New Jersey Department of Environmental Protection
Site Remediation and Waste Management Program

DISCHARGE TO GROUND WATER (DGW) PERMIT-BY-RULE AUTHORIZATION REQUEST

☒ LSRP ☐ Subsurface Evaluator (UHOT)

Date Stamp (For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Former Sunoco Service Station #0006-9898

AKAs: Sunoco Cranford

Street Address: 49 South Avenue West & Lincoln Avenue West

Municipality: Cranford (*Township, Borough or City*)

County: Union Zip Code: 07016

Program Interest (PI) Number(s): 016450

Case Tracking Number(s) for this submission: 92-06-08-0953 and 05-03-03-1418

Municipal block(s) and lot(s) where the **proposed discharge(s)** would occur:

Block # 473 Lot #(s) 1 Block # _____ Lot #(s) _____

Block # _____ Lot #(s) _____ Block # _____ Lot #(s) _____

SECTION B. FEE AND DISCHARGE INFORMATION

DGW Proposal Review Fee $350.00

Discharge Type *(check all that apply)*

☐ Discharge of Recovered Ground Water

Will the discharge be a result of dewatering only? ..... ☐ Yes ☐ No

☒ Discharge that is part of an *In situ* Remediation

☐ Discharges other than those above *(see instructions for more information)*

Facility Type *(check all that apply)*

☒ Underground Injection Control (UIC) facility (i.e., any type of injection)

☐ Non-UIC (e.g., surface application) *(see instructions for more information)*

Attach a Discharge to Ground Water Proposal to this form *(see instructions)*

SECTION C. PUBLIC NOTICE PROVISIONS *(Does not apply to residential heating oil tank cases)*

Is the proposed discharge lasting greater than 180 days? ..... ☐ Yes ☒ No

If "Yes," attach a copy of the public notice written as you intend it to be published. *(see instructions)*

SECTION D. SITE USE AND GROUND WATER CLASSIFICATION

Current Site Use *(check all that apply)*

☐ Industrial ☐ Agricultural
☐ Residential ☐ Park or recreational use
☒ Commercial ☒ Vacant
☐ School or child care ☐ Government
☐ Other _____

Intended Future Site Use *(check all that apply)*

☐ Industrial ☐ Park or recreational use
☐ Residential ☐ Vacant
☒ Commercial ☐ Government
☐ School or child care ☐ Future site use unknown

What is the ground water classification for this site as per N.J.A.C. 7:9C? *(check all that apply)*

☐ Class I-A ☒ Class II-A
☐ Class I-PL Pinelands Protection Area ☐ Class III-A
☐ Class I-PL Pinelands Preservation Area ☐ Class III-B

SECTION E. RECEPTOR EVALUATION SUMMARY

Non-UHOT Cases

1. Have any of the following been identified on the site or within 200 feet of the site boundary?

   Check all that apply.

   ☒ Residences
   ☐ Child care facilities
   ☐ Public and private schools (K-12)
   ☐ Surface water
   ☒ Other occupied buildings
   ☐ Public parks and playgrounds

2. Did the well search conducted as a part of the receptor evaluation show any well use (potable, industrial, or irrigation)? ☒ Yes ☐ No

   If "Yes," indicate the type of use and approximate distance (closest occurrence) from site: *(Check all that apply)*

   ☒ Potable Distance from site: 812 feet
   ☒ Industrial Distance from site: 2045 feet
   ☒ Irrigation Distance from site: 2928 feet

3. Have any of these receptors been impacted? ☐ Yes ☒ No
   If "Yes," Do you have an NJDEP assigned Case Manager? ☐ Yes ☒ No

   If "Yes," please list the Case Manager: _____

UHOT Cases

1. Is ground water contamination above the Ground Water Remediation Standards? ☐ Yes ☐ No
   If "Yes," answer questions 2 and 3.
2. Has a potable well been identified within 100 feet of the contamination? ☐ Yes ☐ No
3. Have any potable wells been impacted? ☐ Yes ☐ No
   If "Yes," has the NJDEP been notified? ☐ Yes ☐ No

SECTION F. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: Sunoco, Inc.

Representative First Name: Jeremy Representative Last Name: Fultz

Title: Senior Specialist

Telephone Number: (302) 485-4081 Ext.: _____ FAX: _____

Mailing Address: 2 Righter Parkway, Suite 120

City/Town: Wilmington State: DE Zip Code: 19803

Email Address: JDFultz@Evergreenresmgt.com

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: _____ Date: 4/21/2020

Name/Title: Jeremy Fultz / Senior Specialist

☐ Check this box if the person above is also the property owner of the site or their representative. If this person is not the site property owner, please ensure the site property owner's name and address is included in the DGW Proposal, and also indicate that the property owner has been informed about the proposed discharge.

SECTION G. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENT

LSRP ID Number: 584527

First Name: David Last Name: Jones

Phone Numbers: (609) 387-5553 Ext.: 14 Fax:

Mailing Address: 6 Terri Lane, Suite 350

Municipality: Burlington State: NJ Zip Code: 08075

Email Address: DavidJ@EnviroTrac.com

This statement shall be signed by the LSRP who is submitting this notification in accordance with N.J.S.A. 58:10C-14, and N.J.S.A. 58:10B-1.3b(1) and (2).

(1) I certify, as a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C-1 et seq. to conduct business in New Jersey, that for the remediation described in this submission, and all attachments included in this submission, I personally: Managed, supervised, or performed the remediation conducted at this site that is described in this submission, and all attachments included in this submission; and/or periodically reviewed and evaluated the work performed by other persons that forms the basis for the information in this submission; and/or completed the work of another site remediation professional, licensed or not, after having: (1) reviewed all available documentation on which I relied; (2) conducted a site visit and observed the then-current conditions and verified the status of as much of the work as was reasonably observable; and (3)concluded, in the exercise of my independent professional judgment, that there was sufficient information upon which to complete any additional phase of remediation and prepare workplans and reports related thereto.

(2) I certify:

- *That I have read this submission and all attachments to this submission;*
- *That in performing the professional services as the licensed site remediation professional for the entire site or each area of concern, I adhered to the professional conduct standards and requirements governing licensed site remediation professionals provided in N.J.S.A. 58:10C-16;*
- *That the remediation conducted at the entire site or each area of concern, that is described in this submission and all attachments to this submission, was conducted pursuant to and in compliance with the remediation requirements in N.J.S.A. 58:10C-14.c;*
- *That the remediation described in this submission, and all attachments to this submission, was conducted pursuant to and in compliance with the regulations of the Site Remediation Professional Licensing Board at N.J.A.C. 7:26I; and*
- *That the information contained in this submission and all attachments to this submission is true, accurate, and complete.*

(3) I certify, when this submission includes a response action outcome, that the entire site or each area of concern has been remediated in compliance with all applicable statutes, rules, and regulations and is protective of public health and safety and the environment.

(4) I certify that no other person is authorized or able to use any password, encryption method, or electronic signature that the Board or the Department have provided to me.

(5) I certify that I understand and acknowledge that:

- *If I knowingly make a false statement, representation, or certification in any document or information I submit to the Department I may be subject to civil and administrative enforcement pursuant to N.J.S.A. 58:10C-17.a.1(a)through (f) by the Board, including but not limited to license suspension, revocation, or denial of renewal; and*
- *If I purposely, knowingly, or recklessly make a false statement, representation, or certification in any application, form, record, document or other information submitted to the Department or required to be maintained pursuant to the Site Remediation Reform Act, I shall be guilty, upon conviction, of a crime of the third degree and shall, notwithstanding the provisions of subsection b. of N.J.S.2C:43-3, be subject to a fine of not less than $5,000 nor more than $75,000 per day of violation, or by imprisonment, or both.*

(6) I certify that I have read this certification prior to signing, certifying, and making this submission.

LSRP Signature:  Date: 4/20/2020

LSRP Name: David Jones

Company Name: EnviroTrac

SECTION G. SUBSURFACE EVALUATOR UST REPORT CERTIFICATION FORM

I certify under penalty of law that the work was performed under my oversight and I have reviewed the report and all attached documents, and the submitted information is true, accurate and complete in accordance with the requirements of N.J.A.C. 7:14B and N.J.A.C. 7:26E. I am aware that there are significant civil and criminal penalties for submitting false, inaccurate or incomplete information including fines and/or imprisonment.

Name: _____ UST Cert. No.: _____

Firm: _____ Firm's UST Cert. Number: _____

Firm Address: _____

City/Town: _____ State: _____ Zip Code: _____

Phone Number: _____ Ext: _____ Fax: _____

Signature: _____ Date: _____

Completed forms should be sent to:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

April 17, 2020

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420

Re: Former Sunoco Service Station # 0006-9898
49 South Avenue West & Lincoln Avenue West
Cranford, Union County, New Jersey
NJDEP Case # 92-06-08-0953 and 05-03-03-1418
PI #016450

To Whom It May Concern:

EnviroTrac Ltd. (EnviroTrac) has prepared the following Permit-By-Rule (PBR) request, on behalf of Sunoco Inc. (Sunoco) for the above referenced site. A Remedial Action Report with a Groundwater Remedial Action Plan for Monitored Natural Attenuation is being submitted separately. This PBR is designed to accelerate closure of the Site through the use of Regenesis PetroFix™.

PetroFix is a dual function in-situ remediation product. It removes hydrocarbons from the dissolved phase by adsorbing them onto activated carbon particles and then stimulates hydrocarbon biodegradation by adding electron acceptors. PetroFix is a highly concentrated, water-based suspension consisting of micron-scale activated carbon and bio-stimulating electron acceptors. The environmentally compatible formulation of micron-scale activated carbon (1-2) microns is combined with both slow and quick release inorganic electron acceptors.

SITE DESCRIPTION

The site is located at 49 South Avenue West and Lincoln Avenue West in Cranford, Union County, New Jersey. According to the United States Geological Survey *Roselle, New Jersey* 7.5 Minute Series Topographic Map, the site elevation is less than 20 feet above mean sea level. The location of the site is shown on the Site Location Map **(Figure 1).**

The site (Block 473, Lot 1) formerly operated as a Sunoco retail petroleum facility and is currently vacant. Site features are depicted on the scaled Site Map **(Figure 2).** Former Underground Storage Tanks (USTs) at the site consist of three (3) 8,000-gallon gasoline USTs, two (2) 1,000-gallon fuel oil USTs, one (1) 1,000-gallon UST of unknown contents (suspected fuel oil), and one (1) 1,000-gallon waste oil UST. All USTs have been removed from the site.

SITE HISTORY

On June 8, 1992, the New Jersey Department of Environmental Protection (NJDEP) received a notification of a discharge (case #92-06-08-0953) of hazardous substances, regulated under the Underground Storage of Hazardous Substance Act (N.J.S.A. 58:10A-21 et seq), which occurred at the subject site. A Remedial Investigation Report (RIR) was submitted to the NJDEP on November 6, 1992, and two subsequent RIR Addendum Reports were submitted on October 7, 1993 and January 26, 1994 respectively.

Effective June 11, 1992, Sun Oil Company, Inc. was given Underground Storage Tank Closure Approval (TMS #C92-1616), for the removal of the gasoline UST piping located at the site. Soil samples were to be collected along all appurtenant piping, following removal activities, and analyzed for Volatile Organic Compounds (VOCs) and lead.

A subsurface retrofit soil boring investigation was conducted in June 1992 to determine what type of tank monitoring system to install. During that investigation, petroleum hydrocarbon impacted soils were detected. Three (3) groundwater monitoring wells (MW1, MW2, and MW3) were subsequently installed in July 1992. Ground water samples were collected and analyzed for VOCs, methyl tertiary butyl ether (MTBE), and tertiary butyl alcohol (TBA). Results for each monitoring well indicated contaminant levels above the Ground Water Quality Standards (GWQS), N.J.A.C. 7:9-6. Three (3) additional monitoring wells (MW4, MW5, and MW6) were installed in April 1993 to further investigate groundwater. All of the above on-site monitoring wells were sampled and analyzed for the referenced parameters on April 29 and August 23, 1993, with the exception of MW1 and MW2 due to the presence of Light Non-Aqueous Phase Liquid (LNAPL). Analytical results of the April 1993 sampling event, indicated contaminant concentrations exceeded their GWQS in monitoring wells MW3, MW4, and MW5.

A July 31, 1996 *Remedial Action Workplan* (RAW), which proposed a Total-Phase Extraction (TPE) remedial system for use onsite, was approved by the NJDEP correspondence dated October 16, 1996. Installation of the TPE remedial system was completed in June 1998. The TPE remedial system was activated in July 1998. Monitoring wells MW1, MW2, and MW4 were retrofitted for dual-phase vacuum extraction.

In a *Remedial Action Progress Report* (RAPR), dated June 8, 2001, a request was made to terminate operation of the TPE remedial system. The NJDEP approved the termination of the TPE remedial system in correspondence dated July 26, 2001. A RAWA/RAPR, dated September 4, 2001, proposed a Total Fluid Recovery (TFR) program for further remediation and proposed a Classification Exception Area (CEA). The NJDEP correspondence dated October 18, 2001 conditionally approved the September 4, 2001 RAWA and requested that the duration of the CEA be re-evaluated. As requested by the NJDEP, a revised CEA was presented in the December 14, 2001 RAPR.

In accordance with the NJDEP correspondence dated July 26, 2001, the TPE remedial system was decommissioned and removed from the site in December 2001. In accordance with the NJDEP RAWA approval, a TFR program commenced at the site.

On February 19, 2005, a leak was reported in a flex hose of product dispenser number three (3). The dispenser was shut down and remained as such until it was repaired and subsequently passed a pressure test on February 23, 2005. The dispenser pan also passed a hydrostatic test.

On March 3, 2005, depth-to-water measurements were collected from all on-site monitoring wells. LNAPL was not detected in any well, with the exception of monitoring well MW1, which reported a LNAPL thickness of 0.09 feet. Accordingly, the NJDEP was notified and incident #05-03-03-1418-54 was assigned.

During the week of August 8, 2005, all site dispenser pans were removed and replaced. On August 9, 2005, soil samples were collected from beneath the original dispenser pans (D1 through D5). Due to the presence of hydrocarbon-impacted soil observed in the vicinity of the dispenser, the affected area was over-excavated and additional soil samples (S1 through S5) were collected. Approximately 7.5 tons of impacted soil were removed from the site. All collected post remedial soil samples were analyzed for VOCs via USEPA Method 8260, modified to include MTBE, and ten tentatively identified compounds (TICs). Analytical results for soil samples D1, S1, and S4 reported MTBE concentrations above their NJDEP *Impact to Ground Water Soil Cleanup Criteria (*IGWSCC). In addition, soil sample S4 reported benzene above the IGWSCC. All other soil samples reported all targeted compound concentrations below their IGWSCC and applicable non-residential criteria. Details of the August 9, 2005 soil sampling event were presented in the September 30, 2005 RAPR.

On June 10, 2008, the NJDEP Case Manager sent an email to both Sunoco and EnviroTrac regarding the groundwater sampling analytical results presented in the March 2008 RAPR; requiring additional horizontal delineation to be completed southeast of MW3. Subsequently, a Remedial Investigation Workplan (RIW) was submitted in September 2008, which proposed the installation of MW9. Monitoring well MW9 was subsequently installed on January 26, 2009.

On June 10, 2008, a NJDEP email required additional horizontal delineation be completed south and southeast of MW3. Therefore, MW10 and MW11 were subsequently installed to achieve groundwater delineation.

On March 26, 2012, the case opted into the Licensed Site Remediation Profession (LSRP) Program in anticipation of the May 7, 2012 adoption of the Administrative Requirements for the Remediation of Contaminated Site (ARRCS) Rules (7:26C), and the repeal and replacement of the Technical Requirements of Site Remediation (7:26E).

NJDEP correspondence dated June 8, 2012 approved the Classification Exception Area/Well Restriction Area (CEA/WRA) Proposal submitted on April 20, 2012.

As detailed in the 2014 RIR, on March 28, 2013, two (2) soil borings were advanced and post remedial soil samples were collected. Soil samples were collected at the same depths and locations of previous soil samples S4 and PL2. All soil samples were analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) via USEPA Method 8260 and both post remedial soil samples (S4R and PL2R) reported all targeted compound concentrations as either ND or below NJDEP IGWSCC.

In February 2014, a RIR was submitted to the NJDEP. On July 9, 2014, monitoring well MW1R was installed in the former location of monitoring well MW1.

From January 20 through March 7, 2014, the following USTs were closed and removed from the Site; Three (3) 8,000-gallon gasoline USTs (00E1, 00E2, and 00E3), one (1) 1,000-gallon waste oil UST (00E4), and one (1)1,000-gallon UST of unknown contents (00E5) were removed as part of closure activity #N13-9457. Three (3) unregistered 1,000-gallon fuel oil USTs were also removed. A remedial soil excavation was conducted to remove petroleum hydrocarbon-impacted soil identified in the vicinity of the former 8,000-gallon gasoline UST field and former dispenser islands and reported in a July 2014, Site Investigation Report/UST Closure Report.

In an effort to mitigate hydrocarbon-impacted groundwater and remove any residual LNAPL, two (2) TFR events were completed on September 15, 2017 and June 6, 2018. Monitoring well MW2 was the extraction well for each event. The extracted liquids were removed via vacuum tanker truck and subsequently transported off-site to a disposal facility. A total of 957-gallons of hydrocarbon-impacted groundwater were recovered during this period.

On July 11, 2018, a 1 Year LNAPL Interim Remedial Measures Report was submitted to the NJDEP due to LNAPL detections from monitoring well MW2 on July 13, 2017.

On April 17, 2017, 0.01 feet of LNAPL was detected in monitoring well MW2. During a gauging and sampling event on July 13, 2017, 0.11 ft. of LNAPL was present in monitoring well MW2. A vacuum extraction event on September 15, 2017, recovered approximately 321 gallons of hydrocarbon-impacted groundwater.

On April 2, 2018, LNAPL was again detected in MW2 at a thickness of 0.04 feet. A vacuum extraction event on June 6, 2018 recovered approximately 636 gallons of hydrocarbon-impacted groundwater.

No additional vacuum extraction events have been required and absorbent socks in the MW2 has kept LNAPL at or below 0.01 feet.

LNAPL was not detected again until a gauging and sampling event in January and May 2019, in which 0.01 ft. was detected in monitoring well MW2 for each event. LNAPL has not been detected in any monitoring well since the May 10, 2019, gauging and sampling event.

On October 26, 2018, vertical monitoring well MW12 was installed on site. On January 22, 2020, off site monitoring well MW13 was installed to complete horizontal delineation.

On January 22 and 23, 2020, six (6) temporary well points, TW-1 through TW-6, were completed. Ground water samples were collected and analyzed from off-site temporary point TW-1 and on-site temporary point TW-2. Temporary well points TW-3, TW-4, TW-5, and TW-6 were installed as field screening locations to delineate residual LNAPL historically detected in MW-2. LNAPL was not detected. A cross section of the area adjacent to MW-2 is included as **Figures 3-4** and a cross section of the Site is included as **Figures 5-6**.

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In summary, soil is in compliance and groundwater currently has concentrations of benzene and VO TICs above the GWQS in MW2 and MW3; and TBA in MW3.

GEOLOGY

The Cranford area lies within the lowlands section of the Piedmont Physiographic Province. The major formation in the Cranford area is the Passaic Formation (formerly Brunswick). Depth to bedrock in the area ranges from 50 feet to 100 feet below grade. The Passaic Formation is generally characterized as having poor groundwater yields from primary porosity, due to the predominantly fine grained and consolidated composition of this unit. Secondary permeability in the form of fractures, joints, and fissures can produce significant yields.

Site-specific stratigraphy was gathered during soil boring advancement and monitoring well installation activities. Based on soil collected via direct push and split-spoon sampling activities, the site is predominantly underlain by silt and clay with little, coarse to fine sand to approximately 12 feet. The soils coarsen to silt and sand with some gravel present to 30 feet below grade. Areas of the Site have predominantly sand below 12 feet. Site specific cross sections are included as **Figures 3-6**.

The nearest surface water body is an unnamed tributary of the Rahway River, located approximately 600 feet hydraulically side-gradient (west) of the site.

GROUNDWATER

Groundwater use in the area of the site is defined as Class II-A. Groundwater is horizontally delineated by MW5, MW6, MW8, MW11, and MW13; and vertically delineated by MW12. MW12 is located onsite in the area which has historically had the highest MTBE and TBA concentrations. Therefore this is an appropriate location to vertically delineate the Site. Currently concentrations of benzene and VOC TICs remain above the GWQS at MW2 and MW3; and TBA at MW2. All other monitoring wells have reported concentrations of all targeted compounds as either ND or below their respective NJDEP GWQS. Groundwater averages 14.5 feet below grade with high and low water at 6.5 and 17 feet respectively. Groundwater depth and concentration data is summarized in **Table 1**. Monitoring well construction summary data is included in **Table 2**.

The groundwater condition is addressed in the Remedial Action Report/Revised CEA/Groundwater Remedial Action Permit application.

Groundwater flow, recent groundwater concentration data and proposed classification exception area outlines are included on **Figure 7** and **Figure 8**.

SOIL

A total of 110 soil samples were collected on-site from 1993 through 2018. Based on review of historical soil sampling results including but not limited to the 2013 post remedial soil sampling and the 2014 post excavation soil sampling, soil is below applicable standards and compliant. The remedial action for soil is considered to have met the remedial objective and no further action is necessary for soil. Soil sample results are Summarized on **Table 3** and soil sample locations are depicted on **Figure 9**.

Light Non-Aqueous Phase Liquid

LNAPL (>0.01' of separate phase product) was initially detected on July 13, 2017 in MW2 and again on April 2, 2018. The LNAPL is severely weathered and is remediated with vacuum extraction and absorbent socks at MW2.

Permit-by-Rule Request

EnviroTrac, on behalf of Sunoco, is requesting approval of a 180-day NJPDES-DGW PBR authorization to inject PetroFix into the subsurface soils at the site. PetroFix is a dual function in-situ remediation product. It removes hydrocarbons by adsorbing them onto activated carbon particles and then stimulates hydrocarbon biodegradation by adding electron acceptors. PetroFix is a highly concentrated, water-based suspension consisting of micron-scale activated carbon and bio-stimulating electron acceptors. The environmentally compatible formulation of micron-scale activated carbon (1-2) microns is combined with both slow and quick release inorganic electron acceptors.

Sunoco is proposing to utilize the PetroFix to enhance the removal of hydrocarbons from the shallow aquifer by sequestration onto the micron-scale carbon and thereby promoting aerobic bioremediation of these constituents. Historical groundwater analytical results are provided in **Table 1**.

A series of up to 24 injection points (currently estimated at 16) will be utilized to inject a total of approximately 1,200 pounds PetroFix. The location of the proposed treatment area is presented on **Figure 10**. Approximately 2,350 gallons of water will be utilized to facilitate the injection of approximately 125 gallons of concentrated PetroFix and 60 pounds of Electron Acceptor in a slurry mix. Approximately 155 gallons of PetroFix slurry will be delivered to each point. It is anticipated that the process will take 3-4 days to complete. The location of the proposed injection points is depicted on **Figure 10**. The injection scope of work is provided below.

Total proposed injection material is 125 gallons of concentrated PetroFix, 60 pounds of Electron Acceptor and 2,350 gallons of water.

The proposed treatment area is based on the soil borings completed approximately 15 feet from MW2 during 2020. The treatment zone depth is from 12-22 feet below grade (fbg).

The calculations of PetroFix volume, number of points, spacing, and electron acceptor supplement rate is included on the worksheet included in **Appendix A**.

Injection Activities

Soils in the vicinity of MW2 are silty sands with two layers with higher hydraulic conductivity at approximately 15 and 20 fbg. Injection material will preferentially move into the higher conductivity layers, distributing additional PetroFix in the suspected hydrocarbon transit zones.

Injection for in-situ treatment will be completed at an injection rate in the range of 2 to 5 gallons per minute (gpm) to avoid excessive mounding and backpressure during injection. The work scope calls for the injection of approximately 3.5 pounds of electron accepter additive at each well location and 15 gallons (approximately 150 pounds) of PetroFix concentrate. The solution will be injected through direct push points. The injection event will take 3-4 days to complete. Nearby monitoring wells will be monitored during the injection process to ensure that the integrity of the monitoring wells is being maintained and that groundwater is not excessively mounding during the injections. The water used for reagent injection will be obtained by a water truck or a locally available tap water, or other local potable source.

Collection of Baseline Data:

Baseline data is to be collected prior to the injections. Baseline geochemical and groundwater samples are to be collected from the following wells: MW2, MW5, MW8 and MW13. The following time-dependent parameters are to be monitored on-site with field instrumentation:

- pH;
- oxidation-reduction potential (ORP);
- temperature;
- dissolved oxygen; and
- conductivity.

The following parameters are to be analyzed by off-site laboratory analysis:

- BTEX and VO TICs;
- Sulfate;
- Nitrate;
- Ammonia;
- Sodium.

Temporary Groundwater Non-Compliance:

It is possible that sulfate, nitrate, ammonia and sodium will temporarily exceed the groundwater quality criteria in the injection area due to the injection amendments. Pre- and post-injection sampling are proposed to monitor these compounds.

Post-Treatment Sampling:

Groundwater monitoring pre- and post-injection is to include monitoring wells MW2, MW5, MW8 and MW13. Groundwater sampling is proposed to be completed 60, 180 and 365 days after the first injection. The wells are to be monitored for the following field parameters:

- pH;
- ORP;
- temperature;
- dissolved oxygen; and
- conductivity.

The following parameters are to be analyzed by off-site laboratory analysis:

- BTEX and VO TICs;
- Sulfate;
- Nitrate;
- Ammonia;
- Sodium.

Permit Requirements:

Injection activities require a PBR since the treatment involves injection of reagents into the subsurface. EnviroTrac, on behalf of Sunoco, requests that a NJPDES-DGW PBR be issued for this project to allow injection of the above described reagents for the purpose of site remediation. The requested conditions of the permit and special considerations are provided below.

The monitoring program will include pre-injection and post-injection groundwater sampling.

Conditions:

The following conditions will be met as part of the injection activities:

- The duration of the injections will not exceed 180 days.
- The injections will not adversely affect water supplies.
- The potential to impact a surface water body is minimal since there are no surface water bodies or drinking water sources in the vicinity of the site.

Duration of the Permit-by-Rule:

It is requested that the PBR authorization be valid for a period of 180 days from the date of the first injection event. The issuance of a NJPDES-DGW PBR is anticipated to expedite the site remediation activities.

Implementation Schedule:

TASK	ESTIMATED COMPLETION
Pre-Injection Monitoring and Sampling	Prior to first injection (June/July 2020)
Injection Activities	Pending NJDEP Permit by Rule approval. First day of injection is Day 1
Groundwater Verification Monitoring and Sampling	Day 60; Day 180; Day 365

The start date is contingent on receipt of a NJPDES-DGW Permit-by-Rule. As stated above, the injection activities will not exceed 180 days.

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Reporting:

Injection documentation and results will be presented in the first Biennial Certification of the Groundwater Remedial Action Plan following the injections. The report will include, but is not limited to, details of remediation activities, date(s) of the injection activities, and QA/QC data packages.

Sincerely,
EnviroTrac, Ltd.

David Jones
Regional Operations Manager

Enclosures

cc: Sunoco Inc.
Calcedonia, Inc (Property Owner)
ET-SNJ File

Permit-By-Rule Request Summary Page

Site Information:	Former Sunoco Service Station # 0006-9898
Location:	49 South Avenue West and Lincoln Ave West Cranford, Union County, New Jersey
NJDEP Case #	92-06-08-0953 and 05-03-03-1418
PI #	016450

Responsible Party:	Sunoco Inc.
Name of Contact:	Jeremy Fultz
Address:	2 Righter Parkway, Suite 120
Municipality:	Wilmington
State:	DE
Zip Code:	19803
Phone Number:	(302) 485-4081

Current Property Owner: Calcedonia Inc
Address: 90 Daniel Dr.
Municipality: Avondale, New Jersey
Zip Code: 19311

Type of Permit-By-Rule: PetroFix in-situ injection

Duration of Permit-By-Rule: 180 days

Direct push technology will be used for the application:
One event will be completed with up to 24 injection points. The injection process will take approximately 3-4 days to complete.

Quantity of Proposed Injection:
Up to 1,200 pounds of PetroFix will be delivered in a 2,500-gallon solution. The maximum injection quantity per point will be approximately 620 gallons. Anticipated injection volume per point is 155 gallons.

Monitoring wells to be sampled for BTEX, TICs, Sulfate, Nitrate, Ammonia, and Sodium:
MW-2 MW-5, MW-8, and MW-13.

Frequency of Sampling:
Wells are to be sampled pre-injection and 30, 180 and 365 days post-injection.

Area in square feet of the treatment area:
Approximately 700 square feet.

Depth of the zone where groundwater is to be remediated:
The targeted zone to be remediated is between 12-22 feet below grade.

EnviroTrac

TABLES

TABLE 1
GROUNDWATER MONITORING & SAMPLING COMPARISON DATA
FORMER SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	07/17/92	99.03	14.05	Clear	84.98	10,100	17,200	2,110	12,400	101,000D	22,400	NA	NA
	04/29/93	99.03	9.12	0.27	90.11	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	08/23/93	99.03	15.50	0.38	83.82	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	06/06/94	99.03	10.57	0.02	88.46	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	01/04/96	99.03	10.75	Clear	88.28	540	810	230	1,100	970	2,000	NA	NA
	07/05/96	99.03	10.89	Clear	88.14	4,600	6,000	2,000	8,500	6,900	20,000	NA	ND
	01/31/97	99.03	8.89	Clear	90.14	540	360	690	2,100	630	2,000	NA	ND
	04/01/97	99.03	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/14/97	99.03	11.82	Clear	87.21	920	150	690	750	3,100	3,000	NA	NA
	10/24/97	99.03	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	04/21/98	99.03	5.59	Clear	93.44	99	21	210	200	3,500	1,500	NA	6.3
	11/09/98	99.03	17.21	Clear	81.82	490	ND	330	170	13,000	ND	NA	NA
	01/07/99	73.68*	18.65	Clear	55.03	450	570	4,200	12,800	7,400	ND	NA	14.1
	04/07/99	73.68	16.62	Clear	57.06	NS	NS	NS	NS	NS	NS	NS	NS
	07/15/99	73.68	14.34	Clear	59.34	340	36	190	260	6,200	4,000	988J(10)	28
	10/11/99	73.68	12.64	Clear	61.04	NS	NS	NS	NS	NS	NS	NS	NS
	02/01/00	73.68	13.47	Clear	60.21	3,290	411	430	985	17,700	34,400	NA	69.2
	04/18/00	73.68	7.28	Clear	66.40	NS	NS	NS	NS	NS	NS	NS	NS
	07/28/00	73.68	7.27	Clear	66.41	27.6	1.5	4.3	54	839	309	138J(6)	NA
	11/10/00	73.68	12.51	Clear	61.17	NS	NS	NS	NS	NS	NS	NS	NS
	01/19/01	73.68	11.77	Clear	61.91	202	ND	9.2	12.1	3,440	3,170	NA	NA
	04/25/01	73.68	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/14/01	73.68	10.04	NM	63.64	ND	ND	ND	ND	243	10.3	ND	NA
	10/04/01	73.68	14.28	Clear	59.40	NS	NS	NS	NS	NS	NS	NS	NS
	02/11/02	73.68	16.96	Clear	56.72	3.4	ND	ND	ND	933	3,030	NA	ND
	05/09/02	73.68	10.37	Clear	63.31	NS	NS	NS	NS	NS	NS	NS	NS
	07/11/02	73.68	13.07	Clear	60.61	3.1	ND	1.4	0.53	40.9	54.6	38.3J(8)	NA
	01/06/03	73.68	3.48	Clear	70.20	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/03	73.68	3.48	Clear	70.20	5.8	ND	ND	ND	27.3	ND	ND	NA
	07/24/04	73.68	8.84	Clear	64.84	30.6	0.91J	0.41J	1.7	195[a]	13.5J	NA	NA
	01/17/05	73.68	5.97	Clear	67.71	NS	NS	NS	NS	NS	NS	NS	NS
	07/08/05	73.68	11.35	1.24	63.26	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	01/16/06	73.68	4.45	0.11	69.31	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	07/06/06	73.68	5.86	0.14	67.93	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	01/08/07	73.68	5.19	Clear	68.49	NS	NS	NS	NS	NS	NS	NS	NS
	04/02/07	73.68	3.36	Clear	70.32	2J	0.8J	3J	260	100	39J	NA	NA
	07/03/07	73.68	6.51	Clear	67.17	13	15	260	1,300	380	290	8,210J(10)	NA
	01/16/08	73.68	8.22	Clear	65.46	NS	NS	NS	NS	NS	NS	NS	NS
	07/10/08	73.68	6.98	Clear	66.70	36	3J	120	420	150	170	3,640J(10)	NA
	02/10/09	73.68	5.64	Clear	68.04	NS	NS	NS	NS	NS	NS	NS	NS
	07/09/09	73.68	5.40	Clear	68.28	15	ND	39	170	50	57J	5,890J(10)	NA
	02/03/10	73.68	5.45	Clear	68.23	NS	NS	NS	NS	NS	NS	NS	NS
	07/07/10	73.68	6.81	Clear	66.87	9	ND	19	4J	24	ND	1,454J(10)	NA
	01/24/11	73.68	13.23	Clear	60.45	NS	NS	NS	NS	NS	NS	NS	NS
	08/18/11	73.68	7.15	Clear	66.53	2J	ND	ND	0.9J	1J	ND	1,484J(10)	NA
	01/09/12	73.68	5.90	Clear	67.78	NS	NS	NS	NS	NS	NS	NS	NS
	07/26/12	73.68	14.79	Clear	58.89	ND	ND	ND	ND	2J	ND	680J(15)	NA
	04/22/13	73.68	5.07	Clear	68.61	NS	NS	NS	NS	NS	NS	NS	NS
MW-1	08/01/13	73.68	6.81	Clear	66.87	2J	ND	ND	ND	6	ND	970J(15)	NA
						Well abandoned properly due to construction activities							
	07/23/14	73.32	9.28	Clear	64.04	2J	ND	1J	9	ND	ND	130J(15)	NA
	10/09/14	73.32	12.25	Clear	61.07	4J	ND	ND	ND	ND	ND	NA	NA
	01/12/15	73.32	9.63	Clear	63.69	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/15	73.32	5.67	Clear	67.65	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/16	73.32	8.86	Clear	64.46	ND	ND	ND	ND	ND	ND	NA	NA
	04/04/16	73.32	5.46	Clear	67.86	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/16	73.32	7.76	Clear	65.56	ND	ND	ND	ND	ND	ND	NA	NA
	10/17/16	73.32	9.86	Clear	63.46	NS	NS	NS	NS	NS	NS	NS	NS
	01/11/17	73.32	8.79	Clear	64.53	ND	ND	ND	ND	ND	ND	NA	NA
	04/17/17	73.32	3.67	Clear	69.65	ND	ND	ND	ND	ND	ND	42J (2)	NA
	07/13/17	73.32	4.20	Clear	69.12	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/17	73.32	9.31	Clear	64.01	NS	NS	NS	NS	NS	NS	NS	NS
	01/31/18	73.32	8.98	Clear	64.34	ND	ND	ND	ND	ND	ND	0	NA
	04/02/18	73.32	3.69	Clear	69.63	NS	NS	NS	NS	NS	NS	NS	NS
	06/19/18	73.32	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	73.32	4.90	Clear	68.42	ND	ND	ND	ND	ND	ND	NA	NA
	11/15/18	73.32	7.42	Clear	65.9	NS	NS	NS	NS	NS	NS	NS	NS
	02/04/19	73.32	3.30	Clear	70.02	ND	ND	ND	ND	ND	ND	0	NS
	05/10/19	73.32	2.37	Clear	70.95	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	73.32	3.61	Clear	69.71	NS	NS	NS	NS	NS	NS	NS	NS
	12/03/19	73.32	4.61	Clear	68.71	NS	NS	NS	NS	NS	NS	NS	NS
MW-1R	**02/11/20**	**73.32**	**3.90**	**Clear**	**69.42**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0**	**NA**
NJDEP Ground Water Quality Standards (GWQS)						**1[(1)]**	**600[(1)]**	**700[(1)]**	**1,000[(2)]**	**70[(2)]**	**100[(2)]**	**100/500[(3)]**	**5[(1)]**

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GROUNDWATER MONITORING & SAMPLING COMPARISON DATA
FORMER SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	07/17/92	98.55	17.07	Clear	81.48	2,110	18,600D	3,450	23,200	492	ND	NA	NA
	04/29/93	98.55	14.80	0.08	83.81	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	08/23/93	98.55	18.03	0.35	80.78	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	06/06/94	98.55	15.94	Clear	82.61	4,460	14,700	3,530	20,100	< 2,500	< 25,000	NA	NA
	01/04/96	98.55	16.42	Clear	82.13	690	8,700	2,800	19,000	300	5,000	NA	NA
	07/05/96	98.55	16.87	1.48	82.79	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	01/31/97	98.55	Dry	Dry	Dry	NS	NS	NS	NS	NS	NS	NS	NS
	04/01/97	98.55	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/14/97	98.55	15.82	Clear	82.73	2,800	7,900	2,200	12,000	890	22,000	NA	16.1
	10/24/97	98.55	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	04/21/98	98.55	16.28	1.05	83.06	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	11/09/98	98.55	15.41	Clear	83.14	610	4,900	2,500	18,700	ND	ND	NA	NA
	01/07/99	73.20*	16.42	Clear	56.78	2,300	9,400	3,300	34,400	4,800	ND	NA	51.6
	04/07/99	73.20	14.63	Clear	58.57	NS	NS	NS	NS	NS	NS	NS	NS
	07/15/99	73.20	15.07	Clear	58.13	2,900	14,000	2,000	11,000	2,300	ND (600)	5,400J(10)	18
	10/11/99	73.20	15.33	Clear	57.87	NS	NS	NS	NS	NS	NS	NS	NS
	02/01/00	73.20	15.21	Clear	57.99	NS	NS	NS	NS	NS	NS	NS	NS
	04/18/00	73.20	11.18	Clear	62.02	NS	NS	NS	NS	NS	NS	NS	NS
	07/28/00	73.20	16.70	Clear	56.50	NS	NS	NS	NS	NS	NS	NS	NS
	11/10/00	73.20	17.40	Clear	55.80	NS	NS	NS	NS	NS	NS	NS	NS
	01/19/01	73.20	14.51	Clear	58.69	ND	1.5	33.2	146	9.3	ND	NA	NA
	04/25/01	73.20	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/14/01	73.20	Dry	Dry	Dry	NS	NS	NS	NS	NS	NS	NS	NS
	10/04/01	73.20	15.32	Clear	57.88	NS	NS	NS	NS	NS	NS	NS	NS
	02/11/02	73.20	16.36	Clear	56.84	2.4	0.95	19.4	117	2	ND	NA	4.8
	05/09/02	73.20	11.21	Clear	61.99	NS	NS	NS	NS	NS	NS	NS	NS
	07/11/02	73.20	15.31	Clear	57.89	10.9	3.5	130	346	2.5	ND	2,440J(10)	NA
	01/06/03	73.20	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/03	73.20	15.33	Clear	57.87	2.9	0.81J	14.6	58.6	2.0	ND	606J(10)	NA
	07/24/04	73.20	14.79	Sheen	58.41	1.7J	2.8	57.2	259	ND	ND	7,210J(10)	NA
	01/17/05	73.20	12.58	Clear	60.62	NS	NS	NS	NS	NS	NS	NS	NS
	07/08/05	73.20	12.10	Clear	61.10	6.8	135	121	341	1.5	105	NA	NA
	01/16/06	73.20	10.75	Clear	62.45	NS	NS	NS	NS	NS	NS	NS	NS
	07/06/06	73.20	12.71	Clear	60.49	1.1	83.6	129	543	ND	ND	NA	NA
	01/08/07	73.20	9.82	Clear	63.38	NS	NS	NS	NS	NS	NS	NS	NS
	04/02/07	73.20	13.02	Clear	60.18	NS	NS	NS	NS	NS	NS	NS	NS
	07/03/07	73.20	15.71	Clear	57.49	ND	ND	ND	ND	ND	130	684J(10)	NA
	01/16/08	73.20	14.60	Clear	58.60	NS	NS	NS	NS	NS	NS	NS	NS
	07/10/08	73.20	15.41	Clear	57.79	ND	1J	0.8J	2J	ND	190	531J(10)	NA
	02/10/09	73.20	15.12	Clear	58.08	2J	ND	ND	ND	ND	74J	NA	NA
	07/09/09	73.20	14.10	Clear	59.10	1J	1J	ND	2J	ND	ND	904J(10)	NA
	02/03/10	73.20	14.91	Clear	58.29	2J	29	3J	9	ND	42J	NA	NA
	07/07/10	73.20	15.30	Clear	57.90	1J	1J	2J	3J	ND	150	1,606J(10)	NA
	01/24/11	73.20	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	08/18/11	73.20	15.31	Clear	57.89	4J	3J	5J	10	ND	220	1,269J(10)	NA
	01/09/12	73.20	14.73	Clear	58.47	ND	ND	ND	ND	ND	ND	NA	NA
	07/26/12	73.20	15.36	Clear	57.84	3J	2J	1J	9	ND	440	1,200J(15)	NA
	04/22/13	73.20	13.95	Clear	59.25	2J	ND	ND	0.9J	ND	88J	1,100J(15)	NA
	08/01/13	73.20	14.90	Clear	58.30	4J	5J	8	31	ND	190	3,300J(15)	NA
	03/27/14	73.20	15.11	Clear	58.09	1J	2J	ND	4J	ND	48J	1,700J(15)	NA
	07/23/14	73.20	14.82	Clear	58.38	ND	ND	ND	0.9J	ND	71J	760J(15)	NA
	10/09/14	73.20	15.35	Clear	57.85	3J	4J	1J	6	ND	100	1,400J(15)	NA
	01/12/15	73.20	14.96	Clear	58.24	ND	ND	ND	ND	ND	ND	130J(15)	NA
	06/30/15	73.20	12.69	Clear	60.51	ND	ND	ND	6J	ND	ND	960J(15)	NA
	01/12/16	73.20	13.72	Clear	59.48	ND	1J	ND	7	ND	34J	2,100J(15)	NA
	04/04/16	73.20	15.28	Clear	57.92	NS	NS	NS	NS	NS	NS	NS	NS
	06/30/16	73.20	15.42	Clear	57.78	ND	150	470	2,700	ND	ND	61,000J (15)	NA
	10/17/16	73.20	16.88	Clear	56.32	ND	47J	99	670	ND	ND	15,000J(15)	NA
	01/11/17	73.20	13.66	Clear	59.54	ND	ND	29.0	150	ND	ND	22,000J (15)	NA
	04/17/17	73.20	13.35	0.01	59.85	NS	NS	NS	NS	NS	NS	NS	NS
	07/13/17	73.20	14.12	0.11	59.16	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/17	73.20	16.22	Clear	56.98	55	31	60	480	ND	31	13,000J (15)	NA
	10/30/17	73.20	16.31	Clear	56.89	NS	NS	NS	NS	NS	NS	NS	NS
	12/27/17	73.20	16.42	Clear	56.78	NS	NS	NS	NS	NS	NS	NS	NS
	01/31/18	73.20	16.20	Clear	57.00	ND	3J	16	130	ND	ND	15,000J (15)	NA
	04/02/18	73.20	14.30	0.04	58.90	NS	NS	NS	NS	NS	NS	NS	NS
	06/19/18	73.20	14.89	CLEAR	58.31	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	73.20	15.40	CLEAR	57.80	4J	27	61	580	ND	170	11,000J (15)	NA
	11/15/18	73.20	14.03	CLEAR	59.17	1J	30	85	330	ND	33J	2,100J (15)	NA
	02/04/19	73.20	6.53	0.01	66.67	30.3	1,320	775	3,780	ND	ND	7,210J (15)	NS
	05/10/19	73.20	12.32	0.01	60.88	NS	NS	NS	NS	NS	NS	NS	NS
	07/23/19	73.20	13.47	CLEAR	59.73	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	73.20	14.25	CLEAR	58.95	41.8	123	251	795	ND	ND	3,558J	NA
	12/03/19	73.20	14.66	Clear	58.54	0.41 J	2.6	12.7	78.1	ND	109	1,586 J	NA
	01/14/20	73.20	14.49	Clear	58.71	NS	NS	NS	NS	NS	NS	NS	NS
MW-2	**02/11/20**	**73.20**	**14.50**	**Clear**	**58.70**	**2.6**	122	228	752	ND	57.4	**1,537 J (15)**	**NA**
NJDEP Ground Water Quality Standards (GWQS)						**1[1]**	**600[1]**	**700[1]**	**1,000[2]**	**70[2]**	**100[2]**	**100/500[3]**	**5[1]**

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(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	07/17/92	98.36	17.18	Clear	81.18	199	6.63	8.32	ND	2,160D	1,520	NA	NA
	04/29/93	98.36	15.08	Clear	83.28	103	5.3	13.7	36.7	3,150D	3,330	NA	NA
	08/23/93	98.36	17.85	Clear	80.51	ND	2.1J	2.5J	17	ND	ND	NA	NA
	06/06/94	98.36	16.01	Clear	82.35	41.2	7.59	29.5	45.9	13,500	< 50	NA	NA
	01/04/96	98.36	16.84	Clear	81.52	190	5	26	31	9,000	3,000	NA	NA
	07/05/96	98.36	16.00	Clear	82.36	8	3	35	19	6,200	2,700	NA	ND
	01/31/97	98.36	16.32	Clear	82.04	200	11	32	30	7,000	2200	NA	ND
	04/01/97	98.36	15.45	Clear	82.91	20	1	22	10	8,600	NA	NA	2.1J
	07/14/97	98.36	17.53	Clear	80.83	5	4	24	88	3,700	4,000	NA	2.2J
	10/24/97	98.36	19.06	Clear	79.30	380	20	85	63	11,000	8,000	NA	20.7
	04/21/98	98.36	15.74	Clear	82.62	180	ND	27	19	7,600	3,700	NA	< 5.0
	11/09/98	98.36	18.73	Clear	79.63	69	ND	27	ND	6,300D	ND	NA	NA
	01/07/99	73.09*	19.05	Clear	54.04	350	24	ND	46	11,000D	14,000	NA	13.3
	04/07/99	73.09	16.84	Clear	56.25	68	2	7	10	8,100	4,400	NA	NA
	07/15/99	73.09	18.36	Clear	54.73	150	3J	19	28	6,900	5,200	223J(10)	ND
	10/11/99	73.09	17.94	Clear	55.15	49	2	8	8	3,400	5,500	NA	NA
	02/01/00	73.09	17.60	Clear	55.49	123	2.7	13	18.7	2,980	17,200	NA	NA
	04/18/00	73.09	16.51	Clear	56.58	44.4	80.4	12.2	662	2,080	2,170	NA	NA
	07/28/00	73.09	17.11	Clear	55.98	128	3.6	19.6	16.2	2,170	7,100	478J(7)	NA
	11/10/00	73.09	17.66	Clear	55.43	169	ND	30.2	ND	3,920	5,460	NA	NA
	01/19/01	73.09	17.09	Clear	56.00	282	ND	50.1	ND	4,040	10,900	NA	NA
	04/25/01	73.09	15.05	Clear	58.04	146	4.9	44	13.7	3,760[a]	5,000	NA	NA
	07/14/01	73.09	17.04	Clear	56.05	125	ND	24.1	ND	2,860	8,280	320J(6)	NA
	10/04/01	73.09	17.89	Clear	55.20	257	8	48.2	38.4	3,590[a]	7,070	NA	NA
	02/11/02	73.09	18.54	Clear	54.55	258	12.5	32.3	68.5	2,610	10,100	NA	NA
	05/09/02	73.09	17.62	Clear	55.47	188	ND	21.3	41.0	2,640	7,970	NA	NA
	07/11/02	73.09	17.97	Clear	55.12	152	ND	13.0	29.1	2,110	8,560	85J(1)	NA
	01/06/03	73.09	16.58	Clear	56.51	101	2.5J	5.2	12.9	1,840	5,090	NA	NA
	07/02/03	73.09	15.92	Clear	57.17	16.6	ND	4.5	ND	286	3,720[a]	72.3J(6)	NA
	07/24/04	73.09	16.86	Clear	56.23	116	6.2	9.9	55.9	186	5,100[a]	NA	NA
	01/17/05	73.09	15.48	Clear	57.61	79.1	5.8	10.4	44.8	90.6	3,610[a]	NA	NA
	07/08/05	73.09	17.17	Clear	55.92	32.6	0.52J	0.91J	2.4	24.5	3,730[a]	NA	NA
	01/16/06	73.09	15.87	Clear	57.22	72.5	3.7	9.1	30.9	49.0	3,460[a]	NA	NA
	07/06/06	73.09	16.31	Clear	56.78	30.3	0.63J	0.63J	2.5	24.8	3,180[a]	NA	NA
	01/08/07	73.09	15.49	Clear	57.60	75	2J	6	24	14	2,900	NA	NA
	04/02/07	73.09	15.98	Clear	57.11	96	3J	3J	19	14	4,300	NA	NA
	07/03/07	73.09	17.43	Clear	55.66	ND	ND	ND	ND	10	2,900	9J(1)	NA
	01/16/08	73.09	17.42	Clear	55.67	4,000	150J	190J	670	580	3,800	NA	NA
	07/10/08	73.09	17.28	Clear	55.81	130	3J	9	21	8	4,500	606J(10)	NA
	02/10/09	73.09	16.29	Clear	56.80	120	3J	6	21	7	4,400	NA	NA
	07/09/09	73.09	16.12	Clear	56.97	10	ND	ND	ND	6	2,700	73J(9)	NA
	02/03/10	73.09	16.92	Clear	56.17	NS	NS	NS	NS	NS	NS	NS	NS
	07/07/10	73.09	17.13	Clear	55.96	7	ND	ND	ND	7	2,200	150J(10)	NA
	01/24/11	73.09	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	08/18/11	73.09	16.96	Clear	56.13	110	1J	ND	2J	2J	2,100	360J(10)	NA
	01/09/12	73.09	16.00	Clear	57.09	63	1J	2J	6	2J	2,200	NA	NA
	07/26/12	73.09	17.39	Clear	55.70	41	ND	77	17	19	36J	NA	NA
	04/22/13	73.09	16.31	Clear	56.78	5	ND	ND	ND	ND	1,500	54J(9)	NA
	08/01/13	73.09	16.00	Clear	57.09	37	ND	ND	1J	1J	1,300	NA	NA
	03/27/14	73.09	16.60	Clear	56.49	100	5J	3J	11	3J	1,900	NA	NA
	07/23/14	73.09	15.89	Clear	57.20	40	ND	ND	1J	1J	1,100	NA	NA
	10/09/14	73.09	17.35	Clear	55.74	26	ND	ND	ND	ND	850	NA	NA
	01/12/15	73.09	16.21	Clear	56.88	180	14	35	78	9	1,100	NA	NA
	06/30/15	73.09	15.83	Clear	57.26	170	6	17	13	6	1,300	NA	NA
	01/12/16	73.09	16.23	Clear	56.86	320	18	56	140	18	1,300	NA	NA
	04/04/16	73.09	15.90	Clear	57.19	300	9	22	44	7	1,200	NA	NA
	06/30/16	73.09	16.71	Clear	56.38	310	10	8	24	4	1,000	NA	NA
	10/17/16	73.09	17.29	Clear	55.80	9	ND	ND	ND	2	870	NA	NA
	01/11/17	73.09	16.50	Clear	56.59	240	4.0	3.0	10.0	5.0	1,100	NA	NA
	04/17/17	73.09	15.11	Clear	57.98	93	1	ND	1	1	620	NA	NA
	07/13/17	73.09	15.44	Clear	57.65	3	ND	ND	ND	2	320	NA	NA
	10/10/17	73.09	16.41	Clear	56.68	20	ND	ND	ND	1	600	NA	NA
	01/31/18	73.09	16.57	Clear	56.52	21	1J	ND	1	2	590	NA	NA
	04/02/18	73.09	15.38	Clear	57.71	4	ND	ND	ND	0.9J	220	170J (14)	NA
	06/19/18	73.09	15.34	Clear	57.75	NS	NS	NS	NS	NS	NS	NS	NS
17.5-19.5						ND	ND	ND	ND	NA	NA	NA	NA
19-19.5						NA	NA	NA	NA	ND	370	NA	NA
22-24	07/02/18	73.09	15.73	Clear	57.36	ND	ND	ND	ND	NA	NA	NA	NA
23.5-24						NA	NA	NA	NA	ND	370	NA	NA
26.5-28.5						ND	ND	ND	ND	NA	NA	NA	NA
28-28.5						NA	NA	NA	NA	ND	360	NA	NA
	11/15/18	73.09	14.97	Clear	58.12	NS	NS	NS	NS	NS	NS	NS	NS
	02/04/19	73.09	14.83	Clear	58.26	10.4	1.2	0.77J	3.8	1.4	303	447.9J (15)	NS
	05/10/19	73.09	14.54	Clear	58.55	10.3	1.28	0.18J	2.69	0.82J	107	330J (15)	NA
	08/13/19	73.09	14.98	Clear	58.11	ND	ND	ND	ND	21.4	152	94.0J	NA
	12/03/19	73.09	15.82	Clear	57.27	4.5	2.2	1	9.9	0.94 J	184	260.8 J	NA
	01/14/20	73.09	15.33	Clear	57.76	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	**02/11/20**	**73.09**	**15.51**	**Clear**	**57.58**	2.6	1.9	0.4	9.9	ND	**145**	**556.1 J (15)**	**NA**
NJDEP Ground Water Quality Standards (GWQS)						**1[(1)]**	**600[(1)]**	**700[(1)]**	**1,000[(2)]**	**70[(2)]**	**100[(2)]**	**100/500[(3)]**	**5[(1)]**

TABLE 1
GROUNDWATER MONITORING & SAMPLING COMPARISON DATA
FORMER SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	04/29/93	99.91	8.84	Clear	91.07	3,440	7,040	1,390	6,720	40,800D	14,300	NA	NA
	08/23/93	99.91	13.45	Clear	86.46	ND	8.4	ND	36	ND	ND	NA	NA
	06/06/94	99.91	9.77	Clear	90.14	4,270	13,500	2,530	14,400	88,000	< 10,000	NA	NA
	01/04/96	99.91	11.90	Clear	88.01	1,600	2,500	1,900	8,500	20,000	20,000	NA	NA
	07/05/96	99.91	10.03	Clear	89.88	1,000	1,600	1,200	4,100	12,000	10,000	NA	ND
	01/31/97	99.91	8.88	Clear	91.03	380	50	200	310	5,400	3,000	NA	ND
	04/01/97	99.91	8.31	Clear	91.60	430	140	350	700	7,600	4,000	NA	2.9J
	07/14/97	99.91	11.26	Clear	88.65	810	420	670	1,600	17,000	10,000	NA	2.5J
	10/24/97	99.91	13.44	Clear	86.47	1,500	4,100	1,500	6,600	20,000	40,000	NA	11.7
	04/21/98	99.91	8.16	Clear	91.75	10	12	19	38	79	ND	NA	10.8
	11/09/98	99.91	14.11	Clear	85.80	740	3,700	730	4,000	36,000D	ND	NA	NA
	01/07/99	72.99*	14.47	Clear	58.52	480	1,800	ND	5,100	16,000	ND	NA	34.4
	04/07/99	72.99	9.25	Clear	63.74	10	5	5	63	1,200	ND	NA	NA
	07/15/99	72.99	12.96	Clear	60.03	700	1,300	900	3,200	24,000	ND(80,000)	NA	ND
	10/11/99	72.99	12.00	Clear	60.99	80	140	670	2,400	3,400	6,600	NA	NA
	02/01/00	72.99	12.18	Clear	60.81	612	1,090	1,520	6,270	17,700	15,600	NA	NA
	04/18/00	72.99	9.03	Clear	63.96	ND	ND	ND	0.97	ND	ND	NA	NA
	07/28/00	72.99	10.19	Clear	62.80	ND	ND	0.34	1.8	34.9	25.6	ND	NA
	11/10/00	72.99	12.13	Clear	60.86	113	25.7	181	598	2,490	6,790	ND	NA
	01/19/01	72.99	10.57	Clear	62.42	ND	ND	ND	ND	91.4	76.3	NA	NA
	04/25/01	72.99	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/14/01	72.99	10.00	Clear	62.99	76.6	7.7	61.4	82.6	1,340	5,820	704J(10)	NA
	10/04/01	72.99	12.93	Clear	60.06	486	606	1,030	3,200	16,200[a]	27,200[a]	NA	NA
	02/11/02	72.99	13.39	Clear	59.60	23.5	3.6	ND	102	877	3,600	NA	NA
	05/09/02	72.99	11.04	Clear	61.95	2.6	0.69	1.7	19.1	82.3	264	NA	NA
	07/11/02	72.99	12.08	Clear	60.91	91.5	4.0	37.2	223	765	3,780	706J(10)	NA
	01/06/03	72.99	8.14	Clear	64.85	0.91J	0.30J	1.3	8.7	25.6	383	NA	NA
	07/02/03	72.99	8.58	Clear	64.41	326[a]	199	343[a]	976[a]	852[a]	2,490[a]	5,500J(10)	NA
	07/24/04	72.99	9.91	Clear	63.08	1.9	ND	ND	5.1	62.9	385	10.6J(3)	NA
	01/17/05	72.99	7.61	Clear	65.38	0.93	ND	1.1	2.2	24.4	90.8	NA	NA
	07/08/05	72.99	10.30	Clear	62.69	44.5	2.9	53.4	18.0	268[a]	714	NA	NA
	01/16/06	72.99	8.45	Clear	64.54	0.83J	ND	2.6	4.6	43.4	2,200[a]	NA	NA
	07/06/06	72.99	8.81	Clear	64.18	20.7	1.4	59.9	6.9	47.1	1,810	NA	NA
	01/08/07	72.99	7.24	Clear	65.75	ND	ND	ND	ND	10	120	NA	NA
	04/02/07	72.99	7.61	Clear	65.38	ND	ND	ND	ND	12	430	NA	NA
	07/03/07	72.99	10.21	Clear	62.78	ND	ND	ND	6	4J	330	240J(10)	NA
	01/16/08	72.99	9.80	Clear	63.19	2J	ND	7	7	6	120	NA	NA
	07/10/08	72.99	9.78	Clear	63.21	ND	ND	2J	12	3J	130	390J(10)	NA
	02/10/09	72.99	8.87	Clear	64.12	ND	ND	1J	2J	1J	42J	NA	NA
	07/09/09	72.99	9.03	Clear	63.96	0.9J	ND	3J	ND	4J	ND	265J(10)	NA
	02/03/10	72.99	9.87	Clear	63.12	ND	10	4J	3J	2J	ND	NA	NA
	07/07/10	72.99	10.06	Clear	62.93	2J	3J	57	25	5J	59J	935J(10)	NA
	01/24/11	72.99	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	08/18/11	72.99	10.84	Clear	62.15	ND	ND	13J	ND	ND	ND	1,284J(10)	NS
	01/09/12	72.99	9.44	Clear	63.55	3J	4J	3J	19	ND	810	888J(10)	NA
	07/26/12	72.99	11.91	Clear	61.08	ND	ND	15	1J	2J	39J	810J(15)	NA
	04/22/13	72.99	9.59	Clear	63.40	ND	ND	32	12	ND	ND	1,100(15)	NA
	08/01/13	72.99	9.99	Clear	63.00	ND	ND	3J	ND	ND	ND	240J(15)	NA
	03/27/14	72.99	13.01	Clear	59.98	3J	1J	100	4J	3J	ND	2,800J(15)	NA
	07/23/14	72.99	10.48	Clear	62.51	1J	ND	56	2J	ND	ND	1,200J(15)	NA
	10/09/14	72.99	13.10	Clear	59.89	12	4J	100	15	4J	32J	1,500J(15)	NA
	01/12/15	72.99	10.78	Clear	62.21	ND	ND	ND	ND	ND	ND	120J(15)	NA
	06/30/15	72.99	7.94	Clear	65.05	ND	ND	ND	ND	ND	ND	3J(1)	NA
	01/12/16	72.99	9.46	Clear	63.53	ND	ND	ND	ND	ND	ND	NA	NA
	04/04/16	72.99	8.12	Clear	64.87	ND	ND	7	0.8J	ND	ND	NA	NA
	06/30/16	72.99	9.93	Clear	63.06	0.9J	ND	10	ND	ND	ND	NA	NA
	10/17/16	72.99	12.18	Clear	60.81	1	0.6J	21	2	ND	ND	NA	NA
	01/11/17	72.99	10.40	Clear	62.59	ND	ND	ND	ND	ND	ND	NA	NA
	04/17/17	72.99	5.82	Clear	67.17	ND	ND	1	ND	ND	ND	360J (13)	NA
	07/13/17	72.99	7.53	Clear	65.46	ND	ND	3	1	ND	ND	280J (15)	NA
	10/10/17	72.99	9.90	Clear	63.09	ND	ND	9	1	ND	ND	2,800J (15)	NA
	01/31/18	72.99	10.64	Clear	62.35	ND	ND	ND	ND	ND	ND	160J (12)	NA
	04/02/18	72.99	6.25	Clear	66.74	ND	ND	ND	ND	ND	ND	49J (9)	NA
	06/19/18	72.99	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	72.99	8.13	Clear	64.86	ND	ND	ND	ND	ND	ND	210J	NA
	11/15/18	72.99	9.15	Clear	63.84	NS	NS	NS	NS	NS	NS	NS	NS
	02/04/19	72.99	6.06	Clear	66.93	ND	ND	ND	ND	ND	ND	0	NS
	05/10/19	72.99	4.93	Clear	68.06	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	72.99	7.03	Clear	65.96	NS	NS	NS	NS	NS	NS	NS	NS
	12/03/19	72.99	4.63	Clear	68.36	NS	NS	NS	NS	NS	NS	NS	NS
	01/14/20	72.99	6.41	Clear	66.58	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	**02/11/20**	**72.99**	**3.45**	**Clear**	**69.54**	ND	ND	ND	ND	ND	6.7 J	0	**NA**
NJDEP Ground Water Quality Standards (GWQS)						**1[(1)]**	**600[(1)]**	**700[(1)]**	**1,000[(2)]**	**70[(2)]**	**100[(2)]**	**100/500[(3)]**	**5[(1)]**

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CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	04/29/93	100.4	14.88	Clear	85.52	77.1	2,060D	2,060D	10,700D	23.5	ND	NA	NA
	08/23/93	100.4	17.81	Clear	82.59	9.1	ND	2.8J	3.3J	250	1,200	NA	NA
	06/06/94	100.4	16.02	0.09	84.38	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	01/04/96	100.4	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NA
	07/05/96	100.4	15.82	Clear	84.58	50	530	1,800	10,000	130	5,000	NA	ND
	01/31/97	100.4	16.33	0.03	84.09	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	04/01/97	100.4	15.60	0.04	84.83	SPP	SPP	SPP	SPP	SPP	SPP	SPP	SPP
	07/14/97	100.4	17.34	Clear	83.06	120	590	2,600	8,300	380	20,000	NA	7.9
	10/24/97	100.4	19.05	Clear	81.35	82	260	1,200	6,500	190	8,800	NA	11.4
	04/21/98	100.4	15.52	Clear	84.88	ND	540	1,300	12,000	130	ND	NA	6.3
	11/09/98	100.4	18.73	Clear	81.67	170	170	1,800	7,000	ND	ND	NA	NA
	01/07/99	73.33*	18.92	Clear	54.41	420	280	ND	9,800	ND	ND	NA	46.8
	04/07/99	73.33	16.80	Clear	56.53	ND	34	67	1,600	150	14,000	NA	NA
	07/15/99	73.33	15.26	Clear	58.07	17	45	360	980	ND (200)	ND (10,000)	NA	ND
	10/11/99	73.33	17.96	Clear	55.37	ND	240	630	3,200	ND	15,000	NA	NA
	02/01/00	73.33	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	04/18/00	73.33	16.38	Clear	56.95	ND	ND	ND	ND	ND	ND	NA	NA
	07/28/00	73.33	16.77	Clear	56.56	ND	9.1	35.3	1,000	0.9	ND	3,120J(10)	NA
	11/10/00	73.33	17.49	Clear	55.84	ND	ND	15.9	6.7	5.4	ND	NA	NA
	01/19/01	73.33	16.72	Clear	56.61	ND	ND	2.6	11.6	ND	ND	NA	NA
	04/25/01	73.33	15.88	Clear	57.45	1.6	32.8	544	1,550	6.4	ND	NA	NA
	07/14/01	73.33	16.89	Clear	56.44	1.2	9.8	288	381	2.2	ND	2,590J(10)	NA
	10/04/01	73.33	17.82	Clear	55.51	4.9	23.2	303	271	4.4	ND	NA	NA
	02/11/02	73.33	18.46	Clear	54.87	0.94	17	62.7	85.1	ND	ND	NA	NA
	05/09/02	73.33	17.53	Clear	55.80	0.96	37.1	99.4	237	ND	ND	NA	NA
	07/11/02	73.33	17.89	Clear	55.44	ND	ND	ND	1.0	ND	ND	59.8J(8)	NA
	01/06/03	73.33	15.96	Clear	57.37	ND	0.89J	88.9	133	ND	ND	NA	NA
	07/02/03	73.33	15.69	Clear	57.64	ND	4.8J	520	250	11.8	155	2,828J(10)	NA
	07/24/04	73.33	15.92	Clear	57.41	ND	0.83J	166	117	ND	ND	1,449J(10)	NA
	01/17/05	73.33	14.63	Clear	58.70	NS	NS	NS	NS	NS	NS	NS	NS
	07/08/05	73.33	16.75	Clear	56.58	ND	0.44J	42.9	8.4	1.8	ND	NA	NA
	01/16/06	73.33	14.90	Clear	58.43	NS	NS	NS	NS	NS	NS	NS	NS
	07/06/06	73.33	14.11	Clear	59.22	ND	ND	102	49.8	ND	ND	NA	NA
	01/08/07	73.33	13.02	Clear	60.31	NS	NS	NS	NS	NS	NS	NS	NS
	04/02/07	73.33	15.34	Clear	57.99	NS	NS	NS	NS	NS	NS	NS	NS
	07/03/07	73.33	15.06	Clear	58.27	ND	ND	2J	ND	ND	ND	116J(10)	NA
	01/16/08	73.33	15.41	Clear	57.92	NS	NS	NS	NS	NS	NS	NS	NS
	07/10/08	73.33	17.12	Clear	56.21	ND	ND	23	11	ND	ND	986J(10)	NA
	02/10/09	73.33	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/09/09	73.33	15.61	Clear	57.72	ND	ND	270	190	ND	ND	3,796J(10)	NA
	02/03/10	73.33	15.71	Clear	57.62	ND	20	1J	6	ND	ND	NA	NA
	07/07/10	73.33	16.93	Clear	56.40	ND	ND	6	3J	ND	ND	1,009J(10)	NA
	01/24/11	73.33	14.40	Clear	58.93	ND	0.8J	ND	5J	ND	ND	NA	NA
	08/18/11	73.33	13.56	Clear	59.77	ND	ND	ND	ND	ND	ND	ND	NA
	01/09/12	73.33	15.55	Clear	57.78	ND	ND	ND	ND	ND	ND	105J(8)	NA
	07/26/12	73.33	17.16	Clear	56.17	ND	ND	ND	ND	ND	ND	NA	NA
	07/26/12	73.33	15.70	Clear	57.63	ND	ND	ND	ND	ND	ND	NA	NA
	08/01/13	73.33	15.49	Clear	57.84	ND	ND	ND	ND	ND	ND	NA	NA
	03/07/14	73.33	13.31	Clear	60.02	ND	ND	ND	ND	ND	ND	NA	NA
	07/23/14	73.33	14.22	Clear	59.11	ND	ND	ND	ND	ND	ND	NA	NA
	10/09/14	73.33	17.14	Clear	56.19	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/15	73.33	13.50	Clear	59.83	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/15	73.33	9.12	Clear	64.21	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/16	73.33	10.50	Clear	62.83	ND	ND	ND	ND	ND	ND	NA	NA
	04/04/16	73.33	14.90	Clear	58.43	ND	ND	ND	0.5J	ND	ND	NA	NA
	06/30/16	73.33	16.40	Clear	56.93	ND	ND	ND	ND	ND	ND	NA	NA
	10/17/16	73.33	11.55	Clear	61.78	NS	NS	NS	NS	NS	NS	NS	NS
	01/11/17	73.33	11.84	Clear	61.49	ND	ND	ND	ND	ND	ND	NA	NA
	04/17/17	73.33	12.21	Clear	61.12	ND	ND	9	98	ND	ND	NA	NA
	07/13/17	73.33	13.94	Clear	59.39	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/17	73.33	10.94	Clear	62.39	NS	NS	NS	NS	NS	NS	NS	NS
	10/30/17	73.33	9.45	Clear	63.88	NS	NS	NS	NS	NS	NS	NS	NS
	12/27/17	73.33	16.03	Clear	57.30	NS	NS	NS	NS	NS	NS	NS	NS
	01/31/18	73.33	15.91	Clear	57.42	ND	ND	ND	ND	ND	ND	NA	NA
	04/02/18	73.33	13.23	Clear	60.10	NS	NS	NS	NS	NS	NS	NS	NS
	06/19/18	73.33	13.88	Clear	59.45	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	73.33	15.07	Clear	58.26	NS	NS	NS	NS	NS	NS	NS	NS
	11/15/18	73.33	14.36	Clear	58.97	NS	NS	NS	NS	NS	NS	NS	NS
	02/04/19	73.33	11.95	Clear	61.38	0.65J	0.93J	1.3	1.5	ND	ND	38.1J	NS
	05/10/19	73.33	9.03	Clear	64.30	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	73.33	12.36	Clear	60.97	2.3	2.9	7.8	11.4	ND	ND	361J	NA
	12/03/19	73.33	5.52	Clear	67.81	ND	ND	ND	ND	ND	ND	0	NA
	01/14/20	73.33	12.98	Clear	60.35	NS	NS	NS	NS	NS	NS	NS	NS
MW-5	02/11/20	73.33	3.00	Clear	70.33	ND	ND	ND	ND	ND	ND	0	NA
NJDEP Ground Water Quality Standards (GWQS)						**1[1]**	**600[1]**	**700[1]**	**1,000[2]**	**70[2]**	**100[2]**	**100/500[3]**	**5[1]**

TABLE 1
GROUNDWATER MONITORING & SAMPLING COMPARISON DATA
FORMER SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	04/29/93	101.37	2.07	Clear	99.30	ND	ND	ND	ND	23.6	ND	NA	ND
	08/23/93	101.37	13.15	Clear	88.22	ND	ND	ND	ND	ND	ND	NA	ND
	06/06/94	101.37	4.70	Clear	96.67	ND	ND	ND	ND	73.9	ND	NA	ND
	01/04/96	101.37	4.93	Clear	96.44	ND	ND	ND	ND	14	ND	NA	ND
	07/05/96	101.37	5.02	Clear	96.35	ND	ND	ND	ND	19	ND	NA	ND
	01/31/97	101.37	3.38	Clear	97.99	ND	ND	ND	ND	79	ND	NA	ND
	04/01/97	101.37	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/14/97	101.37	10.00	Clear	91.37	ND	ND	ND	ND	22	ND	NA	32.5
	10/24/97	101.37	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	04/21/98	101.37	3.08	Clear	98.29	ND	9.6	ND	ND	ND	ND	NA	<5.0
	11/09/98	101.37	14.79	Clear	86.58	ND	ND	ND	ND	16	ND	NA	NA
	01/07/99	73.16*	13.33	Clear	59.83	ND	ND	ND	ND	11	ND	NA	14.8
	04/07/99	73.16	16.17	Clear	56.99	NS	NS	NS	NS	NS	NS	NS	NS
	07/15/99	73.16	11.96	Clear	61.20	6	37	8	37	ND	200	NA	ND
	10/11/99	73.16	7.40	Clear	65.76	NS	NS	NS	NS	NS	NS	NS	NS
	02/01/00	73.16	10.25	Clear	62.91	ND	ND	ND	ND	5.3	ND	NA	NA
	04/18/00	73.16	3.15	Clear	70.01	NS	NS	NS	NS	NS	NS	NS	NS
	07/28/00	73.16	5.19	Clear	67.97	ND	ND	ND	ND	1.3	ND	ND	NA
	11/10/00	73.16	5.92	Clear	67.24	NS	NS	NS	NS	NS	NS	NS	NS
	01/19/01	73.16	4.39	Clear	68.77	ND	ND	ND	ND	5.3	ND	NA	NA
	04/25/01	73.16	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/14/01	73.16	8.91	Clear	64.25	ND	ND	ND	ND	1.4	ND	ND	NA
	10/04/01	73.16	10.62	Clear	62.54	NS	NS	NS	NS	NS	NS	NS	NS
	02/11/02	73.16	11.04	Clear	62.12	ND	ND	ND	ND	3.4	ND	NA	NA
	05/09/02	73.16	3.41	Clear	69.75	NS	NS	NS	NS	NS	NS	NS	NS
	07/11/02	73.16	10.55	Clear	62.61	ND	ND	ND	ND	11.0	ND	ND	NA
	01/06/03	73.16	1.97	Clear	71.19	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/03	73.16	3.36	Clear	69.80	ND	ND	ND	ND	0.86J	ND	ND	NA
	07/24/04	73.16	6.72	Clear	66.44	ND	ND	ND	ND	0.69J	ND	NA	NA
	01/17/05	73.16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	07/08/05	73.16	5.06	Clear	68.10	NS	NS	NS	NS	NS	NS	NS	NS
	01/16/06	73.16	3.22	Clear	69.94	ND	ND	ND	ND	1.9	ND	NA	NA
	07/06/06	73.16	5.05	Clear	68.11	ND	ND	ND	ND	ND	ND	NA	NA
	01/08/07	73.16	2.82	Clear	70.34	ND	ND	ND	ND	ND	ND	NA	NA
	04/02/07	73.16	2.63	Clear	70.53	ND	ND	ND	ND	ND	ND	NA	NA
	07/03/07	73.16	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	01/16/08	73.16	5.01	Clear	68.15	NS	NS	NS	NS	NS	NS	NS	NS
	07/10/08	73.16	8.72	Clear	64.44	ND	ND	ND	ND	ND	ND	ND	NA
	02/10/09	73.16	7.58	Clear	65.58	NS	NS	NS	NS	NS	NS	NS	NS
	07/09/09	73.16	6.32	Clear	66.84	ND	ND	ND	ND	ND	ND	ND	NA
	02/03/10	73.16	4.93	Clear	68.23	NS	NS	NS	NS	NS	NS	NS	NS
	07/07/10	73.16	9.61	Clear	63.55	0.9J	ND	ND	ND	ND	ND	11J(2)	NA
	01/24/11	73.16	11.18	Clear	61.98	NS	NS	NS	NS	NS	NS	NS	NS
	08/18/11	73.16	10.58	Clear	62.58	ND	ND	ND	ND	ND	ND	654J(6)	NA
	01/19/12	73.16	6.50	Clear	66.66	NS	NS	NS	NS	NS	NS	NS	NS
	07/26/12	73.16	12.09	Clear	61.07	ND	ND	ND	ND	ND	ND	28J(3)	NA
	04/22/13	73.16	5.26	Clear	67.90	NS	NS	NS	NS	NS	NS	NS	NS
	08/01/13	73.16	9.52	Clear	63.64	ND	ND	ND	ND	ND	ND	ND	NA
	03/27/14	73.16	4.93	Clear	68.23	NS	NS	NS	NS	NS	NS	NS	NS
	07/23/14	73.16	9.86	Clear	63.30	ND	ND	ND	ND	ND	ND	NA	NA
	10/09/14	73.16	14.26	Clear	58.90	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/15	73.16	10.00	Clear	63.16	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/15	73.16	6.39	Clear	66.77	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/16	73.16	10.30	Clear	62.86	ND	ND	ND	ND	ND	ND	NA	NA
	04/04/16	73.16	4.82	Clear	68.34	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/16	73.16	8.85	Clear	64.31	ND	ND	ND	ND	ND	ND	NA	NA
	10/17/16	73.16	11.33	Clear	61.83	NS	NS	NS	NS	NS	NS	NS	NS
	01/11/17	73.16	4.75	Clear	68.41	ND	ND	ND	ND	ND	ND	NA	NA
	04/17/17	73.16	2.80	Clear	70.36	ND	ND	ND	ND	ND	ND	NA	NA
	07/13/17	73.16	5.15	Clear	68.01	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/17	73.16	11.14	Clear	62.02	NS	NS	NS	NS	NS	NS	NS	NS
	01/31/18	73.16	9.96	Clear	63.20	ND	ND	ND	ND	ND	ND	NA	NA
	04/02/18	73.16	2.39	Clear	70.77	NS	NS	NS	NS	NS	NS	NS	NS
	06/19/18	73.16	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	73.16	9.16	Clear	64.00	NS	NS	NS	NS	NS	NS	NS	NS
	11/15/18	73.16	8.36	Clear	64.80	NS	NS	NS	NS	NS	NS	NS	NS
	02/04/19	73.16	3.00	Clear	70.16	NS	NS	NS	NS	NS	NS	NS	NS
	05/10/19	73.16	2.26	Clear	70.90	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	73.16	4.26	Clear	68.90	NS	NS	NS	NS	NS	NS	NS	NS
	12/03/19	73.16	3.72	Clear	69.44	NS	NS	NS	NS	NS	NS	NS	NS
	01/14/20	73.16	3.21	Clear	69.95	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	02/11/20	73.16	6.68	Clear	66.48	NS	NS	NS	NS	NS	NS	NS	NS
NJDEP Ground Water Quality Standards (GWQS)						**1[(1)]**	**600[(1)]**	**700[(1)]**	**1,000[(2)]**	**70[(2)]**	**100[(2)]**	**100/500[(3)]**	**5[(1)]**

TABLE 1
GROUNDWATER MONITORING & SAMPLING COMPARISON DATA
FORMER SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	04/07/99	73.12	16.10	**Clear**	57.02	ND	ND	ND	ND	ND	ND	ND	NA
	07/15/99	73.12	18.15	Clear	54.97	ND	ND	ND	ND	2	ND	NA	ND
	10/11/99	73.12	17.82	Clear	55.30	ND	ND	ND	ND	0.5J	ND	NA	NA
	02/01/00	73.12	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	04/18/00	73.12	16.53	Clear	56.59	203	5.4	26	17.3	7,700	8,600	NA	NA
	07/28/00	73.12	16.94	Clear	56.18	ND	ND	ND	ND	ND	ND	ND	NA
	11/10/00	73.12	17.42	Clear	55.70	ND	ND	ND	ND	ND	ND	NA	NA
	01/19/01	73.12	5.22	Clear	67.90	360	27.5	192	358	54.5	ND	NA	NA
	04/25/01	73.12	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/14/01	73.12	16.84	Clear	56.28	ND	ND	ND	ND	ND	ND	ND	NA
	10/04/01	73.12	17.77	Clear	55.35	ND	ND	ND	ND	ND	ND	NA	NA
	02/11/02	73.12	12.27	Clear	60.85	243	16.2	118	179	22.9	ND	NA	NA
	05/09/02	73.12	4.65	Clear	68.47	87.7	7.4	56.2	105	7.1	ND	NA	NA
	07/11/02	73.12	17.82	Clear	55.30	ND	ND	ND	ND	ND	ND	ND	NA
	01/06/03	73.12	16.34	Clear	56.78	ND	ND	ND	ND	ND	ND	NA	NA
	07/02/03	73.12	4.80	Clear	68.32	119	ND	3.9	1.7	15.0	ND	168.3J(10)	NA
	07/24/04	73.12	16.61	Clear	56.51	ND	ND	ND	ND	ND	ND	NA	NA
	01/17/05	73.12	15.21	Clear	57.91	ND	ND	ND	ND	ND	ND	NA	NA
	07/08/05	73.12	16.90	Clear	56.22	ND	ND	ND	ND	ND	ND	NA	NA
	01/16/06	73.12	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/06/06	73.12	16.08	Clear	57.04	ND	ND	ND	ND	1.4	ND	NA	NA
	01/08/07	73.12	15.26	Clear	57.86	ND	ND	ND	ND	ND	ND	NA	NA
	04/02/07	73.12	15.71	Clear	57.41	ND	ND	ND	ND	ND	ND	NA	NA
	07/03/07	73.12	17.38	Clear	55.74	ND	ND	ND	ND	ND	ND	ND	NA
	01/16/08	73.12	17.20	Clear	55.92	ND	ND	ND	ND	1J	ND	NA	NA
	07/10/08	73.12	17.06	Clear	56.06	ND	ND	ND	ND	ND	ND	1,500J(1)	NA
	02/10/09	73.12	15.99	Clear	57.13	NS	NS	NS	NS	NS	NS	NS	NS
	07/09/09	73.12	15.86	Clear	57.26	ND	ND	ND	ND	ND	ND	ND	NA
MW-7	02/03/10	73.12	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
						Destroyed during construction							
NJDEP Ground Water Quality Standards (GWQS)						**1**[(1)]	**600**[(1)]	**700**[(1)]	**1,000**[(2)]	**70**[(2)]	**100**[(2)]	**100/500**[(3)]	**5**[(1)]

TABLE 1
GROUNDWATER MONITORING & SAMPLING COMPARISON DATA
FORMER SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	04/07/99	70.69	14.59	Clear	56.10	ND	ND	ND	1J	ND	ND	10J(1)	NA
	07/15/99	70.69	16.07	Clear	54.62	ND	ND	ND	ND	0.4J	ND	NA	ND
	10/11/99	70.69	15.67	Clear	55.02	ND	ND	ND	ND	ND	ND	NA	NA
	02/01/00	70.69	15.25	Clear	55.44	ND	ND	ND	ND	ND	ND	NA	NA
	04/18/00	70.69	14.24	Clear	56.45	ND	ND	ND	ND	ND	ND	NA	NA
	07/28/00	70.69	14.24	Clear	56.45	ND	ND	ND	ND	ND	ND	ND	NA
	11/10/00	70.69	15.32	Clear	55.37	ND	ND	ND	ND	ND	ND	NA	NA
	01/19/01	70.69	14.84	Clear	55.85	ND	ND	ND	ND	ND	ND	NA	NA
	04/25/01	70.69	13.75	Clear	56.94	ND	0.98	ND	3	ND	ND	NA	NA
	07/14/01	70.69	14.72	Clear	55.97	ND	ND	ND	ND	ND	ND	ND	NA
	10/04/01	70.69	15.62	Clear	55.07	ND	ND	ND	ND	ND	ND	NA	NA
	02/11/02	70.69	16.29	Clear	54.40	ND	ND	ND	ND	ND	ND	NA	NA
	05/09/02	70.69	15.36	Clear	55.33	ND	ND	ND	ND	ND	ND	NA	NA
	07/11/02	70.69	15.73	Clear	54.96	ND	ND	ND	ND	.	ND	ND	NA
	01/06/03	70.69	14.23	Clear	56.46	ND	ND	ND	ND	ND	ND	NA	NA
	07/02/03	70.69	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/24/04	70.69	14.52	Clear	56.17	ND	ND	ND	ND	0.65J	ND	NA	NA
	01/17/05	70.69	13.51	Clear	57.18	NS	NS	NS	NS	NS	NS	NS	NS
	07/08/05	70.69	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	01/16/06	70.69	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/06/06	70.69	13.98	Clear	56.71	ND	ND	ND	ND	1.0	ND	NA	NA
	01/08/07	70.69	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	04/02/07	70.69	16.89	Clear	53.80	NS	NS	NS	NS	NS	NS	NS	NS
	07/03/07	70.69	15.27	Clear	55.42	ND	ND	ND	ND	1J	ND	ND	NA
	01/16/08	70.69	15.09	Clear	55.60	NS	NS	NS	NS	NS	NS	NS	NS
	07/10/08	70.69	14.98	Clear	55.71	ND	ND	ND	ND	ND	ND	ND	NA
	02/10/09	70.69	13.92	Clear	56.77	ND	ND	ND	ND	ND	ND	ND	NA
	07/09/09	70.69	13.80	Clear	56.89	ND	ND	ND	ND	ND	ND	ND	NA
	02/03/10	70.69	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/07/10	70.69	14.85	Clear	55.84	ND	ND	ND	ND	ND	ND	ND	NA
	01/24/11	70.69	14.78	Clear	55.91	ND	1J	1J	8	ND	ND	NA	NA
	08/18/11	70.69	14.67	Clear	56.02	ND	ND	ND	ND	ND	ND	ND	NA
	01/09/12	70.69	13.65	Clear	57.04	ND	ND	ND	ND	ND	ND	NA	NA
	07/26/12	70.69	15.05	Clear	55.64	ND	ND	ND	ND	ND	ND	NA	NA
	04/22/13	70.69	13.98	Clear	56.71	ND	ND	ND	ND	ND	ND	NA	NA
	08/01/13	70.69	13.78	Clear	56.91	ND	ND	ND	ND	ND	ND	NA	NA
	03/27/14	70.69	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/23/14	70.69	13.55	Clear	57.14	ND	ND	ND	ND	ND	ND	NA	NA
	10/09/14	70.69	15.11	Clear	55.58	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/15	70.69	13.93	Clear	56.76	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/15	70.69	13.52	Clear	57.17	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/16	70.69	13.90	Clear	56.79	ND	ND	ND	ND	ND	ND	NA	NA
	04/04/16	70.69	14.49	Clear	56.20	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/16	70.69	14.38	Clear	56.31	ND	ND	ND	ND	ND	ND	NA	NA
	10/17/16	70.69	14.91	Clear	55.78	ND	ND	ND	ND	ND	ND	NA	NA
	01/11/17	70.69	14.16	Clear	56.53	ND	ND	ND	ND	ND	ND	NA	NA
	04/17/17	70.69	12.98	Clear	57.71	ND	ND	ND	ND	ND	ND	5J (1)	NA
	07/13/17	70.69	13.10	Clear	57.59	ND	ND	ND	ND	ND	ND	0	NA
	10/10/17	70.69	14.35	Clear	56.34	NS	NS	NS	NS	NS	NS	NS	NS
	01/31/18	70.69	14.11	Clear	56.58	ND	ND	ND	ND	ND	ND	11J (1)	NA
	04/02/18	70.69	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	06/19/18	70.69	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	70.69	13.37	Clear	57.32	ND	ND	ND	ND	ND	ND	0	NA
	11/15/18	70.69	12.55	Clear	58.14	ND	ND	ND	ND	0.1J	ND	0	NA
	02/04/19	70.69	12.41	Clear	58.28	ND	ND	ND	ND	ND	ND	0	NS
	05/10/19	70.69	12.18	Clear	58.51	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	70.69	12.59	Clear	58.10	ND	ND	ND	ND	ND	ND	0	NA
	12/03/19	70.69	13.44	Clear	57.25	NS	NS	NS	NS	NS	NS	NS	NS
	01/14/20	70.69	12.91	Clear	57.78	NS	NS	NS	NS	NS	NS	NS	NS
MW-8	02/11/20	70.69	13.03	Clear	57.66	ND	ND	ND	ND	ND	ND	0	NA
NJDEP Ground Water Quality Standards (GWQS)						**1[1]**	**600[1]**	**700[1]**	**1,000[1]**	**70[1]**	**100[2]**	**100/500[3]**	**5[1]**

TABLE 1
GROUNDWATER MONITORING & SAMPLING COMPARISON DATA
FORMER SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	02/10/09	72.93	15.92	Clear	57.01	ND	ND	ND	ND	5J	ND	ND	NA
	07/09/09	72.93	14.81	Clear	58.12	110	1J	79	84	25	72J	2,870J(10)	NA
	02/03/10	72.93	14.37	Clear	58.56	110	11	280	450	22	32J	NA	NA
	07/07/10	72.93	16.80	Clear	56.13	79	1J	210	100	21	38J	9,798J(10)	NA
	01/24/11	72.93	17.21	Clear	55.72	7	ND	17	4J	12	33J	NA	NA
	08/18/11	72.93	17.04	Clear	55.89	52	ND	100	3J	18	ND	2,595J(10)	NA
	01/09/12	72.93	16.20	Clear	56.73	53	ND	140	57	17	ND	3,510J(10)	NA
	07/26/12	72.93	17.31	Clear	55.62	120	5	6	14	3J	2,500	910J(15)	NA
	04/22/13	72.93	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	08/01/13	72.93	16.26	Clear	56.67	73	2J	220	160	15	ND	6,600J(15)	NA
	03/27/14	72.93	16.78	Clear	56.15	50	ND	160	150	15J	ND	8,000J(15)	NA
	07/23/14	72.93	16.04	Clear	56.89	25	ND	70	22	10	ND	3,300J(15)	NA
	10/09/14	72.93	17.47	Clear	55.46	8	ND	21	3J	6	ND	1,600J(15)	NA
	01/12/15	72.93	16.51	Clear	56.42	9	ND	8	4J	10	ND	1,300J(15)	NA
	06/30/15	72.93	16.04	Clear	56.89	14	ND	21	1J	5J	ND	1,200J(15)	NA
	01/12/16	72.93	16.40	Clear	56.53	9	ND	11	2J	7	ND	3,700J(15)	NA
	04/04/16	72.93	16.07	Clear	56.86	23	3	65	51	8	12J	3,000J(15)	NA
	06/30/16	72.93	16.91	Clear	56.02	13	ND	26	2	9	15J	2,900J(15)	NA
	10/17/16	72.93	17.39	Clear	55.54	2	ND	2	ND	5	ND	1,500J(15)	NA
	01/11/17	72.93	16.62	Clear	56.31	0.8J	ND	ND	ND	3.0	12J	1,900J (15)	NA
	04/17/17	72.93	15.41	Clear	57.52	22	0.7J	57	39	8	ND	4,600J (15)	NA
	07/13/17	72.93	15.70	Clear	57.23	24	0.8J	99	22	7	ND	5,100J (15)	NA
	10/10/17	72.93	16.58	Clear	56.35	5	ND	16	ND	5	ND	1,800J (15)	NA
	01/31/18	72.93	16.73	Clear	56.20	ND	ND	ND	ND	ND	ND	0	NA
	04/02/18	72.93	15.60	Clear	57.33	23	0.9J	80	31	7	14J	5,400J (15)	NA
	06/19/18	72.93	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	72.93	16.00	Clear	56.93	4J	ND	ND	ND	ND	ND	0	NA
	11/15/18	72.93	15.16	Clear	57.77	NS	NS	NS	NS	NS	NS	NS	NS
	02/04/19	72.93	15.13	Clear	57.80	ND	ND	ND	ND	1.4	6.4J	0	NS
	05/10/19	72.93	14.73	Clear	58.20	11	0.65J	41.4	7.55	2.99	4.11J	2,100J (15)	NA
	08/13/19	72.93	15.22	Clear	57.71	6.8	0.57	41.0	15.7	3.5	8.7J	869J	NA
	12/03/19	72.93	15.95	Clear	56.98	**1.1**	ND	1.5	ND	3.6	11.3 J	**588 J**	NA
	01/14/20	72.93	15.49	Clear	57.44	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	02/11/20	72.93	15.74	Clear	57.19	ND	ND	ND	ND	1.8	ND	0	NA
	07/07/10	71.47	15.74	Clear	55.73	ND	ND	ND	ND	ND	ND	0	NA
	01/24/11	71.47	15.70	Clear	55.77	ND	7	6	42	ND	ND	NA	NA
	08/18/11	71.47	15.55	Clear	55.92	ND	ND	ND	ND	ND	ND	ND	NA
	01/09/12	71.47	14.55	Clear	56.92	ND	ND	ND	1J	ND	ND	NA	NA
	07/26/12	71.47	15.91	Clear	55.56	ND	ND	ND	ND	ND	ND	NA	NA
	04/22/13	71.47	14.93	Clear	56.54	ND	ND	ND	ND	ND	ND	NA	NA
	08/01/13	71.47	14.72	Clear	56.75	ND	ND	ND	ND	ND	ND	NA	NA
	03/27/14	71.47	15.18	Clear	56.29	ND	ND	ND	ND	ND	ND	NA	NA
	07/23/14	71.47	13.67	Clear	57.80	ND	ND	ND	ND	ND	ND	NA	NA
	10/09/14	71.47	15.98	Clear	55.49	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/15	71.47	14.35	Clear	57.12	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/15	71.47	14.45	Clear	57.02	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/16	71.47	14.80	Clear	56.67	ND	ND	ND	ND	ND	ND	NA	NA
	04/04/16	71.47	14.49	Clear	56.98	ND	ND	ND	0.6J	ND	ND	NA	NA
	06/30/16	71.47	14.88	Clear	56.59	ND	ND	ND	ND	ND	ND	NA	NA
	10/17/16	71.47	15.84	Clear	55.63	ND	ND	ND	ND	ND	ND	NA	NA
	01/11/17	71.47	15.07	Clear	56.40	ND	ND	ND	ND	ND	ND	NA	NA
	04/17/17	71.47	13.81	Clear	57.66	ND	ND	ND	ND	ND	ND	4,100J (1)	NA
	07/13/17	71.47	14.00	Clear	57.47	ND	ND	ND	ND	ND	ND	0	NA
	10/10/17	71.47	15.25	Clear	56.22	ND	ND	ND	ND	ND	ND	0	NA
	01/31/18	71.47	15.01	Clear	56.46	ND	ND	ND	ND	ND	ND	11J (1)	NA
	04/02/18	71.47	13.95	Clear	57.52	ND	ND	ND	ND	ND	ND	0	NA
	06/19/18	71.47	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	71.47	14.24	Clear	57.23	NS	NS	NS	NS	NS	NS	NS	NS
	11/15/18	71.47	13.48	Clear	57.99	NS	NS	NS	NS	NS	NS	NS	NS
	02/04/19	71.47	13.30	Clear	58.17	NS	NS	NS	NS	NS	NS	NS	NS
	05/10/19	71.47	12.52	Clear	58.95	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	71.47	13.62	Clear	57.85	NS	NS	NS	NS	NS	NS	NS	NS
	12/03/19	71.47	14.16	Clear	57.31	ND	ND	ND	ND	ND	ND	0	NA
	01/14/20	71.47	13.84	Clear	57.63	NS	NS	NS	NS	NS	NS	NS	NS
MW10	02/11/20	71.47	13.96	Clear	57.51	NS	NS	NS	NS	NS	NS	NS	NS
	08/18/11	72.08	16.40	Clear	55.68	ND	ND	ND	ND	ND	ND	7J(1)	NA
	01/09/12	72.08	15.55	Clear	56.53	ND	ND	ND	ND	ND	ND	NA	NA
	07/26/12	72.08	16.79	Clear	55.29	ND	ND	ND	ND	ND	ND	NA	NA
	04/22/13	72.08	15.92	Clear	56.16	ND	ND	ND	ND	ND	ND	NA	NA
	08/01/13	72.08	15.68	Clear	56.40	ND	ND	ND	ND	ND	ND	NA	NA
	03/27/14	72.08	16.07	Clear	56.01	ND	ND	ND	ND	ND	ND	NA	NA
	07/23/14	72.08	15.41	Clear	56.67	ND	ND	ND	ND	ND	ND	NA	NA
	10/09/14	72.08	16.83	Clear	55.25	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/15	72.08	15.79	Clear	56.29	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/15	72.08	15.82	Clear	56.26	ND	ND	ND	ND	ND	ND	NA	NA
	01/12/16	72.08	15.71	Clear	56.37	ND	ND	ND	ND	ND	ND	NA	NA
	04/04/16	72.08	15.47	Clear	56.61	ND	ND	ND	ND	ND	ND	NA	NA
	06/30/16	72.08	16.18	Clear	55.90	ND	ND	ND	ND	ND	ND	NA	NA
	10/17/16	72.08	16.73	Clear	55.35	ND	ND	ND	ND	ND	ND	NA	NA
	01/11/17	72.08	15.99	Clear	56.09	ND	ND	ND	ND	ND	ND	0	NA
	04/17/17	72.08	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/13/17	72.08	15.02	Clear	57.06	ND	ND	ND	ND	ND	ND	0	NA

TABLE 1
GROUNDWATER MONITORING & SAMPLING COMPARISON DATA
FORMER SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

(All results reported in parts per billion)

Well	Date	Casing Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Adj. Water Elevation (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	VOC TICs	Total Lead
	10/10/17	72.08	16.15	Clear	55.93	NS	NS	NS	NS	NS	NS	NS	NS
	01/31/18	72.08	15.94	Clear	56.14	ND	ND	ND	ND	ND	ND	12J (1)	NA
	04/02/18	72.08	15.06	Clear	57.02	ND	ND	ND	ND	ND	ND	0	NA
	06/19/18	72.08	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	07/02/18	72.08	15.09	Clear	56.99	NS	NS	NS	NS	NS	NS	NS	NS
	11/15/18	72.08	14.34	Clear	57.74	NS	NS	NS	NS	NS	NS	NS	NS
	02/04/19	72.08	14.68	Clear	57.40	ND	ND	ND	ND	ND	ND	0	NS
	05/10/19	72.08	14.43	Clear	57.65	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	72.08	14.67	Clear	57.41	ND	ND	ND	ND	ND	ND	0	NS
	12/03/19	72.08	15.37	Clear	56.71	NS	NS	NS	NS	NS	NS	NS	NS
	01/14/20	72.08	14.99	Clear	57.09	NS	NS	NS	NS	NS	NS	NS	NS
MW11	02/11/20	72.08	15.31	Clear	56.77	NS	NS	NS	NS	NS	NS	NS	NS
	11/15/18	WNS	15.18	Clear	WNS	0.2J	ND	0.2J	0.6J	45	ND	6 J (1)	NA
	02/04/19	WNS	15.03	Clear	WNS	NS	NS	NS	NS	NS	NS	NS	NS
	05/10/19	WNS	14.56	Clear	WNS	NS	NS	NS	NS	NS	NS	NS	NS
	08/13/19	WNS	14.99	Clear	WNS	NS	NS	NS	NS	NS	NS	NS	NS
	12/03/19	WNS	15.79	Clear	WNS	NS	NS	NS	NS	NS	NS	NS	NS
	01/14/20	WNS	15.31	Clear	WNS	NS	NS	NS	NS	NS	NS	NS	NS
MW12	02/11/20	WNS	15.67	Clear	WNS	NS	NS	NS	NS	NS	NS	NS	NS
MW13	02/11/20	WNS	9.95	Clear	WNS	ND	ND	ND	ND	ND	ND	0	NA
TW1	01/22/20	WNS	15.49	Clear	WNS	0.43ND	NA	NA	NA	NA	NA	NA	NA
TW2	01/23/20	WNS	13.09	Clear	WNS	0.43ND	0.53ND	0.60ND	0.59ND	0.51ND	5.8ND	60 J	NA
NJDEP Ground Water Quality Standards (GWQS)						**1[(1)]**	**600[(1)]**	**700[(1)]**	**1,000[(1)]**	**70[(1)]**	**100[(2)]**	**100/500[(3)]**	**5[(1)]**

Note: 1,1-dichloroethane and tetrachloroethene were detected in offsite downgradient well MW-7 during the 07/2/03 sampling event at concentrations of 1.0 and 2.4 ppb, respectively.

Notes:

MTBE	= Methyl *tert*-butyl ether	NM	= Not Measured or Monitored
TBA	= *Tert*-butyl alcohol	NS	= Not Sampled
TICs	= Tentatively Identified Compounds	NA	= Not Analyzed or Not Available
J	= Below given Method Detection Limit, Estimated Concentration	ND	= Not Detected
ND (#)	= Not Detected at Method Detection Limit Provided	D	= Secondary Dilution
(#)	= Number of TICs identified in the library search	SPP	= Separate-Phase Product
(1)	= Ground Water Quality Standard pursuant to N.J.A.C. 7:9-6	a	= Result is from Second Run
(2)	= NJDEP Interim Specific Ground Water Criteria	<	= Less Than
(3)	= 100 ppb for individual and 500 ppb for total synthetic organic chemicals, pursuant to N.J.A.C. 7:9-6		
*	= All wells were surveyed on 10/17/98 to comply with NJ Vertical Datum (NJVD) Standards		

TABLE 2
WELL CONSTRUCTION SUMMARY
SUNOCO SERVICE STATION #0006-9898
LINCOLN AVENUE WEST AND SOUTH AVENUE WEST
CRANFORD, UNION COUNTY, NEW JERSEY

Well Designation	Installation Date	Total Well Depth	Depth to Screen	Top of Casing	Northing	Easting	Lattitude	Longitude	Well Permit #
MW1	7/1/1992	30	5	73.68	663005	544601	40°39'12"	74°18'42"	26-29945
MW1R	7/9/2014	20	5	73.32	663002.4	544593.3	41°49'10.88"	74°10'11.06"	E201408651
MW2	7/1/1992	30	5	73.20	662991	544529	40°39'12"	74°18'42"	26-29946
MW3	7/2/1992	30	5	73.09	662928	544616	40°39'12"	74°18'41"	26-29947
MW4	4/16/1993	19	4	72.99	662954	544579	40°39'12"	74°18'42"	26-33062
MW5	4/16/1993	23	5	73.33	663020	544520	40°39'13"	74°18'43"	26-33063
MW6	4/16/1993	25	5	73.16	663036	544602	40°39'13"	74°18'41"	26-33064
MW7	3/10/1999	24.5	4.5	73.12	662944	544453	40°39'11"	74°18'43"	26-53237
MW8	3/10/1999	25	15	70.69	662836	544564	40°39'10"	74°18'41"	26-53238
MW9	1/26/2009	25	10	72.93	662902	544640	40°39'11.4"	74°18'38.5"	P200804533
MW10	4/9/2010	23.5	3.5	71.47	662820	544621			E201003034
MW11	7/29/2011	20	5	72.08	662829	544689	40°39'10.3"	74°18'37.2"	E201112346
MW12	10/26/2018	43	2	73.22	662927.8	544623.2	41°49'10.15"	74°10'10.67"	E201811174
MW13	1/28/2020	19	4	NS	NS	NS	NS	NS	E202000907

NS=Not Surveyed

Table 3
Historical Soil Sampling Analytical Data
Former Sunoco Service Station #0006-9898
South Avenue West Lincoln Avenue West
Cranford, Union County, New Jersey

Sample Location	Date	Depth (feet)	PID (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	VO TICS (mg/kg)	Methylene Chloride (mg/kg)	TPH (mg/kg)	Lead (mg/kg)
S4R	03/28/13	6.0'-6.5'	--	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
PL2R	03/28/13	2.5'-3.0'	--	0.0043	0.0021	0.0895	0.0022	NA	NA	NA	NA	NA	NA
SB-A	10/27/05	5.5'-6.0'	--	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
SB-A	10/27/05	7.5'-8.0'	--	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
SB-B	10/27/05	5.5'-6.0'	--	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
SB-B	10/27/05	8.0'-8.5'	--	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
SB-C	10/27/05	5.5'-6.0'	--	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
D1	08/09/05	2.0'-2.5'	--	ND	ND	ND	0.472	5.27	NA	11.79J(10)	NA	NA	NA
D2	08/09/05	2.5'-3.0'	--	ND	0.0282J	ND	0.163	0.280	NA	0.63J (1)	NA	NA	NA
D3	08/09/05	2.5'-3.0'	--	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
D4	08/09/05	2.5'-3.0'	--	ND	ND	ND	0.0368J	0.0955	NA	ND	NA	NA	NA
S1	08/09/05	6.0'-6.5'	--	0.329	0.418	0.0344J	0.0657J	25.5a	NA	ND	NA	NA	NA
S2	08/09/05	6.0'-6.5'	--	ND	0.0236J	4.36	5.00	0.339	NA	46.5J (10)	NA	NA	NA
S3	08/09/05	6.0'-6.5'	--	0.0422J	ND	17.5a	25.3	ND	NA	189J (10)	NA	NA	NA
**S4	08/09/05	6.0'-6.5'	--	**3.35**	15.0a	2.25	62.7a	17.9a	NA	160J (10)	NA	NA	NA
S5*	08/09/05	6.0'-6.5'	--	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
B1	02/27/95	10.0'-12.0'	0.5	ND	ND	ND	ND	NA	NA	0.01J	NA	NA	3.5
B2	02/27/95	6.0'-8.0'	0.5	ND	ND	ND	ND	NA	NA	0.011J	NA	NA	4.4
B3	02/27/95	8.0'-10.0'	27	ND	ND	0.011	0.013	NA	NA	0.216J	NA	NA	4.3
B4	02/27/95	6.0'-8.0'	7.5	ND	ND	ND	ND	NA	NA	0.009J	NA	NA	4.3
B5	02/27/95	8.0'-10.0'	2.5	ND	ND	ND	ND	NA	NA	0.006J	NA	NA	7.1
B6	02/27/95	8.0'-10.0'	178	ND	ND	0.010	0.015	NA	NA	0.306J	NA	NA	5.1
B7	02/27/95	8.0'-10.0'	0.0	ND	ND	ND	ND	NA	NA	0.010J	NA	NA	4.4
PL-1	04/21/95	2.5'	713	ND	ND	0.009	0.76	0.01	ND	2.98	ND	NA	13
**PL-2	04/21/95	2.5'	931	ND	9	11	**73**	ND	ND	303	ND	NA	17
PL-3	04/21/95	2.5'	1,162	ND	0.920	1.40	9.30	0.68	ND	158	0.36	NA	48
PL-4	04/21/95	3.0'	278	ND	ND	0.07	0.17	0.044	ND	29.50	ND	NA	32
PL-5	04/21/95	2.0'	791	ND	0.047	0.85	6.20	0.38	ND	20.30	ND	NA	87
PL-6	04/21/95	2.5'	692	ND	0.360	7.5	53	ND	ND	236	ND	NA	37
PES-1	04/20/95	8.0'	--	NA	NA	NA	NA	NA	NA	NA	NA	37	NA
PES-2	04/20/95	8.0'	--	NA	NA	NA	NA	NA	NA	NA	NA	110	NA
PES-3	04/20/95	8.5'	--	NA	NA	NA	NA	NA	NA	NA	NA	160	NA
PES-4	04/20/95	8.5'	--	NA	NA	NA	NA	NA	NA	NA	NA	2,800	NA
NJDEP Impact to Groundwater SCC				**1**	**500**	**100**	**67**	**3.1**	**--**	**--**	**1**	**--**	**--**
NJDEP Residential Direct Contact SCC				**3**	**1,000**	**1,000**	**410**	**--**	**--**	**--**	**49**	**5,100**	**400**
NJDEP Non Residential Direct Contact SCC				**13**	**1,000**	**1,000**	**1,000**	**--**	**--**	**--**	**210**	**51,000**	**600**

Table 3
Historical Soil Sampling Analytical Data
Former Sunoco Service Station #0006-9898
South Avenue West Lincoln Avenue West
Cranford, Union County, New Jersey

Sample Location	Date	Depth (feet)	PID (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	VO TICS (mg/kg)	Methylene Chloride (mg/kg)	TPH (mg/kg)	Lead (mg/kg)
SB1	05/04/94	9.0'-11.0'	1.0	ND	ND	ND	ND	NA	NA	2.384C(2)	NA	NA	NA
SB2	05/04/94	9.0'-11.0'	5.0	ND	ND	ND	ND	NA	NA	2.07C	NA	NA	NA
SB3	05/04/94	9.0'-11.0'	15.0	ND	ND	ND	ND	NA	NA	2.04C	NA	NA	NA
SB4	05/04/94	9.0'-11.0'	6.0	ND	ND	ND	ND	NA	NA	2.21C	NA	NA	NA
SB5	05/04/94	9.0'-11.0'	1.0	ND	ND	ND	ND	NA	NA	2.016C	NA	NA	NA
SB6	05/04/94	11.0'-12.0'	27.0	ND	ND	ND	ND	NA	NA	1.910C	NA	NA	NA
SB7	05/04/94	11.0'-12.0'	20	ND	ND	ND	ND	NA	NA	1.89C	NA	NA	NA
SB8	05/04/94	8.0'-9.0'	62	ND	ND	ND	ND	NA	NA	1.065(10)	NA	NA	NA
SB9	05/04/94	8.0'-9.0'	250	ND	1.3	14.0	51E	NA	NA	100(10)	NA	NA	NA
SB10	05/04/94	8.0'-9.0'	300	ND	ND	1.3	3.5	NA	NA	54.77(10)	NA	NA	NA
SB11	05/04/94	8.0'-10.0'	50	ND	ND	0.320J	ND	NA	NA	59.29(10)	NA	NA	NA
SB12	05/04/94	6.0'-8.0'	22.5	ND	ND	ND	ND	NA	NA	0.482C	NA	NA	NA
SB13	05/04/94	6.0'-8.0'	30	ND	ND	ND	ND	NA	NA	0.632C	NA	NA	NA
SB14	05/04/94	6.0'-8.0'	300	ND	ND	4.6	12.3	NA	NA	16.49(10)	NA	NA	NA
SB15	05/04/94	6.0'-8.0'	210	ND	ND	0.043	0.154J	NA	NA	1.298(10)	NA	NA	NA
MW4	04/16/93	--	--	ND	ND	ND	ND	NA	NA	0.161(3)	NA	NA	NA
MW5	04/16/93	--	--	ND	ND	0.327	1.34	NA	NA	20.54(10)	0.315J	NA	NA
MW6	04/16/93	--	--	ND	ND	ND	ND	NA	NA	ND	NA	NA	NA
NJDEP Impact to Groundwater SCC				**1**	**500**	**100**	**67**	**--**	**--**	**--**	**1**	**--**	**--**
NJDEP Residential Direct Contact SCC				**3**	**1,000**	**1,000**	**410**	**--**	**--**	**--**	**49**	**5,100**	**400**
NJDEP Non Residential Direct Contact SCC				**13**	**1,000**	**1,000**	**1,000**	**--**	**--**	**--**	**210**	**51,000**	**600**

Notes:

mg/kg	= milligrams per kilogram
ND	= Not Detected
MTBE	= Methyl Tertiary Butyl Ether
TBA	= Tertiary Butyl Alcohol
J	= Estimated Concentration
VO TICs (#)	= Volatile Organic Tentatively Identified Compounds (number of TICs identified)
E	= Exceeds Calibration Range
B	= One or more analytes were also detected in the blank
C	= Secondary Dilution
PID	= Photoionization Detector Reading
(ppm)	= Parts Per Million
SRS	= NJDEP Soil Remediation Standard
--	= SRP Not Applicable

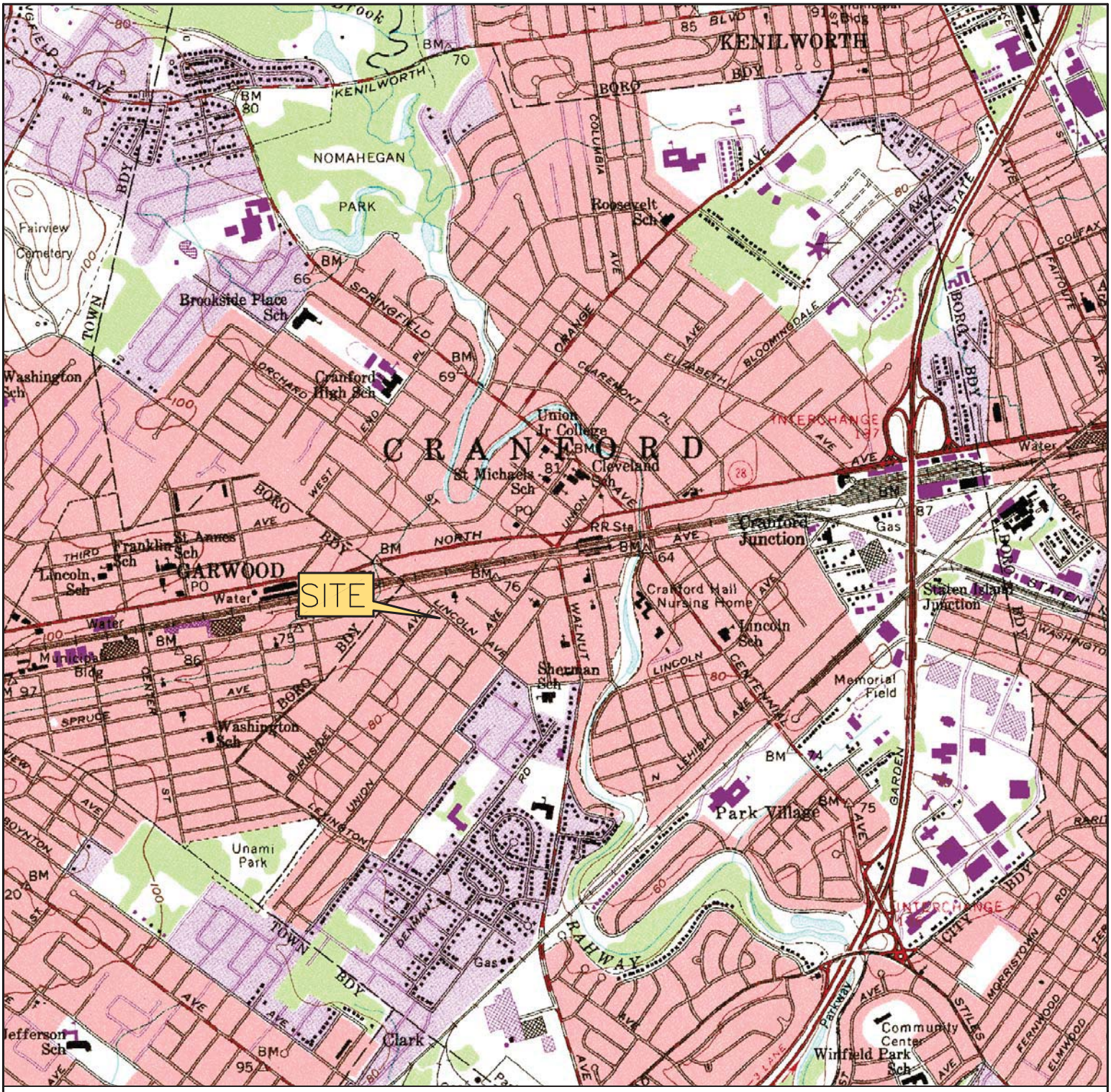
* Analyte trichlorethane was detected at a concentration of 0.109J

** Sample was previously above NJDEP SCC Standards, Post-Remedial Samples S4R and PL2R collected 3/28/13

TABLE 4
SUNOCO SERVICE STATION #0006-9898
PBR MONITORING SUMMARY TABLE

Wells	Sample Type	Onsite Parameters	Laboratory Analytical Parameters	Sample Schedule
MW2 MW5 MW8 MW13	Pre-Injection	ORP pH Temperature DO Conductivity	BTEX and VO TICs Sulfate Nitrate Ammonia Sodium	Pre-Injection
MW2 MW5 MW8 MW13	Post-Injection	ORP pH Temperature DO Conductivity	BTEX and VO TICs Sulfate Nitrate Ammonia Sodium	60, 180 and 365 Days Post-Injection

FIGURES



QUADRANGLE LOCATION:
ROSELLE, NEW JERSEY

SOURCE: USGS 7.5 MINUTE SERIES
REVISED/INSPECTED: 1981
CONTOUR INTERVAL: 20 FEET

N
W E
S

0 2,000 6,000 FEET
1,000 4,000

FIGURE #	SITE LOCATION MAP	DRAWN BY: CM	EnviroTrac ENVIRONMENTAL SERVICES
1	FORMER SUNOCO SERVICE STATION #006-9898 SOUTH AVE. WEST & LINCOLN AVE. WEST CRANDFORD, NEW JERSEY	REVISION DATE: 7/9/2014	6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016 PHONE: (609)387-5553 FAX: (609)387-5533

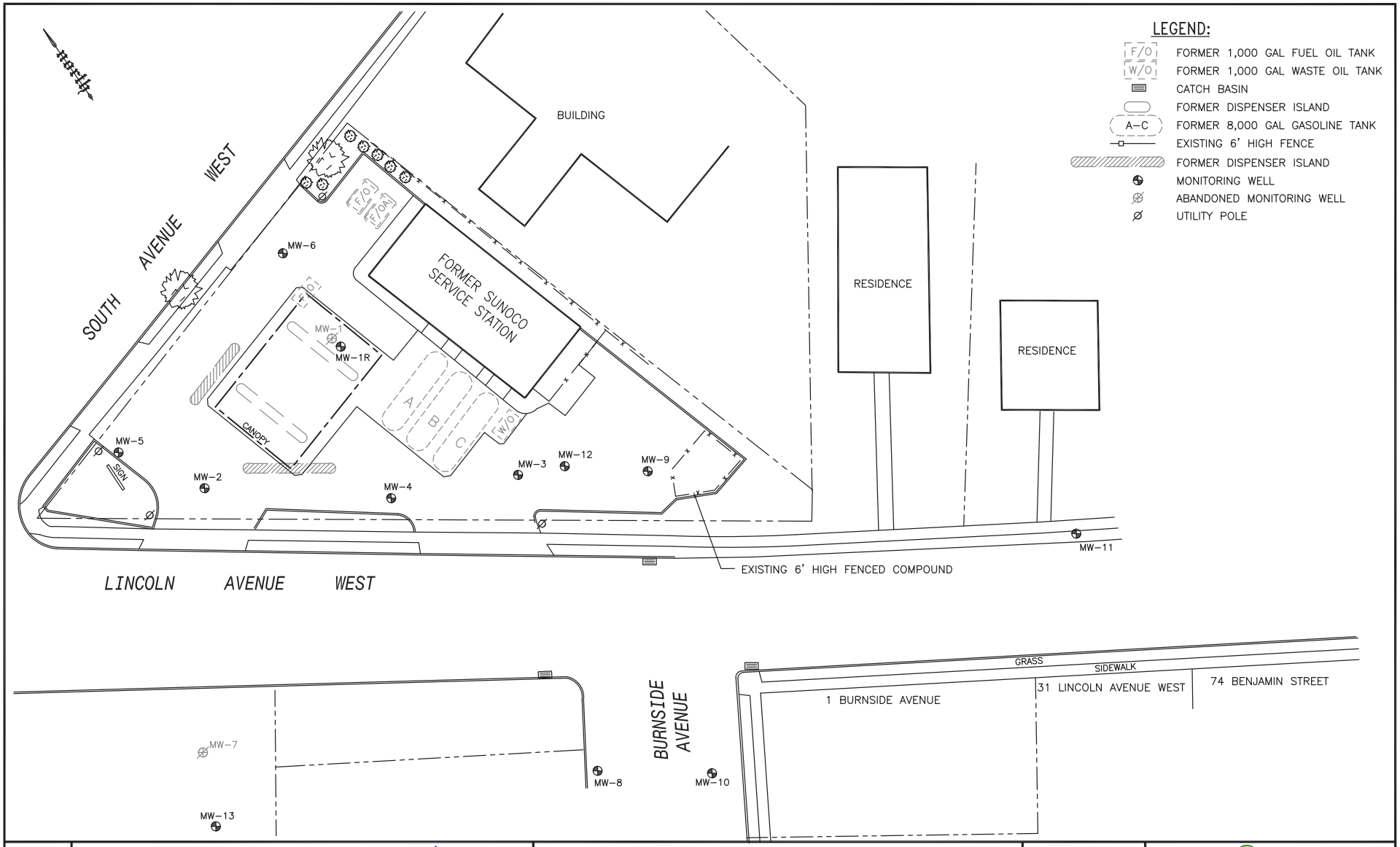


FIGURE #				
2	FORMER SUNOCO SERVICE STATION #0006–9898 SOUTH AVE. WEST & LINCOLN AVE. WEST CRANFORD, NEW JERSEY	SITE MAP	0 30 SCALE IN FEET	EnviroTrac ENVIRONMENTAL SERVICES 6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016 PHONE: (609)387–5553 FAX: (609)387–5533
		DRAWN BY: B.S.	REVISION DATE: 4/15/2020	

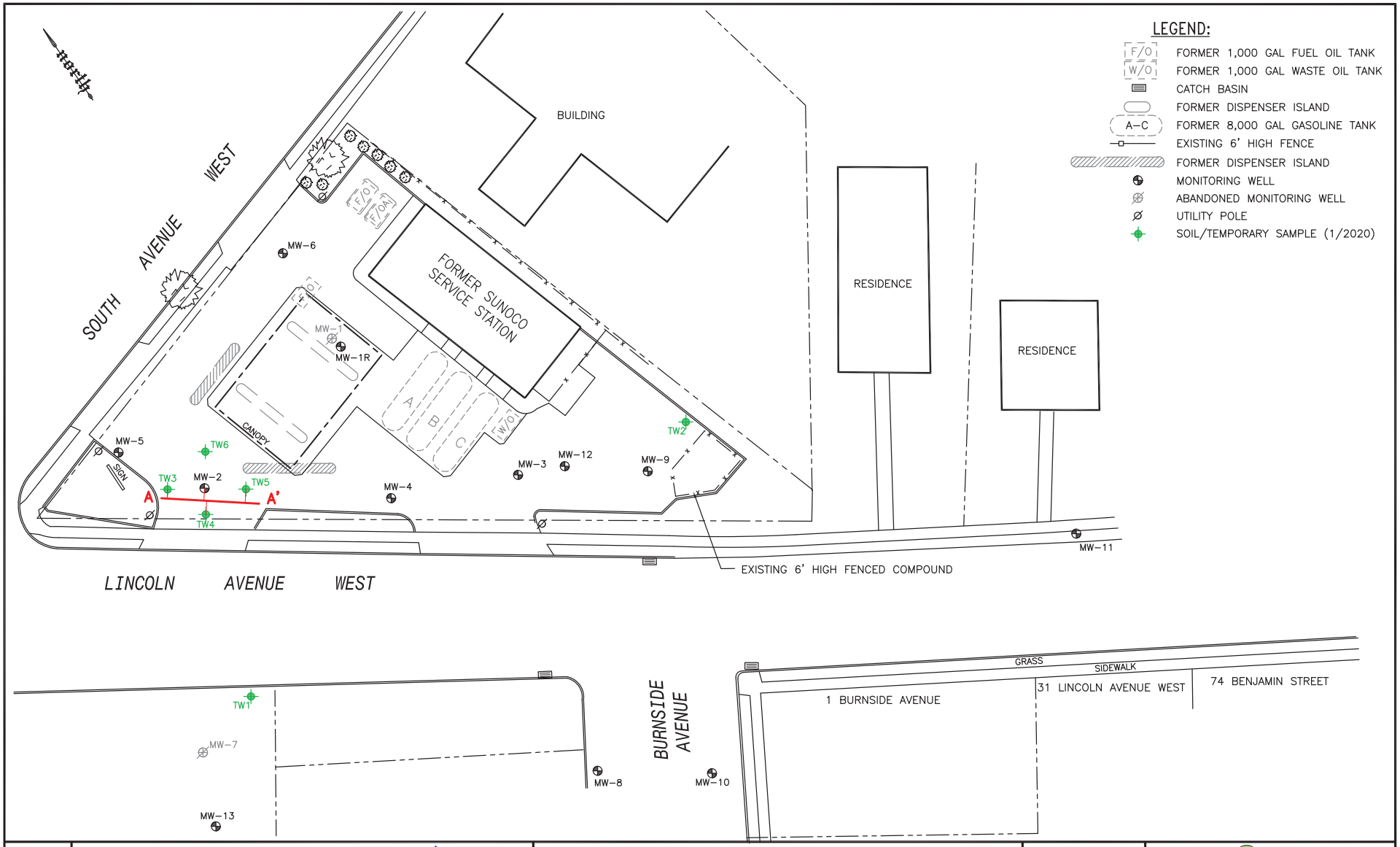
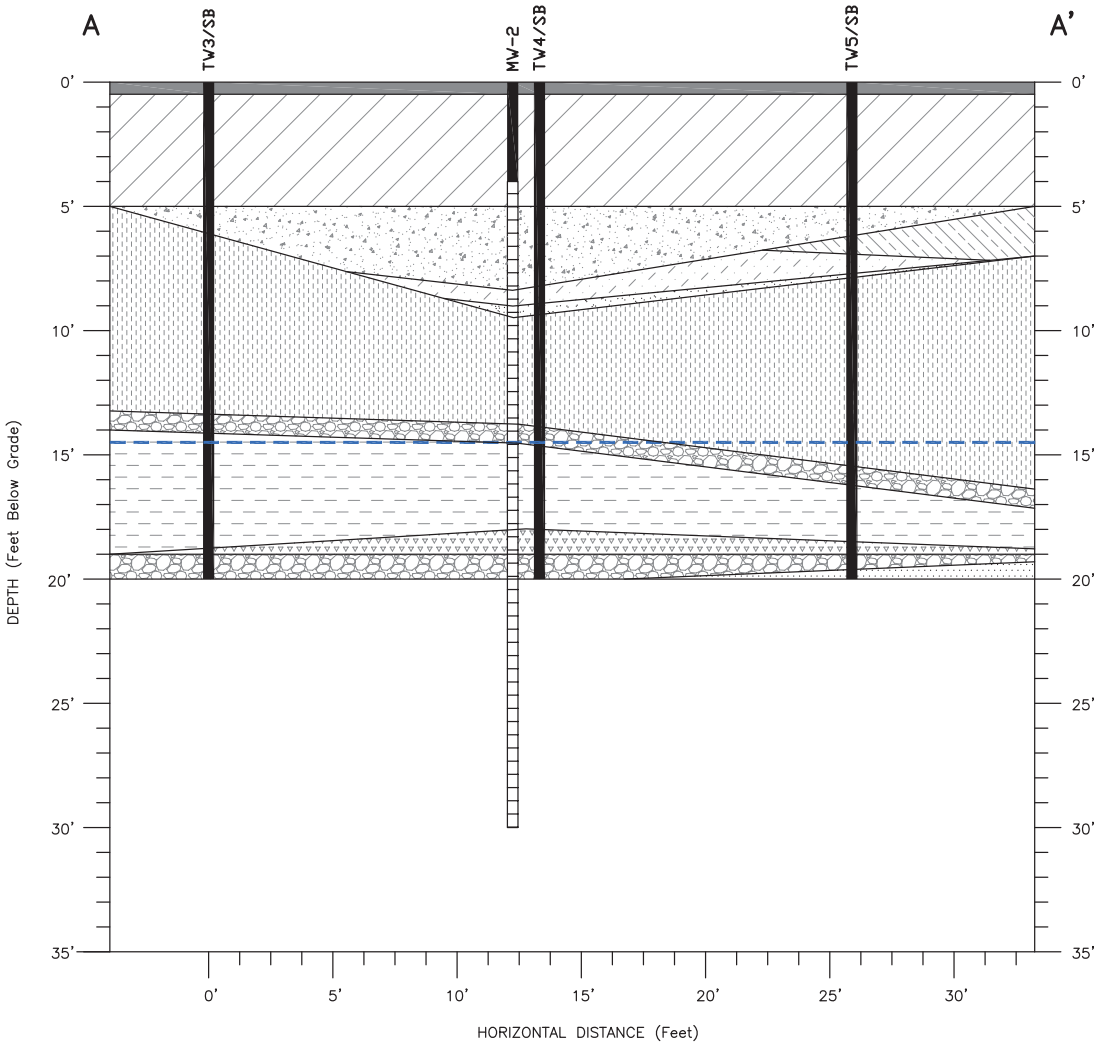


FIGURE #				
3	FORMER SUNOCO SERVICE STATION #0006–9898 SOUTH AVE. WEST & LINCOLN AVE. WEST CRANFORD, NEW JERSEY	CROSS–SECTION LOCATION MAP A–A'	0 30 SCALE IN FEET	EnviroTrac ENVIRONMENTAL SERVICES 6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016 PHONE: (609)387–5553 FAX: (609)387–5533
		DRAWN BY: B.S.	REVISION DATE: 4/15/2020	



LEGEND:

= WELL CASING

= SCREENED INTERVAL

= SOIL BORING/TEMPORARY WELL

= AVERAGE GROUNDWATER TABLE

- ASPHALT
- NO RECOVERY (AIR KNIFE PRE-CLEAR)
- BROWN/GRAY MOTTLED MIXED MEDIUM TO FINE SAND & SILTY CLAY, TRACE GRAVEL
- SAND & WEATHERED ROCK
- DENSE CLAY
- SANDY CLAY
- RED/BROWN FINE SAND AND SILTY CLAY, LITTLE MEDIUM TO FINE GRAVEL
- GRAVEL & SAND & WEATHERED ROCK
- RED/BROWN FINE SAND AND SILTY CLAY LITTLE COARSE MEDIUM TO FINE GRAVEL
- DRY DENSE SILTY SAND AND CLAY
- SAND

FIGURE # 4

FORMER SUNOCO SERVICE STATION
#0006-9898
SOUTH AVE. WEST & LINCOLN AVE. WEST
CRANFORD, NEW JERSEY

GEOLOGIC CROSS-SECTION A-A'

DRAWN BY: B.S.

REVISION DATE: 4/15/2020

VERTICAL SCALE: 1 INCH = 5 FT.
HORIZONTAL SCALE: 1 INCH = 5 FT.

EnviroTrac
ENVIRONMENTAL SERVICES
6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016
PHONE: (609)387-5553 FAX: (609)387-5533

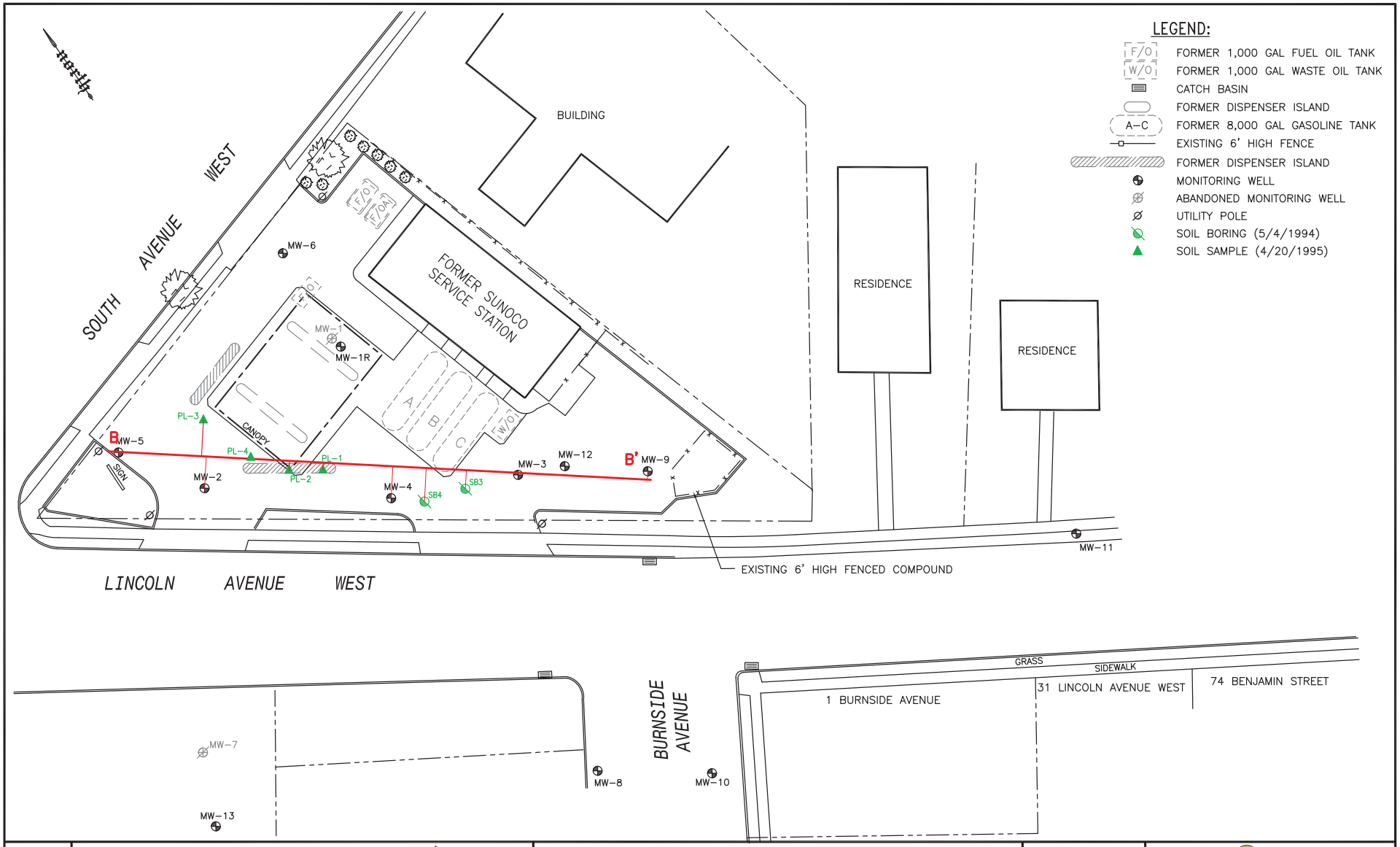
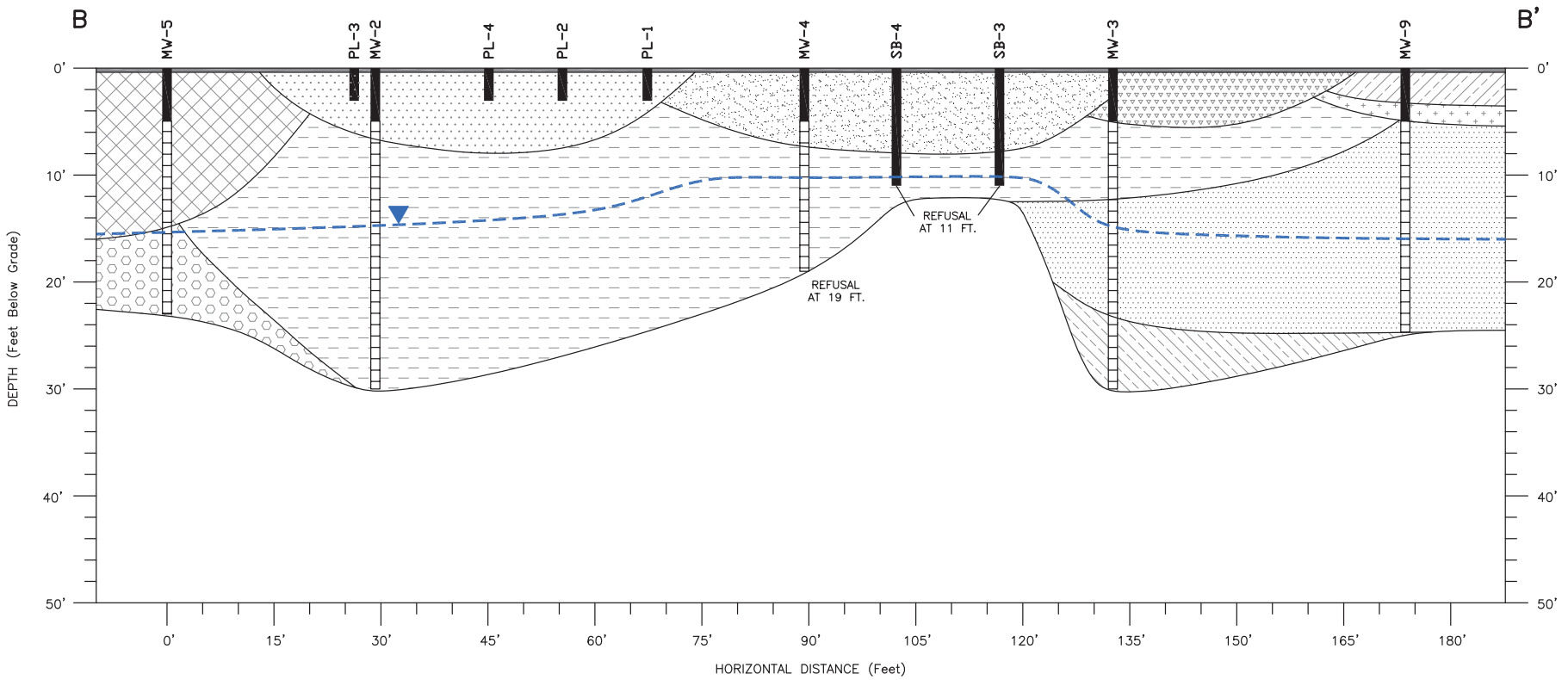


FIGURE #				
5	FORMER SUNOCO SERVICE STATION #0006–9898 SOUTH AVE. WEST & LINCOLN AVE. WEST CRANFORD, NEW JERSEY	CROSS–SECTION LOCATION MAP B–B'	0 30 SCALE IN FEET	EnviroTrac ENVIRONMENTAL SERVICES 6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016 PHONE: (609)387–5553 FAX: (609)387–5533
		DRAWN BY: B.S.	REVISION DATE: 4/15/2020	



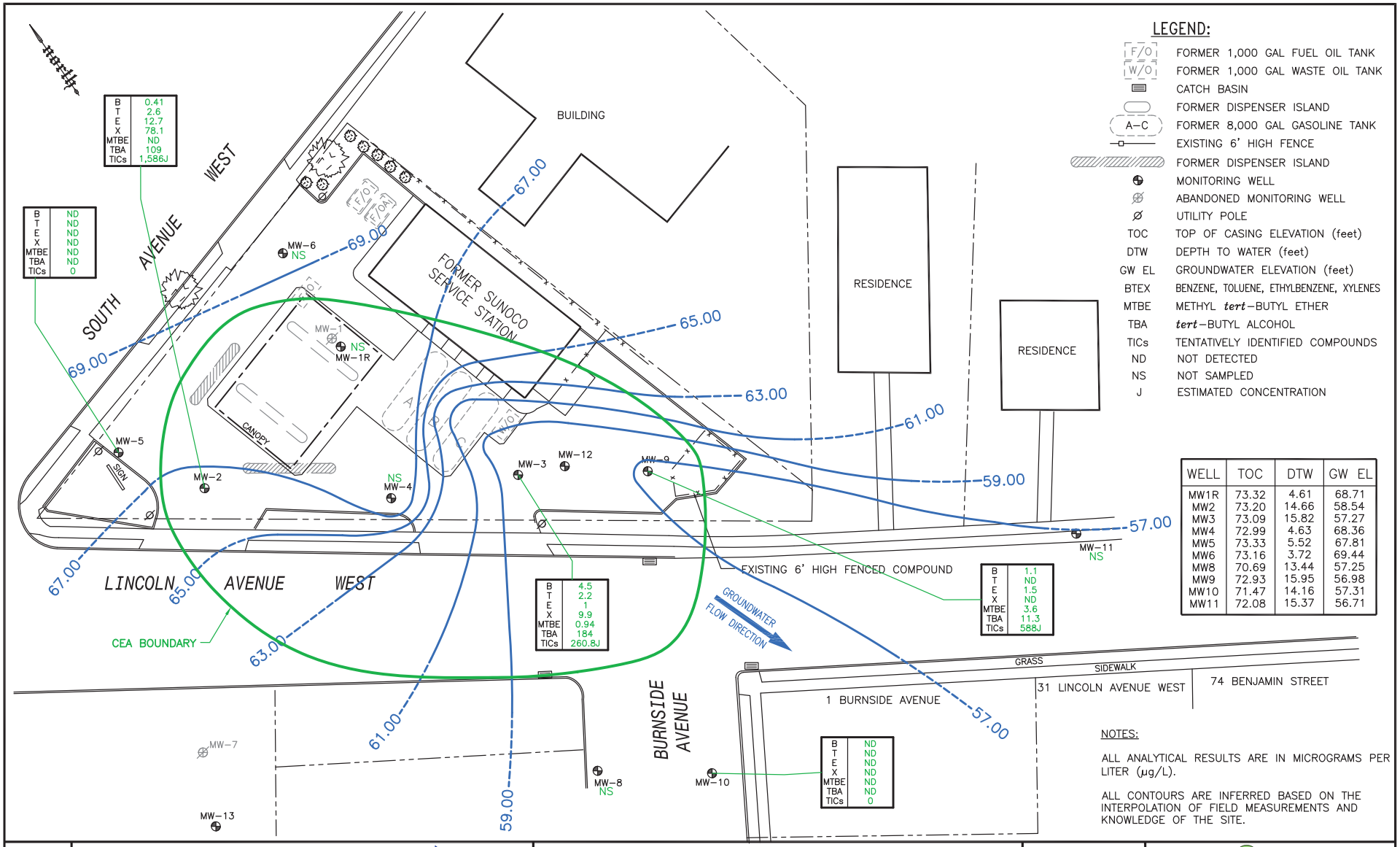
LEGEND:

- = WELL CASING
- = SCREENED INTERVAL
- = AVERAGE GROUNDWATER TABLE
- = SOIL BORING/TEMPORARY WELL

- ASPHALT
- BROWN–RED COARSE TO FINE SAND, TRACE GRAVEL, TRACE CLAY
- GRAY CLAYEY SILT, TRACE BRICK, CONCRETE, GLASS
- RED–BROWN SILT, TRACE SAND, SOME GRAVEL
- BLACK TO GRAY SILT AND CLAY
- ROAD STONE AND GRAVEL
- RED–BROWN SILT, TRACE GRAVEL AND SAND
- RED–BROWN CLAYEY SILT, TRACE SAND, SOME GRAVEL
- RED–BROWN SILT, TRACE CLAY
- RED–BROWN SILT, COARSE TO FINE SAND, TRACE GRAVEL
- RED–BROWN COARSE TO FINE SAND, SOME GRAVEL

FIGURE #			
6	FORMER SUNOCO SERVICE STATION #0006–9898 SOUTH AVE. WEST & LINCOLN AVE. WEST CRANFORD, NEW JERSEY	GEOLOGIC CROSS–SECTION B–B'	VERTICAL SCALE: 1 INCH = 10 FT. HORIZONTAL SCALE: 1 INCH = 15 FT.
		DRAWN BY: B.S. / REVISION DATE: 4/15/2020	

EnviroTrac ENVIRONMENTAL SERVICES
6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016
PHONE: (609)387–5553 FAX: (609)387–5533



WELL	TOC	DTW	GW EL
MW1R	73.32	4.61	68.71
MW2	73.20	14.66	58.54
MW3	73.09	15.82	57.27
MW4	72.99	4.63	68.36
MW5	73.33	5.52	67.81
MW6	73.16	3.72	69.44
MW8	70.69	13.44	57.25
MW9	72.93	15.95	56.98
MW10	71.47	14.16	57.31
MW11	72.08	15.37	56.71

NOTES:

ALL ANALYTICAL RESULTS ARE IN MICROGRAMS PER LITER (µg/L).

ALL CONTOURS ARE INFERRED BASED ON THE INTERPOLATION OF FIELD MEASUREMENTS AND KNOWLEDGE OF THE SITE.

FIGURE # 7

FORMER SUNOCO SERVICE STATION
#0006–9898
SOUTH AVE. WEST & LINCOLN AVE. WEST
CRANFORD, NEW JERSEY

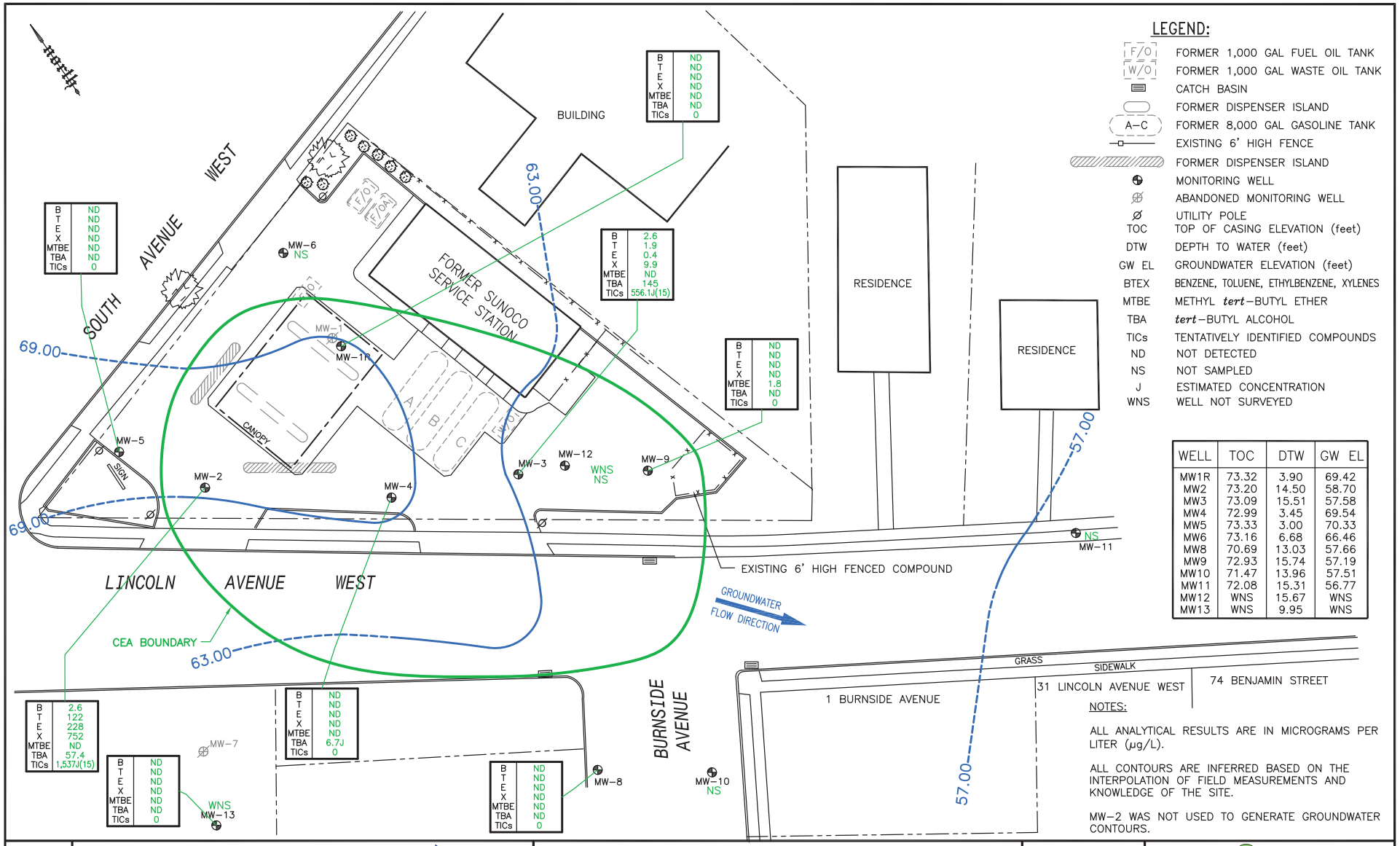
GROUNDWATER MONITORING MAP
DECEMBER 3, 2019

DRAWN BY: B.S.

REVISION DATE: 4/15/2020

0 30
SCALE IN FEET

EnviroTrac
ENVIRONMENTAL SERVICES
6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016
PHONE: (609)387–5553 FAX: (609)387–5533



WELL	TOC	DTW	GW EL
MW1R	73.32	3.90	69.42
MW2	73.20	14.50	58.70
MW3	73.09	15.51	57.58
MW4	72.99	3.45	69.54
MW5	73.33	3.00	70.33
MW6	73.16	6.68	66.46
MW8	70.69	13.03	57.66
MW9	72.93	15.74	57.19
MW10	71.47	13.96	57.51
MW11	72.08	15.31	56.77
MW12	WNS	15.67	WNS
MW13	WNS	9.95	WNS

NOTES:

ALL ANALYTICAL RESULTS ARE IN MICROGRAMS PER LITER (µg/L).

ALL CONTOURS ARE INFERRED BASED ON THE INTERPOLATION OF FIELD MEASUREMENTS AND KNOWLEDGE OF THE SITE.

MW–2 WAS NOT USED TO GENERATE GROUNDWATER CONTOURS.

FIGURE # 8

FORMER SUNOCO SERVICE STATION
#0006–9898
SOUTH AVE. WEST & LINCOLN AVE. WEST
CRANFORD, NEW JERSEY

GROUNDWATER MONITORING MAP
FEBRUARY 11, 2020

DRAWN BY: B.S.

REVISION DATE: 4/15/2020

0 30
SCALE IN FEET

EnviroTrac
ENVIRONMENTAL SERVICES
6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016
PHONE: (609)387–5553 FAX: (609)387–5533

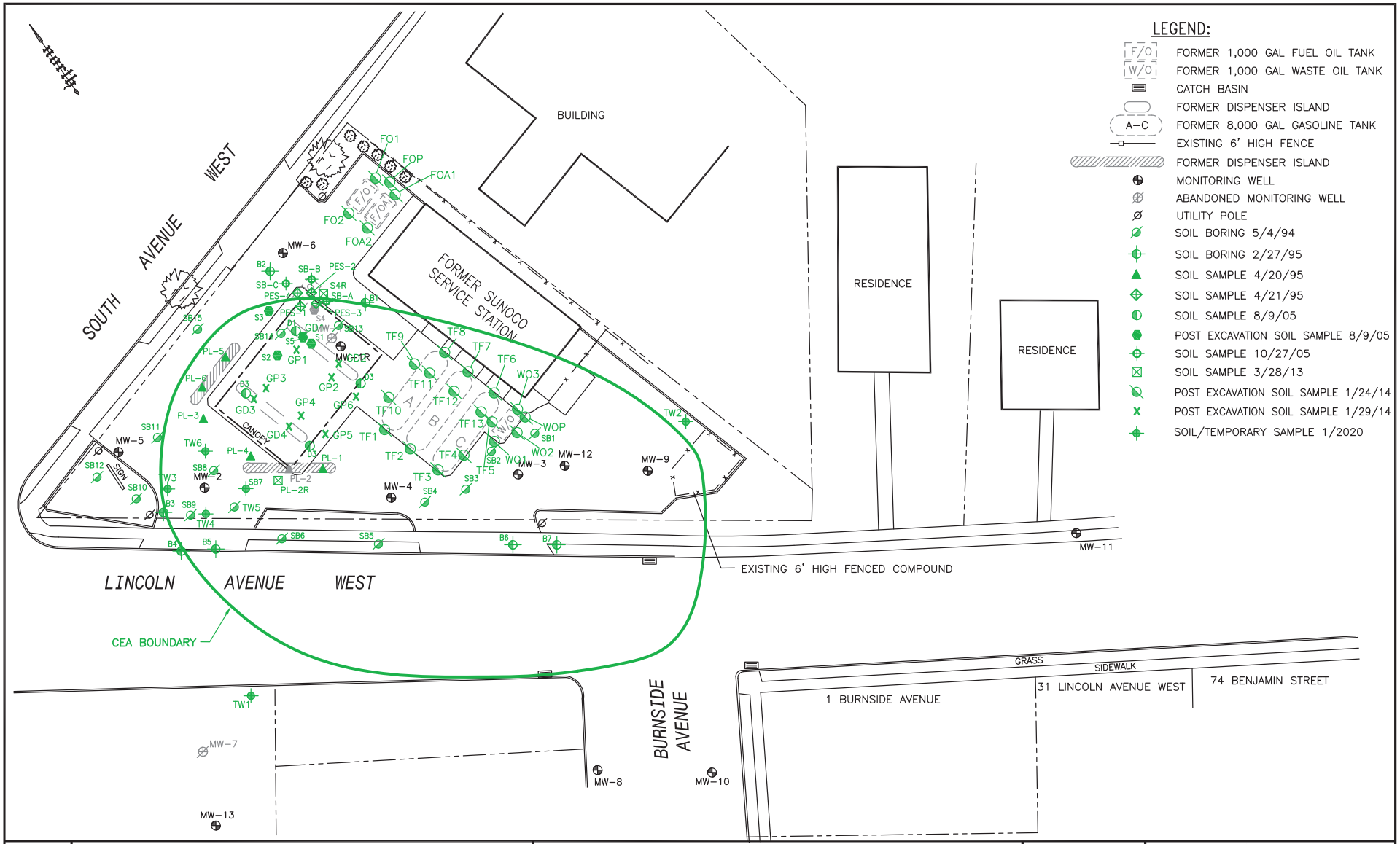


FIGURE #				
9	FORMER SUNOCO SERVICE STATION #0006-9898 SOUTH AVE. WEST & LINCOLN AVE. WEST CRANFORD, NEW JERSEY	HISTORIC SOIL SAMPLE LOCATION MAP	0 30 SCALE IN FEET	EnviroTrac ENVIRONMENTAL SERVICES 6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016 PHONE: (609)387-5553 FAX: (609)387-5533
		DRAWN BY: B.S.	REVISION DATE: 4/15/2020	

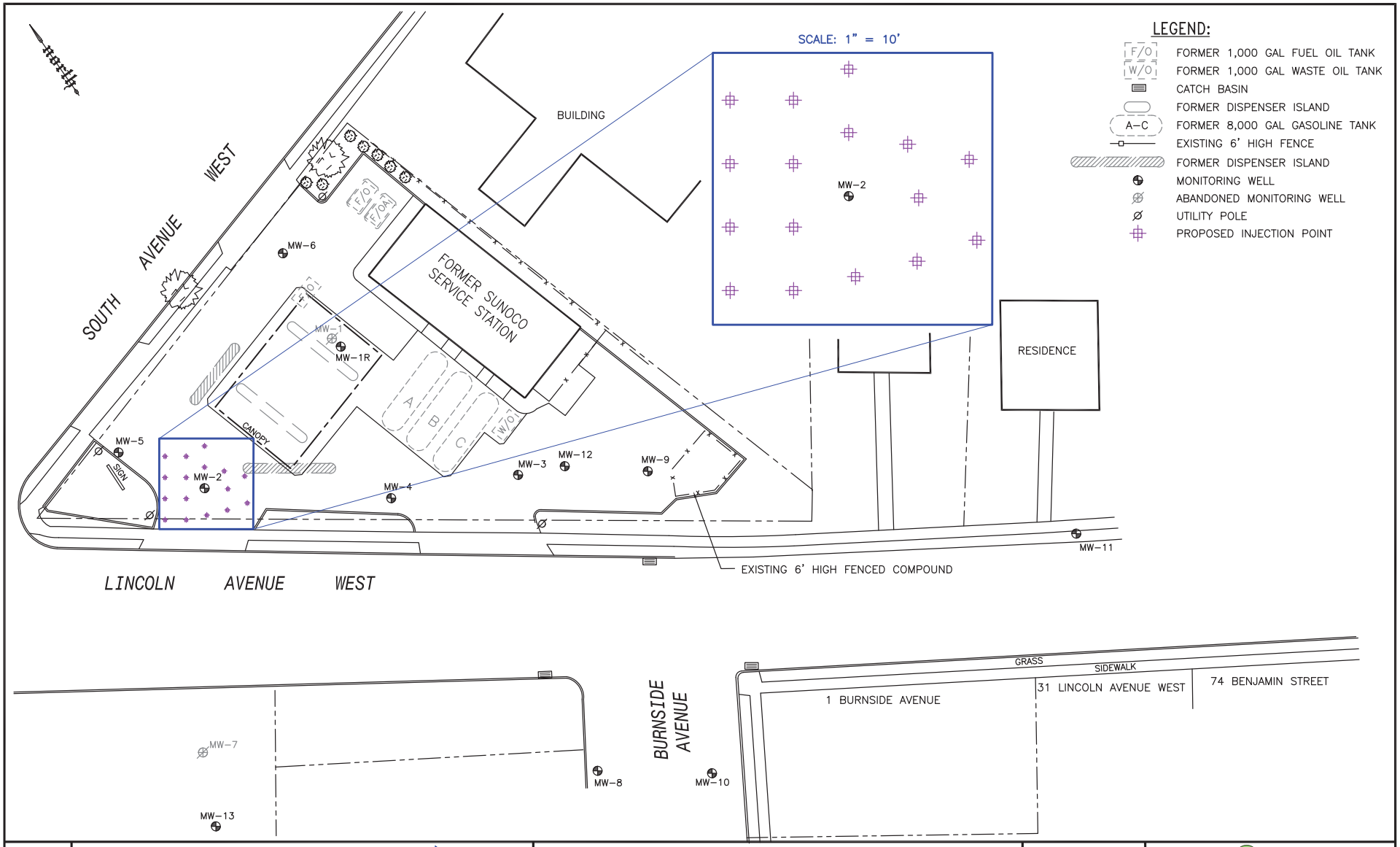


FIGURE #				
10	FORMER SUNOCO SERVICE STATION #0006–9898 SOUTH AVE. WEST & LINCOLN AVE. WEST CRANFORD, NEW JERSEY	PROPOSED INJECTION LOCATION MAP	0 30 SCALE IN FEET	EnviroTrac ENVIRONMENTAL SERVICES 6 TERRI LANE, SUITE #350, BURLINGTON, NJ 08016 PHONE: (609)387–5553 FAX: (609)387–5533
		DRAWN BY: B.S.	REVISION DATE: 4/15/2020	

APPENDIX A

PETROFIX WORKSHEET

SUNOCO CRANFORD 9898

Sunoco Cranford 9898 Combined

LAST UPDATED
04.13.20

SOURCE AREA

Application Summary

PROJECT LOCATION
49 South Avenue West
Cranford, NJ, 07016
UNITED STATES

PetroFix Amount	1,200 lbs
Treatment Surface Area	700.0 ft^2
Delivery Points	16
Point Spacing	6.6 ft
Top of Treatment Interval	12.0 ft bgs
Bottom of Treatment Interval	22.0 ft bgs
Vertical Treatment Interval Thickness	10.0 ft
Treatment Volume	259 yd^3
PetroFix Dose	4.63 lb/yd^3

Total Volume	2,456 gal
Product Volume	123 gal
Water Volume	2,334 gal
Injection Volume/Point	154 gal
Inject Volume/Vertical ft	15 gal
Product/Point	7.7 gal
Water/Point	145.9 gal
Soil Type	Mix of coarse and fine
Effective Pore Volume Fill %	23%

Mix Tank Volume	300 gal
Dilution Factor	20.0
PetroFix per Mix Tank	15 gal
Water per Mix Tank	285 gal
Electron Acceptor per Mix Tank	7 lb
Number of Batches Required	8.19

AREA NOTES

REPORTED

Ground Water Concentrations (µg/L)

		NAPL Present?	Sheen Reported
Benzene	20	Isopropylbenzene	0
Toluene	122	Naphthalenes	0
Ethylbenzene	228	MTBE	0
Xylenes	752	TPH-GRO	0
Trimethylbenzenes	0	TPH-DRO	0
Butylbenzene	0	**Sum of Dissolved Concentrations:**	**1,122**

APPENDIX B

PETROFIX SAFETY DATA SHEETS

SAFETY DATA SHEET

1. Identification

Product identifier PetroFix

Other means of identification None.

Recommended use Remediation of contaminants in soil and groundwater.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name Regenesis

Address 1011 Calle Sombra
San Clemente, CA 92673 USA

General information 949-366-8000

E-mail CustomerService@regenesis.com

Emergency phone number For Hazardous Materials Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC 24/7 at:

USA, Canada, Mexico 1-800-424-9300

International 1-703-527-3887

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement The mixture does not meet the criteria for classification.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash hands after handling.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Activated carbon <10 µm	7440-44-0	>25
Calcium sulfate dihydrate	10101-41-4	<10
Additive	-	<2

Composition comments All concentrations are in percent by weight unless otherwise indicated.
Components not listed are either non-hazardous or are below reportable limits.
Chemical ingredient identity and/or concentration information withheld for some or all components present is confidential business information (trade secret), and is being withheld as permitted by 29 CFR 1910.1200(i).

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Rinse with water. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed Treat symptomatically.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media None known.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed. Combustion products may include: carbon oxides, nitrogen oxides, sulfur oxides, calcium oxide.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards This material will not burn until the water has evaporated. Residue can burn. When dry may form combustible dust concentrations in air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Avoid prolonged exposure. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Activated carbon <10 µm (CAS 7440-44-0)	TWA	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Activated carbon <10 µm (CAS 7440-44-0)	TWA	2 mg/m3	Respirable fraction.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Calcium sulfate dihydrate (CAS 10101-41-4)	TWA	10 mg/m3	Inhalable fraction.

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Skin protection

Other Wear suitable protective clothing.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Aqueous suspension.

Color Not available.

Odor Not available.

Odor threshold Not available.

pH 8 - 10

Melting point/freezing point Not available.

Initial boiling point and boiling range 212 °F (100 °C)

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Vapor pressure Not available.

Vapor density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Other information

Explosive properties Not explosive.

Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials. Avoid drying out product. May generate combustible dust if material dries.
Incompatible materials	Strong oxidizing agents. Acids.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Spray mist may irritate the respiratory system. For dry material: Dust may irritate respiratory system.
Skin contact	Prolonged or repeated exposure may cause minor irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	May cause discomfort if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

Components	Species	Test Results
Activated carbon <10 µm (CAS 7440-44-0)		
Acute		
Oral		
LD50	Rat	> 10000 mg/kg

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	None known.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

15. Regulatory information

US federal regulations	This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical	No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Calcium sulfate dihydrate (CAS 10101-41-4)

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. Rhode Island RTK

Activated carbon <10 µm (CAS 7440-44-0)
Calcium sulfate dihydrate (CAS 10101-41-4)

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 15-February-2018

Revision date -

Version # 01

HMIS® ratings Health: 1
Flammability: 1
Physical hazard: 0

NFPA ratings

Disclaimer Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

SAFETY DATA SHEET

1. Identification

Product identifier **PetroFix Electron Acceptor Blend**

Other means of identification None.

Recommended use Remediation of soils and groundwater.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name Regenesis

Address 1011 Calle Sombra
San Clemente, CA 92673 USA

General information 949-366-8000

E-mail CustomerService@regenesis.com

Emergency phone number For Hazardous Materials Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC 24/7 at:

USA, Canada, Mexico 1-800-424-9300

International 1-703-527-3887

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Serious eye damage/eye irritation Category 2B

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word Warning

Hazard statement Causes eye irritation.

Precautionary statement

Prevention Wash thoroughly after handling.

Response If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Ammonium sulfate	7783-20-2	40 - 60
Sodium nitrate	7631-99-4	40 - 60

Composition comments All concentrations are in percent by weight unless otherwise indicated.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact	Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. Dusts may irritate the respiratory tract, skin and eyes.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Use extinguishing agent suitable for type of surrounding fire.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed. Combustion products may include: nitrogen oxides, sulfur oxides, ammonia.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use water spray to cool unopened containers.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Material will not burn.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Avoid the generation of dusts during clean-up. Collect dust using a vacuum cleaner equipped with HEPA filter. Stop the flow of material, if this is without risk. Large Spills: Wet down with water and dike for later disposal. Absorb in vermiculite, dry sand or earth and place into containers. Shovel the material into waste container. Following product recovery, flush area with water. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Avoid contact with eyes. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection	Unvented, tight fitting goggles should be worn in dusty areas.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
Skin protection	
Other	Wear suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment. Wear NIOSH approved respirator appropriate for airborne exposure at the point of use. Appropriate respirator selection should be made by a qualified professional. Recommended use: Wear respirator with dust filter.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Solid.
Form	Powder.
Color	White.
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	This material will not burn.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials. Heat.
Incompatible materials	Strong reducing agents. Strong acids.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system.
Skin contact	Dust or powder may irritate the skin.
Eye contact	Causes eye irritation.
Ingestion	May cause discomfort if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. Dusts may irritate the respiratory tract, skin and eyes.

Information on toxicological effects

Acute toxicity	Not expected to be acutely toxic.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Causes eye irritation.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Further information	Nitrate poisoning resulting in methemoglobinemia manifested as cyanosis is rare, but possible for people with specific susceptibility traits.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	The product solely consists of inorganic compounds which are not biodegradable.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	None known.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Serious eye damage or eye irritation

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Ammonium sulfate	7783-20-2	40 - 60
Sodium nitrate	7631-99-4	40 - 60

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Ammonium sulfate (CAS 7783-20-2)
Sodium nitrate (CAS 7631-99-4)

US. New Jersey Worker and Community Right-to-Know Act

Sodium nitrate (CAS 7631-99-4)

US. Pennsylvania Worker and Community Right-to-Know Law

Ammonium sulfate (CAS 7783-20-2)
Sodium nitrate (CAS 7631-99-4)

US. Rhode Island RTK

Ammonium sulfate (CAS 7783-20-2)
Sodium nitrate (CAS 7631-99-4)

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Flammability: 0
Physical hazard: 0

NFPA ratings

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