HRS DOCUMENTATION RECORD–REVIEW COVER SHEET

Name of Site: Saint-Gobain Performance Plastics

EPA ID No.: NYD004986741

Date Prepared: September 2016

Contact Persons

Site Investigations:	James Desir U.S. Environmental Protection Agency New York, NY	(212) 637-4342
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Pathways, Components, or Threats Not Scored

The surface water, soil exposure, and air pathways were not scored because the listing decision is not significantly affected by those pathways. The site score is sufficient to list the site on the ground water pathway score.

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HRS DOCUMENTATION RECORD

Name of Site: Saint-Gobain Performance Plastics Date Prepared: September 2016

EPA ID No.: NYD004986741

EPA Region: 2

Street Address of Site:* 14 McCaffrey Street, Village of Hoosick Falls 12090

County and State: Rensselaer, New York

General Location in State: Eastern Capital District

Topographic Map: Hoosick Falls, NY-VT

Latitude: *42° 53' 39.48" North (42.8943°) Longitude: *-73° 21' 23.76" West (-73.3566°)

Site Reference Point: U.S. Environmental Protection Agency (EPA) contaminated soil boring location SGPP-S07

[**Figure 2**; Ref. 3, p. 1; 5, p. 1; 17, p. 1; 22, p. 24; 23, pp. 29, 84; 32, pp. 50, 59; 49, pp. 168, 1,200; 51, p. 2]

* The street address, coordinates, and contaminant locations presented in this Hazard Ranking System (HRS) documentation record identify the general area where the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, disposed, or placed, or otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

Scores

Ground Water Pathway	100.00
Surface Water Pathway	Not Scored
Soil Exposure Pathway	Not Scored
Air Pathway	Not Scored
HRS SITE SCORE	50.00

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WORKSHEET FOR COMPUTING HRS SITE SCORE
Saint-Gobain Performance Plastics

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	100.00	10,000
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	Not Scored	
2b.	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	Not Scored	
2c.	Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	Not Scored	
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	Not Scored	
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	Not Scored	
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$	10,000	
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root	50.00	

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GROUND WATER MIGRATION PATHWAY SCORESHEET
Saint-Gobain Performance Plastics

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	MAXIMUM VALUE	VALUE ASSIGNED
Likelihood of Release		
1. Observed Release	550	550
2. Potential to Release		
2a. Containment	10	not scored
2b. Net Precipitation	10	not scored
2c. Depth to Aquifer	5	not scored
2d. Travel Time	35	not scored
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	not scored
3. Likelihood of Release	550	550
Waste Characteristics		
4. Toxicity/Mobility	*	10,000
5. Hazardous Waste Quantity	*	100
6. Waste Characteristics	100	32
Targets		
7. Nearest Well	50	50
8. Population		
8a. Level I Concentrations	**	13,330
8b. Level II Concentrations	**	1,333
8c. Potential Contamination	**	101
8d. Population (lines 8a+8b+8c)	**	14,814
9. Resources	5	0
10. Wellhead Protection Area	20	20
11. Targets (lines 7+8d+9+10)	**	14,834
12. Aquifer Score (lines 3x6x11 divided by 82,500)	100	100
13. Ground Water Migration Pathway Score (Sgw)	100	100

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

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SITE SUMMARY

The Saint-Gobain Performance Plastics (SGPP) site as scored consists of soil and ground water contaminated with trichloroethylene (TCE), vinyl chloride (VC), polychlorinated biphenyls (PCBs), and perfluorooctanoic acid (PFOA) as a result of historical releases from the SGPP facility located at 14 McCaffrey Street in Hoosick Falls, NY. Sampling and analysis of soil and ground water by EPA in April–May 2016 document the presence of TCE in facility soils, and TCE, VC, and PFOA in ground water at concentrations that meet the criteria for observed release by chemical analysis [see **Section 3.1.1 of this HRS documentation record**]. Sampling and analysis by EPA of the Village of Hoosick Falls municipal water supply in May 2016 document Level I actual contamination of drinking water wells with VC and Level II actual contamination with PFOA that is attributable at least in part to the site [see **Section 3.3.2**]. In addition, information provided by SGPP to EPA in December 2014 documents an observed release by direct observation of PFOA to the aquifer of concern [see **Section 3.1.1**]. A Site Location Map is presented in Figure 1.

For the SGPP site, EPA is evaluating the ground water migration pathway. The source is evaluated as soil contaminated with cis-1,2-dichloroethylene (DCE), TCE, and PCBs (Source 1) as further discussed in **Section 2.4.1**. *Sampling and analysis by EPA in April and May 2016 showed the presence of PFOA in SGPP facility soil; however, due to laboratory quality control issues, the data are considered unusable and will not be evaluated in this HRS Documentation Record Package.*

The facility that currently houses SGPP was originally built in 1961 for Dodge Fibers Corp. and was used first for producing extruded tapes and then circuit board laminates; prior to 1961 the property was vacant land [Ref. 39, p. 23]. Oak Materials Group (a.k.a. Oak Electronetics; a.k.a. Oak Industries) purchased the property from Dodge Fibers between 1969 and 1971 [Ref. 39, p. 23]. Oak Industries operated the facility until 1987 when it was sold to Allied Signal Fluorglas [Ref. 39, p. 23]. The property was sold to Furon Company in February 1996 [Ref. 40, p. 24]. Allied Signal Fluorglas and Furon Company used the facility to manufacture polytetrafluoroethylene (PTFE)-coated fiberglass, and molded and extruded PTFE intermediates [Ref. 40, p. 24]. Manufacturing processes at the facility included the use of certain non-stick coatings [Ref. 40, p. 24]. Fluoropolymers used to manufacture non-stick coatings are known to include PFOA [Ref. 13, p. 20; 52, p. 1].

SGPP has operated at 14 McCaffrey Street (Tax Map/Parcel No. Section 37.6, Block 3, Lot 1) since 1999 [Ref. 4, p. 1; 18, p. 2]. SGPP is a Paris-based multinational corporation which manufactures a variety of polymer-based products [Ref. 14, pp. 1–2]. The McCaffrey Street facility manufactures high-performance polymeric films and membranes, as well as foams for bonding, sealing, acoustical and vibrational damping, and thermal management; the facility previously used PFOA in its manufacturing processes [Ref. 4, p. 1; 14, pp. 4, 7, 9]. The facility is situated near the southwest corner of Hoosick Falls and along the east side of the Hoosic River [**Figure 1**; Ref. 4, p. 1; 5, p. 1].

The McCaffrey Street facility historically used PFOA or raw materials containing PFOA in its manufacturing processes; since 2003, the facility has participated in the industry's voluntary PFOA phase-out effort by purchasing raw materials with decreasing levels of PFOA as an ingredient. [Ref. 4, p. 1; 19, p. 1]. PFOA is a man-made chemical that belongs to a group of fluorine-containing chemicals called perfluorinated chemicals (PFC) [Ref. 12, p. 2; 15, p. 2]. PFOA was once widely used in nonstick cookware, in surface coatings for stain-resistant carpets and fabric, and in paper and cardboard food packaging [Ref. 12, p. 2]. PFOA was also used in fire-fighting foam and in many products for the aerospace, automotive, building/construction, and electronic industries [Ref. 12, p. 2]. PFOA and related compounds are persistent in water and soil, and resistant to typical environmental degradation processes [Ref. 15, p. 3]. PFOA poses potential adverse effects for the environment and human health based on its toxicity, mobility, and bioaccumulation potential [Ref. 15, pp. 1, 3-4]. PFOA exists as a white powder or waxy white solid at room temperature, and it is water-soluble and can readily migrate from soil to ground water [Ref. 15, pp. 2–3].

Former employees of the McCaffrey Street facility describe a powder-like smoke plume that was routinely discharged to the air from the facility's smokestacks and settled in the valley surrounding the plant [Ref. 4, p. 1]. The powder was observed to cover equipment and other surfaces within the facility as well [Ref. 4, p. 1]. After approximately 15 years of unfiltered emissions, filters were installed in the facility's smokestacks in the early 1980s [Ref. 4, p. 1]. A former employee stated that the filters and other equipment contacted by the white powder were cleaned weekly by washing them on a hillside outside the plant [Ref. 4, p. 1].

The Village of Hoosick Falls operates three public supply wells (Village Wells 3, 6, and 7); the well field is located

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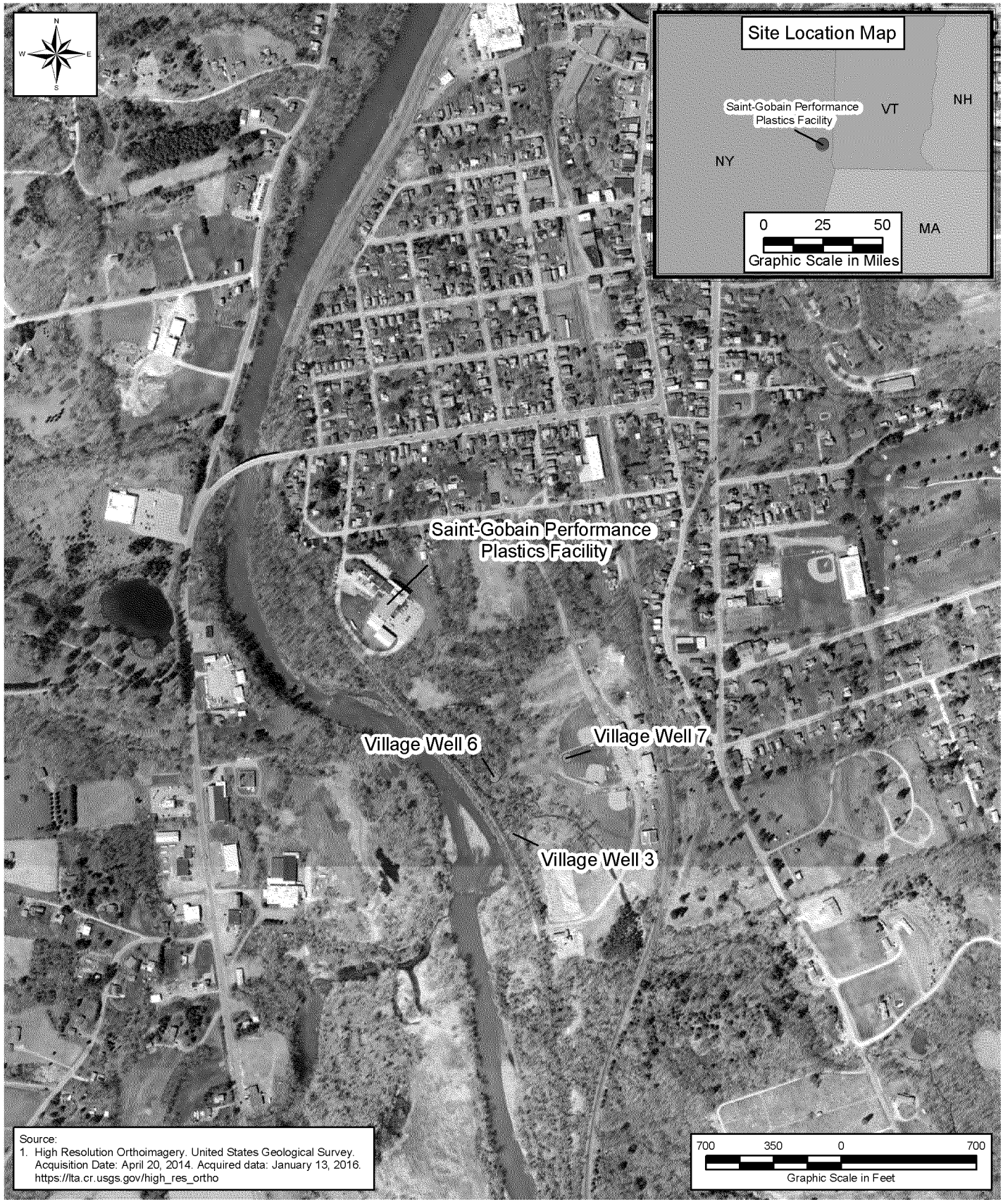

Source:
1. High Resolution Orthoimagery. United States Geological Survey. Acquisition Date: April 20, 2014. Acquired data: January 13, 2016. https://lta.cr.usgs.gov/high_res_ortho

LEGEND:

Village Well Location

TITLE:

Saint-Gobain Performance Plastics Site Location Map

PROJECT:

Saint-Gobain Performance Plastics

CLIENT NAME:

USEPA

WESTON SOLUTIONS

DATE:

August 2016

FIGURE #:

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on the Hoosic River floodplain east of the river and near the southern limits of the village [**Figure 1**; Ref. 5, p. 1; 27, p. 3]. The municipal wells withdraw water from the lower sand and gravel aquifer that overlies bedrock [see **Section 3.0.1 of this HRS documentation record**]. The lower aquifer was deposited by glacial meltwater [Ref. 6, pp. 12– 13, 17–18; 27, p. 3]. The deep gravel deposit is as much as 25 feet thick and is generally overlain by approximately 12 feet of fine sand that is part of the aquifer [Ref. 27, p. 3]. The areal extent of the sand and gravel aquifer is generally limited to the river valley areas, including the Hoosic River and its tributaries [Ref. 10, p. 1; 11, p. 21]. The lower aquifer is overlain by approximately 8 feet of poorly permeable clay and silt, which can be a barrier to water flow and separates the deep aquifer from the shallow aquifer [Ref. 6, pp. 12–13; 27, p. 3]. However, the lower aquifer is described as exhibiting "leaky artesian conditions" and there is evidence of site-attributable hazardous substance migration across the silt and clay layer; therefore, an aquifer interconnection occurs within 2 miles of sources at the site and, for Hazard Ranking System (HRS) scoring purposes, the upper and lower aquifers are evaluated together as a single hydrologic unit [**Figure 3**; see **Section 3.1.1 of this HRS documentation record**; Ref. 1, Section 3.0.1.2.1; 6, p. 18].

The unconsolidated sand and gravel aquifer underlies the Hoosic River and its tributaries [Ref. 10, p. 1]. The Hoosic River is in hydraulic contact with the sand and gravel aquifer as the municipal wells are deemed Ground Water Under the Direct Influence of Surface Water [Ref. 8, p. 2]. Although the pre-development ground water flow direction in the vicinity of the SGPP facility and the village wells was likely northward in the direction of flow of the Hoosic River, the pumping of the village wells has created a radius of influence that extends out as far as 0.67 mile and encompasses the SGPP facility [Ref. 7, pp. 22-23; 29, pp. 1–3; 42, p. 1]. Shallow ground water flow beneath the SGPP facility is northwest to southeast toward the village wells [Ref. 7, pp. 22-23; 42, p. 1]. The Hoosick Falls public well system serves a population of approximately 4,000 people based on information obtained from the Hoosick Falls Water Department [Ref. 8, p. 1].

Historical Soil and Ground Water Sampling

A May 1996 Phase II Environmental Site Assessment (ESA) conducted by Furon Company identified the presence of chlorinated volatile organic compounds (VOC) in facility soil and ground water. Analysis of soil and ground water samples collected as part of a May 1996 ESA reported the presence of TCE at an estimated concentration of 4.0 micrograms per kilogram (µg/kg) at soil sample location MW-1M-0 and in ground water in two monitoring wells, MW-2M [13 microgram per liter (µg/L)] and MW-5M [6 µg/L (estimated) and duplicate result 7 µg/L (estimated)] [Ref. 40, pp. 36, 40, 42, 44]. The compound 1,2-DCE, which the Phase II noted is a breakdown product of TCE, was detected in MW-5M and its duplicate MW-15M at 2.0 µg/L each [Ref. 40, p. 42]. The Phase II ESA noted that the facility maintains floor drains and a sump, and concluded that the TCE source may be related to the facility sump pit [Ref. 40, p. 46].

In 2014, a laboratory found PFOA in a water sample sent by a village resident [Ref. 4, p. 2]. Subsequent sampling and analysis of the Village of Hoosick Falls public water supply wells in February 2015 identified the presence of PFOA at maximum concentration of 490 nanograms per liter (ng/L) in Village Well 7 [Ref. 9, pp. 3–8]. Sampling and analysis of the public water supply wells in June and July 2015 by the New York State Department of Health (NYSDOH) showed the presence of PFOA at concentration of 620 ng/L in Village Well 7 and 662 ng/L in the Water Plant Clearwell (i.e., disinfection contact tank) [Ref. 16, pp. 1, 3].

On December 12, 2014, SGPP became aware of the presence of PFOA in the village drinking water supply and obtained the analytical results on December 15, 2014 [Ref. 19, p. 1]. On December 30, 2014, counsel for SGPP submitted notification to EPA under the Section 8(e) of the Toxic Substances and Control Act (TSCA) (15 U.S.C. § 2601 *et seq.*) regarding the presence of PFOA in the village public drinking water supply; PFOA analytical results for the village wells were attached to the notification [Ref. 19, pp. 1–10]. The notification acknowledged that SGPP processed fluoropolymers that contained PFOA at a facility within the village [Ref. 19, p. 1]. Section 8(e) of TSCA requires any person who manufactures, processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment to immediately notify EPA of such information [Ref. 31, p. 33].

The May 2016 Health Effects Support Document for PFOA established a Reference Dose (RfD) value of 0.00002 milligrams per kilogram per day (mg/kg/day) [Ref. 13, p. 256]. The calculated PFOA dose in Village Well 7 is 0.000025 mg/kg/day [Ref. 59, pp. 1–4]. The calculated PFOA dose in ground water can be up to 0.000897 mg/kg/day [Ref. 59, pp. 1–4]. Both calculated dose values exceed the RfD [Ref. 59, pp. 1–4]. Therefore, the TSCA

submittal by SGPP documents an observed release by direct observation of PFOA at a concentration that likely results in harm to any organism following exposure [Ref. 59, pp. 1–4]. The exceedances of the RfD establishes PFOA as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) pollutant or contaminant (i.e., any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions [including malfunctions in reproduction] or physical deformations, in such organisms or their offspring) [Ref. 1, Section 3.1.1; 46, pp. 14–15; 59, pp. 1–4].

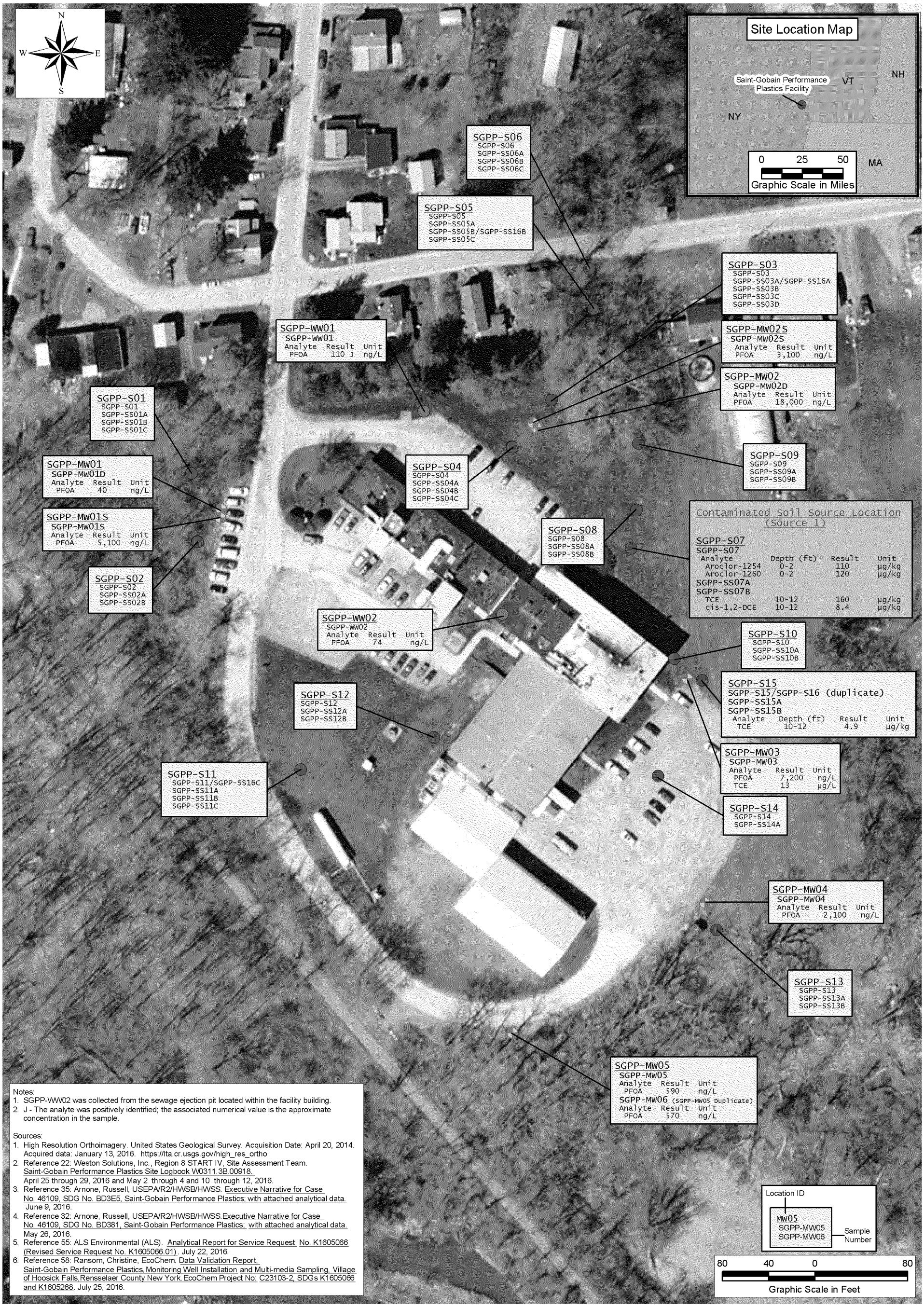
In August 2015, SGPP installed seven monitoring wells, which included two co-located shallow and deep well pairs, at the McCaffrey Street facility property [Ref. 7, pp. 23, 199-213]. Soil samples were collected at depths of 0 to 2 feet below ground surface (bgs) and 2 to 4 feet bgs from five of the monitoring well boreholes [Ref. 7, pp. 4–5, 143]. PFOA was detected in all the soil samples at concentrations ranging from 0.35 micrograms per kilogram (µg/kg) in the northeastern portion of the property (SG1-MW02D-02.0; depth: 2 to 4 bgs) to 4.1 µg/kg in the southeastern portion of the property (SG1-MW04S-00.0; depth: 0 to 2 feet bgs) [Ref. 7, pp. 4–5, 23, 109–112]. PFOA analysis of the ground water samples collected from the monitoring wells during two rounds of sampling in September and October 2015 showed non-detect values for PFOA in monitoring well MW-1 (screen interval 22 to 27 feet bgs; Sample Nos. SG1-MW01D-150903 and SG1-MW01-151001) and non-detect and 60 nanograms per liter (ng/L), respectively in monitoring well MW-1S (screen interval 5 to 15 feet bgs; Sample Nos. SG1-MW01S-150903 and SG1-MW01S-151001) [Ref. 7, pp. 6, 23, 128, 132, 162, 165, 207–208]. MW-1 and MW-1S are installed in the northwestern portion of the property [Ref. 7, p. 23]. PFOA was detected in all the ground water samples collected from the remaining five monitoring wells during both rounds of sampling, at concentrations ranging from 570 ng/L in MW-5 (screen interval 6 to 21 feet bgs; Sample No. SG1-MW05-151001) to 18,000 ng/L in MW-2 (screen interval 35 to 45 feet bgs; Sample No. SG1-MW02D-150902) [Ref. 7, pp. 7-9, 126-130, 132, 160-162, 165, 210, 213]. MW-2 is located in the northeastern portion of the facility and MW-5 is located along the southern facility property boundary [Ref. 7, p. 23]. PFOA was also detected in wastewater samples collected from the facility's sanitary discharge system, at concentrations of 1,000 ng/L (Manhole #1; Sample No. SG1-NORTH Manhole-151027) and 850 ng/L (sewage ejector pit; Sample No. SG1-SUMP PIT-151027) [Ref. 7, pp. 10, 23, 178–179, 182–183].

EPA 2016 Soil, Ground Water, and Waste Water Sampling

In April and May 2016, EPA conducted soil, ground water, and waste water sampling activities at the SGPP site. EPA collected 55 (including four environmental duplicate samples) soil samples from 15 boreholes advanced throughout the SGPP facility property using direct-push technology [**Figure 2**; Ref. 22, pp. 20–31, 47–48, 51–52; 23, pp. 72, 74, 78–79, 83–84, 95–96, 98, 109–110, 112–113, 117]. The boreholes were advanced to ground water or refusal, and were completed at depths ranging from 6.5 to 24.5 feet below ground surface (bgs) [Ref. 23, pp. 22–37]. EPA also collected eight (including one environmental duplicate sample) ground water samples from the seven monitoring wells installed throughout the SGPP facility property [**Figure 2**; Ref. 22, pp. 32–33, 53–54; 23, pp. 39–50, 130–131, 133–134]. Two waste water samples were collected, one from the facility sewer ejector pit, and one from Manhole #1 [**Figure 2**; Ref. 7, pp. 23, 207–213; 22, pp. 34, 55; 23, p. 136]. In addition to the samples collected from the SGPP facility, EPA collected four ground water samples from four overburden monitoring wells installed by EPA in the vicinity of the SGPP facility and the Village of Hoosick Falls municipal wells; four (including one environmental duplicate sample) raw water samples from the three active village wells; one ground water sample from the village test well; and four ground water samples from four residential drinking water wells located north of the SGPP facility [**Figure 3**; Ref. 22, pp. 35–40, 43–46, 56–64; 23, pp. 51–70; 137–138, 146–148, 152–154; 24, pp. 1–16].

Organic Target Analyte List Results

Sampling and analysis by EPA in April and May 2016 confirmed the presence of cis-1,2-DCE, TCE, and PCBs in facility soil at a concentrations significantly above background at direct-push borehole location SGPP-S07, located in the northeastern portion of the SGPP facility [**Figure 2**]. Analysis of subsurface soil sample SGPP-SS07B (depth: 10 to 12 feet) showed the presence of TCE (160 µg/kg) and cis-1,2-DCE (8.4 µg/kg) [**Figure 2**; Ref. 22, p. 24; 23, pp. 29, 84; 32, pp. 3–6, 59, 160; 33, p. 8; 49, p. 168]. Aroclor-1254 (110 µg/kg) and Aroclor-1260 (120 µg/kg) were detected in surface soil sample SGPP-S07 (depth: 0 to 2 feet) [Ref. 22, p. 24; 23, pp. 29, 84; 32, pp. 10–



Notes:
1. SGPP-WW02 was collected from the sewage ejection pit located within the facility building.
2. J - The analyte was positively identified; the associated numerical value is the approximate concentration in the sample.

Sources:
1. High Resolution Orthoimagery. United States Geological Survey. Acquisition Date: April 20, 2014. Acquired data: January 13, 2016. https://lta.cr.usgs.gov/high_res_ortho
2. Reference 22: Weston Solutions, Inc., Region 8 START IV, Site Assessment Team. Saint-Gobain Performance Plastics Site Logbook W0311.3B.00918. April 25 through 29, 2016 and May 2 through 4 and 10 through 12, 2016.
3. Reference 35: Arnone, Russell, USEPA/R2/HWSB/HWSS. Executive Narrative for Case No. 46109, SDG No. BD3E5, Saint-Gobain Performance Plastics; with attached analytical data. June 9, 2016.
4. Reference 32: Arnone, Russell, USEPA/R2/HWSB/HWSS.Executive Narrative for Case No. 46109, SDG No. BD381, Saint-Gobain Performance Plastics; with attached analytical data. May 26, 2016.
5. Reference 55: ALS Environmental (ALS). Analytical Report for Service Request No. K1605066 (Revised Service Request No. K1605066.01). July 22, 2016.
6. Reference 58: Ransom, Christine, EcoChem. Data Validation Report, Saint-Gobain Performance Plastics, Monitoring Well Installation and Multi-media Sampling, Village of Hoosick Falls,Rensselaer County New York. EcoChem Project No: C23103-2, SDGs K1605066 and K1605268. July 25, 2016.

LEGEND:
- Groundwater Sample Location
- Waste Water Sample Location
- Soil Boring Location

PROJECT: Saint-Gobain Performance Plastics

CLIENT NAME: EPA

TITLE:

Saint-Gobain Performance Plastics Facility Sample Results Map

DRAWING NUMBER: 18438

REPORT DATE: August 2016

FIGURE #: 2

DRAWN BY: P. DiTillio

REVIEWED BY: S. Snyder

PROJECT MANAGER: S. Snyder

SCALE: 1" = 80'

DATE: 8/3/2016

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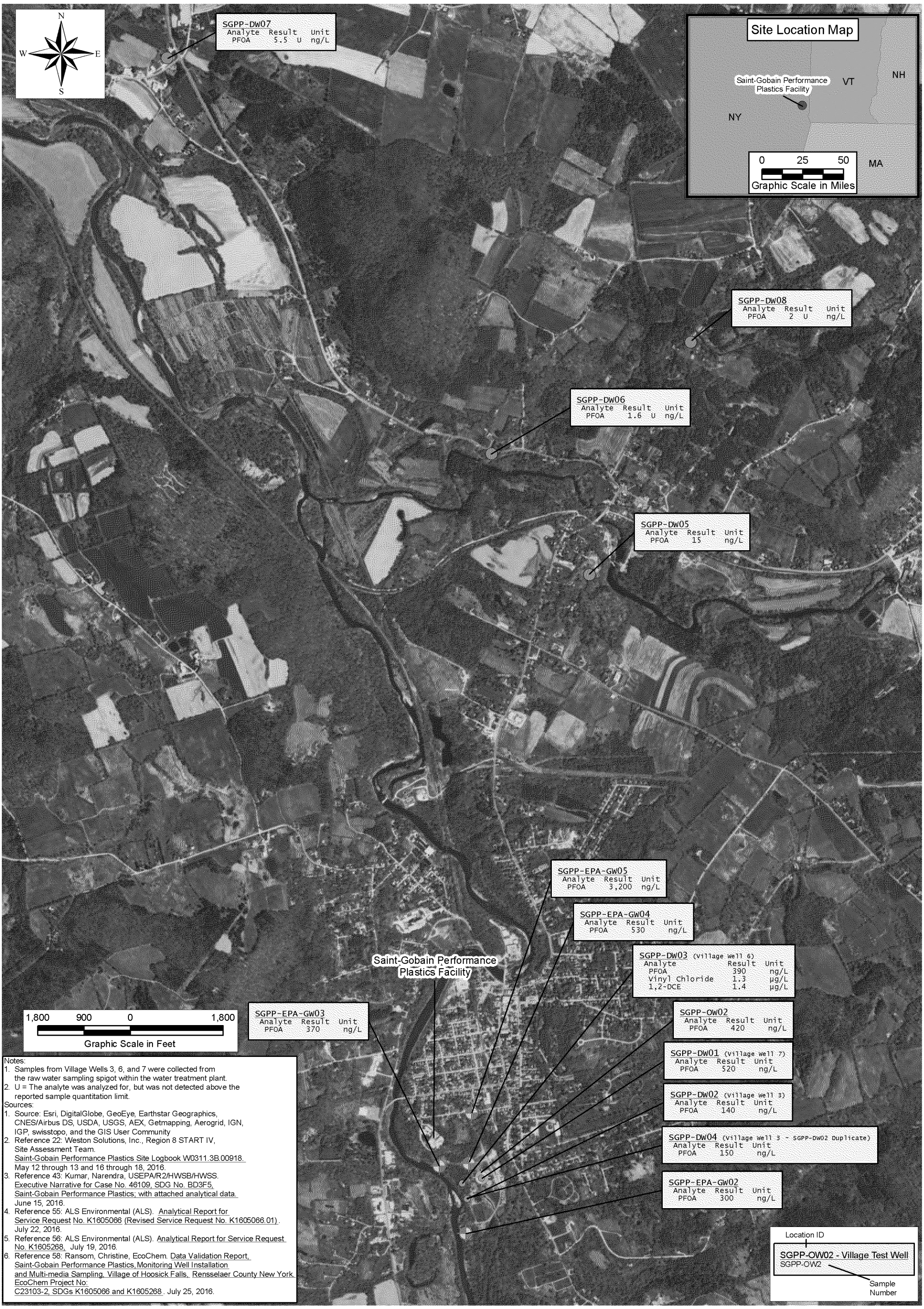

Notes:
1. Samples from Village Wells 3, 6, and 7 were collected from the raw water sampling spigot within the water treatment plant.
2. U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

Sources:
1. Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
2. Reference 22: Weston Solutions, Inc., Region 8 START IV, Site Assessment Team. Saint-Gobain Performance Plastics Site Logbook W0311.3B.00918. May 12 through 13 and 16 through 18, 2016.
3. Reference 43: Kumar, Narendra, USEPA/R2/HWSB/HWSS. Executive Narrative for Case No. 46109, SDG No. BD3F5, Saint-Gobain Performance Plastics; with attached analytical data. June 15, 2016.
4. Reference 55: ALS Environmental (ALS). Analytical Report for Service Request No. K1605066 (Revised Service Request No. K1605066.01). July 22, 2016.
5. Reference 56: ALS Environmental (ALS). Analytical Report for Service Request No. K1605268, July 19, 2016.
6. Reference 58: Ransom, Christine, EcoChem. Data Validation Report, Saint-Gobain Performance Plastics, Monitoring Well Installation and Multi-media Sampling, Village of Hoosick Falls, Rensselaer County New York. EcoChem Project No: C23103-2, SDGs K1605066 and K1605268. July 25, 2016.

LEGEND:
- EPA Monitoring Well Sample Location
- Village Test Well
- Residential Drinking Water Well Sample Location
- Village Well Location

PROJECT: Saint-Gobain Performance Plastics

CLIENT NAME: EPA

TITLE:

EPA Monitoring Well And Drinking Water Sample Location Map

DRAWING NUMBER: 18441

REPORT DATE: August 2016

FIGURE #: 3

DRAWN BY: P.DiTillio

REVIEWED BY: S. Snyder

PROJECT MANAGER: S. Snyder

SCALE: 1" = 1800'

DATE: 8/3/2016

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12, 50, 199; 49, p. 1200]. Analysis of waste water samples SGPP-WW02 and SGPP-WW01, collected from the aforementioned facility sump pit (a.k.a. sewage ejector pit) and a downstream sanitary manhole (Manhole #1), respectively, reported non-detect values for TCE and all other chlorinated solvents [**Figure 2**; Ref. 7, p. 23; 22, pp. 34, 55; 23, p. 136; 35, pp. 82–83, 85–86].

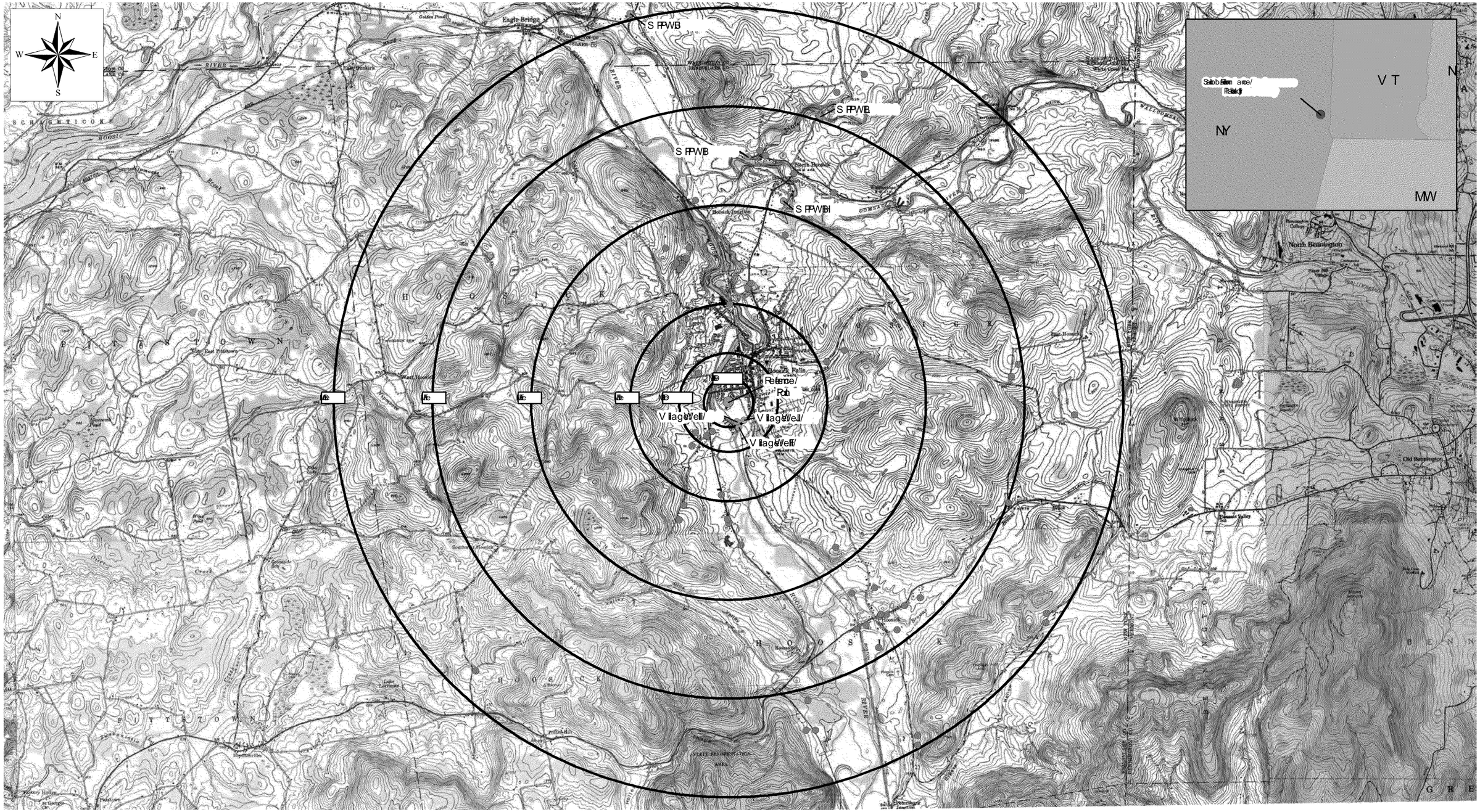
In order to evaluate background conditions in an area believed to be unaffected by site activities, seven soil samples (SGPP-S01, -SS01A, -SS01B, -SS01C, -S02, -SS02A, and -SS02B) were collected from two direct-push boreholes that were advanced in the northwestern, undeveloped portion of the SGPP facility [**Figure 2**]. All seven of the soil samples reported non-detect values for TCE and cis-1,2-DCE [Ref. 22, p. 29; 23, pp. 22–23, 112–113; 33, p. 8; 41, pp. 3–6, 22, 28, 36, 42, 45, 51, 57, 121–126; 45, pp. 61, 78, 95, 112, 125, 138, 151]. Background soil sample SGPP-S01 (depth: 0 to 2 feet), which had the highest non-detect reporting detection limit (RDL) of 5.1 µg/kg, is evaluated as the maximum background concentration [Ref. 22, p. 29; 23, pp. 22–23, 112–113; 33, p. 8; 41, pp. 3–6, 22, 28, 36, 42, 45, 51, 57, 121–126; 45, pp. 61, 78, 95, 112, 125, 138, 151]. All seven of the soil samples also reported non-detect values for Aroclor-1254 and Aroclor-1260 [Ref. 22, p. 29; 23, pp. 22–23, 112–113; 33, p. 8; 41, pp. 2, 10–12, 21, 27, 35, 38, 44, 50, 56, 155–156; 45, pp. 1217, 1220, 1223, 1226, 1229, 1232, 1235]. SGPP-S01 (depth: 0 to 2 feet) reported the highest non-detect RDL of 40 µg/kg and is therefore evaluated as the maximum background concentration for Aroclors [Ref. 22, p. 29; 23, pp. 22, 112; 41, pp. 10–12, 27, 155; 45, p. 1,220]. All of the soil samples discussed above were analyzed for Organic Target Analyte List (TAL) volatile organic compounds (VOC) and Aroclors by an EPA Contract Laboratory Program (CLP) laboratory via Statement of Work (SOW) SOM02.3 and the data were validated by EPA according to EPA Region 2 data validation guidelines [Ref. 23, pp. 84, 112–113, 136; 32, pp. 3–6, 10–12; 35, pp. 6–10; 41, pp. 3–6, 10–12; 45, pp. 1, 61, 78, 95, 112, 125, 138, 151, 1217, 1220, 1223, 1226, 1229, 1232, 1235; 49, pp. 1, 168, 1200].

Halogenated (i.e., chlorinated) solvents, such as TCE, are known to be associated with the manufacture of circuit boards and other electronic equipment [Ref. 36, p. 21; 37, p. 9]. Historical facility operations related to the manufacture of circuit board laminates and electronics were conducted at the facility from the early 1960s to 1987 (i.e., approximately 26 years) [Ref. 39, p. 23; 60, p. 1].

PCBs are associated with historical facility operations. Phase I and II ESAs prepared for the facility in 1996 identified an "old" transformer known to contain PCBs as a condition of environmental concern (CEC) [Ref. 40, pp. 11–12]. The transformer was mounted on a concrete pad in the rear of the facility [Ref. 40, p. 11]. During the Phase I, the transformer appeared to be at least as old as the original facility building, which was built in 1961, and it was not contained within any bermed area [Ref. 4, p. 12]. The transformer was removed in 1995 [Ref. 40, p. 12]. Although no signs of leakage or spillage were observed, the ESAs noted that spillage may have occurred during filling or replacement of transformer oil in the past [Ref. 40, p. 12]. Phase II soil sampling reported the presence of Aroclor-1254 and Aroclor-1260 at estimated concentrations in three soil samples (TF-1M-163, GD-1M-1, and GD-1M-2) below their respective New York State Technical and Administrative Guidance Memorandums (TAGM) [Ref. 40, p. 38].

Sampling and analysis by EPA in May 2016 documents the presence of TCE in an SGPP facility monitoring well at a concentration significantly above background [Ref. 1, Table 2-3, Section 3.1.1; see **Section 3.1.1 of this HRS documentation record**]. Analysis of ground water sample SGPP-MW03, collected from a SGPP facility monitoring well (MW-3) located in the eastern portion of the SGPP facility property in the vicinity of SGPP-S07, showed the presence of TCE at a concentration of 13 µg/L [**Figure 2**; Ref. 7, p. 211; 22, p. 33; 23, p. 134; 35, pp. 6–10, 36, 138; 47, p. 304]. Analysis of background ground water samples SGPP-MW05 and duplicate sample SGPP-MW06 reported non-detect values for TCE [Ref. 22, p. 33; 23, p. 133; 33, p. 8; 35, pp. 2, 6–10, 50, 58, 140–141; 47, pp. 325, 335]. The background and contaminated samples were collected from the same hydrologic unit (i.e., upper unconsolidated sand and gravel aquifer) [Ref. 7, pp. 204, 206, 211, 213; 10, p. 1].

On May 17, 2016, EPA collected ground water sample SGPP-DW03 from Village Well 6 via the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, p. 38; 23, p. 152]. Village Well 6 is the closest of the three village wells to the contaminated soil source at the SGPP facility (i.e., borehole SGPP-S07) [**Figures 2 and 4**]. Analysis of SGPP-DW03 showed the presence of VC, a breakdown product of TCE, at a concentration of 1.3 µg/L [Ref. 33, p. 8; 38, pp. 16–17; 43, pp. 3–6, 39, 117; 48, p. 68]. Analytical results of background samples collected from Village Well 7 (SGPP-DW01) and Village Well 3 (SGPP-DW02 and duplicate SGPP-DW04) reported non-detect values for VC [Ref. 22, p. 37; 23, p. 147–148; 33, p. 8; 43, pp. 2–6, 28, 33, 49, 115–116, 118; 48, pp. 48, 58, 79]. All three village wells withdraw water from the lower sand and gravel aquifer, which exhibits leaky artesian conditions; therefore, Village Well 6 being the closest to the source likely intercepts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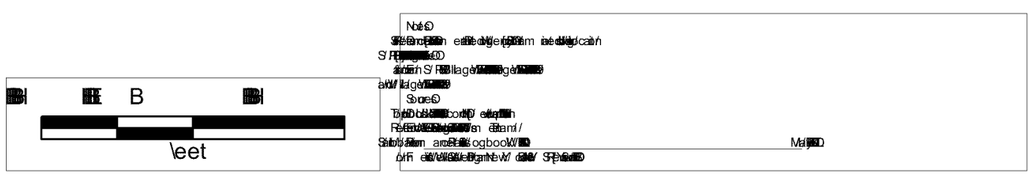
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and draws water and the VC from the upper aquifer through the silt and clay layer to the lower aquifer [**Figure 4**; Ref. 6, pp. 12–13, 18, 53–54; 28, p. 1]. All of the ground water samples discussed above were analyzed for Organic TAL VOCs (trace and low-medium concentrations) by an EPA CLP laboratory via SOW SOM02.3 and the data were validated by EPA according to EPA Region 2 data validation guidelines [Ref. 23, p. 133–134, 147–148, 152; 35, pp. 6–10, 36, 50, 58, 138, 140–141; 43, pp. 3–6, 28, 33, 39, 49, 116–118; 47, pp. 1, 304, 325, 335; 48, pp. 1, 48, 58, 68, 79].

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids Results

Sampling and analysis by EPA in April and May 2016 showed the presence of PFOA in SGPP facility soil; however, due to laboratory quality control issues, the data are considered unusable and will not be evaluated in this HRS Documentation Record Package.

Sampling and analysis by EPA in May 2016 shows the presence of PFOA in SGPP facility monitoring wells at concentrations that are significantly above background [Ref. 1, Table 2-3, Section 3.1.1; see **Section 3.1.1 of this HRS documentation record**]. PFOA was detected in ground water samples SGPP-MW02D (18,000 ng/L), SGPP-MW03 (7,200 ng/L), SGPP-MW04 (2,100 ng/L), SGPP-MW05 (590 ng/L), and SGPP-MW06 (570 ng/L) (environmental duplicate of SGPP-MW05), which were collected from SGPP facility monitoring wells MW-2, MW-3, MW-4, MW-5, and MW-5 (duplicate), respectively [**Figure 2**; Ref. 7, pp. 210–213; 22, pp. 32–33; 23, pp. 143–144; 55, pp. 9–10, 18, 20–23]. Analysis of background ground water sample SGPP-MW01D, collected from upgradient monitoring well MW-1, indicated a PFOA concentration of 40 ng/L [**Figure 2**; Ref. 7, p. 208; 22, p. 33; 23, p. 143; 42, p. 1; 55, pp. 9, 16]. The background and contaminated samples were collected from the same hydrologic unit (i.e., upper unconsolidated sand and gravel aquifer) [Ref. 7, pp. 200, 202–206; 10, p. 1].

As part of the May 2016 ground water sampling effort, EPA also collected ground water samples from the four monitoring wells that were installed in the vicinity of the SGPP facility and the village wells [**Figure 3**]. Monitoring wells EPA MW-3 and EPA MW-4 were installed between the SGPP facility and the village wells and are screened in the lower sand and gravel aquifer [**Figure 3**; Ref. 24, pp. 5, 10]. Analysis of ground water samples SGPP-EPA-GW03 and SGPP-EPA-GW04 collected from these wells showed the presence of PFOA at concentrations of 370 ng/L and 530 ng/L, respectively [Ref. 22, pp. 35–36; 23, p. 143; 55, pp. 9, 14–15]. Analysis of ground water samples SGPP-EPA-GW02, collected from EPA MW-2 southwest of the village wells, and SGPP-EPA-GW05, collected from EPA MW-5 east-northeast of the SGPP facility, showed the presence of PFOA at concentrations of 300 ng/L and 3,200 ng/L, respectively; both EPA MW-2 and EPA MW-5 are screened in the lower sand and gravel aquifer [**Figure 3**; Ref. 22, pp. 35–36; 23, pp. 143, 158; 24, pp. 3, 16; 55, pp. 9, 13, 56, pp. 9, 21, 86, 89].

On May 16, 2016, EPA collected ground water sample SGPP-DW01 from Village Well 7 via the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, p. 37; 23, p. 158]. Analysis of SGPP-DW01 showed the presence of PFOA at a concentration of 520 ng/L [Ref. 56, pp. 9, 13, 90]. Analytical results for samples collected from Village Well 3 (SGPP-DW02 and duplicate SGPP-DW04) indicated PFOA concentrations of 140 ng/L and 150 ng/L [Ref. 22, p. 37; 23, p. 158; 56, pp. 9, 14, 16, 90]. All three village wells withdraw water from the lower sand and gravel aquifer, which exhibits leaky artesian conditions; Village Well 3, being the farthest from the source, is considered to receive less impact from site sources and is evaluated as representing background conditions for scoring purposes [**Figure 4**].

All of the ground water samples discussed above were analyzed for PFCs by an EPA-subcontracted laboratory using standard operating procedures for extraction, analysis (high performance liquid chromatography/mass spectrometry [HPLC/MS]), and quality control [Ref. 56, pp. 86, 89–90; 57, pp. 3, 10–18, 23]. The data were validated by EPA according to EPA Region 2 data validation guidelines [Ref. 58, pp. 1–22]. The variation in the distribution of PFOA detections compared to VC is likely due to PFOA's significantly higher water solubility [9.5×10^3 milligrams per liter (mg/L)] compared to VC (2,763 mg/L), which results in greater mobility within the sand and gravel aquifer under evaluation [Ref. 15, p. 2; 20, p. 18].

In June 2016, SGPP and New York State Department of Environmental Conservation (NYSDEC) State Superfund Program entered into an Order on Consent and Administrative Settlement (hereafter referred to as "The Order") [Ref. 18, pp. 1–31]. The Order designates the McCaffrey Street facility as a "significant threat to public health or the environment" [Ref. 18, p. 4]. Therefore, the Order directs SGPP to prepare and submit a Remedial Investigation/Feasibility Study (RI/FS) work plan for the McCaffrey Street facility to NYSDEC that includes a study and assessment of alternatives to eliminate or reduce PFOA in the municipal water supply (MWS) [Ref. 18, p. 4].

Based on the environmental degradation of TCE to DCE to VC, the relative persistence of VC in subsurface environments, and drawdown through the "leaky" silt and clay layer at the village wells, the sampling and analysis discussed above document an observed release of VC from the SGPP facility to the aquifer of concern, and Level I actual contamination of Village Well 6, which serves an apportioned population of 1,333 people [see **Sections 3.1.1 and 3.3**]. Based on historical use of PFOA and PFOA-containing materials at the SGPP facility; the acknowledgment by SGPP of PFOA's attribution to a facility within the village; historical waste disposal practices at the McCaffrey Street facility; the detections of PFOA in facility soil and ground water; and the mobility and persistence of PFOA in the environment, the sampling and analysis discussed above document an observed release of PFOA from the SGPP facility to the aquifer of concern, and Level II actual contamination of Village Well 7, which serves an apportioned population of 1,333 people [see **Sections 3.1.1 and 3.3**].

ED_001670_00014122-00020

2.2 SOURCE CHARACTERIZATION

Number of the source: 1

Source Type of the source: Contaminated Soil

Name and description of the source: SGPP McCaffrey Street facility

Source 1 consists of contaminated soil resulting from the historical discharges of chlorinated solvent(s) and PFOA from the SGPP McCaffrey Street facility. The McCaffrey Street facility was constructed in 1961 for Dodge Fibers Corp. and was used first for producing extruded tapes and then circuit board laminates; prior to 1961 the property was undeveloped [Ref. 39, p. 23]. Oak Material Group (Oak Electronetics) purchased the property from Dodge Fibers sometime between 1969 and 1971 [Ref. 39, p. 23]. Oak Electronetics operated the facility until 1987 when it was sold to Allied Signal Fluorglas [Ref. 39, p. 22]. The property was sold to Furon Company in February 1996 [Ref. 40, p. 24]. Allied Signal Fluorglas and Furon Company used the facility to manufacture PTFE-coated fiberglass, and molded and extruded PTFE intermediates [Ref. 40, p. 24]. Manufacturing processes at the facility included the use of certain nonstick coatings [Ref. 40, p. 24]. PTFE is also used to make nonstick coatings for consumer products such as cooking pans and stain-resistant carpets and fabrics [Ref. 52, p. 1]. SGPP has operated at 14 McCaffrey Street since 1999 [Ref. 4, p. 1]. SGPP manufactures a variety of polymer-based products [Ref. 14, pp. 1–2]. The McCaffrey Street facility manufactures high-performance polymeric films and membranes, as well as foams for bonding, sealing, acoustical and vibrational damping, and thermal management; the facility previously used PFOA or raw materials containing PFOA in its manufacturing processes [Ref. 4, p. 1; 14, pp. 4, 7, 9; 19, p. 1]. Therefore, activities related to the manufacture of electronics were conducted at the facility from approximately 1961 to 1987 (i.e., 26 years) and PFOA-containing substances were used at the facility from approximately 1987 to 2003 (i.e., 16 years) [Ref. 4, p. 1; 39, pp. 22–23; 40, p. 24]. Halogenated (i.e., chlorinated) solvents, such as TCE, are known to be associated with the manufacture of circuit boards and other electronic equipment [Ref. 36, p. 21; 37, p. 9].

Analysis of soil and ground water samples collected as part of a May 1996 ESA prepared for a former facility occupant, Furon Company, reported the presence of TCE at an estimated concentration of 4.0 µg/kg at soil sample location MW-1M-0 and in ground water in two monitoring wells, MW-2M (13 µg/L) and MW-5M [6 µg/L (estimated) and duplicate result 7 µg/L (estimated)] [Ref. 40, pp. 36, 40, 42, 44]. The compound 1,2-DCE, which the Phase II noted is a breakdown product of TCE, was detected in MW-5M and its duplicate MW-15M at 2.0 µg/L each [Ref. 40, p. 42]. The Phase II ESA noted that the facility maintains floor drains and a sump, and concluded that the TCE source may be related to the facility sump pit [Ref. 40, p. 46].

SGPP 2015 Soil Sampling

In August 2015, SGPP installed seven monitoring wells, which included two co-located shallow and deep well pairs, at the McCaffrey Street facility property [Ref. 7, pp. 23, 199-213]. Soil samples were collected at depths of 0 to 2 feet bgs and 2 to 4 feet bgs from five of the monitoring well boreholes [Ref. 7, pp. 4–5, 143]. PFOA was detected in all the soil samples at concentrations ranging from 0.35 µg/kg in the northeastern portion of the property (SG1-MW02D-02.0; depth: 2 to 4 bgs) to 4.1 µg/kg in the southeastern portion of the property (SG1-MW04S-00.0; depth: 0 to 2 feet bgs) [Ref. 7, pp. 4–5, 23, 109–112]. For the purposes of establishing the contaminated soil source, the minimum PFOA concentration (0.35 µg/kg) detected in soil sample SG1-MW02D-02.0 will be evaluated as representing background conditions [Ref. 7, pp. 4–5, 23, 109–112, 143]. PFOA concentrations in soil samples SG1-MW01D-02.0 (2.4 µg/kg), SG1-MW02D-00.0 (1.3 µg/kg), SG1-DS01-150805 (field duplicate of SG1-MW02D-00.0) (1.5 µg/kg), SG1-MW03S-00.0 (2.5 µg/kg), SG1-MW04S-00.0 (4.1 µg/kg), SG1-MW04S-02.0 (1.8 µg/kg), SG1-MW05S-00.0 (1.4 µg/kg), and SG1-MW05S-02.0 (1.2 µg/kg) exceeded the designated background concentration by more than three times [Ref. 7, pp. 109–112]. All of the soil samples discussed above were collected by SGPP in August 2015; analyzed by the same laboratory (Maxxam of Ontario, Canada); and the data validated according to EPA CLP National Function Guidelines for Superfund Organic Methods Data review (June 2008) [Ref. 7, pp. 4–5, 55–59, 109–112].

EPA 2016 Soil Sampling

Organic Target Analyte List Results

Sampling and analysis by EPA in April and May 2016 document the presence of an uncontained contaminated soil source at the SGPP facility, as the presence of cis-1,2-DCE, TCE, and PCB Aroclors were reported in SGPP facility soil at a concentrations significantly above background at a direct-push borehole location in the northeastern portion of the SGPP facility [**Figure 2**]. Analysis of subsurface soil sample SGPP-SS07B (depth: 10 to 12 feet) reported the presence of TCE (160 µg/kg) and cis-1,2-DCE (8.4 µg/kg) with RDLs of 4.2 µg/kg for each [**Figure 2**; Ref. 22, p. 24; 23, pp. 29, 84; 32, pp. 3–6, 59, 160; 33, p. 8; 49, p. 168]. Aroclor-1254 (110 µg/kg) and Aroclor-1260 (120 µg/kg) were detected in surface soil sample SGPP-S07 (depth: 0 to 2 feet) with RDLs of 42 µg/kg for each [Ref. 22, p. 24; 23, pp. 29, 84; 32, pp. 10–12, 50, 199; 49, p. 1200].

In order to evaluate background conditions in an area believed to be unaffected by site activities, seven soil samples (SGPP-S01, -SS01A, -SS01B, -SS01C, -S02, -SS02A, and -SS02B) were collected from two direct-push boreholes that were advanced in the northwestern, undeveloped portion of the SGPP facility [**Figure 2**]. All seven of the soil samples reported non-detect values for TCE and cis-1,2-DCE with RDLs ranging from 4.3 µg/kg to 5.1 µg/kg [Ref. 22, p. 29; 23, pp. 22–23, 112–113; 33, p. 8; 41, pp. 3–6, 22, 28, 36, 42, 45, 51, 57, 121–126; 45, pp. 61, 78, 95, 112, 125, 138, 151]. Background soil sample SGPP-S01 (depth: 0 to 2 feet), which had the highest RDL of 5.1 µg/kg, is evaluated as the maximum background concentration [Ref. 22, p. 29; 23, pp. 22, 112; 33, p. 8; 41, pp. 3–6, 28, 122; 45, p. 78]. All seven of the soil samples also reported non-detect values for Aroclor-1254 and Aroclor-1260, with RDLs ranging from 36 µg/kg to 40 µg/kg [Ref. 22, p. 29; 23, pp. 22–23, 112–113; 33, p. 8; 41, pp. 2, 10–12, 21, 27, 35, 38, 44, 50, 56, 155–156; 45, pp. 1217, 1220, 1223, 1226, 1229, 1232, 1235]. SGPP-S01 (depth: 0 to 2 feet) reported the highest RDL of 40 µg/kg and is therefore evaluated as the maximum background concentration for Aroclors [Ref. 22, p. 29; 23, pp. 22, 112; 41, pp. 10–12, 27, 155; 45, p. 1220]. All of the soil samples used to document the presence of the contaminated soil source at the SGPP facility were collected during the same sample sampling event, using the same methodologies as outlined in EPA sampling SOPs [Ref. 22, pp. 20, 24, 29, 50–52; 23, pp. 6, 84, 112; 30, pp. 4, 73–76]. All soil samples were analyzed by the same EPA CLP laboratory (Chemtech Consulting Group of Mountainside, NJ) under CLP SOW SOM02.3 and the data were validated according to EPA Region 2 data validation guidelines [Ref. 23, pp. 1, 84, 112; 32, pp. 3–6, 59; 41, pp. 3–6, 28; 45, p. 1; 49, p. 1].

PCBs are attributable to historical facility operations. Phase I and II ESAs prepared for the facility in 1996 identified an "old" transformer known to contain PCBs as a CEC [Ref. 40, pp. 11–12]. The transformer was mounted on a concrete pad in the rear of the facility [Ref. 40, p. 11]. During the Phase I, the transformer appeared to be at least as old as the original facility building, which was built in 1961, and it was not contained within any bermed area [Ref. 40, p. 12]. The transformer was removed in 1995 [Ref. 40, p. 12]. Although no signs of leakage or spillage were observed, the ESAs noted that spillage may have occurred during filling or replacement of transformer oil in the past [Ref. 40, p. 12]. Phase II soil sampling reported the presence of Aroclor-1254 and Aroclor-1260 at estimated concentrations in three soil samples (TF-1M-163, GD-1M-1, and GD-1M-2) at concentrations below their respective New York State TAGMs [Ref. 40, p. 38].

Sampling and analysis by EPA in April and May 2016 showed the presence of PFOA in SGPP facility soil; however, due to laboratory quality control issues, the data are considered unusable and will not be evaluated in this HRS Documentation Record Package.

Location of the source, with reference to a map of the site:

Source 1 (contaminated soil) is located at EPA soil boring location SGPP-S07 at depths ranging from 0 to 12 feet below ground surface (bgs). SGPP-S07 was advanced in the northeastern portion of the SGPP facility property [**Figure 2**; Ref. 22, p. 24; 23, pp. 29, 84; 32, pp. 50, 59, 49, pp. 168, 1,200]. The geographic coordinates for SGPP-S07 are 42° 53′ 39.48″ (42.8943°) and 73° 21′ 23.76″ (-73.3566°) [Ref. 51, p. 2]. The location is depicted on **Figure 2**.

Containment

Release to ground water:

Sampling and analysis by EPA in May 2016 documents the presence of TCE and PFOA in SGPP facility monitoring wells at a concentrations significantly above background [Ref. 1, Table 2-3, Section 3.1.1; see **Section 3.1.1 of this HRS documentation record**]. Analysis of ground water sample SGPP-MW03, collected from a SGPP facility monitoring well (MW-3) located in the eastern portion of the SGPP facility property in the vicinity of SGPP-S07, reported the presence of TCE at a concentration of 13 µg/L [**Figure 2**; Ref. 7, p. 211; 22, p. 33; 23, p. 134; 33, p. 8; 35, pp. 6–10, 36, 138; 47, p. 304]. Analysis of background ground water samples SGPP-MW05 and duplicate sample SGPP-MW06 reported non-detect values for TCE [Ref. 22, p. 33; 23, p. 133; 33, p. 8; 35, pp. 2, 6–10, 50, 58, 140–141; 47, pp. 325, 335]. The background and contaminated samples were collected from the same hydrologic unit (i.e., unconsolidated sand and gravel aquifer) [see **Section 3.0.1 of this HRS documentation record**].

On May 17, 2016, EPA collected ground water sample SGPP-DW03 from Village Well 6 via the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, p. 38; 23, p. 152]. Village Well 6 is the closest of the three village wells to the contaminated soil source at the SGPP facility (i.e., borehole SGPP-S07) [**Figure 4**]. Analysis of SGPP-DW03 reported the presence of VC, a breakdown product of TCE, at a concentration of 1.3 µg/L [Ref. 33, p. 8; 38, pp. 16–17; 43, pp. 3–6, 39, 117; 48, p. 68]. Analytical results of background samples collected from Village Well 7 (SGPP-DW01) and Village Well 3 (SGPP-DW02 and duplicate SGPP-DW04) reported non-detect values for VC [Ref. 22, p. 37; 23, pp. 147–148; 33, p. 8; 43, pp. 2–6, 28, 33, 49, 115–116, 118; 48, pp. 48, 58, 79]. All three village wells withdraw water from the lower sand and gravel aquifer, which exhibits leaky artesian conditions [Ref. 6, pp. 12–13, 18, 53–54; 28, p. 1].

Sampling and analysis by EPA in May 2016 shows the presence of PFOA in SGPP facility monitoring wells at concentrations that are significantly above background [Ref. 1, Table 2-3, Section 3.1.1; see **Section 3.1.1 of this HRS documentation record**]. PFOA was detected in ground water samples SGPP-MW02D (18,000 ng/L), SGPP-MW03 (7,200 ng/L), SGPP-MW04 (2,100 ng/L), SGPP-MW05 (590 ng/L), and SGPP-MW06 (570 ng/L) (environmental duplicate of SGPP-MW05), which were collected from SGPP facility monitoring wells MW-2, MW-3, MW-4, MW-5, and MW-5 (duplicate), respectively [**Figure 2**; Ref. 7, pp. 210–213; 22, pp. 32–33; 23, pp. 143–144; 55, pp. 9–10, 18, 20–23]. Analysis of background ground water sample SGPP-MW01D, collected from upgradient monitoring well MW-1, indicated a PFOA concentration of 40 ng/L [**Figure 2**; Ref. 7, p. 208; 22, p. 33; 23, p. 143; 42, p. 1; 55, pp. 9, 16. The background and contaminated samples were collected from the same hydrologic unit (i.e., upper unconsolidated sand and gravel aquifer) [Ref. 7, pp. 200, 202–206; 10, p. 1].

EPA also collected ground water samples from monitoring wells EPA MW-3 and EPA MW-4, which were installed between the SGPP facility and the village wells and are screened in the lower sand and gravel aquifer [**Figure 3**; Ref. 24, pp. 5, 10]. Analysis of ground water samples SGPP-EPA-GW03 and SGPP-EPA-GW04 collected from these wells showed the presence of PFOA at concentrations of 370 ng/L and 530 ng/L, respectively [Ref. 22, pp. 35–36; 23, p. 143; 55, pp. 9, 14–15].

On May 16, 2016, EPA collected ground water sample SGPP-DW01 from Village Well 7 via the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, p. 37; 23, p. 158]. Analysis of SGPP-DW01 showed the presence of PFOA at a concentration of 520 ng/L [Ref. 56, pp. 9, 13, 90]. Analytical results for samples collected from Village Well 3 (SGPP-DW02 and duplicate SGPP-DW04) indicated PFOA concentrations of 140 ng/L and 150 ng/L [Ref. 22, p. 37; 23, p. 158; 56, pp. 9, 14, 16, 90]. All three village wells withdraw water from the lower sand and gravel aquifer, which exhibits leaky artesian conditions; Village Well 3, being the farthest from the source, is considered to receive less impact from site sources and is evaluated as representing background conditions for scoring purposes [**Figure 4; see Section 3.0.1 of this HRS documentation record**].

Based on a lack of containment measures (e.g., liner, maintained engineered cover, a functioning and maintained run-on control system and runoff management system, or a functioning leachate collection and removal system) and evidence of hazardous substance migration (i.e., TCE and PFOA detections significantly above background in

ground water samples collected from SGPP facility monitoring wells, and VC and PFOA detections in Village Wells 6 and 7, respectively), a containment factor of 10 is assigned [Ref. 1, Table 3-2; 23, p. 29].

2.4.1 Hazardous Substances

As discussed above, soil samples collected by SGPP in August 2015 document the presence of PFOA in facility soils. Soil and ground water samples collected by EPA in April 2016 document the presence of TCE, cis-1,2-DCE, and PCBs in site soils and TCE and VC in the aquifer of concern. As all of these compounds are man-made chemicals and do not naturally occur in the environment, the data for the samples discussed above are being considered for source documentation and are presented in Tables 1–7. The source type is contaminated soil; therefore, background soil samples are used for comparison purposes. *Sampling and analysis by EPA in April and May 2016 showed the presence of PFOA in SGPP facility soil; however, due to laboratory quality control issues, the data are considered unusable and will not be evaluated in this HRS Documentation Record Package.*

TABLE 1. BACKGROUND AND SOURCE SAMPLE INFORMATION – cis-1,2-DCE and TCE						
Field Sample ID	**CLP ID**	**Sample Date**	**Sample Time**	**Depth (feet)**	**Solids (%)**	**References**
Background Sample						
SGPP-S01	BD371	5/3/2016	1550	0–2	81.7	22, p. 29; 23, p. 112; 45, pp. 2, 78
Source Sample						
SGPP-SS07B	BD3B1	4/27/2016	1710	10–12	88.7	22, p. 24; 23, p. 84; 49, pp. 3, 168

TABLE 2. BACKGROUND AND SOURCE SAMPLE INFORMATION – PCBs						
Field Sample ID	**CLP ID**	**Sample Date**	**Sample Time**	**Depth (feet)**	**Solids (%)**	**References**
Background Sample						
SGPP-S01	BD371	5/3/2016	1550	0–2	81.7	22, p. 29; 23, p. 112; 45, pp. 2, 1220
Source Sample						
SGPP-S07	BD3A9	4/27/2016	1650	0–2	78.3	22, p. 24; 23, p. 84; 49, pp. 3, 1200

TABLE 3. BACKGROUND AND SOURCE CONCENTRATIONS – cis-1,2-DCE and TCE				
	Maximum Background Concentration		**Source Concentration**	
Field Sample ID	SGPP-S01		SGPP-SS07B	
Sample Date	5/3/2016		4/27/2016	
CLP Sample ID	BD371		BD3B1	
Depth (feet)	0–2		10–12	
	Result	**RDL***	**Result**	**RDL***
cis-1,2-DCE	5.1 U	5.1	8.4	4.2
TCE	5.1 U	5.1	160	4.2
References	22, p. 29; 23, p. 112; 33, p. 8; 41, pp. 2–6, 28, 122; 45, pp. 2, 78		22, p. 24; 23, p. 84; 32, pp. 3–6, 59, 160; 33, p. 8; 49, pp. 3, 168	

Concentrations reported in micrograms per kilogram (µg/kg).
RDL = Reporting Detection Limit.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) (i.e., SQL) for sample and method.
*The RDL for each result is the CRQL adjusted for sample and method [Ref. 33, p. 8]. Since the samples were analyzed through CLP, these adjusted CRQLs are used in place of the HRS-defined sample quantitation limit (SQL) [Ref. 1, Sections 1.1 and 2.3].

TABLE 4. BACKGROUND AND SOURCE CONCENTRATIONS – PCBs				
	Maximum Background Concentration		**Source Concentration**	
Field Sample ID	SGPP-S01		SGPP-S07	
Sample Date	5/3/2016		4/27/2016	
CLP Sample ID	BD371		BD3A9	
Depth (feet)	0–2		0–2	
	Result	**RDL***	**Result**	**RDL***
Aroclor-1254	40 U	40	110	42
Aroclor-1260	40 U	40	120	42
References	22, p. 29; 23, p. 112; 33, p. 8; 41, pp. 2, 10–13, 27, 155; 45, pp. 2, 1220		22, p. 24; 23, p. 84; 32, pp. 10–12, 50, 199; 33, p. 8; 49, pp. 3, 1200	

Concentrations reported in micrograms per kilogram (µg/kg).
RDL = Reporting Detection Limit.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted CRQL (i.e., SQL) for sample and method.
*The RDL for each result is the CRQL adjusted for sample and method [Ref. 33, p. 8]. Since the samples were analyzed through CLP, these adjusted CRQLs are used in place of the HRS-defined SQL [Ref. 1, Sections 1.1 and 2.3].

Notes on samples

- Source sample concentrations are compared to the maximum RDL of the non-detect background samples.
- Sampling Methods: The background and source samples were all collected from the SGPP facility property by EPA, using EPA SOPs, during the same sample event in April–May 2015 [**Figure 2**; Ref. 22, pp. 20, 24, 29, 50–52; 30, pp. 72–75].
- Analytical Procedures: The background and source samples were all analyzed for Organic TAL VOC parameters via EPA CLP Statement of Work (SOW) SOM02.3 by the same laboratory (Chemtech Consulting Group of Mountainside, New Jersey) [Ref. 23, pp. 1, 84, 112; 45, p. 1; 49, p. 1]. The chemical analyses were coordinated through the EPA CLP; EPA validated the data according to EPA Region 2 data validation guidelines [Sample Delivery Groups (SDG): BD381 and B0AR7] [Ref. 32, pp. 1–6, 10–12; 41, pp. 1–6, 10–13].
- Percent Solids: Background and source samples had similar percent (%) solid content [see **Tables 1 and 2**].

TABLE 5. BACKGROUND AND SOURCE SAMPLE INFORMATION – PFOA						
Field Sample ID	**Laboratory ID**	**Sample Date**	**Sample Time**	**Depth (feet)**	**Moisture (%)**	**References**
Background Sample						
SG1-MW02D-02.0	ATN772	8/5/2015	1510	2–4	11	7, pp. 4, 110, 143
Source Samples						
SG1-MW01D-02.0	AUP458	8/10/2015	1315	2–4	9.6	7, pp. 4, 110
SG1-MW02D-00.0	ATN771	8/5/2015	1500	0–2	11	7, pp. 4, 109, 143
SG1-DS01-150805*	ATN770	8/5/2015	1445	0–2	11	7, pp. 4, 109, 143
SG1-MW03S-00.0	AUP467	8/13/2015	0840	0–2	14	7, pp. 5, 112
SG1-MW04S-00.0	ATN765	8/5/2015	0825	0–2	22	7, pp. 5, 109, 143
SG1-MW04S-02.0	ATN766	8/5/2015	0830	2–4	25	7, pp. 5, 109, 143
SG1-MW05S-00.0	AUP461	8/11/2015	1210	0–2	12	7, pp. 5, 111
SG1-MW05S-02.0	AUP462	8/11/2015	1212	2–4	15	7, pp. 5, 111

* Environmental duplicate of SG1-MW02D-00.0.

TABLE 6. BACKGROUND SAMPLE RESULTS – PFOA						
Field Sample ID	**Laboratory ID**	**Hazardous Substance**	**Date Sampled**	**Result (µg/kg)**	**MDL* (µg/kg)**	**Reference(s)**
SG1-MW02D-02.0	ATN772	PFOA	8/5/2015	0.35	0.023	7, pp. 55–59, 110

Concentrations reported in micrograms per kilogram (µg/kg).
MDL = method detection limit.
* For HRS purposes, the detection limit (DL) used is the MDL, which is the lowest concentration of analyte that a method can detect reliably in either a sample or blank [Ref. 1, Section 1.1]. Since the sample analysis was not performed under the CLP, the MDL is used in place of the HRS-defined SQL [Ref. 1, Section 2.3].

TABLE 7. SOURCE SAMPLE RESULTS – PFOA						
Field Sample ID	**Laboratory ID**	**Hazardous Substance**	**Date Sampled**	**Result (µg/kg)**	**MDL* (µg/kg)**	**Reference(s)**
SG1-MW01D-02.0	AUP458	PFOA	8/10/2015	2.4	0.023	7, pp. 55–59, 110
SG1-MW02D-00.0	ATN771	PFOA	8/5/2015	1.3	0.023	7, pp. 55–59, 109
SG1-DS01-150805	ATN770	PFOA	8/5/2015	1.5	0.023	7, pp. 55–59, 109
SG1-MW03S-00.0	AUP467	PFOA	8/5/2015	2.5	0.023	7, pp. 55–59, 112
SG1-MW04S-00.0	ATN765	PFOA	8/5/2015	4.1	0.023	7, pp. 55–59, 109
SG1-MW04S-02.0	ATN766	PFOA	8/5/2015	1.8	0.023	7, pp. 55–59, 109
SG1-MW05S-00.0	AUP461	PFOA	8/11/2015	1.4	0.23	7, pp. 55–59, 111
SG1-MW05S-02.0	AUP462	PFOA	8/11/2015	1.2	0.023	7, pp. 55–59, 111

Concentrations reported in micrograms per kilogram (µg/kg).
MDL = method detection limit
* For HRS purposes, the DL used is the MDL, which is the lowest concentration of analyte that a method can detect reliably in either a sample or blank [Ref. 1, Section 1.1]. Since the sample analysis was not performed under the CLP, the MDL is used in place of the HRS-defined SQL [Ref. 1, Section 2.3].

Notes on samples

- Sampling Methods: The background and source samples were all collected from the SGPP facility property by SGPP during August 2015 [Ref. 7, pp. 4–5, 23, 109–112].
- Analytical Procedures: The background and source samples were all analyzed for selected perfluorinated alkyl acids (PFAA) parameters via solid phase extraction and liquid chromatography/tandem mass spectrometry (LC/MS) by the same laboratory (Maxxam Analytics of Mississauga, Ontario, Canada) [Ref. 7, pp. 55–56, 109–112]. The data was subjected to Level II data validation based on EPA CLP National Functional guidelines for Superfund Organic Methods Data Review (June 2008) [Ref. 7, pp. 55–59].
- Percent Moisture: Background and most source samples had similar percent (%) moisture content [see **Table 5**].

<u>EPA 2016 Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids Results</u>

Sampling and analysis by EPA in April and May 2016 showed the presence of PFOA in SGPP facility soil; however, due to laboratory quality control issues, the data are considered unusable and will not be evaluated in this HRS Documentation Record Package.

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Tier A – Hazardous Constituent Quantity

The hazardous constituent quantity for Source 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence [Ref. 1, Section 2.4.2.1.1]. There are insufficient historical and current data [manifests, potentially responsible party (PRP) records, State records, permits, waste concentration data, etc.] available to adequately calculate the total or partial mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source 1 with reasonable confidence. As a result, the evaluation of hazardous waste quantity proceeds to the evaluation of *Tier B*, Hazardous Wastestream Quantity [Ref 1, Section 2.4.2.1.1].

Hazardous Constituent Quantity (C) Value: NS

2.4.2.1.2 Tier B – Hazardous Wastestream Quantity

The hazardous wastestream quantity for Source 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams plus the mass of any additional CERCLA pollutants and contaminants in the source and releases from the source is not known and cannot be estimated with reasonable confidence [Ref. 1, Section 2.4.2.1.2]. There are insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, etc.) available to adequately calculate the total mass or partial mass of the hazardous wastestreams plus the mass of all CERCLA pollutants and contaminants in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous wastestream quantity for Source 1 with reasonable confidence. Scoring proceeds to the evaluation of *Tier C*, Volume [Ref. 1, Section 2.4.2.1.2].

2.4.2.1.3 Volume (Tier C)

The information available on the depth of Source No. 1 is not sufficiently specific to support an exact volume of the contaminated soil with reasonable confidence; therefore it is not possible to assign a volume (Tier C) for Source 1 [Ref. 1, p. 51591 (Section 2.4.2.1.3)]. Source 1 has been assigned a value of 0 for the volume measure [Ref. 1, p. 51591]. As a result the evaluation of hazardous waste quantity proceeds to the evaluation of *Tier D*, Area [Ref. 1, p. 51591].

Volume (V) Value: 0

2.4.2.1.4 Area (Tier D)

Contaminated soil has been documented at the site; however, as contamination has been documented (e.g., SGPP-S07, SG1-MW04S-00.0) a definitive area of contamination has not been determined. Because the information available is insufficient to estimate the area and measure with reasonable confidence [as required in Section 2.4.2.1.4 of Reference 1], a value of greater than zero (>0) is established as the source hazardous waste quantity (HWQ) value for Tier D – area. The source type is "Contaminated Soil," so the area value is divided by 34,000 to obtain the assigned value of >0, as shown below [Ref. 1, p. 51591, Section 2.4.2.1.3, Table 2-5].

Area of source in ft^2 = >0
Area (A) Assigned Value: >0/34,000 = >0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source hazardous waste quantity value for Source No. 1 is >0 for Tier D – Area [Ref. 1, p. 51591].

Source Hazardous Waste Quantity Value: >0

ED_001670_00014122-00030

SITE SUMMARY OF SOURCE DESCRIPTIONS

TABLE 8. HAZARDOUS WASTE QUANTITY AND CONTAINMENT					
Source Number	**Source Hazardous Waste Quantity Value**	**Containment**			
		Ground Water	**Surface Water**	**Air (Gas)**	**Air (Particulate)**
1	>0	10	NS	NS	NS

NS = Not Scored

Other Possible Sources

SGPP Facility Sump (a.k.a Sewage Ejector Pit)

A May 1996 Phase II ESA conducted by Furon Company identified the presence of chlorinated VOCs in facility soil and ground water. The Phase II ESA noted that the facility maintains floor drains and a sump, and concluded that the TCE source may be related to the facility sump pit [Ref. 40, p. 46]. However, sampling and analysis of EPA waste water samples SGPP-WW02 (sewage ejector pit) and SGPP-WW01 (Manhole #1) in May 2016 reported non-detect values for chlorinated solvents [Ref. 22, pp. 34, 55; 23, p. 136; 35, pp. 82–83, 85–86].

Waste water samples collected by SGPP in 2015 from the sewage ejector pit and Manhole #1 showed the presence of PFOA at concentrations of 850 ng/L (duplicate result 470 ng/L) and 1,000 ng/L, respectively [Ref. 7, p. 10]. EPA sampling in May 2016 showed PFOA at concentrations of 110 ng/L (estimated) and 74 ng/L, respectively [Ref. 55, pp. 10, 26–27; 58, pp. 6–11, 13, 21].

Former employees of the McCaffrey Street facility describe a powder-like smoke plume that was routinely discharged to the air from the facility's smokestacks and settled in the valley surrounding the plant [Ref. 4, p. 1]. Although analytical data documenting the presence of PFOA in the plume is not known to exist, given the physical state of PFOA at room temperature (i.e., white powder or waxy white solid) and the facility's use of PFOA-containing materials at the time, it is considered reasonable to conclude that the air emissions contained at least some PFOA. However, the smokestack emissions are historical and are therefore not evaluated as a source in this HRS documentation record package.

3.0 GROUND WATER MIGRATION PATHWAY

3.0.1 General Considerations

The Hoosick Falls well field is located on the Hoosic River floodplain east of the river and near the southern limits of the village [**Figures 1, 3, and 4**; Ref. 5, p. 1; 27, p. 3]. The municipal wells withdraw water from the lower of two sand and gravel aquifers that overlie bedrock, as evidenced by available background information that indicates that Village Well 3, which has a total depth of 55 feet and a pump suction flange depth of 53 feet, withdraws water from the lower aquifer and that the total well depths and pump suction flange depths of Village Wells 6 and 7 are of similar or greater depth; therefore it is reasonable to conclude that Village Wells 6 and 7 also withdraw water from the lower aquifer [Ref. 27, pp. 7, 18; 28, pp. 1, 8, 13, 24–25, 27, 31, 37]. The upper aquifer consists of sandy gravel deposited by the Hoosic River and its tributaries in post-glacial times [Ref. 6, pp. 12–13, 17–18; 27, p. 3]. The upper aquifer is approximately 15 feet thick; however, only the lower part is saturated [Ref. 27, p. 3]. The lower aquifer was deposited by glacial meltwater [Ref. 6, pp. 12–13, 17–18; 27, p. 3]. The deep gravel deposit is as much as 25 feet thick and is generally overlain by approximately 12 feet of fine sand that is part of the aquifer [Ref. 27, p. 3]. The areal extent of the sand and gravel aquifer is generally limited to the river valley areas, including the Hoosic River and its tributaries [Ref. 10, p. 1; 11, p. 21]. The lower aquifer is overlain by approximately 8 feet of poorly permeable clay and silt, which can be barrier to water flow and separates the deep aquifer from the shallow aquifer [Ref. 6, pp. 12–13, 18; 27, p. 3].

The sand and gravel aquifer extends north of the well field along the valleys of the Hoosic River and its tributaries and underlies the SGPP facility [Ref. 10, p. 1]. Surficial deposits outside the valley areas consist primarily of glacial till, a heterogeneous mixture of grain sizes ranging from clay and silt to cobbles and boulders [Ref. 11, pp. 17, 20]. The thickness of the glacial till is variable and may exceed 100 feet; ground water yields are generally small and are considered sufficient for domestic use [Ref. 11, pp. 17, 20]. As the sand and gravel aquifer is limited to the river valleys and the glacial till is not a significant source of drinking water, potential targets of contamination beyond the sand and gravel aquifer are not evaluated in this HRS documentation record.

Hoosick Falls is located in eastern Rensselaer County, which is part of the Taconic section of the New England Upland [Ref. 11, p. 13; 17, p. 1]. The bedrock underlying the Taconic area consists of schist, slate, and limestone of Cambrian and Ordovician age, which have been intensely folded and metamorphosed [Ref. 11, p. 13]. The Walloomsac slate underlies the surficial deposits in the site area and consists of dark-green, fine-grained slate [Ref. 11, p. 17]. Due to low porosity, ground water flow is through joints and fractures in the rock [Ref. 11, p. 23]. Ground water yields are variable and depend on the number and size of water-bearing factures intersected during well installation [Ref. 11, p. 23]. The Walloomsac slate lies conformably on the uppermost member of the Stockbridge limestone [Ref. 11, pp. 17, 19]. The limestone has also been subjected to considerable metamorphism and ground water flow is through intersecting systems of joints and fault cracks [Ref. 11, p. 19]. Wells that penetrate fractures can be expected to yield moderate supplies of ground water (17 to 18 gallons per minute) [Ref. 11, p. 17]. The Stockbridge has the highest average yield of all the bedrock formations in Rensselaer County [Ref. 11, p. 17]. The bedrock in the site vicinity is not a significant aquifer and exhibits very little primary porosity, although some secondary porosity does exits; therefore, for the purposes of this HRS documentation Record, the bedrock surface is considered to be the lower limit of the aquifer being evaluated [Ref. 6, p. 17].

Aquifer Interconnection

The lower sand and gravel aquifer is described as exhibiting "leaky artesian conditions" [Ref. 6, p. 18]. In addition, the detection of VC in Village Well 6 documents that contamination has migrated between the upper and lower aquifers [see **Section 3.1.1 of this HRS documentation record**]. Therefore, an aquifer interconnection has been documented within 2 miles of sources at the site and for HRS scoring purposes, the upper and lower aquifers are evaluated together as a single hydrologic unit [Ref. 1, Section 3.0.1.2.1]. The vertical extent of this combined hydrologic unit is approximately 60 feet (upper aquifer: 15 feet + silt and clay layer: 8 feet + lower aquifer: 37 feet) [Ref. 27, p. 3]. The sand and gravel aquifer in the vicinity of the site generally trends north to south following the course of the Hoosic River [Ref. 10, p. 1]. The lateral extent of the sand and gravel aquifer in the vicinity of the village wells is approximately 0.8 mile [Ref. 10, p. 1]. Moving north the aquifer widens to approximately 1 mile in the vicinity of the SGPP facility [Ref. 10, p. 1].

Aquifer Discontinuities

The unconsolidated sand and gravel aquifer underlies the Hoosic River and its tributaries [Ref. 10, p. 1]. The aquifer trends north to south in the vicinity of the site and is roughly bisected by the Hoosic River [Ref. 10, p. 1]. However, given that the vertical extent of the combined upper and lower aquifers is approximately 60 feet, it is unlikely the Hoosic River completely transects the sand and gravel aquifer in the vicinity of the site [Ref. 27, p. 3]. In addition, both the contaminated soil source and the village wells lie to the east of Hoosic River; therefore, even if the Hoosic River formed an aquifer discontinuity, it would likely not disrupt the flow of ground water and hazardous substances from the source to the village wells [**Figure 3**]. Although the pre-development ground water flow direction in the vicinity of the SGPP facility and the village wells was likely northward in the direction of flow of the Hoosic River, the pumping of the village wells has created a radius of influence that extends out as far as 0.67 mile and encompasses the SGPP facility [Ref. 29, pp. 1–3]. Shallow ground water flow beneath the SGPP was observed to be northwest to south-southeast toward the village wells in both August–September 2015 and May 2016 [**Figures 2 and 3**; Ref. 7, pp. 20, 23; 42, p. 1].

Stratum 1 (shallowest)

Stratum/Aquifer Name: unconsolidated sand and gravel aquifer (upper aquifer)

Description: The upper aquifer consists of sandy gravel deposited by the Hoosic River and its tributaries in post-glacial times [Ref. 6, pp. 12–13, 17–18; 27, p. 3]. The upper aquifer is approximately 15 feet thick; however, only the lower part is saturated [Ref. 27, p. 3].

Stratum 2 (intervening layer)

Stratum/Aquifer Name: silt and clay layer

Description: The upper and lower aquifers are separated by approximately 8 feet of poorly permeable clay and silt with some fine sand, which can be barrier to water flow [Ref. 6, pp. 12–13, 53-54; 27, p. 3].

Stratum 3 (deepest)

Stratum/Aquifer Name: unconsolidated sand and gravel aquifer (lower aquifer)

Description:

The lower unconsolidated sand and gravel aquifer was deposited by glacial meltwater [Ref. 6, pp. 12–13, 17–18; 27, p. 3]. The deep gravel deposit is as much as 25 feet thick and is generally overlain by approximately 12 feet of fine sand that is part of the aquifer [Ref. 27, p. 3]. The lower sand and gravel aquifer is described as exhibiting "leaky artesian conditions" [Ref. 6, p. 18]. In addition, the detection of VC in Village Well 6 documents that contamination has migrated between the upper and lower aquifers [see **Section 3.1.1 of this HRS documentation record**]. Therefore, an aquifer interconnection has been documented within 2 miles of sources at the site and for HRS scoring purposes, the upper and lower aquifers are evaluated together as a single hydrologic unit [Ref. 1, Section 3.0.1.2.1].

The areal extent of the sand and gravel aquifer is generally limited to the river valley areas, including the Hoosic River and its tributaries [Ref. 10, p. 1; 11, p. 21]. The sand and gravel aquifer system extends north of the well field along the valleys of the Hoosic River and its tributaries and underlies the SGPP facility [Ref. 10, p. 1]. The Village of Hoosick Falls operates three public supply wells (Village Wells 3, 6, and 7); all three wells are located in a well field approximately 0.35 mile south of the SGPP facility and withdraw water from the sand and gravel aquifer. [**Figure 2**; Ref. 6, p. 12–13; 28, pp. 1, 8, 13, 24–27, 37]. The Hoosic River is in hydraulic contact with the sand and gravel aquifer as the municipal wells are deemed Ground Water Under the Direct Influence of Surface Water [Ref. 8, p. 2]. The SGPP facility lies within the approximate radius of influence of the village wells [Ref. 29, pp. 1–3]. The sand and gravel aquifer is evaluated separately from the glacial till and the underlying bedrock because data are not adequate to establish aquifer interconnections [Ref. 1, Section 3.0.1.2 and Table 3-6].

3.1 LIKELIHOOD OF RELEASE

3.1.1 Observed Release

Aquifer Being Evaluated: unconsolidated sand and gravel (upper and lower aquifers)

An observed release is documented for the SGPP site. Chemical analyses for ground water samples collected from monitoring wells located on the SGPP facility property and Village Wells 6 and 7, confirm the presence of hazardous substances in the upper and lower aquifer, respectively [see "Chemical Analysis", below].

Direct Observation

Information provided to EPA by SGPP documents an observed release by direct observation to the aquifer being evaluated. On December 12, 2014, SGPP became aware of the presence of PFOA in the village drinking water supply and obtained the analytical results on December 15, 2014 [Ref. 19, p. 1]. On December 30, 2014, counsel for SGPP submitted notification to EPA under the Section 8(e) of TSCA (15 U.S.C. § 2601 *et seq.*) regarding the presence of PFOA in the village public drinking water supply; PFOA analytical results for the village wells were attached to the notification [Ref. 19, pp. 1–10]. The notification acknowledges that SGPP processed fluoropolymers that were made with PFOA at a facility within the village [Ref. 19, p. 1]. Section 8(e) of TSCA requires any person who manufactures, processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment to immediately notify EPA of such information [Ref. 31, pp. 32, 33].

The May 2016 Health Effects Support Document for PFOA established an RfD value of 0.00002 mg/kg/day [Ref. 13, p. 256]. The calculated PFOA dose in the Village Well 7 is 0.000025 mg/kg/day [Ref. 59, pp. 1–4]. The calculated PFOA dose in ground water can be up to 0.000897 mg/kg/day [Ref. 59, pp. 1–4]. Both calculated dose values exceed the RfD [Ref. 59, pp. 1–4]. Therefore, the TSCA submittal by SGPP documents an observed release by direct observation of PFOA at a concentration that likely results in harm to any organism following exposure [Ref. 59, pp. 1–4]. The exceedances of the RfD establishes PFOA as a CERCLA pollutant or contaminant [Ref. 1, Section 3.1.1; 46, pp. 14–15; 59, pp. 1–4].

In June 2016, SGPP and NYSDEC State Superfund Program entered into an Order on Consent and Administrative Settlement [Ref. 18, pp. 1–31]. The Order designates the McCaffrey Street facility as a "significant threat to public health or the environment" [Ref. 18, p. 4]. Therefore, the Order directs SGPP to prepare and submit an RI/FS work plan for the McCaffrey Street facility to NYSDEC that includes a study and assessment of alternatives to eliminate or reduce PFOA in the MWS [Ref. 18, p. 4].

Chemical Analysis

TCE and VC

Sampling and analysis document an observed release of VC to the aquifer (i.e., sand and gravel aquifer). Sampling and analysis by EPA in April and May 2016 document the presence of an uncontained contaminated soil source at the SGPP facility, as the presence of TCE was reported in SGPP facility soil at a concentration significantly above background. Analysis of subsurface soil sample SGPP-SS07B (depth: 10 to 12 feet) reported the presence of TCE at a concentration of 160 µg/kg with an RDL of 4.2 µg/kg [**Figure 2**; Ref. 22, p. 24; 23, pp. 29, 84; 32, pp. 3–6, 59, 160; 33, p. 8; 49, p. 168]. Soil sample SGPP-SS07B was collected from a direct-push borehole advanced in the northeastern portion of the facility property [**Figure 2**]. In order to evaluate background conditions in an area believed to be unaffected by site activities, seven soil samples (SGPP-S01, -SS01A, -SS01B, -SS01C, -S02, -SS02A, and -SS02B) were collected from two direct-push boreholes that were advanced in the northwestern, undeveloped portion of the SGPP facility [**Figure 2**]. All seven of the soil samples reported non-detect values for TCE with RDLs ranging from 4.3 µg/kg to 5.1 µg/kg [Ref. 22, p. 29; 23, pp. 112–113; 33, p. 8; 41, pp. 3–6, 22, 28, 36, 42, 45, 51, 57, 121–126]. Background soil sample SGPP-S01 (depth: 0 to 2 feet), which had the highest RDL of 5.1 µg/kg, is evaluated as the maximum background concentration [Ref. 22, p. 29; 23, pp. 22, 112; 33, p. 8; 41, pp. 3–6, 28, 122; 45, p. 78]. All of the soil samples used to document the presence of the contaminated soil source at

the SGPP facility were collected during the same sampling event, using the same methodologies as outlined in EPA sampling SOPs [Ref. 22, pp. 20, 24, 29, 50–52; 23, pp. 6, 84, 112; 30, pp. 4, 73–76]. All soil samples were analyzed by the same EPA CLP laboratory (Chemtech Consulting Group of Mountainside, NJ) under CLP SOW SOM02.3 and the results were validated according to EPA Region 2 data validation guidelines [Ref. 23, pp. 1, 84, 112; 32, pp. 3–6, 59; 41, pp. 3–6, 28; 45, p. 1; 49, p. 1].

Sampling and analysis by EPA in May 2016 documents the presence of TCE in an SGPP facility monitoring well at a concentration significantly above background [Ref. 1, Table 2-3, Section 3.1.1]. Analysis of ground water sample SGPP-MW03, collected from an SGPP facility monitoring well (MW-3) located in the eastern portion of the SGPP facility property, showed the presence of TCE at a concentration of 13 µg/L with an RDL of 5.0 µg/L [**Figure 2**; Ref. 7, p. 211; 22, p. 33; 23, p. 134; 33, p. 8; 35, pp. 6–10, 36, 138; 47, p. 304]. SGPP facility monitoring well MW-5 is evaluated as representing background conditions. Based on the direction of ground water flow beneath the facility at the time of sampling, MW-5 is side-gradient to MW-3 [**Figure 2**; Ref. 7, pp. 20, 208, 210–213; 23, pp. 41–42, 44, 47, 49; 42, pp. 1, 6]. MW-5's construction is the same as that of MW-3 (i.e., screen length of 15 feet) and they are both screened at similar elevations [Ref. 7, pp. 20, 211, 213; 42, p. 1]. Analysis of ground water sample SGPP-MW05 and duplicate sample SGPP-MW06 reported non-detect values for TCE with an RDL of 5.0 µg/L [Ref. 22, p. 33; 23, p. 133; 33, p. 8; 35, pp. 2, 6–10, 50, 58, 140–141; 47, pp. 325, 335]. All of the ground water samples used to document the release of TCE at the SGPP facility were collected during the same sampling event, using the same methodologies as outlined in EPA sampling SOPs [Ref. 22, pp. 31–33, 57; 23, pp. 6, 47–50, 133–134; 30, pp. 4, 45–50, 56–58]. The ground water samples were analyzed by the same EPA CLP laboratory (Chemtech Consulting Group of Mountainside, NJ) under CLP SOW SOM02.3 and the results were validated according to EPA Region 2 data validation guidelines [Ref. 23, pp. 1, 133–134; 35, pp. 6–10, 36, 51, 58; 47, p. 1]. The background and contaminated samples were collected from the same hydrologic unit (i.e., upper unconsolidated sand and gravel aquifer) [Ref. 7, pp. 204, 206, 211, 213; 10, p. 1]. Ground water samples collected from SGPP facility monitoring wells MW-1 (Sample No SGPP-MW01D) and MW-2 (Sample No. SGPP-MW02D), which are situated upgradient of MW-3, reported non-detect values for TCE, documenting that the contamination has not migrated onto the SGPP facility from an upgradient off-site source to the north-northwest [**Figure 2**; Ref. 7, pp. 20, 200, 203, 208, 210; 22, p. 32–33; 23, pp. 41, 45, 48, 130, 134; 35, pp. 2, 6–10, 21, 29; 42, p. 1; 47, pp. 272, 294].

TCE, a man-made substance, is attributable to historical site operations [Ref. 36, p. 20]. A March 1996 Phase I ESA prepared for a former site occupant, Allied Signal Fluorglas, indicated that past uses of the facility included activities related to circuit board and electronics manufacturing [Ref. 39, pp. 1, 23]. Halogenated solvents, including TCE, are known to be used in the manufacture of circuit boards and electronics [Ref. 36, p. 21; 37, p. 9]. Analysis of soil and ground water samples collected as part of a May 1996 ESA prepared for a former facility occupant, Furon Company, reported the presence of TCE at an estimated concentration of 4.0 µg/kg at soil sample location MW-1M-0, and at estimated concentrations in ground water in two monitoring wells, MW-2M (13 µg/L) and MW-5M (6 µg/L) (duplicate result for MW-15M: 7 µg/L) [Ref. 40, pp. 36, 40, 44]. The Phase II ESA concluded that the TCE source may be related to the facility sump pit [Ref. 40, p. 46].

On May 16 and 17, 2016 EPA collected raw ground water samples from the three village wells (i.e., Village Wells 3, 6, and 7) [**Figure 3**; Ref. 22, pp. 37–38]. The village wells were sampled from a raw water sampling spigot within the Hoosick Falls water treatment plant with the assistance of water plant personnel [Ref. 22, pp. 36–37, 58]. According to water department personnel, previous sampling of the village wells included purging each well for 20 minutes; therefore, each of the village wells were also purged for 20 minutes [Ref. 22, pp. 37–38; 23, pp. 59, 62, 64]. Water quality parameters were recorded for all of the drinking water wells prior to sample collection [Ref. 22, p. 58; 23, pp. 59, 62, 64]. As discussed previously, the village wells withdraw water from a sand and gravel aquifer that underlies the Hoosic River and its tributaries [Ref. 10, p. 1].

On May 17, 2016, EPA collected ground water sample SGPP-DW03 from Village Well 6 via the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, p. 38; 23, p. 152]. Village Well 6 is the closest of the three village wells to the contaminated soil source at the SGPP facility (i.e., borehole SGPP-S07) [**Figure 4**]. Analysis of SGPP-DW03 showed the presence of VC at a concentration of 1.3 µg/L with an RDL of 0.5 µg/L [Ref. 22, p. 38; 23, p. 152; 33, p. 8; 43, pp. 3–6, 39, 117; 48, p. 68]. Analytical results of samples collected from Village Well 7 (SGPP-DW01) and Village Well 3 (SGPP-DW02 and duplicate SGPP-DW04) reported non-detect values for VC, each sample with an RDL of 0.5 µg/L [Ref. 22, p. 37; 23, pp. 147–148; 33, p. 8; 43, pp. 2–6,

28, 33, 49, 115–116, 118; 48, pp. 48, 58, 79]. Therefore, Village Wells 3 and 7 are evaluated as representing background conditions.

All of the ground water samples used to document the observed release of VC to Village Well 6 were collected during the same sampling event, using the same methodologies as previous sampling events and as outlined in EPA sampling SOPs [Ref. 22, pp. 37–38, 58–59; 23, pp. 59, 62, 64; 30, pp. 4, 70]. The ground water samples were analyzed by the same EPA CLP laboratory (Chemtech Consulting Group of Mountainside, NJ) under CLP SOW SOM02.3 and the results were validated according to EPA Region 2 data validation guidelines [Ref. 23, pp. 1, 147–148, 152; 43, pp. 1, 3–6; 48, p. 1]. The background and release samples documenting the observed release were all collected from public supply wells that withdraw water from the same hydrologic unit (i.e., lower sand and gravel aquifer) [Ref. 6, pp. 12–13; 28, p. 1].

The VC detected in Village Well 6 is attributable to the release of TCE and the contaminated soil source documented at the SGPP facility. Subsurface microorganisms can degrade chlorinated solvents via a variety of chemical processes [Ref. 38, pp. 15–17]. The most important process for the natural biodegradation of chlorinated solvents is reductive dechlorination [Ref. 38, p. 15]. In general, reductive dechlorination occurs by sequential dechlorination of tetrachloroethylene (PCE) to TCE to DCE to VC to ethene [Ref. 38, pp. 15–16]. Reductive dechlorination affects each of the chlorinated ethenes differently [Ref. 38, p. 17]. VC is the least susceptible to reductive chlorination because it is the least oxidized of these compounds [Ref. 38, p. 17]. As a result, the rate of reductive dechlorination decreases as the degree of chlorination decreases and may explain the accumulation of VC in TCE plumes [Ref. 38, p. 17].

Background Concentrations – TCE

In August 2015, SGPP installed seven monitoring wells, which included two co-located shallow and deep well pairs, at the McCaffrey Street facility property completed in the unconsolidated sand and gravel [Ref. 7, pp. 23, 199-213]. In May 2015, EPA collected ground water samples from the seven monitoring wells located on the SGPP facility property [**Figure 2**; Ref. 22, pp. 32–33]. Prior to purging and sample collection, EPA measured the static water level in each well [Ref. 23, pp. 39–50]. Based on the ground water elevations measured prior to sampling, the direction of ground water flow beneath the site was confirmed to be generally northwest to south-southeast [**Figure 2**; 7, p. 20; Ref. 23, pp. 39–50; 42, pp. 1, 6].

The duplicate ground water samples collected from MW-5 are evaluated as representing background conditions because the well was constructed with the same screened interval length (i.e., 15 feet) at a similar elevation as the release well (i.e., MW-3), and based on the inferred direction of ground water flow, is side-gradient of MW-3. [Figure 1]

TABLE 9. BACKGROUND SAMPLE INFORMATION – TCE

Well Location	Top of Casing Elev. (ft MSL)	Screened Interval (ft MSL)	Sample ID	Date Sampled	Reference(s)
MW-5*	433.50	427.5–412.5	SGPP-MW05 SGPP-MW06	5/11/2016	7, pp. 20, 213; 22, p. 33; 23, p. 133; 42, p. 1

ft MSL = feet above mean sea level
* also listed as MW-05

TABLE 10. BACKGROUND SAMPLE RESULTS – TCE						
Field Sample ID	**CLP Sample ID**	**Hazardous Substance**	**Date Sampled**	**Result (µg/L)**	**RDL* (µg/L)**	**Reference(s)**
SGPP-MW05	BD3E9	TCE	5/11/16	5.0 U	5.0	22, p. 33; 23, p. 133; 33, p. 8; 35, pp. 6–10, 50, 140; 47, pp. 5, 325
SGPP-MW06 (Duplicate of SGPP-MW05)	BD3F0	TCE	5/11/16	5.0 U	5.0	22, p. 33; 23, p. 133; 33, p. 8; 35, pp. 6–10, 58, 141; 47, pp. 5, 335

µg/L = micrograms per liter
RDL = reporting detection limit
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted CRQL for sample and method.
*The RDL for each result is the CRQL adjusted for sample and method [Ref. 33, p. 8]. Since the samples were analyzed through CLP, these adjusted CRQLs are used in place of the HRS-defined SQL [Ref. 1, Sections 1.1 and 2.3].

Contaminated Samples – TCE

On May 11, 2016, EPA collected ground water sample SGPP-MW03 from SGPP facility monitoring well MW-3. Analysis reported the presence of TCE at a concentration of 13 µg/L. This result is compared to the TCE results reported for designated background monitoring well, MW-5.

TABLE 11. RELEASE SAMPLE INFORMATION – TCE					
Well Location	**Top of Casing Elev. (ft. MSL)**	**Screened Interval (ft. MSL)**	**Sample ID**	**Date Sampled**	**Reference(s)**
MW-3*	436.33	432.33–417.33	SGPP-MW03	5/11/16	7, pp. 20, 211; 22, p. 33; 23, p. 134; 42, p. 1

* also listed as MW-03
Ft. MSL = feet above mean sea level

TABLE 12. OBSERVED RELEASE SAMPLE RESULTS – TCE						
Field Sample ID	**CLP Sample ID**	**Hazardous Substance**	**Date Sampled**	**Result (µg/L)**	**RDL* (µg/L)**	**Reference(s)**
SGPP-MW03	BD3E7	TCE	5/11/2016	13	5.0	22, p. 33; 23, p. 134; 33, p. 8; 35, pp. 6–10, 36, 138; 47, pp. 4, 304

µg/L = micrograms per liter
RDL = reporting detection limit
*The RDL for each result is the CRQL adjusted for sample and method [Ref. 33, p. 8]. Since the samples were analyzed through CLP, these adjusted CRQLs are used in place of the HRS-defined SQL [Ref. 1, Sections 1.1 and 2.3].

Notes on samples

- Release sample concentration is compared to the maximum RDL for non-detect background samples.
- Sampling Methods: The background and release samples were all collected by EPA from monitoring wells installed by SGPP at the McCaffrey Street facility that are screened in the same hydrologic unit, using an EPA SOP, during the same sampling event in May 2016 [**Figure 2**; Ref. 7, pp. 204, 206, 211, 213; 22, pp. 31–33; 23, pp. 47–50, 133–134; 30, pp. 46–50, 56–58].
- Analytical Procedures: The background and release samples were all analyzed for Organic TAL VOC parameters via EPA CLP SOW SOM02.3 (low/medium concentration) by the same laboratory (Chemtech Consulting Group of Mountainside, New Jersey) [Ref. 23, pp. 1, 3-4, 133–134; 47, pp. 1, 304, 325]. The chemical analyses were coordinated through the EPA CLP; EPA validated the data according to EPA Region 2 data validation guidelines (SDG: BD3E5) [Ref. 35, pp. 1, 6–10].

Background Concentrations – VC

On May 16, 2016, EPA collected raw ground water samples SGPP-DW01 from Village Well 7 and SGPP-DW02 and SGPP-DW04 (environmental duplicate of SGPP-DW02) from Village Well 3 [Ref. 22, pp. 37–38; 23, pp. 147–148]. All three samples were collected from the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, pp. 37–38, 58]. Because these wells are used for the same purpose (i.e., public drinking water supply) and withdraw water from similar elevations within the same hydrologic unit (i.e., sand and gravel aquifer) as the well that shows the release (i.e., Village Well 6), they are evaluated as representing background conditions [Ref. 6, pp. 12–13, 53-54; 8, p. 2; 28, pp. 1, 8, 26–28].

TABLE 13. BACKGROUND SAMPLE INFORMATION – VC					
Well Location	**Total Well Depth (ft.)**	**Pump Suction Flange Elevation (ft. MSL)**	**Sample ID**	**Date Sampled**	**Reference(s)**
Village Well 3	55	377	SGPP-DW02 and SGPP-DW04	5/16/2016	22, p. 37; 23, p. 148; 28, pp. 1, 8, 37
Village Well 7	64-76*	374	SGPP-DW01	5/16/2016	22, p. 37; 23, p. 147; 28, pp. 1, 24–26, 37

f.t MSL = feet above mean sea level
* Range of values indicated in supporting documentation

TABLE 14. BACKGROUND SAMPLE RESULTS – VC						
Field Sample ID	**CLP Sample ID**	**Hazardous Substance**	**Date Sampled**	**Result (µg/L)**	**RDL* (µg/L)**	**Reference(s)**
SGPP-DW02	BD3G2	VC	5/16/2016	0.50 U	0.50	22, p. 37; 23, p. 148; 33, p. 8; 43, pp. 2–6, 33, 116; 48, pp. 4, 58
SGPP-DW04*	BD3G4	VC	5/16/2016	0.50 U	0.50	22, p. 37; 23, p. 148; 33, p. 8; 43, pp. 2–6, 49, 118; 48, pp. 4, 79
SGPP-DW01	BD3G1	VC	5/16/2016	0.50 U	0.50	22, p. 37; 23, p. 147; 33, p. 8; 43, pp. 2–6, 28, 115; 48, pp. 3, 48

* Environmental duplicate of SGPP-DW02
µg/L = micrograms per liter
RDL = reporting detection limit
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted CRQL for sample and method.
*The RDL for each result is the CRQL adjusted for sample and method [Ref. 33, p. 8]. Since the samples were analyzed through CLP, these adjusted CRQLs are used in place of the HRS-defined SQL [Ref. 1, Sections 1.1 and 2.3].

Contaminated Samples – VC

On May 17, 2016, EPA collected raw ground water sample SGPP-DW03 from Village Well 6 [Ref. 22, p. 38; 23, p. 152]. The sample was collected from the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, pp. 38, 58]. Village Well 6 is a public drinking water supply well and withdraws water from a similar elevation within the same hydrologic unit (i.e., sand and gravel aquifer) as the background wells [Ref. 6, pp. 12–13; 8, p. 2; 28, pp. 1, 13, 37].

TABLE 15. RELEASE SAMPLE INFORMATION – VC					
Well Location	**Total Well Depth (ft)**	**Pump Suction Flange Elevation (ft MSL)**	**Sample ID**	**Date Sampled**	**Reference(s)**
Village Well 6	59	380	SGPP-DW03	5/17/2016	22, p. 38; 23, p. 152; 28, pp. 1, 13, 37

ft. MSL = feet above/below mean sea level

TABLE 16. OBSERVED RELEASE SAMPLE RESULTS – VC						
Field Sample ID	**CLP Sample ID**	**Hazardous Substance**	**Date Sampled**	**Result (µg/L)**	**RDL* (µg/L)**	**Reference(s)**
SGPP-DW03	BD3G3	VC	5/17/2016	1.3	0.50	22, p. 38; 23, p. 152; 43, pp. 3–6, 39, 117; 48, pp. 7, 68

µg/L = micrograms per liter
RDL = reporting detection limit
*The RDL for each result is the CRQL adjusted for sample and method [Ref. 33, p. 8]. Since the samples were analyzed through CLP, these adjusted CRQLs are used in place of the HRS-defined SQL [Ref. 1, Sections 1.1 and 2.3].

Notes on samples

- Release sample concentration is compared to the RDLs reported for the non-detect background samples.
- Sampling Methods: The background and release samples were all collected by EPA from the three active village wells via the raw water sampling spigot within the Hoosick Falls water treatment plant, that withdraw water from the same hydrologic unit, using an EPA SOP, during the same sample event in May 2015 [**Figure 3**; Ref. 6, pp. 12–13, 53–54; 8, p. 2; 22, pp. 37–38, 58; 23, pp. 147–148, 152; 28, pp. 1, 8, 13, 24–25].
- Analytical Procedures: The background and release samples were all analyzed for Organic TAL VOC parameters via EPA CLP SOW SOM02.3 (trace concentration) by the same laboratory (Chemtech Consulting Group of Mountainside, New Jersey) [Ref. 23, pp. 1, 147–148, 152; 47, pp. 1, 48, 58, 68, 79]. The chemical analyses were coordinated through the EPA CLP; EPA validated the data according to EPA Region 2 data validation guidelines (SDG: BD3F5) [Ref. 35, pp. 1, 3–6].

PFOA

Information regarding historical use of PFOA-containing materials and waste disposal practices at the SGPP facility, and sampling and analysis by EPA in May 2016, document an observed release of PFOA to the aquifer of concern (i.e., sand and gravel aquifer). In 1987 the facility that currently houses SGPP was sold to Allied Signal Fluorglas [Ref. 39, pp. 1, 23]. The property was sold to Furon Company in February 1996 [Ref. 40, p. 24]. Allied Signal Fluorglas and Furon company used the facility to manufacture PTFE-coated fiberglass, and molded and extruded PTFE intermediates [Ref. 40, p. 24]. Manufacturing processes at the facility included the use of certain non-stick coating [Ref. 40, p. 24]. Fluoropolymers used to manufacture non-stick coatings are known to include PFOA [Ref. 13, p. 20; 52, p. 1]. SGPP has operated at 14 McCaffrey Street since 1999 [Ref. 4, p. 1]. SGPP manufactures a variety of polymer-based products [Ref. 14, pp. 1–2]. The McCaffrey Street facility manufactures high-performance polymeric films and membranes, as well as foams for bonding, sealing, acoustical and vibrational damping, and thermal management; the facility previously used PFOA or raw materials containing PFOA in its manufacturing processes [Ref. 4, p. 1; 14, pp. 4, 7, 9; 19, p. 1]. PTFE-containing substances were used at the facility from approximately 1987 to 2003 (i.e., 16 years) [Ref. 4, p. 1; 39, pp. 22–23; 40, p. 24].

Former employees of the McCaffrey Street facility describe a powder-like smoke plume that was routinely discharged to the air from the facility's smokestacks and settled in the valley surrounding the plant [Ref. 4, p. 1]. The powder was observed to cover equipment and other surfaces within the facility as well [Ref. 4, p. 1]. After approximately 15 years of unfiltered emissions, filters were installed in the facility's smokestacks in the early 1980s [Ref. 4, p. 1]. A former employee stated that the filters and other equipment contacted by the white powder were cleaned weekly by washing them on a hillside outside the plant [Ref. 4, p. 1].

On December 30, 2014, counsel for SGPP submitted notification to EPA under the Section 8(e) of TSCA (15 U.S.C. § 2601 *et seq.*) regarding the presence of PFOA in the village public drinking water supply; PFOA analytical results for the village wells were attached to the notification [Ref. 19, pp. 1–10]. The notification acknowledged that SGPP processed fluoropolymers that contained PFOA at a facility within the village [Ref. 19, p. 1]. The TSCA submittal by SGPP documents an observed release by direct observation of PFOA, a CERCLA pollutant or contaminant [Ref. 1, Section 3.1.1; 46, pp. 14–15; 59, pp. 1–4].

Sampling and analysis by EPA in May 2016 documents the presence of PFOA in SGPP facility monitoring wells at concentrations that are significantly above background [Ref. 1, Table 2-3, Section 3.1.1]. PFOA was detected in ground water samples SGPP-MW02D (18,000 ng/L), SGPP-MW03 (7,200 ng/L), SGPP-MW04 (2,100 ng/L), SGPP-MW05 (590 ng/L), and SGPP-MW06 (570 ng/L) (environmental duplicate of SGPP-MW05), which were collected from SGPP facility monitoring wells MW-2, MW-3, MW-4, MW-5, and MW-5 (duplicate), respectively [**Figure 2**; Ref. 7, pp. 210–213; 22, pp. 32–33; 23, pp. 143–144; 55, pp. 9–10, 18, 20–23]. Analysis of background ground water sample SGPP-MW01D, collected from upgradient monitoring well MW-1, indicated a PFOA concentration of 40 ng/L [**Figure 2**; Ref. 7, p. 208; 22, p. 33; 23, p. 143; 42, p. 1; 55, pp. 9, 16]. The background and contaminated samples were collected from the same hydrologic unit (i.e., upper unconsolidated sand and gravel aquifer) [Ref. 7, pp. 200, 202–206; 10, p. 1].

All ground water samples used to document the release of PFOA at the SGPP facility were collected during the same sampling event, using the same methodologies as outlined in EPA sampling SOPs [Ref. 22, pp. 31–33, 54; 23, pp. 6, 41–45, 48–51, 143–144; 30, pp. 4, 45–50, 56–58]. The samples were all analyzed for PFCs by an EPA-subcontracted laboratory using standard operating procedures for extraction, analysis (HPLC/MS), and quality control [Ref. 55, pp. 77, 80; 57, pp. 3, 10–18, 23]. The data were validated by EPA according to EPA Region 2 data validation guidelines [Ref. 58, pp. 1–22].

As part of the May 2016 ground water sampling effort, EPA collected ground water samples from monitoring wells EPA MW-3 and EPA MW-4, which were installed between the SGPP facility and the village wells and are screened in the lower sand and gravel aquifer [**Figure 3**; Ref. 24, pp. 5, 10]. Analysis of ground water samples SGPP-EPA-GW03 and SGPP-EPA-GW04 collected from these wells showed the presence of PFOA at concentrations of 370 ng/L and 530 ng/L, respectively [Ref. 22, pp. 35–36; 23, p. 143; 55, pp. 9, 14–15].

On May 16 and 17, 2016 EPA collected raw ground water samples from the three village wells (i.e., Village Wells 3, 6, and 7) [**Figure 3**; Ref. 22, pp. 37–38]. The village wells were sampled from a raw water sampling spigot within the Hoosick Falls water treatment plant with the assistance of water plant personnel [Ref. 22, pp. 36–37, 58]. According to water department personnel, previous sampling of the village wells included purging each well for 20 minutes; therefore, each of the village wells were also purged for 20 minutes [Ref. 22, pp. 37–38; 23, pp. 59, 62, 64]. Water quality parameters were recorded for all of the drinking water wells prior to sample collection [Ref. 22, pp. 37-38, 58; 23, pp. 59, 62, 64]. As discussed previously, the village wells withdraw water from a sand and gravel aquifer that underlies the Hoosic River and its tributaries [Ref. 10, p. 1].

On May 16, 2016, EPA collected ground water sample SGPP-DW01 from Village Well 7 via the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, p. 37; 23, p. 158]. Analysis of SGPP-DW01 showed the presence of PFOA at a concentration of 520 ng/L [Ref. 56, pp. 9, 13, 90]. Analytical results for samples collected from Village Well 3 (SGPP-DW02 and duplicate SGPP-DW04) indicated PFOA concentrations of 140 ng/L and 150 ng/L [Ref. 22, p. 37; 23, p. 158; 56, pp. 9, 14, 16, 90]. All three village wells withdraw water from the lower sand and gravel aquifer, which exhibits leaky artesian conditions; Village Well 3, being the farthest from the source, is considered to receive less impact from site sources and is evaluated as representing background conditions for scoring purposes [**Figure 4**].

All of the ground water samples used to document the observed release of PFOA to Village Well 7 were analyzed for PFCs by an EPA-subcontracted laboratory using standard operating procedures for extraction, analysis (HPLC/MS), and quality control [Ref. 56, p. 90; 57, pp. 3, 10–18, 23]. The data were validated by EPA according to EPA Region 2 data validation guidelines [Ref. 58, pp. 1–22].

SGPP Facility Monitoring Well Background Concentrations – PFOA

In August 2015, SGPP installed seven monitoring wells, which included two co-located shallow and deep well pairs, at the McCaffrey Street facility property completed in the unconsolidated sand and gravel [Ref. 7, pp. 23, 199-213]. In May 2015, EPA collected ground water samples from the seven monitoring wells located on the SGPP facility property [**Figure 2**; Ref. 22, pp. 32–33]. Prior to purging and sample collection, EPA measured the static water level in each well [Ref. 23, pp. 39–50]. Based on the ground water elevations measured prior to sampling, the direction of ground water flow beneath the site was confirmed to be generally northwest to south-southeast [**Figure 2**; 7, p. 20; Ref. 23, pp. 39–50; 42, pp. 1, 6].

The ground water sample collected from MW-1 is evaluated as representing background conditions because the well is screened at similar elevations as the release wells. In addition, based on the significantly lower concentration of PFOA (40 ng/L) detected and MW-1's upgradient location relative to the release wells, the well appears to be unaffected by facility activities.

TABLE 17. SGPP FACILITY BACKGROUND SAMPLE INFORMATION – PFOA						
Well Location	**Top of Casing Elev. (ft. MSL)**	**Screened Interval (ft. MSL)**	**Sample ID**	**pH**	**Date Sampled**	**Reference(s)**
MW-1*	455.46	433.46–428.46	SGPP-MW01D	9.92	5/11/2016	7, pp. 20, 208; 22, p. 33; 23, pp. 45, 143; 42, p. 1

ft. MSL = feet above mean sea level
* also listed as MW-01

TABLE 18. SGPP FACILITY BACKGROUND SAMPLE RESULTS – PFOA						
Field Sample ID	**Laboratory Sample ID**	**Hazardous Substance**	**Date Sampled**	**Result (ng/L)**	**MDL* (ng/L)**	**Reference(s)**
SGPP-MW01D	K1605066-004	PFOA	5/11/16	40	0.27	22, p. 33; 23, p. 143; 55, pp. 9, 16

ng/L = nanograms per liter
MDL = method detection limit
* For HRS purposes, the DL used is the MDL, which is the lowest concentration of analyte that a method can detect reliably in either a sample or blank [Ref. 1, Section 1.1]. Since the sample analysis was not performed under the CLP, the MDL is used in place of the HRS-defined SQL [Ref. 1, Section 2.3].

SGPP Facility Monitoring Well Contaminated Samples – PFOA

On May 10 and 11, 2016, EPA collected ground water samples SGPP-MW02D, SGPP-MW03, SGPP-MW04, SGPP-MW05, and SGPP-MW06 from SGPP facility monitoring wells MW-2, MW-3, MW-4, and MW-5, respectively. Analysis reported the presence of PFOA at concentrations ranging from 570 ng/L to 18,000 ng/L. These results are compared to the PFOA results reported for designated background monitoring well, MW-1.

TABLE 19. SGPP FACILITY RELEASE SAMPLE INFORMATION – PFOA						
Well Location	**Top of Casing Elev. (ft. MSL)**	**Screened Interval (ft. MSL)**	**Sample ID**	**pH**	**Date Sampled**	**Reference(s)**
MW-2*	460.11	425.11–415.11	SGPP-MW02D	7.29	5/10/16	7, pp. 20, 210; 22, p. 32; 23, pp. 42, 143; 42, p. 1
MW-3*	436.33	432.33–417.33	SGPP-MW03	7.49	5/11/16	7, pp. 20, 211; 22, p. 33; 23, pp. 51, 143; 42, p. 1
MW-4*	430.86	419.86 – 404.864	SGPP-MW04	7.67	5/10/16	7, pp. 20, 212; 22, p. 32; 23, pp. 44, 143; 42, p. 1
MW-5*	433.50	427.5 –412.5	SGPP-MW05 SGPP-MW06**	6.51	5/11/16	7, pp. 20, 213; 22, p. 33; 23, pp. 49, 143–144; 42, p. 1

* also listed as MW-02, MW-03, MW-04, and MW-05
** environmental duplicate of SGPP-MW05
ft. MSL feet above mean sea level

TABLE 20. SGPP FACILITY OBSERVED RELEASE SAMPLE RESULTS – PFOA						
Field Sample ID	**Laboratory Sample ID**	**Hazardous Substance**	**Date Sampled**	**Result (ng/L)**	**MDL** (ng/L)**	**Reference(s)**
SGPP-MW02D	K1605066-006	PFOA	5/10/2016	18,000	14	22, p. 32; 23, p. 143; 55, pp. 9, 18
SGPP-MW03	K1605066-008	PFOA	5/11/2016	7,200	14	22, p. 33; 23, p. 143; 55, pp. 9, 20
SGPP-MW04	K1605066-009	PFOA	5/10/2016	2,100	5.4	22, p. 32; 23, p. 143; 55, pp. 9, 21
SGPP-MW05	K1605066-010	PFOA	5/11/2016	590	0.27	22, p. 33; 23, p. 143; 55, pp. 9, 22
SGPP-MW06*	K1605066-011	PFOA	5/11/2016	570	0.27	22, p. 33; 23, p. 144; 55, pp. 10, 23

ng/L = nanograms per liter
MDL = method detection limit
* environmental duplicate of SGPP-MW05
** For HRS purposes, the DL used is the MDL, which is the lowest concentration of analyte that a method can detect reliably in either a sample or blank [Ref. 1, Section 1.1]. Since the sample analysis was not performed under the CLP, the MDL is used in place of the HRS-defined SQL [Ref. 1, Section 2.3].

Notes on samples

- Release sample concentrations are compared to the most upgradient deep well sample concentration.
- Sampling Methods: The background and release samples were all collected by EPA from monitoring wells installed by SGPP at the McCaffrey Street facility that are screened in the same hydrologic unit, using an EPA SOP, during the same sampling event in May 2016 [**Figure 2**; Ref. 7, pp. 200, 202–206, 208, 210–213; 22, pp. 31–33; 23, pp. 41–45, 48–51, 143–144; 30, pp. 46–50, 56–58].
- Analytical Procedures: The background and release samples were all analyzed for PFCs by a single EPA-subcontracted laboratory using standard operating procedures for extraction, analysis (high performance liquid chromatography/mass spectrometry), and quality control [Ref. 55, pp. 77, 80; 57, pp. 3, 10–18, 23]. The data were validated by EPA according to EPA Region 2 data validation guidelines [Ref. 58, pp. 1–22].
- The behavior and fate of PFCs in sandy aquifer sediment is affected by pore water pH, which impacts their adsorptive properties. As pH decreases the potential of PFCs to adsorb to aquifer sediment increases [Ref. 53, pp. 2, 7]. Background ground water sample SGPP-MW01D showed a higher pH than the release samples, suggesting that the PFOA exhibited greater mobility near the background well than near the release wells.

Village Wells Background Concentrations– PFOA

On May 16, 2016, EPA collected raw ground water samples SGPP-DW02 and SGPP-DW04 (environmental duplicate of SGPP-DW02) from Village Well 3 [Ref. 22, pp. 37–38; 23, p. 158]. The samples were collected from the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, pp. 37–38, 58]. Because this well is used for the same purpose (i.e., public drinking water supply) and withdraws water from a similar elevation within the same hydrologic unit (i.e., sand and gravel aquifer) as the well that shows the release (i.e., Village Well 7), it is evaluated as representing background conditions [Ref. 6, pp. 12–13; 8, p. 2; 28, pp. 1, 8, 25, 27].

TABLE 21. VILLAGE WELLS BACKGROUND SAMPLE INFORMATION – PFOA						
Well Location	**Total Well Depth (ft.)**	**Pump Suction Flange Elevation (ft. MSL)**	**Sample ID**	**pH**	**Date Sampled**	**Reference(s)**
Village Well 3	55	377	SGPP-DW02 and SGPP-DW04	7.26	5/16/2016	22, p. 37; 23, pp. 62, 158; 28, pp. 1, 8, 37

ft. MSL = feet above mean sea level

TABLE 22. VILLAGE WELLS BACKGROUND SAMPLE RESULTS – PFOA						
Field Sample ID	**Laboratory Sample ID**	**Hazardous Substance**	**Date Sampled**	**Result (ng/L)**	**MDL** (ng/L)**	**Reference(s)**
SGPP-DW02	K1605268-002	PFOA	5/16/2016	140	0.27	22, p. 37; 23, p. 158; 56, pp. 9, 14
SGPP-DW04*	K1605268-004	PFOA	5/16/2016	150	0.27	22, p. 37; 23, p. 158; 56, pp. 9, 16

* Environmental duplicate of SGPP-DW02
ng/L = nanograms per liter
MDL = method detection limit
** For HRS purposes, the DL used is the MDL, which is the lowest concentration of analyte that a method can detect reliably in either a sample or blank [Ref. 1, Section 1.1]. Since the sample analysis was not performed under the CLP, the MDL is used in place of the HRS-defined SQL [Ref. 1, Section 2.3].

Village Wells Contaminated Samples – PFOA

On May 16, 2016, EPA collected raw ground water sample SGPP-DW01 from Village Well 7 [Ref. 22, p. 37; 23, p. 158]. The sample was collected from the raw water sampling spigot within the Hoosick Falls water treatment plant [Ref. 22, pp. 37, 58]. Village Well 7 is a public drinking water supply well and withdraws water from a similar elevation within the same hydrologic unit (i.e., sand and gravel aquifer) as the background wells [Ref. 6, pp. 12–13; 8, p. 2; 28, pp. 1, 24–25, 37].

TABLE 23. VILLAGE WELL RELEASE SAMPLE INFORMATION – PFOA						
Well Location	**Total Well Depth (ft.)**	**Pump Suction Flange Elevation (ft. MSL)**	**Sample ID**	**pH**	**Date Sampled**	**Reference(s)**
Village Well 7	64-76*	374	SGPP-DW01	7.36	5/16/2016	22, p. 37; 23, pp. 59, 147; 28, pp. 1, 24–26, 37

ft. MSL = feet above mean sea level
* Range of values indicated in supporting documentation

TABLE 24. VILLAGE WELL OBSERVED RELEASE SAMPLE RESULTS – PFOA						
Field Sample ID	**Laboratory Sample ID**	**Hazardous Substance**	**Date Sampled**	**Result (ng/L)**	**MDL* (ng/L)**	**Reference(s)**
SGPP-DW01	K1605268-001	PFOA	5/16/2016	520	0.27	22, p. 37; 23, p. 158; 56, pp. 9, 13

ng/L = nanograms per liter
MDL = method detection limit
* For HRS purposes, the DL used is the MDL, which is the lowest concentration of analyte that a method can detect reliably in either a sample or blank [Ref. 1, Section 1.1]. Since the sample analysis was not performed under the CLP, the MDL is used in place of the HRS-defined SQL [Ref. 1, Section 2.3].

Notes on samples

- Sampling Methods: The background and release samples were all collected by EPA from active village wells via the raw water sampling spigot within the Hoosick Falls water treatment plant, that withdraw water from the same hydrologic unit, using an EPA SOP, during the same sample event in May 2016 [**Figure 3**; Ref. 6, pp. 12–13, 53–54; 8, p. 2; 22, p. 37, 58; 23, pp. 59, 62, 158; 28, pp. 1, 8, 24–25, 37; 30, pp. 4, 69–70].
- Analytical Procedures: The background and release samples were all analyzed for PFCs by a single EPA-subcontracted laboratory using standard operating procedures for extraction, analysis (HPLC/MS), and quality control [Ref. 56, pp. 9, 90; 57, pp. 3, 10–18, 23]. The data were validated by EPA according to EPA Region 2 data validation guidelines [Ref. 58, pp. 1–22].
- There was no significant difference in the pH of the background and release samples.

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Ground Water Observed Release Factor Value: 550

Attribution:

PFOA

In 1987 the facility that currently houses SGPP was sold to Allied Signal Fluorglas [Ref. 39, pp. 1, 23]. The property was sold to Furon Company in February 1996 [Ref. 40, p. 24]. Allied Signal Fluorglas and Furon Company used the facility to manufacture PTFE-coated fiberglass, and molded and extruded PTFE intermediates [Ref. 40, pp. 1, 24]. Manufacturing processes at the facility included the use of non-stick coatings [Ref. 40, p. 24]. Fluoropolymers such as those in certain non-stick coatings are known to incorporate PFOA [Ref. 13, p. 20; 52, p. 1].

SGPP has operated at 14 McCaffrey Street since 1999 [Ref. 4, p. 1]. SGPP manufactures a variety of polymer-based products [Ref. 14, pp. 1–2]. The McCaffrey Street facility manufactures high-performance polymeric films and membranes, as well as foams for bonding, sealing, acoustical and vibrational damping, and thermal management; the facility previously used PFOA or raw materials containing PFOA in its manufacturing processes [Ref. 4, p. 1; 14, pp. 4, 7, 9; 19, p. 1]. PFOA-containing substances were used at the facility from approximately 1987 to 2003 (i.e., 16 years) [Ref. 4, p. 1; 39, pp. 22–23; 40, p. 24]. Since 2003, the facility has participated in industry's voluntary PFOA phase-out effort by purchasing raw materials with decreasing levels of PFOA as an ingredient. [Ref. 19, p. 1].

Former employees of the McCaffrey Street facility describe a powder-like smoke plume that was routinely discharged to the air from the facility's smokestacks and settled in the valley surrounding the plant [Ref. 4, p. 1]. The powder was observed to cover equipment and other surfaces within the facility as well [Ref. 4, p. 1]. After approximately 15 years of unfiltered emissions, filters were installed in the facility's smokestacks in the early 1980s [Ref. 4, p. 1]. A former employee stated that the filters and other equipment contacted by the white powder were cleaned weekly by washing them on a hillside outside the plant [Ref. 4, p. 1].

On December 30, 2014, counsel for SGPP submitted notification to EPA under the Section 8(e) of the TSCA (15 U.S.C. § 2601 *et seq.*) regarding the presence of PFOA in the village public drinking water supply; PFOA analytical results for the village wells were attached to the notification [Ref. 19, pp. 1–10]. The notification acknowledged that SGPP processed fluoropolymers that contained PFOA at a facility within the village [Ref. 19, p. 1]. The TSCA submittal by SGPP documents an observed release by direct observation of PFOA, a CERCLA pollutant or contaminant [Ref. 1, Section 3.1.1; 46, pp. 14–15; 59, pp. 1–4].

In August 2015, SGPP collected soil samples at depths of 0 to 2 feet bgs and 2 to 4 feet bgs from five monitoring well boreholes [Ref. 7, pp. 4–5, 143]. As discussed in **Section 2.2 Source Characterization** of this HRS documentation record, PFOA was detected in all the soil samples at concentrations ranging from 0.35 µg/kg in the northeastern portion of the property to 4.1 µg/kg in the southeastern portion of the property [Ref. 7, pp. 4–5, 23, 109–112].

PFOA analysis of the ground water samples collected from the monitoring wells during two rounds of sampling in September and October 2015 showed non-detect values for PFOA in monitoring well MW-1 and non-detect and 60 ng/L, respectively in monitoring well MW-1S [Ref. 7, pp. 6, 23, 128, 132, 162, 165, 207–208]. PFOA was detected in all the ground water samples collected from the remaining five monitoring wells during both rounds of sampling, at concentrations ranging from 570 ng/L in MW-5 to 18,000 ng/L in MW-2 [Ref. 7, pp. 7–9, 126, 128–130, 132–133, 148, 160, 161, 165]. PFOA was also detected in wastewater samples collected from the facility's sanitary discharge system, at concentrations of 1,000 ng/L (Manhole #1) and 850 ng/L (sewage ejector pit) [Ref. 7, pp. 10, 23, 178–179, 182–183].

Sampling and analysis by EPA in May 2016 shows the presence of PFOA in SGPP facility monitoring wells at concentrations that are significantly above background [Ref. 1, Table 2-3, Section 3.1.1; see **Section 3.1.1 of this HRS documentation record**]. PFOA was detected in ground water samples SGPP-MW02D (18,000 ng/L), SGPP-MW03 (7,200 ng/L), SGPP-MW04 (2,100 ng/L), SGPP-MW05 (590 ng/L), and SGPP-MW06 (570 ng/L) (environmental duplicate of SGPP-MW05), which were collected from SGPP facility monitoring wells MW-2, MW-3, MW-4, MW-5, and MW-5 (duplicate), respectively [**Figure 2**; Ref. 7, pp. 210–213; 22, pp. 32–33; 23, pp. 143–144; 55, pp. 9–10, 18, 20–23]. Analysis of background ground water sample SGPP-MW01D, collected from upgradient monitoring well MW-1, indicated a PFOA concentration of 40 ng/L [**Figure 2**; Ref. 7, p. 208; 22, p. 33;

23, p. 143; 42, p. 1; 55,pp. 9, 16]. The background and contaminated samples were collected from the same hydrologic unit (i.e., upper unconsolidated sand and gravel aquifer) [Ref. 7, pp. 200, 202–206; 10, p. 1].

As part of the May 2016 ground water sampling effort, EPA also collected ground water samples from the four monitoring wells that were installed in the vicinity of the SGPP facility and the village wells [**Figure 3**]. Monitoring wells EPA MW-3 and EPA MW-4 were installed between the SGPP facility and the village wells and are screened in the lower sand and gravel aquifer [**Figure 3**; Ref. 24, pp. 5, 10]. Analysis of ground water samples SGPP-EPA-GW03 and SGPP-EPA-GW04 collected from these wells showed the presence of PFOA at concentrations of 370 ng/L and 530 ng/L, respectively [Ref. 22, pp. 35–36; 23, p. 143; 55, pp. 9, 14–15].

On May 17, 2016, EPA collected ground water sample SGPP-OW02 from the village test well, which is a monitoring well located adjacent to Village Well 7 [**Figure 3**; Ref. 22, pp. 38, 59; 23, pp. 65–66, 158]. Analysis of SGPP-OW02 showed the presence of PFOA at a concentration of 420 ng/L [Ref. 56, pp. 9, 22, 90]. Analysis of ground water sample SGPP-DW03, collected from Village Well 6, also showed a PFOA concentration of 390 ng/L [Ref. 22, p. 38; 23, p. 158; 56, pp. 9, 15, 90].

On May 18, 2016, EPA collected four ground water samples (SGPP-DW05, -DW06, -DW07, and -DW08) from four residential drinking water wells located north of the SGPP facility [**Figure 3**; Ref. 22, pp. 39–40, 60–62, 64; 23, p. 158]. The samples were collected using the same methodology as the village wells [Ref. 22, pp. 39–40; 23, pp. 67–70]. The wells were chosen for sampling based on information provided by the U.S. Geological Survey (USGS), which indicated that these wells withdraw water from the sand and gravel aquifer that underlies the Hoosic River and its tributaries, or from fractured shale bedrock that is in hydraulic contact with the sand and gravel aquifer [Ref. 10, p. 1; 26, pp. 1, 3, 5, 9–10, 12–15]. Sample analytical results showed PFOA concentrations ranging from non-detect to 15 ng/L [Ref. 56, pp. 9, 17–20; 58, pp. 6–11, 13, 22]. These sample results show that PFOA contamination of the sand and gravel aquifer is not ubiquitous throughout the site area.

VC

A March 1996 Phase I ESA prepared for a former site occupant, Allied Signal Fluorglas, indicated that past uses of the facility included activities related to circuit board and electronics manufacturing dating back to 1961 and proceeding to at least 1987 [Ref. 39, pp. 1, 23]. Halogenated solvents, including TCE, are known to be used in the manufacture of circuit boards and electronics [Ref. 36, p. 21; 37, p. 9]. Analysis of soil and ground water samples collected as part of a May 1996 ESA prepared for a former facility occupant, Furon Company, reported the presence of TCE at an estimated concentration of 4.0 µg/kg at soil sample location MW-1M-0 and in ground water in two monitoring wells, MW-2M (13 µg/L) and MW-5M [6 µg/L (estimated) and duplicate result 7µg/L (estimated)] [Ref. 40, pp. 36, 40, 42, 44]. The compound 1,2-DCE, which the Phase II noted is a breakdown product of TCE, was detected in MW-5M and its duplicate MW-15M at 2.0 µg/L each [Ref. 40, p. 42]. The Phase II ESA noted that the facility maintains floor drains and a sump, and concluded that the TCE source may be related to the facility sump pit [Ref. 40, p. 46].

Sampling and analysis by EPA in April and May 2016 document the presence of TCE in SGPP facility soil at a concentration significantly above background. Analysis of subsurface soil sample SGPP-SS07B (depth: 10 to 12 feet) showed the presence of TCE at a concentration of 160 µg/kg with an RDL of 4.2 µg/kg [**Figure 2**; Ref. 22, p. 24; 23, pp. 29, 84; 32, pp. 3–6, 59, 160; 33, p. 8; 49, p. 168]. Soil sample SGPP-SS07B was collected from a direct-push borehole advanced in the northeastern portion of the facility property in the vicinity of Saint-Gobain monitoring well MW-3 [**Figure 2**]. Analysis of background soil sample SGPP-S01 (depth: 0 to 2 feet), collected from an undeveloped area in the northwestern portion of the SGPP facility, reported a non-detect value for TCE [Ref. 22, p. 29; 23, pp. 22, 112; 33, p. 8; 41, pp. 3–6, 28, 122; 45, p. 78].

Sampling and analysis by EPA in May 2016 documents the presence of TCE in an SGPP facility monitoring well at a concentration significantly above background [Ref. 1, Table 2-3, Section 3.1.1; section 3.1.1 of this HRS documentation record]. Analysis of ground water sample SGPP-MW03, collected from a SGPP facility monitoring well (MW-3) located in the eastern portion of the SGPP facility property in the vicinity of borehole SGPP-S07, showed the presence of TCE at a concentration of 13 µg/L [**Figure 2**; Ref. 7, p. 211; 22, p. 33; 23, p. 134; 33, p. 8; 35, pp. 6–10, 36, 138; 47, p. 304]. Analysis of background ground water sample SGPP-MW05 and duplicate sample

SGPP-MW06 reported non-detect values for TCE [Ref. 22, p. 33; 23, p. 133; 35, pp. 2, 6–10, 50, 58, 140–141; 47, pp. 325, 335]. EPA ground water samples collected from SGPP facility monitoring wells MW-1 (Sample No SGPP-MW01D) and MW-2 (Sample No. SGPP-MW02D), which is situated upgradient of MW-3 and in the vicinity of direct-push borehole SGPP-S01, reported non-detect values for TCE, documenting that the contamination has not migrated onto the SGPP facility from an upgradient off-site source to the north-northwest. [**Figure 2**; Ref. 7, pp. 20, 200, 203, 208, 210; 22, p. 32–33; 23, pp. 41, 44, 130, 134; 35, pp. 2, 6–10, 21, 29; 42, p. 1; 47, pp. 272, 294].

EPA calculated the estimated radius of influence for the Village of Hoosick Falls water supply wells [Ref. 29, pp. 1–3]. Based on this calculation, the maximum radius of influence for the Village of Hoosick Falls water supply wells is estimated to be 3,530 feet (0.67 mile) [Ref. 29, pp. 2–3]. Based on this radius of influence, and the absence of VC in Village Wells 3 and 7, it is unlikely that any potential sources to the south, southeast, or southwest are contributing contamination to ground water beneath the SGPP facility or Village Well 6 [Ref. 43, pp. 28, 33, 49]. VC is a breakdown product of TCE and studies have shown that it is more persistent in subsurface environments than its parent compounds (i.e., PCE, TCE, and DCE) [Ref. 38, p. 17]. A 1996 Phase II report prepared for the facility suggested that TCE undergoes dechlorination in the environment [Ref. 40, p. 42]. VC was detected in Village Well 6, the closest of the three Village Wells to contaminated sample location SGPP-SS07B [**Figure 4**]. The more persistent VC is likely surviving transport from the SGPP facility and is being intercepted by Village Well 6 before reaching the other village wells [**Figure 3**; Ref. 38, p. 17]. Although neither TCE nor VC were detected in the intervening monitoring wells installed by EPA (i.e., EPA MW03 and EPA MW04), which are screened in the lower sand and gravel aquifer beneath the low-permeability silt and clay layer that separates the upper and lower sand and gravel aquifers, the silt and clay layer is not a completely impermeable layer; therefore, the VC is likely traveling horizontally over the silt and clay before being drawn down to the lower aquifer either directly or through the silt and clay layer by the pumping of Village Well 6 [**Figure 3**; Ref. 6, pp. 12–13, 18; 35, pp. 2, 68, 77; 50, p. 14]. Although VC was not detected in the intervening monitoring wells, the presence of PFOA in EPA MW-3 and EPA MW-4 is likely due to PFOA's significantly higher water solubility (9.5×10^3 mg/L) compared to VC (2,763 mg/L), which results in greater mobility within the sand and gravel aquifer under evaluation [Ref. 15, p. 2; 20, p. 18].

Other Possible Sites

Nearby Laundromat

EPA identified a laundromat located approximately 0.5 mile north-northeast of the SGPP facility [Ref. 44, pp. 1, 3, 6–7]. Information obtained from an employee indicates that dry cleaning has not been conducted historically or currently at the facility [Ref. 44, p. 2]. In addition, an extensive silt and clay layer (112 feet thick) was encountered during the April 2016 monitoring well installation activities approximately midway between the laundromat and the SGPP facility that would likely form a barrier to a solvent release from the laundromat or any other potential sources to the north-northeast [Ref. 44, pp. 1, 7–15]. In April 2016, EPA installed a monitoring well (EPA MW-5) at the intersection of Waterworks Road and Carey Avenue, east-northeast of the SGPP facility [**Figure 3**; Ref. 22, p. 14; 24, pp. 12–16]. The well is screened in the sand and gravel aquifer beneath the silt and clay [Ref. 24, pp. 12–16]. Analysis of the ground water sample (SGPP-EPA-GW05) collected by EPA from this well reported a non-detect value for TCE, as well other chlorinated solvents [Ref. 43, pp. 2, 19–20; 44, p. 1; 48, pp. 383–384].

Nearby Plastic Foam and Coated Fabrics Manufacturing Facilities

In addition to the SGPP facility on McCaffrey Street, a search of EPA's Envirofacts database lists four other facilities in Hoosick Falls designated as manufacturing plastic foam products or coated fabrics under the Standard Industrial Classification (SIC) System, including a second SGPP facility located at 1 Liberty Street [Ref. 25, pp. 1-10]. However, given the historical use of PFOA and PFOA-containing materials at the McCaffrey Street facility; the presence of PFOA in facility soil and ground water; the presence of PFOA in the intervening EPA monitoring wells (i.e., EPA MW-3 and EPA MW-4); the decreasing PFOA concentrations in ground water moving away from the SGPP facility; and the location of the SGPP facility within the village wells' radius of influence, the PFOA detected in Village Well 7 is considered at least partially attributable to the SGPP facility [**Figures 2 and 3**; Ref. 39, pp. 22–23; 40, p. 24; 19, pp. 1–2.; 29, pp. 1–3].

Hazardous Substances Released:

Trichloroethylene (TCE)	CAS No. 79-01-6
Vinyl chloride (VC)	CAS No. 75-01-4
Perfluorooctanoic Acid (PFOA)	CAS No. 335-67-1

3.2 WASTE CHARACTERISTICS

3.2.1 Toxicity/Mobility

TABLE 25. TOXICITY/MOBILITY					
Hazardous Substance	**Source Numbers**	**Toxicity Factor Value**	**Mobility Factor Value**	**Toxicity/ Mobility**	**Reference(s)**
VC	1, OR	10,000	1	10,000	2, p. 4
1,2-DCE	1	1,000	1	1,000	2, p. 1
TCE	1	1,000	1	1,000	2, p. 3
PCBs	1	10,000	2.0×10^{-7}	0.001	2, p. 2
PFOA	1, OR	10,000	1	10,000	34, pp. 1–2

OR = Observed Release

3.2.2 Hazardous Waste Quantity

TABLE 26. HAZARDOUS WASTE QUANTITY – GROUND WATER PATHWAY		
Source Number	**Source Hazardous Waste Quantity (HWQ) Value (Section 2.4.2.1.5)**	**Is source hazardous constituent quantity data complete? (yes/no)**
1	>0	No
Sum of Values:	1 (rounded to 1 as specified in HRS Section 2.4.2.2)	

The sum corresponds to a hazardous waste quantity factor value of 1 in Table 2-6 of the HRS [Ref. 1, p. 51591]. However, based on the fact that targets are subject to Level I and Level II concentrations (see **Section 3.3.2.3**), a hazardous waste quantity factor value of 100 is assigned if it is greater than the hazardous waste quantity value from Table 2-6 of the HRS (i.e., 1) [Ref. 1, pp 51591-51592]. Therefore, a hazardous waste quantity factor value of 100 is assigned for the ground water pathway [Ref. 1, pp 51591-51592].

Hazardous Waste Quantity Factor Value: 100

3.2.3 Waste Characteristics Factor Category Value

VC and PFOA both correspond to the toxicity/mobility factor value of 10,000, as shown previously (see **Section 3.2.1**).

Toxicity/Mobility Factor Value (10,000) x Hazardous Waste Quantity Factor Value (100): 1×10^6

The product (1×10^6) corresponds to a Waste Characteristics Factor Category Value of 32 in Table 2-7 of the HRS [Ref. 1, p. 51592].

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Waste Characteristics Factor Category Value: 32

3.3 TARGETS

The Village of Hoosick Falls municipal water system consists of three active wells (Village Wells 3, 6, and 7) located in a well field approximately 0.3 mile from the SGPP McCaffrey Street facility [**Figure 3**; Ref . 8, p. 2]. The pumping capacity of each well is approximately 900,000 gallons per day and contributes to a blended system that serves an approximate population of 4,000 [Ref. 8, p. 1]. No single component contributes more than 40 percent of the total system production, so the system population is apportioned equally among the active system components (i.e., each active well is apportioned a population of 1,333 people) [Refs. 1, p. 51603; 8, p. 1].

TABLE 27. TARGETS – GROUND WATER PATHWAY

Well	Distance from Source (mi.)*	Population	Level I Conc. (Y/N)**	Level II Conc. (Y/N)**	Potential Contam. (Y/N)	Reference(s)
Village Well 3	0.27	1,333	N	N	Y	**Figures 1 and 4**; 8, p. 1
Village Well 6	0.21	1,333	Y	N	N	**Figures 1 and 4**; 8, p. 1
Village Well 7	0.24	1,333	N	Y	N	**Figures 1 and 4**; 8, p. 1

* Distance is measured from direct-push borehole location SGPP-S07 (see **Figure 4**).

** See **Tables 16 and 24** for analytical results by ground water sample. Maximum Contaminant Level Goals (MCLG) greater than 0, Maximum Contaminant Levels (MCL), Cancer Risk Screening Concentrations (CRSC), and Noncancer Risk Screening Concentrations (NRSC) are used as benchmarks to evaluate the level of contamination for the ground water migration pathway [Refs. 1, p. 51593, Section 2.5.2; 2, p. 4].

Additional targets not evaluated as part of this HRS documentation record include 21 domestic wells identified as being located within 4 miles of the SGPP McCaffrey Street facility [Ref. 21, pp. 1-26].

Applicable benchmarks for the hazardous substance detected in the observed release are as follows; **boldface type** denotes the lowest applicable benchmark concentration for each hazardous substance):

TABLE 28. HRS BENCHMARKS – GROUND WATER PATHWAY

Substance	MCL	Cancer Risk	Non-Cancer Risk	Reference(s)
VC	2	**2.1×10^{-2}**	60	2, p. 4
PFOA*	N/A	N/A	N/A	N/A

Concentrations presented in micrograms per liter (µg/L) for consistency with reported analytical data.
* Superfund Chemical Data Matrix (SCDM) benchmarks for PFOA have not been established.

TABLE 29. LEVEL I CONCENTRATIONS

Well	Sample	Substance	Conc. (µg/L)	RDL* (µg/L)	Benchmark (µg/L)	Reference(s)
Village Well 6	SGPP-DW03	VC	1.3	0.50	2.1×10^{-2}	2, p. 4; 22, p. 38; 23, p. 152; 43, pp. 3–6, 39, 117; 48, pp. 7, 68

µg/L = micrograms per liter
*The RDL for each result is the CRQL adjusted for sample and method [Ref. 33, p. 8]. Since the samples were analyzed through CLP, these adjusted CRQLs are used in place of the HRS-defined sample quantitation limit SQL [Ref. 1, Sections 1.1 and 2.3].

TABLE 30. LEVEL II CONCENTRATIONS						
Well	**Sample**	**Substance**	**Conc. (ng/L)**	**MRL (ng/L)**	**Benchmark (µg/L)***	**Reference(s)**
Village Well 7	SGPP-DW01	PFOA	520 ng/L	1.8	N/A	22, p. 37; 23, p. 158; 56, pp. 9, 13

ng/L = nanograms per liter.
MRL = method reporting limit.
N/A = not applicable.
* Although the concentrations of PFOA detected in Village Well 7 exceed the 0.00002 mg/kg/day RfD established by EPA in May 2016, SCDM benchmarks have not been established for this substance; therefore, Village Well 7 is evaluated as being subject to Level II actual contamination [Ref. 1, Section 2.5; 59, p. 1].

3.3.1 Nearest Well

As identified in **Section 3.3**, the active drinking water supply wells, Village Wells 6 and 7, for the Village of Hoosick Falls are subject to Level I and Level II concentrations, respectively. Therefore, a nearest well factor value of 50 is assigned [Ref. 1, pp. 51602, 51603].

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Nearest Well Factor Value: 50

3.3.2 Population

3.3.2.2 Level I Concentrations

As identified in **Section 3.3**, the active drinking water supply well, Village Well 6, for the Village of Hoosick Falls is subject to Level I concentrations. The population assigned to this well is presented in **Section 3.3**.

TABLE 31. LEVEL I POPULATIONS		
Level I Well	**Population**	**Reference(s)**
Village Well 6	1,333	8, p. 1

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Population Served by Level I Wells: 1,333 Level I Concentrations Factor Value: 13,330

3.3.2.3 Level II Concentrations

As identified in **Section 3.3**, the active drinking water supply well, Village Well 7, for the Village of Hoosick Falls is subject to Level II concentrations. The population assigned to this well is presented in **Section 3.3**.

TABLE 32. LEVEL II POPULATIONS		
Level II Well	**Population**	**Reference(s)**
Village Well 7	1,333	8, p. 1

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Level II Concentrations Factor Value: 1,333

3.3.2.4 Potential Contamination

As identified in **Section 3.3**, the active drinking water supply well, Village Well 3, for the Village of Hoosick Falls is subject to potential contamination. The population assigned to this well is presented in **Section 3.3**.

Distance Category	Population	Distance-Weighted Population Value	Population Range	References
¼ – ½ mile	1,333	1,013	1,000 to 3,000	**Figure 4**; Ref. 1, Section 3.3.2.4; 8, p. 1

Therefore, the distance-weighted population value (W_i) is 1,013 [Ref. 1, Section 3.3.2.4, Table 3-12].

Potential Contamination Factor (PC) = $(W_i + K_i)/10$ = (1,013+0)/10 = 101.3 (round to the nearest integer) = 101

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Potential Contamination Factor Value: 101

3.3.3 Resources

Documentation regarding resource use of ground water is unavailable; therefore, the Resources Factor Value is 0 [Ref. 1, Section 3.3.3].

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Resources Factor Value: 0

3.3.4 Wellhead Protection Area

New York State's Wellhead Protection Program (WHPP) was approved by EPA in 1990 [Ref. 62, p. 1]. For unconsolidated aquifers located in upstate New York, the aquifer boundary serves as the fundamental delineation of the wellhead protection area (WHPA) [Ref. 61, p. 26; 63, p. 23]. Since observed ground water contamination attributable to sources at the site lies, either partially or fully, within the boundary of the unconsolidated sand and gravel aquifer under evaluation, a value of 20 is assigned for the WHPA Factor Value [Ref. 1, Section 3.3.4; 10, p. 1].

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Wellhead Protection Area Factor Value: 20

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