**From:** Henderson, David <Dave.Henderson@aecom.com>
**Sent:** Thursday, April 18, 2024 4:58 PM
**To:** Beggs, Tauren R - DNR
**Subject:** Newton Pit 02-36-000268, Amendment to RAOR
**Attachments:** RAOR_Amendment_04172024_final.pdf

Tauren,

Attached is an Amendment to the Revised Remedial Action Options Report for the Newton Gravel Pit project.

I've also submitted the document through the Submittal Portal.

Let me know if you have any questions.

Thanks
dsh

**David Henderson, P.E.** **(WI)**
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# Letter of Transmittal

| | | | |
|---|---|---|---|
| Attention: | Mr. Tauren Beggs<br>Hydrogeologist, WDNR<br>2984 Shawano Ave<br>Green Bay, WI 54313 | Date: | 4/18/24 |
| Project reference: | Former Newton Pit<br>BRRTS No. 02-36-000268 | Project number: | 60135471 |

**We are sending you the following:**

| Number of originals: | Number of copies: | Description: |
|---|---|---|
| One | Zero | Amendment to Revised Remedial Action Options Report (RAOR) |

Mr. Beggs,

Attached is the Amendment to Revised Remedial Action Options Report (RAOR) for the Former Town of Newton Gravel Pit, Manitowoc Wisconsin.

Please let me know if you have any questions.

Thank you.

David Henderson, P.E.
Senior Project Manager
D 414.944.6190 C 414.429.8304
dave.henderson@aecom.com

Cc: Eric Nycz, City Attorney, City of Manitowoc
Karen Dorow, Business Manager, City of Manitowoc
Dan Koski, Director of Public Infrastructure, City of Manitowoc

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April 17, 2024

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

**Amendment to Revised Remedial Action Options Report (RAOR)**
Former Town of Newton Gravel Pit
3130 Hecker Road, Manitowoc, Wisconsin
BRRTS No. 02-36-000268

Dear Mr. Beggs,

AECOM Technical Services, Inc (AECOM), on the behalf of the City of Manitowoc (City), is providing an amendment to the Revised Remedial Action Options Report (RAOR) for the Former Town of Newton Gravel Pit site, 3130 Hecker Road, Manitowoc Wisconsin. Recent monitoring indicates that changed site conditions support an amendment to the RAOR. The amendment modifies the design of the light non-aqueous phase liquid (LNAPL) recovery system.

Presented below is background and current site conditions information along with the RAOR amendment.

## Background and Current Site Conditions

The Former Town of Newton Gravel Pit (Newton Pit) was the location of disposal practices that included discharge of liquid industrial wastes such as petroleum products and chlorinated solvents. The disposal activities encompassed an area along the western property line referred to as the Western Source Area (Figure 1).

A Revised Remedial Action Options Report & Conceptual Design Report[1] was submitted to the Wisconsin Department of Natural Resource (WDNR or Department) in June 2017. The chosen remedial alternative included construction of an engineered cap over the Western Source Area, a groundwater treatment system (engineered treatment pond) just downgradient/east of the Western Source Area, and an engineered treatment system (soil vapor extraction (SVE) and LNAPL recovery) within the Western Source Area. The Revised RAOR was approved by the Department on July 7, 2017.

AECOM has been conducting remedial activities in a phased approach. The first phase was conducted in the fall of 2017 with construction of the engineered cap and the engineered groundwater treatment pond.

The second phase of the remedial activities was initiated in May and June of 2023 with the installation of extraction wells (EX-1 through EX-8) associated with the proposed engineered treatment system. Construction documentation[2] for the extraction wells was provided to the Department in October 2023.

AECOM has monitored water and LNAPL levels in the extraction wells and three surrounding monitoring wells since construction of the extraction wells.

[1] *Revised Remedial Action Options Report & Conceptual Design Report*, Former Gravel Pit, Town of Newton, Wisconsin. AECOM Technical Services, Inc., June 12, 2017.
[2] *Construction Documentation Proposed Engineered Treatment System – Extraction Well Installation Technical Memo*, Former Gravel Pit, Town of Newton, Wisconsin. AECOM Technical Services, Inc., October 16, 2023.

## LNAPL Monitoring

Historical water and LNAPL levels were measured in monitoring wells within the Western Source Area (i.e., WT-02, WT-09, WT-14, WT-10, WT-17, and WT-18) from May 19, 1999 to September 25, 2012 (Figure 2). Historically, LNAPL thickness varied from 3.48 ft to a 'sheen' in wells WT-02, WT-09, and WT-14, which are the main LNAPL wells (Table 1). The original Western Source Area monitoring wells were abandoned in 2012 during early remediation site preparation work.

After the 2023 extraction well installation, water and LNAPLs levels were monitored from June 6, 2023 through March 8, 2024, in the extraction wells and three surrounding monitoring wells. See attached LNAPL and Groundwater Elevation field data sheets. During this nine-month monitoring period, no LNAPL was observed in the extraction wells.

LNAPL thickness can vary over time based on changes in groundwater elevations. Typically, when groundwater elevations increase LNAPL thicknesses decrease and vice versa. AECOM compared historical 2012 and prior groundwater elevations with recent groundwater elevation data. In general, recent groundwater elevations are similar to historical low groundwater elevations. However, during nine-months of monitoring, LNAPL has not been observed in the Western Source Area extraction wells even though groundwater elevations are at historically low levels, indicating that appearance of LNAPL may not be related to groundwater elevation.

## Extraction Wells VOC Sampling

The extraction wells were monitored for volatile organic compounds (VOCs) during the November 2023 semi-annual site-wide groundwater monitoring event. Analytical results indicate levels of VOCs that exceed the NR 140 Enforcement Standards (ES) for multiple compounds in five wells (EX-1, EX-2, EX-3, EX-4, and EX-5). Based on the data, these five wells are considered the core of the Western Source Area.

Groundwater VOC results will be provided in a 2023 Annual Groundwater Monitoring Report to be submitted under a separate cover.

# RAOR Amendment

The Revised RAOR originally proposed six LNAPL recovery wells, See Figure 6 in the 2017 Revised RAOR document. As originally envisioned, the LNAPL recovery and treatment system would have included infrastructure (i.e., wellheads, trenched-in carrier piping, and space for equipment within the treatment building), along with treatment equipment (i.e., down-well pneumatic recovery pumps, air supply and product tubing, and within the treatment building, piping manifolds, an air compressor with dryer, control instrumentation, and a LNAPL storage tank).

Based on nine-months of monitoring without measurable levels of LNAPL along with VOC groundwater results confirming the core of the Western Source Area, AECOM proposes an amendment to the Revised RAOR that would include installation of the infrastructure for an LNAPL system but, at this time, would not include installation of the treatment equipment associated with the system. Specifically, AECOM proposes the following changes to the LNAPL system design:

Wells:

- Originally proposed design, eight SVE wells, of which six wells would also be used for LNAPL recovery.
- Amended design, eight SVE wells, of which five wells (EX-1, EX-2, EX-3, EX-4, and EX-5) would also be used for LNAPL recovery.

Infrastructure (wellheads, trenched-in carrier piping, and equipment space within the treatment building):

- Originally proposed design, wellhead and trenched in carrier pipe for six wells along with treatment building equipment space.
- Amended design, wellhead and trenched in carrier pipe for five wells (EX-1, EX-2, EX-3, EX-4, and EX-5). The equipment building will be sized to accommodate the possible addition of LNAPL treatment equipment at a later date.

Treatment Equipment: (down-well pneumatic recovery pumps, air supply and product tubing, piping manifolds, an air compressor with dryer, control instrumentation, and a LNAPL storage tank):

- Originally proposed design, purchase and install all LNAPL treatment equipment.
- Amended design, purchase and installation of LNAPL treatment equipment is postponed to a later date and only if site conditions dictate the need for the equipment.

SVE enhanced LNAPL recovery is a known technology to improve LNAPL recovery from extraction wells. Therefore, it is possible that once the SVE system is operational, there will be an influx of LNAPL into the extraction wells. Under the amended RAOR, AECOM proposes to monitor for LNAPL in the extraction wells and respond in a two-step manner if LNAPL is detected:

1. Begin LNAPL recovery using 3-inch dia. absorbent socks.
2. If, after a period of time, the absorbent socks cannot keep up with the recovery of LNAPL, AECOM will revisit purchasing and installing LNAPL recovery equipment in one or more wells, as needed.

## Summary

AECOM is providing an amendment to the Revised RAOR for the Newton Pit site based on changed site conditions. The amendment modifies the design of the LNAPL recovery system.

Based on nine-months of monitoring without measurable levels of LNAPL along with VOC groundwater results confirming the core of the Western Source Area, AECOM proposes to amend the remediation system by installing the infrastructure for an LNAPL system but, at this time, not install the associated treatment equipment.

Once the engineered treatment system is operational, if LNAPL is observed in the extractions wells, AECOM proposes to use manual LNAPL recovery methods (i.e., absorbent socks). If the absorbent socks cannot adequately address the LNAPL quantities, then AECOM will reconsider installing LNAPL recovery equipment in one or more wells, as needed.

At this time, we are proceeding with the amended RAOR design and anticipate bidding and construction of the Western Source Area engineered treatment system during 2024.

Yours sincerely,

AECOM Technical Services, Inc.

Robert Weseljak, P.G. (WI)
Project Scientist

D. S. Henderson

David Henderson, P.E. (WI)
Project Manager

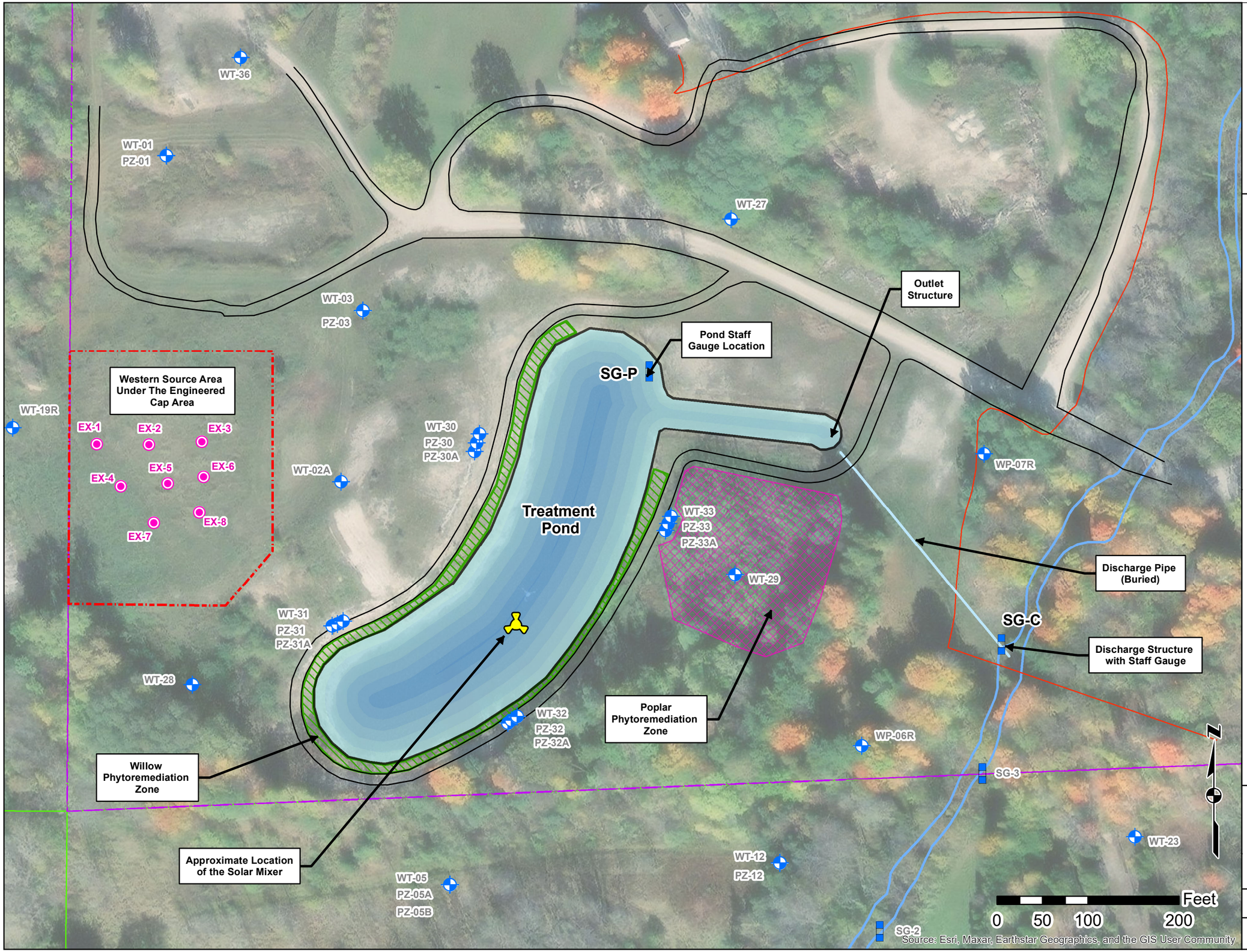
Cc: Eric Nycz, City Attorney, City of Manitowoc
Dan Koski, Director of Public Infrastructure, City of Manitowoc

Attachments:
Figure 1 – Site Features
Figure 2 – Extraction Well Locations
Table 1 – Summary of Historic Free Product Measurements
LNAPL and Groundwater Elevation Field Data Sheets

# Figures

# FIGURE 1
# REMEDIAL SITE FEATURES

Former Newton Gravel Pit
Manitowoc, Wisconsin




## Legend

- SVE/RW Location
- Monitoring Well(s)
- Staff Gauge
- Gravel Pit Roads
- Approximate Pond Location
- Willow Phytoremediation Zone
- Popular Phytoremediation Zone
- Approximate Outfall Pipe Location
- Engineered Cap Area
- Electric Line
- Civil Divisions
- Parcels
- Sliver Creek

1 inch = 100 feet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| DRAWN BY: RW | DATE: 2/28/2024 |
|---|---|

**Project No.: 60135471**

C:\data\Projects\NewtonGP\MXD\Fig3_RemedialSiteFeatures_OM.mxd

# FIGURE 2
# EXTRACTION WELL LOCATIONS

Former Newton Gravel Pit
Manitowoc, Wisconsin


**Legend**

- Extraction Well Location
- Abandoned Boring/Well Locations
- Monitoring Well(s)
- Gravel Pit Roads
- Approximate Pond Location
- Engineered Cap Area
- Civil Divisions
- Parcels

1 inch = 50 feet


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| APPROVED BY: DH | DATE: 2/28/2024 |
|---|---|

**Project No.: 60135471**

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# Tables

**SUMMARY OF HISTORIC FREE PRODUCT MEASUREMENTS**
**FORMER GRAVEL PIT**
**TOWN OF NEWTON, WISCONSIN**

| Well Identification | Ground Surface Elevation | TOC Elevation | Depth to | Depth to Groundwater | | Groundwater Elevation | Free Product | | Date |
|---|---|---|---|---|---|---|---|---|---|
| | | | (ft from TOC) | (ft. BGS) | (ft. from TOC) | | depth (ft. from TOC) | thickness (ft.) | |
| WT-02 | 718.5 | 720.56 | | | | | | | Installed 4/22/1993 |
| | | | 40.41 | 29.85 | 31.91 | 688.65 | NM | NM | 7/1/1993 |
| | | | 40.32 | 33.77 | 35.83 | 684.73 | 33.35 | 2.48 | 5/19/1999 |
| | | | 40.35 | 37.14 | 39.2 | 681.36 | 36.05 | 3.15 | 10/5/1999 |
| | | | 40.31 | 37.10 | 39.16 | 681.40 | 36.09 | 3.07 | 12/9/1999 |
| | | | 40.30 | 32.69 | 34.75 | 685.81 | 34.25 | 0.50 | 4/5/2000 |
| | | | 40.35 | 37.54 | 39.6 | 680.96 | 36.12 | 3.48 | 4/14/2005 |
| | | 720.85 | | | | | | | 10/1/2006 |
| | | | -- | 33.31 | 35.66 | 685.19 | 34.21 | 1.45 | 9/18/2007 |
| | | | -- | 32.97 | 35.32 | 685.53 | 34.31 | 1.01 | 9-19-07, 9:45 |
| | | | -- | 32.45 | 34.8 | 686.05 | 34.38 | 0.42 | 9-19-07, 11:25 |
| | | | -- | 34.41 | 36.76 | 684.09 | 34.38 | 2.38 | 9/20/2007 |
| | | | -- | 33.65 | 36 | 684.85 | 34.39 | 1.61 | 9/21/2007 |
| | | | -- | 31.30 | 33.65 | 687.20 | -- | 0.00 | 1/16/2008 |
| | | | 40.08 | 33.60 | 35.95 | 684.90 | 34.30 | 1.65 | 9/25/2012 |
| | | | | | | | | not sampled since 4-5-00 | |
| WT-09 | NM | 717.84 | | | | | | | Installed 9-19-06 |
| | | | 36.59 | | 33.55 | 684.29 | 30.69 | 2.86 | 10/1/2006 |
| | | | -- | | 32.85 | 684.99 | 31.34 | 1.51 | 9/18/2007 |
| | | | -- | | 32.9 | 684.94 | 31.39 | 1.51 | 9/19/2007 |
| | | | -- | | 32.51 | 685.33 | 31.44 | 1.07 | 9-19-07, 11:42 |
| | | | -- | | 32.66 | 685.18 | 31.43 | 1.23 | 9/20/2007 |
| | | | -- | | 32.6 | 685.24 | 31.40 | 1.20 | 9/21/2007 |
| | | | -- | | 33.7 | 684.14 | 30.70 | 3.00 | 1/14/2008 |
| | | | -- | | 33.2 | 684.64 | 30.65 | 2.55 | 1/15/2008 |
| | | | -- | | 32.5 | 685.34 | 30.70 | 1.80 | 1/16/2008 |
| | | | -- | | 32.9 | 684.94 | 30.65 | 2.25 | 1/18/2008 |
| | | | -- | | 31.7 | 686.14 | 30.66 | 1.04 | 1/22/2008 |
| | | | -- | | 32.6 | 685.24 | 30.74 | 1.86 | 1/29/2008 |
| | | | 36.31 | | 32.79 | 685.05 | 31.41 | 1.38 | 9/25/2012 |
| | | | | | | | | | Never Developed |
| WT-14 | NM | 722.48 | | | | | | | Installed 9-19-06 |
| | | | 40.26 | | 34.01 | 688.47 | 34.00 | 0.01 | 10/1/2006 |
| | | | -- | | 34.91 | 687.57 | -- | Sheen | 9/18/2007 |
| | | | -- | | 34.92 | 687.56 | -- | Sheen | 9/19/2007 |
| | | | -- | | -- | -- | -- | Sheen | 9/20/2007 |
| | | | -- | | 34.32 | 688.16 | -- | 0.00 | 1/16/2008 |
| | | | 40.20 | | 35.12 | 687.36 | 35.09 | 0.03 | 9/25/2012 |
| | | | | | | | | | Never Developed |
| WT-10 | NM | 727.32 | | | | | | | Installed 9-20-06 |
| | | | -- | | 41.15 | 686.17 | -- | 0.00 | 1/16/2008 |
| | | | | | 42.03 | 685.29 | -- | 0.00 | 9/25/2012 |
| | | | | | | | | | |
| WT-17 | 718.4 | 720.17 | | | | | | | Installed 9-19-07 |
| | | | -- | | 32.46 | 687.71 | -- | 0.00 | 1/16/2008 |
| | | | 38.83 | 30.47 | 32.24 | 687.93 | -- | 0.00 | 9/25/2012 |
| | | | | | | | | | |
| WT-18 | 729.2 | 731.72 | | | | | | | Installed 9-19-07 |
| | | | -- | | 45.25 | 686.47 | -- | 0.00 | 1/16/2008 |
| | | | 51.73 | 43.42 | 45.94 | 685.78 | -- | 0.00 | 9/25/2012 |
| | | | | | | | | | |

Notes:
BGS = Below Ground Surface
TOC = Top of Casing
NM = Not Measured

AECOM

**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Top of former western source area cap

Weather: Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **EX-1** | 5/31/2023 | 734.90 | | | | |
| **EX-1** | 6/1/2023 | 734.90 | | | | |
| **EX-1** | 6/2/2023 | 734.90 | | | | |
| **EX-1** | 6/5/2023 | 734.90 | | | | |
| **EX-1** | 6/6/2023 | 734.90 | | | | |
| **EX-1** | 6/7/2023 | 734.90 | | | | |
| **EX-1** | 6/8/2023 | 734.90 | | | | Well installed on 6/8/2023 |
| **EX-1** | 6/9/2023 | 734.90 | 46.82 | 46.83 | 688.07 | |
| **EX-1** | 6/12/2023 | 734.90 | - - | 47.04 | 687.86 | |
| **EX-1** | 6/15/2023 | 734.90 | - - | 47.12 | 687.78 | |
| **EX-1** | 7/19/2023 | 734.90 | - - | 47.77 | 687.13 | |
| **EX-1** | 8/18/2023 | 734.90 | - - | 47.83 | 687.07 | |
| **EX-1** | 9/14/2023 | 734.90 | - - | 48.14 | 686.76 | |
| **EX-1** | 11/6/2023 | 734.90 | - - | 48.15 | 686.75 | |
| **EX-1** | 1/8/2024 | 734.90 | - - | 48.25 | 686.65 | |
| **EX-1** | 3/8/2024 | 734.90 | - - | 47.67 | 687.23 | |
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Entered on Computer: Date

TOC = Top of Casing or Top of Pipe

Personnel

AECOM

**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Top of former western source area cap

Weather: Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **EX-2** | 5/31/2023 | 732.08 | | | | |
| **EX-2** | 6/1/2023 | 732.08 | | | | |
| **EX-2** | 6/2/2023 | 732.08 | | | | |
| **EX-2** | 6/5/2023 | 732.08 | | | | |
| **EX-2** | 6/6/2023 | 732.08 | | | | |
| **EX-2** | 6/7/2023 | 732.08 | | | | Well installed on 6/7/2023 |
| **EX-2** | 6/8/2023 | 732.08 | 44.55 | 44.56 | 687.52 | |
| **EX-2** | 6/9/2023 | 732.08 | 44.05 | 44.06 | 688.02 | |
| **EX-2** | 6/12/2023 | 732.08 | - - | 44.67 | 687.41 | |
| **EX-2** | 6/15/2023 | 732.08 | - - | 44.74 | 687.34 | |
| **EX-2** | 7/19/2023 | 732.08 | - - | 45.35 | 686.73 | |
| **EX-2** | 8/18/2023 | 732.08 | - - | 45.40 | 686.68 | |
| **EX-2** | 9/14/2023 | 732.08 | - - | 45.70 | 686.38 | |
| **EX-2** | 11/6/2023 | 732.08 | - - | 45.64 | 686.44 | |
| **EX-2** | 1/8/2024 | 732.08 | - - | 45.71 | 686.37 | |
| **EX-2** | 3/8/2024 | 732.08 | - - | 45.18 | 686.90 | |
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Entered on Computer: Date

TOC = Top of Casing or Top of Pipe

Personnel

AECOM

**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Top of former western source area cap

Weather: Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **EX-3** | 5/31/2023 | 733.10 | | | | |
| **EX-3** | 6/1/2023 | 733.10 | | | | |
| **EX-3** | 6/2/2023 | 733.10 | | | | Well installed on 6/2/2023 |
| **EX-3** | 6/5/2023 | 733.10 | | 46.03 | 687.07 | |
| **EX-3** | 6/6/2023 | 733.10 | | 46.03 | 687.07 | |
| **EX-3** | 6/7/2023 | 733.10 | 46.06 | 46.07 | 687.03 | |
| **EX-3** | 6/8/2023 | 733.10 | - - | 46.07 | 687.03 | |
| **EX-3** | 6/9/2023 | 733.10 | - - | 46.11 | 686.99 | |
| **EX-3** | 6/12/2023 | 733.10 | - - | 46.16 | 686.94 | |
| **EX-3** | 6/15/2023 | 733.10 | - - | 46.20 | 686.90 | |
| **EX-3** | 7/19/2023 | 733.10 | - - | 46.78 | 686.32 | |
| **EX-3** | 8/18/2023 | 733.10 | - - | 46.81 | 686.29 | |
| **EX-3** | 9/14/2023 | 733.10 | - - | 47.11 | 685.99 | |
| **EX-3** | 11/6/2023 | 733.10 | - - | 47.12 | 685.98 | |
| **EX-3** | 1/8/2024 | 733.10 | - - | 47.11 | 685.99 | |
| **EX-3** | 3/8/2024 | 733.10 | - - | 46.60 | 686.50 | |
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Entered on Computer: Date

TOC = Top of Casing or Top of Pipe

Personnel

AECOM

**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Top of former western source area cap

Weather: Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **EX-4** | 5/31/2023 | 733.56 | | | | |
| **EX-4** | 6/1/2023 | 733.56 | | | | |
| **EX-4** | 6/2/2023 | 733.56 | | | | |
| **EX-4** | 6/5/2023 | 733.56 | | | | |
| **EX-4** | 6/6/2023 | 733.56 | | | | |
| **EX-4** | 6/7/2023 | 733.56 | | | | |
| **EX-4** | 6/8/2023 | 733.56 | | | | Well installed on 6/8/2023 |
| **EX-4** | 6/9/2023 | 733.56 | - - | 44.58 | 688.98 | |
| **EX-4** | 6/12/2023 | 733.56 | - - | 46.26 | 687.30 | |
| **EX-4** | 6/15/2023 | 733.56 | - - | 46.32 | 687.24 | |
| **EX-4** | 7/19/2023 | 733.56 | - - | 46.90 | 686.66 | |
| **EX-4** | 8/18/2023 | 733.56 | - - | 46.92 | 686.64 | |
| **EX-4** | 9/14/2023 | 733.56 | - - | 47.24 | 686.32 | |
| **EX-4** | 11/6/2023 | 733.56 | - - | 47.20 | 686.36 | |
| **EX-4** | 1/8/2024 | 733.56 | - - | 47.22 | 686.34 | |
| **EX-4** | 3/8/2024 | 733.56 | - - | 46.67 | 686.89 | |
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Entered on Computer: Date

TOC = Top of Casing or Top of Pipe

Personnel Page 1 of 1

AECOM

**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Top of former western source area cap

Weather: Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **EX-5** | 5/31/2023 | 733.75 | | | | |
| **EX-5** | 6/1/2023 | 733.75 | | | | |
| **EX-5** | 6/2/2023 | 733.75 | | | | |
| **EX-5** | 6/5/2023 | 733.75 | | | | |
| **EX-5** | 6/6/2023 | 733.75 | | | | Well installed on 6/6/2023 |
| **EX-5** | 6/7/2023 | 733.75 | - - | 46.88 | 686.87 | |
| **EX-5** | 6/8/2023 | 733.75 | - - | 46.85 | 686.90 | |
| **EX-5** | 6/9/2023 | 733.75 | - - | 46.90 | 686.85 | |
| **EX-5** | 6/12/2023 | 733.75 | - - | 46.96 | 686.79 | |
| **EX-5** | 6/15/2023 | 733.75 | - - | 47.01 | 686.74 | |
| **EX-5** | 7/19/2023 | 733.75 | - - | 47.54 | 686.21 | |
| **EX-5** | 8/18/2023 | 733.75 | - - | 47.47 | 686.28 | possible sheen |
| **EX-5** | 9/14/2023 | 733.75 | - - | 47.81 | 685.94 | |
| **EX-5** | 11/6/2023 | 733.75 | - - | 47.74 | 686.01 | |
| **EX-5** | 1/8/2024 | 733.75 | - - | 47.77 | 685.98 | |
| **EX-5** | 3/8/2024 | 733.75 | - - | 47.24 | 686.51 | |
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**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Top of former western source area cap

Weather: Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **EX-6** | 5/31/2023 | 734.96 | | | | |
| **EX-6** | 6/1/2023 | 734.96 | | | | Well installed on 6/1/2023 |
| **EX-6** | 6/2/2023 | 734.96 | - - | 47.64 | 687.32 | |
| **EX-6** | 6/5/2023 | 734.96 | - - | 48.25 | 686.71 | |
| **EX-6** | 6/6/2023 | 734.96 | - - | 48.28 | 686.68 | |
| **EX-6** | 6/7/2023 | 734.96 | - - | 48.31 | 686.65 | |
| **EX-6** | 6/8/2023 | 734.96 | - - | 48.32 | 686.64 | |
| **EX-6** | 6/9/2023 | 734.96 | - - | 48.37 | 686.59 | |
| **EX-6** | 6/12/2023 | 734.96 | - - | 48.42 | 686.54 | |
| **EX-6** | 6/15/2023 | 734.96 | - - | 48.46 | 686.50 | |
| **EX-6** | 7/19/2023 | 734.96 | - - | 48.99 | 685.97 | |
| **EX-6** | 8/18/2023 | 734.96 | - - | 48.92 | 686.04 | |
| **EX-6** | 9/14/2023 | 734.96 | - - | 49.24 | 685.72 | |
| **EX-6** | 11/6/2023 | 734.96 | - - | 49.15 | 685.81 | |
| **EX-6** | 1/8/2024 | 734.96 | - - | 49.15 | 685.81 | |
| **EX-6** | 3/8/2024 | 734.96 | - - | 48.65 | 686.31 | |
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TOC = Top of Casing or Top of Pipe

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**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Top of former western source area cap

Weather: Varied Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **EX-7** | 5/31/2023 | 737.36 | | | | |
| **EX-7** | 6/1/2023 | 737.36 | | | | |
| **EX-7** | 6/2/2023 | 737.36 | | | | |
| **EX-7** | 6/5/2023 | 737.36 | | | | Well installed on 6/5/2023 |
| **EX-7** | 6/6/2023 | 737.36 | - - | 50.24 | 687.12 | |
| **EX-7** | 6/7/2023 | 737.36 | - - | 50.27 | 687.09 | |
| **EX-7** | 6/8/2023 | 737.36 | 50.29 | 50.29 | 687.07 | |
| **EX-7** | 6/9/2023 | 737.36 | - - | 50.31 | 687.05 | |
| **EX-7** | 6/12/2023 | 737.36 | - - | 50.38 | 686.98 | |
| **EX-7** | 6/15/2023 | 737.36 | - - | 50.44 | 686.92 | |
| **EX-7** | 7/19/2023 | 737.36 | - - | 50.99 | 686.37 | |
| **EX-7** | 8/18/2023 | 737.36 | - - | 51.00 | 686.36 | |
| **EX-7** | 9/14/2023 | 737.36 | - - | 51.30 | 686.06 | |
| **EX-7** | 11/6/2023 | 737.36 | - - | 51.24 | 686.12 | |
| **EX-7** | 1/8/2024 | 737.36 | - - | 51.32 | 686.04 | |
| **EX-7** | 3/8/2024 | 737.36 | - - | 50.82 | 686.54 | |
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Entered on Computer: Date

TOC = Top of Casing or Top of Pipe

Personnel

AECOM

**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Top of former western source area cap

Weather: Varied Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **EX-8** | 5/31/2023 | 736.28 | | | | Well installed on 5/31/2023 |
| **EX-8** | 6/1/2023 | 736.28 | - - | 49.62 | 686.66 | |
| **EX-8** | 6/2/2023 | 736.28 | - - | 49.65 | 686.63 | |
| **EX-8** | 6/5/2023 | 736.28 | - - | 49.78 | 686.50 | |
| **EX-8** | 6/6/2023 | 736.28 | - - | 49.77 | 686.51 | |
| **EX-8** | 6/7/2023 | 736.28 | - - | 49.81 | 686.47 | |
| **EX-8** | 6/8/2023 | 736.28 | 49.81 | 49.82 | 686.46 | |
| **EX-8** | 6/9/2023 | 736.28 | - - | 49.85 | 686.43 | |
| **EX-8** | 6/12/2023 | 736.28 | 49.90 | 49.91 | 686.37 | |
| **EX-8** | 6/15/2023 | 736.28 | - - | 49.94 | 686.34 | |
| **EX-8** | 7/19/2023 | 736.28 | - - | 50.43 | 685.85 | |
| **EX-8** | 8/18/2023 | 736.28 | - - | 50.35 | 685.93 | |
| **EX-8** | 9/14/2023 | 736.28 | - - | 50.68 | 685.60 | |
| **EX-8** | 11/6/2023 | 736.28 | - - | 50.60 | 685.68 | |
| **EX-8** | 1/8/2024 | 736.28 | - - | 50.56 | 685.72 | |
| **EX-8** | 3/8/2024 | 736.28 | - - | 50.08 | 686.20 | |
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**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Adjacent to former western source area cap

Weather: Varied Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **WT-02A** | 5/31/2023 | 736.58 | | | | |
| **WT-02A** | 6/1/2023 | 736.58 | | | | |
| **WT-02A** | 6/2/2023 | 736.58 | | | | |
| **WT-02A** | 6/5/2023 | 736.58 | | | | |
| **WT-02A** | 6/6/2023 | 736.58 | | | | |
| **WT-02A** | 6/7/2023 | 736.58 | | | | |
| **WT-02A** | 6/8/2023 | 736.58 | | | | |
| **WT-02A** | 6/9/2023 | 736.58 | | | | |
| **WT-02A** | 6/12/2023 | 736.58 | | | | |
| **WT-02A** | 6/15/2023 | 736.58 | | | | |
| **WT-02A** | 7/19/2023 | 736.58 | | | | |
| **WT-02A** | 8/18/2023 | 736.58 | - - | 51.12 | 685.46 | |
| **WT-02A** | 9/14/2023 | 736.58 | - - | 51.41 | 685.17 | |
| **WT-02A** | 11/6/2023 | 736.58 | - - | 51.34 | 685.24 | |
| **WT-02A** | 1/8/2024 | 736.58 | - - | 51.26 | 685.32 | |
| **WT-02A** | 3/8/2024 | 736.58 | - - | 50.80 | 685.78 | |
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**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Adjacent to former western source area cap

Weather: Varied Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **WT-03** | 5/31/2023 | 718.53 | | | | |
| **WT-03** | 6/1/2023 | 718.53 | | | | |
| **WT-03** | 6/2/2023 | 718.53 | | | | |
| **WT-03** | 6/5/2023 | 718.53 | | | | |
| **WT-03** | 6/6/2023 | 718.53 | | | | |
| **WT-03** | 6/7/2023 | 718.53 | | | | |
| **WT-03** | 6/8/2023 | 718.53 | | | | |
| **WT-03** | 6/9/2023 | 718.53 | | | | |
| **WT-03** | 6/12/2023 | 718.53 | | | | |
| **WT-03** | 6/15/2023 | 718.53 | | | | |
| **WT-03** | 7/19/2023 | 718.53 | | | | |
| **WT-03** | 8/18/2023 | 718.53 | - - | 32.74 | 685.79 | |
| **WT-03** | 9/14/2023 | 718.53 | - - | 33.01 | 685.52 | |
| **WT-03** | 11/6/2023 | 718.53 | - - | 32.96 | 685.57 | |
| **WT-03** | 1/8/2024 | 718.53 | - - | 32.91 | 685.62 | |
| **WT-03** | 3/8/2024 | 718.53 | - - | 32.42 | 686.11 | |
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**LNAPL and Groundwater Elevation**

Project No. 60135471 Site: Former Newton Gravel Pit

Description of Site: Adjacent to former western source area cap

Weather: Varied Date:

| Well Number | Date | Top of Pipe Elevation | Depth to Product (TOC) | Depth to Water (TOC) | Elevation (ft MSL) | Comments |
|---|---|---|---|---|---|---|
| **WT-28** | 5/31/2023 | 731.95 | | | | |
| **WT-28** | 6/1/2023 | 731.95 | | | | |
| **WT-28** | 6/2/2023 | 731.95 | | | | |
| **WT-28** | 6/5/2023 | 731.95 | | | | |
| **WT-28** | 6/6/2023 | 731.95 | | | | |
| **WT-28** | 6/7/2023 | 731.95 | | | | |
| **WT-28** | 6/8/2023 | 731.95 | | | | |
| **WT-28** | 6/9/2023 | 731.95 | | | | |
| **WT-28** | 6/12/2023 | 731.95 | | | | |
| **WT-28** | 6/15/2023 | 731.95 | | | | |
| **WT-28** | 7/19/2023 | 731.95 | | | | |
| **WT-28** | 8/18/2023 | 731.95 | - - | 45.60 | 686.35 | |
| **WT-28** | 9/14/2023 | 731.95 | - - | 46.00 | 685.95 | |
| **WT-28** | 11/6/2023 | 731.95 | - - | 45.89 | 686.06 | |
| **WT-28** | 1/8/2024 | 731.95 | - - | 45.85 | 686.10 | |
| **WT-28** | 3/8/2024 | 731.95 | - - | 45.35 | 686.60 | |
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