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April 11, 2019

New Jersey Department of Environmental Protection
Bureau of Case Management
Mail Code 401-05F281107
P.O. Box 420
Trenton, NJ 08625-0420

Attn: Donna Gaffigan, Case Manager

Re: Investigative Area – *6 Interim Remedial Measure Progress Report*
Hoffmann-La Roche Inc. Site
340 Kingsland Street
Nutley, New Jersey 07110-1199
NJDEP SRP P.I. No. 009949
TRC Project No. 198233

Dear Ms. Gaffigan:

On behalf of Hoffmann-La Roche Inc. (Roche), TRC Environmental Corporation (TRC) has prepared the enclosed Interim Remedial Measure (IRM) Progress Report for Investigative Area (IA)-6. The IA-6 IRM was implemented in accordance with the New Jersey Department of Environmental Protection (NJDEP) Discharge to Groundwater (DGW) Permit-By-Rule (PBR) authorization dated June 26, 2015, the modified DGW PBR authorization dated October 25, 2017, air permits dated September 14, 2015 and March 8, 2017, and the DGW PBR authorization dated May 17, 2018. This IA-6 IRM Progress Report provides an overview of the IRM treatment program, including a summary of IRM operations during 2017-2018 and monitoring data for that period.

If you have any questions or need additional information, please contact Rebecca Hollender (908-988-1710; rhollender@trcsolutions.com).

Sincerely,

TRC ENVIRONMENTAL CORPORATION

Rebecca K. Hollender, PG, LSRP
Office Practice Leader – Director of LSRP Services

cc: Ms. Dawn Pompeo, TRC Environmental Corp.
Mr. Chandra Patel, Hoffmann-La Roche Inc.

Investigative Area – 6
Interim Remedial Measure Progress Report

Hoffmann-La Roche Inc. Site
340 Kingsland Street, Nutley, New Jersey

Prepared For:

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April 11, 2019

Investigative Area -6
Interim Remedial Measure Progress Report

Hoffmann-La Roche Inc. Site
340 Kingsland Street, Nutley, New Jersey

Date: 4/11/19

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3	Full Digital Copy of Progress Report (Text, Figures, Tables, and Appendices)

Investigative Area -6
Interim Remedial Measure Progress Report

Hoffmann-La Roche Inc. Site
340 Kingsland Street, Nutley, New Jersey

Date: April 11, 2019

1.0 INTRODUCTION

On behalf of Hoffmann-La Roche Inc. (Roche), TRC Environmental Corporation (TRC) has prepared this Interim Remedial Measure (IRM) Progress Report to document groundwater remediation efforts conducted at Investigative Area (IA)-6 of the former Roche Facility (Site) located at 340 Kingsland Street, Nutley, New Jersey (Figure 1).

Roche submitted an initial Discharge to Groundwater (DGW) Permit-by-Rule (PBR) Progress Report for the IA-6 Advanced Remediation Technologies In-Well Air Stripping and In Situ Chemical Oxidation (ART-IWAS/ISCO) IRM to the New Jersey Department of Environmental Protection (NJDEP) on November 30, 2017 (TRC, 2017). The November 2017 Progress Report provided a summary of IA-6 IRM activities through July 31, 2017, including a summary of the full-scale ART-IWAS/ISCO IRM operations conducted, ISCO injection methods, quantities of ozone used through the reporting period, and supporting data.

The IRM was implemented between May 2016 and June 2018 in accordance with the following NJDEP permits:

- *New Jersey Pollutant Discharge Elimination System (NJPDES) DGW PBR Discharge Authorization for IA-1, 4, 6, & 12* dated August 13, 2015, for the application of ISCO treatment technology using ozone sparging and sodium persulfate injections;
- Air discharge permits dated September 14, 2015 and March 8, 2017;
- *NJPDES Modified DGW PBR Authorization* dated October 25, 2017 for the application of ISCO treatment technology using ozone sparging and sodium persulfate injections; and
- *NJPDES DGW PBR Authorization* dated May 17, 2018 for enhanced *in situ* bioremediation (EISB) using Anaerobic Biochem (ABC®) injections.

In December 2017, TRC notified the NJDEP that the list of wells monitored quarterly differed from the list that was included in the August 2015 DGW PBR application. TRC demonstrated that the monitored locations adequately monitored the operating IRM. The NJDEP confirmed that the modified monitoring plan was satisfactory. Documentation regarding the modified monitoring plan is provided in Appendix A.

1.1 Background Information

The IRM for IA-6 is located in the southern portion of the Site and occupies approximately 5.5 acres. Figure 2 shows the boundaries of the IAs and the treatment system layout.

The groundwater in the overburden and shallow bedrock at IA-6 contained volatile organic compounds (VOCs) at concentrations exceeding the NJDEP Ground Water Quality Standards (GWQS). The primary constituent of concern (COC) at IA-6 was chlorobenzene (CB), which was found to depths of nearly 100 feet below ground surface (bgs). Other VOCs, including benzene and tetrachloroethene (PCE), were also found in localized areas at concentrations above the GWQS.

1,4-Dioxane (dioxane) attributable to upgradient sources, was detected in groundwater at IA-6. While ISCO would locally reduce dioxane concentrations, the IA-6 IRM was not designed to target dioxane. An IRM in IA-1 and IA-4 was implemented to address the on-Site dioxane source area.

1.2 Hydrogeology

Roche submitted a Conceptual Site Model (CSM) Report (TRC and B. Kueper & Associates, Ltd., 2018) that defines the vertical hydrostratigraphic zonation into hydrogeologic units (HGUs) of the groundwater flow system and corresponding contaminant plumes and transport patterns at the Site. However, the groundwater IRMs were designed and implemented based on depth of apparent source area contamination bgs; therefore, treatment area remediation and monitoring results are reported as shallow, intermediate, or deep within the treatment zone.

1.3 Progress Report Objectives and Document Overview

This Progress Report summarizes the operations and performance of the IA-6 ART-IWAS/ISCO and EISB IRM systems and documents the IRM effectiveness in remediating groundwater since July 2017. The Progress Report consists of the following sections:

- Section 1.0: Introduction;
- Section 2.0: IRM Activities;
- Section 3.0: Performance and Compliance Monitoring Program;
- Section 4.0: Monitoring Results;
- Section 5.0: Conclusions; and,
- Section 6.0: References.

2.0 IRM SYSTEM OPERATION

This current IA-6 IRM Progress Report summarizes the operations and performance of the IA-6 IRM systems since July 31, 2017, including:

- ART-IWAS/ISCO;
- Soil vapor extraction (SVE);
- Supplemental ISCO injection of hydrogen-peroxide-activated persulfate (APS); and
- EISB.

This IRM Progress Report includes all IA-6 IRM groundwater monitoring results from baseline in April 2016 through October 15, 2018.

2.1 ART-IWAS/ISCO System Operation

The ART-IWAS/ISCO IRM system was implemented in May 2016 to remediate CB impacts in shallow bedrock groundwater in IA-6 (Figures 3A, 3B, and 3C). The ART-IWAS component of the system included in-well air sparging (AS), SVE, and groundwater recirculation in ART's proprietary well setup. The ISCO components included an air compressor, oxygen generator, and ozone generator to provide ozone into elevated CB concentration areas, as well as a biosparging network that used air at a very low flow rate to stimulate aerobic biodegradation of CB in low-concentration areas downgradient of the apparent source area.

The ART-IWAS/ISCO IRM system, which was idled in January 2017 to monitor for rebound, was restarted in October 2017 after sampling results showed elevated concentrations of PCE and its degradation products (trichloroethene [TCE], *cis*-1,2-dichloroethene [cis-1,2-DCE], and vinyl chloride [VC], collectively referred to as PCE+).

<u>System Operation and Monitoring</u>

The following tasks were completed before the ART-IWAS/ISCO system was restarted in October 2017:

- Reinstalled pumps at wells ART-75 through ART-80;
- Installed new ozone generators;
- Fixed the internet connection;
- Fixed the HMI internet connection; and
- Installed a Red Zone valve.

<u>System Restart Prior to ISCO Injection</u>

On October 5, 2017, the ART-IWAS/ISCO systems were restarted after the July 2017 groundwater sampling results showed elevated PCE+ concentrations in wells MW-346A, IW-109A, and IW-110A. Refer to Figures 4A through 7C for well locations and July 2017 PCE+ concentrations.

System Shutdown for APS Injection

In August 2017, Roche elected to inject APS (as described in Section 2.2), a stronger oxidant that had the potential to effectively remove CB and PCE+ from source-area groundwater in a shorter timeframe than was estimated for ozone-based treatment. TRC submitted a request to the NJDEP to modify the 2015 DGW PBR system for injection of APS, and the NJDEP issued a modified DGW PBR discharge authorization on October 25, 2017 (Appendix A). Ozone injection wells IW-105A, IW-106A, IW-108A, IW-109A, IW-110A, IW-112A, and IW-113A were converted to APS injection wells.

The wells and vapor extraction trenches (VETs) listed in Table 1 below were shut down at least three days prior to the start of APS injection.

Table 1: Wells Shutdown in Preparation for APS Injection

Ozone Injection Wells	ART-IWAS Wells	VETs
IW-104A	ART-75	IA-6-VET-1
IW-107A	ART-76	IA-6-VET-2
IW-111A	ART-77	IA-6-VET-3
	ART-78	IA-6-VET-4
	ART-80	

Redox Technologies (Redox Tech), under the direction of TRC, injected APS into the converted injection wells in December 2017. The ART-IWAS and biosparging wells in the biosparging area continued to operate.

System Restart and Shutdown After APS Injection

The results of the post APS injection groundwater sampling showed decreases in PCE+ concentrations relative to those detected prior to the APS injection. From February through April 2018, the ART-IWAS wells and VETs were operated intermittently, and vapor monitoring was conducted to evaluate remedial progress.

2.2 APS-ISCO Injection Program

2.2.1 Injection Overview and Amendments

The APS injection program was conducted pursuant to the NJPDES Modified DGW Authorization letter dated October 25, 2017 (Appendix A). The goal of the APS injection was to target two small areas of elevated PCE+ concentrations found just south of and within the area of ozone injection (primarily in monitoring well MW-346A and injection wells IW-109A and IW-110A; Figure 4A). Portions of the ART-IWAS/ISCO system were shut down to accommodate the injections, and seven ozone injection wells were converted to APS injection wells as summarized in Section 2.1. The APS injection program included the following activities:

- APS injections consisting of targeted injections of activator, oxidant, and pH buffer into rows of injection wells, with recirculation of amended groundwater; and

- A performance monitoring program, consisting of:
  - injection monitoring, and
  - groundwater sampling and laboratory analysis.

The APS injection program was conducted from December 1 through 26, 2017. Seven injection wells were used: IW-105A, IW-108A, IW-109A, IW-112A, IW-106A, IW-110A, and IW-113A. The injection well locations are shown on Figure 4A. The following amendments were injected:

- Primary oxidant: sodium persulfate (20 percent by weight);
- pH Buffer: sodium bicarbonate; and
- Activator: hydrogen peroxide (8 percent by weight).

Injection of persulfate/buffer solution was followed by injection of a fixed volume of the activator. In addition, chase water was injected to clear the wells and to push the amendments out of the injection wells.

2.2.2 Injection Design and Procedure

The APS injection was conducted in two batches, with each batch containing two cycles. The first cycle in each batch was the injection of a buffered persulfate solution into the seven injection wells, followed by the second cycle, which was hydrogen peroxide injection. Based on the field amendment inventory, approximately 7,700 gallons of 20 percent sodium persulfate mixed with approximately 2,265 pounds (lbs.) of sodium bicarbonate and 13,800 gallons of 8 percent hydrogen peroxide solution were injected. Injected amendment and water quantities are summarized for each well in Table 2.

Daily injection quantities were tracked and recorded on injection logs, which are provided in Appendix B. The performance monitoring and maintenance program included injection monitoring and extensive groundwater quality monitoring in accordance with the approved DGW PBR. System operating parameters were adjusted as needed to optimize performance.

During injection, hourly groundwater level and *in situ* geochemical parameters measurements were collected from sixteen wells including one round before the start of and one round at the end of injection each day. Appendix C includes forms documenting daily field groundwater measurements.

2.3 EISB Injection Program

In March 2018, Roche elected to utilize EISB to treat the remaining PCE+ in the IA-6 source area, as prior IRM efforts had reduced CB to below GWQS in all but one well. EISB was proven to be a rapid, effective remedy for removing PCE+ from groundwater in other areas of the Site.

The EISB injection program was conducted from May 21 through June 11, 2018. Redox Tech performed the injections with TRC's oversight. The program consisted of injecting an electron donor solution (ABC®) into source area injection wells combined with recirculation to facilitate the amendment transport and distribution within the treatment zone. Groundwater was extracted from downgradient wells, mixed with the amendment solution in dosing tanks, and re-injected into upgradient

injection wells. Recirculation continued throughout the injection period until the planned quantities of amendment and buffer solution were dispensed. Redox Tech then injected chase water, which had been conditioned using anaerobic amendments prior to injection, to push amendment out of the injection wells.

2.3.1 Injection Overview and Amendments

Injection well IW-194B, which is screened from 30 to 45 feet bgs, was installed on May 18, 2018 and was used for injection and monitoring. The construction details for wells in the IA-6 IRM program and the log for well IW-194B are presented in Appendix D.

The following amendments were used:

- ABC®: a lactate-based electron donor solution;
- Terra Systems Inc. TSI DC®: Dehalococcoides ethenogenes (DHC) bioaugmentation culture;
- Sodium ascorbate, sugar, and yeast: to scavenge oxygen and foster anaerobic conditions; and
- NuBuff: pH buffer.

Based on the field amendment inventory, a total of approximately 4,700 lbs. (550 gallons) of ABC®, approximately 7 gallons of DHC, and 2,812 lbs. of NuBuff (resulting in a total of approximately 58,500 gallons of injected remedial solutions) was injected into the shallow treatment zone (upper 10-15 feet below the water table). A total of approximately 700 lbs. (82 gallons) of ABC®, one gallon of DHC, and 420 lbs. of NuBuff (resulting in a total of approximately 9,000 gallons of solution) was injected into the intermediate treatment zone (depths of approximately 25 to 45 feet bgs). A portion of the injection water was extracted from two wells (ART-77 and ART-78) and an additional 20,000 gallons was obtained from an on-Site municipal water fire hydrant. Table 3 below summaries the injection volumes for each amendment.

Table 3: EISB Amendment Injection Summary with Permitted Totals

Well IDs	16.7% ABC® * (gallons)		Anaerobic Chase Water (gallons)		TSI DC® Culture (liters)		Chase Water (gallons)	
	Injected	Target	Injected	Target	Injected	Target	Injected	Target
Shallow Wells								
IW-109A	500	500	600	600	3.7	3.7	14,610	13,310
IW-110A	500	500	600	600	3.7	3.7	18,910	13,310
ART-75	500	500	600	600	3.7	3.7	710	13,310
ART-76	500	500	600	600	3.7	3.7	13,410	13,310
---IW-105A	-	-	-	-	-	-	2,500	12,600
IW-106A	-	-	-	-	-	-	1,250	-
IW-113A	-	-	-	-	-	-	2,500	-
Intermediate Wells								
IW-194B	160	160	270	270	1.5	1.5	4,000	3,995
MW-346B	160	160	270	270	1.5	1.5	5,500	3,995
Total	2320**	2,320	2,940	2,940	17.8	17.8	53,890	73,830
Permitted Total	2,400 for 60%		-		18 concentrated		NA	
	8,640 for 16.7%				30 unconcentrated			

Notes:
* 1 part (60% ABC®) was mixed with 2.6 parts of water to create 16.7% ABC® solution.
** 2,320 gallons of 16.7% ABC® equals approximately 644 gallons of 60% ABC®.
DHC is concentrated at 60% volume.

Daily injection volumes were recorded in logs that are included in Appendix E and Attachment 1.

2.3.2 Injection Design and Procedure

Figure 2 depicts the injection and extraction well layout and networks. The following injection wells were used: IW-109A, IW-110A, ART-75, ART-76, IW-105A, IW-113A, IW-106A, MW-346B, MW-194B and MW-346B. Two extraction wells were also used: ART-77 and ART-78.

The performance monitoring program included injection monitoring and extensive groundwater quality monitoring in accordance with the approved DGW PBR. System operating parameters were adjusted as needed to optimize performance.

An injection log and a batch mixing log were also used to track progress and monitor injection fluid geochemistry. Appendix E and Appendix F include injection and geochemistry logs, respectively. Daily injection summaries were kept, including average flow rate, injection pressure at each well, and volume of each amendment injected. A Field Summary Report is provided in Attachment 1.

3.0 PERFORMANCE & COMPLIANCE MONITORING PROGRAM

The groundwater performance monitoring program included groundwater quality monitoring in accordance with the approved DGW PBRs for the ISCO and EISB injection programs, as discussed below. The IA-6 quarterly groundwater monitoring program is also discussed below. All sampling followed the most current edition of the NJDEP's Field Sampling Procedures Manual.

3.1 Groundwater Monitoring Program for ISCO and EISB

3.1.1 Groundwater Monitoring for APS-ISCO

To establish baseline groundwater quality in the ISCO treatment area, a pre-injection groundwater sampling event took place in November 2017. The remedial progress post-APS injection was monitored through four groundwater sampling events (January 11-12, 2018; January 23, 2018; February 20, 2018; and March 16, 2018), corresponding to 2 weeks, 1 month, 2 months, and 3 months post injection (see Table 4).

3.1.2 Groundwater Monitoring for EISB

To establish baseline groundwater quality in the EISB treatment area, a pre-injection groundwater sampling event took place from May 18 through 21, 2018. The remedial progress post-EISB injection was monitored through four groundwater sampling events (May 31, 2018; June 26, 2018; August 30, 2018; and September 17, 2018), corresponding to 2 weeks, 1 month, 3 months, and 3.5 months post-injection (see Table 5). However, due to Site development activities, all of the source-area treatment and monitoring wells were abandoned on July 23 and 24, 2018, except for four wells: well IW-194B on the upgradient edge of the EISB treatment zone and wells BIOS-1B, MW-318A, and MW-318B downgradient of the treatment zone. Subsequent sampling in August and September 2018 was conducted only using these four wells; these remaining wells subsequently were abandoned on September 17, 2018 after groundwater quality samples were collected. The measurements and analyses included conducted in association with the EISB injection events are shown in Table 5.

Groundwater monitoring within the treated zone will occur after installation of replacement wells, and the monitoring results from the replacement wells will be provided in a future report.

3.2 Routine Groundwater Monitoring Program

Beside the groundwater sampling events that occurred immediately before and after the APS and EISB injection events, quarterly groundwater sampling at the Site was also conducted at IA-6 to monitor the IRM progress. The parameters analyzed for quarterly groundwater treatment progress monitoring are shown in Table 6.

.

Below is a list of the quarterly IRM-related groundwater sampling events completed since the last reporting period:

- July 26 to July 28, 2017: third quarter 2017 groundwater sampling of 65 wells;
- October 5 and October 6, 2017: fourth quarter 2017 groundwater sampling of 31 wells;
- January 11 and January 12, 2018: first quarter 2018 groundwater sampling of 31 wells; and

- April 5 and April 6, 2018: second quarter 2018 groundwater sampling of 31 wells.

Results for these routine IRM-related groundwater sampling events are discussed in Section 4.0.

3.3 System Air Influent and Effluent Monitoring Program

As per the NJDEP Air Permit No. PCP150005 (superseded by Permit No. PCP160008, dated March 8, 2017), two additional influent/effluent air samples were collected on March 8 and 28, 2018. The air permits are provided in Appendix A. Influent and effluent air samples were collected in 6-liter Summa canisters using 30-minute flow regulators. Samples were sent to TestAmerica Laboratories of Edison, New Jersey for VOC analysis. Air analytical results are discussed in Section 3.4.

Air treatment was also assessed using a hand-held photoionization detector (PID), with influent and effluent readings collected from each vessel. The mid-treatment PID readings were used to assess the adsorptive capacity of the primary granular activated carbon (GAC) vessel and the need for GAC change-out. The PID readings are provided in Appendix G.

4.0 MONITORING RESULTS

The IA-6 IRM DGW PBR and IRM-wide quarterly groundwater analytical results are presented in this section as well as in the following list of figures, tables, and appendices:

- Figures 3A, 3B and 3C present baseline and most recent CB isopleths for zones shallow, intermediate, and deep, respectively;
- Figures 4A, 4B and 4C present baseline and most recent PCE isopleths for zones shallow, intermediate, and deep, respectively;
- Figures 5A, 5B and 5C present baseline and most recent TCE isopleths for zones shallow, intermediate, and deep, respectively;
- Figures 6A, 6B and 6C present baseline and most recent cis-1,2-DCE isopleths for zones shallow, intermediate, and deep, respectively;
- Figures 7A, 7B and 7C present baseline and most recent VC isopleths for zones shallow, intermediate, and deep, respectively;
- Table 7A, 7B, 7C, 7D, and 7E present the summary of VOCs, metals & general chemistry, volatile fatty acids (VFAs), and dissolved gases, and biological parameters analytical results, respectively;
- Appendices B and C provide injection tracking and geochemical measurements for the APS injection program, respectively;
- Appendices E and F provide injection tracking and geochemical measurements for EISB injection program, respectively;
- Appendix H provides the groundwater concentration (PCE+ and CB) trend graphs;
- Appendix I provides the low-flow groundwater sampling calculations and measurements;
- Attachment 2 provides laboratory data reports and Electronic Data Deliverables/Electronic Data Submission and data usability reports.

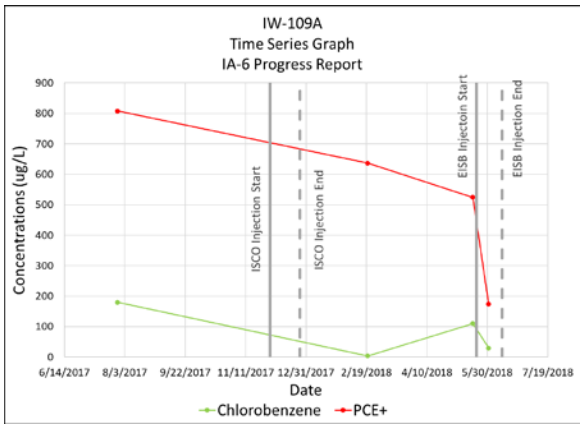
The following sections summarize the groundwater results and provide conclusions regarding CB and PCE+ treatment as of September 2018.

4.1 APS-ISCO Injection Performance Monitoring Results

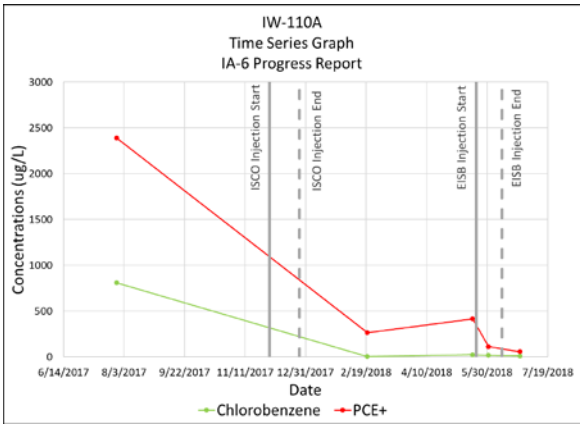
The performance monitoring results indicate that APS injection enhanced the destruction of CB and PCE+ in the targeted treatment area, as shown on Figures 3A through 7C and Table 7A. CB and PCE+ trend graphs for IW-109A, IW-110A, and MW-346A are provided below. Individual CB and PCE+ trend graphs for each well within or near the treatment zones are provided in Appendix I.

As shown in Table 7B, sulfate concentrations were elevated at ART-78 (1,960 milligrams per liter [mg/L]), ART-77 (1,800 mg/L), and ART-85 (640 mg/L) in March 2018 (3-month post injection), due to the APS injection. The positive oxidation-reduction potential (ORP), high specific conductivity (SC), and high dissolved oxygen (DO) levels, near saturation, are indicative of the development of oxidizing conditions, which would be expected following injection of an oxidant such as APS.

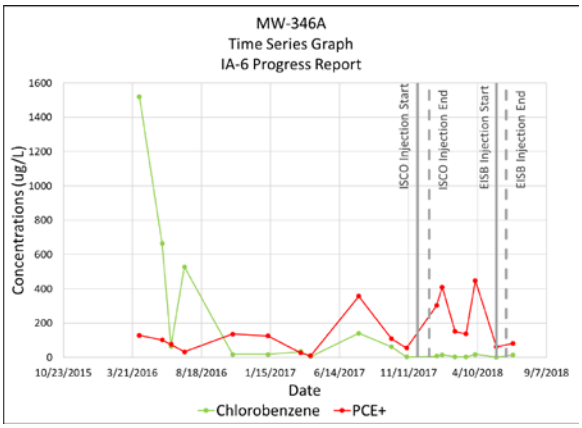
As shown in Graphs 4-1 through 4-3 and Table 7A, the APS injection (referred to as ISCO injection on the graphs) resulted in significant decreases in CB concentrations.



Graph 4-1: CB and PCE+ trends in IW-109A



Graph 4-2: CB and PCE+ trends in IW-110A



Graph 4-3: CB and PCE+ trends in MW-346A

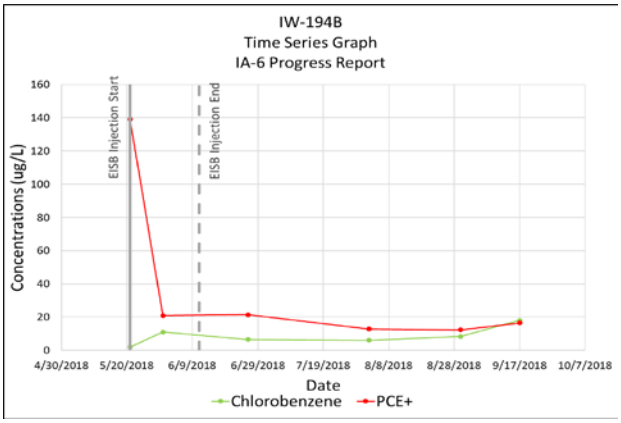
4.2 EISB Performance Monitoring Results

The goal of the EISB effort was to enhance biological degradation of PCE+ by the addition of organic substrate to the aquifer to ensure highly reducing conditions and to provide the carbon and hydrogen needed by dechlorinating organisms. Evidence of the appropriate distribution of amendment is the measurement of total organic carbon (TOC). As shown in Table 7B, the May 21, 2018 pre-injection results show that TOC concentrations throughout most of the treatment area were relatively low (less than 10 mg/L), indicating that the aquifer was generally limited in available carbon and electron donors prior to the EISB injections. The May 2018 sampling results show that TOC concentrations sharply increased after injections were started, ranging from 257 mg/L to 4,220 mg/L. The June 2018 (1-month post injection) results show that TOC concentrations were still high, ranging from 401 mg/L to 4,850

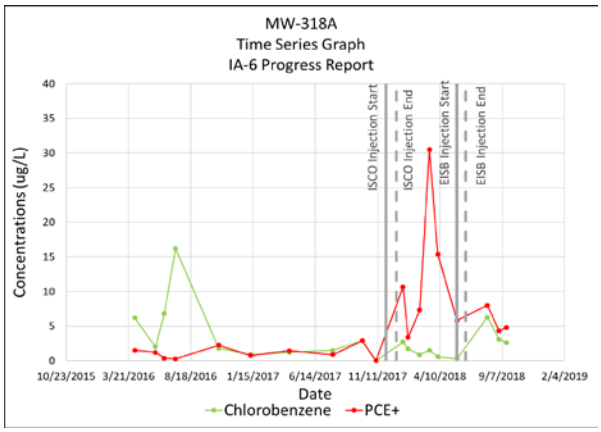
mg/L. These results indicate the aquifer had sufficient organic carbon to support PCE degradation in the treatment area.

The development of reducing conditions due to the injection of ABC® was also evidenced by significant increases of dissolved iron and manganese concentrations (as shown in Table 7B), which is indicative of a strong reducing environment. The highest concentrations of dissolved iron (53,500 micrograms per liter [µg/L]) and dissolved manganese (17,500 µg/L) were observed in ART-78 in June 2018. ORP levels decreased following the EISB injection and generally remained less than -100 millivolts (mV), which is indicative of the development of favorable reducing conditions for PCE+ reduction. DO levels fluctuated between 0.0 and 4.5 mg/L in all targeted wells.

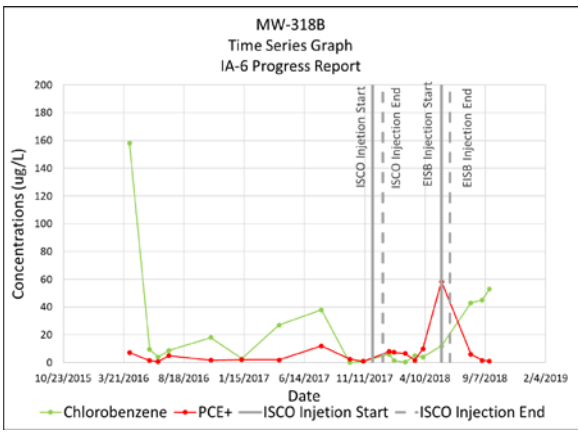
Graphs 4-1 through 4-7 demonstrate that EISB resulted in decreased PCE+ concentrations throughout the treatment zone, with sustained concentration decreases observed in those wells for which monitoring was able to be continued beyond June 2018. Trend graphs for individual PCE+ constituents in Appendix H show, in most cases, decreases in PCE and TCE with corresponding increases and subsequent decreases in cis-1,2-DCE and VC, as biodegradation continued.



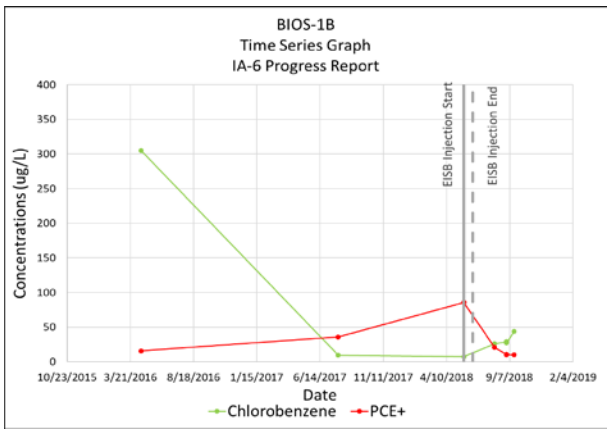
Graph 4-4: CB and PCE+ trends in IW-194B



Graph 4-5: CB and PCE+ trends in MW-318A



Graph 4-6: CB and PCE+ trends in MW-318B



Graph 4-7: CB and PCE+ trends in BIOS-1B

As of June 2018, cis-1,2-DCE concentrations were reduced to below the GWQS of 70 µg/L in all sampled wells. VC concentrations were also reduced to below its GWQS of 1 µg/L in all sampled wells, except for MW-346A. The VC concentration in MW-346A increased to 5.7 µg/L during June 2018 compared to the pre-injection (May 2018) concentration of non-detect (ND), indicating that biodegradation of PCE, TCE, and cis-1,2-DCE had proceeded sufficiently to produce VC. Dissolved ethene concentrations started to increase in ART-77 after 1-month post-injection, demonstrating that complete reductive dechlorination was occurring.

4.3 IRM-Wide Groundwater Monitoring Results

The average overall reduction of CB concentrations between April 2016 and June 2018 was 98 percent, 84 percent, and 92 percent for shallow, intermediate and deeper treatment-zone wells, respectively. This mostly resulted from the ART-IWAS/ISCO system operation and the ISCO-APS injection. During the most recent sampling event conducted on September 17, 2018, MW-318B was the only well that showed a CB concentration above the GWQS of 50 µg/L. This value likely represents a short-term anomaly as this well showed no exceedances of the GWQS from June 2016 to August 2018.

The average reduction of PCE+ concentrations between July 2017 and June 2018 was 50 percent, 63 percent, and 72 percent for shallow, intermediate, and deeper treatment-zone wells, respectively.

PCE concentrations were below 10 µg/L during the most recent sampling at wells IW-194B, MW-318A, MW-318B and BIOS-1B (sampling varied from June 2018 to September 2018 due to decommissioning of some wells). Wells IW-109A and IW-110A still had minor exceedances of PCE and TCE following the EISB injection, but monitoring was limited after June 26, 2018 due to the decommissioning of all wells located in the EISB treatment area for construction purposes.

Dioxane was not targeted for treatment in the IA-6 IRM. The most recent groundwater sampling results showed dioxane concentrations ranging from 0.82 to 180 µg/L. Benzene was also present at low levels in treatment area wells; post-treatment concentrations ranged from 1.2 to 6.4 µg/L.

4.4 Air Sampling Results

The results of air samples were used to assess compliance with the NJDEP air permit and to calculate VOC mass removal rates. As shown in Table 8 and Appendix J, analytical results from the influent samples indicate a decrease in VOC concentrations over time.

<u>VOC Removal</u>

Approximately 1.4 lbs. of VOCs were removed via the ART-IWAS/SVE systems, in addition to the mass degraded by ISCO and EISB. VOC mass removal was calculated using the concentration results from the air samples and the volume of vapor removed, based on the recorded flow rates and the hours of operation (Appendix H). The rate of VOC removal varied from 7.4×10^{-6} pounds per hour (lb/hr) in March 2017 to 2.42×10^{-4} lb/hr in March 2018 due to higher SVE flow rates and higher VOC concentrations in the influent air.

VOC Emission

The VOC emission rates were calculated based on GAC effluent concentrations and flow rates. As shown in Appendix J, the emission rate increased to 2 x 10^{-4} lb/hr on March 28, 2018 but was still well below the reporting limit of 0.05 lb/hr as stated in the air permit (Appendix A). VOC concentrations in the effluent air samples increased since March 2017, to around 410 micrograms per cubic meter ($\mu g/m^3$) which is equivalent to 135 parts per billion in volume (ppbv), as shown in Appendix J and Table 8, confirming that the GAC treatment system was adequately controlling emissions below the permit's 5,000 ppbv reporting limit. Measured extraction flow rates were consistently below the air permit limit.

5.0 CONCLUSIONS

The ART-IWAS/ISCO remediation system was restarted in September 2017 and fully shut down in April 2018, with partial shutdown and intermittent restart to accommodate rebound monitoring and persulfate injection programs. The system operated within its design parameters and NJDEP permit requirements since its startup in May 2016.

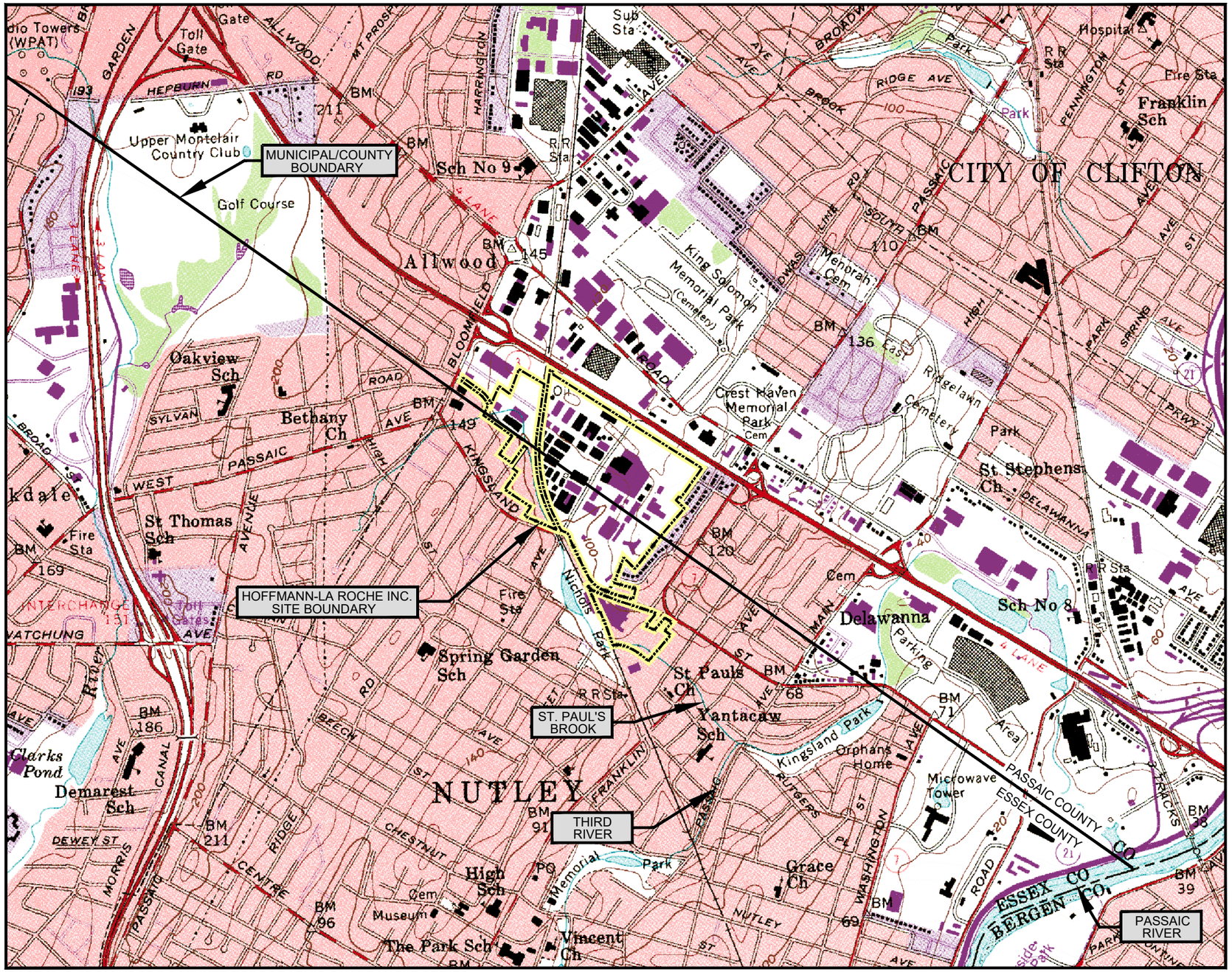
The combined effort of the ART-IWAS/ISCO remediation system, the APS injection in December 2017, and the EISB injection in May 2018, greatly reduced the concentrations of CB and PCE+ to below the GWQS in most wells. Monitoring of the treatment zone was interrupted due to construction activities. Additional groundwater monitoring following the installation of replacement wells will help to further evaluate EISB effectiveness, PCE+ degradation rates, and any potential rebound from back diffusion from the rock matrix or from untreated groundwater surrounding the EISB treatment area.

6.0 REFERENCES

TRC, 2017. Nutley Site Remediation Project No. S153.29215. *Investigative Area (IA)-6 Discharge to Groundwater Permit by Rule – ART In-Well Air Stripping & In Situ Chemical Oxidation Interim Remedial Measure Progress Report.* NJDEP PI ID No. 009949. Prepared for Hoffmann-La Roche Inc. by TRC Environmental Corporation. November 30, 2017.

TRC and B. Kueper & Associates, Ltd., 2018. Nutley Site Remediation Project No. S153.29215. *Site-Wide Groundwater Conceptual Site Model Report for the Hoffmann-La Roche Inc. Site*. NJDEP PI No. 009949. January 29, 2018.

FIGURES

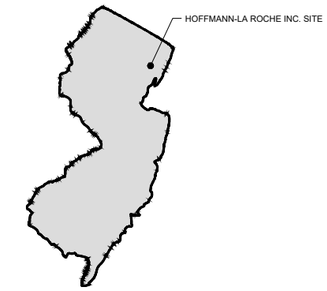


BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES
ORANGE, N.J. 1955, PHOTOREVISED 1981

SCALE

0 750 1500

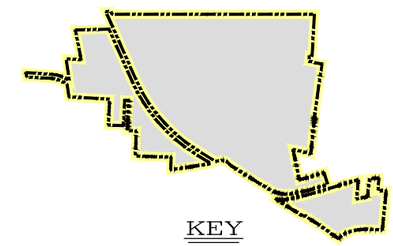
1 INCH = 1500 FEET



KEY MAP

CENTER OF FACILITY

(0,0 PLANT GRID SYSTEM)
LAT.: 40° 50' 03.7"
LONG.: 74° 09' 21.9"



KEY

HOFFMANN–LA ROCHE INC. SITE BOUNDARY LIMITS

GEODETIC DATA

(FOR THE PLANT CENTROID)

N.A.D. 1927 ADJUSTMENT	N.A.D. 1983 ADJUSTMENT
LATITUDE/LONGITUDE	LATITUDE/LONGITUDE
LAT.: 40° 50' 03.7"	LAT.: 40° 50' 04.08"
LONG.: 74° 09' 21.9"	LONG.: 74° 09' 20.45"
N.J. STATE PLANE COORDINATES	N.J. STATE PLANE COORDINATES
NORTH: 729,307.93	NORTH: 729,078.36
EAST: 2,141,288.07	EAST: 587,396.30

PROJECT:

ROCHE NUTLEY REMEDIATION SITE

TITLE:

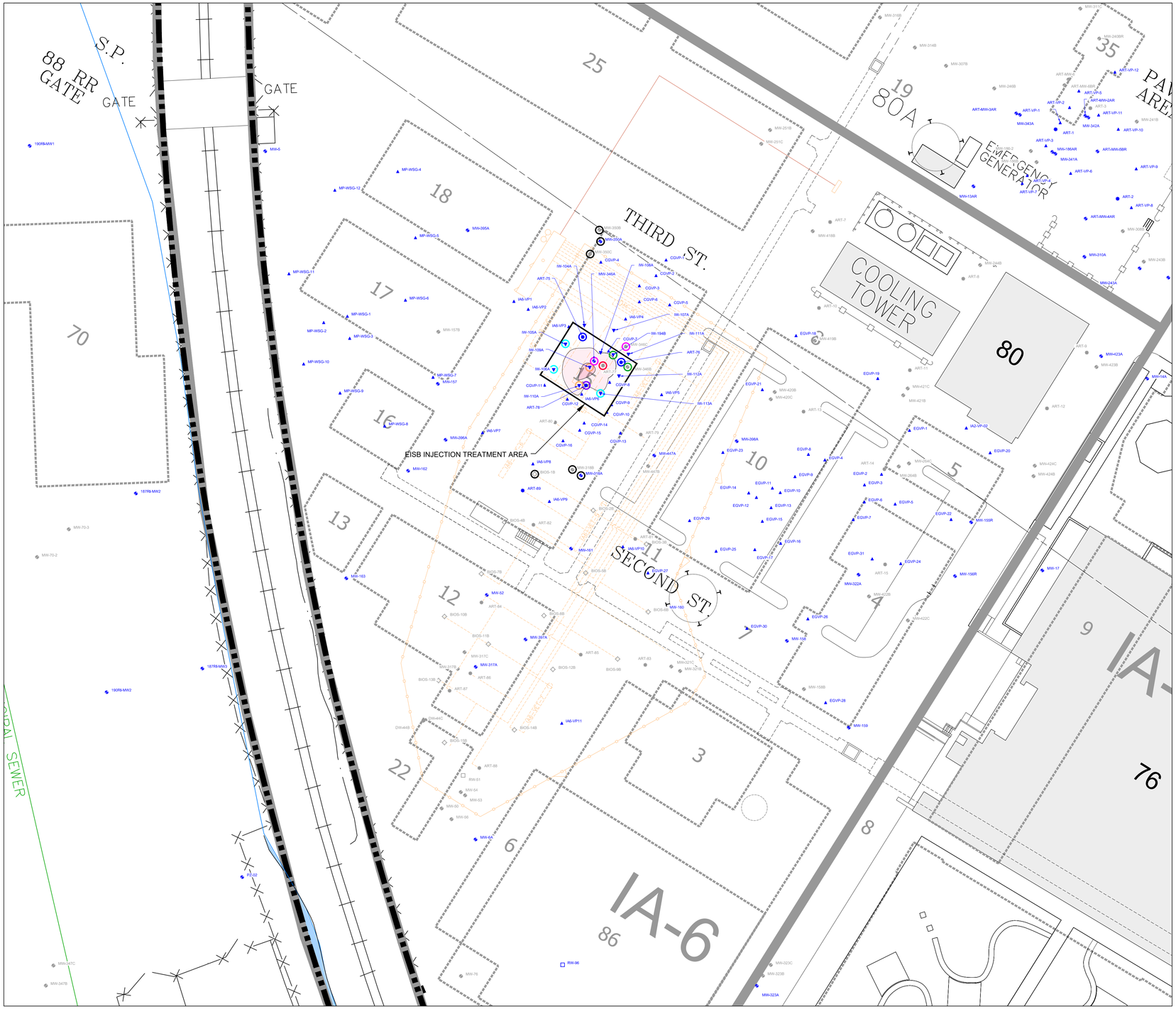
SITE LOCATION MAP

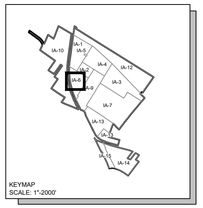
DRAWN BY:	M. GIAMBATTISTA	PROJ NO.:	198233
CHECKED BY:	S. CROSBY		
APPROVED BY:	J. BRUMMER-JECKO		**FIGURE 1**
DATE:	DECEMBER 2018		

TRC
41 Spring Street
Suite 102
New Providence, NJ 07974
Phone: 908.988.1700

FILE NO.: FIGURE 1 - SITE LOCATION MAP REV4.dwg

15:17 — USER: MGiambattista — ATTACHED XREFS: — ATTACHED IMAGES: 'Nutley'=relie-clean-2, 04000162
DRAWING NAME: M:\Cad Files\Vision Projects\105009\ FIGURE 1 - SITE LOCATION MAP REV4.dwg — PLOT DATE: December 20, 2018 - 12:41 PM — LAYOUT: IRM FIGURE 1
Version: 2017-10-21





N

LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- DEMOLISHED BUILDING
- 76 BUILDING
- PROJECTED IRM TREATMENT AREA
- REMEDIATION SYSTEM
- MONITORING WELL LOCATION
- IN-WELL AIR STRIPPING (IWAS) LOCATION
- INJECTION WELL (IW) LOCATION
- VAPOR WELL LOCATION
- RECOVERY WELL
- EXTRACTION LOCATION
- BIOSPARGE WELL LOCATION

WELL SYMBOL COLOR LEGEND

- SHALLOW TREATMENT ZONE (~100-80 FT AMSL)

PCE+ ISOCONCENTRATION CONTOURS (ug/L)

- >100 AND ≤ 500
- >500 AND ≤ 1000

- PERIMETER WELLS IN GROUNDWATER MONITORING PROGRAM
- SHALLOW INJECTION POINT - PHASE 1
- SHALLOW INJECTION POINT - PHASE 2
- INTERMEDIATE INJECTION POINTS - PHASE 1
- SHALLOW EXTRACTION POINT - PHASE 1 AND 2
- INTERMEDIATE EXTRACTION POINTS - PHASE 1 AND 2
- CONTINGENT INJECTION/EXTRACTION WELLS
- TREATMENT AREA MONITORING WELLS

PROJECT:

ROCHE NUTLEY SITE REMEDIATION

TITLE:

IA6 EISB INJECTION AND EXTRACTION WELL LAYOUT AND NETWORK

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		
APPROVED BY:	J. BRUMMER-JECKO		**FIGURE 2**
DATE:	MARCH 2019		

TRC
41 Spring Street
Suite 102
New Providence, NJ 07974
Phone: 908.988.1700

FILE NO.: Figure 2.dwg

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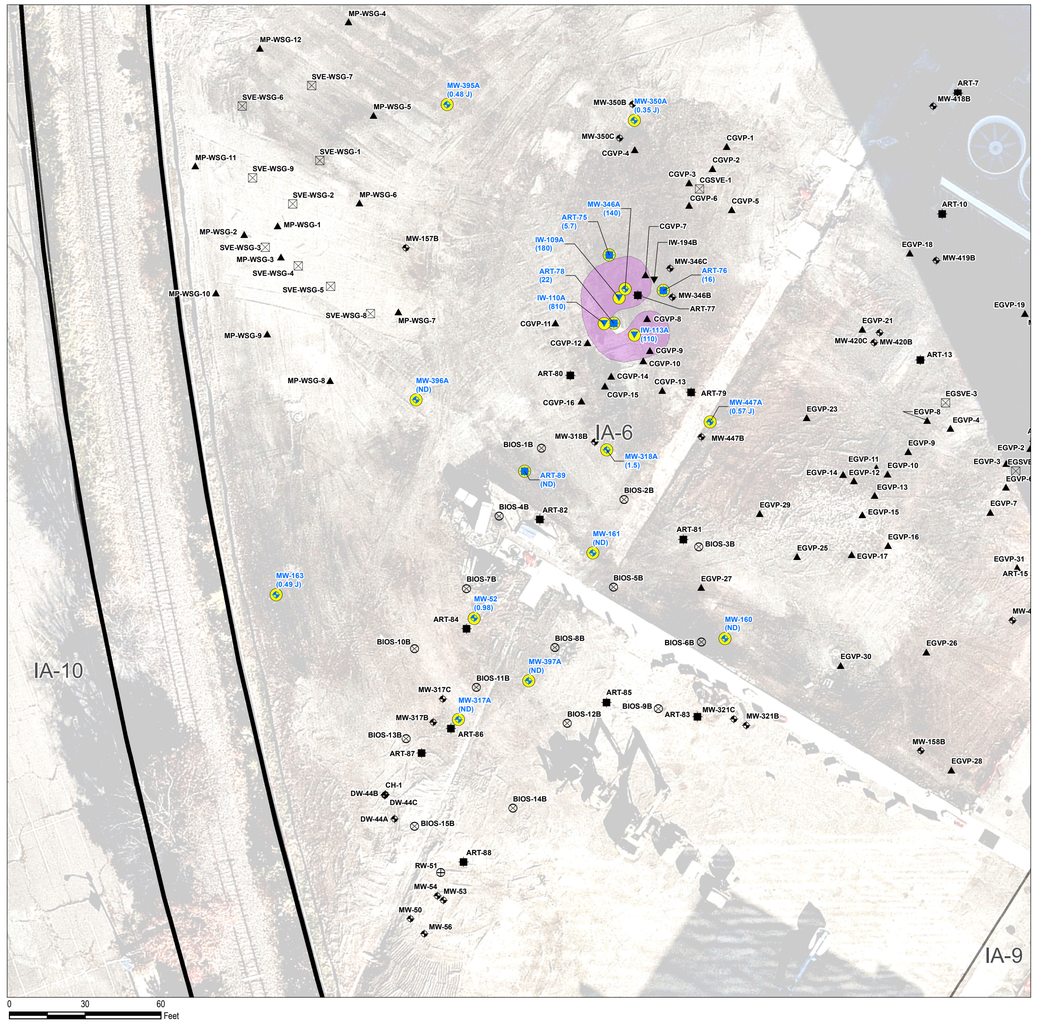
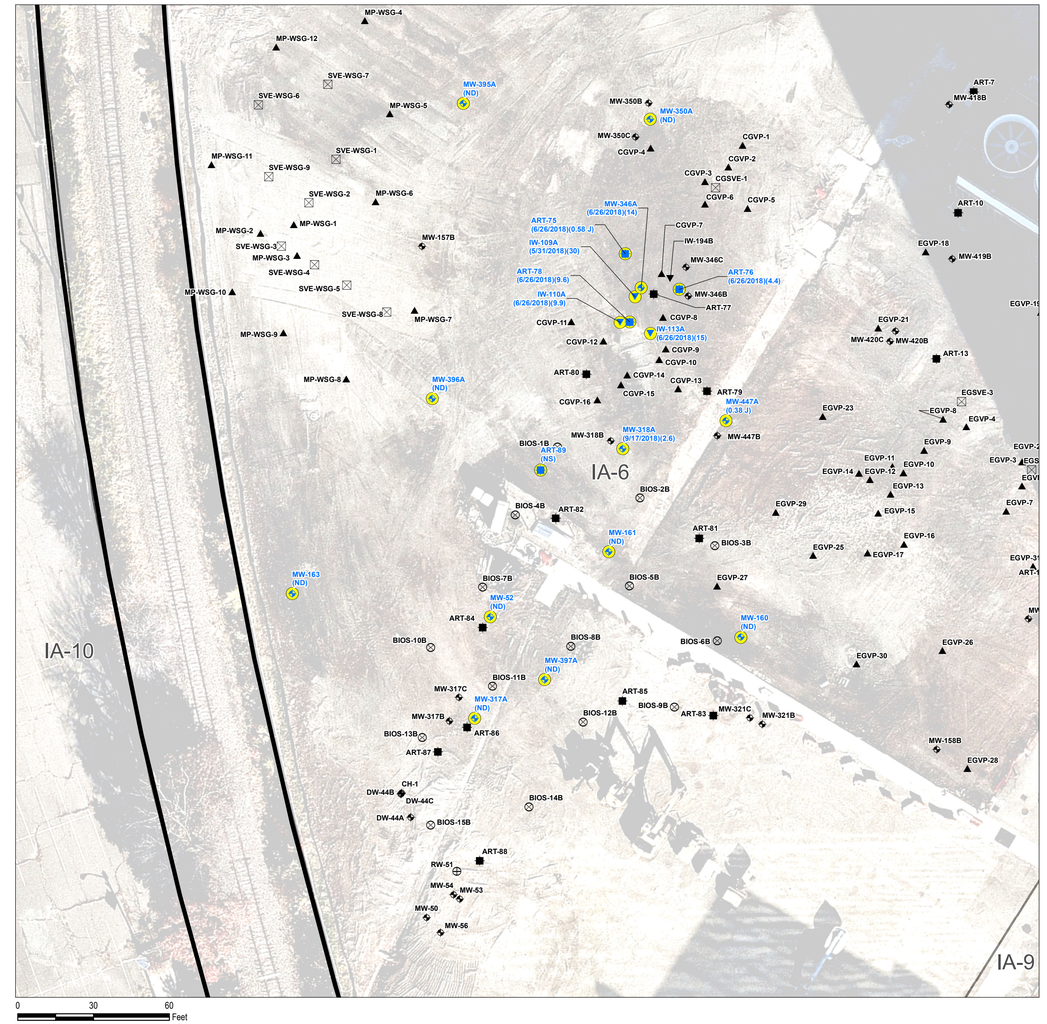
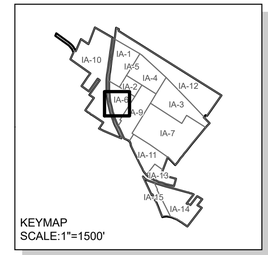
Version: 2017-10-21

BASELINE - JULY 2017



MOST RECENT*





N

LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- SHALLOW TREATMENT ZONE

CHLOROBENZENE ISOCONCENTRATION CONTOURS (ug/L)

- >50 AND ≤ 1000

ABBREVIATION	GWQS (µg/L)	COMPOUND
CB	50	Chlorobenzene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. SHALLOW TREATMENT ZONE - ~100 - 80 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED

ART-75	Depth	CB
04/07/16	22.48	**111**
01/10/17	16.5	NE (0.67 J)
03/22/17	16.5	ND (<0.17)
04/13/17	16.5	ND (<0.24)
7/26/2017 - Baseline	16.5	NE (5.7)
10/05/17	16.5	NE (0.27 J)
01/11/18	16.5	NE (0.82 J)
03/16/18	16.5	NE (7)
04/05/18	16.5	NE (1.9)
05/18/2018	16.5	NE (26)
05/31/18	16.5	NE (17)
06/26/18	16.5	NE (0.58 J)

ART-76	Depth	CB
04/06/16	22.88	**151**
7/26/2017 - Baseline	23	NE (16)
05/18/2018	16.5	NE (2.1)
05/31/18	16.5	NE (7.7)
06/26/18	16.5	NE (4.4)

ART-78	Depth	CB
04/07/16	22.81	**631.0**
01/10/17	16.5	NE (4.0)
03/22/17	16.5	NE (7)
04/12/17	16.5	NE (1.1)
7/26/2017 - Baseline	16.5	NE (22)
10/05/17	16.5	NE (1.4)
01/11/18	16.5	NE (12)
02/20/18	16.5	NE (8.5)
03/16/18	16.5	NE (1.8)
04/05/18	16.5	NE (0.46 J)
05/18/2018	16.5	NE (8.2)
05/31/18	16.5	NE (7.7)
06/26/18	16.5	NE (9.6)

ART-89	Depth	CB
04/06/16	22.37	NE (4.5)
7/27/2017 - Baseline	22.37	ND (<2.4)

IW-109A	Depth	CB
7/28/2017 - Baseline	27.5	**180**
02/20/18	27.5	NE (4.0)
05/18/18	27.5	**110**
05/31/18	27.5	NE (30)

IW-110A	Depth	CB
7/28/2017 - Baseline	27.5	**810**
02/20/18	27.5	NE (5.2)
05/18/18	27.5	NE (24)
05/31/18	27.5	NE (17)
06/26/18	27.5	NE (9.9)

IW-113A	Depth	CB
7/28/2017 - Baseline	27.5	**110**
05/21/18	27.5	NE (3.2)
06/26/18	27.5	NE (15)

MW-160	Depth	CB
04/05/16	14.8	ND (<0.19)
06/13/16	14.8	ND (<0.17)
10/24/16	14.5	ND (<0.24)
01/10/17	14.5	ND (<0.24)
04/12/17	14.5	ND (<0.24)
7/26/2017 - Baseline	14.5	ND (<0.24)
10/05/17	14.5	ND (<0.24)
01/11/18	14.5	ND (<0.24)
04/06/18	14.5	ND (<0.24)

MW-161	Depth	CB
04/05/16	12	ND (<0.19)
06/14/16	12	ND (<0.17)
10/24/16	12	ND (<0.24)
1/10/2017	12	ND (<0.24)
04/12/17	12	ND (<0.24)
7/26/2017 - Baseline	12	ND (<0.24)
10/05/17	12	ND (<0.24)
01/11/18	12	ND (<0.24)
04/05/18	12	ND (<0.24)

MW-163	Depth	CB
04/06/16	14.58	NE (5)
06/15/16	14.60	NE (20)
10/25/16	14.60	NE (15)
04/12/17	14.60	ND (<0.24)
7/26/2017 - Baseline	14.60	NE (0.49 J)
10/05/17	14.60	NE (1.1)
01/11/18	14.60	ND (<0.24)
04/06/18	14.60	ND (<0.24)

MW-317A	Depth	CB
04/05/16	12.85	ND (<0.19)
06/14/16	12.85	ND (<0.17)
10/25/16	12.85	ND (<0.24)
01/10/17	12.85	ND (<0.24)
04/12/17	12.85	ND (<0.24)
7/26/2017 - Baseline	12.85	ND (<0.24)
10/05/17	12.85	ND (<0.24)
01/11/18	12.85	ND (<0.24)
04/06/18	12.85	ND (<0.24)

MW-318A	Depth	CB
04/05/16	11.74	NE (6.2)
06/15/16	11.74	NE (6.8)
10/24/2016	11.74	NE (1.8)
01/09/17	11.74	NE (0.89 J)
04/12/17	11.74	NE (1.2)
7/26/2017 - Baseline	11.74	NE (1.5)
10/05/17	11.74	NE (2.9)
11/7/2017	10.00	ND (<0.24)
01/11/18	11.74	NE (2.7)
01/23/18	10.00	NE (1.7)
02/20/18	10.00	NE (0.85 J)
03/16/18	11.74	NE (1.5)
04/05/18	11.74	NE (0.58 J)
05/21/2018	10.00	NE (0.29 J)
08/02/18	10.00	NE (6.3)
08/30/18	10.00	NE (3.1)
09/17/18	10.00	NE (2.6)

MW-346A	Depth	CB
04/05/16	13.1	**1,520**
06/13/16	13.1	**64.7**
10/25/16	13.1	NE (17)
01/10/17	13.1	NE (18)
03/22/17	13.1	NE (32.3)
04/12/17	13.1	NE (4.0)
7/26/2017 - Baseline	13.1	**140**
10/05/17	13.1	**61**
11/7/2017	11.0	NE (2.6)
01/11/18	13.1	NE (6.8)
01/23/18	11.0	NE (15)
02/20/18	13.1	NE (3.0)
03/16/18	13.1	NE (2.2)
04/05/18	13.1	NE (17)
05/21/2018	10.5	NE (0.83 J)
06/26/18	10.5	NE (14)

MW-350A	Depth	CB
04/05/16	11.4	ND (<0.19)
10/24/16	11.4	ND (<0.24)
01/09/17	11.4	ND (<0.24)
04/12/17	11.4	ND (<0.24)
7/26/2017 - Baseline	11.4	NE (0.35 J)
10/05/17	11.4	ND (<0.24)
01/11/18	11.4	ND (<0.24)
04/05/18	11.4	ND (<0.24)
05/21/2018	10.5	ND (<0.24)

MW-395A	Depth	CB
04/06/16	12.5	ND (<0.19)
06/14/16	12.5	ND (<0.17)
10/24/2016	12.5	ND (<0.24)
04/13/17	12.5	ND (<0.24)
7/26/2017 - Baseline	12.5	NE (0.48 J)
10/05/17	12.5	ND (<0.24)
01/11/18	12.5	ND (<0.24)
04/06/18	12.5	ND (<0.24)

MW-396A	Depth	CB
04/05/16	11	ND (<0.19)
6/15/2016	11	ND (<0.17)
10/24/16	11	ND (<0.24)
04/13/17	11	ND (<0.24)
7/26/2017 - Baseline	11	ND (<0.24)
10/05/17	11	ND (<0.24)
01/11/18	11	ND (<0.24)
04/05/18	11	ND (<0.24)

MW-397A	Depth	CB
04/05/16	16	ND (<0.19)
06/15/16	16	ND (<0.17)
10/25/16	16	ND (<0.24)
01/09/17	16	ND (<0.24)
04/12/17	16	ND (<0.24)
7/26/2017 - Baseline	16	ND (<0.24)
10/05/17	16	ND (<0.24)
01/11/18	16	ND (<0.24)
04/06/18	16	ND (<0.24)

MW-447A	Depth	CB
04/06/16	12.3	ND (<0.19)
6/15/2016	12.3	NE (2.7)
10/24/16	12.3	NE (7.3)
01/10/17	12.3	NE (0.25 J)
04/12/17	12.3	ND (<0.24)
7/26/2017 - Baseline	12.3	NE (0.57 J)
10/05/17	12.3	NE (1.9)
11/7/2017	10.0	ND (<0.24)
01/12/18	12.3	ND (<0.24)
1/23/2018	12.3	ND (<0.24)
2/20/2018	12.3	ND (<0.24)
03/16/18	12.3	ND (<0.24)
4/5/2018[9]	12.3	NE (0.38 J)

MW-52	Depth	CB
4/6/2016	25	NE (18.1)
06/14/16	25	NE (0.91 J)
10/25/16	25	NE (1.1)
01/10/17	25	NE (1.2)
04/12/17	25	NE (0.53 J)
7/26/2017 - Baseline	25	NE (0.98)
10/05/17	25	NE (1.9)
11/7/2017	25	NE (0.71 J)
01/12/18	25	NE (0.29 J)
01/23/18	25	ND (<0.24)
02/20/18	25	ND (<0.24)
04/05/18	25	ND (<0.24)

PROJECT:
ROCHE NUTLEY SITE REMEDIATION

TITLE:
CHLOROBENZENE ISOCONCENTRATION CONTOURS - SHALLOW TREATMENT ZONE

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		
APPROVED BY:	J. BRUMMER-JECKO		**FIGURE 3A**
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_CB_Shallow.mxd

Plot Date: 3/12/2019, 14:42:22 PM by LLANTIGUA, -- LAYOUT: ANSI D (22"X34")
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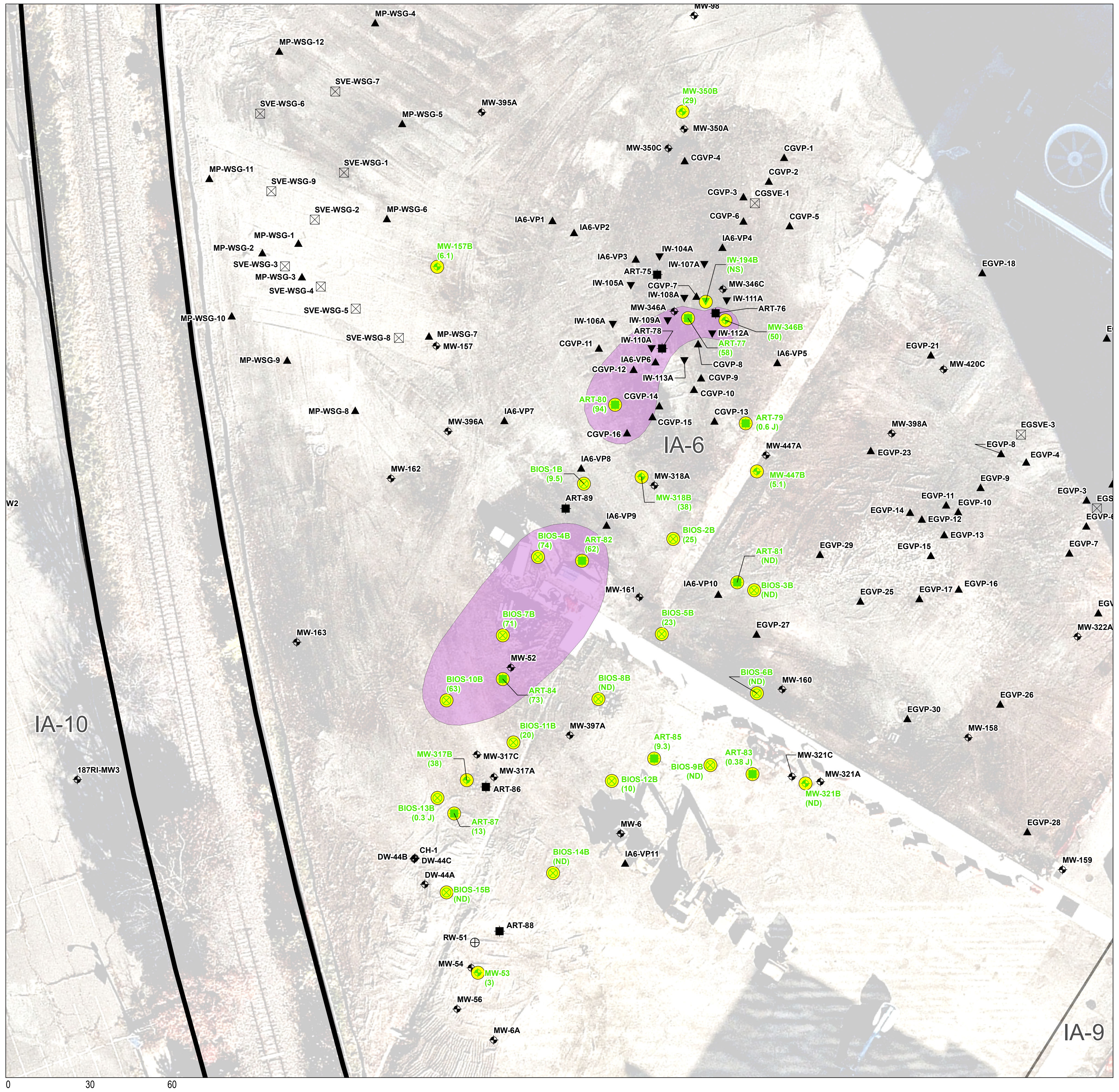
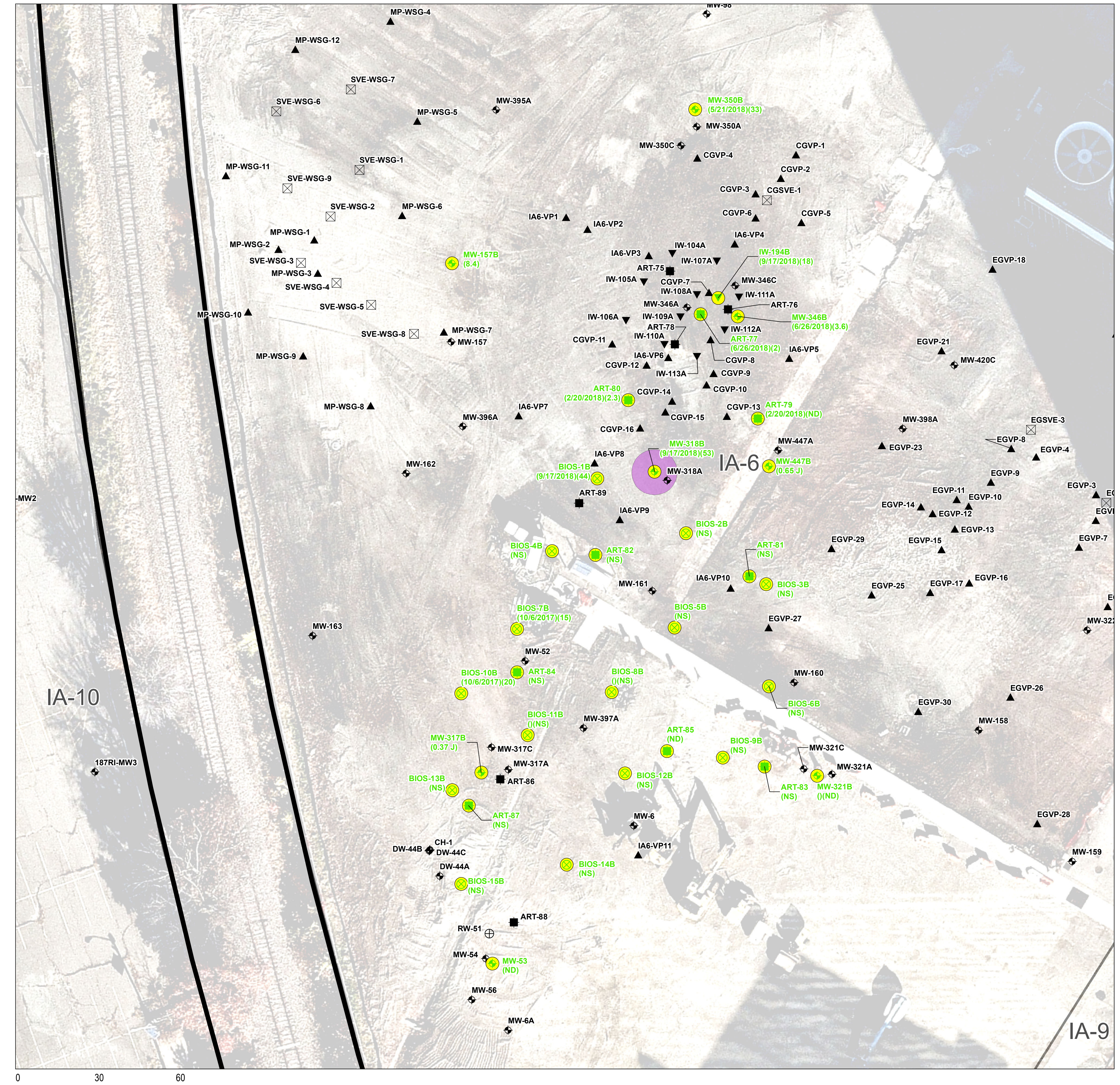
Map Rotation: 0

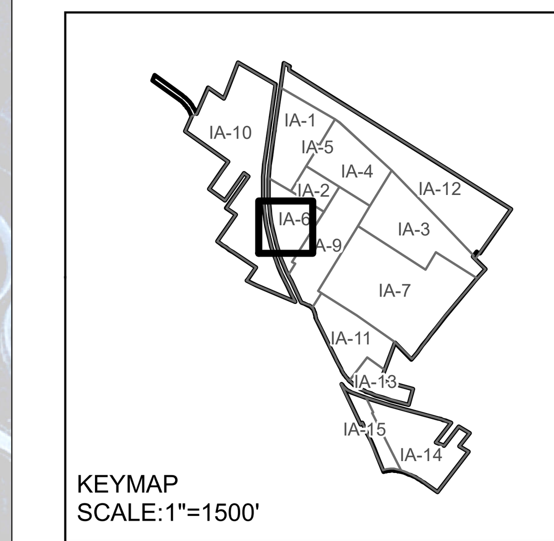
TRC - GIS

BASELINE - JULY 2017



MOST RECENT*





LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- INTERMEDIATE TREATMENT ZONE

CHLOROBENZENE ISOCONCENTRATION CONTOURS (ug/L)

- >50 AND ≤ 1000

ABBREVIATION	GWQS (µg/L)	COMPOUND
CB	50	Chlorobenzene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. INTERMEDIATE TREATMENT ZONE - ~80 - 50 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED
12. D - DUPLICATE SAMPLE
13. NA - NOT ANALYZED

MW-53	Depth	CB
04/05/16	35	**60.7**
06/13/16	35	NE (1.6)
10/25/16	35	NE (13)
01/10/17	35	NA
04/12/17	35	NE (6.9)
7/26/2017 - Baseline	35	NE (3)
10/05/17	35	NE (0.75 J)
01/11/18	35	NE (1.1)
04/06/18	35	ND (<0.24)

MW-157B	Depth	CB
04/05/16	40	NE (0.72 J)
06/14/16	40	NE (11.8)
10/24/16	40	NE (12)
01/10/17	40	NE (8.4)
04/13/17	40	NE (1.2)
7/26/2017 - Baseline	40	NE (6.1)
10/5/2017	40	NE (5.9)
01/11/18	40	NE (11)
03/16/18	40	NE (9.2)
4/6/2018	40	NE (8.4)

MW-317B	Depth	CB
04/05/16	40	**169**
06/14/16	40	NE (6.6)
10/25/16	40	NE (5.1)
01/10/17	40	NE (1.8)
04/12/17	40	NE (4.0)
7/26/2017 - Baseline	40	NE (38)
10/05/17	40	NE (6.1)
11/7/2017	40	NE (1.9)
01/11/18	40	ND (<0.24)
01/23/18	40	ND (<0.24)
02/20/18	40	NE (0.37 J)
04/05/18	40	NE (0.37 J)

MW-318B	Depth	CB
04/05/16	50	**158**
06/15/16	50	NE (4)
10/24/16	50	NE (18)
01/09/17	50	NE (2.8)
04/12/17	50	NE (27)
7/26/2017 - Baseline	50	NE (38)
10/05/17	50	ND (<0.24)
11/7/2017	50	NE (0.79 J)
01/11/18	50	NE (6.1)
01/23/18	50	NE (1.5)
02/20/18	50	NE (0.28 J)
03/16/18	50	NE (5.1)
04/05/18	50	NE (4.0)
05/21/18	50	NE (12)
08/02/18	50	NE (43)
08/30/18	50	NE (45)
09/17/18	50	**53**

MW-321B	Depth	CB
04/05/16	50	NE (35.7)
06/14/16	50	NE (0.88 J)
07/12/16	50	NE (0.6 J)
10/24/16	50	ND (<0.24)
01/10/17	50	NE (1.5)
04/12/17	50	NE (3.1)
7/26/2017 - Baseline	50	ND (<0.24)
10/5/2017	50	NE (0.9 J)
01/11/18	50	ND (<0.24)
04/06/18	50	ND (<0.24)

MW-346B	Depth	CB
04/05/16	40	**127**
06/13/16	40	NE (4.9)
10/25/16	40	NE (24)
01/10/17	40	NE (9.8)
03/22/17	40	NE (47)
04/12/17	40	NE (61)
7/26/2017 - Baseline	40	**50**
10/05/17	40	NE (8)
11/7/2017	40	NE (3.7)
01/11/18	40	NE (24)
01/23/18	40	NE (13)
02/20/18	40	NE (4.1)
03/16/18	40	NE (8.4)
04/05/18	40	NE (1.1)
05/21/18	40	NE (22)
05/31/18	40	ND (<0.24)
06/26/18	40	NE (3.6)

MW-350B	Depth	CB
04/05/16	40	NA
06/01/16	NA	NA
10/24/16	40	NE (44)
01/10/17	40	NE (40)
04/12/17	40	NE (34)
7/26/2017 - Baseline	40	NE (29)
10/05/17	40	NE (32)
01/11/18	40	**86**
04/05/18	40	**58**
05/21/2018	40	NE (33)

MW-447B	Depth	CB
04/06/16	40	NE (6.2)
06/15/16	40	NE (3.5)
10/24/16	40	NE (1.9)
01/10/17	40	NE (0.3 J)
04/13/17	40	NE (1.4)
7/26/2017 - Baseline	40	NE (5.1)
10/05/17	40	NE (0.92 J)
11/7/2017	40	NE (0.26 J)
01/11/18	40	NE (0.34 J)
01/23/18	40	ND (<0.24)
02/20/18	40	ND (<0.24)
03/16/18	40	NE (1.3)
04/05/18	40	NE (0.65 J)

ART-77	Depth	CB
04/07/16	39.4	**331**
06/01/16	NA	NA
01/10/17	36.5	NE (6.8)
03/22/17	36.5	NE (6.1)
04/12/17	36.5	NE (2.5)
7/26/2017 - Baseline	36.5	**58**
10/05/17	36.5	NE (1.8)
01/11/18	36.5	NE (0.28 J)
02/20/18	36.5	NE (2.6)
03/16/18	36.5	NE (1.6)
04/05/18	36.5	NE (7.5)
05/18/18	36.5	**55**
05/31/18	36.5	NE (8.5)
6/26/2018[D]	36.5	NE (2.0)

ART-79	Depth	CB
4/7/2016	22.74	NE (16.6)
4/7/2016	52.08	NE (17.8)
06/01/16	NA	NA
7/26/2017	22.75	NE (0.73 J)
7/26/2017 - Baseline	49	NE (0.6 J)
02/20/18	49	ND (<0.24)

ART-80	Depth	CB
04/07/16	22.76	**106**
04/07/16	52.06	**320**
06/01/16	NA	NA
7/26/2017[D]	22.75	**61**
7/26/2017 - Baseline	49	**94**
11/7/2017	31.5	NE (0.98 J)
02/20/18	16.5	NE (2.3)

ART-81	Depth	CB
4/6/2016	22.54	NE (0.68 J)
4/6/2016	51.68	NE (1.5)
06/01/16	NA	NA
07/27/17	22.54	ND (<0.24)
7/27/2017 - Baseline	49	ND (<0.24)

ART-82	Depth	CB
04/06/16	46.44	**129**
06/01/16	NA	NA
7/27/2017 - Baseline	44	**62**

ART-83	Depth	CB
04/07/16	22.54	NE (48.7)
04/07/16	51.53	**64.2**
06/01/16	NA	NA
07/27/17	22.54	NE (0.43 J)
7/26/2017 - Baseline	49	NE (0.38 J)

ART-84	Depth	CB
4/6/2016[D]	46.8	**137**
06/01/16	NA	NA
7/26/2017 - Baseline	44	**73**

ART-85	Depth	CB
04/07/16	46.71	**93.4**
06/01/16	NA	NA
01/10/17	44	NA
04/12/17	44	NE (2.2)
7/26/2017 - Baseline	44	NE (9.3)
10/05/17	44	ND (<0.24)
01/11/18	44	ND (<0.24)
03/16/18	44	ND (<0.24)
04/05/18	44	ND (<0.24)

ART-87	Depth	CB
04/07/16	49.41	**141**
06/01/16	NA	NA
7/26/2017 - Baseline	46.5	NE (13)

BIOS-1B	Depth	CB
04/15/16	66	**305**
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (9.5)
05/21/18	65	NE (7.4)
08/02/18	65	NE (26)
08/30/18	65	NE (27)
09/17/18	65	NE (44)

BIOS-2B	Depth	CB
04/15/16	66.7	**54.5**
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (25)

BIOS-3B	Depth	CB
04/15/16	66.5	NE (14.6)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.24)

BIOS-4B	Depth	CB
04/15/16	66.9	**316**
06/01/16	NA	NA
7/26/2017 - Baseline	65	**74**

BIOS-5B	Depth	CB
4/15/2016	66	NE (35)
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (23)

BIOS-6B	Depth	CB
4/15/2016	67.3	NE (35.9)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.24)

BIOS-7B	Depth	CB
04/15/16	66.4	NE (10.5)
06/01/16	NA	NA
10/26/16	66.4	NE (2)
7/28/2017 - Baseline	65	**71**
10/06/17	65	NE (15)

BIOS-8B	Depth	CB
04/15/16	66.2	**63.5**
06/01/16	NA	NA
7/28/2017 - Baseline	65	ND (<0.24)

BIOS-9B	Depth	CB
4/15/2016	66.8	NE (20.6)
06/01/16	NA	NA
7/28/2017 - Baseline	65	ND (<0.24)

BIOS-10B	Depth	CB
04/15/16	65.9	ND (<1.9)
06/01/16	NA	NA
7/27/2017 - Baseline	65	**63**
10/06/17	65	NE (20)

BIOS-11B	Depth	CB
04/15/16	65.9	**50.1**
06/01/16	NA	NA
10/26/16	65.9	NE (0.76 J)
7/27/2017 - Baseline	65	NE (20)

BIOS-12B	Depth	CB
04/15/16	67	NE (5.9)
06/01/16	NA	NA
7/27/2017 - Baseline	60	NE (10)

BIOS-13B	Depth	CB
04/15/16	61.8	ND (<19)
06/01/16	NA	NA
10/26/16	61.8	NE (3)
7/27/2017 - Baseline	60	NE (0.3 J)

BIOS-14B	Depth	CB
04/15/16	61	**272**
06/01/16	NA	NA
7/27/2017[D] - Baseline	60	ND (<0.24)

BIOS-15B	Depth	CB
04/15/16	61.7	NE (11)
06/01/16	NA	NA
10/26/16	61.7	ND (<0.24)
7/27/2017 - Baseline	60	ND (<0.24)

IW-194B	Depth	CB
05/21/18	37.5	NE (1.9)
05/31/18	37.5	NE (11)
06/26/18	37.5	NE (6.5)
08/02/18	40	NE (6)
08/30/18	40	NE (8.3)
09/17/18	40	NE (18)

PROJECT:
ROCHE NUTLEY SITE REMEDIATION

TITLE:
CHLOROBENZENE ISOCONCENTRATION CONTOURS - INTERMEDIATE TREATMENT ZONE

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY	**FIGURE 3B**	
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

FILE NO.: IA-6_CB_Intermediate.mxd

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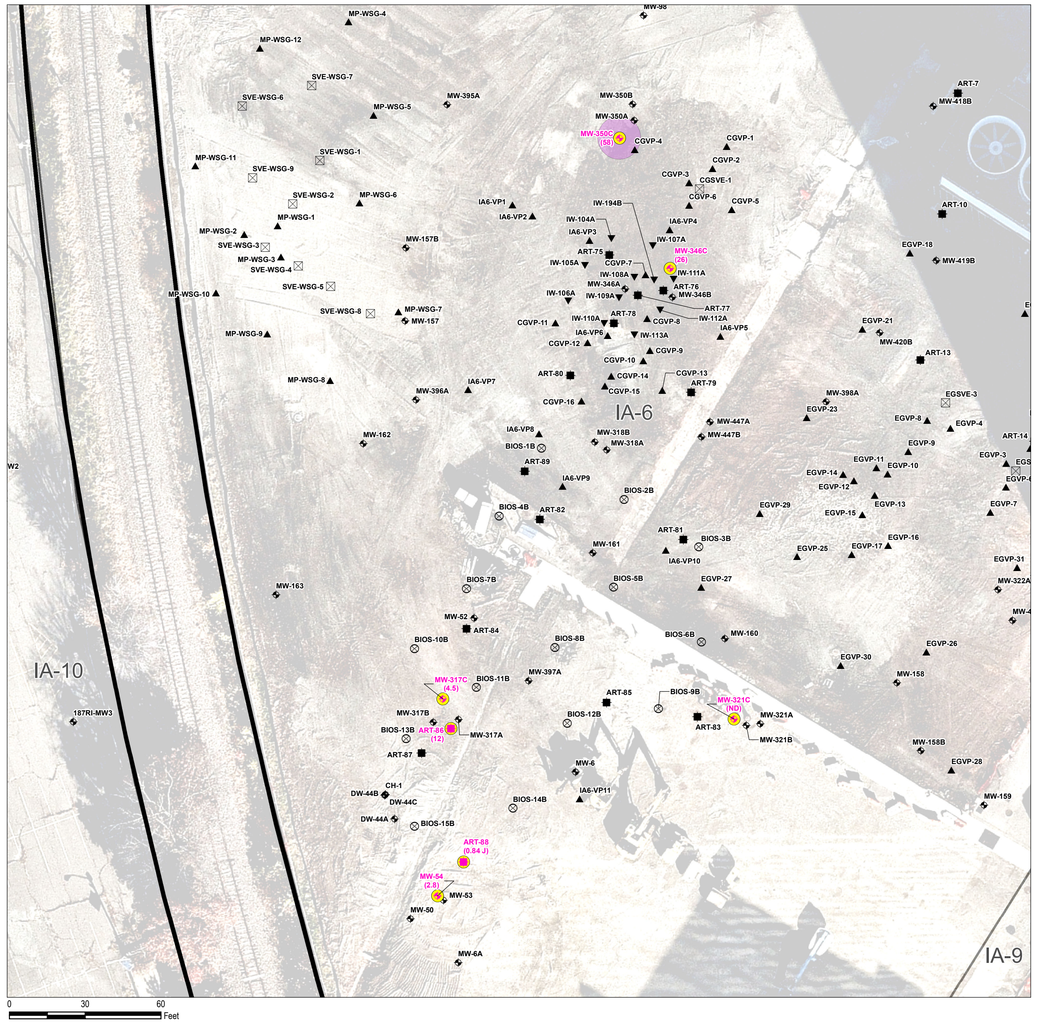
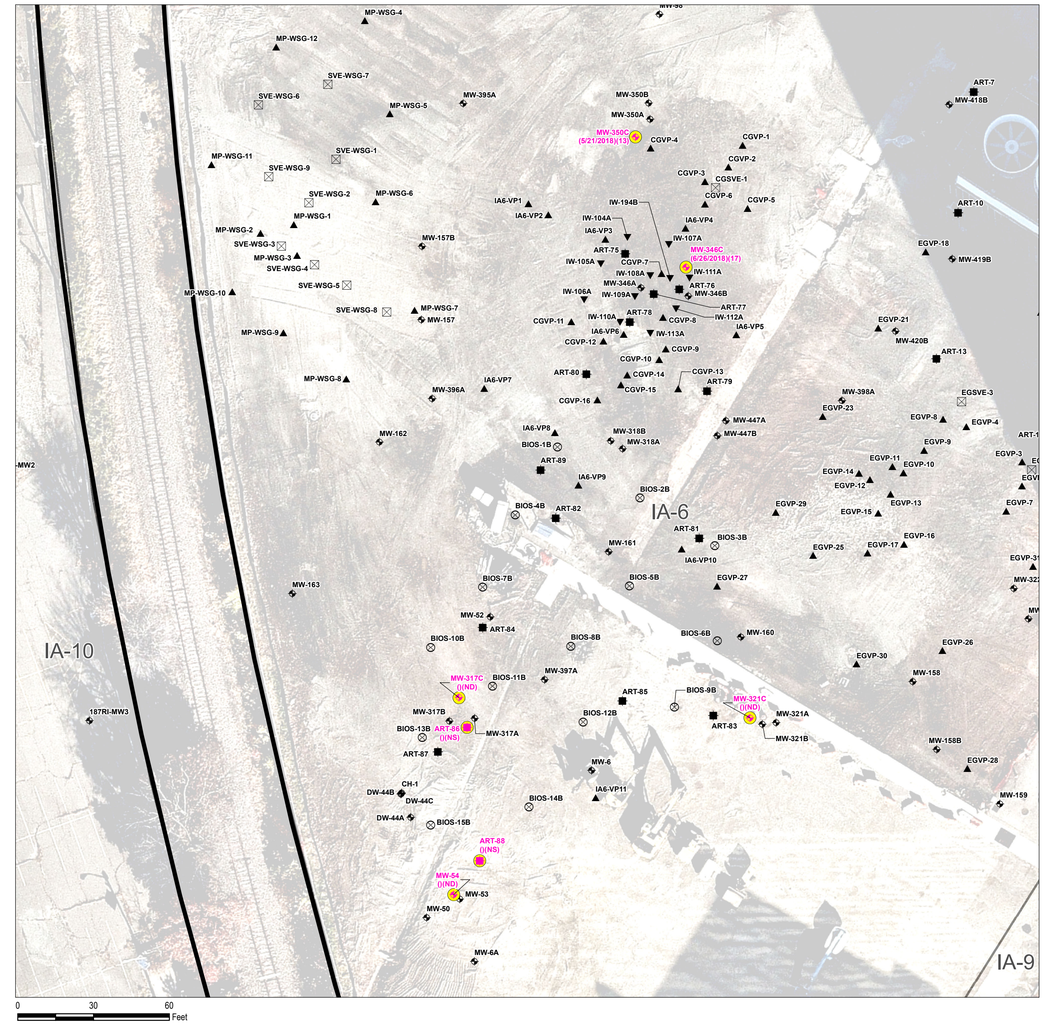
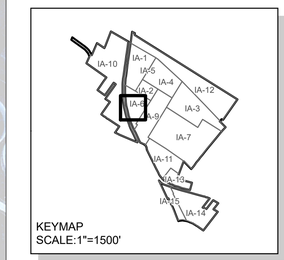
Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Map Rotation: 0

BASELINE - JULY 2017



MOST RECENT*





N

LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- DEEP TREATMENT ZONE

CHLOROBENZENE ISOCONCENTRATION CONTOURS (ug/L)

- >50 AND ≤ 1000

ABBREVIATION	GWQS (µg/L)	COMPOUND
CB	50	Chlorobenzene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. DEEP TREATMENT ZONE - ~50 - 0 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NA - NOT ANALYZED

MW-54	Depth	CB
4/5/2016	60	NE (8.1)
06/13/16	60	NE (0.51 J)
10/25/16	60	NE (1.2)
01/10/17	60	NE (3.7)
04/12/17	60	NE (3.8)
7/26/2017 - Baseline	60	NE (2.8)
10/06/17	60	NE (1.7)
01/12/18	60	NE (2.3)
04/06/18	60	ND (<0.24)

MW-317C	Depth	CB
04/05/16	65	**129**
06/14/16	65	**53.1**
10/25/16	65	NE (11)
01/10/17	65	NE (0.25 J)
04/12/17	65	NE (5.3)
7/26/2017 - Baseline	65	NE (4.5)
10/05/17	65	NE (0.55 J)
11/7/2017	65	NE (8.7)
01/11/18	65	ND (<0.24)
01/23/18	65	ND (<0.24)
02/20/18	65	ND (<0.24)
04/05/18	65	ND (<0.24)

MW-321C	Depth	CB
04/06/16	65	NE (11.9)
6/13/2016[D]	65	NE (5.2)
10/24/16	65	ND (<0.24)
01/10/17	65	NE (2.8)
04/12/17	65	NE (1.1)
7/26/2017 - Baseline	65	ND (<0.24)
10/05/17	65	ND (<0.24)
01/11/18	65	ND (<0.24)
04/06/18	65	ND (<0.24)

MW-346C	Depth	CB
04/06/16	70	**69.1**
06/13/16	70	NE (28.6)
10/25/16	70	NE (18)
01/09/17	70	NE (12)
04/12/17	70	ND (<0.24)
7/26/2017 - Baseline	70	NE (26)
10/05/17	70	NE (20)
11/7/2017	70	NE (23)
01/11/18	70	NE (16)
01/23/18	70	NE (20)
02/20/18	70	NE (18)
04/05/18	70	NE (21)
05/21/18[D]	70	NE (13)
06/26/18	70	NE (17)

MW-350C	Depth	CB
4/5/2016	70	NE (19.9)
06/01/16	NA	NA
10/24/16	70	NE (22)
01/10/17	70	NE (23)
04/12/17	70	NE (12)
7/26/2017 - Baseline	70	**58**
10/05/17	70	NE (35)
01/11/18	70	NE (18)
04/05/18	70	NE (14)
05/21/2018	70	NE (13)

ART-86	Depth	CB
04/07/16	64.76	**180**
06/01/16	NA	NA
7/26/2017 - Baseline	61.5	NE (12)

ART-88	Depth	CB
04/07/16	61.63	**125**
06/01/16	NA	NA
7/26/2017 - Baseline	59	NE (0.84 J)

PROJECT:
ROCHE NUTLEY SITE REMEDIATION

TITLE:
CHLOROBENZENE ISOCONCENTRATION CONTOURS - DEEP TREATMENT ZONE

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		**FIGURE 3C**
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_CB_Deep.mxd

TRC - GIS
Plot Date: 4/11/2019, 15:46:32 PM by LLANTIGUA -- LAYOUT: ANSI D (22"X34")
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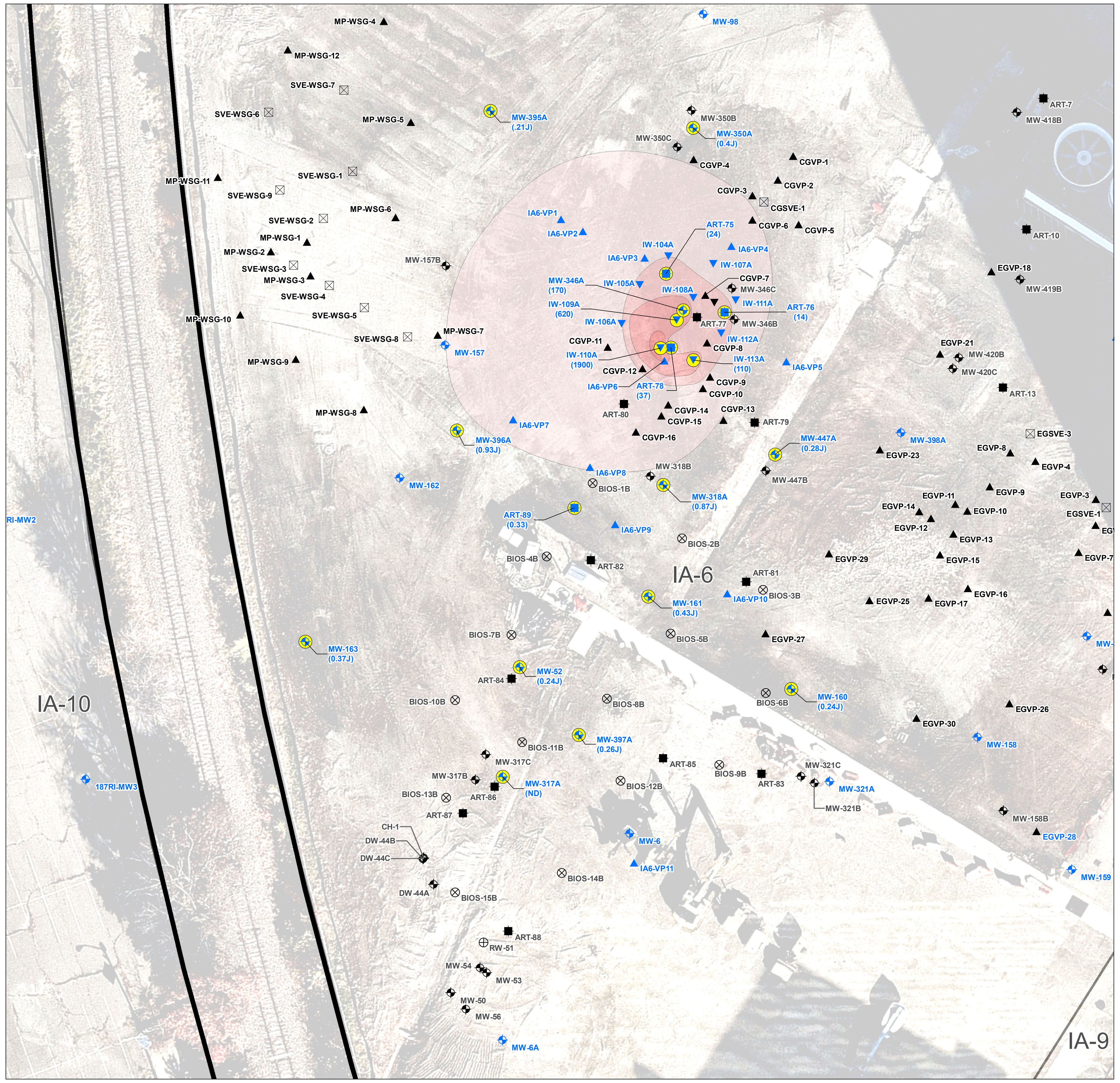
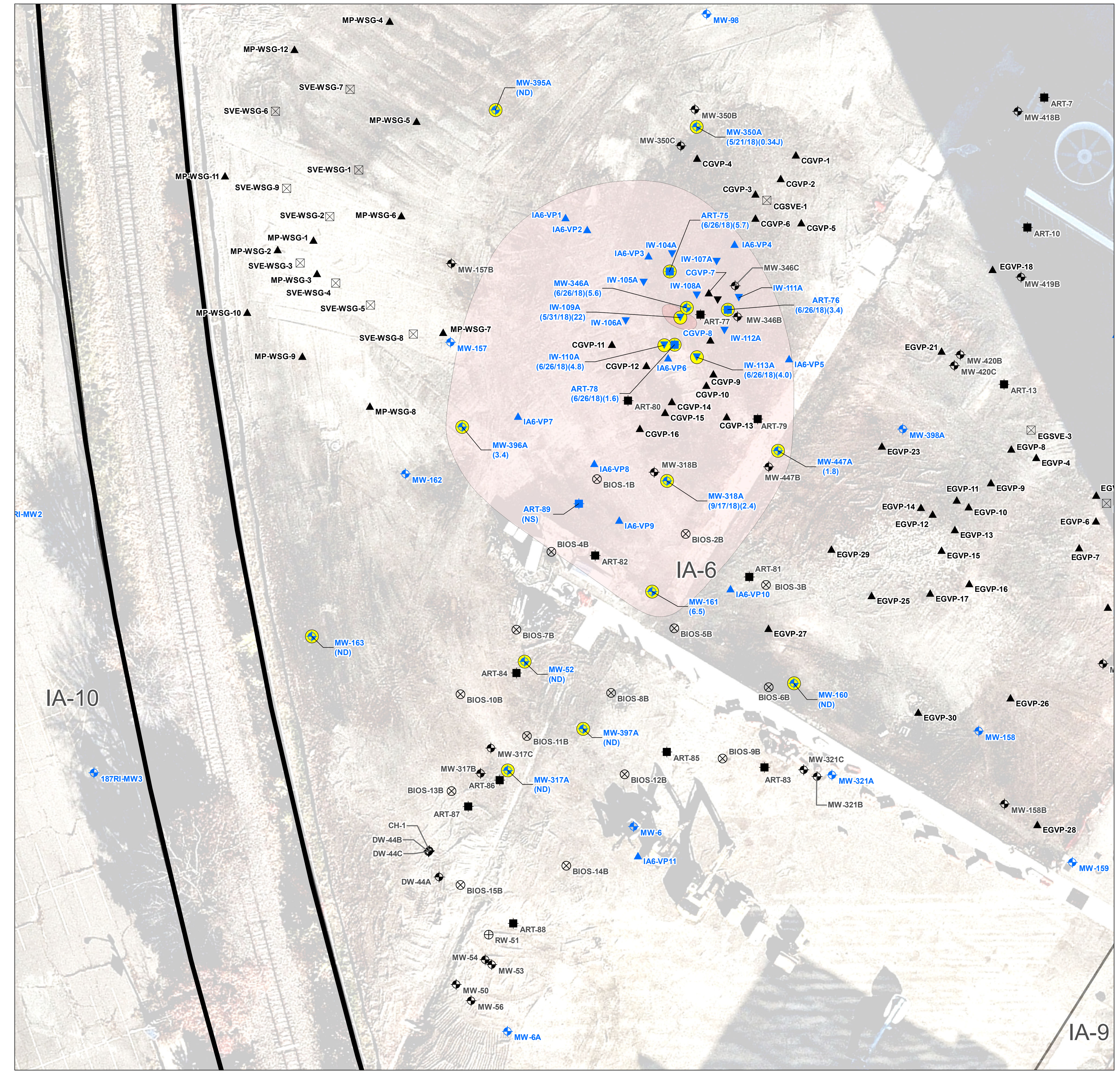
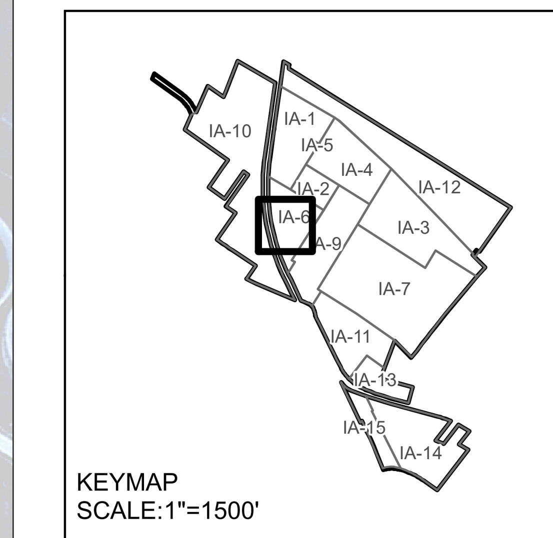
Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Sig Reviewer: 0

BASELINE - JULY 2017



MOST RECENT*





LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- SHALLOW TREATMENT ZONE

PCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10
- >10 AND ≤ 100
- >100 AND ≤ 1000
- > 1000

ABBREVIATION	GWQS (µg/L)	COMPOUND
PCE	1	Tetrachloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. SHALLOW TREATMENT ZONE - ~100 - 80 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED

ART-75	Depth	PCE
04/07/16	22.48	**71.8**
01/10/17	16.5	**33**
03/22/17	16.5	NE (0.83 J)
04/13/17	16.5	NE (0.41 J)
7/26/2017 - Baseline	16.5	**24**
10/05/17	16.5	**3.7**
01/11/18	16.5	**99**
03/16/18	16.5	**120**
04/05/18	16.5	**79**
05/18/2018	16.5	**110**
05/31/18	16.5	**46**
06/26/18	16.5	**5.7**

ART-76	Depth	PCE
04/06/16	22.88	ND (<0.4)
7/26/2017 - Baseline	23	**14**
05/18/2018	16.5	**22**
05/31/18	16.5	**6.7**
06/26/18	16.5	**3.4**

ART-78	Depth	PCE
04/07/16	22.81	**7.1**
01/10/17	16.5	**48.0**
03/22/17	16.5	**6.9**
04/12/17	16.5	**9.5**
7/26/2017 - Baseline	16.5	**37.0**
10/05/17	16.5	NE (0.57 J)
01/11/18	16.5	**490.0**
02/20/18	16.5	**210.0**
03/16/18	16.5	**71.0**
04/05/18	16.5	**26.0**
05/18/2018	16.5	**91.0**
05/31/18	16.5	**14.0**
06/26/18	16.5	**1.6**

ART-89	Depth	PCE
04/06/16	22.37	ND (<0.4)
7/27/2017 - Baseline	22.37	NE (0.33 J)

IW-109A	Depth	PCE
7/28/2017 - Baseline	27.5	**620**
02/20/18	27.5	**590**
05/18/18	27.5	**440**
05/31/18	27.5	**22**

IW-110A	Depth	PCE
7/28/2017 - Baseline	27.5	**1900**
02/20/18	27.5	**250**
05/18/18	27.5	**380**
05/31/18	27.5	**31**
06/26/18	27.5	**4.8**

IW-113A	Depth	PCE
7/28/2017 - Baseline	27.5	**110**
05/21/18	27.5	**82**
06/26/18	27.5	**4**

MW-160	Depth	PCE
04/05/16	14.8	ND (<0.4)
06/13/16	14.8	ND (<0.23)
10/24/16	14.5	ND (<0.12)
01/10/17	14.5	ND (<0.12)
04/12/17	14.5	ND (<0.12)
7/26/2017 - Baseline	14.5	NE (0.24 J)
10/05/17	14.5	ND (<0.12)
01/11/18	14.5	NE (0.4 J)
04/06/18	14.5	ND (<0.12)

MW-161	Depth	PCE
04/05/16	12	NE (0.67 J)
06/14/16	12	NE (0.8 J)
10/24/16	12	NE (0.47 J)
1/10/2017	12	NE (0.72 J)
04/12/17	12	NE (0.23 J)
7/26/2017 - Baseline	12	NE (0.43 J)
10/05/17	12	**1**
01/11/18	12	NE (0.51 J)
04/05/18	12	**6.5**

MW-163	Depth	PCE
04/06/16	14.58	**1.3**
06/15/16	14.60	ND (<0.23)
10/25/16	14.60	ND (<0.12)
04/12/17	14.60	ND (<0.12)
7/26/2017 - Baseline	14.60	NE (0.37 J)
10/05/17	14.60	ND (<0.12)
01/11/18	14.60	NE (0.29 J)
04/06/18	14.60	ND (<0.12)

MW-317A	Depth	PCE
04/05/16	12.85	ND (<0.4)
06/14/16	12.85	ND (<0.23)
10/25/16	12.85	ND (<0.12)
01/10/17	12.85	ND (<0.12)
04/12/17	12.85	ND (<0.12)
7/26/2017 - Baseline	12.85	ND (<0.12)
10/05/17	12.85	ND (<0.12)
01/11/18	12.85	ND (<0.12)
04/06/18	12.85	ND (<0.12)

MW-318A	Depth	PCE
04/05/16	11.74	**1.5**
06/15/16	11.74	NE (0.38 J)
10/24/2016	11.74	**2**
01/09/17	11.74	NE (0.75 J)
04/12/17	11.74	NE (0.91 J)
7/26/2017 - Baseline	11.74	NE (0.87 J)
10/05/17	11.74	**1.6**
11/7/2017	10.00	ND (<0.12)
01/11/18	11.74	**9.4**
01/23/18	10.00	**3.1**
02/20/18	10.00	**7.0**
03/16/18	11.74	**26.0**
04/05/18	11.74	**12.0**
05/21/2018	10.00	**4.7**
08/02/18	10.00	**1.4**
08/30/18	10.00	**1.6**
09/17/18	10.00	**2.4**

MW-346A	Depth	PCE
04/05/16	13.1	ND (<2.0)
06/13/16	13.1	**50.5**
10/25/16	13.1	**97**
01/10/17	13.1	**110**
03/22/17	13.1	**19.6**
04/12/17	13.1	**6.7**
7/26/2017 - Baseline	13.1	**170**
10/05/17	13.1	**58**
11/7/2017	11.0	**51**
01/11/18	13.1	**280**
01/23/18	11.0	**380**
02/20/18	13.1	**140**
03/16/18	13.1	**130**
04/05/18	13.1	**420**
05/21/2018	10.5	**55**
06/26/18	10.5	**5.6**

MW-350A	Depth	PCE
04/05/16	11.4	NE (0.5 J)
10/24/16	11.4	NE (0.21 J)
01/09/17	11.4	NE (0.31 J)
04/12/17	11.4	ND (<0.12)
7/26/2017 - Baseline	11.4	NE (0.4 J)
10/05/17	11.4	ND (<0.12)
01/11/18	11.4	ND (<2.3)
04/05/18	11.4	NE (0.87 J)
05/21/2018	10.5	NE (0.34 J)

MW-395A	Depth	PCE
04/06/16	12.5	ND (<0.4)
06/14/16	12.5	NE (0.6 J)
10/24/2016	12.5	NE (0.9 J)
04/13/17	12.5	NE (0.29 J)
7/26/2017 - Baseline	12.5	NE (0.21 J)
10/05/17	12.5	NE (0.31 J)
01/11/18	12.5	NE (0.2 J)
04/06/18	12.5	ND (<0.12)

MW-396A	Depth	PCE
04/05/16	11	ND (<0.40)
6/15/2016	11	**2**
10/24/16	11	NE (0.62 J)
04/13/17	11	**1.1**
7/26/2017 - Baseline	11	NE (0.93 J)
10/05/17	11	NE (0.24 J)
01/11/18	11	**12**
04/05/18	11	**3.4**

MW-397A	Depth	PCE
04/05/16	16	ND (<0.4)
06/15/16	16	ND (<0.23)
10/25/16	16	ND (<0.34)
01/09/17	16	ND (<0.12)
04/12/17	16	ND (<0.12)
7/26/2017 - Baseline	16	NE (0.26 J)
10/05/17	16	NE (0.15 J)
01/11/18	16	NE (0.19 J)
04/06/18	16	ND (<0.12)

MW-447A	Depth	PCE
04/06/16	12.3	ND (<0.4)
6/15/2016	12.3	NE (0.42 J)
10/24/16	12.3	ND (<0.12)
01/10/17	12.3	NE (0.42 J)
04/12/17	12.3	NE (0.34 J)
7/26/2017 - Baseline	12.3	NE (0.28 J)
10/05/17	12.3	NE (0.16 J)
11/7/2017	10.0	ND (<0.12)
01/11/18	12.3	ND (0.83 J)
1/23/2018[D]	10.0	**3.6**
2/20/2018	10.0	**2.7**
03/16/18	12.3	**2.2**
04/05/18	12.3	**1.8**

MW-52	Depth	PCE
4/6/2016	25	ND (<0.4)
06/14/16	25	ND (<0.23)
10/25/16	25	ND (<0.12)
01/10/17	25	ND (<0.12)
04/12/17	25	NE (0.13 J)
7/26/2017 - Baseline	25	NE (0.24 J)
10/05/17	25	ND (<0.12)
11/7/2017	25	ND (<0.12)
01/11/18	25	NE (0.41 J)
01/23/18	25	NE (0.26 J)
02/20/18	25	ND (<0.12)
04/05/18	25	ND (<0.12)

PROJECT: **ROCHE NUTLEY SITE REMEDIATION**

TITLE: **PCE ISOCONCENTRATION CONTOURS - SHALLOW TREATMENT ZONE**

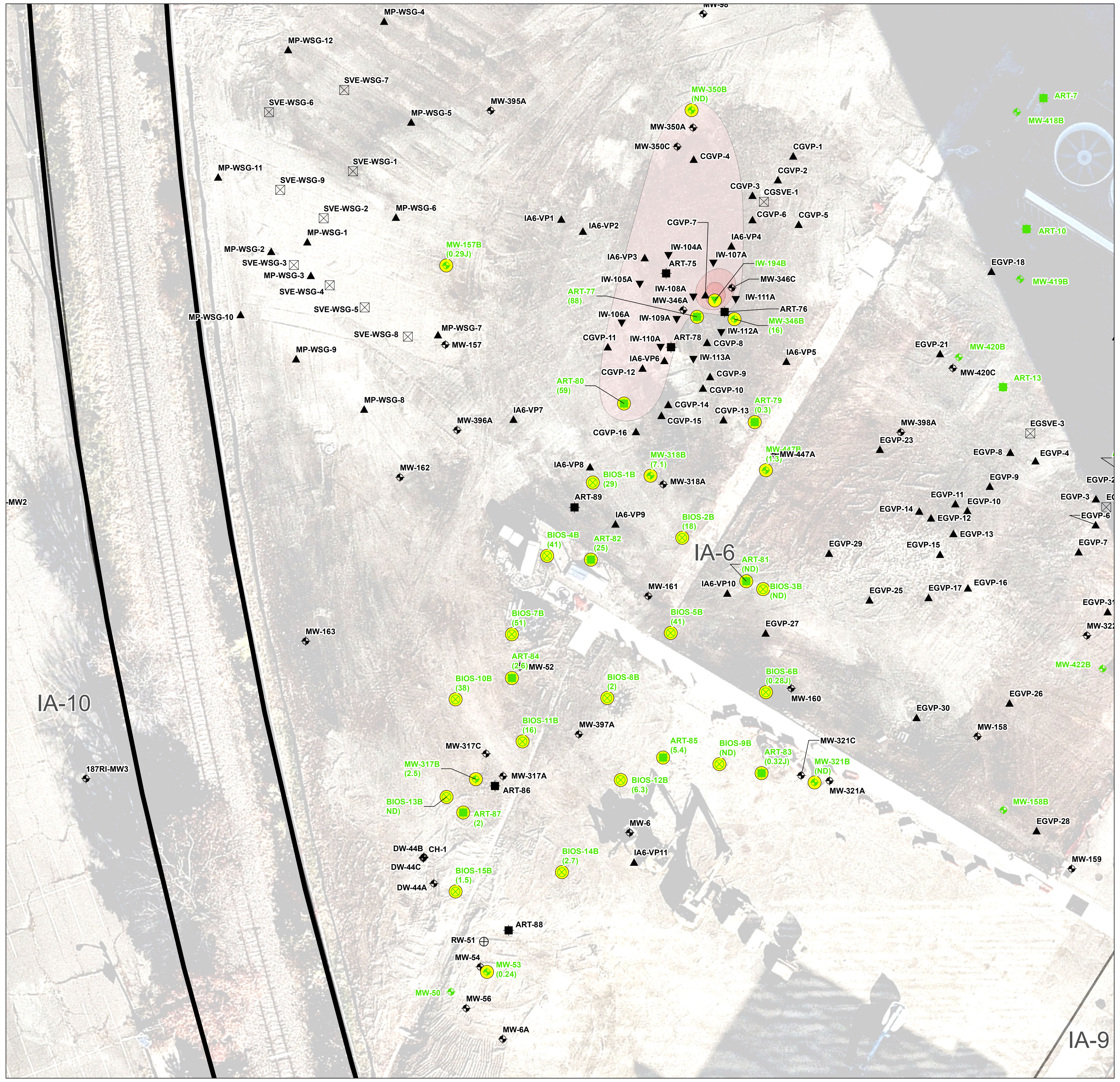
DRAWN BY: M. GIAMBATTISTA	PROJ. NO.: 198233
CHECKED BY: S. CROSBY	**FIGURE 4A**
APPROVED BY: J. BRUMMER-JECKO	
DATE: MARCH 2019	

TRC

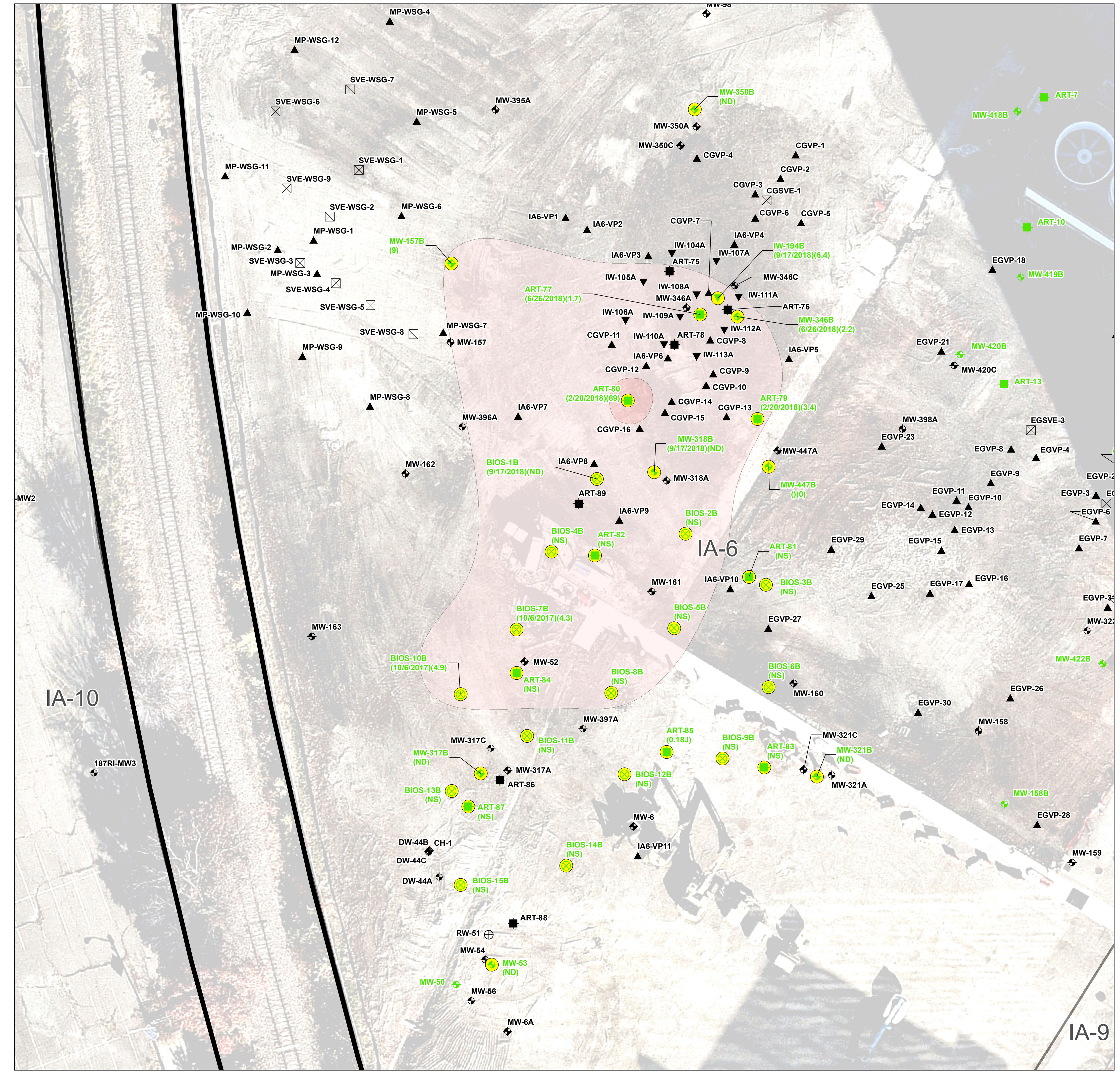
FILE NO.: IA-6_PCE_Shalllow.mxd

Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Map Rotation: 0
Plot Date: 3/11/2019, 13:45:07 PM by LLANTIGUA -- LAYOUT: ANSI D (22"x34")
Path: ...\Drafting Files\ArcGIS Files\105009\IA-6\Revised_IRM Figures\Map Documents\IA-6_PCE_Shalllow.mxd

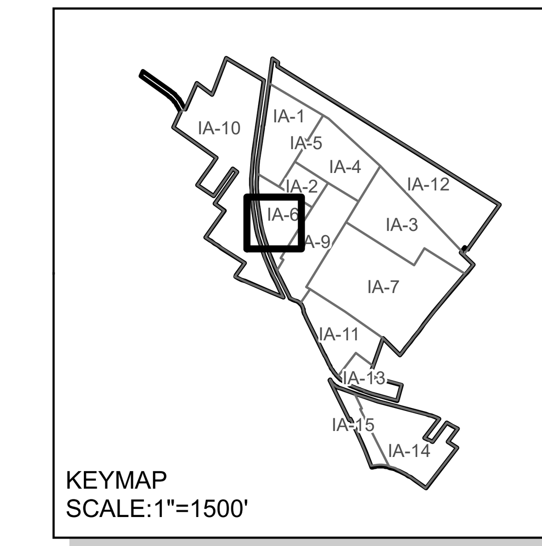
BASELINE - JULY 2017



MOST RECENT*



0 30 60 Feet



N

LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- INTERMEDIATE TREATMENT ZONE

PCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10
- >10 AND ≤ 100

ABBREVIATION	GWQS (µg/L)	COMPOUND
PCE	1	Tetrachloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. INTERMEDIATE TREATMENT ZONE - ~80 - 50 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED
12. D - DUPLICATE SAMPLE
13. NA - NOT ANALYZED

MW-53	Depth	PCE
04/05/16	35	ND (<0.40)
06/13/16	35	ND (<0.23)
10/25/16	35	ND (<0.12)
01/10/17	35	ND (<0.12)
04/12/17	35	NE (0.13 J)
7/26/2017 - Baseline	35	NE (0.24)
10/05/17	35	ND (<0.12)
01/11/18	35	NE (0.41 J)
04/06/18	35	ND (<0.12)

MW-157B	Depth	PCE
04/05/16	40	NE (0.74 J)
06/14/16	40	ND (<0.23)
10/24/16	40	NE (0.83 J)
01/10/17	40	NA
04/13/17	40	ND (<0.12)
7/26/2017[D] - Baseline	40	NE (0.29 J)
10/05/17	40	NE (0.23 J)
01/11/18	40	2.5
03/16/18	40	2.5
4/6/2018[D]	40	9

MW-317B	Depth	PCE
04/05/16	40	ND (<0.40)
06/14/16	40	ND (<0.23)
10/25/16	40	ND (<0.12)
01/10/17	40	ND (<0.12)
04/12/17	40	1.4
7/26/2017 - Baseline	40	2.5
10/05/17	40	NE (0.32 J)
11/7/2017	40	ND (<0.12)
01/11/18	40	ND (<0.12)
01/23/18	40	NE (0.14 J)
02/20/18	40	ND (<0.12)
04/05/18	40	ND (<0.12)

MW-318B	Depth	PCE
04/05/16	50	ND (<0.40)
06/15/16	50	ND (<0.23)
10/24/16	50	1.4
01/09/17	50	1.5
04/12/17	50	1.1
7/26/2017 - Baseline	50	7.1
10/05/17	50	1.3
11/7/2017	50	NE (0.65 J)
01/11/18	50	7.3
01/23/18	50	6.3
02/20/18	50	4.7
03/16/18	50	1.2
04/05/18	50	7.5
05/21/2018	50	52
08/02/18	50	ND (<0.25)
08/30/18	50	ND (<0.25)
09/17/18	50	ND (<0.25)

MW-321B	Depth	PCE
04/05/16	50	ND (<0.40)
06/14/16	50	ND (<0.23)
10/24/16	50	ND (<0.12)
01/10/17	50	ND (<0.12)
04/12/17	50	ND (<0.12)
7/26/2017 - Baseline	50	ND (<0.12)
10/5/2017[D]	50	ND (<0.12)
01/11/18	50	ND (<0.12)
04/06/18	50	ND (<0.12)

MW-346B	Depth	PCE
04/05/16	40	ND (<0.4)
06/13/16	40	1.8
10/25/16	40	7
01/10/17	40	15
03/22/17	40	1.6
04/12/17	40	1
7/26/2017 - Baseline	40	16
10/05/17	40	4.2
11/7/2017	40	1.2
01/11/18	40	78
01/23/18	40	84
02/20/18	40	57
03/16/18	40	17
04/05/18	40	16
05/21/2018	40	49
05/31/18	40	7.7
06/26/18	40	2.2

MW-350B	Depth	PCE
04/05/16	40	1.4
06/01/16	NA	NA
10/24/16	40	ND (<0.12)
01/10/17	40	NE (0.59 J)
04/12/17	40	ND (<0.12)
7/26/2017 - Baseline	40	ND (<0.12)
10/05/17	40	ND (<0.12)
01/11/18	40	ND (<0.12)
04/05/18	40	ND (<0.12)
05/21/2018	40	ND (<0.12)

MW-447B	Depth	PCE
04/06/16	40	ND (<0.4)
06/15/16	40	ND (<0.23)
10/24/16	40	NE (0.12 J)
01/10/17	40	NA
04/13/17	40	NE (0.29 J)
7/26/2017 - Baseline	40	1.3
10/05/17	40	NE (0.30 J)
11/7/2017	40	ND (<0.12)
01/11/18	40	1.5
01/23/18	40	5.3
02/20/18	40	1.5
03/16/18	40	NE (0.97 J)
04/05/18	40	NE (0.57 J)

ART-77	Depth	PCE
04/07/16	39.4	NE (0.78 J)
06/01/16	NA	NA
01/10/17	36.5	130
03/22/17	36.5	2.8
04/12/17	36.5	NE (0.20 J)
7/26/2017 - Baseline	36.5	88
10/05/17	36.5	17
01/11/18	36.5	2.5
02/20/18	36.5	320
03/16/18	36.5	220
04/05/18	36.5	560
05/18/18	36.5	220
05/31/18	36.5	25
6/26/2018[D]	36.5	1.7

ART-79	Depth	PCE
4/7/2016	22.74	ND (<0.4)
4/7/2016	52.08	ND (<0.4)
06/01/16	NA	NA
7/26/2017	22.75	NE (0.36)
7/26/2017 - Baseline	49	NE (0.3)
02/20/18	49	3.4

ART-80	Depth	PCE
04/07/16	22.76	1.4
04/07/16	52.06	1.2
06/01/16	NA	NA
7/26/2017[D]	22.75	7.7
7/26/2017 - Baseline	49	59
11/7/2017	31.5	NE (0.58 J)
02/20/18	16.5	69

ART-81	Depth	PCE
4/6/2016	22.54	ND (<0.4)
4/6/2016	51.68	ND (<0.4)
06/01/16	NA	NA
07/27/17	22.54	ND (<0.12)
7/27/2017 - Baseline	49	ND (<0.12)

ART-82	Depth	PCE
04/06/16	46.44	ND (<0.4)
06/01/16	NA	NA
7/27/2017 - Baseline	44	25

ART-83	Depth	PCE
04/07/16	22.54	ND (<0.40)
04/07/16	51.53	ND (<0.40)
06/01/16	ND (<0.4)	ND (<0.40)
07/27/17	22.54	ND (<0.12)
7/26/2017 - Baseline	49	NE (0.32 J)

ART-84	Depth	PCE
04/06/16	46.8	ND (<0.40)
06/01/16	NA	NA
7/26/2017 - Baseline	44	2.6

ART-85	Depth	PCE
04/07/16	46.71	ND (<0.40)
06/01/16	NA	NA
01/10/17	44	NA
04/12/17	44	1.3
7/26/2017 - Baseline	44	5.4
10/5/20117	44	NE (0.57 J)
01/11/18	44	ND (<0.12)
03/16/18	44	ND (<0.12)
04/05/18	44	NE (0.18 J)

ART-87	Depth	PCE
04/07/16	49.41	ND (<0.40)
06/01/16	NA	NA
7/26/2017 - Baseline	46.5	2

BIOS-1B	Depth	PCE
04/15/16	66	ND (<0.4)
06/01/16	NA	NA
7/26/2017 - Baseline	65	29
05/21/18	65	77
08/02/18	65	NE (0.58 J)
08/30/18	65	ND (<0.25)
9/17/2018[D]	65	ND (<0.25)

BIOS-2B	Depth	PCE
04/15/16	66.7	ND (<0.4)
06/01/16	NA	NA
7/26/2017 - Baseline	65	18

BIOS-3B	Depth	PCE
04/15/16	66.5	ND (<0.40)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.12)

BIOS-4B	Depth	PCE
04/15/16	66.9	ND (<0.40)
06/01/16	NA	NA
7/26/2017 - Baseline	65	41

BIOS-5B	Depth	PCE
4/15/2016	66	ND (<0.40)
06/01/16	NA	NA
7/26/2017 - Baseline	65	41

BIOS-6B	Depth	PCE
4/15/2016	67.3	ND (<0.40)
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (0.28 J)

BIOS-7B	Depth	PCE
04/15/16	66.4	ND (<2.2)
06/01/16	NA	NA
10/26/16	66.4	ND (<0.22)
7/28/2017 - Baseline	65	51
10/06/17	65	4.3

BIOS-8B	Depth	PCE
04/15/16	66.2	NE (0.82 J)
06/01/16	NA	NA
7/28/2017 - Baseline	65	2

BIOS-9B	Depth	PCE
4/15/2016	66.8	ND (<0.40)
06/01/16	NA	NA
7/28/2017 - Baseline	65	ND (<0.12)

BIOS-10B	Depth	PCE
04/15/16	65.9	ND (<4)
06/01/16	NA	NA
7/27/2017 - Baseline	65	38
10/06/17	65	4.9

BIOS-11B	Depth	PCE
04/15/16	65.9	ND (<0.40)
06/01/16	NA	NA
10/26/16	65.9	ND (<0.12)
7/27/2017 - Baseline	65	16

BIOS-12B	Depth	PCE
04/15/16	67	ND (<2)
06/01/16	NA	NA
7/27/2017 - Baseline	60	6.3

BIOS-13B	Depth	PCE
04/15/16	61.8	ND (<40)
06/01/16	NA	NA
10/26/16	61.8	ND (<0.12)
7/27/2017 - Baseline	60	ND (<0.12)

BIOS-14B	Depth	PCE
04/15/16	61	ND (<0.4)
06/01/16	NA	NA
7/27/2017 - Baseline	60	2.7

BIOS-15B	Depth	PCE
04/15/16	61.7	ND (<0.12)
06/01/16	NA	NA
10/26/16	61.7	ND (<8)
7/27/2017 - Baseline	60	1.5

IW-194B	Depth	PCE
05/21/18	37.5	120
05/31/18	37.5	16
06/26/18	37.5	13
08/02/18	40	5.7
08/30/18	40	5.5
09/17/18	40	6.4

PROJECT: ROCHE NUTLEY SITE REMEDIATION

TITLE: PCE ISOCONCENTRATION CONTOURS - INTERMEDIATE TREATMENT ZONE

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY	FIGURE 4B	
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_PCE_Intermediate.mxd

Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (US)

Plot Date: 3/12/2019, 09:11:25 AM by LLANTIGUA -- LAYOUT: ANSI D (22"x34")

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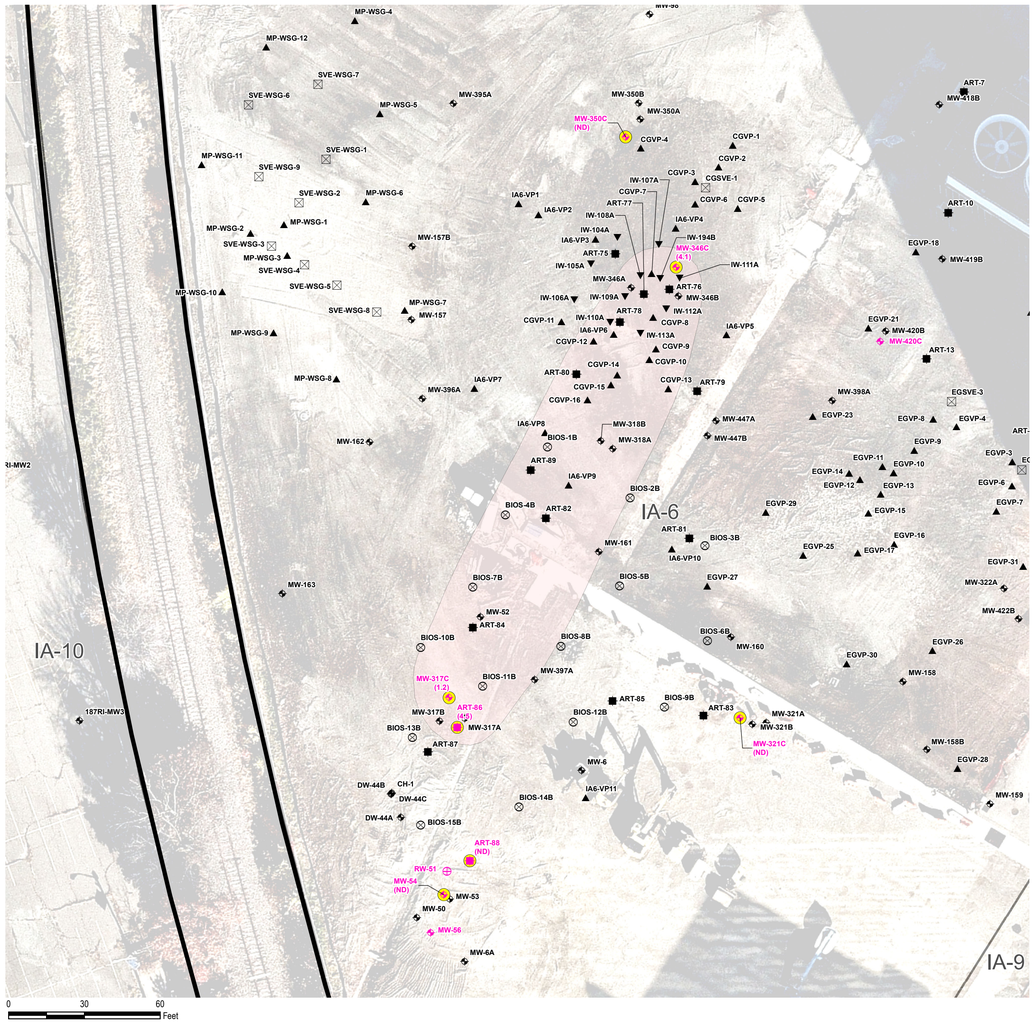
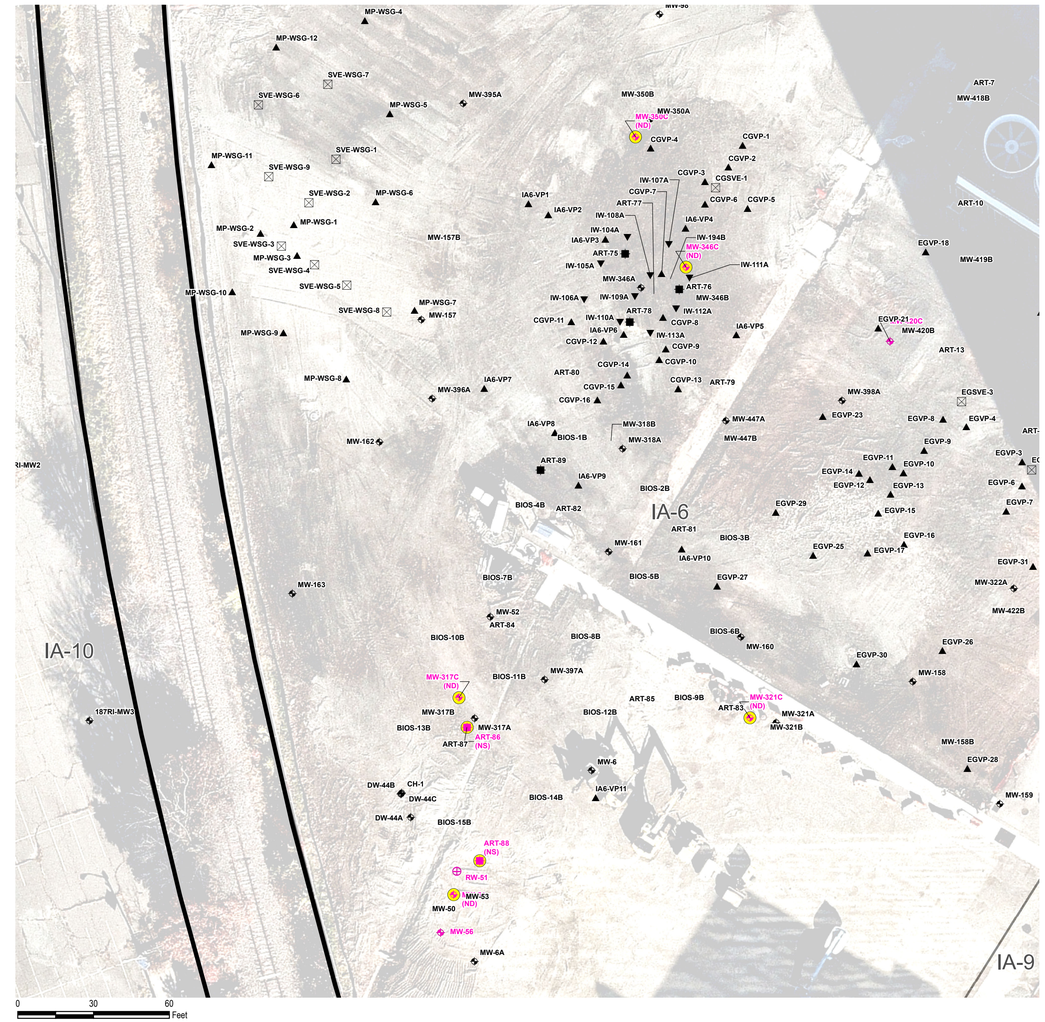
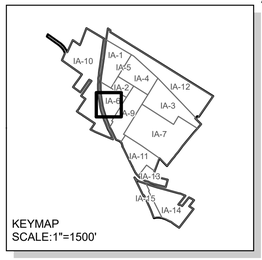
BASELINE - JULY 2017



MOST RECENT*



N



LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- DEEP TREATMENT ZONE

PCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10

ABBREVIATION	GWQS (µg/L)	COMPOUND
PCE	1	Tetrachloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. DEEP TREATMENT ZONE - ~50 - 0 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NA - NOT ANALYZED

MW-54	Depth	PCE
4/5/2016	60	ND (<0.40)
06/13/16	60	ND (<0.23)
10/25/16	60	ND (<0.12)
01/10/17	60	ND (<0.12)
04/12/17	60	ND (<0.12)
7/26/2017 - Baseline	60	ND (<0.12)
10/06/17	60	ND (<0.12)
01/11/18	60	ND (<0.12)
04/06/18	60	ND (<0.12)

MW-317C	Depth	PCE
04/05/16	65	ND (<0.40)
06/14/16	65	ND (<0.23)
10/25/16	65	NE (0.14 J)
01/10/17	65	ND (<0.12)
04/12/17	65	ND (<0.12)
7/26/2017 - Baseline	65	**1.2**
10/05/17	65	ND (<0.12)
11/7/2017	65	**2.2**
01/11/18	65	**2.7**
01/23/18	65	NE (0.69 J)
02/23/18	65	NE (0.36 J)
04/05/18	65	ND (<0.12)

MW-321C	Depth	PCE
04/06/16	65	ND (<0.40)
06/13/16	65	ND (<0.23)
10/24/16	65	ND (<0.12)
01/10/17	65	ND (<0.12)
04/12/17	65	ND (<0.12)
7/26/2017 - Baseline	65	ND (<0.12)
10/05/17	65	ND (<0.12)
01/11/18	65	ND (<0.12)
04/06/18	65	ND (<0.12)

MW-346C	Depth	PCE
04/06/16	70	ND (<0.40)
06/13/16	70	ND (<0.23)
10/25/16	70	ND (<0.12)
01/09/17	70	ND (<0.12)
04/12/17	70	NE (0.2 J)
7/26/2017 - Baseline	70	**4.1**
10/05/17	70	ND (<0.12)
11/7/2017	70	ND (<0.12)
01/11/18	70	ND (<0.12)
01/23/18	70	NE (0.23 J)
02/20/18	70	ND (<0.12)
04/05/18	70	ND (<0.12)
05/21/2018	70	NE (0.41 J)
06/26/18	70	ND (<0.25)

MW-350C	Depth	PCE
4/5/2016	70	NE (0.98 J)
06/01/16	NA	NA
10/24/16	70	ND (<0.12)
01/10/17	70	ND (<0.12)
04/12/17	70	ND (<0.12)
7/26/2017 - Baseline	70	ND (<0.12)
10/05/17	70	ND (<0.12)
01/11/18	70	NE (0.55 J)
04/05/18	70	ND (<0.12)
05/21/2018	70	ND (<0.12)

ART-86	Depth	PCE
04/07/16	64.76	ND (<0.40)
06/01/16	NA	NA
7/26/2017 - Baseline	61.5	**4.5**

ART-88	Depth	PCE
04/07/16	61.63	ND (<0.40)
06/01/16	NA	NA
7/26/2017 - Baseline	59	ND (<0.12)

PROJECT:
ROCHE NUTLEY SITE REMEDIATION

TITLE:
PCE ISOCONCENTRATION CONTOURS - DEEP TREATMENT ZONE

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		
APPROVED BY:	J. BRUMMER-JECKO		**FIGURE 4C**
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_PCE_Deep.mxd

Plot Date: 3/12/2019, 09:11:52 AM by LLANTIGUA -- LAYOUT-ANSI D (22"x 34")
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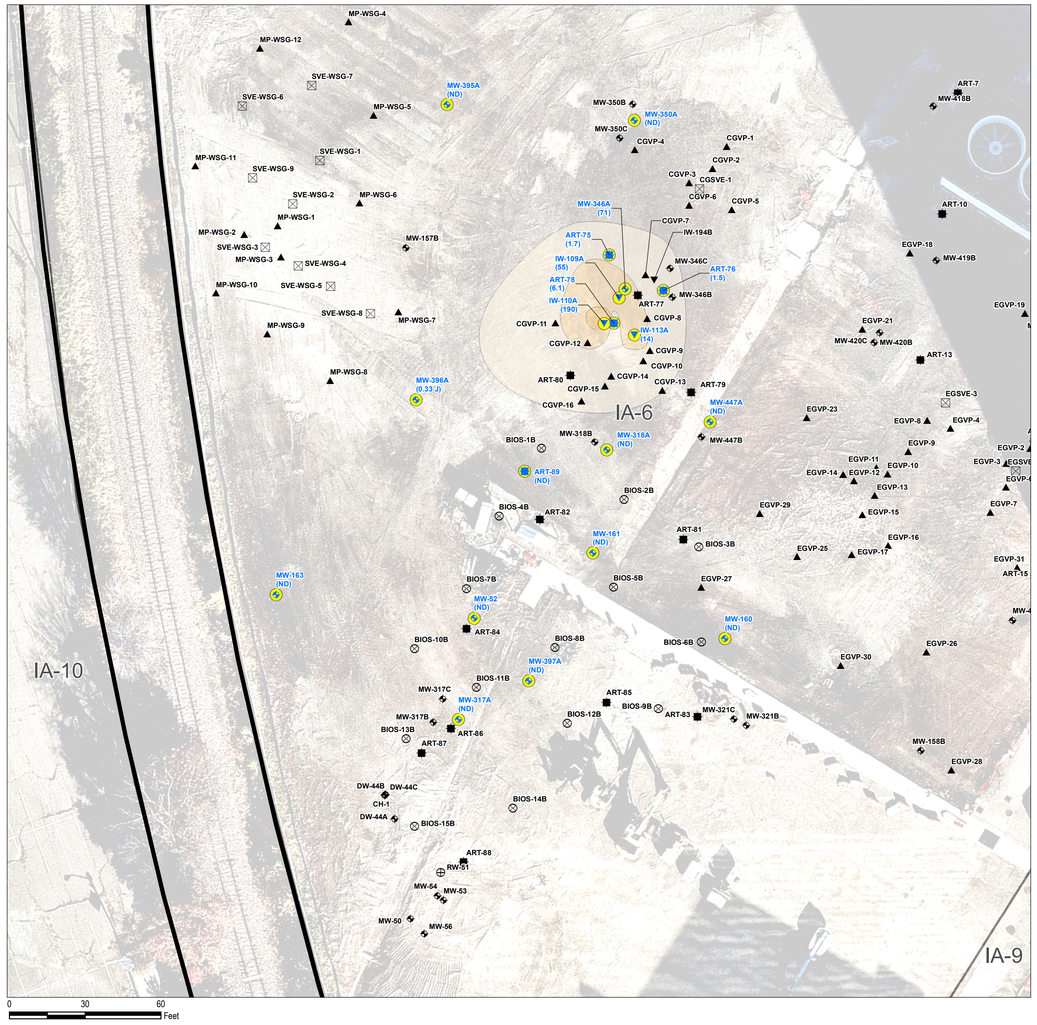
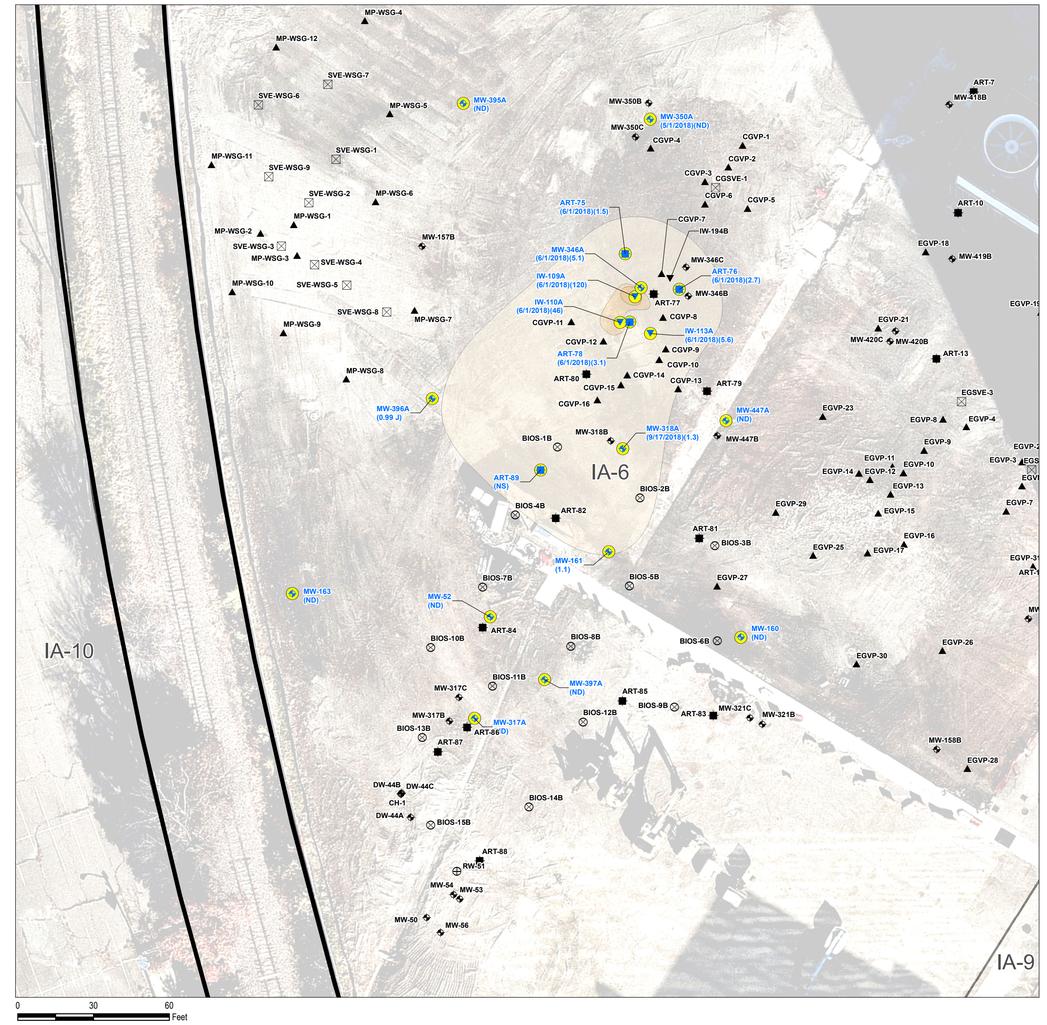
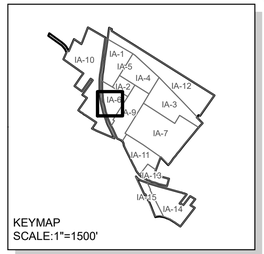
Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Map Bearings: 0

BASELINE - JULY 2017



MOST RECENT*





LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- SHALLOW TREATMENT ZONE

TCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10
- >10 AND ≤ 100
- >100 AND ≤ 1000

ABBREVIATION	GWQS (µg/L)	COMPOUND
TCE	1	Trichloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. SHALLOW TREATMENT ZONE - ~100 - 80 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED

ART-75	Depth	TCE
04/07/16	22.48	**31.9**
01/10/17	16.5	**1.5**
03/22/17	16.5	ND (<0.26)
04/13/17	16.5	ND (<0.22)
7/26/2017 - Baseline	16.5	**1.7**
10/05/17	16.5	NE (0.40 J)
01/11/18	16.5	**3.2**
03/16/18	16.5	**3.4**
04/05/18	16.5	**3**
05/18/2018	16.5	**4**
05/31/18	16.5	**3.8 J**
06/26/18	16.5	**1.5**

ART-76	Depth	TCE
04/06/16	22.88	NE (0.27 J)
7/26/2017 - Baseline	23	**1.5**
05/18/2018	16.5	**2.7**
05/31/18	16.5	**4 J**
06/26/18	16.5	**2.7**

ART-78	Depth	TCE
04/07/16	22.81	**7.7**
01/10/17	16.5	**3.5**
03/22/17	16.5	**1.0**
04/12/17	16.5	**1.0**
7/26/2017 - Baseline	16.5	**6.1**
10/05/17	16.5	ND (<0.22)
01/11/18	16.5	**11.0**
02/20/18	16.5	**6.8**
03/16/18	16.5	**3.1**
04/05/18	16.5	**2.1**
05/18/2018	16.5	**4.7**
05/31/18	16.5	**6.6**
06/26/18	16.5	**3.1**

ART-89	Depth	TCE
04/06/16	22.37	ND (<0.22)
7/27/2017 - Baseline	22.37	ND (<0.22)

IW-109A	Depth	TCE
7/28/2017 - Baseline	27.5	**55**
02/20/18	27.5	**26**
05/18/18	27.5	**60**
05/31/18	27.5	**120**

IW-110A	Depth	TCE
7/28/2017 - Baseline	27.5	**190**
02/20/18	27.5	**8.4**
05/18/18	27.5	**26**
05/31/18	27.5	**53**
06/26/18	27.5	**46**

IW-113A	Depth	TCE
7/28/2017 - Baseline	27.5	**14**
05/21/18	27.5	**6.8**
06/26/18	27.5	**5.6**

MW-160	Depth	TCE
04/05/16	14.8	ND (<0.22)
06/13/16	14.8	ND (<0.26)
10/24/16	14.5	ND (<0.22)
01/10/17	14.5	ND (<0.22)
04/12/17	14.5	ND (<0.22)
7/26/2017 - Baseline	14.5	ND (<0.22)
10/05/17	14.5	ND (<0.22)
01/11/18	14.5	ND (<0.22)
04/06/18	14.5	ND (<0.22)

MW-161	Depth	TCE
04/05/16	12	ND (<0.22)
06/14/16	12	ND (<0.26)
10/24/16	12	ND (<0.22)
1/10/2017	12	ND (<0.22)
04/12/17	12	ND (<0.22)
7/26/2017 - Baseline	12	ND (<0.22)
10/05/17	12	ND (<0.22)
01/11/18	12	ND (<0.22)
04/05/18	12	**1.1**

MW-163	Depth	TCE
04/06/16	14.58	ND (<0.22)
06/15/16	14.60	ND (<0.26)
10/25/16	14.60	ND (<0.22)
04/12/17	14.60	ND (<0.22)
7/26/2017 - Baseline	14.60	ND (<0.22)
10/05/17	14.60	ND (<0.22)
01/11/18	14.60	ND (<0.22)
04/06/18	14.60	ND (<0.22)

MW-317A	Depth	TCE
04/05/16	12.85	ND (<0.22)
06/14/16	12.85	ND (<0.26)
10/25/16	12.85	ND (<0.22)
01/10/17	12.85	ND (<0.22)
04/12/17	12.85	ND (<0.22)
7/26/2017 - Baseline	12.85	ND (<0.22)
10/05/17	12.85	ND (<0.22)
01/11/18	12.85	ND (<0.22)
04/06/18	12.85	ND (<0.22)

MW-318A	Depth	TCE
04/05/16	11.74	ND (<0.22)
06/15/16	11.74	ND (<0.26)
10/24/2016	11.74	NE (0.23 J)
01/09/17	11.74	ND (<0.22)
04/12/17	11.74	ND (<0.22)
7/26/2017 - Baseline	11.74	ND (<0.22)
10/05/17	11.74	NE (0.45 J)
11/7/2017	10.00	ND (<0.22)
01/11/18	11.74	NE (0.9 J)
01/23/18	10.00	NE (0.25 J)
02/20/18	10.00	NE (0.31 J)
03/16/18	11.74	**2.1**
04/05/18	11.74	**2**
05/21/2018	10.00	NE (0.72 J)
08/02/18	10.00	**2.1**
08/30/18	10.00	**1.6**
09/17/18	10.00	**1.3**

MW-346A	Depth	TCE
04/05/16	13.1	**4 J**
06/13/16	13.1	**21.4**
10/25/16	13.1	**22**
01/10/17	13.1	**6.6**
03/22/17	13.1	**2.3**
04/12/17	13.1	NE (0.74 J)
7/26/2017 - Baseline	13.1	**71**
10/05/17	13.1	**16**
11/7/2017	11.0	**1.9**
01/11/18	13.1	**12**
01/23/18	11.0	**15**
02/20/18	13.1	**8.1**
03/16/18	13.1	**4.6**
04/05/18	13.1	**16**
05/21/2018	10.5	**4.8**
06/26/18	10.5	**5.1**

MW-350A	Depth	TCE
04/05/16	11.4	ND (<0.22)
10/24/16	11.4	ND (<0.22)
01/09/17	11.4	ND (<0.22)
04/12/17	11.4	ND (<0.22)
7/26/2017 - Baseline	11.4	ND (<0.22)
10/05/17	11.4	ND (<0.22)
01/11/18	11.4	ND (<0.22)
04/05/18	11.4	ND (<0.22)
05/21/2018	10.5	ND (<0.22)

MW-395A	Depth	TCE
04/06/16	12.5	ND (<0.22)
06/14/16	12.5	ND (<0.26)
10/24/2016	12.5	ND (<0.22)
04/13/17	12.5	ND (<0.22)
7/26/2017 - Baseline	12.5	ND (<0.22)
10/05/17	12.5	ND (<0.22)
01/11/18	12.5	ND (<0.22)
04/06/18	12.5	ND (<0.22)

MW-396A	Depth	TCE
04/05/16	11	ND (<0.22)
6/15/2016	11	NE (0.49 J)
10/24/16	11	NE (0.36 J)
04/13/17	11	NE (0.29 J)
7/26/2017 - Baseline	11	NE (0.33 J)
10/05/17	11	ND (<0.22)
01/11/18	11	NE (0.75 J)
04/05/18	11	NE (0.99 J)

MW-397A	Depth	TCE
04/05/16	16	ND (<0.22)
06/15/16	16	ND (<0.26)
10/25/16	16	ND (<0.22)
01/09/17	16	ND (<0.22)
04/12/17	16	ND (<0.22)
7/26/2017 - Baseline	16	ND (<0.22)
10/05/17	16	ND (<0.22)
01/11/18	16	ND (<0.22)
04/06/18	16	ND (<0.22)

MW-447A	Depth	TCE
04/06/16	12.3	ND (<0.22)
6/15/2016	12.3	ND (<0.26)
10/24/16	12.3	ND (<0.22)
01/10/17	12.3	ND (<0.22)
04/12/17	12.3	ND (<0.22)
7/26/2017 - Baseline	12.3	ND (<0.22)
10/05/17	12.3	ND (<0.22)
11/7/2017	10.0	ND (<0.22)
01/12/18	12.3	ND (<0.22)
1/23/2018	12.3	ND (<0.22)
2/20/2018	12.3	ND (<0.22)
03/16/18	12.3	ND (<0.22)
04/05/18	12.3	ND (<0.22)

MW-52	Depth	TCE
4/6/2016	25	ND (<0.22)
06/14/16	25	ND (<0.26)
10/25/16	25	ND (<0.22)
01/10/17	25	ND (<0.22)
04/12/17	25	ND (<0.22)
7/26/2017 - Baseline	25	ND (<0.22)
10/05/17	25	ND (<0.22)
11/7/2017	25	ND (<0.22)
01/12/18	25	ND (<0.22)
01/23/18	25	ND (<0.22)
02/20/18	25	ND (<0.22)
04/05/18	25	ND (<0.22)

PROJECT: ROCHE NUTLEY SITE REMEDIATION

TITLE: **TCE ISOCONCENTRATION CONTOURS - SHALLOW TREATMENT ZONE**

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		
APPROVED BY:	J. BRUMMERJECKO		**FIGURE 5A**
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_TCE_Shallow.mxd

Plot Date: 3/11/2019, 11:14:06 AM by LLANTIGUA ---- LAN OUT-ANSI D (22"X34")
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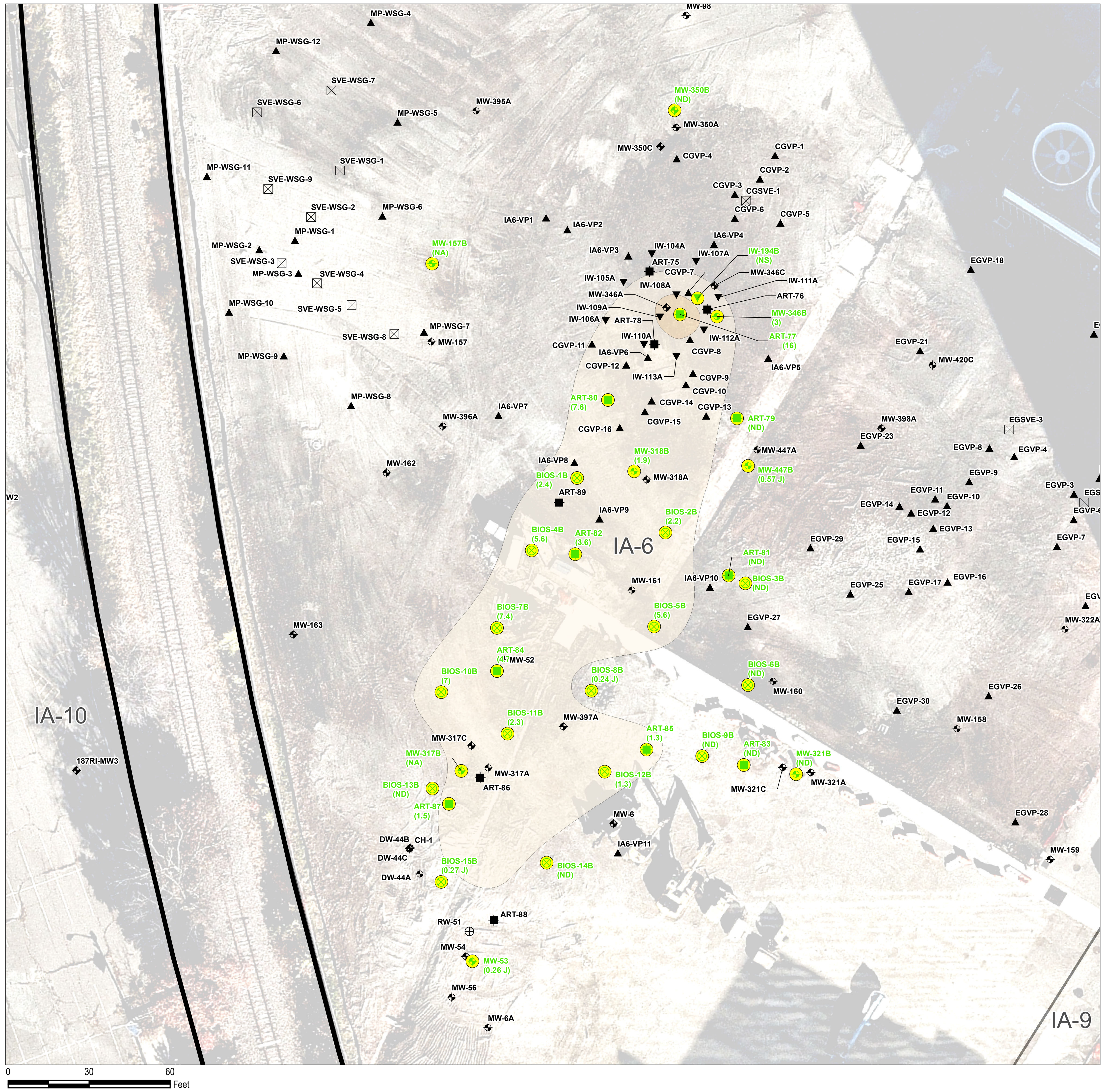
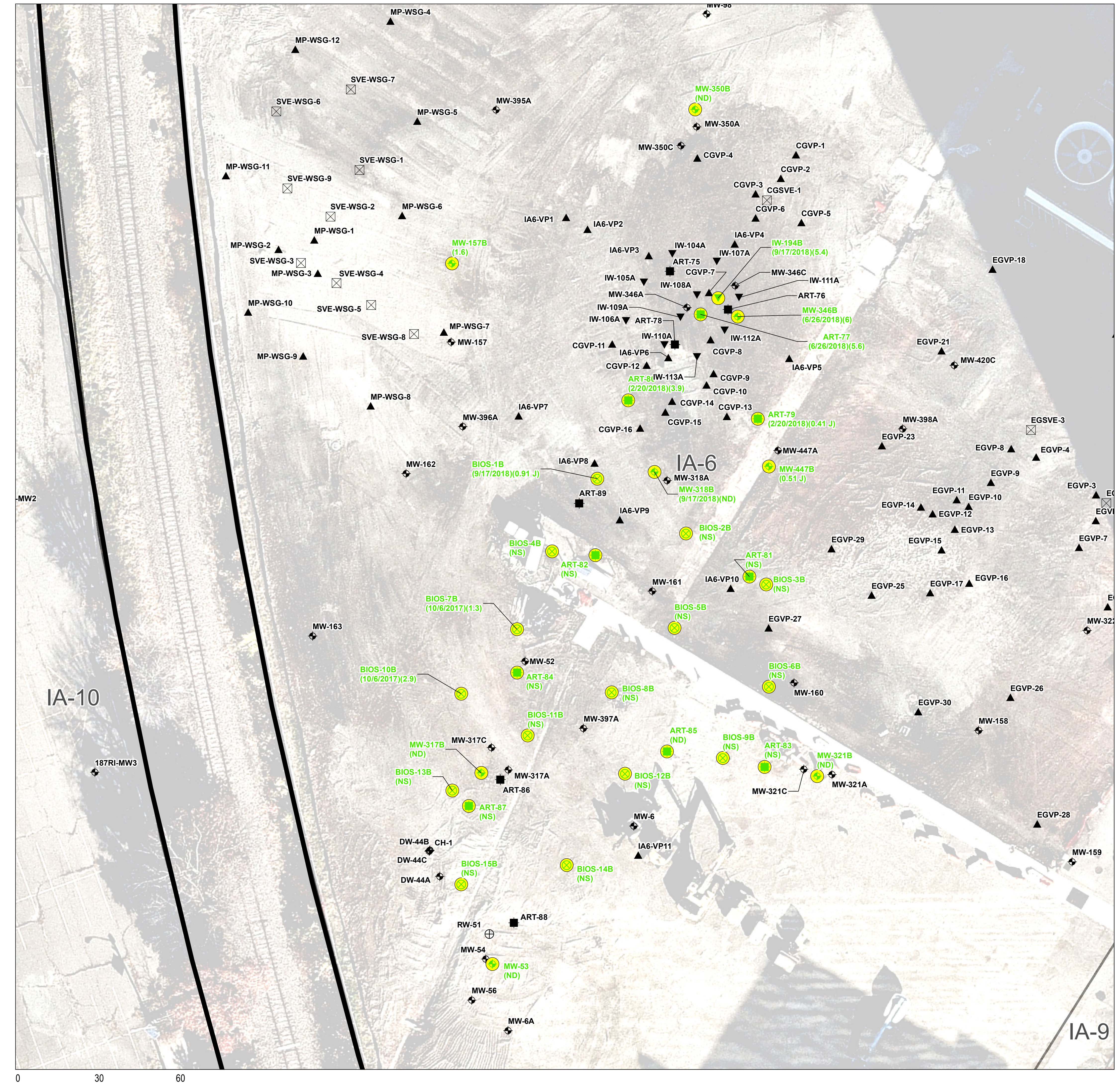
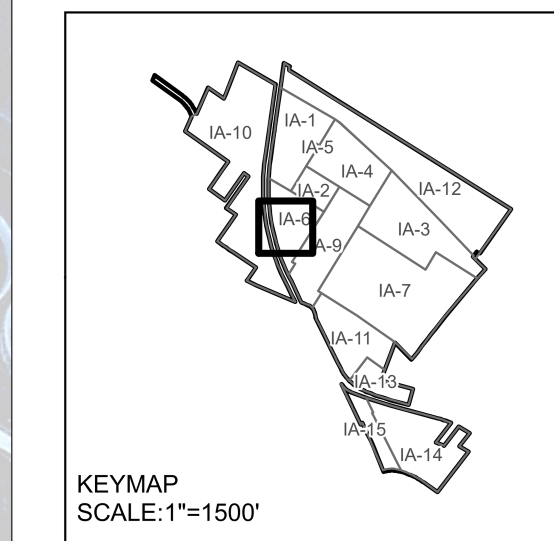
Map Datum: NAD 1983 2011

BASELINE - JULY 2017



MOST RECENT*





LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- INTERMEDIATE TREATMENT ZONE

TCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10
- >10 AND ≤ 100

ABBREVIATION	GWQS (µg/L)	COMPOUND
TCE	1	Trichloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. INTERMEDIATE TREATMENT ZONE - ~80 - 50 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED
12. D - DUPLICATE SAMPLE
13. NA - NOT ANALYZED

MW-53	Depth	TCE
04/05/16	35	NE (0.48 J)
06/13/16	35	ND (<0.26)
10/25/16	35	NE (0.44)
01/10/17	35	ND (<0.22)
04/12/17	35	NE (0.3 J)
7/26/2017 - Baseline	35	NE (0.26 J)
10/05/17	35	ND (<0.22)
01/12/18	35	ND (<0.22)
04/06/18	35	ND (<0.22)

MW-157B	Depth	TCE
04/05/16	40	NA
06/14/16	40	NA
10/24/16	40	NA
01/10/17	40	NA
04/13/17	40	NA
7/26/2017[D] - Baseline	40	NA
10/05/17	40	NA
01/11/18	40	NA
03/16/18	40	NA
4/6/2018[D]	40	**1.6**

MW-317B	Depth	TCE
04/05/16	40	NA
06/14/16	40	NA
10/25/16	40	NA
01/10/17	40	NA
04/12/17	40	NA
7/26/2017 - Baseline	40	NA
10/05/17	40	NA
11/7/2017	40	NA
01/11/18	40	NA
01/23/18	40	**1.6**
02/20/18	40	ND (<0.22)
04/05/18	40	ND (<0.22)

MW-318B	Depth	TCE
04/05/16	50	NE (0.57 J)
06/15/16	50	ND (<0.26)
10/24/16	50	NE (0.27 J)
01/09/17	50	NE (0.23 J)
04/12/17	50	ND (<0.22)
7/26/2017 - Baseline	50	**1.9**
10/05/17	50	NE (0.50 J)
11/7/2017	50	NE (0.26 J)
01/11/18	50	ND (<0.22)
01/23/18	50	NE (0.36 J)
02/20/18	50	NE (0.44 J)
03/16/18	50	NE (0.37 J)
04/05/18	50	**1.6**
05/21/2018	50	**3.8**
08/02/18	50	ND (<0.31)
08/30/18	50	ND (<0.31)
09/17/18	50	ND (<0.31)

MW-321B	Depth	TCE
04/05/16	50	ND (<0.22)
06/14/16	50	ND (<0.26)
10/24/16	50	ND (<0.22)
01/10/17	50	ND (<0.22)
04/12/17	50	ND (<0.22)
7/26/2017 - Baseline	50	ND (<0.22)
10/5/2017	50	ND (<0.22)
01/11/18	50	ND (<0.22)
04/06/18	50	ND (<0.22)

MW-346B	Depth	TCE
04/05/16	40	ND (<0.22)
06/13/16	40	NE (0.92 J)
10/25/16	40	NE (0.88 J)
01/10/17	40	**1.1**
03/22/17	40	NE (0.28 J)
04/12/17	40	NE (0.28 J)
7/26/2017 - Baseline	40	**3**
10/05/17	40	NE (0.70 J)
11/7/2017	40	ND (<0.22)
01/11/18	40	**2.4**
01/23/18	40	**3.6**
02/20/18	40	**3**
03/16/18	40	**1.4**
04/05/18	40	**2**
05/21/2018	40	**3.4**
05/31/18	40	NE (0.36 J)
06/26/18	40	**6.0**

MW-350B	Depth	TCE
04/05/16	40	ND (<0.22)
07/12/16	40	ND (<0.26)
10/24/16	40	ND (<0.22)
01/10/17	40	ND (<0.22)
04/12/17	40	ND (<0.22)
7/26/2017 - Baseline	40	ND (<0.22)
10/05/17	40	ND (<0.22)
01/11/18	40	ND (<0.22)
04/05/18	40	ND (<0.22)
05/21/2018	40	ND (<0.22)

MW-447B	Depth	TCE
04/06/16	40	ND (<0.22)
06/15/16	40	ND (<0.26)
10/24/16	40	ND (<0.22)
01/10/17	40	ND (<0.22)
04/13/17	40	ND (<0.22)
7/26/2017 - Baseline	40	NE (0.57 J)
10/05/17	40	ND (<0.22)
11/7/2017	40	ND (<0.22)
01/12/18	40	ND (<0.22)
01/23/18	40	NE (0.51 J)
02/20/18	40	NE (0.28 J)
03/16/18	40	NE (0.58 J)
04/05/18	40	NE (0.51 J)

ART-77	Depth	TCE
04/07/16	39.4	**3.9**
06/01/16	NA	NA
01/10/17	36.5	**8.7**
03/22/17	36.5	ND (<0.26)
04/12/17	36.5	ND (<0.22)
7/26/2017 - Baseline	36.5	**16**
10/05/17	36.5	**2.4**
01/11/18	36.5	ND (<0.22)
02/20/18	36.5	**8.8**
03/16/18	36.5	**9.8**
04/05/18	36.5	**21**
05/18/18	36.5	**15**
05/31/18	36.5	**6.7**
6/26/2018[D]	36.5	**5.6**

ART-79	Depth	TCE
4/7/2016	22.74	ND (<0.22)
4/7/2016	52.08	ND (<0.22)
06/01/16	NA	NA
7/26/2017	22.75	ND (<0.22)
7/26/2017 - Baseline	49	ND (<0.22)
02/20/18	49	NE (0.41 J)

ART-80	Depth	TCE
04/07/16	22.76	NE (0.36 J)
04/07/16	52.06	**1.9**
06/01/16	NA	NA
7/26/2017[D]	22.75	NE (0.89 J)
7/26/2017 - Baseline	49	**7.6**
11/7/2017	31.5	ND (<0.22)
02/20/18	16.5	**3.9**

ART-81	Depth	TCE
4/6/2016	22.54	ND (<0.22)
4/6/2016	51.68	ND (<0.22)
06/01/16	NA	NA
07/27/17	22.54	ND (<0.22)
7/27/2017 - Baseline	49	ND (<0.22)

ART-82	Depth	TCE
04/06/16	46.44	ND (<0.22)
06/01/16	NA	NA
7/27/2017 - Baseline	44	**3.6**

ART-83	Depth	TCE
04/07/16	22.54	ND (<0.22)
04/07/16	51.53	ND (<0.22)
06/01/16	NA	NA
07/27/17	22.54	ND (<0.22)
7/26/2017 - Baseline	49	ND (<0.22)

ART-84	Depth	TCE
04/06/16	46.8	ND (<0.22)
06/01/16	NA	NA
7/26/2017 - Baseline	44	**4.7**

ART-85	Depth	TCE
04/07/16	46.71	ND (<0.22)
06/01/16	NA	NA
01/10/17	44	NA
04/12/17	44	NE (0.3 J)
7/26/2017 - Baseline	44	**1.3**
10/5/20117	44	ND (<0.22)
01/11/18	44	ND (<0.22)
03/16/18	44	ND (<0.22)
04/05/18	44	ND (<0.22)

ART-87	Depth	TCE
04/07/16	49.41	ND (<0.22)
06/01/16	NA	NA
7/26/2017 - Baseline	46.5	**1.5**

BIOS-1B	Depth	TCE
04/15/16	66	**2.1**
06/01/16	NA	NA
7/26/2017 - Baseline	65	**2.4**
05/21/18	65	**5**
08/02/18	65	**5**
08/30/18	65	**1.9**
9/17/2018[D]	65	NE (0.91 J)

BIOS-2B	Depth	TCE
04/15/16	66.7	ND (<0.22)
06/01/16	NA	NA
7/26/2017 - Baseline	65	**2.2**

BIOS-3B	Depth	TCE
04/15/16	66.5	ND (<0.22)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.22)

BIOS-4B	Depth	TCE
04/15/16	66.9	**1.3**
06/01/16	NA	NA
7/26/2017 - Baseline	65	**5.6**

BIOS-5B	Depth	TCE
4/15/2016	66	ND (<0.22)
06/01/16	NA	NA
7/26/2017 - Baseline	65	**5.6**

BIOS-6B	Depth	TCE
4/15/2016	67.3	ND (<0.22)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.22)

BIOS-7B	Depth	TCE
04/15/16	66.4	ND (<4)
06/01/16	NA	NA
10/26/16	66.4	ND (<0.12)
7/28/2017 - Baseline	65	**7.4**
10/06/17	65	**1.3**

BIOS-8B	Depth	TCE
04/15/16	66.2	ND (<0.22)
06/01/16	NA	NA
7/28/2017 - Baseline	65	NE (0.24 J)

BIOS-9B	Depth	TCE
4/15/2016	66.8	ND (<0.22)
06/01/16	NA	NA
7/28/2017 - Baseline	65	ND (<0.22)

BIOS-10B	Depth	TCE
04/15/16	65.9	ND (<2.2)
06/01/16	NA	NA
7/27/2017 - Baseline	65	**7**
10/06/17	65	**2.9**

BIOS-11B	Depth	TCE
04/15/16	65.9	ND (<4)
06/01/16	NA	NA
10/26/16	65.9	ND (<0.12)
7/27/2017 - Baseline	65	**2.3**

BIOS-12B	Depth	TCE
04/15/16	67	ND (<1.1)
06/01/16	NA	NA
7/27/2017 - Baseline	60	**1.3**

BIOS-13B	Depth	TCE
04/15/16	61.8	ND (<0.22)
06/01/16	NA	NA
10/26/16	61.8	ND (<0.22)
7/27/2017 - Baseline	60	ND (<0.22)

BIOS-14B	Depth	TCE
04/15/16	61	**1.9**
06/01/16	NA	NA
7/27/2017 - Baseline	60	ND (<0.22)

BIOS-15B	Depth	TCE
04/15/16	61.7	ND (<4.5)
06/01/16	NA	NA
10/26/16	61.7	ND (<0.22)
7/27/2017 - Baseline	60	NE (0.27 J)

IW-194B	Depth	TCE
05/21/18	37.5	**14**
05/31/18	37.5	**4.9**
06/26/18	37.5	**5.4**
08/02/18	40	**4**
08/30/18	40	**3.8**
09/17/18	40	**5.4**

PROJECT: ROCHE NUTLEY SITE REMEDIATION

TITLE: TCE ISOCONCENTRATION CONTOURS - INTERMEDIATE TREATMENT ZONE

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY	FIGURE 5B	
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_TCE_Intermediate.mxd

Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Map Rotation: 0

Plot Date: 3/11/2019, 13:12:16 PM by LLANTIGUA -- LAYOUT: ANSI D (22"x34")
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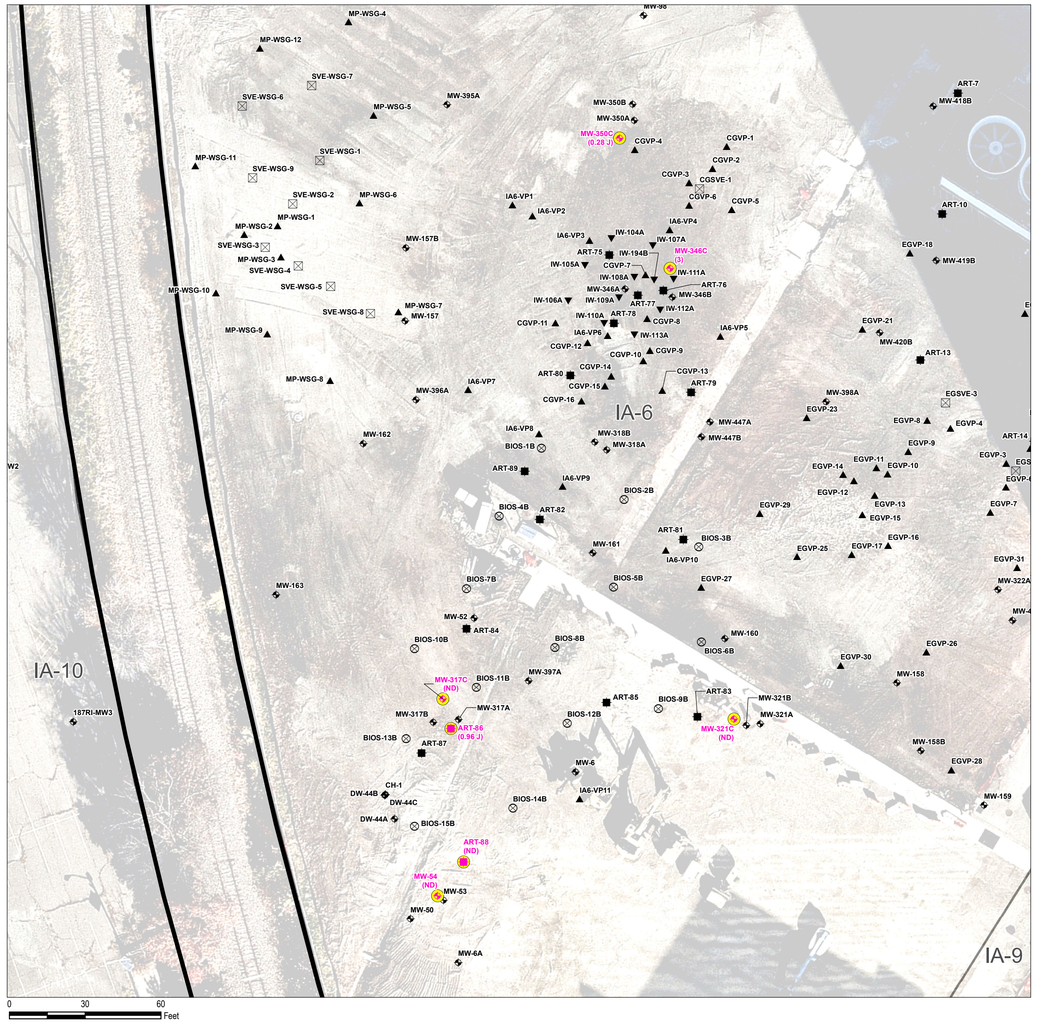
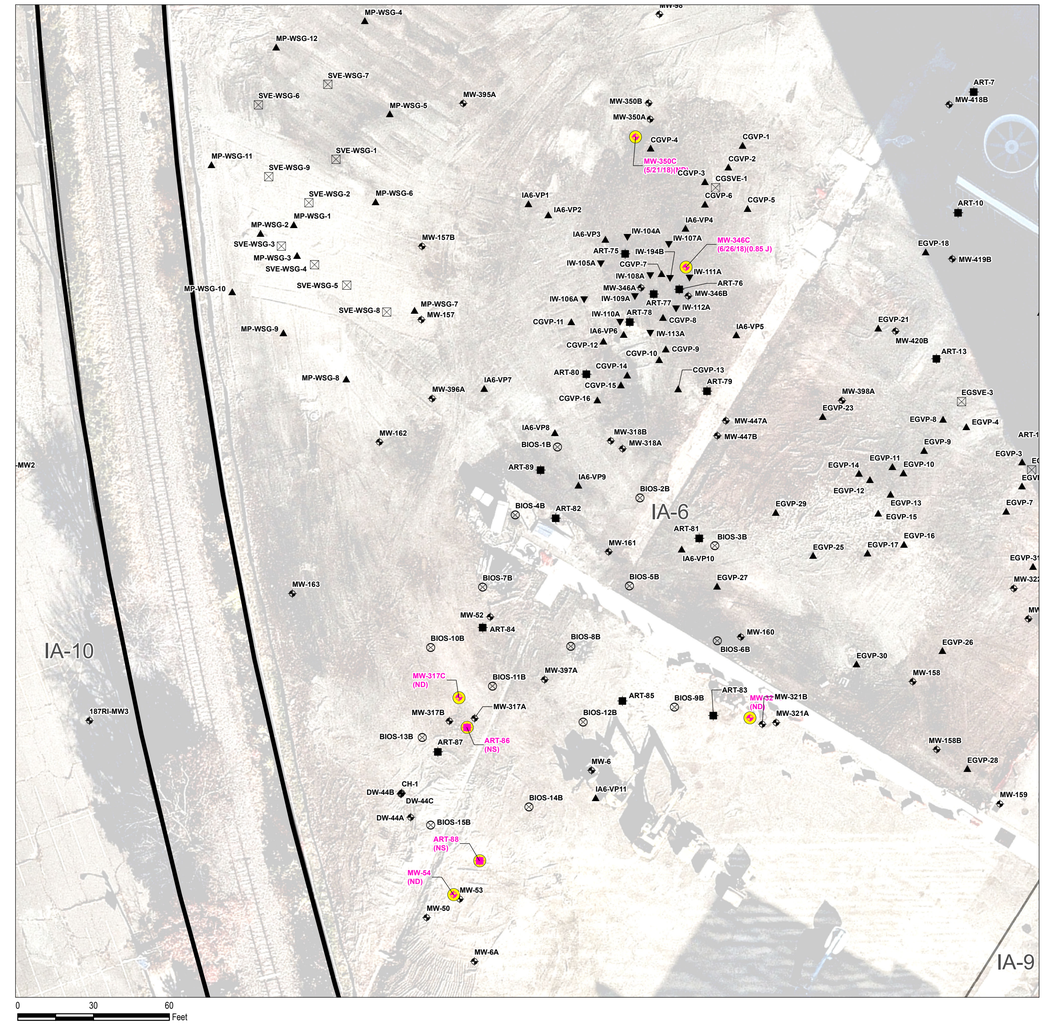
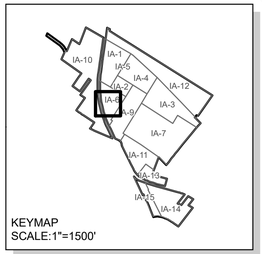
BASELINE - JULY 2017



MOST RECENT*





LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- DEEP TREATMENT ZONE

TCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10

ABBREVIATION	GWQS (µg/L)	COMPOUND
TCE	1	Trichloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. DEEP TREATMENT ZONE - ~50 - 0 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NA - NOT ANALYZED

MW-54	Depth	TCE
4/5/2016	60	ND (<0.22)
06/13/16	60	ND (<0.26)
10/25/16	60	ND (<0.22)
01/10/17	60	ND (<0.22)
04/12/17	60	ND (<0.22)
7/26/2017 - Baseline	60	ND (<0.22)
10/06/17	60	ND (<0.22)
01/12/18	60	ND (<0.22)
04/06/18	60	ND (<0.22)

MW-317C	Depth	TCE
04/05/16	65	NE (0.71 J)
06/14/16	65	NE (0.36 J)
10/25/16	65	NE (0.25 J)
01/10/17	65	ND (<0.22)
04/12/17	65	ND (<0.22)
7/26/2017 - Baseline	65	ND (<0.22)
10/05/17	65	ND (<0.22)
11/7/2017	65	ND (<0.22)
01/11/18	65	NE (0.49 J)
01/23/18	65	ND (<0.22)
02/20/18	65	ND (<0.22)
04/05/18	65	ND (<0.22)

MW-321C	Depth	TCE
04/06/16	65	ND (<0.22)
06/13/16	65	ND (<0.26)
10/24/16	65	ND (<0.22)
01/10/17	65	ND (<0.22)
04/12/17	65	ND (<0.22)
7/26/2017 - Baseline	65	ND (<0.22)
10/05/17	65	ND (<0.22)
01/11/18	65	ND (<0.22)
04/06/18	65	ND (<0.22)

MW-346C	Depth	TCE
04/06/16	70	NE (0.5 J)
06/13/16	70	NE (0.38 J)
10/25/16	70	NE (0.34 J)
01/09/17	70	ND (<0.22)
04/12/17	70	ND (<0.22)
7/26/2017 - Baseline	70	**3**
10/05/17	70	**1.5**
11/7/2017	70	NE (0.31 J)
01/11/18	70	NE (0.35 J)
01/23/18	70	NE (0.5 J)
02/20/18	70	NE (0.5 J)
04/05/18	70	NE (0.35 J)
05/21/2018	70	NE (0.77 J)
06/26/18	70	NE (0.85 J)

MW-350C	Depth	TCE
4/5/2016	70	NE (0.35 J)
06/01/16	NA	NA
10/24/16	70	NE (0.5 J)
01/10/17	70	NE (0.35 J)
04/12/17	70	NE (0.27 J)
7/26/2017 - Baseline	70	NE (0.28 J)
10/05/17	70	NE (0.27 J)
01/11/18	70	ND (<0.22)
04/05/18	70	ND (<0.22)
05/21/2018	70	ND (<0.22)

ART-86	Depth	TCE
04/07/16	64.76	NE (0.6 J)
06/01/16	NA	NA
7/26/2017 - Baseline	61.5	NE (0.96 J)

ART-88	Depth	TCE
04/07/16	61.63	ND (<0.22)
06/01/16	NA	NA
7/26/2017 - Baseline	59	ND (<0.22)

PROJECT: **ROCHE NUTLEY SITE REMEDIATION**

TITLE: **TCE ISOCONCENTRATION CONTOURS - DEEP TREATMENT ZONE**

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		**FIGURE 5C**
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_TCE_Deep.mxd

Plot Date: 3/11/2019, 13:06:28 PM by LANTIGUA, LAYOUT: ANSI D (22"x34")
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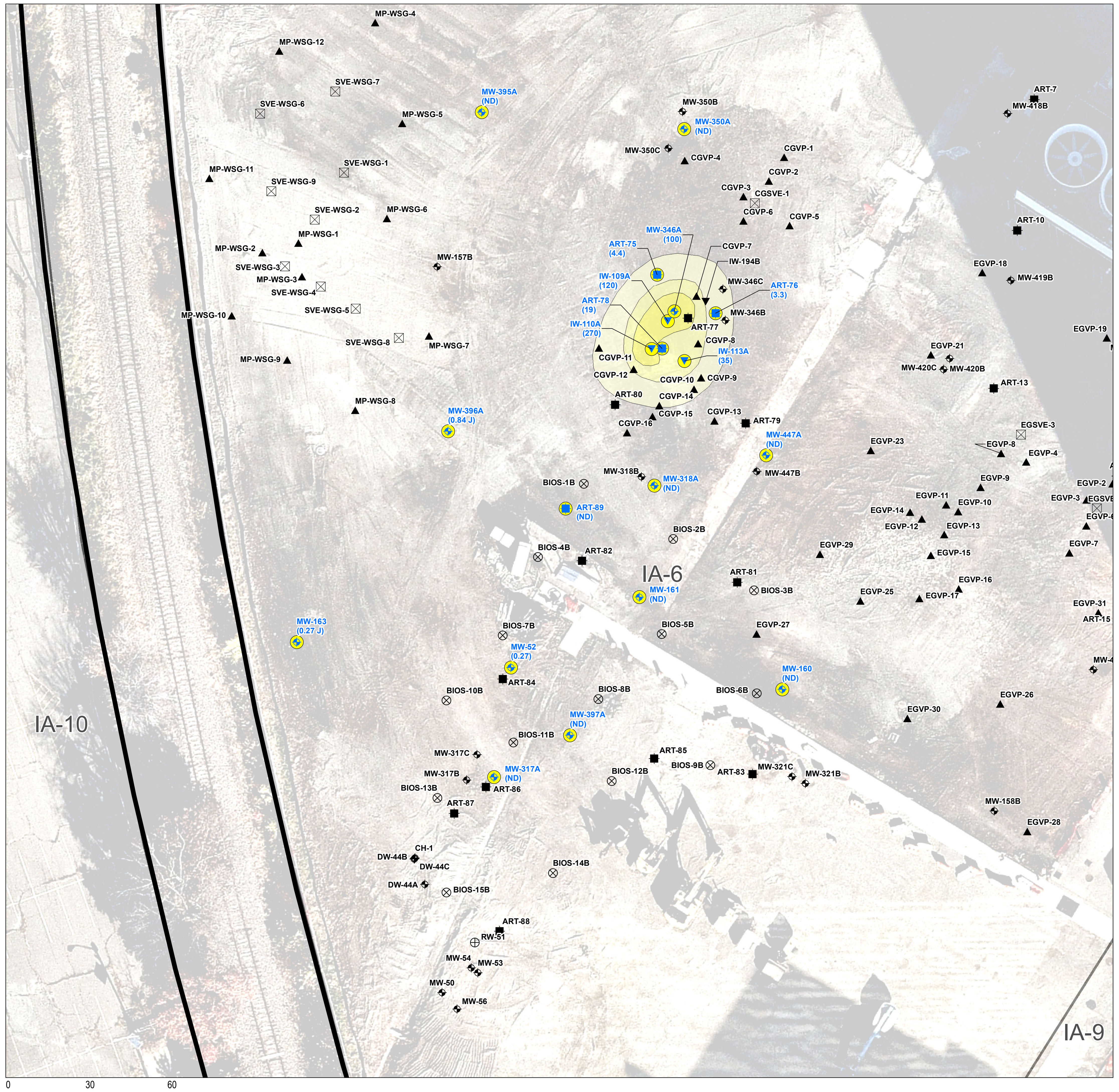
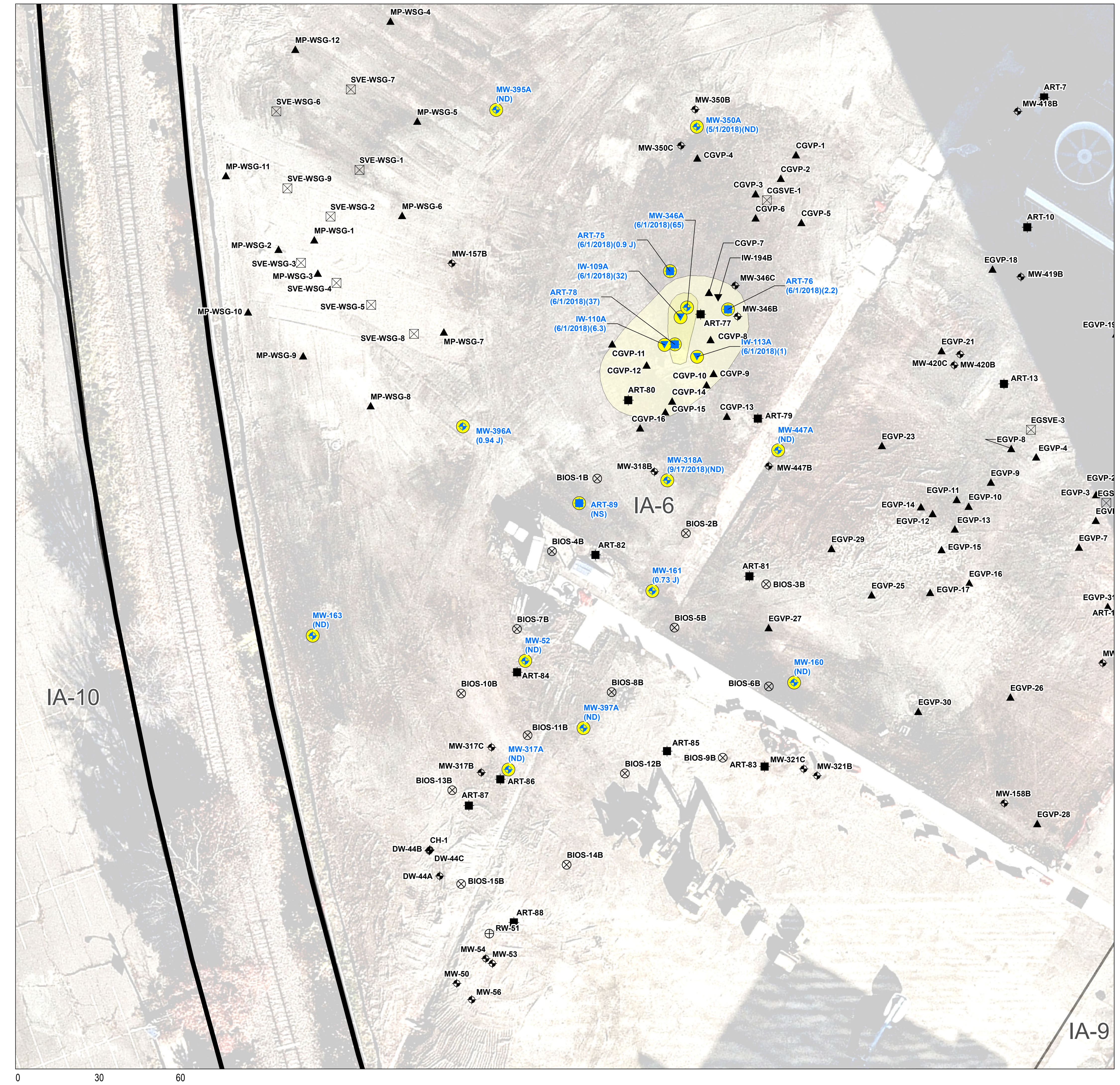
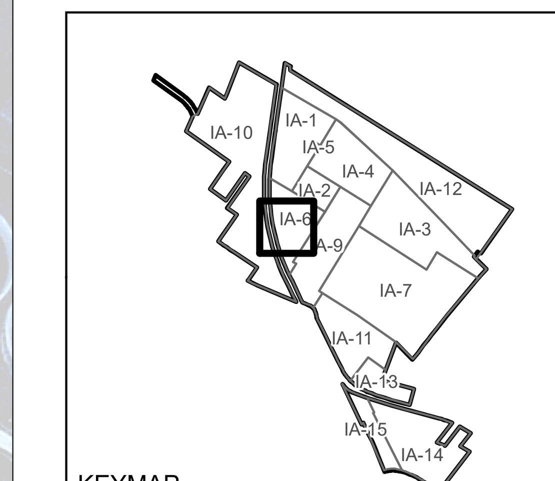
Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot-US)

BASELINE - JULY 2017



MOST RECENT*





KEYMAP
SCALE:1"=1500'

N

LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- SHALLOW TREATMENT ZONE

cis-1,2-DCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10
- >10 AND ≤ 100
- >100 AND ≤ 1000

ABBREVIATION	GWQS (µg/L)	COMPOUND
c-DCE	70	cis-1,2-Dichloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. SHALLOW TREATMENT ZONE - ~100 - 80 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED

ART-75	Depth	*cis*-1,2-DCE
04/07/16	22.48	**99.1**
01/10/17	16.5	NE (2.3)
03/22/17	16.5	ND (<0.31)
04/13/17	16.5	ND (<0.26)
7/26/2017 - Baseline	16.5	NE (4.4)
10/05/17	16.5	NE (0.51 J)
01/11/18	16.5	NE (1.6)
03/16/18	16.5	NE (3.8)
04/05/18	16.5	NE (2.0)
05/18/2018	16.5	NE (4.7)
05/31/18	16.5	NE (2.4 J)
06/26/18	16.5	NE (0.90 J)

ART-76	Depth	*cis*-1,2-DCE
04/06/16	22.88	NE (2.3)
7/26/2017 - Baseline	23	NE (3.3)
05/18/2018	16.5	NE (0.79 J)
05/31/18	16.5	ND (<1.3)
06/26/18	16.5	NE (2.2)

ART-78	Depth	*cis*-1,2-DCE
04/07/16	22.81	**84.5**
01/10/17	16.5	NE (2.8)
03/22/17	16.5	NE (1.3)
04/12/17	16.5	NE (2.5)
7/26/2017 - Baseline	16.5	NE (19)
10/05/17	16.5	NE (0.47 J)
01/11/18	16.5	NE (9.8)
02/20/18	16.5	NE (5.3)
03/16/18	16.5	NE (3.1)
04/05/18	16.5	NE (1.4)
05/18/2018	16.5	NE (2.9)
05/31/18	16.5	NE (4.6 J)
06/26/18	16.5	NE (37)

ART-89	Depth	*cis*-1,2-DCE
04/06/16	22.37	ND (<0.27)
7/27/2017 - Baseline	22.37	ND (<0.26)

IW-109A	Depth	*cis*-1,2-DCE
7/28/2017 - Baseline	27.5	**120**
02/20/18	27.5	NE (19)
05/18/18	27.5	NE (22)
05/31/18	27.5	NE (32)

IW-110A	Depth	*cis*-1,2-DCE
7/28/2017 - Baseline	27.5	**270**
02/20/18	27.5	NE (6.3)
05/18/18	27.5	NE (8.2)
05/31/18	27.5	NE (26)
06/26/18	27.5	NE (6.3)

IW-113A	Depth	*cis*-1,2-DCE
7/28/2017 - Baseline	27.5	NE (35)
05/21/18	27.5	NE (2.7)
06/26/18	27.5	NE (1)

MW-160	Depth	*cis*-1,2-DCE
04/05/16	14.8	ND (<0.27)
06/13/16	14.8	ND (<0.31)
10/24/16	14.5	ND (<0.26)
01/10/17	14.5	ND (<0.26)
04/12/17	14.5	ND (<0.26)
7/26/2017 - Baseline	14.5	ND (<0.26)
10/05/17	14.5	ND (<0.26)
01/11/18	14.5	ND (<0.26)
04/06/18	14.5	ND (<0.26)

MW-161	Depth	*cis*-1,2-DCE
04/05/16	12	ND (<0.27)
06/14/16	12	ND (<0.31)
10/24/16	12	ND (<0.26)
1/10/2017	12	ND (<0.26)
04/12/17	12	ND (<0.26)
7/26/2017 - Baseline	12	ND (<0.26)
10/05/17	12	NE (0.47 J)
01/11/18	12	ND (<0.26)
04/05/18	12	NE (0.73 J)

MW-163	Depth	*cis*-1,2-DCE
04/06/16	14.58	NE (0.3 J)
06/15/16	14.60	NE (0.32 J)
10/25/16	14.60	NE (0.29 J)
1/10/2017	14.60	ND (<0.26)
04/12/17	14.60	ND (<0.26)
7/26/2017 - Baseline	14.60	NE (0.27 J)
10/05/17	14.60	NE (0.48 J)
01/11/18	14.60	NE (0.61 J)
04/06/18	14.60	ND (<0.26)

MW-317A	Depth	*cis*-1,2-DCE
04/05/16	12.85	ND (<0.27)
06/14/16	12.85	ND (<0.31)
10/25/16	12.85	ND (<0.26)
01/10/17	12.85	ND (<0.26)
04/12/17	12.85	ND (<0.26)
7/26/2017 - Baseline	12.85	ND (<0.26)
10/05/17	12.85	ND (<0.26)
01/11/18	12.85	ND (<0.26)
04/06/18	12.85	ND (<0.26)

MW-318A	Depth	*cis*-1,2-DCE
04/05/16	11.74	ND (<0.27)
06/15/16	11.74	ND (<0.31)
10/24/2016	11.74	ND (<0.26)
01/09/17	11.74	ND (<0.26)
04/12/17	11.74	NE (0.53 J)
7/26/2017 - Baseline	11.74	ND (<0.26)
10/05/17	11.74	NE (0.84 J)
11/7/2017	10.00	ND (<0.26)
01/11/18	11.74	NE (0.36 J)
01/23/18	11.74	ND (<0.26)
02/20/18	11.74	ND (<0.26)
03/16/18	11.74	NE (2.2)
04/05/18	11.74	NE (1.4)
05/21/18	10.00	NE (0.38 J)
08/02/18	10.00	ND (<0.26)
08/30/18	10.00	NE (1.1)
09/17/18	10.00	ND (<0.26)

MW-346A	Depth	*cis*-1,2-DCE
04/05/16	13.1	**94.5**
06/13/16	13.1	NE (3.7)
10/25/16	13.1	NE (15)
01/10/17	13.1	NE (5.6)
03/22/17	13.1	NE (2.7)
04/12/17	13.1	NE (1.7)
7/26/2017 - Baseline	13.1	**100**
10/05/17	13.1	NE (27)
11/7/2017	11.0	NE (1.2)
01/11/18	13.1	NE (7.9)
01/23/18	11.0	NE (12)
02/20/18	13.1	NE (3)
03/16/18	13.1	NE (2.3)
04/05/18	13.1	NE (9.9)
05/21/18	10.5	NE (1.4)
06/26/18	10.5	NE (65)

MW-350A	Depth	*cis*-1,2-DCE
04/05/16	11.4	ND (<0.27)
10/24/16	11.4	ND (<0.26)
01/09/17	11.4	ND (<0.26)
04/12/17	11.4	ND (<0.26)
7/26/2017 - Baseline	11.4	ND (<0.26)
10/05/17	11.4	ND (<0.26)
01/11/18	11.4	ND (<0.26)
04/05/18	11.4	ND (<0.26)
05/21/2018	10.5	ND (<0.26)

MW-395A	Depth	*cis*-1,2-DCE
04/06/16	12.5	ND (<0.27)
06/14/16	12.5	ND (<0.31)
10/24/2016	12.5	ND (<0.26)
04/13/17	12.5	NE (0.37 J)
7/26/2017 - Baseline	12.5	ND (<0.26)
10/05/17	12.5	ND (<0.26)
01/11/18	12.5	ND (<0.26)
04/06/18	12.5	ND (<0.26)

MW-396A	Depth	*cis*-1,2-DCE
04/05/16	11	ND (<0.27)
6/15/2016	11	NE (0.82 J)
10/24/16	11	NE (0.99 J)
01/10/17	11	NE (0.88 J)
04/13/17	11	NE (0.75 J)
7/26/2017 - Baseline	11	NE (0.84 J)
10/05/17	11	NE (0.85 J)
01/11/18	11	NE (0.69 J)
04/05/18	11	NE (0.94 J)

MW-397A	Depth	*cis*-1,2-DCE
04/05/16	16	ND (<0.27)
06/15/16	16	ND (<0.31)
10/25/16	16	ND (<0.26)
01/09/17	16	ND (<0.26)
04/12/17	16	ND (<0.26)
7/26/2017 - Baseline	16	ND (<0.26)
10/05/17	16	ND (<0.26)
01/11/18	16	ND (<0.26)
04/06/18	16	ND (<0.26)

MW-447A	Depth	*cis*-1,2-DCE
04/06/16	12.3	ND (<0.27)
6/15/2016	12.3	ND (<0.31)
10/24/16	12.3	ND (<0.26)
01/10/17	12.3	ND (<0.26)
04/12/17	12.3	ND (<0.26)
7/26/2017 - Baseline	12.3	ND (<0.26)
10/05/17	12.3	ND (<0.26)
11/7/2017	10.0	ND (<0.26)
01/11/18	12.3	ND (<0.26)
1/23/2018[D]	12.3	ND (<0.26)
2/20/2018	12.3	ND (<0.26)
03/16/18	12.3	ND (<0.26)
04/05/18	12.3	ND (<0.26)

MW-52	Depth	*cis*-1,2-DCE
4/6/2016	25	NE (0.34 J)
06/14/16	25	ND (<0.31)
10/25/16	25	ND (<0.26)
01/10/17	25	ND (<0.26)
04/12/17	25	NE (0.32 J)
7/26/2017 - Baseline	25	NE (0.27)
10/05/17	25	NE (0.36 J)
11/7/2017	25	ND (<0.26)
01/11/18	25	ND (<0.26)
01/23/18	25	ND (<0.26)
02/20/18	25	ND (<0.26)
04/05/18	25	ND (<0.26)

PROJECT: ROCHE NUTLEY SITE REMEDIATION

TITLE: **CIS-1,2-DCE ISOCONCENTRATION CONTOURS - SHALLOW TREATMENT ZONE**

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY	FIGURE 6A	
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

FILE NO.: IA-6_cis_Shalllow.mxd

TRC - GIS

Plot Date: 3/12/2019, 12:51:56 PM by LLANTIGUA -- LAYOUT: ANSI D (22"x34")
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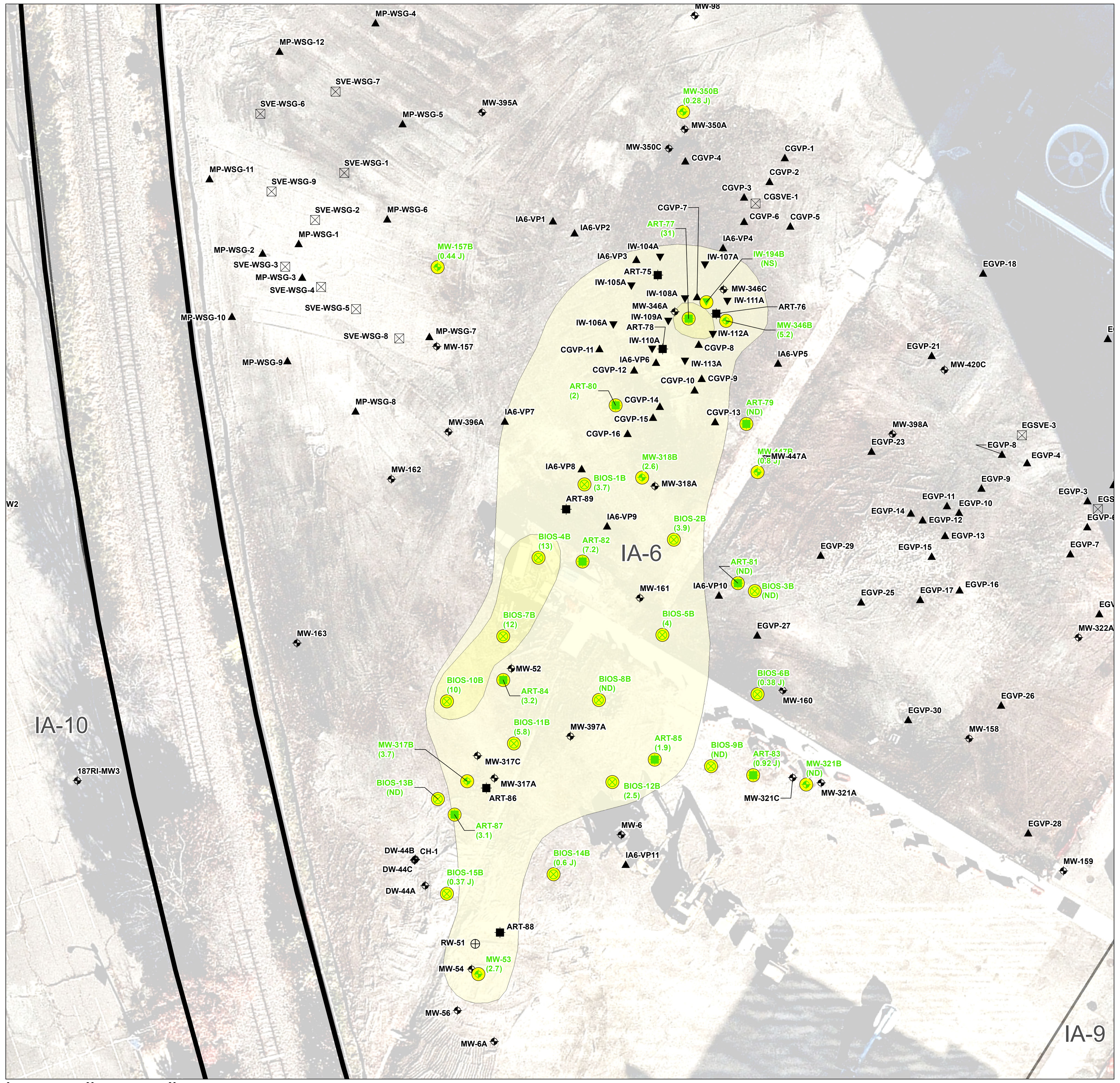
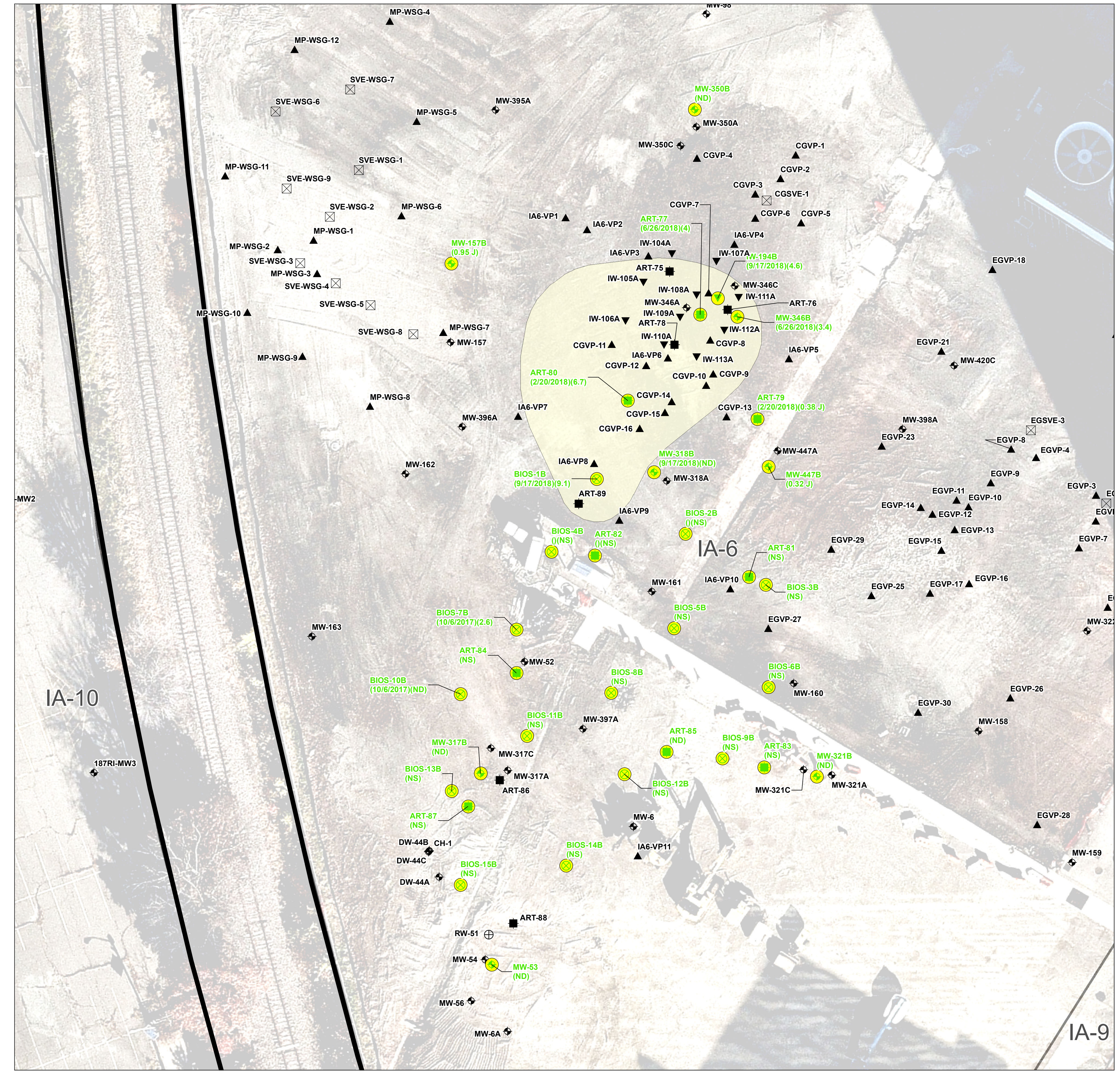
Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Map Rotation: 0

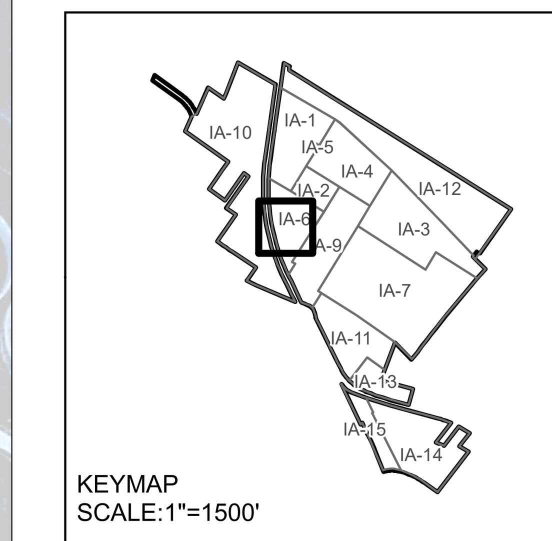
BASELINE - JULY 2017



MOST RECENT*



N



LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- INTERMEDIATE TREATMENT ZONE

cis-1,2-DCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10
- >10 AND ≤ 100
- >100 AND ≤ 1000

ABBREVIATION	GWQS (µg/L)	COMPOUND
c-DCE	70	cis-1,2-Dichloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. INTERMEDIATE TREATMENT ZONE - ~80 - 50 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED
12. D - DUPLICATE SAMPLE
13. NA - NOT ANALYZED

MW-53	Depth	*cis*-1,2-DCE
04/05/16	35	NE (3.2)
06/13/16	35	NE (0.53 J)
10/25/16	35	NE (1.7)
01/10/17	35	ND (<0.26)
04/12/17	35	NE (1.4)
7/26/2017 - Baseline	35	NE (2.7)
10/05/17	35	NE (1.6)
01/11/18	35	NE (0.66 J)
04/06/18	35	ND (<0.26)

MW-157B	Depth	*cis*-1,2-DCE
04/05/16	40	NE (0.35 J)
06/14/16	40	NE (2.5)
10/24/16	40	NE (3.6)
01/10/17	40	NE (1.4)
04/13/17	40	ND (<0.26)
7/26/2017[D] - Baseline	40	NE (0.44 J)
10/5/2017[D]	40	NE (0.89 J)
01/11/18	40	NE (0.4 J)
03/16/18	40	NE (0.26)
4/6/2018[D]	40	NE (0.95 J)

MW-317B	Depth	*cis*-1,2-DCE
04/05/16	40	NE (0.52 J)
06/14/16	40	ND (<0.31)
10/25/16	40	ND (<0.26)
01/10/17	40	ND (<0.26)
04/12/17	40	NE (1.3)
7/26/2017 - Baseline	40	NE (3.7)
10/05/17	40	NE (0.97 J)
11/7/2017	40	ND (<0.26)
01/11/18	40	ND (<0.26)
01/23/18	40	ND (<0.26)
02/20/18	40	ND (<0.26)
04/05/18	40	ND (<0.26)

MW-318B	Depth	*cis*-1,2-DCE
04/05/16	50	NE (4.2)
06/15/16	50	ND (<0.31)
10/24/16	50	ND (<0.22)
01/09/17	50	NE (0.34 J)
04/12/17	50	NE (0.47 J)
7/26/2017 - Baseline	50	NE (2.6)
10/05/17	50	NE (0.71 J)
11/7/2017	50	ND (<0.26)
01/11/18	50	NE (0.6 J)
01/23/18	50	NE (0.67 J)
02/20/18	50	NE (1.3)
03/16/18	50	ND (<0.26)
04/05/18	50	NE (0.72 J)
05/21/18	50	NE (2.1)
08/02/18	50	ND (<0.26)
08/30/18	50	NE (1.6)
09/17/18	50	ND (<0.26)

MW-321B	Depth	*cis*-1,2-DCE
04/05/16	50	NE (0.35 J)
06/14/16	50	ND (<0.31)
10/24/16	50	ND (<0.26)
01/10/17	50	ND (<0.26)
04/12/17	50	NE (0.29 J)
7/26/2017 - Baseline	50	ND (<0.26)
10/5/2017[D]	50	ND (<0.26)
01/11/18	50	ND (<0.26)
04/06/18	50	ND (<0.26)

MW-346B	Depth	*cis*-1,2-DCE
04/05/16	40	NE (1.3)
06/13/16	40	NE (1.6)
10/25/16	40	NE (0.81 J)
01/10/17	40	NE (1.5)
03/22/17	40	NE (0.4 J)
04/12/17	40	NE (0.51 J)
7/26/2017 - Baseline	40	NE (5.2)
10/05/17	40	NE (0.89 J)
11/7/2017	40	ND (<0.26)
01/11/18	40	NE (2.3)
01/23/18	40	NE (3.5)
02/20/18	40	ND (<0.26)
03/16/18	40	ND (<0.26)
04/05/18	40	NE (0.84 J)
05/21/18	40	NE (2.4)
05/31/18	40	ND (<0.26)
06/26/18	40	NE (3.4)

MW-350B	Depth	*cis*-1,2-DCE
04/05/16	40	NE (0.63 J)
06/01/16	NA	NA
10/24/16	40	NE (0.56 J)
01/10/17	40	NE (0.44 J)
04/12/17	40	NE (0.38 J)
7/26/2017 - Baseline	40	NE (0.28 J)
10/05/17	40	NE (0.26 J)
01/11/18	40	ND (<0.26)
04/05/18	40	ND (<0.26)
05/21/2018	40	ND (<0.26)

MW-447B	Depth	*cis*-1,2-DCE
04/06/16	40	ND (<0.27)
06/15/16	40	ND (<0.31)
10/24/16	40	ND (<0.26)
01/10/17	40	ND (<0.26)
04/13/17	40	NE (0.37 J)
7/26/2017 - Baseline	40	NE (0.8 J)
10/05/17	40	NE (0.37 J)
11/7/2017	40	ND (<0.26)
01/11/18	40	ND (<0.26)
01/23/18	40	NE (0.46 J)
02/20/18	40	NE (0.38 J)
03/16/18	40	ND (<0.26)
04/05/18	40	NE (0.32 J)

ART-77	Depth	*cis*-1,2-DCE
04/07/16	39.4	NE (36.4)
06/01/16	NA	NA
01/10/17	36.5	NE (15)
03/22/17	36.5	NE (0.47 J)
04/12/17	36.5	NE (0.48 J)
7/26/2017 - Baseline	36.5	NE (31)
10/05/17	36.5	NE (3.5)
01/11/18	36.5	ND (<0.26)
02/20/18	36.5	NE (11)
03/16/18	36.5	NE (15)
04/05/18	36.5	NE (22)
05/18/18	36.5	NE (14)
05/31/18	36.5	NE (3.8)
6/26/2018[D]	36.5	NE (4)

ART-79	Depth	*cis*-1,2-DCE
4/7/2016	22.74	NE (0.38 J)
4/7/2016	52.08	ND (<0.27)
06/01/16	NA	NA
7/26/2017	22.75	ND (<0.26)
7/26/2017 - Baseline	49	ND (<0.26)
02/20/18	49	NE (0.38 J)

ART-80	Depth	*cis*-1,2-DCE
04/07/16	22.76	NE (10.7)
04/07/16	52.06	NE (18.2)
06/01/16	NA	NA
7/26/2017[D]	22.75	NE (2)
7/26/2017 - Baseline	49	NE (18)
11/7/2017	31.5	NA
02/20/18	16.5	NE (6.7)

ART-81	Depth	*cis*-1,2-DCE
4/6/2016	22.54	ND (<0.27)
4/6/2016	51.68	ND (<0.27)
06/01/16	NA	NA
07/27/17	22.54	ND (<0.26)
7/27/2017 - Baseline	49	ND (<0.26)

ART-82	Depth	*cis*-1,2-DCE
04/06/16	46.44	NE (0.77 J)
06/01/16	NA	NA
7/27/2017 - Baseline	44	NE (7.2)

ART-83	Depth	*cis*-1,2-DCE
04/07/16	22.54	NE (0.3 J)
04/07/16	51.53	NE (0.32 J)
06/01/16	NA	NA
07/27/17	22.54	NE (0.67 J)
7/26/2017 - Baseline	49	NE (0.92 J)

ART-84	Depth	*cis*-1,2-DCE
4/6/2016[D]	46.8	NE (0.72 J)
06/01/16	NA	NA
7/26/2017 - Baseline	44	NE (3.2)

ART-85	Depth	*cis*-1,2-DCE
04/07/16	46.71	NE (0.34 J)
06/01/16	NA	NA
01/10/17	44	ND (<0.26)
04/12/17	44	NE (0.56 J)
7/26/2017 - Baseline	44	NE (1.9)
10/05/17	44	NE (0.35 J)
01/11/18	44	ND (<0.26)
03/16/18	44	ND (<0.26)
04/05/18	44	ND (<0.26)

ART-87	Depth	*cis*-1,2-DCE
04/07/16	49.41	NE (1.1)
06/01/16	NA	NA
7/26/2017 - Baseline	46.5	NE (3.1)

BIOS-1B	Depth	*cis*-1,2-DCE
04/15/16	66	NE (8.6)
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (3.7)
05/21/18	65	NE (2.9)
08/02/18	65	NE (5.9)
08/30/18	65	NE (8.7)
09/17/18	65	NE (9.1)

BIOS-2B	Depth	*cis*-1,2-DCE
04/15/16	66.7	ND (<0.27)
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (3.9)

BIOS-3B	Depth	*cis*-1,2-DCE
04/15/16	66.5	ND (<0.27)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.26)

BIOS-4B	Depth	*cis*-1,2-DCE
04/15/16	66.9	NE (0.88 J)
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (13)

BIOS-5B	Depth	*cis*-1,2-DCE
4/15/2016	66	NE (0.28 J)
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (4)

BIOS-6B	Depth	*cis*-1,2-DCE
4/15/2016	67.3	NE (0.39)
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (0.38 J)

BIOS-7B	Depth	*cis*-1,2-DCE
04/15/16	66.4	ND (<2.7)
06/01/16	NA	NA
10/26/16	66.4	ND (<0.26)
7/28/2017 - Baseline	65	NE (12)
10/06/17	65	NE (2.6)

BIOS-8B	Depth	*cis*-1,2-DCE
04/15/16	66.2	NE (0.32 J)
06/01/16	NA	NA
7/28/2017 - Baseline	65	ND (<0.26)

BIOS-9B	Depth	*cis*-1,2-DCE
4/15/2016	66.8	ND (<0.27)
06/01/16	NA	NA
7/28/2017 - Baseline	65	ND (<0.26)

BIOS-10B	Depth	*cis*-1,2-DCE
04/15/16	65.9	ND (<2.7)
06/01/16	NA	NA
7/27/2017 - Baseline	65	NE (10)
10/06/17	65	ND (<3.9)

BIOS-11B	Depth	*cis*-1,2-DCE
04/15/16	65.9	ND (<2.7)
06/01/16	NA	NA
10/26/16	65.9	ND (<0.26)
7/27/2017 - Baseline	65	NE (5.8)

BIOS-12B	Depth	*cis*-1,2-DCE
04/15/16	67	ND (<1.4)
06/01/16	NA	NA
7/27/2017 - Baseline	60	NE (2.5)

BIOS-13B	Depth	*cis*-1,2-DCE
04/15/16	61.8	ND (<27)
06/01/16	NA	NA
10/26/16	61.8	ND (<0.26)
7/27/2017 - Baseline	60	ND (<0.26)

BIOS-14B	Depth	*cis*-1,2-DCE
04/15/16	61	NE (3.5)
06/01/16	NA	NA
7/27/2017[D] - Baseline	60	NE (0.6 J)

BIOS-15B	Depth	*cis*-1,2-DCE
04/15/16	61.7	ND (<5.5)
06/01/16	NA	NA
10/26/16	61.7	ND (<0.26)
7/27/2017 - Baseline	60	NE (0.37 J)

IW-194B	Depth	*cis*-1,2-DCE
05/21/18	37.5	NE (4.6)
05/31/18	37.5	ND (<0.26)
06/26/18	37.5	NE (3 J)
08/02/18	40	NE (3.1)
08/30/18	40	NE (3 J)
09/17/18	40	NE (4.6)

PROJECT: ROCHE NUTLEY SITE REMEDIATION

TITLE: CIS-1,2-DCE ISOCONCENTRATION CONTOURS - INTERMEDIATE TREATMENT ZONE

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY	FIGURE 6B	
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_cis_Intermediate.mxd

Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Map Rotation:

Plot Date: 3/12/2019, 13:47:53 PM by LLANTIGUA -- LAYOUT: ANSI D (22"x34")
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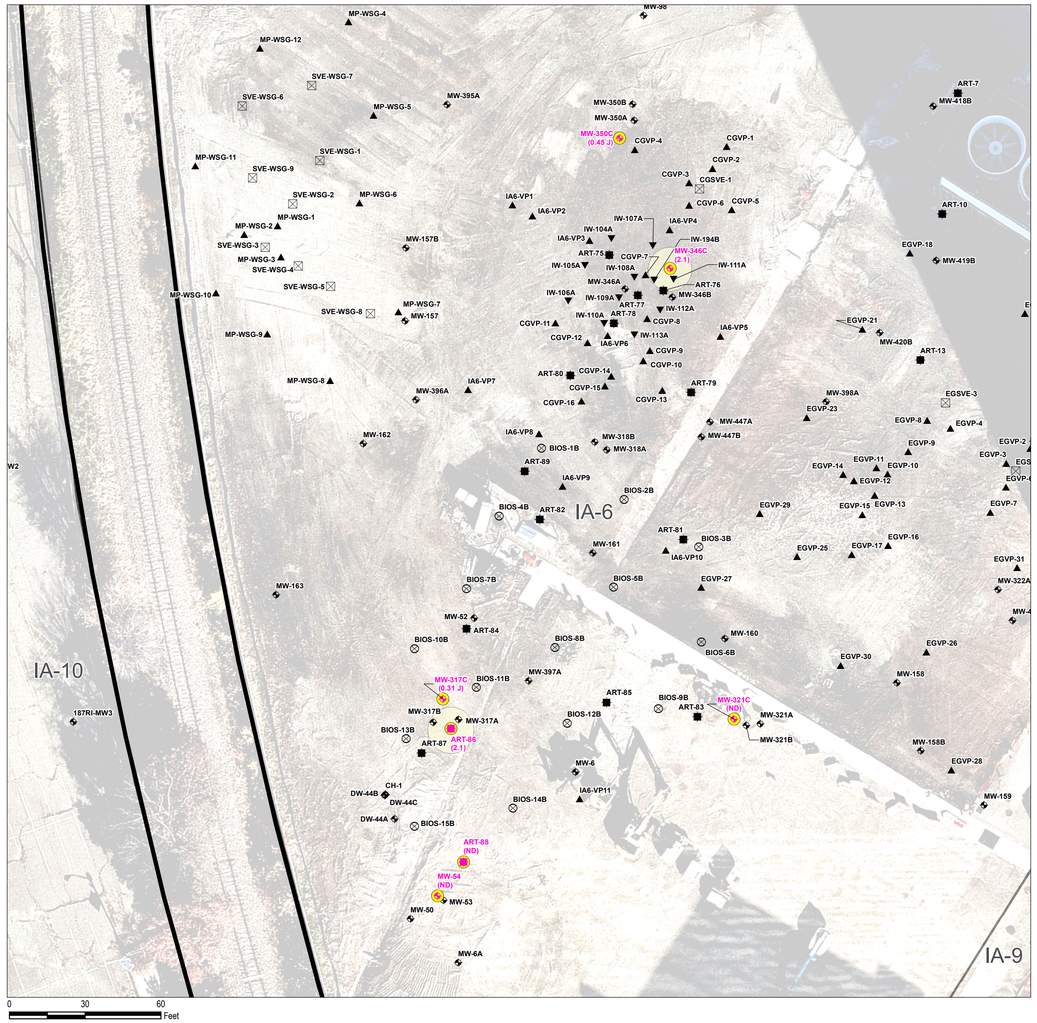
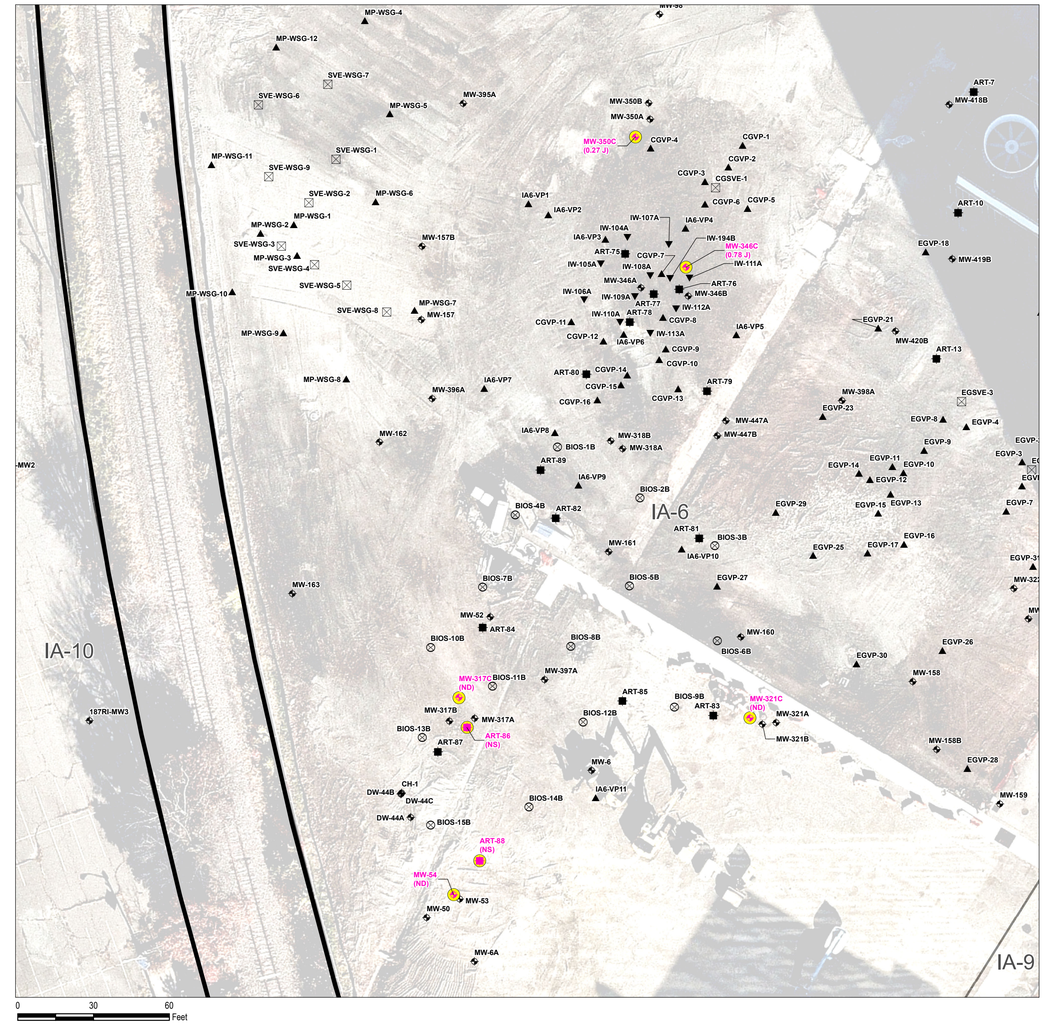
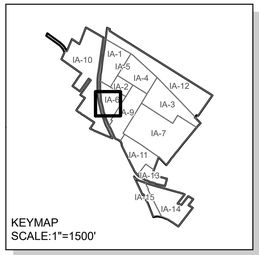
BASELINE - JULY 2017



MOST RECENT*





LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- DEEP TREATMENT ZONE

cis-1,2-DCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10

ABBREVIATION	GWQS (µg/L)	COMPOUND
c-DCE	70	cis-1,2-Dichloroethene

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. DEEP TREATMENT ZONE - ~50 - 0 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NA - NOT ANALYZED

MW-54	Depth	*cis* -1,2-DCE
4/5/2016	60	ND (<0.27)
06/13/16	60	ND (<0.31)
10/25/16	60	ND (<0.26)
01/10/17	60	ND (<0.26)
04/12/17	60	ND (<0.26)
7/26/2017 - Baseline	60	ND (<0.26)
10/06/17	60	ND (<0.26)
01/12/18	60	ND (<0.26)
04/06/18	60	ND (<0.26)

MW-317C	Depth	*cis* -1,2-DCE
04/05/16	65	NE (1.8)
06/14/16	65	NE (0.41 J)
10/25/16	65	ND (<0.26)
01/10/17	65	ND (<0.26)
04/12/17	65	ND (<0.26)
7/26/2017 - Baseline	65	NE (0.31 J)
10/05/17	65	ND (<0.26)
11/7/2017	65	NE (0.63 J)
01/11/18	65	NE (0.39 J)
01/23/18	65	ND (<0.26)
02/20/18	65	ND (<0.26)
04/05/18	65	ND (<0.26)

MW-321C	Depth	*cis* -1,2-DCE
04/06/16	65	ND (<0.27)
06/13/16	65	ND (<0.31)
10/24/16	65	ND (<0.26)
01/10/17	65	ND (<0.26)
04/12/17	65	ND (<0.26)
7/26/2017 - Baseline	65	ND (<0.26)
10/05/17	65	ND (<0.26)
01/11/18	65	ND (<0.26)
04/06/18	65	ND (<0.26)

MW-346C	Depth	*cis* -1,2-DCE
04/06/16	70	NE (1.2)
06/13/16	70	ND (<0.31)
10/25/16	70	NE (0.63 J)
01/09/17	70	NE (0.4 J)
04/12/17	70	NE (0.41 J)
7/26/2017 - Baseline	70	NE (2.1)
10/05/17	70	NE (1.2)
11/7/2017	70	NE (0.5 J)
01/11/18	70	NE (0.66 J)
01/23/18	70	NE (1)
02/20/18	70	NE (1.3)
04/05/18	70	NE (0.33 J)
05/21/18[D]	70	NE (0.41 J)
06/26/18	70	NE (0.78 J)

MW-350C	Depth	*cis* -1,2-DCE
4/5/2016	70	NE (1)
06/01/16	NA	NA
10/24/16	70	NE (0.92 J)
01/10/17	70	NE (0.7 J)
04/12/17	70	NE (0.6 J)
7/26/2017 - Baseline	70	NE (0.45 J)
10/05/17	70	NE (0.6 J)
01/11/18	70	NE (0.52 J)
04/05/18	70	NE (0.57 J)
05/21/2018	70	NE (0.27 J)

ART-86	Depth	*cis* -1,2-DCE
04/07/16	64.76	NE (1.1)
06/01/16	NA	NA
7/26/2017 - Baseline	61.5	NE (2.1)

ART-88	Depth	*cis* -1,2-DCE
04/07/16	61.63	NE (0.77 J)
06/01/16	NA	NA
7/26/2017 - Baseline	59	ND (<0.26)

PROJECT: ROCHE NUTLEY SITE REMEDIATION

TITLE: **CIS-1,2-DCE ISOCONCENTRATION CONTOURS - DEEP TREATMENT ZONE**

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

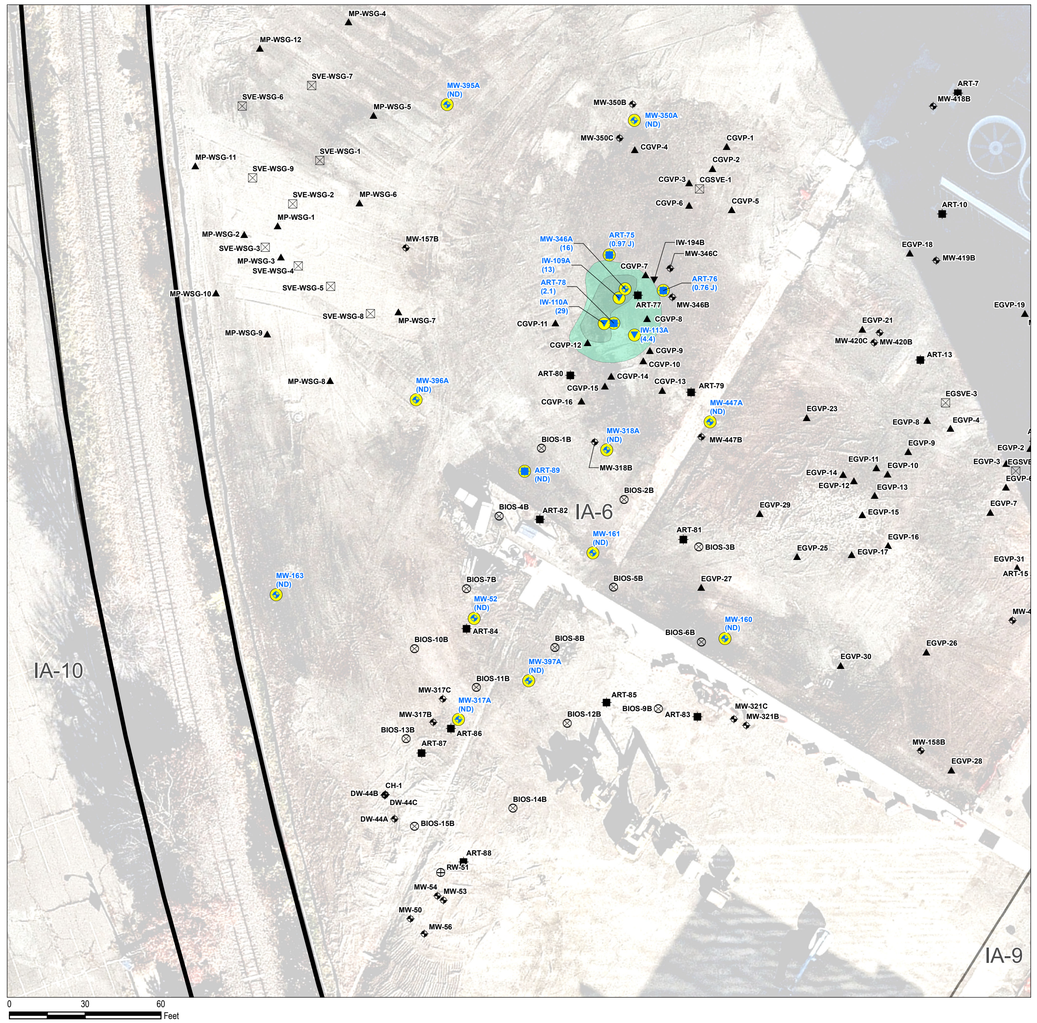
FIGURE 6C

TRC

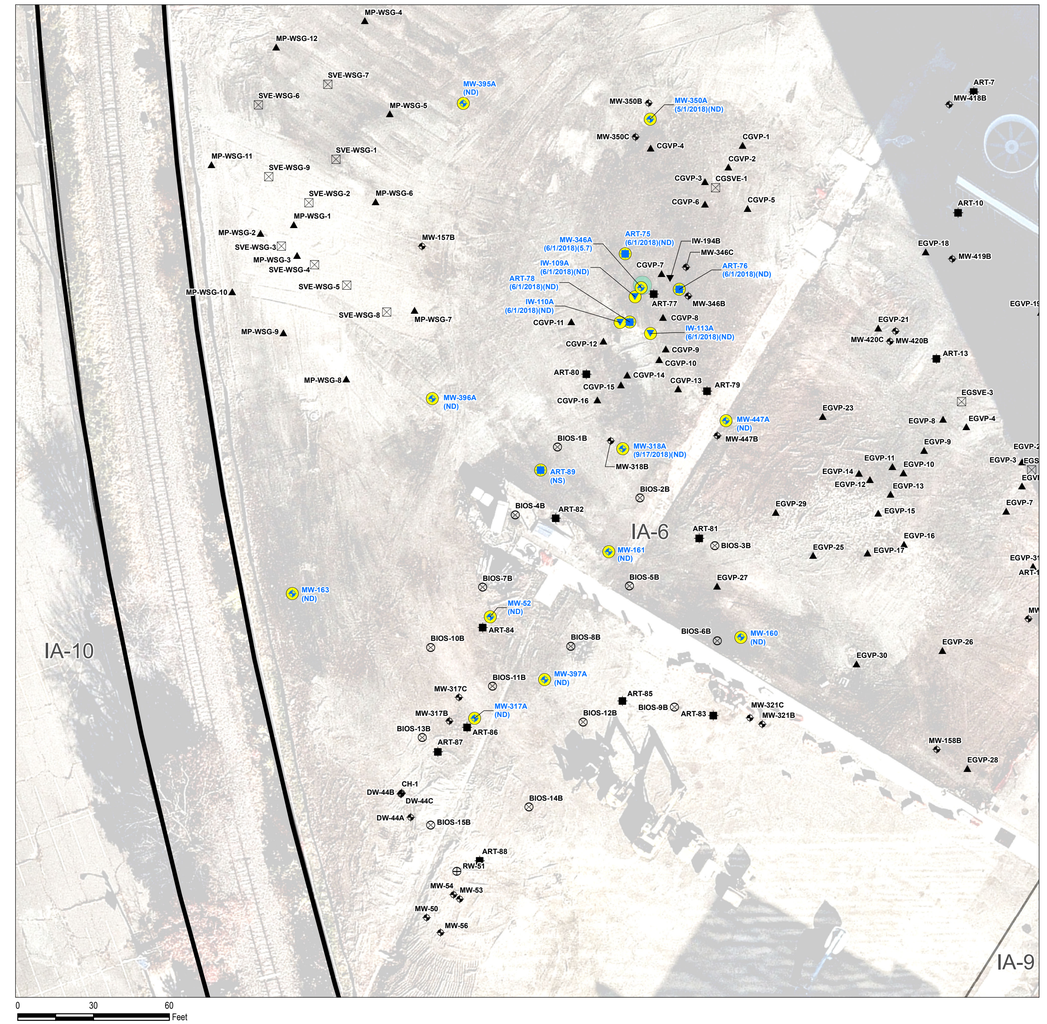
FILE NO.: IA-6_cis_Deep.mxd

Plot Date: 3/12/2019, 13:45:04 PM by LLANTIGUA -- LAYOUT: ANSI D (22"x 34")
Path: \\trcpros-gis\Environmental\Drafting Files\CGS Files\155620\IA-6\Revised_IRM Figures\Map Documents\IA-6_MapExpansion.mxd
Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Map Rotation: 0

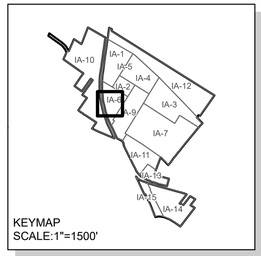
BASELINE - JULY 2017



MOST RECENT*



N



LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- SHALLOW TREATMENT ZONE

PCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10
- >10 AND ≤ 100

ABBREVIATION	GWQS (µg/L)	COMPOUND
VC	1	Vinyl Chloride

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. SHALLOW TREATMENT ZONE - ~100 - 80 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED

ART-75	Depth	VC
04/07/16	22.48	**13.5**
01/10/17	16.5	NE (0.26 J)
03/22/17	16.5	ND (<0.33)
04/13/17	16.5	ND (<0.060)
7/26/2017 - Baseline	16.5	NE (0.97 J)
10/05/17	16.5	NE (0.19 J)
01/11/18	16.5	NE (0.21 J)
03/16/18	16.5	NE (0.26 J)
04/05/18	16.5	ND (<0.060)
05/18/2018	16.5	NE (0.52 J)
05/31/18	16.5	ND (<0.30)
06/26/18	16.5	ND (<0 .17)

ART-76	Depth	VC
04/06/16	22.88	**1.7**
7/26/2017 - Baseline	23	NE (0.76 J)
05/18/2018	16.5	NE (0.10 J)
05/31/18	16.5	ND (<0.30)
06/26/18	16.5	ND (<0.17)

ART-78	Depth	VC
04/07/16	22.81	**24.3**
01/10/17	16.5	NE (0.32 J)
03/22/17	16.5	ND (<0.33)
04/12/17	16.5	NE (0.11 J)
7/26/2017 - Baseline	16.5	**2.1**
10/05/17	16.5	ND (<0.06)
01/11/18	16.5	NE (0.79 J)
02/20/18	16.5	NE (0.71 J)
03/16/18	16.5	NE (0.16 J)
04/05/18	16.5	NE (0.084 J)
05/18/2018	16.5	NE (0.64 J)
05/31/18	16.5	ND (<0.3)
06/26/18	16.5	ND (<0.17)

ART-89	Depth	VC
04/06/16	22.37	ND (<0.15)
7/27/2017 - Baseline	22.37	ND (<0.06)

IW-109A	Depth	VC
7/28/2017 - Baseline	27.5	**13**
02/20/18	27.5	**1.3 J**
05/18/18	27.5	**2.5**
05/31/18	27.5	ND (<0.3)

IW-110A	Depth	VC
7/28/2017 - Baseline	27.5	**29**
02/20/18	27.5	NE (0.68 J)
05/18/18	27.5	**1.4**
05/31/18	27.5	**3.1**
06/26/18	27.5	ND (<0.17)

IW-113A	Depth	VC
7/28/2017 - Baseline	27.5	**4.4**
05/21/18	27.5	NE (0.6 J)
06/26/18	27.5	ND (<0.17)

MW-160	Depth	VC
04/05/16	14.8	ND (<0.15)
06/13/16	14.8	ND (<0.33)
10/24/16	14.5	ND (<0.06)
01/10/17	14.5	ND (<0.06)
04/12/17	14.5	ND (<0.06)
7/26/2017 - Baseline	14.5	ND (<0.06)
10/05/17	14.5	ND (<0.06)
01/11/18	14.5	ND (<0.06)
04/06/18	14.5	ND (<0.06)

MW-161	Depth	VC
04/05/16	12	ND (<0.15)
06/14/16	12	ND (<0.33)
10/24/16	12	ND (<0.06)
1/10/2017	12	ND (<0.06)
04/12/17	12	ND (<0.06)
7/26/2017 - Baseline	12	ND (<0.06)
10/05/17	12	ND (<0.06)
01/11/18	12	ND (<0.06)
04/05/18	12	ND (<0.06)

MW-163	Depth	VC
04/06/16	14.58	ND (<0.15)
06/15/16	14.60	ND (<0.33)
10/25/16	14.60	ND (<0.06)
01/10/19	14.60	ND (<0.06)
04/12/17	14.60	ND (<0.06)
7/26/2017 - Baseline	14.60	ND (<0.06)
10/05/17	14.60	ND (<0.06)
01/11/18	14.60	ND (<0.06)
04/06/18	14.60	ND (<0.06)

MW-317A	Depth	VC
04/05/16	12.85	ND (<0.15)
06/14/16	12.85	ND (<0.33)
10/25/16	12.85	ND (<0.06)
01/10/17	12.85	ND (<0.06)
04/12/17	12.85	ND (<0.06)
7/26/2017 - Baseline	12.85	ND (<0.06)
10/05/17	12.85	ND (<0.06)
01/11/18	12.85	ND (<0.06)
04/06/18	12.85	ND (<0.06)

MW-318A	Depth	VC
04/05/16	11.74	ND (<0.15)
06/15/16	11.74	ND (<0.33)
10/24/2016	11.74	ND (<0.06)
01/09/17	11.74	ND (<0.06)
04/12/17	11.74	ND (<0.06)
7/26/2017 - Baseline	11.74	ND (<0.06)
10/05/17	11.74	ND (<0.06)
11/7/2017	10.00	ND (<0.06)
01/11/18	11.74	ND (<0.06)
01/23/18	10.00	ND (<0.06)
02/20/18	10.00	ND (<0.06)
03/16/18	11.74	NE (0.19 J)
04/05/18	11.74	ND (<0.06)
05/21/2018	10.00	ND (<0.06)
08/02/18	10.00	ND (<0.06)
08/30/18	10.00	ND (<0.17)
09/17/18	10.00	ND (<0.17)

MW-346A	Depth	VC
04/05/16	13.1	**30.2**
06/13/16	13.1	ND (<0.33)
10/25/16	13.1	**2.1**
01/10/17	13.1	**2.3**
03/22/17	13.1	**1.2**
04/12/17	13.1	NE (0.15 J)
7/26/2017 - Baseline	13.1	**16**
10/05/17	13.1	**7.9**
11/7/2017	11.0	ND (<0.06)
01/11/18	13.1	**1.2**
01/23/18	11.0	**1.9**
02/20/18	13.1	NE (0.48 J)
03/16/18	13.1	NE (0.18 J)
04/05/18	13.1	**1.4 J**
05/21/2018	10.5	NE (0.35 J)
06/26/18	10.5	**5.7**

MW-350A	Depth	VC
04/05/16	11.4	ND (<0.15)
10/24/16	11.4	ND (<0.33)
01/09/17	11.4	ND (<0.06)
04/12/17	11.4	ND (<0.06)
7/26/2017 - Baseline	11.4	ND (<0.06)
10/05/17	11.4	ND (<0.06)
01/11/18	11.4	ND (<0.06)
04/05/18	11.4	ND (<0.06)
05/21/2018	10.5	ND (<0.06)

MW-395A	Depth	VC
04/06/16	12.5	ND (<0.15)
06/14/16	12.5	ND (<0.33)
10/24/2016	12.5	ND (<0.06)
04/13/17	12.5	ND (<0.06)
7/26/2017 - Baseline	12.5	ND (<0.06)
10/05/17	12.5	ND (<0.06)
01/11/18	12.5	ND (<0.06)
04/06/18	12.5	ND (<0.06)

MW-396A	Depth	VC
04/05/16	11	ND (<0.15)
6/15/2016	11	ND (<0.33)
10/24/16	11	ND (<0.06)
01/10/17	11	ND (<0.06)
04/13/17	11	ND (<0.06)
7/26/2017 - Baseline	11	ND (<0.06)
10/05/17	11	ND (<0.06)
01/11/18	11	ND (<0.06)
04/05/18	11	ND (<0.06)

MW-397A	Depth	VC
04/05/16	16	ND (<0.15)
06/15/16	16	ND (<0.33)
10/25/16	16	ND (<0.06)
01/09/17	16	ND (<0.06)
04/12/17	16	ND (<0.06)
7/26/2017 - Baseline	16	ND (<0.06)
10/05/17	16	ND (<0.06)
01/11/18	16	ND (<0.06)
04/06/18	16	ND (<0.06)

MW-447A	Depth	VC
04/06/16	12.3	ND (<0.15)
6/15/2016	12.3	ND (<0.33)
10/24/16	12.3	ND (<0.06)
01/10/17	12.3	ND (<0.06)
04/12/17	12.3	ND (<0.06)
7/26/2017 - Baseline	12.3	ND (<0.06)
10/05/17	12.3	ND (<0.06)
11/7/2017	10.0	ND (<0.06)
01/12/18	12.3	ND (<0.06)
1/23/2018	10.0	ND (<0.06)
2/20/2018	10.0	ND (<0.06)
03/16/18	12.3	ND (<0.06)
04/05/18	12.3	ND (<0.06)

MW-52	Depth	VC
4/6/2016	25	ND (<0.15)
06/14/16	25	ND (<0.33)
10/25/16	25	ND (<0.06)
01/10/17	25	ND (<0.06)
04/12/17	25	NE (0.067 J)
7/26/2017 - Baseline	25	ND (<0.06)
10/05/17	25	ND (<0.06)
11/7/2017	25	ND (<0.06)
01/11/18	25	ND (<0.06)
01/23/18	25	ND (<0.06)
02/20/18	25	ND (<0.06)
04/05/18	25	ND (<0.06)

PROJECT: ROCHE NUTLEY SITE REMEDIATION

TITLE: **VC ISOCONCENTRATION CONTOURS - SHALLOW TREATMENT ZONE**

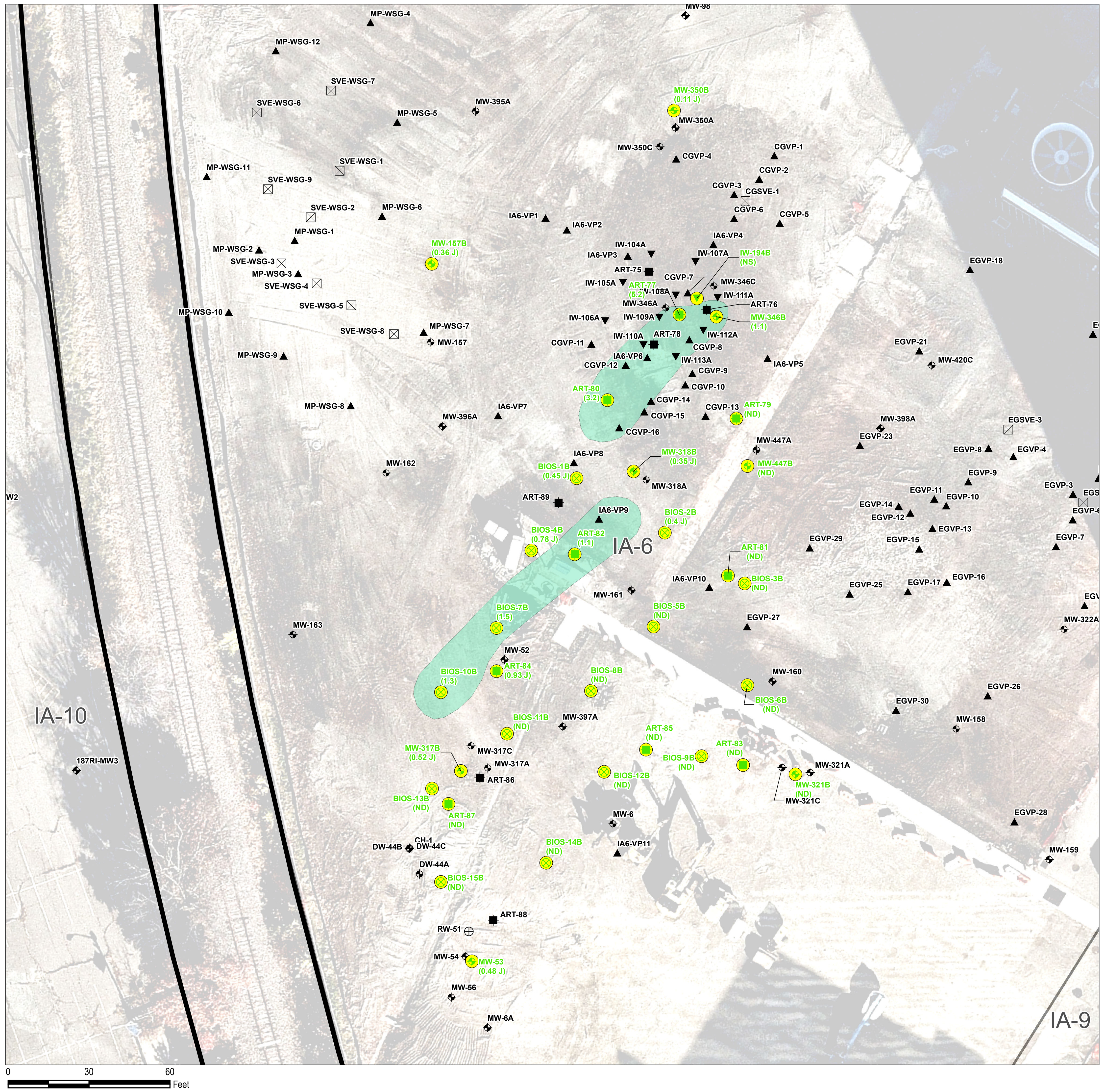
DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		
APPROVED BY:	J. BRUMMER-JECKO		**FIGURE 7A**
DATE:	MARCH 2019		

TRC

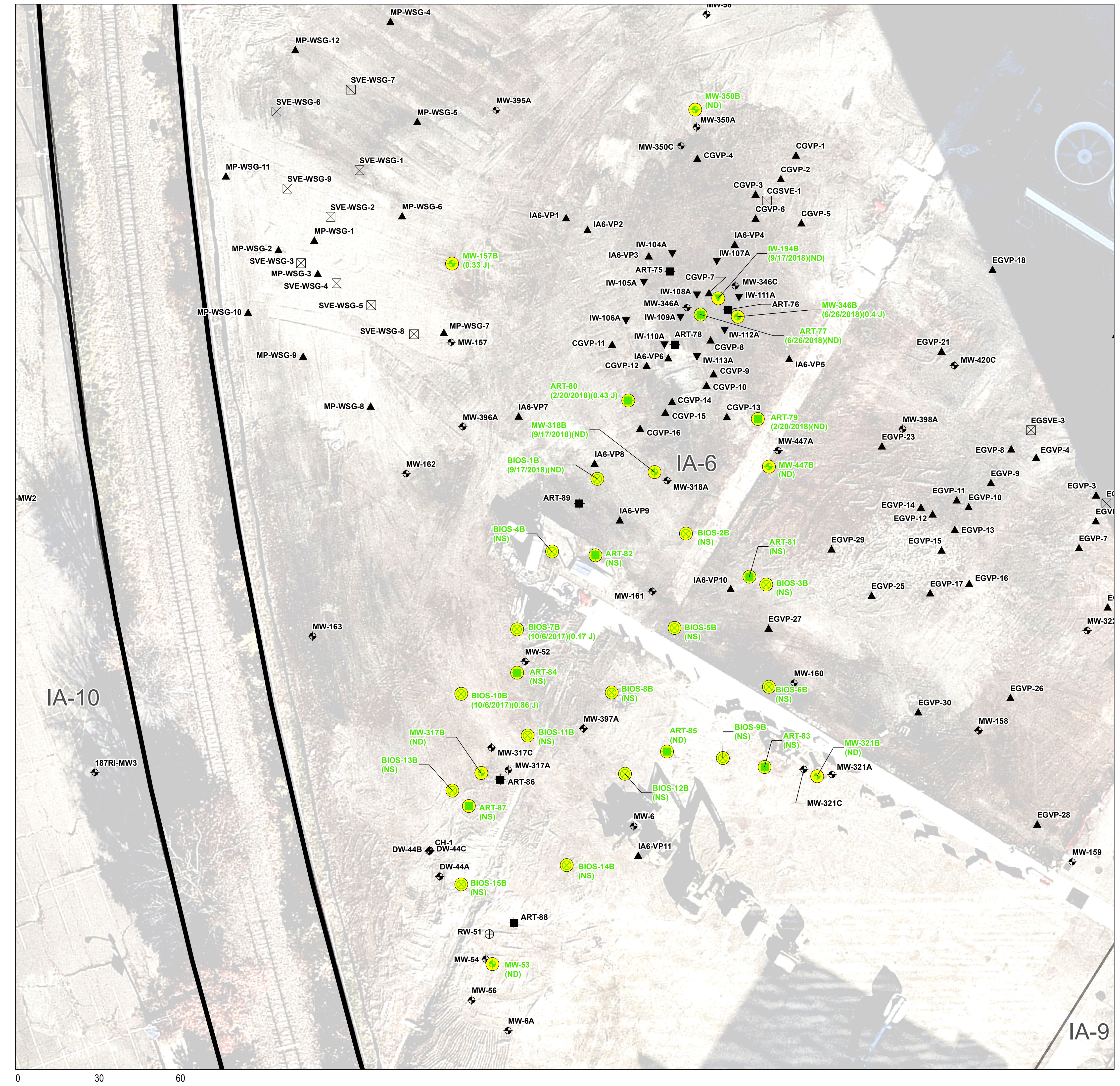
FILE NO.: IA-6_VC_Shallow.mxd

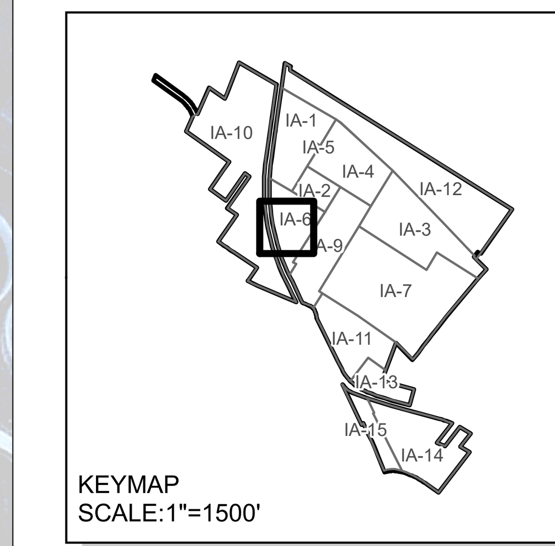
Plot Date: 3/12/2019, 10:56:33 AM by LLANTIGUA, ~LAYOUT, ANSI D (22"x 34")
Path: \\trcwpros.ipt\Environmental\Drawing Files\ACGS\Fast\053091A-B\Revised_IRM Figures\Map Documents\IA-6_Baseline.mxd
Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot-US)
Scale: 0

BASELINE - JULY 2017



MOST RECENT*





MW-53	Depth	VC
04/05/16	35	NE (0.99 J)
06/13/16	35	ND (<0.33)
10/25/16	35	ND (<0.06)
01/10/17	35	ND (<0.06)
04/12/17	35	NE (0.2 J)
7/26/2017 - Baseline	35	NE (0.48 J)
10/05/17	35	ND (<0.06)
01/12/18	35	ND (<0.06)
04/06/18	35	ND (<0.06)

MW-157B	Depth	VC
04/05/16	40	NE (0.24 J)
06/14/16	40	**1.6**
10/24/16	40	**1.1**
01/10/17	40	NA
04/13/17	40	ND (<0.060)
7/26/2017[D] - Baseline	40	NE (0.36 J)
10/05/17	40	NE (0.40 J)
01/11/18	40	ND (<0.060)
03/16/18	40	NE (0.16 J)
4/6/2018[D]	40	NE (0.33 J)

MW-317B	Depth	VC
04/05/16	40	NE (0.44 J)
06/14/16	40	ND (<0.33)
10/25/16	40	ND (<0.06)
01/10/17	40	ND (<0.06)
04/12/17	40	NE (0.11 J)
7/26/2017 - Baseline	40	NE (0.52 J)
10/05/17	40	NE (0.34 J)
11/7/2017	40	ND (<0.06)
01/11/18	40	ND (<0.06)
01/23/18	40	ND (<0.06)
02/20/18	40	ND (<0.06)
04/05/18	40	ND (<0.06)

MW-318B	Depth	VC
04/05/16	50	**2.5**
06/15/16	50	NE (0.67 J)
10/24/16	50	NE (0.094 J)
01/09/17	50	ND (<0.060)
04/12/17	50	ND (<0.060)
7/26/2017 - Baseline	50	NE (0.35 J)
10/05/17	50	ND (<0.060)
11/7/2017	50	ND (<0.060)
01/11/18	50	ND (<0.060)
01/23/18	50	ND (<0.060)
02/20/18	50	ND (<0.060)
03/16/18	50	ND (<0.060)
04/05/18	50	ND (<0.060)
05/21/2018	50	NE (0.4 J)
08/02/18	50	ND (<0.17)
08/30/18	50	ND (<0.17)
09/17/18	50	ND (<0.17)

MW-321B	Depth	VC
04/05/16	50	NE (0.21 J)
06/14/16	50	ND (<0.33)
10/24/16	50	ND (<0.06)
01/10/17	50	ND (<0.06)
04/12/17	50	NE (0.08 J)
7/26/2017 - Baseline	50	ND (<0.06)
10/5/2017	50	ND (<0.06)
01/11/18	50	ND (<0.06)
04/06/18	50	ND (<0.06)

MW-346B	Depth	VC
04/05/16	40	NE (0.91 J)
06/13/16	40	NE (0.38 J)
10/25/16	40	ND (<0.06)
01/10/17	40	NE (0.074 J)
03/22/17	40	ND (<0.33)
04/12/17	40	NE (0.14 J)
7/26/2017 - Baseline	40	**1.1**
10/05/17	40	ND (<0.06)
11/7/2017	40	ND (<0.06)
01/11/18	40	ND (<0.06)
01/23/18	40	NE (0.28 J)
02/20/18	40	NE (0.14 J)
03/16/18	40	ND (<0.06)
04/05/18	40	ND (<0.06)
05/21/18	40	NE (0.31 J)
05/31/18	40	ND (<0.06)
06/26/18	40	NE (0.4 J)

MW-350B	Depth	VC
04/05/16	40	NE (0.53 J)
06/01/16	NA	ND (<0.33)
10/24/16	40	NE (0.23 J)
01/10/17	40	NE (0.3 J)
04/12/17	40	NE (0.12 J)
7/26/2017 - Baseline	40	NE (0.11 J)
10/05/17	40	ND (<0.06)
01/11/18	40	ND (<0.06)
04/05/18	40	ND (<0.06)
05/21/18	40	ND (<0.06)

MW-447B	Depth	VC
04/06/16	40	ND (<0.15)
06/15/16	40	ND (<0.33)
10/24/16	40	ND (<0.06)
01/10/17	40	ND (<0.06)
04/13/17	40	ND (<0.06)
7/26/2017 - Baseline	40	ND (<0.06)
10/05/17	40	ND (<0.06)
11/7/2017	40	ND (<0.06)
01/11/18	40	ND (<0.06)
01/23/18	40	ND (<0.06)
02/20/18	40	ND (<0.06)
03/16/18	40	ND (<0.06)
04/05/18	40	ND (<0.06)

ART-77	Depth	VC
04/07/16	39.4	**38**
06/01/16	NA	NA
01/10/17	36.5	NE (0.25 J)
03/22/17	36.5	ND (<0.33)
04/12/17	36.5	ND (<0.060)
7/26/2017 - Baseline	36.5	**5.2**
10/05/17	36.5	NE (0.52 J)
01/11/18	36.5	ND (<0.060)
02/20/18	36.5	ND (<0.060)
03/16/18	36.5	NE (0.95 J)
04/05/18	36.5	**2.2**
05/18/18	36.5	**1.2**
05/31/18	36.5	ND (<0.060)
6/26/2018[D]	36.5	ND (< 0.17)

ART-79	Depth	VC
4/7/2016	22.74	ND (<0.15)
4/7/2016	52.08	ND (<0.15)
06/01/16	NA	NA
7/26/2017	22.75	ND (<0.06)
7/26/2017 - Baseline	49	ND (<0.06)
02/20/18	49	ND (<0.06)

ART-80	Depth	VC
04/07/16	22.76	**3.2**
04/07/16	52.06	**7.1**
06/01/16	NA	NA
7/26/2017[D]	22.75	NE (0.42 J)
7/26/2017 - Baseline	49	**3.2**
11/7/2017	31.5	ND (<0.06)
02/20/18	16.5	NE (0.43 J)

ART-81	Depth	VC
4/6/2016	22.54	ND (<0.15)
4/6/2016	51.68	ND (<0.15)
06/01/16	NA	NA
07/27/17	22.54	ND (<0.06)
7/27/2017 - Baseline	49	ND (<0.06)

ART-82	Depth	VC
04/06/16	46.44	NE (0.78 J)
06/01/16	NA	NA
7/27/2017 - Baseline	44	**1.1**

ART-83	Depth	VC
04/07/16	22.54	NE (0.23 J)
04/07/16	51.53	NE (0.26 J)
06/01/16	NA	NA
07/27/17	22.54	ND (<0.06)
7/26/2017 - Baseline	49	ND (<0.06)

ART-84	Depth	VC
04/06/16	46.8	NE (0.31 J)
06/01/16	NA	NA
7/26/2017 - Baseline	44	NE (0.93 J)

ART-85	Depth	VC
04/07/16	46.71	NE (0.29 J)
06/01/16	NA	NA
01/10/17	44	ND (<0.06)
04/12/17	44	ND (<0.06)
7/26/2017 - Baseline	44	ND (<0.06)
10/05/17	44	ND (<0.06)
01/11/18	44	ND (<0.06)
03/16/18	44	ND (<0.06)
04/05/18	44	ND (<0.06)

ART-87	Depth	VC
04/07/16	49.41	NE (0.75 J)
06/01/16	NA	NA
7/26/2017 - Baseline	46.5	ND (<0.06)

BIOS-1B	Depth	VC
04/15/16	66	**4.8**
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (0.45 J)
05/21/18	65	NE (0.64 J)
08/02/18	65	ND (<0.17)
08/30/18	65	ND (<0.17)
9/17/2018[D]	65	ND (<0.17)

BIOS-2B	Depth	VC
04/15/16	66.7	ND (<0.15)
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (0.4 J)

BIOS-3B	Depth	VC
04/15/16	66.5	ND (<0.15)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.06)

BIOS-4B	Depth	VC
04/15/16	66.9	**1.4**
06/01/16	NA	NA
7/26/2017 - Baseline	65	NE (0.78 J)

BIOS-5B	Depth	VC
4/15/2016	66	ND (<0.15)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.06)

BIOS-6B	Depth	VC
4/15/2016	67.3	ND (<0.15)
06/01/16	NA	NA
7/26/2017 - Baseline	65	ND (<0.06)

BIOS-7B	Depth	VC
04/15/16	66.4	ND (<1.5)
06/01/16	NA	NA
10/26/16	66.4	ND (<0.06)
7/28/2017 - Baseline	65	**1.5**
10/06/17	65	NE (0.17 J)

BIOS-8B	Depth	VC
04/15/16	66.2	ND (<0.15)
06/01/16	NA	NA
7/28/2017 - Baseline	65	ND (<0.06)

BIOS-9B	Depth	VC
4/15/2016	66.8	ND (<0.15)
06/01/16	NA	NA
7/28/2017 - Baseline	65	ND (<0.06)

BIOS-10B	Depth	VC
04/15/16	65.9	ND (<1.5)
06/01/16	NA	NA
7/27/2017 - Baseline	65	**1.3**
10/06/17	65	NE (0.86 J)

BIOS-11B	Depth	VC
04/15/16	65.9	ND (<1.5)
06/01/16	NA	NA
10/26/16	65.9	ND (<0.06)
7/27/2017 - Baseline	65	ND (<0.06)

BIOS-12B	Depth	VC
04/15/16	67	ND (<0.74)
06/01/16	NA	NA
7/27/2017 - Baseline	60	ND (<0.06)

BIOS-13B	Depth	VC
04/15/16	61.8	ND (<1.5)
06/01/16	NA	NA
10/26/16	61.8	ND (<0.06)
7/27/2017 - Baseline	60	ND (<0.06)

BIOS-14B	Depth	VC
04/15/16	61	**3.1**
06/01/16	NA	NA
7/27/2017 - Baseline	60	ND (<0.060)

BIOS-15B	Depth	VC
04/15/16	61.7	ND (<2.9)
06/01/16	NA	NA
10/26/16	61.7	ND (<0.060)
7/27/2017 - Baseline	60	ND (<0.060)

IW-194B	Depth	VC
05/21/18	37.5	NE (0.64 J)
05/31/18	37.5	ND (<0.06)
06/26/18	37.5	ND (<0.86)
08/02/18	40	ND (<0.17)
08/30/18	40	ND (<0.17)
09/17/18	40	ND (<0.17)

LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- INTERMEDIATE TREATMENT ZONE

PCE ISOCONCENTRATION CONTOURS (ug/L)

- >1 AND ≤ 10

ABBREVIATION	GWQS (µg/L)	COMPOUND
VC	1	Vinyl Chloride

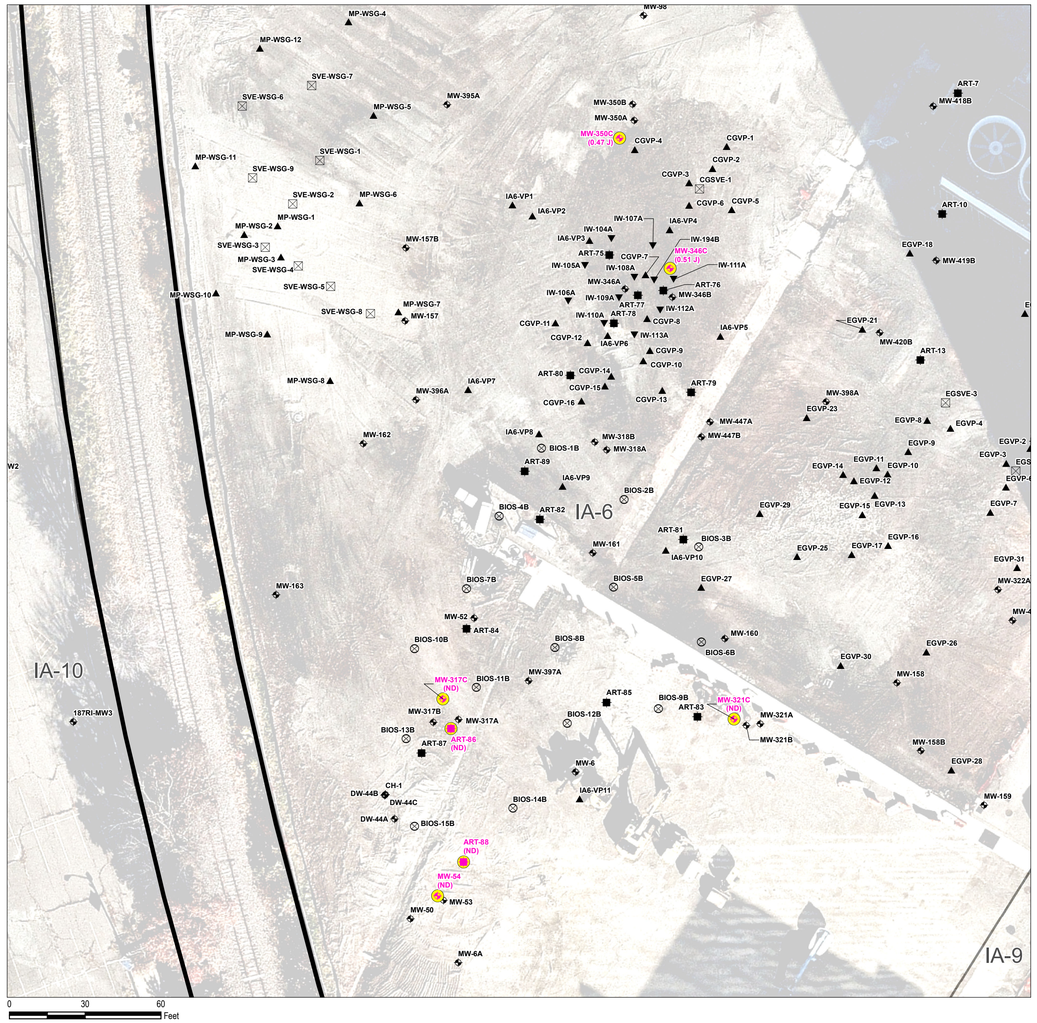
NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. INTERMEDIATE TREATMENT ZONE - ~80 - 50 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NS - NOT SAMPLED
12. D - DUPLICATE SAMPLE
13. NA - NOT ANALYZED

PROJECT:	ROCHE NUTLEY SITE REMEDIATION		
TITLE:	VC ISOCONCENTRATION CONTOURS - INTERMEDIATE TREATMENT ZONE		
DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY	FIGURE 7B	
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		
FILE NO.:	IA-6_VC_Intermediate.mxd		

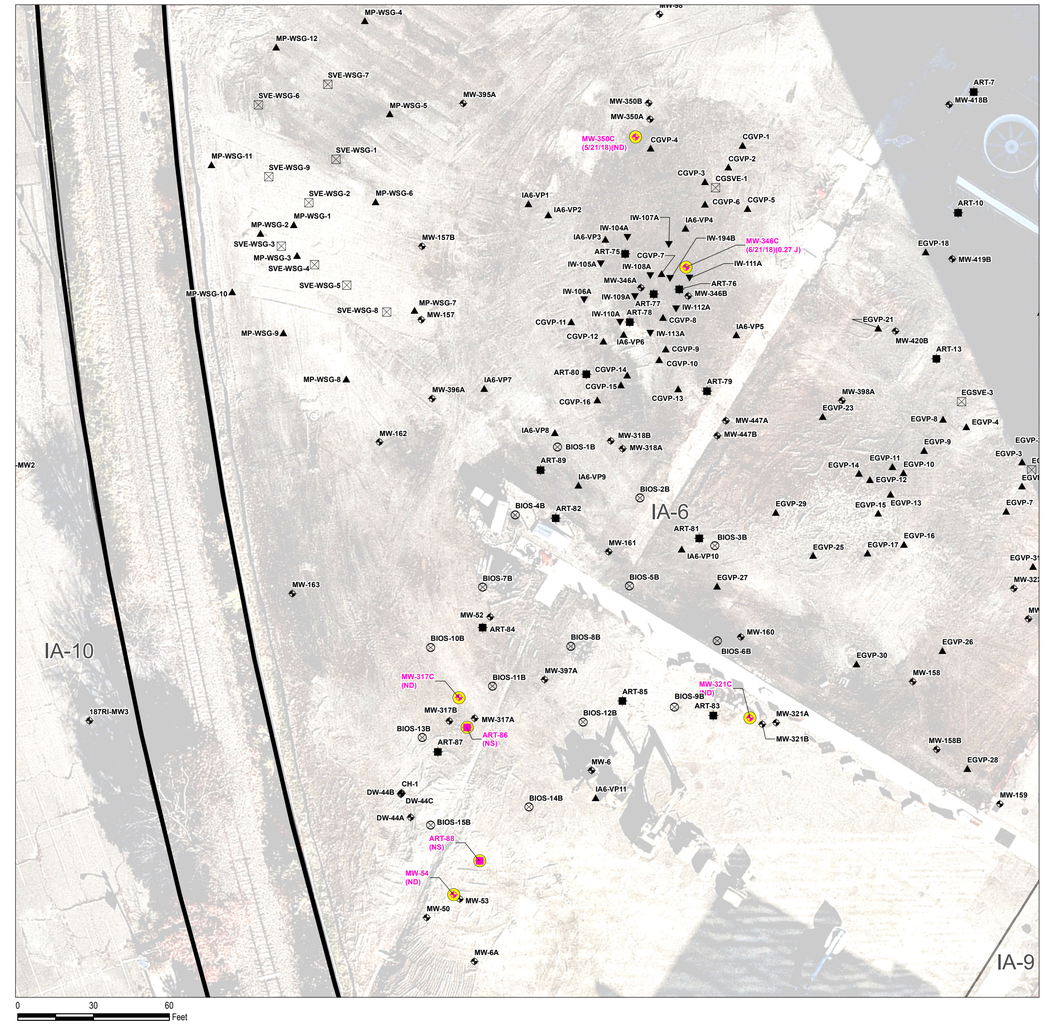
TRC

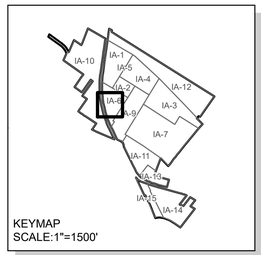
Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)

BASELINE - JULY 2017



MOST RECENT*





LEGEND

- PROPERTY BOUNDARY
- INVESTIGATION AREAS (IA)
- MONITORING WELL LOCATION
- INJECTION LOCATION
- IN-WELL STRIPPING WELL LOCATION
- VAPOR POINT
- BIOSPARGE LOCATION
- EXTRACTION LOCATION
- SVE LOCATION
- WELL USED FOR CONTOURING

WELL SYMBOL COLOR LEGEND

- DEEP TREATMENT ZONE

ABBREVIATION	GWQS (µg/L)	COMPOUND
VC	1	Vinyl Chloride

NOTES:
1. µg/L - MICROGRAM PER LITER
2. BASELINE - PRE-INJECTION SAMPLING EVENT FOR THE ACTIVATED PERSULFATE EFFORT
3. GWQS - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) GROUNDWATER QUALITY STANDARD
4. DEEP TREATMENT ZONE - ~50 - 0 FEET ABOVE MEAN SEA LEVEL
5. DEPTH – FEET BELOW GROUND SURFACE
6. NE - NO EXCEEDANCE
7. BOLD VALUE IN DATA TABLE INDICATES CONCENTRATION ABOVE GWQS
8. ND - NOT DETECTED
9. *MOST RECENT DATA IS APRIL 2018; EXCEPTIONS ARE SHOWN WITH THE DATE NEXT TO THE RESULT
10. J - ESTIMATED VALUE BELOW SAMPLE REPORTING LIMIT
11. NA - NOT ANALYZED

MW-54	Depth	VC
4/5/2016	60	ND (<0.15)
06/13/16	60	ND (<0.33)
10/25/16	60	ND (<0.06)
01/10/17	60	ND (<0.06)
04/12/17	60	ND (<0.06)
7/26/2017 - Baseline	60	ND (<0.06)
10/06/17	60	ND (<0.06)
01/12/18	60	ND (<0.06)
04/06/18	60	ND (<0.06)

MW-317C	Depth	VC
04/05/16	65	**1.1**
06/14/16	65	NE (0.96 J)
10/25/16	65	**1.1**
01/10/17	65	ND (<0.06)
04/12/17	65	NE (0.12 J)
7/26/2017 - Baseline	65	ND (<0.06)
10/05/17	65	ND (<0.06)
11/7/2017	65	ND (<0.06)
01/11/18	65	ND (<0.06)
01/23/18	65	ND (<0.06)
02/20/18	65	ND (<0.06)
04/05/18	65	ND (<0.06)

MW-321C	Depth	VC
04/06/16	65	ND (<0.15)
06/13/16	65	ND (<0.33)
10/24/16	65	ND (<0.06)
01/10/17	65	NE (0.11 J)
04/12/17	65	ND (<0.06)
7/26/2017 - Baseline	65	ND (<0.06)
10/05/17	65	ND (<0.06)
01/11/18	65	ND (<0.06)
04/06/18	65	ND (<0.06)

MW-346C	Depth	VC
04/06/16	70	NE (0.89 J)
06/13/16	70	ND (<0.33)
10/25/16	70	NE (0.33 J)
01/09/17	70	NE (0.31 J)
04/12/17	70	NE (0.067 J)
7/26/2017 - Baseline	70	NE (0.51 J)
10/05/17	70	NE (0.54 J)
11/7/2017	70	ND (<0.06)
01/11/18	70	ND (<0.06)
01/23/18	70	NE (0.29 J)
02/20/18	70	NE (0.17 J)
04/05/18	70	NE (0.34 J)
05/21/18	70	ND (<0.06)
06/26/18	70	NE (0.27 J)

MW-350C	Depth	VC
4/5/2016	70	NE (0.44 J)
06/01/16	NA	NA
10/24/16	70	NE (0.72 J)
01/10/17	70	NE (0.76 J)
04/12/17	70	NE (0.27 J)
7/26/2017 - Baseline	70	NE (0.47 J)
10/05/17	70	NE (0.45)
01/11/18	70	NE (0.35 J)
04/05/18	70	NE (0.47 J)
05/21/2018	70	ND (<0.06)

ART-86	Depth	VC
04/07/16	64.76	**1.3**
06/01/16	NA	NA
7/26/2017 - Baseline	61.5	ND (<0.06)

ART-88	Depth	VC
04/07/16	61.63	NE (0.64 J)
06/01/16	NA	NA
7/26/2017 - Baseline	59	ND (<0.06)

PROJECT: ROCHE NUTLEY SITE REMEDIATION

TITLE: VC ISOCONCENTRATION CONTOURS - DEEP TREATMENT ZONE

DRAWN BY:	M. GIAMBATTISTA	PROJ. NO.:	198233
CHECKED BY:	S. CROSBY		FIGURE 7C
APPROVED BY:	J. BRUMMER-JECKO		
DATE:	MARCH 2019		

TRC

FILE NO.: IA-6_VC_Deep.mxd

Plot Date: 3/12/2019, 11:11:41 AM by LLANTIGUA -- LAYOUT: ANSI D (22"x 34") Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet (Foot US)
Path: \\trcwpros.ftp\Environmental\Drafting Files\ACOS Fleet\198233\4-6\Revised_IRM Figures\Map Documents\IA-6_ Map Rotation: 0

TABLES

TABLE 1

WELLS SHUTDOWN IN PREPARATION FOR APS INJECTION

Hoffmann-La Roche Inc. – Nutley, New Jersey

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Table 2
APS Amendment Injection Summary
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

INDIVIDUAL INJECTION HEADER MONITORING														
WELLS	**BATCH ID**	**INJECTATE**	**INJECTION HEADER**	**START DATE**	**START TIME**	**FLOW TOTALIZER (Start) (gals)**	**AVG. FLOW RATE (gpm)**	**AVG. INJECTION PRESSURE (psi)**	**END TIME**	**FLOW TOTALIZER (End) (gals)**	**TOTAL VOLUME INJECTED (gals)**	**DESIGN GALLONS PER INJECTION WELL**		
Batch #1														
IW-105A, IW-108A, IW-109A, IW-112A	1A	Persulfate + Buffer	1	12/1/2017	11:45	0	1.477	30	12/4/2017 @ 13:52	2196.93	2196.93	Target	**550**	Gallons per Well
													2200	Gallons Total
IW-105A, IW-108A, IW-109A, IW-112A	1B	Hydrogen Peroxide	1	12/5/2017	09:00	0	0.969	30	12/13/2017 @14:30	4709.38	4709.38	Target	**983**	Gallons per Well
													3931	Gallons Total
IW106A, IW-110A, IW-113A	1C	Persulfate + Buffer	2	12/1/2017	11:45	0	1.622	30	12/4/2017 @13:52	1649.96	1649.96	Target	**550**	Gallons per Well
													1650	Gallons Total
IW106A, IW-110A, IW-113A	1D	Hydrogen Peroxide	2	12/5/2017	09:00	0	0.834	30	12/13/2017 @14:30	2167.82	2167.82	Target	**983**	Gallons per Well
													2949	Gallons Total
Batch #2														
IW-105A, IW-108A, IW-109A, IW-112A	2A	Persulfate + Buffer	1	12/14/2017	11:45	0	1.484	30	12/18/2017 @14:00	2216.75	2216.75	Target	**550**	Gallons per Well
													2200	Gallons Total
IW-105A, IW-108A, IW-109A, IW-112A	2B	Hydrogen Peroxide	1	12/18/2017	14:30	0	1.270	30	12/26/2017 @10:50	4031.37	4031.37	Target	**983**	Gallons per Well
													3931	Gallons Total
IW106A, IW-110A, IW-113A	2C	Persulfate + Buffer	2	12/14/2017	11:45	0	1.624	30	12/18/2017 @14:30	1784.78	1784.78	Target	**550**	Gallons per Well
													1650	Gallons Total
IW106A, IW-110A, IW-113A	2D	Hydrogen Peroxide	2	12/18/2017	14:30	0	1.228	30	12/26/2017 @10:50	2850.19	2850.19	Target	**983**	Gallons per Well
													2949	Gallons Total

TABLE 3

EISB AMENDMENT INJECTION SUMMARY WITH PERMITTED TOTALS

Hoffmann-La Roche Inc. – Nutley, New Jersey

Inserted in text

Table 4
APS-ISCO Groundwater Monitoring Plan
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Well Designation	Screen Interval	Approximate Sample Depths	Preinjection (Baseline) [1] [2] and Post- Injection	During Injection
MW-52	20 to 30	25	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	--
IW-104A[4]	25 to 30	27.5	GWQP, Sulfate	GWQP, Oxidant
IW-107A[4]	30 to 35	32.5	GWQP, Sulfate	GWQP, Oxidant
IW-111A[4]	29 to 34	31.5	GWQP, Sulfate	GWQP, Oxidant
MW-317B	35 to 45	40	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	--
MW-317C	60 to 70	65	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	--
MW-318A	5 to 15	10	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	GWQP, Oxidant
MW-318B	35 to 65	50	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	GWQP, Oxidant
MW-346A	5 to 16	11	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	GWQP, Oxidant
MW-346B	35 to 45	40	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	GWQP, Oxidant
MW-346C	60 to 80	70	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	GWQP, Oxidant
MW-447A	5 to 15	10	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	GWQP, Oxidant
MW-447B	35 to 45	40	GWQP, VOCs, Sulfate, Sodium, Chloride, Metals, TOC	GWQP, Oxidant
ART-75	4 to 29	16.5	GWQP, Sulfate	GWQP, Oxidant
ART-76	4 to 29	16.5	GWQP, Sulfate	GWQP, Oxidant
ART-77	29 to 44	36.5	GWQP, Sulfate	GWQP, Oxidant
ART-78	4 to 29	16.5	GWQP, Sulfate	GWQP, Oxidant
ART-79[3]	4 to 29 34 to 64	31.5	GWQP, Sulfate	GWQP, Oxidant
ART-80[3]	4 to 29 34 to 64	31.5	GWQP, Sulfate	GWQP, Oxidant

Notes:

1. GWQP = pH, Temperature, dissolved oxygen (DO), Oxidation-Reduction Potential (Orp), and Conductivity
2. Metals: arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, and hexavalent chromium. Dissolved and total.
3. ART-79 and ART-80 have screens from 4 to 29 ft and 34 to 64 ft bgs. Sample at midpoint between these screens.
4. Injection wells may need sampling by peristaltic pump
5. APS-ISCO = Activated Persulfate - In Situ Chemical Oxidation
6. VOCs = Volatile organic compounds
7. TOC = Total organic carbon

	Part of Compliance Monitoring for DGW-PBR
	Part of Performance Sampling and Monitoring Activities

Table 5
EISB Groundwater Monitoring Plan
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Well Designation	Screen Interval	Approximate Sample Depth (feet below grade)	Baseline[(1)(2)(3)(4)(6)(7)(8)]	1 week after Injection	1 month after Injection	3 Month Sampling (Low Flow Method[1])	6 Month Sampling (Low Flow Method)
Injection Wells							
ART-75	4-29	16.5	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
ART-76	4-29	16.5	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
IW-109A	25-30	27.5	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
IW-110A	25-30	27.5	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
IW-194B	30-45	37.5	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
MW-346B	35-45	40	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
Extraction Wells							
ART-78	4-29	16.5	VOCs, TOC, Remediation Analytes, Dissolved Gases, Microbes, VFAs, GWQP	VOCs, TOC, GWQP	VOCs, TOC, Remediation Analytes, Dissolved Gases, Microbes, VFAs, GWQP	VOCs, TOC, Remediation Analytes, Dissolved Gases, Microbes, VFAs, GWQP	VOCs, TOC, Remediation Analytes, Dissolved Gases, Microbes, VFAs, GWQP
ART-77	29-44	36.5	VOCs, TOC, Remediation Analytes, Dissolved Gases, Microbes, VFAs, GWQP	VOCs, TOC, GWQP	VOCs, TOC, Remediation Analytes, Dissolved Gases, Microbes, VFAs, GWQP	VOCs, TOC, Remediation Analytes, Dissolved Gases, Microbes, VFAs, GWQP	VOCs, TOC, Remediation Analytes, Dissolved Gases, Microbes, VFAs, GWQP
Contingent Injection/Extraction Wells[5]							
IW-105A	25-30	27.5	VOCs, TOC, GWQP	--	--	--	VOCs, TOC, GWQP
IW-106A	29-34	31.5	VOCs, TOC, GWQP	--	--	--	VOCs, TOC, GWQP
IW-113A	25-30	27.5	VOCs, TOC, GWQP	--	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
Treatment Area Monitoring Wells							
MW-346A	5-16	10.5	VOCs, TOC, GWQP	--	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
MW-346C	60-80	70	VOCs, TOC, GWQP	--	VOCs, TOC, GWQP	VOCs, TOC, GWQP	VOCs, TOC, GWQP
Perimeter Monitoring Wells							
MW-350A	5-16	10.5	VOCs, TOC, GWQP	--	--	--	VOCs, TOC, GWQP
MW-350B	35-45	40	VOCs, TOC, GWQP	--	--	--	VOCs, TOC, GWQP
MW-350C	60-80	70	VOCs, TOC, GWQP	--	--	--	VOCs, TOC, GWQP
MW-318A	5-15	10	VOCs, TOC, GWQP	--	--	--	VOCs, TOC, GWQP
MW-318B	35-65	50	VOCs, TOC, GWQP	--	--	--	VOCs, TOC, GWQP
BIOS-1B	60-70	65	VOCs, TOC, GWQP	--	--	--	VOCs, TOC, GWQP

Notes:

[1] Dissolved Gases: Dissolved Methane, Ethane, Ethene, Carbon Dioxide and VFAs

[2]Microbes: DHC (Dehalococcoides) and DHC functional genes (bvc, tce, vcr)

[3]GWQP: pH, Temperature, Dissolved Oxygen (DO), Specific Conductivity (SC), Oxidation-Reduction Potential (ORP), Salinity, and Turbidity.

[4]Remediation Analytes: Chloride, Dissolved Iron, Dissolved Manganese, Sulfate, Nitrate, Orthophosphate, Dissolved Sodium

[5]Contingent injection and extraction wells will be used as monitoring wells if they are not needed for injection/extraction

[6] VOCs = Volatile organic compounds

[7] TOC = Total organic carbon

[8] VFAs = Volatile fatty acids

Table 6
IA-6 Quarterly Groundwater Monitoring Plan
Q3 2017 (July 26 - 28, 2017)
Hoffmann-La Roche, Inc. - Nutley, New Jersey

Well Designation	Proposed Field ID	Anticipated Sample Depth	Sample Parameters[1]	Inner Casing Diameter (in)	Total Depth (ft bgs)	Open Interval Depth (ft bgs)	QA/QC	Sample Priority Group
ART-75	ART-75_LF16.5	16.5	VOCs +10, 1,4-Dioxane (8260SIM)	6	30	4 - 29	TBD	1
MW-157B	MW-157B_LF40.0	40.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	4	45.0	35 - 45	TBD	1
MW-160	MW-160_LF14.5	14.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	19.8	9.8 - 19.8	TBD	1
MW-161	MW-161_LF12.0	12.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	17.0	7 - 17	TBD	1
MW-163	MW-163_LF14.6	14.6	VOCs +10, 1,4-Dioxane (8260SIM)	2	19.8	4.8 - 19.8	TBD	1
MW-317A	MW-317A_LF12.85	12.85	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	15.0	5 - 15	TBD	1
IW-111A	IW-111A_LF31.5	31.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	35.0	29 - 34	TBD	1
IW-112A	IW-112A_LF27.5	27.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	31.5	25 - 30	TBD	1
IW-113A	IW-113A_LF27.5	27.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	31.5	25 - 30	TBD	1
IW-105A	IW-105A_LF27.5	27.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	31.5	25 - 30	TBD	1
IW-106A	IW-106A_LF31.5	31.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	35.0	29 - 34	TBD	1
IW-107A	IW-107A_LF32.5	32.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	36.5	30 - 35	TBD	1
IW-108A	IW-108A_LF31.5	31.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	35.0	29 - 34	TBD	1
IW-109A	IW-109A_LF27.5	27.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	31.5	25 - 30	TBD	1
IW-110A	IW-110A_LF27.5	27.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	31.5	25 - 30	TBD	1
BIOS-5B	BIOS-5B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-6B	BIOS-6B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-7B	BIOS-7B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-8B	BIOS-8B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-9B	BIOS-9B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
IW-104A	IW-104A_LF27.5	27.5	VOCs +10, 1,4-Dioxane (8260SIM)	2	31.5	25 - 30	TBD	1
BIOS-14B	BIOS-14B_LF60.0	60.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	65.0	55 - 65	TBD	1
BIOS-15B	BIOS-15B_LF60.0	60.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	65.0	55 - 65	TBD	1
BIOS-1B	BIOS-1B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-2B	BIOS-2B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-3B	BIOS-3B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-4B	BIOS-4B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
ART-88	ART-88_LF59.0	59.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	75.5	44 - 74	TBD	1
ART-89	ART-89_LF22.37	22.37	VOCs +10, 1,4-Dioxane (8260SIM)	6	30	4 - 29	TBD	1
BIOS-10B	BIOS-10B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-11B	BIOS-11B_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-12B	BIOS-12B_LF60.0	60.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.0	60 - 70	TBD	1
BIOS-13B	BIOS-13B_LF60.0	60.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	65.0	55 - 65	TBD	1
ART-83	ART-83_LF22.54	22.54	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	4 - 29	TBD	1
ART-83	ART-83_LF49.0	49.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	4 - 29	TBD	1
ART-84	ART-84_LF44.0	44.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	24 - 64	TBD	1
ART-85	ART-85_LF44.0	44.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	24 - 64	TBD	1
ART-86	ART-86_LF61.5	61.5	VOCs +10, 1,4-Dioxane (8260SIM)	6	75.5	49 - 74	TBD	1
ART-87	ART-87_LF46.5	46.5	VOCs +10, 1,4-Dioxane (8260SIM)	6	60.5	34 - 59	TBD	1
ART-79	ART-79_LF22.75	22.75	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	4 - 29	TBD	1
ART-80	ART-80_LF22.75	22.75	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	4 - 29	TBD	1
ART-80	ART-80_LF49.0	49.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	4 - 29	TBD	1
ART-81	ART-81_LF22.54	22.54	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	4 - 29	TBD	1
ART-81	ART-81_LF49.0	49.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	4 - 29	TBD	1
ART-82	ART-82_LF44.0	44.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	24 - 64	TBD	1
MW-53	MW-53_LF35.0	35.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	45.0	25 - 45	TBD	1
MW-54	MW-54_LF60.0	60.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	70.0	50 - 70	TBD	1
ART-76	ART-76_LF23.0	23.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	30	4 - 29	TBD	1
ART-77	ART-77_LF36.5	36.5	VOCs +10, 1,4-Dioxane (8260SIM)	6	45.5	29 - 44	TBD	1
ART-78	ART-78_LF16.5	16.5	VOCs +10, 1,4-Dioxane (8260SIM)	6	30	4 - 29	TBD	1
ART-79	ART-79_LF49.0	49.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	65.5	4 - 29	TBD	1
MW-395A	MW-395A_LF12.5	12.5	VOCs +10, 1,4-Dioxane (8260SIM)	4	18.5	5 - 18.5	TBD	1
MW-396A	MW-396A_LF11.0	11.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	4	15.0	5 - 15	TBD	1
MW-397A	MW-397A_LF16.0	16.0	VOCs +10, 1,4-Dioxane (8260SIM)	4	20.0	5 - 20	TBD	1

Table 6
IA-6 Quarterly Groundwater Monitoring Plan
Q3 2017 (July 26 - 28, 2017)
Hoffmann-La Roche, Inc. - Nutley, New Jersey

Well Designation	Proposed Field ID	Anticipated Sample Depth	Sample Parameters[1]	Inner Casing Diameter (in)	Total Depth (ft bgs)	Open Interval Depth (ft bgs)	QA/QC	Sample Priority Group
MW-447A	MW-447A_LF12.3	12.3	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	15.5	5 - 15	TBD	1
MW-447B	MW-447B_LF40.0	40.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45.5	35 - 45	TBD	1
MW-52	MW-52_LF25.0	25.0	VOCs +10, 1,4-Dioxane (8260SIM)	6	30.0	20 - 30	TBD	1
MW-346A	MW-346A_LF13.1	13.1	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	16.0	5 - 16	TBD	1
MW-346B	MW-346B_LF40.0	40.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45.0	35 - 45	TBD	1
MW-346C	MW-346C_LF70.0	70.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	80.0	60 - 80	TBD	1
MW-350A	MW-350A_LF11.4	11.4	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	16.0	5 - 16	TBD	1
MW-350B	MW-350B_LF40.0	40.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45.0	35 - 45	TBD	1
MW-350C	MW-350C_LF70.0	70.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	80.0	60 - 80	TBD	1
MW-317B	MW-317B_LF40.0	40.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45.0	35 - 45	TBD	1
MW-317C	MW-317C_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	70.0	60 - 70	TBD	1
MW-318A	MW-318A_LF11.74	11.74	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	15.0	5 - 15	TBD	1
MW-318B	MW-318B_LF50.0	50.0	VOCs +10, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	65.5	35 - 65	TBD	1
MW-321B	MW-321B_LF50.0	50.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	65.5	35 - 65	TBD	1
MW-321C	MW-321C_LF65.0	65.0	VOCs +10, 1,4-Dioxane (8260SIM)	2	70.5	60 - 70	TBD	1

Table 6
IA-6 Quarterly Groundwater Monitoring Plan
Q4 2017 (October 5 - 6, 2017)
Hoffmann-La Roche, Inc. - Nutley, New Jersey

Well Designation	Proposed Field ID	Anticipated Sample Depth	Sample Parameters	Inner Casing Diameter (in)	Total Depth (ft bgs)	Open Interval Depth (ft bgs)	QA/QC	Sample Priority Group
ART-75	ART-75_LF16.5	16.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	30	4 - 29	TBD	1
ART-77	ART-77_LF36.5	36.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	45.5	29 - 44	TBD	1
ART-78	ART-78_LF16.5	16.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	30	4 - 29	TBD	1
ART-85	ART-85_LF44.0	44.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	6	65.5	24 - 64	TBD	1
MW-157B	MW-157B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	4	45	35 - 45	TBD	1
MW-160	MW-160_LF14.5	14.5	VOCs +15, 1,4-Dioxane (8260SIM)	2	19.8	9.8 - 19.8	TBD	1
MW-161	MW-161_LF12.0	12.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	17	7 - 17	TBD	1
MW-163	MW-163_LF14.6	14.6	VOCs +15, 1,4-Dioxane (8260SIM)	2	19.8	4.8 - 19.8	TBD	1
MW-317A	MW-317A_LF12.85	12.85	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	15	5 - 15	TBD	1
MW-317B	MW-317B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45	35 - 45	TBD	1
MW-317C	MW-317C_LF65.0	65.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	70	60 - 70	TBD	1
MW-318A	MW-318A_LF11.74	11.74	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	15	5 - 15	TBD	1
MW-318B	MW-318B_LF50.0	50.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	65.5	35 - 65	TBD	1
MW-321B	MW-321B_LF50.0	50.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	65.5	35 - 65	TBD	1
MW-321C	MW-321C_LF65.0	65.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	70.5	60 - 70	TBD	1
MW-346A	MW-346A_LF13.1	13.1	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	16	5 - 16	TBD	1
MW-346B	MW-346B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45	35 - 45	TBD	1
MW-346C	MW-346C_LF70.0	70.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	80	60 - 80	TBD	1
MW-350A	MW-350A_LF11.4	11.4	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	16	5 - 16	TBD	1
MW-350B	MW-350B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45	35 - 45	TBD	1
MW-350C	MW-350C_LF70.0	70.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	80	60 - 80	TBD	1
MW-395A	MW-395A_LF12.5	12.5	VOCs +15, 1,4-Dioxane (8260SIM)	4	18.5	5 - 18.5	TBD	1
MW-396A	MW-396A_LF11.0	11.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	4	15	5 - 15	TBD	1
MW-397A	MW-397A_LF16.0	16.0	VOCs +15, 1,4-Dioxane (8260SIM)	4	20	5 - 20	TBD	1
MW-447A	MW-447A_LF12.3	12.3	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	15.5	5 - 15	TBD	1
MW-447B	MW-447B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45.5	35 - 45	TBD	1
MW-52	MW-52_LF25.0	25.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	30	20 - 30	TBD	1
MW-53	MW-53_LF35.0	35.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	45	25 - 45	TBD	1
MW-54	MW-54_LF60.0	60.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	70	50 - 70	TBD	1
BIOS-7B	BIOS-7B_LF65.0	65.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	70	60 - 70	TBD	1
BIOS-10B	BIOS-10B_LF65.0	65.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	70	60 - 70	TBD	1

Table 6

IA-6 Quarterly Groundwater Monitoring Plan

Q1 2018 (January 11 - 12, 2018)

Hoffmann-La Roche, Inc. - Nutley, New Jersey

Well Designation	Proposed Field ID	Anticipated Sample Depth	Sample Parameters	Inner Casing Diameter (in)	Total Depth (ft bgs)	Open Interval Depth (ft bgs)	QA/QC
ART-75	ART-75_LF16.5	16.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	30	4 - 29	TBD
ART-77	ART-77_LF36.5	36.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	45.5	29 - 44	TBD
ART-78	ART-78_LF16.5	16.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	30	4 - 29	TBD
ART-85	ART-85_LF44.0	44.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	65.5	24 - 64	TBD
MW-157B	MW-157B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM)	4	45	35 - 45	TBD
MW-160	MW-160_LF14.5	14.5	VOCs +15, 1,4-Dioxane (8260SIM)	2	19.8	9.8 - 19.8	TBD
MW-161	MW-161_LF12.0	12.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	17	7 - 17	TBD
MW-163	MW-163_LF14.6	14.6	VOCs +15, 1,4-Dioxane (8260SIM)	2	19.8	4.8 - 19.8	TBD
MW-317A	MW-317A_LF12.85	12.85	VOCs +15, 1,4-Dioxane (8260SIM)	2	15	5 - 15	TBD
MW-317B	MW-317B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	45	35 - 45	TBD
MW-317C	MW-317C_LF65.0	65.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	70	60 - 70	TBD
MW-318A	MW-318A_LF11.74	11.74	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	15	5 - 15	TBD
MW-318B	MW-318B_LF50.0	50.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	65.5	35 - 65	TBD
MW-320C	MW-320C_LF61.0	61.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	70	60 - 70	TBD
MW-321B	MW-321B_LF50.0	50.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	65.5	35 - 65	TBD
MW-321C	MW-321C_LF65.0	65.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	70.5	60 - 70	TBD
MW-322A	MW-322A_LF17.0	17.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	27	7 - 27	TBD
MW-346A	MW-346A_LF13.1	13.1	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	16	5 - 16	TBD
MW-346B	MW-346B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	45	35 - 45	TBD
MW-346C	MW-346C_LF70.0	70.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	80	60 - 80	TBD
MW-350A	MW-350A_LF11.4	11.4	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	16	5 - 16	TBD
MW-350B	MW-350B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45	35 - 45	TBD
MW-350C	MW-350C_LF70.0	70.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	80	60 - 80	TBD
MW-395A	MW-395A_LF12.5	12.5	VOCs +15, 1,4-Dioxane (8260SIM)	4	18.5	5 - 18.5	TBD
MW-396A	MW-396A_LF11.0	11.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	4	15	5 - 15	TBD
MW-397A	MW-397A_LF16.0	16.0	VOCs +15, 1,4-Dioxane (8260SIM)	4	20	5 - 20	TBD
MW-447A	MW-447A_LF12.3	12.3	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	15.5	5 - 15	TBD

Table 6

IA-6 Quarterly Groundwater Monitoring Plan

Q1 2018 (January 11 - 12, 2018)

Hoffmann-La Roche, Inc. - Nutley, New Jersey

MW-447B	MW-447B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	45.5	35 - 45	TBD
MW-52	MW-52_LF25.0	25.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	6	30	20 - 30	TBD
MW-53	MW-53_LF35.0	35.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	45	25 - 45	TBD
MW-54	MW-54_LF60.0	60.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	70	50 - 70	TBD

Table 6
IA-6 Quarterly Groundwater Monitoring Plan
Q2 2018 (April 5 - 6, 2018)
Hoffmann-La Roche, Inc. - Nutley, New Jersey

Well Designation	Proposed Field ID	Anticipated Sample Depth	Sample Parameters	Inner Casing Diameter (in)	Total Depth (ft bgs)	Open Interval Depth (ft bgs)	QA/QC	Sample Priority Group
ART-75	ART-75_LF16.5	16.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	30.0	4.0 - 29.0	TBD	1
ART-77	ART-77_LF36.5	36.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	45.5	29.0 - 44.0	TBD	1
ART-78	ART-78_LF16.5	16.5	VOCs +15, 1,4-Dioxane (8260SIM)	6	30.0	4.0 - 29.0	TBD	1
ART-85	ART-85_LF44.0	44.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	65.5	24.0 - 64.0	TBD	1
MW-157B	MW-157B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM)	4	45.0	35.0 - 45.0	TBD	1
MW-160	MW-160_LF14.5	14.5	VOCs +15, 1,4-Dioxane (8260SIM)	2	19.8	9.8 - 19.8	TBD	1
MW-161	MW-161_LF12.0	12.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	17.0	7.0 - 17.0	TBD	1
MW-163	MW-163_LF14.6	14.6	VOCs +15, 1,4-Dioxane (8260SIM)	2	19.8	4.8 - 19.8	TBD	1
MW-317A	MW-317A_LF12.85	12.85	VOCs +15, 1,4-Dioxane (8260SIM)	2	15.0	5.0 - 15.0	TBD	1
MW-317B	MW-317B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	45.0	35.0 - 45.0	TBD	1
MW-317C	MW-317C_LF65.0	65.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	70.0	60.0 - 70.0	TBD	1
MW-318A	MW-318A_LF11.74	11.74	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	15.0	5.0 - 15.0	TBD	1
MW-318B	MW-318B_LF50.0	50.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	65.5	35.0 - 65.0	TBD	1
MW-320C	MW-320C_LF61.0	61.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	70.0	60.0 - 70.0	TBD	1
MW-321B	MW-321B_LF50.0	50.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	65.5	35.0 - 65.0	TBD	1
MW-321C	MW-321C_LF65.0	65.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	70.5	60.0 - 70.0	TBD	1
MW-322A	MW-322A_LF17.0	17.0	VOCs +15, 1,4-Dioxane (8260SIM)	2	27.0	7.0 - 27.0	TBD	1
MW-346A	MW-346A_LF13.1	13.1	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	16.0	5.0 - 16.0	TBD	1
MW-346B	MW-346B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	45.0	35.0 - 45.0	TBD	1
MW-346C	MW-346C_LF70.0	70.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	80.0	60.0 - 80.0	TBD	1
MW-350A	MW-350A_LF11.4	11.4	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	16.0	5.0 - 16.0	TBD	1
MW-350B	MW-350B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	45.0	35.0 - 45.0	TBD	1
MW-350C	MW-350C_LF70.0	70.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	2	80.0	60.0 - 80.0	TBD	1
MW-395A	MW-395A_LF12.5	12.5	VOCs +15, 1,4-Dioxane (8260SIM)	4	18.5	5.0 - 18.5	TBD	1
MW-396A	MW-396A_LF11.0	11.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Dissolved Iron, Dissolved Manganese, Dissolved CO2	4	15.0	5.0 - 15.0	TBD	1
MW-397A	MW-397A_LF16.0	16.0	VOCs +15, 1,4-Dioxane (8260SIM)	4	20.0	5.0 - 20.0	TBD	1
MW-447A	MW-447A_LF12.3	12.3	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	15.5	5.0 - 15.0	TBD	1
MW-447B	MW-447B_LF40.0	40.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	2	45.5	35.0 - 45.0	TBD	1

Table 6
IA-6 Quarterly Groundwater Monitoring Plan
Q2 2018 (April 5 - 6, 2018)
Hoffmann-La Roche, Inc. - Nutley, New Jersey

Well Designation	Proposed Field ID	Anticipated Sample Depth	Sample Parameters	Inner Casing Diameter (in)	Total Depth (ft bgs)	Open Interval Depth (ft bgs)	QA/QC	Sample Priority Group
MW-52	MW-52_LF25.0	25.0	VOCs +15, 1,4-Dioxane (8260SIM), TOC, Alkalinity, Nitrate, Nitrite, Sulfate, Chloride, Total and Dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, sodium and hexavalent chromium), Dissolved CO2	6	30.0	20.0 - 30.0	TBD	1
MW-53	MW-53_LF35.0	35.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	45.0	25.0 - 45.0	TBD	1
MW-54	MW-54_LF60.0	60.0	VOCs +15, 1,4-Dioxane (8260SIM)	6	70.0	50.0 - 70.0	TBD	1

Note:
1.) 1 - Sampling activities also include field measurements of pH, temperature, dissolved oxygen, oxidation-reduction potential, and conductivity, as well as groundwater level.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-75_LF16.5		ART-75_LF16.5		ART-75_LF16.5		ART-75_LF16.5		ART-75_LF16.5		ART-75_LF16.5	
		Date Sampled:	7/26/2017		10/5/2017		1/11/2018		3/16/2018		4/5/2018		5/18/2018	
		LAB Sample ID:	460138067-1-3		460142481-1-3		460148307-1-3		460152187-1-3		460153381-1-3		460156495-1-4	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	6.7		15		11		4.1	J B	4.4	J	3.4	J B
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.14	J	0.09	U	0.09	U	0.097	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.43	J	0.45	J	0.49	J	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	1.5		0.92	J	1.2		0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.41	J	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.35	J	0.33	U	0.47	J	0.33	U
Chlorobenzene	*108-90-7*	*50*	5.7		0.27	J	0.82	J	7		1.9		26	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	1.9		1.8		1.6		1.1	
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	4.4		0.51	J	1.6		3.8		2		4.7	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.63	J	0.67	J	0.48	J	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**0.46**		**3.6**		**2.1**		*8.7*	U	**9.3**		*8.7*	U
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.39	J	0.38	J	1.1		0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**24**		**3.7**		**99**		**120**		**79**		**110**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.5	J	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.21	J	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**1.7**		0.4	J	**3.2**		**3.4**		**3**		**4**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.97	J	0.19	J	0.21	J	0.26	J	0.06	U	0.52	J
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	40	J	ND	U	16	J	ND		ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-75_LF16.5		ART-75_LF16.5		ART-76_LF16.5		ART-76_LF16.5		ART-76_LF16.5		ART-76_LF23.0	
		Date Sampled:	5/31/2018		6/26/2018		5/18/2018		5/31/2018		6/26/2018		7/26/2017	
		LAB Sample ID:	460157265-1-3		460159218-1-3		460156495-1-5		460157265-1-4		460159218-1-4		460138067-1-33	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	97	B	67		4.8	J B	140	B	230		36	
Benzene	*71-43-2*	*1*	0.45	U	0.47	J	0.099	J	**1.2**	J	0.99	J	0.44	J
Bromochloromethane	*74-97-5*	*100*	1.5	U	0.41	U	0.3	U	1.5	U	0.41	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.75	U	0.34	U	0.19	J	0.75	U	0.34	U	0.15	U
Bromoform	*75-25-2*	*4*	0.9	U	0.54	U	0.25	J	0.9	U	0.54	U	0.35	J
Bromomethane	*74-83-9*	*10*	0.9	U	1	U	0.18	U	0.9	U	1	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	160		170		2.2	U	88		**1200**		2.2	U
Carbon Disulfide	*75-15-0*	*700*	1.1	U	0.16	U	0.22	U	1.1	U	2.5		0.22	U
Carbon tetrachloride	*56-23-5*	*1*	*1.7*	U	0.21	U	0.33	U	*1.7*	U	0.21	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	17		0.58	J	2.1		7.7		4.4		16	
Chloroethane	*75-00-3*	*5*	1.9	U	0.32	U	0.37	U	1.9	U	0.32	U	0.37	U
Chloroform	*67-66-3*	*70*	2.4	J	0.33	U	1.2		4.8	J	0.33	U	0.22	J
Chloromethane	*74-87-3*	*100*	1.1	U	0.14	U	0.22	U	1.1	U	0.14	U	1.1	
cis-1,2-Dichloroethene	*156-59-2*	*70*	2.4	J	0.9	J	0.79	J	1.3	U	2.2		3.3	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.8	U	0.46	U	0.16	U	0.8	U	0.46	U	0.16	U
Cyclohexane	*110-82-7*	*100*	1.3	U	0.32	U	0.26	U	1.3	U	0.32	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*1.2*	U	*0.38*	U	*0.23*	U	*1.2*	U	*0.38*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	*1.1*	U	0.28	U	0.22	U	*1.1*	U	0.28	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.95*	U	*0.5*	U	*0.19*	U	*0.95*	U	*0.5*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	1.1	U	0.43	U	0.22	U	1.1	U	0.43	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	1.7	U	0.34	U	0.33	U	1.7	U	0.34	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	1.7	U	0.76	U	0.33	U	1.7	U	0.76	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.7	U	0.12	U	0.14	U	0.7	U	0.12	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	1.2	U	0.26	U	0.24	U	1.2	U	0.26	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	1.3	U	0.43	U	0.25	U	1.3	U	0.43	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	*1.7*	U	0.12	U	0.34	U	*1.7*	U	0.12	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.9	U	0.35	U	0.18	U	0.9	U	0.35	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	*44*	U	*28*	U	*8.7*	U	*44*	U	*28*	U	**3.8**	
Ethylbenzene	*100-41-4*	*700*	1.5	U	1.1		0.3	U	1.5	U	1.2		0.3	U
2-Hexanone	*591-78-6*	*40*	3.6	U	2.9	U	0.72	U	3.6	U	2.9	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	1.6	U	0.34	U	0.32	U	1.6	U	0.34	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	4.2	J	34		0.58	U	27		66		0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.65	U	0.48	J	0.13	U	0.65	U	0.66	J	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	3.2	U	2.7	U	0.63	U	3.2	U	2.7	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	1.1	U	0.26	U	0.22	U	1.1	U	0.26	U	0.22	U
Methylene chloride	*75-09-2*	*3*	1.1	U	0.32	U	0.21	J	1.7	J B	0.46	J	0.21	U
Styrene	*100-42-5*	*100*	0.85	U	0.42	U	0.17	U	0.85	U	0.42	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.95	U	0.37	U	0.19	U	0.95	U	0.37	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**46**		**5.7**		**22**		**6.7**		**3.4**		**14**	
Toluene	*108-88-3*	*600*	1.3	U	0.55	J	0.25	U	1.3	U	0.71	J	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.9	U	0.24	U	0.18	U	0.9	U	0.24	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.95	U	0.49	U	0.19	U	0.95	U	0.49	U	0.19	U
Freon 113	*76-13-1*	*20000*	1.7	U	0.31	U	0.34	U	1.7	U	0.31	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	1.8	U	0.36	U	0.35	U	1.8	U	0.36	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	1.4	U	0.24	U	0.28	U	1.4	U	0.24	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.4	U	0.43	U	0.08	U	0.4	U	0.43	U	0.08	U
Trichloroethene	*79-01-6*	*1*	***3.8***	J	**1.5**		**2.7**		***4***	J	**2.7**		**1.5**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.75	U	0.14	U	0.15	U	0.75	U	0.14	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	1.4	U	0.37	U	0.27	U	1.4	U	0.37	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.3	U	0.17	U	0.1	J	0.3	U	0.17	U	0.76	J
m,p-Xylene	*179601-23-1*	*--*	1.4	U	0.66	J	0.28	U	1.4	U	0.65	J	0.28	U
o-Xylene	*95-47-6*	*--*	1.6	U	0.37	J	0.32	U	1.6	U	0.36	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	1.4	U	1.03	J	0.28	U	1.4	U	0.65	J	0.28	U
Total VOC TIC	*SRP170*	*500*	280	JN	33.2	JN	ND	U	**600**	JN	25.7	JN	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-77_LF36.5		ART-77_LF36.5		ART-77_LF36.5		ART-77_LF36.5		ART-77_LF36.5		ART-77_LF36.5	
		Date Sampled:	7/26/2017		10/5/2017		1/11/2018		2/20/2018		3/16/2018		4/5/2018	
		LAB Sample ID:	460138067-1-34		460142481-1-4		460148307-1-4		460150539-1-18		460152187-1-4		460153381-1-4	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	19		12		730		150	B	12		9.1	J
Benzene	*71-43-2*	*1*	**1.6**		0.09	U	0.09	U	0.64	J	0.78	J	0.83	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.6	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.28	J	0.15	U	0.3	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.44	J	**6.8**		0.75	J	1.5	J
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	1.1		0.18	U	0.18	U	0.36	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	4.2	J	8.5		2.2	U	4.4	U
Carbon Disulfide	*75-15-0*	*700*	0.51	J	0.22	U	0.22	U	2.6		0.43	J	0.44	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.74	J
Chlorobenzene	*108-90-7*	*50*	**58**		1.8		0.28	J	2.6		1.6		7.5	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.74	U
Chloroform	*67-66-3*	*70*	0.29	J	0.22	U	0.45	J	3.4		1.4		2.7	
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	3.7		2.2		0.42	J	0.44	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	31		3.5		0.26	U	11		15		22	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.32	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.52	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.46*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.45	J	0.41	J	0.44	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.38*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.44	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.66	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.34	J	0.33	U	0.33	U	0.33	U	0.33	U	0.66	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.28	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.48	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.5	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.68	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.36	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**4.8**		**17**		0.2	U	*8.7*	U	*8.7*	U	**32**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.6	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	1.4	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.64	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	1.2	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.32	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	1.3	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.44	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.21	U	0.34	J	0.97	J	0.92	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.34	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.38	U
Tetrachloroethene	*127-18-4*	*1*	**88**		**17**		**2.5**		**320**		**220**		**560**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.5	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.75	J	0.18	U	0.18	U	1.3		0.98	J	1.4	J
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.38	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.68	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.7	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.56	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.16	U
Trichloroethene	*79-01-6*	*1*	**16**		**2.4**		0.22	U	**8.8**		**9.8**		**21**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.3	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.54	U
Vinyl Chloride	*75-01-4*	*1*	**5.2**		0.52	J	0.06	U	0.06	U	0.95	J	**2.2**	
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.3	J	0.56	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.64	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.3	J	0.56	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	8.4	JN	ND	U	ND		ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-77_LF36.5		ART-77_LF36.5		ART-77_LF36.5 (A)		ART-77_LF36.5 (B)		ART-78_LF16.5		ART-78_LF16.5	
		Date Sampled:	5/18/2018		5/31/2018		6/26/2018		6/26/2018		7/26/2017		10/5/2017	
		LAB Sample ID:	460156495-1-9		460157265-1-10		460159218-1-7		460159218-1-8		460138067-1-35		460142481-1-5	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	9	B	16	B	93		99		5.4		19	
Benzene	*71-43-2*	*1*	**1.5**		**2.7**		**1.2**		**1.2**		0.14	J	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.55	J	0.41	U	0.41	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.34	U	0.34	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.54	U	0.54	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	5.7		**11**		8.9		0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	6.2		**1400**		**1400**		2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	2.6		2.9		2.8		0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.21	U	0.21	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	**55**		8.5		1.9		2		22		1.4	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	**11**		**11**		0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	1.3		12		1.3		1.3		0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.29	J	11		**210**		**210**		0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	14		3.8		3.7		4		19		0.47	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.46	U	0.46	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.32	U	0.32	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.38*	U	*0.38*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.28	U	0.28	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.5*	U	*0.5*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.43	U	0.43	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.34	U	0.34	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.76	U	0.76	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.12	U	0.12	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.26	U	0.26	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	1.6		1.6		0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.12	U	0.12	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.35	U	0.35	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	*8.7*	U	***18***	J	*28*	U	*28*	U	**6.1**		**76**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	11		0.74	J	0.79	J	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	2.9	U	2.9	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.33	J	0.34	U	0.34	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	190		83		84		0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	1.8		0.87	J	0.89	J	0.13	U	0.22	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	2.7	U	2.7	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.59	J	0.26	U	0.26	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.4	J	2		1.3		1.1		0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.23	J	0.42	U	0.42	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.37	U	0.37	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**220**		**25**		**1.5**		**1.7**		**37**		0.57	J
Toluene	*108-88-3*	*600*	0.33	J	3.6		0.97	J	1		0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.58	J	0.18	U	0.24	U	0.24	U	0.23	J	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.49	U	0.49	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.31	U	0.31	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.36	U	0.36	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.24	U	0.24	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.43	U	0.43	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**15**		**6.7**		**5.1**		**5.6**		**6.1**		0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.14	U	0.14	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.37	U	0.37	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	**1.2**		0.06	U	0.17	U	0.17	U	**2.1**		0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.38	J	8.9		0.5	J	0.55	J	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	3		0.36	U	0.36	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.38	J	11.9		0.5	U	0.55	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	6.2	JN	**2224**	JN	198.2	JN	240.2	JN	6.2	JN	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-78_LF16.5		ART-78_LF16.5		ART-78_LF16.5		ART-78_LF16.5		ART-78_LF16.5		ART-78_LF16.5	
		Date Sampled:	1/11/2018		2/20/2018		3/16/2018		4/5/2018		5/18/2018		5/31/2018	
		LAB Sample ID:	460148307-1-5		460150539-1-19		460152187-1-5		460153381-1-5		460156495-1-3		460157265-1-9	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	95		11	B	8.8	B	15		5.1	B	88	B
Benzene	*71-43-2*	*1*	0.34	J	0.1	J	0.09	U	0.09	U	0.09	U	**1.4**	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	1.5	U
Bromodichloromethane	*75-27-4*	*1*	0.19	J	0.32	J	0.15	U	0.15	U	0.15	U	0.75	U
Bromoform	*75-25-2*	*4*	1.7		1.4		0.85	J	0.18	U	0.18	U	0.9	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.9	U
2-Butanone (MEK)	*78-93-3*	*300*	6.2		2.2	U	2.2	U	2.2	U	2.2	U	90	
Carbon Disulfide	*75-15-0*	*700*	5.8		0.83	J	0.43	J	0.22	U	0.22	U	1.1	U
Carbon tetrachloride	*56-23-5*	*1*	**2.4**		0.71	J	0.33	U	0.33	U	0.33	U	*1.7*	U
Chlorobenzene	*108-90-7*	*50*	12		8.5		1.8		0.46	J	8.2		7.7	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	1.9	U
Chloroform	*67-66-3*	*70*	0.94	J	0.77	J	1		3.1		0.69	J	3.8	J
Chloromethane	*74-87-3*	*100*	0.84	J	0.22	U	0.22	U	0.22	U	0.22	U	1.1	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	9.8		5.3		3.1		1.4		2.9		4.6	J
cis-1,3-Dichloropropene	*10061-01-5*	--	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.8	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	1.3	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*1.2*	U
Dibromochloromethane	*124-48-1*	*1*	0.26	J	0.37	J	0.4	J	0.22	U	0.22	U	*1.1*	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.95*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	1.1	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	1.7	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	1.7	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.7	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	1.2	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.29	J	0.25	U	1.3	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	*1.7*	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.9	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**12**		*8.7*	U	***23***	J	***120***		***9.7***	J	*44*	U
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	1.5	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	3.6	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	1.6	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	20	J
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.2	J	0.13	U	0.13	U	0.65	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	3.2	U
Methylcyclohexane	*108-87-2*	*100*	0.68	J	0.22	U	0.22	U	0.22	U	0.22	U	1.1	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	1		1.1		0.21	U	1.5	J B
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.85	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.95	U
Tetrachloroethene	*127-18-4*	*1*	**490**		**210**		**71**		**26**		**91**		**14**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	1.3	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.55	J	0.18	U	0.18	U	0.18	U	0.18	U	0.9	U
trans-1,3-Dichloropropene	*10061-02-6*	--	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.95	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	1.7	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	1.8	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	1.4	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.4	U
Trichloroethene	*79-01-6*	*1*	**11**		**6.8**		**3.1**		**2.1**		**4.7**		***6.6***	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.75	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	1.4	U
Vinyl Chloride	*75-01-4*	*1*	0.79	J	0.71	J	0.16	J	0.084	J	0.64	J	0.3	U
m,p-Xylene	*179601-23-1*	--	0.38	J	0.28	U	0.28	U	0.28	U	0.28	U	1.8	J
o-Xylene	*95-47-6*	--	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	1.6	U
Xylenes (total)	*1330-20-7*	*1000*	0.38	J	0.28	U	0.28	U	0.28	U	0.28	U	1.8	J
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND		ND	U	ND	U	**788**	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-78_LF16.5		ART-79_LF22.75		ART-79_LF25.0		ART-79_LF49.0		ART-80_LF16.5		ART-80_LF22.75 (A)	
		Date Sampled:	6/26/2018		7/26/2017		2/20/2018		7/26/2017		2/20/2018		7/26/2017	
		LAB Sample ID:	460159218-1-14		460138067-1-37		460150539-1-20		460138067-1-36		460150539-1-17		460138067-1-38	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	61		7.7	B	10	B	8.6	B	9	B	13	
Benzene	*71-43-2*	*1*	0.54	J	0.12	J	0.09	U	0.11	J	0.15	J	0.23	J
Bromochloromethane	*74-97-5*	*100*	0.41	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.34	U	0.15	U	0.15	U	0.15	U	0.33	J	0.15	U
Bromoform	*75-25-2*	*4*	0.54	U	0.64	J	0.5	J	0.61	J	1.2		0.18	U
Bromomethane	*74-83-9*	*10*	1	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	**360**		2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.56	J	0.22	U	0.22	U	0.22	U	0.66	J	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.21	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	9.6		0.73	J	0.24	U	0.6	J	2.3		**60**	
Chloroethane	*75-00-3*	*5*	0.32	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.33	U	0.25	J	0.33	J	0.25	J	0.83	J	0.22	U
Chloromethane	*74-87-3*	*100*	0.14	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	37		0.26	U	0.38	J	0.26	U	6.7		1.9	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.46	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.32	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.38*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.28	U	0.22	U	0.22	U	0.22	U	0.41	J	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.5*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.43	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.34	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.76	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.12	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.26	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.43	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.12	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.35	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	*28*	U	**9.5**		*8.7*	U	**9.5**		*8.7*	U	**14**	
Ethylbenzene	*100-41-4*	*700*	1.1		0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	2.9	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.34	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	3.4	J	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.47	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	2.7	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.26	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.32	U	0.21	U	0.21	U	0.21	U	0.3	J	0.21	U
Styrene	*100-42-5*	*100*	0.42	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.37	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**1.6**		0.36	J	**3.4**		0.3	J	**69**		**7.5**	
Toluene	*108-88-3*	*600*	0.49	J	0.25	U	0.25	U	0.25	U	0.29	J	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.43	J	0.18	U	0.18	U	0.18	U	0.19	J	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.49	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.31	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.36	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.24	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.43	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**3.1**		0.22	U	0.41	J	0.22	U	**3.9**		0.77	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.14	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.37	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.17	U	0.06	U	0.06	U	0.06	U	0.43	J	0.34	J
m,p-Xylene	*179601-23-1*	*--*	0.57	J	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.36	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.57	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	12.9	JN	ND	U	ND	U	ND	U	295.8	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-80_LF22.75 (B)		ART-80_LF31.5		ART-80_LF49.0		ART-81_LF22.54		ART-81_LF49.0		ART-82_LF44.0	
		Date Sampled:	7/26/2017		11/7/2017		7/26/2017		7/27/2017		7/27/2017		7/27/2017	
		LAB Sample ID:	460138067-1-39		460144534-1-8		460138067-1-40		460138281-1-3		460138281-1-4		460138281-1-5	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	12		26		12		5.9		8.7		25	
Benzene	*71-43-2*	*1*	0.22	J	0.09	U	0.85	J	0.09	U	0.09	U	0.93	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	**20**		0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	**61**		0.98	J	**94**		0.24	U	0.24	U	**62**	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.29	J	0.4	J	0.26	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	2		0.26	U	18		0.26	U	0.26	U	7.2	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.58	J	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.43	J	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.25	J	0.24	U	0.24	U	0.29	J
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**14**		**48**		**21**		**9.1**		**10**		**35**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.27	J	0.13	U	0.13	U	0.4	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.36	J	0.21	U	0.21	U	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**7.7**		0.58	J	**59**		0.12	U	0.12	U	**25**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	J	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.89	J	0.22	U	**7.6**		0.22	U	0.22	U	**3.6**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.42	J	0.06	U	**3.2**		0.06	U	0.06	U	**1.1**	
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	345.3	JN	ND	U	170	J	7.8	J	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-83_LF22.54		ART-83_LF49.0		ART-84_LF44.0		ART-85_LF44.0		ART-85_LF44.0		ART-85_LF44.0	
		Date Sampled:	7/27/2017		7/27/2017		7/27/2017		7/27/2017		10/5/2017		1/11/2018	
		LAB Sample ID:	460138281-1-6		460138281-1-7		460138281-1-8		460138281-1-9		460142481-1-6		460148307-1-6	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	13		13		22		18		14		33	
Benzene	*71-43-2*	*1*	0.29	J	0.44	J	0.74	J	0.57	J	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.43	J	0.38	J	**73**		9.3		0.24	U	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.29	J	0.58	J	0.22	U	0.24	J	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.67	J	0.92	J	3.2		1.9		0.35	J	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**17**		**18**		**27**		**25**		**28**		**22**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.36	J	0.46	J	0.23	J	0.42	J	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.21	U	0.21	U	0.38	J	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.32	J	**2.6**		**5.4**		0.57	J	0.12	U
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	**4.7**		**1.3**		0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.93	J	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	38	JN	16	J	31	J	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-85_LF44.0		ART-85_LF44.0		ART-86_LF61.5		ART-87_LF46.5		ART-88_LF59.0		ART-89_LF22.37	
		Date Sampled:	3/16/2018		4/5/2018		7/27/2017		7/27/2017		7/27/2017		7/27/2017	
		LAB Sample ID:	460152187-1-6		460153381-1-6		460138281-1-10		460138281-1-11		460138281-1-12		460138281-1-13	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	13	B	11		37		13		12		13	
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.71	J	0.61	J	0.26	J	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.51	J	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	12		13		0.84	J	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.32	J	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	2.1		3.1		0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***24***	J	**28**		***84***		**32**		***90***		**1.6**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	1.2		0.13	U	0.51	J	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.44	J	0.42	J	0.21	U	0.21	U	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.18	J	**4.5**		**2**		0.12	U	0.33	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.96	J	**1.5**		0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND		ND	U	490	J	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	BIOS-1B_LF65.0		BIOS-1B_LF65.0		BIOS-1B_LF65.0 (A)		BIOS-1B_LF65.0 (A)		BIOS-1B_LF65.0 (A)		BIOS-1B_LF65.0 (B)	
		Date Sampled:	7/27/2017		5/21/2018		8/2/2018		8/30/2018		9/17/2018		8/2/2018	
		LAB Sample ID:	460138281-1-22		460156736-1-13		460161962-1-3		460163757-1-3		460164877-1-3		460161962-1-4	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	14		14		140		67		72		170	
Benzene	*71-43-2*	*1*	0.16	J	0.09	U	**1.4**		**1.1**		**1.8**		**1.4**	
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.41	U	0.41	U	0.41	U	0.41	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.34	U	0.34	U	0.34	U	0.34	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.54	U	0.54	U	0.54	U	0.54	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	1	U	1	U	1	U	1	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	**590**		240		110		**630**	
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	2.3		1		0.91	J	23	
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.21	U	0.21	U	0.21	U	0.21	U
Chlorobenzene	*108-90-7*	*50*	9.5		7.4		25		29		44		26	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.32	U	0.32	U	0.32	U	0.32	U
Chloroform	*67-66-3*	*70*	0.22	U	0.76	J	0.33	U	0.33	U	0.33	U	0.33	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.14	U	0.14	U	0.14	U	0.14	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	3.7		2.9		15		8.7		9.1		15	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.46	U	0.46	U	0.46	U	0.46	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.32	U	0.32	U	0.32	U	0.32	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.38*	U	*0.38*	U	*0.38*	U	*0.38*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.28	U	0.28	U	0.28	U	0.28	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.5*	U	*0.5*	U	*0.5*	U	*0.5*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.43	U	0.43	U	0.43	U	0.43	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.34	U	0.34	U	0.34	U	0.34	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.76	U	0.76	U	0.76	U	0.76	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.12	U	0.12	U	0.12	U	0.12	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.43	U	0.43	U	0.43	U	0.43	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.12	U	0.12	U	0.12	U	0.12	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.35	U	0.35	U	0.35	U	0.35	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**19**		***27***	J	*28*	U	*28*	U	*28*	U	*28*	U
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	2.9		1.8		2.4		2.9	
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	2.9	U	2.9	U	2.9	U	2.9	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.34	U	0.34	U	0.34	U	0.34	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.31	U	0.31	U	0.31	U	0.31	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.24	J	0.67	J	0.5	J	0.71	J	0.66	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	2.7	U	2.7	U	2.7	U	2.7	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.26	U	0.26	U	0.26	U	0.26	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.22	J	0.32	U	0.32	U	0.32	U	0.45	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.42	U	0.42	U	0.42	U	0.42	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.37	U	0.37	U	0.37	U	0.37	U
Tetrachloroethene	*127-18-4*	*1*	**29**		**77**		0.5	J	0.25	U	0.25	U	0.58	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	1.1		0.9	J	0.9	J	1.2	
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.24	U	0.24	U	0.24	U	0.24	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.49	U	0.49	U	0.49	U	0.49	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.31	U	0.31	U	0.31	U	0.31	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.36	U	0.36	U	0.36	U	0.36	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.24	U	0.24	U	0.24	U	0.24	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.43	U	0.43	U	0.43	U	0.43	U
Trichloroethene	*79-01-6*	*1*	**2.4**		**5**		**4.3**		**1.9**		0.88	J	**5**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.14	U	0.14	U	0.14	U	0.14	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.37	U	0.37	U	0.37	U	0.37	U
Vinyl Chloride	*75-01-4*	*1*	0.45	J	0.64	J	0.17	U	0.17	U	0.17	U	0.17	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	2.3		1.4		1.7		2.2	
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	1.8		7.5		8.7		1.8	
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	4.1		8.9		10.4		4	
Total VOC TIC	*SRP170*	*500*	88	JN	ND	U	**669.3**	JN	66.6	JN	**717**	JN	**713.6**	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	BIOS-1B_LF65.0 (B)		BIOS-1B_LF65.0 (B)		BIOS-2B_LF65.0		BIOS-3B_LF65.0		BIOS-4B_LF65.0		BIOS-5B_LF65.0	
		Date Sampled:	8/30/2018		9/17/2018		7/27/2017		7/27/2017		7/28/2017		7/28/2017	
		LAB Sample ID:	460163757-1-4		460164877-1-4		460138281-1-23		460138281-1-24		460138242-1-3		460138242-1-4	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	62		62		16		5.7		17		13	B
Benzene	*71-43-2*	*1*	**1.2**		**1.9**		0.67	J	0.09	U	0.7	J	0.48	J
Bromochloromethane	*74-97-5*	*100*	0.41	U	0.41	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.34	U	0.34	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.54	U	0.54	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	1	U	1	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	220		110		2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	1.4		0.95	J	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.21	U	0.21	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	27		44		25		0.24	U	**74**		23	
Chloroethane	*75-00-3*	*5*	0.32	U	0.32	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.33	U	0.33	U	0.6	J	0.22	J	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.14	U	0.14	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	8.5		9		3.9		0.26	U	13		4	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.46	U	0.46	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.32	U	0.32	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.38*	U	*0.38*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.28	U	0.28	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.5*	U	*0.5*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.43	U	0.43	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.34	U	0.34	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.76	U	0.76	U	0.33	U	0.33	U	0.33	J	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.12	U	0.12	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.26	U	0.26	U	0.26	J	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.43	U	0.43	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.12	U	0.12	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.35	U	0.35	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***29***	J	***79***		**57**		**8.6**		**26**		**30**	
Ethylbenzene	*100-41-4*	*700*	1.7		2.3		0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	2.9	U	2.9	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.34	U	0.34	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.31	U	0.31	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.47	U	0.57	J	0.61	J	0.13	U	0.25	J	0.5	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	2.7	U	2.7	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.26	U	0.26	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.32	U	0.32	U	0.21	U	0.21	U	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.42	U	0.42	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.37	U	0.37	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.25	U	0.25	U	**18**		0.12	U	**41**		**14**	
Toluene	*108-88-3*	*600*	0.85	J	1		0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.24	U	0.24	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.49	U	0.49	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.31	U	0.31	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.36	U	0.36	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.24	U	0.24	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.43	U	0.43	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**1.9**		0.91	J	**2.2**		0.22	U	**5.6**		**2.3**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.14	U	0.14	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.37	U	0.37	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.17	U	0.17	U	0.4	J	0.06	U	0.78	J	0.06	U
m,p-Xylene	*179601-23-1*	*--*	1.6		1.6		0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	7.2		9.3		0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	8.8		10.9		0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	67.8	JN	**837**	JN	6.1	JN	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	BIOS-6B_LF65.0		BIOS-7B_LF65.0		BIOS-7B_LF65.0		BIOS-8B_LF65.0		BIOS-9B_LF65.0		BIOS-10B_LF65.0	
		Date Sampled:	7/28/2017		7/28/2017		10/6/2017		7/28/2017		7/28/2017		7/27/2017	
		LAB Sample ID:	460138242-1-5		460138242-1-6		460142554-1-4		460138242-1-7		460138242-1-8		460138281-1-15	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	14		20		17		8.5	B	5.2		1.1	U
Benzene	*71-43-2*	*1*	0.09	U	0.76	J	0.25	J	0.09	U	0.09	U	0.63	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	**71**		15		0.24	U	0.24	U	**63**	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.35	J	0.83	J	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.38	J	12		2.6		0.26	U	0.26	U	10	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.42	J	0.33	U	0.33	U	0.33	U	0.5	J
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.28	J	0.29	J	0.24	U	0.24	U	0.38	J
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**27**		**45**		***180***		**29**		**9.3**		***82***	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.52	J	0.49	J	2.9		0.38	J	0.16	J	1.3	
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.25	J	0.21	U	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.28	J	**51**		**4.3**		**2**		0.12	U	**38**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.22	J	0.18	U	0.18	U	0.26	J
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	**7.4**		**1.3**		0.24	J	0.22	U	**7**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	**1.5**		0.17	J	0.06	U	0.06	U	**1.3**	
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	11.8	JN	ND	U	20.6	JN	ND	U	ND	U	8.5	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	BIOS-10B_LF65.0		BIOS-11B_LF65.0		BIOS-12B_LF60.0		BIOS-13B_LF60.0		BIOS-14B_LF60.0(A)		BIOS-14B_LF60.0(B)	
		Date Sampled:	10/6/2017		7/27/2017		7/27/2017		7/27/2017		7/27/2017		7/27/2017	
		LAB Sample ID:	460142554-1-5		460138281-1-16		460138281-1-17		460138281-1-18		460138281-1-19		460138281-1-20	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	19		28		10		43		21	B	22	
Benzene	*71-43-2*	*1*	0.11	J	0.29	J	0.59	J	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	20		20		10		0.3	J	0.24	U	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.23	J	0.37	J	0.22	U	3.4		4.1	
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	3.9		5.8		2.5		0.26	U	0.58	J	0.6	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.81	J	0.24	U	0.24	U	0.24	U	0.24	U	0.29	J
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***130***		**56**		**48**		**3.4**		***82***		**78**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.81	J	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	2.2		0.69	J	0.81	J	0.13	U	0.96	J	0.94	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.23	J	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	1.1		0.17	U	0.21	J	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**4.9**		**16**		**6.3**		0.12	U	**2.7**		**3.4**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.3	J	2.1		0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**2.9**		**2.3**		**1.3**		0.22	U	0.22	U	0.52	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.86	J	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	8.1	JN	ND	U	7.8	JN	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	BIOS-15B_LF60.0		IW-104A_LF27.5		IW-105A_LF27.5		IW-106A_LF31.5		IW-107A_LF32.5		IW-108A_LF31.5	
		Date Sampled:	7/27/2017		7/28/2017		7/28/2017		7/28/2017		7/28/2017		7/28/2017	
		LAB Sample ID:	460138281-1-21		460138242-1-9		460138242-1-10		460138242-1-11		460138242-1-12		460138242-1-13	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	42		32		22		26	B	36		16	
Benzene	*71-43-2*	*1*	0.09	U	0.56	J	0.73	J	**2.6**		0.78	J	0.28	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.6	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.3	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.36	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.36	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.7	J	2.2	U	4.4	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.44	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.66	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	15		32		**180**		**81**		16	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.74	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.28	J	0.29	J	0.63	J	0.22	U	0.51	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.44	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.37	J	2.3		8.7		17		1.7		5.2	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.32	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.52	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.46*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.44	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.38*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.44	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.66	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.48	J	0.55	J	0.66	U	0.94	J	0.44	J
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.28	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.48	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.5	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.68	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.36	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**41**		**6.1**		**5.3**		**8.2**		**16**		**7.5**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.6	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	1.4	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.64	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	1.2	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.26	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	1.3	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.44	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.22	J	0.21	U	0.42	U	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.34	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.38	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**1.5**		0.49	J	**59**		**27**		**1.1**		**26**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.5	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.36	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.38	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.68	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.7	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.56	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.16	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.27	J	0.22	U	**4.9**		**14**		0.28	J	**2.2**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.3	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.54	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.36	J	**1.7**		**3.8**		0.73	J	0.7	J
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.56	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.64	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.56	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	17.2	JN	14	JN	ND	U	34	JN	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IW-109A_LF27.5		IW-109A_LF27.5		IW-109A_LF27.5		IW-109A_LF27.5		IW-110A_LF27.5		IW-110A_LF27.5	
		Date Sampled:	7/28/2017		2/20/2018		5/18/2018		5/31/2018		7/28/2017		2/20/2018	
		LAB Sample ID:	460138242-1-14		460150539-1-15		460156495-1-6		460157265-1-5		460138242-1-15		460150539-1-16	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	24	B	87	B	14	B	210	B	11	U	25	B
Benzene	*71-43-2*	*1*	**2.8**		**1.4**	J	**2.2**		**3.1**	J	**5**	J	0.26	J
Bromochloromethane	*74-97-5*	*100*	0.6	U	0.6	U	0.6	U	1.5	U	3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.3	U	0.5	J	0.3	U	0.75	U	*1.5*	U	0.29	J
Bromoform	*75-25-2*	*4*	0.79	J	1.2	J	0.36	U	0.9	U	1.8	U	1.4	
Bromomethane	*74-83-9*	*10*	0.36	U	0.36	U	0.36	U	0.9	U	1.8	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	4.4	U	8.2	J	4.4	U	49		22	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.44	U	7.2		0.44	U	10		2.2	U	2.8	
Carbon tetrachloride	*56-23-5*	*1*	0.66	U	0.66	U	0.66	U	*1.7*	U	*3.3*	U	0.72	J
Chlorobenzene	*108-90-7*	*50*	**180**		4		**110**		30		**810**		5.2	
Chloroethane	*75-00-3*	*5*	0.74	U	0.74	U	0.74	U	1.9	U	3.7	U	0.37	U
Chloroform	*67-66-3*	*70*	0.75	J	2.8		1.1	J	16		2.2	U	1.1	
Chloromethane	*74-87-3*	*100*	0.44	U	1.1	J	0.44	U	1.1	U	2.2	U	0.45	J
cis-1,2-Dichloroethene	*156-59-2*	*70*	**120**		19		22		32		**270**		6.3	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.32	U	0.32	U	0.32	U	0.8	U	1.6	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.52	U	0.52	U	0.52	U	1.3	U	2.6	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.46*	U	*0.46*	U	*0.46*	U	*1.2*	U	*2.3*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.44	U	0.66	J	0.44	U	*1.1*	U	*2.2*	U	0.36	J
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.38*	U	*0.38*	U	*0.38*	U	*0.95*	U	*1.9*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.44	U	0.44	U	0.44	U	1.1	U	2.2	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.66	U	0.66	U	0.66	U	1.7	U	3.3	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.66	U	0.66	U	0.66	U	1.7	U	3.3	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.28	U	0.28	U	0.28	U	0.7	U	1.4	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.48	U	0.48	U	0.48	U	1.2	U	2.4	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.5	U	0.5	U	0.5	U	1.3	U	*2.5*	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.68	U	0.68	U	0.68	U	*1.7*	U	*3.4*	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.36	U	0.36	U	0.36	U	0.9	U	*1.8*	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**6.1**		*17*	U	*17*	U	*44*	U	**7.4**		*8.7*	U
Ethylbenzene	*100-41-4*	*700*	0.6	U	0.6	U	0.6	U	2.2	J	3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	1.4	U	1.4	U	1.4	U	3.6	U	7.2	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.64	U	0.64	U	0.64	U	1.6	U	3.2	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	1.2	U	1.2	U	1.2	U	42		5.8	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.26	U	0.26	U	0.26	U	0.65	U	1.3	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	1.3	U	1.3	U	1.3	U	3.2	U	6.3	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.44	U	0.44	U	0.44	U	1.1	U	2.2	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.42	U	0.61	J	0.42	U	1.8	J B	2.1	U	0.27	J
Styrene	*100-42-5*	*100*	0.34	U	0.34	U	0.34	U	0.85	U	1.7	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.38	U	0.38	U	0.38	U	0.95	U	*1.9*	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**620**		**590**		**440**		**22**		***1900***		**250**	
Toluene	*108-88-3*	*600*	0.5	U	0.5	U	2		1.7	J	2.5	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	6.2		1.7	J	1.2	J	1.4	J	2.5	J	0.3	J
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.38	U	0.38	U	0.38	U	0.95	U	1.9	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.68	U	0.68	U	0.68	U	1.7	U	3.4	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.7	U	0.7	U	0.7	U	1.8	U	3.5	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.56	U	0.56	U	0.56	U	1.4	U	2.8	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.16	U	0.16	U	0.16	U	0.4	U	0.8	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**55**		**26**		**60**		***120***		***190***		**8.4**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.3	U	0.3	U	0.3	U	0.75	U	1.5	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.54	U	0.54	U	0.54	U	1.4	U	2.7	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	**13**		**1.3**	J	**2.5**		0.3	U	**29**		0.68	J
m,p-Xylene	*179601-23-1*	*--*	0.56	U	2.1		1.4	J	2.1	J	2.8	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.64	U	1.1	J	0.64	U	1.6	U	3.2	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.56	U	3.2	J	1.4	J	2.1	J	2.8	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	**1112**	JN	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IW-110A_LF27.5		IW-110A_LF27.5		IW-110A_LF27.5		IW-111A_LF31.5		IW-112A_LF27.5		IW-113A_LF27.5	
		Date Sampled:	5/18/2018		5/31/2018		6/26/2018		7/28/2017		7/28/2017		7/28/2017	
		LAB Sample ID:	460156495-1-7		460157265-1-6		460159218-1-5		460138242-1-16		460138242-1-17		460138242-1-18	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	7	B	98	B	66		29	B	37		25	
Benzene	*71-43-2*	*1*	0.53	J	**2.1**		**1.4**		0.95	J	0.42	J	**1.3**	
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.37	J	0.41	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.34	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.21	J	0.18	U	0.54	U	0.27	J	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	1	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	30		**550**		2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	7.1		1.8		0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	**1.7**		0.21	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	24		17		9.9		34		25		**110**	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.32	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	1.1		14		0.33	U	0.47	J	0.35	J	0.35	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.61	J	0.14	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	8.2		26		6.3		1.4		0.26	U	35	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.46	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.32	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.38*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.28	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.5*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.43	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.34	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.76	U	0.41	J	0.41	J	0.43	J
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.12	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.26	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.43	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.12	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.35	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***14***	J	*8.7*	U	*28*	U	**7.4**		**12**		**15**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	3		1.2		0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	2.9	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.34	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	60		22		0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.87	J	0.47	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	2.7	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.26	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.27	J	1.7		2.4		0.23	J	0.21	U	0.32	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.42	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.37	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**380**		**31**		**4.8**		**3.5**		0.56	J	**110**	
Toluene	*108-88-3*	*600*	0.27	J	1.2		0.71	J	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.39	J	0.71	J	0.42	J	0.18	U	0.63	J	0.63	J
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.49	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.31	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.36	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.24	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.43	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**26**		**53**		**46**		0.49	J	0.22	U	**14**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.37	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	**1.4**		**3.1**		0.17	U	0.46	J	0.06	U	**4.4**	
m,p-Xylene	*179601-23-1*	*--*	0.56	J	3		1		0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	1.1		0.36	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.56	J	4.1		1	J	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	**1048.9**	JN	62.1	JN	27	JN	17	JN	5.2	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IW-113A_LF27.5		IW-113A_LF27.5		IW-194B_LF37.5		IW-194B_LF37.5		IW-194B_LF37.5		IW-194B_LF40.0	
		Date Sampled:	5/21/2018		6/26/2018		5/21/2018		5/31/2018		6/26/2018		8/2/2018	
		LAB Sample ID:	460156736-1-5		460159218-1-9		460156736-1-14		460157265-1-11		460159218-1-12		460161962-1-5	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	1.1	U	63		17	B	370	B	91		110	
Benzene	*71-43-2*	*1*	0.09	U	**1.2**		0.13	J	**2**		***2.3***	J	**4.8**	
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.41	U	0.3	U	0.3	U	2.1	U	0.41	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.34	U	0.15	U	0.15	U	*1.7*	U	0.34	U
Bromoform	*75-25-2*	*4*	0.18	U	0.54	U	0.18	U	0.18	U	2.7	U	0.54	U
Bromomethane	*74-83-9*	*10*	0.18	U	1	U	0.18	U	0.18	U	5	U	1	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	**330**		2.2	U	**870**		**860**		**490**	
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.16	U	0.22	U	2.2		0.78	U	23	
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.21	U	0.33	U	0.33	U	1	U	0.21	U
Chlorobenzene	*108-90-7*	*50*	3.2		15		1.9		11		6.5		6	
Chloroethane	*75-00-3*	*5*	0.37	U	0.32	U	0.37	U	0.37	U	1.6	U	0.32	U
Chloroform	*67-66-3*	*70*	0.89	J	0.33	U	2.3		8.5		1.6	U	0.33	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.14	U	0.22	U	0.22	U	0.72	U	0.14	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	2.7		1		4.6		0.26	U	3	J	3.1	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.46	U	0.16	U	0.16	U	2.3	U	0.46	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.32	U	0.26	U	0.26	U	1.6	U	0.32	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.38*	U	*0.23*	U	*0.23*	U	*1.9*	U	*0.38*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.28	U	0.22	U	0.22	U	*1.4*	U	0.28	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.5*	U	*0.19*	U	*0.19*	U	*2.5*	U	*0.5*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.43	U	0.22	U	0.22	U	2.2	U	0.43	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.34	U	0.33	U	0.33	U	1.7	U	0.34	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.76	U	0.33	U	0.33	U	3.8	U	0.76	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.12	U	0.14	U	0.14	U	0.61	U	0.12	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.26	U	0.24	U	0.24	U	1.3	U	0.26	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.43	U	0.25	U	0.25	U	*2.2*	U	0.43	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.12	U	0.34	U	0.34	U	0.59	U	0.12	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.35	U	0.18	U	0.18	U	*1.8*	U	0.35	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	*8.7*	U	*28*	U	*8.7*	U	*8.7*	U	*140*	U	*28*	U
Ethylbenzene	*100-41-4*	*700*	0.3	U	1		0.3	U	1.9		8.3		5.9	
2-Hexanone	*591-78-6*	*40*	0.72	U	2.9	U	0.72	U	0.72	U	15	U	2.9	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.34	U	0.32	U	0.32	U	1.7	U	0.34	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	42		0.58	U	27		220		570	
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.47	U	0.13	U	0.35	J	2.3	U	2.9	
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	2.7	U	0.63	U	0.63	U	14	U	5	
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.26	U	0.22	U	0.22	U	1.6	J	0.26	U
Methylene chloride	*75-09-2*	*3*	0.41	J	0.71	J	0.49	J	1.3		1.6	J	1.9	
Styrene	*100-42-5*	*100*	0.17	U	0.42	U	0.17	U	0.17	U	2.1	U	0.42	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.37	U	0.19	U	0.19	U	*1.8*	U	0.37	U
Tetrachloroethene	*127-18-4*	*1*	**82**		**4**		**120**		**16**		***13***		**5.7**	
Toluene	*108-88-3*	*600*	0.25	U	1		0.25	U	1		2.2	J	1.9	
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.24	U	0.29	J	0.18	U	1.2	U	0.24	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.49	U	0.19	U	0.19	U	2.4	U	0.49	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.31	U	0.34	U	0.34	U	1.6	U	0.31	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.36	U	0.35	U	0.35	U	1.8	U	0.36	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.24	U	0.28	U	0.28	U	1.2	U	0.24	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.43	U	0.08	U	0.08	U	2.2	U	0.43	U
Trichloroethene	*79-01-6*	*1*	**6.8**		**5.6**		**14**		**4.9**		***5.4***		**4**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.14	U	0.15	U	0.15	U	0.72	U	0.14	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.37	U	0.27	U	0.27	U	1.8	U	0.37	U
Vinyl Chloride	*75-01-4*	*1*	0.6	J	0.17	U	0.64	J	0.06	U	0.86	U	0.17	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.73	J	0.38	J	2.9		7.1	B	3.2	
o-Xylene	*95-47-6*	*--*	0.32	U	0.6	J	0.32	U	1.1		2.6	J	1.6	
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	1.33	J	0.38	J	4		9.7	J	4.8	
Total VOC TIC	*SRP170*	*500*	ND	U	53.6	J	5.3	JN	**1287.1**	JN	107	JN	**708**	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IW-194B_LF40.0		IW-194B_LF40.0		MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0	
		Date Sampled:	8/30/2018		9/17/2018		7/26/2017		10/5/2017		11/7/2017		1/12/2018	
		LAB Sample ID:	460163757-1-5		460164877-1-5		460138067-1-30		460142481-1-34		460144534-1-24		460148401-1-8	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	140		220		20		9.6		17		11	
Benzene	*71-43-2*	*1*	**4.3**		**6.4**		0.09	U	0.11	J	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.41	U	0.41	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.34	U	0.34	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.54	U	0.54	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	1	U	1	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	**600**		**900**		2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	2.6		2		0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.21	U	0.21	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	8.3		18		0.98	J	1.9		0.71	J	0.29	J
Chloroethane	*75-00-3*	*5*	0.32	U	0.32	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.33	U	0.33	U	0.22	U	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.14	U	0.14	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	3		4.6		0.27	J	0.36	J	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.46	U	0.46	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.32	U	0.32	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.38*	U	*0.38*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.28	U	0.28	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.5*	U	*0.5*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.43	U	0.43	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.34	U	0.34	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.76	U	0.76	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.12	U	0.12	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.26	U	0.26	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.43	U	0.43	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.12	U	0.12	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.35	U	0.35	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	*28*	U	*28*	U	**48**		**41**		**28**		**30**	
Ethylbenzene	*100-41-4*	*700*	6.6		6.3		0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	2.9	U	2.9	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.34	U	0.34	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	500		180		0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	1.8		1.4		0.34	J	0.29	J	0.13	U	0.17	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	2.7	U	2.7	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.26	U	0.26	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	1.5		2		0.21	U	0.21	U	0.46	J	0.21	U
Styrene	*100-42-5*	*100*	0.42	U	0.42	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.37	U	0.37	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**5.5**		**6.4**		0.24	J	0.12	U	0.12	U	0.41	J
Toluene	*108-88-3*	*600*	2.1		2.7		0.25	U	0.25	U	0.25	U	0.46	J
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.24	U	0.24	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.49	U	0.49	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.31	U	0.31	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.36	U	0.36	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.24	U	0.24	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.43	U	0.43	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**3.8**		**5.4**		0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.14	U	0.14	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.37	U	0.37	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.17	U	0.17	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	2.8		3.6		0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	1.5		1.9		0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	4.3		5.5		0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	442.3	JN	267.8	JN	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0		MW-53_LF35.0		MW-53_LF35.0		MW-53_LF35.0	
		Date Sampled:	1/23/2018		2/20/2018		4/5/2018		7/26/2017		10/5/2017		1/12/2018	
		LAB Sample ID:	460148918-1-14		460150539-1-14		460153381-1-25		460138067-1-31		460142481-1-35		460148401-1-9	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	9.3		9.5	B	10		8.5		5.6		11	
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.2	J	0.09	U	0.24	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	0.24	U	3		0.75	J	1.1	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.26	U	2.7		1.6		0.66	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	1.1		0.8	J	0.35	J
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**30**		**29**		**30**		**30**		**32**		**26**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.18	J	0.13	U	0.13	U	1.1		0.75	J	0.74	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.24	J	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.26	J	0.12	U	0.12	U	0.12	U	0.12	U	0.42	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.21	J	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.26	J	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.48	J	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-53_LF35.0		MW-54_LF60.0		MW-54_LF60.0		MW-54_LF60.0		MW-54_LF60.0		MW-157B_LF40.0	
		Date Sampled:	4/6/2018		7/26/2017		10/6/2017		1/12/2018		4/6/2018		3/16/2018	
		LAB Sample ID:	460153543-1-14		460138067-1-32		460142554-1-3		460148401-1-10		460153543-1-15		460152187-1-9	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	12		8.1		2.9	J	5.5		2	J	17	
Benzene	*71-43-2*	*1*	0.09	U	0.14	J	0.09	U	0.09	U	0.09	U	0.4	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	J	0.22	U	0.22	U	0.22	U	0.28	J
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	2.8		1.7		2.3		0.24	U	9.2	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.57	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.51	J
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	1.1	
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.25	J
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**23**		**1.9**		**1.3**		**2.5**		**0.76**		***30***	J
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	2.6	
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.33	J	0.13	U	0.13	U	0.13	U	0.13	U	0.22	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.57	J	0.22	J	0.21	U	0.21	U	0.43	J	0.76	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	**2.5**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.63	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.16	J
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.3	J
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	12	
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	12.3	
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-157B_LF40.0(A)		MW-157B_LF40.0(A)		MW-157B_LF40.0(A)		MW-157B_LF40.0(A)		MW-157B_LF40.0(B)		MW-157B_LF40.0(B)	
		Date Sampled:	7/26/2017		10/5/2017		1/11/2018		4/6/2018		7/26/2017		10/5/2017	
		LAB Sample ID:	460138067-1-4		460142481-1-7		460148307-1-7		460153543-1-3		460138067-1-5		460142481-1-8	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	22		14		43		15		25		17	
Benzene	*71-43-2*	*1*	0.64	J	0.46	J	0.58	J	0.32	J	0.66	J	0.44	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	4.4	J	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	24		0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	1		0.9	J	0.91	J	0.33	U	0.93	J	0.9	J
Chlorobenzene	*108-90-7*	*50*	6.1		5.9		11		8		6		5.9	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.35	J	0.4	J	0.51	J	0.46	J	0.34	J	0.39	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	1.3		0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.44	J	0.88	J	0.4	J	0.86	J	0.44	J	0.89	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.3	J	0.22	U	0.33	J	0.46	J	0.3	J	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.91	J	0.91	J	0.99	J	0.88	J	0.91	J	0.88	J
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	1.6		1.6		0.25	J	0.24	U	1.6		1.8	
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***79***		**84**		**25**		**25**		***80***		**81**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	2.2		0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	1.5		1.2		0.21	J	0.16	J	1.5		1.2	
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.41	J	0.82	J	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.41	J	0.23	J	**2.5**		**8.6**		0.29	J	0.18	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.35	J	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.63	J	0.32	J	**1.5**		0.22	U	0.53	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.36	J	0.4	J	0.06	U	0.26	J	0.36	J	0.44	J
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.34	J	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.34	J	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	19.6	JN	25	JN	21	JN	25	JN	19.6	JN	24	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-157B_LF40.0(B)		MW-157B_LF40.0(B)		MW-160_LF14.5		MW-160_LF14.5		MW-160_LF14.5		MW-160_LF14.5	
		Date Sampled:	1/11/2018		4/6/2018		7/26/2017		10/5/2017		1/11/2018		4/6/2018	
		LAB Sample ID:	460148307-1-8		460153543-1-4		460138067-1-6		460142481-1-9		460148307-1-9		460153543-1-5	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	47		13		8.2		2.7	J	1.1	U	1.1	U
Benzene	*71-43-2*	*1*	0.61	J	0.33	J	0.09	U	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	4.5	J	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	27		0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.87	J	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	11		8.4		0.24	U	0.24	U	0.24	U	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.54	J	0.51	J	0.22	U	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	1.5		0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.38	J	0.95	J	0.26	U	0.26	U	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.31	J	0.5	J	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.96	J	0.93	J	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.26	J	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**24**		**25**		**4.5**		**5.5**		**3.5**		**1.1**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	2.2		0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.21	J	0.19	J	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.44	J	1.1		0.21	U	0.21	U	0.21	U	0.42	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**2.5**		**9**		0.24	J	0.12	U	0.4	J	0.12	U
Toluene	*108-88-3*	*600*	0.35	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.31	J	**1.6**		0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.33	J	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.31	J	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.31	J	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	22	JN	27	JN	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-161_LF12.0		MW-161_LF12.0		MW-161_LF12.0		MW-161_LF12.0		MW-163_LF14.6		MW-163_LF14.6	
		Date Sampled:	7/26/2017		10/5/2017		1/11/2018		4/5/2018		7/26/2017		10/5/2017	
		LAB Sample ID:	460138067-1-7		460142481-1-10		460148307-1-10		460153381-1-7		460138067-1-8		460142481-1-11	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	1.1	U	10		9.1		7		1.1	U	1.1	U
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.094	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.57	J	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.49	J	1.1	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	1.1		0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.47	J	0.26	U	0.73	J	0.27	J	0.48	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**5.1**		**29**		**24**		**34**		**1.2**		**1.4**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.24	J	0.14	J	0.37	J	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.21	U	1.1		0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.43	J	1		0.51	J	**6.5**		0.37	J	0.12	U
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	**1.1**		0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-163_LF14.6		MW-163_LF14.6		MW-317A_LF12.85		MW-317A_LF12.85		MW-317A_LF12.85		MW-317A_LF12.85	
		Date Sampled:	1/11/2018		4/6/2018		7/26/2017		10/5/2017		1/11/2018		4/6/2018	
		LAB Sample ID:	460148307-1-11		460153543-1-6		460138067-1-9		460142481-1-13		460148307-1-12		460153543-1-7	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	5.5		2.9	J	9.5		6.7		3.1	J	2.2	J
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.81	J	0.36	J	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.61	J	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**3.3**		**0.82**		**0.54**		**0.61**		**1.3**		**1**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.67	J	0.63	J	0.21	U	0.21	U	0.73	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.29	J	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0	
		Date Sampled:	7/26/2017		10/5/2017		1/11/2018		1/23/2018		2/20/2018		4/5/2018	
		LAB Sample ID:	460138067-1-10		460142481-1-14		460148307-1-13		460148918-1-3		460150539-1-3		460153381-1-8	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	21		18		28		14		15	B	20	
Benzene	*71-43-2*	*1*	**1.4**		0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	38		6.1		0.24	U	0.24	U	0.37	J	0.37	J
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	3.7		0.97	J	0.26	U	0.26	U	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**29**		**39**		**37**		**33**		**33**		**43**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.36	J	0.42	J	0.17	J	0.14	J	0.13	U	0.18	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.41	J	0.21	U	0.21	U	0.23	J	0.21	U	0.38	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**2.5**		0.32	J	0.12	U	0.14	J	0.12	U	0.12	U
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**5.1**		0.86	J	0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.52	J	0.34	J	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317B_LF40.0(A)		MW-317B_LF40.0(B)		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0	
		Date Sampled:	11/7/2017		11/7/2017		7/26/2017		10/5/2017		11/7/2017		1/11/2018	
		LAB Sample ID:	460144534-1-12		460144534-1-13		460138067-1-11		460142481-1-15		460144534-1-17		460148307-1-14	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	27		27		19		1.1	U	19		17	
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.096	J	0.09	U	0.17	J	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.27	J	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	1.9		1.7		4.5		0.55	J	8.7		0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.64	J	0.22	U	0.55	J	8.5	
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.31	J	0.26	U	0.63	J	0.39	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**44**		**40**		**36**		**2**		**32**		**44**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.68	J	0.13	U	0.13	U	0.66	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.35	J	0.23	J	0.55	J	0.21	U	0.25	J	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.12	U	**1.2**		0.12	U	**2.2**		**2.7**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.38	J	0.24	J	0.18	U	0.18	U	0.89	J	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.35	J	0.34	J	0.22	U	0.22	U	0.45	J	0.49	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-318A_LF10.0		MW-318A_LF10.0		MW-318A_LF10.0	
		Date Sampled:	1/23/2018		2/20/2018		4/5/2018		11/7/2017		1/23/2018		5/21/2018	
		LAB Sample ID:	460148918-1-4		460150539-1-4		460153381-1-9		460144534-1-14		460148918-1-5		460156736-1-11	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	4.3	J	5	B	3.9	J	17		7.8	B	9.1	
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.14	J	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	2.3		0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.46	J	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	1.7		0.29	J
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.46	J	0.22	U	0.22	U	0.22	U	0.22	U	0.54	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.38	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**2.8**		**1.6**		**0.79**		**74**		**24**		***14***	J
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.31	J	0.13	U	0.16	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.21	U	0.51	J	0.24	J	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.69	J	0.36	J	0.12	U	0.12	U	**3.1**		**4.7**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	1.1		0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.25	J	0.72	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318A_LF10.0		MW-318A_LF10.0		MW-318A_LF10.0		MW-318A_LF11.74		MW-318A_LF11.74		MW-318A_LF11.74	
		Date Sampled:	8/2/2018		8/30/2018		9/17/2018		7/26/2017		10/5/2017		1/11/2018	
		LAB Sample ID:	460161962-1-6		460163757-1-6		460164877-1-6		460138067-1-12		460142481-1-17		460148307-1-16	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	7.6		5	U	5	U	7.2		18		12	
Benzene	*71-43-2*	*1*	0.43	U	0.43	U	0.43	U	0.09	U	0.09	U	0.17	J
Bromochloromethane	*74-97-5*	*100*	0.41	U	0.41	U	0.41	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.34	U	0.34	U	0.34	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.54	U	0.54	U	0.54	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	1	U	1	U	1	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	1.9	U	1.9	U	1.9	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	J	0.16	U	0.16	U	0.22	U	0.22	U	0.26	J
Carbon tetrachloride	*56-23-5*	*1*	0.21	U	0.21	U	0.21	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	6.3		3.1		2.6		1.5		2.9		2.7	
Chloroethane	*75-00-3*	*5*	0.32	U	0.32	U	0.32	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.41	J	0.33	U	0.33	U	0.24	J	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.14	U	0.14	U	0.14	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	4.5		1.1		1.1		0.26	U	0.84	J	0.36	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.46	U	0.46	U	0.46	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.32	U	0.32	U	0.32	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.38*	U	*0.38*	U	*0.38*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.28	U	0.28	U	0.28	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.5*	U	*0.5*	U	*0.5*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.43	U	0.43	U	0.43	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.34	U	0.34	U	0.34	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.76	U	0.76	U	0.76	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.12	U	0.12	U	0.12	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.26	U	0.26	U	0.26	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.43	U	0.43	U	0.43	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.12	U	0.12	U	0.12	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.35	U	0.35	U	0.35	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***29***	J	*28*	U	*28*	U	**12**		**52**		**37**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	2.9	U	2.9	U	2.9	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.34	U	0.34	U	0.34	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.31	U	0.31	U	0.31	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.47	U	0.47	U	0.47	U	0.13	U	0.36	J	0.18	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	2.7	U	2.7	U	2.7	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.26	U	0.26	U	0.26	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.57	J B	0.32	U	0.33	J	0.21	U	0.25	J	0.21	U
Styrene	*100-42-5*	*100*	0.42	U	0.42	U	0.42	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.37	U	0.37	U	0.37	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**1.4**		**1.6**		**2.4**		0.87	J	**1.6**		**9.4**	
Toluene	*108-88-3*	*600*	0.38	U	0.38	U	0.38	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.24	U	0.24	U	0.24	U	0.18	U	0.18	U	0.24	J
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.49	U	0.49	U	0.49	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.31	U	0.31	U	0.31	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.36	U	0.36	U	0.36	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.24	U	0.24	U	0.24	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.43	U	0.43	U	0.43	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**2.1**		**1.6**		**1.3**		0.22	U	0.45	J	0.9	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.14	U	0.14	U	0.14	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.37	U	0.37	U	0.37	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.61	J	0.17	U	0.17	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.3	U	0.3	U	0.3	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.36	U	0.36	U	0.36	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.65	U	0.65	U	0.65	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318A_LF11.74		MW-318A_LF11.74		MW-318A_LF11.74		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0	
		Date Sampled:	2/20/2018		3/16/2018		4/5/2018		7/26/2017		10/5/2017		11/7/2017	
		LAB Sample ID:	460150539-1-5		460152187-1-13		460153381-1-10		460138067-1-13		460142481-1-18		460144534-1-15	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	8.2	B	9.6		14		33		24		34	
Benzene	*71-43-2*	*1*	0.09	U	0.096	J	0.09	U	0.72	J	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.72	J	0.18	U	0.18	U	0.18	U	1.7	
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.85	J	1.5		0.58	J	38		0.24	U	0.79	J
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.84	J	3.4		0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	2.2		1.4		2.6		0.71	J	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.61	J	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.27	J	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.26	J	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**23**		***31***	J	***110***		**33**		**31**		**28**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.23	J	1.2		0.45	J	0.27	J	0.28	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	J	0.47	J	0.83	J	0.21	U	0.21	U	0.51	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**7**		**26**		**12**		**7.1**		**1.3**		0.65	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.31	J	**2.1**		**2**		**1.9**		0.5	J	0.26	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.19	J	0.06	U	0.35	J	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND		5.9	JN	17.9	JN	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
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Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0	
		Date Sampled:	1/11/2018		1/23/2018		2/20/2018		3/16/2018		4/5/2018		5/21/2018	
		LAB Sample ID:	460148307-1-17		460148918-1-6		460150539-1-6		460152187-1-14		460153381-1-11		460156736-1-12	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	100		26	B	20	B	26		24		14	
Benzene	*71-43-2*	*1*	0.21	J	0.22	J	0.09	U	0.09	U	0.12	J	0.2	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.2	J	0.18	U	0.55	J	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.93	J	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	3	J	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	13		2.8		0.22	U	0.28	J	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	6.1		1.5		0.28	J	5.1		4		12	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.34	J	0.22	U	0.25	J	0.31	J	0.51	J	0.78	J
Chloromethane	*74-87-3*	*100*	2.6		0.36	J	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.6	J	0.67	J	1.3		0.26	U	0.72	J	2.1	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.31	J	0.27	J	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**27**		**20**		**25**		***31***	J	**46**		***25***	J
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.2	J	0.13	U	0.17	J	0.3	J	0.49	J	0.25	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.56	J	0.37	J	0.23	J	0.52	J	0.95	J	0.26	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**7.3**		**6.3**		**4.7**		**1.2**		**7.5**		**52**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.36	J	0.44	J	0.37	J	**1.6**		**3.8**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.4	J
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	7.9	JN	ND	U	ND		ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-320C_LF61.0		MW-320C_LF61.0		MW-321B_LF50.0	
		Date Sampled:	8/2/2018		8/30/2018		9/17/2018		1/11/2018		4/6/2018		1/11/2018	
		LAB Sample ID:	460161962-1-7		460163757-1-7		460164877-1-7		460148307-1-18		460153543-1-8		460148307-1-19	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	140		58		38		1.1	U	5.8		5	
Benzene	*71-43-2*	*1*	**2.3**		**1.1**		0.99	J	0.11	J	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.41	U	0.41	U	0.41	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.34	U	0.34	U	0.34	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.54	U	0.54	U	0.54	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	1	U	1	U	1	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	**670**		220		130		2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	12		1.5		0.16	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.21	U	0.21	U	0.21	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	43		45		**53**		11		5.6		0.24	U
Chloroethane	*75-00-3*	*5*	0.32	U	0.32	U	0.32	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.33	U	0.33	U	0.33	U	0.56	J	0.26	J	0.29	J
Chloromethane	*74-87-3*	*100*	0.14	U	0.14	U	0.14	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	6.1		1.6		0.95	J	3.1		2		0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.46	U	0.46	U	0.46	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.32	U	0.32	U	0.32	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.38*	U	*0.38*	U	*0.38*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.28	U	0.28	U	0.28	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.5*	U	*0.5*	U	*0.5*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.43	U	0.43	U	0.43	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.34	U	0.34	U	0.34	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.76	U	0.76	U	0.76	J	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.12	U	0.12	U	0.12	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.26	U	0.26	U	0.26	U	10		5.9		0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.43	U	0.43	U	0.43	U	0.26	J	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.12	U	0.12	U	0.12	U	**8**		**4.6**		0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.35	U	0.35	U	0.35	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	*28*	U	*28*	U	*28*	U	***120***		**69**		**16**	
Ethylbenzene	*100-41-4*	*700*	2.1		1.7		2		0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	2.9	U	2.9	U	2.9	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.34	U	0.59	J	0.58	J	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.31	U	0.31	U	0.31	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.65	J	0.47	U	0.5	J	12		6.7		0.65	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	2.7	U	2.7	U	2.7	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.26	U	0.26	U	0.26	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.32	U	0.32	U	0.32	U	0.21	U	0.54	J	0.21	U
Styrene	*100-42-5*	*100*	0.42	U	0.42	U	0.42	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.37	U	0.37	U	0.37	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.25	U	0.25	U	0.25	U	**1.1**		0.61	J	0.12	U
Toluene	*108-88-3*	*600*	0.83	J	0.51	J	0.55	J	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.24	U	0.24	U	0.24	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.49	U	0.49	U	0.49	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.31	U	0.31	U	0.31	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.36	U	0.36	U	0.36	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.24	U	0.24	U	0.24	U	0.28	U	0.4	J	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.43	U	0.43	U	0.43	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.31	U	0.31	U	0.31	U	**3**		**1.9**		0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.14	U	0.14	U	0.14	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.37	U	0.37	U	0.37	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.17	U	0.17	U	0.17	U	0.61	J	0.4	J	0.06	U
m,p-Xylene	*179601-23-1*	*--*	2		1.4		1.2		0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	22		26		27		0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	24		27.4		28.2		0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	147.1	JN	58.3	JN	56.5	JN	32	JN	19	JN	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-321B_LF50.0		MW-321B_LF50.0(A)		MW-321B_LF50.0(A)		MW-321B_LF50.0(B)		MW-321B_LF50.0(B)		MW-321C_LF65.0	
		Date Sampled:	4/6/2018		7/26/2017		10/5/2017		7/26/2017		10/5/2017		7/26/2017	
		LAB Sample ID:	460153543-1-9		460138067-1-15		460142481-1-19		460138067-1-16		460142481-1-20		460138067-1-17	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	8.5		25		6.4		23		6.3		22	
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.39	J	0.22	U	0.46	J	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	0.9	J	0.24	U	0.24	U	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.25	J	0.22	U	0.26	J	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**16**		**18**		**19**		**16**		**21**		**9.6**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.8	J	0.98	J	0.71	J	0.91	J	0.73	J	0.47	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	1.1		0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	18.8	JN	14	JN	8.1	JN	14	JN	13.7	JN	5.9	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-321C_LF65.0		MW-321C_LF65.0		MW-321C_LF65.0		MW-322A_LF17.0		MW-322A_LF17.0		MW-346A_LF10.5	
		Date Sampled:	10/5/2017		1/11/2018		4/6/2018		1/11/2018		4/6/2018		5/21/2018	
		LAB Sample ID:	460142481-1-21		460148307-1-20		460153543-1-10		460148307-1-21		460153543-1-11		460156736-1-4	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	1.1	U	19		9.9		1.1	U	1.1	U	18	B
Benzene	*71-43-2*	*1*	0.093	J	0.09	U	0.09	U	0.12	J	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.32	J
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.59	J
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.83	J
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.23	J	2.5	
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.28	J
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	1.4	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.37	J
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**23**		**18**		**21**		**3.3**		**1.8**		*8.7*	U
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.79	J	0.84	J	0.83	J	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.89	J	0.21	U	1.8		0.32	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.12	U	0.12	U	0.6	J	0.12	U	**55**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	**4.8**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.35	J
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	19.5	JN	18.8	JN	18.3	JN	13	JN	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346A_LF10.5		MW-346A_LF11.0		MW-346A_LF11.0		MW-346A_LF13.1		MW-346A_LF13.1		MW-346A_LF13.1	
		Date Sampled:	6/26/2018		11/7/2017		1/23/2018		7/26/2017		10/5/2017		1/11/2018	
		LAB Sample ID:	460159218-1-10		460144534-1-19		460148918-1-7		460138067-1-18		460142481-1-22		460148307-1-22	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	92		22		23	B	15		13		60	
Benzene	*71-43-2*	*1*	**1.1**		0.09	U	0.4	J	0.7	J	0.32	J	0.58	J
Bromochloromethane	*74-97-5*	*100*	0.41	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.34	U	0.57	J	0.18	J	0.15	U	0.15	U	0.19	J
Bromoform	*75-25-2*	*4*	0.54	U	**36**		0.48	J	0.18	U	0.18	U	1.7	
Bromomethane	*74-83-9*	*10*	1	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	**960**		2.2	U	2.4	J	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.16	U	0.22	U	1.2		0.22	U	0.22	U	1.8	
Carbon tetrachloride	*56-23-5*	*1*	0.21	U	0.33	U	0.33	U	0.33	U	0.33	U	0.69	J
Chlorobenzene	*108-90-7*	*50*	14		2.6		15		**140**		**61**		6.8	
Chloroethane	*75-00-3*	*5*	0.32	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.33	U	0.54	J	0.94	J	0.22	U	0.22	U	1.1	
Chloromethane	*74-87-3*	*100*	0.14	U	0.22	U	0.54	J	0.22	U	0.22	U	0.38	J
cis-1,2-Dichloroethene	*156-59-2*	*70*	65		1.2		12		**100**		27		7.9	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.46	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.32	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.38*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.28	U	**2.3**		0.25	J	0.22	U	0.22	U	0.31	J
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.5*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.43	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.34	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.76	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.12	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.26	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.43	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.12	U	0.34	U	0.34	U	0.38	J	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.35	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	*28*	U	**11**		**3.2**		**10**		**17**		**8.9**	
Ethylbenzene	*100-41-4*	*700*	1.4		0.3	U	0.3	U	0.37	J	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	2.9	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.34	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	7.8		0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.81	J	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	2.7	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.26	U	0.22	U	0.28	J	0.36	J	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.32	U	0.21	U	0.38	J	0.21	U	0.21	U	0.28	J
Styrene	*100-42-5*	*100*	0.42	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.37	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**5.6**		**51**		**380**		**170**		**58**		**280**	
Toluene	*108-88-3*	*600*	0.72	J	0.25	U	0.49	J	0.31	J	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.24	U	0.18	U	0.65	J	2.2		0.56	J	0.75	J
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.49	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.31	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.36	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.24	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.43	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**5.1**		**1.9**		**15**		**71**		**16**		**12**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.14	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.37	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	**5.7**		0.06	U	**1.9**		**16**		**7.9**		**1.2**	
m,p-Xylene	*179601-23-1*	*--*	0.77	J	0.28	U	0.56	J	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.36	U	0.32	U	0.32	U	0.47	J	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.77	J	0.28	U	0.56	J	0.47	J	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	74	JN	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346A_LF13.1		MW-346A_LF13.1		MW-346A_LF13.1		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0	
		Date Sampled:	2/20/2018		3/16/2018		4/5/2018		7/26/2017		10/5/2017		11/7/2017	
		LAB Sample ID:	460150539-1-7		460152187-1-7		460153381-1-13		460138067-1-19		460142481-1-23		460144534-1-20	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	9.3	B	19	B	8.1	J	26		11		19	
Benzene	*71-43-2*	*1*	0.13	J	0.16	J	0.18	J	**1.1**		0.13	J	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.6	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.7	J	0.53	J	0.3	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	2.1		2.8		1.8	J	0.3	J	0.18	U	**26**	
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.36	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	4.4	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.33	J	0.32	J	0.44	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	**1.6**	J	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	3		2.2		17		50		8		3.7	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.74	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	2.8		1.9		2.5		0.43	J	0.27	J	0.36	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.44	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	3		2.3		9.9		5.2		0.89	J	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.32	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.52	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.46*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.85	J	0.99	J	0.44	U	0.22	U	0.22	U	**1.1**	
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.38*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.44	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.66	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.66	U	0.53	J	0.48	J	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.28	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.48	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.5	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.68	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.36	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**1.9**		*8.7*	U	**37**		**10**		**15**		**14**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.6	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	1.4	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.64	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	1.2	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.38	J	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	1.3	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.44	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.23	J	0.75	J	1.3	J	0.21	J	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.34	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.38	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**140**		**130**		**420**		**16**		**4.2**		**1.2**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.5	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.62	J	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.38	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.68	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.7	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.56	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.16	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**8.1**		**4.6**		**16**		**3**		0.7	J	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.3	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.54	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.48	J	0.18	J	**1.4**	J	**1.1**		0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.56	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.64	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.56	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND		ND	U	14	JN	13	JN	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0	
		Date Sampled:	1/11/2018		1/23/2018		2/20/2018		3/16/2018		4/5/2018		5/21/2018	
		LAB Sample ID:	460148307-1-23		460148918-1-9		460150539-1-9		460152187-1-8		460153381-1-14		460156736-1-3	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	360		180	B	78	B	14		13		16	B
Benzene	*71-43-2*	*1*	0.61	J	0.61	J	0.48	J	0.34	J	0.09	U	0.75	J
Bromochloromethane	*74-97-5*	*100*	1.2		0.4	J	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.2	J	0.16	J	0.27	J	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.85	J	1.3		1		0.89	J	0.88	J	0.18	U
Bromomethane	*74-83-9*	*10*	5		0.76	J	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	16		7.8		4.9	J	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	51		25		9.5		2.1		0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.59	J	0.58	J	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	24		13		4.1		8.4		1.1		22	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.94	J	1		1.4		0.78	J	0.91	J	0.79	J
Chloromethane	*74-87-3*	*100*	19		4.5		1.8		0.53	J	0.22	U	0.48	J
cis-1,2-Dichloroethene	*156-59-2*	*70*	2.3		3.5		4.3		0.26	U	0.84	J	2.4	
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.23	J	0.36	J	0.48	J	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.37	J	0.32	J	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**12**		**13**		**16**		***18***	J	**22**		***12***	J
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.42	J	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.66	J	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.14	J	0.21	J	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	1.1		0.57	J	0.36	J	0.66	J	1		0.33	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**78**		**84**		**57**		**17**		**16**		**49**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.24	J	0.28	J	0.27	J	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**2.4**		**3.6**		**3**		**1.4**		**2**		**3.4**	
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.28	J	0.14	J	0.06	U	0.06	U	0.31	J
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	15.2	J	ND	U	ND	U	11	JN	ND	U	15	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346B_LF40.0		MW-346B_LF40.0(A)		MW-346B_LF40.0(B)		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0	
		Date Sampled:	6/26/2018		5/31/2018		5/31/2018		7/26/2017		10/5/2017		11/7/2017	
		LAB Sample ID:	460159218-1-6		460157265-1-7		460157265-1-8		460138067-1-20		460142481-1-24		460144534-1-21	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	79		71	B	58	B	37		36		43	
Benzene	*71-43-2*	*1*	**1.1**		0.09	U	0.18	U	0.12	J	0.11	J	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.41	U	0.3	U	0.6	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.34	U	0.15	U	0.3	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.54	U	0.18	U	0.36	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	1	U	0.18	U	0.36	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	**840**		230		140		2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	2		0.24	J	0.44	U	0.29	J	0.23	J	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.21	U	0.33	U	0.66	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	3.6		0.24	U	0.48	U	26		20		23	
Chloroethane	*75-00-3*	*5*	0.32	U	0.37	U	0.74	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.52	J	0.22	U	0.44	U	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	4.2		0.22	U	0.44	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	3.4		0.26	U	0.52	U	2.1		1.2		0.5	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.46	U	0.16	U	0.32	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.32	U	0.26	U	0.52	U	0.59	J	0.6	J	0.63	J
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.38*	U	*0.23*	U	*0.46*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.28	U	0.22	U	0.44	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.5*	U	*0.19*	U	*0.38*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.43	U	0.22	U	0.44	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.34	U	0.33	U	0.66	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.76	U	0.33	U	0.66	U	0.35	J	0.42	J	0.38	J
Dichlorodifluoromethane	*75-71-8*	*1000*	0.12	U	0.14	U	0.28	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.26	U	0.24	U	0.48	U	0.52	J	0.77	J	0.8	J
1,2-Dichloroethane	*107-06-2*	*2*	0.43	U	0.25	U	0.5	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.12	U	0.34	U	0.68	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.35	U	0.18	U	0.36	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	*28*	U	***11***	J	*17*	U	***96***		***190***		***160***	
Ethylbenzene	*100-41-4*	*700*	0.44	J	0.3	U	0.6	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	2.9	U	0.72	U	1.4	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.34	U	0.32	U	0.64	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	45		0.71	J	1.2	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.78	J	0.13	U	0.26	U	1.9		1.8		3	
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	2.7	U	0.63	U	1.3	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.26	U	0.22	U	0.44	U	0.22	U	0.65	J	0.22	U
Methylene chloride	*75-09-2*	*3*	0.63	J	0.28	J	0.42	U	0.21	U	0.21	U	0.27	J
Styrene	*100-42-5*	*100*	0.42	U	0.17	U	0.34	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.37	U	0.19	U	0.38	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**2.2**		**7.7**		**6**		**4.1**		0.12	U	0.12	U
Toluene	*108-88-3*	*600*	0.54	J	0.25	U	0.5	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.24	U	0.18	U	0.36	U	0.28	J	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.49	U	0.19	U	0.38	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.31	U	0.34	U	0.68	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.36	U	0.35	U	0.7	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.24	U	0.28	U	0.56	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.43	U	0.08	U	0.16	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	**6**		0.36	J	0.44	U	**3**		**1.5**		0.31	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.14	U	0.15	U	0.3	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.37	U	0.27	U	0.54	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.4	J	0.06	U	0.12	U	0.51	J	0.54	J	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.3	J	0.28	U	0.56	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.36	U	0.32	U	0.64	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.3	U	0.28	U	0.56	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	90.3	JN	466.2	JN	**822**	JN	54	JN	65	JN	103.2	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0(A)	
		Date Sampled:	1/11/2018		1/23/2018		2/20/2018		4/5/2018		6/26/2018		5/21/2018	
		LAB Sample ID:	460148307-1-25		460148918-1-10		460150539-1-10		460153381-1-15		460159218-1-11		460156736-1-6	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	26		27		27	B	25		35		30	B
Benzene	*71-43-2*	*1*	0.09	U	0.13	J	0.09	U	0.11	J	0.43	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.41	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.34	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.54	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	1	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	19		2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.16	U	0.35	J
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.21	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	16		20		18		21		17		13	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.32	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.33	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.14	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.66	J	1		1.3		0.33	J	0.78	J	0.4	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.46	U	0.16	U
Cyclohexane	*110-82-7*	*100*	2		0.26	U	0.54	J	0.7	J	0.32	U	0.31	J
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.38*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.28	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.5*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.43	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.34	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.34	J	0.38	J	0.33	U	0.33	U	0.76	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.12	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.65	J	0.51	J	0.41	J	0.56	J	0.4	J	0.32	J
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.43	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.12	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.35	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***100***		***95***		***150***		***150***		***65***		***80***	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	2.9	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.34	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.31	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	2.2		1.7		1.6		2.4		1		1.1	
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	2.7	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.6	J	0.26	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.21	U	0.76	J	0.32	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.42	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.37	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.23	J	0.12	U	0.12	U	0.25	U	0.41	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.38	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.24	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.49	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.31	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.36	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.24	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.43	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.35	J	0.5	J	0.52	J	0.35	J	0.85	J	0.77	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.14	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.37	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.29	J	0.17	J	0.34	J	0.27	J	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.3	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.36	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.65	U	0.28	U
Total VOC TIC	*SRP170*	*500*	26	JN	29.7	JN	63	JN	65	JN	35.2	JN	39.3	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346C_LF70.0(B)		MW-350A_LF10.5		MW-350A_LF11.4		MW-350A_LF11.4		MW-350A_LF11.4		MW-350A_LF11.4	
		Date Sampled:	5/21/2018		5/21/2018		7/26/2017		10/5/2017		1/11/2018		4/5/2018	
		LAB Sample ID:	460156736-1-7		460156736-1-8		460138067-1-21		460142481-1-25		460148307-1-26		460153381-1-17	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	32	B	4.9	J B	1.1	U	1.1	U	1.1	U	1.1	U
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.33	J	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	13		0.24	U	0.35	J	0.24	U	0.24	U	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.38	J	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.41	J	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.29	J	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.3	J	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***77***		*8.7*	U	0.2	U	0.2	U	**0.44**		0.2	U
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	1.1		0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.87	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.33	J	0.34	J	0.4	J	0.12	U	**2.3**		0.87	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.76	J	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	38.2	JN	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-350B_LF40.0		MW-350B_LF40.0		MW-350B_LF40.0		MW-350B_LF40.0		MW-350B_LF40.0		MW-350C_LF70.0	
		Date Sampled:	7/26/2017		10/5/2017		1/11/2018		4/5/2018		5/21/2018		7/26/2017	
		LAB Sample ID:	460138067-1-22		460142481-1-27		460148307-1-27		460153381-1-18		460156736-1-9		460138067-1-23	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	37		30		33		24		28	B	39	
Benzene	*71-43-2*	*1*	0.16	J	0.14	J	**1.6**		0.76	J	0.3	J	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.23	J
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	29		32		**86**		**58**		33		**58**	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.28	J	0.26	J	0.26	U	0.26	U	0.26	U	0.45	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.57	J
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.29	J	0.27	J	0.46	J	0.45	J	0.25	J	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.48	J	0.41	J	0.5	J	0.45	J	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	1.5		1.4		1.7		1.6		1		0.53	J
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.38	J	0.38	J	0.51	J	0.4	J	0.27	J	1.2	
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.29	J	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***58***		***68***		**71**		***84***		***57***		***180***	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.46	J	0.45	J	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.31	J	0.22	J	0.26	J	0.34	J	0.19	J	3.9	
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.22	J	0.21	U	1.2		0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
Toluene	*108-88-3*	*600*	0.29	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.28	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.11	J	0.06	U	0.06	U	0.06	U	0.06	U	0.47	J
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	3.5		0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	3.5		0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	53.9	JN	57.8	JN	52.1	JN	27	JN	43.3	JN	131.7	JN

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-350C_LF70.0		MW-350C_LF70.0		MW-350C_LF70.0		MW-350C_LF70.0		MW-395A_LF12.5		MW-395A_LF12.5	
		Date Sampled:	10/5/2017		1/11/2018		4/5/2018		5/21/2018		7/26/2017		10/5/2017	
		LAB Sample ID:	460142481-1-28		460148307-1-28		460153381-1-19		460156736-1-10		460138067-1-24		460142481-1-29	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	36		45		38		34	B	4	J	1.1	U
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	1.5		0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	35		18		14		13		0.48	J	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.6	J	0.52	J	0.57	J	0.27	J	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.41	J	1.1		0.42	J	0.37	J	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.59	J	0.51	J	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	1.4		0.99	J	1.2		0.57	J	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	***190***		***130***		***180***		***120***		0.2	U	0.2	U
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	3.2		3		3.5		1.9		0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.55	J	0.23	J	0.21	U	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.12	U	0.55	J	0.12	U	0.12	U	0.21	J	0.31	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.22	J	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.27	J	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.45	J	0.35	J	0.47	J	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	114	JN	43.6	JN	84	JN	69.4	JN	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-395A_LF12.5		MW-395A_LF12.5		MW-396A_LF11.0		MW-396A_LF11.0		MW-396A_LF11.0		MW-396A_LF11.0	
		Date Sampled:	1/11/2018		4/6/2018		7/26/2017		10/5/2017		1/11/2018		4/5/2018	
		LAB Sample ID:	460148307-1-29		460153543-1-12		460138067-1-25		460142481-1-30		460148307-1-30		460153381-1-20	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	1.1	U	4.7	J	6.9		1.1	U	1.1	U	2.4	J
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	**3.7**		0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	1.8		0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.84	J	0.85	J	0.69	J	0.94	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**0.68**		0.2	U	**1.6**		**2.5**		**6.5**		**3.4**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	1.4		0.21	U	0.37	J	0.29	J	0.93	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.2	J	0.12	U	0.93	J	0.24	J	**12**		**3.4**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.33	J	0.22	U	0.75	J	0.99	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-397A_LF16.0		MW-397A_LF16.0		MW-397A_LF16.0		MW-397A_LF16.0		MW-447A_LF10.0		MW-447A_LF10.0(A)	
		Date Sampled:	7/26/2017		10/5/2017		1/12/2018		4/6/2018		11/7/2017		1/23/2018	
		LAB Sample ID:	460138067-1-27		460142481-1-31		460148401-1-3		460153543-1-13		460144534-1-22		460148918-1-11	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	30		1.1	U	4.7	J	2.3	J	6.9		2.3	J
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.52	J	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.27	J	0.22	U	0.22	U	0.22	U	0.25	J	0.48	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**3.4**		**4.7**		**6.1**		**2.3**		**2.4**		**1.8**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.21	U	0.82	J	0.34	J	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.26	J	0.15	J	0.19	J	0.12	U	0.12	U	**3.6**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	1.1		0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447A_LF10.0(B)		MW-447A_LF12.3		MW-447A_LF12.3		MW-447A_LF12.3(A)		MW-447A_LF12.3(A)		MW-447A_LF12.3(A)	
		Date Sampled:	1/23/2018		7/26/2017		10/5/2017		1/12/2018		2/20/2018		3/16/2018	
		LAB Sample ID:	460148918-1-12		460138067-1-28		460142481-1-32		460148401-1-4		460150539-1-11		460152187-1-10	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	2	J	13		1.1	U	8		1.1	U	1.1	U
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.13	J	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.24	U	0.57	J	1.9		0.24	U	0.24	U	0.24	U
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.48	J	0.54	J	0.26	J	0.36	J	0.46	J	0.44	J
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**1.6**		**2.9**		**8.8**		**1.2**		**1.4**		*8.7*	U
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.54	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**3.8**		0.28	J	0.16	J	0.83	J	**2.7**		**2.2**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447A_LF12.3(A)		MW-447A_LF12.3(B)		MW-447A_LF12.3(B)		MW-447A_LF12.3(B)		MW-447A_LF12.3(B)		MW-447B_LF40.0	
		Date Sampled:	4/5/2018		1/12/2018		2/20/2018		3/16/2018		4/5/2018		7/26/2017	
		LAB Sample ID:	460153381-1-21		460148401-1-5		460150539-1-12		460152187-1-11		460153381-1-22		460138067-1-29	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	1.1	U	8.8		1.1	U	1.1	U	8.5		24	
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.73	J
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.34	J	0.24	U	0.24	U	0.24	U	0.38	J	5.1	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.39	J	0.35	J	0.43	J	0.47	J	0.28	J	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.8	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**1.1**		**1.2**		**1.3**		*8.7*	U	**1.2**		**21**	
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.41	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.24	J	0.21	U	0.21	U	0.4	J	0.91	J	0.21	U
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	**1.8**		0.56	J	**2.7**		**2.2**		**1.3**		**1.3**	
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.57	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND		ND	U	ND	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0	
		Date Sampled:	10/5/2017		11/7/2017		1/12/2018		1/23/2018		2/20/2018		3/16/2018	
		LAB Sample ID:	460142481-1-33		460144534-1-23		460148401-1-6		460148918-1-13		460150539-1-13		460152187-1-12	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Acetone	*67-64-1*	*6000*	24		32		13		19		22	B	17	B
Benzene	*71-43-2*	*1*	0.09	U	0.09	U	0.11	J	0.09	U	0.09	U	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.92	J	0.26	J	0.34	J	0.24	U	0.24	U	1.3	
Chloroethane	*75-00-3*	*5*	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U	0.22	U	0.22	U	0.22	J	0.22	U	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.37	J	0.26	U	0.26	U	0.46	J	0.38	J	0.26	U
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U	0.25	U	0.25	U	0.28	J	0.25	U	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND		ND		ND		ND		ND		ND	
1,4-Dioxane	*123-91-1*	*0.4*	**28**		**22**		**15**		**20**		**25**		***17***	J
Ethylbenzene	*100-41-4*	*700*	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.39	J	0.13	U	0.28	J	0.33	J	0.22	J	0.29	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U	0.33	J	0.21	U	0.35	J	0.21	U	0.43	J
Styrene	*100-42-5*	*100*	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.3	J	0.12	U	**1.5**		**5.3**		**1.5**		0.97	J
Toluene	*108-88-3*	*600*	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U	0.31	J	0.18	U	0.85	J	0.18	U	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U
Trichloroethene	*79-01-6*	*1*	0.22	U	0.22	U	0.22	U	0.51	J	0.28	J	0.58	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U	ND	U	ND	U	ND	U	ND	U	ND	

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Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
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Values in italics indicate MDL above applicable criterion.

Table 7A
Summary of Volatile Organic Compounds (VOCs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Sample No.:	MW-447B_LF40.0
Date Sampled:	4/5/2018
LAB Sample ID:	460153381-1-23
LAB:	TestAmerica Edison

Parameter (ug/l)	***CAS No.***	***GWQS***		
Acetone	*67-64-1*	*6000*	17	
Benzene	*71-43-2*	*1*	0.09	U
Bromochloromethane	*74-97-5*	*100*	0.3	U
Bromodichloromethane	*75-27-4*	*1*	0.15	U
Bromoform	*75-25-2*	*4*	0.18	U
Bromomethane	*74-83-9*	*10*	0.18	U
2-Butanone (MEK)	*78-93-3*	*300*	2.2	U
Carbon Disulfide	*75-15-0*	*700*	0.22	U
Carbon tetrachloride	*56-23-5*	*1*	0.33	U
Chlorobenzene	*108-90-7*	*50*	0.65	J
Chloroethane	*75-00-3*	*5*	0.37	U
Chloroform	*67-66-3*	*70*	0.22	U
Chloromethane	*74-87-3*	*100*	0.22	U
cis-1,2-Dichloroethene	*156-59-2*	*70*	0.32	J
cis-1,3-Dichloropropene	*10061-01-5*	*--*	0.16	U
Cyclohexane	*110-82-7*	*100*	0.26	U
1,2-Dibromo-3-chloropropane	*96-12-8*	*0.02*	*0.23*	U
Dibromochloromethane	*124-48-1*	*1*	0.22	U
1,2-Dibromoethane	*106-93-4*	*0.03*	*0.19*	U
1,2-Dichlorobenzene	*95-50-1*	*600*	0.22	U
1,3-Dichlorobenzene	*541-73-1*	*600*	0.33	U
1,4-Dichlorobenzene	*106-46-7*	*75*	0.33	U
Dichlorodifluoromethane	*75-71-8*	*1000*	0.14	U
1,1-Dichloroethane	*75-34-3*	*50*	0.24	U
1,2-Dichloroethane	*107-06-2*	*2*	0.25	U
1,1-Dichloroethene	*75-35-4*	*1*	0.34	U
1,2-Dichloropropane	*78-87-5*	*1*	0.18	U
1,3-Dichloropropene (total)	*542-75-6*	*1*	ND	
1,4-Dioxane	*123-91-1*	*0.4*	**26**	
Ethylbenzene	*100-41-4*	*700*	0.3	U
2-Hexanone	*591-78-6*	*40*	0.72	U
Isopropylbenzene	*98-82-8*	*700*	0.32	U
Methyl Acetate	*79-20-9*	*7000*	0.58	U
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*70*	0.44	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*100*	0.63	U
Methylcyclohexane	*108-87-2*	*100*	0.22	U
Methylene chloride	*75-09-2*	*3*	0.21	U
Styrene	*100-42-5*	*100*	0.17	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*1*	0.19	U
Tetrachloroethene	*127-18-4*	*1*	0.57	J
Toluene	*108-88-3*	*600*	0.25	U
trans-1,2-Dichloroethene	*156-60-5*	*100*	0.18	U
trans-1,3-Dichloropropene	*10061-02-6*	*--*	0.19	U
Freon 113	*76-13-1*	*20000*	0.34	U
1,2,3-Trichlorobenzene	*87-61-6*	*100*	0.35	U
1,1,1-Trichloroethane	*71-55-6*	*30*	0.28	U
1,1,2-Trichloroethane	*79-00-5*	*3*	0.08	U
Trichloroethene	*79-01-6*	*1*	0.51	J
Trichlorofluoromethane	*75-69-4*	*2000*	0.15	U
1,2,4-Trichlorobenzene	*120-82-1*	*9*	0.27	U
Vinyl Chloride	*75-01-4*	*1*	0.06	U
m,p-Xylene	*179601-23-1*	*--*	0.28	U
o-Xylene	*95-47-6*	*--*	0.32	U
Xylenes (total)	*1330-20-7*	*1000*	0.28	U
Total VOC TIC	*SRP170*	*500*	ND	U

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ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
N = Presumptive evidence of a compound
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-75_LF16.5		ART-75_LF16.5		ART-75_LF16.5		ART-75_LF16.5		ART-75_LF16.5		ART-76_LF16.5	
		Date Sampled:	11/7/2017		3/16/2018		5/18/2018		5/31/2018		6/26/2018		11/7/2017	
		LAB Sample ID:	460144534-1-3		460152187-1-3		460156495-1-4		460157265-1-3		460159218-1-3		460144534-1-4	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		NA		NA		NA		NA		NA	
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		NA	
Iron	*7439-89-6*	*300*	NA		NA		NA		NA		NA		NA	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		NA	
Manganese	*7439-96-5*	*50*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		NA	
Sulfate	*14808-79-8*	*250000*	**360000**	D	**435000**	D	NA		NA		NA		**656000**	D
Total Organic Carbon	*SRP33*	--	NA		NA		4200	B	257000		614000	B	NA	

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U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.
B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-76_LF16.5		ART-76_LF16.5		ART-76_LF16.5		ART-77_LF36.5		ART-77_LF36.5		ART-77_LF36.5	
		Date Sampled:	5/18/2018		5/31/2018		6/26/2018		11/7/2017		3/16/2018		5/18/2018	
		LAB Sample ID:	460156495-1-5		460157265-1-4		460159218-1-4		460144534-1-5		460152187-1-4		460156495-1-9	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		NA		NA		NA		NA		212000	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		NA	
Iron	*7439-89-6*	*300*	NA		NA		NA		NA		NA		189	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		NA	
Manganese	*7439-96-5*	*50*	NA		NA		NA		NA		NA		**8680**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		4700	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		590	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		240	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		**596000**	
Sulfate	*14808-79-8*	*250000*	NA		NA		NA		**570000**	D	**1800000**	D	**767000**	D
Total Organic Carbon	*SRP33*	--	6200	B	1240000		1390000	B	NA		NA		4800	B

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B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-77_LF36.5		ART-77_LF36.5 (A)		ART-77_LF36.5 (B)		ART-78_LF16.5		ART-78_LF16.5		ART-78_LF16.5	
		Date Sampled:	5/31/2018		6/26/2018		6/26/2018		11/7/2017		3/16/2018		5/18/2018	
		LAB Sample ID:	460157265-1-10		460159218-1-7		460159218-1-8		460144534-1-6		460152187-1-5		460156495-1-3	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		**293000**	D	**294000**	D	NA		NA		**433000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		NA	
Iron	*7439-89-6*	*300*	NA		129	J	**615**		NA		NA		163	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		NA	
Manganese	*7439-96-5*	*50*	NA		**2330**		**2550**		NA		NA		**5780**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		53	J B	61	J B	NA		NA		6400	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		**1100**	
Phosphate, Ortho	*14265-44-2*	--	NA		21	U	21	U	NA		NA		110	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		**12900000**		**13000000**		NA		NA		**331000**	
Sulfate	*14808-79-8*	*250000*	NA		**1120000**	D	**1110000**	D	**427000**	D	**1960000**	D	**1460000**	D
Total Organic Carbon	*SRP33*	--	4220000		1830000	B	1820000	B	NA		NA		4500	B

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NA = Not Analyzed
J = Estimated value below sample reporting limit
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B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-78_LF16.5		ART-78_LF16.5		ART-79_LF31.5		ART-80_LF31.5		ART-80_LF31.5		ART-85_LF44.0	
		Date Sampled:	5/31/2018		6/26/2018		11/7/2017		11/7/2017		11/7/2017		10/5/2017	
		LAB Sample ID:	460157265-1-9		460159218-1-14		460144534-1-7		460144534-1-8		460144534-1-8F		460142481-1-6	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		86400	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		86400	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		5000	U
Arsenic	*7440-38-2*	*3*	NA		NA		NA		0.74	J	0.8	J	NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		39.6		36		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		0.71	U	0.71	U	NA	
Chloride	*16887-00-6*	*250000*	NA		139000	D	NA		**813000**	D	NA		**730000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		43.6		33.3		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		29.3		33.9		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		14.3		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		11.1		3.4	J	NA	
Iron	*7439-89-6*	*300*	NA		**53500**		NA		131		42.4	U	92.1	U
Lead	*7439-92-1*	*5*	NA		NA		NA		0.52	J	0.38	U	NA	
Manganese	*7439-96-5*	*50*	NA		**17500**		NA		NA		NA		25.8	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		38	J B	NA		NA		NA		3000	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		33	J
Phosphate, Ortho	*14265-44-2*	--	NA		420		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		0.73	U	0.73	U	NA	
Sodium	*7440-23-5*	*50000*	NA		**379000**		NA		**441000**		**421000**		NA	
Sulfate	*14808-79-8*	*250000*	NA		24000	D	241000	D	**360000**	D	NA		**271000**	D
Total Organic Carbon	*SRP33*	--	788000		366000	B	NA		NA		NA		4600	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-85_LF44.0		BIOS-1B_LF65.0		BIOS-1B_LF65.0 (A)		BIOS-1B_LF65.0 (B)		IW-104A_LF27.5		IW-107A_LF32.5	
		Date Sampled:	3/16/2018		5/21/2018		8/2/2018		8/2/2018		11/7/2017		11/7/2017	
		LAB Sample ID:	460152187-1-6		460156736-1-13		460161962-1-3		460161962-1-4		460144534-1-9		460144534-1-10	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		NA		NA		NA		NA		NA	
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		NA	
Iron	*7439-89-6*	*300*	NA		NA		NA		NA		NA		NA	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		NA	
Manganese	*7439-96-5*	*50*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		NA	
Sulfate	*14808-79-8*	*250000*	**640000**	D	NA		NA		NA		**449000**	D	**444000**	D
Total Organic Carbon	*SRP33*	--	NA		4700		123000		123000		NA		NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IW-109A_LF27.5		IW-109A_LF27.5		IW-110A_LF27.5		IW-110A_LF27.5		IW-110A_LF27.5		IW-111A_LF31.5	
		Date Sampled:	5/18/2018		5/31/2018		5/18/2018		5/31/2018		6/26/2018		11/7/2017	
		LAB Sample ID:	460156495-1-6		460157265-1-5		460156495-1-7		460157265-1-6		460159218-1-5		460144534-1-11	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		NA		NA		NA		NA		NA	
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		NA	
Iron	*7439-89-6*	*300*	NA		NA		NA		NA		NA		NA	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		NA	
Manganese	*7439-96-5*	*50*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		NA	
Sulfate	*14808-79-8*	*250000*	NA		NA		NA		NA		NA		**455000**	D
Total Organic Carbon	*SRP33*	--	4200	B	1610000		4600	B	2310000		764000	B	NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IW-113A_LF27.5		IW-113A_LF27.5		IW-194B_LF37.5		IW-194B_LF37.5		IW-194B_LF37.5		IW-194B_LF40.0	
		Date Sampled:	5/21/2018		6/26/2018		5/21/2018		5/31/2018		6/26/2018		8/2/2018	
		LAB Sample ID:	460156736-1-5		460159218-1-9		460156736-1-14		460157265-1-11		460159218-1-12		460161962-1-5	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		NA		NA		NA		NA		NA	
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		NA	
Iron	*7439-89-6*	*300*	NA		NA		NA		NA		NA		NA	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		NA	
Manganese	*7439-96-5*	*50*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		NA	
Sulfate	*14808-79-8*	*250000*	NA		NA		NA		NA		NA		NA	
Total Organic Carbon	*SRP33*	--	4000		401000	B	5200		1830000		4850000	B	4080000	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IW-194B_LF40.0		IW-194B_LF40.0		MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0	
		Date Sampled:	8/30/2018		9/17/2018		11/7/2017		11/7/2017		1/12/2018		1/12/2018	
		LAB Sample ID:	460163757-1-5		460164877-1-5		460144534-1-24		460144534-1-24F		460148401-1-8		460148401-1-8F	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		187000		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		187000		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		5000	U	NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		5000	U	NA	
Arsenic	*7440-38-2*	*3*	NA		NA		1.4	J	1.1	J	**3.4**		0.94	J
Barium	*7440-39-3*	*6000*	NA		NA		64.9		54.3		122		62.4	
Cadmium	*7440-43-9*	*4*	NA		NA		0.71	U	0.71	U	0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	NA		NA		**859000**	D	NA		74000	D	NA	
Chromium	*7440-47-3*	*70*	NA		NA		3.4	J	1.3	U	17.5		4.5	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		27.3	U	27.3	U	27.4	U	13.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		NA		3.4		NA		17.5		NA	
Copper	*7440-50-8*	*1300*	NA		NA		23		1.5	J	7.9		1.9	U
Iron	*7439-89-6*	*300*	NA		NA		**8180**		**3380**		**53500**		**11100**	
Lead	*7439-92-1*	*5*	NA		NA		1.8		0.38	U	2.1		0.39	J
Manganese	*7439-96-5*	*50*	NA		NA		NA		NA		**1570**		**1080**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		800		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		38	J	NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		0.73	U	0.73	U	0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	NA		NA		**420000**		**450000**		**473000**		**524000**	
Sulfate	*14808-79-8*	*250000*	NA		NA		**288000**	D	NA		49300	D	NA	
Total Organic Carbon	*SRP33*	--	3990000		2670000	B	NA		NA		7600		NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0		MW-52_LF25.0	
		Date Sampled:	1/23/2018		1/23/2018		2/20/2018		2/20/2018		4/5/2018		4/5/2018	
		LAB Sample ID:	460148918-1-14		460148918-1-14F		460150539-1-14		460150539-1-14F		460153381-1-25		460153381-1-25F	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		46100		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		46100		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		5000	U	NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		5000	U	NA	
Arsenic	*7440-38-2*	*3*	1.3	J	0.77	U	1.2	J	0.77	U	0.77	U	0.77	U
Barium	*7440-39-3*	*6000*	61.5		49		56		30.5		41.5		30.5	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	**751000**	D	NA		**787000**	D	NA		**668000**	D	NA	
Chromium	*7440-47-3*	*70*	5.2		1.4	J	5.8		1.3	U	7.1		1.3	U
Chromium, Hexavalent	*18540-29-9*	--	5.5	U	2.7	U	13.7	U	2.7	U	2.7	U	2.7	U
Chromium, Trivalent	*16065-83-1*	--	5.2		NA		5.8		NA		7.1		NA	
Copper	*7440-50-8*	*1300*	4.8		1.9	U	6.6		1.9	U	3.9	J	1.9	U
Iron	*7439-89-6*	*300*	**18200**		**5640**		**20200**		**1850**		**15100**		277	
Lead	*7439-92-1*	*5*	0.62	J	0.37	U	1.4		0.37	U	0.37	U	0.37	U
Manganese	*7439-96-5*	*50*	**1010**		**1010**		**641**		**348**		**509**		**376**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		790		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		45	J	NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	**446000**		**530000**		**488000**		NA		**539000**		**574000**	
Sulfate	*14808-79-8*	*250000*	**530000**	D	NA		**957000**	D	NA		**839000**	D	NA	
Total Organic Carbon	*SRP33*	--	NA		NA		NA		NA		3800		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.
B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-157B_LF40.0		MW-157B_LF40.0(A)		MW-157B_LF40.0(A)		MW-157B_LF40.0(B)		MW-157B_LF40.0(B)		MW-161_LF12.0	
		Date Sampled:	3/16/2018		7/26/2017		10/5/2017		7/26/2017		10/5/2017		1/11/2018	
		LAB Sample ID:	460152187-1-9		460138067-1-4		460142481-1-7		460138067-1-5		460142481-1-8		460148307-1-10	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		212000		214000		213000		215000		188000	
Alkalinity, Bicarbonate	*SRP163*	--	NA		212000		214000		213000		215000		188000	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	5000	U	5000	U	5000	U	5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	5000	U	5000	U	5000	U	5000	U
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		**1210000**	D	**955000**	D	**1250000**	D	**851000**	D	**492000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		NA	
Iron	*7439-89-6*	*300*	NA		232		233		221		238		NA	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		NA	
Manganese	*7439-96-5*	*50*	NA		**2590**		**2630**		**2580**		**2650**		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		10	U	NA		10	U	6400	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		650		NA		680		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		3	U ^	NA		3	U ^	390	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		NA	
Sulfate	*14808-79-8*	*250000*	**347000**	D	**267000**	D	**272000**	D	**266000**	D	**273000**	D	**602000**	D
Total Organic Carbon	*SRP33*	--	NA		4300		4400		4400		4500		7900	B

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-161_LF12.0		MW-161_LF12.0		MW-161_LF12.0		MW-317A_LF12.85		MW-317A_LF12.85		MW-317B_LF40.0	
		Date Sampled:	1/11/2018		4/5/2018		4/5/2018		7/26/2017		10/5/2017		7/26/2017	
		LAB Sample ID:	460148307-1-10F		460153381-1-7		460153381-1-7F		460138067-1-9		460142481-1-13		460138067-1-10	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		77600		NA		491000		383000		195000	
Alkalinity, Bicarbonate	*SRP163*	--	NA		77600		NA		491000		383000		195000	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	NA		5000	U	5000	U	5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	NA		5000	U	5000	U	5000	U
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		221000	D	NA		**411000**	D	**467000**	D	**788000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		NA	
Iron	*7439-89-6*	*300*	164		NA		**430**		92.1	U	**6370**		92.1	U
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		NA	
Manganese	*7439-96-5*	*50*	**665**		NA		**3170**		8.8	J	**429**		**3290**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		4200		NA		NA		2000	H	NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		1800		NA		790	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		180		NA		NA		52	J H	NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		NA	
Sulfate	*14808-79-8*	*250000*	NA		**551000**	D	NA		**509000**	D	**504000**	D	**322000**	D
Total Organic Carbon	*SRP33*	--	NA		6500		NA		8700		8300		4600	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0	
		Date Sampled:	10/5/2017		1/11/2018		1/11/2018		1/23/2018		1/23/2018		2/20/2018	
		LAB Sample ID:	460142481-1-14		460148307-1-13		460148307-1-13F		460148918-1-3		460148918-1-3F		460150539-1-3	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	131000		84500		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	131000		84500		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	5000	U	5000	U	NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	5000	U	5000	U	NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	NA		**10.2**		**7**		1.9	J	1.8	J	**3.8**	
Barium	*7440-39-3*	*6000*	NA		286		74		74.7		68.2		165	
Cadmium	*7440-43-9*	*4*	NA		0.61	U	0.61	U	0.61	U	0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	**708000**	D	**440000**	D	NA		**799000**		NA		**966000**	D
Chromium	*7440-47-3*	*70*	NA		**79.3**		11.2		6.7		1.3	U	12.3	
Chromium, Hexavalent	*18540-29-9*	--	NA		54.8	U	27.4	U	2.7	U	2.7	U	27.4	U
Chromium, Trivalent	*16065-83-1*	--	NA		NA		11.2		6.7		NA		12.3	
Copper	*7440-50-8*	*1300*	NA		31.6		15.5		12.6		2.6	J	13.7	
Iron	*7439-89-6*	*300*	92.1	U	**12800**		**3890**		**1250**		45.7	U	**4970**	
Lead	*7439-92-1*	*5*	NA		**22.6**		**12**		3		0.37	U	**7**	
Manganese	*7439-96-5*	*50*	**2940**		**4970**		**3840**		**1040**		**847**		**2120**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	4300		**11700**		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	280	J	96	J	NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	NA		**448000**		**501000**		**422000**		**512000**		**467000**	
Sulfate	*14808-79-8*	*250000*	**343000**	D	**390000**	D	NA		**779000**		NA		**1730000**	D
Total Organic Carbon	*SRP33*	--	5000		4600	B	NA		NA		NA		NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0		MW-317B_LF40.0(A)		MW-317B_LF40.0(A)		MW-317B_LF40.0(B)	
		Date Sampled:	2/20/2018		4/5/2018		4/5/2018		11/7/2017		11/7/2017		11/7/2017	
		LAB Sample ID:	460150539-1-3F		460153381-1-8		460153381-1-8F		460144534-1-12		460144534-1-12F		460144534-1-13	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		84100		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		84100		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	1.8	J	**3.6**		1.7	J	1.2	J	1.2	J	1.2	J
Barium	*7440-39-3*	*6000*	59.7		113		56.2		54.9		54.8		54	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	0.61	U	0.71	U	0.71	U	0.71	U
Chloride	*16887-00-6*	*250000*	NA		**740000**	D	NA		**864000**	D	NA		**843000**	D
Chromium	*7440-47-3*	*70*	1.3	U	10.1		1.3	U	6.1		1.5	J	7.6	
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	5.5	U	2.7	U	2.7	U	2.7	U	2.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		10.1		NA		6.1		NA		7.6	
Copper	*7440-50-8*	*1300*	1.9	U	10.2		1.9	J	1.7	J	1.4	U	19.7	
Iron	*7439-89-6*	*300*	45.7	U	**2820**		136		172		42.4	U	191	
Lead	*7439-92-1*	*5*	0.37	U	4.9		0.62	J	0.45	J	0.38	U	1.6	
Manganese	*7439-96-5*	*50*	**425**		**1880**		**376**		NA		NA		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		**15900**		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		28	J	NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U	0.69	U	0.73	U	0.73	U	0.73	U
Sodium	*7440-23-5*	*50000*	NA		**575000**		**564000**		**428000**		**421000**		**428000**	
Sulfate	*14808-79-8*	*250000*	NA		**1080000**	D	NA		**381000**	D	NA		**426000**	D
Total Organic Carbon	*SRP33*	--	NA		4100		NA		NA		NA		NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317B_LF40.0(B)		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0	
		Date Sampled:	11/7/2017		7/26/2017		10/5/2017		11/7/2017		11/7/2017		1/11/2018	
		LAB Sample ID:	460144534-1-13F		460138067-1-11		460142481-1-15		460144534-1-17		460144534-1-17F		460148307-1-14	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		131000		134000		NA		NA		131000	
Alkalinity, Bicarbonate	*SRP163*	--	NA		131000		134000		NA		NA		131000	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	5000	U	NA		NA		5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	5000	U	NA		NA		5000	U
Arsenic	*7440-38-2*	*3*	1.2	J	NA		NA		1.5	J	1.3	J	1.7	J
Barium	*7440-39-3*	*6000*	54.1		NA		NA		227		226		270	
Cadmium	*7440-43-9*	*4*	0.71	U	NA		NA		0.71	U	0.71	U	0.61	U
Chloride	*16887-00-6*	*250000*	NA		**321000**	D	16200	D	**958000**	D	NA		**547000**	D
Chromium	*7440-47-3*	*70*	1.7	J	NA		NA		32.2		4.7		6.1	
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	NA		NA		2.7	U	2.7	U	5.2	J
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		32.2		NA		0.9000001	
Copper	*7440-50-8*	*1300*	1.4	U	NA		NA		15.6		6.3		9.1	
Iron	*7439-89-6*	*300*	42.4	U	157		**870**		**861**		269		**556**	
Lead	*7439-92-1*	*5*	0.38	U	NA		NA		2.6		0.97	J	1.2	
Manganese	*7439-96-5*	*50*	NA		**192**		**290**		NA		NA		**152**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		10	U	NA		NA		3200	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		2700		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		13	J ^	NA		NA		39	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.73	U	NA		NA		0.73	U	0.73	U	0.69	U
Sodium	*7440-23-5*	*50000*	**421000**		NA		NA		**136000**		**137000**		**198000**	
Sulfate	*14808-79-8*	*250000*	NA		70100	D	20700	D	68400	D	NA		207000	D
Total Organic Carbon	*SRP33*	--	NA		5700		8400		NA		NA		5200	B

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0	
		Date Sampled:	1/11/2018		1/23/2018		1/23/2018		2/20/2018		2/20/2018		4/5/2018	
		LAB Sample ID:	460148307-1-14F		460148918-1-4		460148918-1-4F		460150539-1-4		460150539-1-4F		460153381-1-9	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		66600	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		66600	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		5000	U
Arsenic	*7440-38-2*	*3*	2.3		1.7	J	1.6	J	1.6	J	1.4	J	0.81	J
Barium	*7440-39-3*	*6000*	287		46.6		34		20.1		16.4		7.4	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	NA		28500	D	NA		14600	D	NA		4430	D
Chromium	*7440-47-3*	*70*	1.3	U	19.8		1.3	U	16.9		4.1		5.4	
Chromium, Hexavalent	*18540-29-9*	--	3	J	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		19.8		NA		16.9		NA		5.4	
Copper	*7440-50-8*	*1300*	7.7		22.1		15.3		32.4		22.2		9.6	
Iron	*7439-89-6*	*300*	45.7	U	**673**		52.3	J	**4710**		259		**600**	
Lead	*7439-92-1*	*5*	0.37	U	3.4		0.37	U	**5.4**		2.1		2.1	
Manganese	*7439-96-5*	*50*	24.2		**118**		31		**89.6**		43.7		41.4	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		1500	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		28	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	**213000**		28200		25200		22000		NA		12500	
Sulfate	*14808-79-8*	*250000*	NA		24200	D	NA		11400	D	NA		6080	D
Total Organic Carbon	*SRP33*	--	NA		NA		NA		NA		NA		4100	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.
B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317C_LF65.0		MW-318A_LF10.0		MW-318A_LF10.0		MW-318A_LF10.0		MW-318A_LF10.0		MW-318A_LF10.0	
		Date Sampled:	4/5/2018		11/7/2017		11/7/2017		1/23/2018		1/23/2018		5/21/2018	
		LAB Sample ID:	460153381-1-9F		460144534-1-14		460144534-1-14F		460148918-1-5		460148918-1-5F		460156736-1-11	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	0.77	U	0.64	U	0.64	U	0.77	U	0.93	J	NA	
Barium	*7440-39-3*	*6000*	4.2		50.8		44.3		32.8		24.8		NA	
Cadmium	*7440-43-9*	*4*	0.61	U	0.71	U	0.71	U	**8.8**		**9.8**		NA	
Chloride	*16887-00-6*	*250000*	NA		**879000**	D	NA		**492000**	D	NA		NA	
Chromium	*7440-47-3*	*70*	1.3	U	27.4		1.8	J	2.7	J	1.3	U	NA	
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	NA	
Chromium, Trivalent	*16065-83-1*	--	NA		27.4		NA		2.7		NA		NA	
Copper	*7440-50-8*	*1300*	5.3		10.7		1.5	J	16		13.7		NA	
Iron	*7439-89-6*	*300*	45.7	U	**770**		68.7	J	**671**		270		NA	
Lead	*7439-92-1*	*5*	0.37	U	1.1	J	0.38	U	0.67	J	0.43	J	NA	
Manganese	*7439-96-5*	*50*	3.8	J	NA		NA		**10800**		**11400**		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.73	U	0.73	U	0.69	U	0.71	J	NA	
Sodium	*7440-23-5*	*50000*	12200		**390000**		**427000**		**365000**		**418000**		NA	
Sulfate	*14808-79-8*	*250000*	NA		**426000**	D	NA		**953000**	D	NA		NA	
Total Organic Carbon	*SRP33*	--	NA		NA		NA		NA		NA		6000	

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NA = Not Analyzed
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B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318A_LF10.0		MW-318A_LF11.74		MW-318A_LF11.74		MW-318A_LF11.74		MW-318A_LF11.74		MW-318A_LF11.74	
		Date Sampled:	8/2/2018		7/26/2017		10/5/2017		1/11/2018		1/11/2018		2/20/2018	
		LAB Sample ID:	460161962-1-6		460138067-1-12		460142481-1-17		460148307-1-16		460148307-1-16F		460150539-1-5	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		71300		62300		163000		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		71300		62300		163000		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	5000	U	5000	U	NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	5000	U	5000	U	NA		NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		**38.7**		1.6	J	0.77	U
Barium	*7440-39-3*	*6000*	NA		NA		NA		4650		32.9		27.6	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		**60.1**		**43.4**		**9.5**	
Chloride	*16887-00-6*	*250000*	NA		227000	D	**731000**	D	**734000**	D	NA		**590000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		**578**		1.9	J	1.3	U
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		274	U	51.7	J	2.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		-49.8		ND	
Copper	*7440-50-8*	*1300*	NA		NA		NA		307		55.9		13.1	
Iron	*7439-89-6*	*300*	NA		92.1	U	92.1	U	***204000***		206		91.8	J
Lead	*7439-92-1*	*5*	NA		NA		NA		**185**		0.63	J	0.37	U
Manganese	*7439-96-5*	*50*	NA		**3150**		**10900**		**53200**		**30200**		**7170**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		**13500**	H	9900		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		5600		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		250	J H	350	J	NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		1.2	J	0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	NA		NA		NA		**515000**		**565000**		**365000**	
Sulfate	*14808-79-8*	*250000*	NA		**282000**	D	**399000**	D	**4270000**	D	NA		**933000**	D
Total Organic Carbon	*SRP33*	--	29800		5400		5400		11500		NA		NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318A_LF11.74		MW-318A_LF11.74		MW-318A_LF11.74		MW-318A_LF11.74		MW-318B_LF50.0		MW-318B_LF50.0	
		Date Sampled:	2/20/2018		3/16/2018		4/5/2018		4/5/2018		7/26/2017		10/5/2017	
		LAB Sample ID:	460150539-1-5F		460152187-1-13		460153381-1-10		460153381-1-10F		460138067-1-13		460142481-1-18	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		114000		NA		220000		125000	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		114000		NA		220000		125000	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		5000	U	NA		5000	U	5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		NA		5000	U	NA		5000	U	5000	U
Arsenic	*7440-38-2*	*3*	0.77	U	NA		2.4		0.77	U	NA		NA	
Barium	*7440-39-3*	*6000*	25.1		NA		98.5		16.8		NA		NA	
Cadmium	*7440-43-9*	*4*	**9.1**		NA		3.5		3		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		NA		**675000**	D	NA		**615000**	D	**589000**	D
Chromium	*7440-47-3*	*70*	1.3	U	NA		20.6		1.3	U	NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	NA		13.7	U	2.7	U	NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		20.6		NA		NA		NA	
Copper	*7440-50-8*	*1300*	11.1		NA		38.5		13.2		NA		NA	
Iron	*7439-89-6*	*300*	45.7	U	NA		**5090**		45.7	U	118	J	92.1	U
Lead	*7439-92-1*	*5*	0.37	U	NA		**5.9**		0.37	U	NA		NA	
Manganese	*7439-96-5*	*50*	**7960**		NA		**19100**		**17700**		**4170**		**1500**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		6800		NA		NA		5500	H
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		580		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		560		NA		NA		15	U H
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.81	J	NA		0.79	J	0.69	U	NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		**796000**		**777000**		NA		NA	
Sulfate	*14808-79-8*	*250000*	NA		**2570000**	D	**1980000**	D	NA		**379000**	D	**398000**	D
Total Organic Carbon	*SRP33*	--	NA		NA		7300		NA		4900		5300	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0	
		Date Sampled:	11/7/2017		11/7/2017		1/11/2018		1/11/2018		1/23/2018		1/23/2018	
		LAB Sample ID:	460144534-1-15		460144534-1-15F		460148307-1-17		460148307-1-17F		460148918-1-6		460148918-1-6F	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		199000		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		199000		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		5000	U	NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		5000	U	NA		NA		NA	
Arsenic	*7440-38-2*	*3*	**7.9**		0.82	J	**16.1**		**8.9**		**28.8**		**8.3**	
Barium	*7440-39-3*	*6000*	262		43.8		463		27.5		573		28	
Cadmium	*7440-43-9*	*4*	0.71	U	0.71	U	0.82	J	0.71	J	0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	**673000**	D	NA		**599000**	D	NA		**445000**	D	NA	
Chromium	*7440-47-3*	*70*	11.1		1.3	U	**79.1**		32.7		**123**		26	
Chromium, Hexavalent	*18540-29-9*	--	27.3	U	2.7	U	13.7	U	20.4	J	2.7	U	2.7	U
Chromium, Trivalent	*16065-83-1*	--	11.1		NA		58.7		NA		123		NA	
Copper	*7440-50-8*	*1300*	9.9		27.4		58.7		24.8		62.4		18.4	
Iron	*7439-89-6*	*300*	**21300**		**634**		***42200***		**16800**		**79300**		**17600**	
Lead	*7439-92-1*	*5*	**7.1**		1.7		**14.4**		**6**		**26.2**		**5.5**	
Manganese	*7439-96-5*	*50*	NA		NA		**32600**		**30900**		**20900**		**21400**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		4500		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		140	J	NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.73	U	0.73	U	2.2	J	2.1	J	1.7	J	1.7	J
Sodium	*7440-23-5*	*50000*	**382000**		**404000**		**1210000**		**1280000**		**628000**		**874000**	
Sulfate	*14808-79-8*	*250000*	**422000**	D	NA		**3660000**	D	NA		**2670000**	D	NA	
Total Organic Carbon	*SRP33*	--	NA		NA		10600	B	NA		NA		NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0		MW-318B_LF50.0	
		Date Sampled:	2/20/2018		2/20/2018		3/16/2018		4/5/2018		4/5/2018		5/21/2018	
		LAB Sample ID:	460150539-1-6		460150539-1-6F		460152187-1-14		460153381-1-11		460153381-1-11F		460156736-1-12	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		195000		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		195000		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		5000	U	NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		5000	U	NA		NA	
Arsenic	*7440-38-2*	*3*	**12.6**		0.77	U	NA		1.1	J	0.77	U	NA	
Barium	*7440-39-3*	*6000*	250		16.2		NA		38		27.2		NA	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	NA		0.61	U	0.61	U	NA	
Chloride	*16887-00-6*	*250000*	**667000**	D	NA		NA		**552000**	D	NA		NA	
Chromium	*7440-47-3*	*70*	42.7		1.3	U	NA		4.2		1.3	U	NA	
Chromium, Hexavalent	*18540-29-9*	--	54.8	U	4.6	J	NA		2.7	U	2.7	U	NA	
Chromium, Trivalent	*16065-83-1*	--	42.7		NA		NA		4.2		NA		NA	
Copper	*7440-50-8*	*1300*	26.9		2.6	J	NA		5.3		3.5	J	NA	
Iron	*7439-89-6*	*300*	**32400**		45.7	U	NA		**2600**		300		NA	
Lead	*7439-92-1*	*5*	**11**		0.37	U	NA		0.81	J	0.37	U	NA	
Manganese	*7439-96-5*	*50*	**16200**		**15900**		NA		**8890**		**8710**		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		3300		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		300		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.73	J	0.88	J	NA		0.69	U	0.69	U	NA	
Sodium	*7440-23-5*	*50000*	**668000**		NA		NA		**658000**		**601000**		NA	
Sulfate	*14808-79-8*	*250000*	**3210000**	D	NA		**1350000**	D	**1210000**	D	NA		NA	
Total Organic Carbon	*SRP33*	--	NA		NA		NA		4700		NA		4500	

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D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318B_LF50.0		MW-346A_LF10.5		MW-346A_LF10.5		MW-346A_LF11.0		MW-346A_LF11.0		MW-346A_LF11.0	
		Date Sampled:	8/2/2018		5/21/2018		6/26/2018		11/7/2017		11/7/2017		1/23/2018	
		LAB Sample ID:	460161962-1-7		460156736-1-4		460159218-1-10		460144534-1-19		460144534-1-19F		460148918-1-7	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		2.8		0.86	J	2.3	
Barium	*7440-39-3*	*6000*	NA		NA		NA		115		55.5		131	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		0.89	J	0.71	U	1.7	J
Chloride	*16887-00-6*	*250000*	NA		NA		NA		**505000**	D	NA		**441000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		3	J	1.3	U	7.6	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		27.3	U	27.3	U	4.3	J
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		3		NA		3.3	
Copper	*7440-50-8*	*1300*	NA		NA		NA		26.8		22.7		24.2	
Iron	*7439-89-6*	*300*	NA		NA		NA		**4840**		**871**		**3410**	
Lead	*7439-92-1*	*5*	NA		NA		NA		4.4		0.71	J	2.4	
Manganese	*7439-96-5*	*50*	NA		NA		NA		NA		NA		**20900**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		0.95	J	1.2	J	0.96	J
Sodium	*7440-23-5*	*50000*	NA		NA		NA		**470000**		**518000**		**613000**	
Sulfate	*14808-79-8*	*250000*	NA		NA		NA		**769000**	D	NA		**1830000**	D
Total Organic Carbon	*SRP33*	--	162000		8900		1050000	B	NA		NA		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.
B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346A_LF11.0		MW-346A_LF13.1		MW-346A_LF13.1		MW-346A_LF13.1		MW-346A_LF13.1		MW-346A_LF13.1	
		Date Sampled:	1/23/2018		7/26/2017		10/5/2017		1/11/2018		1/11/2018		2/20/2018	
		LAB Sample ID:	460148918-1-7F		460138067-1-18		460142481-1-22		460148307-1-22		460148307-1-22F		460150539-1-7	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		221000		177000		139000		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		221000		177000		139000		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	5000	U	5000	U	NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	5000	U	5000	U	NA		NA	
Arsenic	*7440-38-2*	*3*	1.2	J	NA		NA		**4**		3		**3.3**	
Barium	*7440-39-3*	*6000*	19.4		NA		NA		157		27		131	
Cadmium	*7440-43-9*	*4*	2.3		NA		NA		1.5	J	1.8	J	1.8	J
Chloride	*16887-00-6*	*250000*	NA		**411000**	D	**466000**	D	**375000**	D	NA		**383000**	D
Chromium	*7440-47-3*	*70*	2.6	J	NA		NA		13.2	U	6.5		12.4	
Chromium, Hexavalent	*18540-29-9*	--	3.2	J	NA		NA		27.4	U	14.9	J	2.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		6.5		12.4	
Copper	*7440-50-8*	*1300*	16.4		NA		NA		56.2		47.2		41.2	
Iron	*7439-89-6*	*300*	91.9	J	95.6	J	**424**		***7110***		**2620**		**4630**	
Lead	*7439-92-1*	*5*	0.37	U	NA		NA		4.1		2.5		2.3	
Manganese	*7439-96-5*	*50*	**22600**		**8160**		**24000**		**22000**		**22600**		**19400**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		**39400**	H	**24000**		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		**16600**		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		210	J H	400	J	NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	1.1	J	NA		NA		1	J	1.2	J	1.1	J
Sodium	*7440-23-5*	*50000*	**707000**		NA		NA		**744000**		**821000**		**546000**	
Sulfate	*14808-79-8*	*250000*	NA		**642000**	D	**790000**	D	**1910000**	D	NA		**1490000**	D
Total Organic Carbon	*SRP33*	--	NA		8600		220	U	8800	B	NA		NA	

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D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346A_LF13.1		MW-346A_LF13.1		MW-346A_LF13.1		MW-346A_LF13.1		MW-346B_LF40.0		MW-346B_LF40.0	
		Date Sampled:	2/20/2018		3/16/2018		4/5/2018		4/5/2018		7/26/2017		10/5/2017	
		LAB Sample ID:	460150539-1-7F		460152187-1-7		460153381-1-13		460153381-1-13F		460138067-1-19		460142481-1-23	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		93300		NA		194000		174000	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		93300		NA		194000		174000	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		5000	U	NA		5000	U	5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		NA		5000	U	NA		5000	U	5000	U
Arsenic	*7440-38-2*	*3*	1.4	J	NA		1.3	J	0.77	U	NA		NA	
Barium	*7440-39-3*	*6000*	18.1		NA		42.2		12.7		NA		NA	
Cadmium	*7440-43-9*	*4*	1.6	J	NA		2.2		2.3		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		NA		**491000**	D	NA		**469000**	D	**484000**	D
Chromium	*7440-47-3*	*70*	2.2	J	NA		5.5		1.3	U	NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	3.5	J	NA		2.7	U	2.7	U	NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		5.5		NA		NA		NA	
Copper	*7440-50-8*	*1300*	18.2		NA		38.6		9.5		NA		NA	
Iron	*7439-89-6*	*300*	45.7	U	NA		**1210**		45.7	U	92.1	U	92.1	U
Lead	*7439-92-1*	*5*	0.37	U	NA		1.5		0.37	U	NA		NA	
Manganese	*7439-96-5*	*50*	**21300**		NA		**22500**		**21100**		**4170**		**2950**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		**18300**		NA		NA		5400	H
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		3400		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		410		NA		NA		96	J H
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	1.5	J	NA		0.99	J	0.98	J	NA		NA	
Sodium	*7440-23-5*	*50000*	NA		NA		**690000**		**699000**		NA		NA	
Sulfate	*14808-79-8*	*250000*	NA		***12800000***	D	**1690000**	D	NA		**493000**	D	**423000**	D
Total Organic Carbon	*SRP33*	--	NA		NA		7000		NA		6200		6400	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0	
		Date Sampled:	11/7/2017		11/7/2017		1/11/2018		1/11/2018		1/23/2018		1/23/2018	
		LAB Sample ID:	460144534-1-20		460144534-1-20F		460148307-1-23		460148307-1-23F		460148918-1-9		460148918-1-9F	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		555000		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		555000		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		5000	U	NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		5000	U	NA		NA		NA	
Arsenic	*7440-38-2*	*3*	1.1	J	0.98	J	*7.7*	U	1	J	0.98	J	0.77	J
Barium	*7440-39-3*	*6000*	63		39.3		98.6		21.4		34.5		21	
Cadmium	*7440-43-9*	*4*	0.79	J	0.71	U	2.6		2.8		1.6	J	2	
Chloride	*16887-00-6*	*250000*	**552000**	D	NA		**403000**	D	NA		**443000**	D	NA	
Chromium	*7440-47-3*	*70*	36.3		31.7		61.7		50.5		35.4		33.9	
Chromium, Hexavalent	*18540-29-9*	--	25.9		22.4		13.7	U	19.5		26.4		25.3	
Chromium, Trivalent	*16065-83-1*	--	10.4		NA		NA		31		9.000002		NA	
Copper	*7440-50-8*	*1300*	19.7		13.7		169		166		73.5		80	
Iron	*7439-89-6*	*300*	**708**		42.4	U	**3880**		138		**777**		45.7	U
Lead	*7439-92-1*	*5*	0.7	J	0.38	U	4.6		0.37	U	1.2		0.37	U
Manganese	*7439-96-5*	*50*	NA		NA		**21900**		**23700**		**14900**		**16700**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		8500		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		120	J	NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.73	U	0.73	U	4.8	J	6.3	J	3.1	J	4.3	J
Sodium	*7440-23-5*	*50000*	**413000**		**406000**		**2410000**		**2900000**		**1650000**		**1960000**	
Sulfate	*14808-79-8*	*250000*	**426000**	D	NA		**3710000**	D	NA		**5090000**	D	NA	
Total Organic Carbon	*SRP33*	--	NA		NA		18100	B	NA		NA		NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0	
		Date Sampled:	2/20/2018		2/20/2018		3/16/2018		4/5/2018		4/5/2018		5/21/2018	
		LAB Sample ID:	460150539-1-9		460150539-1-9F		460152187-1-8		460153381-1-14		460153381-1-14F		460156736-1-3	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		235000		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		235000		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		5000	U	NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		5000	U	NA		NA	
Arsenic	*7440-38-2*	*3*	1.1	J	1.1	J	NA		0.88	J	0.77	U	NA	
Barium	*7440-39-3*	*6000*	67.6		22.2		NA		37.1		17.5		NA	
Cadmium	*7440-43-9*	*4*	1.4	J	1.3	J	NA		0.61	U	0.61	U	NA	
Chloride	*16887-00-6*	*250000*	**440000**		NA		NA		**445000**	D	NA		NA	
Chromium	*7440-47-3*	*70*	47.7		35.6		NA		10.4		4.5		NA	
Chromium, Hexavalent	*18540-29-9*	--	5.7	J	13.5		NA		2.7	U	2.7	U	NA	
Chromium, Trivalent	*16065-83-1*	--	42		NA		NA		10.4		NA		NA	
Copper	*7440-50-8*	*1300*	32.8		23.5		NA		20.4		12.1		NA	
Iron	*7439-89-6*	*300*	**1370**		273		NA		**1050**		45.7	U	NA	
Lead	*7439-92-1*	*5*	2		0.54	J	NA		1.3		0.37	U	NA	
Manganese	*7439-96-5*	*50*	**11100**		**11300**		NA		**9370**		**8560**		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		2000		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		890		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	2.1	J	2.4	J	NA		0.69	U	0.69	J	NA	
Sodium	*7440-23-5*	*50000*	**1490000**		NA		NA		**727000**		**769000**		NA	
Sulfate	*14808-79-8*	*250000*	**4310000**		NA		**2080000**	D	**1520000**	D	NA		NA	
Total Organic Carbon	*SRP33*	--	NA		NA		NA		5800		NA		4800	

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D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346B_LF40.0		MW-346B_LF40.0(A)		MW-346B_LF40.0(B)		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0	
		Date Sampled:	6/26/2018		5/31/2018		5/31/2018		7/26/2017		10/5/2017		11/7/2017	
		LAB Sample ID:	460159218-1-6		460157265-1-7		460157265-1-8		460138067-1-20		460142481-1-24		460144534-1-21	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		247000		245000		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		247000		245000		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		5000	U	5000	U	NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		5000	U	5000	U	NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		0.73	J
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		148	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		0.95	J
Chloride	*16887-00-6*	*250000*	NA		NA		NA		**1600000**	D	**1290000**	D	**1750000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		6.5	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		2.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		6.5	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		26.6	
Iron	*7439-89-6*	*300*	NA		NA		NA		**1100**		**1490**		**1880**	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		2.1	
Manganese	*7439-96-5*	*50*	NA		NA		NA		**1490**		**1590**		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		10	U	NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		580		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		6.5	J ^	NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		0.73	U
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		**443000**	
Sulfate	*14808-79-8*	*250000*	NA		NA		NA		234000	D	**258000**	D	**261000**	D
Total Organic Carbon	*SRP33*	--	1750000	B	3400		2500		4700		4700		NA	

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D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0	
		Date Sampled:	11/7/2017		1/11/2018		1/11/2018		1/23/2018		1/23/2018		2/20/2018	
		LAB Sample ID:	460144534-1-21F		460148307-1-25		460148307-1-25F		460148918-1-10		460148918-1-10F		460150539-1-10	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		274000		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		274000		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	0.69	J	1.9	J	1.9	J	1.3	J	1.4	J	0.96	J
Barium	*7440-39-3*	*6000*	124		87.2		79.1		83		84.6		115	
Cadmium	*7440-43-9*	*4*	0.74	J	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	NA		**1290000**	D	NA		**1020000**	D	NA		**1400000**	D
Chromium	*7440-47-3*	*70*	1.9	J	3.2	J	1.3	U	2.1	J	1.3	U	4.5	
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	11.8		34.9		2.7	U	2.7	U	2.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		-31.7		NA		2.1		NA		4.5	
Copper	*7440-50-8*	*1300*	13.2		5.3		2.5	J	2.7	J	1.9	U	9	
Iron	*7439-89-6*	*300*	**1560**		**1920**		**1480**		**1450**		**1470**		**1540**	
Lead	*7439-92-1*	*5*	1.5		0.37	U	0.37	U	0.37	U	0.37	U	0.72	J
Manganese	*7439-96-5*	*50*	NA		**1790**		**1610**		**1650**		**1700**		**1500**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		880		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		50	J	NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.73	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	**487000**		**547000**		**541000**		**479000**		**524000**		**499000**	
Sulfate	*14808-79-8*	*250000*	NA		**369000**	D	NA		**474000**	D	NA		**361000**	D
Total Organic Carbon	*SRP33*	--	NA		5500	B	NA		NA		NA		NA	

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D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0		MW-346C_LF70.0(A)		MW-346C_LF70.0(B)	
		Date Sampled:	2/20/2018		4/5/2018		4/5/2018		6/26/2018		5/21/2018		5/21/2018	
		LAB Sample ID:	460150539-1-10F		460153381-1-15		460153381-1-15F		460159218-1-11		460156736-1-6		460156736-1-7	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		258000		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		258000		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	1.4	J	1.2	J	1.3	J	NA		NA		NA	
Barium	*7440-39-3*	*6000*	82.4		101		90.9		NA		NA		NA	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	0.61	U	NA		NA		NA	
Chloride	*16887-00-6*	*250000*	NA		**1100000**	D	NA		NA		NA		NA	
Chromium	*7440-47-3*	*70*	1.3	U	3.4	J	3.4	J	NA		NA		NA	
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	2.7	U	2.7	U	NA		NA		NA	
Chromium, Trivalent	*16065-83-1*	--	NA		3.4		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	1.9	U	14.7		8.8		NA		NA		NA	
Iron	*7439-89-6*	*300*	**1040**		**1500**		**1210**		NA		NA		NA	
Lead	*7439-92-1*	*5*	0.37	U	0.8	J	**10**		NA		NA		NA	
Manganese	*7439-96-5*	*50*	**1490**		**1530**		**1370**		NA		NA		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		10	U	NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		21	J	NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U	0.69	U	NA		NA		NA	
Sodium	*7440-23-5*	*50000*	NA		**489000**		**469000**		NA		NA		NA	
Sulfate	*14808-79-8*	*250000*	NA		**253000**	D	NA		NA		NA		NA	
Total Organic Carbon	*SRP33*	--	NA		5000		NA		13700	B	4600		4600	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-350A_LF10.5		MW-350A_LF11.4		MW-350A_LF11.4		MW-350A_LF11.4		MW-350A_LF11.4		MW-350A_LF11.4	
		Date Sampled:	5/21/2018		7/26/2017		10/5/2017		1/11/2018		1/11/2018		4/5/2018	
		LAB Sample ID:	460156736-1-8		460138067-1-21		460142481-1-25		460148307-1-26		460148307-1-26F		460153381-1-17	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		112000		122000		105000		NA		93700	
Alkalinity, Bicarbonate	*SRP163*	--	NA		112000		122000		105000		NA		93700	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	5000	U	5000	U	NA		5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	5000	U	5000	U	NA		5000	U
Arsenic	*7440-38-2*	*3*	NA		NA		NA		2.4		0.77	U	NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		130		81.6		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		0.7	J	0.68	J	NA	
Chloride	*16887-00-6*	*250000*	NA		181000	D	**644000**	D	**595000**	D	NA		149000	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		17.3		2.2	J	NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		13.7	U	2.7	U	NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		17.3		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		11.9		3.4	J	NA	
Iron	*7439-89-6*	*300*	NA		**816**		**598**		**7450**		**746**		NA	
Lead	*7439-92-1*	*5*	NA		NA		NA		**10**		1.5		NA	
Manganese	*7439-96-5*	*50*	NA		**76.6**		**178**		**758**		**241**		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		3000	H	5200		NA		2500	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		5000		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		55	J H	43	J	NA		16	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		0.69	U	0.69	U	NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		**315000**		**394000**		NA	
Sulfate	*14808-79-8*	*250000*	NA		**251000**	D	250000	D	**264000**	D	NA		77100	D
Total Organic Carbon	*SRP33*	--	6000		8500		8300		7600	B	NA		5600	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-350A_LF11.4		MW-350B_LF40.0		MW-350B_LF40.0		MW-350B_LF40.0		MW-350B_LF40.0		MW-350B_LF40.0	
		Date Sampled:	4/5/2018		7/26/2017		10/5/2017		1/11/2018		1/11/2018		4/5/2018	
		LAB Sample ID:	460153381-1-17F		460138067-1-22		460142481-1-27		460148307-1-27		460148307-1-27F		460153381-1-18	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		213000		210000		220000		NA		199000	
Alkalinity, Bicarbonate	*SRP163*	--	NA		213000		210000		220000		NA		199000	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	5000	U	5000	U	NA		5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	5000	U	5000	U	NA		5000	U
Arsenic	*7440-38-2*	*3*	NA		NA		NA		0.77	U	0.77	U	NA	
Barium	*7440-39-3*	*6000*	NA		NA		NA		55.2		49.4		NA	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		0.61	U	0.61	U	NA	
Chloride	*16887-00-6*	*250000*	NA		**684000**	D	**628000**	D	**634000**	D	NA		**640000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		4.6		1.3	U	NA	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		2.7	U	2.7	U	NA	
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		ND		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		1.9	U	1.9	U	NA	
Iron	*7439-89-6*	*300*	**354**		92.1	U	92.1	U	203		65.8	J	NA	
Lead	*7439-92-1*	*5*	NA		NA		NA		0.5	J	0.37	U	NA	
Manganese	*7439-96-5*	*50*	42.9		**1030**		**1000**		**1030**		**930**		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		10	U	5700		NA		11	J
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		680		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		7.2	J ^	84	J	NA		29	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		0.69	U	0.69	U	NA	
Sodium	*7440-23-5*	*50000*	NA		NA		NA		**392000**		**383000**		NA	
Sulfate	*14808-79-8*	*250000*	NA		**313000**	D	**322000**	D	**379000**	D	NA		**300000**	D
Total Organic Carbon	*SRP33*	--	NA		4900		4700		5200	B	NA		4400	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-350B_LF40.0		MW-350B_LF40.0		MW-350C_LF70.0		MW-350C_LF70.0		MW-350C_LF70.0		MW-350C_LF70.0	
		Date Sampled:	4/5/2018		5/21/2018		7/26/2017		10/5/2017		1/11/2018		1/11/2018	
		LAB Sample ID:	460153381-1-18F		460156736-1-9		460138067-1-23		460142481-1-28		460148307-1-28		460148307-1-28F	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		251000		240000		253000		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		251000		240000		253000		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		5000	U	5000	U	5000	U	NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		5000	U	5000	U	5000	U	NA	
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		1.2	J	0.92	J
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		101		81.9	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	NA		NA		**1320000**	D	**1430000**	D	**1430000**	D	NA	
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		3.1	J	1.3	U
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		7.4	J	2.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		ND	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		4		1.9	U
Iron	*7439-89-6*	*300*	92.1	U	NA		**2310**		**3670**		**4010**		**3640**	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		0.5	J	0.37	U
Manganese	*7439-96-5*	*50*	**1030**		NA		**1700**		**1850**		**2000**		**1850**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		10	U	560		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		600		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		8.8	J ^	5.9	J	NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		**475000**		**498000**	
Sulfate	*14808-79-8*	*250000*	NA		NA		224000	D	**286000**	D	**460000**	D	NA	
Total Organic Carbon	*SRP33*	--	NA		4100		5000		4800		5500	B	NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-350C_LF70.0		MW-350C_LF70.0		MW-350C_LF70.0		MW-396A_LF11.0		MW-396A_LF11.0		MW-396A_LF11.0	
		Date Sampled:	4/5/2018		4/5/2018		5/21/2018		7/26/2017		10/5/2017		1/11/2018	
		LAB Sample ID:	460153381-1-19		460153381-1-19F		460156736-1-10		460138067-1-25		460142481-1-30		460148307-1-30	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	242000		NA		NA		67500		91400		138000	
Alkalinity, Bicarbonate	*SRP163*	--	242000		NA		NA		67500		91400		138000	
Alkalinity, Hydroxide	*SRP161*	--	5000	U	NA		NA		5000	U	5000	U	5000	U
Alkalinity, Carbonate	*SRP162*	--	5000	U	NA		NA		5000	U	5000	U	5000	U
Arsenic	*7440-38-2*	*3*	NA		NA		NA		NA		NA		**6.8**	
Barium	*7440-39-3*	*6000*	NA		NA		NA		NA		NA		50.1	
Cadmium	*7440-43-9*	*4*	NA		NA		NA		NA		NA		0.61	U
Chloride	*16887-00-6*	*250000*	**1300000**	D	NA		NA		**599000**	D	**383000**	D	**396000**	D
Chromium	*7440-47-3*	*70*	NA		NA		NA		NA		NA		6.3	
Chromium, Hexavalent	*18540-29-9*	--	NA		NA		NA		NA		NA		13.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	NA		NA		NA		NA		NA		10.4	
Iron	*7439-89-6*	*300*	NA		**4700**		NA		243		268		**6990**	
Lead	*7439-92-1*	*5*	NA		NA		NA		NA		NA		**5.5**	
Manganese	*7439-96-5*	*50*	NA		**2050**		NA		**478**		**526**		**1460**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	18	J	NA		NA		NA		2500		2300	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		3700		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	18	J	NA		NA		NA		25	J	96	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	NA		NA		NA		NA		NA		0.69	U
Sodium	*7440-23-5*	*50000*	NA		NA		NA		NA		NA		**256000**	
Sulfate	*14808-79-8*	*250000*	**474000**	D	NA		NA		242000	D	**310000**	D	**516000**	D
Total Organic Carbon	*SRP33*	--	4600		NA		4500		5000		5500		6300	B

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-396A_LF11.0		MW-396A_LF11.0		MW-396A_LF11.0		MW-447A_LF10.0		MW-447A_LF10.0		MW-447A_LF10.0(A)	
		Date Sampled:	1/11/2018		4/5/2018		4/5/2018		11/7/2017		11/7/2017		1/23/2018	
		LAB Sample ID:	460148307-1-30F		460153381-1-20		460153381-1-20F		460144534-1-22		460144534-1-22F		460148918-1-11	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		49400		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		49400		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	**4.4**		NA		NA		**14**		1.3	J	1.2	J
Barium	*7440-39-3*	*6000*	34.2		NA		NA		1380		230		131	
Cadmium	*7440-43-9*	*4*	0.61	U	NA		NA		0.99	J	0.71	U	0.61	U
Chloride	*16887-00-6*	*250000*	NA		**308000**	D	NA		**265000**	D	NA		**282000**	D
Chromium	*7440-47-3*	*70*	1.4	J	NA		NA		**79.4**		1.8	J	10.3	
Chromium, Hexavalent	*18540-29-9*	--	5.5	U	NA		NA		27.3	U	27.3	U	2.7	U
Chromium, Trivalent	*16065-83-1*	--	1.4		NA		NA		79.4		NA		10.3	
Copper	*7440-50-8*	*1300*	4.6		NA		NA		67.7		7.9		7.6	
Iron	*7439-89-6*	*300*	**2390**		NA		273		**72000**		**1270**		**4170**	
Lead	*7439-92-1*	*5*	2.4		NA		NA		**103**		3		4.1	
Manganese	*7439-96-5*	*50*	**1120**		NA		**81.7**		NA		NA		**637**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		2600		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		28	J	NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	NA		NA		0.73	U	0.73	U	0.69	U
Sodium	*7440-23-5*	*50000*	**298000**		NA		NA		**146000**		**171000**		**167000**	
Sulfate	*14808-79-8*	*250000*	NA		187000	D	NA		47100	D	NA		65400	D
Total Organic Carbon	*SRP33*	--	NA		4600		NA		NA		NA		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.
B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447A_LF10.0(A)		MW-447A_LF10.0(B)		MW-447A_LF10.0(B)		MW-447A_LF12.3		MW-447A_LF12.3		MW-447A_LF12.3(A)	
		Date Sampled:	1/23/2018		1/23/2018		1/23/2018		7/26/2017		10/5/2017		1/12/2018	
		LAB Sample ID:	460148918-1-11F		460148918-1-12		460148918-1-12F		460138067-1-28		460142481-1-32		460148401-1-4	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		162000		173000		144000	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		162000		173000		144000	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		5000	U	5000	U	5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		5000	U	5000	U	5000	U
Arsenic	*7440-38-2*	*3*	0.77	U	1.1	J	0.77	U	NA		NA		0.77	J
Barium	*7440-39-3*	*6000*	104		136		104		NA		NA		121	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	0.61	U	NA		NA		0.61	U
Chloride	*16887-00-6*	*250000*	NA		**265000**	D	NA		**340000**	D	**427000**	D	28300	D
Chromium	*7440-47-3*	*70*	1.3	U	10.1		1.3	U	NA		NA		13.6	
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	5.5	U	2.7	U	NA		NA		5.5	U
Chromium, Trivalent	*16065-83-1*	--	NA		10.1		NA		NA		NA		NA	
Copper	*7440-50-8*	*1300*	1.9	U	10.2		1.9	U	NA		NA		5.9	
Iron	*7439-89-6*	*300*	206		**4170**		172		**532**		92.1	U	**2170**	
Lead	*7439-92-1*	*5*	0.55	J	4.2		0.51	J	NA		NA		2.7	
Manganese	*7439-96-5*	*50*	**75.8**		**655**		**63.4**		**233**		**314**		**394**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		900		880	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		1300		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		22	J	15	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U	0.69	U	NA		NA		0.69	U
Sodium	*7440-23-5*	*50000*	**208000**		**165000**		**206000**		NA		NA		**146000**	
Sulfate	*14808-79-8*	*250000*	NA		58500	D	NA		80100	D	81500	D	3690	
Total Organic Carbon	*SRP33*	--	NA		NA		NA		3400		3200		3100	

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ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
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Values in italics indicate MDL above applicable criterion.
B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447A_LF12.3(A)		MW-447A_LF12.3(A)		MW-447A_LF12.3(A)		MW-447A_LF12.3(A)		MW-447A_LF12.3(A)		MW-447A_LF12.3(A)	
		Date Sampled:	1/12/2018		2/20/2018		2/20/2018		3/16/2018		4/5/2018		4/5/2018	
		LAB Sample ID:	460148401-1-4F		460150539-1-11		460150539-1-11F		460152187-1-10		460153381-1-21		460153381-1-21F	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		133000		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		133000		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		5000	U	NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		5000	U	NA	
Arsenic	*7440-38-2*	*3*	0.77	U	1.3	J	0.81	J	NA		2.6		0.77	J
Barium	*7440-39-3*	*6000*	105		92.7		74.1		NA		165		95.1	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	0.61	U	NA		0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	NA		**278000**	D	NA		NA		200000	D	NA	
Chromium	*7440-47-3*	*70*	1.3	U	5.8		1.3	U	NA		12		2.2	J
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	13.7	U	13.7	U	NA		13.7	U	13.7	U
Chromium, Trivalent	*16065-83-1*	--	ND		5.8		NA		NA		12		NA	
Copper	*7440-50-8*	*1300*	2.1	J	5.2		2.1	J	NA		14.3		2.9	J
Iron	*7439-89-6*	*300*	191		**3030**		**350**		NA		**7770**		**744**	
Lead	*7439-92-1*	*5*	0.4	J	3.4		0.95	J	NA		**10.8**		1.3	
Manganese	*7439-96-5*	*50*	**115**		**377**		**165**		NA		**1300**		**198**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		860		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		7	J	NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U	0.69	U	NA		0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	**138000**		**138000**		NA		NA		**138000**		**144000**	
Sulfate	*14808-79-8*	*250000*	NA		39100	D	NA		47900	D	38700	D	NA	
Total Organic Carbon	*SRP33*	--	NA		NA		NA		NA		2400		NA	

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Values in italics indicate MDL above applicable criterion.
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D = Sample results obtained from a dilution

Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447A_LF12.3(B)		MW-447A_LF12.3(B)		MW-447A_LF12.3(B)		MW-447A_LF12.3(B)		MW-447A_LF12.3(B)		MW-447A_LF12.3(B)	
		Date Sampled:	1/12/2018		1/12/2018		2/20/2018		2/20/2018		3/16/2018		4/5/2018	
		LAB Sample ID:	460148401-1-5		460148401-1-5F		460150539-1-12		460150539-1-12F		460152187-1-11		460153381-1-22	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	144000		NA		NA		NA		NA		134000	
Alkalinity, Bicarbonate	*SRP163*	--	144000		NA		NA		NA		NA		134000	
Alkalinity, Hydroxide	*SRP161*	--	5000	U	NA		NA		NA		NA		5000	U
Alkalinity, Carbonate	*SRP162*	--	5000	U	NA		NA		NA		NA		5000	U
Arsenic	*7440-38-2*	*3*	0.79	J	0.77	U	1.8	J	0.81	J	NA		1.9	J
Barium	*7440-39-3*	*6000*	122		103		118		78.3		NA		102	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	0.61	U	0.61	U	NA		0.61	U
Chloride	*16887-00-6*	*250000*	25500	D	NA		**266000**	D	NA		NA		218000	D
Chromium	*7440-47-3*	*70*	14.9		1.3	U	10.2		1.3	U	NA		7.8	
Chromium, Hexavalent	*18540-29-9*	--	5.5	U	2.7	U	13.7	U	5.5	U	NA		13.7	U
Chromium, Trivalent	*16065-83-1*	--	14.9		NA		10.2		NA		NA		7.8	
Copper	*7440-50-8*	*1300*	6.3		1.9	U	6.7		1.9	U	NA		7.8	
Iron	*7439-89-6*	*300*	**2160**		176		**4620**		**561**		NA		**3170**	
Lead	*7439-92-1*	*5*	2.6		0.37	J	**5.2**		1.1	J	NA		3.8	
Manganese	*7439-96-5*	*50*	**402**		**109**		**753**		**181**		NA		**395**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	870		NA		NA		NA		NA		820	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	18	J	NA		NA		NA		NA		26	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U	0.69	U	0.69	U	NA		0.69	U
Sodium	*7440-23-5*	*50000*	**148000**		**137000**		**147000**		NA		NA		**155000**	
Sulfate	*14808-79-8*	*250000*	3720		NA		59400	D	NA		45600	D	42200	D
Total Organic Carbon	*SRP33*	--	3100		NA		NA		NA		NA		2500	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447A_LF12.3(B)		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0	
		Date Sampled:	4/5/2018		7/26/2017		10/5/2017		11/7/2017		11/7/2017		1/12/2018	
		LAB Sample ID:	460153381-1-22F		460138067-1-29		460142481-1-33		460144534-1-23		460144534-1-23F		460148401-1-6	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		221000		151000		NA		NA		186000	
Alkalinity, Bicarbonate	*SRP163*	--	NA		221000		151000		NA		NA		186000	
Alkalinity, Hydroxide	*SRP161*	--	NA		5000	U	5000	U	NA		NA		5000	U
Alkalinity, Carbonate	*SRP162*	--	NA		5000	U	5000	U	NA		NA		5000	U
Arsenic	*7440-38-2*	*3*	0.95	J	NA		NA		1.2	J	0.93	J	1.4	J
Barium	*7440-39-3*	*6000*	92.3		NA		NA		48.8		46.9		36	
Cadmium	*7440-43-9*	*4*	0.61	U	NA		NA		0.71	U	0.71	U	0.61	U
Chloride	*16887-00-6*	*250000*	NA		**621000**	D	**678000**	D	**724000**	D	NA		52100	D
Chromium	*7440-47-3*	*70*	1.8	J	NA		NA		5.6		1.3	U	3.2	J
Chromium, Hexavalent	*18540-29-9*	--	5.5	U	NA		NA		2.7	U	2.7	U	2.7	U
Chromium, Trivalent	*16065-83-1*	--	NA		NA		NA		5.6		NA		NA	
Copper	*7440-50-8*	*1300*	3.8	J	NA		NA		3.9	J	8.4		8.5	
Iron	*7439-89-6*	*300*	**1090**		184		92.1	U	247		42.4	U	**801**	
Lead	*7439-92-1*	*5*	2.6		NA		NA		0.38	U	0.5	J	1.2	
Manganese	*7439-96-5*	*50*	**354**		**2550**		**2190**		NA		NA		**4920**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		2200		NA		NA		1300	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		620		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		530		NA		NA		61	J
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	NA		NA		0.73	U	0.73	U	0.69	U
Sodium	*7440-23-5*	*50000*	**146000**		NA		NA		**401000**		**398000**		**425000**	
Sulfate	*14808-79-8*	*250000*	NA		**284000**	D	**390000**	D	**439000**	D	NA		94400	D
Total Organic Carbon	*SRP33*	--	NA		4500		4500		NA		NA		4000	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0	
		Date Sampled:	1/12/2018		1/23/2018		1/23/2018		2/20/2018		2/20/2018		3/16/2018	
		LAB Sample ID:	460148401-1-6F		460148918-1-13		460148918-1-13F		460150539-1-13		460150539-1-13F		460152187-1-12	
		LAB:	TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Alkalinity, Total	*SRP48*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Bicarbonate	*SRP163*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Hydroxide	*SRP161*	--	NA		NA		NA		NA		NA		NA	
Alkalinity, Carbonate	*SRP162*	--	NA		NA		NA		NA		NA		NA	
Arsenic	*7440-38-2*	*3*	1	J	1.6	J	1	J	**4.4**		1.2	J	NA	
Barium	*7440-39-3*	*6000*	31.3		40.3		34		106		34.1		NA	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U	NA	
Chloride	*16887-00-6*	*250000*	NA		**671000**	D	NA		**720000**	D	NA		NA	
Chromium	*7440-47-3*	*70*	1.3	U	2	J	1.3	U	5.5		1.3	U	NA	
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	3.2	J	2.7	U	2.7	U	2.7	U	NA	
Chromium, Trivalent	*16065-83-1*	--	ND		-1.2		NA		5.5		NA		NA	
Copper	*7440-50-8*	*1300*	5.6		165		83.9		28.2		4.1		NA	
Iron	*7439-89-6*	*300*	**317**		**652**		45.7	U	**5670**		75.6	J	NA	
Lead	*7439-92-1*	*5*	0.64	J	1.2		0.37	U	**6.7**		0.37	U	NA	
Manganese	*7439-96-5*	*50*	**4420**		**5840**		**5120**		**3670**		**2870**		NA	
Nitrogen, Nitrate	*14797-55-8*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA		NA		NA		NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	NA		NA		NA		NA		NA		NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA		NA		NA		NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	NA	
Sodium	*7440-23-5*	*50000*	**418000**		**512000**		**549000**		**474000**		NA		NA	
Sulfate	*14808-79-8*	*250000*	NA		**1300000**	D	NA		**1260000**	D	NA		**701000**	D
Total Organic Carbon	*SRP33*	--	NA		NA		NA		NA		NA		NA	

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Table 7B
Summary of Metals and General Chemistry Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447B_LF40.0		MW-447B_LF40.0	
		Date Sampled:	4/5/2018		4/5/2018	
		LAB Sample ID:	460153381-1-23		460153381-1-23F	
		LAB:	TestAmerica Edison		TestAmerica Edison	
Parameter (ug/l)	***CAS No.***	***GWQS***				
Alkalinity, Total	*SRP48*	--	181000		NA	
Alkalinity, Bicarbonate	*SRP163*	--	181000		NA	
Alkalinity, Hydroxide	*SRP161*	--	5000	U	NA	
Alkalinity, Carbonate	*SRP162*	--	5000	U	NA	
Arsenic	*7440-38-2*	*3*	1.2	J	0.77	U
Barium	*7440-39-3*	*6000*	31.9		25.8	
Cadmium	*7440-43-9*	*4*	0.61	U	0.61	U
Chloride	*16887-00-6*	*250000*	**610000**	D	NA	
Chromium	*7440-47-3*	*70*	1.5	J	1.3	U
Chromium, Hexavalent	*18540-29-9*	--	2.7	U	2.7	U
Chromium, Trivalent	*16065-83-1*	--	1.5		NA	
Copper	*7440-50-8*	*1300*	3.8	J	1.9	J
Iron	*7439-89-6*	*300*	**685**		45.7	U
Lead	*7439-92-1*	*5*	0.47	J	0.37	U
Manganese	*7439-96-5*	*50*	**3320**		**2690**	
Nitrogen, Nitrate	*14797-55-8*	*10000*	6600		NA	
Nitrogen, Nitrate And Nitrite	*SRP127*	*10000*	NA		NA	
Nitrogen, Nitrite	*14797-65-0*	*1000*	31	J	NA	
Phosphate, Ortho	*14265-44-2*	--	NA		NA	
Selenium	*7782-49-2*	*40*	0.69	U	0.69	U
Sodium	*7440-23-5*	*50000*	**536000**		**503000**	
Sulfate	*14808-79-8*	*250000*	**787000**	D	NA	
Total Organic Carbon	*SRP33*	--	4100		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.
B = Detected in the method blank
D = Sample results obtained from a dilution

Table 7C
Summary of Volatile Fatty Acids (VFAs) in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-77_LF36.5		ART-77_LF36.5 (A)		ART-77_LF36.5 (B)		ART-78_LF16.5		ART-78_LF16.5	
		Date Sampled:	5/18/2018		6/26/2018		6/26/2018		5/18/2018		6/26/2018	
		LAB Sample ID:	460156495-1-9		460159218-1-7		460159218-1-8		460156495-1-3		460159218-1-14	
		LAB:	TestAmerica Buffalo		TestAmerica Buffalo		TestAmerica Buffalo		TestAmerica Buffalo		TestAmerica Buffalo	
Parameter (ug/l)	***CAS No.***	***GWQS***										
Acetic Acid	*64-19-7*	--	2900	U	1200000		1200000		2900	U	620000	
Butyric Acid	*107-92-6*	--	2600	U	430000		421000		2600	U	5200	U
Formic Acid	*64-18-6*	--	2600	U	56500		73400		2600	U	5200	U
Lactic Acid	*50-21-5*	--	3100	U	485000		529000		3100	U	6200	U
Propionic Acid	*79-09-4*	--	3500	U	408000		381000		3500	U	197000	
Pyruvic Acid	*127-17-3*	--	3700	U	74000	U	74000	U	3700	U	7400	U

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	ART-77_LF36.5		ART-77_LF36.5 (A)		ART-77_LF36.5 (B)		ART-78_LF16.5		ART-78_LF16.5		ART-85_LF44.0	
		Date Sampled:	5/18/2018		6/26/2018		6/26/2018		5/18/2018		6/26/2018		10/5/2017	
		LAB Sample ID:	460156495-1-9		460159218-1-7		460159218-1-8		460156495-1-3		460159218-1-14		460142481-1-6	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Carbon Dioxide	*124-38-9*	--	57000		1300000		1300000		56000		310000		2700	J
Ethane	*74-84-0*	--	1.5	U	4.8		4.6		1.5	U	3.3	J	NA	
Ethene	*74-85-1*	--	1.4	U	28		27		1.4	U	1.4	U	NA	
Methane	*74-82-8*	--	32		75		72		32		56		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-52_LF25.0		MW-52_LF25.0		MW-157B_LF40.0(A)		MW-157B_LF40.0(A)		MW-157B_LF40.0(B)		MW-157B_LF40.0(B)	
		Date Sampled:	1/12/2018		4/5/2018		7/26/2017		10/5/2017		7/26/2017		10/5/2017	
		LAB Sample ID:	460148401-1-8		460153381-1-25		460138067-1-4		460142481-1-7		460138067-1-5		460142481-1-8	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Carbon Dioxide	*124-38-9*	--	15000		2700	J	19000		24000		19000		21000	
Ethane	*74-84-0*	--	NA		NA		NA		NA		NA		NA	
Ethene	*74-85-1*	--	NA		NA		NA		NA		NA		NA	
Methane	*74-82-8*	--	NA		NA		NA		NA		NA		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-161_LF12.0	MW-161_LF12.0	MW-317A_LF12.85	MW-317A_LF12.85	MW-317B_LF40.0	MW-317B_LF40.0
		Date Sampled:	1/11/2018	4/5/2018	7/26/2017	10/5/2017	7/26/2017	10/5/2017
		LAB Sample ID:	460148307-1-10	460153381-1-7	460138067-1-9	460142481-1-13	460138067-1-10	460142481-1-14
		LAB:	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington
Parameter (ug/l)	***CAS No.***	***GWQS***						
Carbon Dioxide	*124-38-9*	--	51000	39000	70000	22000	19000	23000
Ethane	*74-84-0*	--	NA	NA	NA	NA	NA	NA
Ethene	*74-85-1*	--	NA	NA	NA	NA	NA	NA
Methane	*74-82-8*	--	NA	NA	NA	NA	NA	NA

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-317B_LF40.0		MW-317B_LF40.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0		MW-317C_LF65.0	
		Date Sampled:	1/11/2018		4/5/2018		7/26/2017		10/5/2017		1/11/2018		4/5/2018	
		LAB Sample ID:	460148307-1-13		460153381-1-8		460138067-1-11		460142481-1-15		460148307-1-14		460153381-1-9	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Carbon Dioxide	*124-38-9*	--	7700		10000		6600		7800		6900		2100	U
Ethane	*74-84-0*	--	NA		NA		NA		NA		NA		NA	
Ethene	*74-85-1*	--	NA		NA		NA		NA		NA		NA	
Methane	*74-82-8*	--	NA		NA		NA		NA		NA		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318A_LF11.74	MW-318A_LF11.74	MW-318A_LF11.74	MW-318A_LF11.74	MW-318B_LF50.0	MW-318B_LF50.0
		Date Sampled:	7/26/2017	10/5/2017	1/11/2018	4/5/2018	7/26/2017	10/5/2017
		LAB Sample ID:	460138067-1-12	460142481-1-17	460148307-1-16	460153381-1-10	460138067-1-13	460142481-1-18
		LAB:	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington
Parameter (ug/l)	***CAS No.***	***GWQS***						
Carbon Dioxide	*124-38-9*	--	35000	71000	31000	83000	21000	8200
Ethane	*74-84-0*	--	NA	NA	NA	NA	NA	NA
Ethene	*74-85-1*	--	NA	NA	NA	NA	NA	NA
Methane	*74-82-8*	--	NA	NA	NA	NA	NA	NA

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-318B_LF50.0	MW-318B_LF50.0	MW-346A_LF13.1	MW-346A_LF13.1	MW-346A_LF13.1	MW-346A_LF13.1
		Date Sampled:	1/11/2018	4/5/2018	7/26/2017	10/5/2017	1/11/2018	4/5/2018
		LAB Sample ID:	460148307-1-17	460153381-1-11	460138067-1-18	460142481-1-22	460148307-1-22	460153381-1-13
		LAB:	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington
Parameter (ug/l)	***CAS No.***	***GWQS***						
Carbon Dioxide	*124-38-9*	--	110000	53000	47000	75000	230000	140000
Ethane	*74-84-0*	--	NA	NA	NA	NA	NA	NA
Ethene	*74-85-1*	--	NA	NA	NA	NA	NA	NA
Methane	*74-82-8*	--	NA	NA	NA	NA	NA	NA

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346B_LF40.0		MW-346C_LF70.0		MW-346C_LF70.0	
		Date Sampled:	7/26/2017		10/5/2017		1/11/2018		4/5/2018		7/26/2017		10/5/2017	
		LAB Sample ID:	460138067-1-19		460142481-1-23		460148307-1-23		460153381-1-14		460138067-1-20		460142481-1-24	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Carbon Dioxide	*124-38-9*	--	32000		31000		1100000		130000		32000		40000	
Ethane	*74-84-0*	--	NA		NA		NA		NA		NA		NA	
Ethene	*74-85-1*	--	NA		NA		NA		NA		NA		NA	
Methane	*74-82-8*	--	NA		NA		NA		NA		NA		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-346C_LF70.0	MW-346C_LF70.0	MW-350A_LF11.4	MW-350A_LF11.4	MW-350A_LF11.4	MW-350A_LF11.4
		Date Sampled:	1/11/2018	4/5/2018	7/26/2017	10/5/2017	1/11/2018	4/5/2018
		LAB Sample ID:	460148307-1-25	460153381-1-15	460138067-1-21	460142481-1-25	460148307-1-26	460153381-1-17
		LAB:	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington
Parameter (ug/l)	***CAS No.***	***GWQS***						
Carbon Dioxide	*124-38-9*	--	62000	51000	48000	64000	29000	9300
Ethane	*74-84-0*	--	NA	NA	NA	NA	NA	NA
Ethene	*74-85-1*	--	NA	NA	NA	NA	NA	NA
Methane	*74-82-8*	--	NA	NA	NA	NA	NA	NA

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-350B_LF40.0		MW-350B_LF40.0		MW-350B_LF40.0		MW-350B_LF40.0		MW-350C_LF70.0		MW-350C_LF70.0	
		Date Sampled:	7/26/2017		10/5/2017		1/11/2018		4/5/2018		7/26/2017		10/5/2017	
		LAB Sample ID:	460138067-1-22		460142481-1-27		460148307-1-27		460153381-1-18		460138067-1-23		460142481-1-28	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Carbon Dioxide	*124-38-9*	--	16000		16000		9300		13000		49000		49000	
Ethane	*74-84-0*	--	NA		NA		NA		NA		NA		NA	
Ethene	*74-85-1*	--	NA		NA		NA		NA		NA		NA	
Methane	*74-82-8*	--	NA		NA		NA		NA		NA		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-350C_LF70.0		MW-350C_LF70.0		MW-396A_LF11.0		MW-396A_LF11.0		MW-396A_LF11.0		MW-396A_LF11.0	
		Date Sampled:	1/11/2018		4/5/2018		7/26/2017		10/5/2017		1/11/2018		4/5/2018	
		LAB Sample ID:	460148307-1-28		460153381-1-19		460138067-1-25		460142481-1-30		460148307-1-30		460153381-1-20	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter (ug/l)	***CAS No.***	***GWQS***												
Carbon Dioxide	*124-38-9*	--	78000		60000		44000		30000		47000		21000	
Ethane	*74-84-0*	--	NA		NA		NA		NA		NA		NA	
Ethene	*74-85-1*	--	NA		NA		NA		NA		NA		NA	
Methane	*74-82-8*	--	NA		NA		NA		NA		NA		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447A_LF12.3	MW-447A_LF12.3	MW-447A_LF12.3(A)	MW-447A_LF12.3(A)	MW-447A_LF12.3(B)	MW-447A_LF12.3(B)
		Date Sampled:	7/26/2017	10/5/2017	1/12/2018	4/5/2018	1/12/2018	4/5/2018
		LAB Sample ID:	460138067-1-28	460142481-1-32	460148401-1-4	460153381-1-21	460148401-1-5	460153381-1-22
		LAB:	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington	TestAM Burlington
Parameter (ug/l)	***CAS No.***	***GWQS***						
Carbon Dioxide	*124-38-9*	--	51000	36000	42000	32000	47000	34000
Ethane	*74-84-0*	--	NA	NA	NA	NA	NA	NA
Ethene	*74-85-1*	--	NA	NA	NA	NA	NA	NA
Methane	*74-82-8*	--	NA	NA	NA	NA	NA	NA

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7D
Summary of Dissolved Gases in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0		MW-447B_LF40.0	
		Date Sampled:	7/26/2017		10/5/2017		1/12/2018		4/5/2018	
		LAB Sample ID:	460138067-1-29		460142481-1-33		460148401-1-6		460153381-1-23	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter (ug/l)	***CAS No.***	***GWQS***								
Carbon Dioxide	*124-38-9*	--	24000		18000		75000		49000	
Ethane	*74-84-0*	--	NA		NA		NA		NA	
Ethene	*74-85-1*	--	NA		NA		NA		NA	
Methane	*74-82-8*	--	NA		NA		NA		NA	

GWQS = NJDEP's Ground Water Quality Standard
Bold indicates concentrations above the GWQS
ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 7E
Summary of Biological Parameters in Groundwater
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample Designation	ART-77_LF36.5	ART-78_LF16.5
		Sampling Zone Designation	Intermediate	Shallow
		Sample Depth (ft bgs)	36.5	16.5
		Sample Method	Low Flow	Low Flow
		Date	5/18/2018	5/18/2018
		Microbial Insights Lab ID	089PE-2	089PE-1
Analytes	CAS #	Units		
DHC	CENSUS	cells/mL	1.3	1.6
BVC	CENSUS	cells/mL	0.2 J	0.8
TCE	CENSUS	cells/mL	0.5 J	0.6
VCR	CENSUS	cells/mL	0.1 J	1

Notes:
ft bgs indicates feet below ground surface
DHC = Dehalococcoides
BVC = BAV1 Vinyl Chloride Reductase
TCE = tceA Reductase
VCR = Vinyl Chloride Reductase
cells/mL = number of cell copies per milliliter of groundwater
J indicates an estimated value
Shallow: greater than 80 feet above mean sea level.
Intermediate: between 80 to 50 feet above mean sea level.

Table 8
Summary of Air Sampling Results
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IA-6-EFF-030818		IA-6-EFF-032818		IA-6-INF-030818		IA-6-INF-032818	
		Date Sampled:	3/8/2018		3/28/2018		3/8/2018		3/28/2018	
		Depth (ft):	-		-		-		-	
		LAB Sample ID:	20042571-1-2		20042877-1-2		20042571-1-1		20042877-1-1	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter	***CAS No.***	***Units***								
Acetone	*67-64-1*	*ug/m3*	41	J	37	D	18		82	D
Benzene	*71-43-2*	*ug/m3*	0.89	J	0.36	J	0.65		0.96	
Bromodichloromethane	*75-27-4*	*ug/m3*	1.6	U	0.40	U	0.40	U	0.40	U
Bromoethene	*593-60-2*	*ug/m3*	0.38	U	0.096	U	0.096	U	0.096	U
Bromoform	*75-25-2*	*ug/m3*	1.4	U	0.36	U	0.36	U	0.36	U
Bromomethane	*74-83-9*	*ug/m3*	0.56	U	0.14	U	0.14	U	0.14	U
2-Butanone (MEK)	*78-93-3*	*ug/m3*	57		74	D	26		120	D
Carbon Disulfide	*75-15-0*	*ug/m3*	0.35	U	0.2	J	0.83	J	1.2	J
Carbon tetrachloride	*56-23-5*	*ug/m3*	0.28	U	0.07	J	1	J	2.5	
Chlorobenzene	*108-90-7*	*ug/m3*	0.46	U	0.12	U	0.45	J	0.64	J
Chloroethane	*75-00-3*	*ug/m3*	1.4	U	0.34	U	0.34	U	0.34	U
Chloroform	*67-66-3*	*ug/m3*	0.49	U	0.12	U	1.4		4.4	
Chloromethane	*74-87-3*	*ug/m3*	1.3	U	0.7	J	0.82	J	0.55	J
3-Chloropropene	*107-05-1*	*ug/m3*	0.79	U	0.20	U	0.20	U	0.20	U
cis-1,2-Dichloroethene	*156-59-2*	*ug/m3*	0.46	U	0.11	U	2.2		2.1	
cis-1,3-Dichloropropene	*10061-01-5*	*ug/m3*	0.65	U	0.16	U	0.16	U	0.16	U
Cyclohexane	*110-82-7*	*ug/m3*	0.62	U	0.15	U	0.15	U	0.15	U
Dibromochloromethane	*124-48-1*	*ug/m3*	0.58	U	0.14	U	0.14	U	0.14	U
1,2-Dibromoethane	*106-93-4*	*ug/m3*	0.71	U	0.18	U	0.18	U	0.18	U
1,2-Dichlorobenzene	*95-50-1*	*ug/m3*	1.1	U	0.27	U	0.27	U	0.27	U
1,3-Dichlorobenzene	*541-73-1*	*ug/m3*	1.2	U	0.30	U	0.30	U	0.30	U
1,4-Dichlorobenzene	*106-46-7*	*ug/m3*	1.5	U	0.38	U	0.38	U	0.38	U
Dichlorodifluoromethane	*75-71-8*	*ug/m3*	1.2	J	1.9	J	2.4	J	1.9	J
1,1-Dichloroethane	*75-34-3*	*ug/m3*	0.28	U	0.069	U	0.069	U	0.22	J
1,2-Dichloroethane	*107-06-2*	*ug/m3*	0.55	U	0.14	U	0.14	U	0.14	U
1,1-Dichloroethene	*75-35-4*	*ug/m3*	0.56	U	0.14	U	0.14	U	0.14	U
1,2-Dichloropropane	*78-87-5*	*ug/m3*	0.65	U	0.16	U	0.16	U	0.16	U
1,3-Dichloropropene (total)	*542-75-6*	*ug/m3*	ND		ND		ND		ND	
Ethylbenzene	*100-41-4*	*ug/m3*	1.4	J	2.5		1.4		2.8	
4-Ethyltoluene	*622-96-8*	*ug/m3*	0.79	U	0.20	U	0.20	U	0.36	J
Freon 114	*76-14-2*	*ug/m3*	1.1	U	0.29	U	0.29	U	0.29	U
Heptane	*142-82-5*	*ug/m3*	1.1	U	0.28	U	0.28	U	0.28	U
Hexane	*110-54-3*	*ug/m3*	0.65	U	2.5		0.28	J	0.16	U
2-Hexanone	*591-78-6*	*ug/m3*	1.4	U	0.35	U	0.35	U	0.35	U
Isooctane	*540-84-1*	*ug/m3*	0.80	U	0.20	U	0.20	U	0.20	U

ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

Table 8
Summary of Air Sampling Results
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

		Sample No.:	IA-6-EFF-030818		IA-6-EFF-032818		IA-6-INF-030818		IA-6-INF-032818	
		Date Sampled:	3/8/2018		3/28/2018		3/8/2018		3/28/2018	
		Depth (ft):	-		-		-		-	
		LAB Sample ID:	20042571-1-2		20042877-1-2		20042571-1-1		20042877-1-1	
		LAB:	TestAM Burlington		TestAM Burlington		TestAM Burlington		TestAM Burlington	
Parameter	***CAS No.***	***Units***								
Methyl Tert Butyl Ether (MTBE)	*1634-04-4*	*ug/m3*	0.59	U	0.15	U	0.15	U	0.39	J
4-methyl-2-pentanone (MIBK)	*108-10-1*	*ug/m3*	1.8	J	1.5	J	1.7	J	1.5	J
Methylene chloride	*75-09-2*	*ug/m3*	0.94	U	26		0.84	J	2.4	
Propene	*115-07-1*	*ug/m3*	5.9	U	1.5	U	1.5	U	1.5	U
Styrene	*100-42-5*	*ug/m3*	0.60	U	0.32	J	0.15	U	0.38	J
tert-Butyl Alcohol	*75-65-0*	*ug/m3*	21	U	5.2	U	5.2	U	5.2	U
1,1,2,2-Tetrachloroethane	*79-34-5*	*ug/m3*	0.71	U	0.18	U	0.18	U	0.18	U
Tetrachloroethene	*127-18-4*	*ug/m3*	0.27	U	0.65	J	46	B	29	
Tetrahydrofuran	*109-99-9*	*ug/m3*	150		42	D	82		120	D
Toluene	*108-88-3*	*ug/m3*	14	B	12		7	B	12	
trans-1,2-Dichloroethene	*156-60-5*	*ug/m3*	0.79	U	0.20	U	0.20	U	0.20	U
trans-1,3-Dichloropropene	*10061-02-6*	*ug/m3*	0.69	U	0.17	U	0.17	U	0.17	U
Freon 113	*76-13-1*	*ug/m3*	0.83	U	0.21	U	0.55	J	0.41	J
1,1,1-Trichloroethane	*71-55-6*	*ug/m3*	0.57	U	0.14	U	0.14	U	0.14	U
1,1,2-Trichloroethane	*79-00-5*	*ug/m3*	0.37	U	0.093	U	0.093	U	0.093	U
Trichloroethene	*79-01-6*	*ug/m3*	0.20	U	0.049	U	3.3		5.7	
Trichlorofluoromethane	*75-69-4*	*ug/m3*	0.70	U	0.31	J	1.2		1	J
1,2,4-Trichlorobenzene	*120-82-1*	*ug/m3*	5.6	U	1.4	U	1.4	U	1.4	U
1,2,4-Trimethylbenzene	*95-63-6*	*ug/m3*	1.1	U	0.91	J	0.53	J	0.99	
Vinyl Acetate	*108-05-4*	*ug/m3*	28	U	7.0	U	7.0	U	7.0	U
Vinyl Chloride	*75-01-4*	*ug/m3*	0.18	U	0.22	J	0.24	J	0.27	J
m,p-Xylene	*179601-23-1*	*ug/m3*	5.7	J	11		6.6		12	
o-Xylene	*95-47-6*	*ug/m3*	1.5	J	3.2		1.7		3.6	
Xylenes (total)	*1330-20-7*	*ug/m3*	7.2	J	14.2		8.3		15.6	

ND = Not Detected
NA = Not Analyzed
J = Estimated value below sample reporting limit
U = Compound not detected above MDL
Values in italics indicate MDL above applicable criterion.

APPENDICES

APPENDIX A

NJDEP PERMITS AND CORRESPONDENCE

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT of ENVIRONMENTAL PROTECTION
AIR QUALITY, ENERGY AND SUSTAINABILITY
Division of Air Quality
Bureau of Air Permits
401 E. State Street, 2nd floor, P.O. Box 420, Mail Code 401-02
Trenton, NJ 08625-0420

BOB MARTIN
Commissioner

Air Pollution Control
Preconstruction Permit and Certificate to Operate
Compliance Plan Change

Permit Activity Number: PCP160008 **Program Interest No:30374**

Mailing Address	Plant Location
TOM LYON SITE HEAD NUTLEY HOFFMANN LA ROCHE INC 800 BLOOMFIELD AVE - STE 127 Nutley, NJ 07110-3202	HOFFMANN-LA ROCHE INC 340 Kingsland St Nutley Essex County, New Jersey

Approval Date: 03/08/2017
Expiration Date: 09/13/2020

The New Jersey Department of Environmental Protection (Department) has reviewed the above referenced air pollution control permit application. On the basis of the information provided, the Department concludes that the application satisfies all applicable requirements of the New Jersey Air Pollution Control regulations codified at N.J.A.C. 7:27 et seq. This Air Pollution Control Permit Compliance Plan Change shall supersede any existing Air Pollution Control Permits issued for the specified source. This permit allows for inspection and evaluation of the equipment by the Department to assure conformance with all provisions of N.J.A.C. 7:27 et seq. and any other applicable federal requirements codified at 40 CFR 52, 60, 61 and 63.

This approval changes certain portions of the previously approved preconstruction permit, and this action does not change the current expiration date of the permit. This approval results in a permit that has replaced the one previously issued, Activity Number PCP 15-0005.

The equipment, that is authorized to be installed and operated under this approval, is described in Section A, Source Operations and Section D, Equipment Inventory. Equipment at the facility referenced by this Permit shall be operated in accordance with the Conditions of Approval set forth in Section D, Facility Specific Requirements.

The Department hereby issues this permit and certificate under the authority of chapter 106, P.L. 1967(N.J.S.A 26:2C-9.2). You may construct, reconstruct, install, or modify the above referenced equipment and/or control apparatus consistent with the approval.

The approved Permit is available for download in PDF format which contains the facility's specific requirements (compliance plan) at: http://www.nj.gov/dep/aqpp. After accessing the

web site, click on “Approved PCP Permits” listed under “Reports” and then type in your Program Interest (PI) Number, 30374, as instructed on the screen. You will be able to view, print or electronically store your permit. If you have any questions regarding this permit approval, please contact the Department at the Preconstruction Permit Help Line available from 9:00 AM to 4:00 PM daily, where you may speak to someone about any technical questions you may have. The Preconstruction Permit Technical Help Line number is 609-292-6716.

If, in your judgment as an applicant for an air pollution control permit, the Department is imposing any unreasonable Condition of Approval, you may contest the Department’s decision and request a contested case hearing pursuant to the Administrative Code at N.J.A.C. 7:27-1.32(a). All requests for contested case hearings must be received in writing by the Department within twenty (20) calendar days of the date you receive this permit approval and must contain the information specified in the Administrative Hearing Request Checklist and Tracking Form.

If you have any non technical questions please use the Bureau’s number 609- 292-0834. If you have any questions when filing a General Permit please use the General Permit Help number 609-633-2829.

Approved by:

Michael A

_____

Michael Adhanom
Preconstruction Permits

Administrative Hearing Request Checklist and Tracking Form

I. Document Being Appealed

Name of the Facility	Facility ID Number	Permit Activity Number	Issuance Date
HOFFMANN-LA ROCHE INC	30374	PCP160008	

II. Contact Information

Name of Person Requesting Hearing	Name of Attorney (if applicable)
Address:	**Address:**
Telephone:	**Telephone:**

III. Please include the following information as part of your request:

A. The date the permittee received the permit decision;
B. Two printed copies of the document being appealed – for submitting to address 1 below;
A PDF copy of the document being appealed on a CD – for submitting to address 2 below
C. The legal and factual questions you are appealing;
D. A statement as to whether or not you raised each legal and factual issues during the permit application process;
E. Suggested revised or alternative permit conditions;
F. An estimate of the time required for the hearing;
G. A request, if necessary, for a barrier-free hearing location for physically disabled persons;
H. A clear indication of any willingness to negotiate a settlement with the Department prior to the Departments processing of your hearing request to the Office of Administrative Law;

Mail this form, completed, signed and dated with all of the information listed above, including attachment, to:

1. New Jersey Department of Environmental Protection
Office of Legal Affairs
Attention: Adjudicatory Hearing Requests
401 E. State Street, P.O. Box 402
Trenton, New Jersey 08625

2. Mail Code: 401-02
New Jersey Department of Environmental Protection
Air Quality Program
P.O. Box 420
Trenton, New Jersey 08625-0420
Phone: (609) 633-2829

_____ _____
Signature **Date**

Administrative Hearing Request Checklist and Tracking Form

IV. If you are not the applicant but rather an interested person claiming to be aggrieved by the permit decision, please include the following information:

1. The date you or your agent received notice of the permit decision (include a copy of that permit decision with your hearing request);
2. Evidence that a copy of the request has been delivered to the applicant for the permit which is the subject of the permit decision;
3. A detailed statement of which findings of fact and/or conclusion of law you are challenging;
4. A description of your participation in any public hearings held in connection with the permit application and copies of any written comments you submitted;
5. Whether you claim a statutory or constitutional right to a hearing, and, if you claim such a right, a reference to the applicable statute or explanation of how your property interests are affected by the permit decision;
6. If the appeal request concerns a CAFRA permit decision, evidence that a copy of the request has been delivered to the clerks of the county and the municipality in which the project which is the subject of the permit decision is located;
7. Suggested revised or alternative permit conditions;
8. An estimate of the time required for the hearing;
9. A request, if necessary, for a barrier-free hearing location for physically disable persons;
10. A clear indication of any willingness to negotiate a settlement with the Department prior to the Department's transmittal of the hearing request to the Office of Administrative Law;

Mail this form, completed, signed and dated with all of the information listed above, including attachment, to:

New Jersey Department of Environmental Protection
Office of Legal Affairs
Attention: Adjudicatory Hearing Requests
401 East State Street, P.O. Box 402
Trenton, New Jersey 08625-0402

Mail Code: 401-02
New Jersey Department of Environmental Protection
Air Quality Program
P.O. Box 420
Trenton, New Jersey 08625-0420
Phone: (609) 633-2829

_____ _____

Signature **Date**

AIR POLLUTION CONTROL PRECONSTRUCTION PERMIT

Table of Contents

Facility Name: HOFFMANN-LA ROCHE INC
Facility ID No.: 30374
Permit Activity No.: PCP160008

Section A

AUTHORIZED SOURCE OPERATIONS

Section B

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GENERAL PROVISIONS AND AUTHORITIES

Section D

PERMIT INFORMATION

AIR POLLUTION CONTROL PRECONSTRUCTION PERMIT

Section A

Facility Name: HOFFMANN-LA ROCHE INC
Facility ID No.: 30374
Permit Activity No.: PCP160008

AUTHORIZED SOURCE OPERATIONS

This Preconstruction Permit and the Certificate to Operate for the following equipment is issued pursuant to N.J.A.C. 7:27-8.

Description of Source Activity

Source Operation Type: Site remediation operations

Source Operation Description: This remediation operation includes in-well air stripping (IWAS), biosparging and in situ chemical oxidation (ISCO) at the Investigative Area IA-12, Operable Treatment Unit OTU-2. Three Vacuum blowers are used. VOC emissions from each blower are controlled by two carbon units in series.

Source Operation Details: The sources authorized by this permit shall be operated within the parameters specified in the Equipment, Control Device, and/or Emission Unit/Batch Process Operating Scenario Details of this permit. Operation of the authorized sources within these parameters is required in addition to compliance with the conditions specified in Section D– Facility Specific Requirements.

ACRONYMS

CEMS	Continuous Emissions Monitor System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COMS	Continuous Opacity Monitor System
EPA	United States Environmental Protection Agency
EMS	Emission Measurement Section - NJDEP
HAP	Hazardous Air Pollutant
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NOx	Oxides of Nitrogen
PM-2.5	All particulate matter having an aerodynamic diameter less than or equal to a nominal 2.5 microns
PM-10	All particulate matter having an aerodynamic diameter less than or equal to a nominal 10 microns
PST	Performance Specification Test
REO	Regional Enforcement Office - NJDEP
SO_2	Sulfur Dioxide
TSP	Total Suspended Particulate Matter
VOC	Volatile Organic Compounds

Section C

Facility Name: HOFFMANN-LA ROCHE INC
Facility ID No.: 30374
Permit Activity No.: PCP160008

GENERAL PROVISIONS AND AUTHORITIES
Preconstruction Permits

1. Not withstanding compliance with other provisions of N.J.A.C. 7:27-1 et seq., no person shall cause, suffer, allow or permit to be emitted into the outdoor atmosphere substances in quantities which shall result in air pollution as defined at N.J.A.C. 7:27-5.1. [N.J.A.C. 7:27-5.2(a)]

2. The permittee shall not construct, reconstruct, install, or modify a significant source or control apparatus serving the significant source without first obtaining a preconstruction permit under N.J.A.C. 7:27-8. [N.J.A.C. 7:27-8.3(a)]

3. The permittee shall not operate (nor cause to be operated) a significant source or control apparatus serving the significant source without a valid operating certificate. [N.J.A.C. 7:27-8.3(b)]

4. Permit Revisions:

   The permittee shall not take any action which requires a permit revision, compliance plan change, seven-day-notice change, amendment, or change to a batch plant permit, under any applicable provision at N.J.A.C. 7:27-8.17 through 8.23, without complying with that applicable provision.

   The following summarize N.J.A.C. 7:27-8.18 through 8.21:

   a. The permittee shall file a permit revision request and receive approval from the Department prior to increasing any maximum allowable emission limit, increasing actual emissions, to a rate or concentration greater than a maximum allowable emission, causing the emissions of a new air contaminant, use a new raw material, reconstructing equipment, change the ground level concentration of an air contaminant in an area where the public has access, replace the permitted source, or constructing or installing a new significant source. [N.J.A.C. 7:27-8.18]

   b. The permittee shall file a compliance plan change request and receive approval from the Department prior to decreasing the frequency of testing, monitoring, recordkeeping, or reporting, changing the monitoring method, changing a level, rate, or limit of an operational parameter included in the conditions, or reducing a source's potential to emit. [N.J.A.C. 7:27-8.19]

   c. At least seven days prior to proceeding with a physical or operational change that is outside the scope of activities allowed by this permit, but will not increase emissions over the allowable emissions and will not alter the stack

characteristics, the permittee shall file a seven-day-notice change. The permittee may proceed with the proposed changes seven days after such notice is filed with the Department. [N.J.A.C. 7:27-8.20]

d. The permittee shall file an amendment within 120 days of making any change of the information which allows the Department to identify and contact the permittee, changing the name, number or designation of any equipment or stack covered by this permit, changing the parameters of a stack in such a way to reduce the ground level concentration of an air contaminant, or correction of a typographical error that will not result in an increase of actual or allowable emissions. [N.J.A.C. 7:27-8.21]

The permittee shall review the provisions of N.J.A.C. 7:27-8.18 through 7:27-8.21 to determine the appropriate type of request to file.

5. The permittee shall make the preconstruction permit or certificate, together with any amendments, seven-day-notices, or other documents related to the permit and certificate, readily available for Department inspection on the operating premises. [N.J.A.C. 7:27-8.3(d)]

6. The permittee shall not use or cause to be used the equipment or control apparatus unless all components connected or attached to, or serving, the equipment or control apparatus, are functioning properly and are in compliance with the preconstruction permit and certificate and all conditions and provisions thereto. [N.J.A.C. 7:27-8.3(e)]

7. A preconstruction permit is not transferable either from the location authorized in the preconstruction permit to another location, or from any one piece of control apparatus or equipment to another piece of control apparatus or equipment. [N.J.A.C. 7:27-8.3(f)]

8. Once a permit or certificate is issued, the permittee is fully responsible for compliance with N.J.A.C. 7:27-8 and with the permit and certificate, including adequate design, construction, and operation of the source, even if employees, contractors, or others work on or operate the permitted source. If the Department issues any other requirement with the force of law, such as an order, which applies to the source, the permittee is also responsible for compliance with that requirement. [N.J.A.C. 7:27-8.3(g)]

9. Preconstruction permits and certificates do not any way relieve the permittee from the obligation to obtain necessary permits from other government agencies and to comply with all other applicable Federal, State, and local rules and regulations. [N.J.A.C. 7:27-8.3(h)]

10. The permittee shall not suffer, allow, or permit any air contaminant detectable by the sense of smell, to be present in the outdoor atmosphere in such quantity and duration which is, or tends to be, injurious to human health or welfare, animal or plant life or property, or would unreasonably interfere with the enjoyment of life or property. This shall not include an air contaminant which occurs only in areas over which the permittee has exclusive use or occupancy. In determining whether an odor unreasonably interferes with the enjoyment of life or property, the Department shall consider all of the relevant facts and circumstances, including, but not limited to, the character, severity, frequency, and duration of the odor, and the number of persons affected thereby. In considering these and other relevant facts and circumstances, no one factor shall be dispositive, but each shall be considered relevant in determining whether an odor interferes with the enjoyment of life or property, and, if so, whether such interference is unreasonable considering all of the circumstances. [N.J.A.C.7:27-8.3(j)]

11. The Department and its representatives have the right to enter and inspect any facility or property in accordance with N.J.A.C. 7:27-1.31. [N.J.A.C. 7:27-8.3(m)]

12. There shall be an affirmative defense to liability for penalties for a violation of a preconstruction permit or certificate occurring as a result of an equipment malfunction, an equipment start-up, an equipment shutdown, or during the performance of necessary maintenance. The affirmative defense shall be asserted and established as required pursuant to P.L. 1993. c.89 (adding N.J.S.A. 26:2C-19.1 through 2C-19.5) and any rules the Department promulgates thereunder, and shall meet all of the requirements thereof. There shall also be an affirmative defense to liabilities for penalties or other sanctions for noncompliance with any technology based emission limitation in this permit or certificate, if the noncompliance was due to an emergency as defined at N.J.A.C. 7:27-22.1, provided that the affirmative defense is asserted and established in compliance with 40 CFR 70.6(g) and meets all requirements thereof. [N.J.A.C. 7:27-8.3(n)]

13. The permittee shall not cause or use the equipment specified in a preconstruction permit in a manner that will result in the emission of any air contaminant not listed in the Facility Specific Requirements in this Preconstruction Permit at a rate equal to or higher than the applicable reporting threshold set forth at N.J.A.C. 7:27-8 Appendix I, Table A or B. [N.J.A.C. 7:27-8.4(k)1]

14. No air contaminant, or category of air contaminant, where accepted by the Department, shall be emitted other than those approved in the preconstruction permit. [N.J.A.C. 7:27-8.13(a)]

15. Any person to whom the Department has issued a preconstruction permit or certificate shall comply with all terms and conditions of any order related to the preconstruction permit or certificate. [N.J.A.C. 7:27-8.13(a)]

16. The permittee shall maintain all records required in the preconstruction permit for a period of five (5) calendar years from the calendar year within which the record was generated. [N.J.A.C. 7:27-8.13(a)]

17. The Department may change the conditions of approval of any approved certificate to operate at the time of renewal of a temporary operating certificate; at the time of approval or renewal of a five-year operating certificate; or at any time during the period a certificate is in effect, if the Department determines that such change is necessary to protect human health or welfare or the environment. [N.J.A.C. 7:27-8.13(b)]

18. Upon request of the Department, the permittee shall submit to the Department information relevant to the operation of equipment and control apparatus including all information specified at N.J.A.C. 7:27-8.13(c). [N.J.A.C. 7:27-8.13(c)]

19. If the conditions of a preconstruction permit or certificate to operate require the Department to incur any of the following charges, the permittee shall reimburse the Department for the full amount of these charges: (1) The charges billed by any phone company for the maintenance of a dedicated telephone line required by this permit or the certificate to operate for the electronic transmission of data; or (2) The charges billed by any laboratory for performing the analysis of audit samples collected pursuant to testing or monitoring required by this permit or the certificate to operate. [N.J.A.C. 7:27-8.13(g)]

20. Any exceedance of the operating requirements or emission concentrations specified in a preconstruction permit shall be reported within three (3) business days, by writing to the Regional Enforcement Office. [N.J.A.C. 7:27-8.13(h)]

21. The permittee shall, when requested by the Department, provide such testing facilities exclusive of instrumentation and sensing devices as may be necessary for the Department to determine the kind and amount of air contaminants emitted from the equipment or control apparatus. The testing facilities shall include the utilities, the structure to hold testing equipment and/or personnel, and any ports in stacks needed to carry out testing required by this permit. During testing by the Department, the equipment and control apparatus shall be operated under such conditions within their capacities as may be requested by the Department. The test facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws, regulations, and rules concerning safe construction and safe practice. Testing facilities, which contain platforms and other means of personnel access, shall conform to OSHA standards. [N.J.A.C. 7:27-8.13(i)]

22. Upon request of the Department, the permittee shall submit to the Department any record relevant to any permit or certificate. Such records shall be submitted to the Department within thirty (30) days of the request by the Department or within a longer time period if approved in writing by the Department. [N.J.A.C. 7:27-8.15(a)]

23. The permittee shall submit any required report in a format and on a schedule approved by the Department. Such report shall be transmitted on paper, on computer disk, or electronically, at the discretion of the Department. [N.J.A.C. 7:27-8.15(b)]

24. Any report submitted to the Department, including but not limited to, a report submitted as an amendment of this permit or the certificate to operate pursuant to N.J.A.C. 7:27-8.3(c) shall include, as an integral part of the report, certifications complying with N.J.A.C. 7:27-1.39. [N.J.A.C. 7:27-8.15(c)]

25. Upon request of the Department, the permittee shall report on forms obtained from the Department the air contaminant actual emissions and information relevant thereto, of any air contaminant or category of air contaminant emitted by the equipment, control apparatus, or source operation. [N.J.A.C. 7:27-8.15(d)]

26. Any emission limit values in a preconstruction permit shall be interpreted to be followed by inherent trailing zeros (0) in the decimal portion of the limit to three significant figures (e.g. a printed limit of "1 lb/hr" means a limit of "1.00 lb/hr").

27. This listing of requirements reflects the state rules and regulations that apply to a majority of sources. If a specific requirement in a rule or regulation that applies to a permittee is not included in this section or in the Facility Specific Requirements it does not relieve the permittee from the obligation to comply with that regulation.

28. Process monitors must be operated at all times when the associated process equipment is operating except during outage time allowed by Department guidelines/procedures or as outlined in Technical Manual 1005. The Permittee must keep a service log as required.

29. Each permittee shall meet all requirements of the approved source emissions testing and monitoring protocol during the term of the operating permit. Whenever the facility makes a replacement, modification, change or repair of a certified CEMS or COMS that may significantly affect the ability of the system to accurately measure or record data, the facility must recertify the CEMS or COMS in accordance with Section V.B. and

Appendix E of Technical Manual 1005. The facility is responsible for contacting the Emission Measurement Section to determine the need for recertification and/or to initiate the recertification process. The facility is responsible for any downtime associated with the replacement, modification, change or repair of the CEMS or COMS. [N.J.A.C. 7:27-8.13(d)]

30. The following Department offices may be referenced in a preconstruction permit. Please use the following addresses when submitting any correspondence to these offices:

Emission Measurement Section
Mail Code: 380-01A, P.O. Box 420
Trenton, NJ 08625-0420

Central Regional Enforcement Office
P. O. Box 407
Trenton, NJ 08625-0407

Northern Regional Enforcement Office
7 Ridgedale Avenue
Cedar Knolls, NJ 07927

Southern Regional Enforcement Office
2 Riverside Drive – Suite 201
Camden, NJ 08102

31. In accordance with the Air Pollution Control Act at N.J.S.A. 26:2C-19(e), any operation of the equipment which may cause off-property effect, including odors, shall be immediately reported by calling the NJDEP Environmental Action Hotline at (877) 927-6337.

32. In accordance with N.J.A.C. 7:27-21, facilities are required to submit annual emission statements of their actual emissions if the Potential-to-emit for the entire facility exceeds the following thresholds (including all emissions from the facility, both permitted and unpermitted). Additional information about Emission Statement reports can be obtained by calling (609) 984-5483.

AIR CONTAMINANT	**Threshold in Tons per Year**
VOC (Volatile Organic Compounds	10
NOx (Oxides of Nitrogen)	25
CO (Carbon Monoxide)	100
SO_2 (Sulfur Dioxide)	100
TSP (Total Suspended Particulates)	100
$PM_{2.5}$ (Particulate Matter $\leq$ 2.5 microns)	100
PM_{10} (Particulate Matter $\leq$ 10 microns)	100
NH_3 (Ammonia)	100
Lead	5

33. In accordance with N.J.A.C. 7:27-22, facilities are required to submit a Title V Operating Permit application, within one year, if the potential-to-emit for the entire facility exceeds any of the following thresholds (including all emissions from the facility, both permitted and unpermitted). Additional Information about Operating Permits can be obtained by calling the Operating Permit Hotline at (609) 633-8248.

AIR CONTAMINANT	**Threshold in Tons per Year**
VOC (Volatile Organic Compounds)	25
NOx (Oxides of Nitrogen)	25
CO (Carbon Monoxide)	100
SO_2 (Sulfur Dioxide)	100
TSP (Total Suspended Particulates)	100
PM_{10} (Particulate Matter ≤ 10 microns)	100
Lead	10
Any HAP (Hazardous Air Pollutant)	10
All HAPs Collectively	25
Any other Air Contaminant	100

AIR POLLUTION CONTROL PRECONSTRUCTION PERMIT

Section D

Facility Name: HOFFMANN-LA ROCHE INC
Facility ID No.: 30374
Permit Activity No.: PCP160008

PERMIT INFORMATION

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FACILITY SPECIFIC REQUIREMENTS

REASON FOR APPLICATION

FACILITY PROFILE (GENERAL)

EQUIPMENT INVENTORY

CONTROL DEVICE INVENTORY

EMISSION POINT INVENTORY

EMISSION UNIT/BATCH PROCESS INVENTORY

AIR POLLUTION CONTROL PRECONSTRUCTION PERMIT

Section D

Facility Name: HOFFMANN-LA ROCHE INC
Facility ID No.: 30374
Permit Activity No.: PCP160008

FACILITY SPECIFIC REQUIREMENTS INDEX

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New Jersey Department of Environmental Protection
Facility Specific Requirements

Emission Unit: U600 IRM-IWAS and Ozone

Subject Item: CD600 Granular Activated Carbon for Vapor Treatment, CD601 Granular Activated Carbon for Vapor Treatment

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	This granulated activated carbon system shall consist of two carbon units (CD600 and CD601) in series. The estimated time for breakthrough shall be calculated based on the amount of carbon in the primary unit(s), the maximum VOC concentration of off-gases measured at the inlet to the emission control system, and the specifications of the manufacturer. [N.J.A.C. 7:27- 8.13(a)]	Monitored by other method (provide description) at the approved frequency. The Permittee shall monitor the carbon adsorption system at a frequency which is less than the estimated time for breakthrough or at least quarterly. Monitoring for breakthrough shall be conducted by following the monitoring protocol developed by the permittee in accordance with the Department's Bureau of Technical Services (BTS) guidance document at http://www.state.nj.us/dep/bts/pdffiles/vocm. "Guidance Document for the Use of Periodic Volatile Organic Compound (VOC) Monitors at Small NJ Sources." The breakthrough point is reached when the concentration of the gases exiting the primary carbon canister(s) exceeds 10% of the inlet concentration of carbon adsorption system or 5 ppmv, whichever is greater. [N.J.A.C. 7:27- 8.13(d)1]	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. The Permittee must maintain records of the estimated breakthrough time, the dates of testing and the initial weight of the carbon beds and make these available for NJDEP inspection upon request until project completion, plus 5 years. Record the VOC concentration measured at the inlet and outlet of the primary carbon unit(s) using a calibrated portable field instrument and make these available for NJDEP inspection upon request until project completion, plus 5 years. Record calibration results in accordance with manufacturer procedures and make these available for NJDEP inspection upon request until project completion, plus 5 years. [N.J.A.C. 7:27- 8.13(d)3]	Submit a report: Upon occurrence of event. The permittee shall report any non-compliance within three working days after the event in writing to the Air Regional Enforcement Office. [N.J.A.C. 7:27- 8.13(d)4]

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
2	Operating Control Efficiency > 90 % across the primary carbon units prior to the final carbon units or VOC emissions less than 5 ppm. [N.J.A.C. 7:27- 8.13(a)]	Operating Control Efficiency: Monitored by periodic emission monitoring once initially. Monitor prior to the primary carbon unit(s) and prior to the secondary carbon unit(s) while operating under typical conditions. If the typical conditions are a range, the monitoring data shall be taken at worst case (max emissions) conditions. [N.J.A.C. 7:27-8.13(d)1]	Operating Control Efficiency: Recordkeeping by manual logging of parameter upon occurrence of event. All monitoring and sampling results shall be kept in table form with the following headings where applicable: Date, Standard Cubic Feet Per Minute, Monitor Reading, Response Factor, % Oxygen (before the first carbon unit and prior to the final carbon units), VOC Parts Per Million (before the first carbon unit and prior to the final carbon unit), VOC Pounds Per Hour (before the first carbon unit and prior to the final carbon unit), VOC Control Efficiency and Permit Limit VOC Control Efficiency. All monitoring and sampling records shall be kept on-site for a minimum of 5 years and made available to representatives of the Department upon request. [N.J.A.C. 7:27-8.13(d)3]	None.
3	When breakthrough occurs the primary carbon unit(s) (closest to the equipment off-gas) shall be replaced with the secondary unit(s) and the secondary unit(s) shall be replaced with the fresh or newly generated carbon units. [N.J.A.C. 7:27- 8.13(a)]	None.	Recordkeeping by manual logging of parameter upon occurrence of event. Records of the date and time when the carbon units are changed or regenerated and the breakthrough concentration shall be kept on-site for a minimum of 5 years after collection and shall be made available to representatives of the Department upon request. [N.J.A.C. 7:27- 8.13(d)3]	None.

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
4	The permittee shall maintain records of carbon unit operations. [N.J.A.C. 7:27-16.16(g)3ii]	None.	Recordkeeping by manual logging of parameter at the approved frequency. The permittee shall record the date and time the carbon used in the control apparatus is regenerated or replaced; also maintain production records sufficient to demonstrate whether the processes conducted generate VOC emissions within the design parameters of the control apparatus and any other information required to document whether the control apparatus is being used and maintained in accordance with the manufacturer's recommended procedures. Such manufacturer's recommended procedures shall readily available on the operating premises, and the person responsible for the source operation shall provide these to the Department upon request. [N.J.A.C. 7:27-16.16(g)3ii]	None.

New Jersey Department of Environmental Protection
Facility Specific Requirements

Emission Unit: **U600 IRM-IWAS and Ozone**

CD602 Catalyst

Subject Item:

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	The permittee shall maintain and operate the Carulite system as per manufacturer instruction. [N.J.A.C. 7:27- 8.13(a)]	None.	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. The permittee shall keep records of maintenance and replacement. [N.J.A.C. 7:27- 8.13(d)]	None.
2	Ozone <= 2 ppmv. [N.J.A.C. 7:27- 8.13(h)]	Ozone: Monitored by periodic emission monitoring at the approved frequency. Each week for the first month and then monthly measured at stack. [N.J.A.C. 7:27- 8.13(d)]	Ozone: Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. The permittee shall keep the record of each monitoring. [N.J.A.C. 7:27- 8.13(d)]	None.

New Jersey Department of Environmental Protection
Facility Specific Requirements

Emission Unit: U600 IRM-IWAS and Ozone

Operating Scenario: OS Summary

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	Opacity: no visible emissions: Equipment shall not be used in a manner that will cause visible emissions exclusive of condensed water vapor. [N.J.A.C. 7:27- 8.13(a)]	None.	None.	Notify by phone: Upon occurrence of event (visible emissions). The permittee shall notify the Department immediately of the event. Such a notification shall be made by calling the Environmental Action Hotline at (877) 927-6337. [N.J.A.C. 7:27- 8.13(a)]
2	The maximum emission rates of any air contaminant not listed in the Facility Specific Requirements must be below the Reporting Threshold in N.J.A.C. 7:27-8, Appendix 1 [N.J.A.C. 7:27- 8.13(h)]	None.	None.	None.
3	Ozone <= 0.04 tons/yr. [N.J.A.C. 7:27-8.13(a)]	None.	None.	None.
4	Maximum No. of Billable Compliance Inspections <= 4 inspections over the life of the Operating Certificate. The permittee will be invoiced for a service fee per inspection pursuant to N.J.A.C. 7:27-8.6 after the periodic compliance inspection is conducted. [N.J.A.C. 7:27- 8.13(e)]	None.	None.	None.
5	This remediation operation shall be restricted to those remediation areas which are specified in the attachment submitted to the Department for this permit. [N.J.A.C. 7:27- 8.13(a)]	None.	None.	None.
6	This permittee shall analyze the inlet gas to the control system for VOC and/or HAPs at the frequency specified under monitoring requiremnts from initial start of this operation. [N.J.A.C. 7:27- 8.13(a)]	Monitored by grab sampling at the approved frequency using EPA Method TO-15. The frequency of sampling shall be as follows: Week 1- day one and another day, Week 2 to 4 - Weekly, Week 5 to 16 monthly, Week 16 to completion- semi-annually. [N.J.A.C. 7:27- 8.13(d)]	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. [N.J.A.C. 7:27- 8.13(d)]	None.

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
7	The permittee shall post the name of the contact person, together with the address and phone number, on a permanent, legible sign in a conspicuous location on the work site prior to beginning the work to be performed in accordance with the permit. [N.J.A.C. 7:27- 8.13(a)]	None.	None.	None.
8	The permittee shall notify the appropriate Regional Enforcement Office in writing at least seven days prior to the start-up of the soil vapor extraction/air sparging system. [N.J.A.C. 7:27- 8.13(d)4]	None.	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. The permittee shall maintain copies of notifications available for NJDEP inspection upon request for five years. [N.J.A.C. 7:27- 8.13(d)3]	Submit a report: Once initially. [N.J.A.C. 7:27- 8.13(d)4]
9	The permittee shall notify the appropriate Regional Enforcement Office in writing within thirty days of the completion of the remediation operation. [N.J.A.C. 7:27- 8.13(d)4]	None.	Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. The permittee shall maintain copies of notifications available for NJDEP inspection upon request for five years. [N.J.A.C. 7:27- 8.13(d)3]	Submit a report: Upon occurrence of event. [N.J.A.C. 7:27- 8.13(d)4]
10	Blower Extraction Rate <= 550 Cubic feet per minute. [N.J.A.C. 7:27- 8.13(a)]	Blower Extraction Rate: Monitored by material feed/flow monitoring at the approved frequency. The frequency of monitoring shall be as follows: Daily for the first week of operation, at least three days during the second week, weekly from third to fifth week and then monthly. The permittee shall install, calibrate and maintain the monitor(s) in accordance with the manufacturer's specifications. The monitor(s) shall be ranged such that the allowable value is approximately mid-scale of the full range current/voltage output. [N.J.A.C. 7:27- 8.13(d)]	Blower Extraction Rate: Recordkeeping by manual logging of parameter or storing data in a computer data system at the approved frequency. The frequency of monitoring shall be as follows: Daily for the first week of operation, at least three days during the second week, weekly from third to fifth week and then monthly. [N.J.A.C. 7:27- 8.13(d)]	None.

New Jersey Department of Environmental Protection
Facility Specific Requirements

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
11	Ozone air sparging rate <= 4.0 cfm [N.J.A.C. 7:27- 8.13(a)]	Monitored by material feed/flow monitoring at the approved frequency.The frequency of monitoring shall be as follows: Daily for the first week of operation, at least three days during the second week, weekly from third to fifth week and then monthly. The permittee shall install, calibrate and maintain the monitor(s) in accordance with the manufacturer's specifications. The monitor(s) shall be ranged such that the allowable value is approximately mid-scale of the full range current/voltage output. [N.J.A.C. 7:27- 8.13(d)]	Recordkeeping by manual logging of parameter or storing data in a computer data system at the approved frequency. The frequency of monitoring shall be as follows: Daily for the first week of operation, at least three days during the second week, weekly from third to fifth week and then monthly. [N.J.A.C. 7:27- 8.13(d)]	None.

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

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KIM GUADAGNO
Lt. Governor

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Teresa O'Meara, Site ES&H Manager
Hoffmann-La Roche, Inc.
800 Bloomfield Ave, Suite 127
Nutley, NJ 07110-1199

October 25, 2017

Re: Modified - Long Term Monitoring Requirement Associated with
NJPDES Discharge to Ground Water Authorization
Permit-by-Rule for IA-1/4, IA-6 & IA-12
Hoffmann-La Roche Inc.
340 Kingsland Street
Nutley, Essex County, NJ 07110
SRP PI No.: 009949

Dear Ms. O'Meara:

This New Jersey Pollutant Discharge Elimination System/Discharge to Ground Water (NJPDES/DGW) permit-by-rule (PBR) discharge authorization is hereby issued under the authority of the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. and the implementing regulations, N.J.A.C. 7:14A-1 et seq. N.J.A.C. 7:14A-7.5 authorizes discharges to ground waters for the application of In-Situ Chemical Oxidation (ISCO) treatment technology using ozone sparging and sodium persulfate, hydrogen peroxide or calcium peroxide injections at the referenced Site.

Pursuant to N.J.A.C. 7:14A-22.4(a)7, a Treatment Works Approval is not required for minor modifications of treatment works including, but not limited to, chemical addition for the purpose of improving performance.

On August 13, 2015, the Department issued a NJPDES/DGW PBR discharge authorization to implement ISCO treatment technology using ozone sparging and sodium persulfate injections to treat groundwater at the Hoffmann-La Roche Inc. (Roche) facility at 340 Kingsland Street, Nutley, Essex County, New Jersey as proposed on behalf of Roche in the June 26, 2015 *Investigative Areas IA-1/4, IA-6 and IA-12 Ozone Sparging and Sodium Persulfate Injection Discharge Groundwater Permit-By-Rule Application* by TRC Environmental Corporation (TRC). Upon implementation of the ISCO treatment as originally proposed, Roche and TRC determined that very limited spots in the larger treatments zones have not been sufficiently removed, warranting modifications to the ISCO treatment.

This Permit discharge authorization is issued in order to facilitate the remedial activities conducted with oversight from the Site Remediation Program of the Department of Environmental Protection (Department). The discharge approved through this authorization is to implement modifications to ISCO treatment technology, as proposed on behalf of Roche in the September 20, 2017 *IA-1/4, IA-6 and IA-12 Discharge to Groundwater Permit-By-Rule – Request for Modification*, the October 9, 2017 *Revised IA-1/4, IA-6 and IA-12 Discharge to Groundwater Permit-By-Rule – Request for Modification*, and the October 12, 2017 e-mail by TRC (collectively, Modified DGW-PBR Application). The modifications include changes to the sodium persulfate injections at IA-12, and the addition of sodium persulfate, hydrogen peroxide and calcium peroxide injections with the ozone sparging at IA-1/4 and IA-6. The discharge shall be conducted in conformance with the Modified DGW-PBR Application and the following requirements.

SITE DESCRIPTION

Based on numerous soil borings completed at the site, the overburden consists primarily of red-brown silt and sand, typical for the Roche site; an intermittent layer of peat and clay was encountered at various locations above Passaic Formation Bedrock. In general, weathered bedrock was encountered from approximately 10 to 13 feet below ground surface (bgs) and is greatest in the vicinity of the Valley Drain and Clifton Sanitary Sewer line.

The objective of the injection programs is to remediate 1,4-dioxane, chlorinated volatile organic compounds (CVOCs) and other volatile organic compounds (VOCs) (e.g. benzene) identified in the groundwater at Investigation Area (IA)-1 and 4 (1/4), IA-6, and IA-12. Targeted CVOCs include tetrachloroethene (PCE), as well as limited impacts of methylene chloride (MC), chloroform (CF) and vinyl chloride (VC). The description of the three targeted IAs area are as follows:

- IA-1/4; located in the northwestern portion of the site, formerly included aboveground storage tanks (ASTs), underground storage tanks (USTs), raw and hazardous material storage areas, electrical transformers, subsurface process/storm water/chemical transfer piping, steam condensate return system and a railroad spur tank car loading/unloading area. Dissolved phase 1,4-dioxane is the primary contaminant of concern (COC) in ground water in IA-1/4 in the S1, S2 and S3 hydro-geologic zones.

- IA-6; located in the southern portion of the site, has the longest history of pharmaceutical and vitamin production. The slabs and footing of former buildings remain. IA-6 includes former USTs, dumpster storage areas, drum storage areas, ASTs, a production well, production building footprints and subsurface process/storm water/chemical transfer piping. The primary COC is chlorobenzene (CB) which is found in the S1, S2 and S3 hydro-geologic zones.

- IA-12; located in the northern portion of the site and is grassed or paved, with relatively flat topography. A small number of permanent structures exist, including the Highway Route No. 3 Guard Shack and Buildings 108 and 108A, which are the pump houses for the potable water mains that enter the site. A former warehouse was located around Building 108. The Clifton-Allwood Municipal Sewer (CAMS) enters the site near the Guard Shack. CVOCs are the primary COCs. This DGW-PBR targets areas of the highest CVOC concentrations

in the S1 and S2 hydro-geologic zones in the vicinity of an on-site discharge from the CAMS.

DISCHARGE DESCRIPTION

The remedial measures at IA-1/4, IA-6 and IA-12 will consist of ISCO treatment using ozone sparging and sodium persulfate and/or hydrogen or calcium peroxide injections. Based on the results of a pilot test, ozone was originally selected as the preferred, primary oxidant for the ISCO treatment at IA-1/4, IA-6 and IA-12, and sodium persulfate was selected as an additional oxidant for the ISCO treatment in IA-12 to address the COCs. The modification includes the addition of hydrogen peroxide and/or calcium peroxide at IA-12, the addition of sodium persulfate and hydrogen peroxide at IA-1/4, and the addition of sodium persulfate and hydrogen peroxide and/or calcium peroxide at IA-6. The peroxides will be used as the activator for the persulfate.

In addition to the above discharges that are authorized by this NJPDES-DGW PBR, In-Well Air Stripping (IWAS) technology will be used to enhance the distribution of ozone as well as for stripping of COCs from the groundwater. Soil vapor extraction (SVE) and biosparge technologies will also be used to increase the effectiveness of the remedial measures.

Ozone will be injected as a gas into sparge points installed in specialized wells or as components of an IWAS well. IWAS wells will recirculate the groundwater to optimize contact of the sparged ozone with the COCs, and thereby enhance and accelerate remediation. The IWAS wells are anticipated to operate continuously during the remediation. The sodium persulfate solution will be injected in IA-1/4, IA-6 and IA-12 through a series of specialized injection wells.

SVE technology will be used to recover vapors from IWAS wells and/or vapor extraction trenches (VETs). The IWAS wells and VETs will be connected to SVE blowers and air compressors in the remediation equipment area. The exhaust will be treated with granular activated carbon prior to venting to the atmosphere in accordance with a valid air permit, as required.

A summary of the oxidant injection/sparge wells, IWAS wells, biosparge wells, VETs and oxidant quantities is listed below:

IA-1/4

The full-scale injection scheme for IA-1/4 includes 44 ozone sparge wells, 34 IWAS wells and nine VETs (as shown on Figures 3M and 3N). Each sparge well includes an upper and lower (shallow and deeper) injection interval, for a total of up to 88 total sparge points in the treatment area as follows:

- Shallow Treatment Zone: Includes 16 ozone sparge wells screened across two depth intervals (25-40 feet bgs and 55-70 feet bgs) and 13 IWAS wells screened between 10 and 60 feet bgs.
- Deeper Treatment Zone: Includes 28 ozone sparge wells screened across two depth intervals (45-50 feet bgs and 75-90 feet bgs) and 21 IWAS wells screened between 30 and 80 feet bgs.

The treatment area is also broken into the North Area and South Area based on the remediation system requirements. The maximum amount of ozone to be injected at IA-1/4 is 44,000 kg, at a rate of approximately 2,500 grams/hour (g/hr) for 24 months (24-hour operation) split between 44 ozone sparge wells, each having one to two injection intervals totaling up to 88 sparge points.

The operating conditions for the injection and recovery components for IA-1/4 are as follows:

- Ozone Sparge: Ozone flow rate of 110 actual cubic feet per minute (ACFM) @ 70 pounds per square inch (psi) per ozone generator (x 2 generators)
- IWAS Air Flow: Air flow rate of 300 ACFM @ 45 psi per air compressor (x 2 compressors)
- SVE: Vacuum of 600 ACFM @ 10 to 14 inches of mercury (Hg) per blower (x 2 blowers)

The Modified DGW-PBR Application request is to perform two (2) injections of activated sodium persulfate solution; each of which will consist of the following elements:

- Injection at up to eleven (11) well locations (22 injection points) utilizing existing, permitted ozone injection wells.
- The IWAS wells near the injection wells will continue to operate to improve the distribution of the injected oxidant solution.
- Hydrogen peroxide will be injected as an activator for the persulfate, along with a pH buffering compound.
- To improve distribution of the oxidant, some monitoring wells may be purged periodically during and after the injections.

Actual gallons injected will be based on concentrations of each compound mixed for application, based on manufacturer's recommendations. The following additional chemicals are proposed for inclusion in the Modified DGW-PBR Application:

Compound	**Quantity**
Sodium Persulfate	160,000 Pounds
Hydrogen Peroxide	140,000 Pounds
Buffering Compound	20,000 Pounds
Sodium Hydroxide	as needed, for pH control

The specific wells to be used for persulfate injections are:

- IW-67A/B
- IW-71A/B
- IW-73A/B
- IW-77A/B
- IW-82B/C
- IW-83B/C
- IW-84B/C
- IW-87B/C
- IW-88B/C
- IW-89B/C
- IW-99B/C

IA-6

The full-scale injection scheme for IA-6 includes ten (10) ozone sparge wells, 14 IWAS wells, 15 biosparge wells and seven (7) VETs (as shown on Figure 4G). The ozone sparge wells are screened from 25 to 30 feet bgs in the bedrock. IWAS treatment in the area of ozone injection will be conducted in Zone S1. Three IWAS wells will be located inside the ozone treatment zone. These IWAS wells will be screened from 4 to 19 feet bgs, and will assist in distributing the ozone through the treatment area. The biosparge wells will be used to inject atmospheric air into the subsurface to promote aerobic biodegradation.

The maximum amount of ozone to be injected at IA-6 is 6,640 kg (14,600 pounds), at a rate of approximately 370 g/hr (20 pounds/day) for 24 months (24-hour operation) split between ten ozone sparge wells.

The operating conditions for the injection and recovery components for IA-6 are as follows:

- Ozone Sparge: Ozone flow rate of 20 ACFM @ 10 psi per ozone generator
- IWAS Air Flow: Air flow rate of 200 ACFM @ 30 psi per air compressor
- SVE: Vacuum of 500 ACFM @ approximately 3.7 to 4.4 inches of Hg vacuum per blower
- Biosparge: Air flow rate of 30 ACFM @ 25 psi per compressor

The Modified DGW-PBR Application is to perform two (2) injections of activated sodium persulfate solution; each of which will consist of the following elements:

- Injection at seven (7) well locations utilizing existing, permitted ozone injection wells and up to three (3) well locations for injection of air.
- The IWAS wells near the injection wells will continue to operate to improve the distribution of the injected oxidant solution.
- Hydrogen peroxide or calcium peroxide will be injected as an activator, along with a pH buffering compound.

Actual gallons injected will be based on concentrations of each compound mixed for application, based on manufacturer's recommendations. The following chemicals in the Modified DGW-PBR Application are proposed for inclusion during the two injection events:

Compound	**Quantity**
Sodium Persulfate	85,000 Pounds
Hydrogen Peroxide	61,000 Pounds
Calcium Peroxide	20,000 Pounds
Buffering Compound	20,000 Pounds
Sodium Hydroxide	as needed, for pH control

The specific wells to be used for persulfate injections are:

- IW-105A
- IW-106A
- IW-108A
- IW-109A

- IW-110A
- IW-112A
- IW-113A
- BIOS-4B
- BIOS-7B
- BIOS-10

It is anticipated that upon completion of persulfate injections into IA-6, the ozone wells will be returned to use as ozone injection points and the biosparge wells will be place back into regular service.

IA-12

The full-scale injection scheme for IA-12 includes approximately 90 ozone injection points at four (4) injection depths, 27 IWAS wells, 20 persulfate injection wells at four (4) injection depths within zones S1 and S2, and 18 VETs (as shown on Figure 5D). The IWAS wells will be constructed to a depth of approximately 61 feet bgs. The ozone injection points will consist of approximately 30 locations, with up to 3-well cluster (shallow, intermediate and deep) at each location. The shallow, intermediate and deep locations (A, B-2 and B-3) will be completed to approximate depths of 31, 51 and 71 feet bgs, respectively. The shallow (A) and deep (B-3) ozone sparge wells will be installed in the same borehole and the intermediate in a separate borehole. B-1 locations include the 3 existing pilot test wells that are completed to approximate depths of 46 feet bgs.

The Modified DGW-BPR Application consist of injection of sodium persulfate solution into six (6) wells constructed and currently permitted for the purpose of injection persulfate, five (5) wells that were constructed for injection of ozone, and, if necessary, one well that was constructed for groundwater monitoring. The basis for this modification is an isolated area of elevated CVOCs within the center portion of IA-12 located around monitoring well MW-80C. Based on limited desired reduction in CVOCs, Roche is prepared to initiate sodium persulfate injections to enhance the ISCO treatment of CVOCs in this area.

The persulfate injection wells will consist of eleven (11) locations, with possibly a twelfth, mainly with a 2-well cluster (shallow and deep) per location. Well and screen depths for injection are as follows:

- Shallow Injection Wells – will be constructed to a depth of approximately 29 feet bgs with injection screens set at 13 to 18 feet and 23 to 28 feet bgs
- Deep Injection Wells – will be constructed to a depth of approximately 61 feet bgs with injection screens set at 35 to 45 feet and 50 to 60 feet bgs

Actual gallons injected will be based on concentrations of each compound mixed for application, based on manufacturer's recommendations. The anticipated chemical loadings for persulfate treatment area injection wells are as follow:

- Approximately 95,000 gallons of 5% to 10% (by weight) persulfate solution
- Approximately 13,000 gallons of 25% (by weight) sodium hydroxide solution, and
- Approximately 2,000 pounds of a bromide tracer may be added

In addition to the quantities list above in the current 2015 permit for sodium persulfate and sodium hydroxide, the following additional chemicals are proposed for inclusion in the Modified DGW-PBR Application:

Compound	Quantity
Hydrogen Peroxide	30,000 Pounds
Calcium Peroxide	15,000 Pounds
Buffering Compound	20,000 Pounds
Sodium Hydroxide	as needed, for pH control

Injections will occur in the previously approved persulfate injections wells:

- IW-13A/B
- IW-35A/B
- IW-40A/B

and the specific wells to be converted to persulfate injections wells:

- IW-39A
- IW-41A
- IW-41B2
- IW-10A
- IW-10B1
- MW-80C

The specific wells planned for groundwater pumping are:

- ART-4
- ART-5
- ART-6
- IW-40B
- MW-80C

Groundwater will be extracted from the same depth zones (S1 and S2) targeted for the injections. Initial persulfate injections(s) will not use well MW-80C as an injection point, as it is anticipated that injections into the injection wells surrounding this well will effectively treat the groundwater at and around MW-80C. However, if oxidant injection into the injection wells does not prove successful in reducing CVOCs at MW-80C, subsequent injections may utilize MW-80C for persulfate injection to directly treat groundwater in the immediate vicinity of MW-80C, which will limit future ground water quality monitoring at this well location.

SYSTEM OPERATION AND MONITORING

All sampling and monitoring will be performed according to the methodology specified in the most current edition of the Department's Field Sampling Procedures Manual. All samples are to be analyzed by a New Jersey Certified Laboratory except those field-determined parameters specified in the monitoring program established pursuant to the oversight document. Low flow sampling collection will be performed in the midpoint of the saturated screen interval of each well.

The permittee will comply with the provisions of the NJPDES regulations, N.J.A.C. 7:14A-8.16(b)1 when UIC-Class V injection wells are used. All design plans and specifications for the injection wells shall be retained and made available to the Department upon request.

Pursuant to N.J.A.C. 7:14A-6.2(a)5 and 11, if free product in ground water, vapors or odors in any building, or any malfunction resulting in a potential impact to a receptor are detected and are a result of the discharge authorized by this approval, the discharger will immediately: (1) cease the discharge or make necessary adjustments to the injection rate; and (2) repair or mitigate any negative impacts.

All UIC-Class V injection wells shall be properly abandoned in accordance with N.J.A.C. 7:14A-8.16(d)1 as applicable. The permittee will comply with any applicable provisions of the Additional Conditions Applicable to Class I, II, III and V UIC Permits of the NJPDES regulations, N.J.A.C. 7:14A-8.9, et seq. when UIC-Class V injection well units (i.e., the injection points) are used.

SITE MONITORING REQUIREMENTS

TRC representatives will monitor the sparging rate and will make adjustment to the injection scheme as needed. These adjustments may include injection rates, injection pressure, oxidant concentrations and injection locations. The radius of influence (ROI) and oxidant distribution throughout the treatment intervals will be recorded via observation at nearby monitoring wells. Water level measurements will be recorded at regular intervals during the injection process. Additionally, groundwater geochemical parameters including pH, temperature, Dissolved Oxygen (DO), Specific Conductivity (SC), Oxidation-Reduction-Potential (ORP), and turbidity will be monitored in the field at regular intervals during injection to further assess the progress of injection at surrounding monitoring wells.

The monitoring and injection well locations and details of the monitoring program for each IA-1/4, IA-6 and IA-12 are summarized on the following Figures and Text of the Modified DGW-PBR Application:

- IA-1/4: Figures 2 and Supplemental Wells: MW-255B, MW-370A, MW-390A/B, MW-392A/B/C, MW393A/B/C, MW-416B/C, and MW426A/B.
- IA-6: Figure 3 and Supplemental Wells: MW-52, MW-346A/B/C, MW-318A/B and MW-317B/C; and
- IA-12: Figure 1 and existing monitoring network.

The IA1/4, IA-6 and IA-12 monitoring parameter list modifications will include VOCs plus 1,4-dioxane (at IA-1/4 and IA-6), sodium, chloride, sulfate, total and dissolved metals (iron, manganese, arsenic, barium, cadmium, total chromium, hexavalent chromium, copper, lead, selenium) and field geochemical parameters. Groundwater sampling will be performed at each of the IA-1/4, IA-6 and IA-12 treatment areas as follows:

- Pre-Injection (baseline) within 2 weeks prior to the start of the first injection,
- Approximately 2 weeks, 4 weeks and 8 weeks after completion of each of the two proposed injections, and
- Quarterly, as required, based on GWQC exceedances and part of the site wide monitoring schedule.

INFORMATION SUBMITTALS

Annual Progress Reports shall be submitted by the LSRP on behalf of Roche. The Annual Progress Reports, and subsequent Remedial Action Report(s), shall be submitted to the following address:

Attention: Donna L. Gaffigan, Case Manager
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street, 5th floor
Mail Code 401-05F
P.O. Box 420
Trenton, NJ 08625-420

The record keeping requirements of N.J.A.C. 7:14A-6.6 are applicable to monitoring information resulting from this discharge authorization. Pursuant to N.J.A.C. 7:14A-6.8(e) the results for any additional sampling done as a result of this discharge, but that is not specified in this authorization, must also be reported with the RAR as specified above. Any malfunctions or non-compliance should be reported by fax or telephone within 24 hours to Donna L. Gaffigan as specified below, and in writing within 7 days to the above address.

If you have any questions, please contact Donna L. Gaffigan, Case Manager, of the Bureau of Case Management by telephone at (609) 633-1494, by fax at (609) 292-2117, or by e-mail at donna.gaffigan@dep.nj.gov.

Sincerely,

Stephen E. Maybury, Chief
Bureau of Case Management

C: Rebecca Hollender, LSRP, TRC
Eleni Pettas, RMC, Nutley Town Clerk
Sue Portuese, Nutley Health Officer
Thomas Restaino, Nutley Public Health Coordinator
Nancy Ferrigno, Clifton City Clerk
John Biegel, III, Clifton Health Officer

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHILIP D. MURPHY
Governor
SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. McCABE
Acting Commissioner

Bureau of Case Management
Mail Code 401-05F
P.O. Box 420
Trenton, NJ 08625
Phone #: 609-633-1455
Fax #: 609-292-2117

Teresa O'Meara, Site ES&H Manager
Hoffmann – La Roche, Inc.
800 Bloomfield Ave, Suite 127
Nutley, NJ 07110

May 17, 2018

Re: NJPDES Discharge to Ground Water Authorization
Permit-by-Rule for IA-6 EISB Injection
Hoffmann – La Roche Inc.
340 Kingsland Street
Nutley, Essex County, NJ 07110
SRP PI No.: 009949

Dear Ms. O'Meara:

This New Jersey Pollutant Discharge Elimination System/Discharge to Ground Water (NJPDES/DGW) Permit-By-Rule (PBR) authorization is hereby issued under the authority of the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. and the implementing regulations, N.J.A.C. 7:14A-1 et seq. N.J.A.C. 7:14A-7.5 authorizes discharge to groundwater for the application of Enhanced In-Situ Bioremediation (EISB) using Anaerobic Biochem (ABC®) injections within Investigation Area 6 (IA-6) at the referenced site.

Pursuant to N.J.A.C. 7:14A-22.4(a)7, a Treatment Works Approval is not required for minor modifications of treatment works including, but not limited to, chemical addition for the purpose of improving performance.

This Permit discharge authorization is issued in order to facilitate the remedial activities conducted with oversight from the Site Remediation Program of the Department of Environmental Protection (Department). Pursuant to N.J.A.C. 7:14A-7.5(b)3ii., the discharge shall not exceed 180 days. The discharge approved through this authorization is to implement the ABC® EISB remediation at the former Hoffmann - La Roche Inc. facility at 340 Kingsland Street Nutley, Essex County, New Jersey as proposed on behalf of Hoffmann La Roche Inc. (Roche) in the May 1, 2018 IA-6 Enhanced In-Situ Bioremediation Injection Discharge to Groundwater Permit-By-Rule Application (DGW-PBR Application) and amendment email dated May 10, 2018 submitted by TRC Environmental Corporation (TRC). The discharge is located in the portion of the site that lies wholly within the Township of Nutley, Essex County. The discharge must be conducted in conformance with the following requirements.

SITE DESCRIPTION

Based on numerous soil borings completed at the site, the overburden consists primarily of red-brown silt and sand, typical for the Roche site; an intermittent layer of peat and clay was encountered as various locations above Passaic Formation Bedrock. In general, weathered bedrock was encountered from approximately 10 to 13 feet below surface and is greatest in the vicinity of the Valley Drain and Clifton Sanitary Sewer line.

The objective of the injection programs is to remediate chlorinated volatile organic compounds (CVOCs) and other volatile organic compounds (VOCs) (e.g. benzene) identified in the groundwater at IA-6. Targeted CVOCs include tetrachloroethene (PCE), as well as limited impacts of methylene chloride (MC), chloroform (CF) and vinyl chloride (VC).

IA-6 is located in the southern portion of the site, encompassing approximately 5.5 acres in the area with greatest pharmaceutical and vitamin production. The slabs and footing of the former building remain. IA-6 includes areas of concern consisting of former underground storage tanks (USTs), dumpster storage areas, drum storage areas, aboveground storage tanks (ASTs), a production well and production building footprints. The primary contaminant of concern (COC), was chlorobenzene (CB) which is found in the S1, S2 and S3 hydro-geologic zones, but is currently found at relatively low concentrations as compared to the other CVOCs due to prior treatment.

A groundwater extraction and treatment system from recovery wells RW-51 and RW-96 was installed in IA-6 in 2004 to control off-site migration of dissolved VOC plumes and continued to operate through 2015. On August 13, 2015, a previous DGW-PBR was issued for IA-6 for discharges to groundwater for the application of In-Situ Chemical Oxidation (ISCO) ozone sparging and sodium persulfate for a period not to exceed five years. In-Well Air Stripping (IWAS) was also implemented at that time.

In January 2017, the IWAS/ISCO system was shut down for rebound testing, with sampling detecting a limited area of elevated levels of PCE. A limited ISCO application using sodium persulfate injections was performed from December 1 through 26, 2017 to enhance the remediation of PCE impacts. The ground water monitoring results after the sodium persulfate injections showed that there are still some areas (primarily in IW-109A, IW-110A and ART-77) with elevated PCE.

DISCHARGE DESCRIPTION

Anaerobic Biochem (ABC®), manufactured by Redox-Tech, LLC, is selected as the primary substrate amendment for bio-stimulation. The objective of the EISB injection program is to enhance the anaerobic reductive dichlorination of CVOCs in the targeted treatment area within groundwater zones S1 and S2 (maximum depths of 30 and 45 feet bgs, respectively). The EISB injection program includes the following activities:

- Installation of one injection well screened in Zone S2;
- Baseline groundwater sampling and laboratory analyses;

- EISB injection, which includes the following (with system/field monitoring):
    - Biostimulation, which involves the injection of nutrient-enhanced organic substrates (electron donors) with pH buffer, as necessary
    - Bioaugmentation: the injection of a microbial culture of dechlorinators.
- Recirculation at wells that are located downgradient of injection wells;
- Performance groundwater monitoring program; and
- Progress reporting.

One new zone S2 injection well, IW-194B screened from approximately 30 to 45 feet bgs will be installed and be added to the existing wells that are proposed for conversion into injection or extraction/recirculation wells as follows:

Well ID	Proposed Use	Depth Zone
IW-109A	Injection	S1
IW-110A	Injection	S1
ART-75	Injection	S1
ART-76	Injection	S1
ART-78	Extraction/Recirculation	S1
IW-105A	Contingent Injection	S1
IW-106A	Contingent Injection	S1
IW-113A	Contingent Injection	S1
MW-346B	Injection	S2
ART-77	Extraction/Recirculation	S2

Additional amendments for maintaining amenable geochemical conditions include pH buffers and anaerobic amendments (gaseous nitrogen [N2]], liquid sucrose, and sodium ascorbate). These amendments will be injected periodically or continuously (on an as needed basis) to maintain optimal subsurface conditions, which will be evaluated at extraction wells ART-78 and ART-77.

The maximum amounts of amendments that may be injected to maintain anaerobic water conditions are as follows:

- 2,400 gallons of 60 % ABC® or equivalent (lactate);
- 30 liters of TSI DC (bioaugmentation culture);
- 100 pounds sodium ascorbate;
- 800 gallons sucrose solution, and
- Nitrogen gas, as needed.

The lactate solution will be delivered to the site at a 60% (by weight) concentrations. The mixing/chase water will be comprised of extracted groundwater, which will be extracted prior to and concurrent with the amendment injection. Groundwater recirculation that include extracting groundwater from downgradient wells, mixing extraction water with electron donor solution in dosing tanks, and re-injection into the upgradient injection wells will be conducted to facilitate the amendment transport and distribution within the treatment zone (via volume; 2,300 cubic yards [CY] in zone S1 and 350 CY in zone S2).

SYSTEM OPERATION AND MONITORING

All sampling and monitoring will be performed according to the methodology specified in the most current edition of the Department's Field Sampling Procedures Manual. All samples are to be analyzed by a New Jersey Certified Laboratory except those field-determined parameters specified in the monitoring program established pursuant to the oversight document.

The permittee will comply with the provisions of the NJPDES regulations, N.J.A.C. 7:14A-8.16(b)1 when UIC-Class V injection wells are used. All design plans and specifications for the injection wells shall be retained and made available to the Department upon request.

Pursuant to N.J.A.C. 7:14A-6.2(a)5 and 11, if free product in ground water, vapors or odors in any building, or any malfunction resulting in a potential impact to a receptor are detected and are a result of the discharge authorized by this approval, the discharger will immediately: (1) cease the discharge or make necessary adjustments to the injection rate; and (2) repair or mitigate any negative impacts.

All UIC-Class V injection wells shall be properly abandoned in accordance with N.J.A.C. 7:14A-8.16(d)1 as applicable. The permittee will comply with any applicable provisions of the Additional Conditions Applicable to Class I, II, III and V UIC Permits of the NJPDES regulations, N.J.A.C. 7:14A-8.9, et seq. when UIC-Class V injection well units (i.e., the injection points) are used.

SITE MONITORING REQUIREMENTS

Construction activities by the current property owner related to the redevelopment of IA-6 as a parking lot will likely begin during the summer of 2018 while the IRM monitoring is underway. Many of the existing injection, ART and monitoring well are located within the footprint of the redevelopment construction area. Most of the existing wells in IA-6 will be decommissioned, and the following 16 wells replaced in approximately the same locations as they currently exist: ART-75, ART-76, ART-77, ART-78, IW-109A, IW-110A, IW-194B, MW-346A, MW-346B, MW-346C, MW-350A, MW-350B, MW-350C, BIOS-1B, MW-318A, and MW-318B to monitor the progress and effectiveness of the EISB performance. A new map of the replacement well will reportedly be provided upon receipt of final redevelopment plans.

Groundwater monitoring will include wells outside the perimeter of the IRM treatment areas and wells located vertically below the IRM treatment areas, to verify the absence of CVOC mobilization due to the IRM activities. The well construction detail for monitoring wells are present on Table 1 and locations shown on Figure 7 of the May 1, 2018 DGW-PBR Application and May 10, 2018 email.

Details of the monitoring program are outlined in Table 3 of the May 1, 2018 DGW-PBR Application and May 10, 2018 email and identified three (3) Treatment Area Monitoring Wells (MW-346A, IW-113A and MW-346C) and six (6) perimeter monitoring wells (MW-350A, MW-350B, MW-350C, MW-318A, MW-318B and BIOS-1B).

Baseline Sampling:
The baseline groundwater sampling event will be completed as specified in Table 3, the groundwater measurements and analyses will include:

- Field-measured geochemical parameters: pH, Temperature, Dissolved Oxygen (DO), Specific Conductivity, Oxidation-Reduction Potential (ORP), and Turbidity, as well as groundwater level measurements;
- CVOCs;
- Total Organic Carbon (TOC),
- Dissolved iron and manganese, chloride, sodium, orthophosphate, sulfate and nitrate,
- Dissolved gasses (methane, ethane, ethene and carbon dioxide), and Volatile Fatty Acids (VFAs); and
- DHC (*Dehalococcoides*) and DHC functional genes (*bvc, tce and vcr*)

Interim Sampling:
During application, monitoring will be limited to field observation at all monitoring locations and recording field conditions / injection volumes.

Post-Remedial Sampling:
Following the placement of the amendments, groundwater samples will be collected from the monitoring wells within and downgradient of the treatment cell. Groundwater samples will be collected for CVOCs and for water quality parameters (WQP - both field water quality readings and laboratory testing) that may show a change due to adding amendments to groundwater as specified in Table 3. Groundwater samples will be collected contingent on redevelopment plans and well decommissioning at a frequency of 1 month, 3 months and 6 months after the treatment.

All sampling and monitoring will be performed according to the methodology specified in the most current edition of the Department's Field Sampling Procedures Manual. All samples are to be analyzed by a New Jersey Certified Laboratory except those field-determined parameters specified in the monitoring program established pursuant to the oversight document.

INFORMATION SUBMITTALS

Progress Reports shall be submitted by the LSRP on behalf of Roche, in accordance with the schedule presented in the May 1, 2018 DGW-PBR Application and May 10, 2018 email. The Progress Reports, and subsequent Remedial Action Report (RAR), shall be submitted to the following address:

Attention: Donna L. Gaffigan, Case Manager
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street, 5th floor
Mail Code 401-05F
P.O. Box 420

Trenton, NJ 08625-420

The record keeping requirements of N.J.A.C. 7:14A-6.6 are applicable to monitoring information resulting from this discharge authorization. Pursuant to N.J.A.C. 7:14A-6.8(e) the results for any additional sampling done as a result of this discharge, but that is not specified in this authorization, must also be reported with the RAR as specified above. Any malfunctions or non-compliance should be reported by fax or telephone within 24 hours to Donna L. Gaffigan as specified below, and in writing within 7 days to the above address.

If you have any questions, please contact Donna L. Gaffigan, Case Manager, of the Bureau of Case Management by telephone at (609) 633-1494, by fax at (609) 292-2117, or by e-mail at donna.gaffigan@dep.nj.gov.

Sincerely,

Stephen E. Maybury, Section Chief
Bureau of Case Management

C: Rebecca Hollender, PG, LSRP/TRC
Eleni Pettas, RMC, Nutley Town Clerk
Sue Portuese, Nutley Health Officer
Thomas Restaino, Nutley Public Health Coordinator

APPENDIX B

ISCO INJECTION TRACKING SHEET

Appendix B
ISCO Injection Tracking Sheet
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Batch 1 Persulfate/Bicarb Injection IA-6

Total Target Injection Per Well - 550 Gallons
Total Blend to be Injected - 3,850 Gallons

Injection Well ID	Injection Volume on Dates (gal)		Target Injection Volume (gal)	Remaining Volume (gal)	Percent of Completion
	12/1/2017	12/4/2017			
IW-105A	229.36	321.12	550	-0.48	100.1%
IW-106A	275.04	275.04	550	-0.08	100.0%
IW-108A	240.4	310.03	550	-0.43	100.1%
IW-109A	240.74	310.08	550	-0.82	100.1%
IW-110A	242.8	307.06	550	0.14	100.0%
IW-112A	235.12	310.08	550	4.8	99.1%
IW-113A	258.98	291.04	550	-0.02	100.0%
Daily Total	**1722.44**	**2124.45**			
Cumulative Persulfate Injected		**3846.89**			
Percent of Completion		**99.9%**			
Amount left to be injected		**3.11**			

Batch 2 Persulfate/Bicarb Injection IA-6

Total Target Injection Per Well - 550 Gallons
Total Blend to be Injected - 3,850 Gallons

Injection Well ID	Injection Volume on Dates (gal)			Target Injection Volume (gal)	Remaining Volume (gal)	Percent of Completion
	12/14/2017	12/15/2017	12/18/2017			
IW-105A	350.12	199.82	39.6	550	-39.54	107.2%
IW-106A	372.28	158.82	36.66	550	-17.76	103.2%
IW-108A	114.76	337.69	102.02	550	-4.47	100.8%
IW-109A	74.3	331.21	92.14	550	52.35	90.5%
IW-110A	139.22	390.18	41.8	550	-21.2	103.9%
IW-112A	361.03	112.04	102.02	550	-25.09	104.6%
IW-113A	385.05	153.75	107.02	550	-95.82	117.4%
Daily Total	**1796.76**	**1683.51**	**521.26**			
Cumulative Persulfate Injected			**4001.53**			
Percent of Completion			**103.9%**			
Amount left to be injected			**-151.53**			

Note: 12/14/2017 - Daylighting observed from IW-113A well pad. Extra volume was injected into each well to balance off the daylighting.

Appendix B
ISCO Injection Tracking Sheet
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Batch 1 Peroxide Injection IA-6

Total Target Injection Per Well - 983 Gallons
Total Peroxide to be Injected - 6,881 Gallons

Injection Well ID	Injection Volume on Dates (gal)							Target Injection Volume (gal)	Remaining Volume (gal)	Percent of Completion
	12/5/2017	12/6/2017	12/7/2017	12/8/2017	12/11/2017	12/12/2017	12/13/2017			
IW-105A	18.04	18.58	618.31	329.19	0	295.81	25.26	983	-322.19	132.8%
IW-106A	25.5	34	56.63	59.74	100.2	52.22	433.91	983	220.8	77.5%
IW-108A	142.72	190.82	114.98	291.04	244	70.75	35.02	983	-106.33	110.8%
IW-109A	131.5	233.7	125.8	301.35	191	80.45	46.02	983	-126.82	112.9%
IW-110A	133.08	304.5	224.15	180.46	141.02	0	0	983	-0.21	100.0%
IW-112A	15.83	11.56	215.3	180	280.56	404.29	97.5	983	-222.04	122.6%
IW-113A	15.38	55	23	29.19	56.97	20.37	222.5	983	560.59	43.0%
Daily Total	**482.05**	**848.16**	**1378.17**	**1370.97**	**1013.75**	**923.89**	**860.21**			
Cumulative Peroxide Injected							**6877.2**			
Percent of Completion							**99.9%**			
Amount left to be injected							**3.8**			

Note: 12/5/2017 to 12/12/2017 - Daylighting observed from IW-106A, IW-112A, and IW-113A. Less volume was injected for these wells.

Batch 2 Peroxide Injection IA-6

Total Target Injection Per Well - 983 Gallons
Total Peroxide to be Injected - 6,881 Gallons

Injection Well ID	Injection Volume on Dates (gal)						Target Injection Volume (gal)	Remaining Volume (gal)	Percent of Completion
	12/18/2017	12/19/2017	12/20/2017	12/21/2017	12/22/2017	12/26/2017			
IW-105A	11.26	505.8	466.01	150	149.96	0	983	-300.03	130.5%
IW-106A	2.69	316.44	339.67	325.3	0	0	983	-1.1	100.1%
IW-108A	5.02	210.62	431.75	94.14	159.01	31.74	983	50.72	94.8%
IW-109A	8	190.02	120.28	265.24	204.66	194.44	983	0.36	100.0%
IW-110A	11.3	112.47	148.06	286.44	204.64	120.08	983	100.01	89.8%
IW-112A	7.1	68.38	118.75	219.02	196.66	223.51	983	149.58	84.8%
IW-113A	12.31	34.8	62.78	103.21	770	0	983	-0.1	100.0%
Daily Total	**57.68**	**1438.53**	**1687.3**	**1443.35**	**1684.93**	**569.77**			
Cumulative Peroxide Injected						**6881.56**			
Percent of Completion						**100.0%**			
Amount left to be injected						**-0.56**			

Note: 12/21/2017 - SGS injected additional volume into IW-105A per TRC's request.

APPENDIX C

ISCO GEOCHEMICAL MEASUREMENT FIELD SHEET

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	DO
MW-346A (5 - 16)	Baseline	12-1-17	10:55	9.40	6.86	71.10	306.4	2.221	5.47
	Injection	12-1-17	12:00	8.39	5.87	71.17	318.3	2.241	1.54
			12:54	7.16	6.22	70.64	292.8	2.231	5.61
			1352	8.05	5.90	71.86	335	2.34	1.27
			1532	8.25	5.87	70.39	319.9	2.357	2.75
		12-4-17	08:35	9.70	6.05	69.62	346.2	2366	3.51
			11:09	7.92	6.05	69.40	385.8	2564	12.45
			12:08	7.57	6.10	69.44	410.0	2702	8.79
			13:57	8.53	5.91	69.53	422.3	2810	9.60
			15:58	8.54	5.87	69.95	427.9	3422	38.22
	Post-Injection								
346B ~~MW-364B~~ (35 - 45)	Baseline	12-1-17	10:48	13.92	7.71	70.84	252.0	1.530	3.22
	Injection	12-1-17	11:59	11.05	7.67	71.70	277.3	1.541	5.96
			1251	9.83	6.83	70.61	293.4	1.549	4.16
			1346	9.28	6.35	71.47	353.0	1.554	5.71
			1525	9.48	6.75	71.38	271.0	1.520	3.28
		12-4-17	09:18	11.70	6.95	69.29	246.3	1608	4.20
			11:02	9.75	7.41	70.02	333.9	1618	11.89
			12:01	7.85	7.93	70.08	350.8	1626	12.10
			13:54	10.03	7.60	70.53	377.4	1811	8.80
			15:53	9.32	7.89	70.08	388.2	1880	10.73
	Post-Injection								
346C ~~MW-364C~~ (60 - 80)	Baseline	12-1-17	10:50	14.26	7.71	70.48	255.3	2.902	5.16
	Injection	12-1-17	11:51	13.41	6.97	69.35	271.7	2.880	9.03
			1254	13.10	6.98	68.23	336.7	2.885	6.05
			1339	12.85	6.81	70.31	335.5	2.862	6.51
			15:22	12.40	7.10	69.30	319.6	0.893	5.25
		12-4-17	08:17	13.35	6.99	66.24	328.6	2970	5.31
			10:53	12.90	7.15	68.29	320.0	2969	10.38
			11:50	12.83	7.09	69.77	340.0	2945	12.34
			13:48	12.96	6.98	69.23	370.6	2922	9.41
			15:46	12.67	7.19	68.58	374.2	2962	7.40
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
TA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	DO
ART-75 (4 - 29)	Baseline	12-1-17	11:06	12.95	6.36	72.05	287.8	1.424	4.08
	Injection		12:16	10.87	6.68	71.05	305.8	1.416	4.74
			1258	10.08	6.45	72.15	321.5	1.403	5.37
		12-4-17	08:48	12.	6.57	70.67	34.	1679	5.
			11:24	9.33	6.48	70.80	379.5	1713	11.64
			12:24	9.45	6.43	71.33	399.6	2714	11.89
			14:10	10.42	6.41	71.93	411.6	1414	13.61
			16:12	10.96	6.40	71.30	418.1	3466	23.82
	Post-Injection								
ART-76 (4 - 29)	Baseline	12-1-17	10:52	14.23	6.15	73.02	293.9	2.437	1.65
	Injection	12-1-17	11:58	11.70	5.89	73.74	308.4	2.465	1.95
			1249	10.0	5.66	73.46	267.6	2.452	3.20
			1344	9.63	5.56	72.30	358.4	2.462	2.53
			15:24	10.52	6.06	72.41	252.5	2.519	3.23
		12-4-17	08:25	13.65	5.80	71.77	225.7	2706	2.19
			10:59	8.43	6.72	72.99	409.7	3152	8.45
			11:59	8.04	7.45	72.17	457.9	29.83	7.26
			13:52	11.27	6.62	71.60	467.5	2969	6.62
			15:51	12.17	7.41	71.80	459.3	2919	4.80
	Post-Injection								
ART-77 (29 - 44)	Baseline	12/1/17	1102	14.37	6.23	75.20	2811	1.887	0.89
	Injection	12-1-17	12:00	11.97	6.41	74.72	2866	1.880	0.77
			1252	8.65	6.72	72.21	265.5	1.843	2.71
			1348	8.00	6.48	71.79	311.6.6	1.881	2.53
			1530	11.10	6.34	72.94	276.6	1.874	2.08
		12-4-17	08:31	13.10	5.26	74.44	339.9	2948	2.5
			11:04	4.68	5.32	67.99	397.7	2725	5.97
			12:04	3.15	5.34	67.68	426.3	2724	4.33
			13:55	7.62	5.33	70.33	420.5	2820	2.17
			15:56	11.12	5.32	72.77	419.3	2865	6.89
	Post-Injection								
ART-78 (4 - 29)	Baseline	12/1/17	11:24	13.83	6.24	69.94	293.0	2.767	1.13
	Injection	12-1-17	12:13	10.60	6.10	69.46	324.7	2.754	2.34
			1256	8.77	6.71	68.94	315.9	2.759	3.32
			1351	10.0	7.18	70.64	419	36.07	6.5
			1538	10.35	7.00	70.45	413.6	29.01	4.67
		12-4-17	7	13.5	5.97	69.88	357.3	2799	2.41
			11:12	8.31	7.18	69.60	461.8	2457	7.88
			11:12	8.02	7.44	69.14	482.5	2876	6.52
			14:00	10.10	7.09	69.80	475.8	2769	4.95
			16:00	12.90	6.98	68.46	490.7	70 70	
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

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Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D
MW-318A (5 - 15)	Baseline	12/1/17	0[illegible]:57	7.45	6.52	[illegible]	247.9	1.470	0.71
	Injection		12:27	7.51	6.43	65.55	315.7	2.955	1.58
			1309	7.49	6.64	65.93	327.3	2.944	3.65
			1407	7.15	6.75	63.81	338.4	2.970	3.75
			1540	7.54	7.35	61.67	353.3	2.970	3.83
		12-4-17	09:02	8.60	6.60	61.8	[illegible]	2985	7.8
			11:39	8.38	6.58	64.49	356.7	2990	11.53
			12:39	8.24	6.62	65.35	375.8	2952	13.31
			14:20	8.23	6.52	65.79	386.9	2968	9.55
			16:21	8.15	6.80	65.39	398.7	2955	42.70
	Post-Injection								
MW-318B (35 - 65)	Baseline								
Under Air Pressure Start Bips - 1B & 2B Turned off to Alleviate.	Injection	12/1/17	1120	4.20	7.50	62.46	49.2	776	well [illegible] Pressure 10.15
			1231	8.11	8.27	66.10	283.8	2.724	9.55
			1311	5.46	7.61	66.31	307.1	2.686	9.42
			1413	8.95	7.46	65.15	326.	2.769	9.36
			1540	9.64	7.63	66.95	353.3	2.7840	9.02
		12-4-17	09:34	10.81	7.08	66.54	362.8	5.91	10.29
			11:15	8.54	7.25	65.85	386.1	5392	14.41
			12:15	8.24	7.40	65.32	407.2	11.69	11.70
			14:03	9.70	7.0	66.25	424.2	65.44	7.11
			16:05	8.10	6.80	66.36	438.8	7246	19.20
	Post-Injection								
MW-447A (5 - 15)	Baseline	12/1/17	0941	7.42	7.84	64.80	225.0	1.145	10.1
	Injection		1222	7.87	7.36	64.23	[illegible]	1.115	7.62
			1306	8.06	7.35	64.03	308.3	1.121	7.74
			1405	7.55	7.59	63.72	327.3	1.092	7.42
			1546	7.82	7.34	64.80	344.1	1.17	6.35
		12-4-17	09:54	8.10	6.95	[illegible]	[illegible]	[illegible]	11.92
			11:32	7.93	7.00	62.80	346.9	1201	14.33
			12:34	7.84	7.08	63.86	371.8	1208	17.20
			14:17	7.84	7.03	63.54	386.4	1222	13.18
			16:16	7.78	7.01	63.63	394.3	1232	42.31
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
TA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	MG/L DO
MW-447B (35 - 45)	Baseline	12/1/17	09:41	11.0	7.30	66.60	244.2	2.760	1.8
	Injection		1224	11.77	7.16	66.37	304.5	2.763	9.98
			1307	11.13	7.02	66.03	319.1	2.759	8.54
			1406	10.48	7.3	65.46	327.2	2.765	9.64
			1544	10.28	7.11	65.41	334.3	2.768	10.01
		12-4-17	09.00	11.10	6.98	63.38	333.7	2791	12.64
			11:36	9.95	7.07	65.17	342.1	2778	16.22
			12:36	9.52	7.05	65.02	373.1	2790	18.89
			14:18	9.83	6.94	65.83	384.2	2783	11.35
			16:19	9.72	6.93	65.71	398.2	2766	38.80
	Post-Injection								
ART-79 (4 - 29) (34 - 64)	Baseline	12/1/17	0841	12.71	7.77	70.34	224.0	3.287	9.95
	Injection		1221	12.62	7.06	69.61	315.3	3.343	6.77
			1304	11.91	6.97	68.16	323.5	3.326	7.01
			1403	11.31	7.4	69.07	347	3.33	7.79
			1546	12.02	7.25	69.10	322.5	.374	5.64
		12-4-17	08:55	13.40	6.57	67.86	359.6	3282	11.08
			11:29	11.00	6.64	68.03	357.4	3298	15.07
			12:28	11.33	6.70	67.60	390.7	3336	14.40
			14:14	11.68	6.61	67.46	403.9	3689	8.80
			16:16	12.20	6.57	67.50	412.3	3495	28.00
	Post-Injection								
ART-80 (4 - 29) (34 - 64)	Baseline	12/1/17	0921	13.88	7.34	71.55	221.4	2472	7.02
	Injection		1214	10.10	6.7	71.24	311.6	2.887	5.44
		12-4-17	08:40	13.57	6.72	69.85	355.8	[illegible]	6.24
			11:15	7.80	6.65	68.95	452.9	4895	7.70
			12:14	9.20	7.15	69.34	427.3	7539	5.66
			14:03	9.55	6.94	69.55	485.9	60.00	4.04
			16:03	13.30	7.17	69.27	482.7	5833	12.79
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	MG/L DO
IW-104A (25 - 30)	Baseline	12-1-17	11:13	10.22	6.16	70.47	200.4	1.984	25.87
	Injection		12:17	8.85	5.89	68.70	332.0	1.955	23.36
			13:00	7.25	5.96	67.01	311.0	1.000	27.41
			13:58	7.87	7.10	65.84	389	1975	21.25
		12-4-17	03:14	11.01	6.20	66.80	318.5	2695	4.30
		12-4-17	08:51	10.0	6.27	69.12	[illegible]	[illegible]	[illegible]
			11:21	6.25	6.50	64.92	377.0	1999	23.70
			12:20	6.40	6.53	64.52	395.2	2002	19.19
			14:08	6.94	6.80	66.24	408.6	1991	12.42
			16:09	6.00	6.87	66.78	416.5	2011	36.00
	Post-Injection								
IW-107A (30 - 35)	Baseline	12-1	10:40	11.70	6.59	71.46	269.2	1938	5.94
	Injection	12-1	11:47	8.40	6.08	68.27	292.4	1947	5.51
			12:38	8.80	6.38	65.23	323.3	1959	7.40
			13:36	7.06	6.86	65.70	312.4	1927	5.02
			15:20	7.27	6.54	65.82	311.2	1932	6.32
		12-4-17	09:[illegible]	11.01	6.20	66.80	318.5	2695	[illegible]
			10:50	6.60	6.40	64.18	325.1	2665	11.07
			11:48	6.27	6.30	64.91	355.5	2654	11.57
			13:44	9.99	6.11	65.85	383.6	2813	7.41
			18:43	9.56	6.14	64.57	384.2	2887	6.87
	Post-Injection								
IW-111A (29 - 34)	Baseline	12-1	10:11	13.53	6.20	71.84	199.6	2.620	4.22
	Injection	12-1-17	11:59	10.71	5.95	71.67	218.9	2.641	4.25
			12:46	9.81	4.75	69.66	327.7	2714	4.29
			13:41	7.22	3.08	67.0	484.2	2.822	4.75
			15:24	9.50	5.55	67.75	212.6	2.655	4.70
		12-4-17	09:21	11.50	6.50	69.11	141.3	2782	4.36
			10:58	8.63	5.85	67.85	206.8	2758	11.89
			11:54	8.65	5.80	68.11	249.7	2698	10.88
			13:50	10.47	3.94	69.54	249.7	2633	7.95
			15:48	9.83	6.03	67.88	293.5	2659	8.83
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

DC

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	
MW-346A (5 - 16)	Baseline	12-5-17	9:04	9.42	6.18	69.89	378.1	2516	4261
	Injection		10:16	8.14	6.38	68.36	358.7	2693	28.22
			11:13	8.41	5.85	69.32	356.4	2753	26.25
			13:11	8.40	5.64	69.28	397.6	2832	3.11
			15:11	8.17	5.91	71.80	380.2	5532	2.04
		12-6-17	7:45	9.51	5.64	72.26	384.7	3.671	10
			9:21	8.33	5.72	71.11	393.5	3.684	1 7
			10:23	8.04	5.67	71.02	388.5	3.292	24.21
			11:27	7.76	5.56	72.13	364.0	4.141	6.39
			1234	7.67	5.67	70.36	351.2	4.187	12.73
			1338	8.43	5.97	70.61	321.0	5.145	2.73
			1515	7.49	5.97	69.22	325.1	0.067	7.62
	Post-Injection								
346B ~~MW-364B~~ (35 - 45)	Baseline	12-5-17	07:54	11.38	7.15	69.80	184.2	1765	3390
	Injection		10:06	10.47	6.81	69.93	251.4	1799	1326
			11:03	10.80	7.11	70.67	209.1	18.15	14.87
			13:06	10.61	7.12	69.64	300.3	18.14	12.20
			15:06	9.87	7.45	69.05	316.6	1821	4.88
		12-6-17	0738	13.31	6.51	70.58	418.2	1.86	14.33
			0917	11.75	6.31	70.45	370.6	1.834	14.72
			1019	10.78	6.40	67.73	337.4	1.780	12.40
			1123	10.00	6.29	68.77	324.4	1.803	3.89
			1230	9.41	6.66	70.06	294.6	1.815	5.03
			1335	10.45	6.46	69.28	291.7	1.840	3.11
			1513	9.49	6.43	68.74	296.7	1.859	2.78
	Post-Injection								
346C ~~MW-364C~~ (60 - 80)	Baseline	12-5-17	07:52	13:40	7.23	69.42	409.8	2993	5027
	Injection		10:02	13:10	7.21	69.16	372.4	2995	12.22
			11:01	13:35	7.08	68.99	314.7	2972	3.73
			13:00	13.20	7.01	68.84	304.8	2983	12.23
			15:00	13.12	7.23	69.34	327.5	2662	7.82
		12-6-17	0730	13.10	7.34	69.78	339.6	2.953	22.21
			0912	13.41	6.81	69.92	319.8	2.973	15.42
			1013	13.25	6.78	69.43	301.7	2.961	5.92
			1118	13.07	6.97	69.07	296.4	2.948	2.64
			1225	12.95	6.97	70.24	298.8	2.940	1.05
			1329	13.33	7.14	68.56	291.4	2.936	2.14
			1507	12.91	7.03	68.20	300.5	2.919	2.88
	Post-Injection								

11:32

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

D.O

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	
ART-75 (4 - 29)	Baseline	12-5-17	8:16	12.23	6.33	71.89	379.1	1846	25.85
	Injection		10:31	10.71	5.70	71.50	385.9	2454	35.31
			11:31	11.19	5.62	71.12	368.9	2442	21.98
			13:28	11.30	5.65	71.45	353.2	2422	10.02
			15:25	11:00	5.45	71.28	346.8	2450	13.06
		12-6-17	7:57	12.50	6.03	69.24	338.3	1849	34.63
			9.32	11.41	5.83	70.18	316.6	2109	37.41
			1033	10.81	5.64	70.46	327.1	2315	30.96
			1138	10.43	5.71	70.96	332.2	2861	18.23
			1247	10.39	5.96	70.96	329.7	3.269	5.95
			1349	10.41	5.88	70.92	342.9	3.517	5.88
			1528	10.51	5.87	71.01	342.2	3.804	11.09
	Post-Injection								
ART-76 (4 - 29)	Baseline	12-5-17	07:38	13.78	5.97	73.80	362.0	1452	22.18
	Injection		10:10	10.80	6.47	72.79	406.8	1852	36.41
			11:09	11.32	6.21	73.29	421.7	1451	26.01
			13:08	11.02	1.60	74.25	569.5	2026	16.17
			15:07	10.90	0.83	75.60	557.7	22.21	2.76
		12-6-17	07:36	14.40	1.07	73.08	601.9	15.67	14.21
			09:15	11.27	1.05	73.01	550.1	15.43	20.29
			1017	10.78	0.90	73.33	541.6	15.91	14.39
			11:21	10.41	0.80	73.29	536.4	16.53	7.17
			1228	10.18	0.83	73.54	528.0	16.90	1.08
			1333	10.00	0.80	73.57	525.4	17.37	0.34
			1511	10.19	0.75	73.90	527.0	17.47	2.36
	Post-Injection								
ART-77 (29 - 44)	Baseline	12-5-17	08:01	13.78	5.41	74.05	388.9	3451	38.13
	Injection		10:12	10.14	6.49	73.02	362.1	1339	36.46
			11:12	10.91	5.11	73.87	371.4	1305	19.73
			13:16	10.00	0.99	75.17	556.8	18.65	0.46
			15:09	9.37	0.71	75.15	539.1	19.43	1.37
		12-6-17	7:42	14.87	0.72	74.46	545.9	21.46	9.55
			9.18	9.27	0.75	74.34	546.8	20.16	15.97
			10.22	7.53	0.70	73.23	540.6	19.13	13.53
			11.25	5.75	0.65	73.31	533.7	17.88	5.52
			12.32	5.00	0.69	73.26	526.5	16.80	2.81
			1337	4.01	0.69	73.51	522.7	15.92	1.00
			1514	4.97	0.71	73.74	522.0	15.19	3.59
	Post-Injection								
ART-78 (4 - 29)	Baseline	12-5-17	8:06	13.75	5.79	69.50	420.1	1121	39.30
	Injection		10:18	7.93	1.20	77.59	556.4	1939	33.30
			11:17	11.00	0.95	77.92	577.4	2357	19.26
			13:15	9.37	1.09	78.09	562.3	2797	0.58
			13:14	8.70	1.85	82.83	518.3	1638	2.60
		12-6-17	7:47	14.69	3.29	71.77	508.6	10.99	12.21
			9.23	8.82	1.41	72.37	540.2	12.02	18.65
		1025	[illegible]	7.10	1.28	73.50	528.6	10.59	19.27
			1129	5.17	1.56	74.60	505.1	8.345	10.19
			12.38	3.85	2.45	78.77	452.0	6.140	12.97
			1340	3.20	4.37	81.36	361.9	4.956	3.52
			1579	4.40	6.03	95.48	289.4	4.352	8.36
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

DO

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	
MW-318A (5 - 15)	Baseline	12-5-17	8:26	8.37	6.60	66.93	355.1	2926	19.14
	Injection		10:41	8.31	6.45	65.35	355.5	2925	10.90
			11:40	8.32	6.40	65.49	325.2	2922	10.36
			13:36	8.32	6.44	66.33	313.6	2939	10.10
			15:36	8.14	6.54	66.90	294.7	2070	12.85
		12-6-17	8:08	7.37	6.52	63.36	332.5	7662	19.89
			9:39	7.42	6.43	65.31	347.7	8.845	12.34
			10:42	7.41	6.31	66.80	354.3	5.961	16.04
			11:46	7.41	6.28	64.84	349.9	8.153	5.97
			12:56	7.47	6.45	66.83	365.5	6.267	1.67
			13:58	7.85	6.42	66.12	357.3	7.626	2.21
			15:37	7.47	6.33	64.95	377.0	7.563	4.40
	Post-Injection								
MW-318B (35 - 65)	Baseline	12-5-17	8:11	7.12	7.14	66.11	436.9	5814	54.3
	Injection		10:27	10.72	6.96	66.18	413.7	2478	11.29
			11:23	9.87	5.81	56.46	414.8	015	17.86
			13:22	11.00	6.91	67.02	415.3	2850	0.52
			15:20	9.41	6.49	67.33	417.5	2661	0.69
		12-6-17	7:52	7.80	5.87	65.22	416.7	3.542	13.22
			9:27	11.85	5.77	66.12	389.8	8.778	16.96
			10:29	11.00	5.81	66.84	361.3	8.876	19.57
			11:36	10.15	5.75	66.54	335.7	8.976	11.95
			12:43	9.81	5.73	66.31	342.6	9.868	8.20
			13:45	9.81	5.55	67.10	350.9	10.44	3.10
			15:24	10.00	5.48	66.70	352.2	12.53	6.02
	Post-Injection								
MW-447A (5 - 15)	Baseline	12-5-17	8:22	7.84	6.52	63.90	359.1	1246	33.9
	Injection		10:37	7.63	6.07	63.93	360.8	1266	38.07
			11:36	7.70	6.00	63.84	343.2	1282	20.16
			13:33	7.72	6.15	64.04	311.3	1296	9.58
			15:31	8.73	6.11	64.65	310.4	1039	22.98
		12-6-17	8:03	7.71	6.50	64.30	313.2	1198	20.54
			9:36	7.81	6.51	63.59	295.2	1.271	23.88
			10:38	7.70	6.51	63.32	299.1	1.270	18.01
			11:43	7.71	6.43	64.15	308.4	1.154	6.67
			12:52	7.75	6.55	62.68	297.6	1.233	2.61
			13:54	7.81	6.38	63.10	317.3	1.228	2.97
			15:33	7.95	6.44	64.24	364.6	1.156	4.09
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-447B (35 - 45)	Baseline	12-5-17	8:24	10.90	6.78	66.12	358.7	2784	26.74
	Injection		10:39	10.53	6.69	65.78	358.1	2761	18.26
			11:38	10.57	6.69	65.55	340.3	2746	18.02
			13:35	10.45	6.84	65.91	304.5	2753	9.57
			15:35	10.32	6.75	66.64	312.0	2757	12.96
		12-6-17	0806	12.81	6.87	65.27	308.3	2809	25.20
			9:38	12.47	6.76	65.47	294.7	2.732	26.67
			10:40	12.13	6.87	65.76	297.6	2.782	22.37
			11:45	11.51	6.89	65.90	299.1	2.809	6.69
			12:54	10.92	7.19	65.39	286.3	2.816	3.23
			1356	10.80	6.88	63.94	299.0	2.823	2.07
			1535	10.67	6.91	65.40	314.2	2.826	5.25
	Post-Injection								
ART-79 (4 - 29) (34 - 64)	Baseline	12-5-17	8:19	13.28	6.84	68.32	373.1	3403	30.35
	Injection		10:35	12.43	6.18	68.30	370.6	3564	36.56
			11:35	13.00	6.09	68.30	384.8	3631	24.42
			13:31	12.69	6.22	68.29	331.8	3888	8.55
			15:28	13.83	6.15	68.32	332.2	4335	8.49
		12-6-17	0800	14.57	6.25	68.29	323.7	3.347	26.36
			0934	13.91	6.12	67.69	309.9	3.394	33.78
			10:37	13.36	6.06	67.83	312.1	3.356	27.39
			11:41	13.95	6.24	68.03	315.7	3.440	14.83
			12:50	13.68	6.38	67.74	328.6	3.024	3.81
			1352	12.73	6.24	67.88	358.7	6.222	2.47
			1532	12.73	6.14	67.17	391.1	~~[illegible]~~ 7.046	10.4
	Post-Injection								
ART-80 (4 - 29) (34 - 64)	Baseline	12-5-17	8:08	13.71	6.77	70.02	416.8	1320	34.44
	Injection		No readings taken						
			11:19	9.00	1.11	79.69	574.8	2643	13.77
			13:18	8.93	0.91	78.04	572.4	3257	0.32
			15:17	7.31	1.29	81.66	535.5	1723	1.21
		12-6-17	7:50	14.51	1.19	72.05	582.9	19.67	9.06
			9:25	9.57	1.21	72.35	541.6	14.20	17.37
			10:27	7.55	1.28	72.89	519.3	10.12	19.39
			11:32	5.73	1.41	74.03	506.4	7.446	11.85
			12:41	4.81	1.57	75.64	486.2	5.463	12.27
			13:43	4.12	1.70	76.46	477.5	4.538	6.58
			15:22	4.75	1.90	78.35	467.6	3.402	8.96
	Post-Injection								

10:20 ART-80 Bubbling over casing, Couldn't take a reading.

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	DO
IW-104A (25 - 30)	Baseline	12-5-17	8:14	10.60	7.13	67.83	383.3	2006	40.09
	Injection		10:30	8.51	7.00	66.77	361.2	2012	39.41
			11:28	9.82	6.32	68.49	332.8	2021	3375
			13:26	8.78	6.27	68.63	323.9	2039	575
			15:23	9.31	6.21	68.27	309.4	2045	9.85
		12-6-17	07:55	9.78	6.37	69.26	335.4	2.045	23.77
			9:29	8.60	6.27	67.08	312.0	2.014	33.02
			10:32	7.92	6.07	68.60	317.2	2.233	28.20
			11:37	7.28	5.85	68.18	322.7	2.626	16.41
			12:46	7.27	6.10	65.30	311.5	2.619	10.04
			13:47	7.21	5.86	70.52	324.3	2.987	7.52
			1527	7.60	5.84	67.94	330.7	2.833	10.89
	Post-Injection								
IW-107A (30 - 35)	Baseline	12-5-17	07:47	10.95	6.23	68.90	411.8	2869	42.95
	Injection		10:00	9.32	6.50	66.24	353.1	2934	18.96
			10:59	10.00	6.06	66.93	311.5	2943	13.02
			12:58	10.07	5.94	66.36	303.6	2981	11.26
			14:50	9.34	5.80	67.07	340.7	3185	7.43
		12-6-17	07:25	11.83	5.60	68.39	372.0	4.076	19.47
			09:09	10.17	5.66	69.26	324.3	4.038	23.40
			10:11	9.51	5.77	68.12	316.7	4.251	15.02
			11:15	9.01	5.75	68.86	333.6	5.821	14.70
			12:22	8.01	5.66	68.44	349.9	7.209	5.63
			1327	7.91	5.60	68.62	351.7	8.334	0.76
			1505	8.14	5.69	67.76	389.5	9.178	2.92
	Post-Injection								
IW-111A (29 - 34)	Baseline	12-5-17	07:56	11.60	6.51	71.28	352.9	2640	47.99
	Injection		10:04	10.53	5.89	70.47	330.3	4483	37.57
			11:04	11.02	5.82	70.42	312.5	5836	27.09
			13:04	10.78	5.91	70.29	341.8	8255	19.50
			15:04	10.00	5.95	70.79	389.9	1071	0.74
		12-6-17	07:32	13.36	1.16	71.28	611.8	19.00	22.08
			09:14	11.67	1.11	71.11	573.2	18.29	24.16
			1015	10.71	1.02	71.14	561.0	18.59	26.02
			1120	10.01	0.93	70.83	560.0	18.86	15.35
			1227	9.30	0.93	71.23	554.0	19.67	2.18
			1332	9.41	0.89	69.92	547.9	20.04	1.08
			1508	9.37	0.83	70.25	550.8	20.46	3.92
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	Dissolved oxygen. D.O
IW-104A (25 - 30)	Baseline	12-7-17	8:30	9.31	6.04	69.44	329.9	2911	6.57
	Injection		10:16	7.87	5.94	67.03	327.2	3086	8.20
			11:11	5.61	5.87	68.09	333.5	3688	2.41
			12:12	4.00	5.82	66.48	345.9	4450	26.92
			13:14	3.37	5.70	63.63	345.1	4760	14.05
			15:36	5.81	5.76	69.80	331.7	4916	6.71
	Post-Injection								
IW-107A (30 - 35)	Baseline	12-7-17	7:44	12.00	5.68	66.76	404.6	1107	12.46
	Injection		9:55	10.07	5.73	66.67	413.4	9389	561
			10:54	8.15	5.64	68.89	399.3	9240	275
			11:54	7.21	5.65	66.98	397.8	9163	106
			12:55	7.30	5.75	67.30	438.7	8116	4.29
	Post-Injection		15:15	8.00	5.85	67.17	399.8	1004	8.13
IW-111A (29 - 34)	Baseline	12-7-17	8:11	12.42	0.73	69.35	575.8	2175	0.58
	Injection		9:58	11.42	0.80	70.85	598.1	2046	0.49
			10:57	9.25	0.89	69.65	576.5	1987	1.08
			11:58	8.92	0.93	69.98	577.3	1968	0.50
			13:06	9.91	0.96	70.05	577.9	1882	0.99
			15:21	9.28	1.02	69.91	591.7	1830	2.35
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-346A (5 - 16)	Baseline	12-7-17	8:18	9.04	5.50	66.82	370.6	3202	3.50
	Injection		10:05	7.81	5.75	69.39	331.6	4162	0.78
			11:03	7.21	5.50	71.86	361.9	3451	0.91
			12:05	6.87	6.53	71.48	286.6	4919	2.29
			13:07	6.48	7.13	71.54	262.1	4963	3.81
			15:28	6.76	6.02	71.73	311.0	4837	1.47
	Post-Injection								
MW-364B (35 - 45)	Baseline	12-7-17	8:16	12.27	6.44	69.27	305.4	1899	4.16
	Injection		10:02	11.02	6.57	70.72	302.9	1913	0.61
			11:00	9.30	6.52	71.17	298.7	1920	3.31
			12:02	8.97	6.49	71.06	293.8	1946	1.41
			13:04	9.11	6.54	71.17	290.4	1968	2.67
			15:24	9.51	6.29	70.51	293.0	2001	4.67
	Post-Injection								
MW-364C (60 - 80)	Baseline	12-7-17	7:52	13.48	7.29	68.52	387.4	2953	4.49
	Injection		9:57	13.48	7.24	70.92	308.9	2969	2.39
			10:56	13.12	7.14	70.63	301.2	2979	2.09
			12:57	12.95	6.99	68.11	304.5	2989	1.32
			12:59	12.91	7.21	70.41	333.9	3005	4.02
			15:18	12.76	7.28	68.12	301.2	3034	6.52
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
ART-75 (4 - 29)	Baseline	12-7-17	8:30	11.44	5.88	71.16	372.8	3715	8.75
	Injection		10:18	10.96	5.92	70.89	347.5	3522	19.96
			11:13	10.38	5.95	71.13	322.0	3099	6.02
			12:15	9.97	5.81	70.64	322.2	3722	25.97
			13:17	9.57	5.55	70.92	327.3	4464	6.56
			15:38	9.43	2.29	71.35	381.8	4680	3.752
	Post-Injection								
ART-76 (4 - 29)	Baseline	12-7-17	8:14	14.04	6.97	72.16	532.6	1567	4.20
	Injection		10:00	10.54	6.95	73.33	521.4	1361	6.21
			10:58	10.07	1.04	73.52	512.5	1286	6.56
			12:00	9.86	1.05	74.16	510.6	1295	6.15
			13:02	9.40	1.00	74.65	514.1	1349	6.69
			15:23	9.43	0.94	74.60	516.7	1444	1.46
	Post-Injection								
ART-77 (29 - 44)	Baseline	12-7-17	8:18	14.43	6.73	73.49	527.2	1730	2.52
	Injection		10:04	3.87	6.72	72.63	520.5	1430	6.14
			11:02	3.06	6.77	71.99	513.9	1335	0.25
			12:03	3.00	6.76	72.38	513.7	1321	6.22
			12:05	2.94	6.74	72.82	514.6	1334	6.63
			15:26	5.93	6.76	73.07	514.8	1388	0.76
	Post-Injection								
ART-78 (4 - 29)	Baseline	12-7-17	8:22	14.62	14.62	82.48	130.61	7373	9.50
	Injection		10:10	3.24	3.24	4.77	72.60	4902	8.29
			11:06	2.45	2.45	72.45	74.43	3651	5.50
			12:07	2.00	4.66	74.60	79.09	3196	10.17
			13:09	2.00	6.00	86.00	89.52	3440	5.92
			15:30	5.73	4.25	86.30	359.4	2708	3.95
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-318A (5 - 15)	Baseline	12-7-17	8:41	7.92	6.33	64.38	385.8	1083	5.14
	Injection		10:27	8.00	6.42	66.73	375.9	5198	15.20
			11:23	10.04	6.43	66.26	406.8	4921	2.39
			12:27	7.91	6.47	65.72	394.8	4779	13.48
			13:29	7.81	6.41	66.01	400.9	4654	5.38
			15:46	7.90	6.40	67.05	367.4	4477	7.72
	Post-Injection								
MW-318B (35 - 65)	Baseline	12-7-17	8:27	11.84	6.04	67.04	438.2	1436	3.70
	Injection		10:14	11.21	6.05	66.62	386.9	1426	9.71
			11:12	10.62	7.22	66.91	300.2	2522	8.15
			12:13	9.42	7.20	67.19	354.8	1394	36.07
			12:15	9.81	5.72	67.14	356.9	1360	3.70
			15:35	10.20	5.62	67.06	355.0	1315	4.05
	Post-Injection								
MW-447A (5 - 15)	Baseline	12-7-17	8:37	7.81	6.35	63.79	318.4	1179	9.69
	Injection		10:23	7.80	6.43	64.06	315.5	1141	12.18
			11:18	7.82	6.41	63.27	313.8	1220	10.21
			12:20	7.73	6.35	63.10	325.3	1222	31.14
			13:22	7.72	6.36	63.52	315.9	1113	35.25
			15:42	7.71	6.40	64.17	319.5	1103	27.11
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-447B (35 - 45)	Baseline	12-7-17	8:39	16.84	6.97	65.95	311.1	2832	8.98
	Injection		10:25	11.25	7.03	64.64	303.0	2822	19.64
			11:19	10.91	5.95	67.30	370.8	1417	1.61
			12:20	10.24	7.08	65.28	298.5	2827	21.53
			13:22	10.11	7.07	65.70	290.4	2822	13.47
			15:44	10.33	6.99	65.88	295.4	2832	13.08
	Post-Injection								
ART-79 (4 - 29) (34 - 64)	Baseline	12-7-17	8:35	13.82	6.34	66.83	319.9	3427	10.16
	Injection		10:21	12.21	6.35	67.00	323.4	35.02	10.37
			11:16	12.61	6.36	67.84	336.7	4243	1.43
			12:17	12.51	6.37	67.64	359.9	5409	22.21
			13:19	12.43	6.35	68.28	327.2	5954	5.64
			15:41	12.51	6.28	68.41	309.7	6297	10.23
	Post-Injection								
ART-80 (4 - 29) (34 - 64)	Baseline	12-7-17	8:25	13.13	1.08	74.11	533.5	1361	7.05
	Injection		10:12	4.27	1.30	73.02	501.2	7044	7.61
			11:08	3.23	1.43	72.76	485.8	4344	7.60
			12:09	2.89	1.53	74.64	481.5	5352	42.58
			13:11	2.84	1.55	76.15	482.0	4446	5.78
			15:33	5.10	1.66	77.99	474.1	4558	2.95
	Post-Injection								

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TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	Dissolved oxygen. D.O
IW-104A (25 - 30)	Baseline	12-12-17	8:17	9.07	4.96	66.39	424.8	6407	12.52
	Injection		10:10	8.87	4.95	66.72	409.4	6311	11.15
			11:09	7.84	4.93	69.22	425.3	6375	3.51
			12:07	6.88	4.92	66.82	418.4	6380	2.18
			13:07	5.78	4.82	64.20	368.5	6396	5.39
			14:08	6.48	4.84	67.60	379.0	6420	6.51
			15:09	6.75	4.69	65.21	367.7	6404	9.17
	Post-Injection								
IW-107A (30 - 35)	Baseline	12-12-17	7:38	11.47	5.62	62.64	270.1	1081	12.52
	Injection		9:42	11.12	5.64	65.75	399.9	1087	1.73
			10:40	10.48	5.60	68.68	399.8	1071	0.25
			11:39	9.15	5.63	67.49	399.9	1064	0.28
			12:34	7.39	5.74	67.85	399.6	1068	5.72
			13:39	8.06	5.72	65.77	399.2	1073	2.09
			14:39	8.17	5.74	66.12	359.1	1072	4.07
	Post-Injection								
IW-111A (29 - 34)	Baseline	12-12-17	7:44	12.13	1.09	69.99	530.2	1330	4.72
	Injection		9:46	11.95	1.11	69.97	530.6	1306	1.69
			10:44	10.68	1.14	70.51	526.6	1260	0.27
			11:43	9.45	1.16	70.16	525.5	1255	0.54
			12:45	8.36	1.20	70.43	521.8	1235	1.25
			13:47	9.20	1.17	69.59	520.5	1245	3.97
			14:46	9.50	1.22	70.26	518.7	1250	11.26
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-346A (5 - 16)	Baseline	12.12.17	8:01	9.10	6.39	69.16	342.0	3295	8.36
	Injection		9:56	8.21	6.38	69.32	335.4	3565	10.26
			10:56	7.18	6.47	69.77	270.4	3517	18.99
			11:55	6.47	6.71	72.07	258.1	3342	13.92
			12:54	6.59	6.73	70.01	265.2	3317	16.27
			13:56	7.15	6.57	69.66	277.0	3313	20.54
			14:57	7.03	6.52	68.77	282.8	3268	16.71
	Post-Injection								
346B MW-364B (35 - 45)	Baseline	12.12.17	7:50	12.16	6.71	69.37	281.2	2182	8.28
	Injection		9:51	12.07	6.64	70.66	278.3	2180	10.54
			10:49	11.27	6.65	70.81	276.1	2187	59.36
			11:47	9.93	6.52	69.88	264.8	2194	45.00
			12:46	8.88	6.54	70.83	260.2	2196	34.18
			13:49	9.75	6.76	70.89	264.1	2203	10.58
			14:49	10.05	6.74	69.74	265.1	2201	16.98
	Post-Injection								
346C MW-364C (60 - 80)	Baseline	12.12.17	7:41	13.36	7.53	67.90	257.6	3069	6.04
	Injection		9:44	14.00	7.09	67.66	290.2	3085	3.01
			10:42	13.81	7.05	68.02	295.9	3074	2.74
			11:41	13.15	7.07	68.41	300.5	3084	1.53
			12:40	13.00	7.31	69.09	267.9	3082	8.48
			13:40	13.05	7.11	69.98	284.4	3096	9.27
			14:39	13.06	7.03	67.70	285.4	3105	12.10
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
ART-75 (4 - 29)	Baseline	12-12-17	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
	Injection		8:19	11.30	2.38	69.57	502.6	4926	7.48
			10:12	11.21	2.37	69.88	490.2	4893	2.74
			11:11	10.91	2.38	70.57	530.8	4875	6.74
			12:09	10.45	2.38	70.46	518.0	4936	7.03
			13:08	9.49	2.31	70.20	477.3	5094	4.73
			14:09	9.62	2.31	70.39	475.0	5104	5.18
			15:10	9.70	2.32	70.32	473.7	5182	3.46
	Post-Injection								
ART-76 (4 - 29)	Baseline	12-12-17	7:47	13.50	2.53	72.15	448.5	5645	2.58
	Injection		9:49	11.18	2.59	72.42	440.7	5379	9.78
			10:47	10.35	3.14	73.67	404.0	4765	15.44
			11:45	8.86	6.31	78.16	276.3	3173	13.04
			12:45	7.70	6.26	82.23	276.7	3677	5.19
			13:47	8.61	6.20	85.59	283.0	3872	9.11
			14:47	8.41	6.13	83.14	285.1	3790	6.31
	Post-Injection								
ART-77 (29 - 44)	Baseline	12-12-17	7:59	14.00	0.75	73.65	515.6	1483	4.17
	Injection		9:54	8.73	0.78	72.91	511.3	1339	3.14
			10:53	4.30	0.77	70.89	507.3	1223	3.92
			11:51	2.35	0.87	70.24	500.2	1156	3.26
			12:51	4.74	0.77	70.49	504.4	1082	4.22
			13:53	5.28	0.81	71.47	502.4	1073	0.66
			14:53	6.47	0.89	71.48	497.4	1070	3.61
	Post-Injection								
ART-78 (4 - 29)	Baseline	12-12-17	8:06	13.54	5.37	75.13	332.6	3762	9.28
	Injection		10:00	8.53	3.61	74.62	388.5	3634	18.17
			11:00	3.85	3.26	73.86	394.5	2768	20.30
			12:58	2.32	4.78	74.52	340.3	2069	25.70
			12:56	4.63	6.20	83.84	277.2	1858	30.01
			13:58	7.62	6.64	90.77	249.9	1992	41.66
			14:58	5.90	6.11	89.54	279.0	2044	18.24
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-318A (5 - 15)	Baseline	12-12-17	8:33	8.26	5.98	63.94	334.1	5499	5.37
	Injection		10:24	8.26	5.97	64.04	346.9	5492	2.01
			11:24	5.20	6.34	64.40	381.7	4274	0.62
			12:22	8.17	6.25	64.02	349.8	5303	8.32
			13:21	8.13	6.04	62.52	329.8	5400	7.11
			14:23	8.08	6.07	63.00	325.7	5374	10.56
			15:22	8.06	6.10	63.64	339.9	5362	11.29
	Post-Injection								
MW-318B (35 - 65)	Baseline	12-12-17	8:13	11.47	6.06	66.36	325.4	7164	7.55
	Injection		10:07	11.45	6.06	66.74	318.1	7161	7.97
			10:06	11.00	6.01	66.70	324.4	7150	9.18
			12:05	10.61	6.16	66.51	316.6	7144	0.20
			13:05	9.75	6.31	65.76	304.7	7020	9.20
			14:06	9.92	6.01	65.75	320.8	7121	1.84
			15:05	10.26	5.99	66.22	325.7	7116	3.30
	Post-Injection								
MW-447A (5 - 15)	Baseline	12-12-17	8:27	7.72	6.64	62.67	274.9	1142	18.16
	Injection		10:20	7.68	6.63	61.75	258.7	1153	12.51
			11:19	7.72	6.61	61.84	291.0	1125	12.61
			12:17	7.63	6.64	61.46	296.3	1129	14.05
			13:16	7.68	6.63	61.52	283.9	1153	12.35
			14:15	7.64	6.65	61.63	255.9	1187	14.95
			15:15	7.60	6.69	62.40	257.2	1172	24.23
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
TA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-447B (35 - 45)	Baseline	12.12.17	8:24	11.14	7.11	64.67	284.1	2611	11.76
	Injection		10:21	10.95	7.08	65.97	284.8	2723	4.91
			11:20	10.71	6.94	65.25	287.2	2714	3.69
			12:18	10.45	6.93	64.74	291.4	2747	2.08
			13:18	10.16	6.92	64.20	276.9	2788	7.26
			14:14	10.33	6.94	64.29	282.0	2796	9.60
			15:19	10.34	6.91	64.38	285.8	2789	10.14
	Post-Injection								
ART-79 (4 - 29) (34 - 64)	Baseline	12.12.17	8:24	13.34	6.45	67.63	300.9	3247	10.17
	Injection		10:17	13.34	6.42	67.59	306.1	3278	7.21
			11:15	12.97	6.45	67.89	287.5	3511	3.03
			12:14	12.57	6.41	68.07	285.6	3603	7.30
			13:14	12.51	6.45	68.99	296.3	3751	7.77
			14:16	12.69	6.17	68.95	297.1	3722	9.42
			15:17	12.47	6.11	68.69	296.2	3733	10.81
	Post-Injection								
ART-80 (4 - 29) (34 - 64)	Baseline	12.12.17	8:10	13.14	2.46	72.87	437.0	4068	10.41
	Injection		10:03	8.76	2.17	72.34	453.4	4672	14.03
			11:02	4.75	2.10	71.70	444.3	3880	10.12
			12:01	3.40	2.14	70.55	435.4	3012	18.50
			13:01	2.92	2.39	70.20	426.3	2341	13.20
			14:02	7.08	2.24	72.33	433.0	2339	2.09
			15:01	6.68	2.40	72.77	426.8	2724	7.00
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS cm)	Dissolved oxygen. D.O
IW-104A (25 - 30)	Baseline	12-13-17	6:41	6.67	3.61	63.73	514.7	6400	5.71
	Injection		12:36	7.46	3.75	65.75	472.9	6355	6.04
			13:35	7.77	4.24	68.19	463.2	6446	11.11
			15:24	7.98	4.52	67.00	424.4	6528	38.45
	Post-Injection								
IW-107A (30 - 35)	Baseline	12-13-17	7:15	12.73	1.66	63.19	-30.3	[illegible]	[illegible]
	Injection		12:07	9.98	5.62	65.42	414.3	16.40	4.19
			13:65	8.20	5.21	67.97	395.9	1184	4.93
			15:00	9.45	5.65	64.24	389.9	1141	5.51
	Post-Injection								
IW-111A (29 - 34)	Baseline	12-13-17	9:06	12.27	1.15	70.05	5[illegible]	12.72	0.54
	Injection		12:13	9.46	1.20	69.25	527.9	1242	3.67
			13:10	8.24	1.15	65.50	527.8	1252	2.60
			15:08	8.59	1.24	66.77	525.3	1244	1.51
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-346A (5 - 16)	Baseline	12-13-17	9:22	5.75	6.63	70.5	392.4	2993	13.13
	Injection		12:23	6.29	6.61	71.46	263.0	3379	6.93
			13:23	6.32	7.07	74.15	234.5	3034	32.15
			15:15	7.40	6.83	71.941	253.2	2027	62.00
	Post-Injection								
MW-364B (35 - 45)	Baseline	12-13-17	8:09	12.05	6.76	70.37	273.5	2213	14.45
	Injection		12:19	9.65	6.69	70.93	275.0	2203	71.50
			13:17	5.93	6.67	69.13	267.1	2205	72.43
			15:13	9.24	6.67	71.01	263.0	2217	47.24
	Post-Injection								
MW-364C (60 - 80)	Baseline	12-13-17	902	12.67	7.17	68.05	340.5	3101	2.52
	Injection		12:11	12.74	7.13	67.69	353.0	2044	5.0
			13:07	12.54	6.94	67.93	350.4	3125	2.5
			15:06	12.70	6.86	68.47	335.7	3131	1.07
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS cm)	D.O
ART-75 (4 - 29)	Baseline	12-13-17	9:43	11.70	3.51	66.53	453.6	507	36.02
	Injection		12:35	10.54	3.50	76.44	464.5	5025	31.15
			13:37	10.01	2.43	76.43	455.5	5054	6.59
			15:31	10.00	2.43	70.23	457.6	5044	33.43
	Post-Injection								
ART-76 (4 - 29)	Baseline	12-13-17	8:10	13.61	5.52	72.74	335.1	4267	2.5
	Injection		12:11	9.05	4.43	74.1	235.8	3461	66.87
			13:14	8.61	5.15	75.92	322.4	3360	55.07
			15:11	9.40	5.75	75.64	297.6	3307	24.55
	Post-Injection								
ART-77 (29 - 44)	Baseline	12-13-17	8:05	13.90	5.73	73.60	500.5	1736	2.03
	Injection		12:21	1.55	0.77	69.72	502.0	1139	6.50
			13:20	1.44	0.75	69.47	497.7	1061	42.70
			13:16	1.70	0.76	70.3	497.7	1054	25.24
	Post-Injection								
ART-78 (4 - 29)	Baseline	12-13-17	8:36	13.46	5.77	74.53	316.5	415	8.96
	Injection		12:27	1.45	3.53	70.30	311.5	2.56	73.95
			13:46	0.60	5.59	73.45	305.6	1650	25.59
			15:20	7.02	6.74	90.72	235.1	1544	51.14
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-318A (5 - 15)	Baseline	12-13-17	3:59	8.30	6.17	64.64	334.3	5264	10.55
	Injection		12:58	8.26	6.06	64.62	340.1	5123	7.65
			13:51	8.22	6.37	64.56	357.6	3095	27.67
			15:40	8.20	6.02	64.66	321.5	5053	17.65
	Post-Injection								
MW-318B (35 - 65)	Baseline	12-13-17	4:30	10.71	5.69	66.26	350.1	6852	20.67
	Injection		12:33	9.90	5.91	65.90	330.0	6905	21.04
			13:32	9.76	5.83	65.73	316.3	6705	8.31
			15:26	9.55	5.69	66.33	332.4	6635	22.30
	Post-Injection								
MW-447A (5 - 15)	Baseline	12-13-17	5:53	7.97	6.17	62.26	375.5	1166	35.74
	Injection		12:46	7.84	6.62	62.00	303.1	1194	63.51
			13:45	7.80	6.44	62.24	331.9	1176	49.42
			15:35	7.53	6.34	62.70	340.1	1195	51.35
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-447B (35 - 45)	Baseline	12-13-17	9:51	9.50	6.32	64.50	365.3	3005	15.46
	Injection		12:45	10.02	6.33	65.61	304.6	3007	35.67
			13:47	9.74	6.74	64.35	297.1	3004	52.96
			15:37	9.90	6.71	64.76	301.9	3001	60.59
	Post-Injection								
ART-79 (4 - 29) (34 - 64)	Baseline	12-13-17	9:19	12.40	6.36	67.35	330.4	2974	27.08
	Injection		12:43	12.65	6.41	67.76	254.5	3132	44.77
			13:42	12.23	6.21	65.32	299.2	3399	26.40
			15:33	13.50	6.00	65.99	300.0	3519	72.31
	Post-Injection								
ART-80 (4 - 29) (34 - 64)	Baseline	12-13-17	9:31	13.22	72.31	2.28	4516	3607	25.45
	Injection		12:30	2.66	2.31	69.45	427.5	2742	71.81
			13:24	2.00	2.31	69.20	424.0	2166	21.73
			15:23	7.37	2.34	71.52	421.3	2314	63.71
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	Dissolved oxygen.
IW-104A (25 - 30)	Baseline	12-18-17	10:28	9.41	5.53	66.12	522.8	7.894	D.O
	Injection		14:00	8.92	5.55	66.10	535.7	7.930	23.70
			15:35	8.28	5.43	65.74	514.6	7.912	27.49
									27.52
	Post-Injection								
IW-107A (30 - 35)	Baseline	12-18-17	9:42	11.20	5.49	65.37	497.9	12.19	26.74
	Injection		14:06	10.64	5.53	65.80	520.1	13.04	23.27
			15:40	09.95	5.45	67.23	518.6	12.80	27.74
	Post-Injection								
IW-111A (29 - 34)	Baseline	12-19-17	9:50	12.01	5.68	68.31	491.7	20.19	12.53
	Injection		14:14	11.80	5.77	68.86	516.8	19.72	13.10
			15:52	10.90	5.78	69.83	528.3	18.53	14.4
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-346A (5 - 16)	Baseline	12-18-17	10:05	7.38	7.08	67.92	596.7	75.83	5.66
	Injection		14:32	8.46	6.27	66.52	506.2	11.92	17.26
			15:13	8.66	6.94	67.66	615.9	86.12	8.54
	Post-Injection								
MW-364B (35 - 45)	Baseline	12-18-17	9:57	12.02	6.72	69.71	299.4	3.046	24.64
	Injection		14:20	10.20	6.60	68.58	284.7	3.067	24.95
			15:58	10.82	6.58	68.52	307.3	3.082	23.53
	Post-Injection								
MW-364C (60 - 80)	Baseline	12-18-17	9:47	13.52	7.31	69.12	331.3	3.685	7.14
	Injection		14:08	13.35	7.22	68.10	348.5	3.681	6.68
			15:48	13.31	7.10	68.77	372.3	3.672	6.50
	Post-Injection								

TABLE 4
Water Level Recording Form
Required Monitoring wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
ART-75 (4 - 29)	Baseline	12-18-17	10:23	12.12	5.96	68.71	475.6	3.079	20.32
	Injection		14:45	11.06	5.93	67.54	468.4	3.107	20.82
			15:30	10.63	6.03	66.37	455.5	3.155	18.26
	Post-Injection								
ART-76 (4 - 29)	Baseline	12-18-17	9:55	13.82	6.08	70.01	465.8	7.145	8.57
	Injection		14:15	10.28	6.07	71.31	441.6	9.480	12.36
			16:02	12.08	6.24	70.12	468.4	14.05	19.58
	Post-Injection								
ART-77 (29 - 44)	Baseline	12-18-17	10:00	11.45	6.37	70.22	569.8	67.32	7.05
	Injection		14:25	11.07	6.35	70.61	548	64.43	7.78
			15:07	12.40	6.59	70.43	601.5	66.46	18.60
	Post-Injection								
ART-78 (4 - 29)	Baseline	12-18-17	10:07	12.02	5.98	69.93	494.7	13.30	13.06
	Injection		14:29	09.78	6.23	70.64	503.3	22.97	17.37
			15:12	12.52	7.21	71.45	375.5	60.93	24.6
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-318A (5 - 15)	Baseline	12-12-17	10.48	08.84	6.67	64.72	392.5	3.666	6.06
	Injection		14.48	08.84	6.34	61.93	438.8	5.053	5.35
			16.27	08.84	6.02	47.82	551.1	0.106	11.24
	Post-Injection								
MW-318B (35 - 65)	Baseline	12-12-17	10:19	11.32	6.59	66.78	435.6	6.841	10.13
	Injection		14:36	11.18	6.18	66.38	447.7	6.781	9.12
			16:21	11.12	6.10	66.23	431.8	6.797	10.72
	Post-Injection								
MW-447A (5 - 15)	Baseline	12-12-17	10:40	8.35	6.73	60.36	432.0	1.430	6.73
	Injection		14:55	8.30	6.56	61.70	465.0	1.461	7.12
			16:32	8.34	6.02	47.82	551.1	0.106	11.24
	Post-Injection								

TABLE 4
Water Level Recording Form
Optional Monitoring Wells
IA-6 ISCO Injections

Monitoring Well (screened interval ft bgs)	Monitoring Event	Date	Time	Depth to Water (ft bgs)	pH	Temperature (F)	ORP (mV)	Specific Conductivity (mS/cm)	D.O
MW-447B (35 - 45)	Baseline	12-18-17	10:45	11:32	6.93	65.2	556.3	3.341	6.97
	Injection		15:00	11.00	6.93	63.78	408.4	2.325	7.47
			16:40	10.98	6.02	47.82	551.1	0.106	11.24
	Post-Injection								
ART-79 (4 - 29) (34 - 64)	Baseline	12-18-17	10:36	14.20	6.60	66.38	441.3	4.039	8.78
	Injection		14:51	13.75	6.41	66.45	455.5	4.976	9.61
			16:55	13.94	6.02	47.83	551.1	0.106	11.24
	Post-Injection								
ART-80 (4 - 29) (34 - 64)	Baseline	12-18-17	10:15	13.42	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	
	Injection		~~15:00~~	~~11.00~~	5.86	69.75	485.3	13.08	14.45
					6.93	63.78	408.4	2.325	~~7.45~~
			15:10	08.85	6.06	69.75	426.3	18.45	18.26
			16:17	11.58	6.28	69.58	365.1	28.16	~~[illegible]~~ 22.95
	Post-Injection								

APPENDIX D

IRM WELL CONSTRUCTION DETAILS & WELL LOG FOR IW-194B

APPENDIX D
As-Built IRM Well Construction Details
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Well Designation	Date Started	Date Developed	Zone	Overburden (OB) / Bedrock	Depth to Bedrock	Borehole Diameter for outer casing (in)	Outer Casing Material / Dia. (in)	Outer Casing Depth[1,2]	Borehole Diameter for the well (in)	Riser / Screen Material	Riser Depth (ft)	Screen Interval (ft bgs)	Well Diameter (in)	Flushmount Manhole (in)	Total Depth of the well[3,4] (ft)	Cement/ Bentonite Grout for Outer Casing[3]	Cement/ Bentonite Grout for Inner Casing (ft bgs)	Filter Pack Choker Sand (No. 00 Sand) [3]	Filter Pack (No. 2 Sand) [3]
OZONE INJECTION WELLS[5]																			
IW-104A	8/25/2015	9/2/2015	S1	Bedrock	13	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 25, 30 to 31	25 to 30	2	8	31.5	N/A	1 to 23	23 to 24	24 to 31.5
IW-105A	8/25/2015	9/2/2015	S1	Bedrock	12	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 25, 30 to 31	25 to 30	2	8	31.5	N/A	1 to 23	23 to 24	24 to 31.5
IW-106A	8/31/2015	9/2/2015	S1	Bedrock	13	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 29, 34 to 35	29 to 34	2	8	35	N/A	1 to 27	27 to 28	28 to 35
IW-107A	8/25/2015	9/2/2015	S1	Bedrock	12	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 30, 35 to 36	30 to 35	2	8	36.5	N/A	1 to 27	27 to 28	28 to 36.5
IW-108A	8/31/2015	9/2/2015	S1	Bedrock	12	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 29, 34 to 35	29 to 34	2	8	35	N/A	1 to 27	27 to 28	28 to 35
IW-109A	8/31/2015	9/2/2015	S1	Bedrock	12	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 25, 30 to 31	25 to 30	2	8	31.5	N/A	1 to 23	23 to 24	24 to 31.5
IW-110A	8/31/2015	9/2/2015	S1	Bedrock	14	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 25, 30 to 31	25 to 30	2	8	31.5	N/A	1 to 23	23 to 24	24 to 31.5
IW-111A	8/25/2015	9/2/2015	S1	Bedrock	11	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 29, 34 to 35	29 to 34	2	8	35	N/A	1 to 27	27 to 28	28 to 35
IW-112A	8/28/2015	9/2/2015	S1	Bedrock	11	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 25, 30 to 31	25 to 30	2	8	31.5	N/A	1 to 23	23 to 24	24 to 31.5
IW-113A	8/25/2015	9/2/2015	S1	Bedrock	10.5	N/A	N/A	N/A	6	Steel / SS - 20 Slot	0.5 to 25, 30 to 31	25 to 30	2	8	31.5	N/A	1 to 23	23 to 24	24 to 31.5
IW-194B	5/17/2018	5/18/2018	S2	Bedrock	14	N/A	N/A	N/A	8	Steel / SS - 20 Slot	0.5 to 30, 45 to 46	30 to 45	4	8	46	0.5 to 25	0.5 to 28	28 to 29	29 to 46
S1 ZONE - IWAS/ART WELLS[5]																			
ART-75	8/27/2015	9/2/2015	S1	OB/Bedrock	13	N/A	N/A	N/A	10	Steel / SS - 20 Slot	0.5 to 4, 29 to 30	4 to 29	6	24	30	N/A	1 to 2	2 to 3	3 to 30
ART-76	8/31/2015	9/2/2015	S1	OB/Bedrock	11	N/A	N/A	N/A	10	Steel / SS - 20 Slot	0.5 to 4, 29 to 30	4 to 29	6	24	30	N/A	1 to 2	2 to 3	3 to 30
ART-78	8/31/2015	9/2/2015	S1	OB/Bedrock	12	N/A	N/A	N/A	10	Steel / SS - 20 Slot	0.5 to 4, 29 to 30	4 to 29	6	24	30	N/A	1 to 2	2 to 3	3 to 30
ART-89	9/14/2015	9/14/2015	S1	OB/Bedrock	12	N/A	N/A	N/A	10	Steel / SS - 20 Slot	0.5 to 4, 29 to 30	4 to 29	6	24	30.5	N/A	1 to 2.5	2.5 to 3	3 to 30.5
S2 ZONE - IWAS/ART WELLS[5]																			
ART-77	8/27/2015	9/2/2015	S2	Bedrock	11	14	Black Iron or equivalent / 10	0.5 to 25	10	Steel / SS - 20 Slot	0.5 to 29, 44 to 45	29 to 44	6	24	45.5	0.5 to 25	1 to 27	27 to 28	28 to 45.5
ART-80	8/14/2015	9/2/2015	S2	Bedrock	14	N/A	N/A	N/A	10	Steel / SS - 20 Slot	0.5 to 4, 29 to 34, 64 to 65	4 to 29, 34 to 64	6	24	65.5	N/A	1 to 3, 30 to 32.5	3 to 3.5, 29.5 to 30, 32.5 to 33	3.5 to 29.5, 33 to 65.5
ART-79	8/14/2015	8/26/2015	S2	Bedrock	11	N/A	N/A	N/A	10	Steel / SS - 20 Slot	0.5 to 4, 29 to 34, 64 to 65	4 to 29, 34 to 64	6	24	65.5	N/A	1 to 3, 30 to 32.5	3 to 3.5, 29.5 to 30, 32.5 to 33	3.5 to 29.5, 33 to 65.5
ART-81	8/4/2015	8/27/2015	S2	Bedrock	12	N/A	N/A	N/A	10	Steel / SS - 20 Slot	0.5 to 4, 29 to 34, 64 to 65	4 to 29, 34 to 64	6	24	65.5	N/A	1 to 2.5, 30 to 32.5	2.5 to3, 29.5 to 30, 32.5 to 33	3 to 29.5, 33 to 65.5
ART-82	8/5/2015	8/27/2015	S2	Bedrock	13	N/A	N/A	N/A	10	Steel / SS - 20 Slot	0.5 to 24, 64 to 65	24 to 64	6	24	65.5	N/A	1 to 22	22 to 23	23 to 65.5
ART-83	10/2/2015	10/2/2015	S2	Bedrock	17	N/A	N/A	N/A	10	Steel / SS - 20 Slot	1 to 4, 29 to 34, 64 to 65	4 to 29, 34 to 64	6	24	65.5	N/A	1 to 3, 30 to 33	3 to 3.5, 33 to 33.5	3.5 to 30, 33.5 to 65.5
ART-84	9/1/2015	10/2/2015	S2	Bedrock	10	14	Black Iron or equivalent / 10	0.5 to 20	10	Steel / SS - 20 Slot	0.5 to 24, 64 to 65	24 to 64	6	24	65.5	1 to 20	1 to 22	22 to 23	23 to 65.5
ART-85	9/1/2015	10/2/2015	S2	Bedrock	11	14	Black Iron or equivalent / 10	0.5 to 20	10	Steel / SS - 20 Slot	1 to 24, 64 to 65	24 to 64	6	24	65.5	1 to 20	1 to 22	22 to 23	23 to 65.5
ART-87	9/11/2015	9/30/2015	S2	Bedrock	10	14	Black Iron or equivalent / 10	0.5 to 30	10	Steel / SS - 20 Slot	0.5 to 34, 59 to 60	34 to 59	6	24	60.5	1 to 30	1 to 26	26 to 27	27 to 60.5**
S3 ZONE - IWAS/ART WELLS[5]																			
ART-88	9/10/2015	9/30/2015	S3	Bedrock	14.5	14	Black Iron or equivalent / 10	0.5 to 40	10	Steel / SS - 20 Slot	1 to 44, 74 to 75	44 to 74	6	24	75.5	1 to 40	1 to 42	42 to 43	43 to 75.5
ART-86	9/30/2015	9/30/2015	S3	Bedrock	9	18 / 14	Black Iron or equivalent / 14, Black Iron or equivalent / 10	0.5 to 10, 0.5 to 45	10	Steel / SS - 20 Slot	1 to 49, 74 to 75	49 to 74	6	24	75.5	1 to 10, 1 to 45	1 to 47	47 to 48	48 to 75.5

APPENDIX D
As-Built IRM Well Construction Details
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Well Designation	Date Started	Date Developed	Zone	Overburden (OB) / Bedrock	Depth to Bedrock	Borehole Diameter for outer casing (in)	Outer Casing Material / Dia. (in)	Outer Casing Depth[1,2]	Borehole Diameter for the well (in)	Riser / Screen Material	Riser Depth (ft)	Screen Interval (ft bgs)	Well Diameter (in)	Flushmount Manhole (in)	Total Depth of the well[3,4] (ft)	Cement/ Bentonite Grout for Outer Casing[3]	Cement/ Bentonite Grout for Inner Casing (ft bgs)	Filter Pack Choker Sand (No. 00 Sand)[5]	Filter Pack (No. 2 Sand)[5]
BIOSPARGING WELLS[2]																			
BIOS-1B	8/10/2015	8/21/2015	S2	Bedrock	12	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-2B	8/10/2015	8/21/2015	S2	Bedrock	10	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-3B	8/10/2015	8/25/2015	S2	Bedrock	14	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-4B	8/10/2015	8/24/2015	S2	Bedrock	13	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-5B	8/10/2015	8/24/2015	S2	Bedrock	15	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-6B	8/10/2015	8/24/2015	S2	Bedrock	14	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-7B	8/27/2015	9/22/2015	S2	Bedrock	10	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-8B	8/20/2015	9/2/2015	S2	Bedrock	13	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-9B	8/26/2015	9/22/2015	S2	Bedrock	15	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-10B	8/28/2015	9/23/2015	S2	Bedrock	11	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-11B	8/24/2015	9/23/2015	S2	Bedrock	14	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-12B	8/20/2015	9/22/2015	S2	Bedrock	12	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 55	60 to 70	2	8	70	1 to 25	1 to 57	57 to 59	59 to 70
BIOS-13B	8/28/2015	9/23/2015	S2	Bedrock	10	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 55	55 to 65	2	8	65	1 to 25	1 to 52	52 to 54	54 to 65
BIOS-14B	8/20/2015	9/22/2015	S2	Bedrock	13	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 55	55 to 65	2	8	65	1 to 25	1 to 52	52 to 54	54 to 65
BIOS-15B	8/20/2015	10/2/2015	S2	Bedrock	13	10	Black Iron or equivalent / 6	0.5 to 25	6	PVC / PVC - 20 Slot	0.5 to 55	55 to 65	2	8	65	1 to 25	1 to 52	52 to 54	54 to 65
S1 ZONE - MONITORING WELLS																			
MW-447A	7/31/2015	8/26/2015	S1	OB	15	N/A	N/A	N/A	6	PVC / PVC - 20 Slot	0.5 to 5	5 to 15	2	8	15.5	N/A	1 to 2	2 to 3	3 to 15.5
S2 ZONE - MONITORING WELLS																			
MW-447B	8/5/2015	8/26/2015	S2	Bedrock	14	10	Black Iron or equivalent / 6	0.5 to 30	6	PVC / PVC - 20 Slot	0.5 to 35	35 to 45	2	8	45.5	1 to 30	1 to 33	33 to 34	34 to 45.5
MW-318B	8/5/2015	8/21/2015	S2	Bedrock	12	10	Black Iron or equivalent / 6	0.5 to 30	6	PVC / PVC - 20 Slot	0.5 to 35	35 to 65	2	8	65.5	1 to 30	1 to 32	32 to 33	33 to 65.5
MW-321B	9/10/2015	9/23/2015	S2	Bedrock	17	10	Black Iron or equivalent / 6	0.5 to 30	6	PVC / PVC - 20 Slot	0.5 to 35	35 to 65	2	8	65.5	1 to 30	1 to 33	33 to 34	34 to 65.5
S3 ZONE - MONITORING WELLS																			
MW-321C	9/25/2015	10/2/2015	S3	Bedrock	15	14 / 10	Black Iron or equivalent / 10, Black Iron or equivalent / 6	0.5 to 15, 0.5 to 45	6	PVC / PVC - 20 Slot	0.5 to 60	60 to 70	2	8	70.5	1 to 15, 1 to 45	1 to 57	57 to 58	58 to 70.5
VAPOR POINTS[4]																			
IA6-VP1	9/1/2015	N/A	S1	Bedrock	10	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 2	2 to 10	1	8	10	N/A	*	1 to 1.5	1.5 to 10
IA6-VP2	9/2/2015	N/A	S1	Bedrock	8.5	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 2	2 to 8.5	1	8	8.5	N/A	*	1 to 1.5	1.5 to 8.5
IA6-VP3	9/2/2015	N/A	S1	Bedrock	10	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 2	2 to 10	1	8	10	N/A	*	1 to 1.5	1.5 to 10
IA6-VP4	9/3/2015	N/A	S1	Bedrock	10	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 2	2 to 10	1	8	10	N/A	*	1 to 1.5	1.5 to 10
IA6-VP5	9/3/2015	N/A	S1	Bedrock	12	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 2	2 to 12	1	8	12	N/A	*	1 to 1.5	1.5 to 12
IA6-VP6	9/4/2015	N/A	S1	Bedrock	11.5	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 2	2 to 11.5	1	8	11.5	N/A	*	1 to 1.5	1.5 to 11.5
IA6-VP7	8/4/2015	N/A	S1	Bedrock	15	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 3.5	3.5 to 14.5	1	8	15	N/A	0 to 1.5	1.5 to 2.5	2.5 to 15
IA6-VP8	7/31/2015	N/A	S1	Bedrock	14	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 3.5	3.5 to 13.5	1	8	14	N/A	0 to 2	2 to 2.5	2.5 to 14
IA6-VP9	7/31/2015	N/A	S1	Bedrock	14	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 3.5	3.5 to 13.5	1	8	14	N/A	0 to 2	2 to 2.5	2.5 to 14
IA6-VP10	7/31/2015	N/A	S1	Bedrock	14.5	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 4	4 to 14	1	8	14.5	N/A	0 to 2	2 to 3	3 to 14.5
IA6-VP11	9/1/2015	N/A	S1	Bedrock	-	N/A	N/A	N/A	6	PVC / PVC - 10 Slot	0.5 to 4	4 to 15	1	8	15	N/A	1 to 2	2 to 2.5	2.5 to 15

[1] Minimum 10' of outer casing into the bedrock
[2] Assuming bedrock to be at 10'
[3] Chosen based on the water bearing zone or fracture
[4] A 1-foot solid piece of pipe with cap installed below screened interval as a sump for the collection of sediment/possible precipitation in ART, ozone and biosparge wells
[5] Finished male NPT
[6] Used No. 1 sand instead of No. 2
*No grout, concrete pad installed on top of choker sand
**borehole collapsed after installing well. Blockage is coarse sand similar to No. 2, well developed successfully

TRC Environmental
41 Spring Street
New PRovidence NJ

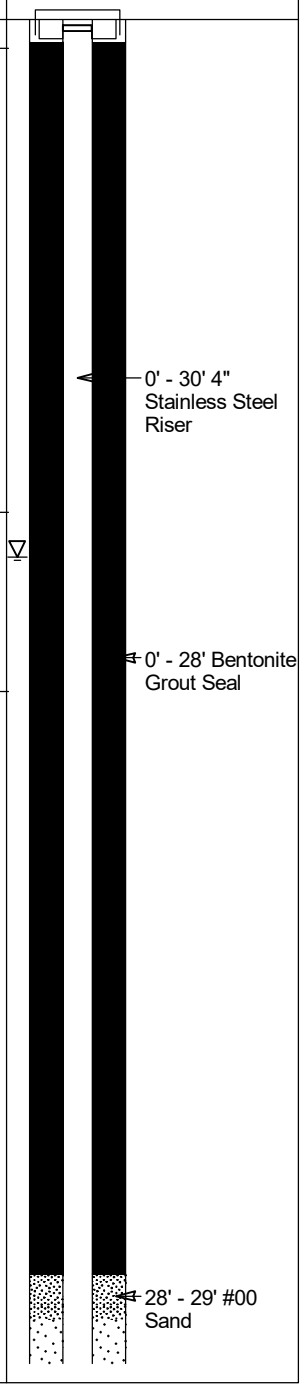
WELL CONSTRUCTION LOG
INJECTION WELL

CLIENT/PROJECT NUMBER Hoffmann-La Roche Inc./198233
EVENT ID IA-6 EISB Well Install
TRC GEOLOGIST Jen Crapella
DRILLING CONTRACTOR/FOREMAN SGS/Matt Tonczyk
DATE DRILLED 5/17/2018 - 5/18/2018
LOCATION IA-6
SAMPLING METHOD N/A
DRILLING METHOD Dual Rotrary
NOTES

BORING/WELL NUMBER IW-194B
SCREEN TYPE/DIAMETER/SLOT 4" SS Riser/0.02
FILTER PACK TYPE/SIZE #2 Sand
GROUT TYPE Portland Cement/Bentonite Seal
DEPTH TO WATER (Approximate Feet) 12
TOTAL WELL DEPTH (Feet) 45
GROUND ELEVATION (Feet, NGVD 29) N/A
REFERENCE ELEVATION (Feet, NGVD 29)
PERMIT NUMBER E201803771

DEPTH (ft. bgs)	BLOW COUNTS	PEN/REC (INCHES)	PID (ppm)	SAMPLE ID	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION
							0-0.5 0.0' - 0.5' Asphalt
1					SP		0.5-11 0.5' - 14.0' Red brown poorly graded SAND and GRAVEL
2							
3							
4							
5							
6							
7							
8							
9							
10							
11					GW		11-15 11.0' - 15.0 ' Red brown weathered rock SHALE
12							
13							
14							
15					GW		15-46 15.0' - 46.0' Red brown competent rock SHALE
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

WELL DIAGRAM



Note:

TRC Environmental
41 Spring Street
New PRovidence NJ

WELL CONSTRUCTION LOG
INJECTION WELL

CLIENT/PROJECT NUMBER Hoffmann-La Roche Inc./198233 **BORING/WELL NUMBER** **IW-194B**

EVENT ID IA-6 EISB Well Install

DEPTH (ft. bgs)	BLOW COUNTS	PEN/REC (INCHES)	PID (ppm)	SAMPLE ID	USCS	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	WELL DIAGRAM
31								
32								
33								29' - 46' #2 Sand
34								
35								
36								
37								
38								30' - 45' 4" Stainless Steel Screen/0.02
39								
40								
41								
42								
43								
44								
45								
46								

Note:

APPENDIX E

EISB INJECTION DATA TRACKING SHEET

Appendix E
EISB Injection Tracking Sheet
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Injection Point Name	Amendment Name	Differential Volume (gal)*	Date	Injection Zone	Screen Interval (ft bgs)	Injection Batch Number	Amendment Name	Start Time	Stop Time	Injection Duration (h:mm)	Injection Duration (min)	Differential Volume (gal)*	Dilution Ratio	Undiluted Amendment Volume (gal)	Dilution Water Volume (gal)	Injection Rate (gpm)	Injection Rate (calculted)	Injection Pressure (psi)	Notes
IW-109A	ABC	500	5/23/2018	S1	25-30	1, 2	ABC	14:35	16:15	1:40	100	500	1:2.6	137	363	3.7	5.00	20	
IW-110A	ABC	500	5/23/2018	S1	25-30	1, 2	ABC	14:02	15:29	1:27	87	500	1:2.6	137	363	4.5	5.75	20	FR started 8.5, decreased to 4.5
IW-109A	Anaerobic Chase	300	5/24/2018	S1	25-30	3, 4, 5, 6	Anaerobic Chase	9:06	10:05	0:59	59	300	NA	NA	NA	5.75	5.08	5	
IW-110A	Anaerobic Chase	300	5/24/2018	S1	25-30	3, 4, 5, 6	Anaerobic Chase	9:15	9:51	0:36	36	300	NA	NA	NA	6.76	8.33	15	
IW-110A	DHC	3.7	5/24/2018	S1	25-30	NA	DHC	10:55	11:00	0:05	5	3.7	NA	NA	NA	NA	NA	15	3.7 L injected
IW-109A	DHC	3.7	5/24/2018	S1	25-30	NA	DHC	11:04	11:09	0:05	5	3.7	NA	NA	NA	NA	NA	15	3.7 L injected
IW-109A	Anaerobic Chase	300	5/24/2018	S1	25-30	3, 4, 5, 6	Anaerobic Chase	11:13	12:37	1:24	84	300	NA	NA	NA	3.72	3.57	15	
IW-110A	Anaerobic Chase	300	5/24/2018	S1	25-30	3, 4, 5, 6	Anaerobic Chase	11:15	12:16	1:01	61	300	NA	NA	NA	5.82	4.92	15	
IW-109A	Flush	500	5/24/2018	S1	25-30	7	Flush	13:55	14:57	1:02	62	500	NA	NA	NA	7.55	8.06	5	
IW-110A	Flush	500	5/24/2018	S1	25-30	8	Flush	13:55	15:07	1:12	72	500	NA	NA	NA	6.2	6.94	15	
IW-109A	Flush	500	5/24/2018	S1	25-30	9	Flush	14:58	16:00	1:02	62	500	NA	NA	NA	7.46	8.06	5	
IW-110A	Flush	500	5/24/2018	S1	25-30	10	Flush	15:23	16:27	1:04	64	500	NA	NA	NA	7.7	7.81	20	
IW-109A	Flush	500	5/24/2018	S1	25-30	11	Flush	16:01	17:11	1:10	70	500	NA	NA	NA	7.54	7.14	5	
IW-110A	Flush	500	5/24/2018	S1	25-30	13	Flush	16:37	17:47	1:10	70	500	NA	NA	NA	7	7.14	20	
IW-109A	Flush	500	5/25/2018	S1	25-30	12	Flush	7:39	8:54	1:15	75	500	NA	NA	NA	10.56	6.67	30	Lowering flow
IW-110A	Flush	500	5/25/2018	S1	25-30	15	Flush	7:39	8:43	1:04	64	500	NA	NA	NA	7.21	7.81	20	
IW-110A	Flush	500	5/25/2018	S1	25-30	16	Flush	8:51	10:11	1:20	80	500	NA	NA	NA	7.46	6.25	20	
IW-109A	Flush	500	5/25/2018	S1	25-30	14	Flush	8:54	10:22	1:28	88	500	NA	NA	NA	5.98	5.68	15	
IW-110A	Flush	500	5/25/2018	S1	25-30	18	Flush	10:17	11:45	1:28	88	500	NA	NA	NA	5.58	5.68	20	
IW-109A	Flush	500	5/25/2018	S1	25-30	17	Flush	10:22	11:35	1:13	73	500	NA	NA	NA	6.97	6.85	15	
IW-109A	Flush	500	5/25/2018	S1	25-30	19	Flush	11:35	12:50	1:15	75	500	NA	NA	NA	7.02	6.67	15	
IW-110A	Flush	500	5/25/2018	S1	25-30	20	Flush	11:55	13:01	1:06	66	500	NA	NA	NA	6.66	7.58	20	
IW-109A	Flush	500	5/25/2018	S1	25-30	21	Flush	12:50	13:55	1:05	65	500	NA	NA	NA	6.78	7.69	15	
IW-110A	Flush	500	5/25/2018	S1	25-30	23	Flush	13:05	14:10	1:05	65	500	NA	NA	NA	6.79	7.69	20	
IW-109A	Flush	500	5/25/2018	S1	25-30	22	Flush	13:55	15:00	1:05	65	500	NA	NA	NA	7.02	7.69	15	
IW-110A	Flush	500	5/25/2018	S1	25-30	24	Flush	14:14	15:20	1:06	66	500	NA	NA	NA	7.86	7.58	20	
IW-109A	Flush	500	5/29/2018	S1	25-30	25	Flush	10:10	11:10	1:00	60	500	NA	NA	NA	8.06	8.33	0	
IW-110A	Flush	500	5/29/2018	S1	25-30	26	Flush	10:16	11:25	1:09	69	500	NA	NA	NA	7.08	7.25	0	
IW-109A	Flush	500	5/29/2018	S1	25-30	27	Flush	11:25	12:10	0:45	45	500	NA	NA	NA	8.12	11.11	0	
IW-110A	Flush	500	5/29/2018	S1	25-30	28	Flush	11:10	12:25	1:15	75	500	NA	NA	NA	7.06	6.67	0	
IW-109A	Flush	500	5/29/2018	S1	25-30	29	Flush	12:10	13:10	1:00	60	500	NA	NA	NA	7.06	8.33	0	
IW-110A	Flush	500	5/29/2018	S1	25-30	30	Flush	12:25	13:30	1:05	65	500	NA	NA	NA	7.06	7.69	0	
IW-109A	Flush	500	5/29/2018	S1	25-30	31	Flush	13:10	14:00	0:50	50	500	NA	NA	NA	7.06	10.00	0	
IW-110A	Flush	500	5/29/2018	S1	25-30	32	Flush	13:20	14:30	1:10	70	500	NA	NA	NA	7.06	7.14	0	
IW-109A	Flush	500	5/29/2018	S1	25-30	33	Flush	14:00	14:55	0:55	55	500	NA	NA	NA	7.06	9.09	0	
IW-110A	Flush	500	5/29/2018	S1	25-30	34	Flush	14:30	15:25	0:55	55	500	NA	NA	NA	7.06	9.09	0	
IW-109A	Flush	500	5/29/2018	S1	25-30	35	Flush	14:55	16:00	1:05	65	500	NA	NA	NA	7.06	7.69	0	
IW-110A	Flush	500	5/29/2018	S1	25-30	36	Flush	15:25	16:20	0:55	55	500	NA	NA	NA	7.06	9.09	0	
IW-109A	Flush	500	5/29/2018	S1	25-30	37	Flush	16:00	17:00	1:00	60	500	NA	NA	NA	7.06	8.33	0	
IW-110A	Flush	500	5/29/2018	S1	25-30	38	Flush	16:20	17:17	0:57	57	500	NA	NA	NA	7.06	8.77	0	
IW-109A	Flush	500	5/30/2018	S1	25-30	39	Flush	8:15	9:15	1:00	60	500	NA	NA	NA	8.64	8.33	0	

Appendix E
EISB Injection Tracking Sheet
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Injection Point Name	Amendment Name	Differential Volume (gal)*	Date	Injection Zone	Screen Interval (ft bgs)	Injection Batch Number	Amendment Name	Start Time	Stop Time	Injection Duration (h:mm)	Injection Duration (min)	Differential Volume (gal)*	Dilution Ratio	Undiluted Amendment Volume (gal)	Dilution Water Volume (gal)	Injection Rate (gpm)	Injection Rate (calculted)	Injection Pressure (psi)	Notes
IW-110A	Flush	500	5/30/2018	S1	25-30	40	Flush	8:15	9:15	1:00	60	500	NA	NA	NA	8.86	8.33	0	
IW-109A	Flush	500	5/30/2018	S1	25-30	41	Flush	9:15	10:10	0:55	55	500	NA	NA	NA	NM	9.09	0	
IW-110A	Flush	500	5/30/2018	S1	25-30	42	Flush	9:15	10:05	0:50	50	500	NA	NA	NA	NM	10.00	0	
IW-109A	Flush	500	5/30/2018	S1	25-30	43	Flush	10:10	11:07	0:57	57	500	NA	NA	NA	NM	8.77	NM	
IW-110A	Flush	500	5/30/2018	S1	25-30	44	Flush	10:05	11:07	1:02	62	500	NA	NA	NA	NM	8.06	NM	
IW-109A	Flush	500	5/30/2018	S1	25-30	45	Flush	11:07	12:05	0:58	58	500	NA	NA	NA	NM	8.62	NM	
IW-110A	Flush	500	5/30/2018	S1	25-30	46	Flush	11:07	12:05	0:58	58	500	NA	NA	NA	NM	8.62	NM	
IW-109A	Flush	500	5/30/2018	S1	25-30	47	Flush	12:05	13:05	1:00	60	500	NA	NA	NA	NM	8.33	NM	
IW-110A	Flush	500	5/30/2018	S1	25-30	48	Flush	12:05	13:05	1:00	60	500	NA	NA	NA	NM	8.33	NM	
IW-109A	Flush	500	5/30/2018	S1	25-30	49	Flush	13:05	14:25	1:20	80	500	NA	NA	NA	8.29	6.25	0	
IW-110A	Flush	500	5/30/2018	S1	25-30	50	Flush	13:05	14:25	1:20	80	500	NA	NA	NA	8.21	6.25	0	
IW-109A	Flush	500	5/30/2018	S1	25-30	51	Flush	14:25	15:15	0:50	50	500	NA	NA	NA	NM	10.00	NM	
IW-110A	Flush	500	5/30/2018	S1	25-30	52	Flush	14:25	15:15	0:50	50	500	NA	NA	NA	NM	10.00	NM	
IW-109A	Flush	500	5/30/2018	S1	25-30	53	Flush	15:15	16:10	0:55	55	500	NA	NA	NA	9.09	9.09	NM	
IW-110A	Flush	500	5/30/2018	S1	25-30	54	Flush	15:15	16:10	0:55	55	500	NA	NA	NA	9.11	9.09	NM	
IW-109A	Flush	500	5/30/2018	S1	25-30	55	Flush	16:10	17:05	0:55	55	500	NA	NA	NA	NM	9.09	NM	
IW-110A	Flush	500	5/30/2018	S1	25-30	56	Flush	16:10	17:05	0:55	55	500	NA	NA	NA	NM	9.09	NM	
IW-109A	Flush	500	5/30/2018	S1	25-30	57	Flush	17:05	18:00	0:55	55	500	NA	NA	NA	NM	9.09	NM	
IW-110A	Flush	500	5/30/2018	S1	25-30	58	Flush	17:05	18:00	0:55	55	500	NA	NA	NA	NM	9.09	NM	
IW-109A	Flush	360	5/30/2018	S1	25-30	59	Flush	18:00	18:30	0:30	30	360	NA	NA	NA	NM	12.00	NM	
IW-110A	Flush	360	5/30/2018	S1	25-30	60	Flush	18:00	18:30	0:30	30	360	NA	NA	NA	NM	12.00	NM	
ART-75	ABC	500	5/31/2018	S1	4-29	61	ABC	15:05	19:15	4:10	250	500	1:2.6	137	363	2.12	2.00	0	
ART-76	ABC	500	5/31/2018	S1	4-29	62	ABC	15:05	19:15	4:10	250	500	1:2.6	137	363	1.97	2.00	0	
IW-194B	ABC	160	5/31/2018	S2	30-45	63	ABC	15:00	16:20	1:20	80	160	1:3	40	120	2.27	2.00	0	
MW-346B	ABC	160	5/31/2018	S2	35-45	63	ABC	15:00	16:20	1:20	80	160	1:3	40	120	2.29	2.00	0	
IW-194B	Anaerobic Chase	135	5/31/2018	S2	30-45	64	Anaerobic Chase	16:20	17:15	0:55	55	135	NA	NA	NA	2	2.45	0	
MW-346B	Anaerobic Chase	135	5/31/2018	S2	35-45	64	Anaerobic Chase	16:20	17:15	0:55	55	135	NA	NA	NA	2	2.45	0	
IW-194B	DHC	1.6	5/31/2018	S2	30-45	NA	DHC	17:25	17:25	0:00	0	1.6	NA	NA	NA	NM	#DIV/0!	NM	
MW-346B	DHC	1.6	5/31/2018	S2	35-45	NA	DHC	17:30	17:30	0:00	0	1.6	NA	NA	NA	NM	#DIV/0!	NM	
IW-194B	Anaerobic Chase	135	5/31/2018	S2	30-45	64	Anaerobic Chase	17:35	18:30	0:55	55	135	NA	NA	NA	2	2.45	0	
MW-346B	Anaerobic Chase	135	5/31/2018	S2	35-45	64	Anaerobic Chase	17:35	18:30	0:55	55	135	NA	NA	NA	2	2.45	0	
ART-75	Anaerobic Chase	150	6/1/2018	S1	4-29	65	Anaerobic Chase	8:35	9:40	1:05	65	150	NA	NA	NA	2.2	2.31	0	
ART-76	Anaerobic Chase	150	6/1/2018	S1	4-29	65	Anaerobic Chase	8:35	9:40	1:05	65	150	NA	NA	NA	2.2	2.31	0	
IW-194B	Flush	250	6/1/2018	S2	30-45	66	Flush	8:45	9:20	0:35	35	250	NA	NA	NA	7.3	7.14	0	
MW-346B	Flush	250	6/1/2018	S2	35-45	66	Flush	8:45	9:20	0:35	35	250	NA	NA	NA	6.7	7.14	0	
IW-194B	Flush	250	6/1/2018	S2	30-45	67	Flush	9:20	9:55	0:35	35	250	NA	NA	NA	NM	7.14	0	
MW-346B	Flush	250	6/1/2018	S2	35-45	67	Flush	9:20	9:55	0:35	35	250	NA	NA	NA	NM	7.14	0	
ART-75	Anaerobic Chase	150	6/1/2018	S1	4-29	68	Anaerobic Chase	9:40	10:40	1:00	60	150	NA	NA	NA	NM	2.50	0	
ART-76	Anaerobic Chase	150	6/1/2018	S1	4-29	68	Anaerobic Chase	9:40	10:40	1:00	60	150	NA	NA	NA	NM	2.50	0	
ART-75	DHC	3.7	6/1/2018	S1	4-29	NA	DHC	10:45	10:47	0:02	2	3.7	NA	NA	NA	NM	1.85	NM	
ART-76	DHC	3.8	6/1/2018	S1	4-29	NA	DHC	10:47	10:49	0:02	2	3.8	NA	NA	NA	NM	1.90	NM	

Appendix E
EISB Injection Tracking Sheet
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Injection Point Name	Amendment Name	Differential Volume (gal)*	Date	Injection Zone	Screen Interval (ft bgs)	Injection Batch Number	Amendment Name	Start Time	Stop Time	Injection Duration (h:mm)	Injection Duration (min)	Differential Volume (gal)*	Dilution Ratio	Undiluted Amendment Volume (gal)	Dilution Water Volume (gal)	Injection Rate (gpm)	Injection Rate (calculted)	Injection Pressure (psi)	Notes
IW-194B	Flush	250	6/1/2018	S2	30-45	69	Flush	9:55	10:30	0:35	35	250	NA	NA	NA	6.8	7.14	0	
MW-346B	Flush	250	6/1/2018	S2	35-45	69	Flush	9:55	10:30	0:35	35	250	NA	NA	NA	7.2	7.14	0	
IW-194B	Flush	250	6/1/2018	S2	30-45	70	Flush	10:30	11:05	0:35	35	250	NA	NA	NA	2.2	7.14	0	
MW-346B	Flush	250	6/1/2018	S2	35-45	70	Flush	10:30	11:05	0:35	35	250	NA	NA	NA	2.1	7.14	0	
ART-75	Anaerobic Chase	150	6/1/2018	S1	4-29	71	Anaerobic Chase	10:50	11:45	0:55	55	150	NA	NA	NA	6.9	2.73	0	
ART-76	Anaerobic Chase	150	6/1/2018	S1	4-29	71	Anaerobic Chase	10:50	11:45	0:55	55	150	NA	NA	NA	7.1	2.73	0	
IW-194B	Flush	250	6/1/2018	S2	30-45	72	Flush	11:05	11:40	0:35	35	250	NA	NA	NA	7	7.14	0	
MW-346B	Flush	250	6/1/2018	S2	35-45	72	Flush	11:05	11:40	0:35	35	250	NA	NA	NA	6.8	7.14	0	
IW-194B	Flush	250	6/1/2018	S1	4-29	73	Flush	11:10	12:15	1:05	65	250	NA	NA	NA	2.1	3.85	0	
MW-346B	Flush	250	6/1/2018	S1	4-29	73	Flush	11:10	12:15	1:05	65	250	NA	NA	NA	2.1	3.85	0	
ART-75	Anaerobic Chase	150	6/1/2018	S1	4-29	74	Anaerobic Chase	11:45	12:45	1:00	60	150	NA	NA	NA	7	2.50	0	
ART-76	Anaerobic Chase	150	6/1/2018	S1	4-29	74	Anaerobic Chase	11:45	12:45	1:00	60	150	NA	NA	NA	7	2.50	0	
IW-194B	Flush	250	6/1/2018	S2	30-45	75	Flush	12:15	12:50	0:35	35	250	NA	NA	NA	2	7.14	0	
MW-346B	Flush	250	6/1/2018	S2	35-45	75	Flush	12:15	12:50	0:35	35	250	NA	NA	NA	1.8	7.14	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	76	Flush	8:28	9:00	0:32	32	250	NA	NA	NA	7.27	7.81	0	
MW-346B	Flush	250	6/4/2018	S2	35-45	76	Flush	8:28	9:00	0:32	32	250	NA	NA	NA	7.25	7.81	0	
ART-75	Flush	250	6/4/2018	S1	4-29	77	Flush	8:35	9:10	0:35	35	250	NA	NA	NA	7	7.14	0	
ART-76	Flush	250	6/4/2018	S1	4-29	77	Flush	8:35	9:10	0:35	35	250	NA	NA	NA	7	7.14	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	78	Flush	9:00	9:45	0:45	45	250	NA	NA	NA	6.5	5.56	0	
MW-346B	Flush	250	6/4/2018	S2	35-45	78	Flush	9:00	9:45	0:45	45	250	NA	NA	NA	6.5	5.56	0	
ART-75	Flush	250	6/4/2018	S1	4-29	79	Flush	9:10	11:00	1:50	110	250	NA	NA	NA	7	2.27	0	
ART-76	Flush	250	6/4/2018	S1	4-29	79	Flush	9:10	11:00	1:50	110	250	NA	NA	NA	7	2.27	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	80	Flush	9:20	9:50	0:30	30	250	NA	NA	NA	6.5	8.33	0	
MW-346B	Flush	250	6/4/2018	S2	35-45	80	Flush	9:20	9:50	0:30	30	250	NA	NA	NA	6.5	8.33	0	
ART-76	Flush	500	6/4/2018	S1	4-29	81	Flush	10:01	11:05	1:04	64	500	NA	NA	NA	6.5	7.81	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	82	Flush	10:10	10:40	0:30	30	250	NA	NA	NA	6.5	8.33	0	
MW-346B	Flush	250	6/4/2018	S2	35-45	82	Flush	10:10	10:40	0:30	30	250	NA	NA	NA	6.5	8.33	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	83	Flush	10:40	11:10	0:30	30	250	NA	NA	NA	7.5	8.33	0	
MW-346B	Flush	250	6/4/2018	S2	35-45	83	Flush	10:40	11:10	0:30	30	250	NA	NA	NA	7.5	8.33	0	
ART-75	Flush	10	6/4/2018	S1	4-29	84	Flush	11:05	11:07	0:02	2	10	NA	NA	NA	4.3	5.00	0	
ART-76	Flush	500	6/4/2018	S1	4-29	84	Flush	11:05	11:58	0:53	53	500	NA	NA	NA	4.5	9.43	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	85	Flush	11:10	11:40	0:30	30	250	NA	NA	NA	6.5	8.33	0	
MW-346B	Flush	250	6/4/2018	S2	30-45	85	Flush	11:10	11:40	0:30	30	250	NA	NA	NA	6.5	8.33	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	86	Flush	11:40	12:00	0:20	20	250	NA	NA	NA	7.5	12.50	0	
MW-346B	Flush	250	6/4/2018	S2	35-45	86	Flush	11:40	12:00	0:20	20	250	NA	NA	NA	7.5	12.50	0	
ART-76	Flush	500	6/4/2018	S1	4-29	87	Flush	11:59	12:45	0:46	46	500	NA	NA	NA	6.3	10.87	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	88	Flush	12:00	12:45	0:45	45	250	NA	NA	NA	6.5	5.56	0	
MW-346B	Flush	250	6/4/2018	S2	35-45	88	Flush	12:00	12:45	0:45	45	250	NA	NA	NA	6.5	5.56	0	
IW-194B	Flush	250	6/4/2018	S2	30-45	89	Flush	12:48	13:20	0:32	32	250	NA	NA	NA	7.2	7.81	0	
MW-346B	Flush	250	6/4/2018	S2	35-45	89	Flush	12:48	13:20	0:32	32	250	NA	NA	NA	6.9	7.81	0	
ART-76	Flush	550	6/4/2018	S1	4-29	90	Flush	12:49	13:50	1:01	61	550	NA	NA	NA	8.5	9.02	0	
ART-75	Flush	100	6/4/2018	S1	4-29	91	Flush	13:25	14:22	0:57	57	100	NA	NA	NA	2.2	1.75	0	Daylighting. 600 gal flush so far

Appendix E
EISB Injection Tracking Sheet
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Injection Point Name	Amendment Name	Differential Volume (gal)*	Date	Injection Zone	Screen Interval (ft bgs)	Injection Batch Number	Amendment Name	Start Time	Stop Time	Injection Duration (h:mm)	Injection Duration (min)	Differential Volume (gal)*	Dilution Ratio	Undiluted Amendment Volume (gal)	Dilution Water Volume (gal)	Injection Rate (gpm)	Injection Rate (calculted)	Injection Pressure (psi)	Notes
ART-76	Flush	500	6/4/2018	S1	4-29	92	Flush	14:00	14:45	0:45	45	500	NA	NA	NA	7.5	11.11	0	
ART-76	Flush	500	6/4/2018	S1	4-29	93	Flush	14:45	15:25	0:40	40	500	NA	NA	NA	8.5	12.50	0	
ART-76	Flush	500	6/4/2018	S1	4-29	94	Flush	15:25	16:13	0:48	48	500	NA	NA	NA	8.25	10.42	0	
ART-76	Flush	500	6/4/2018	S1	4-29	95	Flush	16:15	17:00	0:45	45	500	NA	NA	NA	8.5	11.11	0	
ART-76	Flush	500	6/4/2018	S1	4-29	96	Flush	17:00	17:55	0:55	55	500	NA	NA	NA	8.55	9.09	0	
ART-76	Flush	500	6/4/2018	S1	4-29	97	Flush	17:56	NM	NM	NM	500	NA	NA	NA	NM	NM	0	
ART-76	Flush	500	6/5/2018	S1	4-29	98	Flush	7:45	8:40	0:55	55	500	NA	NA	NA	8.5	9.09	0	
ART-75	Flush	100	6/5/2018	S1	4-29	91	Flush	7:45	8:35	0:50	50	100	NA	NA	NA	2	2.00	0	
IW-105A	Flush	300	6/5/2018	S1	25-30	91	Flush	8:35	10:35	2:00	120	300	NA	NA	NA	3	2.50	50	
ART-76	Flush	500	6/5/2018	S1	4-29	99	Flush	8:42	9:20	0:38	38	500	NA	NA	NA	8	13.16	0	
ART-76	Flush	500	6/5/2018	S1	4-29	100	Flush	9:20	10:25	1:05	65	500	NA	NA	NA	8	7.69	0	
ART-76	Flush	500	6/5/2018	S1	4-29	101	Flush	10:30	11:18	0:48	48	500	NA	NA	NA	8	10.42	0	
IW-105A	Flush	500	6/5/2018	S1	25-30	102	Flush	10:40	11:10	0:30	30	500	NA	NA	NA	3	16.67	0	
ART-76	Flush	500	6/5/2018	S1	4-29	103	Flush	11:20	12:05	0:45	45	500	NA	NA	NA	8	11.11	0	
ART-76	Flush	500	6/5/2018	S1	4-29	104	Flush	12:05	12:50	0:45	45	500	NA	NA	NA	8.5	11.11	0	
IW-105A	Flush	500	6/5/2018	S1	25-30	105	Flush	12:35	14:15	1:40	100	500	NA	NA	NA	4	5.00	0	
ART-76	Flush	500	6/5/2018	S1	4-29	106	Flush	12:50	13:40	0:50	50	500	NA	NA	NA	8.5	10.00	0	
ART-76	Flush	500	6/5/2018	S1	4-29	107	Flush	13:41	14:28	0:47	47	500	NA	NA	NA	8.5	10.64	0	
IW-105A	Flush	500	6/5/2018	S1	25-30	108	Flush	14:17	16:00	1:43	103	500	NA	NA	NA	4	4.85	0	
ART-76	Flush	500	6/5/2018	S1	4-29	109	Flush	14:29	15:20	0:51	51	500	NA	NA	NA	7.5	9.80	0	
ART-76	Flush	500	6/5/2018	S1	4-29	110	Flush	15:20	16:10	0:50	50	500	NA	NA	NA	8	10.00	0	
IW-105A	Flush	500	6/5/2018	S1	25-30	111	Flush	16:01	18:10	2:09	129	500	NA	NA	NA	4	3.88	0	
ART-76	Flush	500	6/5/2018	S1	4-29	112	Flush	16:10	17:00	0:50	50	500	NA	NA	NA	8	10.00	0	
ART-76	Flush	500	6/5/2018	S1	4-29	113	Flush	17:01	18:00	0:59	59	500	NA	NA	NA	8	8.47	0	
IW-105A	Flush	200	6/5/2018	S1	25-30	114	Flush	18:00	18:23	0:23	23	200	NA	NA	NA	4	8.70	0	
ART-76	Flush	250	6/5/2018	S1	4-29	115	Flush	18:00	18:23	0:23	23	250	NA	NA	NA	8	10.87	0	
IW-110A	Flush	300	6/6/2018	S1	25-30	114	Flush	8:05	9:20	1:15	75	300	NA	NA	NA	3	4.00	0	
ART-76	Flush	250	6/6/2018	S1	4-29	115	Flush	8:05	8:10	0:05	5	250	NA	NA	NA	8	50.00	0	
ART-76	Flush	500	6/6/2018	S1	4-29	116	Flush	8:10	8:55	0:45	45	500	NA	NA	NA	8	11.11	0	
ART-76	Flush	500	6/6/2018	S1	4-29	117	Flush	8:55	9:40	0:45	45	500	NA	NA	NA	8	11.11	0	
IW-110A	Flush	500	6/6/2018	S1	25-30	118	Flush	9:20	11:10	1:50	110	500	NA	NA	NA	3	4.55	0	
ART-76	Flush	360	6/6/2018	S1	4-29	119	Flush	9:41	10:27	0:46	46	360	NA	NA	NA	8	7.83	0	
IW-110A	Flush	500	6/6/2018	S1	25-30	120	Flush	11:15	12:50	1:35	95	500	NA	NA	NA	3.5	5.26	0	
IW-110A	Flush	500	6/6/2018	S1	25-30	121	Flush	12:52	14:46	1:54	114	500	NA	NA	NA	4	4.39	0	

Appendix E
EISB Injection Tracking Sheet
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

Injection Point Name	Amendment Name	Differential Volume (gal)*	Date	Injection Zone	Screen Interval (ft bgs)	Injection Batch Number	Amendment Name	Start Time	Stop Time	Injection Duration (h:mm)	Injection Duration (min)	Differential Volume (gal)*	Dilution Ratio	Undiluted Amendment Volume (gal)	Dilution Water Volume (gal)	Injection Rate (gpm)	Injection Rate (calculted)	Injection Pressure (psi)	Notes
IW-110A	Flush	500	6/6/2018	S1	25-30	122	Flush	14:47	16:40	1:53	113	500	NA	NA	NA	4	4.42	0	
IW-110A	Flush	500	6/6/2018	S1	25-30	123	Flush	16:41	18:30	1:49	109	500	NA	NA	NA	4	4.59	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	124	Flush	8:00	8:50	0:50	50	250	NA	NA	NA	4.2	5.00	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	124	Flush	8:00	8:50	0:50	50	250	NA	NA	NA	4.1	5.00	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	125	Flush	8:50	9:40	0:50	50	250	NA	NA	NA	4.2	5.00	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	125	Flush	8:50	9:40	0:50	50	250	NA	NA	NA	4.2	5.00	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	126	Flush	9:40	10:30	0:50	50	250	NA	NA	NA	4	5.00	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	126	Flush	9:40	10:30	0:50	50	250	NA	NA	NA	4	5.00	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	127	Flush	10:30	11:20	0:50	50	250	NA	NA	NA	4	5.00	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	127	Flush	10:30	11:20	0:50	50	250	NA	NA	NA	4	5.00	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	128	Flush	11:20	12:36	1:16	76	250	NA	NA	NA	3.9	3.29	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	128	Flush	11:20	12:36	1:16	76	250	NA	NA	NA	3.9	3.29	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	129	Flush	12:36	13:30	0:54	54	250	NA	NA	NA	4	4.63	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	129	Flush	12:36	13:30	0:54	54	250	NA	NA	NA	4	4.63	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	130	Flush	13:30	14:20	0:50	50	250	NA	NA	NA	3.8	5.00	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	130	Flush	13:30	14:20	0:50	50	250	NA	NA	NA	3.8	5.00	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	131	Flush	14:20	15:30	1:10	70	250	NA	NA	NA	4	3.57	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	131	Flush	14:20	15:30	1:10	70	250	NA	NA	NA	4	3.57	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	132	Flush	16:00	16:50	0:50	50	250	NA	NA	NA	3.8	5.00	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	132	Flush	16:00	16:50	0:50	50	250	NA	NA	NA	3.8	5.00	0	
IW-110A	Flush	250	6/7/2018	S1	25-30	133	Flush	16:50	17:50	1:00	60	250	NA	NA	NA	3.8	4.17	0	
IW-113A	Flush	250	6/7/2018	S1	25-30	133	Flush	16:50	17:50	1:00	60	250	NA	NA	NA	3.8	4.17	0	
IW-106A	Flush	250	6/8/2018	S1	25-30	134	Flush	8:19	9:10	0:51	51	250	NA	NA	NA	4	4.90	0	
MW-346B	Flush	250	6/8/2018	S2	35-45	134	Flush	8:19	9:10	0:51	51	250	NA	NA	NA	3.9	4.90	0	
IW-106A	Flush	250	6/8/2018	S1	25-30	135	Flush	9:10	10:00	0:50	50	250	NA	NA	NA	4	5.000	0	
MW-346B	Flush	250	6/8/2018	S2	35-45	135	Flush	9:10	10:00	0:50	50	250	NA	NA	NA	4	5.00	0	
IW-106A	Flush	250	6/8/2018	S1	25-30	136	Flush	11:15	12:05	0:50	50	250	NA	NA	NA	3.9	5.00	0	
MW-346B	Flush	250	6/8/2018	S2	35-45	136	Flush	11:15	12:05	0:50	50	250	NA	NA	NA	3.9	5.00	0	
IW-109A	Flush	250	6/11/2018	S1	25-30	137	Flush	9:00	9:43	0:43	43	250	NA	NA	NA	4	5.81	0	
MW-346B	Flush	250	6/11/2018	S2	35-45	137	Flush	9:00	9:43	0:43	43	250	NA	NA	NA	3.9	5.81	0	
IW-109A	Flush	250	6/11/2018	S1	25-30	138	Flush	9:55	10:37	0:42	42	250	NA	NA	NA	4	5.95	0	
MW-346B	Flush	250	6/11/2018	S2	35-45	138	Flush	9:55	10:37	0:42	42	250	NA	NA	NA	4	5.95	0	
IW-109A	Flush	250	6/11/2018	S1	25-30	139	Flush	10:37	11:25	0:48	48	250	NA	NA	NA	3.9	5.21	0	
MW-346B	Flush	250	6/11/2018	S2	35-45	139	Flush	10:37	11:25	0:48	48	250	NA	NA	NA	3.9	5.21	0	
IW-109A	Flush	250	6/11/2018	S1	25-30	140	Flush	11:35	12:15	0:40	40	250	NA	NA	NA	4.1	6.25	0	
IW-106A	Flush	250	6/11/2018	S1	25-30	140	Flush	11:35	12:15	0:40	40	250	NA	NA	NA	4	6.25	0	
IW-109A	Flush	250	6/11/2018	S1	25-30	141	Flush	12:15	13:25	1:10	70	250	NA	NA	NA	3.9	3.57	0	Clogging at end of day
IW-106A	Flush	250	6/11/2018	S1	25-30	141	Flush	12:15	13:25	1:10	70	250	NA	NA	NA	3.9	3.57	0	Clogging at end of day
IW-110A	Flush	250	6/11/2018	S1	25-30	144	Flush	16:00	16:45	0:45	45	500	NA	NA	NA	7	11.11	0	

APPENDIX F

EISB GEOCHEMICAL MEASUREMENT TRACKING SHEET

Appendix F
EISB Geochemical Measurement Tracking Sheet
Hoffmann-La Roche - Nutley, New Jersey
Investigative Area (IA) - 6

Date	Time	Well ID/ Sample Location	Screen Interval (ft)	Probe Depth (ft)	VOC	LEL	DTW (ft)	Temp (ºC)	pH (su)	D.O. (mg/L)	ORP (mv)	Sp. Cond. (mS/cm)	Turbidity (NTU)	Water Conditions/Comments
5/18/2018	8:55	ART-75	4-29	16.5	0	0	11.28	17.03	6.32	1.41	202.8	1.242	50.7	
5/18/2018	10:06	ART-76	4-29	16.5	0	0	11.8	17.4	5.86	2.99	234.9	2.782	53.1	
5/18/2018	10:30	ART-77	29-44	36.5	0	0	11.94	17.99	6.62	6.82	212.9	3.417	16.9	
5/18/2018	9:00	ART-78	4-29	16.5	0	0	11.89	17.27	6.44	0.31	91.5	2.173	12.6	
5/18/2018	9:17	IW-109A	25-30	27.5	0	0	NA	17.91	6.82	4.69	177.6	3.017	65.9	
5/21/2018	12:30	BIOS-1B	60-70	70	0	0	12.9	20.56	6.76	0.21	75.3	3.652	20.2	
5/21/2018	11:51	IW-113A	25-30	27.5	0	0	NA	21.62	6.19	3.82	238.8	2.516	14	
5/21/2018	10:37	IW-194B	30-45	37.5	0	0	15.05	21.13	6.22	1.04	225.6	3.372	50.6	
5/21/2018	11:30	IW-318A	5-15	10	0	0	7.98	17.64	6.47	1.16	106.3	1.947	17.7	
5/21/2018	10:30	MW-318B	35-65	50	0	0	10.72	19.26	6.28	0.49	149.3	4.316	77.1	
5/21/2018	10:10	MW-340C	60-80	70	0	0	12.25	19.35	6.83	0.44	-4.5	4.361	9.24	
5/21/2018	12:10	MW-346A	5-16	10.5	0	0	10.21	24.11	6.26	1.74	164.3	3.591	1427	
5/21/2018	11:15	MW-346B	35-45	40	0	0	9.75	20.44	6.43	0.77	123.2	4.89	21.2	
5/21/2018	12:11	MW-350A	5-16	10.5	0	0	8.08	16.92	7.00	3.26	55.7	0.854	24.2	
5/21/2018	11:28	MW-350B	35-45	40	0.7	0	12.3	17.7	7.26	0.15	-102.7	3.159	6	
5/21/2018	10:38	MW-350C	60-80	70	0	0	11.02	17.61	6.82	0.29	-46	4.807	2.5	
5/22/2018	13:30	ART-77	29-44	36	NM	NM	14.21	18.96	6.39	6.89	124.7	4.1	9.53	
5/22/2018	13:30	ART-78	4-29	18	NM	NM	13.84	21.01	6.19	3.48	147.4	3.947	16.6	
5/22/2018	13:30	IW-113A	25-30	27	NM	NM	11.78	NM	NM	NM	NM	NM	NM	
5/23/2018	14:00	ART-77	29-44	36	0	0	14.4	19.81	6.47	0.48	173.6	3.89	28.2	
5/23/2018	16:40	ART-77	29-44	36	0	0	14.74	20.47	6.7	0.68	13.84	2.84	OR	
5/23/2018	14:00	ART-78	4-29	18	0	0	13.05	20.63	6.43	1.57	204.4	3.711	63.2	
5/23/2018	16:40	ART-78	4-29	18	0	0	13.82	18.9	6.53	0.45	166.4	2.715	113	
5/23/2018	14:00	IW-113A	25-30	27	NM	NM	NM	NM	NM	NM	NM	NM	NM	
5/23/2018	16:40	IW-113A	25-30	27	0	0	11.61	NM	NM	NM	NM	NM	NM	
5/24/2018	9:05	ART-77	29-44	36	0	0	14.18	19.69	6.51	3.85	130.4	3.169	OR	
5/24/2018	17:05	ART-77	29-44	36	0	0	8.40	24.16	6.40	5.29	160.7	0.603	535	
5/24/2018	9:05	ART-78	4-29	18	0	0	13.12	18.57	6.62	3.52	137.6	2.105	130	
5/24/2018	17:05	ART-78	4-29	18	0	0	8.32	23.28	6.5	4.94	163.1	0.545	82.8	
5/24/2018	17:05	IW-106A	25-30	27	0.1	0	4.80	22.35	6.14	6.47	252.2	4.049	115	
5/24/2018	9:05	IW-113A	25-30	27	NM	0	11.60	18.58	6.26	5.11	250.4	3.352	580	
5/24/2018	17:05	IW-113A	25-30	27	0	0	5.45	19.14	6.09	5.56	224.3	3.381	645	
5/25/2018	7:15	IW-113A	25-30	27	0.2	0	9.37	18.43	5.58	5.76	220.8	2.91	595	
5/25/2018	7:10	ART-77	29-44	36	0	0	11.80	20.15	6.08	8.83	149.1	1.015	540	
5/25/2018	7:10	ART-78	4-29	18	0	0	11.51	18.83	5.73	6.2	126.1	1.834	135	
5/25/2018	15:15	IW-113A	25-30	27	0	0	6.09	21.05	6.12	4.21	73.8	3.208	546	
5/25/2018	15:15	ART-77	29-44	36	0	0	9.20	25.55	6.44	3.34	-1.3	1.148	330	
5/25/2018	15:15	ART-78	4-29	18	0	0	9.09	25.69	6.02	3.48	-400.5	2.385	620	
5/25/2018	15:15	IW-106A	25-30	27	0	0	7.11	22.99	6.14	7.5	140.7	3.94	120	
5/29/2018	9:10	ART-77	29-44	36	NM	NM	14.20	20.76	5.55	6.28	130.6	3.16	1200	Over Range
5/29/2018	NA	ART-77	29-44	36	0	0	9.26	21.67	6.34	3.89	-10.8	1.232	1108	
5/29/2018	9:10	ART-78	4-29	18	NM	NM	13.84	21.18	5.84	6.18	118	1.845	1864	
5/29/2018	NA	ART-78	4-29	18	0	0	9.11	21.09	6.08	3.99	87.8	2.498	1560	
5/29/2018	NA	IW-106A	25-30	27	0.2	0	7.18	22.88	6.14	6.95	150.2	3.99	138	
5/29/2018	9:10	IW-108A	25-30	27	NM	NM	7.1	22.32	6.08	7.26	-23.2	3.83	142	
5/29/2018	9:10	IW-113A	25-30	27	NM	NM	11.77	20.12	6.3	7.24	220.2	3.22	1542	Over Range

Appendix F
EISB Geochemical Measurement Tracking Sheet
Hoffmann-La Roche - Nutley, New Jersey
Investigative Area (IA) - 6

Date	Time	Well ID/ Sample Location	Screen Interval (ft)	Probe Depth (ft)	VOC	LEL	DTW (ft)	Temp (ºC)	pH (su)	D.O. (mg/L)	ORP (mv)	Sp. Cond. (mS/cm)	Turbidity (NTU)	Water Conditions/Comments
5/29/2018	NA	IW-113A	25-30	27	0.1	0	6.02	22.08	6.15	4.84	113.7	3.118	1406	
5/30/2018	8:15	ART-77	29-44	36	0	0	11.78	20.87	5.83	4.71	-267.8	3.151	1256	Over Range
5/30/2018	18:00	ART-77	29-44	36	0	0	6.19	25.15	6.37	5.82	-188.6	4.213	OR	
5/30/2018	8:15	ART-78	4-29	18	0	0	11.49	21.15	6.09	6.89	-161.5	3.49	2423	Over Range
5/30/2018	18:00	ART-78	4-29	18	0	0	4.8	25.41	6.44	6.83	-166.3	3.417	OR	
5/30/2018	8:15	IW-106A	25-30	27	0.1	25	7.1	18.53	6.1	8.84	-179	3.936	125	
5/30/2018	18:00	IW-106A	25-30	27	0	0	1.71	20.01	6.54	6.33	-306.1	5.77	4041	Over Range
5/30/2018	8:15	IW-113A	25-30	27	0.1	0	9.35	19.02	6.34	7.48	-241.8	3.254	1737	Water level meter malfunction
5/30/2018	18:00	IW-113A	25-30	27	0	0	2.24	19.69	6.3	6.31	-232.7	3.398	2128	
5/31/2018	14:00	ART-75	4-29	16.5	501.1	7	12.3	18.3	6.08	1.42	37.9	1.623	36.9	
5/31/2018	15:05	ART-76	4-29	16.5	500.9	99	NA	18.81	5.76	0.09	-17.6	4.099	77	
5/31/2018	14:21	ART-77	29-44	36.5	0	0	12.49	19.79	6.44	1.49	-95.1	7.003	1022	
5/31/2018	15:00	ART-78	4-29	16.5	0	0	12.49	19.38	5.54	0.25	-35.7	3.583	155	
5/31/2018	17:30	IW-105A	25-30	27	NM	NM	7.5	19.93	6.31	6.18	-159.4	3.422	564	PID malfunction
5/31/2018	NA	IW-106A	25-30	27	0	22	7.12	20.22	6.23	6.89	-223.1	4.854	3568	Over Range
5/31/2018	14:00	IW-109A	25-30	27.5	0	0	NA	19.17	5.27	0.29	-35.7	4.777	1188	
5/31/2018	12:55	IW-110A	25-30	27.5	0	0	NA	19.52	5.19	0.43	0.43	4.686	1666	
5/31/2018	NA	IW-113A	25-30	27	0.1	0	9.41	19.82	6.28	6.77	-301.2	3.452	1882	
5/31/2018	17:30	IW-113A	25-30	27	NM	NM	8.32	20.45	6.32	6.84	-302.8	3.153	1788	
5/31/2018	12:55	IW-194B	35-45	37.5	7900	99	12.02	18.38	5.45	1.17	-2.9	3.857	1026	
5/31/2018	13:02	MW-346B	35-45	40	0	0	11.53	18.97	7.08	5.1	159.1	0.85	5.25	
5/31/2018	NA	ART-77	29-44	36.5	0	0	12.82	22.18	6.18	6.88	-153.2	3.489	OR	
5/31/2018	NA	ART-78	4-29	16.5	0	0	11.52	21.56	6.38	7.02	-186.3	4.985	OR	
5/31/2018	17:30	IW-109A	25-30	27.5	NM	NM	8.05	19.87	5.64	4.36	-154.1	4.682	1701	Over Range
5/31/2018	17:30	ART-77	29-44	36.5	0	0	11.62	21.37	5.55	6.31	-102.4	4.099	OR	
5/31/2018	17:30	ART-78	4-29	16.5	0	0	11.71	22.78	5.45	2.31	-246.9	3.457	OR	
6/1/2018	9:21	IW-105A	25-30	27	0	0	8.28	19.60	7.63	NM	66.8	3.410	200	
6/1/2018	9:33	IW-109A	25-30	27	18.5	OR	8.25	20.99	6.66	3.32	-45.5	5.758	NM	light grey
6/1/2018	10:15	IW-110A	25-30	27	0.1	OR	8.10	20.44	6.29	2.32	-61.4	5.606	OR	milky white
6/1/2018	10:25	IW-113A	25-30	27	0.5	45	8.20	20.18	5.91	2.23	-137.5	4.216	OR	milky white
6/1/2018	10:30	ART-77	29-44	36	0	0	13.2	22.29	6.19	5.01	-39.3	5.535	OR	milky white
6/1/2018	10:45	ART-78	04-29	18	0	0	13.2	21.98	6.44	0.42	-118.8	5.380	OR	milky white
6/1/2018	10:55	IW-106A	25-30	27	15.5	35	4.20	24.56	6.19	0.11	-237.8	5.338	OR	milky white
6/1/2018	12:25	IW-105A	25-30	27	0	0	2.55	24.58	5.98	2.96	-31.0	3.610	40	milky white
6/1/2018	12:40	IW-109A	25-30	27	16.5	OR	2.50	23.12	6.27	5.64	-52.4	5.118	OR	milky white
6/1/2018	13:05	IW-110A	25-30	27	0	OR	5.50	24.12	5.67	1.94	-50.4	4.693	OR	milky white
6/1/2018	13:20	IW-113A	25-30	27	0.2	40	6.05	21.22	6.12	3.68	-12.9	4.896	OR	milky white
6/1/2018	13:25	ART-77	29-44	36	0	0	9.50	19.16	5.77	0.55	-206.2	4.047	OR	milky white
6/1/2018	13:35	ART-78	04-29	18	0	0	9.28	19.84	6.01	0.37	-283.1	5.028	OR	milky white
6/1/2018	13:50	IW-106A	25-30	27	12.5	40	6.70	22.99	6.02	0.35	-131.9	5.146	OR	milky white

Appendix F
EISB Geochemical Measurement Tracking Sheet
Hoffmann-La Roche - Nutley, New Jersey
Investigative Area (IA) - 6

Date	Time	Well ID/ Sample Location	Screen Interval (ft)	Probe Depth (ft)	VOC	LEL	DTW (ft)	Temp (ºC)	pH (su)	D.O. (mg/L)	ORP (mv)	Sp. Cond. (mS/cm)	Turbidity (NTU)	Water Conditions/Comments
6/4/2018	7:55	IW-105A	25-30	27	0.5	2	8.20	11.55	5.82	0.10	10.3	3.171	150	milky white
6/4/2018	8:05	IW-106A	25-30	27	20.1	OR	8.80	12.27	6.07	0.57	-69.9	4.228	OR	
6/4/2018	8:20	IW-109A	25-30	27	0.2	OR	9.45	13.13	5.87	0.79	32.9	3.691	OR	
6/4/2018	8:30	IW-110A	25-30	27	0.2	OR	11.15	12.56	5.86	1.43	14.5	4.183	OR	
6/4/2018	8:40	IW-113A	25-30	27	0.5	30	11.45	12.87	5.76	0.40	-34.4	3.825	OR	
6/4/2018	8:50	ART-77	29-44	36	0	0	16.00	14.39	6.09	0.22	-139.8	5.086	OR	
6/4/2018	9:00	ART-78	04-29	18	0	0	14.40	14.55	5.75	0.44	-54.0	3.855	OR	
6/4/2018	17:30	IW-105A	25-30	27	0.2	0	7.55	12.25	5.75	0.12	12.3	3.210	OR	
6/4/2018	17:40	IW-106A	25-30	27	2.5	OR	7.67	12.27	5.77	0.22	-50.3	4.210	OR	milky white
6/4/2018	17:50	IW-109A	25-30	27	0.1	40	11.20	12.15	5.62	0.87	25.1	3.511	OR	milky white
6/4/2018	17:58	IW-110A	25-30	27	0.1	OR	11.25	14.45	5.65	1.05	20.7	4.311	OR	milky white
6/4/2018	18:05	IW-113A	25-30	27	0	15	11.40	13.32	5.54	0.50	-49.5	3.830	OR	milky white
6/4/2018	18:10	ART-77	29-44	36	0	0	14.45	13.29	6.10	0.17	-159.6	4.505	OR	milky white
6/4/2018	18:20	ART-78	04-29	18	0	0	14.43	13.15	5.85	0.41	-55.5	3.771	OR	milky white
6/5/2018	8:08	IW-105A	25-30	27	0.1	0	8.25	12.50	5.88	0.08	10.4	3.27	133	
6/5/2018	8:12	IW-106A	25-30	27	15.5	OR	9.05	12.35	6.11	0.50	-55.8	4.238	OR	
6/5/2018	8:20	IW-109A	25-30	27	2.2	OR	9.30	13.05	5.80	0.70	25.8	3.501	OR	
6/5/2018	8:30	IW-110A	25-30	27	3.1	OR	9.45	13.03	5.88	1.20	23.1	4.286	OR	
6/5/2018	8:35	IW-113A	25-30	27	0.1	20	9.42	13.13	5.79	1.10	-55.1	3.831	OR	
6/5/2018	8:40	ART-77	29-44	36	0.0	0	13.20	16.69	6.11	0.27	-129.9	4.506	OR	
6/5/2018	8:45	ART-78	04-29	18	0.0	0	13.30	16.66	5.79	0.30	-56.6	3.788	OR	
6/5/2018	8:08	IW-105A	25-30	27	NM	NM	NM	NM	NM	NM	NM	NM	NM	
6/5/2018	17:15	IW-106A	25-30	27	NM	NM	8.58	18.86	5.89	0.00	-55.5	4.281	OR	
6/5/2018	17:25	IW-109A	25-30	27	NM	NM	9.95	18.77	6.01	0.02	-95.5	3.818	OR	
6/5/2018	17:35	IW-110A	25-30	27	NM	NM	9.95	18.98	6.10	0.70	25.5	4.330	OR	
6/5/2018	17:50	IW-113A	25-30	27	NM	NM	13.10	19.92	5.31	1.73	-2.9	3.927	OR	
6/5/2018	18:15	ART-77	29-44	36	NM	NM	13.30	18.14	6.32	0.30	-150.5	4.696	OR	
6/5/2018	18:25	ART-78	04-29	18	NM	NM	13.35	18.77	6.11	0.31	-67.8	3.511	OR	
6/6/2018	8:25	IW-113A	25-30	27	1	10	6.40	14.21	NM	2.97	164.2	4.69	OR	milky white
6/6/2018	8:35	IW-105A	25-30	27	0	0	4.20	13.87	6.21	2.58	-135.9	5.924	OR	milky white
6/6/2018	8:49	IW-106A	25-30	27	12	OR	7.20	13.07	6.11	2.98	28.4	4.657	OR	
6/6/2018	9:00	IW-109A	25-30	27	0	OR	7.10	14.07	6.08	2.86	25.3	4.968	OR	
6/6/2018	9:05	ART-77	29-44	36	0	0	13.21	15.08	6.31	0.23	-50.8	5.333	OR	
6/6/2018	9:10	ART-78	4-29	18	0	0	10.10	12.36	6.10	0.31	-65.5	3.423	OR	
6/6/2018	12:30	IW-194B	35-45	37.5	0.2	25	7.10	19.14	6.32	0.31	-76.9	5.357	OR	milky white
6/6/2018	12:40	MW-346B	35-45	40	0.5	OR	10.05	17.02	5.99	0.56	-133.2	4.759	OR	milky white
6/6/2018	17:35	IW-105A	25-30	27	0	0	7.30	13.39	6.50	1.25	-149.5	4.730	OR	milky white
6/6/2018	17:45	IW-106A	25-30	27	12	OR	6.20	14.90	5.93	0.43	-62.1	3.517	OR	
6/6/2018	17:55	IW-109A	25-30	27	0	20	6.90	15.03	6.63	0.55	-74.9	5.095	OR	
6/6/2018	18:05	IW-194B	35-45	37.5	0	10	6.70	15.38	6.14	0.33	-183.8	3.971	OR	
6/6/2018	18:15	MW-346B	35-45	40	0	20	9.30	16.78	5.86	0.23	-298.0	3.597	OR	
6/6/2018	18:25	IW-113A	25-30	27	0.2	0	6.20	14.95	5.91	0.34	-46.1	3.047	OR	milky white
6/6/2018	18:30	ART-78	4-29	18	0	0	11.75	12.26	6.30	0.29	-127.9	3.430	OR	
6/6/2018	18:35	ART-77	29-44	36	0	0	13.70	18.86	6.70	0.52	-125.7	6.802	OR	milky white

Appendix F
EISB Geochemical Measurement Tracking Sheet
Hoffmann-La Roche - Nutley, New Jersey
Investigative Area (IA) - 6

Date	Time	Well ID/ Sample Location	Screen Interval (ft)	Probe Depth (ft)	VOC	LEL	DTW (ft)	Temp (ºC)	pH (su)	D.O. (mg/L)	ORP (mv)	Sp. Cond. (mS/cm)	Turbidity (NTU)	Water Conditions/Comments
6/7/2018	8:10	IW-105A	25-30	27	NM	NM	7.71	14.39	6.51	0.75	-151.2	4.763	OR	milky white
6/7/2018	8:15	IW-109A	25-30	27	NM	NM	NM	14.39	6.31	1.28	183.4	4.840	OR	milky white
6/7/2018	8:20	IW-106A	25-30	27	NM	NM	8.81	14.15	6.18	0.79	47.0	4.560	OR	milky white
6/7/2018	8:35	IW-194B	35-45	37.5	NM	NM	NM	14.32	6.16	0.68	-241.2	4.540	OR	milky white
6/7/2018	8:45	MW-346B	35-45	40	NM	NM	NM	14.36	5.98	0.44	-282.2	4.022	OR	milky white
6/7/2018	8:50	ART-77	29-44	36	NM	NM	NM	14.33	6.34	0.93	-86.7	6.017	OR	milky white
6/7/2018	8:57	ART-78	4-29	18	NM	NM	NM	15.67	7.03	2.19	-65.9	1.220	OR	milky white
6/7/2018	16:55	MW-346B	35-45	37.5	NM	NM	7.21	22.79	6.12	13.09	-367.4	6.028	OR	milky white
6/7/2018	17:05	IW-194B	25-30	27	NM	NM	7.30	22.09	6.15	0.33	-85.4	7.541	OR	milky white
6/7/2018	17:20	IW-109A	25-30	27	2.0	OR	10.80	22.97	6.86	1.96	-9.70	1.220	OR	milky white
6/7/2018	17:30	IW-106A	25-30	27	0	0	8.31	21.57	6.04	1.51	-41.3	5.997	OR	milky white
6/7/2018	17:35	IW-105A	25-30	27	0	0	10.15	22.25	6.35	0.5	-30.5	7.583	OR	milky white
6/7/2018	17:40	ART-77	29-44	36	0	0	11.23	15.56	6.56	0.83	-89.9	5.969	OR	milky white
6/7/2018	17:45	ART-78	4-29	18	0	0	13.10	15.45	7.1	0.96	-69.6	3.771	OR	milky white
6/8/2018	8:30	IW-105A	25-30	27	0	0	7.91	13.56	6.50	0.30	-31.9	7.700	OR	milky white
6/8/2018	8:40	IW109A	25-30	27	1.8	40	6.95	14.13	6.68	0.69	-40.6	1.230	OR	milky white
6/8/2018	8:50	IW110A	25-30	27	0.2	0	6.70	13.20	7.20	0.12	-77.8	6.671	OR	milky white
6/8/2018	8:58	IW113A	25-30	27	0.1	0	6.90	13.21	7.01	0.50	-65.9	5.721	OR	milky white
6/8/2018	9:05	ART-77	29-44	36*	0	0	12.30	11.78	6.87	0.79	-122.5	6.056	OR	milky white
6/8/2018	9:10	ART-78	4-29	18*	0	0	12.50	11.81	7.05	0.90	-67.2	5.038	OR	milky white
6/8/2018	12:10	IW-105A	25-30	27	0	0	7.89	15.95	6.61	0.31	-31.1	6.901	OR	milky white
6/8/2018	12:20	IW-109A	25-30	27	1.2	21	7.16	15.96	6.81	0.51	-42.2	2.720	OR	milky white
6/8/2018	12:30	IW110A	25-30	27	0	0	7.10	16.12	7.25	0.05	-75.5	6.520	OR	
6/8/2018	12:45	IW113A	25-30	27	0	0	7.25	15.23	6.98	0.21	-69.9	5.610	OR	milky white
6/8/2018	12:50	ART-77	29-44	36*	0	0	11.30	12.27	6.79	0.57	-134.2	6.533	OR	milky white
6/8/2018	12:55	ART-78	4-29	18*	0	0	11.40	12.31	7.17	0.66	-75.6	4.742	OR	milky white
6/11/2018	15:00	IW-105A	25-30	27	NM	NM	8.95	20.58	7.42	2.20	-110.5	6.035	OR	milky white
6/11/2018	15:00	IW-109A	25-30	27	NM	NM	18.10	22.78	8.01	1.83	36.2	107.80	OR	
6/11/2018	15:00	IW110A	25-30	27	NM	NM	9.90	21.99	6.36	2.82	-45.4	5.219	235	
6/11/2018	15:00	IW113A	25-30	27	NM	NM	8.98	20.95	6.50	2.77	-35.2	6.522	213	
6/11/2018	15:00	ART-77	29-44	36*	0	0	13.05	20.34	7.41	1.11	-37.4	32.72	672	
6/11/2018	15:00	ART-78	4-29	18*	0	0	11.90	20.42	6.70	1.16	29.2	5.190	87.6	
6/11/2018	15:00	IW-106A	25-30	27	NM	NM	14.35	22.89	8.00	1.75	34.8	98.20	OR	
6/12/2018	8:20	IW-105A	25-30	27	0	0	9.08	17.66	7.35	7.62	-73.2	6.914	2775	Over Range
6/12/2018	8:20	IW-109A	25-30	27	2	18	10.39	19.66	7.99	4.26	105.0	109.2	OR	
6/12/2018	8:20	IW110A	25-30	27	0.2	0	10.05	18.24	7.70	7.62	52.9	15.72	100.5	
6/12/2018	8:20	IW113A	25-30	27	0	0	10.20	17.73	6.89	2.45	-30.1	6.986	456	
6/12/2018	8:20	ART-77	29-44	36*	0	0	13.70	17.60	7.52	3.17	50.1	21.17	643	Over Range
6/12/2018	8:20	ART-78	4-29	18*	0	0	11.98	17.31	7.67	0.93	-35.0	2.707	65.6	
6/12/2018	8:20	IW-106A	25-30	27	0	0	14.75	18.52	8.17	2.01	135.9	107.9	OR	

APPENDIX G

SYSTEM DATA LOGS

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	9/20/2017
Initials:	js
Personnel: (Automatically Fills Out)	Jason Stone

Billed Hours:		
System U/D/O Arrival	u	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	u	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	n	
Visual Emissions? ("Y"/"N"	n	

Light Grey areas are from Digital Readout on Control Panel

NOTES:

PID Calibration			
Serial Number:	095-523250	**Initial Reading**	
Model:	Rae-10 Multi Gas Meter	**Final Reading:**	

Did you check/clean air compressor cooler coils?	

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
	Hours	8479.35	8498.8	1.1	5425.75	0	5332.2	

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
0:00	0	7.3	7.3	21.6	21	17.2	17		26	27	24	25	23	24	39.5
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
0:00	35	0	1.5	41	0	1.5	39	0	3.5
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

header 5 0z0n3 0.8

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
0:00	36	0	4	14	0	4	165	NA	4	13	8	16
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
0:00	0	0	0	18	0	48	0	270	131	48	128	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
0:00	5	44	6	44	6	44	6	44	9	45	9	44
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
0:00	7	45	7	44	4	44	4	44	29	90	104	90	106
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	4.8			4.9			3.9	4.7	3.9	3.9	3.9	4.7	4.9	3.8	4.9
Hours	8398	5749	8456	8445	6077	6077	5940	6082	6077	6041	6071	6078	6085	6085	6082

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
0:00	72	1	32	10	35	1	na	25	31	0.9
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
0:00	2.1	8	2.2	9	0.01	3	1.5	8	0.01	6	1.3	18
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	0.3		37	0	1	off	off	off			0.35		12	0	1	0.23		0		0.35		0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	off	off	off			0.2		off	0	1	off	off				0.9		0		0.2		0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	1		8	0.09	1	1.15		12	0	1	1		2	0	1	1.1		22	0.005	1	0.2		0.15	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	0.8		7	0.02	1	0.75		4	0	1	0.25		18	0	1.3	0.75		0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
	0.5		23	0.01	1	0.13		11	0	1	0.5		0						
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	10/5/2017
Initials:	ps
Personnel: (Automatically Fills Out)	FALSE

Billed Hours:		
System U/D/O Arrival		(**U**p, **D**own, **O**ff)
System U/D/O Depart.		(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")		
Visual Emissions? ("Y"/"N"		

Light Grey areas are from Digital Readout on Control Panel

NOTES:

Biosparge off for sampling.

PID Calibration			
Serial Number:	095-523250	**Initial Reading**	
Model:	Rae-10 Multi Gas Meter	**Final Reading:**	

Did you check/clean air compressor cooler coils?	

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
1:15	**Hours**	8835	8855	1.1	5429	0.0667	5332	**see ia 2**

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
1:15															
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
1:15	44	0	0.75	62	0	0.55	44	0	1
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
1:15	0	0	0.4	27	0	1	177	NA	5	15	8	17
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
1:15	0	0	0	26	0	32	0	310	130	49	128	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
1:15	5	44	4	45	11	44	12	45	12	44	11	45
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
1:15	5	44	5	45	3	44	3	45	37	84	100	84	106
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	4.9	5.2	4.8	4.9	3.8	4.8	3.8	4.7	3.9	3.9	3.7	4.9	4.9	3.7	4.9
Hours	8751	6084	8787	8755	6413	6413	6296	6438	6432	6397	6426	6434	6438	6440	6438

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
1:15	93	3.3	29	93	30	3	2.2	3.6	35	0.0
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
1:15	3	8	3	8	2.6	8	2.6	9	1.9	10	1.9	10
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	0.4	0	29	0	120	0.3	0	broken	0	120	0.35	0	10	0	60	0.23	0	0		0.21	0	0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	0.25	0	31	0.01	120	0.15	0	10	0	120	0.2	0	18	0.005	120	0.6	0	0		0.16	0	0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	0.65	0	10	0	120	1.15	0	14	0	120	0.45	0	13	0	120	1.1	0	22	0.005	120	0.1	0	0d	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	0.4	0	8	0	60	0.45	0	4	0	60	0.35	0	18	0	80	0.5	0	0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	0.5	0	20	0.025	60	0.07	0	10	0	60	0.35	0	0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0	0-2	0-5																		
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	
Initials:	
Personnel: (Automatically Fills Out)	FALSE

Billed Hours:		
System U/D/O Arrival		(**U**p, **D**own, **O**ff)
System U/D/O Depart.		(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")		
Visual Emissions? ("Y"/"N"		

Light Grey areas are from Digital Readout on Control Panel

NOTES:

PID Calibration			
Serial Number:	095-523250	**Initial Reading**	
Model:	Rae-10 Multi Gas Meter	**Final Reading:**	

Did you check/clean air compressor cooler coils?	

Counter Hours (From Control Panel)								
Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
	Hours							

Biosparge (PLC Readings)															
Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
0:00															
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)									
Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
0:00									
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)												
Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
0:00							0	NA				
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump	
Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)													
Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
0:00													
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
0:00												
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
0:00													
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)															
Hours															

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
0:00										
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
0:00												
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																							
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																								
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																			
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	
Initials:	
Personnel: (Automatically Fills Out)	FALSE

Billed Hours:		
System U/D/O Arrival		(**U**p, **D**own, **O**ff)
System U/D/O Depart.		(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")		
Visual Emissions? ("Y"/"N"		

Light Grey areas are from Digital Readout on Control Panel

NOTES:

PID Calibration			
Serial Number:	095-523250	**Initial Reading**	
Model:	Rae-10 Multi Gas Meter	**Final Reading:**	

Did you check/clean air compressor cooler coils?	

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
10:30	**Hours**	9480.9	9500	1.1	6058.7	628	5960	**884545**

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
10:30	1.9	1.9	11	11.3	11	11.9	27	27.1	28	28	25	25	25	24	50
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
10:30	5	0	0.1	63	0	0.25	14	0	0.35
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
10:30	144	0	0.65	16	0	0.65	242	NA.	6	14	8	18
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
10:30	0	0	0	28	0	40	0	307	105	50	110	54	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
10:30	11	44	11	44	11	44	12	44	14	45	14	45
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
10:30	6	45	7	45	4	45	4	45	49	83	56	82	58
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	4.9	5.0	4.7	4.9	3.7	4.8	3.8	4.7	3.8	3.8	3.7	5.0	4.9	3.7	4.9
Hours	9360	6729	9432	9400	7058	7058	6942	7083	7078	7042	7071	7079	7085	7086	7083

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
10:30	65	2.6	40	74	40	2.7	20	26	38	0.0
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
10:30	2.36	24	2.3	0.24	2.86	14	2.7	14	2.41	19	2.4	20
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																							
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																								
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																			
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3

Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2

Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1

Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4

Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3

Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2

Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	11/22/2017
Initials:	NS
Personnel: (Automatically Fills Out)	FALSE

Billed Hours:		
System U/D/O Arrival	u	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	u	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	n	
Visual Emissions? ("Y"/"N"	n	

Light Grey areas are from Digital Readout on Control Panel

NOTES: ozone system off

PID Calibration			
Serial Number:	095-523250	**Initial Reading**	0
Model:	Rae-10 Multi Gas Meter	**Final Reading:**	100

Did you check/clean air compressor cooler coils?	no

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
11:30	**Hours**	9987.7	10007	1.1	6520.3	1089.6	6421.8	

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
11:30	2	2	15	15.9	14	14.1	31	32	28	29	25	25	24	24	50
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
11:30	10	0	0.15	79	0	1.8	41	0	0.3
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
11:30	43	0	0.6	29	0	0.2	202	NA	5	14	8	18
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
11:30	0	0	0	32	0	48	0	298	104	49	107	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
11:30	0	46	0	46	9	45	10	44	15	45	15	45
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
11:30	7	45	7	45	3	45	4	45	35	83	62	83	60
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	off	off	off	off	3.8	4.9	3.8	4.7	3.8	3.8	3.8	5.0	4.9	3.7	5.0
Hours	9827	7209	9914	9878	7561	7564	7449	7590	7585	7549	7578	7586	7591	7592	7590

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
11:30										
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
11:30												
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	off	off	off	off	off	0.4	0	13	0	2	0.35	0	18	0.03	2	off	off	off	off	off	off	off	off
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	2.5	0	11	0	2	2.5	0	13	0	2	2.5	0	15	0	1.9	2.5	0	21	0	2	0.25	0	0.02	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	1.8	0	7	0.005	1.2	1.6	0	2	0	1.1	0.95	0	18	0	1.8	1.45	0	0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	0.5	0	15	0	0.8	0.12	0	10	0	1.4	0.45	0	0	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	12/12/2017
Initials:	js
Personnel: (Automatically Fills Out)	Jason Stone

Billed Hours:		
System U/D/O Arrival	up	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	up	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	no	
Visual Emissions? ("Y"/"N"	no	

Light Grey areas are from Digital Readout on Control Panel

NOTES: system o&m, northeren system components off for chemical injections

PID Calibration			
Serial Number:	40224	**Initial Reading**	0
Model:	minirae3000	**Final Reading:**	100

Did you check/clean air compressor cooler coils?	no

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
9:00	**Hours**	10464.8	10484.2	1.1	6520.3	1089.6	6421.8	**943697**

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
9:00	0.6	0.6	19	19	13	13.3	36	36.6	29	30	23	23	24	24	50
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
9:00	19	0	9	44	0	1.3	51	0	5
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
9:00	35	0	2.2	14	0	2	163	NA	9	17	11	20
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
9:00	0	0	0	40	0	52	0	290	102	52	105	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
9:00	0	46	0	47	0	46	0	47	14	45	14	46
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
9:00	6	45	7	46	5	45	5	46	25	83	60	82	60
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	off	off	off	off	off	off	3.8	4.8	3.8	3.8	3.8	5.0	4.9	3.7	4.9
Hours	9827.3	7208.8	9914.4	9877.8	7772.4	7775.2	7926	8067.6	8062.2	8026.4	8055.5	8063.5	8069.1	8070.1	8067.6

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
9:00	off									
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
9:00												
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	3.5	0	12	0.1	2	3.5	0	14	0.01	2	4	0	0	0.02	2	3.5	0	20	0.05	2	off	off	off	off
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	1.25	0	10	0.15	1	0.85	0	10	0.005	1.5	1.35	0	20	1.25	1.75	1.35	0.1	0.1	na
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
	0.6	0	17	0.01	1	0.7	0	11	0	1	0.6	0	0.1						
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3

Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2

Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1

Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4

Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
	na	off	off	na	off	off	na	23	on	na	off	off	na	23	on			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3

Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0	na	25	on	na	24	on	na	23	on	na	24	on	na	23	on			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2

Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0	na	off	off	na	off casing broken	off	na	30	on	na	off casing broken	off	na	30	on			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	1/9/2018
Initials:	js
Personnel: (Automatically Fills Out)	Jason Stone

Billed Hours:		
System U/D/O Arrival	u	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	u	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	n	
Visual Emissions? ("Y"/"N"	n	

Light Grey areas are from Digital Readout on Control Panel

NOTES:

use heat gun to unfreeze drains on sve lines and drain condensate water.

PID Calibration			
Serial Number:	40224	**Initial Reading**	0
Model:	miniRae3000	**Final Reading:**	100

Did you check/clean air compressor cooler coils?	na

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
9:00	**Hours**	11136	11155.5	1.1	6520.3	1089.6	6421.8	

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
9:00	9.4	9.4	20	20	6	6	37	37.8	24	24	22	22	24	24	47
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
9:00	50	0	8	42	0	1.4	30	0	2
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
9:00	15	0	2	35	0	2.7	172	NA.	12	22	16	24
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
9:00	0	0	0	47	0	56	0	288	108	56	108	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
9:00	0	47	0	47	2	47	0	47	2	47	1	47
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
9:00	6	47	6	47	4	46	5	47	12	47	77	85	80
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	off	off	off	off	off	off	3.8	4.7	3.8	3.8	3.8	5.0	4.9	3.8	5.0
Hours							8597.4	8739	8733.6	8697.8	8726.8	8734.9	8740.6	8741.5	8739

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
9:00	off									
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
9:00	off											
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off		off	off	off	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off		off	off	off	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	1.1	0	10	0.05	2	1.2	0	15	0.05	0.5	1.25	0	14	0.05	1	1.2	0	20	0.05	1				
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	0.85	0	10	0.15	1	0.85	0	10	0.05	1.4	0.85	0	20	0.075	1.4	0.9	0	0.05	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
	0.85	0	14	0.12	1	0.9	0	11	0.1	1	0.9	0	0.05						
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
	off	off	off		off	off		23			off	off	na	24				
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0		23			22			22			22			24				
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0		off	off		off	off		23			23			23				
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	1/30/2018
Initials:	js
Personnel: (Automatically Fills Out)	Jason Stone

Billed Hours:		
System U/D/O Arrival	u	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	u	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	n	
Visual Emissions? ("Y"/"N"	n	

Light Grey areas are from Digital Readout on Control Panel

NOTES:

PID Calibration			
Serial Number:	40224	**Initial Reading**	0
Model:	miniRae3000	**Final Reading:**	100

Did you check/clean air compressor cooler coils?	na

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
8:30	**Hours**	11639	11659	1.1	6520.3	1089.6	6421.8	**1001449**

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
8:30	13	13.6	16	16.9	14	14.6	50	44	23	23	23	23	23	23	46
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
8:30	45	0	5	38	0	1	58	0	2
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
8:30	38	0	2	40	0	2.8	219	NA.	10	20	12	22
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
8:30	0	0	0	45	0	53	0	300	111	54	112	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
8:30	0	46	0	46	0	46	0	46	20	45	19	46
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
8:30	6	45	6	46	3	45	3	46	25	46	102	82	110
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	off	off	off	off	off	off	3.8	4.7	3.8	3.8	3.8	5.0	4.9	3.7	4.9
Hours							9101	9242	9237	9201	9227	9122	9244	9245	9243

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
8:30	off									
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
8:30	off											
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
9:00	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off		off	off	off	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0.375	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off		off	off	off	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0.375	1.45	0	10	0.01	2	1.45	0	15	0.01	2	1.4	0	14	0.01	1	1.35	0	20	0.05	2	off	off	off	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0.375	1.15	0	10	0.1	1	1.2	0	10	0.065	1.4	0.95	0	20	0.06	1.4	1.2	0	0.035	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
	0.95	0	13	0.04	1	0.95	0	10	0.01	1	0.9	0	0.045						
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
		24	0.07		22	0.005		23	0.02		23	0.03		22	0.02			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0		25	0.03		23	0.04		23	0.04		23	0.035		23	0.04			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0		24	0.005		23	0.005		23	0.25		23	0.03		23	0.05			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	3/13/2018
Initials:	NS
Personnel: (Automatically Fills Out)	Nick Simkovich

Billed Hours:		
System U/D/O Arrival	u	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	u	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	n	
Visual Emissions? ("Y"/"N"	n	

Light Grey areas are from Digital Readout on Control Panel

NOTES:

PID Calibration			
Serial Number:	40224	**Initial Reading**	0
Model:	miniRae3000	**Final Reading:**	100

Did you check/clean air compressor cooler coils?	na

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
13:00	**Hours**	12651	12669.7	1.1	6520.3	1089.6	6421.8	**1036140.2**

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
13:00	14	14.5	18	18.7	off	off	37	37.4	23	24	23	23	off	off	50
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
13:00	46	0	4.6	34	0	0.9	32	0	1
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
13:00	32	0	3.1	42	0	3.4	166	NA.	8	18	12	21
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
13:00	0	0	0	40	0	58	0	292	100	53	104	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
13:00	0	46	0	46	1	46	2	46	10	46	9	45
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
13:00	6	45	7	45	4	45	4	45	20	83	55	86	60
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	off	off	off	off	3.7	5.1	3.9	4.7	3.8	3.8	3.8	5.0	4.9	3.7	5.0
Hours	9982.8	7555.6	10261.1	10224.3	8235.4	8238.3	10112.4	10253.9	10248.6	10212.7	10238.7	10128	10255.5	10256.5	10254

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
13:00										
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
13:00												
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																							
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																								
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																			
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	3/22/2018
Initials:	NS
Personnel: (Automatically Fills Out)	Nick Simkovich

Billed Hours:		
System U/D/O Arrival	u	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	u	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	n	
Visual Emissions? ("Y"/"N"	n	

Light Grey areas are from Digital Readout on Control Panel

NOTES:

art78 air sparge off due to bubbling. around casing

PID Calibration			
Serial Number:	40224	**Initial Reading**	0
Model:	miniRae3000	**Final Reading:**	100

Did you check/clean air compressor cooler coils?	na

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
9:45	**Hours**	12866	12884	1.1	6520	1089.6	6422	**1044126**

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
9:45	16	15.1	22	19.3	9.8	7.5	54	41.9	23	24	22	23	25	25	49
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
9:45	48	0	3.4	48	0	1.4	41	0	1.4
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
9:45	31	0	2	38	0	2.4	206	NA.	8	17	10	20
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
9:45	0	0	0	31	0	52	0	294	99	51	103	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
9:45	4	44	5	45	4	45	6	44	9	45	9	44
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
9:45	5	45	6	45	2	45	2	45	28	84	61	84	62
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	4.8	5.2	4.7	5.4	3.7	5.0	3.8	4.7	3.8	3.7	3.8	5.0	4.9	3.7	5.1
Hours	10050	7697	10472	10365	8449	8452	10326	10468	10463	10427	10381	10342	10470	10471	10468

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
9:45										
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
9:45												
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	3.2	0	28	0.005	40	3.5	0	25	0.01	80	3.5	0	17	0.25	off	off	off	off		off	off	off	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	0	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	0.45	0	17	0.01	50	0.1	0	10	0.01	40	0.25	0	30	0.01	45	1.4	0	0.01		0.25	0	0.005	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	1.35	0	15	0.1	100	1.05	0	14	0	45	1.1	0	13	0.01	45	1.05	0	20	0.01	100	0.22	0	0.035	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	1.35	0	5	0.06	95	1.35	0	20	0.01	65	0.4	0	20	0.25	60	1.4	0	0.03	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	Jan-00	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	0	0	27	0	20	0	0	11	0	70	0.01	0	0.005	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
	0	24	0.025	0	25	0.04	0	24	0.03	0	25	0.03	0	25	0.03			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0	0	24	0.025	0	23	0.06	0	23	0.025	0	23	0.015	0	23	0.035			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0	0	22	0.02	0	23	0.025	0	23	0.04	0	22	0.025	0	23	0.07			
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	4/5/2018
Initials:	NS
Personnel: (Automatically Fills Out)	Nick Simkovich

Billed Hours:		
System U/D/O Arrival	u	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	u	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	n	
Visual Emissions? ("Y"/"N"	n	

Light Grey areas are from Digital Readout on Control Panel

NOTES:

PID Calibration			
Serial Number:	40224	**Initial Reading**	0
Model:	miniRae3000	**Final Reading:**	100

Did you check/clean air compressor cooler coils?	na

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
10:00	**Hours**	13200.2	13217.4	1.1	6520.3	1089.6	6421.8	**1056038**

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
10:00	13	13.5	14	14.8	9.6	9.5	39	39	23	23	23	23	24	24	49
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
10:00	47	0	0.3	44	0	1.3	39	0	1.2
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
10:00	31	0	1.7	31	0	2.3	192	NA.	6	16	10	19
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
10:00	0	0	0	30	0	52	0	301	97	52	103	0	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
10:00	0	46	0	46	4	45	4	46	11	45	11	45
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
10:00	5	45	6	46	2	45	3	46	22	84	58	85	60
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	off	off	off	off	3.7	5.1	3.8	4.7	3.8	3.7	off	5.0	4.9	3.7	5.1
Hours	10238	7885	10590.5	10553.5	8784	8787	10661	10803	10797.5	10761.5	10713.5	10677	10804	10805	10893

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
10:00										
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
10:00												
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
	sampling	sampling	sampling	sampling	sampling	6.5	0	off	0.01	off	6.5	0	off	0.3	off	off	off	off		off	off	off	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	0.45	0	off	0.01	off	0.4	0	10	0.005	90	0.4	0	20	0.01	50	1.4	0	0.01		0.4	0	0.01	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	1.25	0	off	0.01	100	1.25	0	14	0.005	45	1.25	0	15	0.01	45	1.3	0	19	0.01	100	0.24	0	0.035	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0	1.2	0	10	0.02	100	1.15	0	15	0.005	60	1.15	0	20	0.01	60	1.25	0	0.025	
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
	1.05	0	27	0.01	50	1.2	0	12	0.01	50	1	0	0.035						
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5

Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

Project Name:	Hoffmann-La Roche IA-6
BST:	0316237-91000-HLR120
Date:	4/20/2018
Initials:	js
Personnel: (Automatically Fills Out)	Jason Stone

Billed Hours:		
System U/D/O Arrival	up	(**U**p, **D**own, **O**ff)
System U/D/O Depart.	up	(**U**p, **D**own, **O**ff)
Sample Collected? ("Y"/"N")	n	
Visual Emissions? ("Y"/"N"	n	

Light Grey areas are from Digital Readout on Control Panel

NOTES:

PID Calibration			
Serial Number:	40224	**Initial Reading**	0
Model:	MiniRae-3000	**Final Reading:**	100

Did you check/clean air compressor cooler coils?	

Counter Hours (From Control Panel)

Time		SVE Blower	Compressor	VLS Transfer Pump	Oxygen Generator	Ozone Generator 1	Ozone Generator 2	Electrical Meter
12:00	**Hours**	13562	113579	1.1	6520	1089	6422	**1069010**

Biosparge (PLC Readings)

Time	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Flow Rate	Total Flow Rate	Header 2	Header 2	Header 3	Header 3	Header 4	Header 4	Total Pressure
	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate	Flow Rate			Pressure	Pressure	Pressure	Pressure	Pressure	Pressure	
	scfm	scfm	scfm	scfm	scfm	scfm	scfm	scfm	psi	psi	psi	psi	psi	psi	psi
12:00	14	14.6	14	14.7	12	12.2	46	45	23	23	23	23	24	24	48
Acceptable Data Range	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 5	0 - 10	0 - 10	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40	40 - 50

System: Soil Vapor Extraction (SVE) (1st Row)

Time	Header 6			Header 5			Header 4		
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm	ppm	in. H2O
12:00	46	0	2.5	48	0	2.2	37	0	2
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10

System: Soil Vapor Extraction (SVE) (2nd row)

Time	Header 3			Header 2			Total SVE Flow Rate		Pre-VLS Vacuum	Post-VLS Vacuum	Post-VLS Vacuum	Post Catalyst Vacuum
	Flow Rate	PID	Vacuum	Flow Rate	PID	Vacuum						
	scfm	ppm	in. H2O	scfm	ppm	in. H2O	scfm		in. H2O	in. H2O	in. H2O	in. H2O
12:00	35	0	1.8	37	0	5.8	203	NA	7	17	10	20
Acceptable Data Range	40 - 60	0 - 5	0 - 10	40 - 60	0 - 5	0 - 10	250 - 400	10 - 30	10 - 30	10 - 30	10 - 30	10 - 30

Transfer Pump

Time	Transfer Pump Pressure
	psi

Carbon Treatment (GAC)

Time	Pre GAC PID	Pre GAC PID	Post GAC 1 PID	Post GAC 1 Vacuum	Post GAC 2 PID	Post GAC 2 Vacuum	Post GAC PID	Post GAC Flow Rate	Post Blower Temp	Pre Blower Pressure	Post Blower Temp	Post Blower Pressure	Pre Carbon Ozone
	ppm	ppm	ppm	in. H2O	ppm	in. H2O	ppm	scfm	°F	in. H2O	°F	in. H2O	ppm
12:00	0	0	0	45	0	52	0	296	109	52	110	56	0
Acceptable Data Range	0 - 5	0 - 5	0 - 5	20 - 60	0 - 5	20 - 60	0 - 5	250 - 400	<175	50 - 150	<175	50 - 150	0 - 5

Air Sparge (AS)												
Time	Header 6				Header 5				Header 4			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
12:00	4	44	4	44	5	44	5	44	9	45	10	44
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50

Air Sparge (AS)													
Time	Header 3				Header 2				Total Flow Rate	Post Tank			
	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure		Pressure	Temperature	Pressure	Temperature
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	°F	psi	°F
12:00	5	45	5	45	3	44	3	45	23	45	60	82	60
Acceptable Data Range	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	0 - 30	0 - 50	40 - 80	40 - 100	<175	40 - 100	<175

ART Recirculation Pumps															
Well #	**ART-75**	**ART-76**	**ART-77**	**ART-78**	**ART-79**	**ART-80**	**ART-81**	**ART-82**	**ART-83**	**ART-84**	**ART-85**	**ART-86**	**ART-87**	**ART-88**	**ART-89**
Amps (~5 amps)	4.8	5.1	4.7	5.4	3.6	5.0	3.8	4.7	3.8	3.7	3.8	4.9	4.8	3.7	5.0
Hours	10575	8221	10927	10890	9146	9149	11024	11165	11159	11123	10976	11039	11167	11167	11055

Ozone System										
Time	Post Cooler Temperature	Oxygen Flow Rate	Oxygen Pressure	Ambient Ozone	Oxygen Pressure	Oxygen Flow Rate	Oxygen Feed to Ozone 1 (FM-03-01)	Oxygen Feed to Ozone 2 (FM-03-02)	Mix Air Pressure	Mix Air Flow Rate
	°F	scfm	psi	ppb	psi	scfm	l/min	l/min	psi	scfm
12:00										
Acceptable Data Range	<100	0 - 5	20 - 40	<150	20 - 40	0 - 5	NA	20 - 30	20 - 40	0 - 5

Ozone System												
Time	Header 1	Header 1	Header 1	Header 1	Header 2	Header 2	Header 2	Header 2	Header 3	Header 3	Header 3	Header 3
	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure	Flow	Pressure
	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi	scfm	psi
12:00												
Acceptable Data Range	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10	0 - 5	0 - 10

Observation Points - HEADER 6

Time	ART-75					ART-77					ART-78					IA6-VET-1				IA6-VET-2			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 5

Time	ART-76					ART-79					ART-80					IA6-VET-3				IA6-VET-4			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																							
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5		0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 4

Time	ART-81					ART-82					ART-83					ART-89					IA6-VET-6			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																								
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 3

Time	ART-84					ART-85					ART-87					IA6-VET-5			
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)
0																			
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5	

Observation Points - HEADER 2

Time	ART-86					ART-88					IA6-VET-7								
	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Recirc P.	Diff. P	Flow (scfm)	VAC	PID	Diff. P	Flow (scfm)					
Acceptable Data Range	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	10 - 40	0 - 0.5	0 - 15	0 - 5	0 - 5	0 - 0.5						

Observation Points - Monitoring Wells & Vapor Points

Time	MW-346A		MW-346B		MW-346C		MW-318A		MW-318B		MW-160		MW-161		MW-52		MW-446A		MW-447B	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	MW-321A		MW-321B		MW-321C		MW-397A		MW-53		MW-54		MW-317A		MW-317B		MW-317C		RW-51	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP1		IA6-VP2		IA6-VP3		IA6-VP4		IA6-VP5		IA6-VP6		IA6-VP7		IA6-VP8		IA6-VP9		IA6-VP10	
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5	0 - 2	0 - 5
Time	IA6-VP11																			
	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID	VAC	PID
0																				
Acceptable Data Range	0-2	0-5																		

Observation Points - Ozone System HEADER 3																		
Time	IW-104A			IW-105A			IW-106A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Ozone System HEADER 2																		
Time	IW-107A			IW-108A			IW-109A			IW-110A								
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA						

Observation Points - Ozone System HEADER 1																		
Time	IW-111A			IW-112A			IW-113A											
	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow	PID	Pres. (PSI)	Flow
0																		
Acceptable Data Range	NA	0 - 15	NA	NA	0 - 15	NA	NA	0 - 15	NA									

Observation Points - Bio Sparge System HEADER 4																		
Time	BIOS-1B			BIOS-2B			BIOS-4B			BIOS-5B			BIOS-7B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

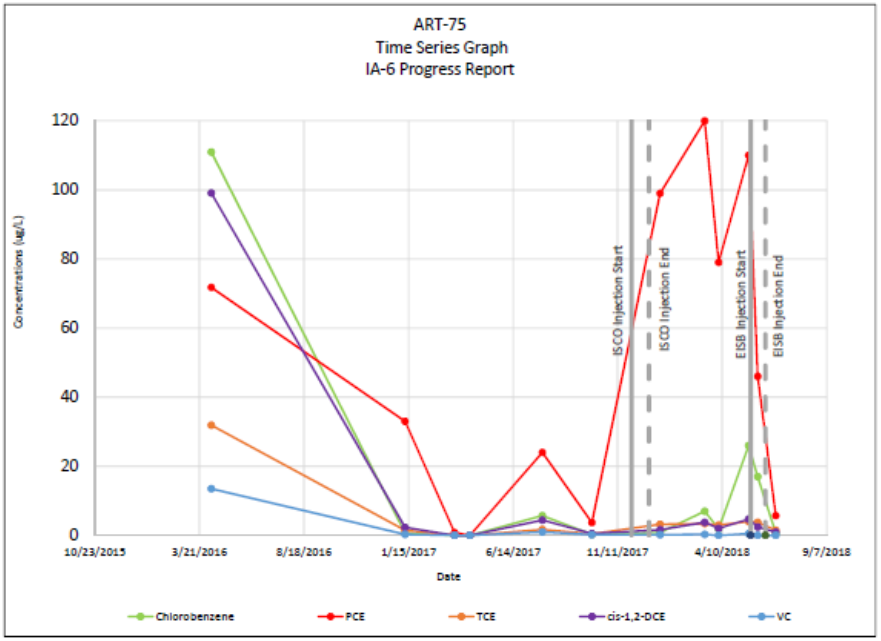
Observation Points - Bio Sparge System HEADER 3																		
Time	BIOS-8B			BIOS-10B			BIOS-11B			BIOS-13B			BIOS-15B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

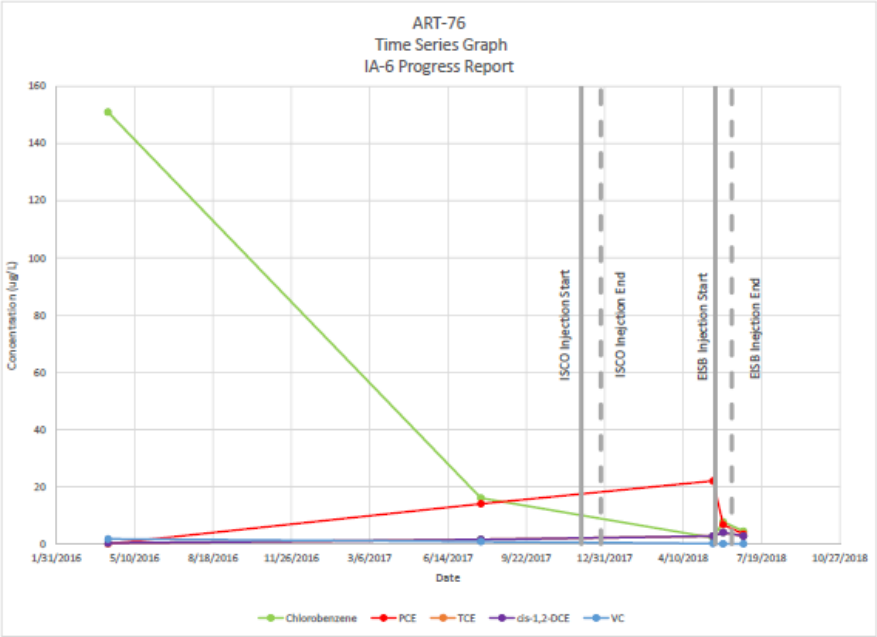
Observation Points - Bio Sparge System HEADER 2																		
Time	BIOS-3B			BIOS-6B			BIOS-9B			BIOS-12B			BIOS-14B					
	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow	PID	Pressure	Flow
0																		
Acceptable Data Range	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10	0 - 5	0 - 30	0 - 10			

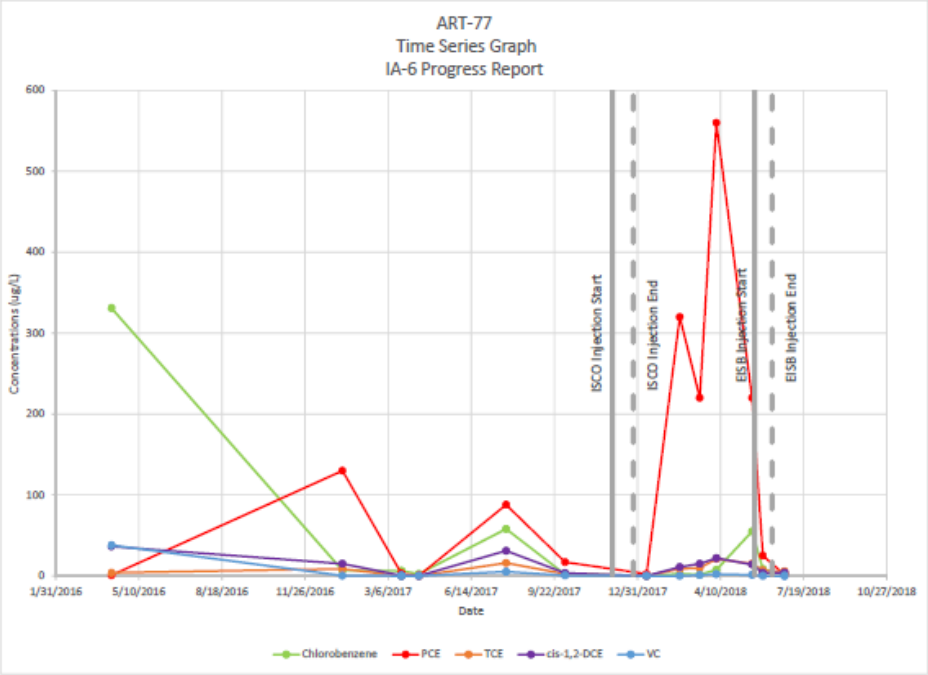
APPENDIX H

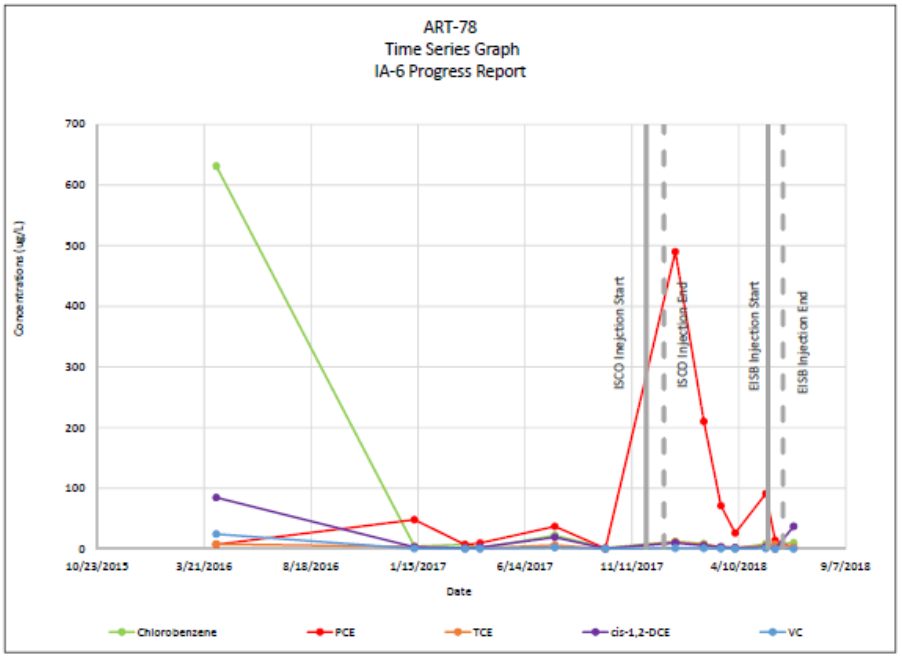
GROUNDWATER CONCENTRATION TREND GRAPHS

Appendix H - Groundwater Concentration Trend Graphs
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6









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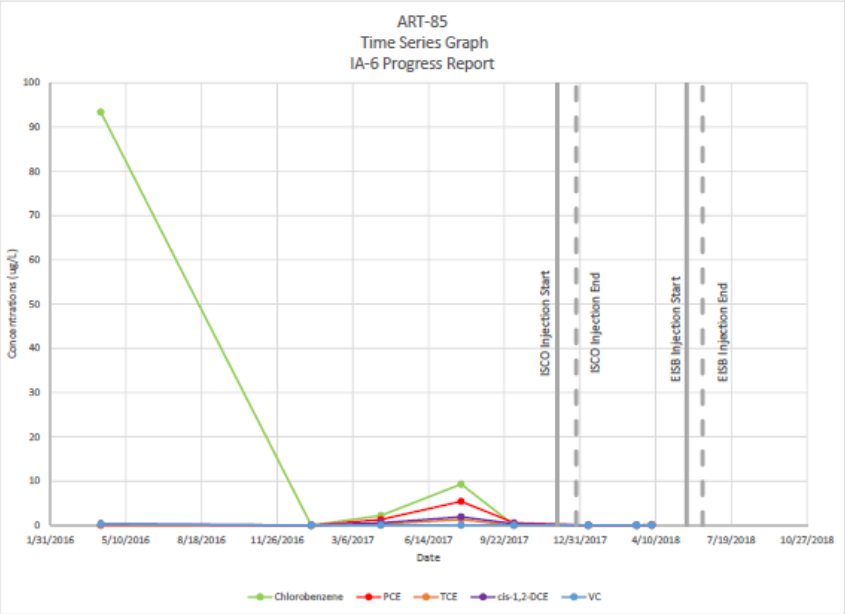
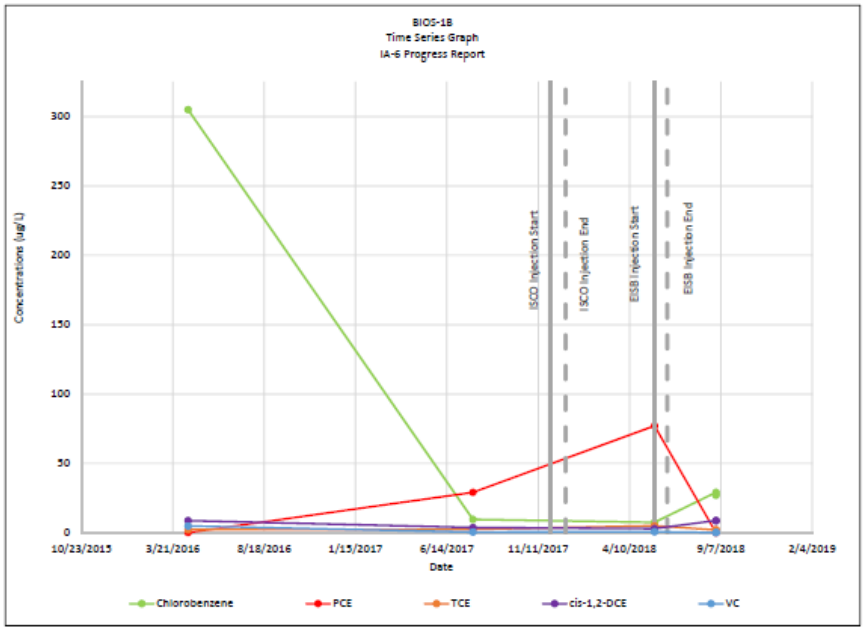
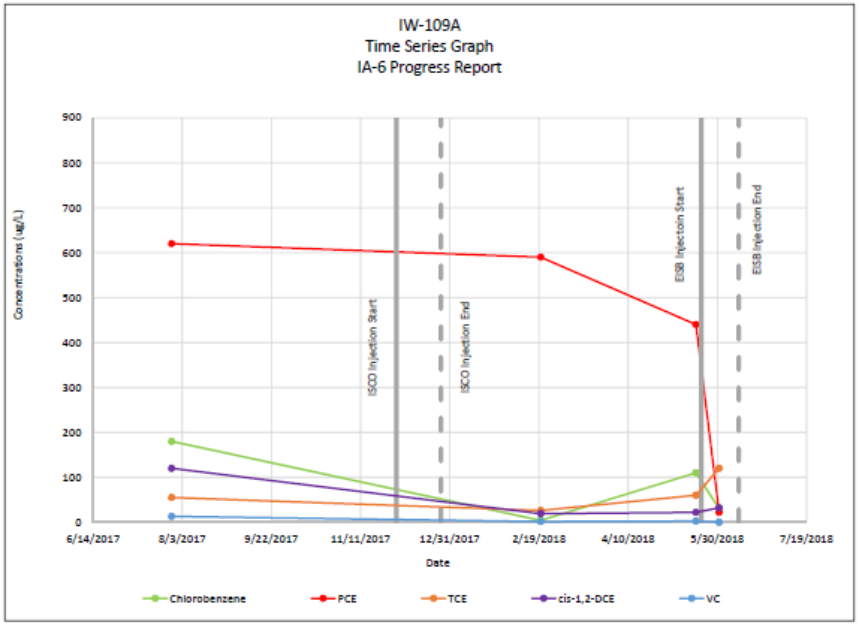
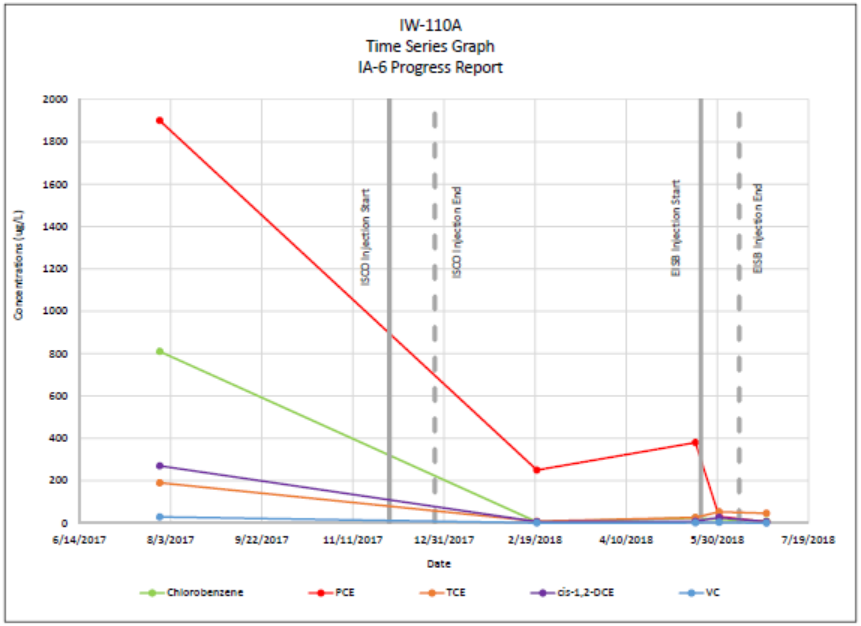
Investigative Area (IA) - 6









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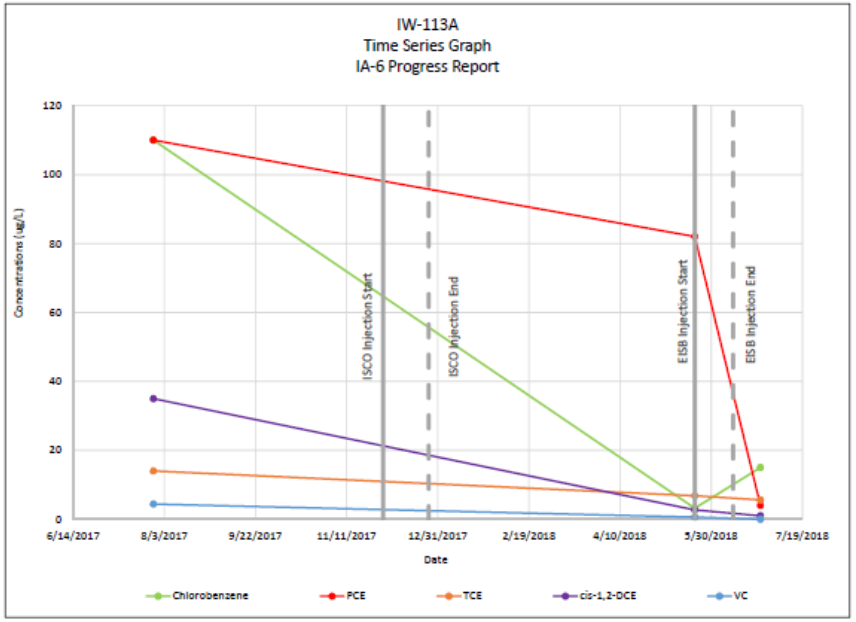
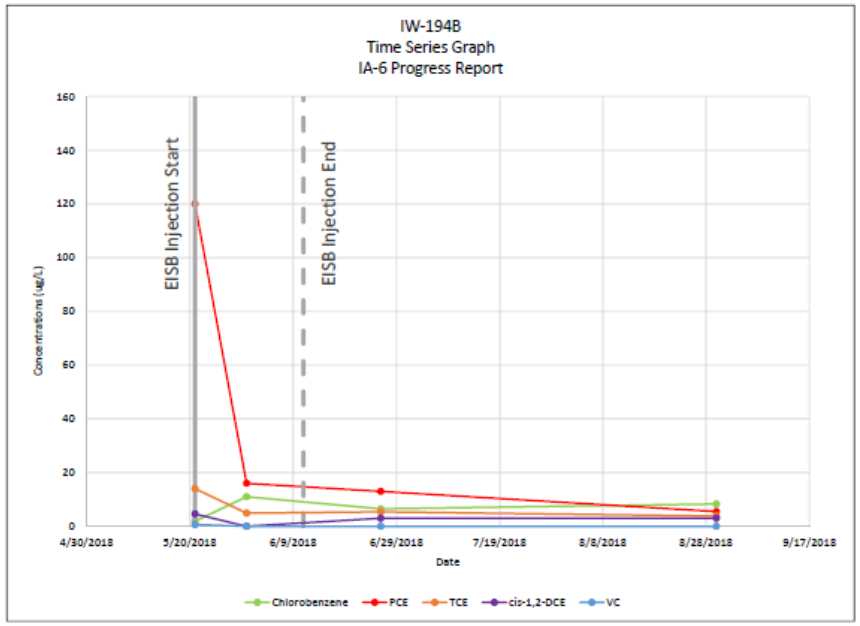
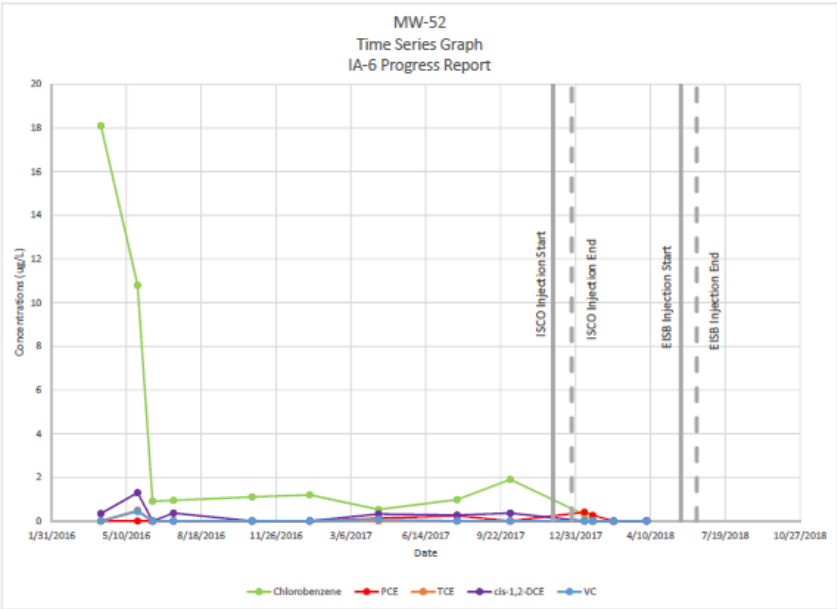
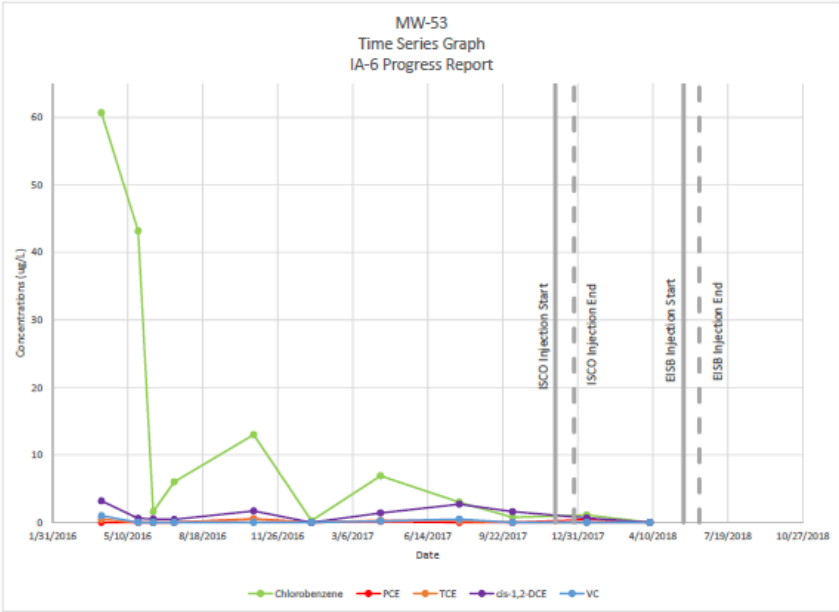
Investigative Area (IA) - 6









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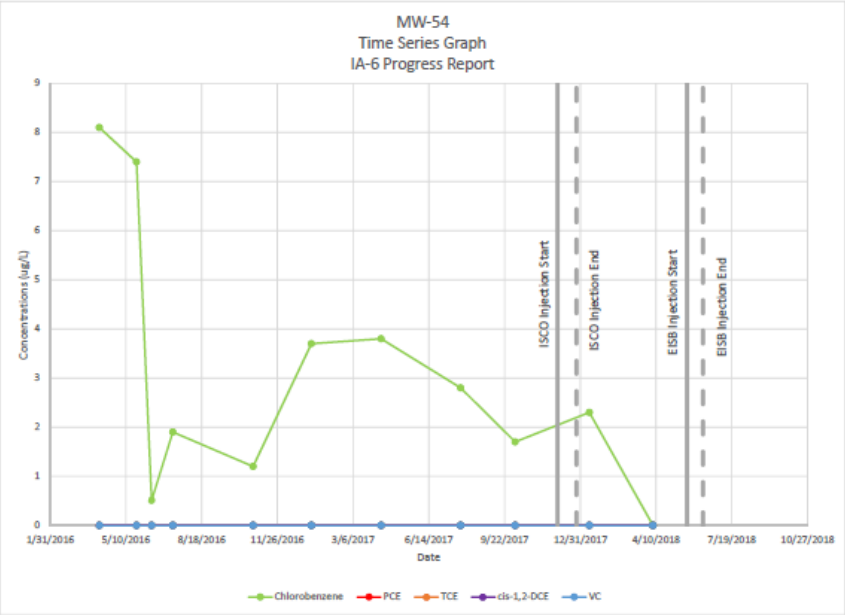
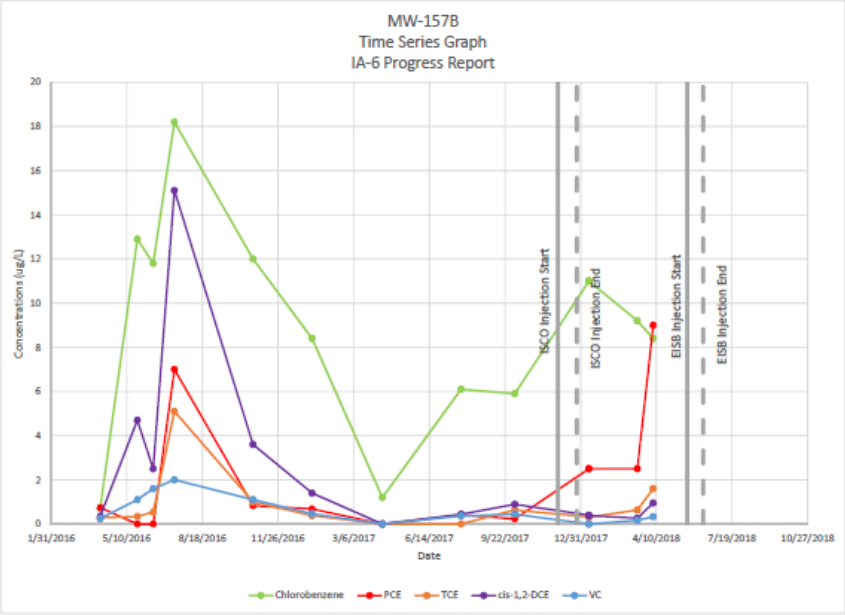
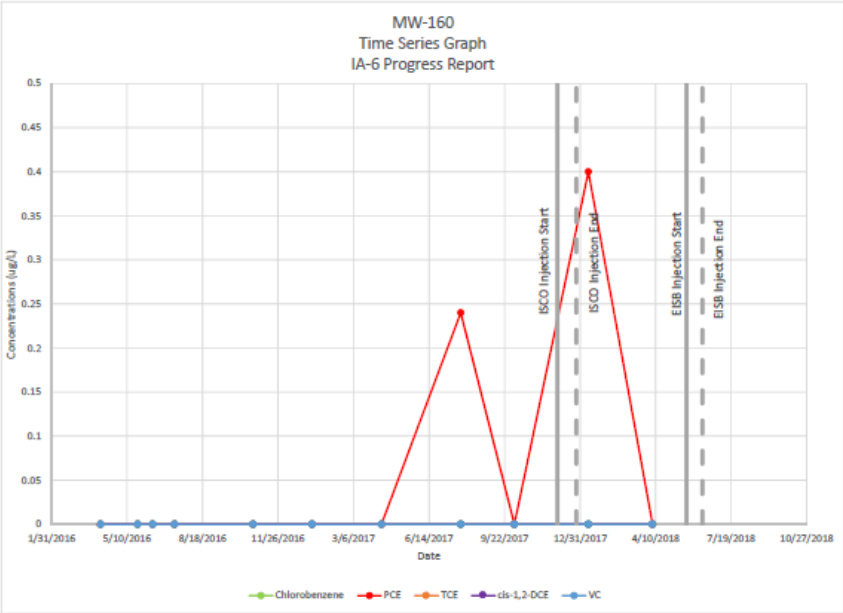
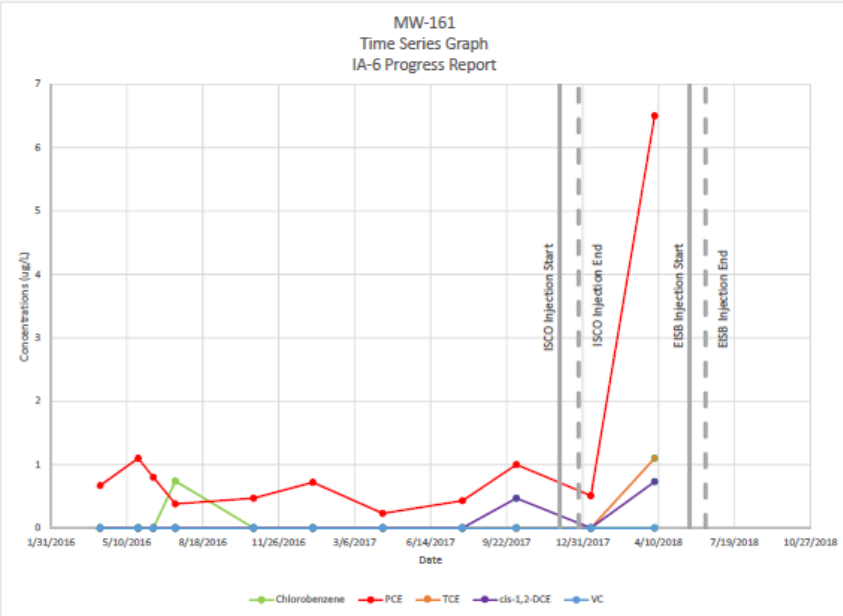
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6









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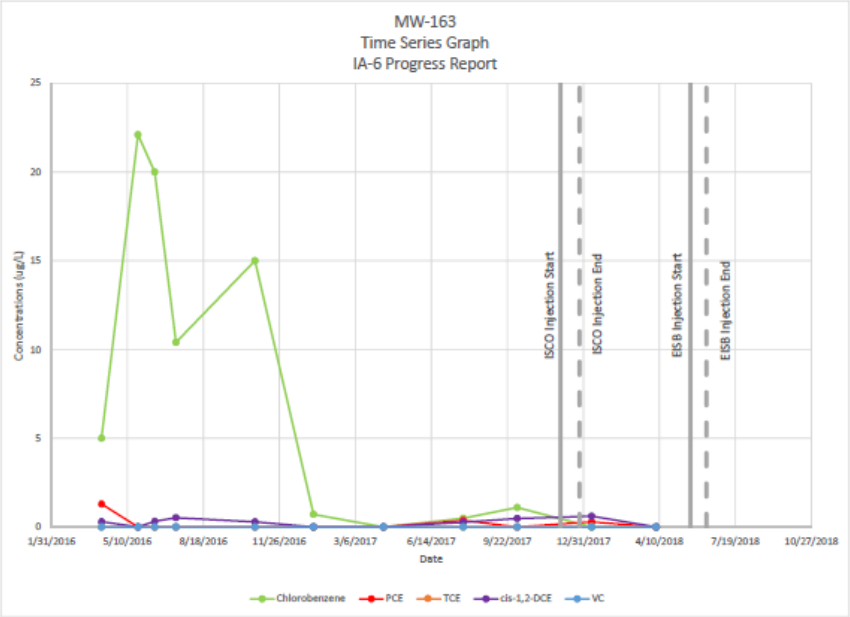
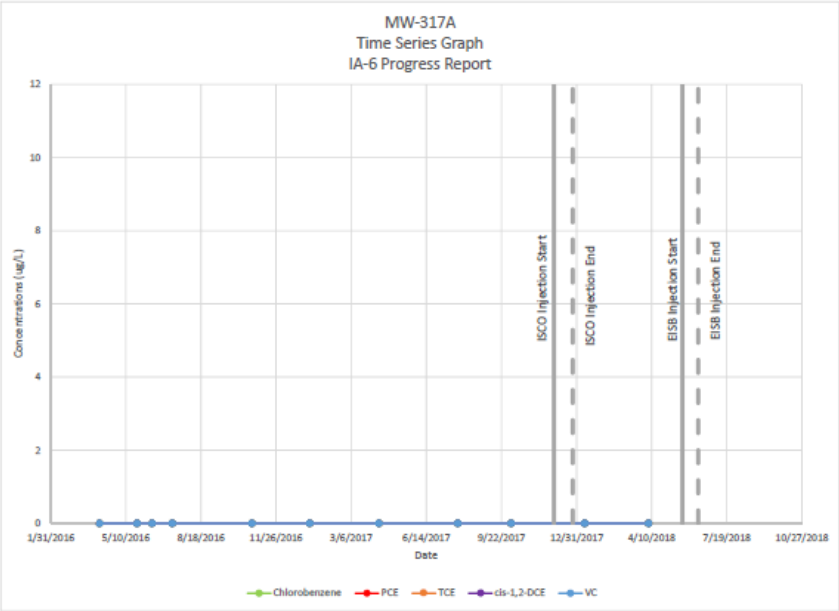
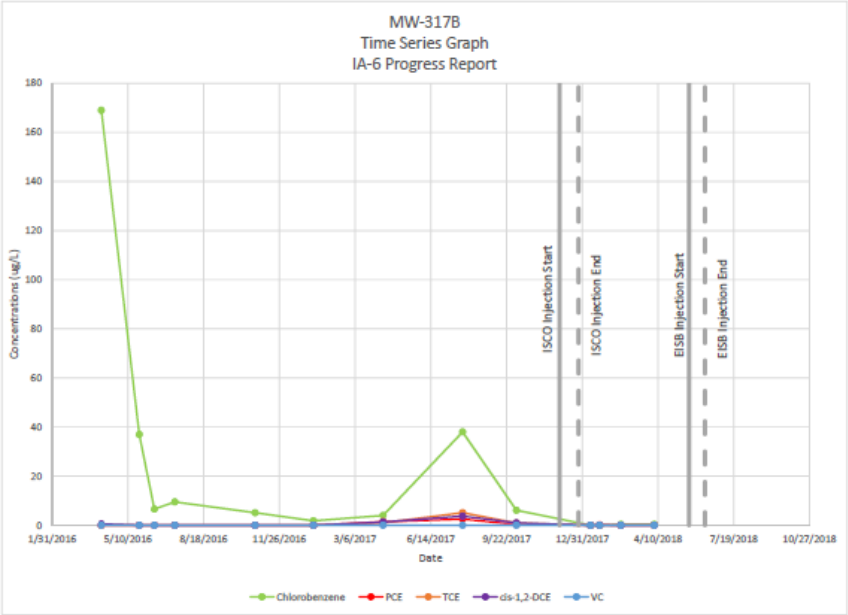
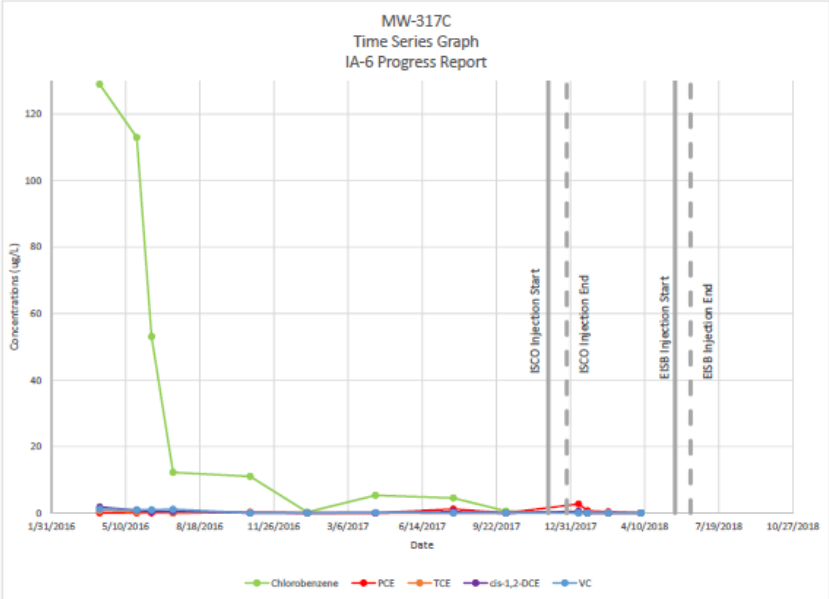
Investigative Area (IA) - 6









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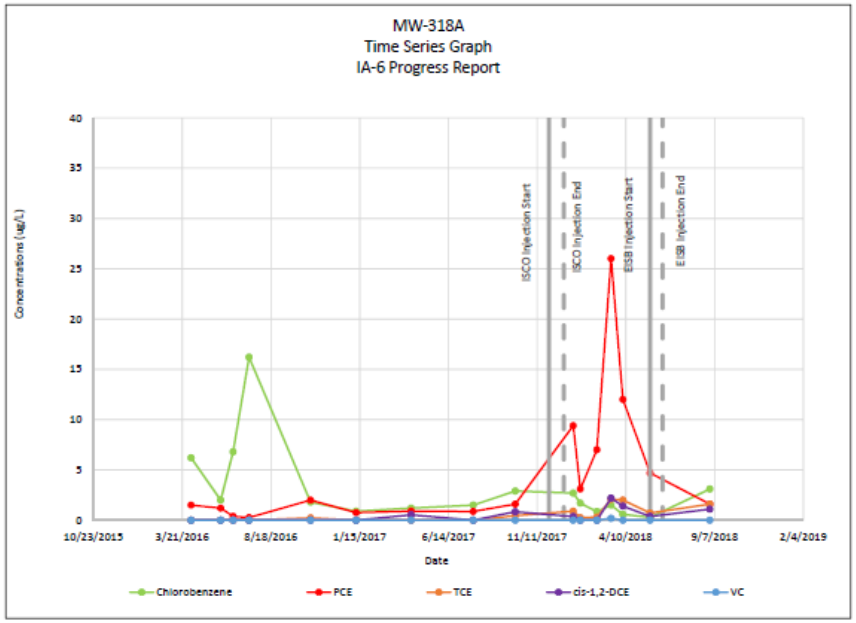
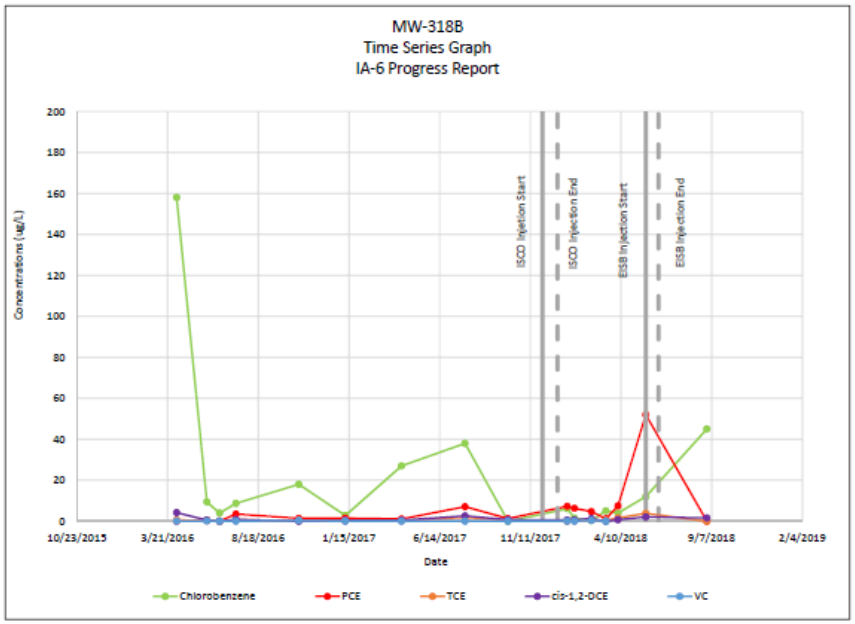
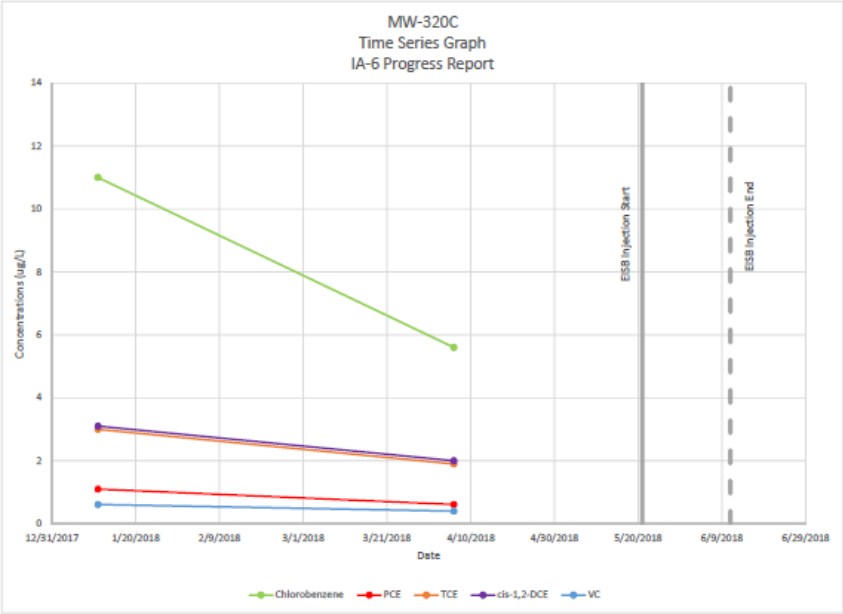
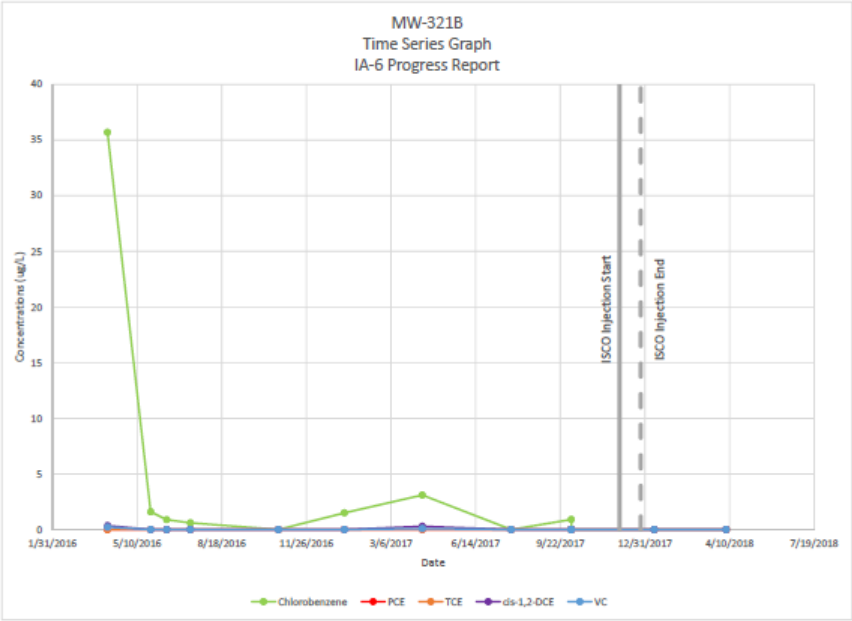
Investigative Area (IA) - 6

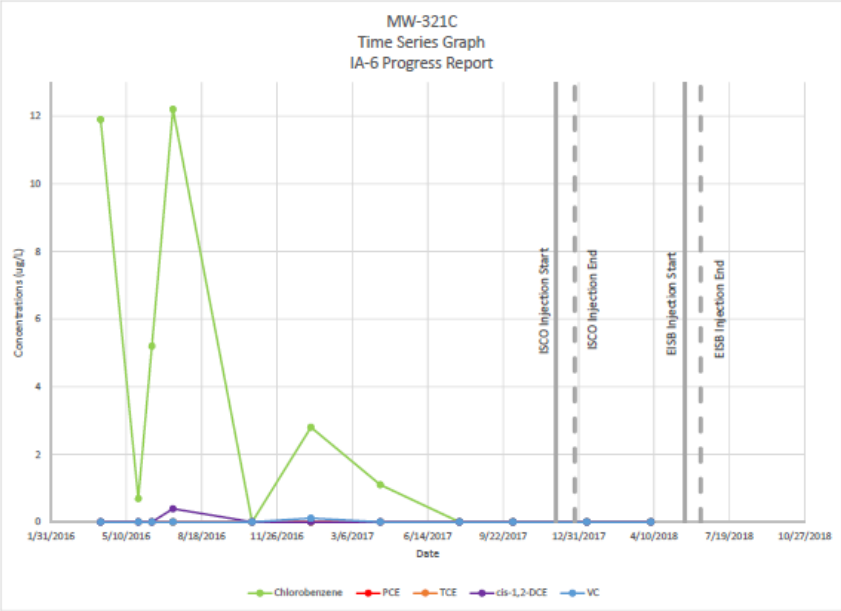


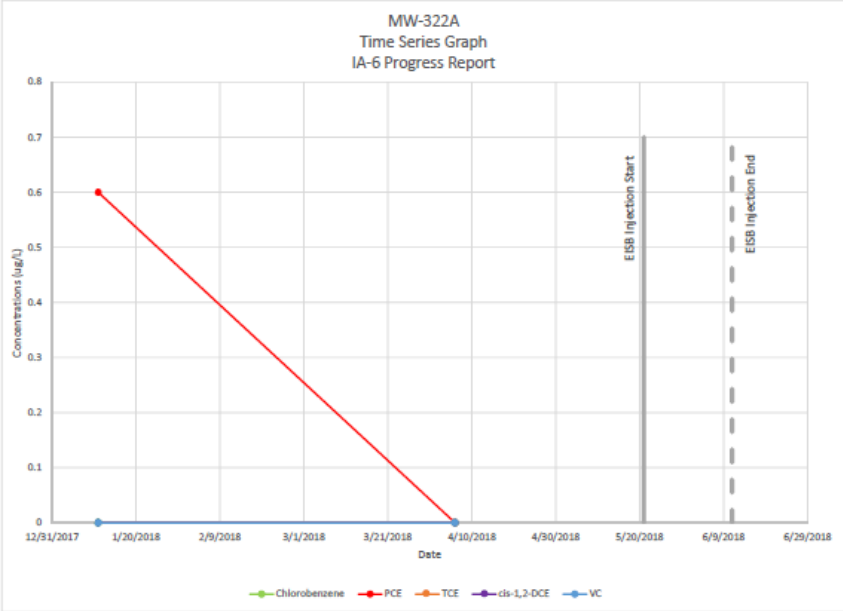


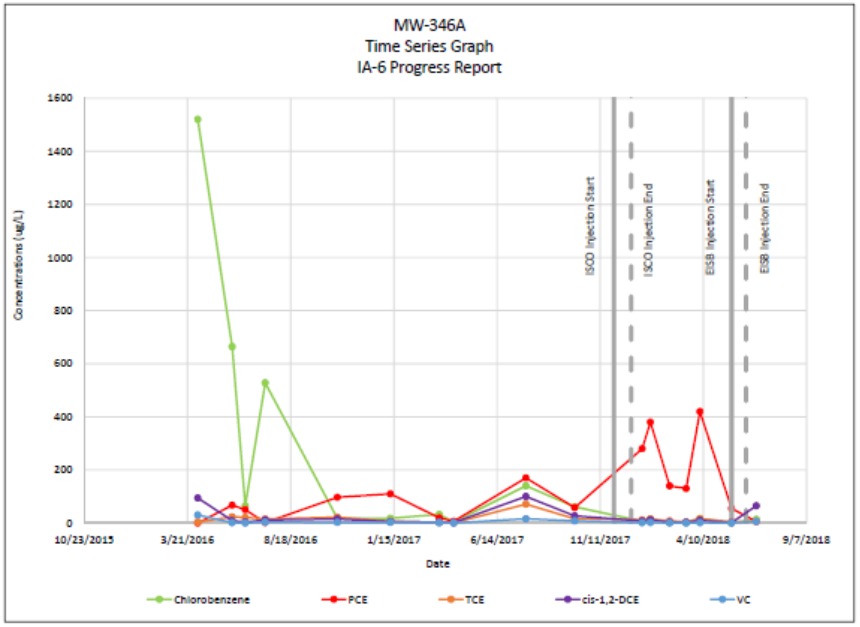


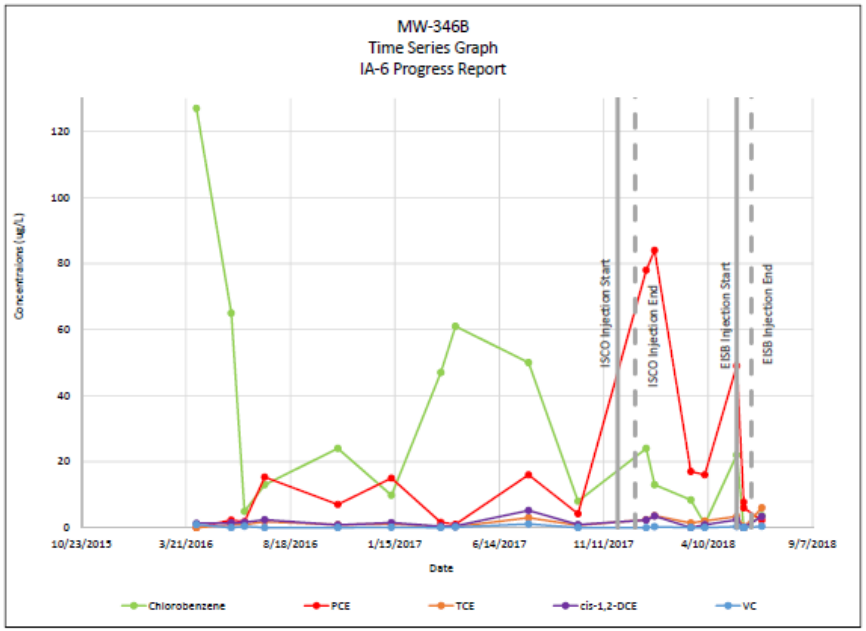


Appendix H - Groundwater Concentration Trend Graphs
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

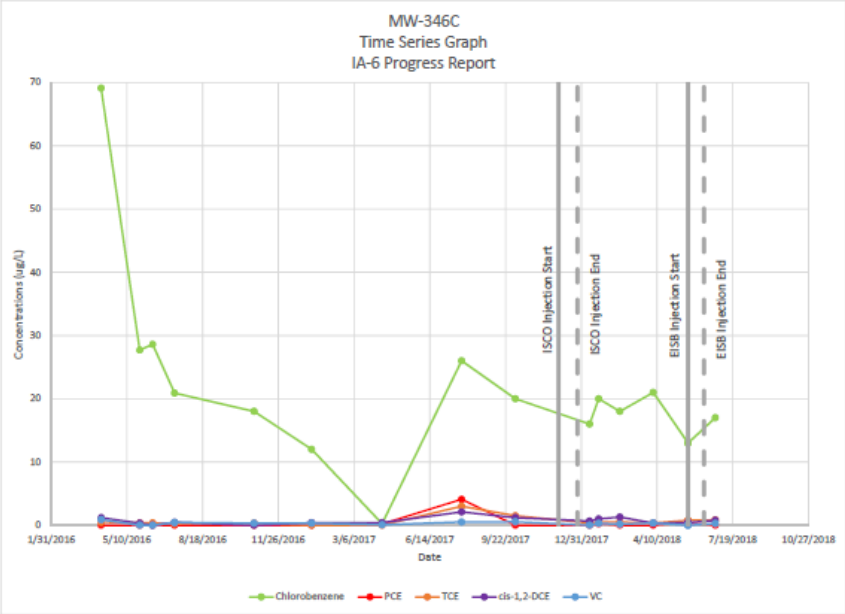


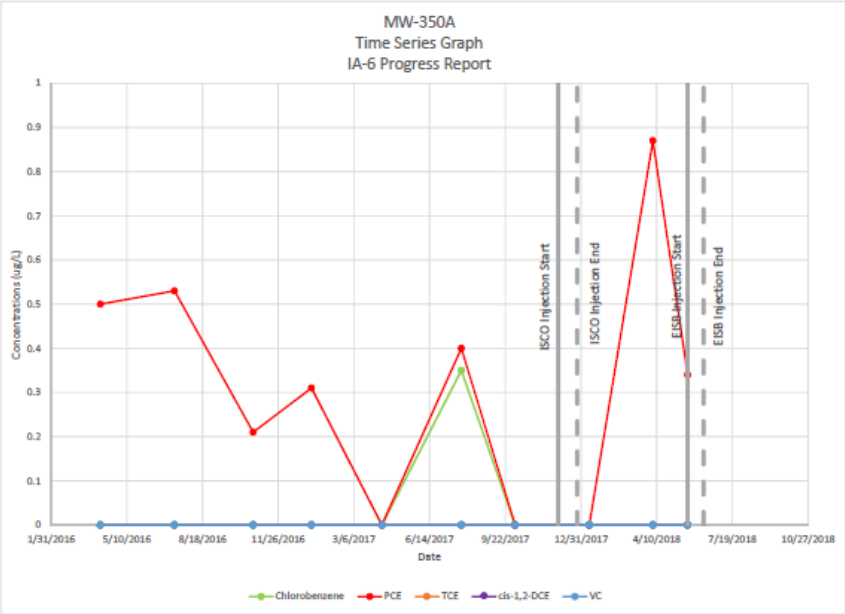


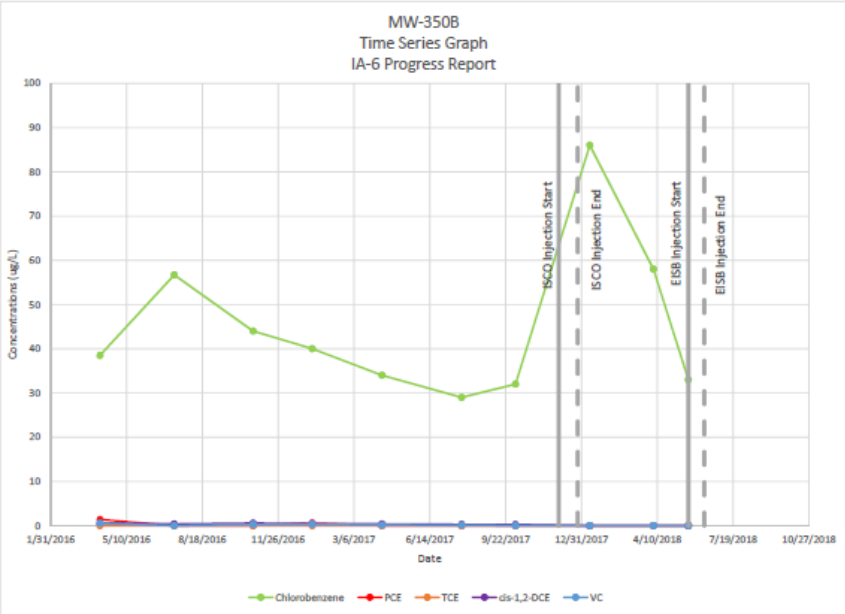


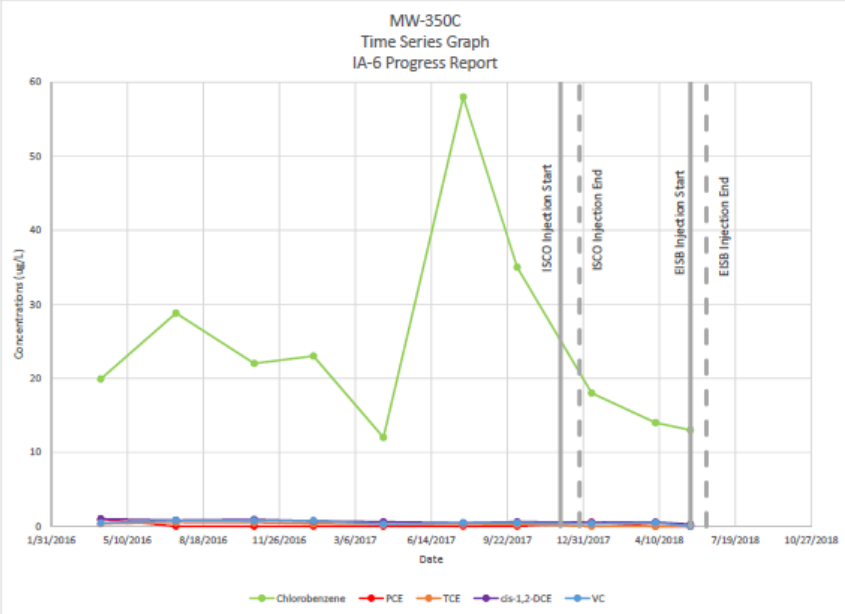


Appendix H - Groundwater Concentration Trend Graphs
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

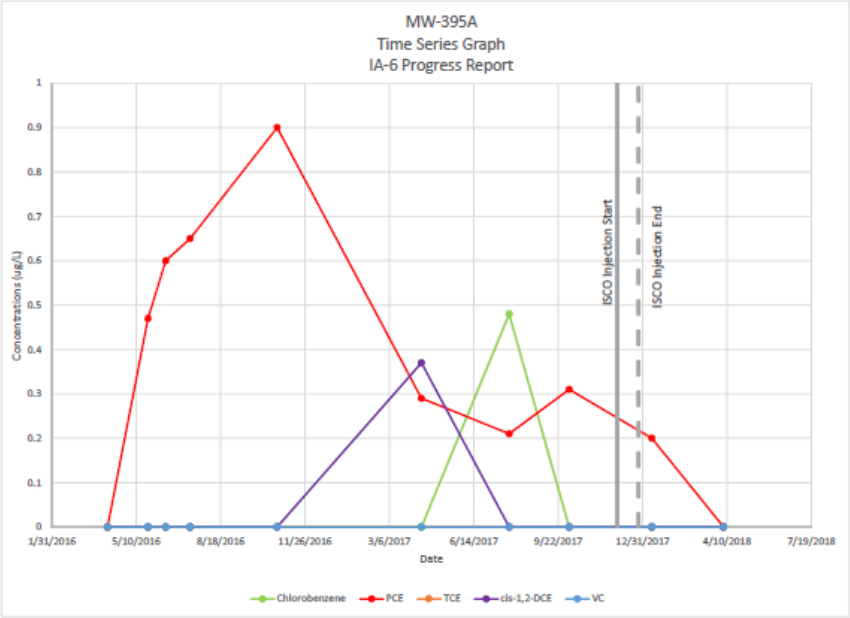


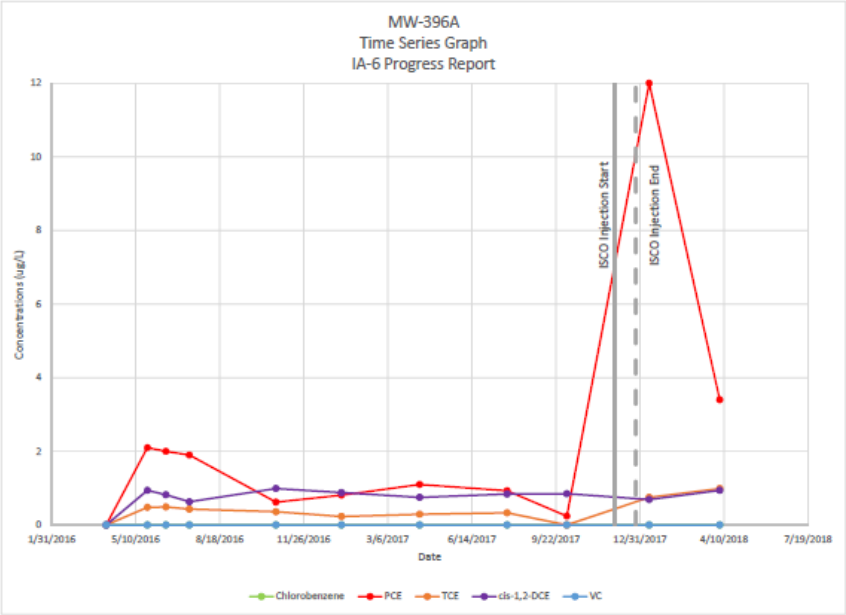


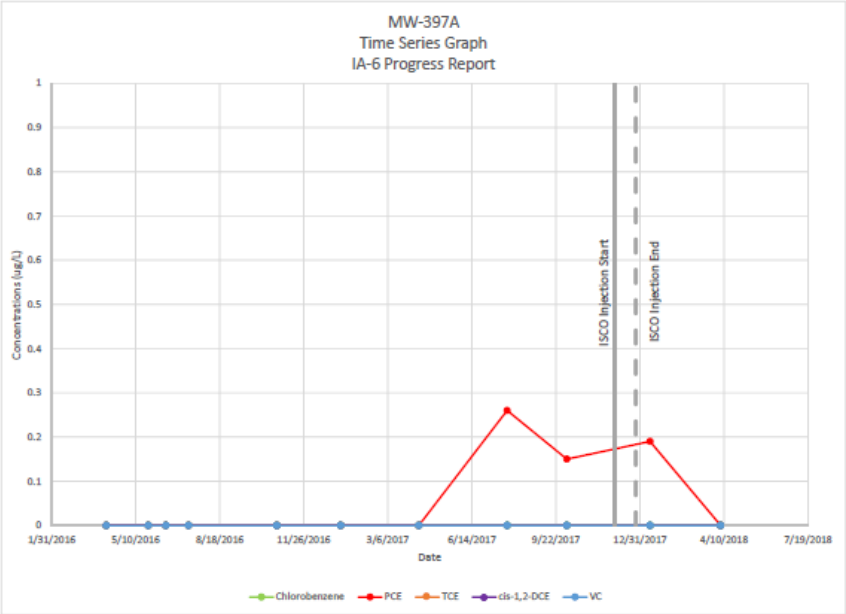


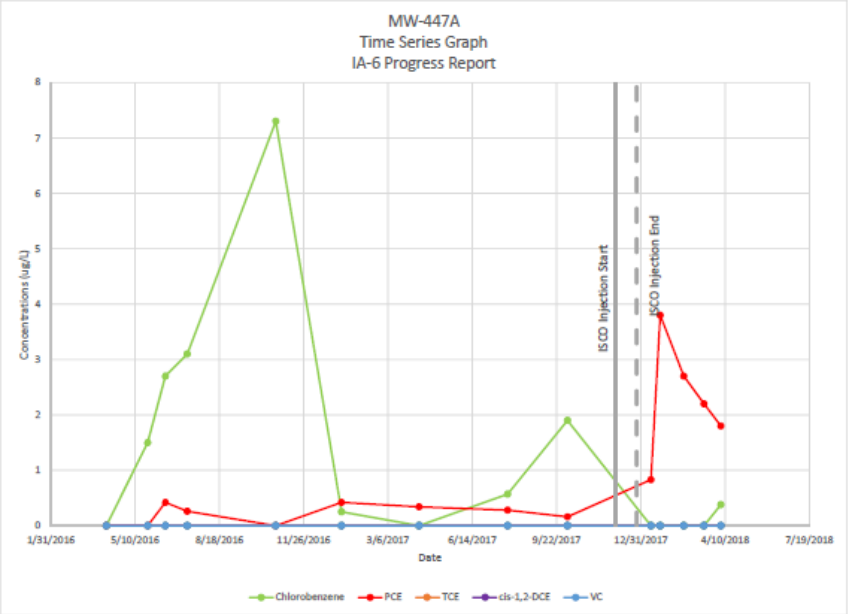


Appendix H - Groundwater Concentration Trend Graphs
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6









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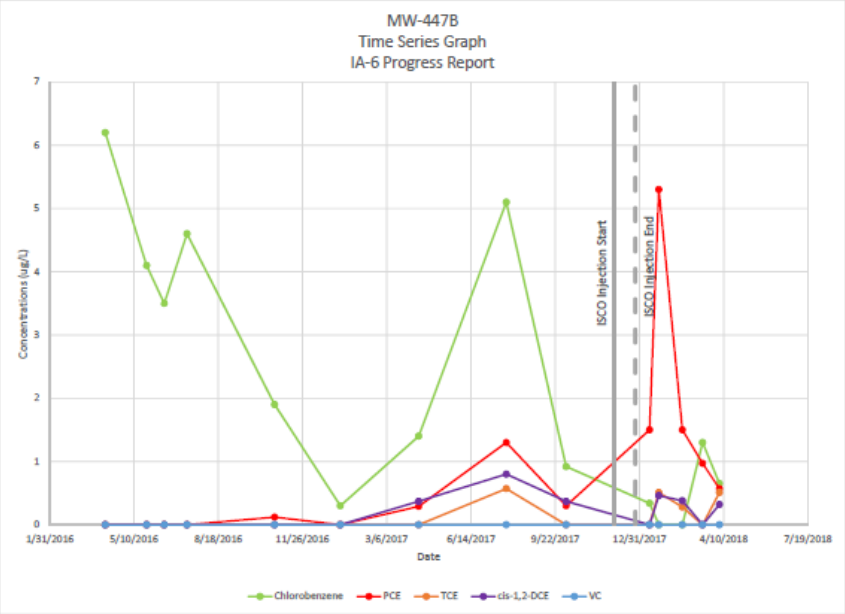
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6



APPENDIX I

LOW-FLOW GROUNDWATER SAMPLING CALCULATIONS AND MEASUREMENTS

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
ART-75	7/26/2017	8:30	32.55	12.29	0.0	ND	ND	Monsoon	Teflon	16.5	8:35	9:05	225	4.0	20.19	6.57	1088	0.54	2.51	132.5	9.6	706	YSI	06D2138	
ART-75	10/5/2017	10:00	32.60	13.43	0.0	ND	ND	Monsoon	Teflon	16.5	10:05	10:30	250	2.0	28.02	9.11	2527	1.30	7.04	-157.0	4.3	1644	YSI	0K8101210	
ART-75	11/7/2017	8:40	23.50	10.29	0.0	ND	ND	Monsoon	Teflon	16.5	8:45	9:10	225	1.5	27.12	6.36	3360	1.75	6.95	11.7	3.5	2184	YSI	0K8101210	
ART-75	1/11/2018	11:20	26.76	12.39	0.0	ND	ND	Monsoon	Teflon	16.5	11:25	11:50	300	2.0	15.79	5.97	3312	1.74	13.41	321.6	23.7	2154	YSI	16A104327	
ART-75	3/16/2018	9:48	32.56	11.21	0	NM	NM	Monsoon	Teflon	16.5	9:55	10:20	200	2	10.77	6.51	2048	1.05	4.00	279.3	41.4	1333	YSI	05D2720	
ART-75	4/5/2018	11:50	33.62	10.46	0.0	ND	ND	Monsoon	Teflon	16.5	12:00	12:30	220	3.0	13.81	7.18	2523	1.31	0.93	191.6	94.9	1640	YSI	07D100535	
ART-75	5/18/2018	8:19	32.71	11.02	0.0	ND	ND	Monsoon	Teflon	16.5	8:30	8:55	225	2.0	16.98	6.39	1141	0.57	3.47	208.9	48.6	744	YSI	05D02720	
ART-75	5/31/2018	13:30	33.00	12.74	501.1	ND	ND	Peristaltic	Teflon	16.5	13:35	14:00	225	2.0	18.00	6.08	1480	0.75	2.82	31.4	65.8	962	YSI	16A104327	
ART-75	6/26/2018	11:00	30.15	11.59	0	ND	ND	Peristaltic	Teflon	16.5	11:05	11:30	260	3	22.23	6.81	3990	1.97	1.38	-225.3	23.1	1823	YSI	13L10054	

FINAL 3 READINGS

Well: ART-75 | Sample Start Time: 9:05 | Finish: 9:10
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:55	13.32	19.99	6.98	1075	0.53	0.48	43.7	4.3	700
9:00	13.49	19.97	7.00	1075	0.53	0.48	42.6	4.2	700
9:05	13.64	19.98	7.01	1074	0.53	0.48	41.9	4.1	700

Comments:

Well: ART-75 | Sample Start Time: 10:30 | Finish: 10:35
Weather Conditions: clear

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:20	13.83	28.63	9.29	2551	1.30	7.27	-191.9	4.3	1656
10:25	13.90	28.49	9.34	2551	1.30	7.46	-197.3	4.1	1656
10:30	13.98	28.96	9.37	2549	1.31	7.30	-198.8	4.2	1660

Comments:

Well: ART-75 | Sample Start Time: 9:10 | Finish: 9:13
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	11.62	24.50	7.83	3406	1.78	7.52	51.0	2.8	2214
9:05	11.98	24.45	7.84	3401	1.78	7.55	49.7	2.8	2210
9:10	12.34	24.41	7.84	3400	1.78	7.49	46.1	2.7	2207

Comments: NA

Well: ART-75 | Sample Start Time: 11:50 | Finish: 11:55
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:40	12.71	17.60	5.95	3343	1.76	13.05	307.0	20.5	2172
11:45	12.74	17.47	5.95	3345	1.76	13.11	304.7	19.7	2174
11:50	12.78	17.37	5.95	3343	1.76	13.23	303.6	18.9	2175

Comments:

Well: ART-75 | Sample Start Time: 10:20 | Finish: 10:30
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:10	10.93	10.43	6.61	2125	1.09	2.80	247.8	58.4	1381
10:15	10.91	10.46	6.62	2122	1.09	2.80	244.2	57.3	1380
10:20	10.89	10.51	6.62	2128	1.1	2.80	237.9	55.7	1383

Comments: NA

Well: ART-75 | Sample Start Time: 12:30 | Finish: 12:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:20	10.78	13.69	6.71	2444	1.28	0.90	184.9	51.2	1592
12:25	10.81	13.68	6.70	2442	1.27	0.88	184.3	50.7	1590
12:30	10.83	13.64	6.67	2443	1.27	0.86	184.8	50.3	1589

Comments:

Well: ART-75 | Sample Start Time: 8:55 | Finish: 9:02
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:45	11.24	16.95	6.28	1246	0.62	1.37	207.2	51.3	810
8:50	11.25	17.01	6.29	1244	0.62	1.39	205.0	51.2	809
8:55	11.28	17.03	6.32	1242	0.62	1.41	202.8	50.7	807

Comments: NA

Well: ART-75 | Sample Start Time: 14:00 | Finish: 14:06
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:50	12.39	18.46	6.09	1610	0.82	1.51	35.6	39.1	1046
13:55	12.35	18.40	6.08	1618	0.82	1.48	36.3	37.8	1051
14:00	12.30	18.35	6.08	1623	0.83	1.42	37.9	36.9	1060

Comments: Peristaltic pump used due to injection cap diameter.

Well: ART-75 | Sample Start Time: 11:30 | Finish: 11:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:20	NA	21.44	5.92	2296	1.25	1.23	-157.1	17	1160
11:25	NA	21.38	5.89	2293	1.21	1.22	-153	16.9	1149
11:30	NA	21.32	5.86	2290	1.18	1.2	-151.2	16.8	1145

Comments: Peristaltic used due to well diameter being 1/2", new cap glued on. Unable to record DTW during low-flow purging.

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).

NJDEP Lab Certification No. 13400

Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
ART-76	7/26/2017	10:40	33.20	13.35	0.0	ND	ND	Monsoon	Teflon	23	10:47	11:17	375	3.0	22.32	6.36	3317	1.74	6.39	179.7	159.0	2154	YSI	07H102075	
ART-76	11/7/2017	8:27	33.39	14.22	0.0	ND	ND	Monsoon	Teflon	16.5	9:03	9:28	250	3.0	24.82	6.31	3721	1.96	23.36	150.4	67.3	2416	YSI	12C100125	
ART-76	5/18/2018	9:26	33.15	11.79	0.0	ND	ND	Monsoon	Teflon	16.5	9:41	10:06	200	2.0	17.08	5.87	2703	1.41	3.48	270.4	55.1	1762	YSI	05D02720	
ART-76	5/31/2018	14:35	NA	NA	500.9	ND	ND	Peristaltic	Teflon	16.5	14:40	15:05	200	1.5	18.70	5.76	4028	2.14	1.57	61.5	89.0	2618	YSI	16A104327	
ART-76	6/26/2018	12:20	NA	NA	6.3	ND	ND	Peristaltic	Teflon	16.5	12:33	12:58	200	2	22.11	5.81	4730	2.53	2.21	-119.8	16.7	3072	YSI	15F101567	
ART-77	7/26/2017	11:50	47.90	13.41	0.0	ND	ND	Monsoon	Teflon	36.5	11:55	12:25	375	3.0	24.08	7.24	2318	1.17	3.63	-50.0	14.0	1412	YSI	07H102075	
ART-77	10/5/2017	11:10	48.80	14.69	0.0	ND	ND	Monsoon	Teflon	36.5	11:20	11:45	250	2.0	28.64	8.07	2982	1.54	8.62	72.7	49.9	1938	YSI	13D101777	
ART-77	11/7/2017	10:55	47.75	13.70	0.0	ND	ND	Monsoon	Teflon	36.5	11:00	11:25	250	1.5	23.54	6.26	4316	2.30	7.63	72.5	5.2	2805	YSI	0K8101210	
ART-77	1/11/2018	11:30	48.73	13.81	0.0	ND	ND	Monsoon	Teflon	36.5	11:39	12:04	225	2.0	14.40	2.42	21490	12.99	26.06	493.7	96.2	14060	YSI	07G100122	

FINAL 3 READINGS

Well: ART-76 | Sample Start Time: 11:17 | Finish: 11:22
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:07	13.37	22.72	6.32	3320	1.74	4.25	150.2	19.3	2154
11:12	13.36	20.42	6.30	3316	1.74	4.10	150.1	19.1	2150
11:17	13.37	19.86	6.27	3312	1.74	3.97	149.1	18.6	2146

Comments:

Well: ART-76 | Sample Start Time: 9:28 | Finish: 9:33
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:18	15.09	27.35	6.46	3720	1.95	24.35	148.3	33.2	2417
9:23	14.80	27.29	6.46	3724	1.97	24.36	148.7	32.8	2421
9:28	14.71	27.26	6.46	3727	1.97	24.30	149.1	33.4	2425

Comments: NA

Well: ART-76 | Sample Start Time: 10:06 | Finish: 10:13
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:56	11.80	17.43	5.86	2785	1.45	3.05	241.9	53.8	1810
10:01	11.80	17.46	5.87	2782	1.45	2.97	237.5	53.6	1809
10:06	11.80	17.40	5.86	2782	1.45	2.99	234.9	53.1	1808

Comments: NA

Well: ART-76 | Sample Start Time: 15:05 | Finish: 15:11
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:55	NA	18.98	5.77	4119	2.19	0.10	-10.2	80.0	2677
15:00	NA	18.91	5.76	4110	2.18	0.10	-13.4	77.0	2671
15:05	NA	18.87	5.76	4099	2.18	0.09	-17.6	77.0	2669

Comments: Peristaltic pump used due to injection cap diameter. NA = Unable to gauge due to construction of injection cap (curved).

Well: ART-76 | Sample Start Time: 12:58 | Finish: 13:04
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:48	NA	21.93	5.68	4724	2.53	2.99	-188.3	5.4	3071
12:53	NA	21.96	5.67	4719	2.52	2.92	-194.5	5.4	3068
12:58	NA	21.97	5.67	4717	2.52	2.89	-196.1	5.3	3064

Comments: Peristaltic pump used. Well opening too narrow for Monsoon Pump due to injection connection. Unable to gauge DTW & TD. Connection bent at 90° angle.

Well: ART-77 | Sample Start Time: 12:25 | Finish: 12:30
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:15	13.58	22.55	7.07	2190	1.12	0.40	-120.7	4.8	1422
12:20	13.59	22.26	7.04	2176	1.12	0.39	-124.3	4.5	1417
12:25	13.61	21.97	7.02	2144	1.11	0.37	-127.9	4.5	1412

Comments:

Well: ART-77 | Sample Start Time: 11:45 | Finish: 11:50
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:35	14.47	28.90	8.09	2964	1.53	7.51	88.9	44.8	1924
11:40	14.46	28.84	8.09	2964	1.53	7.54	91.7	44.7	1923
11:45	14.42	28.81	8.08	2965	1.53	7.55	92.9	44.1	1923

Comments:

Well: ART-77 | Sample Start Time: 11:25 | Finish: 11:28
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:15	13.73	23.25	7.09	4459	2.38	7.98	41.3	4.1	2898
11:20	13.73	23.16	7.10	4457	2.38	7.91	40.6	4.3	2897
11:25	13.73	22.89	7.11	4452	2.38	7.78	40.2	4.3	2903

Comments: NA

Well: ART-77 | Sample Start Time: 12:04 | Finish: 12:09
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:54	13.81	14.96	2.20	22620	13.65	33.01	510.7	105.8	14670
11:59	13.81	15.01	2.20	22580	13.66	32.88	514.9	106.3	14680
12:04	13.81	15.04	2.21	22540	13.64	32.92	519.7	105.9	14650

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
ART-77	2/20/2018	11:32	46.07	12.28	2.1	ND	ND	Monsoon	Teflon	36.5	11:42	12:07	200	2	17.28	5.86	8297	4.65	14.01	336.3	74.4	5432	YSI	05D2720	
ART-77	3/16/2018	8:40	43.18	12.77	0.2	NM	NM	Monsoon	Teflon	36.5	8:45	9:10	225	2	13.98	6.28	5112	2.77	7.30	213.3	4.6	3323	YSI	16A104327	
ART-77	4/5/2018	9:30	46.12	11.95	0.0	ND	ND	Monsoon	Teflon	36.5	9:40	10:05	270	3.0	13.05	6.66	4984	2.70	9.11	201.9	81.1	3246	YSI	07D100535	
ART-77	5/18/2018	9:45	47.60	11.94	0.0	ND	ND	Monsoon	Teflon	36.5	10:00	10:30	250	3.0	17.91	6.80	3506	1.85	6.99	181.6	37.0	2280	YSI	15F100872	
ART-77	5/31/2018	13:43	47.49	12.90	0.0	ND	ND	Monsoon	Teflon	36.5	13:56	14:21	225	2.0	19.73	6.19	6367	3.58	2.09	-20.4	993.0	4279	YSI	05D2720	
ART-77	6/26/2018	8:55	44.21	12.82	0	ND	ND	Monsoon	Teflon	36.5	9:00	9:25	270	3	19.43	7.22	41280	26.56	4.96	-167.8	79	20690	YSI	13L10054	
ART-78	7/26/2017	10:20	32.81	12.99	0.0	ND	ND	Monsoon	Teflon	16.5	10:30	11:00	260	2.0	23.60	7.07	1543	0.78	3.74	98.2	11.3	1005	YSI	11B100644	
ART-78	10/5/2017	8:45	37.25	12.27	0.0	ND	ND	Monsoon	Teflon	16.5	8:50	9:15	375	3.0	20.40	6.99	3535	1.86	9.95	-59.1	3.7	2297	YSI	0K8101210	
ART-78	11/7/2017	13:35	27.05	12.93	0.0	ND	ND	Monsoon	Teflon	16.5	13:40	14:05	275	2.0	18.37	5.41	4203	2.25	9.26	46.5	29.6	2739	YSI	0K8101210	

FINAL 3 READINGS

Well: ART-77 | Sample Start Time: 12:07 | Finish: 12:17
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:57	12.23	18.2	5.4	9441	5.32	12.86	435.2	68.8	6138
12:02	12.23	18.16	5.41	9440	5.32	12.8	440.6	68.1	6133
12:07	12.23	18.22	5.43	9438	5.31	12.9	444.1	67.9	6128

Comments:

Well: ART-77 | Sample Start Time: 9:10 | Finish: 9:20
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	12.23	12.23	6.39	5283	2.86	6.40	256.9	3.6	3434
9:05	12.17	12.35	6.39	5280	2.86	6.30	258.2	3.3	3432
9:10	12.14	12.42	6.39	5286	2.87	6.30	259.2	3.4	3437

Comments: NA

Well: ART-77 | Sample Start Time: 10:05 | Finish: 10:10
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:55	11.98	12.84	6.31	5017	2.71	7.94	224.7	13.8	3261
10:00	11.98	12.86	6.31	5022	2.71	7.91	221.6	12.9	3261
10:05	11.98	12.82	6.32	5025	2.71	7.87	228.3	12.4	3261

Comments:

Well: ART-77 | Sample Start Time: 10:30 | Finish: 11:30
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:20	11.94	17.90	6.64	3449	1.82	6.64	206.0	15.7	2240
10:25	11.94	17.92	6.67	3432	1.81	6.69	209.3	16.3	2230
10:30	11.94	17.99	6.62	3417	1.80	6.82	212.9	16.9	2225

Comments: MS/MSD

Well: ART-77 | Sample Start Time: 14:21 | Finish: 14:39
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:11	12.58	19.75	6.50	7006	3.86	1.53	-86.7	1017.0	4551
14:16	12.56	19.75	6.46	7003	3.84	1.57	-90.1	1010.0	4548
14:21	12.49	19.79	6.44	7003	3.82	1.49	-95.1	1022.0	4543

Comments: MS/MSD

Well: ART-77 | Sample Start Time: 9:25 | Finish: 10:16
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:15	14.68	20.14	7.17	41500	26.64	8.15	-12.1	110	20760
9:20	15.14	20.26	7.16	41540	26.67	8.23	-8.3	113	20780
9:25	15.60	20.35	7.14	41560	26.71	8.28	-5.4	117	20800

Comments: DUP

Well: ART-78 | Sample Start Time: 11:00 | Finish: 11:05
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:50	13.10	25.31	6.65	1563	0.78	1.68	94.2	5.3	1019
10:55	13.10	25.37	6.63	1568	0.79	1.69	93.8	5.3	1021
11:00	13.10	25.42	6.62	1570	0.79	1.72	93.1	5.2	1021

Comments:

Well: ART-78 | Sample Start Time: 9:15 | Finish: 9:20
Weather Conditions: clear

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:05	13.82	21.14	6.63	3578	1.89	5.10	-71.0	3.3	2326
9:10	14.43	21.16	6.62	3578	1.89	5.18	-71.6	3.2	2325
9:15	14.75	21.20	6.60	3577	1.89	5.29	-70.1	3.1	2325

Comments:

Well: ART-78 | Sample Start Time: 14:05 | Finish: 14:08
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:55	13.09	19.52	5.82	4459	2.39	10.99	27.1	29.9	2898
14:00	13.11	19.60	5.83	4461	2.39	10.81	26.9	29.0	2899
14:05	13.11	19.66	5.85	4461	2.39	10.76	26.8	28.2	2899

Comments: NA

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
ART-78	1/11/2018	10:05	28.10	13.22	0.0	ND	ND	Monsoon	Teflon	16.5	10:10	10:35	250	2.0	14.58	5.75	4672	2.54	12.07	315.6	86.9	3056	YSI	16A104327	
ART-78	2/20/2018	11:10	32.75	11.85	0	ND	ND	Monsoon	Teflon	16.5	11:15	11:40	250	2	13.89	6.15	2521	1.3	2.11	274.5	20.1	1630	YSI	16A104327	
ART-78	3/16/2018	8:33	32.84	12.20	0	NM	NM	Monsoon	Teflon	16.5	8:44	9:09	225	2	9.84	5.92	5013	2.71	5.20	224.9	15.5	3267	YSI	05D2720	
ART-78	4/5/2018	10:45	32.50	11.44	0.0	ND	ND	Monsoon	Teflon	16.5	10:55	11:20	260	3.0	14.81	7.02	5561	2.99	5.01	214.1	44.2	3577	YSI	07D100535	
ART-78	5/18/2018	8:30	31.02	11.89	0.0	ND	ND	Monsoon	Teflon	16.5	8:35	9:00	250	2.0	17.23	6.37	2144	1.11	2.42	165.4	15.8	1077	YSI	13L10054	
ART-78	5/31/2018	14:30	33.00	12.39	0.0	ND	ND	Monsoon	Teflon	16.5	14:35	15:00	270	3.0	19.48	5.54	3615	1.92	2.53	-18.8	172.0	1812	YSI	13L10054	
ART-78	6/26/2018	8:45	33.17	11.63	0	ND	ND	Monsoon	Teflon	16.5	8:50	9:15	300	4	20.47	6.49	2463	1.27	0.68	44.7	12.5	1604	YSI	13D101256	
ART-79	7/26/2017	9:35	66.24	12.17	0.0	ND	ND	Monsoon	Teflon	49	9:40	10:05	350	4.0	19.47	6.88	1871	0.95	8.31	220.3	9.2	1215	YSI	13J101897	
ART-79	7/26/2017	8:25	66.24	12.80	0.0	ND	ND	Monsoon	Teflon	22.75	8:30	9:00	350	4.0	20.92	6.96	1752	0.89	0.65	109.5	16.7	1139	YSI	13J101897	

FINAL 3 READINGS

Well: ART-78 | Sample Start Time: 10:35 | Finish: 10:40
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:25	13.29	17.24	5.73	5000	2.70	11.36	336.2	9.4	3250
10:30	13.29	17.13	5.74	5002	2.70	11.15	336.5	9.2	3252
10:35	13.29	17.02	5.73	5011	2.71	11.26	336.9	9.1	3259

Comments:

Well: ART-78 | Sample Start Time: 11:40 | Finish: 11:48
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:30	11.91	14.23	6.1	2795	1.46	1.15	278.6	2.1	1817
11:35	11.92	14.25	6.1	2796	1.46	1.14	278.6	2	1818
11:40	11.92	14.25	6.1	2797	1.46	1.15	278.6	2.1	1819

Comments:

Well: ART-78 | Sample Start Time: 9:09 | Finish: 9:19
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:59	11.86	9.1	6.07	5253	2.84	3.20	245.4	2.4	3417
9:04	11.80	9.13	6.08	5256	2.84	3.20	249	2.3	3414
9:09	11.79	9.16	6.1	5262	2.85	3.20	250.4	2.3	3419

Comments: NA

Well: ART-78 | Sample Start Time: 11:20 | Finish: 11:25
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:10	11.55	14.23	6.68	5480	2.95	4.20	208.7	9.7	3549
11:15	11.56	14.30	6.65	5472	2.96	4.17	206.9	9.6	3549
11:20	11.56	14.34	6.64	5469	2.96	4.16	206.4	9.5	3551

Comments:

Well: ART-78 | Sample Start Time: 9:00 | Finish: 9:18
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:50	11.89	17.28	6.42	2175	1.12	0.32	94.6	13.2	1089
8:55	11.89	17.27	6.43	2174	1.13	0.31	92.9	12.8	1088
9:00	11.89	17.27	6.44	2173	1.13	0.31	91.5	12.6	1087

Comments: NA

Well: ART-78 | Sample Start Time: 15:00 | Finish: 15:05
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:50	12.45	19.37	5.54	3581	1.89	0.27	-32.8	156.0	1790
14:55	12.47	19.38	5.54	3582	1.88	0.25	-34.1	155.0	1791
15:00	12.49	19.38	5.54	3583	1.89	0.25	-35.7	155.0	1791

Comments: NA

Well: ART-78 | Sample Start Time: 9:15 | Finish: 10:15
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:05	11.75	20.45	6.46	2537	1.31	0.23	-59.8	7.4	1650
9:10	11.76	20.33	6.46	2539	1.31	0.22	-57.3	7.2	1651
9:15	11.76	20.29	6.47	2541	1.31	0.21	-57.4	7.1	1651

Comments: MS/MSD

Well: ART-79 | Sample Start Time: 10:05 | Finish: 10:10
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:55	12.71	19.99	6.89	1862	0.95	6.81	199.4	12.4	1210
10:00	12.73	20.11	6.90	1864	0.95	6.61	196.8	12.7	1211
10:05	12.71	20.30	6.90	1866	0.95	6.40	193.5	12.6	1213

Comments:

Well: ART-79 | Sample Start Time: 9:00 | Finish: 9:05
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:50	12.73	21.50	6.89	1850	0.95	0.42	155.2	16.4	1205
8:55	12.75	21.40	6.88	1861	0.95	0.42	153.0	16.3	1210
9:00	12.76	21.30	6.88	1866	0.95	0.41	151.6	16.3	1214

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
ART-79	11/7/2017	8:25	66.00	15.95	0.0	ND	ND	Monsoon	Teflon	31.5	8:35	9:05	200	3.0	19.91	7.16	3904	2.04	10.82	48.3	42.4	2535	YSI	13J101897	
ART-79	2/20/2018	10:50	66.17	12.59	0	ND	ND	Monsoon	Teflon	25	11:00	11:25	230	3	15.53	7.32	2533	1.32	14.71	151.1	60.9	1647	YSI	07D100535	
ART-80	7/26/2017	8:20	66.31	12.96	0.1	ND	ND	Monsoon	Teflon	22.75	8:30	8:55	250	2.0	21.24	6.98	1327	0.66	2.61	157.9	12.9	863	YSI	11B100644	
ART-80	7/26/2017	9:15	66.31	12.96	0.1	ND	ND	Monsoon	Teflon	49	9:25	9:50	270	2.0	20.51	6.88	2417	1.12	3.12	119.9	17.1	1499	YSI	11B100644	
ART-80	11/7/2017	12:00	66.00	13.15	0.0	ND	ND	Monsoon	Teflon	31.5	12:10	12:40	200	3.0	19.62	7.49	3642	1.96	8.98	42.7	20.2	2420	YSI	13J101897	
ART-80	2/20/2018	11:36	66.13	11.48	0	ND	ND	Monsoon	Teflon	16.5	11:52	12:22	325	3	17.12	6.74	3578	1.89	13.32	190.3	6.8	2319	YSI	13D101777	
ART-81	7/27/2017	10:26	63.07	13.20	0.0	ND	ND	Monsoon	Teflon	22.54	10:31	10:56	320	4.0	18.74	6.91	2468	1.28	0.37	53.7	56.1	1604	YSI	13J101897	
ART-81	7/27/2017	11:32	63.07	12.80	0.0	ND	ND	Monsoon	Teflon	49	11:37	12:02	320	4.0	19.04	6.92	2487	1.29	2.48	83.8	25.7	1616	YSI	13J101897	
ART-82	7/27/2017	9:30	67.40	13.08	0.0	ND	ND	Monsoon	Teflon	44	9:35	10:00	240	4.0	19.99	6.62	2989	1.56	3.79	159.6	11.1	1942	YSI	06D2138	

FINAL 3 READINGS

Well: ART-79 | Sample Start Time: 9:05 | Finish: 9:13
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:55	15.95	20.01	7.27	3940	2.12	10.21	63.6	34.6	2545
9:00	15.95	20.04	7.30	3943	2.13	10.26	67.7	33.4	2546
9:05	15.95	20.06	7.32	3945	2.13	10.29	70.6	32.2	2547

Comments: NA

Well: ART-79 | Sample Start Time: 11:25 | Finish: 11:30
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:15	12.30	15.92	7.28	2541	1.32	16.18	165.2	47.8	1651
11:20	12.27	15.97	7.26	2542	1.32	16.22	166.3	47.2	1652
11:25	12.20	15.99	7.26	2545	1.32	16.27	168.1	47.1	1654

Comments:

Well: ART-80 | Sample Start Time: 8:55 | Finish: 9:05
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:45	13.01	21.74	6.77	1421	0.71	1.64	117.1	13.1	921
8:50	13.01	21.80	6.79	1424	0.71	1.67	116.3	12.8	928
8:55	13.01	21.82	6.80	1429	0.72	1.69	115.1	12.4	931

Comments: DUP TAKEN

Well: ART-80 | Sample Start Time: 9:50 | Finish: 9:55
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:40	12.99	19.70	6.86	2377	1.22	1.30	107.1	9.8	1541
9:45	12.99	19.67	6.86	2379	1.23	1.34	107.4	9.7	1544
9:50	12.99	19.64	6.85	2379	1.23	1.39	106.8	9.7	1547

Comments:

Well: ART-80 | Sample Start Time: 12:40 | Finish: 12:53
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:30	13.15	19.77	7.45	3660	1.95	8.93	57.9	8.2	2404
12:35	13.15	19.80	7.44	3663	1.96	8.81	60.6	8.0	2405
12:40	13.15	19.83	7.43	3665	1.96	8.94	63.3	8.0	2405

Comments: NA

Well: ART-80 | Sample Start Time: 12:22 | Finish: 12:27
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:12	11.81	17.4	6.61	3661	1.94	13.34	206.7	4.2	2379
12:17	11.88	17.44	6.61	3669	1.94	13.29	207.2	4.2	2381
12:22	11.95	17.5	6.61	3672	1.95	13.22	209.1	4	2384

Comments:

Well: ART-81 | Sample Start Time: 10:56 | Finish: 11:01
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:46	13.56	19.51	6.90	2476	1.28	0.29	30.4	59.3	1610
10:51	13.62	19.55	6.89	2476	1.28	0.28	29.6	59.8	1610
10:56	13.60	19.61	6.89	2477	1.28	0.28	29.2	59.1	1610

Comments:

Well: ART-81 | Sample Start Time: 12:02 | Finish: 12:07
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:52	13.28	19.38	6.91	2483	1.28	1.39	50.4	28.9	1614
11:57	13.33	19.46	6.91	2483	1.28	1.29	50.7	29.3	1614
12:02	13.37	19.57	6.91	2483	1.28	1.20	51.0	29.0	1614

Comments:

Well: ART-82 | Sample Start Time: 10:00 | Finish: 10:05
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:50	13.14	18.87	7.03	2954	1.54	0.48	113.2	5.9	1919
9:55	13.16	18.85	7.03	2953	1.54	0.46	112.5	5.9	1918
10:00	13.18	18.83	7.06	2952	1.54	0.46	111.3	5.8	1918

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
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Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
ART-83	7/27/2017	9:23	66.12	14.37	0.0	ND	ND	Monsoon	Teflon	22.54	9:41	10:06	250	2.0	21.28	7.14	3311	1.74	1.97	-69.2	7.9	2153	YSI	12L100448	
ART-83	7/27/2017	9:23	66.12	14.37	0.0	ND	ND	Monsoon	Teflon	49	10:30	10:55	225	2.0	19.43	7.17	3311	1.74	1.55	-61.8	4.3	2156	YSI	12L100448	
ART-84	7/27/2017	12:45	66.53	14.93	0.0	ND	ND	Monsoon	Teflon	44	12:50	13:15	320	4.0	18.20	7.31	2448	1.27	0.33	-96.6	7.7	1591	YSI	13J101897	
ART-85	7/27/2017	11:31	67.98	15.08	0.0	ND	ND	Monsoon	Teflon	44	11:41	12:06	225	2.0	22.04	7.17	3510	1.85	3.19	11.3	15.7	2288	YSI	12L100448	
ART-85	10/5/2017	12:04	68.15	19.29	0.0	ND	ND	Monsoon	Teflon	44	12:20	12:45	200	2.0	25.19	7.72	3489	1.83	10.71	40.4	13.3	2268	YSI	12C100125	
ART-85	1/11/2018	9:00	64.90	15.65	0.0	ND	ND	Monsoon	Teflon	44	9:05	9:30	250	4.0	17.93	5.56	4164	2.23	10.35	271.7	16.5	2718	YSI	07G100121	
ART-85	3/16/2018	9:50	67.8	13.90	0	NM	NM	Monsoon	Teflon	44	10:00	10:25	250	3	18.55	7.81	3407	1.78	12.70	-42.8	74.8	2201	YSI	07D100535	
ART-85	4/5/2018	8:40	67.95	12.40	0.0	ND	ND	Monsoon	Teflon	44	8:45	9:10	250	2.0	19.06	7.61	3814	2.03	11.64	137.2	91.4	2483	YSI	16A104327	
ART-86	7/27/2017	9:20	77.30	18.78	0.0	ND	ND	Monsoon	Teflon	61.5	9:30	10:00	350	3.0	19.33	7.24	3925	2.08	2.20	-150.9	14.2	2542	YSI	07H102075	

FINAL 3 READINGS

Well: ART-83 | Sample Start Time: 10:06 | Finish: 10:11
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:56	14.21	22.88	7.27	3321	1.74	0.72	-58.9	5.4	2159
10:01	14.21	22.98	7.28	3321	1.74	0.71	-50.8	5.4	2159
10:06	14.21	22.92	7.28	3323	1.74	0.68	-49.7	5.3	2160

Comments:

Well: ART-83 | Sample Start Time: 10:55 | Finish: 11:00
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:45	13.99	22.88	7.36	3372	1.77	0.59	-48.2	9.7	2193
10:50	13.99	22.80	7.36	3368	1.77	0.57	-53.4	9.7	2189
10:55	13.99	22.76	7.37	3366	1.77	0.54	-56.2	9.7	2187

Comments:

Well: ART-84 | Sample Start Time: 13:15 | Finish: 13:20
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:05	14.65	17.96	7.29	2453	1.27	0.17	-96.1	6.7	1594
13:10	14.66	17.91	7.29	2457	1.28	0.16	-98.1	6.8	1598
13:15	14.67	17.85	7.29	2460	1.28	0.16	-101.5	7.0	1600

Comments:

Well: ART-85 | Sample Start Time: 12:06 | Finish: 12:11
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:56	14.79	23.39	7.17	3522	1.85	1.81	-20.1	33.4	2289
12:01	14.77	23.33	7.17	3518	1.85	1.77	-16.4	32.9	2287
12:06	14.75	23.31	7.17	3517	1.85	1.75	-12.2	32.6	2287

Comments:

Well: ART-85 | Sample Start Time: 12:45 | Finish: 13:00
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:35	18.45	24.46	7.82	3492	1.83	9.69	39.4	11.6	2269
12:40	18.40	24.42	7.80	3493	1.83	9.65	41.7	11.4	2271
12:45	18.35	24.37	7.79	3493	1.83	9.60	43.4	11.2	2271

Comments:

Well: ART-85 | Sample Start Time: 9:30 | Finish: 9:35
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:20	15.57	18.70	7.54	4119	2.22	10.62	237.6	4.9	2680
9:25	15.58	18.81	7.57	4115	2.21	10.58	237.2	4.8	2683
9:30	15.60	18.89	7.60	4113	2.20	10.55	236.7	4.8	2685

Comments:

Well: ART-85 | Sample Start Time: 10:25 | Finish: 10:38
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:15	13.90	19.33	8.08	3446	1.81	12.40	68.4	51.4	2241
10:20	13.91	19.29	8.09	3444	1.81	12.30	70.1	51.1	2239
10:25	13.91	19.24	8.1	3444	1.81	12.30	70.2	50.7	2237

Comments: NA

Well: ART-85 | Sample Start Time: 9:10 | Finish: 9:15
Weather Conditions: clear

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	14.79	21.47	8.12	3837	2.03	12.91	131.0	57.8	2493
9:05	14.80	21.43	8.11	3839	2.03	12.82	131.2	55.4	2497
9:10	14.82	21.27	8.12	3843	2.04	12.71	131.5	53.70	2502

Comments:

Well: ART-86 | Sample Start Time: 10:00 | Finish: 10:05
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:50	17.93	18.74	7.28	3816	2.03	0.27	-194.4	15.2	2482
9:55	18.12	18.60	7.28	3804	2.03	0.26	-197.2	15.1	2471
10:00	18.34	18.63	7.28	3798	2.02	0.25	-199.4	14.8	2465

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
ART-87	7/27/2017	10:32	63.15	14.82	0.0	ND	ND	Monsoon	Teflon	46.5	10:42	11:12	375	3.0	19.42	7.43	2845	1.47	2.95	-62.2	20.8	1828	YSI	07H102075	
ART-88	7/27/2017	13:05	75.50	14.58	0.0	ND	ND	Monsoon	Teflon	59	13:15	13:45	200	2.0	20.41	7.31	2868	1.50	1.61	-193.6	10.1	1872	YSI	08A100738	
ART-89	7/27/2017	11:00	33.70	12.52	0.0	ND	ND	Monsoon	Teflon	22.37	11:05	11:35	230	4.0	23.51	7.53	1091	0.51	5.41	52.1	*	656	YSI	06D2138	
BIOS-1B	7/27/2017	12:10	71.39	11.80	0.0	ND	ND	Peristaltic	Teflon	65	12:15	12:45	245	3.0	20.82	7.37	2147	1.11	2.39	55.3	13.3	1403	YSI	06D2138	
BIOS-1B	5/21/2018	12:00	71.60	11.11	0.0	ND	ND	Monsoon	Teflon	65	12:05	12:30	260	2.0	20.20	6.93	3594	1.90	1.47	85.4	71.1	1796	YSI	13L10054	
BIOS-1B	8/2/2018	9:40	70.01	10.44	5.1	ND	ND	Monsoon	Teflon	65	9:52	10:17	200	2	22.46	6.88	3545	1.89	1.28	-305.2	13.9	2342	YSI	11D101945	
BIOS-1B	8/30/2018	9:20	70.01	10.11	0.3	NM	NM	Monsoon	Teflon	65	9:34	9:59	200	2	23.1	6.69	3387	1.78	1.7	-260.4	29	2212	YSI	11D101945	
BIOS-1B	9/17/2018	10:13	70.01	10.63	0.0	ND	ND	Monsoon	Teflon	65	10:23	10:48	200	2.0	22.13	6.59	3945	1.86	2.59	-238.1	12.6	2297	YSI	11D101945	
BIOS-2B	7/27/2017	13:15	71.70	12.25	0.0	ND	ND	Peristaltic	Teflon	65	13:20	13:45	245	3.0	22.58	7.53	2813	1.46	4.54	56.8	9.6	1831	YSI	06D2138	

FINAL 3 READINGS

Well: ART-87 | Sample Start Time: 11:12 | Finish: 11:17
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:02	14.11	20.65	7.23	2699	1.40	0.34	-82.9	8.8	1756
11:07	14.11	20.71	7.23	2709	1.40	0.34	-84.4	8.3	1759
11:12	14.12	20.84	7.23	2717	1.40	0.35	-87.9	8.2	1763

Comments:

Well: ART-88 | Sample Start Time: 13:45 | Finish: 13:55
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:35	14.83	20.23	7.25	2880	1.50	1.22	-204.3	9.9	1874
13:40	14.88	20.21	7.27	2883	1.50	1.18	-207.2	10.0	1873
13:45	14.93	20.17	7.29	2885	1.50	1.14	-210.5	10.0	1873

Comments:

Well: ART-89 | Sample Start Time: 11:35 | Finish: 11:40
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:25	13.33	20.51	7.05	876	0.43	2.69	32.9	107.0	569
11:30	13.54	20.62	7.03	877	0.43	2.73	33.6	103.0	569
11:35	13.67	20.66	7.02	877	0.43	2.75	34.7	100.0	570

Comments:

Well: BIOS-1B | Sample Start Time: 12:45 | Finish: 12:50
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:35	12.46	20.54	7.52	2165	1.11	1.10	45.3	8.6	1407
12:40	12.47	20.54	7.53	2166	1.11	1.07	45.0	8.4	1407
12:45	12.48	20.55	7.54	2167	1.11	1.06	44.8	8.4	1407

Comments:

Well: BIOS-1B | Sample Start Time: 12:30 | Finish: 12:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:20	12.51	20.45	6.75	3646	1.91	0.19	78.2	24.1	1815
12:25	12.69	20.52	6.76	3650	1.92	0.21	77.1	22.8	1820
12:30	12.90	20.56	6.76	3652	1.93	0.21	75.3	20.2	1826

Comments: NA

Well: BIOS-1B | Sample Start Time: 10:17 | Finish: 10:30
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:07	10.95	22.56	6.55	4873	2.61	1.56	-304.6	4.1	3166
10:12	10.98	22.52	6.55	4871	2.61	1.53	-305.3	4	3163
10:17	11.01	22.5	6.54	4869	2.59	1.52	-305.2	4.1	3162

Comments: DUP, vials contain headspace

Well: BIOS-1B | Sample Start Time: 9:59 | Finish: 10:10
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:49	10.55	24.04	6.55	5153	2.77	4.5	-308	25.8	3353
9:54	10.55	24.01	6.53	5154	2.77	4.4	-307.1	25.3	3351
9:59	10.58	23.96	6.55	5151	2.75	4.4	-306.4	25	3351

Comments: DUP, Vials contain headspace

Well: BIOS-1B | Sample Start Time: 10:48 | Finish: 10:59
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:38	10.90	22.33	6.49	5509	2.98	3.07	-270.6	27.1	3586
10:43	11.01	22.35	6.49	5513	2.99	3.03	-273.2	26.7	3591
10:48	10.91	22.38	6.49	5514	3.00	3.00	-274.4	26.3	3596

Comments: DUP, vials contain headspace

Well: BIOS-2B | Sample Start Time: 13:45 | Finish: 13:50
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:35	12.87	21.22	7.28	2831	1.47	1.68	47.1	5.3	1840
13:40	12.89	21.17	7.27	2829	1.47	1.67	48.2	5.1	1839
13:45	12.91	21.12	7.26	2828	1.47	1.66	48.6	5.0	1838

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
BIOS-3B	7/27/2017	9:20	71.94	12.14	0.0	ND	ND	Peristaltic	Teflon	65	9:25	9:55	300	4.0	18.89	7.01	2350	1.21	1.86	68.0	46.3	1528	YSI	13J101897	
BIOS-4B	7/28/2017	8:25	72.25	12.01	0.0	ND	ND	Peristaltic	Teflon	65	8:35	9:05	200	2.0	20.57	7.17	2506	1.29	8.56	29.7	16.2	1626	YSI	08A100738	
BIOS-5B	7/28/2017	8:31	71.14	11.54	0.0	ND	ND	Peristaltic	Teflon	65	8:40	9:05	200	2.0	21.58	7.01	2492	1.29	3.31	198.0	11.6	1622	YSI	12L100448	
BIOS-6B	7/28/2017	9:32	72.61	13.04	0.0	ND	ND	Peristaltic	Teflon	65	9:41	10:11	200	2.0	22.46	8.97	56	0.03	7.87	116.3	38.4	37	YSI	12L100448	
BIOS-7B	7/28/2017	9:35	71.45	11.92	0.0	ND	ND	Peristaltic	Teflon	65	9:45	10:15	200	2.0	20.65	7.45	2791	1.46	2.31	109.2	9.4	1827	YSI	08A100738	
BIOS-7B	10/6/2017	8:40	71.30	14.02	2.8	ND	ND	Peripump	Teflon	65	8:45	9:10	200	1.5	17.63	10.08	3500	1.84	12.23	-272.4	5.2	2269	YSI	0K8101210	
BIOS-8B	7/28/2017	10:37	71.74	13.44	0.0	ND	ND	Peristaltic	Teflon	65	10:48	11:13	200	2.0	26.90	7.42	2551	1.31	5.10	170.7	8.6	1660	YSI	12L100448	
BIOS-9B	7/28/2017	11:36	70.80	13.18	0.0	ND	ND	Peristaltic	Teflon	65	11:46	12:11	200	2.0	27.08	7.66	2004	1.02	1.02	127.9	1.2	1308	YSI	12L100448	
BIOS-10B	7/27/2017	11:55	69.85	11.38	0.0	ND	ND	Peristaltic	Teflon	65	12:05	12:35	200	2.0	19.84	7.52	3039	1.64	2.30	10.4	2.8	2000	YSI	08A100738	

FINAL 3 READINGS

Well: BIOS-3B | Sample Start Time: 9:55 | Finish: 10:00
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:45	13.04	18.84	6.98	2450	1.27	0.50	76.7	1.9	1594
9:50	13.11	19.00	6.98	2451	1.27	0.45	83.4	1.8	1594
9:55	12.96	18.94	6.98	2453	1.27	0.45	87.0	1.8	1595

Comments:

Well: BIOS-4B | Sample Start Time: 9:05 | Finish: 9:15
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:55	12.57	20.35	7.23	2492	1.29	8.32	21.2	14.2	1620
9:00	12.69	20.32	7.22	2490	1.29	8.30	23.7	14.5	1619
9:05	12.82	20.29	7.21	2488	1.29	8.28	22.1	14.3	1618

Comments:

Well: BIOS-5B | Sample Start Time: 9:05 | Finish: 9:10
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:55	11.65	21.38	7.17	2632	1.36	1.98	213.9	1.4	1711
9:00	11.66	21.33	7.18	2638	1.37	2.01	220.2	1.3	1714
9:05	11.66	21.35	7.18	2640	1.37	1.96	222.3	1.3	1721

Comments: Peri pump used due to well diameter.

Well: BIOS-6B | Sample Start Time: 10:11 | Finish: 10:16
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:01	13.26	23.83	7.26	1398	0.71	8.40	130.6	5.0	927
10:06	13.26	23.88	7.29	1401	0.74	8.47	123.7	5.1	929
10:11	13.26	23.90	7.31	1406	0.75	8.50	121.6	5.0	931

Comments: Peri pump used due to well diameter.

Well: BIOS-7B | Sample Start Time: 10:15 | Finish: 10:25
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:05	12.52	20.37	7.34	2770	1.44	2.05	97.5	6.9	1810
10:10	12.65	20.33	7.32	2767	1.44	2.02	94.1	6.9	1808
10:15	12.76	20.30	7.30	2764	1.43	1.98	91.6	6.8	1805

Comments:

Well: BIOS-7B | Sample Start Time: 9:10 | Finish: 9:15
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	14.85	17.45	10.28	3610	1.91	9.65	-277.6	4.1	2346
9:05	14.85	17.51	10.28	3607	1.91	9.73	-277.7	4.0	2341
9:10	14.85	17.54	10.28	3601	1.91	9.64	-277.8	3.9	2341

Comments: Peripump used. The cap cannot be removed And sub-pump would not fit down well.

Well: BIOS-8B | Sample Start Time: 11:13 | Finish: 11:18
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:03	13.63	27.02	7.26	2588	1.33	3.57	87.6	3.6	1683
11:08	13.63	27.07	7.24	2591	1.33	3.52	81.3	3.5	1684
11:13	13.63	27.05	7.24	2593	1.33	3.51	79.6	3.5	1688

Comments: Peri pump used due to well diameter.

Well: BIOS-9B | Sample Start Time: 12:11 | Finish: 12:16
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:01	14.13	25.03	7.43	2509	1.22	6.98	74.0	14.1	1631
12:06	14.13	25.10	7.43	2513	1.23	6.92	70.9	13.9	1637
12:11	14.13	25.12	7.43	2518	1.23	6.90	68.6	13.6	1640

Comments: Peri pump used due to well diameter.

Well: BIOS-10B | Sample Start Time: 12:35 | Finish: 12:45
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:25	11.45	19.69	7.40	3027	1.58	2.13	9.4	2.6	1967
12:30	11.46	19.66	7.37	3025	1.58	2.10	8.3	2.6	1966
12:35	11.47	19.64	7.35	3027	1.58	2.07	9.5	2.6	1965

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
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Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
BIOS-10B	10/6/2017	9:45	70.87	13.09	0.0	ND	ND	Peripump	Teflon	65	9:50	10:15	225	1.5	17.17	5.40	3532	1.87	12.62	101.8	3.6	2296	YSI	0K8101210	
BIOS-11B	7/27/2017	11:35	71.00	13.27	0.0	ND	ND	Peristaltic	Teflon	65	11:46	12:16	325	3.0	22.81	7.47	3356	1.76	4.14	-34.9	6.5	2180	YSI	07H102075	
BIOS-12B	7/27/2017	12:36	71.61	14.26	0.0	ND	ND	Peristaltic	Teflon	60	12:48	13:18	200	2.0	24.55	8.30	149	0.08	7.06	79.8	10.4	110	YSI	12L100448	
BIOS-13B	7/27/2017	12:50	65.40	13.60	0.0	ND	ND	Peristaltic	Teflon	60	13:03	13:33	325	3.0	25.13	7.79	3748	2.01	8.02	-20.9	19.1	2482	YSI	07H102075	
BIOS-14B	7/27/2017	10:35	65.75	13.86	0.0	ND	ND	Peristaltic	Teflon	60	10:45	11:15	200	2.0	18.98	7.37	4011	2.13	10.30	68.5	15.4	2605	YSI	08A100738	
BIOS-15B	7/27/2017	9:15	65.00	12.24	0.0	ND	ND	Peristaltic	Teflon	60	9:25	9:55	200	2.0	17.87	7.43	3985	2.12	4.54	-1.1	7.7	2590	YSI	08A100738	
IW-104A	7/28/2017	8:35	32.05	9.10	0.0	ND	ND	Peristaltic	Teflon	27.5	8:40	9:10	225	3.0	24.25	6.53	2514	1.29	5.35	192.7	88.0	1631	YSI	06D2138	
IW-104A	11/7/2017	9:40	31.80	10.65	0.0	ND	ND	Peristaltic	Teflon	27.5	9:45	10:10	200	1.5	18.01	6.15	3276	1.72	26.66	70.3	45.1	2128	YSI	0K8101210	
IW-105A	7/28/2017	10:45	32.10	9.29	0.0	ND	ND	Peristaltic	Teflon	27.5	10:55	11:25	200	2.0	22.53	7.22	2417	1.24	7.45	55.3	139.0	1589	YSI	08A100738	

FINAL 3 READINGS

Well: BIOS-10B | Sample Start Time: 10:15 | Finish: 10:20
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:05	13.45	17.88	4.09	3589	1.90	10.27	217.7	3.3	2337
10:10	13.46	17.84	4.06	3592	1.91	10.30	220.4	3.2	2338
10:15	13.48	17.77	4.01	3598	1.91	10.33	226.1	3.1	2339

Comments: Peripump used. The cap cannot be removed And sub-pump would not fit down well.

Well: BIOS-11B | Sample Start Time: 12:16 | Finish: 12:21
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:06	15.10	26.02	7.62	3354	1.75	6.84	-22.6	2.8	2180
12:11	15.07	26.12	7.64	3355	1.75	6.95	-21.2	2.6	2184
12:16	15.02	26.31	7.69	3357	1.75	7.03	-19.7	2.6	2185

Comments:

Well: BIOS-12B | Sample Start Time: 13:18 | Finish: 13:23
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:08	14.41	25.40	7.31	2215	1.14	5.67	71.0	44.4	1450
13:13	14.41	25.39	7.27	2219	1.14	5.60	68.4	46.3	1458
13:18	14.41	25.33	7.23	2236	1.17	5.58	68.0	45.4	1459

Comments: Peri pump used due to well diameter.

Well: BIOS-13B | Sample Start Time: 13:33 | Finish: 13:38
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:23	19.99	20.59	7.26	4389	2.34	6.94	-11.5	14.8	2854
13:28	21.12	20.67	7.26	4384	2.34	6.63	-10.2	14.6	2852
13:33	22.36	20.81	7.27	4377	2.33	6.41	-8.9	13.9	2851

Comments:

Well: BIOS-14B | Sample Start Time: 11:15 | Finish: 11:34
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:05	14.21	19.12	7.32	3998	2.13	9.90	54.2	14.8	2598
11:10	14.28	19.15	7.31	3997	2.13	9.87	50.3	14.4	2598
11:15	14.35	19.18	7.30	3997	2.13	9.83	47.7	13.9	2598

Comments: DUP TAKEN

Well: BIOS-15B | Sample Start Time: 9:55 | Finish: 10:15
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:45	12.90	17.97	7.45	3969	2.11	3.95	-5.6	7.2	2585
9:50	13.03	17.99	7.47	3970	2.11	3.91	-6.2	7.2	2585
9:55	13.18	18.01	7.49	3971	2.11	3.88	-7.4	7.1	2586

Comments: MS/MSD

Well: IW-104A | Sample Start Time: 9:10 | Finish: 9:15
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	10.35	23.10	7.40	2461	1.27	1.30	164.8	21.3	1604
9:05	10.57	23.05	7.42	2459	1.27	1.27	164.1	20.8	1600
9:10	10.80	23.00	7.45	2457	1.26	1.25	163.5	20.1	1600

Comments:

Well: IW-104A | Sample Start Time: 10:10 | Finish: 10:13
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:00	11.03	17.57	6.14	3373	1.78	29.98	34.3	39.8	2192
10:05	11.14	17.51	6.14	3375	1.78	30.12	34.9	39.9	2192
10:10	11.26	17.46	6.15	3375	1.78	30.17	35.2	39.7	2193

Comments: Peristaltic pump used because well diameter is 1 inch and the Monsoon pump is 2 inch.

Well: IW-105A | Sample Start Time: 11:25 | Finish: 11:35
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:15	9.64	22.67	7.34	2436	1.26	7.27	41.7	91.5	1585
11:20	9.71	22.70	7.35	2437	1.26	7.25	38.8	75.3	1585
11:25	9.77	22.73	7.36	2437	1.26	7.22	35.2	71.5	1585

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
IW-106A	7/28/2017	10:50	34.75	9.80	0.0	ND	ND	Peristaltic	Teflon	31.5	10:55	11:20	300	4.0	19.23	7.64	1694	0.79	0.79	181.4	10.9	1084	YSI	13J101897	
IW-107A	7/28/2017	10:50	37.00	11.30	0.0	ND	ND	Peristaltic	Teflon	32.5	10:55	11:20	230	3.0	23.05	7.43	2546	1.31	4.54	124.8	14.5	1656	YSI	06D2138	
IW-107A	11/7/2017	9:52	36.74	12.43	0.0	ND	ND	Peristaltic	Teflon	32.5	10:04	10:29	200	2.0	16.10	6.59	2690	1.40	33.33	155.2	30.3	1748	YSI	12C100125	
IW-108A	7/28/2017	9:45	35.86	11.09	0.0	ND	ND	Peristaltic	Teflon	31.5	9:50	10:15	225	3.0	22.98	7.41	2110	1.06	5.28	152.8	11.6	1354	YSI	06D2138	
IW-109A	5/18/2018	8:40	31.91	9.03	0.0	ND	ND	Peristaltic	Teflon	27.5	8:47	9:17	250	3.0	17.53	6.38	958	0.49	11.75	149.3	29.5	650	YSI	15F100872	
IW-109A	5/31/2018	13:30	31.81	11.19	0.0	ND	ND	Peristaltic	Teflon	27.5	13:35	14:00	240	2.0	19.12	5.29	4745	2.56	1.61	-11.6	1452.0	2382	YSI	13L10054	
IW-109A	7/28/2017	8:40	31.40	10.25	0.0	ND	ND	Peristaltic	Teflon	27.5	8:45	9:20	300	4.0	22.33	6.73	2418	1.27	3.04	104.6	44.7	1575	YSI	13J101897	
IW-109A	2/20/2018	10:00	31.94	9.40	0	ND	ND	Peristaltic	Teflon	27.5	10:05	10:30	225	2	16.71	5.94	5873	3.22	20.34	244.4	32	3840	YSI	16A104327	
IW-110A	7/28/2017	9:50	30.80	10.15	0.0	ND	ND	Peristaltic	Teflon	27.5	9:55	10:20	300	4.0	20.94	7.03	2117	1.08	1.77	117.4	89.6	1403	YSI	13J101897	

FINAL 3 READINGS

Well: IW-106A | Sample Start Time: 11:20 | Finish: 11:25
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:10	10.23	19.44	7.64	1678	0.83	0.36	144.8	8.2	1090
11:15	10.41	19.44	7.62	1674	0.83	0.35	136.5	8.1	1091
11:20	10.46	19.48	7.60	1668	0.83	0.33	131.4	8.1	1093

Comments:

Well: IW-107A | Sample Start Time: 11:20 | Finish: 11:25
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:10	11.68	23.38	7.34	2565	1.33	0.56	105.5	12.8	1668
11:15	11.88	23.45	7.33	2567	1.34	0.55	104.4	12.4	1669
11:20	11.95	23.59	7.32	2567	1.35	0.55	102.5	12.1	1670

Comments:

Well: IW-107A | Sample Start Time: 10:29 | Finish: 10:34
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:19	NA	16.50	6.57	2725	1.42	40.71	156.4	8.1	1772
10:24	NA	16.53	6.54	2718	1.42	40.83	155.8	8.0	1767
10:29	NA	16.59	6.51	2724	1.42	40.66	156.1	8.0	1771

Comments: Peristaltic pump used. Well opening too narrow for Monsoon pump. Unable to gauge DTW while purging due to well opening diameter.

Well: IW-108A | Sample Start Time: 10:15 | Finish: 10:20
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:05	11.81	22.05	7.43	2016	1.03	1.18	142.8	8.7	1311
10:10	11.96	21.96	7.44	2014	1.02	1.17	141.3	8.6	1308
10:15	12.10	21.86	7.44	2012	1.02	1.15	140.6	8.5	1306

Comments:

Well: IW-109A | Sample Start Time: 9:17 | Finish: 9:22
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:07	NA	17.79	6.75	2957	1.61	5.12	169.2	71.4	1932
9:12	NA	17.83	6.79	2982	1.68	4.92	172.1	68.7	1969
9:17	NA	17.91	6.82	3017	1.73	4.69	177.6	65.9	1992

Comments: Peripump used due to well diameter. Post sample depth was taken after readings/tubing removal.

Well: IW-109A | Sample Start Time: 14:00 | Finish: 14:05
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:50	NA	19.16	5.28	4775	2.57	0.30	-33.9	1210.0	2387
13:55	NA	19.17	5.27	4776	2.57	0.30	-34.6	1197.0	2388
14:00	NA	19.17	5.27	4777	2.57	0.29	-35.7	1188.0	2388

Comments: Peristaltic pump used - as well has 1/2" diameter and Monsoon is 2" diameter. NA = Unable to gauge.

Well: IW-109A | Sample Start Time: 9:20 | Finish: 9:25
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:10	10.45	21.96	6.66	2400	1.23	2.06	121.9	28.6	1564
9:15	10.55	21.89	6.65	2398	1.23	2.00	126.5	27.0	1563
9:20	10.67	21.86	6.64	2396	1.23	1.96	128.8	26.4	1560

Comments:

Well: IW-109A | Sample Start Time: 10:30 | Finish: 10:38
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:20	NM	16.87	5.89	6012	3.29	15.69	260.2	59	3908
10:25	NM	16.9	5.89	6008	3.29	15.67	260.7	61	3910
10:30	NM	16.86	5.89	6013	3.29	15.74	261.4	63	3909

Comments: Peristaltic pump used due to diameter (1"), also unable to collect depth to water readings with tubing in well due to diameter (1")

Well: IW-110A | Sample Start Time: 10:20 | Finish: 10:25
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:10	10.38	20.80	7.00	2220	1.13	1.37	137.6	15.0	1444
10:15	10.52	20.85	7.00	2225	1.14	1.34	140.4	15.3	1448
10:20	10.70	20.91	6.99	2230	1.15	1.33	143.9	15.1	1450

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
IW-110A	2/20/2018	10:47	31.33	9.48	0	ND	ND	Peristaltic	Teflon	27.5	10:56	11:21	225	3	15.88	6.49	3567	1.9	14.47	153.6	27.7	2328	YSI	13D101777	
IW-110A	5/18/2018	9:50	31.38	9.38	0.0	ND	ND	Peristaltic	Teflon	27.5	9:55	10:20	240	2.0	17.69	6.80	2932	1.52	7.73	92.9	12.5	1458	YSI	13L10054	
IW-110A	5/31/2018	12:25	31.52	15.90	0.0	ND	ND	Peristaltic	Teflon	27.5	12:30	12:55	240	2.0	19.55	5.26	4894	2.64	1.36	7.0	1500.0	2450	YSI	13L10054	
IW-110A	6/26/2018	10:45	31.22	9.84	0	ND	ND	Peristaltic	Teflon	27.5	10:50	11:15	250	2	22.44	6.32	4290	2.29	0.78	35.1	12.7	2791	YSI	13D101256	
IW-111A	7/28/2017	8:30	35.55	11.36	10.2	ND	ND	Peristaltic	Teflon	31.5	8:56	9:26	350	3.0	24.08	7.12	2923	1.52	7.80	145.5	66.9	1878	YSI	07H102075	
IW-111A	11/7/2017	10:54	35.18	12.61	0.0	ND	ND	Peristaltic	Teflon	31.5	11:06	11:31	200	2.0	19.32	6.36	3020	1.58	31.73	160.4	21.2	1970	YSI	12C100125	
IW-112A	7/28/2017	9:50	32.37	11.05	79.7	ND	ND	Peristaltic	Teflon	27.5	9:59	10:29	325	3.0	23.81	7.23	2555	1.32	7.17	50.7	45.4	1660	YSI	07H102075	
IW-113A	7/28/2017	11:00	32.00	11.26	359.0	ND	ND	Peristaltic	Teflon	27.5	11:12	11:42	325	3.0	28.95	7.33	2385	1.21	7.42	142.3	20.9	1548	YSI	07H102075	
IW-113A	5/21/2018	11:12	31.51	11.24	0.0	ND	ND	Peristaltic	Teflon	27.5	11:26	11:51	200	2.0	21.08	6.28	2563	1.33	3.84	298.2	85.9	1669	YSI	05D02720	

FINAL 3 READINGS

Well: IW-110A | Sample Start Time: 11:21 | Finish: 11:26
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:11	NM	15.36	6.22	3427	1.81	15.37	194.5	19.5	2225
11:16	NM	15.32	6.21	3285	1.72	15.32	201.5	19.5	2127
11:21	NM	15.29	6.2	3194	1.69	15.29	202.9	19.1	2102

Comments: Peristaltic pump used due to diameter (1"), also unable to collect depth to water readings with tubing in well due to diameter (1")

Well: IW-110A | Sample Start Time: 10:20 | Finish: 10:25
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:10	NA	17.58	6.43	3204	1.63	0.69	118.7	9.6	1602
10:15	NA	17.61	6.41	3207	1.65	0.67	120.1	9.6	1605
10:20	NA	17.64	6.40	3209	1.69	0.66	121.4	9.6	1607

Comments: Peripump used as well is 1" and Monsoon pump is 2" diameter.

Well: IW-110A | Sample Start Time: 12:55 | Finish: 13:00
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:45	NA	19.53	5.21	4691	2.57	0.44	-15.8	1629.0	2361
12:50	NA	19.52	5.20	4688	2.55	0.43	-16.0	1640.0	2355
12:55	NA	19.52	5.19	4686	2.52	0.43	-16.4	1666.0	2344

Comments: Peristaltic pump used - as well has 1/2" diameter and Monsoon is 2" diameter. NA = Unable to gauge.

Well: IW-110A | Sample Start Time: 11:15 | Finish: 11:20
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:05	NA	21.87	6.31	4306	2.29	0.13	-75	8.5	2799
11:10	NA	22	6.31	4295	2.29	0.12	-79.6	8.3	2791
11:15	NA	22.03	6.31	4293	2.29	0.11	-83.7	8	2790

Comments: Peristaltic pump used due to 3/4" diameter. DTW reading could not be taken during purging with tubing in well.

Well: IW-111A | Sample Start Time: 9:26 | Finish: 9:31
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:16	12.00	22.13	6.80	2910	1.51	0.09	53.0	38.7	1892
9:21	12.13	22.17	6.80	2911	1.51	0.09	52.1	37.9	1893
9:26	12.24	22.23	6.80	2912	1.50	0.08	51.9	37.2	1893

Comments:

Well: IW-111A | Sample Start Time: 11:31 | Finish: 11:36
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:21	NA	17.92	6.57	3080	1.61	33.93	151.5	13.9	2000
11:26	NA	17.98	6.59	3087	1.63	34.02	150.5	13.6	2008
11:31	NA	17.92	6.61	3091	1.64	34.06	149.9	13.2	2007

Comments: Peristaltic pump used. Well opening too narrow for Monsoon pump. Unable to gauge DTW while purging due to well opening diameter.

Well: IW-112A | Sample Start Time: 10:29 | Finish: 10:34
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:19	11.54	25.31	7.35	2547	1.31	2.04	65.9	5.9	1655
10:24	11.59	25.11	7.34	2546	1.31	1.97	63.1	5.7	1652
10:29	11.63	24.95	7.32	2543	1.31	1.94	60.4	5.4	1647

Comments:

Well: IW-113A | Sample Start Time: 11:42 | Finish: 11:47
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:32	11.36	24.92	6.91	2321	1.19	1.50	134.5	13.9	1509
11:37	11.37	24.86	6.90	2321	1.19	1.47	131.6	13.5	1509
11:42	11.39	24.72	6.88	2320	1.19	1.42	129.4	13.9	1509

Comments:

Well: IW-113A | Sample Start Time: 11:51 | Finish: 11:58
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:41	NA	21.55	6.19	2523	1.30	3.77	247.1	14.4	1638
11:46	NA	21.60	6.18	2518	1.29	3.80	240.2	14.1	1636
11:51	NA	21.62	6.19	2516	1.29	3.82	238.8	14.0	1633

Comments: Peripump used. Well diameter too narrow for Monsoon pump. Unable to gauge DTW while puging due to well diameter.

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
IW-113A	6/26/2018	11:50	31.55	9.90	20.9	ND	ND	Peristaltic	Teflon	27.5	11:55	12:20	275	2	24.25	5.99	3509	1.84	1.33	46.1	14.9	2286	YSI	13D101256	
IW-194B	5/21/2018	9:48	46.31	9.03	0.0	ND	ND	Monsoon	Teflon	37.5	10:07	10:37	225	3.0	19.97	6.07	3188	1.67	2.20	242.5	21.1	2076	YSI	05D02720	
IW-194B	5/31/2018	12:15	47.38	13.30	7900	ND	ND	Peristaltic	Teflon	37.5	12:30	12:55	200	1.5	18.42	5.40	3746	1.99	10.42	28.5	1020.0	2435	YSI	16A104327	
IW-194B	6/26/2018	8:54	46.27	9.45	8.1	ND	ND	Monsoon	Teflon	37.5	9:04	9:29	225	2	19.12	6.04	9318	5.41	3.13	-129.5	4,039.00	6292	YSI	15F101567	
IW-194B	8/2/2018	8:16	46.31	9.02	3.6	ND	ND	Monsoon	Teflon	40	8:30	9:00	250	3	23.46	5.44	6695	3.7	1.27	-171.3	119	4391	YSI	11D101945	
IW-194B	8/30/2018	8:00	46.37	9.09	0.7	NM	NM	Monsoon	Teflon	40	8:12	8:37	250	3	22.57	5.19	4767	2.78	3.5	-205.4	73.2	3368	YSI	11D101945	
IW-194B	9/17/2018	9:01	46.41	9.23	0.0	ND	ND	Monsoon	Teflon	40	9:10	9:35	250	3.0	20.50	5.30	6283	3.62	7.85	-156.2	67.1	4308	YSI	11D101945	
MW-52	7/26/2017	13:20	28.81	11.24	8.2	ND	ND	Monsoon	Teflon	25	13:31	14:01	350	3.0	18.61	7.64	3954	2.11	1.27	-161.1	50.8	2582	YSI	07H102075	
MW-52	10/5/2017	13:30	28.47	12.36	0.0	ND	ND	Monsoon	Teflon	25	13:37	14:07	350	3.0	22.68	8.08	3240	1.71	1.22	-94.8	3,270.0	2130	YSI	09G100725	

FINAL 3 READINGS

Well: IW-113A | Sample Start Time: 12:20 | Finish: 12:25
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:10	NA	23.88	5.99	3508	1.84	0.21	6.3	11.5	2280
12:15	NA	23.93	5.99	3502	1.84	0.2	6	11.3	2274
12:20	NA	23.82	5.99	3506	1.84	0.2	5.5	11.2	2279

Comments: Peristaltic pump used due to 3/4" diameter. DTW reading could not be taken during purging with tubing in well.

Well: IW-194B | Sample Start Time: 10:37 | Finish: 10:44
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:27	9.05	21.21	6.18	3372	1.77	1.09	231.6	51.3	2195
10:32	9.05	21.16	6.20	3370	1.77	1.06	228.4	50.8	2192
10:37	9.05	21.13	6.22	3372	1.77	1.04	225.6	50.6	2193

Comments: NA

Well: IW-194B | Sample Start Time: 12:55 | Finish: 13:01
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:45	12.41	18.39	5.46	3841	2.03	1.25	1.6	1020.0	2495
12:50	12.31	18.38	5.45	3852	2.05	1.20	-2.4	1023.0	2501
12:55	12.20	18.38	5.45	3857	2.06	1.17	-2.9	1026.0	2516

Comments: Peristaltic pump used due to injection cap diameter.

Well: IW-194B | Sample Start Time: 9:29 | Finish: 9:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:19	9.81	20.34	6.2	11510	6.59	0.24	-307.3	*	7510
9:24	9.83	20.32	6.21	11540	6.6	0.23	-312.6	*	7508
9:29	9.96	20.3	6.23	11570	6.61	0.22	-316.1	*	7513

Comments: * = OUT OF RANGE

Well: IW-194B | Sample Start Time: 9:00 | Finish: 9:18
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:50	9.92	19.87	5.6	8816	4.92	0.15	-241.8	983	5706
8:55	10.07	19.91	5.62	8821	4.92	0.16	-242.7	981	5712
9:00	10.20	19.92	5.63	8824	4.95	0.15	-245.8	982	5714

Comments: MS/MSD, vials contain headspace

Well: IW-194B | Sample Start Time: 8:37 | Finish: 8:55
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:27	9.22	22.63	5.36	8349	4.64	5.5	-213.9	931	5421
8:32	9.40	22.66	5.36	8351	4.64	5.4	-220.1	920	5427
8:37	9.61	22.71	5.38	8358	4.65	5.4	-220.9	917	5428

Comments: MS/MSD, Vials contain headspace

Well: IW-194B | Sample Start Time: 9:35 | Finish: 9:51
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:25	10.51	20.05	5.21	6586	3.61	6.67	-164.2	35.2	4268
9:30	10.70	20.10	5.22	6581	3.60	6.60	-163.4	35.1	4262
9:35	10.80	20.12	5.22	6582	3.62	6.57	-161.1	34.7	4260

Comments: MS/MSD

Well: MW-52 | Sample Start Time: 14:01 | Finish: 14:06
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:51	13.44	18.24	7.57	3945	2.10	0.11	-169.0	91.6	2564
13:56	14.61	18.29	7.57	3941	2.10	0.11	-165.4	89.7	2560
14:01	14.79	18.33	7.56	3937	2.10	0.11	-160.7	87.2	2559

Comments:

Well: MW-52 | Sample Start Time: 14:07 | Finish: 14:12
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:57	12.95	22.00	7.63	3656	1.93	0.21	-98.6	1,026.0	2377
14:02	12.96	22.02	7.63	3647	1.93	0.21	-100.9	992.0	2372
14:07	12.97	22.05	7.63	3639	1.93	0.20	-104.3	954.0	2369

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-52	11/7/2017	13:10	28.50	11.74	0.0	ND	ND	Monsoon	Teflon	25	13:20	13:50	200	2.0	18.53	7.59	3251	1.23	3.35	64.2	59.6	2196	YSI	13J101897	
MW-52	1/12/2018	10:32	28.50	11.99	0.0	ND	ND	Monsoon	Teflon	25	10:42	11:07	225	3.0	17.56	6.67	3560	1.89	4.48	179.4	*	2320	YSI	07G100122	
MW-52	1/23/2018	11:30	28.37	11.64	0.0	ND	ND	Monsoon	Teflon	25	11:35	12:00	275	3.0	17.58	7.40	3732	1.98	0.32	144.6	86.7	2426	YSI	16A104327	
MW-52	2/20/2018	12:05	29.1	10.32	0	ND	ND	Monsoon	Teflon	25	12:10	12:35	240	2	16.5	7.65	3705	1.94	4.05	30.4	270	2381	YSI	11L00217	
MW-52	4/5/2018	12:00	29.10	9.92	0.0	ND	ND	Monsoon	Teflon	25	12:05	12:30	270	3.0	14.88	7.59	3737	1.98	5.48	116.6	129	2423	YSI	11L00217	
MW-53	7/26/2017	8:41	45.11	11.04	0.0	ND	ND	Monsoon	Teflon	35	8:57	9:22	200	2.0	17.98	7.19	3037	1.59	0.94	-152.7	40.3	1979	YSI	12L100448	
MW-53	10/5/2017	14:00	45.18	12.12	0.0	ND	ND	Monsoon	Teflon	35	14:05	14:35	275	2.5	17.99	8.94	2848	1.45	4.63	-127.2	36.6	1792	YSI	0K8101210	
MW-53	1/12/2018	10:05	44.10	12.34	0.0	ND	ND	Monsoon	Teflon	35	10:10	10:35	225	2.0	16.18	8.37	2368	1.22	0.62	181.5	61.7	1539	YSI	16A104327	
MW-53	4/6/2018	10:05	44.69	10.55	0.0	ND	ND	Monsoon	Teflon	35	10:10	10:35	250	3.0	9.79	7.44	1759	0.97	8.47	90.5	777	1245	YSI	11L00217	

FINAL 3 READINGS

Well: MW-52 | Sample Start Time: 13:50 | Finish: 14:03
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:40	12.42	18.71	7.50	3268	1.27	2.97	74.6	55.8	2202
13:45	12.53	18.74	7.47	3271	1.28	2.93	77.9	57.6	2204
13:50	12.67	18.78	7.45	3273	1.28	2.90	80.1	56.2	2206

Comments: NA

Well: MW-52 | Sample Start Time: 11:07 | Finish: 12:07
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:57	12.46	17.11	7.31	3660	1.94	0.55	144.8	97.1	2379
11:02	12.53	17.07	7.33	3663	1.94	0.55	138.0	96.7	2381
11:07	12.59	17.04	7.38	3664	1.94	0.54	135.1	96.1	2381

Comments: MS/MSD, * = out of range

Well: MW-52 | Sample Start Time: 12:00 | Finish: 12:13
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:50	12.29	17.87	7.40	3721	1.97	0.07	110.4	96.4	2419
11:55	12.48	18.09	7.40	3721	1.97	0.07	109.2	89.8	2418
12:00	12.60	18.11	7.40	3721	1.97	0.07	103.6	91.4	2417

Comments: NA

Well: MW-52 | Sample Start Time: 12:35 | Finish: 12:53
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:25	11.12	17.19	7.64	3531	1.87	1.14	40.1	197	2295
12:30	11.24	17.32	7.63	3529	1.86	1.1	41	193	2293
12:35	11.37	17.45	7.63	3528	1.86	1.07	41.2	190	2292

Comments:

Well: MW-52 | Sample Start Time: 12:30 | Finish: 13:15
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:20	11.52	16.20	7.57	3856	2.05	0.52	57.2	73.9	2507
12:25	11.71	16.29	7.57	3857	2.05	0.52	55.7	74.5	2509
12:30	11.93	16.36	7.56	3859	2.05	0.52	54.4	75.3	2510

Comments: MS/MSD

Well: MW-53 | Sample Start Time: 9:22 | Finish: 9:27
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:12	11.37	18.19	7.38	3094	1.62	0.46	-147.2	37.7	2013
9:17	11.44	18.18	7.41	3090	1.62	0.44	-155.1	36.9	2009
9:22	11.49	18.23	7.42	3085	1.62	0.40	-148.2	37.1	2007

Comments:

Well: MW-53 | Sample Start Time: 14:35 | Finish: 14:40
Weather Conditions: clear

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:25	12.39	16.66	7.73	3068	1.61	0.54	-146.5	37.2	1994
14:30	12.41	16.68	7.72	3067	1.61	0.53	-145.6	35.9	1995
14:35	12.43	16.56	7.71	3072	1.61	0.51	-145.1	35.2	2000

Comments:

Well: MW-53 | Sample Start Time: 10:35 | Finish: 10:40
Weather Conditions: cloudy/rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:25	12.83	16.20	8.63	2720	1.39	1.79	56.7	59.7	1751
10:30	12.95	16.13	8.67	2720	1.40	1.70	51.2	55.3	1763
10:35	12.90	15.97	8.69	2723	1.42	1.86	49.2	56.8	1770

Comments:

Well: MW-53 | Sample Start Time: 10:35 | Finish: 10:40
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:25	11.63	14.42	7.00	3448	1.78	0.33	35.5	637	1246
10:30	11.90	14.49	6.98	3451	1.80	0.32	33.0	630	1246
10:35	12.19	14.55	6.96	3455	1.83	0.32	32.6	624	1246

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

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Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
MW-54	7/26/2017	9:45	68.51	11.17	0.0	ND	ND	Monsoon	Teflon	60	9:57	10:22	250	2.0	19.34	10.35	205	0.10	1.44	-34.8	13.9	137	YSI	12L100448	
MW-54	10/6/2017	11:00	68.52	12.25	0.0	ND	ND	Monsoon	Teflon	60	11:05	11:30	275	2.0	18.56	12.17	254	0.13	6.55	-311.7	10.6	165	YSI	0K8101210	
MW-54	1/12/2018	11:10	68.70	12.55	0.0	ND	ND	Monsoon	Teflon	60	11:15	11:40	275	2.0	16.72	10.79	301	0.14	2.58	-6.9	21.3	196	YSI	16A104327	
MW-54	4/6/2018	8:55	69.82	10.23	0.0	ND	ND	Monsoon	Teflon	60	9:00	9:25	260	2.5	13.91	8.87	156	0.08	2.66	87.2	33.0	93	YSI	11L00217	
MW-157B	7/26/2017	11:25	44.78	7.58	0.0	ND	ND	Monsoon	Teflon	40	11:35	12:05	280	3.0	19.45	8.55	3479	1.83	5.71	35.2	19.7	2401	YSI	11B100644	
MW-157B	10/5/2017	11:50	46.39	8.60	0.1	ND	ND	Monsoon	Teflon	40	12:47	13:12	250	6.0	19.20	8.67	3847	2.06	3.82	8.3	12.3	2524	YSI	15L102309	
MW-157B	1/11/2018	12:33	45.60	8.62	2.7	ND	ND	Monsoon	Teflon	40	12:47	13:17	250	3.0	16.10	6.24	3763	2.00	1.37	4.0	66.2	2446	YSI	16A104340	
MW-157B	3/16/2018	8:15	44.98	6.09	0	NM	NM	Monsoon	Teflon	40	8:25	8:55	270	3	13.11	7.15	3108	1.57	2.70	-121.7	97.1	1951	YSI	07D100535	
MW-157B	4/6/2018	8:15	45.05	6.43	0.0	ND	ND	Monsoon	Teflon	40	8:25	8:55	260	3.0	13.21	7.08	3053	1.44	3.71	62.8	99.8	1793	YSI	07D100535	

FINAL 3 READINGS

Well: MW-54 | Sample Start Time: 10:22 | Finish: 10:27
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:12	11.79	18.61	10.91	354	0.17	0.27	-162.0	51.0	230
10:17	11.93	18.66	10.90	353	0.17	0.25	-165.1	50.7	230
10:22	12.04	18.70	10.88	353	0.17	0.23	-167.3	50.4	230

Comments:

Well: MW-54 | Sample Start Time: 11:30 | Finish: 11:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:20	12.85	15.18	12.26	318	0.15	0.44	-318.7	9.7	207
11:25	12.98	15.20	12.26	318	0.15	0.42	-318.0	9.7	207
11:30	13.09	15.22	12.27	318	0.16	0.43	-317.7	9.6	208

Comments:

Well: MW-54 | Sample Start Time: 11:40 | Finish: 11:45
Weather Conditions: cloudy/rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:30	13.36	16.45	11.06	298	0.14	0.69	-119.3	18.7	193
11:35	13.48	16.32	11.04	297	0.14	0.67	-121.4	19.1	193
11:40	13.61	16.35	11.05	296	0.14	0.65	-126.7	18.3	191

Comments:

Well: MW-54 | Sample Start Time: 9:25 | Finish: 9:37
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:15	12.21	15.07	9.62	122	0.07	0.33	22.3	22.0	82
9:20	12.85	15.19	9.65	121	0.06	0.33	20.4	21.6	79
9:25	13.50	15.26	9.69	121	0.06	0.33	18.2	21.2	78

Comments: MS/MSD

Well: MW-157B | Sample Start Time: 12:05 | Finish: 12:29
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:55	7.65	18.44	8.01	4249	2.27	0.88	-84.1	7.0	2763
12:00	7.66	18.49	8.02	4253	2.27	0.84	-85.8	7.0	2764
12:05	7.66	18.53	7.99	4258	2.27	0.82	-87.9	6.9	2766

Comments: DUP TAKEN

Well: MW-157B | Sample Start Time: 13:12 | Finish: 13:27
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:02	8.68	18.72	7.59	4118	2.20	0.26	-51.1	1.8	2677
13:07	8.70	18.88	7.59	4112	2.19	0.18	-66.5	1.3	2673
13:12	8.72	19.30	7.58	4116	2.19	0.16	-69.0	1.1	2677

Comments: DUP

Well: MW-157B | Sample Start Time: 13:17 | Finish: 13:21
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:07	9.08	17.55	5.95	3900	2.07	1.51	26.7	69.2	2535
13:12	9.05	17.56	6.08	3918	2.08	1.38	24.0	66.4	2546
13:17	9.07	17.37	5.90	3932	2.09	1.35	24.5	66.2	2556

Comments: DUP

Well: MW-157B | Sample Start Time: 8:55 | Finish: 9:25
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:45	6.30	14.33	7.01	2961	1.6	1.20	-94.1	17.8	1937
8:50	6.32	14.39	6.99	2957	1.57	1.10	-92.7	17.2	1930
8:55	6.33	14.44	6.98	2953	1.55	1.10	-90.2	16.8	1920

Comments: MS/MSD

Well: MW-157B | Sample Start Time: 8:55 | Finish: 9:05
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:45	6.52	13.47	6.97	2971	1.53	0.97	-78.4	44.2	1911
8:50	6.52	13.50	6.96	2968	1.54	0.92	-80.1	43.8	1920
8:55	6.52	13.55	6.95	2962	1.55	0.89	-81.0	43.1	1927

Comments: DUP

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-160	7/26/2017	10:52	18.00	9.89	0.0	ND	ND	Monsoon	Teflon	14.5	10:57	11:27	235	4.0	21.18	7.63	2782	1.42	3.50	53.8	*	1753	YSI	06D2138	
MW-160	10/5/2017	8:49	18.14	9.11	0.0	ND	ND	Monsoon	Teflon	14.5	8:57	9:22	250	3.0	21.66	6.93	3213	1.69	8.24	174.7	1,247.0	2096	YSI	12C100125	
MW-160	1/11/2018	13:45	17.94	8.20	0.0	ND	ND	Monsoon	Teflon	14.5	13:50	14:15	325	2.5	15.50	7.64	2858	1.50	8.98	167.0	*	1867	YSI	16A104327	
MW-160	4/6/2018	8:40	17.70	7.13	0.0	ND	ND	Monsoon	Teflon	14.5	8:45	9:10	300	2.0	11.95	8.02	2098	1.08	12.49	153.9	*	1364	YSI	16A104327	
MW-161	7/26/2017	8:20	17.01	7.28	0.0	ND	ND	Monsoon	Teflon	12	8:34	8:59	260	3.0	21.92	6.61	1217	0.60	1.72	197.8	647.0	786	YSI	09M100933	
MW-161	10/5/2017	11:00	16.90	6.88	0.0	ND	ND	Monsoon	Teflon	12	11:10	11:40	325	3.0	23.22	7.05	3097	1.62	1.75	143.7	47.0	2013	YSI	09G100725	
MW-161	1/11/2018	11:05	17.01	8.53	0.0	ND	ND	Monsoon	Teflon	12	11:13	11:43	300	3.0	11.97	7.45	2606	1.35	9.32	244.7	2123	1697	YSI	13D101777	
MW-161	4/5/2018	9:55	17.00	5.98	0.0	ND	ND	Monsoon	Teflon	12	10:00	10:25	275	3.0	11.33	6.50	4425	2.38	3.19	173.8	602	2894	YSI	16A104327	
MW-163	7/26/2017	12:50	19.22	9.09	0.0	ND	ND	Monsoon	Teflon	14.6	13:00	13:30	260	3.0	21.31	7.82	844	0.42	1.81	11.1	2611.0	549	YSI	11B100644	

FINAL 3 READINGS

Well: MW-160 | Sample Start Time: 11:27 | Finish: 11:32
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:17	10.68	19.74	7.47	3052	1.57	0.88	41.6	783.0	1968
11:22	10.79	19.77	7.45	3050	1.58	0.86	42.0	780.0	1975
11:27	10.89	19.80	7.44	3047	1.59	0.86	42.2	778.0	1980

Comments: * = Out of Range

Well: MW-160 | Sample Start Time: 9:22 | Finish: 9:27
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:12	10.21	22.20	7.51	3404	1.79	6.90	148.4	3,809.0	2215
9:17	10.27	22.28	7.55	3403	1.79	6.93	140.7	3,672.0	2209
9:22	10.31	22.30	7.57	3403	1.78	6.98	139.6	3,711.0	2207

Comments:

Well: MW-160 | Sample Start Time: 14:15 | Finish: 14:20
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:05	8.53	15.97	7.65	3068	1.61	8.39	163.0	*	1991
14:10	8.53	15.97	7.64	3069	1.61	8.36	163.8	*	1995
14:15	8.53	15.97	7.64	3070	1.61	8.32	164.3	*	1996

Comments: * = out of range

Well: MW-160 | Sample Start Time: 9:10 | Finish: 9:15
Weather Conditions: snow flurries

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	7.52	12.29	8.08	2395	1.23	10.68	135.4	1461	1550
9:05	7.63	12.38	8.05	2405	1.25	10.62	135.6	1420	1569
9:10	7.70	12.39	8.04	2420	1.26	10.58	135.6	1399	1580

Comments: *=OUT OF RANGE

Well: MW-161 | Sample Start Time: 8:59 | Finish: 9:04
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:49	7.74	22.60	6.51	1144	0.57	1.51	222.8	24.8	743
8:54	7.77	22.58	6.54	1149	0.57	1.47	212.6	21.3	746
8:59	7.83	22.64	6.60	1144	0.57	1.37	199.7	19.6	743

Comments:

Well: MW-161 | Sample Start Time: 11:40 | Finish: 11:45
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:30	7.47	23.87	6.48	2602	1.34	1.76	164.6	72.4	1690
11:35	7.59	23.91	6.53	2581	1.29	1.71	166.2	71.3	1652
11:40	7.72	23.97	6.55	2559	1.23	1.63	169.9	69.8	1617

Comments:

Well: MW-161 | Sample Start Time: 11:43 | Finish: 11:55
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:33	10.74	13.84	6.99	2670	1.39	6.01	241.7	43.9	1736
11:38	10.97	13.72	6.97	2694	1.40	6.01	241.2	41.0	1742
11:43	11.22	13.67	6.96	2707	1.40	6.00	240.8	40.5	1754

Comments:

Well: MW-161 | Sample Start Time: 10:25 | Finish: 10:41
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:15	6.25	11.90	6.57	2720	1.42	5.83	172.5	44.3	1768
10:20	6.29	11.87	6.56	2709	1.40	5.81	172.7	42.1	1747
10:25	6.32	11.92	6.57	2706	1.40	5.80	172.7	41.9	1746

Comments:

Well: MW-163 | Sample Start Time: 13:30 | Finish: 13:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:20	9.27	21.26	6.79	1027	0.49	1.76	44.1	90.5	649
13:25	9.27	21.27	6.75	1031	0.51	1.74	44.8	89.9	667
13:30	9.28	21.31	6.72	1034	0.51	1.75	45.2	89.4	675

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
MW-163	10/5/2017	8:20	19.10	9.92	0.0	ND	ND	Monsoon	Teflon	14.6	8:30	9:00	220	2.0	21.89	6.32	866	0.44	3.80	235.4	88.5	582	YSI	13J101897	
MW-163	1/11/2018	10:05	19.02	10.10	0.0	ND	ND	Monsoon	Teflon	14.6	10:10	10:35	235	3.0	13.46	6.74	1098	0.55	6.03	192.8	1130	716	YSI	07G100121	
MW-163	4/6/2018	9:13	19.02	8.23	0.0	ND	ND	Monsoon	Teflon	14.6	9:22	9:47	225	2.0	9.17	6.41	681	0.34	5.56	145.8	75.0	453	YSI	05D2720	
MW-317A	7/26/2017	10:56	14.60	10.10	0.0	ND	ND	Monsoon	Teflon	12.85	11:08	11:33	200	2.0	23.98	6.96	2948	1.53	1.73	85.0	821.0	1915	YSI	12L100448	
MW-317A	10/5/2017	9:45	14.85	10.41	0.0	ND	ND	Monsoon	Teflon	12.85	9:55	10:25	200	2.0	22.94	7.44	2773	1.44	8.40	228.8	77.9	1807	YSI	13J101897	
MW-317A	1/11/2018	13:55	14.45	10.41	0.0	ND	ND	Monsoon	Teflon	12.85	14:00	14:25	240	4.0	11.67	7.26	2955	1.50	10.35	104.0	2073	1853	YSI	07G100121	
MW-317A	4/6/2018	8:37	14.57	8.95	0.0	ND	ND	Monsoon	Teflon	12.85	8:42	9:07	280	3.0	7.96	7.52	2282	1.18	11.01	234.8	3196	1490	YSI	11J102429	
MW-317B	7/26/2017	12:27	44.64	11.59	0.0	ND	ND	Monsoon	Teflon	40	12:38	13:03	225	2.0	20.61	7.23	2169	1.15	1.22	97.2	60.9	1468	YSI	12L100448	
MW-317B	10/5/2017	11:25	44.60	13.45	0.0	ND	ND	Monsoon	Teflon	40	11:35	12:05	200	2.0	19.93	7.23	3056	1.60	2.20	159.1	63.8	1985	YSI	13J101897	

FINAL 3 READINGS

Well: MW-163 | Sample Start Time: 9:00 | Finish: 9:13
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:50	10.10	21.94	6.33	882	0.45	3.47	222.5	81.3	586
8:55	10.13	21.97	6.32	885	0.45	3.43	218.7	84.6	586
9:00	10.15	22.00	6.31	887	0.45	3.40	215.3	82.8	587

Comments:

Well: MW-163 | Sample Start Time: 10:35 | Finish: 10:40
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:25	10.33	15.09	6.36	1082	0.52	3.55	151.2	73.1	700
10:30	10.37	15.16	6.38	1085	0.53	3.52	149.9	70.5	704
10:35	10.40	15.25	6.40	1088	0.54	3.51	148.0	68.0	706

Comments:

Well: MW-163 | Sample Start Time: 9:47 | Finish: 9:52
Weather Conditions: snow/rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:37	8.36	9.65	6.41	716	0.35	4.95	137.8	62.9	465
9:42	8.38	9.71	6.43	720	0.36	4.97	138.3	62.6	468
9:47	8.37	9.74	6.43	721	0.37	4.98	138.9	62.2	471

Comments:

Well: MW-317A | Sample Start Time: 11:33 | Finish: 12:09
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:23	10.98	23.33	6.97	2865	1.49	1.92	44.1	35.8	1859
11:28	11.24	23.28	6.97	2864	1.47	1.86	45.4	35.7	1854
11:33	11.28	23.31	6.97	2862	1.48	1.83	41.0	34.9	1853

Comments: MS/MSD

Well: MW-317A | Sample Start Time: 10:25 | Finish: 11:00
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:15	11.23	22.85	7.55	2785	1.44	8.40	218.3	38.1	1810
10:20	11.40	22.87	7.58	2784	1.45	8.43	215.9	35.7	1811
10:25	11.58	22.84	7.60	2782	1.45	8.41	212.7	34.8	1810

Comments: MS/MSD

Well: MW-317A | Sample Start Time: 14:25 | Finish: 14:37
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:15	11.25	13.10	7.52	2573	1.28	8.49	115.9	145	1672
14:20	11.47	13.15	7.50	2571	1.27	8.44	116.3	141	1670
14:25	11.68	13.19	7.49	2569	1.27	8.42	116.7	137	1668

Comments: MS/MSD

Well: MW-317A | Sample Start Time: 9:07 | Finish: 9:19
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:57	9.94	8.69	7.80	2340	1.21	10.11	223.4	730.0	1520
9:02	10.21	8.80	7.84	2346	1.21	10.05	219.6	731	1524
9:07	10.48	8.87	7.90	2350	1.21	9.96	214.5	711	1528

Comments:

Well: MW-317B | Sample Start Time: 13:03 | Finish: 13:15
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:53	11.81	20.07	7.20	2890	1.51	0.35	28.1	81.4	1881
12:58	11.81	20.10	7.18	2904	1.51	0.33	21.4	80.5	1884
13:03	11.80	20.16	7.17	2906	1.53	0.31	19.5	79.6	1885

Comments:

Well: MW-317B | Sample Start Time: 12:05 | Finish: 12:15
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:55	13.56	19.83	7.17	3068	1.61	1.82	149.6	41.1	1995
12:00	13.58	19.80	7.16	3070	1.61	1.79	147.1	39.8	1997
12:05	13.60	19.78	7.15	3072	1.61	1.76	143.8	38.7	1999

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-317B	11/7/2017	8:55	45.21	13.78	0.0	ND	ND	Monsoon	Teflon	45	10:15	10:40	350	3.2	18.63	7.04	3362	1.78	2.44	132.4	2,591.0	2202	YSI	11J101189	
MW-317B	1/11/2018	12:37	44.42	11.05	0.0	ND	ND	Monsoon	Teflon	40	12:42	13:07	250	4.0	13.14	7.42	2873	1.64	8.69	89.3	3991	2035	YSI	07G100121	
MW-317B	1/23/2018	10:20	44.53	11.59	0.0	ND	ND	Monsoon	Teflon	40	10:30	11:00	270	3.0	17.17	7.51	3571	1.89	13.11	169.5	28.0	2328	YSI	07D100535	
MW-317B	2/20/2018	10:50	44.5	8.99	0	ND	ND	Monsoon	Teflon	40	10:55	11:20	245	3	16.95	7.44	3269	1.59	9.63	47.7	915	2019	YSI	11L00217	
MW-317B	4/5/2018	9:00	44.50	10.00	0.0	ND	ND	Monsoon	Teflon	40	9:05	9:30	270	3.0	13.82	7.56	3823	2.13	9.57	78.6	1117	2610	YSI	11L00217	
MW-317C	7/26/2017	13:40	69.41	12.16	0.0	ND	ND	Monsoon	Teflon	65	13:50	14:15	200	2.0	20.64	7.45	595	0.30	2.75	80.3	9.6	414	YSI	12L100448	
MW-317C	10/5/2017	12:40	70.00	15.90	0.0	ND	ND	Monsoon	Teflon	65	12:50	13:20	200	2.0	21.76	7.65	375	0.19	2.24	-43.7	15.3	266	YSI	13J101897	
MW-317C	11/7/2017	8:50	70.35	19.41	0.0	ND	ND	Monsoon	Teflon	65	9:05	9:30	300	2.5	17.68	7.43	4693	0.36	6.92	152.1	6.7	481	YSI	11J101189	
MW-317C	1/11/2018	11:15	69.30	13.80	0.0	ND	ND	Monsoon	Teflon	65	11:20	11:50	260	4.0	15.18	6.64	2381	1.23	8.55	139.0	57.3	1544	YSI	07G100121	

FINAL 3 READINGS

Well: MW-317B | Sample Start Time: 10:40 | Finish: 10:52
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:30	14.37	18.84	7.04	3514	1.86	1.03	120.7	30.0	2284
10:35	14.44	18.92	7.04	3520	1.86	1.10	119.2	27.0	2289
10:40	13.85	18.67	7.04	3525	1.86	1.20	122.3	15.1	2289

Comments: DUP

Well: MW-317B | Sample Start Time: 13:07 | Finish: 13:24
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:57	11.56	13.18	7.12	4215	2.19	6.63	87.4	2555	2744
13:02	11.68	13.20	7.10	4219	2.23	6.58	87.0	2549	2749
13:07	11.79	13.23	7.07	4221	2.26	6.56	86.7	2534	2753

Comments:

Well: MW-317B | Sample Start Time: 11:00 | Finish: 11:12
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:50	11.70	16.70	7.26	4047	2.11	7.88	161.7	23.2	2590
10:55	11.73	16.67	7.24	4052	2.14	7.84	162.3	22.9	2640
11:00	11.74	16.62	7.22	4058	2.17	7.81	163.3	22.6	2658

Comments: NA

Well: MW-317B | Sample Start Time: 11:20 | Finish: 11:38
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:10	9.44	17.89	7.13	4522	2.38	5.63	28.5	652	2933
11:15	9.46	17.96	7.11	4525	2.41	5.58	27.9	661	2936
11:20	9.47	18.05	7.09	4528	2.43	5.55	26.5	667	2941

Comments:

Well: MW-317B | Sample Start Time: 9:30 | Finish: 9:45
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:20	10.30	16.98	7.23	4697	2.47	6.24	47.9	740.0	3040
9:25	10.37	17.14	7.20	4701	2.50	6.19	45.1	735	3059
9:30	10.48	17.29	7.18	4706	2.54	6.15	44.4	726	3069

Comments:

Well: MW-317C | Sample Start Time: 14:15 | Finish: 14:27
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:05	15.94	20.77	7.43	1985	1.01	0.59	9.1	23.4	1287
14:10	16.33	20.80	7.44	1927	0.99	0.61	7.1	23.1	1284
14:15	17.01	20.82	7.45	1976	0.87	0.64	5.4	22.8	1280

Comments:

Well: MW-317C | Sample Start Time: 13:20 | Finish: 13:30
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:10	16.72	21.75	7.55	360	0.18	2.00	-53.7	11.9	255
13:15	16.89	21.78	7.52	358	0.17	1.97	-55.8	11.5	254
13:20	17.05	21.80	7.50	358	0.17	1.94	-58.2	11.3	253

Comments:

Well: MW-317C | Sample Start Time: 9:30 | Finish: 10:00
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:20	25.12	19.27	7.35	3008	1.55	2.20	144.1	51.4	1931
9:25	26.07	19.46	7.39	2408	1.54	2.15	138.5	60.1	1988
9:30	27.10	19.32	7.43	2402	1.38	2.47	133.9	63.1	1946

Comments: MS/MSD

Well: MW-317C | Sample Start Time: 11:50 | Finish: 12:07
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:40	18.21	14.69	6.97	2340	1.22	8.67	107.8	30.5	1521
11:45	19.09	14.62	6.99	2337	1.21	8.69	105.7	29.8	1519
11:50	19.99	14.57	7.01	2334	1.21	8.71	103.6	29.4	1517

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

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Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
MW-317C	1/23/2018	8:45	69.81	5.29	0.0	ND	ND	Monsoon	Teflon	65	8:55	9:25	270	3.0	14.38	7.02	384	0.24	3.71	186.1	12.1	404	YSI	07D100535	
MW-317C	2/20/2018	8:45	69.6	11.90	0	ND	ND	Monsoon	Teflon	65	9:00	9:25	260	3	16.14	6.85	259	0.12	4.12	6	15.8	168	YSI	11L00217	
MW-317C	4/5/2018	10:30	69.30	11.49	0.0	ND	ND	Monsoon	Teflon	65	10:35	11:00	280	2.5	14.48	6.91	1124	0.38	11.24	33.0	13.0	474	YSI	11L00217	
MW-318A	7/26/2017	11:02	14.18	7.66	0.3	ND	ND	Monsoon	Teflon	11.74	11:15	11:40	280	4.0	22.03	6.74	1669	0.84	2.25	86.4	1379.0	1077	YSI	09M100933	
MW-318A	10/5/2017	8:42	14.16	7.02	0.0	ND	ND	Monsoon	Teflon	11.74	8:50	9:20	350	3.0	22.10	6.12	3259	1.71	1.03	182.6	1,482.0	2121	YSI	09G100725	
MW-318A	11/7/2017	9:35	14.20	6.93	0.0	ND	ND	Monsoon	Teflon	10	9:45	10:15	200	2.0	17.99	6.61	3773	2.00	1.90	80.9	120.0	2452	YSI	13J101897	
MW-318A	1/11/2018	9:12	13.04	9.96	0.0	ND	ND	Monsoon	Teflon	11.74	9:59	10:29	300	3.0	12.17	7.11	4075	2.15	6.59	268.3	*	2617	YSI	13D101777	
MW-318A	1/23/2018	8:45	13.04	9.15	0.0	ND	ND	Monsoon	Teflon	10	8:50	9:15	300	3.0	13.21	6.39	3158	1.66	7.94	190.5	1495	2053	YSI	16A104327	
MW-318A	2/20/2018	8:49	13.04	7.42	0	ND	ND	Monsoon	Teflon	11.74	9:40	10:10	275	3	12.43	7.56	2722	1.41	8.87	187.1	2467	1762	YSI	13D101777	

FINAL 3 READINGS

Well: MW-317C | Sample Start Time: 9:25 | Finish: 9:50
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:15	9.12	15.07	7.37	424	0.22	3.51	157.9	9.9	301
9:20	10.31	15.11	7.39	426	0.21	3.49	156.7	9.9	287
9:25	11.71	15.13	7.41	429	0.21	3.44	155.1	9.8	277

Comments: MS/MSD

Well: MW-317C | Sample Start Time: 9:25 | Finish: 10:05
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:15	18.31	18.49	7.28	269	0.13	2.81	12.6	10	167
9:20	20.27	18.55	7.32	269	0.13	2.77	12.9	10	167
9:25	22.30	18.63	7.35	271	0.13	2.75	13.3	9.9	167

Comments: MS/MSD

Well: MW-317C | Sample Start Time: 11:00 | Finish: 11:15
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:50	17.55	16.60	7.39	224	0.08	7.36	52.8	7.2	122
10:55	19.52	16.72	7.40	223	0.08	7.28	54.1	7.2	119
11:00	21.50	16.81	7.42	225	0.07	7.23	56.5	7.2	117

Comments:

Well: MW-318A | Sample Start Time: 11:40 | Finish: 11:50
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:30	7.90	22.66	5.99	1575	0.79	0.56	125.5	17.8	1024
11:35	7.93	22.69	6.02	1562	0.80	0.35	126.6	13.8	1029
11:40	7.93	22.82	6.05	1587	0.80	0.29	127.0	8.8	1032

Comments:

Well: MW-318A | Sample Start Time: 9:20 | Finish: 9:25
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:10	7.19	22.97	6.09	3284	1.72	0.61	147.5	8.4	2135
9:15	7.19	22.61	6.09	3286	1.72	0.62	148.1	8.2	2125
9:20	7.19	22.73	6.10	3286	1.72	0.63	144.7	8.0	2137

Comments:

Well: MW-318A | Sample Start Time: 10:15 | Finish: 10:28
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:05	7.55	18.15	6.51	3780	2.00	1.70	70.6	87.7	2450
10:10	7.68	18.18	6.49	3779	2.00	1.68	68.3	85.4	2449
10:15	7.80	18.21	6.46	3778	2.00	1.65	66.4	83.3	2448

Comments: NA

Well: MW-318A | Sample Start Time: 10:29 | Finish: 10:43
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:19	10.05	13.01	7.08	4130	2.16	5.97	236.3	*	2633
10:24	10.05	12.92	7.10	4131	2.16	5.95	234.9	*	2637
10:29	10.06	12.87	7.11	4129	2.16	5.86	232.1	*	2647

Comments: * = out of range

Well: MW-318A | Sample Start Time: 9:15 | Finish: 9:28
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:05	9.48	13.08	6.34	3373	1.78	4.91	194.9	704	2192
9:10	9.49	12.66	6.29	3362	1.77	4.86	197.8	683	2179
9:15	9.49	12.43	6.26	3360	1.77	4.80	199.1	651	2171

Comments: NA

Well: MW-318A | Sample Start Time: 10:10 | Finish: 10:20
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:00	7.71	12.04	6.59	2679	1.4	4.75	204.3	13.8	1743
10:05	7.73	12.07	6.56	2710	1.42	4.51	207.2	13.2	1782
10:10	7.76	12.11	6.52	2721	1.41	4.39	210.7	12.7	1803

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

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PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-318A	3/16/2018	8:30	13.02	6.45	0	NM	NM	Monsoon	Teflon	11.74	8:35	9:00	240	2	10.69	6.05	4407	2.38	4.70	14.1	*	2889	YSI	11L00217	
MW-318A	4/5/2018	11:20	13.00	5.81	0.0	ND	ND	Monsoon	Teflon	11.74	11:25	11:50	250	3.0	12.05	6.57	5489	2.99	1.42	205.4	4126	3576	YSI	16A104327	
MW-318A	5/21/2018	11:00	13.00	7.74	0.0	ND	ND	Monsoon	Teflon	10	11:05	11:30	240	2.0	18.36	6.89	3193	1.60	2.01	150.0	*	1516	YSI	13L10054	
MW-318A	8/2/2018	10:52	12.94	7.21	0	ND	ND	Monsoon	Teflon	10	11:02	11:27	225	2	25.31	6.9	3065	1.58	1.79	-151.6	2061	1979	YSI	11D101945	
MW-318A	8/30/2018	10:29	12.89	7.34	0	NM	NM	Monsoon	Teflon	10	10:41	11:06	200	2	27.66	7.14	1628	0.81	2	-178.2	3948	1055	YSI	11D101945	
MW-318A	9/17/2018	11:21	12.90	7.43	0.0	ND	ND	Monsoon	Teflon	10	11:29	11:54	200	2.0	25.04	7.52	1368	0.68	3.16	-114.3	*	887	YSI	11D101945	
MW-318B	7/26/2017	12:10	66.97	10.21	0.0	ND	ND	Monsoon	Teflon	50	12:20	12:45	270	3.0	20.79	8.10	2803	1.49	4.32	125.6	1421.0	1873	YSI	09M100933	
MW-318B	10/5/2017	9:40	64.60	15.36	0.0	ND	ND	Monsoon	Teflon	50	9:55	10:25	350	3.0	19.36	6.80	2877	1.50	10.62	120.7	1,514.0	1870	YSI	09G100725	
MW-318B	11/7/2017	10:50	64.65	12.18	0.0	ND	ND	Monsoon	Teflon	50	11:00	11:30	200	2.0	17.40	6.76	3171	1.66	7.82	76.1	1,262.0	2074	YSI	13J101897	

FINAL 3 READINGS

Well: MW-318A | Sample Start Time: 9:00 | Finish: 9:05
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:50	6.68	11.22	5.81	5300	2.82	0.90	18.2	119	3439
8:55	6.81	11.39	5.78	5304	2.85	0.90	18.5	115	3445
9:00	6.90	11.46	5.75	5307	2.87	0.90	18.7	112	3447

Comments: * = out of range

Well: MW-318A | Sample Start Time: 11:50 | Finish: 12:15
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:40	5.89	12.38	6.41	5475	2.97	0.93	192.5	821	3559
11:45	5.89	12.44	6.42	5476	2.97	0.90	192.3	769	3560
11:50	5.89	12.46	6.41	5477	2.98	0.91	192.1	754	3562

Comments:

Well: MW-318A | Sample Start Time: 11:30 | Finish: 11:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:20	7.90	17.80	6.53	1939	0.96	1.20	114.2	18.0	938
11:25	7.94	17.71	6.50	1945	0.98	1.18	110.7	17.8	964
11:30	7.98	17.64	6.47	1947	1.00	1.16	106.3	17.7	977

Comments: * = OUT OF RANGE

Well: MW-318A | Sample Start Time: 11:27 | Finish: 11:33
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:17	7.35	24.8	6.7	3017	1.57	1.32	-146.6	26.2	1959
11:22	7.35	24.9	6.7	3021	1.58	1.31	-142.6	25.8	1962
11:27	7.35	24.87	6.68	3024	1.59	1.27	-144.7	25.4	1966

Comments: Vials contain headspace

Well: MW-318A | Sample Start Time: 11:06 | Finish: 11:11
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:56	7.56	26.53	6.59	1551	0.78	2.7	-191.5	13.1	1009
11:01	7.54	26.57	6.56	1554	0.78	2.7	-185.3	13.3	1012
11:06	7.55	26.61	6.53	1557	0.79	2.6	-182.3	12.7	1015

Comments: Vials contain headspace

Well: MW-318A | Sample Start Time: 11:54 | Finish: 11:59
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:44	7.59	25.66	6.69	1344	0.67	2.68	-119.0	62.1	873
11:49	7.55	25.71	6.64	1341	0.67	2.62	-121.8	61.6	870
11:54	7.64	25.65	6.61	1348	0.67	2.59	-121.2	61.3	869

Comments: * = overrange

Well: MW-318B | Sample Start Time: 12:45 | Finish: 12:55
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:35	10.32	21.55	7.02	3084	1.61	0.46	131.7	146.0	2004
12:40	10.33	20.64	6.95	3077	1.61	0.41	132.4	63.0	1999
12:45	10.35	20.31	6.96	3070	1.60	0.31	119.3	43.4	1994

Comments:

Well: MW-318B | Sample Start Time: 10:25 | Finish: 10:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:15	15.37	19.67	7.18	2813	1.47	9.28	120.3	95.0	1830
10:20	15.37	19.71	7.19	2813	1.47	9.29	119.4	95.0	1833
10:25	15.37	19.79	7.21	2814	1.47	9.27	118.9	92.0	1832

Comments: Air sparge turned off 1 hour prior to purge start.

Well: MW-318B | Sample Start Time: 11:30 | Finish: 11:43
Weather Conditions: p. sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:20	12.18	17.55	6.85	3185	1.69	7.64	83.4	1,091.0	2082
11:25	12.18	17.58	6.87	3188	1.69	7.66	85.9	1,077.0	2083
11:30	12.18	17.61	6.90	3191	1.69	7.65	87.6	1,070.0	2085

Comments: NA

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
MW-318B	1/11/2018	8:30	64.51	11.40	0.0	ND	ND	Monsoon	Teflon	50	9:04	9:34	350	3.0	13.97	6.69	5763	3.15	11.95	238.4	84.3	3754	YSI	13D101777	
MW-318B	1/23/2018	10:00	64.55	11.20	0.9	ND	ND	Monsoon	Teflon	50	10:05	10:30	325	3.0	15.61	6.85	6865	3.80	11.25	198.1	1560	4482	YSI	16A104327	
MW-318B	2/20/2018	8:25	64.51	8.82	0	ND	ND	Monsoon	Teflon	50	8:37	9:07	350	3	16.81	6.79	5278	2.9	12.58	219.8	*	3482	YSI	13D101777	
MW-318B	3/16/2018	9:30	64.5	9.70	0	NM	NM	Monsoon	Teflon	50	9:35	10:00	270	3	14.59	6.22	3821	3.88	10.90	120.4	688	2601	YSI	11L00217	
MW-318B	4/5/2018	12:55	64.55	12.07	0.0	ND	ND	Monsoon	Teflon	50	13:00	13:25	300	4.0	15.25	7.01	4352	2.33	12.46	166.7	3140	2820	YSI	16A104327	
MW-318B	5/21/2018	10:00	64.20	10.05	0.0	ND	ND	Monsoon	Teflon	50	10:05	10:30	260	2.0	19.21	6.14	4220	2.26	4.32	192.4	46.0	2117	YSI	13L10054	
MW-318B	8/2/2018	11:55	64.1	7.62	17.6	ND	ND	Monsoon	Teflon	50	12:08	12:33	200	2	21.81	6.18	5547	3.03	8.71	-124.8	20.5	3646	YSI	11D101945	
MW-318B	8/30/2018	11:28	64.02	9.04	17.1	NM	NM	Monsoon	Teflon	50	11:43	12:13	225	2	21.83	6.57	5217	3.05	8.1	-175.4	23.1	3689	YSI	11D101945	
MW-318B	9/17/2018	12:21	64.09	10.13	1.2	ND	ND	Monsoon	Teflon	50	12:34	12:59	225	2.0	20.48	6.44	4251	2.43	8.77	-146.9	794.0	3048	YSI	11D101945	

FINAL 3 READINGS

Well: MW-318B | Sample Start Time: 9:34 | Finish: 9:44
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:24	11.48	13.57	6.48	7570	4.22	17.23	287.7	186	4933
9:29	11.50	13.62	6.49	7392	4.16	17.04	288.9	182	4904
9:34	11.51	13.81	6.51	7287	4.12	16.83	291.4	177	4872

Comments:

Well: MW-318B | Sample Start Time: 10:30 | Finish: 10:43
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:20	11.43	15.21	6.92	6801	3.71	11.16	203.5	1545	4411
10:25	11.40	15.30	6.92	6795	3.69	11.40	200.4	1495	4403
10:30	11.31	15.26	6.94	6793	3.62	11.32	198.7	1470	4387

Comments: NA

Well: MW-318B | Sample Start Time: 9:07 | Finish: 9:17
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:57	9.05	16.99	7.57	5545	3.01	14.63	193.7	1151	3601
9:02	9.07	17.03	7.59	5546	3.01	14.82	190.4	1127	3598
9:07	9.10	17.07	7.61	5547	3.01	15.03	189.1	1104	3597

Comments: * = out of range

Well: MW-318B | Sample Start Time: 10:00 | Finish: 10:05
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:50	10.02	16.93	6.8	4122	2.33	13.20	7	421	2715
9:55	10.09	17.02	6.83	4125	2.27	13.30	6.8	379	2721
10:00	10.17	17.09	6.85	4129	2.24	13.40	6.5	376	2724

Comments: NA

Well: MW-318B | Sample Start Time: 13:25 | Finish: 13:50
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:15	11.19	15.85	6.84	4403	2.36	12.57	167.0	4265	2857
13:20	11.07	15.71	6.87	4405	2.38	12.41	167.3	4140	2866
13:25	11.00	15.61	6.83	4440	2.39	12.26	167.6	4028	2869

Comments:

Well: MW-318B | Sample Start Time: 10:30 | Finish: 10:35
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:20	10.41	19.21	6.24	4320	2.31	0.47	153.9	79.3	2135
10:25	10.55	19.24	6.26	4318	2.30	0.48	151.7	78.6	2132
10:30	10.72	19.26	6.28	4316	2.28	0.49	149.3	77.1	2129

Comments: NA

Well: MW-318B | Sample Start Time: 12:33 | Finish: 12:39
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:23	9.92	25.39	6.49	5523	2.98	3.04	-128.7	351	3589
12:28	10.02	25.45	6.51	5520	2.97	3	-130.9	344	3591
12:33	10.13	25.48	6.53	5516	2.97	2.96	-132.1	336	3593

Comments: Vials contain headspace

Well: MW-318B | Sample Start Time: 12:13 | Finish: 12:18
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:03	9.20	24.22	6.48	4486	2.38	7.1	-169.6	712	2902
12:08	9.20	24.18	6.48	4482	2.38	7.1	-166	700	2904
12:13	9.20	24.2	6.5	4481	2.38	7.1	-161.8	699	2906

Comments: Vials contain headspace

Well: MW-318B | Sample Start Time: 12:59 | Finish: 13:04
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:49	10.11	23.14	6.40	4242	2.25	6.33	-113.4	912.0	2756
12:54	10.11	23.12	6.40	4241	2.25	6.41	-112.1	903.0	2754
12:59	10.11	23.10	6.41	4238	2.26	6.38	-106.7	991.0	2751

Comments: Vials contain headspace

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-320C	1/11/2018	12:15	70.31	8.98	0.0	ND	ND	Monsoon	Teflon	61	12:32	13:02	325	3.0	19.20	8.58	309	0.15	1.69	189.1	55.0	197	YSI	13D101777	
MW-320C	4/6/2018	8:10	70.31	7.13	0.0	ND	ND	Monsoon	Teflon	61	8:20	8:45	200	2.0	14.35	6.61	268	0.13	3.51	207.1	11.5	176	YSI	05D2720	
MW-321B	7/26/2017	12:02	64.98	10.80	0.0	ND	ND	Monsoon	Teflon	50	12:07	12:37	245	5.0	19.38	6.93	4300	2.30	1.72	24.8	744.0	2795	YSI	06D2138	
MW-321B	10/5/2017	9:49	64.81	16.54	0.0	ND	ND	Monsoon	Teflon	50	9:59	10:24	200	2.0	19.41	6.91	4338	2.32	8.62	148.2	686.0	2825	YSI	12C100125	
MW-321B	1/11/2018	12:42	64.70	11.46	0.0	ND	ND	Monsoon	Teflon	50	12:53	13:18	225	2.0	14.75	5.79	4205	2.25	11.31	453.3	11.8	2736	YSI	07G100122	
MW-321B	4/6/2018	8:30	64.94	10.14	0.0	ND	ND	Monsoon	Teflon	50	8:47	9:17	350	3.0	11.97	8.40	1486	0.61	6.17	220.1	347	748	YSI	11B100634	
MW-321C	7/26/2017	13:12	67.45	10.58	0.0	ND	ND	Monsoon	Teflon	65	13:17	13:47	250	5.0	19.56	11.55	2816	1.41	5.15	9.9	240.0	1775	YSI	06D2138	
MW-321C	10/5/2017	10:53	67.70	12.71	0.0	ND	ND	Monsoon	Teflon	65	11:02	11:32	250	2.0	20.86	12.04	3342	1.65	3.15	-51.5	41.0	2027	YSI	12C100125	
MW-321C	1/11/2018	13:38	67.70	10.94	0.0	ND	ND	Monsoon	Teflon	65	13:49	14:14	200	2.0	12.83	11.32	1915	0.98	10.66	356.5	61.0	1251	YSI	07G100122	

FINAL 3 READINGS

Well: MW-320C | Sample Start Time: 13:02 | Finish: 13:07
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:52	9.03	18.41	7.25	2704	1.41	0.24	154.2	1.3	1782
12:57	9.04	18.20	7.23	2712	1.41	0.24	150.9	1.3	1807
13:02	9.04	18.09	7.19	2721	1.41	0.24	148.3	1.3	1824

Comments:

Well: MW-320C | Sample Start Time: 8:45 | Finish: 8:50
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:35	7.19	14.39	7.10	3071	1.61	0.86	166.5	5.3	1995
8:40	7.19	14.42	7.13	3064	1.60	0.82	160.7	5.2	1991
8:45	7.19	14.46	7.16	3062	1.58	0.81	157.8	5.2	1987

Comments:

Well: MW-321B | Sample Start Time: 12:37 | Finish: 12:47
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:27	11.54	18.78	6.99	4246	2.27	1.22	3.9	631.0	2755
12:32	11.56	18.83	6.99	4244	2.26	1.24	3.5	625.0	2753
12:37	11.58	18.87	7.00	4243	2.26	1.26	3.2	622.0	2751

Comments: DUP TAKEN

Well: MW-321B | Sample Start Time: 10:24 | Finish: 10:34
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:14	17.08	21.64	6.90	4353	2.33	5.50	114.4	127.0	2835
10:19	17.14	21.60	6.90	4358	2.34	5.44	110.7	123.0	2838
10:24	17.21	21.59	6.90	4361	2.35	5.41	108.6	121.0	2842

Comments: DUP

Well: MW-321B | Sample Start Time: 13:18 | Finish: 13:23
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:08	11.81	15.08	6.74	4098	2.20	11.99	429.5	67.3	2662
13:13	11.84	15.12	6.77	4102	2.20	11.92	426.2	67.1	2667
13:18	11.79	15.06	6.77	4101	2.19	11.90	423.9	66.7	2666

Comments:

Well: MW-321B | Sample Start Time: 9:17 | Finish: 9:22
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:07	10.25	14.32	9.52	2124	1.15	3.69	151.3	1.7	1501
9:12	10.24	14.01	9.47	2104	1.21	3.51	155.7	1.7	1517
9:17	10.25	13.93	9.43	2083	1.25	3.45	159.2	1.5	1530

Comments:

Well: MW-321C | Sample Start Time: 13:47 | Finish: 14:00
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:37	11.73	18.19	7.37	3612	1.92	0.35	45.4	199.0	2352
13:42	11.82	18.15	7.34	3615	1.92	0.34	44.8	196.0	2353
13:47	11.92	18.12	7.32	3617	1.92	0.34	43.6	190.0	2354

Comments: MS/MSD

Well: MW-321C | Sample Start Time: 11:32 | Finish: 11:47
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:22	13.29	21.67	6.97	3791	2.00	0.54	-26.8	879.0	2464
11:27	13.42	21.66	7.02	3797	2.01	0.58	-27.4	881.0	2469
11:32	13.55	21.70	7.05	3799	2.00	0.61	-28.2	873.0	2458

Comments:

Well: MW-321C | Sample Start Time: 14:14 | Finish: 14:19
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:04	12.05	14.27	9.27	2583	1.35	5.06	212.2	69.4	1687
14:09	12.09	14.30	9.22	2601	1.35	5.04	209.7	69.1	1689
14:14	12.11	14.34	9.20	2599	1.36	5.01	205.2	68.8	1691

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
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+ = water quality meter does not have separate serial numebr for probe

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Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
MW-321C	4/6/2018	9:35	68.22	10.39	0.0	ND	ND	Monsoon	Teflon	65	9:54	10:24	300	3.0	14.32	8.32	2750	1.51	4.51	179.2	107	1742	YSI	11B100634	
MW-322A	1/11/2018	12:40	25.65	9.27	1.1	ND	ND	Monsoon	Teflon	17	12:45	13:15	350	3.0	14.57	6.27	3155	1.66	4.82	220.6	*	2053	YSI	16A104327	
MW-322A	4/6/2018	9:55	25.60	6.24	0.0	ND	ND	Monsoon	Teflon	17	10:00	10:25	250	2.0	9.30	3.90	8901	4.98	12.06	236.3	731	5788	YSI	16A104327	
MW-346A	7/26/2017	9:35	14.60	8.88	0.0	ND	ND	Monsoon	Teflon	13.1	9:40	10:10	225	5.0	23.38	6.84	3270	1.71	1.72	30.0	*	2118	YSI	06D2138	
MW-346A	10/5/2017	7:40	14.61	8.65	0.0	ND	ND	Monsoon	Teflon	13.1	7:45	8:20	270	3.0	23.27	6.24	4271	2.27	6.11	242.8	3,471.0	2772	YSI	13D101777	
MW-346A	11/7/2017	12:20	14.47	8.28	1.3	ND	ND	Monsoon	Teflon	11	12:25	12:50	225	2.5	18.37	3.85	5155	2.79	14.70	32.6	*	3357	YSI	0K8101210	
MW-346A	1/11/2018	8:45	14.40	10.24	0.0	ND	ND	Monsoon	Teflon	13.1	8:50	9:15	275	3.5	14.22	5.82	7653	4.29	18.64	276.4	1549	4986	YSI	16A104327	
MW-346A	1/23/2018	9:10	14.46	9.93	0.0	ND	ND	Monsoon	Teflon	11	11:05	11:30	200	3.0	15.39	6.00	5099	2.75	7.94	355.2	654	3301	YSI	16A104340	
MW-346A	2/20/2018	8:40	14.38	8.52	0	ND	ND	Monsoon	Teflon	13.1	8:45	9:10	325	3.5	13.07	6.1	5662	3.09	3.94	211.9	2106	3688	YSI	16A104327	

FINAL 3 READINGS

Well: MW-321C | Sample Start Time: 10:24 | Finish: 10:29
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:14	10.67	13.90	7.79	2137	1.61	1.36	157.9	32.7	1682
10:19	10.66	13.84	7.75	2112	1.62	1.32	163.5	31.9	1669
10:24	10.66	13.78	7.70	2097	1.61	1.27	165.1	29.9	1662

Comments:

Well: MW-322A | Sample Start Time: 13:15 | Finish: 13:20
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:05	10.61	17.42	6.32	3210	1.68	3.83	170.2	*	2081
13:10	10.75	17.30	6.32	3214	1.68	3.72	169.4	*	2088
13:15	10.82	17.25	6.32	3216	1.69	3.64	168.2	*	2090

Comments: * = out of range

Well: MW-322A | Sample Start Time: 10:25 | Finish: 10:30
Weather Conditions: mixed snow/rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:15	6.72	8.55	3.94	9428	5.26	12.75	249.1	783	6127
10:20	6.95	8.47	3.93	9427	5.26	12.67	249.6	780	6125
10:25	6.88	8.36	3.94	9426	5.26	12.73	250.0	761	6122

Comments:

Well: MW-346A | Sample Start Time: 10:10 | Finish: 10:22
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:00	11.38	24.33	6.67	3107	1.62	0.93	65.7	*	2019
10:05	11.91	24.37	6.66	3104	1.62	0.92	66.9	*	2017
10:10	12.39	24.40	6.65	3101	1.62	0.91	67.3	*	2016

Comments: * = Out of Range

Well: MW-346A | Sample Start Time: 8:20 | Finish: 8:30
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:10	10.55	23.62	6.41	3924	2.11	3.59	236.6	90.2	2569
8:15	10.67	23.66	6.41	3920	2.09	3.55	236.4	89.4	2557
8:20	10.75	23.71	6.41	3919	2.07	3.50	236.1	88.9	2550

Comments:

Well: MW-346A | Sample Start Time: 12:50 | Finish: 13:05
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:40	9.45	17.05	3.57	5296	2.87	19.54	34.7	*	3439
12:45	9.70	16.89	3.57	5295	2.87	19.60	34.6	*	3441
12:50	9.82	16.87	3.58	5292	2.86	19.65	34.4	*	3434

Comments: * = OUT OF RANGE

Well: MW-346A | Sample Start Time: 9:15 | Finish: 9:38
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:05	10.67	15.28	5.91	6991	3.85	21.43	327.7	2451	4537
9:10	10.67	15.37	5.91	6975	3.79	21.35	328.4	2560	4447
9:15	10.68	15.36	5.91	6970	3.74	21.88	329.6	2532	4405

Comments:

Well: MW-346A | Sample Start Time: 11:30 | Finish: 11:38
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:20	10.61	15.59	5.88	5102	2.52	7.87	345.1	824	3345
11:25	10.80	15.62	5.80	5069	2.45	7.86	343.2	819	3296
11:30	10.85	15.66	5.74	5087	2.46	7.66	342.1	714	2990

Comments: NA

Well: MW-346A | Sample Start Time: 9:10 | Finish: 9:30
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	8.77	13.51	6.07	4544	2.44	3.2	249.3	819	2948
9:05	8.75	13.51	6.07	4532	2.43	3.19	249.4	805	2941
9:10	8.73	13.52	6.07	4528	2.42	3.17	249.6	780	2933

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-346A	3/16/2018	9:50	14.35	8.20	0	NM	NM	Monsoon	Teflon	13.1	9:55	10:20	200	2	10.79	6.17	4932	2.68	3.20	295.6	918	3219	YSI	16A104327	
MW-346A	4/5/2018	8:10	14.35	8.01	0.0	ND	ND	Monsoon	Teflon	13.1	8:20	8:50	280	3.0	9.94	5.88	5124	2.76	2.40	250.4	2711	3323	YSI	07D100535	
MW-346A	5/21/2018	11:35	14.30	8.63	0.0	ND	ND	Monsoon	Teflon	10.5	11:45	12:10	230	3.0	21.31	6.54	3871	2.46	1.54	144.7	1640.0	2985	YSI	07D100535	
MW-346A	6/26/2018	13:20	14.2	8.79	0	ND	ND	Monsoon	Teflon	10.5	13:25	13:50	260	3	21.77	6.25	9528	5.13	1.71	-241.3	*	4512	YSI	13L10054	
MW-346B	7/26/2017	9:25	44.54	10.86	0.0	ND	ND	Monsoon	Teflon	40	9:37	10:07	375	3.0	22.87	7.66	3466	1.73	4.33	63.2	21.4	2136	YSI	07H102075	
MW-346B	10/5/2017	8:50	44.61	12.52	0.0	ND	ND	Monsoon	Teflon	40	9:00	9:30	260	3.0	21.36	7.17	2880	1.51	2.61	213.3	44.1	1879	YSI	13D101777	
MW-346B	11/7/2017	13:07	44.62	12.01	0.0	ND	ND	Monsoon	Teflon	40	13:15	13:40	250	3.0	18.82	7.22	3097	1.64	2.43	38.3	19.5	2039	YSI	12C100125	
MW-346B	1/11/2018	10:11	44.50	11.84	0.0	ND	ND	Monsoon	Teflon	40	10:21	10:51	200	2.0	15.58	3.36	11170	6.40	22.46	373.9	40.9	7304	YSI	07G100122	
MW-346B	1/23/2018	9:07	45.26	11.60	0.0	ND	ND	Monsoon	Teflon	40	10:20	10:45	200	2.5	18.18	5.87	10540	6.04	17.38	205.1	30.0	6915	YSI	16A104340	

FINAL 3 READINGS

Well: MW-346A | Sample Start Time: 10:20 | Finish: 10:30
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:10	8.36	10.22	6.15	4596	2.46	2.20	307.1	869	2982
10:15	8.43	10.18	6.15	4580	2.45	2.20	307.4	831	2971
10:20	8.46	10.14	6.14	4555	2.44	2.20	307.6	812	2954

Comments: NA

Well: MW-346A | Sample Start Time: 8:50 | Finish: 9:10
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:40	8.40	11.30	6.04	4799	2.60	1.50	238.9	18.1	3127
8:45	8.39	11.35	6.04	4794	2.59	1.44	236.3	17.6	3120
8:50	8.39	11.37	6.05	4789	2.58	1.41	234.1	17.3	3113

Comments:

Well: MW-346A | Sample Start Time: 12:10 | Finish: 12:15
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:00	9.71	24.01	6.24	3601	2.01	1.71	160.7	1440.0	2411
12:05	10.01	24.07	6.25	3594	1.94	1.71	162.1	1432.0	2370
12:10	10.21	24.11	6.26	3591	1.90	1.74	164.3	1427.0	2342

Comments: NA

Well: MW-346A | Sample Start Time: 13:50 | Finish: 13:55
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:40	9.61	21.48	6.2	4970	5.57	0.51	-247.3	70.4	2488
13:45	9.72	21.42	6.19	4968	5.62	0.51	-248	68.3	2480
13:50	9.80	21.32	6.18	4965	5.66	0.5	-248.4	66.1	2474

Comments: * = OUT OF RANGE

Well: MW-346B | Sample Start Time: 10:07 | Finish: 10:18
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:57	11.28	20.56	6.92	2845	1.48	0.19	-0.7	7.1	1848
10:02	11.40	20.23	6.91	2821	1.47	0.19	-1.9	6.9	1815
10:07	11.52	20.09	6.88	2807	1.47	0.18	-3.6	6.5	1786

Comments:

Well: MW-346B | Sample Start Time: 9:30 | Finish: 9:40
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:20	15.01	21.40	6.98	2869	1.49	1.65	169.9	10.9	1862
9:25	15.11	21.36	6.96	2869	1.49	1.63	171.7	10.4	1861
9:30	15.24	21.32	6.95	2868	1.49	1.62	173.8	10.2	1861

Comments:

Well: MW-346B | Sample Start Time: 13:40 | Finish: 13:50
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:30	12.06	19.26	6.81	3200	1.68	4.36	56.4	10.6	2079
13:35	12.05	19.31	6.78	3190	1.67	4.42	62.7	10.2	2073
13:40	12.04	19.35	6.77	3192	1.67	4.36	65.4	10.1	2071

Comments: NA

Well: MW-346B | Sample Start Time: 10:51 | Finish: 11:13
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:41	12.19	16.95	5.64	14930	8.71	22.18	373.8	78.9	9691
10:46	12.24	17.00	5.63	14860	8.69	22.09	375.7	79.1	9688
10:51	12.13	16.94	5.63	14920	8.72	22.08	377.9	78.5	9693

Comments:

Well: MW-346B | Sample Start Time: 10:45 | Finish: 10:54
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:35	12.10	17.85	5.89	10510	5.97	16.24	335.7	87.8	6826
10:40	11.89	17.49	5.90	10380	5.90	16.07	347.3	81.9	6740
10:45	11.88	17.70	5.90	10270	5.82	15.91	355.4	76.9	6670

Comments: NA

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).

NJDEP Lab Certification No. 13400

Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-346B	2/20/2018	10:11	44.4	9.79	0	ND	ND	Monsoon	Teflon	40	10:27	10:52	225	3	17.22	6.3	8292	4.98	7.65	126.4	12.3	5857	YSI	05D2720	
MW-346B	3/16/2018	11:00	44.4	9.90	0	NM	NM	Monsoon	Teflon	40	11:05	11:30	250	2	13.68	6.62	2644	1.62	7.30	294.8	15.9	2003	YSI	16A104327	
MW-346B	4/5/2018	10:01	44.60	10.16	0.0	ND	ND	Monsoon	Teflon	40	10:06	10:31	300	3.0	7.98	6.94	3750	1.95	6.90	32.2	39.5	2415	YSI	11J102429	
MW-346B	5/21/2018	10:35	44.51	9.67	0.0	ND	ND	Monsoon	Teflon	40	10:45	11:15	270	3.0	19.61	7.14	4891	1.78	6.60	74.1	44.6	2281	YSI	07D100535	
MW-346B	5/31/2018	12:18	44.64	12.66	0.0	ND	ND	Peristaltic	Teflon	40	12:37	13:02	200	2.0	18.83	6.71	828	0.41	5.50	190.3	5.9	539	YSI	05D2720	
MW-346B	6/26/2018	11:08	44.64	11.19	82.3	ND	ND	Peristaltic	Teflon	40	11:23	11:48	200	2	24.36	7.26	29220	18.06	7.44	-187.4	51	19000	YSI	15F101567	
MW-346C	7/26/2017	8:24	80.03	13.48	0.0	ND	ND	Monsoon	Teflon	70	8:35	9:05	350	3.0	20.94	7.92	3671	2.04	5.07	116.2	26.9	2538	YSI	07H102075	
MW-346C	10/5/2017	10:00	80.04	16.22	0.0	ND	ND	Monsoon	Teflon	70	10:10	10:40	280	3.0	20.31	7.30	4601	2.05	3.90	2.9	26.9	2561	YSI	13D101777	
MW-346C	11/7/2017	11:56	80.01	14.64	0.0	ND	ND	Monsoon	Teflon	70	12:05	12:35	200	2.0	17.94	6.55	3496	1.94	3.51	160.5	14.7	2422	YSI	12C100125	

FINAL 3 READINGS

Well: MW-346B | Sample Start Time: 10:52 | Finish: 11:12
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:42	10.21	16.86	6.19	9417	5.31	10.89	271.7	65.1	6116
10:47	10.20	16.91	6.19	9414	5.3	10.81	274.6	64.8	6114
10:52	10.20	16.93	6.18	9408	5.27	10.78	280.7	64.2	6110

Comments:

Well: MW-346B | Sample Start Time: 11:30 | Finish: 11:40
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:20	10.18	17.53	6.42	5687	3.09	1.80	285.2	29.9	3695
11:25	10.20	17.59	6.42	5688	3.1	1.80	285.3	31.1	3697
11:30	10.22	17.64	6.42	5697	3.11	1.90	285.4	29.3	3715

Comments: NA

Well: MW-346B | Sample Start Time: 10:31 | Finish: 10:56
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:21	10.49	10.43	6.55	5284	2.80	2.64	261.2	40.6	3430
10:26	10.55	10.54	6.48	5290	2.84	2.55	265.4	40.3	3438
10:31	10.60	10.62	6.44	5291	2.86	2.50	267.3	39.7	3439

Comments:

Well: MW-346B | Sample Start Time: 11:15 | Finish: 11:20
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:05	9.75	20.41	6.44	4895	2.63	0.82	123.2	22.5	3172
11:10	9.75	20.43	6.44	4894	2.63	0.80	124.1	21.8	3174
11:15	9.75	20.44	6.43	4890	2.63	0.77	123.2	21.2	3179

Comments: NA

Well: MW-346B | Sample Start Time: 13:02 | Finish: 13:15
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:52	11.78	18.89	7.01	846	0.42	5.12	166.6	5.3	550
12:57	11.65	18.94	7.06	848	0.42	5.06	162.9	5.3	551
13:02	11.53	18.97	7.08	850	0.42	5.10	159.1	5.3	553

Comments: DUP - Peristaltic pump used due to well diameter. Too small for Monsoon pump. Injection well with new PVC for connecting hose to sealed with glue.

Well: MW-346B | Sample Start Time: 11:48 | Finish: 11:54
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:38	11.63	24.25	7.22	29450	18.21	1.2	-193.2	90.7	19140
11:43	11.64	24.2	7.22	29440	18.21	1.16	-190.3	91.2	19140
11:48	11.64	24.17	7.21	29400	18.2	1.14	-185.8	91.4	19130

Comments: Peristaltic pump used. Well opening too narrow for Monsoon Pump due to injection connection.

Well: MW-346C | Sample Start Time: 9:05 | Finish: 9:16
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:55	15.03	21.54	7.00	4540	2.43	0.93	-32.0	8.1	2952
9:00	15.10	21.39	7.00	4566	2.47	0.91	-32.9	8.0	3010
9:05	15.14	21.17	6.99	4621	2.49	0.87	-33.6	7.5	3017

Comments:

Well: MW-346C | Sample Start Time: 10:40 | Finish: 10:50
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:30	16.71	21.21	6.95	4849	2.61	1.24	-9.9	22.8	3147
10:35	16.90	21.27	6.94	4847	2.61	1.21	-11.1	22.5	3147
10:40	17.01	21.31	6.94	4846	2.61	1.22	-13.6	22.1	3148

Comments:

Well: MW-346C | Sample Start Time: 12:35 | Finish: 12:45
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:25	14.43	17.61	6.88	5087	2.75	0.97	-9.8	13.8	3307
12:30	14.31	17.55	6.88	5092	2.76	0.95	-13.2	14.2	3312
12:35	14.24	17.52	6.90	5094	2.76	0.95	-16.7	14.4	3314

Comments: NA

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
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Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
MW-346C	1/11/2018	8:47	79.91	13.11	0.0	ND	ND	Monsoon	Teflon	70	9:01	9:26	200	2.0	12.01	6.49	3964	1.97	8.80	250.6	7.7	2419	YSI	07G100122	
MW-346C	1/23/2018	9:00	81.06	12.85	0.0	ND	ND	Monsoon	Teflon	70	9:34	9:59	300	3.5	16.21	6.62	4373	2.37	1.24	212.3	41.8	2888	YSI	16A104340	
MW-346C	2/20/2018	8:48	79.91	11.49	0	ND	ND	Monsoon	Teflon	70	9:02	9:32	200	2	16.04	6.26	2657	1.45	6.28	222.4	6.1	1869	YSI	05D2720	
MW-346C	4/5/2018	8:30	80.70	12.18	0.0	ND	ND	Monsoon	Teflon	70	8:45	9:10	280	3.0	6.96	6.98	2764	1.45	8.24	256.6	7.0	1806	YSI	11J102429	
MW-346C	5/21/2018	9:40	79.81	10.97	0.0	ND	ND	Monsoon	Teflon	70	9:40	10:10	280	3.0	19.16	6.81	4271	1.87	2.84	187.7	17.1	2401	YSI	07D100535	
MW-346C	6/26/2018	9:58	79.84	11.70	0	ND	ND	Monsoon	Teflon	70	10:12	10:37	200	2	19.68	8.2	2203	1.15	1.47	-145.7	22.1	1465	YSI	15F101567	
MW-350A	7/26/2017	11:10	15.90	7.02	0.0	ND	ND	Monsoon	Teflon	11.4	11:20	11:50	200	2.0	22.53	6.96	1630	0.86	1.60	-71.7	95.6	1003	YSI	08A100738	
MW-350A	10/5/2017	8:50	15.90	7.43	0.1	ND	ND	Monsoon	Teflon	11.4	8:56	9:21	200	3.0	21.06	6.41	2813	1.46	3.34	174.7	1,389.0	1830	YSI	15L102309	
MW-350A	1/11/2018	8:50	15.88	8.12	0.0	ND	ND	Monsoon	Teflon	11.4	11:15	11:40	200	2.0	13.07	7.43	2512	1.30	1.10	33.0	85.2	1632	YSI	16A104340	

FINAL 3 READINGS

Well: MW-346C | Sample Start Time: 9:26 | Finish: 9:48
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:16	13.85	12.75	6.73	4844	2.61	2.00	-9.1	7.0	3151
9:21	13.91	12.81	6.76	4851	2.62	1.96	-8.3	6.9	3153
9:26	13.91	12.83	6.76	4853	2.62	1.94	-14.1	6.9	3155

Comments:

Well: MW-346C | Sample Start Time: 9:59 | Finish: 10:07
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:49	14.88	15.45	6.78	4689	2.52	0.90	10.3	3.7	3048
9:54	14.79	15.51	6.79	4688	2.52	0.91	10.8	3.0	3047
9:59	14.50	15.83	6.79	4690	2.52	0.91	10.2	2.9	3048

Comments: NA

Well: MW-346C | Sample Start Time: 9:32 | Finish: 9:52
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:22	12.81	16.57	6.78	4796	2.58	0.96	164.2	4.9	3116
9:27	12.74	16.61	6.8	4802	2.6	0.94	160.5	4.9	3119
9:32	12.79	16.67	6.82	4805	2.59	0.92	158.3	4.8	3121

Comments:

Well: MW-346C | Sample Start Time: 9:10 | Finish: 9:30
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	13.76	10.10	6.87	4418	2.35	0.71	52.6	10.3	2870
9:05	13.83	10.11	6.88	4422	2.36	0.68	48.9	10.2	2875
9:10	13.90	10.18	6.88	4428	2.37	0.64	46.8	10.2	2879

Comments:

Well: MW-346C | Sample Start Time: 10:10 | Finish: 10:20
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:00	12.31	19.30	6.82	4352	2.32	0.49	-2.7	9.4	2821
10:05	12.30	19.34	6.83	4357	2.33	0.47	-3.8	9.3	2824
10:10	12.25	19.35	6.83	4361	2.33	0.44	-4.5	9.2	2829

Comments: DUP

Well: MW-346C | Sample Start Time: 10:37 | Finish: 10:43
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:27	12.79	19.48	7.1	4066	2.17	0.7	-300.7	2.9	2644
10:32	12.94	19.51	7.05	4067	2.16	0.71	-304.8	2.9	2645
10:37	12.99	19.54	7.04	4070	2.17	0.73	-309.1	2.8	2648

Comments: NA

Well: MW-350A | Sample Start Time: 11:50 | Finish: 12:07
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:40	7.31	22.46	6.92	1611	0.80	1.70	-69.3	82.9	988
11:45	7.38	22.47	6.90	1607	0.79	1.73	-67.9	80.7	985
11:50	7.43	22.46	6.88	1605	0.79	1.75	-66.5	78.3	984

Comments:

Well: MW-350A | Sample Start Time: 9:21 | Finish: 9:31
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:11	7.79	21.04	6.52	2795	1.46	0.46	165.8	1,012.0	1785
9:16	7.80	21.84	6.49	2946	1.54	0.72	168.2	912.0	1922
9:21	7.85	22.11	6.51	2907	1.51	0.91	167.4	891.0	1888

Comments:

Well: MW-350A | Sample Start Time: 11:40 | Finish: 11:58
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:30	9.03	12.81	6.95	2503	1.30	0.79	69.5	27.9	1627
11:35	9.10	13.05	6.92	2487	1.29	0.82	70.2	26.1	1616
11:40	9.11	13.17	6.90	2479	1.29	0.81	68.6	24.9	1612

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).

NJDEP Lab Certification No. 13400

Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-350A	4/5/2018	8:30	15.85	6.53	0.0	ND	ND	Monsoon	Teflon	11.4	8:40	9:10	200	2.0	11.15	6.49	1990	1.02	5.55	189.7	68.1	1289	YSI	15K101883	
MW-350A	5/21/2018	9:49	15.87	6.74	0.0	ND	ND	Monsoon	Teflon	10.5	11:46	12:11	300	3.5	15.97	7.18	1805	0.93	2.67	19.9	37.0	1181	YSI	11J102429	
MW-350B	7/26/2017	9:40	44.85	10.07	0.0	ND	ND	Monsoon	Teflon	40	9:50	10:20	200	2.0	19.87	7.83	2949	1.54	1.21	-165.3	24.8	1916	YSI	08A100738	
MW-350B	10/5/2017	9:39	45.19	12.05	2.4	ND	ND	Monsoon	Teflon	40	9:47	10:12	220	2.5	19.05	8.54	3011	1.57	5.25	53.3	21.4	1948	YSI	15L102309	
MW-350B	1/11/2018	8:45	45.48	10.60	2.1	ND	ND	Monsoon	Teflon	40	10:12	10:37	230	2.5	14.32	11.00	3107	1.63	1.24	-75.4	23.0	2015	YSI	16A104340	
MW-350B	4/5/2018	9:50	45.00	8.60	0.0	ND	ND	Monsoon	Teflon	40	10:00	10:30	200	2.0	14.06	9.98	2924	1.53	1.21	63.4	23.5	1903	YSI	15K101883	
MW-350B	5/21/2018	9:46	45.19	7.00	0.7	ND	ND	Monsoon	Teflon	40	11:03	11:28	300	3.5	17.56	8.35	3154	1.66	1.18	44.2	14.3	2040	YSI	11J102429	
MW-350C	7/26/2017	8:15	81.00	11.35	0.0	ND	ND	Monsoon	Teflon	70	8:30	9:00	250	2.0	18.68	7.06	5024	0.70	1.77	-19.7	10.1	1264	YSI	08A100738	
MW-350C	10/5/2017	10:32	82.03	14.40	0.0	ND	ND	Monsoon	Teflon	70	10:42	11:07	250	4.5	20.84	7.31	5240	2.84	5.30	-8.4	13.0	3418	YSI	15L102309	

FINAL 3 READINGS

Well: MW-350A | Sample Start Time: 9:10 | Finish: 9:30
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:00	6.73	11.05	6.60	1885	1.00	5.63	175.8	66.0	1280
9:05	6.78	11.03	6.62	1882	0.98	5.65	172.3	65.8	1280
9:10	6.82	11.01	6.65	1880	0.98	5.67	169.6	65.0	1278

Comments:

Well: MW-350A | Sample Start Time: 12:11 | Finish: 12:16
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:01	8.02	16.58	7.01	900	0.44	3.08	46.7	62.0	585
12:06	7.90	16.39	7.01	854	0.42	3.61	52.6	30.3	556
12:11	8.08	16.95	7.00	854	0.42	3.26	55.7	24.2	555

Comments: NA

Well: MW-350B | Sample Start Time: 10:20 | Finish: 10:40
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:10	10.07	19.87	7.78	2950	1.54	0.93	-177.6	23.3	1916
10:15	10.07	19.84	7.75	2949	1.54	0.90	-180.4	22.8	1915
10:20	10.07	19.81	7.73	2945	1.54	0.88	-183.1	23.1	1915

Comments:

Well: MW-350B | Sample Start Time: 10:12 | Finish: 10:20
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:02	13.45	18.91	7.75	2945	1.54	0.41	-35.1	18.0	1914
10:07	13.60	18.64	7.76	2943	1.54	0.26	-42.5	17.5	1913
10:12	13.37	18.79	7.75	2938	1.54	0.22	-42.0	18.5	1910

Comments:

Well: MW-350B | Sample Start Time: 10:37 | Finish: 10:58
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:27	11.83	15.07	9.06	3014	1.58	0.08	-129.8	26.7	1959
10:32	11.83	15.09	8.83	3017	1.58	0.08	-124.5	24.2	1963
10:37	11.85	15.24	8.81	3010	1.58	0.08	-123.6	22.9	1956

Comments:

Well: MW-350B | Sample Start Time: 10:30 | Finish: 10:50
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:20	9.42	13.94	9.84	2931	1.54	1.00	57.7	20.4	1908
10:25	9.57	13.90	9.81	2932	1.54	0.97	56.3	19.8	1910
10:30	9.74	13.87	9.79	2933	1.54	0.93	55.2	19.4	1911

Comments:

Well: MW-350B | Sample Start Time: 11:28 | Finish: 11:33
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:18	11.58	17.23	7.25	3157	1.66	0.09	-86.9	8.2	2051
11:23	12.07	17.40	7.35	2140	1.65	0.12	-98.7	7.5	2042
11:28	12.30	17.70	7.26	3159	1.66	0.15	-102.7	6.0	2052

Comments: NA

Well: MW-350C | Sample Start Time: 9:00 | Finish: 9:17
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:50	11.35	18.57	7.04	5014	0.70	1.35	-33.7	10.0	1277
8:55	11.35	18.55	7.03	5016	0.70	1.33	-37.6	9.9	1280
9:00	11.35	18.52	7.05	5018	0.70	1.30	-41.5	10.0	1281

Comments:

Well: MW-350C | Sample Start Time: 11:07 | Finish: 11:16
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:57	14.63	19.27	7.28	5132	2.77	0.36	-19.4	12.7	3334
11:02	14.72	19.48	7.26	5086	2.74	0.22	-18.2	9.5	3305
11:07	14.80	19.57	7.24	5064	2.73	0.20	-18.4	6.6	3291

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-350C	1/11/2018	8:40	82.03	12.11	0.0	ND	ND	Monsoon	Teflon	70	9:04	9:29	200	2.0	14.14	7.23	4938	2.67	2.03	-7.8	15.4	3220	YSI	16A104340	
MW-350C	4/5/2018	11:10	80.80	12.00	0.0	ND	ND	Monsoon	Teflon	70	11:50	12:20	200	2.0	15.94	7.10	4834	2.61	1.08	-10.9	15.0	3145	YSI	15K101883	
MW-350C	5/21/2018	9:55	81.87	10.15	0.0	ND	ND	Monsoon	Teflon	70	10:13	10:38	300	3.5	16.84	6.79	4911	2.63	2.14	201.2	10.0	3162	YSI	11J102429	
MW-395A	7/26/2017	12:40	18.25	6.15	0.0	ND	ND	Monsoon	Teflon	12.5	12:50	13:20	200	2.0	24.34	7.24	2177	1.11	2.74	58.7	62.7	1415	YSI	08A100738	
MW-395A	10/5/2017	11:47	18.90	7.58	0.3	ND	ND	Monsoon	Teflon	12.5	12:02	12:27	250	5.0	25.71	7.33	1653	0.83	3.61	79.3	10.5	1068	YSI	15L102309	
MW-395A	1/11/2018	12:40	18.61	7.81	0.0	ND	ND	Monsoon	Teflon	12.5	13:43	14:08	250	2.5	14.49	7.49	1846	0.94	2.65	-56.3	7.3	1195	YSI	16A104340	
MW-395A	4/6/2018	9:25	18.11	5.18	0.0	ND	ND	Monsoon	Teflon	12.5	9:35	10:05	270	3.0	9.26	7.59	1796	0.92	9.12	17.1	72.7	1169	YSI	07D100535	
MW-396A	7/26/2017	9:38	15.54	6.90	0.0	ND	ND	Monsoon	Teflon	11	9:45	10:10	250	3.0	18.59	6.79	2993	1.57	1.24	154.1	27.6	1947	YSI	09M100933	
MW-396A	10/5/2017	13:18	14.95	8.03	0.0	ND	ND	Monsoon	Teflon	11	13:26	13:51	225	2.0	22.06	7.05	2771	1.44	1.22	-17.4	73.0	1801	YSI	12C100125	

FINAL 3 READINGS

Well: MW-350C | Sample Start Time: 9:29 | Finish: 9:43
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:19	12.35	14.00	7.09	5197	2.81	0.44	-90.3	10.9	3377
9:24	12.35	14.44	7.02	5191	2.81	0.41	-88.0	10.6	3374
9:29	12.35	14.72	7.07	5191	2.81	0.39	-90.2	10.1	3374

Comments:

Well: MW-350C | Sample Start Time: 12:20 | Finish: 12:40
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:10	12.00	16.08	7.01	4843	2.61	0.89	-21.6	12.9	3147
12:15	12.00	16.11	7.00	4842	2.61	0.86	-23.7	12.3	3145
12:20	12.00	16.14	6.98	4843	2.61	0.82	-25.9	12.0	3144

Comments:

Well: MW-350C | Sample Start Time: 10:38 | Finish: 10:43
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:28	11.41	17.51	6.84	4827	2.60	0.29	-35.3	2.9	3122
10:33	10.90	17.48	6.83	4810	2.59	0.34	-41.4	2.9	3125
10:38	11.02	17.61	6.82	4807	2.59	0.29	-46.0	2.5	3127

Comments: NA

Well: MW-395A | Sample Start Time: 13:20 | Finish: 13:30
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:10	6.18	24.48	7.23	2174	1.11	2.57	47.6	47.1	1414
13:15	6.18	24.51	7.22	2178	1.11	2.55	45.5	45.5	1415
13:20	6.18	24.55	7.21	2177	1.11	2.52	42.9	43.2	1416

Comments:

Well: MW-395A | Sample Start Time: 12:27 | Finish: 12:32
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:17	8.10	25.67	7.16	1594	0.80	0.83	99.9	21.7	1037
12:22	8.25	25.21	7.16	1604	0.81	0.86	101.3	35.8	1043
12:27	8.30	25.10	7.15	1612	0.81	0.85	104.1	83.6	1047

Comments:

Well: MW-395A | Sample Start Time: 14:08 | Finish: 14:12
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:58	8.05	13.92	7.50	1786	0.91	2.18	-24.1	8.9	1161
14:03	8.06	13.96	7.52	1792	0.92	2.15	-23.9	8.9	1165
14:08	8.11	14.44	7.57	1793	0.92	2.19	-25.1	9.1	1166

Comments:

Well: MW-395A | Sample Start Time: 10:05 | Finish: 10:10
Weather Conditions: Cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:55	5.70	9.33	7.32	1747	0.89	9.90	42.7	18.1	1141
10:00	5.74	9.38	7.30	1745	0.88	9.94	44.2	17.5	1134
10:05	5.80	9.40	7.26	1741	0.88	10.01	45.3	17.1	1130

Comments:

Well: MW-396A | Sample Start Time: 10:10 | Finish: 10:22
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:00	7.51	20.58	6.18	3037	1.59	1.10	72.8	38.5	1975
10:05	7.60	20.44	6.18	3020	1.58	1.05	72.0	38.1	1961
10:10	7.63	20.86	6.20	2992	1.55	0.86	74.1	28.5	1935

Comments:

Well: MW-396A | Sample Start Time: 13:51 | Finish: 14:06
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:41	8.69	23.49	6.62	2701	1.40	0.33	-19.2	88.8	1756
13:46	8.82	23.44	6.62	2695	1.38	0.38	-18.8	84.7	1751
13:51	9.01	23.40	6.62	2696	1.38	0.41	-18.6	83.6	1747

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).

NJDEP Lab Certification No. 13400

Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-396A	1/11/2018	13:20	14.95	8.24	0.0	ND	ND	Monsoon	Teflon	11	13:40	14:10	325	3.0	14.01	7.59	1908	0.98	1.51	130.3	619	1240	YSI	13D101777	
MW-396A	4/5/2018	13:00	15.00	6.11	0.0	ND	ND	Monsoon	Teflon	11	13:10	13:40	200	2.0	11.09	8.20	1689	0.87	4.45	73.5	22.2	1103	YSI	15K101883	
MW-397A	7/26/2017	12:35	19.40	11.27	0.0	ND	ND	Monsoon	Teflon	16	12:40	13:10	320	4.0	19.90	6.88	1910	0.97	4.36	190.3	3115.0	1240	YSI	13J101897	
MW-397A	10/5/2017	12:17	19.42	13.49	0.0	ND	ND	Monsoon	Teflon	16	12:22	12:52	325	3.0	22.93	7.22	1873	0.95	7.76	139.8	1,694.0	1212	YSI	09G100725	
MW-397A	1/12/2018	8:45	19.37	11.53	0.0	ND	ND	Monsoon	Teflon	16	8:50	9:15	250	2.0	15.51	7.36	1780	0.91	9.76	200.1	248.7	1157	YSI	16A104327	
MW-397A	4/6/2018	9:44	19.25	10.00	0.0	ND	ND	Monsoon	Teflon	16	9:49	10:14	300	3.0	11.14	7.82	1377	0.69	10.22	198.2	2229	895	YSI	11J102429	
MW-447A	7/26/2017	11:34	14.15	8.47	0.0	ND	ND	Monsoon	Teflon	12.3	11:39	12:04	320	4.0	22.36	6.44	1522	0.76	0.94	160.1	*	988	YSI	13J101897	
MW-447A	10/5/2017	11:15	14.00	8.94	0.0	ND	ND	Monsoon	Teflon	12.3	11:20	11:45	200	2.5	21.43	7.74	1665	0.95	4.73	-154.0	*	1212	YSI	0K8101210	
MW-447A	11/7/2017	11:24	13.69	7.63	0.0	ND	ND	Monsoon	Teflon	10	12:16	12:41	240	2.8	19.31	7.08	1136	0.56	5.41	224.6	*	735	YSI	11J101189	

FINAL 3 READINGS

Well: MW-396A | Sample Start Time: 14:10 | Finish: 14:24
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
14:00	9.91	14.56	6.98	1885	0.96	0.93	59.1	41.2	1225
14:05	10.14	14.82	6.96	1885	0.96	0.94	62.4	39.6	1227
14:10	10.37	15.12	6.95	1887	0.96	0.95	64.9	38.1	1227

Comments:

Well: MW-396A | Sample Start Time: 13:40 | Finish: 14:00
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:30	6.75	11.07	8.12	1675	0.85	4.21	83.6	19.8	1096
13:35	6.87	11.10	8.10	1673	0.85	4.19	85.7	19.4	1094
13:40	7.00	11.08	8.08	1671	0.84	4.16	87.9	19.1	1093

Comments:

Well: MW-397A | Sample Start Time: 13:10 | Finish: 13:15
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:00	13.21	19.73	6.87	1754	0.88	3.59	161.1	112.0	1140
13:05	13.56	19.81	6.87	1748	0.88	3.47	160.0	109.4	1133
13:10	13.89	19.86	6.87	1736	0.87	3.40	159.5	100.7	1123

Comments:

Well: MW-397A | Sample Start Time: 12:52 | Finish: 12:57
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:42	14.62	22.41	7.46	1784	0.90	7.59	127.9	82.0	1159
12:47	14.81	22.27	7.48	1760	0.91	7.71	125.2	80.0	1143
12:52	15.00	22.12	7.50	1747	0.90	7.94	121.4	77.0	1129

Comments:

Well: MW-397A | Sample Start Time: 9:15 | Finish: 9:20
Weather Conditions: cloudy/rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:05	12.13	15.76	8.20	1842	0.94	8.94	163.9	296.7	1197
9:10	12.14	15.24	8.20	1836	0.94	8.92	163.2	311.3	1193
9:15	12.15	15.20	8.20	1831	0.94	9.26	161.7	304.5	1191

Comments:

Well: MW-397A | Sample Start Time: 10:14 | Finish: 10:26
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:04	10.62	10.56	7.70	1372	0.69	10.60	193.7	1153	893
10:09	10.72	10.50	7.66	1372	0.69	10.64	193.4	1162	893
10:14	10.83	10.54	7.64	1372	0.69	10.62	192.0	1171	893

Comments:

Well: MW-447A | Sample Start Time: 12:04 | Finish: 12:09
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:54	9.25	22.36	6.44	1597	0.81	0.42	154.9	*	1038
11:59	9.20	22.44	6.43	1596	0.81	0.41	153.4	*	1038
12:04	9.22	22.47	6.44	1595	0.81	0.42	153.0	*	1037

Comments: * = Out of Range

Well: MW-447A | Sample Start Time: 11:45 | Finish: 12:05
Weather Conditions: clear

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:35	9.63	21.12	7.48	1865	0.95	2.84	-165.1	NM	1211
11:40	9.65	21.14	7.47	1863	0.95	2.81	-164.8	NM	1211
11:45	9.68	21.15	7.47	1863	0.95	2.73	-164.3	NM	1210

Comments: NM = Out of Range

Well: MW-447A | Sample Start Time: 12:41 | Finish: 12:46
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:31	8.35	19.94	7.11	1139	0.57	6.93	229.6	*	747
12:36	8.53	20.91	7.05	1176	0.59	6.91	233.4	*	765
12:41	8.60	21.02	7.09	1149	0.57	6.36	238.8	*	747

Comments: * = OUT OF RANGE

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).

NJDEP Lab Certification No. 13400

Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number*
MW-447A	1/12/2018	10:15	12.62	7.52	0.0	ND	ND	Monsoon	Teflon	12.3	10:20	10:45	240	3.0	11.65	6.99	1170	0.60	10.47	125.2	805	770	YSI	07G100121	
MW-447A	1/23/2018	8:50	12.62	8.02	0.0	ND	ND	Monsoon	Teflon	10	8:55	9:20	240	3.0	11.39	5.24	1385	0.70	6.86	120.2	OR	902	YSI	07G100121	
MW-447A	2/20/2018	8:20	12.65	6.56	0	ND	ND	Monsoon	Teflon	12.3	8:20	9:00	270	3	11.31	5.39	891	0.44	10.51	244.7	3841	576	YSI	07D100535	
MW-447A	3/16/2018	8:26	12.49	6.42	0	NM	NM	Monsoon	Teflon	12.3	8:39	9:09	350	3	9.8	6.78	982	0.49	11.60	176.7	*	638	YSI	13D101777	
MW-447A	4/5/2018	11:36	12.54	6.17	0.0	ND	ND	Monsoon	Teflon	12.3	11:41	12:06	280	3.5	10.98	7.42	712	0.34	12.35	258.9	*	460	YSI	11J102429	
MW-447B	7/26/2017	10:36	45.15	10.01	0.0	ND	ND	Monsoon	Teflon	40	10:41	11:11	350	4.0	18.78	6.93	2187	1.22	1.19	125.4	78.1	1480	YSI	13J101897	
MW-447B	10/5/2017	12:30	45.13	13.98	0.0	ND	ND	Monsoon	Teflon	40	12:35	13:00	225	2.5	18.19	6.04	3034	1.59	7.52	121.3	52.6	1981	YSI	0K8101210	
MW-447B	11/7/2017	11:20	45.75	12.65	0.0	ND	ND	Monsoon	Teflon	40	11:35	12:00	300	3.0	17.12	7.34	2506	1.57	6.32	200.3	31.4	1959	YSI	11J101189	
MW-447B	1/12/2018	8:45	45.15	11.02	0.0	ND	ND	Monsoon	Teflon	40	8:50	9:15	260	3.0	13.79	6.34	692	0.97	10.09	168.4	22.0	1333	YSI	07G100121	

FINAL 3 READINGS

Well: MW-447A | Sample Start Time: 10:45 | Finish: 11:19
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:35	7.96	12.74	5.91	1193	0.57	7.75	165.8	54.3	778
10:40	7.97	12.82	5.92	1195	0.59	7.71	165.0	51.9	780
10:45	7.98	12.86	5.92	1199	0.60	7.68	164.3	50.3	782

Comments: DUP

Well: MW-447A | Sample Start Time: 9:20 | Finish: 9:44
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:10	8.42	12.74	8.01	1402	0.71	4.92	-217.4	98.1	915
9:15	8.48	12.79	8.05	1405	0.71	4.88	-219.9	96.3	916
9:20	8.55	12.84	8.08	1409	0.71	4.83	-221.8	94.1	918

Comments: DUP, * = out of range

Well: MW-447A | Sample Start Time: 9:00 | Finish: 9:16
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:50	7.11	11.76	6.53	986	0.48	9.8	174.7	124	631
8:55	7.15	11.8	6.56	990	0.49	9.75	172.1	121	640
9:00	7.18	11.85	6.6	991	0.49	9.71	170.9	123	645

Comments: DUP

Well: MW-447A | Sample Start Time: 9:09 | Finish: 9:24
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
8:59	6.94	11.08	6.92	1138	0.57	6.70	159.5	70.6	739
9:04	6.99	11.11	6.92	1138	0.57	6.70	159.3	67.4	740
9:09	7.05	11.17	6.93	1139	0.58	6.70	158.7	66.2	740

Comments: DUP, * = out of range

Well: MW-447A | Sample Start Time: 12:06 | Finish: 12:51
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:56	6.45	12.01	7.02	873	0.41	9.77	276.0	1723	563
12:01	6.49	12.00	6.98	872	0.43	9.71	278.8	1710	566
12:06	6.55	12.04	6.96	872	0.43	9.69	279.0	1702	567

Comments: DUP, *=OUT OF RANGE

Well: MW-447B | Sample Start Time: 11:11 | Finish: 11:16
Weather Conditions: partly sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:01	10.48	19.30	6.91	2685	1.42	0.33	44.9	14.6	1753
11:06	10.55	19.45	6.90	2691	1.44	0.35	42.8	14.4	1770
11:11	10.63	19.57	6.91	2708	1.45	0.37	41.7	14.4	1780

Comments:

Well: MW-447B | Sample Start Time: 13:00 | Finish: 13:20
Weather Conditions: clear

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
12:50	14.57	17.77	6.25	3050	1.60	2.52	215.2	44.1	1983
12:55	14.71	17.92	6.27	3043	1.60	2.41	220.5	47.9	1981
13:00	14.85	18.09	6.25	3063	1.60	2.69	224.1	46.0	1990

Comments:

Well: MW-447B | Sample Start Time: 12:00 | Finish: 12:07
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
11:50	13.07	18.03	7.06	3193	1.68	1.94	203.4	11.4	2075
11:55	13.10	18.24	7.05	3182	1.67	1.76	207.7	6.8	2069
12:00	13.22	18.49	7.05	3183	1.67	1.68	210.4	11.3	2069

Comments: NA

Well: MW-447B | Sample Start Time: 9:15 | Finish: 9:32
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
9:05	11.51	15.84	6.52	3312	1.72	3.50	141.6	18.5	2149
9:10	11.55	15.92	6.55	3315	1.74	3.46	139.2	18.1	2157
9:15	11.60	16.10	6.59	3319	1.75	3.41	138.1	17.9	2163

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
* = water quality meter does not have separate serial numebr for probe

NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

Appendix I
Groundwater Sampling Measurements and Calculations - Low Flow Purging
Hoffmann-La Roche, Inc. - Nutley, New Jersey
Investigative Area (IA) - 6

PRE-PURGE INFORMATION								PURGING INFORMATION							INITIAL PURGE PARAMETERS								METER-PROBE INFO		
Well Number	Sample Date	Time	Total Depth (ft)	Depth to Water (ft)	PID (ppm)	Depth to Prod (ft)	Prod Thick (ft)	Pump Type	Tubing Type	Pump Intake Depth (ft)	Purge Start Time	Purge Stop Time	Flow Rate	Total Purge Vol (gal)	Temp (C°)	pH (s.u.)	K25 (µS/cm)	SAL	D.O. (ppm)	ORP (mv)	Turb (NTU)	TDS (mg/L)	Meter Model	Meter Serial Number	Probe Serial Number+
MW-447B	1/23/2018	10:30	45.15	10.70	0.0	ND	ND	Monsoon	Teflon	40	10:35	11:00	260	3.0	13.94	6.87	3885	2.12	4.88	-19.0	34.0	2595	YSI	07G100121	
MW-447B	2/20/2018	9:40	45.7	9.36	0	ND	ND	Monsoon	Teflon	40	9:50	10:15	250	3	15.67	6.78	3796	2.08	12.21	163.5	72.4	2411	YSI	07D100535	
MW-447B	3/16/2018	9:45	45.12	9.66	0	NM	NM	Monsoon	Teflon	40	9:52	10:22	350	3	13.39	7.96	599	1.05	9.30	124.7	26.5	1379	YSI	13D101777	
MW-447B	4/5/2018	13:23	45.38	12.76	0.0	ND	ND	Monsoon	Teflon	40	13:28	13:53	300	3.0	12.76	7.03	919	0.61	11.11	281.6	72.4	715	YSI	11J102429	

FINAL 3 READINGS

Well: MW-447B | Sample Start Time: 11:00 | Finish: 11:12
Weather Conditions: rain

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:50	11.32	17.30	7.79	4443	2.36	4.62	-132.3	18.4	2884
10:55	11.41	17.19	7.76	4445	2.37	4.60	-129.5	17.9	2890
11:00	11.52	17.09	7.73	4447	2.39	4.58	-127.7	17.6	2896

Comments: NA

Well: MW-447B | Sample Start Time: 10:15 | Finish: 10:25
Weather Conditions: cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:05	9.66	16.51	6.91	3745	1.99	6.8	151.7	44.7	2440
10:10	9.68	16.54	6.9	3741	1.98	6.75	150.2	44.1	2434
10:15	9.70	16.6	6.88	3738	1.98	6.74	149.5	43.7	2429

Comments:

Well: MW-447B | Sample Start Time: 10:22 | Finish: 10:27
Weather Conditions: sunny

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
10:12	10.15	14.93	7.04	3204	1.69	1.80	141.9	7.4	2084
10:17	10.25	15.32	7.04	3217	1.74	1.70	139.2	7.2	2124
10:22	10.32	15.67	7.02	3222	1.79	1.70	137.9	6.9	2147

Comments: NA

Well: MW-447B | Sample Start Time: 13:53 | Finish: 14:10
Weather Conditions: partly cloudy

Time	DTW	Temp	pH	K25	SAL	D.O.	ORP	Turb	TDS
13:43	12.11	15.29	6.77	3590	1.87	2.29	280.4	18.5	2337
13:48	12.10	15.37	6.76	3596	1.90	2.17	280.2	18.1	2340
13:53	12.10	15.44	6.76	3600	1.91	2.13	280.0	17.6	2340

Comments:

The well was considered stabilized when the final three readings were: +/- 0.1 s.u. for pH; +/- 3% for temperature and conductivity; +/- 10% for D.O. and turbidity; and +/- 10 mv for Eh (for values greater than 1).
Analytical Methods (EPA): Temp (SM 2550 B); pH (SM 4500-H B); Cond (120.1 and SM 2510 B); DO (SM 4500-O G); Salinity (SM 2520 B); Turbidity (EPA 180.1)
TDS readings are field screening data measured with a rental meter. TRC is not certified in New Jersey for this parameter.
K25 = Conductivity to 25°.
SAL = Salinity in parts per thousand (ppt).
PID lamp is 10.6 eV, unless otherwise noted.
NA = Not Available
ND = Not Detected
NM = Not Measured
TLP = Teflon Lined Poly
+ = water quality meter does not have separate serial numebr for probe

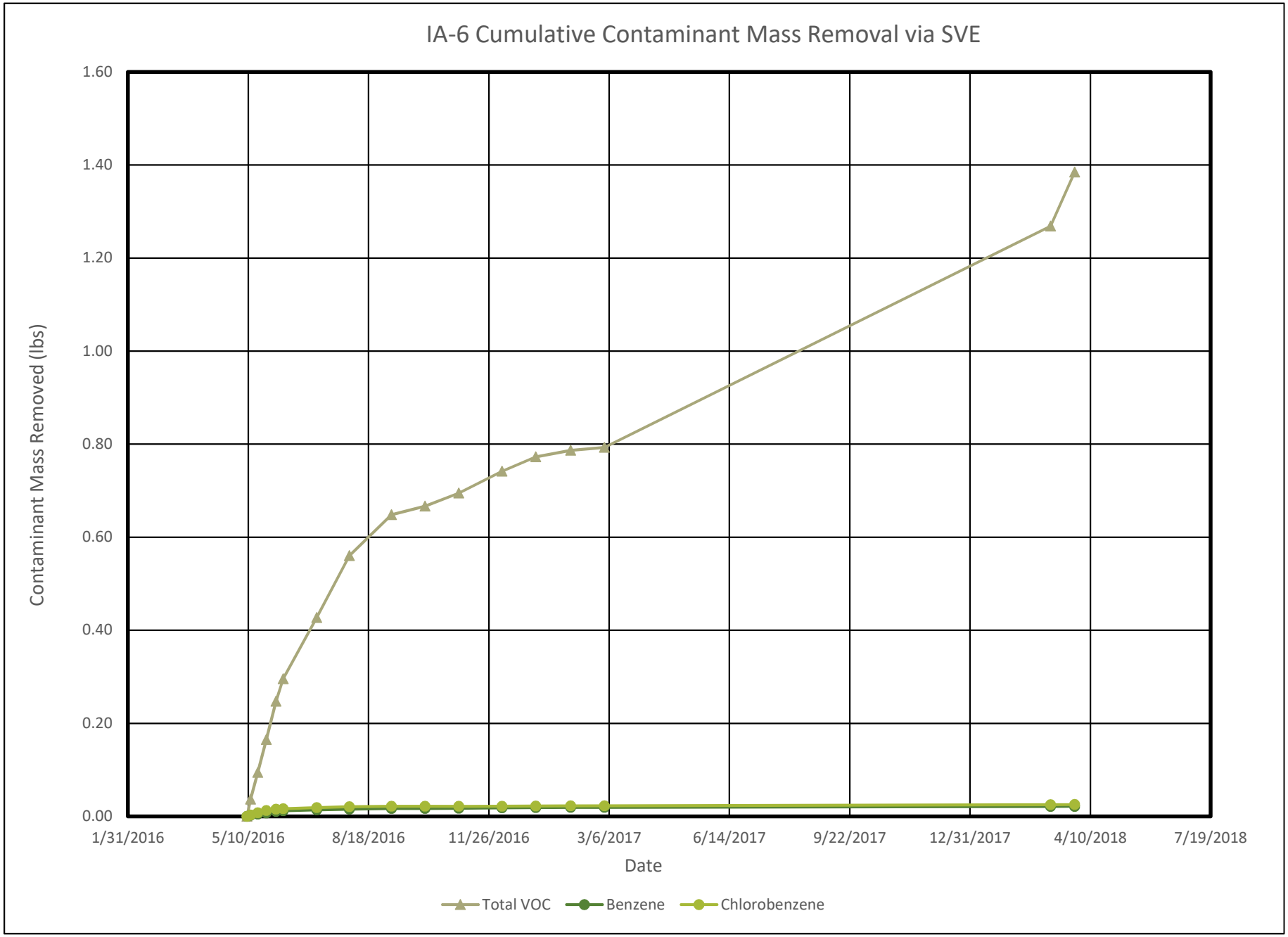
NJDEP Lab Certification No. 13400

Reviewed & Approved by: _____
Laboratory Manager or Designated Supervisor

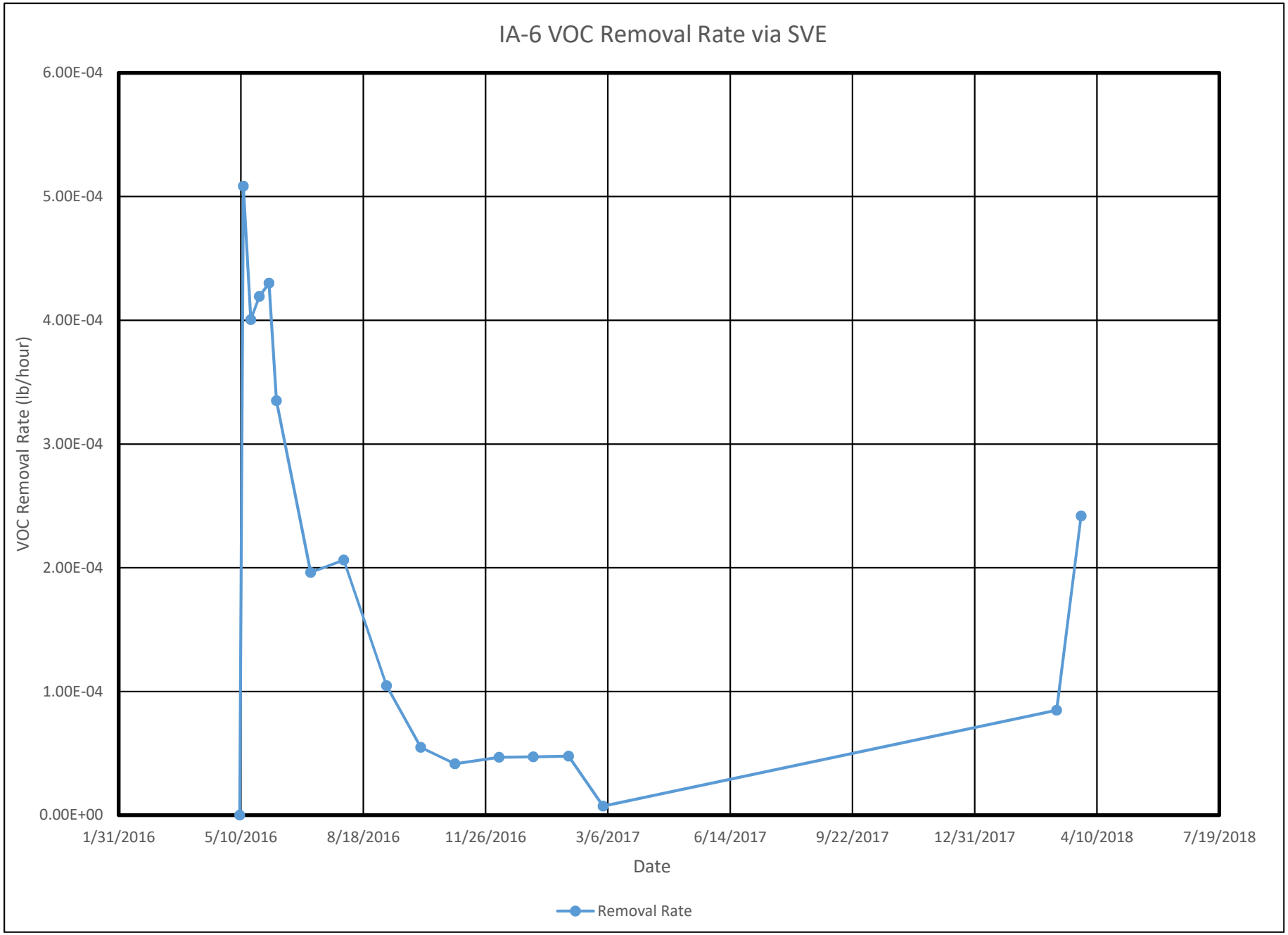
APPENDIX J

AIR MONITORING TREND GRAPHS

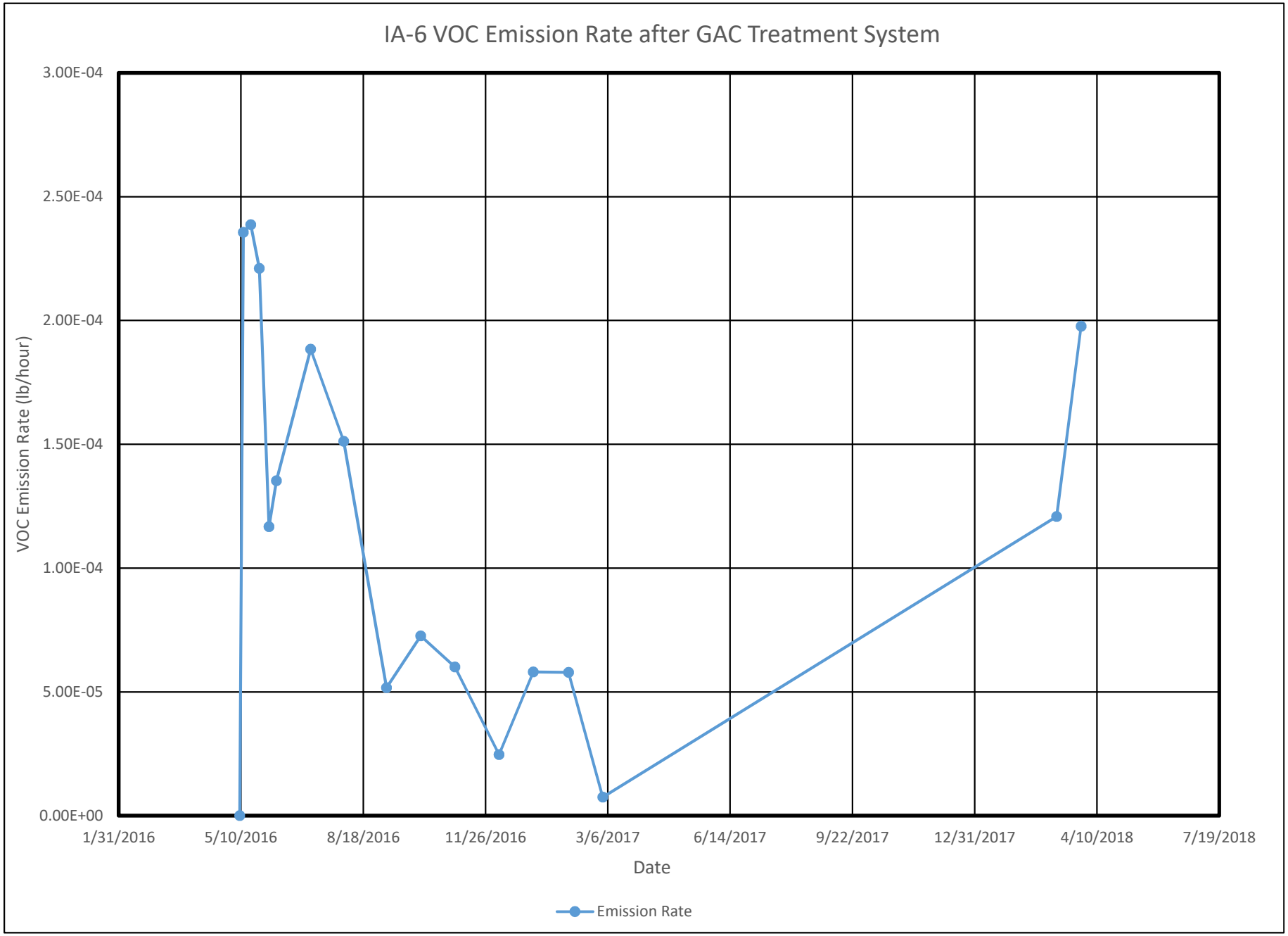
Appendix J - Air Monitoring Trend Graphs
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6



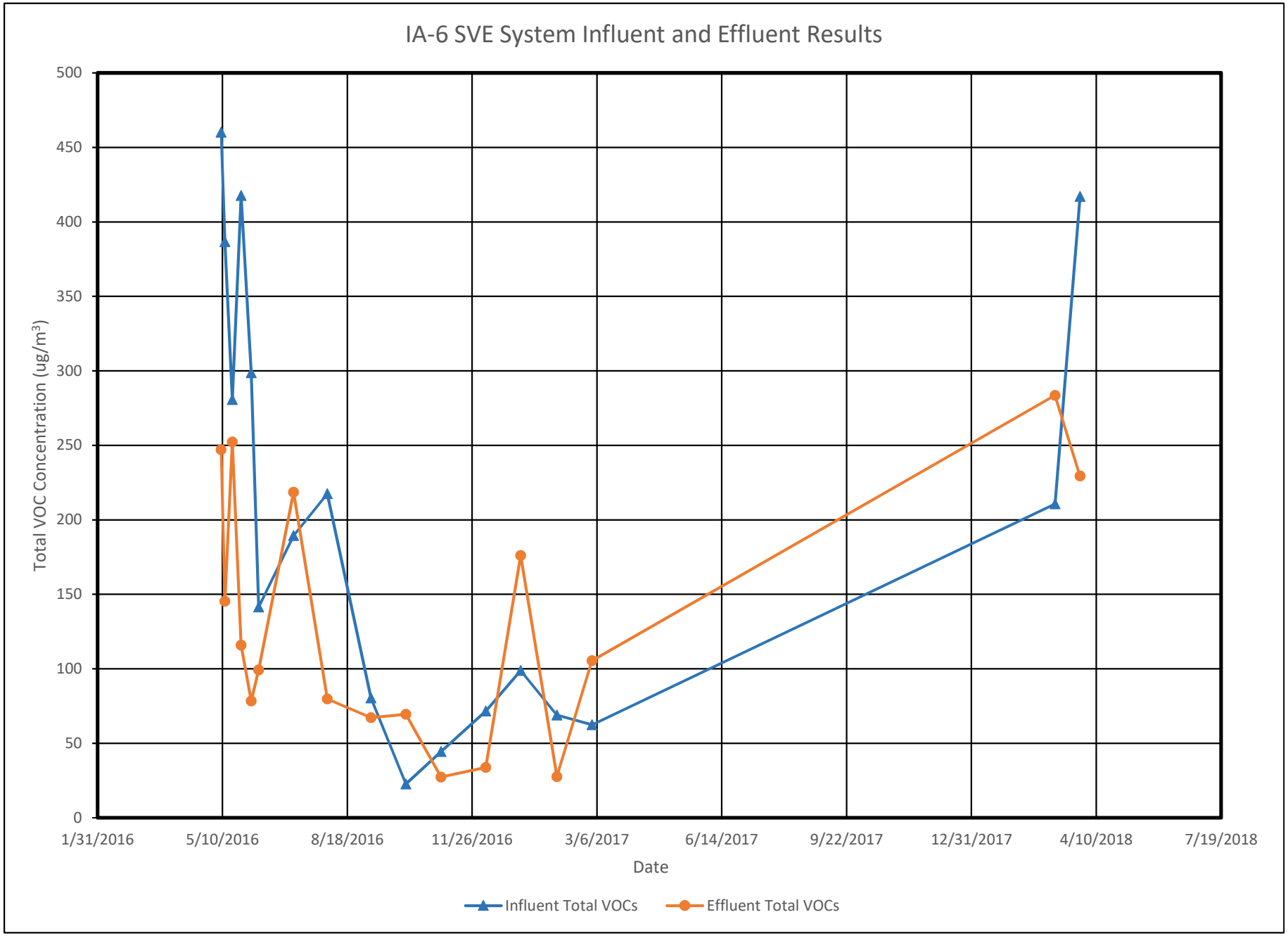
Appendix J - Air Monitoring Trend Graphs
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6



Appendix J - Air Monitoring Trend Graphs
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6



Appendix J - Air Monitoring Trend Graphs
Hoffmann-La Roche Inc. - Nutley, New Jersey
Investigative Area (IA) - 6



ATTACHMENTS

ATTACHMENT 1

REDOX TECH FIELD SUMMARY REPORT FOR EISB INJECTION

REDOX TECH, LLC

"Providing Innovative In Situ Soil and Groundwater Treatment"

Field Summary Report
Nutley, NJ

Prepared by Greg Powers on June 27, 2018			
Project Name	TRC Nutley, NJ	**Start and End Date**	May 21 – June 11, 2018
City and State	Nutley, NJ	**Address**	Hoffman La-Roche Attn. TRC Brian Ross 340 Kingsland Street Nutley, NJ 07110 908-988-1631
Contaminant of Concern	Chlorinated Solvents	**Contaminated Media**	Groundwater
Field Contractor	Redox Tech, LLC	**Client**	Yasemin Kunukcu, Ph.D, PE Senior Project Manager C: (908) 578-8075 O: (908) 988-1729
Address	200 Quade Drive Cary, NC	**Address**	41 Spring Street, Suite 102 New Providence, NJ 07974
Crew Members	Keith Precious, Jim McFarland, Zack Poole	**Number of Points and Depths**	6 wells
Chemical	Anaerobic Biochem (ABC) DHC Sugar NuBuff Sodium Ascorbate	**Mass or Volume**	5,400 lbs 30 liters 6,000 lbs 3,235 lbs 100 lbs

Brief Narrative

During the period of May 21 to June 11, 2018, Redox Tech injected the amendments into two zones of the subsurface, Zone S1 and Zone S2. All of the water used for making up the injectate solution was deoxygenated by premixing in sugar and yeast and, if necessary, sodium ascorbate. In zone S1 we injected ABC solution followed by a bioaugmentation culture (DHC) in a total of 4 wells installed by others. In each well we injected a total of approximately 1175 lbs of ABC (60 wt% fermentable carbon substrate) as well as 6.5 liters of DHC, and approximately 703 lbs of NuBuff in approximately 14,625 gallons of solution. This resulted in a total of approximately 4700 lbs of ABC, 26 liters of DHC, and 2812 lbs of NuBuff in a total of approximately 58,500 gallons of solution.

In Zone S2, we injected ABC (60 wt% fermentable carbon substrate), DHC, and NuBuff in a total of two wells. In each well we injected a total of approximately 350 lbs of ABC as well as 2 liters of DHC, and approximately 210 lbs of NuBuff in approximately 4,500 gallons of solution. This resulted in a total of approximately 700 lbs of ABC, 4 liters of DHC, and 420 lbs of NuBuff in a total of approximately 9,000 gallons of solution.

During injection activities we extracted groundwater from two wells on site. The extracted groundwater was stored in a 6,500 gallon poly tank onsite and either run through the onsite treatment system or used for injection solution. Another 6,500-gallon tank was used for amendment mixing and a 21,000 gallon frac tank was used to hold injection makeup water. We used a fire hydrant for makeup water. Detail of this injection event is presented in Table 1 and injection location shown on Figure 1.

Table 1. Injection Details

Date	Start Time	End Time	Depth (ft bgs)	Flowrate (gpm)	Injection Pressure (psi)	Solution Injected (gal)	Notes (flow change, etc:)
5/23/2018	2:38	4:16	109	5.1	20	500/500	5/23/18 ABC MIX
5/23/2018	2:02	3:29	110	5.7	20	500/500	ABC MIX
5/24/2018	9:02	10:05	109	4.8	20	300/800	5/24/18 Super Do
5/24/2018	9:04	9:51	110	6.4	20	300/800	Super Do

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
5/24/2018	11:13	11:37	109	3.6	20	300/1100	Super Do + Dhc
5/24/2018	11:15	12:16	110	4.9	20	300/1100	Super Do + Dhc
5/24/2018	1:55	2:57	109	8.1	20	500/1600	Flush Water
5/24/2018	1:55	3:07	110	6.9	20	500/1600	Flush Water
5/24/2018	2:58	4:00	109	8	20	500/2100	Flush Water
5/24/2018	3:23	4:27	110	7.8	20	500/2100	Flush Water
5/24/2018	4:01	5:11	109	7.1	20	500/2600	Flush Water
5/24/2018	4:37	5:47	110	7.1	20	500/2600	Flush Water
5/25/2018	7:39	8:54	109	6.7	20	500/3100	5/25/18 Flush Water
5/25/2018	7:39	8:42	110	7.9	20	500/3100	Flush Water
5/25/2018	8:54	10:19	109	6	20	500/3600	Flush Water
5/25/2018	8:51	10:11	110	6.3	20	500/3600	Flush Water
5/25/2018	10:19	11:34	109	6.7	20	500/4100	Flush Water
5/25/2018	10:19	11:45	110	5.8	20	500/4100	Flush Water
5/25/2018	11:34	12:50	109	6.6	20	500/4600	Flush Water
5/25/2018	11:55	1:00	110	7.7	20	500/4600	Flush Water
5/25/2018	12:50	1:55	109	7.7	20	500/5100	Flush Water
5/25/2018	1:05	2:10	110	7.7	20	500/5100	Flush Water
5/25/2018	1:55	3:00	109	7.7	20	500/5600	Flush Water
5/29/2018	2:14	3:20	110	7.6	20	500/5600	Flush Water

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
5/30/2018	10:10	11:10	109	8.3	20	500/6100	5/29/18 Flush Water
5/29/2018	10:15	11:25	110	8.3	20	500/6100	5/29/18 Flush Water
5/29/2018	11:10	12:10	109	8.3	20	500/6600	Flush Water
5/29/2018	11:25	12:25	110	8.3	20	500/6600	Flush Water
5/29/2018	12:10	1:10	109	8.3	20	500/7100	Flush Water
5/29/2018	12:25	1:30	110	7.7	20	500/7100	Flush Water
5/29/2018	1:10	2:00	109	10	20	500/7600	Flush Water
5/29/2018	1:30	2:30	110	8.3	20	500/7600	Flush Water
5/29/2018	2:00	2:55	109	7.7	20	500/8100	Flush Water
5/29/2018	2:30	3:35	110	7.7	20	500/8100	Flush Water
5/29/2018	2:55	4:00	109	7.7	20	500/8600	Flush Water
5/29/2018	3:25	4:20	110	9.1	20	500/8600	Flush Water
5/29/2018	4:00	5:00	109	8.3	20	500/9100	Flush Water
5/29/2018	4:20	5:20	110	8.3	20	500/9100	Flush Water
5/29/2018	8:15	9:15	109	8.3	20	500/9600	5/30/18 Flush Water
5/29/2018	8:15	9:15	110	8.3	20	500/9600	Flush Water
5/29/2018	9:15	10:10	109	9.1	20	500/10100	Flush Water
5/29/2018	9:15	10:05	110	10	20	500/10100	Flush Water
5/29/2018	10:10	11:05	109	9.1	20	500/10600	Flush Water
5/29/2018	10:05	11:05	110	8.3	20	500/10600	Flush Water

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
5/29/2018	11:05	12:05	109	8.3	20	500/11100	Flush Water
5/29/2018	11:05	12:05	110	8.3	20	500/11100	Flush Water
5/29/2018	12:05	1:05	109	8.3	20	500/11600	Flush Water
5/29/2018	12:05	1:05	110	8.3	20	500/11600	Flush Water
5/29/2018	1:05	2:05	109	8.3	20	500/12100	Flush Water
5/29/2018	1:05	2:05	110	8.3	20	500/12100	Flush Water
5/29/2018	2:20	3:15	109	9.1	20	500/12600	Flush Water
5/29/2018	2:20	3:15	110	9.1	20	500/12600	Flush Water
5/29/2018	3:15	4:10	109	9.1	20	500/13100	Flush Water
5/29/2018	3:15	4:10	110	9.1	20	500/13100	Flush Water
5/29/2018	4:10	5:05	109	9.1	20	500/13600	Flush Water
5/29/2018	4:10	5:05	110	9.1	20	500/13600	Flush Water
5/29/2018	5:05	6:00	109	9.1	20	500/14100	Flush Water
5/29/2018	5:05	6:00	110	9.1	20	500/14100	Flush Water
5/29/2018	6:00	6:35	109	10.2	20	360/14460	Flush Water Complete
5/29/2018	6:00	6:30	110	12	20	360/14460	Flush Water Complete
5/31/2018	3:05	5:10	ART75	3.8	20	250/250	5/31/18 ABC MIXTURE
5/31/2018	3:05	5:10	ART76	3.8	20	250/250	ABC MIXTURE
5/31/2018	3:00	4:20	IW-194b	2	20	160/160	ABC MIXTURE
5/31/2018	3:00	4:20	MW-346B	2	20	160/160	ABC MIXTURE

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
5/31/2018	5:10	7:15	ART75	2	20	250/500	ABC MIXTURE
5/31/2018	5:10	7:15	ART76	2	20	250/500	ABC MIXTURE
5/31/2018	4:20	5:15	IW-194b	2.5	20	135/295	Chase Water/DHC
5/31/2018	4:20	5:15	MW-346B	2.5	20	135/295	Chase Water/DHC
5/31/2018	5:35	6:30	IW-194b	2.5	20	135/430	Chase Water
5/31/2018	5:35	6:30	MW-346B	2.5	20	135/430	Chase Water
6/1/2018	8:35	9:40	ART75	2.3	20	150/650	6/1/18 Chase Water
6/1/2018	8:35	9:40	ART76	2.3	20	150/650	Chase Water
6/1/2018	8:45	9:20	IW-194b	7.1	20	250/680	Flush Water
6/1/2018	8:45	9:20	MW-346B	7.1	20	250/680	Flush Water
6/1/2018	9:20	9:55	IW-194b	7.1	20	250/930	Flush Water
6/1/2018	9:20	9:55	MW-364B	7.1	20	250/930	6/1/18Flush Water
6/1/2018	9:40	10:40	ART75	2.5	20	150/800	Chase Water
6/1/2018	9:40	10:40	ART76	2.5	20	150/800	Chase Water
6/1/2018	9:55	10:30	IW-194B	7.1	20	250/1180	Flush Water
6/1/2018	9:55	10:30	MW-364B	7.1	20	250/1180	Flush Water
6/1/2018	10:30	11:05	IW-194B	7.1	20	250/1430	Flush Water

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
6/1/2018	10:30	11:05	MW-364B	7.1	20	250/1430	Flush Water
6/1/2018	10:50	11:45	ART75	2.7	20	150/950	Chase Water/DHC
6/1/2018	10:50	11:45	ART76	2.7	20	150/950	Chase Water/DHC
6/1/2018	11:05	11:40	IW-194B	7.1	20	250/1680	Flush Water
6/1/2018	11:05	11:40	MW-364B	7.1	20	250/1680	Flush Water
6/1/2018	11:40	12:15	IW-194B	7.1	20	250/1930	Flush Water
6/1/2018	11:40	12:15	MW-364B	7.1	20	250/1930	Flush Water
6/1/2018	11:45	12:45	ART75	2.5	20	150/1100	Chase Water
6/1/2018	11:45	12:45	ART76	2.5	20	150/1100	Chase Water
6/1/2018	12:15	12:50	IW-194B	5.6	20	250/2180	Flush Water
6/1/2018	12:15	12:50	MW-364B	5.6	20	250/2180	Flush Water
6/4/2018	8:25	9:00	IW-194B	7.1	20	250/2430	6/4/18Flush Water
6/4/2018	8:25	9:00	MW-364B	7.1	20	250/2430	Flush Water
6/4/2018	8:35	9:20	ART75	5.6	20	250/1350	Flush Water
6/4/2018	8:35	9:20	ART76	5.6	20	250/1350	Flush Water
6/4/2018	9:00	9:35	IW-194B	7.1	20	250/2680	Flush Water
6/4/2018	9:00	9:35	MW-	7.1	20	250/2680	Flush Water

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
			364B				
6/4/2018	9:20	10:05	ART75	5.6	20	250/1600	Flush Water
6/4/2018	9:20	10:05	ART76	5.6	20	250/1600	Flush Water
6/4/2018	9:35	10:05	Iw-194B	8.3	20	250/2930	Flush Water
6/4/2018	9:35	10:05	MW - 364B	8.3	20	250/2930	Flush Water
6/4/2018	10:05	11:00	ART76	9.1	20	500/2100	Flush Water/Shut off Art75 daylighting
6/4/2018	10:05	10:35	Iw-194B	8.3	20	250/3180	Flush Water
6/4/2018	10:05	10:35	MW - 364B	8.3	20	250/3180	Flush Water
6/4/2018	10:35	11:05	Iw-194B	8.3	20	250/3430	Flush Water
6/4/2018	10:35	11:05	MW - 364B	8.3	20	250/3430	Flush Water
6/4/2018	11:00	11:55	ART76	9.1	20	500/2600	Flush Water
6/4/2018	11:05	11:40	Iw-194B	7.1	20	250/3680	Flush Water
6/4/2018	11:05	11:40	MW - 364B	7.1	20	250/3680	Flush Water
6/4/2018	11:40	12:15	Iw-194B	7.1	20	250/3930	Flush Water
6/4/2018	11:40	12:15	MW - 364B	7.1	20	250/3930	Flush Water
6/4/2018	11:55	12:45	ART76	10	20	500/3100	6/4/18 Flush Water
6/4/2018	12:15	12:50	Iw-194B	7.1	20	250/4180	Flush Water

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
6/4/2018	12:15	12:50	MW - 364B	7.1	20	250/4180	Flush Water
6/4/2018	12:45	1:40	ART76	9.1	20	500/3600	Flush Water
6/4/2018	12:50	1:25	Iw-194B	7	20	245/4425	Flush Water/Complete
6/4/2018	12:50	1:25	MW - 364B	7	20	245/4425	Flush Water/Complete
6/4/2018	1:25	2:20	ART75	1.8	20	100/1700	daylight at low flow rate
6/4/2018	1:40	2:35	ART76	9.1	20	500/4100	Flush Water
6/4/2018	2:35	3:30	ART76	9.1	20	500/4600	Flush Water
6/4/2018	3:30	4:20	ART76	10	20	500/5100	Flush Water
6/4/2018	4:20	5:10	ART76	10	20	500/5600	Flush Water
6/4/2018	5:10	6:00	ART76	10	20	500/6100	Flush Water
6/4/2018	6:00	6:45	ART76	11.1	20	500/6600	Flush Water
6/5/2018	7:45	8:35	ART75	2	20	100/1800	6/5/18 Flush Water daylight at 2 gpm
6/5/2018	7:45	8:45	ART76	8.3	20	500/7100	Flush Water
6/5/2018	8:35	10:30	IW-105A	2.6	20	300/300	Flush Water
6/5/2018	8:45	9:35	ART76	10	20	500/7600	Flush Water
6/5/2018	9:35	10:25	ART76	10	20	500/8100	Flush Water
6/5/2018	10:25	11:15	ART76	10	20	500/8600	Flush Water
6/5/2018	10:30	12:35	IW-105A	4	20	500/800	Flush Water
6/5/2018	11:15	12:05	ART76	10	20	500/9100	Flush Water

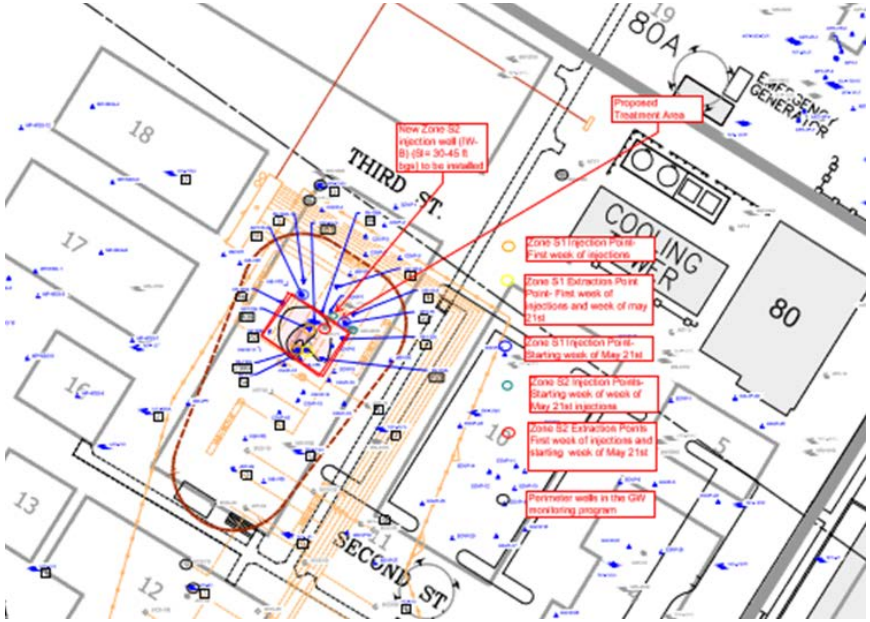
Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
6/5/2018	12:05	12:55	ART76	10	20	500/9600	Flush Water
6/5/2018	12:35	2:20	IW-105A	4.7	20	500/1300	Flush Water
6/5/2018	12:55	1:40	ART76	11.1	20	500/10100	Flush Water
6/5/2018	1:40	2:30	ART76	10	20	500/10600	Flush Water
6/5/2018	2:20	4:00	IW-105A	5	20	500/1800	Flush Water
6/5/2018	2:30	3:20	ART76	10	20	500/11100	Flush Water
6/5/2018	3:20	4:10	ART76	10	20	500/11600	Flush Water
6/5/2018	4:00	5:45	IW-105A	4.8	20	500/2300	Flush Water
6/5/2018	4:10	5:00	ART76	10	20	500/12100	Flush Water
6/5/2018	5:00	5:55	ART76	9.1	20	500/12600	Flush Water
6/5/2018	5:45	7:15	IW-105A	5.6	20	500/2800	Flush Water
6/5/2018	5:55	6:25	ART76	8.3	20	250/12850	Flush Water
6/6/2018	7:37	8:03	ART76	9.6	20	250/13100	6/6/18 Flush Water
6/6/2018	7:37	9:21	ART76	2.9	20	300/300	Flush Water
6/6/2018	8:03	8:54	IW-110	9.8	20	500/13600	Flush Water
6/6/2018	8:54	9:49	ART76	9.1	20	500/14100	Flush Water
6/6/2018	9:21	10:50	IW-110	5.6	20	500/800	Flush Water
6/6/2018	9:49	10:28	ART76	9.2	20	360/14460	6/6/18 Flush Water Complete
6/6/2018	10:50	12:52	Iw-110	4.1	20	500/1300	Flush Water
6/6/2018	12:52	2:48	Iw-110	4.3	20	500/1800	Flush Water

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
6/6/2018	2:48	4:43	Iw-110	4.3	20	500/2300	Flush Water
6/6/2018	4:43	6:37	Iw-110	4.4	20	500/2800	Flush Water
6/7/2018	7:41	8:48	Iw-110	3.7	20	250/3050	6/7/18 Flush Water
6/7/2018	7:41	8:48	Iw-113A	3.7	20	250/250	Flush Water
6/7/2018	8:48	9:47	Iw-110	4.2	20	250/3300	Flush Water
6/7/2018	8:48	9:47	Iw-113A	4.2	20	250/500	Flush Water
6/7/2018	9:47	10:48	Iw-110	4.1	20	250/3550	Flush Water
6/7/2018	9:47	10:48	Iw-113A	4.1	20	250/750	Flush Water
6/7/2018	10:48	11:42	Iw-110	4.6	20	250/3800	Flush Water
6/7/2018	10:48	11:42	Iw-113A	4.6	20	250/1000	Flush Water
6/7/2018	11:42	12:38	Iw-110	4.5	20	240/4000	Flush Water
6/7/2018	11:42	12:38	Iw-113A	4.5	20	250/1250	Flush Water
6/7/2018	12:38	1:33	Iw-110	4.5	20	250/4300	Flush Water
6/7/2018	12:38	1:33	Iw-113A	4.5	20	250/1500	Flush Water
6/7/2018	1:33	2:41	Iw-110	3.7	20	250/4550	Flush Water
6/7/2018	1:33	2:41	Iw-113A	3.7	20	250/1750	Flush Water
6/7/2018	2:41	3:43	Iw-110	4	20	250/4800	Flush Water
6/7/2018	2:41	3:43	Iw-113A	4	20	250/2000	Flush Water
6/7/2018	4:01	4:56	Iw-110	4.5	20	250/5050	Flush Water
6/7/2018	4:01	4:56	Iw-113A	4.5	20	250/2250	Flush Water

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
6/7/2018	4:59	6:02	Iw-110	4	20	250/5300	Flush Water
6/7/2018	4:59	6:02	Iw-113A	4	20	250/2500	Flush Water
6/8/2018	8:19	9:09	IW-106A	5	20	250/250	6/8/18 Flush Water
6/8/2018	8:19	9:09	MW-346B	5	20	250/250	Flush Water
6/8/2018	9:09	10:01	IW-106A	4.8	20	250/500	Flush Water
6/8/2018	9:09	10:01	MW-346B	4.8	20	250/500	Flush Water
6/8/2018	11:29	12:22	IW-106A	4.7	20	250/750	Flush Water
6/8/2018	11:29	12:22	MW-346B	4.7	20	250/750	Flush Water
6/11/2018	8:53	9:43	MW-346B	5	20	250/1000	6/11/18 Flush Water
6/11/2018	8:53	9:43	IW-109A	5	20	250/250	Flush Water
6/11/2018	9:51	10:35	MW-346B	5.7	20	250/1250	Flush Water
6/11/2018	9:51	10:35	IW-109A	5.7	20	250/500	Flush Water
6/11/2018	10:35	11:25	MW-346B	5	20	250/1500	Flush Water
6/11/2018	10:35	11:25	IW-109A	5	20	250/750	Flush Water
6/11/2018	11:29	12:15	IW-109A	5.4	20	250/1000	Flush Water
6/11/2018	11:29	12:15	IW-106A	5.4	20	250/1000	Flush Water

Table 1. Injection Details							
Date	**Start Time**	**End Time**	**Depth (ft bgs)**	**Flowrate (gpm)**	**Injection Pressure (psi)**	**Solution Injected (gal)**	**Notes (flow change, etc:)**
6/11/2018	12:15	1:21	IW-109A	3.8	20	250/1250	Flush Water
6/11/2018	12:15	1:21	IW-106A	3.8	20	250/1250	Flush Water
6/11/2018	3:51	4:59	IW-110	7.4	20	500/500	Hydrant Water+NuBuff

Figure 1. Location Map



ATTACHMENT 2

TESTAMERICA LABORATORY REPORTS AND ELECTRONIC DATA DELIVERABLES (EDDS)

NOTE FOR ATTACHMENT 2

The Laboratory Data Packages and Electronic Data Deliverables (EDDs) are part of the project file at the TRC New Providence office. CD(s) containing laboratory analytical reports and EDDs associated with the IA-6 IRM Progress Report were submitted to the NJDEP under Attachment 2 of this report. As required by the current Site Remediation Program Electronic Data Interchange Manual (February 21, 2013), the EDDs were also submitted electronically (via e-mail) to the NJDEP SRP (srpedd@dep.nj.gov). Copies of the e-mails, submitting the EDD files to the NJDEP, are attached.

Clare, April

From: Clare, April
Sent: Thursday, April 11, 2019 2:32 PM
To: srpedd@dep.nj.gov
Cc: Kunukcu, Yasemin; Lippencott, Robert
Subject: 009949, RPC070001, 009949
Attachments: DTST.txt; HZSAMPLE.txt; HZRESULT.txt

Case Name: Hoffmann-La Roche Inc
Directory: IA6IRMPR
Submit Date: 04/11/2019
Description: HLR IA-6 IRM Progress Report

April Clare, PG (PA, NY)
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Please note that our domain name and email addresses have changed