

From: Henderson, Dave <Dave.Henderson@aecom.com>
Sent: Tuesday, April 20, 2021 7:43 AM
To: GravelPit; Beggs, Tauren R - DNR; Witte, Edward
Subject: Former Newton Pit - Emerging Contaminant WP Update #3, Area Wide Potable Well Investigation
Attachments: Emerging Contaminant WP_Update #3_04202021_final.pdf

Team,

Attached is the *Emerging Contaminant Work Plan #3 – Area Wide Potable Well Investigation* for the Former Newton Pit.

Tauren, I have also submitted this through the WDNR's portal system.

Thanks
dsh

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Letter of Transmittal

Attention:	Mr. Tauren Beggs Hydrogeologist, WDNR 2984 Shawano Ave Green Bay, WI 54313	Date:	4/20/21
Project reference:	Former Newton Pit BRRTS No. 02-36-000268	Project number:	60135471

We are sending you the following:

Number of originals:	Number of copies:	Description:
One	Zero	Emerging Contaminant Work Plan Update #3 – Area Wide Potable Well Investigation

Mr. Beggs,

Attached is the Emerging Contaminant Work Plan Update #3 – Area Wide Potable Well Investigation for the Former Town of Newton Gravel Pit, Manitowoc Wisconsin.

Please let me know if you have any questions.

Thank you.



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Cc: Kathleen M. McDaniel, City Attorney, City of Manitowoc
Dan Koski, Director of Public Infrastructure, City of Manitowoc

Mr. Tauren Beggs
Hydrogeologist
Wisconsin Department of Natural
Resources
2984 Shawano Avenue
Green Bay, WI 54313-6727

April 20, 2021

**Emerging Contaminant Work Plan Update #3 - Area Wide Potable Well Investigation
Former Town of Newton Gravel Pit
BRRTS No. 02-36-000268
AECOM Project No. 60135471(82518)**

Dear Mr. Beggs,

AECOM Technical Services, Inc. (AECOM), on the behalf of the City of Manitowoc (City), is pleased to submit this Emerging Contaminant Work Plan Update #3 for a May 2021 potable well sampling event to continue the investigation of per- and polyfluoroalkyl substances (PFAS) related to the Former Town of Newton Gravel Pit site, 3130 Hecker Road, Manitowoc Wisconsin.

Presented below is emerging contaminant background information along with an updated work plan for additional PFAS potable well sampling activities.

Emerging Contaminant Background Information

The Former Newton Gravel Pit property is owned by the City of Manitowoc, is approximately 58 acres in size, and is located at 3130 Hecker Road in the Town of Newton, Manitowoc County Wisconsin. The property is situated in the southeast quarter of the northwest quarter of Section 02, Township 18N, Range 23E. A property location map is included as Figure 1.

The land use near the property is rural. Bordering the property to the west is an active gravel pit, to the north is farmland and forest, to the east is farmland and rural residences, and to the south is farmland and an active gravel pit. A small creek, Silver Creek, flows through the property from the north/northwest to the south/southeast. Site features are shown on Figure 2.

During the 1960's and early 1970's liquid industrial waste was disposed of within two areas that have been determined to be the source areas for impacts at the site. The Western Source Area is located on an elevated area of the property along the western property line. The Northern Source Area is located on the north central portion of the property. In addition, historical aerial photos indicate former drying ponds were present in the northwest corner of the property.

In July 2018, at the request of the Wisconsin Department of Natural Resources (WDNR), AECOM conducted a limited groundwater assessment for PFAS¹. The limited investigation focused on the property boundaries, the Western Source Area, the Northern Source Area, and based on anecdotal information along with historic aerial photography, an area in the northwestern portion of the property that historically contained former drying ponds. The limited investigation sampled groundwater from seven

¹ *Limited Groundwater Assessment for Emerging Contaminants*, Former Town of Newton Gravel Pit, 3130 Hecker Road, Manitowoc, Wisconsin, BRRTS no. 02-3-000268, AECOM Project No. 60581251, October 22, 2018

monitoring wells. Groundwater samples were analyzed for PFAS compounds using the Modified EPA Method 537, isotope dilution method, for the Michigan 24 compound list. Laboratory analytical results indicated that PFAS are present in the groundwater beneath the site, and that concentrations of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) compounds exceed the EPA advisory level lifetime HAL at one location (WT-01).

On September 24, 2018, AECOM notified² the WDNR that emerging contaminants (i.e. PFAS) were present in the groundwater at the Former Newton Pit site. In response to the notification, the WDNR issued an updated responsible party (RP) letter³ to the City informing them of their legal responsibilities and the next steps to be taken associated with the PFAS release.

In compliance with the updated RP letter, an *Emerging Contaminant Monitoring Work Plan*⁴ was developed and submitted to the WDNR for initiating an emerging contaminant site investigation. The work plan included both potable well and groundwater monitoring well sampling activities. The emerging contaminant potable well sampling was conducted during the October 2018 event and the results have been reported under a separate cover⁵.

The emerging contaminant groundwater investigation was conducted in association with fall 2018 on-site groundwater sampling event⁶. In total, between the two 2018 PFAS sampling events, 16 on-site wells and the groundwater treatment pond were sampled and analyzed using EPA Method 537 modified, isotope dilution, for the State of Michigan list of 24 PFAS analytes. Analytical results indicated that PFAS were present in the on-site groundwater and in the waters of the treatment pond. At the time, no source area was defined for the PFAS compounds.

In March of 2020 the City provided a *Revised Emerging Contaminant Work Plan Update #1*⁷ to the WDNR for continued groundwater, potable well, and surface water sampling. The workplan was approved by the WDNR, with additions to the potable well and surface water monitoring scope of work.

The Work Plan Update #1 groundwater monitoring⁸ was conducted in June of 2020 and it included PFAS sampling for the remaining 38 monitoring wells associated with the site. Groundwater samples were analyzed using EPA Method 537 modified, isotope dilution, for the Wisconsin list of 36 PFAS analytes. Analytical results indicated that PFAS were present in the wells sampled.

The Work Plan Update #1 potable well sampling⁹ was conducted in conjunction with the June 2020 groundwater event. In total, 15 addresses were scheduled for sampling and 15 addresses were sampled. Water samples were analyzed using EPA Method 537 modified, isotope dilution, for the Wisconsin list of 36 PFAS analytes. The laboratory analytical data indicated that PFAS are present in the potable wells sampled.

² Notification for Hazardous Substance Discharge, WDNR Form 4400-225, submitted to WDNR on September 24, 2018

³ Roxanne N. Chronert, WDNR, to City of Manitowoc, September 24, 2018. *Reported Contamination at Manitowoc City/Former Newton Tn Gravel Pit*, 3130 Hecker Road, Manitowoc.

⁴ *Emerging Contaminant Monitoring Work Plan and Project Status Update*, Former Town of Newton Gravel Pit, BRRTS no. 02-3-000268, AECOM Project No. 60135471(82518), October 24, 2018

⁵ *October 2018 VOC Semi-Annual Potable Well Monitoring Letter Report and Initiation of Per- and Polyfluoroalkyl Substances (PFAS) Monitoring*, Former Town of Newton Gravel Pit, BRRTS No. 02-36-000268, AECOM Project No: 60135471(82518), February 18, 2019

⁶ *Northern Source Area Sampling, 2018 VOC Annual Groundwater Monitoring, and Initial Emerging Contaminant Groundwater Investigation Report*, Former Town of Newton Gravel Pit, BRRTS No. 02-36-000268, WDNR FID No. 436104020, AECOM Project No: 60135471(82518), June 5, 2019

⁷ *Revised Emerging Contaminant Work Plan Update #1*, Former Town of Newton Gravel Pit, BRRTS No. 02-36-000268, AECOM Project No: 60135471(82518), March 18, 2020

⁸ *Emerging Contaminant Groundwater Investigation Update Report, June 2020*, Former Town of Newton Gravel Pit, BRRTS No. 02-36-000268, WDNR FID No. 436104020, AECOM Project No: 60135471(82518), February 26, 2021

⁹ *June 2020 VOC Semi-Annual and PFAS Potable Well Monitoring Letter Report*, BRRTS No. 02-36-000268, AECOM Project No: 60135471(82518), December 30, 2020

The Work Plan Update #1 Silver Creek surface water sampling¹⁰ was conducted during August and November 2020. Sampling was conducted both upstream and downstream of the gravel pit site. Water samples were analyzed using EPA Method 537 modified, isotope dilution, for the Wisconsin list of 36 PFAS analytes. In total, 15 surface water samples were obtained from 11 locations during the two events. Analytical results indicate that PFAS were present in the surface water at all sample locations.

On November 6, 2020, the Wisconsin Department of Health Services reported-out the 11th Cycle of Groundwater Standards Proposals. The recommendation included individual standards for 12 PFAS and combined standards for 6 PFAS.

Effective March 1, 2021 the WDNR modified the Wisconsin 36 PFAS laboratory analytical list. Three PFAS were removed from the original list, making the updated Wisconsin PFAS laboratory analytical list of 33 compounds.

On April 19, 2021 the City provided an *Emerging Contaminant Work Plan Update #2 – Continued On-Site Investigation*¹¹ to the WDNR for continued site investigation activities focused on the former drying ponds present in the northwest corner of the property and to aid in the hydrological understanding of the northwest corner of the property, especially how groundwater flow relates to the surface water of Silver Creek.

The proposed Cycle 11 standards and the updated Wisconsin analytical list of 33 PFAS have been incorporated into this Work Plan Update #3.

At this time no source has been defined for the PFAS identified during sampling associated with the Former Newton Pit.

Emerging Contaminant Work Plan Update #3

This work plan update is provided in general accordance with the requirements of the Wisconsin Administrative Code Chapter NR 700 rule series with the understanding that multiple work plans for the project are currently in place and approved by the WDNR. Therefore, this work plan update is intended to be reviewed in conjunction with the existing plans.

Potable Well Sampling Schedule and Locations

A total of 96 potable wells are scheduled for sampling during this event. Sampling is proposed along Hecker Road, Viebahn Street, CTH CR, Thunder Ridge Road, Blackhawk Court, Silver Creek Road, South 26th Street, Elm Road, Orchard Lane, South 19th Street, and South 15th Street. The work is tentatively scheduled to be conducted in conjunction with the *Area Wide VOC Five Year Potable Well Monitoring Work Plan*¹² sampling event tentatively scheduled for May 2021.

For Work Plan Update #3 the potable well sampling locations are categorized as follows:

- Confirmation sampling wells: wells previously sample that are to be re-sampled.
- Proposed new sampling location wells: wells not previously sampled.
- Potential potable well locations, wells where no sampling is proposed.
- Former potable well locations now connected to City water.

¹⁰ 2020 Silver Creek Emerging Contaminants Sampling Letter Report, Former Town of Newton Gravel Pit, BRRTS No. 02-36-000268, AECOM Project No: 60135471(82518), March 15, 2021

¹¹ Emerging Contaminant Work Plan Update #2 – Continued On-Site Investigation, Former Town of Newton Gravel Pit, BRRTS No. 02-36-000268, AECOM Project No: 60135471(82518), April 19, 2021

¹² Area Wide VOC Five Year Potable Well Sampling Work Plan, Former Town of Newton Gravel Pit, 3130 Hecker Road, Manitowoc, Wisconsin, BRRTS No. 02-36-000268, AECOM Project No: 60135471(82518), April 16, 2021

A description of each sampling location and the proposed location specific sampling schedule are presented below. This information is also detailed on Table 1 and presented on Figure 3.

Confirmation Sampling

Confirmation sampling wells are locations with detectable PFAS as follows:

- Proposed PFAS NR 140 Enforcement Standard (ES) exceedances, map color code symbol: ●
- Proposed PFAS NR 140 Preventative Action Limit (PAL) exceedances, map color code symbol: ●
- PFAS detects below proposed PAL levels, map color code symbol: ●
- Previous sampled with no detects above laboratory method detection limits (MDLs), map color code symbol: ●

Confirmation sampling for the May 2021 event includes a total of 19 wells as follows.

Twelve wells along Hecker Road:

- 3114 Hecker Road
- 3121 Hecker Road
- 3303 Hecker Road, replacement
- 3320 Hecker Road
- 3327 Hecker Road
- 3461(3417) Hecker Road
- 3515 Hecker Road, replacement
- 3518 Hecker Road, replacement
- 3609 Hecker Road, replacement
- 3625 Hecker Road
- 3702 Hecker Road
- 3720 Hecker Road

One well on County Road CR:

- 3533 County Road CR

Three wells located along Viebahn Street:

- 3817 Viebahn Street
- 4141 Viebahn Street / 2717 County Road CR
- 4219 Viebahn Street

One well located on Silver Creek Road:

- 4159 Silver Creek Road

One well on Blackhawk Court:

- 3911 Black Hawk Court

One well on Thunder Ridge Road:

- 4127 Thunder Ridge Road

Proposed New Sampling Locations

The proposed new sampling locations have been selected based on two criteria:

1. To geographically extend the original area of sampling. This includes:
 - a. expanding the sampling area west/up-gradient of the Gravel Pit site.

- b. extending the sampling area north and south along Hecker Road,
 - c. extending the northern boundary of the sampling area along Viebahn Street in the vicinity of CTH CR,
 - d. extending the sampling area along CTH CR, Thunder Ridge Road, and Black Hawk Court.
 - e. extending the southern boundary of the sampling area along Silver Creek Road in the vicinity of Hecker Road and CTH CR.
2. To sample those wells east of CTH CR that specifically have had volatile organic compound (VOC) ES exceedances in the past. The WDNR has expressed concern that future work to connect these properties to an extended City of Manitowoc water main and the subsequent abandonment of the individual potable wells will limit the opportunity for sampling at these locations.

The proposed new sampling locations are identified on Figure 3 with the color code symbol: 

Proposed new sampling locations for the May 2021 event includes a total of 77 wells as follows.

Four wells, expanded west/upgradient of Gravel Pit site:

- 5107 Viebahn Street
- 2925 Fricke Drive
- 3107 Fricke Drive
- 3609 M and M Lane
- 5202 Silver Creek Road

Two wells extending north and south along Hecker Road:

- 3018 Hecker Road
- 3627 Hecker Road

One well extending the north boundary on Viebahn Street:

- 3825 Viebahn Street

Thirty wells along CTH CR, Thunder Ridge Road, and Black Hawk Court:

- 2706 County Road CR
- 2716 County Road CR
- 2832 and 2904 County Road CR
- 2911 County Road CR
- 3023 County Road CR
- 3120 County Road CR
- 3224 County Road CR
- 3312 County Road CR
- 3322 County Road CR
- 3403 County Road CR
- 3412 County Road CR
- 3618 County Road CR
- 3626 County Road CR
- 3627 County Road CR
- 3904 County Road CR
- 4024 County Road CR
- 4101 County Road CR
- 4114 County Road CR
- 4125 County Road CR
- 3921 Black Hawk Court
- 4002 Thunder Ridge Road
- 4005 Thunder Ridge Road

- 3422 County Road CR
- 3504 County Road CR
- 3523 County Road CR
- 3611 County Road CR
- 4010 Thunder Ridge Road
- 4027 Thunder Ridge Road
- 4101 Thunder Ridge Road
- 4111 Thunder Ridge Road

Fourteen wells extending the south boundary along Silver Creek Road in the vicinity of Hecker Road and CTH CR:

- 3812 Silver Creek Road
- 3902 Silver Creek Road
- 4004 Silver Creek Road
- 4156 Silver Creek Road
- 4314 Silver Creek Road
- 4315 Silver Creek Road
- 4212 Silver Creek Road, 4220 Silver Creek Road and 4236 Silver Creek Road (Shared Well)
- 4609 Silver Creek Road
- 4620 Silver Creek Road
- 4747 Silver Creek Road
- 4751 Silver Creek Road
- 4752 Silver Creek Road
- 4808 Silver Creek Road
- 4904 Silver Creek Road

Twenty five wells east of CTH CR with VOC ES exceedances:

- 3008 South 26th Street
- 3027 Orchard Lane
- 2201 Elm Road
- 2322 Elm Road
- 2732 South 15th Street
- 2820 South 15th Street
- 2823 South 15th Street
- 2827 South 15th Street
- 2834 South 15th Street
- 2908 South 15th Street
- 2911 South 15th Street
- 2912 South 15th Street
- 2824 South 19th Street, 2828 South 19th Street and 2904 South 19th Street (Shared Well)
- 3028 South 15th Street
- 3107 South 15th Street
- 3126 South 15th Street
- 3209 South 15th Street, 3217 South 15th Street (Shared Well)
- 2917 South 19th Street
- 2918 South 19th Street
- 3006 and 3008 19th Street (Duplex)
- 3011 South 19th Street
- 3019 South 19th Street
- 3109 South 19th Street
- 3123 South 19th Street
- 3027 South 15th Street

The attached Figure 3 also identifies the following locations:

- Potential potable well locations, color code symbol: ●
These are locations of potable wells where no sampling is scheduled for this event.
- Address on City water, color code symbol: ○
City water has been provided at these are locations and the potable wells have been properly abandoned.

Methods

There are potential cross contamination issues associated with PFAS sampling due to the presence of these compounds in many commercial products. Therefore, AECOM PFAS-certified sampling teams will conduct the PFAS sampling events. AECOM certification requires attending an internal PFAS sampling training course and reviewing the AECOM PFAS Sampling Guidance document designed to make AECOM samplers aware of the products known to have tested positive for PFAS compounds, as well as identifying PFAS-free products that are appropriate to use in the sampling environment.

Potable well sampling for PFAS will include the following protocols:

Testing Laboratory:

WDNR PFAS certified laboratory, or a laboratory that has applied for Wisconsin certification, for analyses.

Laboratory Analysis:

Modified EPA Method 537.1 (isotope dilution method), State of Wisconsin list of 33 PFAS analytes.

Sampling:

Where applicable, PFAS sampling will be conducted first, before VOC sampling. This is to provide a separation of time and distance between the PFAS sampling and the VOC sampling, which is collected in 40-ml glass vials with a Teflon septum (the Teflon septa is a possible source for PFAS).

Samples will be obtained from a sample port/valve prior to treatment equipment and at a location as close to the well as possible. This is typically a sample port/valve located next to the system pressure tank, or it may be the nearest cold-water hose bib. The system will be purged for at least 10 minutes immediately prior to sampling.

The water samples will be collected in laboratory-supplied 500ml HDPE bottles without preservative. The sample bottles, once filled, will be stored on ice in insulated coolers. The coolers will be shipped via FEDEX to the analytical laboratory for chemical analysis within the holding times specified by the analytical method (14 days). The samples will be transferred to the laboratory under standard chain of custody control.

Quality Control:

Duplicate Sample: No field dups will be obtained.

Field Blanks:

The original Method 537 sampling protocol, which require field blanks at each sampling location, will be modified as follows:

Since sampling will occur within individual homeowner residences, no field blanks will be collected during the sampling event.

Equipment Blanks:

There will be no field sampling equipment used. Therefore, no equipment blanks will be obtained.

Laboratory Quality Control:

The test lab will provide a Level 4 data package. Due to the use of the isotope dilution method, Matrix Spike/Spike Duplication (MS/MSD) analysis will not be requested.

Data Validation:

AECOM will provide a data validation review using procedures described in the National Functional Guidelines for High Resolution Superfund Method Data Review (EPA, April 2016), as appropriate.

Reporting:

AECOM will present the PFAS sampling results in a potable well monitoring letter report. The report will also include historical PFAS potable well sampling results.

Results will be compared to the Wisconsin Department of Health Services (WDHS) Cycle 10 and Cycle 11 proposed PFAS ES and PAL limits. Additionally, a cumulative Hazard Index (HI) will be calculated using WDHS' recommended method for assessing the cumulative risk of PFAS using the individual compound Hazard Quotients (HQs).

Response Actions (alternative water management plan)

Groundwater results will be compared to proposed ES, PAL, and HI standards for PFAS. Based on the results, the following response actions will be implemented upon the City's receipt of the PFAS potable well monitoring laboratory results:

For potable well locations with reported PFAS concentrations at or above the proposed ES or HI standard:

- The well owner, or occupant as applicable, will be notified of the sampling results by phone call or in-person visit, as soon as reasonably possible. In accordance with NR 716.14, the City will provide written notice of the results to the well owner, or occupant as applicable, and the WDNR within 10 days of receiving the results.
- Bottled water will be provided to the homeowner, or occupant as applicable, as soon as reasonably possible.
- A confirmation sample will be scheduled, as needed.
- Planning will begin for providing a new drinking water source. This may entail continuing to provide bottled and a longer-term solution such as a replacement potable well or the provision of City water.

For potable well locations with reported PFAS concentrations below the proposed ES and HI standards:

- In accordance with NR 716.14, the City will provide written notice of the results to the well owner, or occupant as applicable, and the WDNR within 10 days of receiving the results.
- The City will inform the well owner, or occupant as applicable, of the opportunity for self-purchase of bottled water and direct them to contact WDHS and WDNR for additional options based on their test results.
- Confirmation sampling will not be scheduled. Additional sampling may be conducted as outlined in a future PFAS potable well monitoring plan.

Step-out Plan

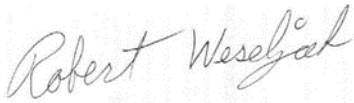
The need for additional iterative phases of PFAS potable well sampling beyond what is proposed in this work plan will be evaluated pending the results from the proposed sampling and future discussions with the WDNR.

Closing

Unless otherwise notified by the WDNR, the City intends to proceed with the activities proposed in this Work Plan Update. If you have any questions, please contact Dave Henderson at 414.944.6190 or dave.henderson@aecom.com.

Sincerely,

AECOM Technical Services, Inc.



Robert Weseljak
AECOM
E: robert.weseljak@aecom.com



David Henderson
AECOM
E: dave.henderson@aecom.com

enclosures: Table 1 - Summary of Proposed Area Wide PFAS Potable Well Sampling Plan
Figure 1 - Site Location Map
Figure 2 - Site Features
Figure 3 - Area Wide PFAS Potable Well Sampling Locations

cc: Kathleen M. McDaniel, City Attorney, City of Manitowoc
Dan Koski, Director of Public Infrastructure, City of Manitowoc

Tables



TABLE 1
SUMMARY OF THE PROPOSED AREA WIDE PFAS POTABLE WELL SAMPLING PLAN
FORMER TOWN OF NEWTON GRAVEL PIT
MANITOWOC, WISCONSIN

Well Address	Map Color Code	Date of Initial PFAS Sampling Event	2021
			May
Confirmation Sampling - Proposed PFAS NR 140 ES Exceedances			
3720 Hecker Rd	●	June 2020	1
3533 CTH CR	●	June 2020	1
3817 Viebahn St	●	June 2020	1
4141 Viebahn St. / 2717 CTH CR (non-potable monitoring location)	●	June 2020	1
4219 Viebahn St	●	June 2020	1
Confirmation Sampling - Proposed PFAS NR 140 PAL Exceedances			
3114 Hecker Rd	●	June 2020	1
3121 Hecker Rd	●	June 2020	1
3303 Hecker Rd, replacement well	●	June 2020	1
3327 Hecker Rd	●	November 2018	1
3515 Hecker Rd, replacement well	●	June 2020	1
3518 Hecker Rd, replacement well	●	June 2020	1
3609 Hecker Rd, replacement well	●	June 2020	1
3625 Hecker Rd	●	June 2020	1
3911 Black Hawk Ct	●	June 2020	1
4127 Thunder Ridge Rd	●	June 2020	1
Confirmation Sampling - PFAS Detected Below Proposed PAL			
3461(3417) Hecker Rd	●	November 2018	1
4159 Silver Creek Rd	●	June 2020	1
Confirmation Sampling - No Previous Detects			
3320 Hecker Rd	●	November 2018	1
3702 Hecker Rd	●	November 2018	1
Proposed Sampling Locations			
Expanding west/upgradient of Gravel Pit site			
5107 Viebahn St	◆	---	1
2925 Fricke Dr.	◆	---	1
3107 Fricke Dr	◆	---	1
3609 M and M Ln	◆	---	1
5202 Silver Creek Rd	◆	---	1
Extending north and south along Hecker Road			
3018 Hecker Rd	◆	---	1
3627 Hecker Rd	◆	---	1
Extending north boundary along Viebahn Street			
3825 Viebahn St	◆	---	1
Extending along CTH CR, Thunder Ridge Road, and Black Hawk Court			
2706 CTH CR	◆	---	1
2716 CTH CR	◆	---	1
2832 and 2904 CTH CR	◆	---	1
2911 CTH CR	◆	---	1
3023 CTH CR, replacement well	◆	---	1
3120 CTH CR, replacement well	◆	---	1
3224 CTH CR	◆	---	1
3312 CTH CR	◆	---	1
3322 CTH CR	◆	---	1
3403 CTH CR, replacement well	◆	---	1
3412 CTH CR	◆	---	1
3422 CTH CR	◆	---	1
3504 CTH CR, replacement well	◆	---	1
3523 CTH CR	◆	---	1
3611 CTH CR	◆	---	1
3618 CTH CR	◆	---	1
3626 CTH CR/3626 CTH CR #B	◆	---	1
3627 CTH CR	◆	---	1
3904 CTH CR	◆	---	1
4024 CTH CR	◆	---	1
4101 CTH CR	◆	---	1
4114 CTH CR	◆	---	1
4125 CTH CR	◆	---	1
4002 Thunder Ridge Rd, replacement well	◆	---	1
4005 Thunder Ridge Rd, replacement well	◆	---	1
4010 Thunder Ridge Rd, replacement well	◆	---	1

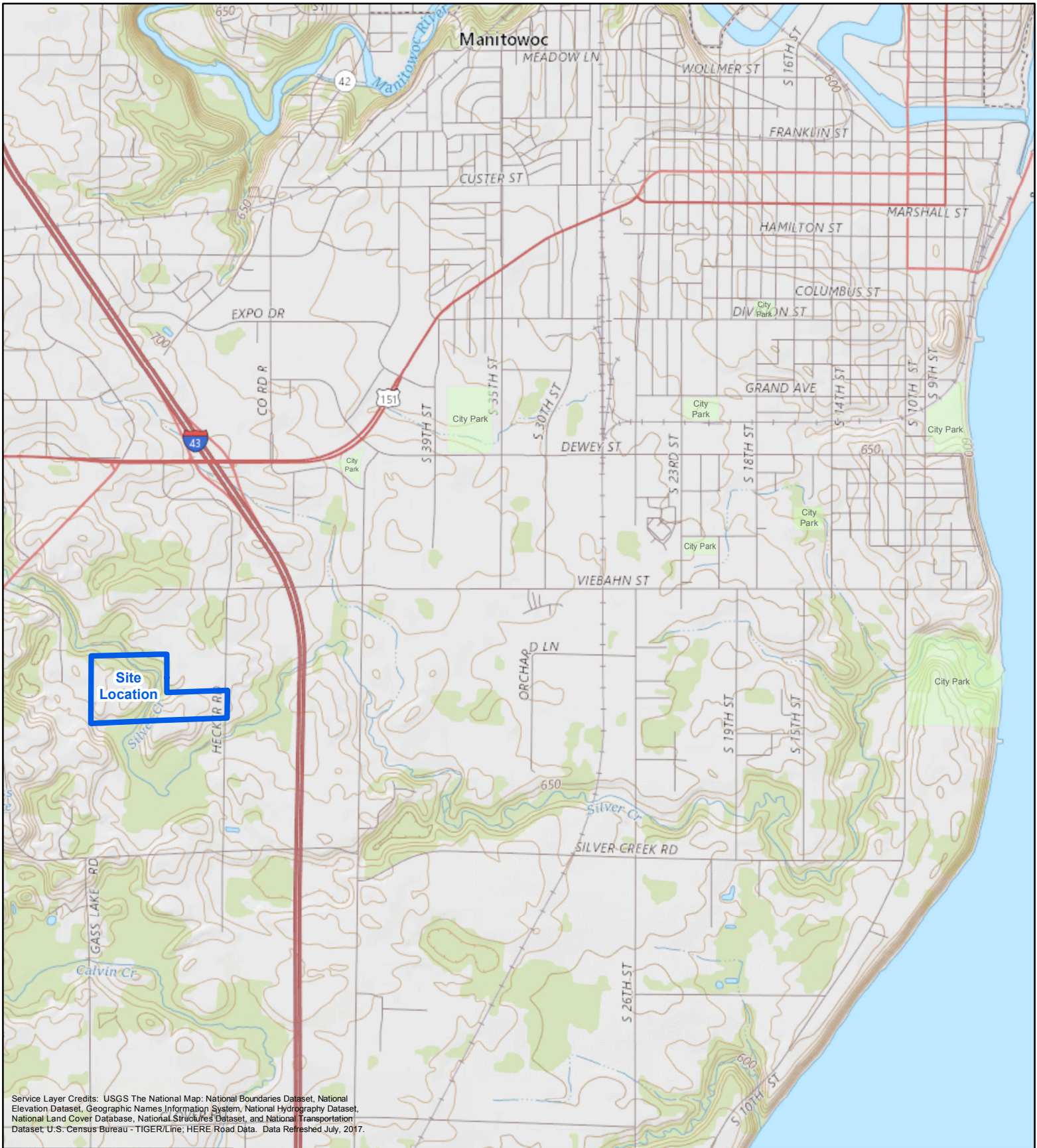


TABLE 1
SUMMARY OF THE PROPOSED AREA WIDE PFAS POTABLE WELL SAMPLING PLAN
FORMER TOWN OF NEWTON GRAVEL PIT
MANITOWOC, WISCONSIN

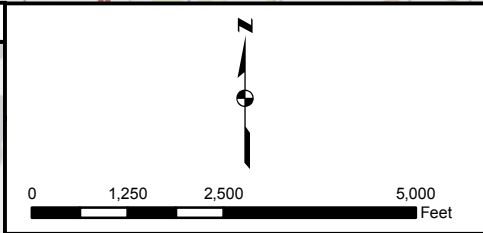
Well Address	Map Color Code	Date of Initial PFAS Sampling Event	2021
			May
4027 Thunder Ridge Rd	◆	---	1
4101 Thunder Ridge Rd	◆	---	1
4111 Thunder Ridge Rd	◆	---	1
3921 Black Hawk Ct	◆	---	1
Extending south boundary along Silver Creek in the vicinity of Hecker Rd and CTH CR			
3812 Silver Creek Rd	◆	---	1
3902 Silver Creek Rd	◆	---	1
4004 Silver Creek Rd	◆	---	1
4156 Silver Creek Rd	◆	---	1
4212 Silver Creek Rd, 4220 Silver Creek Rd and 4236 Silver Creek Rd (Shared Well)	◆	---	1
4314 Silver Creek Rd	◆	---	1
4315 Silver Creek Rd	◆	---	1
4609 Silver Creek Rd	◆	---	1
4620 Silver Creek Rd	◆	---	1
4747 Silver Creek Rd	◆	---	1
4751 Silver Creek Rd	◆	---	1
4752 Silver Creek Rd	◆	---	1
4808 Silver Creek Rd	◆	---	1
4904 Silver Creek Rd	◆	---	1
Wells east of CTH CR with VOC ES Exceedances			
3008 S 26TH St	◆	---	1
3027 Orchard Ln	◆	---	1
2201 Elm Road	◆	---	1
2322 ELM RD	◆	---	1
2732 S 15TH ST	◆	---	1
2820 S 15TH ST	◆	---	1
2823 S 15TH ST	◆	---	1
2827 S 15TH ST	◆	---	1
2834 S 15TH ST	◆	---	1
2908 S 15TH ST	◆	---	1
2911 S 15TH ST	◆	---	1
2912 S 15TH ST	◆	---	1
3027 S 15TH ST	◆	---	1
3028 S 15TH ST	◆	---	1
3107 S 15TH ST	◆	---	1
3126 S 15TH ST	◆	---	1
3209 S 15TH ST and 3217 S 15TH ST (Shared Well)	◆	---	1
2824 S 19TH ST, 2828 S 19TH ST and 2904 S 19TH ST (Shared Well)	◆	---	1
2917 S 19TH ST	◆	---	1
2918 S 19TH ST	◆	---	1
3006 and 3008 19th ST (Duplex)	◆	---	1
3011 S 19TH ST	◆	---	1
3019 S 19TH ST	◆	---	1
3109 S 19TH ST	◆	---	1
3123 S 19TH ST	◆	---	1
Former Potable Wells Now Connected to City Water			
2734(2804) CTH CR	○	City Water Provided - No Potable Well Sampling Required	
2916 CTH CR	○		
2917 CTH CR	○		
3617(3621) Viebahn St	○		
3701 Viebahn St	○		
3815 Viebahn St	○		
4025 Viebahn St	○		
4101 Viebahn St	○		
4141 Viebahn St. / 2717 CTH CR (non-potable monitoring location)	○		
		Wells Per Event	96

Notes:
Map Color Code: ○ indicates locations with potable wells not scheduled for sampling

Figures



Service Layer Credits: USGS The National Map: National Boundaries Dataset, National Elevation Dataset, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line; HERE Road Data. Data Refreshed July, 2017.



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FORMER NEWTON GRAVEL PIT

SITE LOCATION MAP





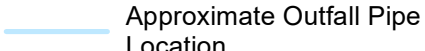






Project No. 60581251 Drawn By: RW Date: July 2018

Figure 1

FIGURE 2 SITE FEATURES

Former Newton Gravel Pit
Manitowoc, Wisconsin

Legend

-  Monitoring Well(s)
-  Staff Gauge
-  Gravel Pit Roads
-  Approximate Pond Location
-  Approximate Outfall Pipe Location
-  Engineered Cap Area
-  Electric Line
-  Civil Divisions
-  Parcels
-  Streams
-  Building Footprints

1 inch = 250 feet



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Milwaukee, WI 53212
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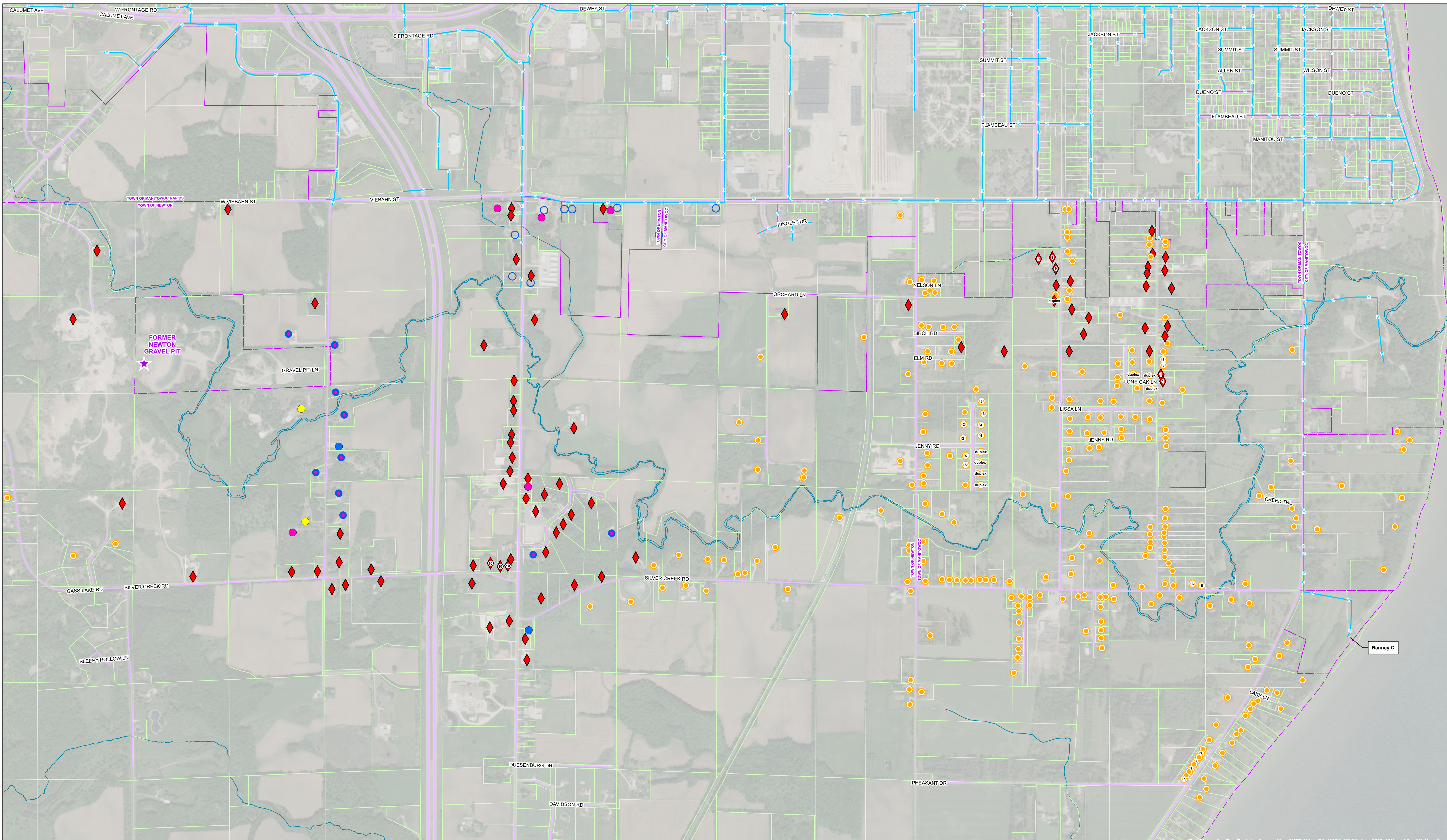
APPROVED BY: DH

DATE: 2/18/2021

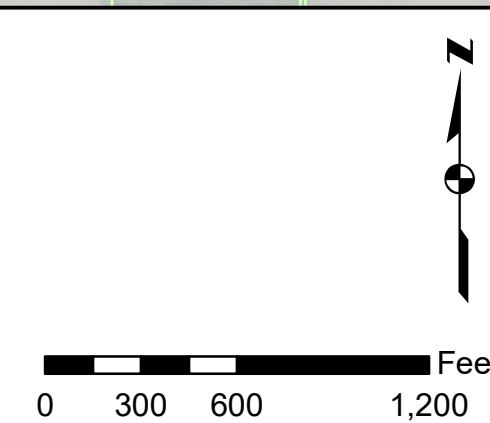
Project No.: 60135471



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Legend**
- ◆ Potable Well with Proposed PFAS ES Exceedance
 - ◆ Potable Well with Proposed PFAS PAL Exceedance
 - ◆ Potable Well with PFAS Detection
 - ◆ Potable Well with PFAS Non-Detection
 - ◆ Proposed Potable Well Location For PFAS Sample (Has Not Been Sampled)
 - Well On City Water
 - Potential Potable Well
 - ★ Site Location
 - Utility Water Line
 - Road Centerlines
 - Municipality Boundaries
 - Parcels
 - Streams



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FORMER NEWTON GRAVEL PIT	
AREA WIDE PFAS POTABLE WELL SAMPLING LOCATIONS	
Project No. 60135471	Date: April 2021
FIGURE 3	

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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