#### Lauridsen, Keld B - DNR

From: Christopher, Michael L <Michael.Christopher@GAPAC.com>

**Sent:** Tuesday, April 12, 2022 11:32 AM

**To:** Lauridsen, Keld B - DNR

Cc: Hassett, Mike P; Council, Greg; Manthey, Mark; Chronert, Roxanne N - DNR; McKnight,

Kevin - DNR; Savale, Michael

**Subject:** RE: PFAS Groundwater Confirmation Sampling Report - Ashview Terrace Apartments,

BRRTS #: 02-05-564043

Attachments: 20220412 Repsonse to WDNR Additional Information Request.pdf

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Good morning Keld. Please find attached our response to the information you requested in the email chain below.

Thank you.

Michael Christopher | Sr Remediation Project Manager | Global Remediation & Environmental Services, LLC

1560 Bay Area Blvd., Suite 200 Friendswood, TX 77546

O 281.947.0083 | E michael.christopher@gapac.com















From: Savale, Michael < Michael. Savale@tetratech.com >

Sent: Friday, February 11, 2022 4:10 PM

To: Lauridsen, Keld B - DNR < Keld. Lauridsen@wisconsin.gov>

**Cc:** Christopher, Michael L < Michael.Christopher@GAPAC.com>; Hassett, Mike P < Mike.Hassett@gapac.com>; Council, Greg < greg.council@tetratech.com>; Manthey, Mark < Mark.Manthey@tetratech.com>; Chronert, Roxanne N - DNR < Roxanne.Chronert@wisconsin.gov>; McKnight, Kevin - DNR < Kevin.McKnight@wisconsin.gov>

Subject: RE: PFAS Groundwater Confirmation Sampling Report - Ashview Terrace Apartments, BRRTS #: 02-05-564043

#### Sent by an external sender

Hi Keld,

Thank you for the feedback. We will contact you if we have any questions.

Thank you,

Mike

Mike Savale | Senior Geologist | Tetra Tech Mobile (810) 923-8076 | michael.savale@tetratech.com This message, including any attachments, may include privileged, confidential and/or inside information. Any distribution or use of this communication by anyone other than the intended recipient is strictly prohibited and may be unlawful. If you are not the intended recipient, please notify the sender by replying to this message and then delete it from your system.

From: Lauridsen, Keld B - DNR < Keld. Lauridsen@wisconsin.gov>

Sent: Friday, February 11, 2022 4:12 PM

To: Savale, Michael < Michael. Savale@tetratech.com >

**Cc:** Christopher, Michael L < <u>Michael.Christopher@GAPAC.com</u>>; Hassett, Mike < <u>mike.hassett@gapac.com</u>>; Council, Greg < <u>Greg.Council@tetratech.com</u>>; Manthey, Mark < <u>Mark.Manthey@tetratech.com</u>>; Chronert, Roxanne N - DNR < Roxanne.Chronert@wisconsin.gov>; McKnight, Kevin - DNR < Kevin.McKnight@wisconsin.gov>

Subject: RE: PFAS Groundwater Confirmation Sampling Report - Ashview Terrace Apartments, BRRTS #: 02-05-564043

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Good morning Mike,

DNR has reviewed the available PFAS analytical results for soil and groundwater samples collected at the Ashview Terrace Apartments site (BRRTS # 02-05-564043). Based on the review, the following is understood:

- The proposed PALs for PFAS compounds were exceeded in all three monitoring wells (MW21-01, MW21-02 and MW21-03) during both the May and the September 2021 sampling events.
- The proposed ES for combined PFAS was exceeded in monitoring well MW21-03 during both the May and September 2021 sampling events.
- Only a single PFOS concentration was found in the soil sample collected at 2-3 feet below ground surface (bgs) at soil boring SB21-02 (also location of MW21-02). The soil sample contained potential paper sludge residuals.
- The monitoring well screens for monitoring wells MW21-01 and MW21-02 were submerged 1-5 feet bgs during both sampling events.
- The groundwater flow direction determined to be in a southwesterly direction was not as expected likely due to an anomalous water elevation at monitoring well MW21-01.

DNR is requesting the following within 60 days to further substantiate the discontinuation of PFAS sampling at this site:

- A PFAS scoping statement should be provided. This should include any known information about the paper sludge waste mass and address the potential for PFAS being present.
- RP to identify any potential off-site sources for PFAS if claiming source is not from on-site.
- Prepare groundwater flow map(s) based on the known water elevations from the two sampling events.
- The PFOS concentration in soil at soil boring SB21-02 should be compared to a groundwater pathway RCL of 0.038 μg/kg.
- Additional flow maps from contamination sites in the general vicinity should be provided to support the suspected true flow direction being in a southeasterly direction.
- Provide any other relevant information or justification supporting the discontinuation of PFAS sampling.
- Provide a narrative on how the available data indicates that no additional action for PFAS should be required or provide a work plan for any additional investigation needed. Additional soil and groundwater sampling within the waste mass can be proposed to provide further evidence supporting the lack of a significant source of PFAS at this site.

Let me know if we need to discuss anything in more detail.

Thanks.

-Keld

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Keld B. Lauridsen Phone: (920) 510 8294

Keld.Lauridsen@wisconsin.gov

From: Savale, Michael < Michael. Savale@tetratech.com >

Sent: Monday, December 6, 2021 4:08 PM

To: Lauridsen, Keld B - DNR < Keld. Lauridsen@wisconsin.gov>

Cc: Christopher, Michael L < Michael. Christopher@GAPAC.com >; Hassett, Mike < mike.hassett@gapac.com >; Council,

Greg <Greg.Council@tetratech.com>; Manthey, Mark <Mark.Manthey@tetratech.com>

Subject: PFAS Groundwater Confirmation Sampling Report - Ashview Terrace Apartments, BRRTS #: 02-05-564043

CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Keld,

Please see the attached PFAS Groundwater Confirmation Sampling Report for the Ashview Terrace Apartments (BRRTS #: 02-05-564043), as prepared by Tetra Tech Inc for Georgia-Pacific LLC. This report will also be uploaded to the BRRTS site. Please advise if a hard copy is required.

Thank you, Mike Savale

Mike Savale | Senior Project Geologist Mobile (810) 923-8076 | Fax (734) 213-5008 | michael.savale@tetratech.com

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710 Avis Drive, Suite 100 | Ann Arbor, MI 48108 | tetratech.com

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April 12, 2022 Via Electronic Mail

Mr. Keld Lauridsen Hydrogeologist Remediation and Redevelopment Program Wisconsin Department of Natural Resources 2984 Shawano Avenue Green Bay, WI 54313-6727

**Subject:** Response to Request for Additional Information

Ashview Terrace Apartments Ashwaubenon, Wisconsin BRRTS # 02-05-564043

Dear Mr. Lauridsen:

Please find attached a response to your February 11, 2022 email requesting additional information to substantiate the discontinuation of PFAS sampling at the referenced site. The response was prepared by Tetra Tech on behalf Global Remediation & Environmental Services (GRES) and Georgia-Pacific LLC (GP).

GRES believes the response provided by Tetra Tech adequately supports the discontinuation of PFAS sampling at the site. The PFAS concentrations do not exceed enforceable standards and there is no risk-based obligation for further sampling. As such, GP does not plan on performing further sampling for this substance.

Please let me know if you have any questions. I can be reached by phone at (281) 947-0083.

Sincerely,

Michael Christopher

Sr. Remediation Project Manager

Michael Christopher

Global Remediation & Environmental Services, LLC

cc: Michael Savale – Tetra Tech



April 12, 2022 Via Electronic Mail

Michael Christopher Senior Remediation Project Manager Georgia-Pacific LLC 133 Peachtree Street NE Atlanta, GA 30303

**Subject:** Response to Request for Additional Information

Ashview Terrace Apartments Ashwaubenon, Wisconsin BRRTS # 02-05-564043

Dear Mr. Christopher,

In a February 11, 2022 email, the Wisconsin Department of Natural Resources (WDNR) provided its understanding of the results of the per- and polyfluoroalkyl substances (PFAS) groundwater investigation activities completed to date at the Ashview Terrace Apartments located in Ashwaubenon, Wisconsin (Site), and requested that a scoping statement be prepared to provide further information. Below is a timeline summary of the Site PFAS investigation, followed by the information requests from the WDNR and responses to those requests.

#### **Timeline Summary**

In an August 17, 2020 letter titled "Reminder to Include Evaluation of Emerging Contaminants in Site Investigation," WDNR asked Georgia-Pacific LLC (GP) to provide a scoping statement to assess groundwater for PFAS at the Ashview Terrace Apartments. In response, GP developed the November 16, 2020 PFAS Site Investigation Work Plan (work plan). In a February 3, 2021 email, WDNR directed GP to proceed with the work plan scope, which GP did between May 3 through 6, 2021 - the work included the installation of three monitoring wells, the PFAS analysis of associated groundwater samples, and the PFAS analysis of one soil sample. The results of the May 2021 investigation were reported to the WDNR in the PFAS Investigation Summary Report dated July 22, 2021. Groundwater analytical results indicated PFAS detections above the Wisconsin Department of Health Services (WDHS) recommended preventive action limits (PALs) in all three monitoring wells and the WDHS recommended enforcement standard (ES) for combined PFAS in one of the three wells (MW-21-03)1. The maximum concentration detected in groundwater was for combined PFAS (PFOS, PFOA, PFOSA, NEtFOSA, NEtFOSAA, and NEtFOSE) detected at MW-21-03 at 30.22 nanograms per liter (ng/L). The soil sample collected as part of the investigation consisted of a clay-like material identified as potential paper residual material. The soil analytical results indicated a perfluorooctane sulfonic acid (PFOS) detection below the non-industrial not-to-exceed direct contact residual contaminant level (RCL). Due to the relatively low PFAS concentrations detected in the Site groundwater and the absence of enforceable standards in Wisconsin, the July 22, 2021 PFAS Investigation Summary Report concluded that no further investigation related to PFAS was recommended.

In an August 18, 2021 email, the WDNR requested collection and analysis of confirmation groundwater samples from the three monitoring wells installed in May 2021. Results from confirmation samples collected on September 20, 2021, are summarized in the December 3, 2021 *PFAS Groundwater Confirmation Sampling* 

<sup>&</sup>lt;sup>1</sup> The WDHS recommended PALs and ESs used in this analysis are the "Cycle 11" recommended groundwater standards provided by WDHS to WDNR on November 20, 2020. However, in February 2022, the WDNR Natural Resources Board voted to adopt a different, less stringent drinking water standard; this newer standard was not exceeded in samples from the Site wells collected in May or September 2021. No groundwater standard has yet been formally adopted.

*Summary Report.* Review of the September 2021 analytical results indicated that the results were generally consistent with the May 2021 results.

#### Additional Information

The following discussions address the informational requests from the WDNR. The requests from the WDNR are reproduced below and are followed by responses approved by GP.

**WDNR Request 1**: A PFAS scoping statement should be provided. This should include any known information about the paper sludge waste mass and address the potential for PFAS being present.

**GP Response to Request 1**: Historical records indicate potential locations of paper waste mass. The Site was part of a larger parcel of agricultural land until the 1930s when the Site and the southwestern adjacent land were used as a borrow pit (Omni 2015). Historical aerial images available online from the Brown County, Wisconsin, Land Information Office, depict the presence of the borrow pit in a 1938 image. Paper sludge waste was placed within the borrow pit as partial fill material at some point in time between 1938 and 1960. In a 1960 aerial image, the borrow pit is filled with only the outline of the former pit visible. Records indicate that the former borrow pit received paper residuals from the Fort Howard Paper Company in Green Bay as backfill. The portion of the former borrow pit located southwest of the Site is known to have received other industrial and municipal waste. The portion of the former borrow pit at the Site may have also received waste material form sources outside of the Fort Howard Paper Company.

Review of geologic cross-sections (Amec Foster Wheeler, 2018, Figures 6a and 6b) indicates that paper sludge mass is primarily located near the center of the Site. The mass was observed to extend to approximately 220-feet west of the eastern Site boundary, approximately 20-feet south of the northern Site boundary, and a minimum of 180-feet east of the western Site boundary. To the south, the mass extends to the southern Site boundary. The mass was observed to occur at a minimum of approximately two feet below the surface with a thickness between eight feet to fourteen feet near the center of the Site. Near the southern property boundary, the mass was observed approximately three feet below the surface with a thickness of 1.5 feet. The geologic cross-sections produced by Amec Foster Wheeler are included as **Attachment 1**.

In Green Bay, GP has never manufactured or intentionally added PFAS or PFAS-containing materials as part of the paper making process. GP utilizes large quantities of recycled fiber in the production of its product line. Recycled stock has included, among other things, tissue and towels products, office paper, container board, and corrugated boxes. Neither PFOA nor PFOS have been detected in the manufactured products.

**WDNR Request 2**: RP to identify any potential off-site sources for PFAS if claiming source is not from onsite.

**GP Response to Request 2**: At this time, no other potential off-site sources have been identified. Review of the online Wisconsin Remediation and Redevelopment Database (WRRD) identified no other sites in the surrounding areas at which PFAS investigations have been conducted. PFAS have been commonly used in hundreds of industries and the majority of potential sources in the state of Wisconsin have yet to be identified (Wisconsin PFAS Action Council 2020). With the ubiquitous nature of PFAS and the low PFAS concentrations detected in the Site groundwater, with the highest detection just above the WDHS recommended ES, GP expanding the Site PFAS investigation to assess for an offsite source is not warranted.

**WDNR Request 3**: Prepare groundwater flow map(s) based on the known water elevations from the two sampling events.

**GP Response to Request 3**: Groundwater flow is expected to be toward the southeast based on local topography and the presence of Dutchman Creek, located approximately 0.7 miles to the southeast, and the Fox River, located 1.4 miles to the southeast, of the Site. The groundwater elevation measurements from the three Site monitoring wells in May and September 2021 did not produce the expected flow pattern and indicated a general groundwater flow direction towards the southwest. Groundwater elevation contour maps for the May and September 2021 are provided as **Figure 1** and **Figure 2**, respectively.

Review of the lithology and the occurrence of groundwater observed during the May 2021 investigation suggests the northeastern well, MW-21-01, is screened in an interval of perched groundwater. Soil boring logs are provided in the July 2021 *PFAS Investigation Summary Report* as Attachment 3. During the May and September 2021 groundwater sampling, the measured groundwater elevation at MW-21-01 was eleven feet higher than measurements from MW-21-02 and MW-21-03. With the maximum difference in ground surface elevation at 5.07 feet, it is unlikely that the MW-21-01 is screened into the same aquifer as MW-21-02 and MW-21-03. The groundwater contours provided in **Figure 1** and **Figure 2** are not likely representative of groundwater flow conditions.

**WDNR Request 4**: The PFOS concentration in soil at soil boring SB21-02 should be compared to a groundwater pathway RCL of  $0.038 \,\mu g/kg$ .

**GP Response to Request 4**: During the May 2021 Site PFAS investigation, a grey, clay-like soil was intermittently observed within the vadose zone from 2.5 to 4 feet below the ground surface in a continuous soil sample retrieved from boring MW-21-02. MW-21-02 is located within the extent of the former borrow pit as depicted by Amec Foster Wheeler in 2018. Analysis of a grab sample of the grey, clay-like soil indicated a PFOS detection of 1.69 micrograms per kilogram (μg/kg).

The PFOS soil result exceeds the groundwater pathway RCL value of 0.038  $\mu$ g/kg provided by the WDNR. However, analytical data from groundwater samples collected from MW-21-02 during the May and September 2021 sampling events indicate that PFOS was not detected in the groundwater above the method detections limits of 1.12 nanograms per liter (ng/L) and 1.04 ng/L, respectively. Therefore, PFOS is not leaching from the soil at this location into groundwater at a concentration representing a completed exposure pathway and subsequent potential exposure risk.

**WDNR Request 5**: Additional flow maps from contamination sites in the general vicinity should be provided to support the suspected true flow direction being in a southeasterly direction.

**GP Response to Request 5**: Review of the online WRRD identified one site with groundwater elevation data in the general vicinity of the Site. Review of groundwater elevation contours (GEI, 2014) associated with an environmental investigation at a WDNR BRRTS site (BRRTS # 02-05-559562) immediately south of Ashview Terrace Apartments depicts a groundwater flow direction to the southeast. The GEI groundwater contour map is provided as **Attachment 2**.

**WDNR Request 6**: Provide any other relevant information or justification supporting the discontinuation of PFAS sampling.

**GP Response to Request 6**: At the request of the WDNR, GP conducted a second round of groundwater sampling from the Site monitoring wells in September 2021, with results largely confirming initial sampling conducted in May 2021, indicating stable conditions. The only significant differences between the two sampling events were a decline in PFOA concentration from 23.4 ng/L in May 2021 to 5.24 ng/L in September

2021 and an increase in PFOSA concentration from 3.70 ng/L in May 2021 to 19.40 ng/L in September 2021 in monitoring well MW-21-03.

No individual concentrations of PFAS congeners were detected above the WDHS recommended ES in September 2021. The total concentration for combined PFAS in the groundwater sample collected from monitoring well MW-21-03 was 26.95 ng/L, just exceeding the WDHS recommended ES of 20 ng/L. The concentrations for combined PFAS in the groundwater samples collected from the other monitoring wells (MW-21-01 and MW-21-02) were below the WDHS recommended ES.

Furthermore, The WDNR Natural Resources Board recently voted to adopt a drinking water standard of 70 ng/L for PFOA and PFOS only, in lieu of the proposed combined limit of 20 ng/L. This new standard is based on USEPA's current drinking water health advisory for PFAS. Concentrations of both PFOA and PFOS were well below the adopted 70 ng/L standard in all Site samples.

Based on magnitude and consistency of PFAS concentrations observed between the May and September 2021 groundwater monitoring, groundwater concentrations are low and stable. The concentrations do not exceed enforceable regulatory standards. There is no regulatory or risk-based onus for further sampling.

**WDNR Request 7**: Provide a narrative on how the available data indicates that no additional action for PFAS should be required or provide a work plan for any additional investigation needed. Additional soil and groundwater sampling within the waste mass can be proposed to provide further evidence supporting the lack of a significant source of PFAS at this site.

**GP Response to Request 7**: Site PFAS concentrations in groundwater are relatively low, with combined concentrations just exceeding the previously recommended ES at one location, but below the recently adopted drinking water standard. PFOS in a soil sample collected during the installation of MW-21-02 exceeded the WDNR-suggested RCL protective of groundwater; however, PFOS has not been detected in groundwater samples collected from MW-21-02. This suggests a low likelihood for PFAS to leach from fill materials potentially associated with the paper sludge waste used to backfill the former borrow pit.

Review of the Site conditions indicates a low likelihood of exposure to the former borrow pit fill materials or groundwater associated with the Site. The former borrow pit fill material is generally overlain with a vegetated soil cover or impervious surface (e.g., asphalt parking lot). Review of the National Wetland Inventory online map provided by the United States Fish and Wildlife Service depicts that there are no wetlands or streams within the immediate Site vicinity, with the closest wetland approximately 0.4 miles from the Site, and the nearest stream, Dutchman Creek, approximately 0.7 miles from the Site. The WDNR Well Construction Information System indicates that there are six potable water wells between 0.5 and one mile from the Site. The wells are all screened within bedrock at depths between 102 feet and 876 feet below surface. At each potable well location, significant confining units separate the water table from the bedrock aquifer.

At this time, PFAS enforcement standards in Wisconsin are recommended values. In late February 2022, the WDNR Natural Resources Board voted in favor of adopting a drinking water standard of 70 ng/L for both PFOA and PFOS. If approved by the Wisconsin legislature, this value would apply to public drinking water supplies. The concentrations of PFOA and PFOS in groundwater at the Site are well below the potential drinking water standard of 70 ng/L, with maximum detections of 23.4 ng/L and 3.12 ng/L for PFOA and PFOS, respectively. The WDNR Natural Resources Board also voted to adopt a surface water standard of 8 ng/L for PFOS. The highest PFOS concentration detected in the Site groundwater was from MW-21-03 in May 2021 at 3.12 ng/L.

With development of PFAS risk values in the State of Wisconsin still ongoing and the absence of PFAS standards promulgated as part of the Wisconsin Administrative Code for drinking water, groundwater, and surface water, no further investigation related to PFAS at the Ashview Terrace apartment is warranted.

#### References

Amec Foster Wheeler Environment & Infrastructure, Inc., January 2018. Supplemental Site Investigation Report, Ashview Terrace Apartments Site, Ashwaubenon, Brown County, Wisconsin.

GEI Consultants, July 2014. Report of Additional Subsurface Investigation and Risk-Based Corrective Action Plan, Athletic Field, Ashwaubenon School District, Ashwaubenon, Wisconsin.

OMNI Associates, February 23, 2015. Phase II Subsurface Investigation at Perry Property, 988-1020 Willard Dr., Parcel VA-120-5, Ashwaubenon, Brown County, WI.

Wisconsin PFAS Action Council, December 2020. Wisconsin PFAS Action Plan.

If you have any additional questions or comments, please feel free to contact me at 734-213-5040 or michael.savale@tetratech.com.

Sincerely,

Michael Savale Senior Geologist

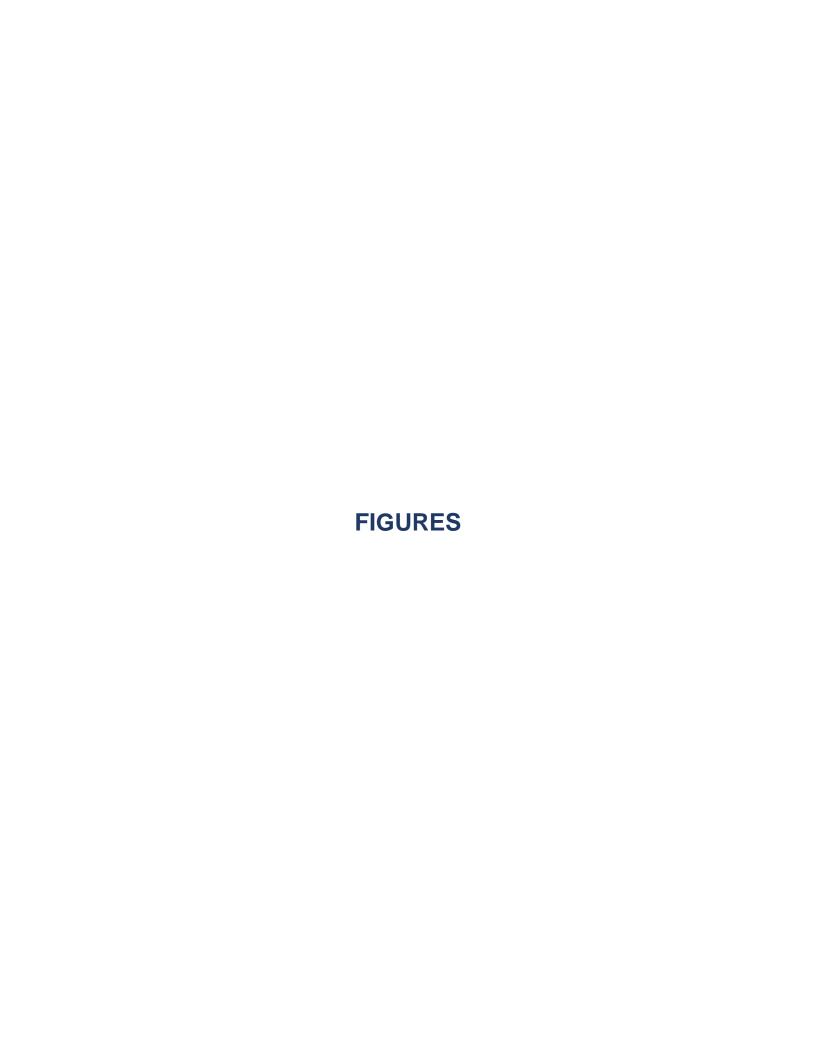
Figure 1 - Groundwater Elevation Contours, May 6, 2021

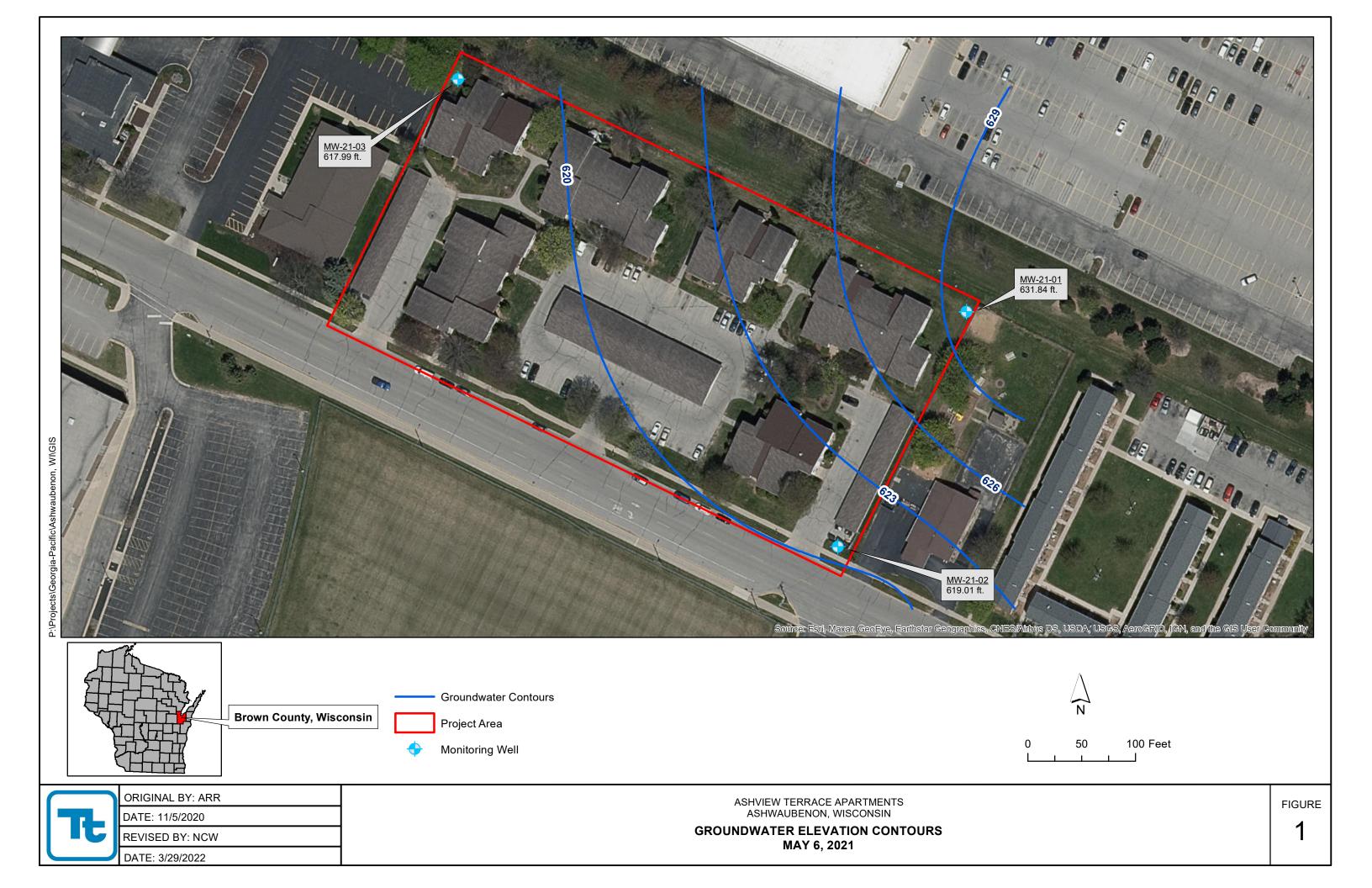
Figure 2 - Groundwater Elevation Contours, September 20, 2021

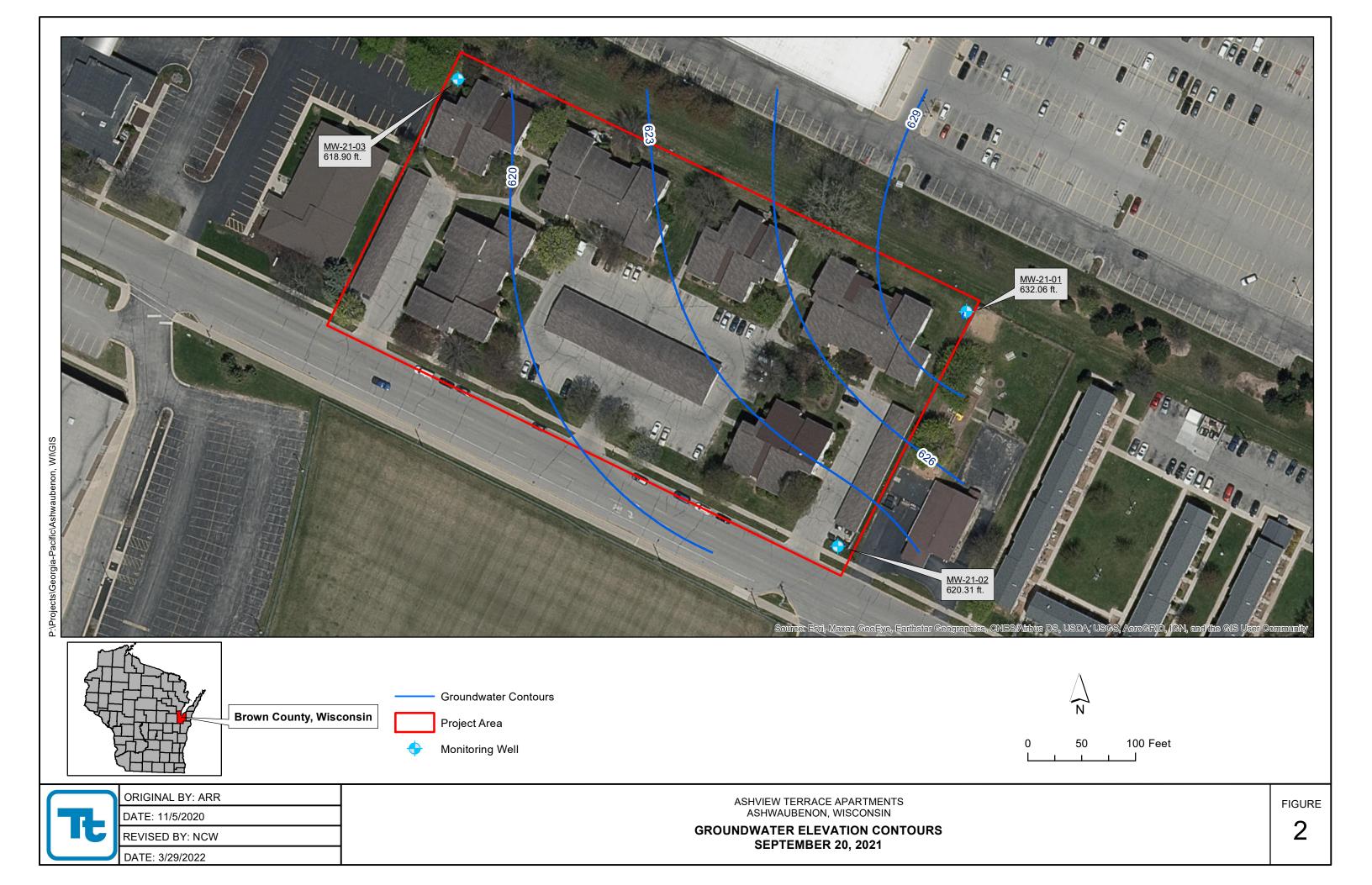
Attachment 1 - Ashview Terrace Apartments Geologic Cross Sections, Amec Foster Wheeler, January 2018

Attachment 2 - Groundwater Contour Map, GEI, July 2014

cc: Mike Hassett – Georgia-Pacific (via email: <a href="mike.hassett@gapac.com">mike.hassett@gapac.com</a>)
Greg Council – Tetra Tech (via email: <a href="mike.hassett@gapac.com">greg.council@tetratech.com</a>)



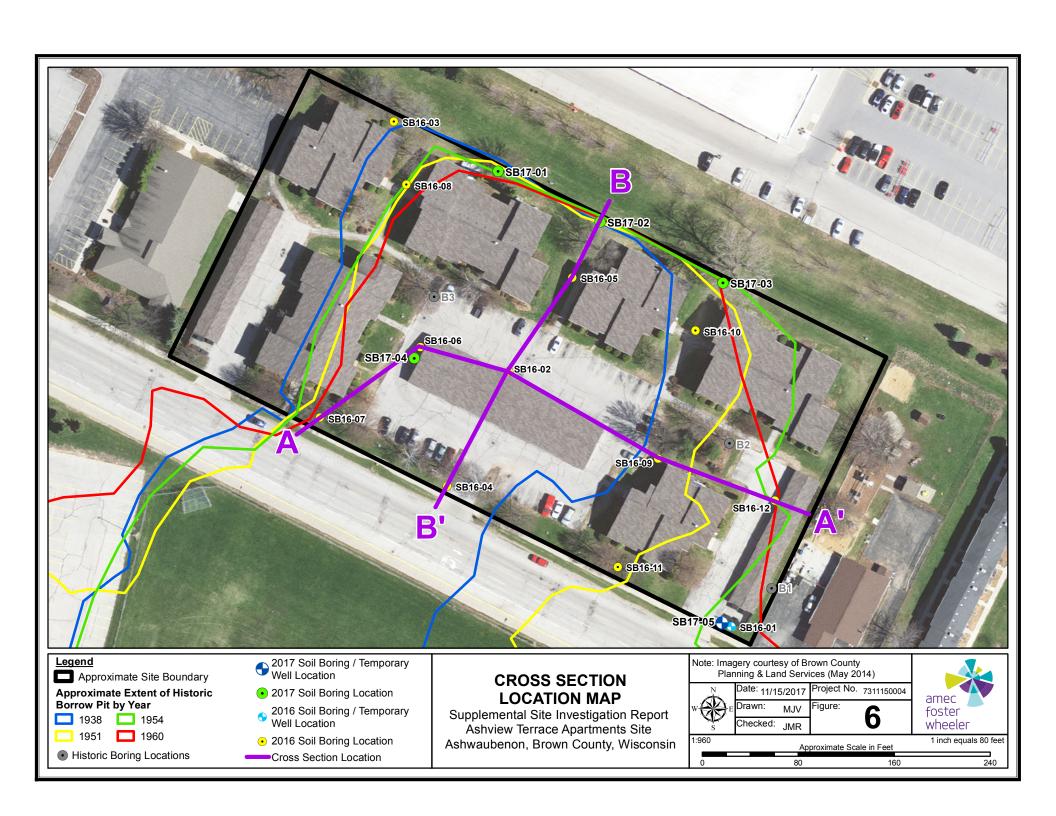


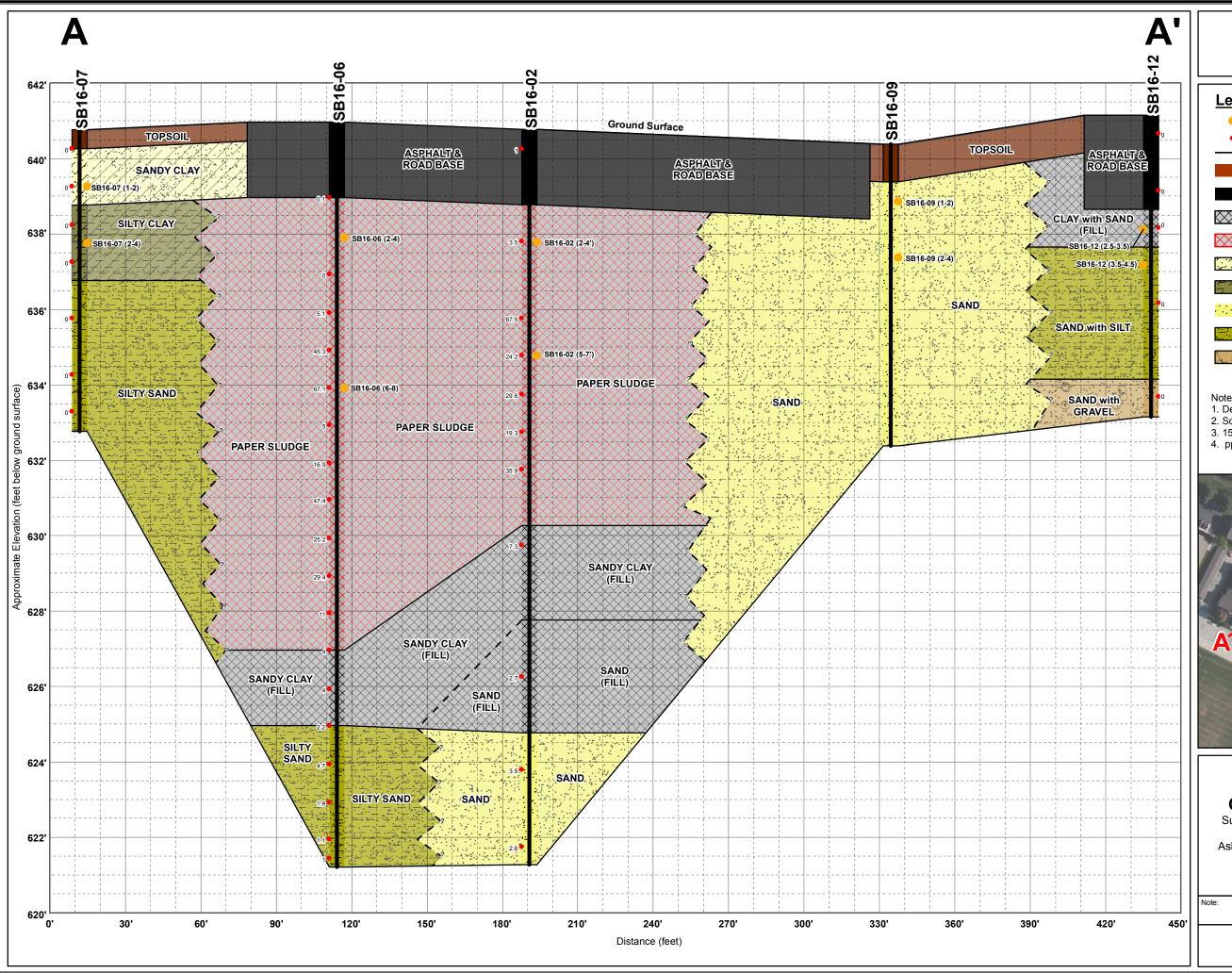


### **ATTACHMENT 1**

## Ashview Terrace Apartments Geologic Cross Sections

Amec Foster Wheeler Environment & Infrastructure, Inc., January 2018. Supplemental Site Investigation Report, Ashview Terrace Apartments Site, Ashwaubenon, Brown County, Wisconsin.



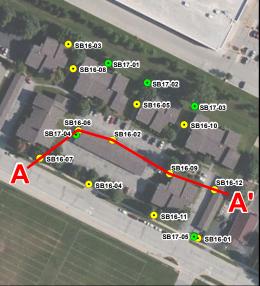


SCALE AS SHOWN Vertical Exaggeration - 15x

#### Legend

- Soil Sample
- PID Response (ppm) Inferred Lithologic Contact
- Topsoil
- Asphalt and Road Base
- Fill Containing Paper Sludge
- Sandy Clay / Clay with Sand
- Silty Clay
- Sand
  - Silty Sand / Sand with Silt
- Sand with Gravel

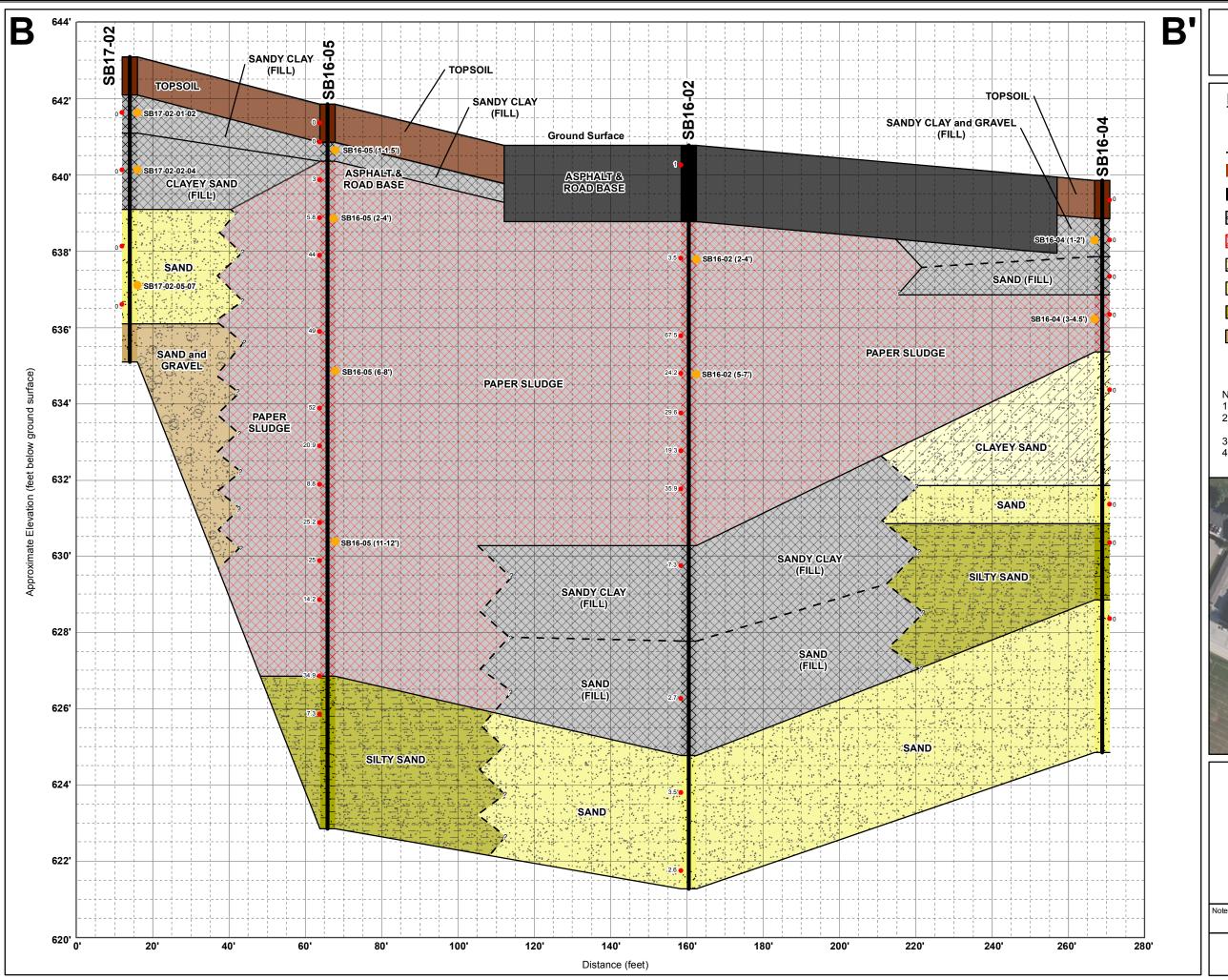
- Detailed boring logs in Appendix A
   Soil samples collected June 21-22, 2016.
- 15x vertical exaggeration for scale
   ppm Parts per million



#### **CROSS SECTION A-A'**

Supplemental Site Investigation Report Ashview Terrace Apartments Site Ashwaubenon, Brown County, Wisconsin

Date:	10/04/2017	Project No. 7311150004	amec
Drawn:	MJV	Figure:	foster
Checke	d: JMR	ba	wheeler

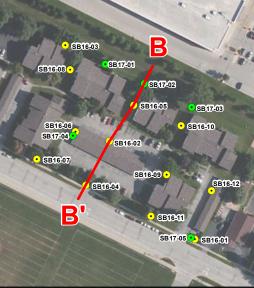


SCALE AS SHOWN Vertical Exaggeration - 10x

#### Legend

- Soil Sample
- PID Response (ppm)
  - Inferred Lithologic Contact
- Topsoil
- Asphalt and Road Base
- Fill Containing Paper Sludge
  - Clayey Sand / Sandy Clay
- Silty Sand
- Sand and Gravel

- Detailed boring logs in Appendix A
   Soil samples collected June 21-22, 2016 and Augst 14, 2017.
- 3. 10x vertical exaggeration for scale4. ppm Parts per million



## **CROSS SECTION B-B'**

Supplemental Site Investigation Report Ashview Terrace Apartments Site Ashwaubenon, Brown County, Wisconsin

Date:	11/17/2017	Project No. 7311150004	amec
Drawn:		Figure:	foster
Checked	d: JMR	do	wheeler

# ATTACHMENT 2 Groundwater Contour Map

GEI Consultants, July 2014. Report of Additional Subsurface Investigation and Risk-Based Corrective Action Plan, Athletic Field, Ashwaubenon School District, Ashwaubenon, Wisconsin.

