

GROUNDWATER MONITORING WORK PLAN

PPG Oak Creek

Former Tank Farm Area Statement of Basis

Revision 0

August 2016

Introduction

This site-specific work plan (Work Plan) is intended to guide the field activities planned for the former Tank Farm Area (Former TFA) at PPG Oak Creek facility (Facility) in Oak Creek, Wisconsin. Before finalizing the Statement of Basis for the Facility, the United States Environmental Protection Agency (USEPA) has requested that PPG conduct a groundwater sampling event to define current groundwater quality and groundwater flow conditions at the Former TFA. As a part of the effort to define current conditions at the site, several existing monitoring wells will be abandoned, repaired, or replaced prior to the sampling event.

Specifically, this Work Plan addresses the following activities: 1) replacement of monitoring well MW-10, which was removed in December 2013, 2) replacement of damaged wells identified on the April 11, 2016 field inspection by CB&I, and 3) installation of a monitoring well south of the Former TFA in the general area of former monitoring well MW-9 as requested by the USEPA, and 4) performing a single round of groundwater sampling to define the current conditions with regard to groundwater quality, groundwater flow direction, and groundwater elevation at the Facility.

Facility History and Background

The Facility covers approximately 51 acres, of which the Former TFA comprises approximately 7.0 acres. The Facility was constructed between 1973 and 1975 (construction was completed in December 1975). The major components of the Facility include a resin plant, a paint production plant, the Former TFA that supported production, and a former impoundment basin. Administrative buildings, laboratories, raw materials, and finished goods warehouses are also located at the Facility. The Facility is currently operational and processes involve primarily those associated with paint production. PPG has no current plans to change or cease operations at the Facility.

The Former TFA is located in the southeastern portion of the Facility. The historical use of this area was for bulk solvent, organic acid, and raw material storage. The Former TFA contained both underground storage tanks (USTs) and above ground storage tanks (ASTs); all of which have been closed in accordance with State of Wisconsin regulations. The Former TFA is underlain by a drainage system that was installed during construction to create a depression in the groundwater potentiometric surface, such that any material leached to groundwater around

PPG Oak Creek Facility
Groundwater Monitoring Work Plan
Statement of Basis

the storage tanks would be collected and sent to the local public treatment works with other discharged water. The under-drain system was deactivated in the fall of 2006.

The Facility is subject to the regulations promulgated under the Resource Conservation and Recovery Act (RCRA). On March 31, 1992 the USEPA issued a RCRA Permit (EPA ID WID 059972935) to the Facility. This permit required PPG to conduct a RCRA Facility Investigation (RFI) at 10 Solid Waste Management Units (SWMUs). The RFI Report was submitted to USEPA in August of 1997. In July 1998, the USEPA granted conditional approval of the RFI Report. The condition of the approval required that PPG initiate corrective measures by proceeding with the closure of the Former TFA in accordance with applicable Wisconsin UST closure guidance and implement a presumptive remedy. In February/March 1999, PPG removed 23 of the 40 USTs and closed the remaining 17 USTs in place with Wisconsin Department of Commerce approval. On September 25, 2000, USEPA formally approved the RFI Report.

With USEPA's approval of the RFI Report, all corrective action requirements were met for 8 of the 10 SWMUs. The two remaining SWMUs (Nos. 8 and 18), which comprise the Former TFA, were the focus of the presumptive remedy implementation. The presumptive remedy selected for the Former TFA involved soil vapor extraction (SVE), which is commonly used as a presumptive remedy. Air sparging (AS) was conducted concurrently with the SVE (SVE/AS) to enhance remediation of the groundwater. The operation of the SVE/AS system effectively removed approximately 6,900 pounds of volatile organic compounds (VOCs) from soil and groundwater beneath the Former TFA. As a result of operational changes at the Facility, PPG elected not to renew the Facility's RCRA permit and received closure notice for the permit on June 30, 2004.

From the beginning of 2004 through September 2011, PPG voluntarily monitored ground water quality semiannually. Following the September 2011 sampling event, the ground water monitoring program was temporarily discontinued pending the USEPA's approval of the Statement of Basis, upon which time the groundwater monitoring will resume as prescribed in the Statement of Basis. Since that time, PPG has prepared several draft Statement of Basis documents to assist USEPA with finalizing the Statement of Basis, and PPG has responded timely to USEPA-provided comments.

At the request of USEPA, a site visit was conducted so that project staff could acquire a better understanding of the site layout. USEPA, PPG, and CB&I personnel attended this site visit, which occurred on April 11, 2016. During the site visit, project plans as well as the anticipated

schedule for the Statement of Basis were discussed. Following the site visit (also occurring on April 11, 2016), a field inspection of the existing monitoring wells was conducted by CB&I personnel in an effort to identify the condition of all site monitoring wells. After the site visit, the USEPA requested that PPG conduct an additional round of groundwater sampling to assess the current conditions at the Facility, so that USEPA may move forward with finalizing the Statement of Basis. The Statement of Basis will document the success of the remedy completed for the Former TFA (*i.e.*, SWMU Nos. 8 and 18), and will assist with determining what additional actions, if any, are required for the Facility.

Monitoring Well Abandonment

On April 11, 2016 (following the site visit attended by USEPA, PPG, and CB&I personnel), a field inspection was conducted by CB&I personnel that identified several existing damaged wells within the Former TFA. These wells will be abandoned and sealed in accordance with State of Wisconsin regulations. These wells include the following:

- LP-2
- LW-2
- LW-6
- MW-11*
- MW-15
- MW-16*

* As discussed below, PPG is proposing to replace existing wells MW-11 and MW-16 with new monitoring wells, MW-11R and MW-16R, respectively.

In addition to the wells within the Former TFA that require abandonment because of damage, there are four monitoring wells outside of the Former TFA that are not used for monitoring groundwater conditions, and there are no current plans to utilize these monitoring wells in the future. Given the age of these wells (all were installed in 1981) and length of time that has lapsed since these wells were sampled, the wells will be abandoned and sealed in accordance with State of Wisconsin regulations. These wells include the following:

- TW-1
- TW-5
- TW-6
- TW-7

Monitoring Well abandonment will comply with all applicable State of Wisconsin regulations. Proper documentation will be submitted to the Wisconsin Department of Natural Resources upon completion of the abandonment of the monitoring wells.

Repair Flush Mount Well Box at LP-3

During the April 11, 2016 field inspection, it was determined that the flush mount well box for monitoring well LP-3 could not be opened. The flush mount well box will be repaired or replaced so that the well can be accessed for monitoring groundwater elevations.

Monitoring Well Installation

New monitoring wells will be installed to replace existing, damaged monitoring wells that were part of the monitoring well network for the Former TFA. The following provides additional information on the monitoring well installation for the Former TFA.

- MW-9R – In an e-mail from USEPA following the April 11, 2016 field inspection, USEPA suggested the installation of a new monitoring well in the general area of the former site monitoring well MW-9, which was previously abandoned. This new monitoring well, MW-9R, is proposed for the area to the south of the Former TFA, and will be used to monitor groundwater quality and groundwater elevations. The former monitoring well MW-9 was installed to a depth of 15 feet below ground surface (bgs), with a 10 foot screened interval. The replacement well will be constructed similarly to the former monitoring well MW-9.
- MW-10R – Monitoring well MW-10 was removed in December 2013. Proposed replacement monitoring well MW-10R is a replacement for former monitoring well MW-10 and will be located in the southeastern corner of the Former TFA in the general vicinity of former MW-10. Review of the boring log and well installation details for former MW-10 indicates that the depth of the monitoring well was 25 feet bgs, with screened zone from 15 to 25 feet bgs. The top of the well screen was near an elevation of 678 ft mean sea level (msl) based on survey data. Measured groundwater elevations in the well between 2004 and 2011

PPG Oak Creek Facility
Groundwater Monitoring Work Plan
Statement of Basis

ranged from 685 to 691 ft msl. The proposed replacement well MW-10R will be constructed at a shallower depth of approximately 15 feet, with a screened zone from 5.0 to 15.0 feet below ground surface, in order to intercept the water table.

- MW-11R - During the April 11, 2016 field inspection, it was determined that monitoring well MW-11 was damaged due to frost heave. Proposed monitoring Well MW-11R will be a replacement for existing monitoring well MW-11. MW-11 has had a history of being damaged and was already repaired once in 2010, so further attempts to repair and rehabilitate this well for longer-term monitoring will likely be unsuccessful. Monitoring well MW-11R will be located along the eastern border of the Former TFA, approximately 225 feet north of MW-10R. It will be constructed as closely as possible to the former monitoring well MW-11, and will be used to monitor groundwater quality and groundwater elevations.
- MW-16R - During the April 11, 2016 field inspection, it was determined that monitoring well MW-16 was damaged due to frost heave. Proposed monitoring Well MW-16R will be a replacement for existing monitoring well MW-16. Monitoring well MW-16R will be located in the general area of MW-16. It will be constructed as closely as possible to the former monitoring well MW-16 (i.e., approximate depth of 16 feet bgs), and will be used to monitor groundwater quality and groundwater elevations.

Monitoring well installation will follow applicable Wisconsin Department of Natural Resources regulations (*i.e.*, Wisconsin Groundwater Quality Standards set forth in WAC NR 140).

Figure 1 presents the location of the proposed monitoring wells. **Table 1** presents the well completion details. Each well will be logged to describe the lithology; however, no soil samples will be collected as soils have already been characterized. A Photo Ionization Detector will be used, as necessary, to meet health and safety requirements. The wells will be installed using hollow-stem auger drilling techniques to a depth of 15 feet bgs with a 10-foot section of slotted 0.010 screen. Monitoring wells will be constructed with 2 inch diameter PVC. Bollards made of

steel pipe and back-filled with concrete will be installed around the new monitoring wells, to protect them from damage. Investigation derived waste will be properly disposed of following the well installation and sampling activities.

Survey of Existing and New Monitoring Wells

A professional survey of the monitoring well network will be conducted by a licensed land surveyor. The location and elevation of all monitoring wells will be determined using a known benchmark. The data will allow for an accurate assessment of the groundwater flow gradient and horizontal direction of flow across the Site.

Monitoring Well Development

Upon completion of well installation activities, the new monitoring wells will be developed in accordance with the Wisconsin Groundwater Monitoring Well Requirements set forth in WAC NR 141. In addition, since the existing monitoring wells have not been sampled since 2011, all existing wells will be redeveloped.

Groundwater Sampling and Groundwater Elevations

After abandoning and/or replacing monitoring wells at the Facility, one round of groundwater samples will be collected from the Former TFA monitoring well network. In addition to collection of groundwater samples, depth to groundwater will be measured and recorded for all wells. Wells to be sampled and groundwater elevations measured include:

- TF-1
- TF-2
- TF-3
- TF-4
- LP-3 (water elevation only)
- LW-3
- LW-5
- MW-9R
- MW-10R
- MW-11R
- MW-12
- MW-13
- MW-14 (water elevation only)

- MW-16R

Prior to collection of groundwater samples, monitoring wells will be purged in accordance with the Wisconsin Groundwater Monitoring Well Requirements set forth in WAC NR 141. Purging and groundwater sampling will be completed using low-flowing pumping techniques. Common groundwater indicator parameters such as dissolved oxygen, oxidation-reduction potential, specific conductance, pH, temperature, and turbidity will be monitored and recorded. Once purging has been completed at a monitoring well, the groundwater samples will be collected. Groundwater samples will be analyzed for Volatile Organic Compounds (VOCs), a limited list of Semivolatile Organic Compounds (SVOCs), and RCRA 8 Metals as follows:

- VOCs (by USEPA Method 8260C)
- Amended SVOCs limited to phthalate compounds (by USEPA Method 8270D)
- RCRA 8 Metals (by USEPA Method 6010C/7470A).

Additional details regarding the analytical methodologies will be specified in the project-specific Quality Assurance Project Plan (QAPP), which will be submitted for approval separately. All appropriate QA/QC samples will be collected and submitted for analysis, including trip blanks and field blanks, as appropriate. Groundwater samples will not be collected from any wells (i.e., TF-3) that have measureable free product.

Free Product - Monitoring Well TF-3

Monitoring Well TF-3 has a history of having measurable free product. Free product was first confirmed in September 2008. In the spring of 2009, a simple monitoring and free product removal program was implemented for monitoring well TF-3. This treatment program consisted of using an oil-water interface probe to determine if measurable free product was present, and was typically executed once or twice per week. If measureable product was observed, a bottom-filling bailer was lowered into the well to capture the free products and remove it from the well. If no measurable product was observed, bailing was not performed. The bailing activities continued through September 2011, with approximately 181 gallons of mixed free product/water removed from TF-3. During the April 11, 2016 site inspection approximately 0.25 feet of free product was measured in monitoring well TF-3.

Schedule

The tasks discussed in this Work Plan will take approximately two weeks to complete. Given that this is the busy time of the year for environmental field work, securing the subcontracted labor (drillers, registered surveyors, etc.) necessary to complete the tasks could take four to six weeks. Once the groundwater samples are collected, standard laboratory turn-around times are approximately two weeks for VOCs. Once the analytical results are available, three weeks are required to write a draft report and submit it to PPG for review, and incorporate review comments. This estimated schedule involves approximately 6 to 8 weeks, which includes the time required to mobilize subcontractors.

Table 1

Summary of Well Construction Details
PPG Oak Creek Facility
Oak Creek, Wisconsin

| Well ID | Date Installed | Monitoring Zone | Ground Surface Elevation (ft, msl) | Top of Casing Elevation (ft, msl) | Well Depth at Construction (ft bgs) | Screen Zone (ft bgs) | Well Type | Inspection ^b Condition | Boring Log | Well Construction Details | Measured Well Depth 4/11/16 (feet TOC) |
|--|----------------|--|------------------------------------|-----------------------------------|-------------------------------------|----------------------|-----------------------------|-----------------------------------|------------|---------------------------|--|
| Former TFA Monitoring Wells | | | | | | | | | | | |
| LP-3 | 12/4/1991 | Shallow Groundwater - Deep | 695.84 | 696.18 | 35 | unknown | 2" PVC w/ flush mount | Unable to open flushmount | Yes | No | NM |
| LW-3 | 12/4/1991 | Shallow Groundwater - Groundwater Interface | 695.76 | 696.39 | 15 | unknown | 2" PVC w/ flush mount | Good | Yes | No | NM |
| LW-5 | 9/18/1996 | Shallow Groundwater - Groundwater Interface | 695.79 | 698.40 | 15.26 | 5.26 - 15.26 | 2" PVC w/ steel standpipe | Good | Yes | Yes | 18.03 |
| TF-1 | 10/13/1994 | Shallow Groundwater - Groundwater Interface | 697.53 | 699.31 | 16.4 | 2.8 - 16.4 | 4" PVC Well | Good | Yes | Yes | 18.74 |
| TF-2 | 10/13/1994 | Shallow Groundwater - Groundwater Interface | 696.82 | 698.00 | 16.7 | 3.3 - 16.7 | 4" PVC Well | Good | Yes | Yes | 18.71 |
| TF-3 | 10/13/1994 | Shallow Groundwater - Groundwater Interface | 697.61 | 699.64 | 18.8 | 2.9 - 18.8 | 4" PVC Well | Good | Yes | Yes | NM |
| TF-4 | 10/13/1994 | Shallow Groundwater - Groundwater Interface | 697.52 | 699.18 | 18.8 | 2.9 - 18.8 | 4" PVC Well | Good | Yes | Yes | NM |
| MW-12 | 1/22/1987 | Shallow Groundwater - Groundwater Interface | 685.60 | 687.92 | 15 | 5 - 15 | 2" steel w/ steel standpipe | Good | Yes | Yes | 14.53 |
| MW-13 | 1/22/1987 | Shallow Groundwater - Groundwater Interface | 683.80 | 686.35 | 15 | 5 - 15 | 2" steel w/ steel standpipe | Good | Yes | Yes | 17.4 |
| MW-14 | 1/22/1987 | Shallow Groundwater - Groundwater Interface | 694.30 | 693.70 | 15 | 5 - 15 | 2" steel w/ flush mount | Good | Yes | Yes | 14.65 |
| Former TFA Monitoring Wells - to be installed | | | | | | | | | | | |
| MW-9R | TBD | Proposed Shallow Groundwater - Groundwater Interface | 695 (estimated) | NA | 15 ^a | 5 - 15 ^a | 2" PVC w/ steel standpipe | NA | NA | NA | NA |
| MW-10R | TBD | Proposed Shallow Groundwater - Groundwater Interface | 693 (estimated) | NA | 15 ^a | 5 - 15 ^a | 2" PVC w/ steel standpipe | NA | NA | NA | NA |
| MW-11R | TBD | Proposed Shallow Groundwater - Groundwater Interface | 689 (estimated) | NA | 15 ^a | 5 - 15 ^a | 2" PVC w/ steel standpipe | NA | NA | NA | NA |
| MW-16R | TBD | Proposed Shallow Groundwater - Groundwater Interface | 696 (estimated) | NA | 15 ^a | 5 - 15 ^a | 2" PVC w/ steel standpipe | NA | NA | NA | NA |
| Former TFA Monitoring Wells - Proposed for Abandonment | | | | | | | | | | | |
| LW-2 | 12/6/1991 | Shallow Groundwater - Groundwater Interface | 697.34 | 698.62 | 15.5 | unknown | 2" PVC w/ steel standpipe | Frost heaved; location off | Yes | No | 18.5 |
| LP-2 | 9/17/1996 | Shallow Groundwater - Deep | 696.83 | 697.79 | 30.92 | 25.92 - 30.92 | 2" PVC w/ steel standpipe | Frost heaved | Yes | Yes | 33.72 |
| LW-6 | 10/14/1996 | Shallow Groundwater - Groundwater Interface | 695.61 | 698.19 | 22.41 | 12.41 - 22.41 | 2" PVC w/ steel standpipe | Good, but frost heaved | Yes | Yes | 25.18 |
| MW-10 | 1/21/1987 | Shallow Groundwater - Groundwater Interface | 693.18 | 696.43 | 25 | 15 - 25 | NA | Removed; no longer present | Yes | Yes | NM |
| MW-11 | 1/21/1987 | Shallow Groundwater - Groundwater Interface | 689.20 | 691.60 | 15 | 5 - 15 | 2" PVC w/ steel standpipe | Frost heaved | Yes | Yes | 16.35 |
| MW-15 | 1/26/1987 | Shallow Groundwater - Deep | 696.30 | 698.97 | 35 | 25 - 35 | 2" steel w/ steel standpipe | Frost heaved | Yes | Yes | 27.37 |
| MW-16 | 1/27/1987 | Shallow Groundwater - Groundwater Interface | 696.30 | 698.36 | 15.2 | 4.7 - ~15 | 2" steel w/ steel standpipe | Frost heaved; damaged | No | No | NM |
| Monitoring Wells Outside of Former TFA - Proposed for Abandonment | | | | | | | | | | | |
| TW-1 | 7/1/1981 | Shallow Groundwater - Groundwater Interface | 695.80 | 697.86 | 18.5 | 14 - 18.5 | 2" | unknown | Yes | Yes | NM |
| TW-5 | 7/2/1981 | Shallow Groundwater - Groundwater Interface | 704.60 | 706.33 | 20 | 15.5 - 20 | 2" | unknown | Yes | Yes | NM |
| TW-6 | 8/6/1981 | Shallow Groundwater - Groundwater Interface | 709.70 | 712.09 | 23 | 18.5 - 23 | 2" | unknown | Yes | Yes | NM |
| TW-7 | 8/6/1981 | Shallow Groundwater - Groundwater Interface | 699.60 | 701.45 | 16 | 14 - 16 | 2" | unknown | Yes | Yes | NM |

Notes:

- a) proposed well completion details.
- b) Site inspection occurred on 4/11/2016.

Definitions:

- ft msl - feet, mean sea level.
- ft bgs - feet, below ground surface.
- NA - not available.
- NM - not measured.
- TBD - to be determined.

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 Plot Date/Time: 04/17/08 11:30am
 Plotted by: bernadette.oconnor

Image: 12-13-07
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OFFICE Pittsburgh, PA
 DRAWN BY B. Faison
 CHECKED BY W. Stanhope
 APPROVED BY
 DRAWING NUMBER 119637-B24



LEGEND:

- APPROXIMATE PPG PROPERTY LINE
- LP-3 ● EXISTING FORMER TANK FARM AREA GROUNDWATER INTERFACE MONITORING WELL
- MW-11 ● MONITORING WELL PROPOSED FOR ABANDONMENT
- MW-10R ● MONITORING WELL, NEW OR REPLACED
- TW-6 ● EXISTING MONITORING WELL OUTSIDE OF FORMER TANK FARM AREA PROPOSED FOR ABANDONMENT.
- * DENOTES GROUND WATER WELL SCREENED ZONE DOES NOT INTERCEPT WATER TABLE.

NOTE: LOCATIONS OF PROPOSED MONITORING WELLS ARE APPROXIMATED AND MAY REQUIRE ADJUSTMENT IN THE FIELD BASED ON SITE CONDITIONS.



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PPG INDUSTRIES, INC.
 OAK CREEK, WISCONSIN

**FIGURE 1
 MONITORING WELL LOCATIONS**

STATEMENT OF BASIS
 OAK CREEK, WISCONSIN