# Memorandum

**To:** Mr. Curtis L. Erickson, North Dakota Department of Health

**Date:** December 13, 2018

**From:** Kurt Herman, Gradient

**Subject:** Remedy Completion Memorandum REV001, Historic Union and Culligan Properties, Fargo MGP Site, Fargo, North Dakota

The objective of this memorandum is to document the outcome of the remedial action undertaken in the pipeline corridor between the Historic Union and Culligan properties ("Corridor Properties") to address impacts associated with the Fargo Manufactured Gas Plant (MGP) Site. As discussed below and in the Barr technical memorandum, the remedial action was completed in accordance with the North Dakota Department of Health (NDDH)-approved Remedial Action Work Plan (RAWP; Barr, 2017[1]) and Remedial Investigation/Focused Feasibility Study (RI/FFS), and pursuant to the requirements of North Dakota Century Code §23-20.03 for receiving a Site-specific No Further Remediation determination from NDDH for MGP-related constituents (active remediation has been completed but monitoring will continue pursuant to the Site-specific Long-term Monitoring [LTM] plan [Gradient, 2017[2]]).

## 1 Background

### Remedial Investigation

The former MGP operated from approximately 1885 to 1960 on the north side of Northern Pacific (NP) Avenue between 11th Street North and North University Drive. Northern States Power Company (NSP) completed a multi-media environmental site assessment of the Fargo MGP Site and adjoining properties, including the Corridor Properties, in accordance with NDDH-approved work plans (see Gradient, 2016[3]). Consistent with NDDH requirements for Phase I and Phase II environmental investigations (North Dakota Century Code §23-20.03), the horizontal and vertical extent of MGP-related impacts to soil and groundwater was sufficiently delineated, receptors were identified and evaluated, the nature of the contaminants of concern were characterized, past and current Site uses were evaluated, and the Site hydrogeology and water use were adequately defined at the Corridor Properties (Gradient, 2016[3]; NDDH, 2017a[4]).

[1] Barr Engineering Co. (Barr). 2017. "Remedial Action Work Plan - Fargo MGP Site Historic Union and Culligan Properties - Revision 01, Fargo, Cass County, North Dakota." Report to Northern States Power Co. (Minneapolis, MN), 14p., April 20.
[2] Gradient. 2017. "Long-Term Monitoring Plan, Fargo Manufactured Gas Plant (MGP) and Vicinity, Fargo, Cass County, North Dakota." Report to Northern States Power Co. (Minneapolis, MN), 25p., March.
[3] Gradient. 2016. "Remedial Investigation and Focused Feasibility Study, Fargo Manufactured Gas Plant (MGP) and Vicinity, Fargo, Cass County, North Dakota." Report to Northern States Power Co. (Minneapolis, MN), 1361p., November 29.
[4] North Dakota Dept. of Health (NDDH). 2017a. Letter to M. Nisbet (Xcel Energy - North Dakota) and T. Coss (Xcel Energy) re: RI/FFS Report, Fargo MGP. 2p., January 20.



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## Risk Evaluation

A human health risk evaluation was performed as part of the RI/FFS (Gradient, 2016[3]). The risk evaluation concluded that there are no unacceptable risks to human health based on current conditions for the Historic Union property and based on current and future potential conditions for the Culligan property. However, the risk assessment identified elevated risks associated with future potential exposures to impacted soil and groundwater for a Construction Worker for the piping corridor portion of the Historic Union property.

## Risk-based Clean-up Goals

As part of the RI/FFS (Gradient, 2016[3]), risk-based clean-up goals (CUGs) were developed for risk-driving MGP constituents of concern. Risk-drivers were defined as any compound that contributed significantly (*i.e.*, individual hazard index [HI] of >0.5 or cancer risk of $>10^{-5}$) to an exceedance of the United States Environmental Protection Agency (US EPA) target risk range (HI of 1 or cancer risk of $10^{-6}$ to $10^{-4}$) for a particular receptor and exposure pathway. For each risk-driver, a post-remediation target of the 95% upper confidence limit on the mean (UCLM) concentration was identified that would achieve an individual compound HI of <0.5 and a cancer risk of $\leq 10^{-6}$. This target 95% UCLM is the CUG that is to be achieved on <u>average</u>.

The CUG for each contaminant represents an average over the exposure area. Sampling data for each property comprising the Site and its vicinity show that there is a distribution of many different concentrations of each constituent (*i.e.*, a "data distribution"). To ensure that the CUG is met on average, a Not-to-Exceed (NTE) value was also determined for each risk-driving chemical. These NTE values represent upper-end values of the data distribution that will satisfy the requirement that CUGs are met on average. These NTE values were used to design targeted remediation areas by comparing the NTE value to individual sampling results (which cannot be done using a CUG that is based on some type of average). See Gradient (2016[3]) for further details.

## Focused Feasibility Study

A detailed analysis of remediation alternatives was performed in the FFS. This analysis concluded that Targeted Source Removal, which included excavation and proper disposal of impacted soils in the vicinity of MGP piping and removal and/or grouting of the pipes, was the preferred remedial approach for the Corridor Properties. In addition, the use of institutional and engineering controls would allow for the long-term management of any residual risks.

NDDH approved the remedial investigation, risk evaluation, and FFS as the basis for remedial action on January 20, 2017 (NDDH, 2017a[4]).

## Long-term Monitoring Plan

A Site-wide monitoring program is underway to assess the stability and attenuation of impacts during and after remedy implementation. An LTM plan was approved by NDDH on March 28, 2017 (NDDH, 2017b[5]).

[5] North Dakota Dept. of Health (NDDH). 2017b. Letter to T. Coss (Xcel Energy) re: Approval of Long-Term Monitoring Plan, Fargo Manufactured Gas Plant (MGP) and Vicinity, Fargo, Cass County, North Dakota. 1p., March 28.

### Remedial Action Work Plan

A RAWP (Barr, 2017[1]) specific to the Corridor Properties was approved by NDDH to address environmental impacts related to historical Site activities. NDDH approved the RAWP on April 6, 2017 (NDDH, 2017c[6]). An additional report will be submitted under separate cover for the work performed on the BNSF-owned property that was also the subject of a RAWP for this area.

## 2 Remedy Implementation/Completion

Pursuant to the requirements of North Dakota Century Code §23-20.03, NSP implemented the NDDH-approved remediation plan described in the RI/FFS and RAWP. The Barr technical memorandum provides details of the successful remedy implementation.

### Post-remediation Risk Evaluation and Remedial Action Objective Attainment

Post-remediation sampling results show attainment of remedial action objectives (RAOs; Table 1). The targeted remedial action removed the bulk of the source material and eliminated the potential preferential pathway associated with the pipeline between the Corridor Properties such that the risk of future potential direct exposure for a Construction Worker is significantly and appropriately mitigated. Of the 15 post-remedial soil samples collected from the base and sides of the excavations, only one sample (C-BS16, located on the northern boundary of the excavation and under the NP Avenue right-of-way) had concentrations of any MGP-related constituent above the NTE thresholds established in the RI/FFS (diesel range organics [DRO] detected at up to 7,200 mg/kg relative to an NTE value of 1,100 mg/kg and benzo(a)pyrene detected at up to 51 mg/kg relative to an NTE value of 14 mg/kg).

Sample C-BS16 was taken 7.5 feet below ground surface, below typical excavation depths, and is limited in extent based on the low concentrations of other base of excavation and sidewall soil samples. Excavation in this area proceeded north to the limit of the sidewalk along NP Avenue and was constrained in depth and to the west by the need to avoid undermining the Culligan building (see Figure 4 in the Barr memorandum). The orange marker layer placed at the bottom of the excavation will indicate to future workers that excavation below the depth of this sample would require following a soil management plan (see attached letter agreements and institutional control plans).

[6] North Dakota Dept. of Health (NDDH). 2017c. Letter to T. Coss (Xcel Energy) re: Remedial Action Work Plan – Fargo MGP Site, Historic Union & Culligan Properties. 1p., April 6.

**Table 1 Basis for Attainment of Remedial Action Objectives**

| Remedial Action Objective | Basis for Attainment |
|---|---|
| Surface Soil, Subsurface Soil, and Groundwater: Control the potential for direct exposure to impacted soil and/or impacted groundwater at levels that may pose unacceptable human health risks to current and future potential receptors based on reasonably anticipated land use (*i.e.*, prevent exposure to chemicals posing an HI >1 and a lifetime excess cancer risk >1 × $10^{-6}$ for individual carcinogens, or >1 × $10^{-5}$ for multiple carcinogens). | Targeted removal of source material and impacted soil from the pipeline corridor has reduced the risk of future potential direct exposure for a Construction Worker.<br><br>Institutional/engineering controls will manage any residual risks associated with impacted soil and groundwater. |
| Source Material (NAPL and Heavily Impacted Soil): Reduce the mass, volume, and/or mobility through treatment or removal and off-Site disposal, as practicable based on property-specific conditions. This will, in turn, help achieve attenuation and stability of the groundwater and soil gas impacts (see below). Achieve attenuation and stability of subsurface NAPL. | Targeted remedial action removed the bulk of the source material in the pipeline corridor, thus reducing the driving head for subsurface NAPL migration and allowing for long-term attenuation/stabilization of any residuals.<br><br>Legacy MGP piping (*i.e.*, no longer regularly maintained or used) that could potentially serve as a preferential pathway for constituent migration into the remediated area has been removed. Migration into other, adjacent areas is not expected since impacts in adjacent areas were not observed in the RI/FFS (Gradient, 2016[3]) and since the impacted material/piping in this area has been removed. |
| Groundwater: Achieve attenuation and stability of impacted groundwater associated with MGP source material. | Removal of source material and impacted soil will result in long-term stabilization and attenuation of impacted groundwater and soil gas.<br><br>An LTM plan is being implemented to monitor long-term attenuation and stabilization of groundwater. |
| Soil Gas: As necessary, protect potential receptors from exposure to potential MGP constituents that may pose a human health risk *via* the vapor intrusion pathway. Achieve attenuation and stability of impacted soil gas associated with potential MGP source material and impacted groundwater. | |

Notes:
HI = Hazard Index; LTM = Long-term Monitoring; MGP = Manufactured Gas Plant; NAPL = Non-aqueous Phase Liquid; RI/FFS = Remedial Investigation/Focused Feasibility Study.

Risks, if any, associated with residual source material and impacted media left in place in the pipeline corridor will be addressed through institutional and engineering controls. The attached letter agreements and institutional control plans outline the institutional controls for these properties. Any future construction in the pipeline corridor would be through up to 10 feet of clean fill. An orange marker layer has been placed at the bottom of the excavation. If construction occurs below this depth horizon, as delineated by the marker layer, the soil and groundwater management plan must be followed to ensure that residual risks are properly managed.

Further, the LTM plan (as may be amended) will be implemented to monitor the long-term attenuation and stability of groundwater and soil vapor.

# 3 Unanticipated Conditions Encountered During Remedial Action

During targeted excavation of MGP-impacted soils and removal of remnant MGP pipes in the pipeline corridor, two unanticipated underground storage tanks (USTs) were encountered. Given that the USTs were found off-Site on a property that was not a part of the historical MGP operations, but rather was owned and operated by other entities, they were not likely associated with the former MGP. Field observations of gasoline-like odors and analytical sampling results also confirmed that the tanks did not appear to be related to potential MGP constituents. A plan was submitted to the City of Fargo Fire Department and NDDH for removal of the tanks. Both tanks were removed, managed, and disposed in accordance with industry standards.

# 4 Conclusion

The NDDH-approved RAWP was successfully implemented at the Corridor Properties. NSP has satisfied the environmental assessment and remediation requirements of North Dakota Century Code §23-20.03 for a No Further Remediation letter and plans to continue monitoring the Site consistent with the NDDH-approved LTM plan.

# Attachments (Omitted)

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# Technical Memorandum

**To:** Northern States Power Company
**From:** Barr Engineering Co.
**Subject:** Remedial Action Documentation – Historic Union and Culligan Properties - Rev01
**Date:** December 13, 2018
**Project:** Fargo MGP Site

This Remedial Action Documentation memorandum has been prepared by Barr Engineering Co. (Barr) on behalf of Northern States Power Co. (NSP) to summarize remedial activities completed at the Historic Union and Culligan properties (the "Corridor Properties"; Figure 1) as a component of the North Dakota Department of Health (NDDH) approved remedial action for the former manufactured gas plant (MGP) that was primarily located at 11 12th Street North in Fargo, North Dakota. A Remedial Action Work Plan (RAWP; Barr, 2017) specific to the Corridor Properties was approved by the NDDH to address environmental impacts related to historical activities. A separate report will be submitted under separate cover for the work performed on BNSF owned and controlled property that was also the subject of this RAWP.

Targeted source removal, which included excavating and properly disposing impacted materials, and removing or grouting former MGP piping that may serve as preferential pathways, was approved by the NDDH as the remedy to meet the remedial objectives for the Corridor Properties. The remedial work at the Corridor Properties is complete and was performed in accordance with the RAWP and Soil Management Plan (Barr, 2018). The following sections of this report detail the activities completed at the Corridor Properties.

## Pre-Remedy Monitoring

Prior to remedial action implementation, perimeter air monitoring samples and a groundwater sample were collected by Barr to document pre-remedy conditions. Pre-remedy Site conditions are shown on Figure 2.

Monitoring well MW-UB-03S, located southeast of the Historic Union Building (see Figure 2) was sampled on June 21, 2018. The groundwater sample was submitted to Legend Technical Services, Inc. (Laboratory) where it was analyzed for benzene, 1,2,4-trimethylebenzene (TMB), and 1,3,5-TMB by EPA method 8260B, naphthalene by EPA method 8270D, and TPH, reported as diesel range organics (DRO)/gasoline range organics (GRO), by EPA methods 9012B and 8015D, respectively, in accordance with the RAWP. None of the parameters analyzed were reported above reporting detection limits (see Table 1). Field forms and analytical reports are included in Attachment 1 and Attachment 2, respectively.

Perimeter air monitoring samples were collected on June 20, 2018 from monitoring stations A1 through A8 (see Figure 3). The perimeter air samples for laboratory analysis were collected in general accordance with Barr's standard operating procedure (SOP) for Collection of Indoor and Ambient Air Samples Using Evacuated Canisters which is included in the Quality Assurance Project Plan (Barr, 2016). The samples were submitted to the Laboratory for chemical analysis for benzene, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene using EPA Toxic Organics Method - 15 (TO-15) in accordance with the RAWP.

In addition to the laboratory samples, field measurements from a photoionization detector (PID); a personal dust monitor, a sound decibel meter and a 4-gas meter measuring hydrogen sulfide, carbon monoxide, oxygen and lower explosive limit (LEL) were recorded. The laboratory results are summarized in Table 2 and the field measurements are provided in Attachment 3.

**General Operations**

NSP contracted with Veit and Company, Inc. (Contractor) to implement the remedial actions. The Contractor prepared a Health Site Safety Plan which addressed the requirements of Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120).

The Corridor Properties were restricted to authorized and trained personnel by the Contractor. Fencing was installed at the construction limits to restrict access. Erosion control measures were implemented to protect surface water quality in the surrounding areas. Storm water was diverted from impacted materials in open excavations to reduce impacted water generation.

During the earthwork activities, Barr was responsible for field screening and managing soils, collecting samples, assisting the Contractor with verifying potential contingency items, sampling and screening imported backfill soils, and documenting air quality around the perimeter. Pertinent photographs of the work are included as Attachment 4.

**Project Preparation**

Preexisting conditions within the excavation area included a grass-covered ground surface between the Historic Union and Culligan buildings as shown on Figure 2. Monitoring well MW-UB-01S was permanently sealed prior to soil excavation activities. The well sealing record is included in Attachment 1.

The Contractor and/or Barr obtained the necessary state, county, and city permits prior to performing the earthwork as detailed in the project specifications and contract. Signs, barricades, and construction fencing were utilized, as needed, to control the work area.

Erosion control devices including, but not limited to, storm water inlet protection, rock construction entrances, construction mats, and erosion control logs, were used to reduce erosion and transport of materials offsite during excavation work. Adjacent street surfaces were swept daily or as necessary to limit sediment runoff.

Dewatering of the excavation occurred when water was encountered in the MGP pipes or had accumulated after rainfall events. Water, regardless of the source, which accumulated within the excavation was pumped into a large polyethylene transfer tank and then transferred to a large steel storage tank for treatment through granular activated carbon (GAC) filters prior to sampling and approval by the City of Fargo (City) for discharge to the sanitary sewer.

**Targeted Source Removal and Disposal**

Following preparation activities, approximately 525 tons of impacted soil and remnant MGP distribution piping were excavated between the adjoining properties (up to 10 feet below ground surface and ranging from approximately 10 to 20 feet in width). The excavation extents are shown on Figure 4 and excavation and final grading record drawings are included as Attachment 5. The impacted soil and remnant MGP distribution piping was transported offsite for disposal at Vonco II landfill in Becker, Minnesota. The waste profile, disposal manifests, and a tonnage summary are included as Attachment 6.

Field screening of soils was performed periodically during excavation work by Barr staff to document excavation base and sidewall conditions prior to backfilling. Field screening observations included the presence and type of debris, odor, soil vapor headspace readings (organic vapors using a photoionization detector equipped with a 10.6 eV lamp), and visual examination for discoloration and hydrocarbon sheen. Soil sample field screening results were generally consistent with previous investigations (clayey soils, some odors, staining, and elevated headspace readings) and are included in Attachment 1.

Nine base of excavation (designated with "BS") and six sidewall (designated with "SW") analytical samples were collected at locations shown on Figure 4 and submitted to the laboratory for volatile organic compounds (VOCs) by EPA method 8260B, semi-volatile organic compounds (SVOCs) by EPA method 8270D, and TPH, reported as GRO/DRO by EPA methods 9012B and 8015D (with silica gel cleanup), respectively, in accordance with the RAWP. Sample C-SW06 was also analyzed for gasoline additives (metals). A summary of soil samples collected and sample results are provided in Tables 3 and 4; respectively. Lab reports are included as Attachment 2. Soil samples collected at the extent of the excavation were below the Not to Exceed (NTE) values (Remedial Investigation / Focused Feasibility Study, Gradient 2016) with the exceptions of DRO (7,200 mg/kg) and benzo(a)pyrene (51 mg/kg) at sample C-BS16 located on the northern boundary below NP Avenue. Note that this area is limited in extent and below the City of Fargo Right of Way Sidewalk adjacent to NP Avenue. Figures showing post excavation soil sample results are provided in Attachment 7.

The final excavation extents were surveyed and an orange marker layer (i.e. construction fencing or fabric) was placed at the base of excavation where residual impacts remained based on field observations and physical limitations in accordance with the RAWP. The excavation extent is shown on Figure 4 and excavation and final grading record drawings are included as Attachment 5.

## Contingencies Executed

Underground Storage Tanks

Two unexpected underground storage tanks (USTs) containing water were encountered during remedial action activities at the Corridor Properties (see Figure 4). The tanks do not appear to be related to any historic MGP activities. The tank capacities were approximately 500 and 750 gallons. The contractor obtained a permit from the City of Fargo Fire Department to remove the USTs and both were removed, managed, and disposed in accordance with industry standards. The North Dakota Department of Health (NDDH) was also notified about the plan to remove the tanks (see Attachment 1).

Both tanks were observed to have severe bottom corrosion and were full of groundwater when encountered. Due to the severity of the corrosion, the water from the tanks entered the excavation when the Contractor excavated the soil immediately adjacent to the tanks. The water was pumped from the excavation into a transfer tank and stored for GAC treatment as previously described. During the excavation work, a limited amount of associated distribution and/or vent piping was observed to still be attached to the tanks.

While the history of these tanks and past contents was unknown at the time of discovery, the soil from directly below the tanks had a gasoline-like odor. Field screening results are included in Attachment 1. No free hydrocarbon products associated with the tanks or their associated piping were observed during the removal. Impacted soil associated with the UST's was excavated as feasible to a depth of approximately 10 feet below ground surface. Impacted soil was removed west of the tanks but the horizontal extent to the east was not excavated due to the presence of an active natural gas service line for the Historic Union Building.

Four confirmation samples were collected in the vicinity of the tanks (see Table 5 for a summary of the samples near the USTs). Samples C-BS08-10' and C-BS10-10' were collected from the base of excavation below the tanks (Figure 4). Sample C-SW04-7' was collected west of the first discovered UST (Western UST) from the west sidewall. Because the two UST's were only a few feet apart, sample C-SW05-6.5' was collected east of the second discovered UST (Eastern UST) and represents the east excavation sidewall at the depth of the bottom of the tank.

As shown in Table 5, low level concentrations of GRO and VOC parameters were detected in the soil sample (C-BS08-10') collected at the base of excavation below the Eastern UST. The eastern sidewall sample (C-SW05-6.5') had laboratory detections of GRO, VOC, SVOC and tetraethyl lead. No analytes were reported as above the laboratory reporting limit for the soil samples collected from the base of excavation below the Western UST (C-BS10-10') or the west excavation sidewall sample (C-SW04-7'). While soil samples from two of the sampling locations exceeded of the North Dakota Cleanup Criteria for UST sites (Table 5), none of the reported concentrations exceeded NTE values for applicable parameters Table 4).

Non-MGP Pipes Removed

Other non-MGP associated piping were also observed and removed within the limits of the excavation; however, the pipes were not removed beyond the extent of the limits of excavation. Three 2-inch diameter abandoned natural gas pipes were encountered south of the USTs and were removed. One 2-inch and one 4-inch diameter abandoned natural gas pipes oriented east-west across the excavation were encountered and removed from within the limits of the excavation. In addition, one 4-inch diameter, likely an abandoned sewer pipe, which was also oriented east-west across the excavation, was encountered and removed from within the limits of the excavation. One 2-inch diameter wrapped pipe, which was also oriented east-west, was encountered and removed during the excavation of the MGP pipes and was located in the general vicinity of the UST's. The wrapped pipe was managed as likely asbestos containing material (ACM) and disposed of accordingly. The east-west pipes are still present outside of the excavation limits; however, all of the remaining non-MGP pipes left in pace at the extent of the excavation were shallow (<2-feet) and above the water-table.

**Air Monitoring and Dust/Odor Control**

During remedy implementation, air monitoring was conducted within the work zone and at the downwind perimeter of the work zone for indicator contaminants with thresholds for exposure (i.e., benzene and naphthalene), odor, and dust. The monitoring results were recorded and posted on a project website during implementation (https://www.barr.com/maps/FargoMGPAirMonitoring) and are now summarized in Attachment 3.

The monitoring type, equipment, method, frequency, and action levels are summarized in the RAWP. No air monitoring action criteria were exceeded during the remedial activities.

**Restoration**

Approximately 326 yards of clean backfill soil was imported and placed at the Corridor Properties. Native, low-permeability backfill was sourced from a stockpile of excess soil located north of 209 Wall Street Ave. NW in Moorhead, MN. The backfill was produced during the construction of a diversion pond performed by the Buffalo – Red River Watershed District. Topsoil used for final grading before seeding was sourced from Strata Corporation's Dilworth Pit. Prior to transport, all imported soil was tested in accordance with the RAWP. A total of 18 soil samples were collected and analyzed for VOCs, SVOCs, GRO, and DRO. The soil sample results were below the laboratory reporting limits and NTE values (see Table 6).

The excavation was backfilled as work progressed to maintain trench stability and protect nearby buildings. Controlled density fill (CDF), a self-compacting cementitious material, was used for backfill where excavation extents approached preexisting structures for additional foundation support. Ground surfaces were restored to pre-existing grades and revegetated. Record drawings showing final grade are included as Attachment 5 and photographs are included as Attachment 4.

### Remarks

The response action activities were completed in accordance with the RAWP with the exception of the additional tasks performed as detailed in the Contingencies Executed section above and under the oversight of the Fire Department and NDDH.

Please contact Rob Heimbach at (952) 832-2739 (rheimbach@barr.com) or Mary Sands at (952) 832-2718 (msands@barr.com) with any questions or comments.

## Enclosures

Table 1 – Pre-Remedy Analytical Groundwater Monitoring Data
Table 2 – Analytical Air Monitoring Data
Table 3 – Analytical Soil Sample Summary
Table 4 – Excavation Extents Analytical Soil Data
Table 5 – UST Analytical Soil Data
Table 6 – Backfill Analytical Soil Data

Figure 1 – Property Location
Figure 2 – Preexisting Conditions
Figure 3 – Monitoring Well Locations
Figure 4 – Air Monitoring Stations
Figure 5 – Source Removal Extents

Attachment 1 – Field Documentation
Attachment 2 – Lab Reports (CD Copy Only)
Attachment 3 – Perimeter Air Monitoring Data
Attachment 4 – Photolog
Attachment 5 – Record Drawings
Attachment 6 – Soil Disposal Documentation
Attachment 7 – Post Excavation Soil Sample Results

## References

Barr, 2018. Soil Management Plan – Fargo MGP Site, Fargo, Cass County, North Dakota. Prepared for Northern States Power Company. June 19, 2018.

Barr, 2017. Remedial Action Work Plan – Fargo MGP Site, Historic Union and Culligan Properties – Revision 01, Fargo, Cass County, North Dakota. Prepared for Northern States Power Company. April 20, 2017.

Barr, 2016. Quality Assurance Project Plan, Former Fargo MGP Site Fargo, North Dakota., Revision 1. Prepared for Northern States Power Company. April, 2016.

Gradient, 2016. Remedial Investigation and Focused Feasibility Study, Fargo MGP and Vicinity, Prepared for Northern States Power Company, November 29, 2016.

# Tables

**Table 1**
**Pre-Remedy Analytical Groundwater Monitoring Data**
**Historic Union and Culligan Properties**
**Fargo, ND**

| | | Location | MW-CUL-01 | MW-UB-03S |
|---|---|---|---|---|
| | | Date | 6/21/2018 | 6/21/2018 |
| | | Depth | 4 - 19 ft | 4.5 - 14.5 ft |
| Parameter | Units | GW Not to Exceed (NTE) Value[1] | | |
| **Effective Date** | | 11/29/2016 | | |
| **Exceedance Key** | | No Exceedances | | |
| SVOCs | | | | |
| Naphthalene | ug/l | NC | < 12 | < 12 |
| VOCs | | | | |
| 1,2,4-Trimethylbenzene | ug/l | | < 1.0 | < 1.0 |
| 1,3,5-Trimethylbenzene | ug/l | | < 1.0 | < 1.0 |
| Benzene | ug/l | 3000 a | < 1.0 | < 1.0 |
| Total Petroleum Hydrocarbons | | | | |
| Gasoline Range Organics, C6-C10 | ug/l | 4100 | < 100 | < 100 |
| Diesel Range Organics-silica gel cleanup | ug/l | NC | < 120 | < 110 |
| Total Petroleum Hydrocarbons (Barr Calculation) | ug/l | | ND | ND |

**Table 1**
**Pre-Remedy Analytical Groundwater Monitoring Data**
**Historic Union and Culligan Properties**
**Fargo, ND**

## Barr Standard Footnotes and Qualifiers

| | |
|---|---|
| N | Sample Type: Normal |
| FD | Sample Type: Field Duplicate |
| ND | Not detected. |
| a | Estimated value, calculated using some or all values that are estimates. |

## Groundwater Not to Exceed (NTE) Value

| | |
|---|---|
| 1 | Site-specific groundwater cleanup goal (see 2016 Remedial Investigation and Focused Feasibility Study for further details [Gradient, 2016]). |

# Table 2
# Analytical Air Monitoring Data
# Historic Union and Culligan Properties - Fargo MGP Site
# Fargo, ND

**Background Results Prior to Targeted Source Removal Excavation**

| Parameter | | | 1,2,4-Trimethylbenzene | 1,3,5-Trimethylbenzene | Benzene | Naphthalene |
|---|---|---|---|---|---|---|
| Units | | | ug/m3 | ug/m3 | ug/m3 | ug/m3 |
| Location | Date | Sample Type | | | | |
| OA1 | 6/20/2018 | N | 0.89 | < 0.84 | < 0.86 | 1.3 |
| OA2 | 6/20/2018 | N | < 0.81 | < 0.79 | < 0.81 | < 0.81 |
| OA3 | 6/20/2018 | N | < 0.78 | < 0.77 | < 0.78 | < 0.78 |
| OA4 | 6/20/2018 | N | < 0.85 | < 0.84 | < 0.85 | < 0.85 |
| OA5 | 6/20/2018 | N | < 0.82 | < 0.80 | < 0.82 | < 0.82 |
| OA6 | 6/20/2018 | N | < 0.81 | < 0.80 | < 0.81 | < 0.81 |
| OA7 | 6/20/2018 | N | < 0.79 | < 0.77 | < 0.79 | < 0.79 |
| OA8 | 6/20/2018 | N | < 0.79 | < 0.77 | < 0.79 | < 0.79 |

**Perimeter Air Monitoring Results During Targeted Source Removal Excavation**

| Parameter | | | 1,2,4-Trimethylbenzene | 1,3,5-Trimethylbenzene | Benzene | Naphthalene |
|---|---|---|---|---|---|---|
| Units | | | ug/m3 | ug/m3 | ug/m3 | ug/m3 |
| Location | Date | Sample Type | | | | |
| OA8 | 6/28/2018 | N | < 0.77 | < 0.76 | < 0.77 | < 0.77 |
| OA8 | 6/28/2018 | FD | < 0.77 | < 0.76 | < 0.77 | < 0.77 |
| OA3 | 7/07/2018 | N | 0.96 | < 0.77 | < 0.78 | 1.7 |

N - Sample Type: Normal.

FD - Sample Type: Field Duplicate.

**Table 3**
**Analytical Soil Sample Summary**
**Historic Union and Culligan Properties - Fargo MGP Site**
**Fargo, North Dakota**

| Sample Type | Sample Identification[1] | Date | GPS Coordinates[2] | | Sample Depth | Organic Headspace | Comments |
|---|---|---|---|---|---|---|---|
| | | | Northing (meters) | Easting (meters) | (feet bgs) | (ppm) | |
| **Documentation Samples** | | | | | | | |
| Base of Excavation Sample | C-BS02 | 6/27/2018 | 5193701.64 | 667914.77 | 6 | 0.3 | |
| | C-BS03 | 6/28/2018 | 5193704.34 | 667915.55 | 7 | 0.2 | |
| | C-BS06 | 6/28/2018 | 5193707.11 | 667914.92 | 8 | 337 | |
| | C-BS06 | 6/28/2018 | 5193707.31 | 667914.32 | 10 | 2.2 | |
| | C-BS08 | 6/29/2018 | 5193715.79 | 667916.22 | 10 | 1118 | Collected from base of UST excavation. Western UST. |
| | C-BS10 | 7/2/2018 | 5193712.76 | 667917.64 | 10 | 6.2 | Collected from base of UST excavation. Eastern UST. |
| | C-BS14 | 7/5/2018 | 5193718.66 | 667914.31 | 8 | 1345 | |
| | C-BS16 | 7/5/2018 | 5193726.64 | 667914.16 | 7.5 | 1436 | |
| | C-BS24 | 7/10/2018 | 5193723.13 | 667914.46 | 8 | 1253 | |
| Sidewall of Excavation Sample | C-SW02 | 6/27/2018 | 5193699.51 | 667916.76 | 6 | 3.1 | |
| | C-SW03 | 6/28/2018 | 5193705.80 | 667917.70 | 5 | 0.3 | |
| | C-SW04 | 6/29/2018 | 5193714.88 | 667913.77 | 7 | 0.9 | Collected from UST basin. West sidewall. |
| | C-SW05 | 7/2/2018 | 5193716.27 | 667917.70 | 6.5 | 1633 | Collected from UST basin. East sidewall. |
| | C-SW06 | 7/6/2018 | 5193719.97 | 667913.76 | 7 | 1661 | Also analyzed for gasoline additives (metals). |
| | C-SW07 | 7/6/2018 | 5193725.46 | 667914.74 | 7 | 0.5 | |
| **Clean Cover Soil** | | | | | | | |
| Clean Soil from Offsite Source | GRAB-1 | 6/1/2018 | -- | -- | NA | -- | General fill, from 209 Wall Street Ave. NW in Moorhead, MN |
| | GRAB-1 | 6/11/2018 | -- | -- | NA | -- | Class III fill, from Strata Pit in Moorhead, MN |
| | GRAB-2 | 6/1/2018 | -- | -- | NA | -- | General fill, from 209 Wall Street Ave. NW in Moorhead, MN |
| | GRAB-2 | 6/11/2018 | -- | -- | NA | -- | Class III fill, from Strata Pit in Moorhead, MN |
| | GRAB-3 | 6/1/2018 | -- | -- | NA | -- | General fill, from 209 Wall Street Ave. NW in Moorhead, MN |
| | GRAB-3 | 6/11/2018 | -- | -- | NA | -- | Class III fill, from Strata Pit in Moorhead, MN |
| | GRAB-4 | 6/11/2018 | -- | -- | NA | -- | General fill, from Strata at 2660 16th Ave S in Moorhead, MN |
| | GRAB-5 | 6/11/2018 | -- | -- | NA | -- | General fill, from Strata at 2660 16th Ave S in Moorhead, MN |
| | GRAB-6 | 6/11/2018 | -- | -- | NA | -- | General fill, from Strata at 2660 16th Ave S in Moorhead, MN |
| | GRAB-7 | 6/11/2018 | -- | -- | NA | -- | Topsoil, from Strata Pit in Dilworth, MN |
| | GRAB-8 | 6/11/2018 | -- | -- | NA | -- | Topsoil, from Strata Pit in Dilworth, MN |
| | GRAB-9 | 6/11/2018 | -- | -- | NA | -- | Topsoil, from Strata Pit in Dilworth, MN |

**Table 3**
**Analytical Soil Sample Summary**
**Historic Union and Culligan Properties - Fargo MGP Site**
**Fargo, North Dakota**

| Sample Type | Sample Identification[1] | Date | GPS Coordinates[2] | | Sample Depth | Organic Headspace | Comments |
|---|---|---|---|---|---|---|---|
| | | | Northing (meters) | Easting (meters) | (feet bgs) | (ppm) | |
| | GRAB-10 | 6/11/2018 | -- | -- | NA | -- | Class V fill, from Strata at 200th St N. in Ullen MN |
| | GRAB-11 | 6/11/2018 | -- | -- | NA | -- | Class V fill, from Strata at 200th St N. in Ullen MN |
| | GRAB-12 | 6/11/2018 | -- | -- | NA | -- | Class V fill, from Strata at 200th St N. in Ullen MN |
| | GRAB-13 | 6/11/2018 | -- | -- | NA | -- | General fill, from watershed area in Moorhead, MN |
| | GRAB-14 | 6/11/2018 | -- | -- | NA | -- | General fill, from watershed area in Moorhead, MN |
| | GRAB-15 | 6/11/2018 | -- | -- | NA | -- | General fill, from watershed area in Moorhead, MN |

**Notes:**

1 - All samples analyzed for VOCs, SVOCs, GRO, DRO except where noted in comments.

2 - UTM coordinates referenced to UTM14N NAD83.

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

GRO - Gasoline Range Organics

DRO - Diesel Range Organics

# Table 4
## Excavation Extents Analytical Soil Data
## Historic Union and Culligan Properties - Fargo MGP Site
## Fargo, ND

| | | Location | C-BS02 | C-BS03 | C-BS06 | C-BS06 | C-BS08 | C-BS10 | C-BS14 | C-BS16 | C-BS24 | C-SW02 | C-SW03 | C-SW04 | C-SW05 | C-SW06 | C-SW07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Date | 6/27/2018 | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/29/2018 | 7/02/2018 | 7/05/2018 | 7/05/2018 | 7/10/2018 | 6/27/2018 | 6/28/2018 | 6/29/2018 | 7/02/2018 | 7/06/2018 | 7/06/2018 |
| | | Depth | 6 ft | 7 ft | 8 ft | 10 ft | 10 ft | 10 ft | 8 ft | 7.5 ft | 8 ft | 6 ft | 5 ft | 7 ft | 6.5 ft | 7 ft | 7 ft |
| | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Parameter | Units | Soil Not to Exceed (NTE) Value | | | | | | | | | | | | | | | |
| **Exceedance Key** | | **Bold** | | | | | | | | | | | | | | | |
| General Parameters | | | | | | | | | | | | | | | | | |
| Solids, percent | % | | 74 | 76 | 72 | 71 | 72 | 70 | 69 | 71 | 73 | 72 | 75 | 75 | 72 | 74 | 73 |
| Metals | | | | | | | | | | | | | | | | | |
| Lead, tetraethyl | mg/kg | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.186 | -- | -- |
| Lead, tetramethyl | mg/kg | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.0246 | -- | -- |
| MMT (antiknock-33) | mg/kg | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.0246 | -- | -- |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 1,2-Dichlorobenzene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 1,3-Dichlorobenzene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 1,4-Dichlorobenzene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 2,2'-oxybis (1-chloropropane) | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 2,3,4,6-Tetrachlorophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2,4,5-Trichlorophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2,4,6-Trichlorophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2,4-Dichlorophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2,4-Dimethylphenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | 4.8 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2,4-Dinitrophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2,4-Dinitrotoluene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 2,6-Dichlorophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2,6-Dinitrotoluene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 2-Chloronaphthalene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 2-Chlorophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2-Methyl-4,6-dinitrophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2-Methylnaphthalene | mg/kg | 4400 | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | 0.73 | 140 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | 2.5 | < 0.52 | < 0.45 |
| 2-Methylphenol (o-cresol) | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 2-Nitroaniline | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 2-Nitrophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 3,3`-Dichlorobenzidine | mg/kg | | < 3.2 | < 2.1 | < 2.2 | < 2.3 | < 2.2 | < 2.3 | < 2.6 | < 10 | < 2.5 | < 2.2 | < 2.1 | < 2.1 | < 2.2 | < 2.5 | < 2.2 |
| 3,4-Methylphenol (m,p cresols) | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 3-Nitroaniline | mg/kg | | < 0.89 | < 0.58 | < 0.61 | < 0.62 | < 0.61 | < 0.63 | < 0.72 | < 2.8 | < 0.68 | < 0.61 | < 0.59 | < 0.59 | < 0.61 | < 0.69 | < 0.60 |
| 4-Bromophenyl phenyl ether | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 4-Chloro-3-methylphenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 4-Chloroaniline | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| 4-Chlorophenyl phenyl ether | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| 4-Nitroaniline | mg/kg | | < 0.85 | < 0.55 | < 0.58 | < 0.59 | < 0.58 | < 0.60 | < 0.69 | < 2.6 | < 0.65 | < 0.58 | < 0.56 | < 0.56 | < 0.58 | < 0.66 | < 0.58 |
| 4-Nitrophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| Acenaphthene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 28 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Acenaphthylene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 110 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Aniline | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| Anthracene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 97 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Azobenzene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Benz(a)anthracene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 72 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Benzidine | mg/kg | | < 5.1 | < 3.3 | < 3.5 | < 3.5 | < 3.5 | < 3.6 | < 4.1 | < 16 | < 3.9 | < 3.5 | < 3.3 | < 3.3 | < 3.5 | < 3.9 | < 3.4 |
| Benzo(a)pyrene | mg/kg | **14** | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | **51** | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Benzo(b)fluoranthene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 63 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Benzo(g,h,i)perylene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 22 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Benzo(k)fluoranthene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 22 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Benzoic acid | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Benzyl alcohol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| Bis(2-chloroethoxy)methane | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Bis(2-chloroethyl)ether | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Bis(2-ethylhexyl)phthalate | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Butyl benzyl phthalate | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Carbazole | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 37 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Chrysene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 57 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Dibenz(a,h)anthracene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 5.8 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |

**Table 4**
**Excavation Extents Analytical Soil Data**
**Historic Union and Culligan Properties - Fargo MGP Site**
**Fargo, ND**

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Location** | **C-BS02** | **C-BS03** | **C-BS06** | **C-BS06** | **C-BS08** | **C-BS10** | **C-BS14** | **C-BS16** | **C-BS24** | **C-SW02** | **C-SW03** | **C-SW04** | **C-SW05** | **C-SW06** | **C-SW07** |
| | | **Date** | **6/27/2018** | **6/28/2018** | **6/28/2018** | **6/28/2018** | **6/29/2018** | **7/02/2018** | **7/05/2018** | **7/05/2018** | **7/10/2018** | **6/27/2018** | **6/28/2018** | **6/29/2018** | **7/02/2018** | **7/06/2018** | **7/06/2018** |
| | | **Depth** | **6 ft** | **7 ft** | **8 ft** | **10 ft** | **10 ft** | **10 ft** | **8 ft** | **7.5 ft** | **8 ft** | **6 ft** | **5 ft** | **7 ft** | **6.5 ft** | **7 ft** | **7 ft** |
| | | **Sample Type** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** |
| Parameter | Units | Soil Not to Exceed (NTE) Value | | | | | | | | | | | | | | | |
| **Exceedance Key** | | **Bold** | | | | | | | | | | | | | | | |
| Dibenzofuran | mg/kg | 1300 | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 90 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Diethyl phthalate | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Dimethyl phthalate | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Di-n-butyl phthalate | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Di-n-octyl phthalate | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Fluoranthene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 210 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Fluorene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 110 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Hexachlorobenzene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Hexachlorobutadiene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Hexachlorocyclopentadiene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Hexachloroethane | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Indeno(1,2,3-cd)pyrene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 27 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Isophorone | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Naphthalene | mg/kg | 2400 | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | 1.8 | 710 | 1.4 | < 0.46 | < 0.44 | < 0.44 | 2.8 | 0.65 | < 0.45 |
| Nitrobenzene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| n-Nitrosodimethylamine | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| n-Nitrosodi-n-propylamine | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| n-Nitrosodiphenylamine | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | < 2.1 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Pentachlorophenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| Phenanthrene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 310 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | 1.1 | < 0.45 |
| Phenol | mg/kg | | < 1.4 | < 0.88 | < 0.93 | < 0.94 | < 0.93 | < 0.96 | < 1.1 | < 4.2 | < 1.0 | < 0.93 | < 0.89 | < 0.89 | < 0.93 | < 1.0 | < 0.92 |
| Pyrene | mg/kg | | < 0.67 | < 0.43 | < 0.46 | < 0.46 | < 0.46 | < 0.47 | < 0.54 | 230 | < 0.51 | < 0.46 | < 0.44 | < 0.44 | < 0.46 | < 0.52 | < 0.45 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,1,1-Trichloroethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,1,2,2-Tetrachloroethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,1,2-Trichloroethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,1-Dichloroethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,1-Dichloroethylene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,1-Dichloropropene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,2,3-Trichlorobenzene | mg/kg | | < 0.68 | < 0.66 | < 0.69 | < 0.70 | < 0.69 | < 0.71 | < 0.72 | < 0.70 | < 0.68 | < 0.69 | < 0.67 | < 0.67 | < 0.69 | < 0.68 | < 0.68 |
| 1,2,3-Trichloropropane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,2,4-Trichlorobenzene | mg/kg | | < 0.68 | < 0.66 | < 0.69 | < 0.70 | < 0.69 | < 0.71 | < 0.72 | < 0.70 | < 0.68 | < 0.69 | < 0.67 | < 0.67 | < 0.69 | < 0.68 | < 0.68 |
| 1,2,4-Trimethylbenzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | 1.6 | < 0.29 | 10 | 61 | 3.0 | < 0.28 | < 0.27 | < 0.27 | 33 | < 0.27 | < 0.27 |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | | < 0.68 | < 0.66 | < 0.69 | < 0.70 | < 0.69 | < 0.71 | < 0.72 | < 0.70 | < 0.68 | < 0.69 | < 0.67 | < 0.67 | < 0.69 | < 0.68 | < 0.68 |
| 1,2-Dibromoethane (EDB) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,2-Dichlorobenzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,2-Dichloroethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,2-Dichloroethylene, cis | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,2-Dichloroethylene, trans | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,2-Dichloropropane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,3,5-Trimethylbenzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | 4.0 | 14 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | 13 | < 0.27 | < 0.27 |
| 1,3-Dichlorobenzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,3-Dichloropropane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,3-Dichloropropene, cis | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,3-Dichloropropene, trans | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 1,4-Dichlorobenzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| 2,2-Dichloropropane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Acetone | mg/kg | | < 1.4 | < 1.3 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.3 | < 1.3 | < 1.4 | < 1.4 | < 1.4 |
| Allyl chloride | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Benzene | mg/kg | 810 | < 0.27 | < 0.26 | < 0.28 | < 0.28 | 0.32 | < 0.29 | 9.7 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | 0.45 | < 0.27 | < 0.27 |
| Bromobenzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Bromochloromethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Bromodichloromethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Bromoform | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Bromomethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Butylbenzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | 0.74 | 6.1 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | 4.8 | < 0.27 | < 0.27 |

**Table 4**
**Excavation Extents Analytical Soil Data**
**Historic Union and Culligan Properties - Fargo MGP Site**
**Fargo, ND**

| | | Location | C-BS02 | C-BS03 | C-BS06 | C-BS06 | C-BS08 | C-BS10 | C-BS14 | C-BS16 | C-BS24 | C-SW02 | C-SW03 | C-SW04 | C-SW05 | C-SW06 | C-SW07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Date | 6/27/2018 | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/29/2018 | 7/02/2018 | 7/05/2018 | 7/05/2018 | 7/10/2018 | 6/27/2018 | 6/28/2018 | 6/29/2018 | 7/02/2018 | 7/06/2018 | 7/06/2018 |
| | | Depth | 6 ft | 7 ft | 8 ft | 10 ft | 10 ft | 10 ft | 8 ft | 7.5 ft | 8 ft | 6 ft | 5 ft | 7 ft | 6.5 ft | 7 ft | 7 ft |
| | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Parameter | Units | Soil Not to Exceed (NTE) Value | | | | | | | | | | | | | | | |
| **Exceedance Key** | | **Bold** | | | | | | | | | | | | | | | |
| Butylbenzene, sec | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | 1.2 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | 0.87 | < 0.27 | < 0.27 |
| Butylbenzene, tert | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Carbon tetrachloride | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Chlorobenzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Chlorodibromomethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Chloroethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Chloroform | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Chloromethane | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Chlorotoluene, o | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Chlorotoluene, p | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Cumene (isopropyl benzene) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | 2.7 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | 1.8 | < 0.27 | < 0.27 |
| Cymene p- (toluene isopropyl p-) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | 1.3 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | 0.76 | < 0.27 | < 0.27 |
| Dibromomethane (methylene bromide) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Dichlorodifluoromethane (Freon-12) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Dichlorofluoromethane (Freon-21) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Ethyl benzene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | 1.0 | < 0.29 | 3.2 | 15 | 0.62 | < 0.28 | < 0.27 | < 0.27 | 11 | < 0.27 | < 0.27 |
| Ethyl ether | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Hexachlorobutadiene | mg/kg | | < 0.68 | < 0.66 | < 0.69 | < 0.70 | < 0.69 | < 0.71 | < 0.72 | < 0.70 | < 0.68 | < 0.69 | < 0.67 | < 0.67 | < 0.69 | < 0.68 | < 0.68 |
| Methyl ethyl ketone (2-butanone) | mg/kg | | < 1.4 | < 1.3 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.3 | < 1.3 | < 1.4 | < 1.4 | < 1.4 |
| Methyl isobutyl ketone (MIBK) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Methyl tertiary butyl ether (MTBE) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Methylene chloride | mg/kg | | < 0.68 | < 0.66 | < 0.69 | < 0.70 | < 0.69 | < 0.71 | < 0.72 | < 0.70 | < 0.68 | < 0.69 | < 0.67 | < 0.67 | < 0.69 | < 0.68 | < 0.68 |
| Naphthalene | mg/kg | 2400 | < 0.68 | < 0.66 | < 0.69 | < 0.70 | < 0.69 | < 0.71 | 440 | 23 | < 0.68 | < 0.69 | < 0.67 | < 0.67 | 6.9 | < 0.68 | < 0.68 |
| Propylbenzene | mg/kg | | < 0.27 | < 0.26 | 0.30 | < 0.28 | 0.46 | < 0.29 | 0.52 | 8.9 | 0.57 | < 0.28 | < 0.27 | < 0.27 | 6.6 | < 0.27 | < 0.27 |
| Styrene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | 1.6 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Tetrachloroethylene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Tetrahydrofuran | mg/kg | | < 1.4 | < 1.3 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.3 | < 1.3 | < 1.4 | < 1.4 | < 1.4 |
| Toluene | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | 18 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Trichloroethylene (TCE) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Trichlorofluoromethane (Freon-11) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Trichlorotrifluoroethane (Freon 113) | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Vinyl chloride | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.28 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Xylene, m & p | mg/kg | | < 0.54 | < 0.53 | < 0.56 | < 0.56 | < 0.56 | < 0.57 | 21 | 25 | < 0.55 | < 0.56 | < 0.53 | < 0.53 | 15 | < 0.54 | < 0.55 |
| Xylene, o | mg/kg | | < 0.27 | < 0.26 | < 0.28 | < 0.28 | < 0.28 | < 0.29 | 9.0 | 2.1 | < 0.27 | < 0.28 | < 0.27 | < 0.27 | < 0.28 | < 0.27 | < 0.27 |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | |
| Diesel Range Organics, silica gel cleanup | mg/kg | **1100** | 9.4 | < 8.6 | 20 | < 9.1 | < 8.5 | < 9.3 | 180 | **7200** | 11 | 56 | < 8.5 | < 8.9 | 240 | 64 | < 11 |
| Gasoline Range Organics, C6-C10 | mg/kg | 1600 | < 6.8 | < 6.6 | 130 | < 7.0 | 260 | < 7.1 | 1200 | 230 | 110 | < 6.9 | < 6.7 | < 6.7 | 910 | 170 | < 6.8 |

**Table 4**
**Excavation Extents Analytical Soil Data**
**Historic Union and Culligan Properties - Fargo MGP Site**
**Fargo, ND**

**Barr Standard Footnotes and Qualifiers**

| | |
|---|---|
| -- | Not analyzed/Not available. |
| N | Sample Type: Normal |
| FD | Sample Type: Field Duplicate |
| ND | Not detected. |
| TIC | Tentatively identified compound. |

# Table 5
## UST Analytical Soil Data
## Historic Union and Culligan Properties - Fargo MGP Site
## Fargo, ND

| | | Location | C-BS08 | C-BS10 | C-SW04 | C-SW05 |
|---|---|---|---|---|---|---|
| | | Date | 6/29/2018 | 7/02/2018 | 6/29/2018 | 7/02/2018 |
| | | Depth | 10 ft | 10 ft | 7 ft | 6.5 ft |
| | | Sample Type | N | N | N | N |
| Parameter | Units | North Dakota Cleanup Criteria for UST Sites | | | | |
| **Effective Date** | | 12/01/2006 | | | | |
| **Exceedance Key** | | **Bold** | | | | |
| General Parameters | | | | | | |
| Solids, percent | % | | 72 | 70 | 75 | 72 |
| Metals | | | | | | |
| Lead, tetraethyl | mg/kg | | -- | -- | -- | 0.186 |
| Lead, tetramethyl | mg/kg | | -- | -- | -- | < 0.0246 |
| MMT (antiknock-33) | mg/kg | | -- | -- | -- | < 0.0246 |
| Semivolatile Organic Compounds | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 1,2-Dichlorobenzene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 1,3-Dichlorobenzene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 1,4-Dichlorobenzene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 2,2'-oxybis (1-chloropropane) | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 2,3,4,6-Tetrachlorophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2,4,5-Trichlorophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2,4,6-Trichlorophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2,4-Dichlorophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2,4-Dimethylphenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2,4-Dinitrophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2,4-Dinitrotoluene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 2,6-Dichlorophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2,6-Dinitrotoluene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 2-Chloronaphthalene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 2-Chlorophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2-Methyl-4,6-dinitrophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2-Methylnaphthalene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | 2.5 |
| 2-Methylphenol (o-cresol) | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 2-Nitroaniline | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 2-Nitrophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 3,3`-Dichlorobenzidine | mg/kg | | < 2.2 | < 2.3 | < 2.1 | < 2.2 |
| 3,4-Methylphenol (m,p cresols) | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 3-Nitroaniline | mg/kg | | < 0.61 | < 0.63 | < 0.59 | < 0.61 |
| 4-Bromophenyl phenyl ether | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 4-Chloro-3-methylphenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 4-Chloroaniline | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| 4-Chlorophenyl phenyl ether | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| 4-Nitroaniline | mg/kg | | < 0.58 | < 0.60 | < 0.56 | < 0.58 |
| 4-Nitrophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| Acenaphthene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Acenaphthylene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Aniline | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| Anthracene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Azobenzene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Benz(a)anthracene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Benzidine | mg/kg | | < 3.5 | < 3.6 | < 3.3 | < 3.5 |
| Benzo(a)pyrene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Benzo(b)fluoranthene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Benzo(g,h,i)perylene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Benzo(k)fluoranthene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Benzoic acid | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Benzyl alcohol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| Bis(2-chloroethoxy)methane | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Bis(2-chloroethyl)ether | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Bis(2-ethylhexyl)phthalate | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Butyl benzyl phthalate | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Carbazole | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |

# Table 5
## UST Analytical Soil Data
## Historic Union and Culligan Properties - Fargo MGP Site
## Fargo, ND

| | | Location | C-BS08 | C-BS10 | C-SW04 | C-SW05 |
|---|---|---|---|---|---|---|
| | | Date | 6/29/2018 | 7/02/2018 | 6/29/2018 | 7/02/2018 |
| | | Depth | 10 ft | 10 ft | 7 ft | 6.5 ft |
| | | Sample Type | N | N | N | N |
| Parameter | Units | North Dakota Cleanup Criteria for UST Sites | | | | |
| **Effective Date** | | 12/01/2006 | | | | |
| **Exceedance Key** | | **Bold** | | | | |
| Chrysene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Dibenz(a,h)anthracene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Dibenzofuran | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Diethyl phthalate | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Dimethyl phthalate | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Di-n-butyl phthalate | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Di-n-octyl phthalate | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Fluoranthene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Fluorene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Hexachlorobenzene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Hexachlorobutadiene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Hexachlorocyclopentadiene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Hexachloroethane | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Indeno(1,2,3-cd)pyrene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Isophorone | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Naphthalene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | 2.8 |
| Nitrobenzene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| n-Nitrosodimethylamine | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| n-Nitrosodi-n-propylamine | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| n-Nitrosodiphenylamine | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Pentachlorophenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| Phenanthrene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Phenol | mg/kg | | < 0.93 | < 0.96 | < 0.89 | < 0.93 |
| Pyrene | mg/kg | | < 0.46 | < 0.47 | < 0.44 | < 0.46 |
| Volatile Organic Compounds | | | | | | |
| 1,1,1,2-Tetrachloroethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,1,1-Trichloroethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,1,2-Trichloroethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,1-Dichloroethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,1-Dichloroethylene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,1-Dichloropropene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,2,3-Trichlorobenzene | mg/kg | | < 0.69 | < 0.71 | < 0.67 | < 0.69 |
| 1,2,3-Trichloropropane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,2,4-Trichlorobenzene | mg/kg | | < 0.69 | < 0.71 | < 0.67 | < 0.69 |
| 1,2,4-Trimethylbenzene | mg/kg | | 1.6 | < 0.29 | < 0.27 | 33 |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | | < 0.69 | < 0.71 | < 0.67 | < 0.69 |
| 1,2-Dibromoethane (EDB) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,2-Dichlorobenzene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,2-Dichloroethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,2-Dichloroethylene, cis | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,2-Dichloroethylene, trans | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,2-Dichloropropane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,3,5-Trimethylbenzene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | 13 |
| 1,3-Dichlorobenzene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,3-Dichloropropane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,3-Dichloropropene, cis | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,3-Dichloropropene, trans | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 1,4-Dichlorobenzene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| 2,2-Dichloropropane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Acetone | mg/kg | | < 1.4 | < 1.4 | < 1.3 | < 1.4 |
| Allyl chloride | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Benzene | mg/kg | | 0.32 | < 0.29 | < 0.27 | 0.45 |
| Bromobenzene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Bromochloromethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |

**Table 5**
**UST Analytical Soil Data**
**Historic Union and Culligan Properties - Fargo MGP Site**
**Fargo, ND**

| | | Location | C-BS08 | C-BS10 | C-SW04 | C-SW05 |
|---|---|---|---|---|---|---|
| | | Date | 6/29/2018 | 7/02/2018 | 6/29/2018 | 7/02/2018 |
| | | Depth | 10 ft | 10 ft | 7 ft | 6.5 ft |
| | | Sample Type | N | N | N | N |
| Parameter | Units | North Dakota Cleanup Criteria for UST Sites | | | | |
| **Effective Date** | | 12/01/2006 | | | | |
| **Exceedance Key** | | **Bold** | | | | |
| Bromodichloromethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Bromoform | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Bromomethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Butylbenzene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | 4.8 |
| Butylbenzene, sec | mg/kg | | < 0.28 | < 0.29 | < 0.27 | 0.87 |
| Butylbenzene, tert | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Carbon tetrachloride | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Chlorobenzene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Chlorodibromomethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Chloroethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Chloroform | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Chloromethane | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Chlorotoluene, o | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Chlorotoluene, p | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Cumene (isopropyl benzene) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | 1.8 |
| Cymene p- (toluene isopropyl p-) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | 0.76 |
| Dibromomethane (methylene bromide) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Dichlorodifluoromethane (Freon-12) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Dichlorofluoromethane (Freon-21) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Ethyl benzene | mg/kg | | 1.0 | < 0.29 | < 0.27 | 11 |
| Ethyl ether | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Hexachlorobutadiene | mg/kg | | < 0.69 | < 0.71 | < 0.67 | < 0.69 |
| Methyl ethyl ketone (2-butanone) | mg/kg | | < 1.4 | < 1.4 | < 1.3 | < 1.4 |
| Methyl isobutyl ketone (MIBK) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Methyl tertiary butyl ether (MTBE) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Methylene chloride | mg/kg | | < 0.69 | < 0.71 | < 0.67 | < 0.69 |
| Naphthalene | mg/kg | | < 0.69 | < 0.71 | < 0.67 | 6.9 |
| Propylbenzene | mg/kg | | 0.46 | < 0.29 | < 0.27 | 6.6 |
| Styrene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Tetrachloroethylene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Tetrahydrofuran | mg/kg | | < 1.4 | < 1.4 | < 1.3 | < 1.4 |
| Toluene | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Trichloroethylene (TCE) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Trichlorofluoromethane (Freon-11) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Trichlorotrifluoroethane (Freon 113) | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Vinyl chloride | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Xylene, m & p | mg/kg | | < 0.56 | < 0.57 | < 0.53 | 15 |
| Xylene, o | mg/kg | | < 0.28 | < 0.29 | < 0.27 | < 0.28 |
| Total Petroleum Hydrocarbons | | | | | | |
| Diesel Range Organics, silica gel cleanup | mg/kg | (1) | < 8.5 | < 9.3 | < 8.9 | 240 |
| Gasoline Range Organics, C6-C10 | mg/kg | (1) | 260 | < 7.1 | < 6.7 | 910 |
| Total Petroleum Hydrocarbons (Barr Calculation) | mg/kg | **100** | **260** | ND | ND | **1150** |

**Table 5**
**UST Analytical Soil Data**
**Historic Union and Culligan Properties - Fargo MGP Site**
**Fargo, ND**

## Barr Standard Footnotes and Qualifiers

| | |
|---|---|
| -- | Not analyzed/Not available. |
| N | Sample Type: Normal |
| ND | Not detected. |

## North Dakota Cleanup Criteria for UST Sites

| | |
|---|---|
| (1) | Value should be included in the TPH sum and compared to the TPH criteria value. |

**Table 6**
**Backfill Analytical Soil Data**
**Fargo MGP Site**
**Fargo, ND**

| Location | | Grab-1 | Grab-1 | Grab-2 | | Grab-2 | Grab-3 | Grab-3 | Grab-4 | Grab-5 | Grab-6 | Grab-7 | Grab-8 | Grab-9 | Grab-10 | Grab-11 | Grab-12 | Grab-13 | Grab-14 | Grab-15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | | 6/01/2018 | 6/11/2018 | 6/01/2018 | | 6/11/2018 | 6/01/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 |
| Depth | | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft |
| Sample Type | | N | N | N | FD | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Parameter | Units | | | | | | | | | | | | | | | | | | | |
| General Parameters | | | | | | | | | | | | | | | | | | | | |
| Solids, percent | % | **75** | **92** | **79** | **79** | **96** | **79** | **95** | **76** | **75** | **76** | **81** | **80** | **83** | **94** | **93** | **96** | **75** | **73** | **73** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 1,2-Dichlorobenzene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 1,3-Dichlorobenzene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 1,4-Dichlorobenzene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 2,2'-oxybis (1-chloropropane) | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 2,3,4,6-Tetrachlorophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2,4,5-Trichlorophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2,4,6-Trichlorophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2,4-Dichlorophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2,4-Dimethylphenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2,4-Dinitrophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2,4-Dinitrotoluene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 2,6-Dichlorophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2,6-Dinitrotoluene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 2-Chloronaphthalene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 2-Chlorophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2-Methyl-4,6-dinitrophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2-Methylnaphthalene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 2-Methylphenol (o-cresol) | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 2-Nitroaniline | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 2-Nitrophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 3,3`-Dichlorobenzidine | mg/kg | < 3.2 | < 1.7 | < 3.0 | < 3.0 | < 1.7 | < 3.0 | < 1.7 | < 3.0 | < 3.1 | < 2.8 | < 2.9 | < 3.0 | < 2.9 | < 1.7 | < 1.7 | < 1.7 | < 2.1 | < 2.2 | < 2.2 |
| 3,4-Methylphenol (m,p cresols) | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 3-Nitroaniline | mg/kg | < 0.88 | < 0.48 | < 0.83 | < 0.82 | < 0.46 | < 0.81 | < 0.46 | < 0.81 | < 0.85 | < 0.78 | < 0.80 | < 0.82 | < 0.79 | < 0.47 | < 0.47 | < 0.46 | < 0.59 | < 0.60 | < 0.60 |
| 4-Bromophenyl phenyl ether | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 4-Chloro-3-methylphenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 4-Chloroaniline | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| 4-Chlorophenyl phenyl ether | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| 4-Nitroaniline | mg/kg | < 0.84 | < 0.46 | < 0.79 | < 0.78 | < 0.44 | < 0.77 | < 0.44 | < 0.77 | < 0.81 | < 0.74 | < 0.77 | < 0.78 | < 0.75 | < 0.45 | < 0.45 | < 0.44 | < 0.56 | < 0.58 | < 0.58 |
| 4-Nitrophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| Acenaphthene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Acenaphthylene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Aniline | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| Anthracene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Azobenzene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Benz(a)anthracene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Benzidine | mg/kg | < 5.0 | < 2.7 | < 4.7 | < 4.7 | < 2.6 | < 4.6 | < 2.6 | < 4.6 | < 4.8 | < 4.4 | < 4.6 | < 4.6 | < 4.5 | < 2.7 | < 2.7 | < 2.6 | < 3.3 | < 3.4 | < 3.4 |
| Benzo(a)pyrene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Benzo(b)fluoranthene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Benzo(g,h,i)perylene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Benzo(k)fluoranthene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Benzoic acid | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Benzyl alcohol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| Bis(2-chloroethoxy)methane | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Bis(2-chloroethyl)ether | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Bis(2-ethylhexyl)phthalate | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Butyl benzyl phthalate | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Carbazole | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Chrysene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Dibenz(a,h)anthracene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Dibenzofuran | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Diethyl phthalate | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Dimethyl phthalate | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Di-n-butyl phthalate | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Di-n-octyl phthalate | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Fluoranthene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Fluorene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |

**Table 6**
**Backfill Analytical Soil Data**
**Fargo MGP Site**
**Fargo, ND**

| Location | | Grab-1 | Grab-1 | Grab-2 | | Grab-2 | Grab-3 | Grab-3 | Grab-4 | Grab-5 | Grab-6 | Grab-7 | Grab-8 | Grab-9 | Grab-10 | Grab-11 | Grab-12 | Grab-13 | Grab-14 | Grab-15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | | 6/01/2018 | 6/11/2018 | 6/01/2018 | | 6/11/2018 | 6/01/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 |
| Depth | | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft |
| Sample Type | | N | N | N | FD | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Parameter | Units | | | | | | | | | | | | | | | | | | | |
| Hexachlorobenzene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Hexachlorobutadiene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Hexachlorocyclopentadiene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Hexachloroethane | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Isophorone | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Naphthalene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Nitrobenzene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| n-Nitrosodimethylamine | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| n-Nitrosodi-n-propylamine | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| n-Nitrosodiphenylamine | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Pentachlorophenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| Phenanthrene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Phenol | mg/kg | < 1.3 | < 0.73 | < 1.3 | < 1.2 | < 0.70 | < 1.2 | < 0.71 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 0.71 | < 0.72 | < 0.70 | < 0.89 | < 0.92 | < 0.92 |
| Pyrene | mg/kg | < 0.66 | < 0.36 | < 0.62 | < 0.61 | < 0.34 | < 0.61 | < 0.35 | < 0.61 | < 0.64 | < 0.58 | < 0.60 | < 0.61 | < 0.59 | < 0.35 | < 0.35 | < 0.34 | < 0.44 | < 0.45 | < 0.45 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,1,1-Trichloroethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,1,2,2-Tetrachloroethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,1,2-Trichloroethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,1-Dichloroethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,1-Dichloroethylene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,1-Dichloropropene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,2,3-Trichlorobenzene | mg/kg | < 0.63 | < 0.27 | < 0.63 | < 0.63 | < 0.24 | < 0.58 | < 0.24 | < 0.33 | < 0.33 | < 0.33 | < 0.29 | < 0.31 | < 0.30 | < 0.27 | < 0.27 | < 0.26 | < 0.67 | < 0.68 | < 0.68 |
| 1,2,3-Trichloropropane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,2,4-Trichlorobenzene | mg/kg | < 0.63 | < 0.27 | < 0.63 | < 0.63 | < 0.24 | < 0.58 | < 0.24 | < 0.33 | < 0.33 | < 0.33 | < 0.29 | < 0.31 | < 0.30 | < 0.27 | < 0.27 | < 0.26 | < 0.67 | < 0.68 | < 0.68 |
| 1,2,4-Trimethylbenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | < 0.63 | < 0.27 | < 0.63 | < 0.63 | < 0.24 | < 0.58 | < 0.24 | < 0.33 | < 0.33 | < 0.33 | < 0.29 | < 0.31 | < 0.30 | < 0.27 | < 0.27 | < 0.26 | < 0.67 | < 0.68 | < 0.68 |
| 1,2-Dibromoethane (EDB) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,2-Dichlorobenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,2-Dichloroethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,2-Dichloroethylene, cis | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,2-Dichloroethylene, trans | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,2-Dichloropropane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,3,5-Trimethylbenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,3-Dichlorobenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,3-Dichloropropane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,3-Dichloropropene, cis | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,3-Dichloropropene, trans | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 1,4-Dichlorobenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| 2,2-Dichloropropane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Acetone | mg/kg | < 1.3 | < 0.54 | < 1.3 | < 1.3 | < 0.47 | < 1.2 | < 0.48 | < 0.66 | < 0.67 | < 0.66 | < 0.58 | < 0.62 | < 0.60 | < 0.53 | < 0.54 | < 0.52 | < 1.3 | < 1.4 | < 1.4 |
| Allyl chloride | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Benzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Bromobenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Bromochloromethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Bromodichloromethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Bromoform | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Bromomethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Butylbenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Butylbenzene, sec | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Butylbenzene, tert | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Carbon tetrachloride | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Chlorobenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Chlorodibromomethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Chloroethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Chloroform | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Chloromethane | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Chlorotoluene, o | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Chlorotoluene, p | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |

**Table 6**
**Backfill Analytical Soil Data**
**Fargo MGP Site**
**Fargo, ND**

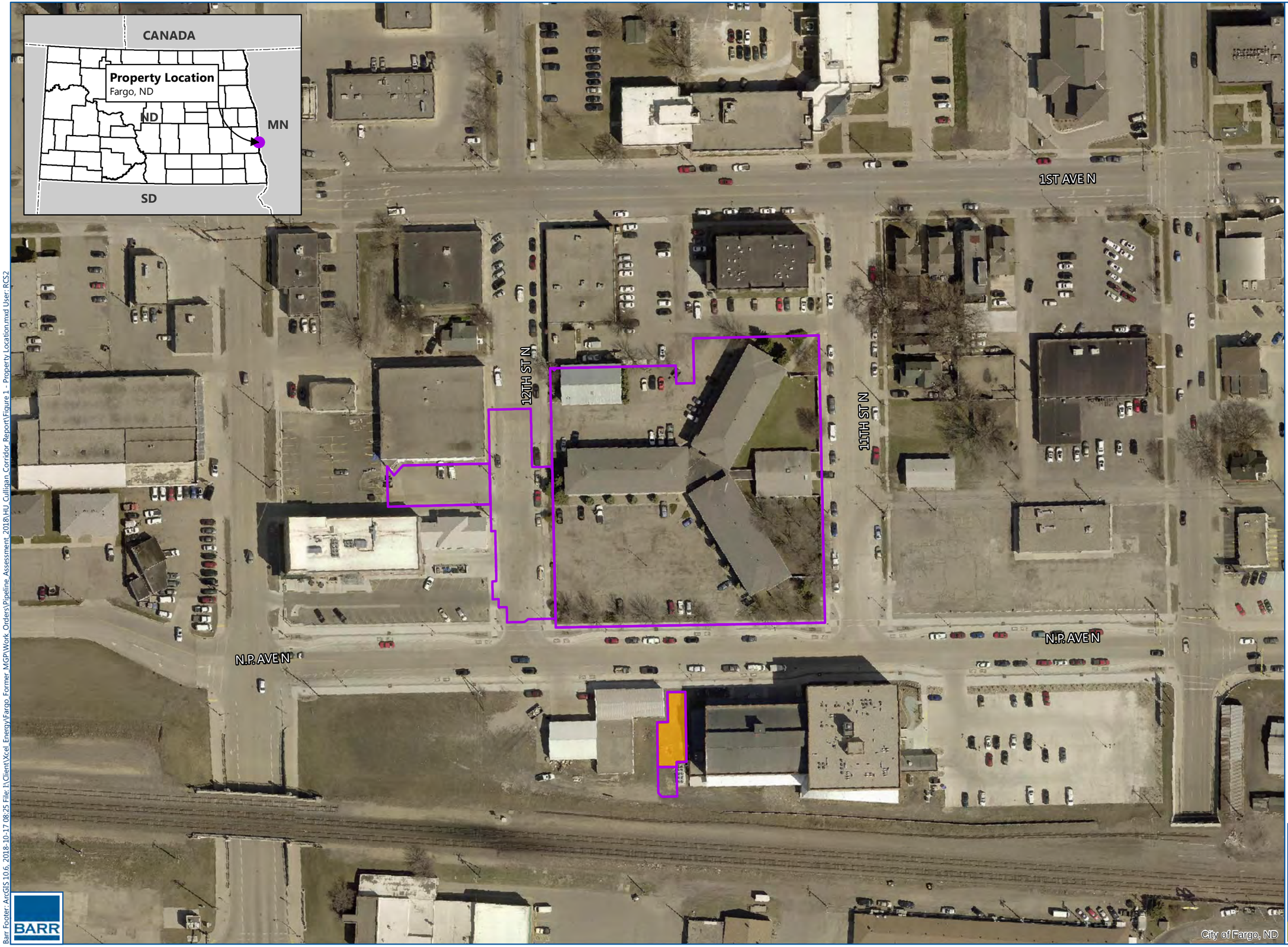
| Location | | Grab-1 | Grab-1 | Grab-2 | | Grab-2 | Grab-3 | Grab-3 | Grab-4 | Grab-5 | Grab-6 | Grab-7 | Grab-8 | Grab-9 | Grab-10 | Grab-11 | Grab-12 | Grab-13 | Grab-14 | Grab-15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | | 6/01/2018 | 6/11/2018 | 6/01/2018 | | 6/11/2018 | 6/01/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 | 6/11/2018 |
| Depth | | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft | 1 ft |
| Sample Type | | N | N | N | FD | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Parameter | Units | | | | | | | | | | | | | | | | | | | |
| Cumene (isopropyl benzene) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Cymene p- (toluene isopropyl p-) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Dibromomethane (methylene bromide) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Dichlorodifluoromethane (Freon-12) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Dichlorofluoromethane (Freon-21) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Ethyl benzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Ethyl ether | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Hexachlorobutadiene | mg/kg | < 0.63 | < 0.27 | < 0.63 | < 0.63 | < 0.24 | < 0.58 | < 0.24 | < 0.33 | < 0.33 | < 0.33 | < 0.29 | < 0.31 | < 0.30 | < 0.27 | < 0.27 | < 0.26 | < 0.67 | < 0.68 | < 0.68 |
| Methyl ethyl ketone (2-butanone) | mg/kg | < 1.3 | < 0.54 | < 1.3 | < 1.3 | < 0.47 | < 1.2 | < 0.48 | < 0.66 | < 0.67 | < 0.66 | < 0.58 | < 0.62 | < 0.60 | < 0.53 | < 0.54 | < 0.52 | < 1.3 | < 1.4 | < 1.4 |
| Methyl isobutyl ketone (MIBK) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Methyl tertiary butyl ether (MTBE) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Methylene chloride | mg/kg | < 0.63 | < 0.27 | < 0.63 | < 0.63 | < 0.24 | < 0.58 | < 0.24 | < 0.33 | < 0.33 | < 0.33 | < 0.29 | < 0.31 | < 0.30 | < 0.27 | < 0.27 | < 0.26 | < 0.67 | < 0.68 | < 0.68 |
| Naphthalene | mg/kg | < 0.63 | < 0.27 | < 0.63 | < 0.63 | < 0.24 | < 0.58 | < 0.24 | < 0.33 | < 0.33 | < 0.33 | < 0.29 | < 0.31 | < 0.30 | < 0.27 | < 0.27 | < 0.26 | < 0.67 | < 0.68 | < 0.68 |
| Propylbenzene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Styrene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Tetrachloroethylene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Tetrahydrofuran | mg/kg | < 1.3 | < 0.54 | < 1.3 | < 1.3 | < 0.47 | < 1.2 | < 0.48 | < 0.66 | < 0.67 | < 0.66 | < 0.58 | < 0.62 | < 0.60 | < 0.53 | < 0.54 | < 0.52 | < 1.3 | < 1.4 | < 1.4 |
| Toluene | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Trichloroethylene (TCE) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Trichlorofluoromethane (Freon-11) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Trichlorotrifluoroethane (Freon 113) | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Vinyl chloride | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Xylene, m & p | mg/kg | < 0.50 | < 0.22 | < 0.51 | < 0.51 | < 0.19 | < 0.47 | < 0.19 | < 0.26 | < 0.27 | < 0.26 | < 0.23 | < 0.25 | < 0.24 | < 0.21 | < 0.22 | < 0.21 | < 0.53 | < 0.55 | < 0.55 |
| Xylene, o | mg/kg | < 0.25 | < 0.11 | < 0.25 | < 0.25 | < 0.095 | < 0.23 | < 0.097 | < 0.13 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.10 | < 0.27 | < 0.27 | < 0.27 |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | | | |
| Diesel Range Organics, silica gel cleanup | mg/kg | < 8.8 | < 8.7 | < 8.4 | < 8.1 | < 8.3 | < 8.0 | < 8.4 | < 11 | < 11 | < 9.8 | < 9.4 | < 9.4 | < 9.6 | < 8.5 | < 8.6 | < 7.7 | < 9.5 | < 11 | < 11 |
| Gasoline Range Organics, C6-C10 | mg/kg | < 6.3 | < 5.4 | < 6.3 | < 6.3 | < 4.7 | < 5.8 | < 4.8 | < 6.6 | < 6.7 | < 6.6 | < 5.8 | < 6.2 | < 6.0 | < 5.3 | < 5.4 | < 5.2 | < 6.7 | < 6.8 | < 6.8 |

**Table 6**
**Backfill Analytical Soil Data**
**Fargo MGP Site**
**Fargo, ND**

**Barr Standard Footnotes and Qualifiers**

| | |
|---|---|
| N | Sample Type: Normal |
| FD | Sample Type: Field Duplicate |

# Figures




Historic Union/
Culligan Corridor

Fargo MGP Site
Boundaries

Note: Boundaries have been surveyed.

N

0 50 100

Feet

PROPERTY LOCATION
Historic Union
- Culligan Corridor
Fargo MGP Site
Fargo, MN

FIGURE 1

BARR

Barr Footer: ArcGIS 10.6, 2018-10-17 08:25 File: I:\Client\Xcel_Energy\Fargo_Former_MGP\Work_Orders\Pipeline_Assessment_2018\HU_Culligan_Corridor_Report\Figure 1 - Property Location.mxd User: RCS2

NORTHERN PACIFIC AVENUE

EXISTING 11" PIPE, TYPE UNKNOWN

HISTORIC UNION

EXISTING GAS LINE, UNKNOWN SIZE AND ELEVATION

EXISTING CONCRETE SLAB

NSP 3

6" PVC WATER LINE

4" PVC WATER LINE

ABANDONED 12" CAST IRON PIPE TOP EL. 891.5' ±

ABANDONED PIPES CAPPED AT PROPERTY LINE

MW-UB-01S

ABANDONED 8" CAST IRON PIPE TOP EL. 893.5' ±

EXISTING GAS LINE, UNKNOWN SIZE AND ELEVATION

PROPOSED CULLIGAN PROPERTY LINE

EXISTING SIDEWALK

6" SDR-26 PLUG INV. EL. 895.03'

EXISTING FIRE HYDRANT

APPROXIMATE LOCATION OF SANITARY SEWER SERVICE CLEANOUT. SERVICE LOCATION AND ELEVATION UNKNOWN

CULLIGAN WATER

PROPOSED BNSF PROPERTY

902 903 904 905 906 907

1 PLAN: EXISTING CONDITIONS

0 10 20

SCALE IN FEET

N

PREEXISTING CONDITIONS
Historic Union
- Culligan Corridor
Fargo MGP Site
Fargo, MN

FIGURE 2

BARR

Barr Footer: ArcGIS 10.6, 2018-10-17 09:11 File: I:\Client\Xcel Energy\Fargo Former MGP\Work Orders\Pipeline Assessment 2018\HU_Culligan Corridor Report\Figure 2 - Preexisting Conditions.mxd User: RCS2

Barr Footer: ArcGIS 10.6, 2018-11-20 13:02 File: I:\Client\Xcel_Energy\Fargo_Former_MGP\Work_Orders\Pipeline_Assessment_2018\BNSF\Figure 3 - Monitoring Well Locations.mxd User: RCS2


Monitoring Wells

BNSF Corridor

Fargo MGP Site Boundaries

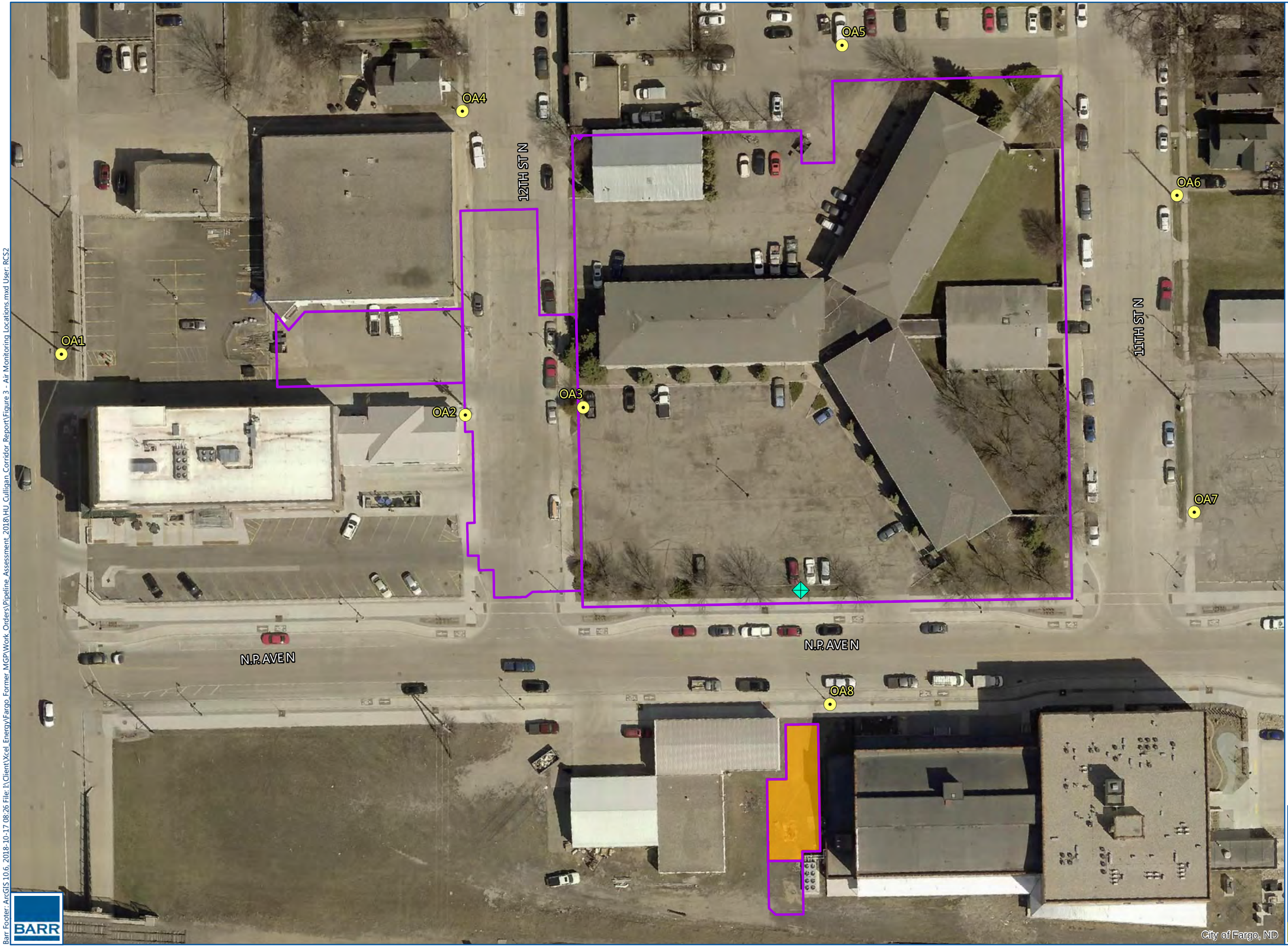
N

0 20 40

Feet

# MONITORING WELL LOCATIONS
BNSF Corridor
Fargo MGP Site
Fargo, MN

FIGURE 3




Weather Station

Perimeter Air Monitoring Location

Historic Union/ Culligan Corridor

Fargo MGP Site Boundaries

Note: Boundaries have been surveyed.

N

0 25 50

Feet

AIR MONITORING LOCATIONS
Historic Union - Culligan Corridor
Fargo MGP Site
Fargo, MN

FIGURE 4

Barr Footer: ArcGIS 10.6, 2018-10-17 08:26 File: I:\Client\Xcel_Energy\Fargo_Former_MGP\Work_Orders\Pipeline_Assessment_2018\HU_Culligan_Corridor_Report\Figure 3 - Air Monitoring Locations.mxd User: RCS2


Soil Sample Locations

MGP Pipe (Removed)*

Parcel Boundaries

Underground Storage Tank (UST)

Excavation Areas

Property Ownership In Question

* MGP pipes north of the displayed excavation extents were removed as part of previous N.P. Avenue reconstruction work.

Note: Boundaries have been surveyed.

N

0 15

Feet

SOURCE REMOVAL EXTENTS
Historic Union
- Culligan Corridor
Fargo MGP Site
Fargo, MN

FIGURE 5

BARR

Barr Footer: ArcGIS 10.6, 2018-10-17 08:27 File: I:\Client\Xcel_Energy\Fargo_Former_MGP\Work_Orders\Pipeline_Assessment_2018\HU_Culligan_Corridor_Report\Figure 4 - Source Removal Extents.mxd User: RCS2

# Attachments

## Omitted