ILLINOIS POLLUTION CONTROL BOARD

| Blake Leasing Company, LLC – Real Estate Series, as owner of Kirkland Quick Stop, |) |
|---|--|
| Petitioner, |) PCB No. 16-100) (Water Well Setback Exception) |
| v. | |
| Illinois Environmental Protection Agency and Village of Kirkland, | |
| Respondents. |) |

NOTICE OF FILING

To: See Attached Certificate of Service

PLEASE TAKE NOTICE that on May 19, 2017, pursuant to a prior Order of this Honorable Board, Blake Leasing Company, LLC - Real Estate Series as owner of Kirkland Quick Stop, submits an additional likely exhibit for the May 23, 2017 Hearing on the abovecaptioned matter, a copy of such additional exhibit is attached hereto and served upon you.

Dated: May 19, 2017

Respectfully submitted,

On behalf of Blake Leasing Company, LLC -Real Estate Series

/s/Charles F. Helsten

Charles F. Helsten One of Its Attorneys

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CERTIFICATE OF SERVICE

I, Charles F. Helsten, an attorney, certify that I have served the attached additional likely exhibit for the May 23, 2017 Hearing on the named parties below via email and by certified mail, return receipt requested, by 5:00 p.m. on May 19, 2017, by depositing the attached in the U.S. Mail at Rockford, Illinois, with proper postage or delivery charge prepaid.

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/s/Charles F. Helsten



TECHNICAL REPORT

Support for the Petition Requesting an Exception to Operate Three Underground Storage Tanks and Perform Remedial Measures Within the Water Well Setback Zone for Two Community Wells Owned by the Village of Kirkland

> Kirkland Quick Stop 411 Main Street Kirkland, Illinois 60146

> > January 5, 2016

Prepared By:

St. John – Mittelhauser & Associates, Inc. 1401 Branding Avenue, Suite 315 Downers Grove, IL 60515





1.0 INTRODUCTION

Blake Leasing, LLC – Real Estate Series (Blake) is requesting an exception to the minimum setback zone for two community wells that the Village of Kirkland (Kirkland) operates. One of these wells is an emergency backup well located on and owned by the Canadian Pacific Railroad immediately north of the Kirkland Quick Stop (KQS) site and is leased by Kirkland for emergency backup purposes. This well is generally known as Well #1 or Well 11424 (five-digit IEPA identifier). A second Kirkland Community well, Well #2 or Well 11425, is located approximately 400 feet north of the KQS site and is one of two wells that primarily and routinely supplies potable water to the citizenry of Kirkland. A third well is located outside of town over a mile to the west and will be referred to as Well #3 in this document.

Currently, Blake is out of compliance with respect to the minimum setback zone of the two community wells because a) it has Underground Storage Tanks (USTs) containing petroleum products installed within the setback zone of Well #1, the backup well; and b) prior releases in the vicinity of the current USTs have resulted in constituent concentrations in shallow groundwater at locations on the KQS site exceeding the Tier 1, Class I Groundwater Remediation Objectives (GROs). To address these compliance issues, Blake submitted a Petition for Water Well Setback Exception on March 21, 2016. On June 15, 2016, IEPA responded to this Petition (Response) and likewise, on August 11, 2016 the IPCB issued its Opinion and Order (PCB-16-100) (Opinion). Collectively, the Response and the Order requested that at a minimum, Blake make the following demonstrations to support its Petition and address four elements contained at Section 35 III. Adm. Code 106.3101:

- 1. The Petition Does Not Describe Why Blake Faces an Arbitrary and Unreasonable Hardship.
- 2. Blake Does Not Describe Why Enhanced Bioremediation is the Best Available Control Technology for the Kirkland Site The petition must contain a general description of the potential impacts of the potential route on groundwater and the potable well, and an explanation of the applicable technology that will be used to minimize risk. The IEPA indicated that petroleum constituents exceeding the GROs within the minimum setback zone of the well(s) should be removed or reduced to within regulatory limits and that the petitioner

¹ Elements 1-4 herein are each specifically and further addressed in the Petitioner's Amended Petition for Water Well Setback Exception Pursuant to 415 ILCS 5/14.2(c).



provide the IPCB a cost and technical feasibility evaluation of the selected remedial measure. Additionally, it will be demonstrated later in this memo that petroleum constituents exceeding the GROs only occur within the minimum setback zone of Well #1 and not Well #2.

- 3. Blake is Unclear About the Maximum Feasible Alternative Setback The petitioner must address the IPCB order for a setback exception for the installation of currently operating USTs within the minimum setback of Well #1 (11424), and depending on the location of the USTs, the minimum setback zone of Well #2 (11425). However, it will be demonstrated later in this memo that the USTs only reside within the minimum setback zone of Well #1 and not Well #2.
- Blake Does Not Adequately Describe Why No Significant Hazard to the Water Supply Will
 Result The petitioner must demonstrate to the IPCB that the potential route is not a
 significant hazard to the potable wells.

Additionally, the IEPA encouraged the petitioner to resolve apparent discrepancies by providing current groundwater monitoring data.

This report has been developed to address the IPCB and IEPA concerns expressed above, and to provide the additional details supportive of these demonstrations. Some supporting site specific and background data development is presented first in order to provide sufficient understanding of site conditions.

2.0 HYDROGEOLOGY

2.1 Regional Hydrogeology

The KQS site is located along State Route 72 in Kirkland, Illinois in northwest DeKalb County (Figure 1). Detailed analysis of the groundwater geology of the Kirkland area is available from several Illinois State Geological Survey (ISGS) publications (R.C. Vaiden, et. al., 2004; David, G.L., 1970; Horberg, L., 1950; IEPA Bureau of Water, 2006) which indicate that the thickness of glacial sediments overlying bedrock in the vicinity of Kirkland is highly variable and ranges from 300 feet west of town in the Troy Bedrock Valley to less than 20 feet north of the Kishwaukee River immediately north of the site. Several detailed well logs are available for wells penetrating the glacial and bedrock units in the vicinity of Kirkland, including the Kirkland community wells. Several boring logs for these wells are provided as Attachment A. These well logs have been used to form the basis for developing two semi-regional geological cross-sections in the vicinity



of Kirkland. A third geological cross-section that depicts the geology in close proximity to the KQS site and includes the Community Wells #1 and #2 has also been developed. The locations of these three cross-sections can be reviewed on Figure 1. These cross-sections are identified as follows:

Cross-section A-A' (Figure 2) - This is an east to west cross-section from approximately ½ mile east of Kirkland to approximately one-mile west of Kirkland and passing through Community Well #2 (11425). This cross-section illustrates the relatively consistent elevation of the bedrock surface and the general nature of the glacial sediments above bedrock in the areas south of the Kishwaukee River. The exception to the relatively uniform nature of the bedrock surface occurs on the far west side of the cross-section where the buried Troy Bedrock Valley occurs.

Community Well #3 (01613) is located there and the log from that well provides the geologic data for cross-section A-A' in that area.

Cross-section B-B' (Figure 3) - This is a north to south geological cross-section from approximately 1/3-mile north of the Kishwaukee River to one-mile south of Kirkland and again, passes through Community Well #2 (11425). This cross-section illustrates the thinning of the glacial sediments northward across the area and illustrates the occurrence of the Kishwaukee River alluvium that occurs from the river through areas south of the KQS site. The sand occurrence associated with the Kishwaukee River alluvium will be discussed in greater detail in the next section discussing the site hydrogeology.

Cross-section C-C' (Figure 4) - This is a north-to-south cross-section from the Community Well #2 (11425) south through the Kirkland backup Well #1 (11424) to the northern portion of the KQS site and was developed to provide a more detailed illustration of the geological unit occurrences in the vicinity of the KQS site. Recent work performed by St. John – Mittelhauser & Associates, Inc. (SMA) allows accurate representation of the surficial sediments and the depth and occurrence of the glacial till unit across the site to the area of Community Well #2 (11425). During the week of August 8, 2016, SMA personnel completed soil boring SB-38 adjacent to existing monitoring well MW-20 immediately south of the water tower and installed monitoring well MW-31 immediately outside of the well house for Community Well #2. During the installation of this boring and this well, soils were continuously sampled and logged by a



geologist to determine the nature and thickness of the sand and the occurrence of the upper surface of the glacial till in the vicinity of the site. The boring logs for SB-38 and MW-31 are provided in Attachment B.

The general sequence of geologic units that occur below the upper surface of the glacial till unit in the vicinity of the site are illustrated based on the detailed geologic log developed by Illinois State Geological Survey personnel for Kirkland Community Well #2 (11425) and is provided in Attachment A. This log indicates that the glacial till in the vicinity of the KQS site is approximately 30 feet in thickness and that Community Well #2 (11425) was constructed by first Installing a 12-½ inch, steel surface casing from surface grade to 69 feet in depth, through all the glacial sediments and approximately nine feet into the upper surface of the Galena Dolomite. The well was then further advanced to 152 feet in depth into the Decorah Dolomite where an 8-inch, steel surface casing was installed inside the 12-½ inch surface casing. Below the 8-inch surface casing, the well is drilled and completed as an open hole to a total depth of 630 feet into the St. Peter Sandstone. The water produced from this well is collected from the lower Decorah Dolomite, the Platteville Dolomite and the St. Peter Sandstone (the Glenwood Shale is primarily an aquitard and is of low and/or inconsequential yield) between 152 and 630 feet in depth.

The nature of the installation of the Community backup Well #1 (11424) is also provided on cross-section C-C'. However, Well #1 (11424) was drilled in 1896 and does not have a detailed geologic log available. All that is known about this well is that it has a 7-inch, steel casing installed to a depth of 88 feet into the bedrock and is an open borehole below to a total depth of 737 feet. From this information it is illustrated on cross-section C-C' based on the detailed geologic data from the log of Community Well #2 (11425) that the water produced from this well is collected from the lower Galena Dolomite, the Decorah Dolomite, the Platteville Dolomite and the St. Peter Sandstone (the Glenwood Shale is primarily an aquitard and is of low and/or inconsequential yield) between 88 and 737 feet in depth.

2.2 <u>Site Hydrogeology</u>

Geological cross-section C-C' illustrates the occurrence and thickness of the glacial and bedrock units in close proximity to the KQS site. As mentioned in the previous section, additional site specific testing was performed by SMA (soil boring SB-38 and monitoring well MW-31) to verify



the continuity and depth of occurrence of the glacial till that occurs below the Kishwaukee alluvial surficial sand unit in the vicinity of the KQS site. Additionally, SMA personnel surveyed the surface grade and top of casing of all the monitoring wells installed for Blake from a United States Geological Survey bench mark that was located immediately north of the site between Community Wells #1 (11424) and #2 (11425). This new survey data allows determinations across the site to be reported in vertical elevation compared to mean sea level (MSL) North American Vertical Datum 88.

Upon completing the new survey of the monitoring wells described above, SMA personnel measured the static water level occurrence in each monitoring well at the KQS site prior to sampling the well and computed the elevation of those static water levels compared to MSL. The static water level elevations determined for the site on August 9, 2016 and November 14, 2016 are provided as Table 1. The cross-sections, boring logs and water level measurements for the KQS site indicate that groundwater saturates the coarse-grained sand and gravel lithologies that occur to a depth of approximately 30 feet in the vicinity of the site above the glacial till unit to form a water table aquifer. This shallow groundwater occurrence within the Kishwaukee alluvial, coarse-grained, surficial sediments can be reviewed in cross-section on Figure 4.

The static water level measurements in Table 1 were plotted in plan-view to create potentiometric surface maps for the water table aquifer in the vicinity of the site. The potentiometric surface map for August 9, 2016 is provided as Figure 5 and the potentiometric surface map for November 14, 2016 is provided as Figure 6. Figure 5 indicates that groundwater flow on August 9, 2016 was to the north-northwest and Figure 6 indicates that groundwater flow on November 14, 2016 was more to the northwest. These directions of groundwater flow are generally consistent with previous determinations of groundwater flow made for the site. The hydraulic gradient determined from both Figures 5 and 6 are 0.012 with a steepening of the gradient immediately north of the site in the vicinity of MW-20. A review of cross-section C-C' on Figure 4 indicates that occurrence of some fine-grained lithologies in the vicinity of MW-20 that are likely to cause the observed hydraulic gradient increase in this area and preserve the conservation of mass flow rate through the water table aquifer. A review of the surficial topography from the site to the Kishwaukee River indicates the topographic gradient from the site to the pool elevation within the river is 0.012, the same as the hydraulic gradient determined for



the site. Collectively, this data indicates that groundwater within the coarse-grained alluvial sediments associated with the Kishwaukee River form a water table aquifer saturating these sediments to a depth of approximately 30 feet where an underlying glacial till unit occurs, and the groundwater within this water table aquifer flows to the north-northwest to discharge to the Kishwaukee River under baseflow conditions.

The nature of the silty clay, glacial till that occurs below the alluvial water table aquifer in the vicinity of the site was examined at two locations immediately north of the site at soil boring SB-38 and monitoring well MW-31 (see Figure 1 and 4 for the locations in plan-view and cross-section). At both of these locations, the soil samples collected from the upper portion of the glacial till examined from these borings were determined to consist of a dense, dry, silty clay that should act to impede the vertical migration of groundwater from the shallow, alluvial, water table aquifer to the groundwater occurring within the bedrock units below. The ability of this silty clay till to act as an aquitard to prohibit vertical migration of groundwater was the subject of additional field testing by SMA is discussed later in this report.

3.0 SITE GROUNDWATER SAMPLING

SMA personnel sampled the groundwater monitoring wells at the KQS site on two occasions, August 2nd and 3rd, and November 14th and 15th, 2016. Due to turbidity issues in monitoring wells MW-30S and MW-30D during the November sampling event, those two wells were re-sampled on December 23, 2016. Previous sampling at the site had been performed by purging three to five well volumes from each well with a bailer. A review of the historical groundwater sampling data for the site indicated this likely resulted in elevated turbidity in the groundwater samples, false positives for some constituents and/or the reporting of more elevated concentrations for some constituents. As a result, SMA employed low-flow groundwater sampling techniques during the groundwater sampling at the site in early August. The low-flow sampling was facilitated through use of bladder pumps to achieve a minimal sustained drawdown with a maximum flow not to exceed 500 milliliters per minute. Well head flow through cells with general chemistry sensors for pH, temperature, specific conductance, dissolved oxygen, turbidity and oxidation/reduction potential were used to determine when parameter stabilization occurred.



The samples obtained from the monitoring wells were submitted for laboratory analysis of benzene, ethylbenzene, toluene and xylene; polynuclear aromatic compounds (PNAs); total lead and iron; and dissolved lead and iron.

The results of the SMA groundwater sampling in August and November (including the re-sampling of MW-30S and MW-30D in December) can be reviewed in Table 2. The August data is summarized on Figure 7. The November groundwater sampling data is summarized on Figure 8 and includes re-sampling data for monitoring wells MW-30S and MW-30D from December 23, 2016.

Upon obtaining the November groundwater sampling results for wells MW-30S and MW-30D, it was observed that the data was not consistent with observations related to the conceptual site model where COCs only occur in groundwater at locations where the DO in groundwater is depleted (described more fully below). The DO concentrations for wells MW-30S and MW-30D were determined to be 0.78 and 2.44 mg/L, respectively, during the November groundwater sampling event. Additionally during the November groundwater sampling event, SMA field staff reported difficulty in getting stabilized turbidity readings at these wells. As a result, it was concluded that the very low concentrations of PNAs observed to occur in the wells during the November sampling event could be the result of turbidity in the samples and wells MW-30S and MW-30D were resampled in December.

Upon re-sampling wells MW-30S and MW-30D on December 23, 2016 the wells were determined to yield more stable turbidity readings and the DO concentrations were determined to be 3.44 mg/L and 1.54 mg/L, respectively. The laboratory results for this resampling of the wells indicated that all PNA and BETX compounds were non-detect in both wells. Dissolved iron concentrations were also determined to be below the detection limit. The laboratory analyses for these samples can be reviewed in Table 2.

The December re-sampling data for monitoring wells MW-30S and MW-30D indicates that turbidity is likely to have caused the low level detections of PNA compounds slightly above the Class I GROs during the November sampling event and it is likely that these PNA constituents were sorbed to solids entering the well during sampling. Had these PNAs migrated to wells



MW-30S and MW-30D as soluble constituents, it would have been likely for benzene to migrate and occur in these wells like other wells at the site. This did not occur. As a result, field staff will be very careful to be watchful of turbidity during future sampling events at these wells.

The groundwater results from August and November/December sampling events can be compared to previous groundwater sampling events through a review of all of the groundwater sampling data developed for the site to date, provided in Table 3. The dissolved oxygen and total/dissolved iron concentrations determined in the wells during the August sampling event can be reviewed on Figures 9 and 10, respectively. The dissolved oxygen and total/dissolved iron concentrations determined in wells during the November sampling event can be reviewed on Figures 11 and 12, respectively. A review of the data contained in Table 2 and Figures 8, 9, 10, 11 and 12 results in the following observations related to constituent occurrence in groundwater at the KQS site:

- None of the wells sampled in August or November had detectable concentrations of dissolved or total lead, indicating that lead detections previously reported at the site were the result of elevated turbidity levels in groundwater samples due to the sampling methods previously employed (purging volumes and sampling with bailers).
- Five wells on site exhibited organic constituents in excess of the GROs. Monitoring wells MW-1 (August and November), MW-3A (August and November) and MW-15 (August only) exhibited benzene concentrations in excess of the GRO. Monitoring wells MW-1 (November only), MW-6 (August and November) and MW-14 (August and November) exhibited PNA concentrations in excess of the GROs.
- A review and comparison of Figures 9 to 10 and Figures 11 to 12 indicate, as would be expected, that elevated concentrations of dissolved iron in groundwater show a direct inverse relationship to dissolved oxygen concentrations in groundwater. That is, where dissolved oxygen concentrations are low (<0.5 mg/L) dissolved iron concentrations are elevated (>1.0 mg/L). From reviewing Table 2, the discrepancy between the dissolved and total iron concentration in some wells can be resolved through reviewing the dissolved oxygen data to determine that several of the total iron concentrations reported were significantly influenced by the turbidity in wells that exceeded 50 NTU.
- From a review and comparison of the groundwater sampling results for August and November (Figures 7 and 8) to the DO concentrations determined for those sampling events (Figures 9 and 11), indicates the occurrence of the organic constituents (benzene and PNAs) exceeding the GRO in groundwater at the site are directly related to areas in groundwater at the site where dissolved oxygen has been depleted (<0.5 mg/L). This observation indicates that significant, natural attenuation of these compounds is taking place at the site under aerobic biodegradation conditions.</p>



- The groundwater sampling data from line of monitoring wells along the northern border of the site, wells MW-18, MW-19, MW-30S and MW-30D indicate that no petroleum constituents are migrating across the KQS property line to the north of the site in excess of the GROs.
- The occurrence of low concentrations of benzene and PNAs at the site are not significantly above the GROs. This fact, in conjunction with the apparent ability of the onsite groundwater system to supply sufficient dissolved oxygen to attenuate these constituents prior to them migrating off-site, suggests a weak residual contamination source associated with a capillary fringe smear zone.

4.0 UST LOCATIONS WITH RESPECT TO COMMUNITY WELL MINIMUM SETBACKS

Figure 13 illustrates the location of the USTs on the KQS site with respect to the 400-foot, minimum setbacks for Community Wells #1 (11424) and #2 (11425). It can be observed from a review of Figure 13 that the Blake USTs are within the minimum setback of backup Well #1 (11424) and are outside the minimum setback of Well #2 (11425). It can also be observed through a review and comparison of Figures 7 and 8 to Figure 13 that no petroleum constituents from the KQS site occur within the minimum setback of Well #2 (11425).

5.0 SITE SPECIFIC HYDROGEOLOGIC TESTING TO EVALUATE ROUTES OF EXPOSURE TO THE KIRKLAND COMMUNITY WELLS

During the week of August 8, 2016, SMA did further testing at the site to evaluate the hydraulic connection between the shallow groundwater occurrence in the Kishwaukee River alluvium (shallow aquifer) and the deeper bedrock aquifers where Community Wells #1 (11424) and #2 (11425) are completed. To do this, SMA contacted Village of Kirkland officials to obtain permission to perform additional drilling and testing on the Village property located immediately north of the KQS site. As described in Section 2 of this report, one soil boring (SB-38) was completed at approximately the mid-point between the north property boundary of the KQS site and Community Well #2 (11425) at the location of monitoring well MW-20, and a monitoring well (MW-31) was installed directly adjacent to, and north of, Community Well #2 (11425). Monitoring well MW-31 and existing monitoring well MW-30D [located directly adjacent to Community Wells #2 (11425) and #1 (11424), respectively] were then used to collect static water level measurements in the alluvial aquifer while the Community wells were pumping to determine if a hydraulic connection between the alluvial aquifer and the lower bedrock aquifers exists.



The first test was performed during the week of August 8, 2016 on Community Well #2 (11425) with monitoring well MW-31 as the shallow groundwater water level observation well. Monitoring well MW-31 is located approximately 13 feet from Community Well #2 (11425). Per the discussion with Village officials, Community Well #3 (located over a mile west of town) was utilized for the Village water needs during the prior week to allow the water level in Well #2 (11425) to rebound from prior pumping and reach static equilibrium. A 15 psi pressure transducer was installed in monitoring well MW-31 on the morning of August 9th to begin taking water level measurements in the well prior to performing the pump test and determine any antecedent trends in the water level data at the well. Community Well #2 (11425) was brought back on line on the morning of August 11th. Pumping at Community Well #2 (11425) was performed intermittently during the test period because it only operates on demand, based on the water level in the water tower. Prior to Well #2 (11425) being brought back on line on the morning of August 11th, the static water level was measured in the well by airline method. Subsequent water level measurements by airline method while Well #2 was operating, indicate that drawdown in the well was over nine feet in Well #2 (11425) during pumping. A plot of the water level data recorded in monitoring well MW-31 during the intermittent pumping of Well #2 (11425) is provided as Figure 14. Also supplied on Figure 14 is the relevant pumping data from Well #2 (11425) during the test period. A review of Figure 14 provides the following observations related to the pump test at Community Well #2 (11425):

- A review of the antecedent trend period data in MW-31 prior to pumping at Community Well #2 (11425) shows a diurnal fluctuation in the water levels of approximately 0.05 feet, which is likely to be caused by evapotranspiration. These diurnal effects were observed to continue throughout the performance of the pump test.
- During the pump test, Community Well #2 (11425) attained a flow rate between 275 gallons per minute (gpm) and 336 gpm when in operation over the four day period of the test.
- The water level measurements from MW-31 during the pumping intervals of Community Well #2 (11425) indicate no observable change related to the pumping. This data indicates that the 30 feet of glacial till that separates the bedrock aquifers from the alluvial aquifer at the site is an effective aquitard, which significantly impedes the vertical migration of groundwater between the units and protects the bedrock aquifers in the vicinity of the site from routes of contaminant migration occurring within the alluvial aquifer.

After the pump test in Community Well #2 was completed a similar short-term test of the backup Well #1 (11424) was attempted. This test was planned as a short term test because the water



generated from the backup well is not routed to the water tower unless there is a need for it and as a result, the water had to be discharged to the local storm sewer system. Similar to the previous pump test, the pressure transducer was set in monitoring well MW-30D (located approximately 19 feet from backup Well #1 (11424) on August 15th to measure the water levels there for approximately one day prior to the pump test on August 16th. Figure 15 provides the water level data from monitoring MW-30D for the antecedent trend period and for the 17 minute test period during which the backup Well #1 (11424) was pumped at a rate of 370 gpm. A review of Figure 15 provides the following observations related to the pump test at Community Well #1 (11424):

- Unlike the pump test at Well #2 (11425), the antecedent trend period did not indicate the occurrence of any diurnal effects. This could be because the antecedent trend period was only approximately 22 hours, or it could be because monitoring well MW-30D is well away from any vegetation and trees on the north side of the KQS site, near the railroad tracks, and not subject to local evapotranspiration effects.
- The antecedent trend period exhibits at least three water level responses in monitoring well MW-30D that resulted in the water level going up between 0.03 and 0.12 feet and then rapidly declining to a level below the static level before returning to equilibrium. It is unclear what caused these observed responses. Train traffic on the adjacent railroad tracks does not appear to have been the cause, but the movement of heavy trucks in close proximity to MW-30D could have been.
- Upon initiation of pumping in backup Well #1 (11424), the water level in monitoring well MW-30D increased 0.05 feet and then declined through the 17 minute duration of the pumping to approximately a 0.05 foot decrease by the end of the pumping period. This water level response in MW-30D does not appear to have been a hydraulic response to pumping (it would be very difficult to explain the 0.05 feet water level increase at the beginning of the test otherwise) and appears to have been some form of mechanical response to the test (e.g., vibrational occurrence due to the well pumping and resulting sinusoidal water level response).

6.0 SELECTED REMEDIAL MEASURE COST AND TECHNICAL FEASIBILITY

The low concentrations of benzene and PNAs in groundwater at the site can be effectively remediated by air sparging small areas of the site groundwater where they occur. Air sparging simply involves gently injecting small amounts of naturally occurring compressed air into the groundwater system on an intermittent basis to increase the DO concentrations and enhance



natural biodegradation of the organic contaminants. A more complete description of the costs and technical feasibility of performing air sparging at the site is provided in Attachment C to this report.

7.0 CONCLUSIONS

Recent investigations, data collection and analysis for the KQS site has resulted in the following itemization of conclusions related to the site.

- The KQS site is underlain by a shallow, alluvial sand and gravel deposit associated with the South Branch of the Kishwaukee River. Groundwater occurs at a depth of approximately eight feet (seasonally) to form an unconfined, water table condition and groundwater saturates the alluvial sand and gravel to a depth of approximately 30 feet.
- A silty clay glacial till occurs from approximately 30 feet to 60 feet in depth in the vicinity of the KQS site. Upon visual inspection, this glacial till deposit exhibits characteristics and is consistent with a low permeability aquitard unit that could be expected to significantly impede the vertical migration of groundwater.
- Groundwater flow direction in the shallow sand and gravel alluvial aquifer was measured to be from north-northwest to northwest during the August and November sampling events.
- 4. Community Well #1 is an emergency backup well located on and owned by the Canadian Pacific Railroad immediately north of the KQS site and is leased by Kirkland for emergency backup purposes. A second Kirkland Community well, Well #2 is located approximately 400 feet north of the KQS site and is one of two wells that primarily and routinely supplies potable water to the citizenry of Kirkland. Kirkland Well #3 is located outside of town over a mile to the west and is the other primary well relied upon by the community for its water supply.
- 5. Well #2 has two steel surface casings that protect it from surficial communication with shallow groundwater. The deeper, 8-inch inner surface casing extends to 152 feet in depth into the Decorah Dolomite. Below the 8-inch surface casing, the well is drilled and completed as an open hole to a total depth of 630 feet into the St. Peter Sandstone. The water produced from this well is collected from the lower Decorah Dolomite, the Platteville Dolomite and the St. Peter Sandstone between 152 and 630 feet in depth.
- 6. Well #1 was drilled in 1896 and has a 7-inch, steel casing installed to a depth of 88 feet into the bedrock and is an open borehole below to a total depth of 737 feet. Based on the detailed geologic data from the log of Community Well #2 (less than 400 feet away), the water produced from this well is collected from the lower Galena Dolomite, the Decorah Dolomite, the Platteville Dolomite and the St. Peter Sandstone between 88 and 737 feet in depth.



- 7. The KQS groundwater monitoring well network was sampled in August and again in November 2016. Five wells on site exhibited organic constituents in excess of the GROs. Monitoring wells MW-1 (August and November), MW-3A (August and November) and MW-15 (August only) exhibited benzene concentrations in excess of the GRO. Monitoring wells MW-1 (November only), MW-(August and November) and MW-14 (August and November) exhibited PNA concentrations in excess of the GROs.
- None of the wells sampled in August or November had detectable concentrations of dissolved or total lead, indicating that lead detections previously reported at the site were the result of elevated turbidity levels in groundwater samples due to the sampling methods previously employed (purging volumes and sampling with bailers).
- 9. Measurements of dissolved iron in groundwater show a direct inverse relationship to dissolved oxygen concentrations in groundwater. That is, where dissolved oxygen concentrations are low (<0.5 mg/L) dissolved iron concentrations are elevated (>1.0 mg/L). Additionally, the dissolved oxygen concentrations determined for the August and November sampling events indicates the occurrence of the organic constituents (benzene and PNAs) exceeding the GRO in groundwater at the site are directly related to areas in groundwater at the site where dissolved oxygen has been depleted (<0.5 mg/L). This observation indicates that significant, attenuation of these compounds is taking place at the site under naturally occurring, aerobic biodegradation conditions.</p>
- 10. The groundwater sampling data from the line of monitoring wells along the northern border of the site, wells MW-18, MW-19, MW-30S and MW-30D indicate that no petroleum constituents are migrating across the KQS property line to the north of the site in excess of the GROs.
- 11. The USTs located on the KQS site are within the minimum setback of backup Well #1 and are outside the minimum setback of Well #2. It has also been demonstrated that no petroleum constituents from the KQS site occur within the minimum setback of Well #2.
- 12. To determine the competency of the 30-foot, sitly clay aquitard that separates the upper alluvial aquifer from the bedrock aquifers in the vicinity of the site, SMA performed a pump test on Community Supply Well #2. Community Supply Well #2 was intermittently pumped at between 275 and 336 gpm over a four day period while the static water level in new monitoring well MW-31 located 18 feet away from Well #2 and completed in the alluvial sand and gravel was monitored continuously to determine if there was any observed water level response. The lack of any observed response in MW-31 indicates that the 30 feet of glacial till that separates the bedrock aquifers from the alluvial aquifer at the site is an effective aquitard, which significantly impedes the vertical migration of groundwater between the units and protects the bedrock aquifers in the vicinity of the site from routes of contaminant migration occurring within the alluvial aquifer.
- 13. The low concentrations of benzene and PNAs in groundwater at the site can be effectively remediated by air sparging small areas of the site groundwater where they occur. Air sparging simply involves gently injecting small amounts of naturally occurring compressed air into the groundwater system on an intermittent basis to increase the dissolved oxygen concentrations and enhance natural biodegradation of the organic contaminants.



14. Based upon the testing and findings presented here, the use of an air sparging system is the Best Available Technology to effectuate the remediation of the KQS site. By using only the oxygen from naturally occurring air, air sparging does not constitute a significant hazard to the potable supply wells currently on Site. While Blake will utilize the maximum feasible setback zone while implementing the air sparging system, the current setback zone poses an arbitrary and unreasonable hardship to the remediation implementation, and therefore a setback exception is required.

8.0 CERTIFICATION STATEMENT

I certify and attest to directing and overseeing all aspects of the work described in this report and believe that the data and conduct of the work described herein comply with good and standard practices related to the conduct of geologic and hydrogeologic investigations, reporting and analysis.

OFESSION A

Ronald B. St. John, PAG, CPG Illinois Professional Geologist

St. John - Mittelhauser & Associates, Inc.

RONALD B.

Certified Professional Hydrogeologist American Institute of Hydrogeology



9.0 REFERENCES

Gross, L. David. April 1970. Geology for Planning in DeKalb County, Illinois. Illinois State Geological Survey, Number 33.

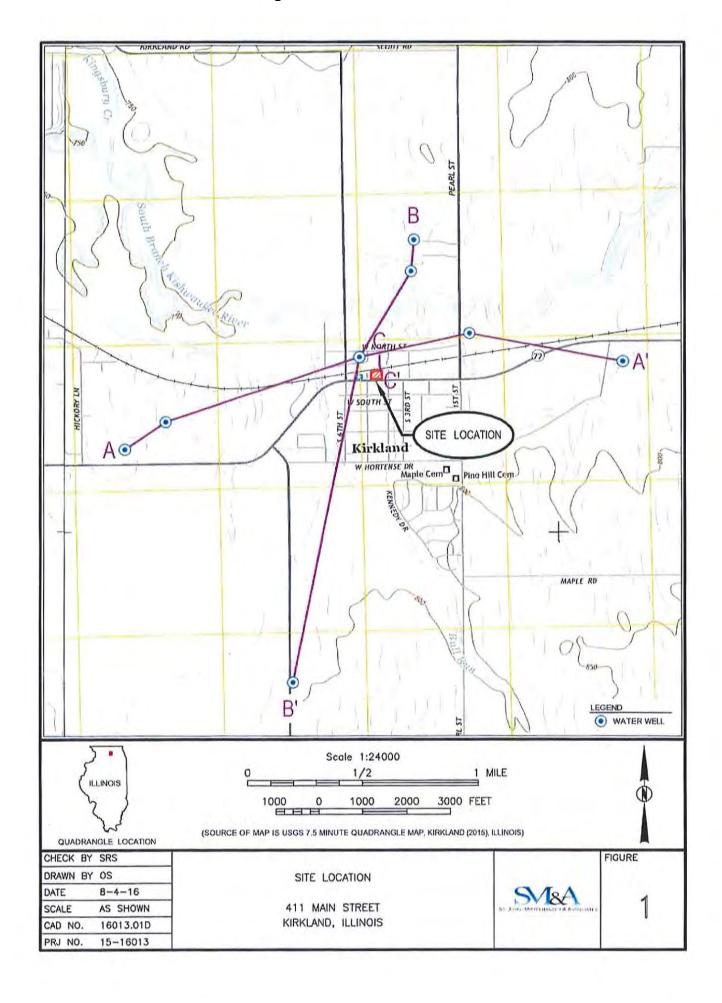
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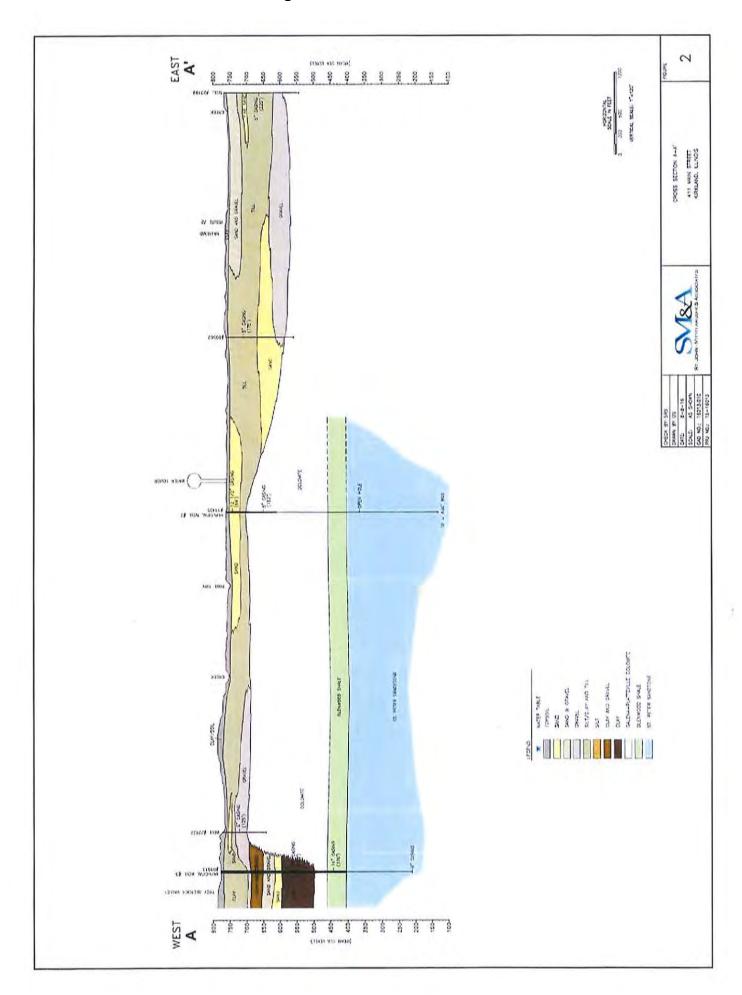
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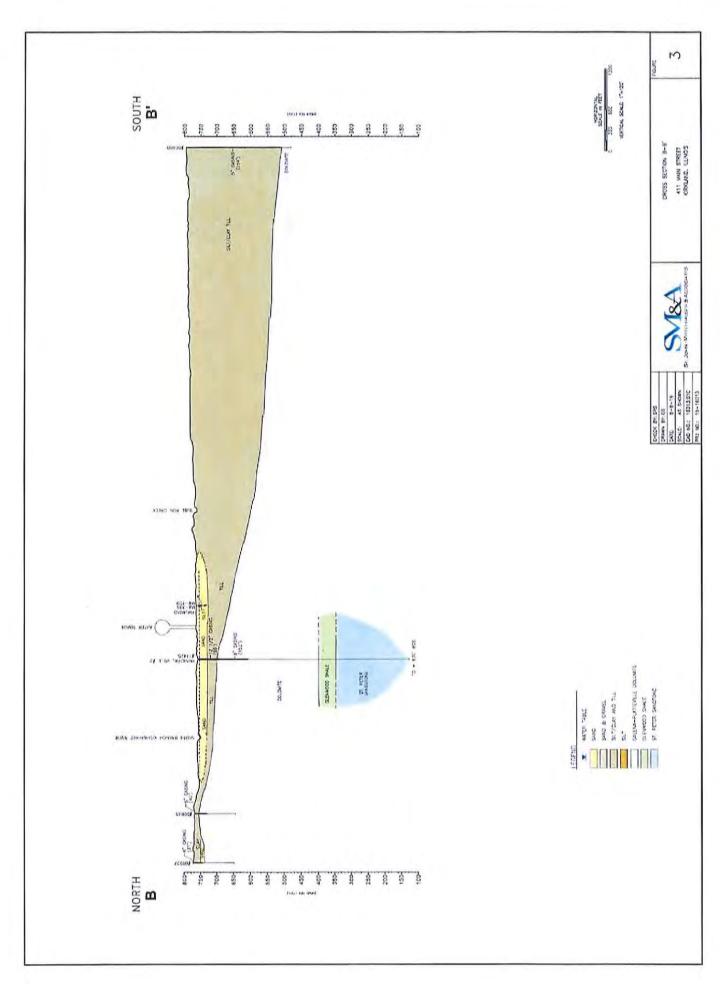
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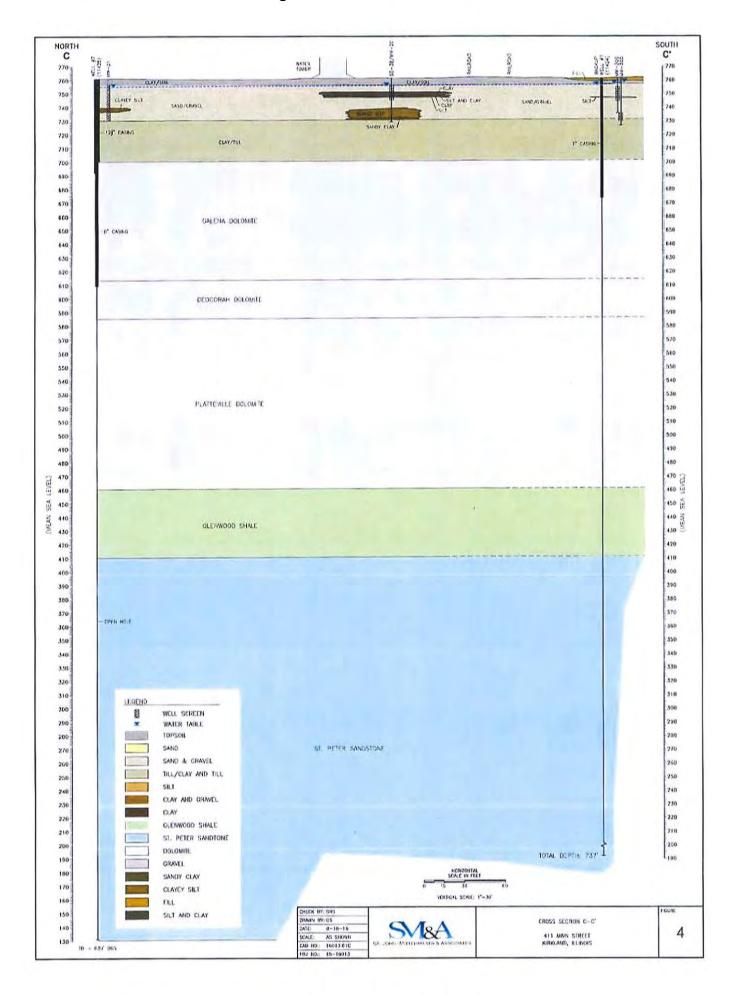


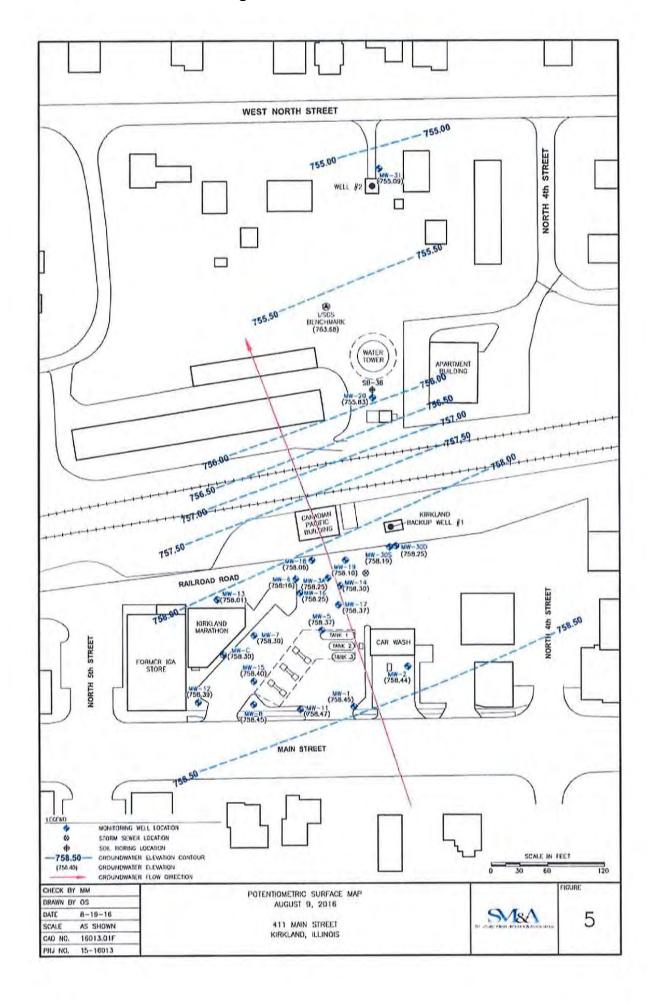
FIGURES

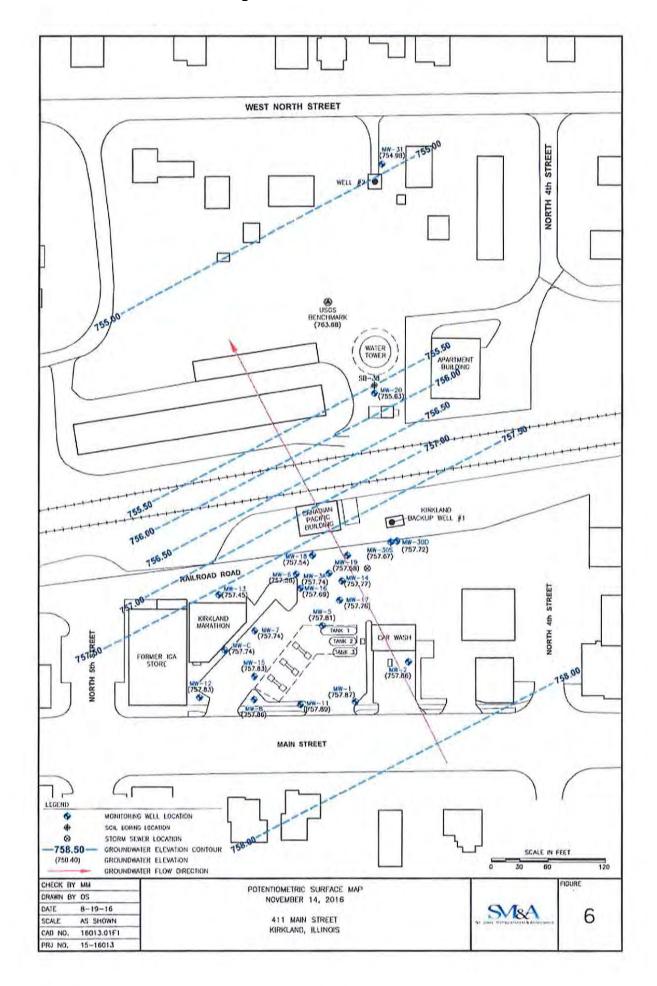


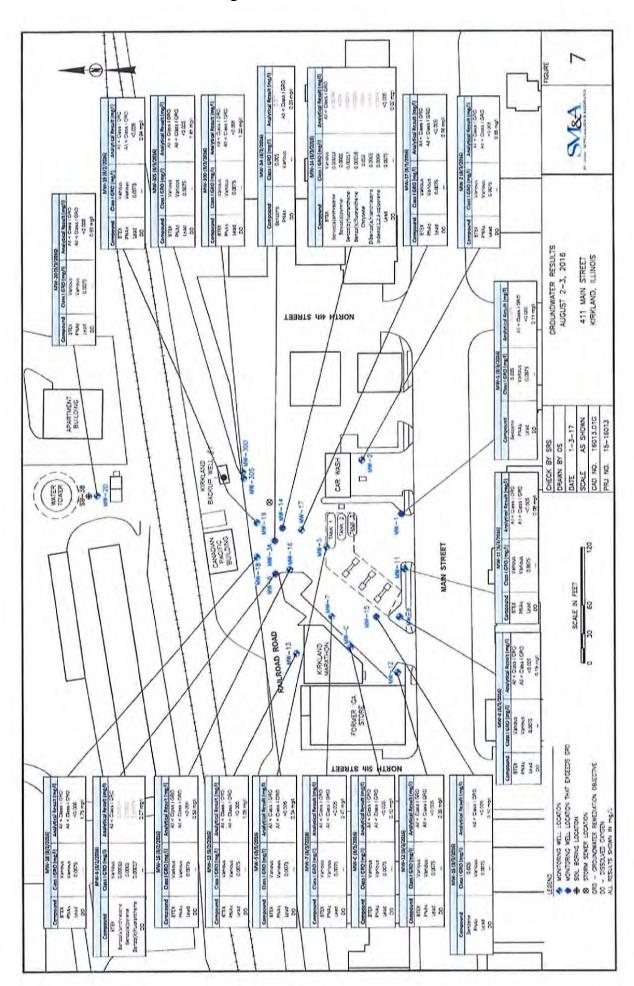


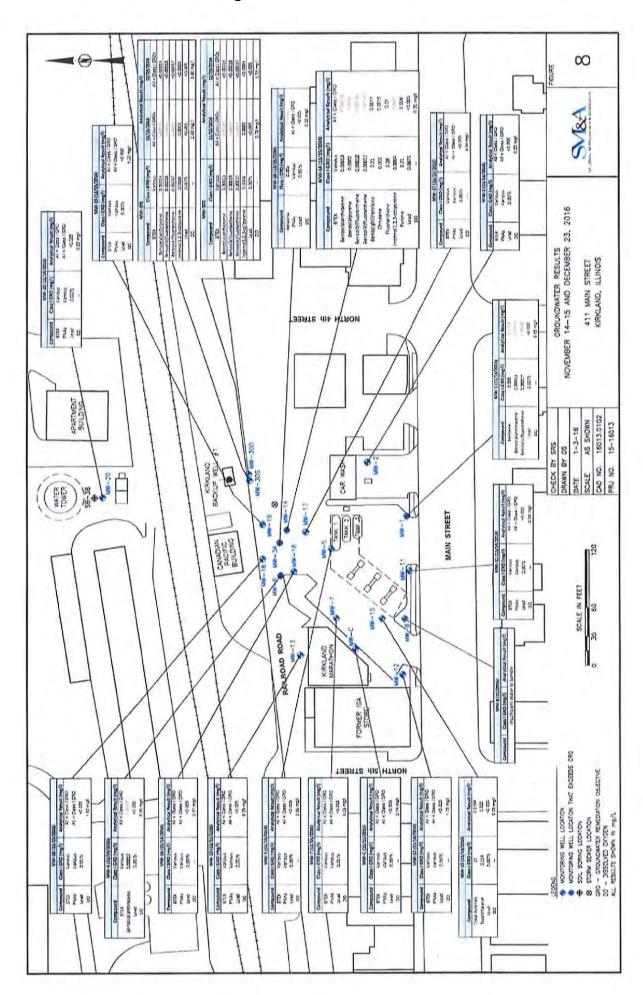


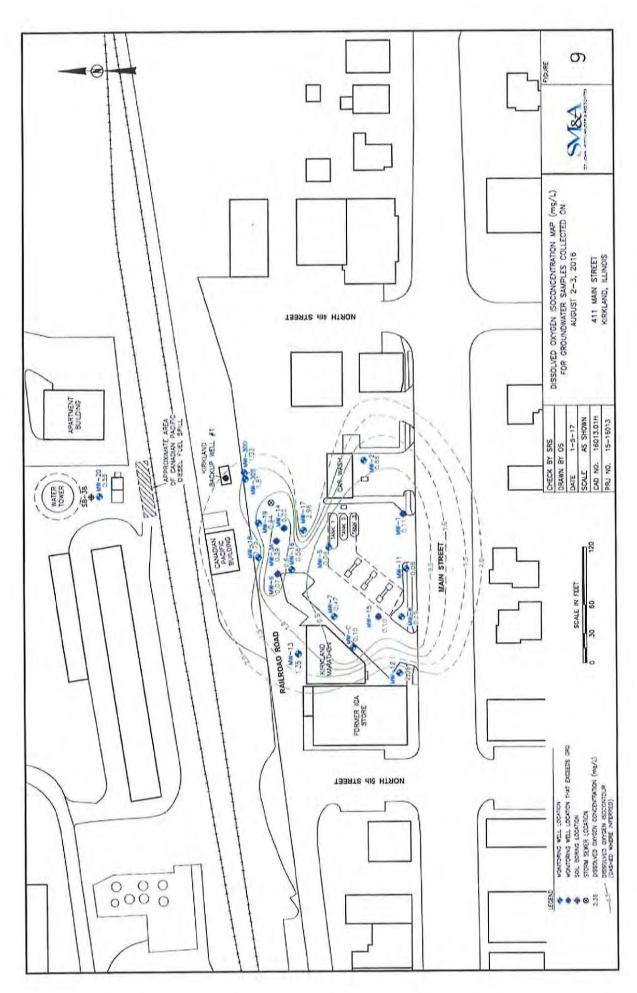


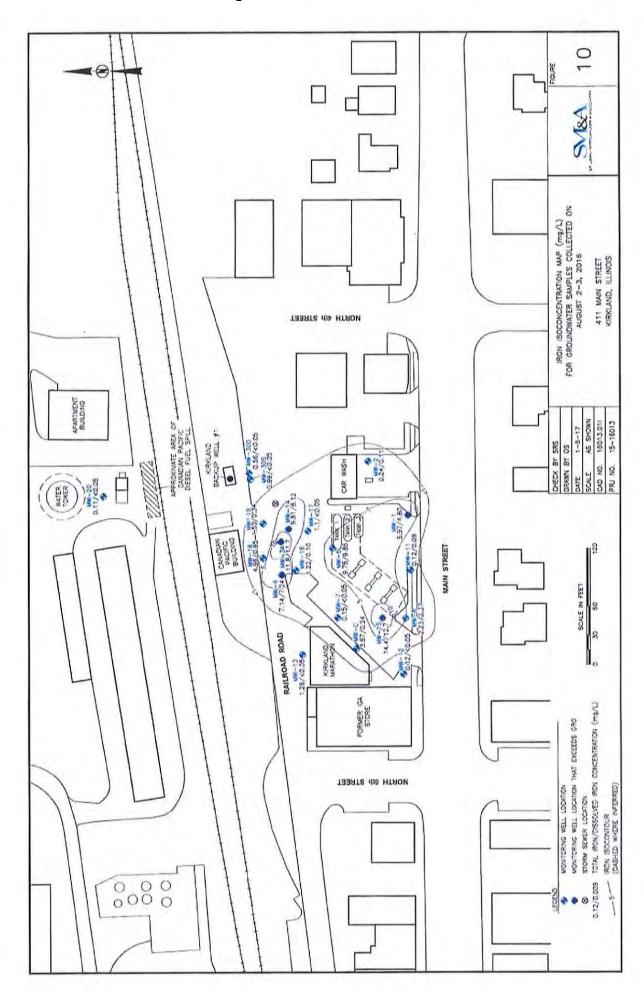


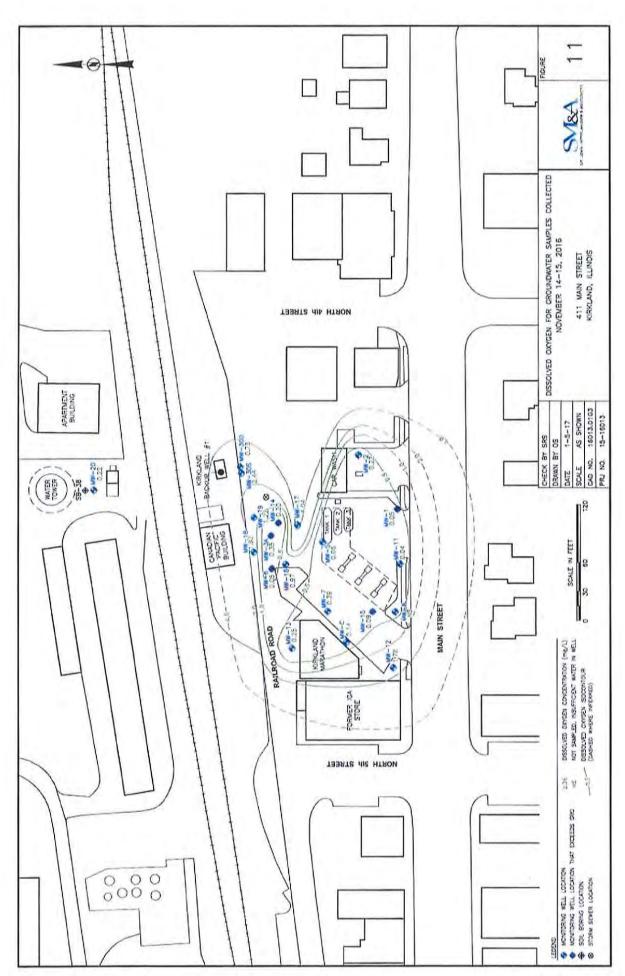


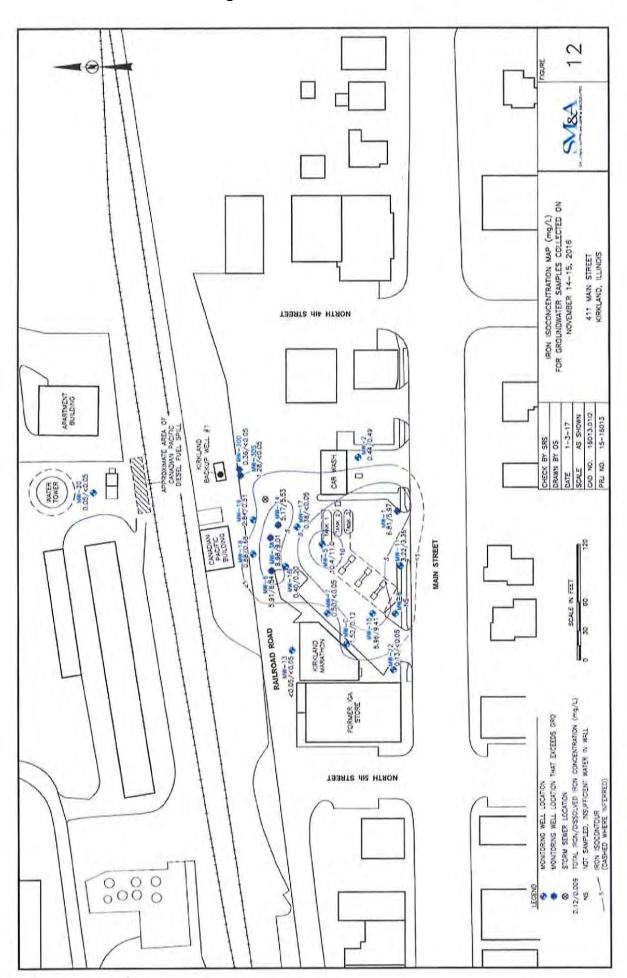












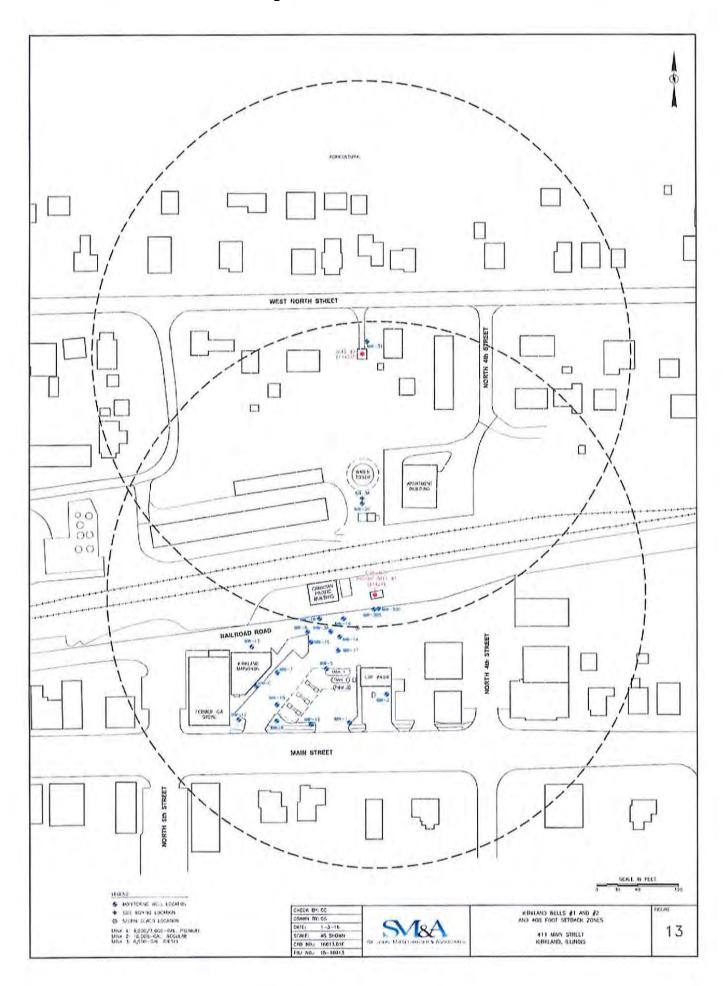


Figure 14 Water Level Data Recorded in MW-31

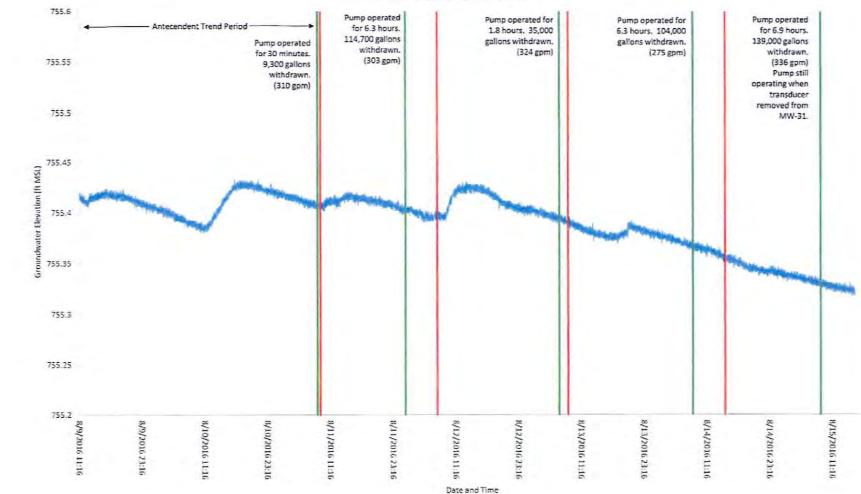


Figure 15 Water Level Data Recorded - MW-30D





TABLES

TABLE 1 Groundwater Level Measurements

0370305005 - DeKalb County / Kirkland, Illinois Kirkland Quick Stop / Blake Leasing

| Well ID | TOC 1 (MSL) | August 9, 2016 | | November 14, 2016 | |
|---------|-------------|------------------|---------------------------------|-----------------------------|---------------------------------|
| | | Depth to Water 2 | Static Water Elevation (MSL) | Depth to Water ² | Static Water Elevation (MSL) |
| MW-1 | 767.28 | 8.83 | 758.45 | 9.41 | 757.87 |
| MW-2 | 767.66 | 9.22 | 758.44 | 9.80 | 757.86 |
| MW-3A | 766.94 | 8.69 | 758.25 | 9.20 | 757.74 |
| MW-5 | 767.44 | 9.07 | 758.37 | 9.63 | 757.81 |
| MW-6 | 767.00 | 8.84 | 758.16 | 9.42 | 757.58 |
| MW-7 | 768.44 | 10.14 | 758.30 | 10.70 | 757.74 |
| MW-8 | 769.13 | 10.68 | 758.45 | 11.27 | 757.86 |
| MW-11 | 767.93 | 9.46 | 758.47 | 10.04 | 757.89 |
| MW-12 | 768.78 | 10.39 | 758.39 | 10.95 | 757.83 |
| MW-13 | 768.26 | 10.25 | 758.01 | 10.81 | 757.45 |
| MW-14 | 766.46 | 8.16 | 758.30 | 8.69 | 757.77 |
| MW-15 | 768.11 | 9.71 | 758.40 | 10.28 | 757.83 |
| MW-16 | 767.04 | 8.79 | 758.25 | 9.35 | 757.69 |
| MW-17 | 766.82 | 8.45 | 758.37 | 9.06 | 757.76 |
| MW-18 | 766.72 | 8.66 | 758.06 | 9.18 | 757.54 |
| MW-19 | 766.20 | 8.10 | 758.10 | 8.62 | 757.58 |
| MW-20 | 763.38 | 7.55 | 755.83 | 7.75 | 755.63 |
| MW-30D | 765.35 | 7.10 | 758.25 | 7.63 | 757.72 |
| MW-30S | 765.50 | 7.31 | 758.19 | 7.83 | 757.67 |
| MW-31 | 766.88 | 11.79 | 755.09 | 11.90 | 754.98 |
| MW-C | 769.35 | 11.05 | 758.30 | 11.61 | 757.74 |

NOTES:

ft = feet

MSL = Mean Sea Level

TOC = Top of Casing

¹ Survey Date: May 9, 2016: USGS Marker S-130 Located 42 05 38 (N), 88 50 53 (W) 763.68 feet MSL

² Measured from Top of Riser

TABLE 2 Groundwater Analytical Results (August, November, December 2016)

0370305005 - DeKalb County / Kirkland, Illinois Kirkland Quick Stop / Blake Leasing

| Contaminant of Concern | Class I Groundwater Remediation | M | V-C | MV | V-1 | M | N-2 | MW | AC-1 | M | N-5 |
|-------------------------------|---------------------------------------|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | Objective 1 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-16 |
| BTEX (mg/l) | | | | | | | | | | | |
| Benzene | 0.005 | <0.005 | <0,005 | 0.0078 | 0.0104 | <0.005 | <0.005 | 0.0711 | 0.0762 | <0.005 | <0,005 |
| Ethylbenzene | 0.7 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0057 | <0.005 |
| Toluene | 4 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Xylene, Total | 30 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| PNAs (mg/l) | | | | | | | | | | | |
| Acensphihene | 0.42 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <9.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Acenaphityviene | 0.21 | 40.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | r0.0> |
| Aninracene | 2.1 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Benzo(a)antivacene | 0.00013 | <0.00013 | <0.00013 | <0.00013 | 0.00016 | <0.00013 | <0.00013 | <0.00013 | <0.00013 | <0.00013 | <0.00013 |
| Benzo(a)ovrene | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Benzo/o'fluoranthene | 0.00018 | <0.20018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 |
| Benzo(k)fluoranthene | 0.00017 | <0.00017 | <0.00017 | <0.00017 | 0.00022 | <0.00017 | <0.00017 | <0.00017 | <0.00017 | <0.00017 | <0.00017 |
| Benzolah iperylene | 0.21 | <0.0004 | <0.0004 | < 0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | < 0.0004 | <0.0004 | <0.0004 |
| Chrysene | 0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 |
| Dibenzo(a,h)anthracene | 0.0003 | <0.0003 | <0.0003 | < 0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 |
| Fluoranthene | 0.28 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Fluorene | 0.28 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.003 | 0.004 | 0.002 | <0.002 |
| Indeno(1,2,3-cd/pyrane | 0.00043 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0033 | <0.0003 | <0.0003 | <0.0003 | <0.0003 |
| Naphthalene | 0.14 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Phenanthrene | 0.21 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.905 | <0.005 | <0.005 | <0.005 |
| Pyrene | 0.21 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0,002 | < 9.002 | <0.002 | <0.002 | <0.002 |
| Total Metals (6010C) | | | | | | | | | | | |
| Iron | | 3.57 | 1.52 | 5.97 | 5.81 | 0.24 | 0.44 | 11.8 | 8.98 | 9.75 | 10.4 |
| Lead | 0.0075 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Dissolved Metals (6010C) | | 1 | | | | | | | | | |
| Iron, diss. | | 0.24 | 0.12 | 4.80 | 5.97 | 0.11 | 0.49 | 11,7 | 9.01 | 9.85 | 11.0 |
| Lead, diss. | 0.0075 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Field Parameters | | | | | | | | | | | |
| pH | 6.5 - 9 | 6.78 | 7.05 | 6.60 | 5.74 | 6.59 | 6.77 | 6,79 | 5.89 | 5.70 | 6.53 |
| Temperature (°C) | - | 17.43 | 17.79 | 16.98 | 17.64 | 17.50 | 17.38 | 18.44 | 17.16 | 17.59 | 16.33 |
| Specific Conductivity (µS/cm) | | 2139.9 | 2785.2 | 1178.9 | 1230.7 | 2325.2 | 1520.4 | 1639.7 | 1760.6 | 1655.4 | 2071.7 |
| Dissolved Oxygen (mg/l) | | 0.10 | 0.14 | 0.11 | 0.05 | 0.56 | 0.23 | 0.39 | 0.35 | 0.04 | 30.0 |
| Turbidity (NTU) | | 75.80 | 36.25 | 18.32 | 224,91 | 48.64 | 113.04 | 8.87 | 0.00 | 23.46 | 4.15 |
| ORP (mW) | | 60.2 | 199.7 | -69.3 | -91.4 | 131.2 | 143.8 | -81.1 | -117,7 | -105.1 | -100.5 |

Notes:

135 IAC 620
14 = Historic analytical table indicated constituent not "C" = Historic analytical table indicated consistent not betterfied above laboratory reporting limits.

NS = Not Sampled, Insufficient Water for Sampling

BOLD Identified above laboratory detection limits

BOLD Stoceds Class I GRO

Results reported in milligrams per liter (mg/ll) or parts per million.

TABLE 2 Groundwater Analytical Results (August, November, December 2016)

0370305005 - DeKalb County / Kirkland, Illinois Kirkland Quick Stop / Blake Leasing

| Contaminant of Concern | Class I Groundwater Remediation | M | W-6 | МУ | V-7 | MV | V-8 | MW | /-11 | MV | W-12 |
|-------------------------------|---------------------------------------|---------|----------|----------|----------|----------|--------|----------|----------|---------------|----------|
| | Objective 1 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-16 |
| BTEX (mg/l) | | | | 0 | | | | | | - | |
| Benzene | 0.005 | <0.005 | < 0.005 | <0.005 | <0.005 | <0.005 | NS | <0.005 | <0.005 | <0.005 | < 0.005 |
| Ethylpenzene | 0.7 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 145 | <0.005 | <0.005 | <0.005 | <0.005 |
| Toluene | 1 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | NS. | <0.005 | <0.005 | <0.005 | <0.005 |
| Xylene, Total | 10 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | NS | <0.005 | <0.005 | ₹0.005 | <0.005 |
| PNAs (mgT) | | | | | | | | | | | 1 3000 |
| Acenzonihene | 0,42 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | MS | <0.01 | <0.01 | <0.01 | <0.01 |
| Acenaphtrylene | 0.21 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NS | <0.01 | <0.01 | <0.01 | <0.01 |
| Arthrapene | 2.1 | <0.005 | <0.005 | < 0.005 | <0.006 | <0.005 | NS | <0.005 | < 0.035 | <0.005 | <0.005 |
| Benzo(a)anthracene | 0.00013 | 0.00015 | 0.00017 | <2,00013 | <0.00013 | <0.00013 | NS | <0.00013 | <0.00013 | <0.00013 | <0.00013 |
| Benzo(a) pyrene | 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | NS | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Benzo(b)fluoranthene | 0.00018 | 0.00022 | <0.00018 | <0.00018 | <0.00018 | <0.00013 | 1.5 | <0.00018 | <0.00018 | <0.00018 | <0.00018 |
| Benzo(k)fluoranthene | 0.00017 | 0.00018 | <0,00017 | <0.00017 | <0.90017 | <0.00017 | NS. | <0.00017 | <0.00017 | <0.00017 | <0.00017 |
| Berzo gruperylene | 0.21 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | NS | <0.0004 | <0.0004 | <0.0004 | <0.0004 |
| Chrysene | 0.0015 | <0.0015 | <0.0015 | <0,0015 | <0.0015 | <0.0015 | NS | <0.0015 | <0.0015 | <0.0015 | <0.0015 |
| Dibenzo(a.h)anthracene | 0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | NS | <0.0003 | <0.0003 | <0.0003 | <0.0003 |
| Fluoranthene | 0.28 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | NS | <0.002 | <0,002 | <0.005 | <0.002 |
| Fluorene | 0.28 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | N5 | <0.002 | <0.002 | <0.002 | <0.002 |
| indeno(1,2,3-cd)pyrene | 0.00043 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | 145 | <0.0003 | <0.0003 | <0.0003 | <0.0003 |
| Nachthalene | 0,14 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NS | <0.01 | <0.01 | <0.01 | <0.01 |
| Phenanthrene | 0.21 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 145 | <0.005 | <0.005 | <0.005 | <0.005 |
| Pyrene | 0.21 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | NS | <0.002 | <0.002 | <0.002 | <0.002 |
| Total Metals (6010C) | | | | 4 | | | | | | | |
| lton . | | 7.14 | 5.91 | 0.15 | 0.50 | 2.32 | NS | 0.12 | 3.22 | 0.12 | 0.13 |
| Lead | 0.0075 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | NS | <0.005 | <0.005 | <0.005 | <0.005 |
| Dissolved Metals (6010C) | | | | | | | | | | | |
| Iron, diss. | | 7.24 | 6.54 | <0.05 | <0.05 | 2.37 | NS | 0.09 | 3.35 | <0.05 | <0.05 |
| Lead, das. | 0.0075 | <0.005 | <0.005 | <0.605 | <0.005 | < 3.005 | NS | <0.005 | <0.005 | <0.005 | <0.005 |
| Field Parameters | | | | | | | | | | | |
| H | 6.5-9 | 6.82 | 7.02 | 6.99 | 5.96 | 6.40 | NS | 5.43 | 5.80 | 6,77 | 7.13 |
| Temperature (°C) | - | 19.28 | 17.05 | 17.99 | 17,02 | 18.93 | NS | 21.38 | 18.60 | 17.86 | 17.76 |
| Specific Conductivity (uS/cm) | | 1097.0 | 897.43 | 2636.7 | 2530.8 | 1142.3 | NS | 856.29 | 1033,2 | 2628.2 | 2441.5 |
| Dissolved Oxygen (mg/li) | - | 0.07 | 0.05 | 0.47 | 0.39 | 0.79 | NS | 80.0 | 0.04 | 236 | 1.78 |
| Turbidity (NTU) | - | 3.77 | 0.02 | 18.53 | 101.13 | 33.74 | NS | 61.28 | 43.05 | 20,30 | 25.58 |
| QRP (mV) | | -96.6 | -191.1 | 42.5 | 243.8 | -105.5 | NS. | 59.8 | -85,4 | 64.0 | 83,4 |

Notes:

35 IAC 620
"<" = Historic analytical table indicated constituent not

Historic analysical table indicated construent not detected above laboratory reporting limits.

NS = Not Sampled, insufficers Water for Sampling
 BOLD liberoffed above laboratory detection limits
 BOLD | Screece Class I GRO

Results reported in miligrams per liter (mg/li or parts per million.)

TABLE 2 Groundwater Analytical Results (August, November, December 2016)

0370305005 - DeKalb County / Kirkland, Illinois Kirkland Quick Stop / Blake Leasing

| Contaminant of Concern | Class I Groundwater Remediation | MV | V-13 | MV | f-14 | MV | /-15 | MW | /-16 | MV | V-17 |
|-------------------------------|---------------------------------------|----------|----------|---------|---------|----------|----------|-----------|----------|----------|-----------|
| | Objective 1 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-15 | Nov-15 | Aug-16 | Nov-15 |
| BTEX (mg/l) | | | | | | | ~ 7 | | | | |
| Benzene | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.012 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Ethylbenzene | 0.7 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0068 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Toluene | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.00€ |
| Xylene, Total | 10 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0164 | 0.0104 | <0.005 | <0.005 | <0.005 | <0.005 |
| PNAs (mg/l) | | | | | | | | | | 4 | |
| Acenaghmene | 0.42 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Acenachthylene | 0.21 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Anthracene | 2.1 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | < 0.005 | <0.005 | <0.005 |
| Benzo(a)anthrapene | 0.00013 | <0.00013 | <0.00013 | 0.00164 | 0.00074 | <0.00013 | <0.00013 | <0.00013 | <0.00013 | <0.00013 | <0.00013 |
| Benzo(a)pyrene | 0.0002 | <0.0002 | <0.0002 | 0.024 | 0.0008 | <0.0002 | <0.0002 | <0,0002 | <0.0002 | <0.0002 | <0.0002 |
| Benzo bifluoranthene | 0.00018 | <0.00318 | <0.00018 | 0.00372 | 0.00149 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 |
| Benzolki/fuoranthene | 0.00017 | <0.00017 | <0.00017 | 0.00288 | 0.00108 | <0.00017 | <0.03017 | <0.00017 | <0.00017 | <0.00017 | < 0.00017 |
| Serupigh perviene | 0.21 | <0.0004 | <0.0004 | 0.0028 | 0.0011 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 |
| Chrysene | 0.0015 | < 0.0015 | <0.0015 | 0.0034 | 0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 |
| Dibenzo(a,h)anthracene | 0.0003 | <0.0003 | <0.0003 | 0.0005 | <0.0003 | <0,0003 | <0.0003 | < 9,00003 | <0.0003 | < 0.0003 | <0.0003 |
| Fluoranthene | 0.28 | <0.002 | <0.002 | 0.01 | 0.01 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Fluorene | 0.26 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Indeno 1,2,3-odipyrene | 0.00043 | <0.0003 | <0.0003 | 0.0029 | 0.0011 | <0.0903 | <0.0003 | < 0.0003 | <0.0003 | <0.0003 | <0.0003 |
| Nachthalene | 0,14 | <0.01 | <0.01 | <0.01 | <0.01 | 0.058 | 0.032 | <0.01 | <0.01 | <0.01 | <0.01 |
| Priorandicene | 0.21 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Pyrene | 0.21 | < 0.002 | <0.002 | 0.007 | 0.006 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Total Metals (6019C) | | | | | | | | | | | |
| Iran | | 1.26 | <0.05 | 9.81 | 5.17 | 14.4 | 3.95 | 1.22 | 0.40 | 1.1 | 0.38 |
| Lead | 0.0075 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Dissolved Metals (6010C) | | | | | | | | | | | |
| iron, diss. | | <0.05 | <0.05 | 8.12 | 5.53 | 12.7 | 9,41 | 0.10 | 0.20 | <0.05 | <0.05 |
| Lead, diss. | 0,0075 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Field Parameters | | | | | | | | | | | , |
| sH . | 55-9 | 6.73 | 6.96 | 6.85 | 7.01 | 5.54 | 5.97 | 6.49 | 5.92 | 6.75 | 6.82 |
| Temperature (*G) | 00-3 | 20.89 | 14.43 | 18.76 | 17.02 | 18.93 | 17,77 | 17.20 | 16.82 | 17.54 | 15.52 |
| Specific Conductivity (µS/cm) | - | 4338.2 | 3119.8 | 1920.9 | 1757.5 | 1704.7 | 1605.1 | 1251,3 | 1389.3 | 1103.0 | 1244.9 |
| Dissolved Oxygen (mg/l) | - | 1.35 | 0.25 | 0.02 | 0.20 | 0.10 | 0.09 | 0.58 | 0.97 | 2.96 | 4.04 |
| Turbidity (NTU) | - | 155,19 | 10.01 | 35.17 | 4.30 | 24.71 | 35.09 | 264,09 | 6.06 | 154,30 | 21,39 |
| ORP (mV) | - | 157.7 | 233.2 | -55.4 | -132.2 | -73.2 | -45.5 | 107.2 | 85.8 | 123.2 | 209.8 |

Notes:

Notes:

"35 IAC 620

"c" = Historic analytical table indicated constituent not detected above laboratory reporting limbs.

NS = Not Sampled, Insufficent Water for Sempling

BOLD identified above laboratory detection limits

BOLD Exceeds Class I GRO

Results reported in militgrams per liter (mg/l) or parts per million.

TABLE 2 Groundwater Analytical Results (August, November, December 2015)

0370305005 - DeKalb County / Kirkland, Illinois Kirkland Quick Stop / Blake Leasing

| Contaminant of Concern | Groundwater Remediation | MY | V-18 | MW | -19 | MW | /-20 | | MW-30S | | | MW-30D | |
|-------------------------------|----------------------------|----------|----------|---------------|-----------|----------|----------|----------|---------|----------|----------|---------|-----------|
| | Objective ' | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-16 | Aug-16 | Nov-15 | Dec-16 | Aug-16 | Nov-16 | Dec-16 |
| BTEX (mg1) | | | | | | | | | | | | | |
| Benzena | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0,005 | <0.005 | < 0.005 | <0.005 | <0.005 |
| Estrylbenzene | 0.7 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | ₹0.005 |
| Toluene | 1 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | < 0.005 | <0.005 | <0.005 |
| Xylene, Total | 10 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.305 | <0.005 | < 0.005 | <0.005 |
| PNAs (mg ī) | | | | | | | | | | | - | | |
| Aceneshthene | 0.42 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Acenzonthylene | 0.21 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Anthracene | 21 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | < 0.005 | <0.005 | <0.005 |
| Benzo(a)anthrapene | 0.00013 | <0.00013 | <0.00013 | < 0.00013 | <0.00013 | <0.00013 | <0.00013 | <0.00013 | 0.00014 | <0.00013 | <0.00013 | 0.00015 | <0.00013 |
| Benzo(a)pyrena | 0.0002 | < 0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.0002 | <0.0002 |
| Benzo(b) flugranthene | 0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | <0.90018 | <0.00018 | <0.00018 | 0.00025 | <0.00018 | <0.00018 | 6.00628 | < 0.00018 |
| Benzo(x)fluoranthene | 0.00017 | <0.00017 | <0,00017 | <0.00017 | < 9.00017 | <0.00017 | <0.00017 | <0.00017 | 0.00027 | <0.00017 | <0.00017 | 0.0003 | <0.00017 |
| Bonzo/ghiliperylene | 0.21 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 |
| Chrysene | 0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 |
| Dipenzola hianthrapene | 0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 |
| Puoranthene | 0.26 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Fluorene | 0.28 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Indenci 1.2.3-cd/critene | 0.00043 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | 0.0003 | < 0.0003 | <0.0003 | 0.0003 | <0.0003 |
| Naphthalene | 0.14 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Phenanthrane | 0.21 | <0.005 | <0.005 | <0.005 | < 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | < 0.005 | <0.005 | <0.005 | <0.005 |
| Pyrene | 0.21 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| Total Metals (6010C) | 72. | 10.00 | 14.000 | | | 10.002 | | | | | | | |
| Iron | | 4.96 | 0.88 | 1.53 | 2.84 | 0.11 | 0.05 | 0.99 | 1,23 | <0.05 | 0.56 | 0.36 | 0.11 |
| Lead | 0.0075 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | < 0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Dissolved Metals (S010C) | 5,515 | | - | - | - | | 40,000 | - | 40,000 | | 42.000 | | 10.000 |
| Iron, diss. | | 0.95 | 0.68 | 0.34 | 0.51 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| lead dies. | 9.0575 | <0.005 | <0.005 | ≠0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <3.005 | <0.005 |
| Field Parameters | 310010 | 50,000 | 1 -4-04- | | | | | | | 10.000 | | 14400 | , |
| pH | 6.5-9 | 7.00 | 7,07 | 6.98 | 7.07 | 7.05 | 5,70 | 6.64 | 6.92 | 6.97 | 6.90 | 5.02 | 7,12 |
| Temperature (°C) | - | 19.09 | 16.85 | 19.07 | 17.25 | 17.58 | 14,73 | 17.89 | 17.87 | 13.93 | 15.55 | 15,41 | 13,42 |
| Specific Conductivity (uSicm) | - | 1304.3 | 1373.3 | 1729.5 | 1755.8 | 1025.4 | 1073,14 | 268.2 | 1766.1 | 1810.7 | 1444,4 | 1626.5 | 1522.9 |
| Dissolved Coypen (mg/l) | - | 1.75 | 1.92 | 0.94 | 1.22 | 0.59 | 0.22 | 1.81 | 2.44 | 3.48 | 1.33 | 0.78 | 1.53 |
| Turbdity (NTU) | _ | 104.33 | 424 | 86.92 | 143.99 | 136.78 | 2.20 | 113.75 | 502.25 | 5.53 | 55.79 | 110.88 | 8.39 |
| ORP (mV) | | 5.0 | 49.9 | 15.5 | 65.2 | -3.5 | 152.19 | 199.0 | 227.8 | 183.5 | 181.7 | 247.2 | 166.9 |

Notes:

Notes:

"35 IAC 620

"2" — Historic analytical table indicated constituent not detected above laboratory reporting limits.

NS = Not Sampled, insufficient Water for Sampling BOLD | Bended above laboratory detection limits BOLD | Exceeds Class I GRO |

Results reported in milligrams per Ner (mg/l) or parts per million.

TABLE 3 Historic Groundwater Analytical Results (2001 - 2016) 0370365005 - DeKalb County / Kirkland, Illinois Kirkland Quick Stop / Blake Leasing

| Contaminant of Concern | Class I Groundwater Remediation | | | NW-C | | | | M | MW-1 | | | AN | 2-544 | |
|--|---------------------------------------|--------|----------|-----------|----------|----------|----------|-----------|-----------|----------|----------|-----------|-----------|-----------|
| | Objective | Nov-12 | Jun-14 | May-15 | Aug-16 | Nov-16 | Aug-01 | May-15 | Aug-16 | Nov-16 | Aug-01 | 15y-15 | Aug-16 | Nov-16 |
| BTEX (mg1) | | | | | | | | | | | | | | |
| Senzene | 5000 | > | <0000> | 10000 | <0.0005 | 40,005 | S00.0> | 0.0072 | 6,0078 | 0.0104 | 40.005 | +0000> | <0.005 | <0.005 |
| Tyberaere | 20 | , | <0.001 | <0.001 | <0.005 | <0.005 | 40.055 | 10000 | <0.005 | <0.005 | <0.005 | 10000 | 40.005 | <0.005 |
| dueno | | * | <0.005 | <0.005 | 500.00 | 500,00 | 50005 | <0.005 | 40,005 | <0.005 | 90000 | S00.0> | <0.005 | <0.005 |
| one. Total | 0, | * | <0.003 | <0.003 | <0.006 | <0.005 | -0.005 | 50.00s | <0.005 | 40.005 | <0.005 | 5000 | <0.005 | <0.005 |
| PNAS (mgT) | | | | | | | | | | | | | | |
| Constitution | 0.42 | 275 | <0.00005 | <0.000005 | <0.01 | (0.0) | 1275 | B.00034 | 10:0> | 4231 | 160 | -300005 | 1005 | 1000 |
| Acendomylene | 1 021 | 177 | <5,00005 | <0.00005 | <0.01 | <0.01 | +0.03 | <0.0000S | 10.05 | 1005 | 10.05 | 5000005 | 100 | 1970 |
| Anthracera | 2.1 | *** | <0.0000S | \$0000°C> | 50002 | 40.005 | 500'0P | 99000000 | 40,005 | <0.005 | -c0005 | 5000055 | S00.05 | 50702 |
| Sental authoresene | 0.00013 | N. I | <0.00005 | 50000000 | 45,00013 | <0.00013 | +0.00013 | <0.00005 | <0.000013 | 0.00016 | <0.00013 | <2,00005 | <0.00013 | <0.00013 |
| Serutolaloyome | 0.0002 | 164 | <0.00005 | <0.300055 | <0.0002 | <0.0002 | -0.0002 | <0.00005 | 200000 | <0.0002 | <0.00002 | <0.00005 | <0.0002 | <0.0002 |
| 6120(3)\$u0:3rmere | 8100000 | M | <0.00005 | <0.00005 | -0.00018 | <0.00018 | <0,00018 | <0.00005 | -C.50018 | <0.00018 | -0.0001E | <0.00005 | <0.000018 | 40,00018 |
| entertainment and service and | 1 0,000.7 | 333 | <0.00005 | <0.00005 | 51000035 | -0.00017 | <0.09017 | 46,000,05 | 4100000> | 0.000022 | 40.00017 | -c00005 | <0.00017 | -C1000017 |
| ace/secutions | 0.21 | 724 | <0.00005 | 5000000 | 200000 | ×00000 | 40,0004 | 50000.05× | 40000 | 200005 | >00000 | <0.00005 | *00000 | <0.0004 |
| hysene | \$1000 | 2 | 5000000 | <0,00005 | 5100.0> | <0.0015 | <0.0015 | -40,0000E | \$100.0× | \$100.00 | <2.0015 | <0.00005 | <0.0015 | 5100,05 |
| Obertoo(a.n)antinacene | 1 0,0003 | NA. | <0.00005 | <0.00005 | <0.6003 | <0.00003 | <0.0003 | <0.00006 | <0.0003 | <0.0003 | 2000002> | <0.00005 | <0.0003 | 60,0003 |
| botanthene | 0.25 | 7.54 | 40,00005 | <0.00005 | <0.202 | c0.002 | 40,002 | 0.00011 | -0.002 | <0.002 | <0.002 | 500000°P | 2000 | 40.002 |
| Buside | 0.38 | *** | <0.00005 | >0000000> | <0.002 | 40.002 | -0.002 | 0.00041 | -0.002 | 40.002 | 42.302 | 5000055 | -C.002 | <0.002 |
| soeno(1.2.3-cd)pyrane | [0.00043] | NA. | <0,00005 | <0.00005 | <0.0003 | 40,003 | 5000F | <0.00005 | <0.0003 | <0.0000 | <0.0003 | -0.00005 | - SD000 | 000000 |
| and the state of t | 71'0 | N. | 400025 | 2600000 | 10.0> | 100 | 1000 | 50000 | 10,0 | 1000 | 16.0 | 52000.05 | 1900 | 10.05 |
| peaughteac | 0.21 | N.A. | <0,00005 | 5000000 | 40.005 | -0.005 | 2000 | 0.00018 | 500'09 | <0.005 | 500.05 | <0.000005 | 500.05 | -c0,005 |
| yrene | 0.21 | NA. | <0.00005 | <0.000005 | <0.000 | -d.002 | <0.002 | 1100000 | <0.002 | <0.002 | <0.002 | <0.00005 | 20000 | <0.002 |
| Fotal Metals (5010C) | | | | | | | | 1 | 1 | | | | | |
| 100 | | 10.4 | 11.4 | 01 | 357 | 1.52 | W. | 99 | 5.97 | 6.81 | *14 | 1.7 | 024 | 0.44 |
| 830 | 0.0075 | NA. | | * | <0.005 | - 45.065 | 314 | > | -0.005 | <0.005 | NA. | , | <0.005 | S00:0> |
| Dissolved Metals (5010C) | | | | | | | | | | | | | | |
| 100, 383. | | 27 | 744 | 14.4 | 0.24 | 0.12 | 74.4 | N.A. | 4.80 | 5.97 | NA. | 165 | 0.21 | 670 |
| ead, dos, | 0.0075 | 104 | 2 | 355 | 50702 | 40.005 | 250 | NA | -0.005 | <0.005 | NA. | 18. | <0.0005 | <0.005 |
| Field Parameters | | | | | | | | | | | | | | |
| | 6.5.3 | NA | 7.30 | 144 | 6.78 | 7.05 | NA. | 7.40 | 6.60 | 723 | 22 | 6.80 | 6.59 | 6.77 |
| emperature (*C) | - | NA. | 343 | 1,44 | 17.43 | 17.79 | 244 | N | 96'31 | 17.54 | 764 | 100 | 17.50 | 17.36 |
| Spoolle Conductivity (u.Stom) | | NA. | 104 | 177 | 2138.9 | 27852 | MA | 20 | 1,178.9 | 1230.7 | NG | 144 | 23552 | 1,520.4 |
| Dasolved Onypen (mg/t) | | 2 | 133 | 148 | 0.10 | 0.14 | MA | 17.5 | 0.11 | 2,35 | 103 | NA | 990 | 0.23 |
| Siday (MTQ) | | 144 | NA NA | 143 | 75.80 | 35.25 | NA. | NS. | 18,32 | 224.91 | NA. | 744 | 48.64 | 113.04 |
| C00 1=11 | | | | | | 4 400 | | | 2002 | **** | *** | 200 | | 0000 |

TABLE 3 Historic Groundwater Analytical Results (2001 - 2016) 6370305005 - DeKalb County / Kirkland, Illinois Kirkland Oulek Stop / Blake Leasing

| Conjaminant of Concern | Groundwater Remediation | | | | | | 2 | MW-3A | | | | | |
|--|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|----------|----------|--------|
| | Objective | Aug-01 | May-02 | Apr-03 | Dec-03 | Apr-04 | Jun-05 | Apr-06 | Jul-06 | Mar-07 | Mar-05 | Feb-09 | Nov-12 |
| BIEX (mg/l) | | | | | | | | | | | 1000 | | |
| enzene | 3000 | 0.0382 | <0.005 | 0.408 | 9950 | 9.172 | 0.0242 | 0.0231 | 0.0264 | 2010.0 | -0.005 | <0.005 | 6000 |
| Enimenace | 2.0 | <0.005 | <0.005 | 0.0195 | <0.005 | <0.005 | <0.005 | <0.005 | 500.05 | <0.005 | <0.005 | -0.00E | * |
| cluste | | <0.005 | <0.005 | 60000 | 0.0224 | 0.012 | <0.00 | 0.0238 | 40.00E | 500.05 | <0.005 | <0.005 | > - |
| Wene, Total | 10 | 0.0059 | <0.005 | 0.0232 | 0.0416 | 0.0236 | <0.00 | <0.005 | 0.0051 | -C.005 | 40.005 | -d0.005 | * |
| PKAs (mgf) | | | | | | | | | | | | | |
| constitution | 0.42 | <0.01 | 40.01 | <0.03 | 1000 | 1000 | 40.01 | 1265 | 10.05 | 10.05 | 1000 | 1500 | 774 |
| analyzinese. | 0.27 | 10.05 | 10 OP | 1000 | :000 | 100 | 10.05 | 100> | 10.05 | 10.05 | 1502 | 1000 | 5% |
| Gracene | 2.1 | 500°0> | 500.05 | 500.0> | 90000 | 90000 | 500.05 | 500.5 | 500.05 | <0.005 | 40.005 | 40,005 | T. |
| enzo(a)anthracere | 0.00013 | <0.00013 | <0.00013 | | <0.000013 | <0.000013 | <0.000013 | 0,00015 | <0.00013 | <0.00013 | 0.00022 | 0.00037 | 52 |
| enzo(a)pyrene | 0.0002 | <0.0002 | 20:00:0> | <0,0002 | 200000> | 2000/0> | 20000° | <0.0002 | <0.0002 | <0.0002 | -0.0002Z | 00000 | NA |
| enzolbilluoranthene | 6,00018 | <0.000018 | <0.00018 | <0.00016 | 9100000> | <6.00018 | S1000.0> | <0.00018 | <0.00018 | <0.00018 | 810000b | 0.00036 | 144 |
| Benzolk(Ruoranthene | 0.00017 | <0.00017 | <0.000017 | -<0.00017 | -0.40017 | C0.00017 | <0.00017 | <0.00017 | <0.00017 | <0.00017 | 0.00021 | 0.00046 | NA |
| Secucionipervene | 0.27 | <0.0004 | <0.0004 | +0000c | <0.00004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | -C0.0004 | 200000 | -0.00x | NA. |
| chysere | 0.0015 | 5100.0> | <0.0015 | <0.0015 | <0.0015 | <0.0015 | -0.0015 | <0.0015 | 510000> | 5100.05 | <0.0015 | -d0.0015 | 770 |
| benzo(2.1)anthracene | 5,0003 | <0.0003 | <0.00003 | <0.0003 | <0.0003 | -0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | NA. |
| Constituent | 0.23 | <0.002 | <0.002 | <0.000 | <0.002 | <0.002 | 40,002 | <0.002 | <0.0002 | <0.002 | <0.002 | 0.003 | N.S. |
| poseue | 0.28 | 4000 | <0.002 | -0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | -0.00c | <0.002 | <0.002 | 114 |
| hotero(1.23-cdloyene | 0.00043 | £00003> | <0.00003 | <0.0003 | <0.0003 | S300.05 | - 40,000g | <0.0003 | 500000P | 200000> | 5000°P | 0,0003 | Z, |
| aphitaiene | 2.14 | 10.05 | 1000 | 1002 | 40.01 | 150 | 10'02 | 120 | 10'02 | 10/22 | 1002 | UP I | SN. |
| Phenandmens | 0.21 | <0.005 | <0.005 | <0.005 | <0.005 | 5000c | <0.005 | <0.005 | 50005 | 500.05 | <0.005 | ₹00.00≥ | 324 |
| PUBLIC PORTION AND ADDRESS OF THE PUBLIC PUBLIC PORTION AND ADDRESS OF THE PUBLIC PUBL | 0.27 | <0.002 | <0.002 | 20,002 | <0.002 | <0.0002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.032 | <0.002 | 27. |
| Total Metals (5010C) | | | | | | | | | | | | | |
| 100 | | XX | NA | 744 | 100 | W | NA | W | NA | 744 | NA | 162 | 324 |
| CESC. | 0.0075 | 354 | 344 | NA | S. | 764 | NA | 878 | NA | NA | NA. | NA | N.A. |
| Dissolved Metals (5010C) | 100 | | | | | | | | | | | | |
| תור, מלגי. | | 265 | NS. | 20 | 744 | 164 | NA. | MA | 25 | NA. | 12. | 144 | 144 |
| used, diss. | 0,00075 | 344. | 344 | 27 | 155 | N.A | NA. | 100 | NA. | 144 | 123 | 709 | NA. |
| Field Parameters | A 25 | | | | | | | | | | | | |
| T | 6-59 | NA. | 7.7 | MA | 104 | NA | NA | N.A. | 25 | MA | 124 | 23 | 250 |
| endersture (C) | | NA. | 75 | 146 | 724 | NA | NA. | NA. | NA | 11.5 | NA | NA. | NA |
| Sossific Conductivity (JuStoria) | - | N.A. | 774 | 770 | NA. | 120 | NA | 570 | N. | NA. | NA. | 572 | NA. |
| issokred Oxygen (mg/t) | | NA | NA | 25 | NA. | NA | NA. | NA. | NA | NA | NA | 162 | NA |
| Turbiday (NTU) | | 395 | 113 | N.S. | N.A | NA | NA | NA | NA. | NA | NA. | 164 | 223 |
| | | | | | | | | | | | | | |

| IABLES | toric Groundwater Analytical Results (2001 - 2016) | MATGATISTIC - DeKalb County Kindland Illinois |
|--------|--|---|
| | Historic G | 0507030 |

| Contaminant of Concern | Class I Groundwater Remediation | | | MW-3A | | | MW-4 | | | | MW-5 | | | |
|-------------------------------|---------------------------------------|---------------|----------|-----------|----------|-----------|--------------|----------|-----------|-----------|----------|----------|----------|----------|
| | Objective | Jun-14 | Aug-14 | May-15 | Aug-15 | Nov-16 | Aug-01 | Aug-01 | May-02 | Apr-03 | Dec-03 | Apr-04 | Spring. | Apr-05 |
| 6TEX (mgl) | | | | | 1 | | | | | | | | | |
| PATERIE | 0.005 | 0.031 | 0.063 | 18005> | 117000 | 0.0762 | <0.005 | 0.235 | 6.192 | 0.0744 | 56200 | 0.065 | 7500 | 0.018 |
| at a manual of the | 6.3 | <0.001 | 10005 | <0000 | 40.005 | 500°C> | 50,005 | 1000 | 0.165 | 6.0324 | 0.0272 | 0.0284 | 0.129 | 0.0154 |
| chere | | <0.005 | <0.005 | <0.005 | <0.005 | 50000 | <0.005 | 0.0135 | 0.0128 | 0.0053 | 40.005 | 500.00 | 0.0059 | Somo |
| Sylene, Total | 96 | 0.0036 | 0.013 | <0.003 | <0.005 | 50005 | 0.0057 | 0.651 | 0.214 | 0.190 | 0 6804 | 8 148 | 0.00 | 0 6303 |
| PMAS (mg1) | | | | | | | | | | | | - | | - |
| desagnatione | 0.42 | 0.0014 | 6,0013 | 213010 | 190> | 1000 | 42.01 | (0.05 | 100 | 1000 | 40.01 | 400 | 40.03 | -900 |
| Acerachtylene | 0.21 | 0.00012 | 9,0002 | 0.00022 | 40.01 | 10.0> | 10.00 | 10.05 | 100 | 100 | 1000 | 1002 | 40.03 | -0.03 |
| Thracene | 2.5 | 0.00024 | 200070 | 0,000018 | <0.005 | S00.05 | 500.05 | <0.005 | 50.05 | 40,005 | 40.005 | 500.05 | S00.0> | S00.05 |
| Benzolaianthrapene | 0.00013 | 0.0001 | 0.000015 | <0.000005 | <0.00013 | <6,000013 | <0.00013 | <0.00013 | <0.000013 | <0.00013 | <0.00013 | <0.00013 | <0.00013 | <0.00013 |
| enzo(a)oyrene | 0.0002 | 0.00016 | <0.30305 | <0.90005 | <0.0002 | <0,0002 | <0.0202 | <0.0002 | <0.0502 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0602 |
| Bentolbifuoranthene | 0.00016 | 0.0003 | <0.30005 | <0.00005 | <0.00018 | <0.000018 | <0.000018 | *0.00018 | -0.0001g | 40.00001B | 40.0001B | <0.00018 | <0.00018 | <0.00018 |
| enzolki fluoranthane | 0.00017 | 0.00023 | <0.00005 | <0.00005 | -4000017 | <0.000017 | <0.000017 | <0.00017 | T1000.0> | 7100005 | <6,00017 | <0.00017 | C100017 | <0.00017 |
| statical pervious | 0.21 | 6,000083 | 48,00006 | <0,00005 | +G0000+ | *00000 | +00000 | 700000 | 40,000 | ×00000> | =0000° | 40000 | 20,0004 | A00000 |
| nysene | 0.0015 | 0.00018 | 0.000025 | <0.000005 | <0.0005 | <0.0015 | <0.0015 | Z10015 | +0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | 50,0015 |
| dentalia/hishitracene | 0,0003 | <0.00005 | <0.00005 | <0.00005 | <0.000G | <0.0002 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | -0.0003 | <0.0003 | <0.0003 | <0.0003 |
| covarthere | 0.26 | 0.00065 | 0.00012 | 0.000057 | 40.002 | <0.002 | 20000 | <0.002 | <0.002 | 40,002 | -0.002 | <0.002 | <0.002 | 40,002 |
| notation | 0.26 | 0.0017 | 0,0016 | 9,0021 | 60003 | 0.004 | <0.002 | <0.002 | <0.002 | -C1,002 | <0.002 | <0.002 | <0.0002 | 0.003 |
| derci123-colorene | 0.00043 | 0.00017 | -000000E | 40,00005 | <0.0003 | <0.000S | <0.0003 | <0.0003 | <0.0003 | <0.0163 | <0.00003 | 50000CP | 500000> | <0.00003 |
| aptrake | 0.14 | 0.0011 | 6.0034 | 0.0032 | 10.05 | 40.01 | 4001 | 0.051 | 0.016 | 4001 | 5,012 | 10.05 | 810.0 | 0.331 |
| nonanthrone: | 0.21 | 6,00073 | 0.0012 | 0.0013 | <0.005 | <0.005 | -0.005 | 40,005 | <0.005 | 2000 | -0.005 | 500.05 | 500'02 | 500°P |
| core. | 0.21 | 0.00052 | 0.00012 | 0.000071 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 40,002 | <0.002 | <0.0002 | <0.002 |
| otal Metals (5010C) | | A COLUMN TO A | | | | 9 | D CONTRACTOR | | | | | | | |
| lion | | NA. | *** | 7 | 11.8 | 8.38 | NA. | NA | *50 | NA. | NA I | NA | N.A. | N.A |
| -020 | 0.0075 | MA | NA | | -0.005 | -0.005 | NA. | M | 255 | N. | N. | 22 | NA | 45% |
| Dissolved Metals (5010C) | | | | | | | 2 | | | 1 | | | | |
| 701, 388. | | N | NA. | NA. | 11.7 | 10'6 | 345 | *** | NA. | N.A. | NA. | NA. | *2 | 3/3 |
| d, diss. | 1 0,0075 | 105 | W. | 10.2 | <0.005 | <0.005 | NA. | W | NA | 92 | 150 | NA | 2 | 5% |
| Field Parameters | | | | | | | | | | | | | | |
| | 6.5.9 | NA. | N.A. | 6.90 | 823 | 5.89 | NA. | N.A. | 150 | Z. | NA. | NA. | NA. | 2 |
| emperature (1.0) | - | N. | NA. | NA. | 18.44 | 17.15 | 100 | W | N | NA | NA | N. | W | 2 |
| deathe Conductivity (L.S.com) | - | 35 | N.S. | NA. | 1,639.7 | 1,760.6 | N. | YX. | 25 | 2 | NA. | NA. | 2 | N. |
| Descrived Onygen (mg/l) | - | 14 | *** | 133 | 626 | 0.35 | 25 | KA | 134 | 2 | 75 | NA. | *** | N. |
| Tubiday (NTU): | | NA | NJA. | 125 | 6.87 | 0.00 | MA | NA. | 17.4 | NA | NA. | NA | 199 | 17 |
| 071 | | 212 | 472 | 200 | * ** | 2200 | 277 | 4.4 | **** | **** | 47.4 | 444 | | *** |

TABLE 3 Historic Groundwater Analytical Results (2001 - 2016)

| Contaminant of Concern | Class I Groundwaler Remedistion | | | | | MW-5 | | | | | | S | UW-6 | |
|-------------------------------|---------------------------------------|-----------|----------|---------|-----------|----------|-----------|------------|----------|-----------|-----------|----------|-----------|--------|
| | Objective | SO-Jul- | War-07 | Mar-08 | Feb-09 | Apr-13 | May-12 | Jun-14 | Aug-15 | Nov-16 | Aug-01 | May-02 | Apr-03 | Dec-03 |
| BTEX (mail) | | | | | | | | | | | | | | |
| Serzene | 5000 | 0.0252 | 0.0392 | 0.0184 | 0.0122 | 0.0744 | 0.192 | 0.0034 | <0.005 | <0.005 | 0.013 | <0.005 | 5000 | 0.0124 |
| Enylpergene | 20 | 0.0273 | 0.0148 | 0.0539 | 2500 | 0.324 | 0.165 | 95000 | 0.0057 | -d0.005 | -40.00S | <0.005 | <0.005 | 9500.0 |
| 900 | | 40.005 | 500.05 | <0.005 | -d.005 | 0.0053 | 0.0128 | -0.805 | <0.005 | -0.005 | 500.00 | <0.005 | <0.005 | 0.021 |
| Allene, Total | 10 | 0,0444 | 0.0274 | 0.0179 | 0.149 | 0.19 | 0.214 | <0.023 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0251 |
| PMAs (mg1) | | | | | | | | | | | | 1 | | |
| Konzonhene | 270 | 4501 | 1000 | 46.01 | 1000 | 10,00 | 1000 | <0.0000055 | 1000> | UP | 1000 | 1000 | 1005 | 10'02 |
| Constitutions (See | 653 | 1005 | 1000 | 1005 | <0.05 | 1000 | <0.03 | <0.0000005 | 10.05 | 40.01 | 10'04 | 10.0 | 10.05 | 10.05 |
| rateacene. | 12 | 50000 | 500CP | 40.005 | 50005 | 50000 | <0.005 | 0,00011 | 50005 | - SOUGE | 500.05 | <0.005 | 500.0P | <0.005 |
| Sento(s)archiadene | 0.00013 | <0.000013 | <6,00013 | 0,00032 | 5,00013 | 40,00013 | <0.00013 | 0.0002 | <0.00013 | <0.000013 | <0.00013 | <0.00013 | <0.00013 | 270070 |
| Sector a prese | 9,0002 | <0,0002 | <0.0002 | 0,0004 | <0.0002 | <0.0002 | -C0,00022 | 2500000 | <0.0002 | <0.000tz | 0,0002 | <0.00002 | <0.00002 | 0.0064 |
| Benco's (fluoranthene | 0,00018 | -0.000na | <0.00018 | 0.00035 | <0.000018 | <0.00013 | 40,0001B | 1000 | <0.00018 | -0.00318 | \$1000°C> | <0.00018 | <0.00018 | 900'9 |
| Berzok Tustantiene | 0,00037 | <0.00017 | 40.00017 | 0.06021 | 710000° | 71000C0> | 40,00017 | 0,00051 | 71000.05 | Z100017 | 71000.05 | <0.00017 | <0.00017 | 550025 |
| Senzolohicentene | 0.21 | -0000° | 400004 | *0000 | *00000 | 20000c | +00000 | 9,00034 | 400000 | *00000 | *C0000> | -0.0004 | <0.000.00 | 670070 |
| Chrysene | 5:000 | 5100.05 | 5:00:0> | <0.0015 | <0.0015 | <0.0015 | <0.0015 | 0.0003 | <0.00015 | <0.0015 | <0.0015 | <0.00015 | <0.00015 | 0.006 |
| Deenzelzhiantrazere | 0.0003 | <0,003 | <0.0003 | <0.0003 | 500000 | £00003 | <0.0003 | <0.000005 | <0.0003 | <0.0003 | -0.000G | <0.0003 | <0.00003 | 100'0 |
| Jorantiene | 0.22 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.000053 | <0.0002 | <0.002 | 40.002 | <0.002 | <0.002 | 0.018 |
| Lightine | 0.22 | A) 002 | Z0000P | 2000 | 40.072 | <0.002 | AD022 | 5000000P | 0.002 | \$000p | -6,002 | 4000 | 43.002 | <0.002 |
| ndeno(1,23-at/o)rece | 0.00043 | <0.0033 | 50000 | <0.0003 | <0.0002 | <0.0003 | <0.0003 | 0.00055 | <5,00003 | <0.0003 | <0.0000s | <0.0003 | 40000 | 0.0052 |
| Nacrosens | 0,54 | 10.05 | 120 | 10.05 | 6003 | 0.051 | 91000 | 0.00052 | 10.05 | 45.01 | 4000 | - 400 | 40.01 | 40.01 |
| Prenantinone | 0.23 | <0.0005 | 40,005 | <0.005 | 500'02 | 500.05 | 40,065 | 0,00022 | 500,005 | 40.005 | -0.005 | <0.005 | 500.05 | 0.02 |
| Maya | 621 | <0.002 | 40.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.00092 | <0.002 | 40.002 | <0.002 | <0.002 | 46,002 | 6,013 |
| otal Metals (5019C) | | | | | | | | | | | | | | |
| | | NA | 14. | NA. | 75 | 20 | 72 | 14. | 9.75 | 10.4 | 14 | 25 | NA | 25 |
| See | 32000 | MA | 22 | 100 | NA. | NA. | 304 | NA. | <0.095 | <6,005 | 164 | NA. | NG. | NA |
| Dissalved Metals (S010C) | | | | | | | | | | | | | | |
| בטי פפצ | | NH. | N.A. | NA. | 100 | 25 | NA. | 155 | 25.55 | 15.0 | 124 | 100 | NA. | N.A. |
| . 255. | 50000 | 100 | 10.2 | 3,44 | 277 | 10.5 | 100 | 12.5 | 500,05 | 4005 | 143 | NA. | 254 | 2 |
| Field Parameters | | | | | | | | | | | | | | |
| | 6-29 | 355 | N.S. | NA I | NA. | NA. | NA. | NA. | 6.70 | 683 | 25 | 2 | NA. | NA |
| cmperature (°C) | | NA. | NA. | NA. | N.A. | 555 | NA. | 124 | 17.59 | 16.33 | NA. | NA. | 757 | NA. |
| Specific Conductivity (uSicm) | 1 - 1 - 1 | NA. | 144 | NA. | NA | ** | 35 | NA. | 1,655.4 | 2.071.7 | 555 | 703 | NA | Na |
| Dissolved Dividen (mg/l) | , | NA. | 113 | NA. | NA. | 3,44 | NA. | NA. | 0.04 | 0.00 | NA | NA. | 144 | NA. |
| Tuesday (MTU) | | 25 | 15 | NA. | NA. | N.A. | NA. | 150 | 23.46 | 4.15 | N. | NA | 37.4 | 144 |
| | | | | | | | | | | | | | | |

TABLE 3 Historic Groundwater Analytical Results (2001 - 2015)

| Contaminant of Concern | Class I Groundwater Remediation | | | | | | 5 | MW-6 | | | | | |
|--------------------------------|---------------------------------------|------------------|---------|---------|---------|----------|----------|---------|------------|----------|----------|----------|----------|
| | autodon | May-04 | Jun-05 | Apr-06 | 30-Jnn | Mar-07 | Mar-08 | Feb-09 | May-12 | Jun-14 | Aug-14 | Marie | 316.15 |
| STEX (mg/l) | | | | | | | | | | | | | |
| Benzena | 0.005 | <0.005 | <2,005 | <0.005 | <0.005 | <0.005 | -0.005 | <0.005 | 50000 | <0.001 | <0.001 | -0.00 | 10000 |
| Edhibertene | 50 | 40,005 | <2,005 | 40 DOS | 50005 | <0.005 | <0.005 | <0.005 | 50000> | (0000) | 10000 | 1000 | -00.00 |
| anare) | 1 | 5000P | <0.005 | 500.05 | 50000> | <0.005 | 9000 | <0.005 | 40,005 | -0.005 | 0.0078 | 2007 | 50000 |
| Xylena, Total | 10 | <0.005 500.05 | <0.005 | <0.035 | 40,005 | <0.305 | -0.00E | <0.005 | -0.005 | -0.003 | 5000 | 20.00 | 90000 |
| PNAs (mgT) | | | | | | | | | | - | 200000 | 200000 | 20000 |
| Seratthere | 270 | 40.01 | 4001 | 1025 | 4001 | 40.05 | 1000 | 1600 | 10.05 | 620073 | 25005.0 | 500000 | 0.000073 |
| centrativene | 021 | 100> | 1000 | 1605 | 4003 | 40.01 | -0.00 | 1000 | 40.03 | -dintohe | SOUTH | -1000 | 0.000097 |
| revenere | 2: | -0.005 -0.005 | <0.005 | 500.05 | <0.0005 | <0.005 | 40.00S | <0.005 | 50005 | 0.00047 | 500005 | 0.00008 | 0.00024 |
| Senza al suchacene | 0.00013 | 0.00168 | 600000 | 0,0004 | 0.0004 | <0.00013 | 699000 | 1000 | <0.000013 | 6,0025 | 0.00085 | 0.000053 | 0.0015 |
| Benzolalcymne | 0,0002 | 0.0016 | 0.0015 | 90000 | 900000 | <0.0002 | 95000 | 0.0032 | <0.0002 | 0,0032 | 0.00093 | 0.000079 | 0.0028 |
| Senzo(b)flupranthene | 0.00018 | 0.0017 | 0.0032 | 0.00075 | 0,00075 | 6,00021 | 0.0122 | 0.00345 | \$1,000,05 | 0.0056 | 71000 | 0.00013 | 0.0057 |
| Bestolkfuorantiere | 0.00017 | 0.00199 | 0.00186 | 0.00045 | 0.00046 | 0.0002 | 0.003899 | 0.00312 | CL00017 | 900000 | 9500070 | 5000005 | 0.0013 |
| natiohiper/lese | 0.21 | 0.0014 | 0.0024 | 90000 | 970000 | 40,000 | 265000 | 0.0035 | 40,000 | 0.0016 | 0.00055 | 0.00012 | 0.0041 |
| publicue | 0.0015 | 92300 | 0,0023 | <0.0015 | <0.0015 | <0.0015 | 15100 | 0.0028 | 5100.00 | 0.00322 | 0.0015 | 0.0001 | 0.0025 |
| Dibenzol a hiarthrapene. | 6,0003 | 0,0005 | 800000 | <0.000G | <0.0003 | <0.0003 | 61000 | 0.0007 | <0.00003 | 0.000092 | <0.00005 | <0.20005 | 0.00012 |
| upractiene | 0.28 | 1100 | 6,003 | 0.002 | -0.00c | -0.002 | 0.033 | 900'0 | -C0.0022 | 9800'6 | 0.0045 | 6.00054 | 0.0052 |
| Ruorene | 0.28 | <0.002 | ÷0.302 | <0.002 | 0.002 | <0.002 | <0.002 | <0.00Z | <0.002 | 0.00053 | 0.00083 | 0,0001 | 0.00011 |
| ndenol 1.2.3-od/pyrene | 0.00043 | 0.0016 | 0.0024 | 0.0006 | <0.0003 | <0.0003 | 86000 | 0,0003 | <0.0003 | 0.0026 | 0.00074 | 0.000003 | 0,003 |
| zimalene. | 0,14 | 1000 | <0.01 | <2.01 | 0.0006 | 10.05 | 16.00 | 1000 | 1012 | S20005 | <0.00025 | STOTES | S20000P |
| Phenanthrone | 321 | <0.005 | 40,005 | <0.005 | <0.005 | 40,005 | 6,008 | 500.05 | 500:02 | 220000 | 0,0027 | 0.000074 | 0.0007 |
| Pyrece | 0.21 | 2000 | 0,002 | <0.002 | <0.0002 | -0.002 | 0.022 | 60003 | <0.002 | 5000 | 0.003 | 0.00038 | 1000 |
| otal Metals (6010C) | | | | | | | | | | | | | |
| nde | | 2 | NA | 2 | NA | NA. | NA | 2 | NA. | MA | NA. | 22 | 15% |
| read | 6,0075 | 24. | 12 | NA | NA. | 124 | 1 | MA | 14.4 | MA | 2 | > | -52 |
| Dissolved Metals (8010C) | | | | | | | 1 | | | | | | |
| hor, das, | | Y74 | 572 | 50 | NA. | N. | 335 | 33.5 | 15 | NA. | N. | NA. | 115 |
| lead, das. | 0.0075 | 10, | MA | NA. | NA | NA. | 25 | N.A. | 27. | 104 | 25 | NA | 5 |
| Field Parameters | | | | | | | | | | | | | |
| | 6.5-8 | 283 | 5,4 | N. | NA. | N. | 141 | NA. | 2 | N. | NA. | 8.70 | 42 |
| Temperature (Co. | | NA. | NA. | NA. | *2 | NA | ā | A.V. | 3 | 2 | NA | 3 | MA |
| Specific Conductivity (US-071) | | N.A. | NA. | NA. | 4 | 754 | NA. | 47 | Z. | 52 | N.S. | 25 | 20 |
| Despived Oxygen (mpil) | | 113 | 144 | NA I | 13 | 476 | 525 | 774 | NA | NA. | N. | 177 | 25 |
| մագետի (ԱՄԱ) | - | 75. | N.A. | N.A. | 754 | 574 | 144 | NA | NA. | 14.4 | NA | NA. | NA |
| 0000 | | 200 | *** | *** | **** | | **** | 1 | **** | | | | |

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TABLE 3 Historic Groundwater Analytical Results (2001 - 2016) 0370305005 - DeKalb County / Kirkland, Illinois Kirkland Gulck Stop / Blake Leasing

| Contaminant of Concern | Class I Groundwater Remediation | WW-6 | 9 | | | | | | L-1044 | | | | | |
|--------------------------------|---------------------------------------|----------|----------|---------|----------|----------|----------|-----------|----------|----------|-----------|-----------|----------|-----------|
| | Objective | Aug-16 | Nov-16 | Aug-01 | May-02 | Apr-03 | Dec-03 | Apr-04 | Sun-05 | Apr-06 | 30-Jnf-06 | Mar-07 | Mar-08 | Feb-09 |
| BTEX (mg1) | | | | | | | | | | | | | | |
| الافاءة | 0.005 | 500'0P | <0.005 | <0.005 | <0.005 | 50000 | 57160 | <0.005 | <0.005 | <0.005 | 90000 | 500 OP | 40,005 | <0.005 |
| phybentene | 0.7 | 40.005 | <0.005 | <0.005 | 900.00 | - S00.05 | 0.0054 | <0.005 | 50000 | <0.005 | 40.00S | 50072 | <0.005 | 500.05 |
| objects | | <0.005 | 40,005 | <0.005 | <0.005 | <0.705 | 0.0101 | 500.05 | <0.005 | <0.005 | 500.05 | <0.005 | 500.05 | <0.005 |
| Jacob, Total | 10 | <0.005 | <0.005 | 9500'0 | <0.005 | <0.005 | 0.0225 | <0.005 | <0.005 | <0.0005 | <0.0005 | <0.0005 | 40005 | <0.0006 |
| PNAS (mgl) | | | H | | | | | | | | | | | |
| Centralifore | 0.42 | -C.D. | 40.61 | -6.63 | 1000 | 10°P | 1000 | 1000 | 1000> | 10.05 | 42.01 | 1000> | 1000 | 1000 |
| and the second | 0.21 | -CD: | 40.01 | 10,05 | 40.00 | 40.01 | -dun | <03: | 40.03 | 1019 | 1000 | 1979 | 1000 | :00 |
| Chacere | .2 | 4005 | <0.005 | 40.05 | -0.00E | <0.005 | 10,05 | 40,005 | <2,005 | 50005 | 50000 | <0.005 | 50.05 | 40.005 |
| 20.30277725306 | 0,00013 | 0.00016 | 710000 | 0.00015 | <0.00013 | c0.00013 | <0.005 | <0.00013 | <0.00013 | <0.00013 | 5100013 | <0.00013 | <0.00013 | E10000.0> |
| Secuciagnese | 0.0002 | <0.0002 | <0.0002 | 900000 | -0.00cz | <0.0002 | <0.00013 | <0.0002 | -40,0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| 20/8/fuccanfrane | 0.00018 | 0.00022 | <0.00018 | 5700000 | -0.00016 | <0.00018 | 0.00023 | £10000°0> | <0.00015 | <0.00018 | <0.00018 | 40.00018 | 40,00018 | <0.00018 |
| Enzalk/fluorarthere | 71000.0 | 8100000 | 71000.0> | 0.00056 | <0.03017 | 2100000> | 0.00023 | <0.000017 | 710000P | C0.00917 | -G000017 | 40,000,07 | <0.90017 | <0.000017 |
| and the parish as | 521 | \$0000 P | *000°P* | 0.0005 | M0000099 | >0000'0> | 2100000 | 70000°0 | P00000> | +00000c | <0.00054 | <0.0004 | +00000P | 400004 |
| Nysene | \$100.6 | S100.0> | <0.0015 | 200005 | S100,05 | <0.0015 | <0.00004 | 40.000ts | <0.0015 | 510000 | <0.0015 | <0.00015 | <0.0015 | <0.0015 |
| Obertoria hightracene | 0.0003 | <0.0003 | <0.0003 | ×0,2003 | 5000000 | <0.0903 | 5:0005 | -C0.0003 | <0.0003 | <0.00003 | <0.0000 | <0.0003 | <0.0003 | <0.0003 |
| Morardisone | 0.28 | 2007P | <0.002 | <0.002 | 20000 | <0.002 | <0.00003 | C.002 | <0.002 | <0.002 | <0.002 | C00002 | -0.002 | <0.002 |
| notene | 0.28 | 40.002 | 4200 | <0.002 | -C0,002 | <0.002 | <0.002 | <0.002 | -0.00c | -0.00c | <0.002 | <0.002 | <0.002 | 40,022 |
| ndencji 2 3-odjavrano | 0.00043 | -COMO2 | <0.0003 | 0.0004 | <0.00003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0000 | 40,000 | <0.0003 | <0.0003 | 50007/D* |
| apriliating | 0.34 | -0.Dt | 40.01 | <0.03 | 40.01 | 40.01 | 1000 | 1000 | 4000 | GB1 | 10,01 | 40.01 | 1000 | 1000 |
| Phonandranc | 120 | <0.005 | 40,005 | -60.00S | <0.005 | <0.005 | <0.005 | <0.005 | -0.00S | <0.005 | 40.005 | 40,005 | <0.005 | -0.00E |
| augut. | 0.21 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.0002 | <0.002 | 40.002 | <0.002 | -0.000 | C1002 |
| otal Metals (6010C) | | | | | | | | 1 | | | | | | |
| | | 7.14 | 5.91 | NA. | 134 | NA. | MA | N. | NA. | NA | 25 | 2 | 77 | 100 |
| par | 0.0075 | <0.005 | <0.005 | N.S. | NA. | 200 | NA | NA | NA. | 20 | NA. | 154 | 177 | 25 |
| Dissolved Metals (6010C) | | | 1 | | | | | | | | | | | |
| ron dise. | | 7.24 | 7.00 | 355 | NA. | NA | 2 | N.S. | NA. | NA | NA. | 153 | NA. | 121 |
| Lead, 555. | 0.0075 | -0.005 | <0.005 | 354 | NA. | 754 | 25 | NA. | 353 | NA. | 2 | NA. | 100 | 144 |
| Reid Parameters | | | | | | | | | | | | | | |
| | 65.3 | 5.82 | 7.02 | NA. | 100 | NA. | NA. | NA | NA. | NA. | 100 | 200 | NA | Z, |
| C) enteredual (C) | • | 19.28 | 17.05 | . W. | 2 | 774 | N. | 2 | N. | 15 | 744 | NA. | 2 | 164 |
| Special Conductivity (u.S.cm.) | | 1,097.0 | 137.00 | NA. | 777 | NA. | 25 | 177 | 75. | N.S. | ** | N | NA. | 734 |
| Dissolved Onygen (mg/l) | , | 10.0 | 50'0 | NA | NA | 755 | 772 | 574 | NA. | NA. | 100 | NA I | 100 | 724 |
| unidov (MTU) | | 3.77 | 6.02 | 574 | 100 | NA | 114 | 765 | N.A. | 2 | NA | NA. | N.S. | A25 |
| | | | * *** | **** | 45.9 | 41.4 | *** | 808 | 4/4 | 200 | 204 | 25.5 | 170 | ALS. |

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TABLE 3 Historic Groundwater Analytical Results (2001 - 2016) 0370305005 - DeKalb County / Kirkland, Illinois Kirkland Quick Stop / Blake Leasing

| Contaminant of Concern | Groundwater Remediation | 5 | NEVI-7 | | | | | | MW-8 | | | | | |
|-----------------------------|----------------------------|--|----------|----------|-----------|----------|--------|-------------|-----------|----------|-----------|----------|----------|-----------|
| | Objective | Aug-16 | Nov-16 | Aug-01 | May-02 | Apr-03 | Dec-03 | Apr-64 | Springs | Apr-06 | Jul-06 | Mar-07 | Mar-38 | Feb-03 |
| BTEX (mg/b) | | | | | | | | | | | | | | |
| Benzehe | 0.005 | <0.005 | \$06:0> | 0.166 | 0.075 | 0.106 | 0.236 | 0.127 | 6500 | 0.0188 | 0.0124 | 0.0054 | 40,005 | 50000 |
| Ethybenzera | 2.7 | 500.05 | <0.005 | 0.0429 | 0.0472 | 0.0744 | 3.17 | 0.538 | 0.519 | 6950 | 0.452 | 0.374 | 0.197 | 0.515 |
| ohere | | 500.05 | <0.005 | 0.0185 | 5600'0 | 0.0164 | 5.073 | 0,0195 | 1.09 | 0.012 | 0.0088 | 0.0101 | <0.005 | 50005 |
| Xylene, Total | 10 | <0.005 | 500.05 | 0.0354 | 0.023 | 0.057 | 8.53 | 141 | 0.912 | 1.07 | 0.83 | 0.478 | 0112 | 0.178 |
| PNAs (mgT) | | | | | | | | | | | - | 2000 | ****** | 2000 |
| censcribene | 0.42 | 40.01 | 1000 | 40.07 | 1500 | 1000 | 2552 | ADD: | 40.01 | 40.01 | :002 | 1000 | 1000 | 0.029 |
| Acerasionyana | 523 | -0.01 | 10.50 | <0.01 | 10:05 | 10.01 | -0.035 | -0.01 | 10.0> | 10.05 | 10.05 | 40.05 | 1000 | 1007 |
| utracene | 2.1 | 500.05 | 50000> | 500.05 | 500'02° | <0.005 | 0.162 | 40,005 | <0.005 | <0.005 | 90000 | <0.005 | e0 025 | 20005 |
| Benzo(a)arthrapana | 0.00013 | C1000.0> | <0.00013 | <0.00013 | <0.000013 | <0.00013 | <0.030 | <0.00013 | <0.000013 | £1000.0> | 40,80913 | <0.00013 | C000013 | C10000 |
| Senzo(a)pyrane | 200000 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 40,030 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.00002 | 0.0002 |
| Senzo(b)fluoranthene | 2,00019 | <0.00018 | <0.00018 | <0.00018 | <0.00018 | 40.0001B | c0.030 | <0.00018 | <0.0001E | <0.00016 | 81,000.05 | -0.000°B | <0.00018 | -0.000013 |
| Sento(Aifluorantherse | 0.00017 | <0.000017 | <6,00017 | <0.00017 | 21000/0> | -0.00017 | 050.05 | C100012 | 2100012 | <0.00017 | 71600.05 | C:000:17 | 71000.05 | 0.00023 |
| Senzelphiperylene | 0.21 | 40,0004 | <0.0004 | <0.0004 | 5000°C> | +00000 | OCCUP. | *000000 | +0.0004 | *00000 | *0000F | A00005 | 40,0004 | 40,000 |
| system | 0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | <0.0015 | CD:030 | <0.0015 | <0.0015 | 40,0015 | 200005 | <0.0015 | <0.0015 | AD0015 |
| Spenzola hishminacene | 0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | -0.03G | -d0.0003 | <0.0003 | <0.0003 | 40.0000 | <0.00033 | <0.0003 | -0.0003 |
| luciaritysne incaritysne | 0.28 | <0,000 40 | <0.002 | <0.002 | <0.002 | <0.002 | 0.042 | <0.002 - | 40,002 | <0.002 | <0.002 | <0.002 | <6.002 | <0.002 |
| horene | 0.28 | <0.002 40.002 | <0.002 | C.002 | <0.00c | <0.002 | 1.58 | 9000 | 2000 | - CD0025 | 0000 | CO.002 | -60.002 | 0.032 |
| deno(1.2.3-cd.pyrene | 1 0,00043 | <0.0003 | <0.0003 | <0.0003 | <0.000G | 40,0003 | 05000 | 5000°P | CD0003 | <0.0003 | 50000 | 500000 | 500000 | <0.0003 |
| Aphthalere | 0.14 | 40.01 | <0.01 | 6.018 | 10.0 | 0.042 | 31.5 | 0.42 | 0.356 | 10.05 | 0.425 | 0.274 | 0.091 | 0.475 |
| Phenarthrene | 0.27 | <0.005 | 90000 | 500.05 | <0.005 | <0.005 | 1,44 | <0.005 | 500.05 | <0.005 | 90000 | 40.005 | <0.005 | 0.03 |
| prene | 0.21 | -0.002 | <6.002 | <0.002 | <0.002 | 20705 | 0.15 | <0.002 | <0.002 | 40,002 | <0.00Z | <0.002 | -0.002 | 0000 |
| Total Metals (5010C) | | | 6 | | | | | | | | | | | |
| 200 | | 51.2 | 050 | NA. | 304 | NA | NA. | NA | NA. | NA. | 177 | NA | NA. | 2 |
| Lead | 0.0075 | 40.00S | <0.005 | NA. | 144 | N. | NA. | 113 | 764 | NA | 25 | M | NA | 2 |
| Dissolved Metals (6010C) | | | | | | | | | | | | | | |
| 134, OSS. | | 50.05 | 50.05 | 22 | 384 | 22 | NA | 114 | N. | NA. | 144 | 744 | 377 | N. |
| ead, das. | 0.0075 | <0.005 | <0.005 | 144 | 759 | NA. | NA. | 14 | 144 | M | 20 | 25 | MA | NA |
| Field Parameters | | | | | | | | | | | | | | |
| | 6.5.9 | 673 | 983 | NA. | NA | ž | NA. | 150 | W | 15% | 22 | 25 | 344 | NA. |
| emperature (CI) | - | 17.99 | 17.02 | 724 | N. | NA. | ZN. | 25 | NA. | 2 | NA | 201 | MA | 2 |
| echt Conductivity (uSich) | | 2,636.7 | 2530.8 | 14 | YNY . | NA | 774 | 250 | NA | 5 | NA. | 2 | 774 | 2 |
| Dissolved Onygen Impili | - | 0.47 | 620 | NA. | 級 | 2 | W. | 14. | 42 | 324 | 13.5 | 25 | NA. | 2 |
| Turbidity (NTL)) | - | 18.53 | 101.13 | 474 | NA. | NA | 374 | 177 | 2 | NA | 31.5 | 724 | NA. | 77.4 |
| 100000 | | | | | | | | | | | | | | |

TABLE 3 Historic Groundwater Analytical Results (2001 - 2016)

| Contaminant of Concern | Groundwaler Remediation | | | MAY-8 | | | MW-9 | MW-10 | | | | 11-307 | | | |
|-------------------------------|----------------------------|--------|-----------|-----------|----------|--------|----------|--------------|----------|-----------|--------|--------|--------|-----------|-----------|
| | Objective | Nov-12 | Jun-14 | May-15 | Aug-16 | Mov-16 | Aug-01 | Aug-01 | Aug-09 | Feb-10 | Mar-11 | Sep-12 | Nov-12 | May-15 | Aug-16 |
| BTEX (mol) | | | | | | | | | | | | | | | |
| Senzere | 6,005 | > | 10002> | <0.001 | 40.905 | NS | 5000 | <0.005 | <0.005 | 5000> | -0.00E | <0.005 | * | 100.05 | <0.005 |
| Emybertane | 2.7 | * | 0.046 | 650'0 | <0.005 | NS | 45,005 | <0.005 | 1,0671 | 0.0581 | 500,00 | 500,05 | > | 10070> | <0.005 |
| Jack | | * | <0.005 | <0.005 | 40,005 | NS | <0.005 | <0.005 | <0.005 | <0.005 | c0.005 | <0.005 | > | 500.05 | <0.005 |
| Wylene, Total | 10 | * | <0.003 | 510'0 | <0.005 | 57 | <0.005 | 40,005 | 0.295 | 0.286 | <0.005 | <0.005 | | -60.002 | <0.005 |
| PNAs (mgf) | | | | | | | | | | | | | | | |
| nachthene | 0.62 | 泛 | 500005 | S00000.05 | 1000 | 32 | 1000 | 1000 | 46.01 | 1979 | 343 | N.A. | 524 | <0.00005 | <0.01 |
| Acenaphone | 521 | ž | <0.00005 | 5000005 | 1000 | 22 | 1000 | 40.01 | 199 | (00) | 3,13 | MA | 123 | <0.00005 | <0.51 |
| \$155545 | 2.1 | M | <0.0000S | <0.00005 | 40.005 | SN | 500.05 | 40.005 | <0.005 | 40.00S | 104 | NA. | 2 | <0.00005 | <0.005 |
| PATO(2) BATH-UDDA | 0,00013 | NA. | <0.00005 | <0.00005 | <0.00013 | 52 | <0.00013 | <0.00013 | <0.00013 | £1000005> | 24 | 272 | NA. | <0,00005 | <0.00013 |
| Serio a priene | 0,0002 | 25 | <0.00005 | <0.000005 | 2000°C> | 52 | -0.0002 | <0.0062 | <0.0002 | <0.0002 | 334 | NA. | 575 | \$0000°P | <0.0902 |
| Benzo tillucrantiene | 0.00018 | NA | <0.000005 | \$000000 | 60,00018 | 165 | <0.00018 | <0.00018 | <0.00015 | <0.00018 | 164 | NA. | 344 | <0.00005 | <0.000018 |
| Benzo Alducianthere | 0.00017 | 777 | 40,000065 | 30000 P | 21000 P | 165 | 21000°0 | <0.00017 | <0.00017 | 40,00017 | 11.5 | MA | NA. | <0.000005 | <0.00017 |
| Benzelphilpsylene | 0.21 | ž | <0.000005 | <0.00005 | *00000 | 22 | 7000°0> | +0.0004 | <2,0004 | <0,0004 | NA. | NA | ** | -0.00055 | <0,0004 |
| Wishe | 0,0015 | N. | <0.00005 | <0.00005 | <0.0015 | SNS | <0,0015 | <0.0015 | <0.0015 | <0.0015 | 13.4 | 144 | NA. | <0.000055 | <0.0015 |
| Disonzo(a,hianthracene | 0,0000 | MA | <0.00005 | 50000000 | -0.0003 | NS. | <0.0003 | <0.00002 | €0.0003 | <0.0003 | NA. | NA. | W | <0.0000S | <0.0003 |
| Fluorantese | 0.28 | 375 | <0.00005 | <0.00005 | <0.002 | 15 | <0.002 | <0.502 | <0.002 | 40,002 | NA. | NA. | NA. | <0.000005 | <6.002 |
| Puccene | 0.28 | N. | <0.00005 | <0.00005 | 40.002 | 35 | <0.002 | <5,002 | A.302 | -0.002 | 155 | NA. | 113 | <0.00005 | <0.002 |
| hdenoi123-adispere | 6709070 | NA | S00005 | <0.00005 | <0.0002 | 35 | <0.00035 | <0.0003 | -C10003 | -0.000g | NA. | N. | NA | <0,00005 | <0.0003 |
| and the second | 7170 | 144 | S20025 | <0.00025 | -C.01 | NS | 4001 | 4001 | 0.017 | 0.031 | 25 | 27 | 2 | <0.00025 | <0.01 |
| Phenanthrene | 0.21 | 200 | 0.00021 | 98070 | <0.005 | 7.5 | 40,005 | <0.005 | <0.005 | <0.005 | NA | 22 | 44 | <0.00005 | c0:005 |
| ارفرد | 1231 | W. | <0.00005 | 0.0000072 | <0.002 | 52 | <0.002 | <0.002 | <0.002 | <0.002 | NA | NA. | 224 | <0.00005 | <0.002 |
| Total Metals (5010C) | | | | | | | | | | | | | | | |
| iran | | NA | 124 | 18 | 232 | NS | 2 | 745 | NA | NA. | NA | NA. | NA | 0.35 | 0.12 |
| pead | 520070 | N. | 104 | 0.0094 | -40.005 | NS | NA. | NA | 25 | N.A. | NA | N.S. | 27 | > | <0.005 |
| Dissolved Metals (6010C) | 100 | 1 | | | | | | | | | | | | | |
| 101.055. | | NA. | 14.4 | NG | 2.37 | 22 | 250 | 144 | NA. | 25 | N.A. | 25 | NA. | 250 | 600 |
| .232. dsz. | 3,000 | NA. | NA. | 25 | <0.05 | 35 | 2 | NA | 748 | 18 | 77.5 | NA | N.A. | 2 | 40.005 |
| Field Parameters | | | | | | | | | | | | | | | |
| | 52.5 | 25 | 375 | 5.80 | 5,40 | 57 | N. | 777 | | N. | 14 | 2 | 2 | 7.30 | 5.43 |
| Temperature (C) | | 744 | MA | NA | 18.53 | 522 | N. | 570 | 105 | NA NA | NA | NA. | NA. | NA. | 21.36 |
| Soeofic Conductivity (US/CCI) | | 100 | 774 | W | 1,142.3 | 22 | N. | 25 | 355 | NG. | NA NA | N | 334 | NA. | 856.29 |
| Solved Orveon (medi | | 155 | 14.4 | NA | 0.19 | NS NS | NA. | NA | 203 | NA. | MA | NA | NA. | NA. | 6.03 |
| Turbidoy (MTU) | | 152 | 37.5 | 144 | 33.74 | 2 | NA. | 155 | 77 | NA. | 182 | NA. | 744 | 11A | 61.28 |
| 2000 | | 202 | 452 | 202 | 2001 | 37 | 270 | 272 | 27.0 | N.S. | 1.44 | MA | NA | - NA | 89.5 |

| Contaminant of Concern | Class 1 Groundwater Remediation | MW-11 | | | MW-12 | | | MA | MW-12 | | | MW-13 | | |
|---------------------------------|---------------------------------------|----------|-----------|-----------|--------|--------|-----------|----------|-----------|-----------|----------|--------|--------|--------|
| | Opjective | Nov-15 | Aug-03 | Feb-10 | Mar-11 | Sep-12 | May-15 | Aug-16 | Nov-15 | Aug-09 | Feb-10 | Mar-11 | Sep-12 | Nov-12 |
| STEX (mgl) | | | | | | | | | | | | | | |
| enzene | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 100.05 | 40,005 | -0.005 | <0.005 | <0.005 | S00.05 | <0.005 | * |
| Envoenzene | 0.7 | <0.005 | <0.005 | <0.005 | 500,05 | 40.055 | 100:00 | 40.005 | <0.005 | 500,05 | <0.005 | 500.05 | <0.005 | , |
| avan | | -40.005 | <0.005 | <0.005 | <0.005 | 40 005 | <0.005 | <0.905 | -d.005 | 40,005 | -d0.005 | <0.005 | <0.005 | , |
| Xyene, Total | 32 | <0.005 | 0.008 | <0.005 | <0.005 | <0.005 | <0.003 | <0.005 | -0.00E | 0.0085 | -0.005 | <0.005 | <0.005 | ٧ |
| PNAs (mp.fi | | | | | | | | | | | | | | |
| Acersolitiere | 0.62 | 10.00 | -6.01 | 100 | Z | NA. | 400005 | 40.01 | (0.0) | 1000> | <0.07 | NA. | 52 | K.A. |
| Acetaptovlene | 0.21 | 100 | -0.01 | 157 | NA | 344 | \$3000°P | 100> | 1000 | 45.01 | 4001 | 2 | NA. | 50 |
| Antivacene | 21 | 42,025 | -0.005 | <0.005 | NA. | 344 | <0.00005 | <0.005 | -0.005 | 40,005 | 5000P | A.A. | N | 2 |
| accopartire (gipcone | 6,00013 | <0.00013 | <0.000013 | <0.000013 | NA | 24 | SDOCOOL | <0.00013 | <0.00013 | <0.00013 | <0.00013 | NA. | NA. | NA |
| Benzo(a)oydena | 0.0002 | <0.0002 | <0.0002 | <0.0002 | NA | 165 | 50000000 | <0.0002 | <0.00002 | <0.0002 | <0.0802 | MA | 243 | NA |
| Benzo Difficiantifiere | 8:0000 | <0.00018 | 5100000 | <200018 | NA | 251 | <0.00005 | 40,00018 | <0.000015 | 31000.05 | <6,00018 | NA. | N. | AN. |
| Berzeitifludiarthene | 0.00017 | 7100005 | <0.000017 | <.000017 | N.A. | 38 | <0.00005 | <0.00017 | 51000.05 | 40,000,07 | 7100012 | N.A. | 7.5 | 5 |
| Sector (d) Desylene | 0.21 | *C0000* | *0000° | 2000CO> | 170 | NA. | 5000000 | <0.0000 | M0000 | *0000c | 7000°F | NA. | NA. | YNY |
| Chrysene | 510000 | <0.00015 | \$1007 | \$10000 | .52 | NA | 50000000 | -C0.0015 | <0.0015 | 40.0015 | <.000ts | 122 | NA. | |
| Digeracia hiardy agene | 000003 | -0.000g | <0.0003 | <0.0003 | NA. | NA. | <0.00005 | <0.00005 | <0.0003 | 40,0003 | <0.0003 | NA. | NA | 124 |
| Puorattene | 0.28 | -0.502 | <0.002 | <0.002 | NA. | 25 | <0.000055 | 40.002 | <0.002 | <0.002 | <0.002 | 200 | NA | 2 |
| Puorene | 0.28 | <0.0002 | <0.002 | <0.002 | 14. | 34.4 | <0.00005 | <0.002 | <0.002 | <0.002 | <0.002 | NA. | 22 | ž |
| Indental 12.3-colleyrene | 5,000.6 | <0.0003 | <0.0003 | 40,000 | 2.3 | 244 | <0.00005 | <0.0003 | -0.000G | <0.0003 | <0.00033 | 25 | 120 | N.A. |
| Vaphthalene | 71'0 | 4331 | 40,01 | 43.01 | NA. | NA | 0.00069 | 10.05 | 40.01 | 1000 | <0.07 | NA | NA | NA |
| Phononome | 0.21 | <0.005 | <0.005 | 40,005 | 724 | 44 | <0.00005 | <0.005 | 40.05 | 500.00 | -0.005 | 134 | 344 | 12 |
| Pyrene | 0.21 | <0.002 | <0.002 | -0.002 | NA | NA. | <0.000055 | <0.002 | <0.002 | <0.002 | 20000 | 13 | 355 | 2 |
| Total Metals (6010C) | | | | | | | | | | | | | | |
| 100 | | 3.22 | N.R. | NS. | ž | NA. | * | 4.12 | 0.13 | 77. | N.A. | NA. | NA. | 25 |
| Lead | 0.0075 | -d.305 | 100 | N.A. | NA. | NA. | | <0.005 | <0.005 | NA. | NA. | NA | NA | ** |
| Dissolved Metals (6010C) | | | | | | | 18 | | | | | | | |
| ron, asss. | | 3.35 | NA | NA. | NA | ž | NA | 40.05 | 40,05 | NA | ı, | MA | 2 | 5 |
| lead, diss. | 1,0075 | <0.005 | NA. | 8.4 | NA. | NA | NA. | <0.005 | <0.005 | NA. | 14.4 | 144 | 100 | 253 |
| Field Parameters | | | | | | | 1 | | | | | | | |
| | 6.5.3 | 6,80 | 25 | 200 | NA. | NA. | 7.80 | 5.77 | 7.13 | 24 | NA | N. | 25 | 3 |
| TOSESTIVE (C) | | 18.50 | N.A. | N.A. | 7.5 | NA. | 200 | 17.88 | 17.75 | 7.5 | 14.4 | 20 | 274 | 2 |
| Specific Conductivity (p.Sicht) | | 1,033.2 | N. | NA | NA | NA. | 22 | 2,628.2 | 241.6 | 355 | NA | N. | NA | . N |
| Dissplied Origen (mg/l) | | 9707 | 164 | 250 | N.A. | 743 | NA. | 235 | 1,78 | NA. | NA | N | NA | NA. |
| Supplies (NTS) | | 43.05 | NA. | N.A. | NA | 14 | 574 | 20.30 | 25.53 | 225 | NA | NA | 2 | NA |
| 500 | | 1.59. | 200 | 200 | NA. | 122 | 355 | 54.0 | 33.4 | 2.4 | 475 | *2 | 476 | NA. |

TABLE 3 Historic Groundwater Analytical Results (2001 - 2015)

TABLE 3 Historic Groundwater Analytical Results (2001 - 2016) 0370305005 - DeKalb County / Kirkland, Illinois Kirkland Ouick Stop / Blake Leasing

| Contaminant of Concern | Chass I Groundwater Remediation | | NAT | MW-13 | | | | | | MW-14 | | | | |
|-----------------------------|---------------------------------------|-----------|-----------|----------|----------|----------|-----------|------------|---------|--------|--------|---------|----------|-----------|
| | Objective | Aug-14 | May-15 | Aug-15 | Mon-16 | Aug-09 | Feb-10 | Jan-11 | Mar-11 | Sep-12 | Nov-12 | Jun-14 | Aug-14 | May-15 |
| STEX (mg/l) | | | | | | | | | | | | | | |
| Benzene | 0.005 | 10000 | - 1080b | 40,006 | <0.005 | 0.0337 | 6.122 | 0.0595 | 6,0304 | <0.005 | 0,0075 | 71000 | 9,0055 | <0.001 |
| mybernene | 1 0.7 | <0.001 | 10000> | <0.005 | -40.00E | <0.005 | <0.005 | <0.005 | 40,005 | 40,005 | > | <0.003 | <0.001 | 100.05 |
| chone | | <0.005 | <0.005 | <0.005 | <0.035 | S00,05 | 90,005 | 5000p | <0.005 | <0.005 | , | <0.005 | 50000 | <0.000 |
| Mene. Total | 10 | <0.005 | <0.003 | -0.005 | <0.005 | 0.0057 | 40,005 | <0.005 | <0.0005 | <0.005 | | -d 000 | 0.003 | <0.003 |
| NAS (mgT) | | | | | | | | | | | | | | |
| cenzohbene | 0,42 | <2,00005 | <0.00005 | 100> | <6.81 | (CO) | 10.00 | 365 | NA. | 35 | N.A. | 81000 | 1000 | 0.00022 |
| Conspribile | 9.21 | 50000005> | S000000P | 100 | 100 | 10'02 | 1902 | 744 | N.C. | N. | N. | 0.00085 | 500005 | <0.000055 |
| composite | 2.1 | <0.000005 | <0.00005 | <0.005 | 40,005 | S00.05 | -0.005 | *** | NA. | W | NA. | 0.0034 | 71000 | 0.00041 |
| Henzo(a)anthracene | 0.00013 | <0.00005 | <0.00005 | <0.00013 | <0.00013 | <0.00013 | <0.000013 | MA | N.A. | 25 | NA. | 0.028 | 0,006 | 0.00017 |
| Benuo(a)pyrane | 0.0062 | <0.00005 | <0.000005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 744 | 177 | NA. | 25 | 0.041 | 0.0008 | 0.00014 |
| Bentolbithorathere | 6100000 | <0.00006 | <0.00005 | <0.00018 | <0.00018 | 31000.0> | <0.00018 | 20 | W. | 150 | NA. | 0.035 | 0.016 | 0.00026 |
| Benzbir/Tuorardhene | 0.00017 | <0.00005 | \$0000E | 42,00017 | <2,00017 | -0.00017 | C1000025 | MA | 344 | NA. | 100 | 0.045 | 95000 | 6,000073 |
| Secusionisespiene | 0.21 | 40,00005 | <0.00005 | X0000 | MOOD | >00000 | 100000P | N.S. | 27% | W | N | 0.022 | 95000 | \$100076 |
| phase | 1 0,000 | <0.00005 | <0,00005 | <0.0075 | <0.0015 | <0.00015 | 5100'05 | 27. | 37.4 | 345 | 123 | 60.048 | 0.015 | 3,00032 |
| Denzolatuanthracene | 0.0003 | <0.000005 | <0.00005 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | 144 | NA NA | 77% | N.A. | 110000 | <0.00005 | <0.000005 |
| Suprantiese | 0.28 | <0.00005 | <0.000055 | <0.002 | 40,002 | <0.0002 | <0.002 | 355 | N4 | NA. | NA. | 0.12 | 0.0028 | 8500'0 |
| horece | 0.28 | <0.000005 | <0.00005 | <0.002 | -D002 | <0.002 | <0.002 | NA. | N. | 12 | NA. | 0.0025 | 6700.0 | 6700079 |
| denoi 1,2,3-cdjayrene | 0.00043 | <0.000005 | <0.00005 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | SA. | 5% | NA. | 18.4 | 80038 | <0.00005 | 1100011 |
| laphthalene | 9714 | <0.00025 | <3,00025 | 40.01 | 1000 | -0.01 | 10.05 | 554 | 377 | 144 | 77 | 210000> | 5000 | -40,0002° |
| Sociatione | 0.21 | 40,0000.b | <0.00005 | 40.005 | 500.05 | 42,005 | 500,05 | NA. | 275 | NA. | 774 | 0.012 | 5000000 | 2,0045 |
| rene | 0.23 | <0.00006 | <0.00005 | <0.002 | <0.002 | 200'0> | <0.002 | 614 | N.Y. | 144 | 100 | 870.0 | 0.024 | 0.0033 |
| otal Metals (6010C) | | | | | | | | | | | | | | |
| 100 | | NA | 1** | 1.28 | <0.05 | N.S. | N. | NA | NA. | 250 | 575 | N.S. | 200 | 10 |
| 630 | 0.0075 | NA. | 0.0076 | <0.005 | <0.005 | NA | NA | MA | NA | 150 | 104 | 355 | 250 | , |
| Dissabred Metals (6010C) | | | | | | | | | | | | | | |
| ron, diss. | | NA. | NA. | 970 | 40.05 | NA. | NA. | 12. | NA. | NA. | 154 | NA. | 15: | 22 |
| ad des. | 0.0075 | N3 | 333 | <0.005 | 4005 | 164 | NA. | 177 | NA. | 191 | 154 | NA. | NA. | 2 |
| Field Parameters | A | | | | | 1 | | | | | | | | |
| | 6-55 | 3 | 2.40 | 6.73 | 36'9 | NA. | NA. | 100 | N.S. | 170 | 2 | 200 | 100 | 7,30 |
| emperature if CI | | 144 | NA | 50.59 | 12.43 | 2 | 344 | 27 | 124 | NA. | 104 | N | NA. | á |
| peofic Conductivity (µS/cm) | - | N. | 20.5 | 4,338.2 | 3.119.8 | N. | NA | 144 | 150 | 35 | ž | NA. | 177 | 2 |
| Dissolved Outgon (mg I) | | NA. | 133 | 1.35 | 0.25 | 244 | NA. | THE STREET | NA. | NA. | 177 | 777 | 177 | W. |
| Lurbidity (MTL)) | - | 15 | NA | 155.19 | 10.01 | 344 | 114 | NA. | NA. | NA. | 152 | NA | 114 | NEE |
| CONT. DOC | | 414 | 818 | | | *** | *** | - | | | | | | |

TABLE 3 Historic Groundwaler Analytical Results (2001 - 2016)

| Contaminant of Concern | Class I Groundwater Remediation | | MW-14 | | | MW-15 | | | MW-16 | | | WW-17 | |
|-------------------------------|---------------------------------------|-------------------|---------|------------------|-----------|------------|----------|------------|----------|----------|-----------|----------|--------------------|
| | Objective | Jul-15 | Aug-16 | Nov-16 | May-15 | Aug-15 | Nov-15 | May-15 | Aug-15 | Nov-16 | May-15 | Annath | Messalk |
| 81EX (mg1) | | | | | | | | | | | | | |
| Senzene | 3000 | 0.012 | 40,005 | <0.005 | 10000> | 0.612 | -0.00E | <0.001 | <0.005 | 5000> | 43001 | 5000 | 20000 |
| Ethybertzene | 50 | 100.05 | 40.005 | 500.05 | 40000 | 0.0068 | -0.00E | CO.001 | 45,005 | -0 005 | -0.00 | 5000 | 5000 |
| oluere | | - C0005 | <0.005 | S00.05 | <0.305 | <0.005 | -00.05 | <0.005 | 50005 | 500.00 | Anny. | 20,000 | 20000 |
| Aytene, Total | 10 | <0.003 -c0.003 | <0.005 | <0.005 | <0.0002 | 0.0154 | 0.0104 | -0.00G | 40,005 | 9000 | 5000 | AU DOS | 2000 |
| PMAs (mg1); | | | | | | | | | | | | - | - |
| Conspirment | 0.42 | 0,00037 | 10.00 | -CD01 | 0.00064 | 400 | 1000 | - 40,0000S | 10.05 | 1000 | -00000s | 1099 | 1000 |
| Acetach6-year | 0.21 | <0.00005 | 10.05 | 16.05 | 2100013 | 1000 | 1005 | 40.000E | CL01 | 100 | <0.0000E | 400 | 43.01 |
| Archacene | 2.5 | 0.00067 | 50000 | 500.05 | 9000000 | 40,005 | 40.00S | 30000CO- | 50000 | 40,006 | <0,00005 | <0.005 | 500.05 |
| BenzolaianThacene | 0.00013 | 0.0018 | 0.00164 | 0,00074 | <0.000005 | £1000/92 | <0.00013 | <0.00005 | £1000000 | <0.00013 | <0.00005 | <0.00013 | <0.00013 |
| enzolalpyrene | 0,0002 | 0.0037 | 0.024 | 8000'0 | 50000000 | <0.0002 | <0.0002 | 5000000° | <0.0002 | <0.0002 | <0.00005 | <0.0902 | <0.00002 |
| Benzchläuderbehe | 0.00018 | 0.0056 | 0.00372 | 0.00149 | <0.00005 | 40.00018 | <0.00018 | -0.00005 | <0.00018 | <0.00018 | <0.00008 | <0.00018 | -0.00018 |
| Serzektfustartzene. | 0.00017 | 0.0022 | 0.00268 | 6,000108 | -0.00005 | Z10005 | <0.00017 | -40.00005 | 7100005 | <0.00017 | <0.00005 | 710000 | <0.00017 |
| Serzo gripony rate | 521 | 0,0041 | 0.0028 | 0.0011 | 40,00005 | -40.000.ch | 40000P | 3000000 | 2000c | 400000 | - S000005 | - 40000a | <0.0004 |
| hysere | 0.0015 | 150000 | 0.0034 | 6.0015 | 50000000 | 2000 | S:00'0> | -40,00005 | <0.0015 | <0.0015 | 40,0006 | 45.00015 | <6,00035 |
| Dental a hi anthrapene | 0.0003 | 0.00012 | 900000 | <0.0003 | <0.00005 | 53055 | <0.0003 | <0.000035 | <0.0003 | CO 00003 | <0.00005 | <0.00033 | <0.0003 40.0003 |
| riuofatifiene | 0.28 | 0.014 | 0.01 | 0.01 | 9500070 | <0.002 | <0.03€ | -0.00006 | <0.002 | <0.002 | <0.00005 | <0.002 | <0.002 |
| CORRE | 0.28 | 900000 | <0.002 | <0.002 ch.002 | <0.00005 | <0.002 | -0.002c | <0.00005 | 40.002 | <0.002 | <0.00005 | <0.002 | <0.0002 |
| denol123-odipyrene | 0.00043 | 6.0033 | 0.0029 | 0.0011 | <0.000055 | <0.0033 | 500000° | <0.00005 | <0.0033 | -C00003 | <0.000005 | -0.000G | <0.0003 |
| Schoolene Schoolene | 6,14 | -0.00025 | 1000 | 10.0> | 0.2 | 8500 | 2000 | 520000 | 10.05 | 100 | -0.00025 | 160> | 1000 |
| Presentatione | 0.21 | 0.0027 | 50000 | 40.05 | 0.00052 | <0.005 | -40.00S | S000005 | -d0005 | 300°C | <0.00006 | <0.005 | 500.05 |
| Pytene | 023 | 0.0051 | 0.007 | 90000 | S000000P | <0.002 | -C0 005 | 50000000 | <0.002 | <0.002 | <0.00006 | <0.002 | 20,000 |
| ctal Metaks (S010C) | | | | | | | | | | | | | |
| 5 | | - 11 | 5.51 | 5,17 | 21 | 14,4 | 9870 | 12 | 122 | 0.40 | 31 | 171 | 0.35 |
| 850 | 0.0075 | 0.0089 | -0.005 | <0.005 | 1100 | -d005 | 50000 | , | 2000 | <0.005 | 2500 | -d00055 | 40.00 |
| Dissalved Metals (6010C) | | | | | | | | | | | | | |
| You, das | | 365 | 5.12 | 553 | *** | 121 | 196 | N.A. | 0.10 | 020 | NA. | 50.05 | 9000 |
| Lead, Oss. | 9,0075 | 573 | <0.005 | <0.005 | NA | <0.005 | 5005 | 754 | <0.005 | -d0.005 | N. | 20005 | 5000 |
| Field Parameters | | | | | | | 7 | | | | | | |
| | 65.8 | 6.35 | 6.35 | 7.01 | 7.20 | 5.54 | 163 | 7.80 | 676 | 532 | 720 | 5.73 | 6.82 |
| Temperature (C) | | NA. | 18.75 | 12,02 | YN | 18.53 | 17.27 | W | 17.20 | 拉拉 | 22 | 25.22 | 25.67 |
| decide Conductivity (u.S.cm.) | | 164 | 1,928,9 | 1,757.6 | NA | 1,734.7 | 1,805.1 | N | 12513 | 1,389.3 | NA | 1,103.0 | 1244.9 |
| Descived Ongen (not) | | NA | 0.02 | 0.20 | 104 | 0,10 | 0.09 | NA. | 550 | 160 | NA. | 296 | 403 |
| Turbidity (MTU) | | NA | 35.17 | 4.80 | 184 | 24.71 | 35.09 | 155 | 264.00 | 503 | NA | 154.30 | 21.33 |
| 000 | | **** | * ** | | 200 | - | | | | | | | |

Historic Groundwater Analytical Results (2001 - 2015) 0370305005 - DeKalb County / Kirkland, Illinois

| Contaminant of Concern | Class I Groundwater Remediation | | MW-18 | | | MW-19 | | | MW-20 | | | MM | SOS-WIN | |
|--------------------------------|---|-----------|----------|----------|-----------|------------------|----------|-----------|----------|----------|-----------|--------|----------|---------|
| | Objective | May-15 | Aug-16 | Nov-16 | May-15 | Aug-15 | Nov-16 | May-15 | Aug-15 | Nov-16 | May-15 | Jul-15 | Aug-16 | Nov-16 |
| BTEX (mgl) | | | | | | | | | | | | | | |
| Benzere | 5000 | 100.05 | <0.005 | 40,005 | <0.001 | <0.005 | -0.065 | -400th | <0,005 | <0.005 | 4C.001 | ٧ | -0.00S | 40.000 |
| Embergase | 6.7 | 100.05 | ₹0.00€ | -0.005 | <0.001 | <0.005 | <0.005 | <0.001 | <0.005 | <0.005 | <0.005 | > | 40.005 | 40,005 |
| Colorine | 1. | <0.005 | -40.005 | <0.005 | <0.035 | <0.005 | <0.305 | <0 DOS | <0.005 | 500.05 | 500'0P | > | 50005 | -0.005 |
| Nifere Cra | 10 | -C0.003 | -40.00S | <0.000 | <0.003 | <0.005 | <0.005 | <0.003 | <0.005 | <0.005 | -0.00G | , | <0.005 | *0.005 |
| PHAS (mg1) | | | | | | | | | | | | | | |
| Acengrithene | 570 | 5000075 | 100 | 1000 | <0.00005 | 1500 | -0.01 | -d100005 | 40.01 | 400 | <0.000055 | > | c0.01 | 4001 |
| Santacata | 0.21 | <0.00005 | 1000 | 10.05 | 5000000 | -000t | -5.01 | <0.00005 | 40.01 | -000 | <0.00005 | , | 40.01 | 49.03 |
| Anthracere | 2.1 | <0.00005 | 50000> | 50005 | 40,00005 | <0.005 | 40,005 | <0.00005 | <0.005 | 40.005 | <0.000005 | ٧ | <0.005 | <0.005 |
| Benzo/alanthracene | 0,00013 | <0.00005 | <0.00013 | <0.00013 | <0.000005 | <0.00013 | <0,00013 | <0.00005 | <0.00013 | <0.00013 | <0.00005 | * | <0.00013 | 0.00014 |
| Berzolalpriere | 0.0002 | <0.090005 | <0.0002 | <0.0002 | <0.0000S | <0.0002 | <0.0002 | <0.000005 | <0.0002 | <0.0002 | <0.00005 | ¥ | <0.0002 | <0.0002 |
| Benzo billuorandhene | 510000 | 9000000 | <0.00018 | <0.00018 | <0.000005 | <0.00018 | <0.00018 | <0.00005 | <0.00018 | <0.00018 | <0.00005 | * | <0.00018 | 0.00025 |
| Benzolii Buorantiere | 110000 | 500005 | <0.00017 | <0.00017 | <0.00005 | <0.00017 | <0.00617 | <0.00065 | <0.00017 | 40,00017 | <0,00005 | ٧ | 40,00017 | 0.00027 |
| Senzal contractions | 150 | <0.00005 | -00000p | 40000c | 50,00005 | +00070> | +00000+ | 500000 | 40,0004 | -C0004 | <0.00005 | ٧ | 40.0004 | <0.0004 |
| Cryster | 0.0015 | <0.00005 | 40,0015 | <0.0005 | 5000025> | <0.0015 | <0.0015 | <0.00005 | <0.0015 | <0,0015 | <0.00005 | ٧ | <0,0015 | <0.0015 |
| Doenzola hishtracene | 0.0003 | 5000005 | <0.0003 | <0.0003 | <0.00005 | <0.0003 | <0.0003 | <0.000005 | <0.0003 | <0.0000 | <0.00005 | ٧ | <0.003 | <0.0000 |
| Florantiene | 0.28 | <1,00005 | 20705 | <0.002 | <0.0000s | <0.002 | <0.002 | <0.00005 | <0.002 | -0.002 | <0.000005 | ٧ | <0.002 | <0.002 |
| ructera | 6.28 | <0.00005 | <0.002 | <0.002 | <0.00005 | <0.002 | <0.002 | <0.00005 | <0.002 | <0.002 | <0.00005 | ٧ | 40,000 | <0.002 |
| Indeno(1.2,3-od)syrena | 0,00043 | <0.00005 | <0.0003 | 200002 | <0.00005 | <0.0003 | <0.0003 | <0.00005 | <0.0003 | 40,000 | <0.00005 | v | <0.0003 | 0.0003 |
| Nanthebre | 77.7 | 40,00025 | 43,31 | 10:0> | <0.00005 | -0.01 | <0.01 | <0.00025 | 10.05 | -C.03 | 40.00025 | 9 | -0.01 | 45.81 |
| Programmere | 621 | <0.00005 | 500.05 | 500.5> | <0.00005 | <0.005 | <0.005 | <2,00005 | <0.005 | <0.005 | 40,00005 | | 40,005 | <0.005 |
| Pyrene | .05. | <0.00005 | <0.002 | - 200C | <0.00005 | <0.002 | -d.002 | <0.00005 | <0.002 | 40,522 | <0,000005 | * | -C0005 | <0.002 |
| Total Metals (5010C) | 1 | | | | | | | | | | | | | |
| SOM | | 28 | 4.35 | 0.88 | 0.13 | 1.53 | 284 | 5.8 | 6.1.3 | 000 | 27 | 7 | 80 | 1.25 |
| Lead | 0.5075 | * | <0.005 | -0.005 | , | 90000 | 45,005 | 0.612 | <0.005 | <0.005 | 95000 | 2800'0 | 40,005 | <0.005 |
| Dissolved Metals (6019C) | 14 | | | | | | | | | - | | | 200 | 2 |
| Iran, diss. | | NA | 0.95 | 0.56 | N. | 0,34 | 0.51 | 100 | 40.05 | 070 | N. | No. | CITIZ | 3 |
| Lead. des. | 0.0075 | W. | <0.005 | <0.005 | NA. | <0.005 40.005 | 40.005 | Z. | <0.005 | 40,005 | NA. | NA. | -0.005 | <0.000 |
| Field Parameters | 0.00 | | | | | | | | | | | | | |
| | 6.5.9 | 6.90 | 7.00 | 7.07 | 5.90 | 6.38 | 7.07 | 7.14 | 7.05 | 6.13 | 7,00 | 659 | 250 | 250 |
| Temperature (C) | | 17% | 19.09 | 15.65 | 5 | 19.07 | 17.25 | Z | 17.58 | 14,73 | 754 | MA | 17.55 | 17,87 |
| Specific Conductivity (USICIA) | | N.A. | 1304.3 | 13733 | N.A. | 1,729.5 | 1,755.8 | NA. | 1,055.4 | 1,073.7 | MA | T. | 258.15 | 1,766.1 |
| Described Organ Impli | | 444 | 52": | 1,52 | NA. | 0.94 | 1.22 | NA | 650 | 0.22 | NA. | KA | 1,21 | 242 |
| TunndiskiNTIII | | 14.4 | 104.33 | 424 | NA | 86.92 | 143.88 | MA | :36.78 | 222 | 114 | NA. | 113.75 | 502.26 |
| Spel edo | | NIA. | 6.0 | 667 | 2 | 15.5 | 65.2 | 25 | -3.5 | 152.19 | NA | NA | 139.0 | 227.8 |

TEMCEZO

"<" – Historic analytical table indicated constituent detected above laboratory reporting limits. NS = Not Sameled. Insufficient Water.

NS = Not Sampled, Insufficient Water
NA = Not Analyzed
BOLD therefore above laboratory detector

OLD beested above laboratory detector limits oLD Ecceeds Class (GRO Enclose) is cased as a few troot in cases on the provision of the cases on the control of the cases on the cases of the cases of the cases on the cases of the case of the cases of the cases of the cases of the cases of the case of the cases of the case of the

Page 13 of 13

TABLE 3
Historic Groundwater Analytical Results (2001 - 2015)
G370305005 - DeKaib County / Kirkland, Illinois
Kirkland Quiek Stop / Blake Lessing

| Contaminant of Concern | Groundwater Groundwater Remediation | New-30S | | | MW-30D | | | Village Main Well | Village Backup Well |
|-------------------------------|---|----------|----------|----------|-----------|---------|----------|----------------------|------------------------|
| | nojective | Dec-16 | May-15 | Jul-15 | Aug-16 | Nov-15 | Dec-16 | Mar-15 | May-15 |
| BTEX (mg1) | | | | | | | | | |
| enzene | 0.005 | <0.005 | <0.001 | · | <0.005 | 40.005 | 40,005 | ALB51 | 40.000 |
| mybersene | 9.7 | 50000 | 40.001 | > | -C0.005 | c0.055 | <0.005 | 10000 | 1000 |
| pipere | | -40,005 | <0.006 | , | <0.005 | <0.005 | <0.005 | 50000 | 40.005 |
| plane, Total | 10 | <0.005 | <0.003 | , | <0.005 | <0.005 | <0.005 | <0.003 | <0.003 |
| NAs (mg/l) | | | | | | | | | |
| canachthana | 0.42 | 40.01 | S000000 | v | 40.01 | 10.05 | 1000 | <0.000005 | S000000> |
| ceranitiyese | 125 | 40.01 | SOCIO | > | 40.01 | (00) | 1300 | <0.0000S | 500000 |
| 00.0000 | 21 | S0000> | 0.000063 | * | 4003 | 90000 | <0.005 | 40,00005 | <0.00005 |
| pozojajantrizbene | 0.00013 | <0.00013 | 0.0003 | > | <0.00013 | 0.00015 | <0.00013 | <0.00005 | <0.00006 |
| accola oprese | 0.0002 | <0.0002 | 0.00049 | * | <0.0002 | 0.0002 | <0.0002 | <0.090005 | <0.0000S |
| enzo(z)/Justanthene | 0.00018 | <0.00016 | 0,0011 | > | <0.000018 | 0.00028 | <0.00018 | <0.000065 | <0.00005 |
| enzo(k)fluoranthene | 0.00017 | <0.00017 | 0.00032 | , | <0.00017 | 0.0003 | C000017 | <0.00005 | <0.00005 |
| etto(ph)perviene | 0.21 | -0.0004 | 0.00072 | > | +0.0004 | *00000> | 40,0034 | <0.000055 | 40.00005 |
| hrysene | 0.0015 | <0.0015 | 0.00004 | > | -60.00°S | <0.0015 | <0.0015 | <0.00005 | <0.000005 |
| Denzo(a.Nanthraperie | 0.0003 | <0.0003 | 0.00012 | 2 | <0.0002 | <0.0003 | <0.0003 | <0.00005 | -d.00005 |
| Doranthene | 0.28 | <0.002 | 0.0012 | 0.000075 | 50.00s | <0.002 | -0.00g | <0.00006 | <0.00005 |
| Cotese | 0.28 | -0.002 | <0.00005 | * | <0.002 | <0.002 | <0.002 | <0.00005 | <0.00000 |
| denoj123-odojnana | 8,00043 | - ST0000 | 75000.0 | > | 40,0003 | 0,0003 | -0.0003 | <0,000055 | <0.00005 |
| schnalene | 2.14 | 1000 | 5200007 | > | 1005 | 40,01 | <0.03 | <0.00025 | <0.00025 |
| decaptions | 0.21 | 50.05 | 0.006526 | * | <0.005 | <0.005 | 40,005 | <0.000055 | <0.00005 |
| topus . | 521 | <0.002 | 0.00095 | 0.000072 | <0.002 | <0.002 | 40.002 | <0.00005 | <0.00005 |
| otal Metats (6010C) | | | | | | | | | |
| 30 | | <0.05 | 171 | 1.5 | 35.0 | 0.35 | 0,13 | 90 | 0.45 |
| 680 | 0.0075 | ≥00.05× | 0.011 | , | <0.005 | 500.05 | <0.005 | ~ | , |
| issolved Metaks (6010C) | | | | | | | | | |
| m éss. | | 500 | 200 | 374 | 50.05 | 50.05 | <0.05 | 175 | 25 |
| 22,055. | 0.0075 | 40.005 | 75.4 | 17N | 500.05 | 9000 | -0.00S | 344 | 2 |
| eld Parameters | | | | | | | | | |
| | 6-53 | 5.97 | 7.72 | 7.04 | 8.30 | \$.02 | 7.52 | 717 | 212 |
| emperature (*Ci | | 13,93 | 2 | N. | 15.55 | 15.61 | 13.53 | 744 | Z |
| peofic Conductivity (US (pm)) | - | 1,810.7 | 75% | 25 | 17771 | 1,526.5 | 15228 | 2 | S. |
| acolved Orygen (mg/l) | - | 3.65 | NA. | NA. | 1.23 | 0.78 | 153 | NA | NA |
| funder, (NTU). | - | 5.53 | 124 | 373 | 55.79 | 110.88 | 629 | MA | × |
| RP ImV | (| 183.8 | 14.4 | NA. | 1217 | 6 276 | 1000 | *** | 27.4 |

Notes:
'26 MC 620
'c' = Mistoric analytical table it

Matter analytical table robotated construing
 Matter above laborately robotated indicates was a Not Sarobed heafficient Wash
 Mat Analyted

NA = Not Analyzod
BOLD Genefica shore laboratory detection limits
BOLD Excens (Cless 16RO
PessAs reponded on miligrams per fire (mg)) or perso per mili



ATTACHMENT A

MUNICIPAL & POTABLE WELL LOGS

ILLINOIS STATE GEOLOGICAL SURVEY Page !

Well ID 00090

| Water Well | Тор | Bottom |
|---|-----|--------|
| dr.1ft | C | 284 |
| limestone | 284 | 311 |
| Total Depth Casing: 5" from 0' to 284' | | 311 |
| Size hole below casing: 5" | | |
| Water from limestone at 284' to 311'. Static level 32' below casing top which is 0' above GL Pumping level 32' when pumping at 30 gpm for 0 hours | | |
| Driller's hog filed | | |
| Owner Address: , | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Permit Date:

Permit #:

COMPANY owner

FARM

Roberts, Mr.

DATE DRILLED January 1, 1955

NO.

ELEVATION 795GL

COUNTY NO. 00090

LOCATION S2 NW

LATITUDE 42.074957

COUNTY DeKalb

LONGITUDE -88,856029

API 120370009000

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Well ID 00562

| Water Well | Top | Bottom |
|---|-----|--------|
| top soil | 0 | 2 |
| clay | 5 | 12 |
| hard pan | 12 | 90 |
| clay | 90 | 95 |
| quiek sand | 95 | 143 |
| gravel | 143 | 175 |
| yellow lime rock | 175 | 198 |
| Total Depth Casing: 5" GALV. STEEL CASING from 0' to 175' Size hole below casing: 5" Water from yellow lime at 175' to 198'. Static level 6' below casing top which is 0' above GL Pumping level 16' when pumping at 10 gpm for 2 hours Remarks: 1st farm on left East of Kirkland Rt 72 Driller's Log filed Owner Address: Location source: Platbook verified | | 198 |
| | | |

| | | | | Constitution of the Consti | vanamani i Tila | |
|------------|------------------------|---------|------------------|--|---------------------|-----|
| COMPANY | owner | | | | | |
| FARM | Ault, Fred | | | Ħ | | |
| DATE DRILL | ED January 1, 1961 | | NO. 1 | | | _ |
| ELEVATION | 778TM C | YTMUOS | NO. 00562 | 1 | | |
| LOCATION | 75'S line, 420'E line | of SW S | W SW | | | |
| LATITUDE | 42.095255 LONGI | TUDE | 88.840864 | L | المنت | لست |

API 120370056200

Permit #:

24 - 42N - 3E

Permit Date:

COUNTY DeKalb

Well 1D 00835

ILLINOIS STATE GEOLOGICAL SURVEY

| Water Well | Top | Bottom |
|---|-----|--------|
| clay | 0 | 16 |
| limestone | 16 | 1,25 |
| Total Depth Casing: 6" 19# BLK STEEL from 0' to 40' | | 125 |
| Size hole below casing: 6" | | |
| Water from rock at 0' to 125'. Pumping level 16' when pumping at 17 gpm for 2 hours | | |
| Driller's Log filed | | |
| Owner Address: Kirkland, IL Location source: Platbook verified | | |
| | | |
| | | |
| | | |
| | | |

Permit #: 4548 Permit Date: January 1, 1968 COMPANY Rosenquist K W FARM Lawrence & Decker DATE DRILLED April 22, 1968 NO. **COUNTY NO.** 00835 ELEVATION 0 LOCATION SW NE SE LONGITUDE ~88.845448 LATITUDE 42.099526

API 120370083500

23 - 42N - 3E

COUNTY DeKalb

ILLINOIS STATE GEOLOGICAL SURVEY Page 1

Well ID 21227

| Water Well | Тор | Bottom |
|--|-----|--------|
| clay | 0 | 5 |
| sand | 5 | 10 |
| clay | 10 | 24 |
| sand & clay | 24 | 38 |
| gravel, stones & sand | 38 | 74 |
| soft limestone | 74 | 83 |
| white & yellow then red limestone | 83 | 125 |
| Total Depth Casing: 6" from 0' to 0' | | 125 |
| Size hole below casing: 6" | | |
| Water from rock at 0' to 0'. Static level 10' below casing top which is 1' above GL | | |
| Driller's Log filed | | |
| Owner Address: 6336 Calumet Ave. Munster, IN Location source: Platbook verified | | |
| SOCHEED SOULCE, ITALDOON VETTICA | | |
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| | | |

Permit Date: February 13, 1974

Permit #: 27609

COMPANY

Stone H I & Son

FARM

Calumet Council B.S.A.

DATE DRILLED March 20, 1974

NO.1

ELEVATION 750TM

COUNTY NO. 21227

COUNTY DeKalb

LOCATION 2380'N line, 1108'E line of SW SE SE

LATITUDE 42.090035 **LONGITUDE** -88.867642

API 120372122700

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Well ID 23199

| Private Water Well | Тор | Bottom |
|--|-----|--------|
| clay | 0 | 10 |
| sand & gravel | 10 | 30 |
| sand, clay & gravel | 30 | 40 |
| clay & stones | 40 | 60 |
| fine sand | 60 | 70 |
| clay | 70 | ВО |
| sandy clay | 80 | 130 |
| fine sand | 130 | 145 |
| sand & gravel | 145 | 170 |
| limestone | 170 | 220 |
| Total Depth Casing: 5" IL APPROVED STEEL from ~1' to 220' Grout: BENTONITE from 0 to 0. Size hole below casing: 5" Water from rock at 0' to 0'. Pumping level 15' when pumping at 15 gpm for 0 hours Permanent pump installed at 40' on July 7, 1999, with a capacity of 10 gpm Owner Address: 31957 Ault Road Kingston, IL Address of well: same as above Location source: Location from permit | | 220 |

Permit Date: June 16, 1999

COMPANY Stone, Guy D.

FARM Busse, Daryl & Connie

DATE DRILLED June 21, 1999 NO.

ELEVATION 0

COUNTY NO. 23199

Permit #:

LOCATION NE NE NE

LATITUDE 42.094289

LONGITUDE ~88.823394

COUNTY DeKalb

API 120372319900

ILLINOIS STATE GEOLOGICAL SURVEY Page 1

Well ID 01007

| Water Well | Top | Bottom |
|--|-----|--------|
| olay | 0 | 2! |
| sand | 25 | 3.1 |
| limestone | 31 | 125 |
| Cotal Depth Casing: 6" BLK, STEEL 19,45# from 0' to 31' | | 125 |
| Size hole below casing: 6" Water from limestone at 31' to 125'. Static level 6' below casing top which is 1' above GL Pumping level 13' when pumping at 15 gpm for 2 hours | | |
| Driller's Log filed | | |
| Owner Address: Box 97 Kirkland, IL Location source: Location from permit | | |
| | | |
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Permit #: 18481 Permit Date: June 27, 1972

COMPANY Rosenquist, Gerald Wilbur

Begun, John FARM

DATE DRILLED July 6, 1972

NO.

ELEVATION 767TM

COUNTY NO. 01007

LOCATION NW NE SE

LATITUDE 42.101333

LONGITUDE -88.845464

COUNTY DeKalb

API 120370100700

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Municipal Well #1 #11424

| Compared Control (Control (Con | | 1 |
|--|-----|--|
| Municipal Water Supply | Тор | Bottom |
| no record | 0 | 737 |
| | | 737 |
| Total Depth Casing: 7" CASING from 0' to 88' | | /3/ |
| | | |
| Static level 6' below casing top which is 0' above GL | | |
| Pumping level 8' when pumping at 200 gpm for 1 hour | | |
| | | 1 70 70 70 70 70 70 70 70 70 70 70 70 70 |
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| Permit Date: | Permit #: | | , 1, 1, 1, 1 | |
|-------------------------|----------------------|----|--------------|------|
| COMPANY | | | | |
| FARM Kirkland, Vil | llage of | - | | |
| DATE DRILLED January 1, | , 1896 NO. | - | | |
| ELEVATION 775 | COUNTY NO. 23132 | - | | |
| LOCATION 650'S 1850'W | NE/c | | | |
| LATITUDE 42.093177 | LONGITUDE -88.848557 | 1. | | 11 |
| COUNTY DeKalb | API 120372313200 | 26 | - 42N | - 3E |

ILLINOIS STATE GEOLOGICAL SURVEY Page 1

Municipal Well #2 # 11425

| Municipal Water Supply | Top | Bottom |
|---|-----|--------|
| | | |
| soil, silty, dark brown; silt, ylsh orange | 0 | 5 |
| gv1(1/2"), sand,calc,clayey,y1sh orn/gry | 5 | 30 |
| till,calc,sy,sty,ylsh orn / gry orange | 30 | 50 |
| till,calc,sty,gry orange to olive green | 50 | 60 |
| dol,ylsh orn / 1gt ylsh gry, f / coarse | 60 | 130 |
| dolomite, cherty, ylsh orn, fine /coarse | 130 | 147 |
| dol,slgtly sy, yl gry,f/crs,few dk spks | 147 | 165 |
| dol, sy, ylsh gry, f / crs, dk speckled | 165 | 175 |
| dol,gry yl,f / ers,ptly dk spkld,f / crs | 175 | 180 |
| dol,gray yl /ylsh gray, fine to medium | 180 | 205 |
| dol,ylsh gry / pale ylsh brn,f / medium | 205 | 215 |
| dol,ylsh orn,f/med;dol,gry,f,slgtly fosf | 215 | 225 |
| dol, lgt ylsh brn / gray, fine to medium | 225 | 245 |
| dol,ylsh gry/gry,f/med,scttrd orn&dk spk | 245 | 260 |
| dol,ptly argil,gry/ylsh gry,f,dark spks | 260 | 270 |
| dol,ylsh gry/orn,f/med,scttrd dk&orn spk | 270 | 290 |
| dol,ptly argil,ylsh orn, fine to medium | 290 | 295 |
| dol,sy,ylsh gry to yellowish orange,fine | 295 | 300 |
| sh,dolc,grn/gry grn,fr;ss,gry,crs,incoh | 300 | 305 |
| dol,sy,argil,yl/grn-gry,vy f,ss,f/crs | 305 | 310 |
| sandstone, gray, fine & coarse, incoherent | 310 | 315 |
| dol,sy,argil,yl/grn-gry,very fine | 315 | 340 |
| ss, partly dol, gry, vy f / crs, incoherent | 340 | 350 |
| ss,gray,fine / crs, incoh,silty, at base | 350 | 420 |
| | | |

Permit Date:

Permit #:

COMPANY owner

FARM Kirkland, Village Of

DATE DRILLED October 1, 1950

NO. 1

ELEVATION 775TM

COUNTY NO. 00792

LOCATION 2219'S line, 1818'E line of SE

LATITUDE 42.086613 LONGITUDE -88.848295

COUNTY DeKalb

API 120370079200

 $_{\mathtt{Page}-2}$ ILLINOIS STATE GEOLOGICAL SURVEY

| en company of the com | | |
|--|--------------|-----|
| | | |
| sandstone, silty, light gray, f / crs, incoh | 420 | 430 |
| sandstone, light gry, fine to coarse, incoh | 430 | 495 |
| ss,lgt ylsh gry,fine / medium,incoherent | 495 | 550 |
| ss,sty,lgt ylsh gray, fine to crs,incoh | 550 | 590 |
| ss,light yellow,fine / medium,incoherent | 590 | 600 |
| ss,lgt gry, pnksh tint, fine to coarse | 600 | 620 |
| cht,yl,pnk,ss,yl-gry,f/crs;ss,silic,yl | 620 | 630 |
| Knox | 350 | |
| St Peter | 350 | |
| Total Depth | | 630 |
| Casing: 13" I.D. from 0' to 69' 8" I.D. from -2' to 152' | | |
| Static level 15' below casing top which is 0' above GL | | |
| Pumping level 24' when pumping at 200 gpm for 0 hours | | |
| | | |
| Driller's Log filed | | |
| Strip Log filed | | |
| Survey Sample Study filed | MANAGE PER A | |
| Sample set # 20714 (0' - 630') Received: January 1, 195 | 0 | |
| | | |

owner

Kirkland, Village C 1

COUNTY DeKalb

Owner Address:

Location source: Platbook verified

API 120370079200 26 - 42N - 3E

ILLINOIS STATE GEOLOGICAL SURVEY Page 1

Municipal Well #3 # 01613

| Municipal Water Supply | Тор | Bottom |
|-----------------------------|-----|--------|
| brown clay | C | 10 |
| yellow clay | 10 | 15 |
| brown clay | 15 | 40 |
| sandy & clay | 40 | 50 |
| sandy clay | 50 | 70 |
| fine gravel | 70 | 80 |
| clay | 80 | 90 |
| clay & fine gravel | 90 | 120 |
| fine gravel | 120 | 125 |
| clay | 125 | 140 |
| sand & fine gravel (caving) | 140 | 160 |
| fine gravel | 160 | 180 |
| clay & fine gravel | 180 | 190 |
| clay | 190 | 205 |
| elay & sand | 205 | 281 |
| soft brown limestone | 281 | 283 |
| shale | 283 | 284 |
| hard limestone | 284 | 287 |
| tan limestone | 287 | 370 |
| sandstone | 370 | 376 |
| tan sandstone | 376 | 430 |
| brown sandstone | 430 | 440 |
| tan sandstone | 440 | 530 |
| brown lime & sand | 530 | 554 |

Permit Date:

Permit #:

COMPANY Meadow Equipment

Kirkland

FARM DATE DRILLED March 25, 2005

NO. 3

ELEVATION 0

COUNTY NO. 23580

LOCATION SW SE NW

LATITUDE 42.088375

COUNTY DeKalb

LONGITUDE -88.874446

API 120372358000

$_{ t Page = 2}$ ILLINOIS STATE GEOLOGICAL SURVEY

| All the second s | | |
|--|---|-----|
| | | |
| red shale | 554 | 560 |
| Total Depth | | 560 |
| Casing: 20" A53 STEEL from 0' to 288' 16" A53 STEEL from 288' to 376' | | |
| Grout: PRESSURIZED from 0 to 288. | | |
| Grout: NEAT CEMENT from 0 to 376. | | |
| Water from sandstone at 376' to 560'. Static level 69' below casing top which is 2' above GL | | |
| Remarks: PICS 03790300 #3, Est Yield 600 gpm | | |
| Owner Address: , | | |
| Address of well: W of Malta Rd, N of Rt 72 Kirkland, JL | | |
| Add'l loc, Info: Subdivision: Hickory Ridge | | |
| Location source: Location from the driller | | |
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| | no. alexandre de la constante | |
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Meadow Equipment

Kirklanc 3

COUNTY DeKalb

API 120372358000 27 - 42N - 3E

ILLINOIS STATE GEOLOGICAL SURVEY Page i

| Water Well | Тор | Bottom |
|--|-----|--------|
| clay | 0 | 5 |
| sand | 5 | 10 |
| clay | 10 | 24 |
| sand & clay | 24 | 38 |
| gravel, stones & sand | 38 | 74 |
| soft limestone | 74 | 83 |
| white & yellow then red limestone | 83 | 1.25 |
| Total Depth Casing: 6" from 0' to 0' | | 125 |
| Size hole below casing: 6" | | |
| Water from rock at 0' to 0'. Static level 10' below casing top which is 1' above GL | | |
| Driller's Log filed | | |
| Owner Address: 6336 Calumet Ave. Munster, IN Location source; Platbook verified | | |
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Permit Date: February 13, 1974

Permit #: 27609

COMPANY Stone H 1 & Son

FARM

Calumet Council B.S.A.

DATE DRILLED March 20, 1974

ELEVATION 750TM

COUNTY NO. 21227

LOCATION 2380'N line, 1100'E line of SW SE SE

LATITUDE 42.090035 **LONGITUDE** -88.867642

COUNTY DeKalb

API 120372122700



ATTACHMENT B
WELL & BORING LOGS

| Bori Date Drilli | | | - A +: | | | | | | TOP | | Bor | ring Type HSA | No. 910 |
|------------------------|--|--|-----------|--|-----|--|--|------------|-----------------------------------|----------------|---------------------------------------|--|-----------------|
| Date | ע גאַר | | | | | | | 7-1-2 | <u> </u> | -11.013 | | vTotal I | epth 1 |
| | St | art | ed_' | 9-5 | 5-9 | 1 | Dot | | | | | gged By M. MEL | TON |
| | | | | | | | | | | ERING | | T | |
| | | | | | | | | | | VADE DEMENT | | Dackfilled (| |
| Suri | T | e. | I | 10113 | | <u> </u> | | | 1 | | | | 7 <u>655</u> 11 |
| SAUPLE | NAME: | RECOVER | SET 6' | 8,0 2,0 | 3FI | "H" VALUE | ים (אנר) | (FEETH | SAMPLE | 2 | DESCRIPTION OF | MATCRIAL | RDW |
| | ╁── | - | | | | | | | 16 | ASPHA | | | |
| | | | | | | | | | 11 | SAND | GRAVEL [FI | 11 7 · · · · | |
| 1 | SS | 18 | 3 | 3 | 3 | 6 | 1.0 | 2. | H | SILTY | CLAY (CL): | Dark brown, soft, | TIP |
| | | | | | | | |] |]XI | 1 moist | s brown@3 | • | 0.0 PF |
| <u> </u> | | | | | | | | ` . | H | | | | TIP |
| 2 | SS | 20 | 2 | 띡 | 3 | 7 | 0.8 | 6. | 1) | grade | s. mottled.gr | eenish-greylsh. | 34.5 |
| <u> </u> | - | | | | | 200 | | | <u> </u> | brewt | | A A F F F F F F F F F F F F F F F F F F | 1 ' ' |
| 3 | SS | 19 | 1 | 15 | 16 | 29 | | 8 | \mathbb{M} | SANC | Y GRAVEL GN | 1); Durk greenish ic, wet, wisilt | TIP - |
| - | - | | | | | | | | Д | grey. | medlum dens | ic, wet, whall | 1145 |
| 4 | SS | 16 | 12 | 18 | 16 | 34 | | 10- | M | | \$ | | TIP = |
| | | • | | | | | |] ,, | W | grade | s saturated @ | 11.2" | Colleg |
| 5 | SS | 16 | 17 | 18 | 24 | 42 | _ | 12- | H. | | | | TIPre |
| | <u> </u> | | | | | | | 14- | W | SAND | (RM); BLOWN | , loose, saturated | 2.4 P |
| | _ | | | | | | | ▍ '. | 11 | | | | |
| <u> </u> | ├ | | | | | | | 16. |] | | | | |
| - | - | | - | | - | | | 1 - | 11 | | | | |
| - | _ | - | | | | | | 18 | 1 | Endo | f boring @ 1 | 8,0' | 1 |
| - | <u> </u> | | | | | | |] | 11 | | | | |
| | | | | | | | |] [|] [| | | > 4 · 4 · 4 · 6 · 4 · 6 · 4 | |
| | | | | | | | | ↓ . | 11 | | | , | |
| ļ | <u> </u> | | | | | | ļ | | 11 | , | e i e a i f e a | e i e e e e e e e e e e e e e e e e e | |
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| - | +- | <u> </u> | - | - | | | | 1 | 1 | | F - F - S - K - S - F - S - F | $\phi_{ij} = \phi_{ij} = \phi$ | |
| - | † | | 1 | | | | I^{-} | 1 | 11 | * * * * | | | |
| | 1 | | † | | T | | T | 1 | 11 | , , , , | * * * * * * * * * * * * * * * * * * * | | |
| 1 | 1- | | † | | 1- | | | 1 | 1 | 1 | * * * * * * * * * * * * * * * * * * * | | 1 |

| ASPHALT SANDY GRAVEL [FiII] 1 SS 12 3 3 6 1.1 2 SILTY CLAY (CL); Dark brown, soft, moist and e wisend @ 6.0' 1" sand scam @ 6.8' SANDY GRAVEL [GM); Brown, dense, 0.0 From states wet eq.4' TIPE on a saturated @ 11.5' SAND (SW); Brown, loose, saturated TIPE SAND (SW); Brown, loose, saturated TIPE | LL WA | TALLED W | Rig No. 17 Backfille | NEERING WADE BUEMEN | EVE | S | 10 | 400 | | | | er P | rille |
|---|---------------------|----------|---------------------------|---------------------------|-------|---------|-------|-----------|----------|------------|-----------|--------|--------|
| 2 SS 16 3 3 4 7 1.5 2 SS 16 3 3 4 7 1.5 4 Grade wisond @ 6.0' 1" sand scam @ 6.8' SANDY GRAVEL [Fill] 2 SS 16 3 3 4 7 1.5 4 Grade wisond @ 6.0' 1" sand scam @ 6.8' SANDY GRAVEL (GM); Brown, dense, 0.0 F maist grades wet eq.4' TIP: 0.0 F SS 19 19 28 21 49 - 10 SAND(SW); Brown, loose, saturated TIP: 0.0 F SAND(SW); Brown, loose, saturated TIP: 0.0 F RDWRKS | | | | GEETH | CISE) | VALUE | 3RD 6" | 7. 20 | \$() 6' | RECOVERED | SAMPLE | SAMPLE |
| 2 SS 16 3 3 4 7 1.5 6 7 Grade wisand @ 6.0' 1" sand scam @ 6.8' 7.1P 0.0 F 10 10 10 10 10 10 10 10 10 10 10 10 10 | • | | GRAVEL [FIII] | SANI | 4 | | | | | | | - | |
| 2 SS 16 3 5 4 17 1.5 6 7 Grade wisund @ 6.0' 3 SS 21 16 19 21 40 - 8 7 SANDY GRAVEL (GM); Brown, dense, 0.0 F moist grades wet eq.4' 4 SS 18 21 25 26 N/A - 12 | 1P read OPPM | | LAY (CL); Dark brown, sof | SILT | 2 - | 1.1 | 6 | 3 | 3 | 3 | 12 | SS | 1 |
| 3 55 21 16 19 21 40 - 8 / SANDY GRAVEL (GM); Brown, dense, 0.0 F moist grades wet eq. 4' 4 55 18 21 25 26 N/A - 12 grades saturated @ 11.5' 5 55 19 19 28 21 49 - 14 SAND (SW); Brown, loose, saturated TIP 0.0 F Grades oxide stains @ 16.5' 6 55 14 10 16 10 26 - 16 grades oxide stains @ 16.5' | IP read 10 PPM | | | | 6 | 1.5 | П | 7 | 3 | 3 | 16 | SS | 2 |
| 4 SS 18 21 25 26 N/A - 2 | 10 real | | GRAVEL (GM); Brown, de | SAN | 8 | | 40 | 21 | 19 | 16 | 21 | SS | 3 |
| 5 SS 19 19 28 21 49 - 14 SAND (SW); Brown, loose, saturated TIP 0.0 F 6 SS 14 10 16 10 26 - 16 V grades oxide stains @ 16.5' | IP read D. P.P.M | | | 7 | 1 | _ | N/A | 26 | 25 | 21 | lB | SS | 4 |
| 6 SS 14 10 16 10 26 - 16 N grades oxide stains @ 16.5' | IP read O PPM | | Swi) · Boom o loose satur | - SAN | 1 | 1 | 49 | 21 | 28 | 19 | 19 | SS | 5 |
| 18 End of boring @ 18.01 | 1P read .OPPN | | | 7 | 16- | <u></u> | 26 | 10 | 16 | 10 | Н | SS | 6 |
| | | | boring @ 18.0' | Eng | 18 | | | | | | | | |
| | | | | | - | | | <u>.</u> | | | | | |
| | | | | | 4 | | | | | | | | |

Well No .: MW-3A

Illinois Environmental Protection Agency

Site Name: KIRKLAND QUICK STOP

Incident No.: 89-1717

up to \$25,000,00 for each day the lature continues, a fine up to \$50,000,00 and improvement up to five years. This form has been upon

For Groundwater Monitoring Wells installed due to a release of petroleum subject to 35 III. Adm. Code Section 731, Subpart F.

LUST Well Completion Report

| Illinois Environmental Prote Incident No.: 89-1717 | | | 4.44 | MANA/ 1 | LUST Well Completion Report |
|--|---|------------------------|--|---|------------------------------|
| | | | | | 4.1 |
| Site Name: KIRKLAND QUIC | | s (A / A) | Date Drillie | ng Start: 11/14/ | 94 |
| Drilling Contractor: FISCHE | NTERPRISES | S INC. | Date Comp | pleted: 11/14/9 | 4 |
| Driller: J. REIMER | | | | A. HAAK/DA | |
| Drilling Method: HOLLOW S | TEM AUGER | | The state of the s | uids (type) NO F | |
| Annular Space Details | | | | | Elevations01 ft. |
| Type of Surface Seal: Portland | cement | | 2 | 7-7 | 98.88 Top of Protective Casi |
| Type of Annual Sealant: Portla | | | | | 98.52 Top of Riser Pipe |
| | | | _ | 45 13 | |
| Type of Bentonite Seal (Granula | r, Pellet): 1/4" p | ellets | - | | 98.88 Ground Surface |
| | | | _ | | 98.36 Top of Annular Sealan |
| Type of Sand Pack: #5 Silica | | | _ | 1111 | 16 Casing Stickup |
| | | | | 1111 | |
| | | | | 1111 | |
| Well Construction Materals | | | | 1111 | |
| | | | | - 1111 | |
| | | | | | 98.22 Top of Seal |
| | | | | | 2' Total Seal Interval |
| | 1 | | | | |
| | 1.6 | | | | 96.22 Top of Sand |
| | 2 & | | 8 | | |
| | Satainless Steel SpeciffType | , à . | Other SpecifyType | | |
| | Sp Ster | PVC Specify Type | a sk | | |
| Riser coupling joint | | | | | 95.22 Top of Screen |
| Riser pipe above w.t. | | Sched 40 | | | Top of ocicen |
| Riser pipe below w.t. | 1 | | | | |
| Screen | 304 | | | | |
| Coupling joint screen to riser | Threaded | Threaded | | | |
| Protective casing | | | Manhole Cover | | |
| T TOTAL OR THE TOT | 100000000000000000000000000000000000000 | | Dat (X lands | | |
| Measurements | to .01 ft (where a | pplicable) | | | 10 Total Screen Interval |
| Riser pipe length | 3' 2" | | | | |
| Screen length | 10 | | | | |
| Screen slot size | .01 | | | erica de la companya | |
| Protective casing length | 1 | | 4 | | |
| Depth to water | 8.68 | | 4 | | |
| Elevation of water Free Product thickness | 89.84 N/A | | - | | |
| Gallons removed (develop) | IN/A | | | | 16.70 |
| Gallons removed (purge) | 2.07 | | 7 | | |
| Other | | | | | 85.22 Rottom of Screen |
| | | | | | 85.22 Bottom of Screen |
| Completed by: A. Haak | | | 1 | | 84.88 Bottom of Borehole |

For Groundwater Monitoring Wells installed due to a release of petroleum subject to 35 III. Adm. Code Section 731, Subpart F.

| Š | | |
|--|---|--|
| of ALSUIT in 8 CM, puisary of by the Forms | | |
| | • | |
| The Agency is authorized to requise this mixing under 415 ILCS 5/4 and 21 insucesture of this entermine is required. Heat up to \$25,000 00 for each day the tailure continues, a line up to \$50,000.00 and improcument up to five years. This form has been represented to the five years. This form has been represented to the five years. | | |
| ractoswa of this ark. prisonnarii up to fiv | | |
| ILCS 5/4 and 21 i | | |
| rection under 415 i | | |
| o day the taibres cor | | |
| lency is authorized 25,000 00 for each ement Center. | | |
| the Ag \$ ot qu Manag | | |

| Illinois Environmental Protection Agency | | | LUST Well Completion Report | | |
|---|---------------------------------------|------------------------|---------------------------------------|--|--------------------------------|
| Incident No.: _89-1717 | | | Well No.: _ | MW-5 | |
| Site Name: KIRKLAND QUICK STOP | | | - | | |
| Drilling Contractor: FISCHE ENTERPRISES INC. | | | | | |
| | | | Date Completed: 11/14/94 | | |
| Driller: J. REIMER | | | Geologist: A. HAAK/DAHL | | |
| Drilling Method: HOLLOW STEM AUGER | | | Drilling Fluids (type) NO FLUIDS USED | | |
| Annular Space Details | | | | | Elevations01 ft. |
| Type of Surface Seal: Portland cement | | | **** | THE T | 99.26 Top of Protective Casing |
| Type of Annual Sealant: Portland cement | | | | | 98.94 Top of Riser Pipe |
| Type of Bentonite Seal (Granular, Pellet): 1/4" pellets | | | | | 99.26 Ground Surface |
| Type of Bentonite Seat (Granular, Pellet): 174 Pollots | | | _ | | |
| | | | | 98.78 Top of Annular Sealan | |
| Type of Sand Pack: #5 Silica | | 1100- | | . 16 Casing Stickup | |
| • | | | | | |
| Well Construction Materals | | | | | <u>-</u> |
| | | | | | 98.60 Top of Seal |
| | | | | | • |
| | | | | | 2 Total Seal Interval |
| | | | | | <u>96.60</u> Top of Sand |
| | , å | | 8. | | |
| | Sstainleas Steel SpecifYTypa | £. | Other SpecifyType | | • |
| | Ssta Stee Spec | PVC Specify Type | Othe Spec | | • |
| Riser coupling joint | | | | | 95.60 Top of Screen |
| Riser pipe above w.t. | | Sched 40 | | | 10001001001 |
| Riser pipe below w.t. | | 1 | | | |
| Screen | 304 | | | | |
| | Threaded | Threaded | | Commentation Comme | _ |
| Coupling joint screen to riser Protective casing | meaced | Timeaded | Manhole | Anger and entire of the control of t | |
| | | | Cover | | _ |
| Measurements | to .01 ft (where t | applicable) | 7 | The second secon | 10 Yotal Screen Interval |
| Riser pipe length Screen length | 3' 2" 10' | | - | Control of the contro | • |
| Screen length Screen slot size | .01 | | - | | |
| Protective casing length | · · · · · · · · · · · · · · · · · · · | | | | 1 |
| Depth to water | 9.21 | | | | _ |
| Elevation of water | 89.73 | | _ | | |
| Free Product thickness | | | | | • |
| Gallons removed (develop) | 0.01 | | + | | |
| Gallons removed (purge) | 2.21 | | 4 | | 00.00 |
| Other | | | - | | 88.60 Bottom of Screen |
| Completed by: A. Haak | | | | | 86.27 Bottom of Barehole |
| | | | J | | |

| Illinois Environmental Prote | ction Agency | <i>'</i> | | | LUST Well Completion Report |
|---|--|------------------------|----------------------|--|--------------------------------|
| Incident No.: 89-1717 | | | Well No.: | MW-6 | |
| Site Name; KIRKLAND QUICE | | | | ng Start: 11/14/9 | 4 |
| Orilling Contractor: FISCHE E | | | | _ | |
| = | | | • | leted: 11/14/94 | |
| | | | - | A. HAAK/DAH | |
| Drilling Method: HOLLOW ST | TEM AUGER | | Drilling Flu | iids (type) NO FL | UIDS USED |
| Annular Space Details | | • | | | Elevations01 ft. |
| Type of Surface Seal: Podland | cement | | | T T | 98.44 Top of Protective Casing |
| Type of Annual Sealant: Portla | nd cement | | | | 98.10 Top of Riser Pipe |
| Type of Bentonite Seal (Granula | r. Pellet): 1/4" | pellets | | | 98.44 Ground Surface |
| ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | . , | | | | |
| The second second | ************************************** | | | | 97 94 Top of Annular Sealant |
| Type of Sand Pack: #5 Silica | | | | | _16' Casing Stickup |
| | | | | | |
| Well Construction Materals | | | | | |
| Well Collati delloli materala | | | | | |
| | | | |]]] | 97.78 Top of Seal |
| | | | | | · · |
| | | | | | 2 Total Seal Interval |
| | | | | | <u>95.78</u> Top of Sand |
| | 8. | | 9 | | >a 4 |
| | lesss MTy | <u> -</u> | l M | | |
| | Sstainless Steel SpecifYType | PVC Specify Type | Other SpecifyType | | |
| Riser coupling joint | | | | | 0470 |
| Riser pipe above w.t. | | Sched 40 | | | 94.78 Top of Screen |
| Riser pipe below w.t. | | | | | |
| Screen | 304 | | | | |
| Coupling joint screen to riser | Threaded | Throadad | | | |
| | illieaded | Threaded | Manhole | | |
| Protective casing | | | Cover | AND THE STATE OF T | s _e t |
| Measurements | to .01 It (where a | applicable) | - | Annual An | 10 Total Screen Interval |
| Riser pipe length | 3' 2" | | 4 | | |
| Screen length | 10' | | 4 | | |
| Screen slot size | .01 | | 4 | | |
| Protective casing length | | | 4 | | |
| Depth to water | 8.62 | | 4 | | |
| Elevation of water | 89.48 | | - | | |
| Free Product thickness | | | _ | | |
| Gallons removed (develop) | 2.52 | | + | | |
| Gallons removed (purge) | 2,52 | | 4 | | |
| Other | <u> </u> | | - | | 84.78 Bottom of Screen |
| Completed by: A. Haak | | | | mentanana | 84.45 Bottom of Borehole |
| | | | | 1 1 | |

| Illinois Environmental Protec | ction Agency | | | | LUST | Vell Completion Report |
|---|------------------------------------|------------------------|----------------------|--|-----------------|------------------------|
| Incident No.: 89-1717 | | | Well No.: - | MW-7 | | |
| Site Name: KIRKLAND QUICK | | · | | | | |
| Drilling Contractor: FISCHE E | | S INC. | | | | |
| - | | | | | | |
| Driller: J. REIMER | | | • | A. HAAK/D | | |
| Drilling Method: HOLLOW ST | EM AUGER | | Drilling Flu | ids (type) NO | FLUIDS US | ED |
| Annular Space Details | | | | | Elev | ations01 ft. |
| Type of Surface Seal: Portland | cement | | MAN- | 7 | 99.0 | Top of Protective Cas |
| Type of Annual Sealant: Portlar | | | _ | | 1 | 5 Top of Riser Pipe |
| | | | _ | | 4 | 3 Ground Surface |
| Type of Bentonite Seal (Granular | , Pelletj: <u>174 </u> | eners . | | | | |
| | | | | | 98.4 | Top of Annular Sealar |
| Type of Sand Pack: #5 Silica | , | | | ' | 16' | Casing Stickup |
| • | | | | | | |
| Well Construction Materals | | | | | | |
| their constituents materials | | <u> </u> | | , | | |
| | | ļ | | | 98.3 | Top of Seal |
| | | | | | 2 | Total Seal Interval |
| | | | | | | |
| | | | | | 963 | Z Top of Sand |
| | \$ 8d /2 | | <u>8</u> | | 1 | |
| | Sstainless Steel SpecifYType | PVC Specify Type | Other SpecifyType | | | |
| | S S S | 3 S 5 | ₹ % | | | , |
| Riser coupling joint | | | | | .95.3 | Top of Screen |
| Riser pipe above w.t. | | Sched 40 | | | | rop or corcon |
| Riser pipe below w.t. | | | | and | | |
| Screen | 304 | | | PARTIES AND | | |
| | | | | | | |
| Coupling Joint screen to riser | Threaded | Threaded | Manhole | | | |
| Protective casing | | <u> </u> | Cover | | | |
| Measurements | to ,01 ft (where a | applicable) | | | 10 | Total Screen Interval |
| Riser pipe length | 3'.2" | | 7 | | | |
| Screen length | 10' | |] | | | |
| Screen slot size | .01 | | - | | | |
| Protective casing length | | | 4 | and the property of the proper | | |
| Depth to water | 9.07 | | - | | | |
| Elevation of water Free Product thickness | 89.58 | | - | ATTENDED TO THE PERSON OF THE | | |
| Gallons removed (develop) | | | 1 | | | |
| Gallons removed (purge) | 2.27 | | † | | | |
| | | | _1 | | ł | |
| Other | | | 7) | | 85.3 | 7 Pattom of Caraca |
| | | | | | 85.3 | 7 Bottom of Screen |

| Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Sand Pack: #5 Silica Type of Sand Pack: #5 Silica Well Construction Materals Riser coupling joint Riser pipe above w.t. Screen 304 Coupling joint screen to riser Threaded Threaded Manhole Cover. | Illinois Environmental Prote | ction Agency | | | | LUST Well Completion Report |
|--|----------------------------------|--------------------|------------------|---------------|--|--------------------------------|
| Drilling Contractor: FISCHE ENTERPRISES INC. Dale Completed: 11/15/94 Bale Completed: 11/15/94 | Incident No.: 89-1717 | | | Well No.: _ | MW-8 | |
| Drilling Contractor: FISCHE ENTERPRISES INC. Drilling: J. REIMER Drilling Method: HOLLOW STEM ALIGER Annular Space Details Type of Surface Seal: Enclated cement Type of Surface Seal: Enclated cement Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Sand Pack: #5 Silica Well Construction Materals Elser.coupling joint Riser pipe above w.t. Riser pipe above w.t. Screen Coupling ioint screen to riser Threaded Threaded Manhole Coupling ioint screen to riser Threaded Threaded Manhole Riser pipe length 3.2" Screen length 10' Screen Stol size 01 Protective casing length Depth to water 99.27 Elsevation of water 99.557 Top of Screen length 10' Screen Stol size 01 Protective casing length Depth to water 99.27 Elsevation of water 99.27 Elsevation of water 99.57 Bottom of Screen 10 Total Screen Interval 86.57 Bottom of Screen Screen Product thickness Gallons removed (fourge) Chief Chief Chief Screen Screen Gallons removed (fourge) Chief Chief Chief Screen Screen Screen (fourge) Chief Screen Screen Screen Screen Screen (fourge) Chief Screen Screen Scree | Site Name: KIRKLAND QUICK | STOP | | Date Orilling | Start: 11/15/9 | 14 |
| Drilling Method: HOLLOW STEM ALIGER Prilling Method: HOLLOW STEM ALIGER Annular Space Details Type of Surface Seal: Portland cement Type of Annular Seal (Granular, Pellet): 1/4" pellets Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Sand Pack: #5 Silica Well Construction Materals Well Construction Materals Riser coupling join! Riser pipe above w.t. Riser pipe below w.t. Screen Goupling joint screen to riser Threaded Manhole Protective casing length 10' Screen Island Screen Island Depth to water Screen 19.27 Elevations01 ft. 99.23 Top of Protective Casing 99.23 Ground Surface 99.23 Ground Surface 99.23 Top of Sand 99.57 Top of Sand 2 Total Seal 1.6: Casing Stickup 96.57 Top of Sand 95.57 Top of Screen 95.57 Top of Screen 10 Total Screen interval Manhole Covey: Measurements 10' Screen Sol size 01 Protective casing length 10' Screen Product thickness Gallons removed (develop) | | | PINIC | | | |
| Drilling Method: HOLLOW STEM ALIGER Annular Space Details Type of Surface Seal: Portland cement Type of Surface Seal: Portland cement Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Sand Pack: #5 Silica Well Construction Materals Well Construction Materals Well Construction Materals Riser coupling joint Riser pipe above w.t. Screen 304 Coupling joint screen to riser Protective casing Measurements 10 0: 11 (where applicable) Riser pipe length Screen Sol size Protective casing length Denth to water Screen Sol size Other Servers House (develop) Gallons removed (develop) Gallons removed (develop) Gallons removed (develop) Gallons removed (gourge) 2.17 Drilling Fluids (type) NO FLUIDS USED Elevations01 ft. 99.23 Top of Riser Pipe. 99.23 Ground Surface 99.23 Ground Surface 99.23 Top of Annular Seals 1.6 Casing Stickup 1.6 Casing Stickup 95.57 Top of Sand 95.57 Top of Screen 95.57 Top of Screen 10 Total Screen Interval 10 Total Screen Interval 85.57 Bottom of Screen | • | | | • | | |
| Annular Space Details Type of Surface Seal: Endland cement Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Sand Pack: #5 Silica Well Construction Materals Well Construction Materals Well construction Materals Riser coupling joint Riser pipe above w.t. Riser pipe above w.t. Coupling ioint screen to riser Protective casing Measurements 10 11 (where applicable) Riser pipe length 10" Screen Stot size Protective casing length Depth to water 10" Screen Stot size Product thickness Gallons removed (develop) Gallons removed (develop) Gallons removed (develop) Gallons removed (glurge) 2.17 Betting 1/4" Sp.23 Top of Protective Casing Sp.23 Top of Riser Pipe 99.23 Top of Riser Pipe 99.23 Top of Annular Seals 1.6 Casing Stickup 98.57 Top of Screen 99.57 Top of Screen 96.57 Top of Screen 10 95.57 Top of Screen 10 Total Screen Interval 10 Total Screen Interval 10 Screen Stot size Free Product thickness Gallons removed (develop) Gallons removed (glurge) 2.117 | • | | | , - | | |
| Type of Surface Seal: _Portland cement Type of Annual Sealant: _Portland cement Type of Bentonite Seal (Granular, Pellet): _1/4" pellets | Drilling Method: HOLLOW ST | EM AUGER | | Drilling Flui | ds (type) NO FL | LUIDS USED |
| Type of Annual Sealant: Portland cement Type of Bentonite Seal (Granular, Pellet): 1/4" pellets Type of Sand Pack: #5 Silica Well Construction Materals Well Construction Materals Well Construction Materals Riser coupling joint Riser pipe above w.t. Screen 304 Coupling joint screen to riser Threaded Protective casing Measurements 10. Total Screen Interval Screen length Screen length Screen sold size 0.11 Protective casing length Depth to water Screen 10 10" Screen length Depth to water Screen Sold size 0.11 Protective casing length Depth to water Screen Sold size 0.11 Protective casing length Depth to water Screen Sold size 0.11 Protective casing length Depth to water Screen Sold size 0.11 Protective casing length Depth to water Screen Sold size 0.12 Riser product thickness Gallons removed (develop) Gallons removed (develop) Gallons removed (develop) Gallons removed (purge) Cother Screen Sold size Depth to water Screen Sold size Sold si | Annular Space Details | | | | | Elevations01 ft. |
| Type of Bentonite Seal (Granular, Pellet): 1/4" pellets 99.23 Ground Surface 98.74 Top of Annular Seals 16 Casing Stickup Well Construction Materals Well Construction Materals Biser coupling join! Riser pipe above w.t. Screen 304 Screen 304 Screen S | Type of Surface Seal: Portland | cement | | | | 99.23 Top of Protective Casing |
| Type of Bentonite Seal (Granular, Pellet): 1/4" pellets 99.23 Ground Surface 98.74 Top of Annular Seals 16 Casing Stickup Well Construction Materals Well Construction Materals Biser coupling join! Riser pipe above w.t. Screen 304 Screen 304 Screen S | Type of Annual Sealant: Portla | nd cement | | - | | 98.90 Top of Riser Pipe |
| Well Construction Materals Well Construction Materals Second | • | | | | | · |
| Well Construction Materals Well Construction Materals Riser coupling joint Riser pipe above w.t. Screen Coupling joint screen to riser Protective casing Measurements to .01 ft (where applicable) Screen slot size Protective casing length Screen length Screen length 10' Screen slot size Dot the water 10' Screen slot size Product thickness Gallons removed (develop) Gallons removed (purge) Gallons removed (purge) 2.17 Other Casing Stickup 28.57 Top of Scal 2 Total Screen Interval 95.57 Top of Screen 95.57 Top of Screen 10 Total Screen Interval 10 Total Screen Interval 85.57 Bottom of Screen | Type of Bottomic both (Bibliotic | , a onety. | | | | |
| Well Construction Materals Second | uc Oilian | | | | | • |
| Riser coupling joint Riser pipe above w.t. Screen 304 Coupling joint screen to riser Protective casing Riser pipe length 3: 2" Screen length 10' Screen length 10' Screen slot size Protective casing length Depth to water Elevation of water Series Significant By 63 By 64 By 65 | Type of Sand Pack: #5 SINCA | | | | | _16' Casing Stickup |
| Riser coupling joint Riser pipe above w.t. Screen 304 Coupling joint screen to riser Protective casing Riser pipe length 3: 2" Screen length 10' Screen length 10' Screen slot size Protective casing length Depth to water Elevation of water Series Significant By 63 By 64 By 65 | | | ŧ | | | |
| Riser coupling joint Riser pipe above w.t. Screen Goupling joint screen to riser Protective casing Riser pipe length Screen length Depth to water Elevation of water By 63 By 64 By 65 | Wall Construction Materals | | | | | , |
| Riser coupling joint Riser pipe above w.t. Screen 304 Coupling joint screen to riser Protective casing Measurements to .01 ft (where applicable) Riser pipe length Screen slot size Protective casing length Depth to water Elevation of water Pree Product thickness Gallons removed (develop) Gallons removed (develop) Gallons removed (purge) Other 2 Total Seal Interval 95.57 Top of Screen 4 Manhole Covor: 10 Total Screen Interval 2 Total Screen 95.57 Top of Screen | Mell Collett Action Materers | | | | | |
| Riser coupling joint Riser pipe above w.t. Screen 304 Coupling joint screen to riser Protective casing Measurements to .01 ft (where applicable) Riser pipe length Screen Sol size Protective casing length Depth to water Protective casing length Depth to water Elevation of water Pree Product thickness Gallons removed (develop) Gallons removed (develop) Gallons removed (purge) Other 2 Total Seal Interval 95.57 Top of Screen 4 Manhole Covor: 10 Total Screen Interval 2 Total Screen 95.57 Top of Screen | | | | | | 98.57 Top of Seal |
| Riser coupling joint Riser pipe above w.t. Screen 304 Coupling joint screen to riser Protective casing Measurements 10.01 ft (where applicable) Riser pipe length Screen length 10' Screen slot size Protective casing length Depth to water Elevation of water Elevation of water Seren yes of a serious size Gallons removed (develop) Gallons removed (develop) Gallons removed (burge) Other 95.57 Top of Screen | | | | | | • |
| Riser coupling joint Riser pipe above w.t. Screen Coupling joint screen to riser Protective casing Measurements to .01 ft (where applicable) Riser pipe length Screen length 10' Screen slot size Protective casing length Depth to water Elevation of water Screen sign semoved (develop) Gallons removed (develop) Gallons removed (purge) Other Riser pipe length 2.27 Elevation of water 89.63 Free Product thickness Gallons removed (purge) Qallons removed (purge) 2.17 Beta to make the sign of screen length Screen len | | | | | | Total Seal Interval |
| Riser pipe above w.t. Riser pipe above w.t. Screen Coupling joint screen to riser Threaded Protective casing Measurements to .01 ft (where applicable) Riser pipe length Screen length Screen slot size Protective casing length Depth to water Elevation of water Free Product thickness Gallons removed (develop) Gallons removed (purge) Other Sched 40 Manhole Manhole Cover 10 Total Screen Interval | | | | | | <u>96.57</u> Top of Sand |
| Riser pipe above w.t. Riser pipe above w.t. Screen Coupling joint screen to riser Threaded Protective casing Measurements to .01 ft (where applicable) Riser pipe length Screen length Screen slot size Protective casing length Depth to water Elevation of water Free Product thickness Gallons removed (develop) Gallons removed (purge) Other Sched 40 Manhole Manhole Cover 10 Total Screen Interval | | ے ا | | 8 | | |
| Riser pipe above w.t. Riser pipe above w.t. Screen Coupling joint screen to riser Threaded Protective casing Measurements to .01 ft (where applicable) Riser pipe length Screen length Screen slot size Protective casing length Depth to water Elevation of water Free Product thickness Gallons removed (develop) Gallons removed (purge) Other Sched 40 Manhole Manhole Cover 10 Total Screen Interval | | Indes: | | r tyti | | |
| Riser pipe above w.t. Riser pipe below w.t. Screen 304 Coupling joint screen to riser Threaded Threaded Protective casing Measurements to .01 ft (where applicable) Riser pipe length 3: 2" Screen length 10' Screen slot size 01 Protective casing length Depth to water 9,27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 83.37 Top of Screen Manhole Cover 10 Total Screen Interval | | Sieel | PVC Type Spec | Spec | | |
| Riser pipe above w.t. Riser pipe below w.t. Screen 304 Coupling joint screen to riser Threaded Threaded Protective casing Manhole Cover Measurements to .01 ft (where applicable) Riser pipe length 3: 2" Screen length 10' Screen slot size 01 Protective casing length Depth to water 9.27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (develop) Gallons removed (purge) 2.17 Other 85.57 Bottom of Screen | Riser coupling joint | | | | | 95.57 Tan of Sarron |
| Screen 304 Coupling joint screen to riser Threaded Threaded Protective casing Manhole (Cover) Measurements to .01 ft (where applicable) Riser pipe length 3: 2" Screen length 10' Screen slot size 01 Protective casing length Depth to water 9,27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 804 Streen slot size 101 Screen slo | Riser pipe above w.t. | | Sched 40 | | | Top of Screen |
| Coupling joint screen to riser Threaded Threaded Protective casing Manhole Cover Measurements to .01 ft (where applicable) Riser pipe length 3: 2" Screen length 10' Screen slot size 01 Protective casing length Depth to water 9,27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 885.57 Bottom of Screen | | | | | | |
| Coupling joint screen to riser Threaded Threaded Protective casing Manhole Cover Measurements to .01 ft (where applicable) Riser pipe length 3: 2" Screen length 10' Screen slot size 01 Protective casing length Depth to water 9,27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 885.57 Bottom of Screen | | 304 | | | | |
| Measurements to .01 ft (where applicable) Riser pipe length Screen length 10' Screen slot size Protective casing length Depth to water Elevation of water Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other Manhole Cover 10 Total Screen Interval 10 Total Screen Interval 10 Total Screen Interval 10 Screen Interval 10 Total Screen Interval 10 Total Screen Interval 10 Screen Interval | | | Threaded | | | |
| Measurements to .01 ft (where applicable) Riser pipe length 3' 2" Screen length 10' Screen slot size 01 Protective casing length Depth to water Elevation of water Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 10 Total Screen Interval | | THEADED | TIMEAUCU | | | |
| Riser pipe length 3' 2" Screen length 10' Screen slot size 01 Protective casing length Depth to water 9.27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 85.57 Bottom of Screen | Protective casing | | | Cover | Annual Control of the | |
| Riser pipe length 3' 2" Screen length 10' Screen slot size 0.1 Protective casing length Depth to water 9.27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 85.57 Bottom of Screen | Measurements | to .01 ft (where a | applicable) | | Annual An | 10 Total Screen Interval |
| Screen length 10' Screen slot size 01 Protective casing length 9.27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 85.57 Bottom of Screen | Riser pipe length | 3' 2" | | | | |
| Screen slot size 01 Protective casing length | | | | | | |
| Depth to water 9.27 Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 85.57 Bottom of Screen | | .01 | | _ | | |
| Elevation of water 89.63 Free Product thickness Gallons removed (develop) Gallons removed (purge) 2.17 Other 85.57 Bottom of Screen | | | | | | |
| Free Product thickness Gallons removed (develop) Gallons removed (purge) Other 85.57 Bottom of Screen | | | | _ | | |
| Gallons removed (develop) Gallons removed (purge) 2.17 Other 85.57 Bottom of Screen | | 89.63 | | _ | | |
| Gallons removed (purge) 2.17 Other 85.57 Bottom of Screen | | . | | _ | | |
| Other 85.57 Bottom of Screen | | 1 | | 4 | | |
| Solicin of Golden | | 2.17 | | | | |
| | Other | | | - | | 85.57 Bottom of Screen |
| Completed by: A. Flaak 85,24 Bottom of Borehole | A Hamir | | | | | |
| | Completed by: A. Haak | | | _ | | 65.24 Bottom of Borenole |

| Illinois Environmental Protect | tion Agency | | | | LUST Well Completion Report |
|-----------------------------------|------------------------------------|---------------------------------------|-------------------------------|--|--|
| Incident No.: 89-1717 | | | Well No : | MW-9 | |
| Site Name: KIRKLAND QUICK | | | | | |
| FIGURE ENTERDRISES INC | | | | | |
| - | | | | | |
| Driller: S. SAUNDERS | | | Geologist: | E. STEWART/ | DAHL |
| Drilling Method: HOLLOW ST | EM AUGER | | Drilling Flui | ds (type) NO FL | UIDS USED |
| Annular Space Details | | | | | Elevations01 ft. |
| Type of Surface Seal: Portland | cement | | - | | Top of Protective Casing |
| Type of Annual Sealant: Potlan | | | _ | | 98.42 Top of Riser Pipe |
| | | ellets | | | 98.68 Ground Surface |
| Type of Bentonite Seal (Granular, | Pellet): 174 p | Gliera | - | 8,80 | |
| | | · · · · · · · · · · · · · · · · · · · | | 2888 | 97.57 Top of Annular Sealant |
| Type of Sand Pack: #5 Silica | | | ~ | | _85 Casing Stickup |
| | | | | | • |
| Mall On should a Hatarala | | | | | |
| Well Construction Materals | | | | | - |
| | | | c . | | 96.91 Top of Seal |
| | | | | PARTIES CONTROL OF THE PARTIES OF TH | · |
| | | | | | 1' Total Seal Interval |
| | | | | | 95.91 Top of Sand |
| | 2 | , | | | y y de γ v de γ de γ |
| • | ess My | | Y ₁ y ₂ | | |
| | Ssteinless Steel SpeciffType | PVC Specify Type | Other SpecifyType | | |
| Riser coupling joint | 000 | I a s F | 10 W | | 2424 |
| Riser pipe above w.t. | | Sched 40 | | | 94.91 Top of Screen |
| | | DCHECT 40 | | | |
| Riser pipe below w.t. | | | | | |
| Screen | 304 | | | | • |
| Coupling joint screen to riser | Threaded | Threaded | 1 | | |
| Protective casing | <u></u> | | Manhole Cover | | 1 |
| Measurements | to .01 ft (where s | oplicable) | | | 10 Total Screen Interval |
| Riser pipe length | 3' | ,,, | ٦ · | | inglian delega mirelian |
| Screen length | 10.00 | | 1 | | |
| Screen slot size | _01 | | | | |
| Protective casing length | | | | | |
| Depth to water | 8.76 | | _ | | |
| Elevation of water | 89.66 | | 4 | | |
| Free Product thickness | <u> </u> | | 4 | | |
| Gallons removed (develop) | | | 4 | | |
| Gallons removed (purge) | 2.33 gallons | | 4 | | 24.04 |
| Other | <u> </u> | | - | | 84.91 Bottom of Screen |
| Completed by: A. Haak | | | | | 85.16 Bottom of Borehole |
| Complete al. | | | J | | Tributania de la compania del compania de la compania del compania de la compania del la compania de la compania de la compania de la compania del la compania de la compania del compania del la compania del la compania del la compania del la |

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| ed to require this information under 415 ILCS 5/4 and 21. Disclosure of this information is required. Failure to do so may result in a civil nemalty un tr | 녚 |
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LUST Well Completion Report

Bottom of Screen
Bottom of Borehole

| Incident No.: 891717 | Well No.: MW-11 |
|--|-------------------------------|
| Site Name: Kirkland Quick Stop | Date Drilled Start: 26-Aug-09 |
| Drilling Contractor: Trans Environmental | Date Completed: 26-Aug-09 |
| Driller: Cabeno Environmental Field Services | Geologist: Matt Warneke |
| Drilling Method: Hollow Stem Auger-Geoprobe | Drilling Fluids (Type): None |

| Driller: Cabeno Enviror | nmental Fi | eld Servic | es | Geologist: | Matt W | ameke |
|--|---|---------------------|-----------------------|----------------|-----------|--|
| Drilling Method: Hollov | v Stem Au | ger-Geop | robe | Drilling Fl | uids (Ty | /pe): None |
| | | | | | | |
| Annular Space Details Type of Surface Seal: Co Type of Annular Sealant: Type of Bentonite Seal (Co Bartoid Bentonite (Hole Ple Type of Sand Pack: Silic | Bentonite Franular, I ug) - Chips | Pellet): _ | | | | Elevations01 ft. Top of Protective CasingTop of Riser PipeGround SurfaceTop of Annular sealantCasing Stickup |
| Well Construction Materia | als | | | | | , |
| | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type | | | Top of Seal |
| Riser coupling joint | | × | | 1883 (8 | 8 | Top of Sand |
| Riser pipe above w.t. | | 1 | | 63 | <u></u> | - Million Copy Lamage Copy Copy Copy Copy Copy Copy Copy Copy |
| Riser Pipe below w.t. | 101-111 | 1 | | | | |
| Screen | | 1 | | | kës Ta | 4' Top of Screen |
| Coupling joint screen to riser | | X | | | | • |
| Protective casing | | | METERS AND A STREET | | | |
| Measurements | to .01 ft (| where appl | icable) | | | |
| Riser Pipe Length | | 4.00 | | | 2 | |
| Screen Length | | 10.00 | | | | Total Screen Interval |
| Screen Slot Size | | | | ※ 目, | K | |
| Protective casing length | | 8" | | | 3 | |
| Depth to water | | 11.00 | | | 1 | · |
| Elevation of water | | ** | | | .[| |
| Free Product thickness | | · | | | 1 | |
| Gallons removed (develop) | | 5 | | | ſ | |
| Gallons removed (purge) | | | | | | • |

Completed by: Matt Warneke

IL 532-2274 LPC 500 Dec-96 Other

| Incident No.: 891717 | | | | Well No | •• | MW-12 |
|--------------------------------|---------------------------------|---------------------|-----------------------|-------------------------------|--|---------------------------------|
| Site Name: Kirkland Qu | ick Stop | | | Date Drilled Start: 26-Aug-09 | | |
| Drilling Contractor: Tr | ans Enviro | nmental | | Date Co | mpleted: | 26-Aug-09 |
| Driller: Cabeno Environ | mental Fig | eld Servic | <u>es</u> | Geologis | st: Matt \ | Varneke |
| Drilling Method: Hollow | Stem Aug | ger-Geopr | ope | Drilling | Fluids (1 | 'ype): None |
| Annular Space Details | | | | | | Elevations01 ft. Top of Protect |
| Type of Surface Seal: Co | ncrete | | | 7- | | Top of Riser P |
| Type of Annular Scalant: | | e Chips | | ا لہ | 7 6 | Ground Surfac |
| Type of Bentonite Seal (G | | | | 41 | | Top of Annula |
| Bartoid Bentonite (Hole Plu | | | | | | Casing Sticku |
| Type of Sand Pack: Silic | | | | | | |
| x ype of said ruck. | | | | | | |
| | | | | 7 | 4 | |
| | * | | | | | |
| Well Construction Materia | als | | l | 1 | | |
| | 70 | <u>&</u> |) <u>\$</u> | | | |
| | ¥3 E | | (| 1 1 1 | | |
| | if is | S # S | cita l | | | Top of Seal |
| | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type | | XX | Total Scal Inte |
| Riser coupling joint | | | | | 88 | Top of Sand |
| Riser pipe above w.t. | | 1 | | | (\$2. | |
| Riser Pipe below w.t. | | 1 | | | | |
| Screen | | 1 | | | \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | 3.5' Top of Screen |
| Coupling joint screen to riser | | Х | | ₩E | 3 | |
| Protective casing | | | | | 3 | |
| | | | | | ∄" | |
| Measurements | to .01 ft (| where app | licable) | | | |
| Riser Pipe Length | T | 3.50 | | 1 / E | | |
| Screen Length | | 3,50 10,00 | | | 3 | 10' Total Screen |
| Screen Slot Size | | | | | 3 8 | |
| Protective casing length | | 8* | | ISF | 当際 | |
| Depth to water | | 11.00 | | | 3/1 | |
| Elevation of water | | | | 1 J.E | ∃ | |
| Free Product thickness | | | | 1 注 | I E | |
| Gallons removed (develop) | 1 | 3 | | 1 進 | ∄ | |
| Galions removed (purge) | 1 | | | 1 | d . l | |
| Other | | | | 1 E | 3 1 | 13.5' Bottom of Sci |
| | <u></u> | | | · }:/= | 3 | 14' Bottom of Bo |
| Completed by: Matt Warneke | 3 | | | | | |

LUST Well Completion Report

Illinois Environmental Protection Agency

| Site Name: Kirkland Qu Drilling Contractor: Tr Driller: Cabeno Environ Drilling Method: Hollow | ens Envir mental Fi | eld Servic | Date Dril Date Con Geologist Drilling I | pleted | 1: 26-/ t Warnel | Aug-09 (8 | |
|--|--|---------------------|--|--------|---------------------|--------------|---|
| Annular Space Details Type of Surface Seal: Co Type of Annular Sealant: Type of Bentonite Seal (G Bartoid Bentonite (Hole Plu Type of Sand Pack: Silica | Bentonit ranular, I ig) - Chips a Sand - # | Pellet): _ s | | | | Ele | vations01 ft. Top of Protective Casi Top of Riser Pipe Ground Surface Top of Annular sealan Casing Stickup |
| Well Construction Materia | | 'Type | / Type | | | | |
| | Stainless Steel Specify Type | PVC Specify Type | Other Specify | | ※ | - | Top of Seal Total Seal Interval |
| Riser coupling joint | | X | | | XX | | Top of Sand |
| Riser pipe above w.t. | | 4 | | | | | |
| Riser Pipe below w.t. | | ✓ | | | | | |
| Screen | | 4 | | | 2.5 | 4' | Top of Screen |
| Coupling joint screen to riser | | х | | | | | |
| Protective casing | | 1 | | | i e., | | |
| Measurements | to .01 ft (| where appl | licable) | | | | |
| Riser Pipe Length | · | 4.00 | | | 7-77 1019 | | |
| Screen Length | | 10,00 | | | <u>,516</u> / | 10' | Total Screen Interval |
| Screen Slot Size | | | · · · · · · · · · · · · · · · · · · · | | i., | | |
| Protective casing length | | 8* | | | | | |
| Depth to water | | 11.00 | | | y 1 | | |
| Elevation of water | | | | | | | |
| Free Product thickness | | | | | | | |
| Gallons removed (develop) | | 5 | | | | | |
| Galions removed (purge) | | | | | -1 | | |
| Other | | | | | 1 | 14' | Bottom of Screen |
| Completed by: Matt Warneke | And the second s | | | | | 15' | Bottom of Borehole |
| | | | | | | | |

LUST Well Completion Report

Illinois Environmental Protection Agency

| Site Name: Kirkland Qu Drilling Contractor: Tr Driller: Cabeno Enviror Drilling Method: Hollow | ans Envir mental Fi | eld Servic | robe | Date Comple Geologist: _! | Start: 28-Aug-09 eted: 28-Aug-09 Matt Warneke ids (Type): None |
|---|---------------------------------|--|---------------------------------------|---|--|
| Annular Space Details | | | | | Elevations01 ft. |
| Type of Surface Seal: Co | ncrete | | | | Top of Protective Ca Top of Riser Pipe |
| Type of Annular Sealant: | | e Chips | | _ A A | Ground Surface |
| Type of Bentonite Seal (G | | | | 4 | Top of Annular seals |
| Bartoid Bentonite (Hole Plu | - | _ | | | Casing Stickup |
| Type of Sand Pack: Silic | | | | | |
| Well Construction Materia | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type | | Top of Scal Total Scal Interval |
| Diamanulia islat | 20.02 | | ON | | 9 |
| Riser coupling joint Riser pipe above w.t. | | X | | 888 5 | Top of Sand |
| Riser Pipe below w.t. | | - | | | |
| Screen | | <u> </u> | <u> </u> | | 3' Ton of Samen |
| Coupling joint screen to riser | | <u> </u> | <u> </u> | | Top of Screen |
| Protective casing | | × | | | |
| Measurements | to .01 ft (| where appl | licable) | | |
| Riser Pipe Length | J | 3.00 | · · · · · · · · · · · · · · · · · · · | | |
| Screen Length | | 10.00 | | | 10' Total Screen Interva |
| Screen Slot Size | | ······································ | | | |
| Protective casing length | | 8" | | | |
| Depth to water | | 9.00 | | | |
| Elevation of water | | | | | |
| Free Product thickness | | | | | |
| Gallons removed (develop) | | 5 | | | |
| | | | | | |
| Gallons removed (purge) | | | | | 13' Bottom of Screen |
| Gallons removed (purge) Other | | | | | |
| | | | | | 14' Bottom of Borehole |



STAGE 2

LUST Well Completion Report

Incident No.: <u>891717</u>

Site Name: Kirkland Quick Stop

Drilling Contractor: C & S Drilling

Driller: Mark and Bart

Drilling Method: 4 1/4" ID HSA

Well No.: SB-21/MW-15

Date Drilled Start: 04/20/15

Date Completed: 04/20/15

Geologist: <u>Tom Mangan/Al Stone</u> Drilling Fluids (Type): <u>None</u>

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite

Type of Bentonite Seal (Granular, Pellet): Pellet

Type of Sand Pack: #5 quartz filter sand

Elevations - .01 ft.

769.55 Top of Protective Casing

769.15 Top of Riser Pipe

769.55 Ground Surface

768.55 Top of Annular sealant

_0.40 Casing Stickup

Well Construction Materials

| | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type |
|--------------------------------|---------------------------------|---------------------|-----------------------|
| Riser coupling joint | | threaded | |
| Riser pipe above w.t. | | 2" sc. 40 | |
| Riser Pipe below w.t. | | 2" sc. 40 | |
| Screen | | #10 slot | |
| Coupling joint screen to riser | | threaded | |
| Protective casing | steel | | |

-1.00 Top of Seal

5.00 Total Seal Interval

-6.00 Top of Sand

-8.00 Top of Screen

Measurements

to .01 ft (where applicable)

| Riser Pipe Length | 7.60 | |
|---------------------------|--------|--|
| Screen Length | 10.00 | |
| Screen Slot Size | 0.00 | |
| Protective casing length | 0.80 | |
| Depth to water | 8.82 | |
| Elevation of water | 760,33 | |
| Free Product thickness | 0.00 | |
| Gallons removed (develop) | 12.00 | |
| Gallons removed (purge) | 5,00 | |
| Other | | |
| | | |

10.00 Total Screen Interval

-18.00 Bottom of Screen

-20.00 Bottom of Borehole

Completed by: Alan Stone



STAGE Z

LUST Well Completion Report

Incident No.: 891717

Site Name: Kirkland Quick Stop Drilling Contractor: C & S Drilling

Driller: Mark and Bart

Drilling Method: 4 1/4" ID HSA

Well No.: SB-23/MW-16

Date Drilled Start: 04/22/15

Date Completed: 04/22/15

Geologist: Tom Mangan/Al Stone Drilling Fluids (Type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite

Type of Bentonite Seal (Granular, Pellet): Pellet

Type of Sand Pack: #5 quartz filter sand

768.18 Top of Riser Pipe

768.57 Top of Protective Casing

Elevations - .01 ft.

768.57 Ground Surface

767.57 Top of Annular scalant

-0.40 Casing Stickup

Well Construction Materials

| • | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type |
|--------------------------------|---------------------------------|---------------------|-----------------------|
| Riser coupling joint | | threaded | |
| Riscr pipe above w.t. | | 2" sc. 40 | |
| Riser Pipe below w.t. | <u> </u> | 2" sc. 40 | |
| Screen | | #10 slot | |
| Coupling joint screen to riser | | threaded | |
| Protective casing | steel | | |

Measurements

to .01 ft (where applicable)

| Riser Pipe Length | 5.61 |
|---------------------------|--------|
| Screen Length | 10.00 |
| Screen Slot Size | 0.00 |
| Protective casing length | 0.80 |
| Depth to water | 7.90 |
| Elevation of water | 760.28 |
| Free Product thickness | 0.00 |
| Gallons removed (develop) | 8.00 |
| Gallons removed (purge) | 5.00 |
| Other | |

Completed by: Alan Stone

-1.00 Top of Seal

3.00 Total Seal Interval

4.00 Top of Sand

-6.00 Top of Screen

10.00 Total Screen Interval

-16.00 Bottom of Screen -20.00 Bottom of Borchole



STAGE &

LUST Well Completion Report

Incident No.: <u>891717</u>

Site Name: Kirkland Quick Stop

Drilling Contractor: C & S Drilling

Driller: Mark and Bart

Drilling Method: 4 1/4" ID HSA

Well No.: SB-24/MW-17

Date Drilled Start: 04/22/15

Date Completed: 04/22/15

Geologist: Tom Mangan/Al Stone

Drilling Fluids (Type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Scalant: Bentonite

Type of Bentonite Seal (Granular, Pellet): Pellet

Type of Sand Pack: #5 quartz filter sand

Elevations - .01 ft.

768.92 Top of Protective Casing

767.91 Top of Riser Pipe

768.92 Ground Surface

767.92 Top of Annular sealant

-1.01 Casing Stickup

Well Construction Materials

| | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type |
|--------------------------------|---------------------------------|---------------------|---|
| Riser coupling joint | | threaded | |
| Riser pipe above w.t. | | 2" sc. 40 | *************************************** |
| Riser Pipe below w.t. | | 2" sc. 40 | |
| Screen | | #10 slot | |
| Coupling joint screen to riser | - | threaded | |
| Protective casing | steel | | |

-1.00 Top of Seal

4.00 Total Seal Interval

-5.00 Top of Sand

-7.00 Top of Screen

Measurements

to .01 ft (where applicable)

| Riser Pipe Length | 5.99 | |
|---------------------------|--------|------------------|
| Screen Length | 10.00 | |
| Screen Slot Size | 0.00 | |
| Protective casing length | 08.0 | |
| Depth to water | 7.58 | |
| Elevation of water | 760.33 | t-de-photoco-co- |
| Free Product thickness | 0.00 | |
| Gallons removed (develop) | 8.00 | |
| Gallons removed (purge) | 5.00 | - |
| Other | | |

10.00 Total Screen Interval

-17.00 Bottom of Screen -20.00 Bottom of Borchole

Completed by: Alan Stone



STAGE 3
LUST Well Completion Report

Incident No.: 891717

Site Name: Kirkland Quick Stop

Drilling Contractor: C & S Drilling

Driller: Mark and Bart

Drilling Method: 4 1/4" ID HSA

Well No.: SB-32MW-18

Date Drilled Start: 04/20/15

Date Completed: 04/20/15

Geologist: Tom Mangan/Al Stone

Drilling Fluids (Type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite

Type of Bentonite Seal (Granular, Pellet): Pellet

Type of Sand Pack: #5 quartz filter sand

Elevations - .01 ft.

768.24 Top of Protective Casing

767.84 Top of Riser Pipe

768.24 Ground Surface

767.24 Top of Annular scalant

-0.40 Casing Stickup

Well Construction Materials

| | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type |
|--------------------------------|---------------------------------|---------------------|-----------------------|
| Riser coupling joint | | threaded | |
| Riser pipe above w.t. | | 2" sc. 40 | |
| Riser Pipe below w.t. | | 2" sc. 40 | |
| Screen | | #10 slot | |
| Coupling joint screen to riser | | threaded | , |
| Protective casing | steel | | |

Measurements

to .01 ft (where applicable)

| Riser Pipe Length | 6.60 |
|---------------------------|--------|
| Screen Length | 10,00 |
| Screen Slot Size | 0.00 |
| Protective casing length | 08,0 |
| Depth to water | 7,71 |
| Elevation of water | 760.13 |
| Free Product thickness | 0.00 |
| Gallons removed (develop) | 8.00 |
| Gallons removed (purge) | 5,00 |
| Other | |

Completed by: Alan Stone

-1.00 Top of Scal

4.00 Total Seal Interval

-5.00 Top of Sand

-7.00 Top of Screen

10.00 Total Screen Interval

-17.00 Bottom of Screen -18.00 Bottom of Borehole

IL 532-2274 LPC 500 Rev June 2004



STAGE 3

LUST Well Completion Report

Incident No.: 891717

Site Name: Kirkland Quick Stop

Drilling Contractor: C & S Drilling

Driller: Mark and Dan

Drilling Method: 4 1/4" ID HSA

Well No.: SB-34/MW-19

Date Drilled Start: 04/23/15

Date Completed: 04/23/15

Geologist: Tom Mangan/Al Stone

Drilling Fluids (Type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite

Type of Bentonite Seal (Granular, Pellet): Pellet

Type of Sand Pack: #5 quartz filter sand

Elevations - .01 ft.

767.79 Top of Protective Casing

767.33 Top of Riser Pipe

767.79 Ground Surface

766.79 Top of Annular sealant

-0.46 Casing Stickup

Well Construction Materials

| | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type |
|--------------------------------|---------------------------------|---------------------|-----------------------|
| Riser coupling joint | | threaded | |
| Riser pipe above w.t. | | 2" sc. 40 | |
| Riser Pipe below w.t. | | 2" sc. 40 | |
| Screen | | #10 slot | |
| Coupling joint screen to riscr | | threaded | |
| Protective casing | steel | | |

-1.00 Top of Scal

3.00 Total Seal Interval

-4.00 Top of Sand

-6.00 Top of Screen

Measurements

to .01 ft (where applicable)

| Riser Pipe Length | 6.54 | |
|---------------------------|--------|--|
| Screen Length | 10.00 | |
| Screen Slot Size | 0.00 | |
| Protective easing length | 0.80 | |
| Depth to water | 7,17 | |
| Elevation of water | 760.16 | |
| Free Product thickness | 0.00 | |
| Gallons removed (develop) | 8.00 | |
| Gallons removed (purge) | 5.00 | |
| Other | | |

Completed by: Alan Stone

10.00 Total Screen Interval

-16.00 Bottom of Screen -19.00 Bottom of Borehole



STAGE 3

LUST Well Completion Report

Incident No.: <u>891717</u>

Site Name: Kirkland Quick Stop

Drilling Contractor: C & S Drilling

Driller: Mark and Dan

Drilling Method: 4 1/4" ID HSA

Well No.: SB-38/MW-20

Date Drilled Start: 04/23/15

Date Completed: 04/23/15

Geologist: Tom Mangan/Al Stone

Drilling Fluids (Type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite

Type of Bentonite Seal (Granular, Pellet): Pellet

Type of Sand Pack: #5 quartz filter sand

Elevations - .01 ft.

764.90 Top of Protective Casing

764.63 Top of Riser Pipe

764.90 Ground Surface

763.90 Top of Annular sealant

-0.27 Casing Stickup

Well Construction Materials

| | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type |
|--------------------------------|---------------------------------|---------------------|-----------------------|
| Riser coupling joint | | threaded | |
| Riser pipe above w.t. | | 2" sc. 40 | |
| Riser Pipe below w.t. | | 2" sc. 40 | |
| Screen | | #10 slot | |
| Coupling joint screen to riser | | threaded | |
| Protective casing | steel | | |

-1.00 Top of Seal

3.00 Total Seal Interval

_4.00 Top of Sand

_6.00 Top of Screen

Measurements

to .01 ft (where applicable)

| Riser Pipc Length | 5.73 |
|---------------------------|--------|
| Screen Length | 10.00 |
| Screen Slot Size | 0.00 |
| Protective casing length | 0,80 |
| Depth to water | 6.80 |
| Elevation of water | 757.83 |
| Free Product thickness | 0.00 |
| Gallons removed (develop) | 5.00 |
| Gallons removed (purge) | 5.00 |
| Other | |

Completed by: Alan Stone

10.00 Total Screen Interval

-16.00 Bottom of Screen
-20.00 Bottom of Borehole

IL 532-2274 LPC 500 Rev June 2004



STAGE 3

LUST Well Completion Report

Incident No.: 891717

Site Name: Kirkland Quick Stop

Drilling Contractor: C & S Drilling

Driller: Mark and Bart

Drilling Method: 4 1/4" ID HSA

Well No.: SB-30D/MW-30D

Date Drilled Start: 04/21/15

Date Completed: 04/21/15

Geologist: Tom Mangan/Al Stone

Drilling Fluids (Type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite, grout

Type of Bentonite Seal (Granular, Pellet): Pellet

Type of Sand Pack: #5 quartz filter sand

Elevations - .01 ft.

766.95 Top of Protective Casing

766.50 Top of Riser Pipe

766.95 Ground Surface

765.95 Top of Annular scalant

-0.45 Casing Stickup

Well Construction Materials

| Stainless Steel Specify Type | PVC Specify Type | Other Specify Type |
|---------------------------------|---------------------|--|
| | threaded | |
| | 2" sc. 40 | |
| | 2" sc. 40 | |
| | #10 slot | |
| | Ihreaded | |
| steel | | |
| | | threaded 2" sc. 40 2" sc. 40 #10 slot threaded |

Measurements

to .01 ft (where applicable)

| Riser Pipe Length | 25.55 | |
|---------------------------|--------|-------------|
| Screen Length | 5,00 | |
| Screen Slot Size | 0.00 | |
| Protective casing length | 0.80 | |
| Depth to water | 6.20 | |
| Elevation of water | 760.30 | |
| Free Product thickness | 0.00 | tono-rossa- |
| Gallons removed (develop) | 47.50 | - |
| Gallons removed (purge) | 5,00 | |
| Other | | |

Completed by: Alan Stone

-1.00 Top of Scal

23.70 Total Seal Interval

-24.70 Top of Sand

-26.00 Top of Screen

5.00 Total Screen Interval

-31.00 Bottom of Screen -35.00 Bottom of Borchole



STAGE 3

LUST Well Completion Report

Incident No.: <u>891717</u>

Site Name: Kirkland Quick Stop

Drilling Contractor: C&S Drilling

Driller: Mark and Bart

Drilling Method: 4 1/4" ID HSA

Well No.: SB-30S/MW-30S

Date Drilled Start: 04/20/15

Date Completed: __04/20/15

Geologist: Tom Mangan/Al Stone

Drilling Fluids (Type): None

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite

Type of Bentonite Seal (Granular, Pellet): Pellet

Type of Sand Pack: #5 quartz filter sand

Elevations - .01 ft.

767.00 Top of Protective Casing

766.64 Top of Riser Pipe

767.00 Ground Surface

766.00 Top of Annular sealant

-0.45 Casing Stickup

Well Construction Materials

| | Stainless Steel Specify Type | PVC Specify Type | Other Specify Type |
|--------------------------------|---------------------------------|---------------------|-----------------------|
| Riser coupling joint | | threaded | |
| Riser pipe above w.t. | | 2" sc. 40 | |
| Riser Pipe below w.t. | | 2" sc. 40 | |
| Screen | | #10 slot | |
| Coupling joint screen to riser | | threaded | |
| Protective casing | sleel | | |

Measurements

to .01 ft (where applicable)

| Riser Pipe Length | 6.64 |
|---------------------------|--------|
| Screen Length | 10.00 |
| Screen Slot Size | 0.00 |
| Protective casing length | 0.80 |
| Depth to water | 6.35 |
| Elevation of water | 760.29 |
| Free Product thickness | 0.00 |
| Galions removed (develop) | 47.50 |
| Gallons removed (purge) | 5,00 |
| Other | |

Completed by: Alan Stone

-1.00 Top of Seal

3.90 Total Seal Interval

-4.90 Top of Sand

-7.00 Top of Screen

10.00 Total Screen Interval

-17.00 Bottom of Screen -26.00 Bottom of Borehole

Electronic Filing: Received, Clerk's Office 5/19/2017



| BOR | ING NO.: MW-31 | WELL NO.: MV | V-31 | PF | OJECT NO | .:15 | -16013 | | PR | OJEC | T NAME | E: Kirkland | |
|--------------------------|--|------------------|---------|-----------------|---------------------------|--------|------------------|---------|----------|------------------|------------------------|-------------------------|----------------|
| SITE | ID. NO.: | FEDERA | L ID. N | 0.: | 11 4-11-11 | _ | | | SIT | E LO | CATION | l: Kirkland, | IL. |
| 000 | RDINATES: | | | 1 00 | AD . WHI | | TITUDE | D. | XII | - | LO | GITUDE: | |
| DRIL | LING CO.: C.S Drilling | | | | AD.: Kirkla C.: 26 | | : T42 N | R | : R3 E | | G.S. EL | EVATION: | 763.90 MSL |
| Ministration of the last | LER: M. Natali | DRILLING | | .: Die | drich D-120 | | | | | _ | | OLE DIA.: | |
| STAF | RT DATE: 8/8/16 RT TIME (hours):0900 | | 100000 | 4.4 | ATE: 8/8/10 ME (hours) | | 45 | | | | | D BY: M. L ED BY: C. | |
| | KUP: 2.98 ft AGS | TOP of C | | _ | TION: 766 | | | | | | A to the second second | A A STATE OF THE PARTY | AL: 2.0'-26.8' |
| - | R DIA./MTL./LGTH.: 2"/ | | | | 1110111700 | | REEN | ATL./SL | OT: P\ | 1 | - | | |
| | | | | | | - | | SAMPL | ES | | PIC | (ppm) | |
| DEPTH (ft) | DESCRIPT | rion | GRAPHIC | ELEVATION | WELL | NUMBER | RECOVERY (ft) | МЕТНОБ | MOISTURE | BLOW CNT (6") | SCAN | HEADSPACE | REMARKS |
| .2 | | | | | | | | | | | | | |
| 0 | TOPSOIL (0.0'-1.6') Black, moist, stiff, orga to high plasticity | inics, medium | | 763,90 762,3 | 27,27,27 | Α | 3.9/4 | HSA | м | - | 0.2 | ** | |
| 2 | SILTY CLAY (1.6'-6.5') Tan, moist, stiff, high p Grades hard at 2.4' | CL plasticity | | | | В | | HSA | М | - | 0.1 | - | |
| 6 | Condensate for a color | ad accordate 41 | | | | С | 3/4 | HSA | М | - | 0.1 | - | |
| din | Grades with fine graine SANDY CLAY (6.5'-7.4 Brown, moist, stiff, low | ') SC | | 757.4 | | D | | HSA | М | | 0.2 | ä. | |
| 8 | SAND (7.4'-10.3') SW Brown, moist, fine grain with fine and coarse grained um grained sand, grained sand Saturated at 9.2' | avel, some | | | | E | 3.4/4 | HSA | М | | 0.4 | | |
| 0 | | | 0.00 | pole to | | | | | | | | | |
| 12 | SAND (10.3'-11.0') SP Brown, saturated, fine medium dense SAND (11.0'-19.8') SW Brown, saturated, fine grained, some fine and | to coarse | | 753.6 752.9 | | F | | HSA | M/S | ** | | - | |
| 14:11:11:11 | Sand seam; Fine grain 12.8'-13.3' Sand seam; Coarse gr 13.3'-13.5' | ained | | | | G | 3/4 | HSA | S | - | 1 | - | |
| arthur. | With fine gravel at 13.7 | | | | | н | | HSA | s | ** | - | | |

Page: 1 of 2

Boring No: MW-31



| BOR | ING NO.: MW-31 WELL NO.: MV | V-31 | PR | OJECT NO | .:15 | -16013 | SAMPL | | OJEC. | | E: Kirkland D (ppm) | |
|-----------------|--|---------|-----------|----------|--------|------------------|--------|----------|------------------|------|------------------------|---------|
| DEPTH (ft) | DESCRIPTION | GRAPHIC | ELEVATION | WELL | NUMBER | RECOVERY (ft) | METHOD | MOISTURE | BLOW CNT (6") | SCAN | HEADSPACE | REMARKS |
| 18 | Sand seam; Fine grained from 16.6'-16.9' | | | | 1 | 1.7/2 | HSA | s | | 1 | - | |
| o linking | | | 744.1 | | J | 2.8/4 | HSA | s | 1 | | - | |
| 1 1 1 1 1 1 1 1 | CLAYEY SILT (19.8'-21.4') ML Tan, saturated, some fine grained sand, medium plasticity Gravel seam; Fine and coarse gravel | | 742,5 | | к | | HSA | s | - | 4 | | |
| 2- | from 21.0'-21.1' SAND (21.4'-24.4') SP Tan, saturated, fine grained, dense | 2011 | 736.0 | | | | | | | | | |
| 24 | Grades to trace clay at 23.9 | | 739.5 | | L | 2.8/4 | HSA | S | ** | - | | |
| unitu | SANDY GRAVEL (24.4'-26.0') GC Dark gray to black, saturated, fine to medium grained sand, fine and coarse gravel Sity clay seam; Dark gray, very hard, | | 737.9 | | M | | HSA | s | 4- | + | - | |
| 26-11-11-12 | trace fine gravel from 24.8'-25.3' Grades gray at 25.3' SAND (26.0'-26.7') SP Gray, saturated, fine grained, dense | | 737.2 | | Z | 2/2 | HSA | s/M | ** | ,, | - | |
| 8- | SAND (26,7'-27,3') SW Gray, saturated, fine to coarse grained sand, dense SILTY CLAY (27,3'-28,0') CL | | 735,9 | | | | | | | | | |
| 0 | Gray, moist, very hard, high plasticity, trace fine gravel End of Boring at 28.0' | | | | | | | | | | | |
| Tris land | | | | | | | | | | | | |
| 2 17777 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| section | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |

Page: 2 of 2

Boring No: MW-31

| Date | St | | | lon | A- | 1 | | | 100 | _ | NOIS Boring Type HSA Elev. Total I | epth 17 |
|--------|--------|-----------|-----|-----|-------|-------|-------------|----------------|--------------|--------------|--|--|
| | 00 (| art | ed_ | 9-3 | 3 - 9 | 11 | Dat | | | | eted 9-3-9/ Logged By M. MEL- | |
| Drille | | | | | | | | | | | RING, INC. | |
| C | er_t | 'AT | HE | IME | 400 | SPI | 53 | 正 | E | W | ADE Rig No. 17 Backfilled (| (N) Y |
| Surt | T | Ta | | T | | 51 | 1110 | | TD | T | T | |
| SAMPLE | SAMPLE | RECOVERED | ZET | 8/0 | 380 | VALIE | OP (TSF) | GTETH GTET) | SAMPLE | 18 | DESCRIPTION OF MATERIAL | REMARKS |
| | - | ~ | | | | | | - | 1 | 1 | ASPHALT | |
| | - | | | | | | - | | 11 | | SANDY GRAVEL TEILT Durk brown loose: | TIP read |
| 1 | SS | 19 | 3 | 3 | 2 | 5 | | 2 | H | 1 | moist, w/brick and cement fragments | 3.4, 77.10 |
| | 24.2 | | | | | | | | X | | ********** | TIP read |
| | | | | | | | 1.2 | 4 | H | | SILTY CLAY (CL) Brown, soft, molst | 1.0.11.270 |
| 2 | SS | 22 | 3 | 3 | 3 | 6 | 1.3 | 6. | M | | | TIP read |
| - | | | _ | _ | _ | _ | | | 14 | ١ | ********* | 4.3 PPM |
| 3 | SS | 14 | 2 | 5 | 3 | 8 | 0.9 | 8 | M | | grades @ B.7', greenish-grey, wet, | Tip read |
| - | - | | | | | | _ | | ₩ | + | GRAVELY SAND (GM) bark brown, loose, wet, trace silt | TIPread |
| 4 | SS | 15 | 5 | 6 | 7 | 13 | 1 | 10 | M | | loose, wet, trace silt | 1043.0 P |
| | | | | | | | | 12 | W | 1 | grades caturated @ 11.25' | TIP read 3824.0 PF Collected sample A |
| 5 | SS | 12 | 6 | 7 | 15 | 12 | - | 12: | \mathbf{H} | 1 | | sample A |
| | | | | | | | | 14. | W | 1 | | TIP read 2045.0 P |
| - | 66 | 10 | - | _ | 4 | 10 | - | | H | 1 | | TIP read |
| 6 | 22 | 18 | 1 | 6 | 7 | 10 | _ | 16. | X | 1 | grades light brown @ 16.0' · · · · | TIP read |
| | | | | | | | | | 11 | † | End of boring@ 17.0' | M99 E.P. |
| | | | | | | | | 18 | 1 | } | The state of the s | 0.00 |
| | | | | | | | | | 11 | 1 | | |
| | | | | _ | | | | | 1 | 1 | | |
| | | _ | | - | | | _ | | 1 | 1 | * * * * * * * * * * * * * * * * * * * | 1.6 8 1 |
| - | - | | | - | | | - | | 11 | 1 | | 11101 |
| | | | | | | | _ | | 1 | | | E. J., 13 |
| | 13 | | | | | | | | 1 | | ************* | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | 78.00 |
| | | 1 | | | | | | | | 1 | | |
| | 1 | | | | | | | | 1 | | | |

| Date Started 9-4-9/ Date Completed 9-4-9/ Logged By M. MELTCN Driller PAT HAMMOND & STEVE WADE RIG NO 17 Backfilled (Y/N) Surface Conditions ASPHALT POWENENT Surface Conditions ASPHALT POWENENT ASPHALT SANDY GENNEL FILL! 1 SS 15 3 3 3 6 111 SANDY GENNEL FILL! 1 SS 15 3 3 3 6 111 SANDY GENNEL FILL! 2 SS 12 4 5 6 11 1.23 A grades trace and gravel, wet 6 6 6' 93.5 3 SS 13 42 51 53 N/A - 8 7 SANDY GENNEL (GM); Light brownish Region (GM); L | Boring Designation A-2 Date Started 9-4-91 Date Completed 9-4-91 Logged By M. MELTICN Drilling Contractor ESTING ENGINEERING, INC. Drilling PAT HAMMOND STEVE WADE Rig No. 17 Backfilled (Y/N) Surface Conditions ASPHALT PAVEMENT ASPHALT SANDY GENVEL [FILL] 1 SS 15 3 3 3 6 1.1 2 SILTY CLAY (CL); Dark Drown, soft, molist 4 grades trace sand (gravel, wet 66.6' 93.5 3 SS 13 42 51 53 N/A - 8 SANDA GENVEL (GN); Light Drownish grey, wet, loase, w/gravel of Asphalt place 81th 1 SS 17 19 21 19 40 - 10 Sand (SW); Light Drownish grey, wet, loase, w/gravel of Book 12.5 Completed grades brown 8 13.8' 5 SS 19 13 16 15 81 - 14 Grades brown 8 13.8' End of Dorling @ 14.5' 18 | Bori Date | | | C 11 +1 | lon | | | ICK AND | | | |) AIC. |
|--|--|--------------|------------|---------|-----------|-------------|-----------|-----------|--------------|-----------------|-----------|---|-----------------|
| Date Started 9-4-9/ Date Completed 9-4-9/ Logged By M. MELTON Drilling Contractor TextING ENGINEERING INC. Driller PAT HAMMOND & STEVIE WADE RIG NO. 17 Backfilled (Y/N) Surface Conditions ASPHALT POVEMENT ASPHALT SANDY GENVEL FILL 1 SS 15 3 3 3 6 1.11 SILTY CLAY (CL) I Dark brown, soft, moist | Date Started 9-4-91 Date Completed 9-4-99 Logged By M. MELTON Driller PAT HAMMOND STRIE WADE RIG NO. 17 Backfilled (Y/N) Surface Conditions. ASPHALT PRUEMENT SANDY GENETLE FILL. 4 SS 15 3 3 3 6 1.1 4 SS 15 3 3 3 6 1.1 4 Pades motified greenish brown 8.40 The result of the same sand squarel, uncl 8.66 3 SS 13 42 51 53 N/A - 8 4 SS 17 19 21 19 40 - 10 Sand Center (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 Sand Senter (SM): Light brownish grey, uset grades galunated 8 10.71 End of boring 8 14.51 18 | Date | ng L | esig | anat | tion | _A | -2 | _ | _ | | Flex. Intol Day | 1+h 14 |
| Driller Contractor ISTING ENGINEERING INC. Driller PAT HAMMOND & STEVE WADE RIG NO. 17 Backfilled (Y/N) Surface Conditions ASPHALT POVEMENT ASPHALT SANDY GENVEL FILL 1 SS 15 3 3 3 6 1.1 2 SILTY CLAY (CL) i Dark brown, soft, moist | Drilling Contractor LETTING ENGINEERING INC. Driller PAT HAMMOND STEVE WADE RIG NO. 17 Backfilled (Y/N) Surface Conditions ASPHALT PAVEMENT ASPHALT SANDY GENVEL [FILL]. 1 SS 15 3 3 3 6 1.1 2 SS 17 4 5 6 11 1.25 4 Grades trace and famicing Light brownish grey wet, loose, warpavel grades browned 13.8 4 SS 17 19 21 19 40 - 10 5 SS 19 13 16 15 31 - 14 Agrades browned 13.8 End of boring @ 14.59 III Proceedings of the process of th | Drilli | St | art | ed_ | 9-1 | 1-9 | 11_ | _Da1 | :e (| Cor | ipleted 9-4-9/ Logged By M. MELTC | N |
| Surface Conditions ASPHALT PAUE MENT Superior Supe | Surface Conditions ASPHALT PAUE MENT Second conditions ASPHALT PAUE MENT | | ing (| Cont | trac | tor | · 15 | STU | NN F | N | MIK | EERING, INC. | |
| ## | ## ## ## ## ## ## ## ## ## ## ## ## ## | Drill | er I | TA' | H | 1ME | νον | \vec{D} | <u> </u> | LEY | E_ | WADE Rig No. 17 Backfilled (Y/ | 4) 4 |
| 1 SS 15 3 3 3 6 111 2 SSITY CLAY (CL): Dark brown, soft, moist moi | 1 SS 15 3 3 3 6 1.1 2 SSITY CLAY (CL): Dark brown, soft, moist qrades mottled greenish brown 8 4.0 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 SANDA GENET (GM); Light brownish grey, wet leave and special process of the content of the conten | Surf | oce. | Co | ndit | ions | <u></u> | SP | AUL | I | <u>89</u> | DEMENT | |
| 1 SS 15 3 3 3 6 1.1 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 SANDY GENVEL (GM); Light brownish TIP. (68); SANDY GENVEL (GM); Light brownish (68); Governored to the control of the | 1 SS 15 3 3 3 6 111 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 Y SANDY GENVEL (GM); Light brown & 4,0' 4 SS 17 19 21 19 40 - 12 SANDY GENVEL (GM); Light brownish Tip re 168.0 5 SS 19 13 16 15 31 - 12 SANDY GENVEL (GM); Light brownish Genvet (GM); | SAMPLE | SAMPLE | RECOVER | SET 6' | e, 55/00 | 3R) 6" | ₩ | DP (73.F) | DEPTH UFEETS | SAMPLE | B DESCRIPTION OF MATERIAL | REHARK |
| 1 SS 15 3 3 3 6 1.1 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 SANQUE GENET (GM); Light brownish 168. 4 SS 17 19 21 19 40 - 10 Sand (SW); Light brownish grey, wet, grades saturated P 10.7! 5 SS 19 13 16 15 31 - 12 5 SS 19 13 16 15 31 - 12 Find of boring @ 14.5. | 1 SS 15 3 3 3 6 1.1 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 NON 100000 100000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 100000 10000 10000 10000 100000 10000 10000 10000 10000 10000 100000 10000 10000 10000 100000 10000 1000000 | | | | | | | | | | JF | ASPHALT | |
| 1 55 15 3 3 3 6 11 4 Grades mottled greenish brown @ 4.0' 2 55 12 4 5 6 11 1.25 3 55 13 42 51 53 N/A - 8 SANDY GENVEL (SIM); Light brownish grey, loose, damp, trace 3 llt 4 55 17 19 21 19 40 - 12 5 55 19 13 16 15 31 - 12 4 Grades brown @ 13.0' End of borling @ 14.5' TIPE 188.0 TIPE 189.0 TIPE 180.0 TIPE 18 | 1 55 15 3 3 3 6 1.1 TIP noist TIP noi | | | | | | | | | 2 |] [| | |
| 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 | 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 | 1 | SS | 15 | 3 | 3 | 3 | 6 | 1.1 | | H | SILTY CLAY (CL) ; Dark brown, soft, | \Q _aa_ |
| 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 | 2 SS 12 4 5 6 11 1.25 3 SS 13 42 51 53 N/A - 8 | | | | | | | | | u. | XI | | 8.0 P |
| 3 SS 13 42 51 53 N/A - 8 | 3 SS 13 42 51 53 N/A - 8 SANQUE GM; Light brownish TIP re 168.0 4 SS 17 19 21 19 40 - 10 Sand (SW); Light brownish grey, wet, 125.0 Solves, w/g mave? 125.0 Solves advanted @ 10.71 Going Goldes Saturated @ 10.71 TIP re 125.0 Solves w/g mave? 125.0 Solv | | | | | | | | | ٦. | H | dianez morties di serman promi e 1,0 | |
| 3 SS 13 42 51 53 N/A - 8 | 3 SS 13 42 51 53 N/A - 8 SANOH GENVEL (GM); Light brownish 9 cg, loose, damp, trace 3 lt. 4 SS 17 19 21 19 40 - 10 Sand (SW); Light brownish grey, wet, 110 re 10 Goilect Sompi 11 SS 19 13 16 15 31 - 14 A grades brown @ 13.8' End of boring @ 14.5' 18 18 | 2 | SS | 12 | 4 | 5 | 6 | 11 | 1.25 | ۷. | M | | |
| Sand (SW); Light brownish grey, wet, TIP r grades saturated @ 10.71 125.6 5 SS 19 13 16 15 31 - | Sand (SW); Light brownish grey, wet, TIP re 1005e, w/grave! 125.0 Collect Sompile | | | | | | | | | ~ . | ₩- | | 3:5 P |
| Sand (SW); Light brownish grey, wet, TIP r grades saturated @ 10.71 125.6 5 SS 19 13 16 15 31 - | Sand (SW); Light brownish grey, wet, TIP re 1005e, w/grave! 125.0 Collect Sompile | 3 | SS | 13 | 42 | 51 | 53 | N/A | | 8 - | H | Sundy or were (aw)! Fight promuler | P.rea |
| 5 SS 19 13 16 15 31 - 14 | 5 SS 19 13 16 15 31 - 14 | | | | | | | | | | X | 16 | 8.0 PF |
| 5 SS 19 13 16 15 31 - 14 | 5 SS 19 13 16 15 31 - 14 | | | | | | | | | lo- | 日 | Sand (SW); Light brownish grey, wet, | |
| 5 SS 19 13 16 15 31 - 14 | 5 SS 19 13 16 15 31 - 14 | 4 | SS | 17 | 19 | 21 | 19 | 40 | | - | M | grades saturated @ 10.71 | 5.0 P |
| 5 SS 19 13 16 15 21 - | 5 55 19 13 16 15 31 - 14 | | | | | | | | | 12- | Д | Co | llecte imple |
| 16-16-16-16-16-16-16-16-16-16-16-16-16-1 | 16 End of boring @ 14.5 | 5 | <u>ISS</u> | 19 | 13 | 16 | 15 | 31 | | - | М | | Prea |
| 16-16-16-16-16-16-16-16-16-16-16-16-16-1 | 16 End of boring @ 14.5 | | | | | | | | | 14- | M | grades brown @ 13.8' | iu ppr Pread |
| | | | - | | | | | | - | - | П | | 4 PPN |
| | | | - | | | | | | | 16- | } | | |
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| S | AHL ite N | . Proje lame: | KIB | 1494 | 1347 OUICK | Boring #: <u>TB-3: MW-</u> Boring Location: <u>BEPL</u> / | 3A ACE MY | V-3 | | Page: Date: Slart | 11/14 | | of 1 |
|-------|--------------|---------------------|--------------------|-----------------|--|--|--------------|--------------------|---------------|-------------------------|------------------------|-----------------|---|
| Gemel | ** | Sample Type | Sample Recovery | Depsh (fett) | Detailed | d Soil and Rock Description | | Natura P.L. % 0 20 | al Moisture (| Content | Penetro- meter(TSF) | OVA/PID/ FID | Remarks |
| 1 | | ss | 3" | | Dark brown s (CL) | ilty clay w/some organic | s. | | | 1 | | 15 | Slight petrol. odor. |
| 2 | | S\$ | 6* | | Grades to gra | ay. | | | | 1 1 3 1 | | 60 | |
| 3 | | SS | F | | Gray sandy s | ilt. (ML) | | | | 1 1 | | 70 | Moist, strong odor. |
| 4 | | ss | F | 178 | @7.5' gray si | lty sand w/large gravel (| GM) | | | 1 | | 90 | Water.@ ~9'. Lab sample collected, strong odor. |
| 5 | | SS | 12" | را براد المالية | Gravel amou loose. | nt & size decréasing, ve | ry | | | ; ; ; | - | 85 | Sheen on spoon, odor. |
| 6 | | SS | | 1111111 | Brown, well s | orted sands. (SW) | | | | | | 30 | Slight odor, wet. |
| 7 | | SS | 20" | 14 | | | | | | | | 1 | |
| 7 | | | | 55 | EOB @ 1 (Lats of blow- | ອະດີທີ່ ຕົວ. -up in hole) | | | | 1 | | | |
| | | | | | | | | | | • | | | |
| | | | | 111 | | | | | | | | | |
| No. | te: St | ratilicati ndwat | on lines er Dat | are approx | ximate; in-situ transit Auger Depth | lon between soil types may be gradu | | e R.5 | 7 Mobile | Orill | | | |
| | ▼ De | 9' 9' | | Orilling | Rotary Depth Driller J. Re | 15' | Geologi | | | -VIII. | | | Illinois Environmental Protection Agency |

DAHL & ASSOCIATES, INC. / BETTENDORF, IOWA

| DAHI Site I | l Incid L Proje Name: | ect #: KIB | 1494 KLANI | 1347 OUICK | Boring #: TB-1: MW Boring Location: SE CO WASH | 4 DRNER | OF CAR | Page: Date: | 11/14 | | of 1 |
|------------------------|-----------------------------|--------------------|---|--|--|--------------|---|---|------------------------|-----------------|---|
| Addr | ess: | KIBK | LAND. | <u> </u> | | | | Start | 8:15 | a.m. | _ Finish 9:10 a.m |
| Semple 8 | Sвтрю Туре | Semple Recovery | Depth (leet) | Detailed | d Soil and Rock Description | n . | Natural Moisture P.L.% 0 20 40 | Content LL% 60 | Penetro- meter(TSF) | OVA/PID/ FID | Remarks |
| 1 | SS | 12" | 1 1 1 1 1 | Silty clay, da | rk brown. (CL) | | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | 0 | |
| 2 | SS | F | 3 . 4 | Grades to me | edium brown. | | | + + + + + + + + + + + + + + + + + + + | | 0 | |
| 3 | SS | F | 5 | Brown, sandy | / silt. (ML) | | |)))))) | | 0 | |
| 3 . 4 . 5 . 6 | SS | 6" | 7 | Brown silt w/s loose (GM) | sand & large gravel, ver | y | | • • • • • • • • • • • • • • • • • • • | | О | Wet @ 8'. |
| 5 | SS | 14" | 9 | | | - Principles | | | | 0 | Wet. Lab sample collected. |
| 6 | SS | 12" | 11 = | | | | | i | | 0.5 | Gravel decrease i size. Wet. |
| . | SS | F | 13 | | | | | + T + T + T + T + T + T + T + T + T + T | | | |
| | | | T 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | EOB @ | 15 1, 35447 ± 0.2 | | | 1 | | | |
| Note: S Grou | tratilicat | on lines | are acore | ximate: in-situ transit | ion between soil types may be grad | ual. | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | |
| Grou | ndwat epth V 8' | er Dai Vhile I | a Drilling Prilling | Auger Depth Rotary Depth Driller J. Re | 14' | Rig Typ | e <u>B-57 Mobile</u> st <u>A. Haak</u> | e Drill | | 6 | Illinois Environme Protection Agency |

DAHL & ASSOCIATES, INC. / BETTENDORF, IOWA

| LUST Incid DAHL Proj Site Name: Address: | | 4 1347 D QUICK | Boring #: <u>TB-2: MW</u> Boring Location: <u>EAST</u> BUILDING | -5 SIDE OF | STATION | Page: Date: Start | 11/14 | | of 1 Finish 10:20 am |
|---|--|--|---|-------------------|----------------|-------------------------|------------------------|-----------------|-----------------------------------|
| Sample Sample Type | Sample Recovery Depth (feet) | Detailed | d Soil and Rock Description | n P. o | L.% 20 , 40 | Content LL% 60 | Penetro- meler(TSF) | OVA/PID/ FID | Remarks |
| | | New fill mate gravel. No samples o | rial consistency of pea | | | | | | |
| | 6 . 7 | | | | | | 1 | 30 | Wet @ ~9-10°. Petroleum odor. |
| | 9 10 11 12 13 | ∃ i | w/silt & fine gravel, very | y loose | | | | | T Ground Sast |
| | 114 115 | (GM) EOB @ | 15'. 19 ¹¹ (4 a.c.) (5 c.c.) | | | | | 110 | Lab sample from ~14'. Wet. |
| Groundwat | tion lines are approter Data While Drilling | oximale; in-situ transit Auger Depth | ion between soil types may be grad | dual. Rig Type | B-57 Mobile | Drill | | | Illinois |
| V | After Drilling | Rotary Depth Driller J. Re | | Geologis | t A, Haak | | | | Environme Protection Agency |

DAHL & ASSOCIATES, INC. T BETTENDORF, IOWA

| DAH Site | | ect#: KIE | | 1347 QUICK | Boring #: <u>TB-4: MW-</u> Boring Location: <u>NORT</u> STATION. | 6 H SIDE | OF | Page: Date: Start | 11/14 | 1/94 p.m. | of 1 |
|-------------|----------------|--------------------|-----------------------------|--------------------------------------|--|----------------|--|---------------------------------------|--|-----------------|--------------------------------------|
| Sample # | Semple Type | Sample Recovery | Depth (feet) | Detailed | Soil and Rock Description | o l | ● Natural Moisture C P.L % 0 20 40 1 1 1 1 1 Scale: | LL% | Penetro- meter(TSF) | OYA/PID/ FID | Remarks |
| 1 | SS | 6" | N 1 1 1 1 1 | Fill - Hit old F | IR tie, bricks. | | | † ! ! | | 1 | Smells like creosote |
| 2 | SS | F | 3. 1. 4 | Dark brown s | ilty clay, some organics | . (CL) | | • | | 0 | |
| 3 | SS | NR | 5.6 | Grades to me | edium brown. | | | • | | | |
| 4 | ss | 18" | | Erown silt & s loose (GM) | and w/large gravel, ver | у | | | | 0.5 | Moist. |
| 5 | SS | 12" | | Grades to gra | y. | ż | | 1 | | 2 | Water @ 9'. |
| 6 | SS | F | 11 1 | Grades to ligh | nt brown. | | | • | | 5 | Slight petrol. odor, wet. |
| 7 | SS | | 13 | Brown, med. | grained sand & gravel. | (GP) | | | | 1 | Wet. |
| | | | 15 | EOB @ 15 | | | | | Market and the state of the sta | | |
| | | | | | | | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | |
| Grou | ndwat | er Da | a | dimate: In-situ transiti Auger Depth | ion between soil types may be grad 14' | ual. Rig Ty | pe B-57 Mobile | Drill | | | Illinois |
| ▼ | 9' | | Drilling ——— Orilling | Rotary Depth Driller J. Re | | Geolog | gist A. Haak | | | | Environmenta Protection Agency |

DAHL & ASSOCIATES, INC. / BETTENDORF, IOWA

| DAH Site | l Incid L Proje Name: 'ess: | ect#: KIE | 1494 | 1347 OUICK | Boring #: TB-5: MW- Boring Location: WEST BUILDING | 7 SIDE | OF | Page: Date: Start | 11/15 | 5/94 a.m. | of 1 |
|-------------|--------------------------------------|--------------------|--|--|--|----------------|---|---------------------------------------|------------------------|-----------------|---|
| Sample | Sample Type | Sample Recovery | Depth (lest) | Detailed | Soil and Rock Description | 1 | Natural Moli P.L. % 0 20 Scale: | Sture Content LL% 40 60 | Penetro- meter(TSF) | OVA/PID/ FID | Remarks |
| 1 | ss | F | 11111111111111111111111111111111111111 | Silty clay w/se gravel, dark b | ome organics, trace sm rown. (CL) | all | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | 0 | |
| 2 | SS | 12" | | | Λ. | | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | 0 | 1 |
| 3 | SS | 18" | 15G. | Grades to me | dium brown. | | 3 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | Ç. | · |
| 4 | SS | 20" | 7 | Brown sandy | silt. (ML) | | | | | 0.5 | |
| 5 | SS | F | 9.15. | Brown sandy | silt w/gravel. (GM) | • | | | | 1 | Water @ ~9.5'. Lab sample collected. |
| 6 | SS | 16" | 11 1 | Brown, well so (SW) | orted sand, medium gra | ined. | | | | О | Saturated. |
| 7 | SS | | 13 | Brown, silty s | and w/gravel. (GM) | | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | 0 | Saturated. |
| | | | 15 | EOB @ | · | | | | | | |
| Note: St | ratilicati ndwati | on lines er Dat | are approx | imate; in-situ transiti Auger Depth | on between soil types may be gradu | al. Rig Typ | e <u>B-57 M</u> c | bile Drill | | | |
| | | | Orilling | Rotary Depth | | וני טייי | | caetta Pelitti | | | Illinois Environmental |
| 4 | epth A | fter D | rilling | Driller J. Re | | Geolog | ist A. Haak | | | E | Protection Agency |

DAHL & ASSOCIATES, INC. / BETTENDORF, IOWA

| T | 1105 | | | | | | | | | | | 4 |
|-----|----------|-----------------|--------------------|-------------------|--|-----------------------------------|-------------|--------------------|----------------------|------------------------|-----------------|-----------------------------------|
| | 10U. | lncid L Proj | ent #: | 8917 | 7 <u>17</u> 1 1347 | Boring #: <u>IB-6: MW</u> | -8 | | Page: | 1 | | _ of <u>T</u> |
| S | ite I | Vame: | ecta; KIF | KLAND | O QUICK | Boring Location: SOUT OF STATION. | LHWES. | COHNER | Date: | 11/15 | 5/94 | |
| | | | | AND. I | | 364 | | | Start | | a.m. | Finish 11:05 am |
| H | _ | | | <u> </u> | | | | | <u> </u> | 1 | | |
| ı | | | | | | | | Natural Moisture (| Content | | | |
| Ι. | | _ 0 | <u> </u> | | Detailed | Soil and Rock Descriptio | n | P.L.%. | LL% | _ E | _ | Remarks |
| 1 | admos | Sample Type | Semple Recovery | Depth (feet) | | · | | 0 20 40 | 6 0 | \$ E | JE J | |
| Ľ | 3 | <i>3</i> | 8 & | å ÷ | | | | Scale: | | Penetro- meler(TSF) | OVA/PID/ FID | |
| | | | | | | | | |) 1 | | | |
| ļ١ | | SS | 20" | F 3 | Dark brown w | organics, silty clay. (C | L) | | , , | | 1 | |
| | | | | F = | | | | | , , | | i | |
| ı | | | | P 3 | | | | | | | | |
| 2 | | SS | 18" | | Grades to me | d. brown w/Fe mottles. | | | | | 2 | |
| | | | | \mathbf{E} | aradoo io inc | a. oromi wit o mounds. | | | | | - | |
| l | | | | 4 | | | | | 1 | | | |
| _ | ļ | 00 | | E = | . | _ #1; 1200 - # | | 1 1 1 1 | | | _ | . |
| 3 | | SS | F | 5 | Dark brown sa staining. (ML) | andy silt w/Fe stains, po | etrol. | | | | 5 | Petroleum odor. |
| | | | | F 7 | Stanmig. (IVIL) | | . | | | | | |
| | | | | E^{T} | | | | | | | 50 | Petroleum odor. |
| 4 | | SS | F | 7 | Gray sand & s | silt w/gravel. (GM) | | | | | | |
| | | | | | | | | | | | | |
| | | | | 18 = | | | | | | | | |
| 5 | | ss | F | | Grav. well sor | ted med. grained sand | . [| | | | 190 | Water @ 9'. Lab |
| | | | | E 3 | (SW) | • | | | | | , | sample collected. |
| | | | | 40 4 | | | | | | | | Petroleum odor. |
| 6 | | ss | F | [,] | Gray cand & e | silt w/gravel, petrol. sta | ining | | | | 170 | Wet, ador. |
| ۲ | ١ | 55 | • | ! '' | (GM) | siit wigiavei, petioi. sta | mary. | | | | 170 | wat, odor. |
| | - 1 | | | [12] | • | | | | | | | |
| _ | - | _ | _ | E_ = | . | | . | | | | | |
| 7 | | SS | F | | Brown, well so grades to coal | orted med, grained san | a, | | | | 150 | Saturated, strong petroleum odor. |
| | | | | F14 = | Aranco in cog | ise granieu. | | | | | | penoieum odor. |
| | | | | E 3 | | | İ | | • | | 60 | |
| 8 | | SS | | [15] | Sand & silt w/ | gravel. (GM) | | | • | | 70 | Slight petroleum |
| | | | | E, ∃ | | | | | | | | odor, |
| | | | | 16 | | | | | | | | |
| | | | | 17 | EOB @ 1 | 7'. '''': 1 C | | | • | | | |
| l | | | | = = | | | | | | | | |
| | | | | 18 | | | | | | | | |
| | | | | 19 | | | | | | | | |
| | | | | ן ד | | | | | | | | |
| N/~ | 0. 54 | ratificati | on lines | am annroy | imate: in-situ transitir | on between soil types may be grad | ual. | - 1 1 1 | • | | | |
| G | rout | idwat | r Dat | a | Auger Depth | | | e B-57 Mobile | Drill | T | | Illinois |
| | | | /hile l | Orilling | | 4.84 | | | | | | Environmental |
| | ▼ | | No- P | | Rotary Depth | | Coologi | st A, Haak | | | | Protection |
| | Δ, | رة الم hnd: | 27 | rilling | Driller J. Rei Note: Boring backfille | ed unless otherwise noted. | or A. Figan | | - | T | Agency | |

DAHL & ASSOCIATES, INC. / BETTENDORF, IOWA

| DAH Site | T Incid L Proje Name: ress: | ect #: KIB | 1494 KLANE | 717 1347 OUICK N STREET | Boring #: TB-7: MW-9 Boring Location: IN PAP SOUTH SIDE OF HW QUICK STOP | RKING LANE | ON OF | Page: Date: Start | 1 1/5/9! 9:00 | | - of 1 |
|-------------|--------------------------------------|--------------------|------------------------------|--|---|---------------------|------------|---------------------------------------|------------------------|----------------------|----------------------------|
| Sample | Sample Type | Semple Recovery | Depth (feet) | Detailed | Soil and Rock Description | | Molsture (| Content LL% 60 | Penatro- meler(TSP) | OVA/PID! F10 | Remarks |
| | | | | Asphalt & cor | | | | | | | Slightly moist. |
| 1 | SS | 1/4 | 244 | Gravel & san | d fill. | | | | | 8 | Plastic. |
| 2 | SS | 1/2 | 6 - 7 | Sand & small | limestone chips | | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | 7 | Dry |
| 3 | SS | 3/4 | 89 | Coarse sand | & pebbles | | | | | 6 | Wet. Lab sample collected. |
| | | | 10 | Mixed grain s | and. | | | | | | |
| 4 | ss | 3/4 | 12 13 | | | | | 1 | | 11 | Wet. |
| 5 | SS | 3/4 | 14 15 16 17 18 19 | EOB @ 1 | 5', MW-9 set @ 15'. | | | | | 8 | |
| Grou | indwat Depth \ | er Dai Vhile | c ave appro a Drilling | Auger Depth | | al. Rig Type B-5 | 7 Mobile | Drill . | - | 6 | Illinois Environmental |
| 1 | 7_1/ Depth / 8.75 | | rilling | Rotary Depth Driller Fisch Note: Boring backli | Geologist <u>E. S</u> | Stewart | | | E | Protection Agency | |

DAHL & ASSOCIATES, INC. / BETTENDORF, IOWA

| _ | LUST Incident #: 89-1717 Boring #: TB-8: MW-10 | | | | | | | | | | | | |
|---------------------------------------|---|----------------|--------------------|-------------------|---------------|---|-------------|---|---------------------------------------|-------------|----------------------|---------------------------------|-----------------|
| H | | | | | | Boring #: TB-8: MW-1 | 0 | | | Page: | 1 | | _ of 1 |
| | | L Proje | | | 1347 OUICK | Boring Location: IN PAE SOUTH SIDE OF HW | KING | LANE | IOE | . . | 1/5/0 | c | |
| _ | | | | | NSTREET | | | | | | 1/5/9 | Finish 12:00 p.m | |
| | 7.007 | V30. | | 1412.00 | | SOUTH CORNER OF | QUIC | (210 | Ľ | Start | بتبيد | | - rinish |
| | | | | | | , | | | al Moisture (| | | | |
| - | | | | | | | | □ P.L.% | | D | | | Remarks |
| | <u>ء</u> ۾ | 2 % | Sample Recovery | _ | Detailed | Soil and Rock Description | 1 | 0 2 | 0 40 | 60 | SF) | OVA/PID/ FID | nemarks |
| | Sample | Sample Type | leco. | Depth (feet) | | | | Scale: | 1 | 1-1 | Penetro- meter(TS | A.P. | |
| | <u>"</u> | · · | 0, 2 | 00 | | | | SCAIG; | | | ج ج | 중문 | |
| | | | | Ł ± | Asphalt & cor | ncrete. | 1 | 1 | | | | | |
| | | | | Þ d | | | | | | , , | | | |
| | | | | F = | | | | | • • • • | | | | |
| | | | | P 3 | Brown/black s | rown/black silty, clay, plastic. | | | , . , . | , , | | | Slightly moist. |
| | | | | $E = \frac{1}{2}$ | 1' Cray good | clay, non-plastic, | | ; | , , , , | | | | Dry. |
| | | | | P = | | 6" Gray clay mixed w/sa | nd & | : | | • • | | | DIY. |
| | 1 | SS | 1/2 | F4 7 | gravel. 6" Gr | | ,10 0 | , | | | | 1 | Dry |
| <u>.</u> | | | | \mathbf{E} | <u>.</u> | | | | | | | | " |
| Serie. | 2 | SS | 1/2 | 5 | Gravel & find | sand. | | | • • • • | | | 1 | Dry |
| ğ | | | | ‡ = | | | | ÷ | • • • • | | | | |
| | | | | F 7 | | | | ; | | | | | |
| 7 | | S\$ | 0/4 | E, 3 | | لمما | | • | | | | | Way O 71 Lab |
| ğ | 3 | 33 | 3/4 | 7 3 | Mixed grain s | | • | | | , | 4 | Wet @ 7'. Lab sample collected. | |
| | | | | E st | | | : | | • • | | | Sample collected. | |
| å Q | | | | FF | | | • | ; ; ; ; ; | • • | | | | |
| 6 | | | | 9] | Mixed grain s | 1 | ; | • •) • • • • • • • • • • • • • • • • | , , | | 3 | Wet. | |
| Has form has been appro- | | | | E \exists | _ | - | | • | | | | | |
| 3 | | | | ₽0 ‡ | | | | : | | | | | |
| n lo | ١. ا | | | F. 7 | | | | : | | | | | |
| That | 4 | SS | 3/4 | ויש = | | | | : | | | | | |
| i je | | | | | | | | • | • • • • | • • | | | |
| , , , , , , , , , , , , , , , , , , , | | | | | | | | i | • • • • | | | | |
| 9.3 | 5 | ss | 3/4 | E eff | | | | , | | | | 1 | |
| nment v | | | | E | | | | • | | | | | |
| | | | | 14 = | | | | : | | • | | | |
| Time up L. 122,000 00 and impaire | | | | F = | | | | • | | : | | | |
|) and | 6 | SS | 3/4 | P ⁵ 3 | EOB @ | 15'. MW-10 set @ 10'. | | ; | f 1 1 1 | • • | | 1 | |
| 1 0 | | | | 16 | | | | ; | | | | | |
| 7 | | | | F 3 | | | | • | | | | | |
| 3 | | | | G7 3 | | | | • | | | | | |
| 9 | | | | E 3 | | | | | , , , | , , | | | |
| | | | | - 8 - | | | | • | * * * * | | | | |
| continue | | | | ‡ ‡ | | | | | | | | | |
| 873 | | | | <u>19</u> | | | | ; | | | | | |
| 2 | | لبي | | <u> </u> | | | | • | | | | | |
| ų, | | | | | | on between soil types may be gradua | i, Die 7 | | · · · · · · · · · · · · · · · · · · · | N.:: | | | |
| | | ndwate | | | Auger Depth | 14' | Rig Typ | e <u>B-5</u> | 7 Mobile | Drill | - | | Illinois |
| 00 la | ■ | epนา ท 8' | ruie I | Drilling | Rolary Depth | | | | | | | 6 | Environmental |
| | ח | | | | | | | | Stewart | | | | Protection |
| ĵ. | V 8.10' Note: Boring backfilled unless otherwise noted. | | | | | | | | | | 7 | V | Agency |

DAHL & ASSOCIATES, INC. / BETTENDORF, IOWA

Electronic Filing: Received, Clerk's Office 5/19/2017

33

| | | | Proj. No. | Kirkland (| Quick Stop | Soll Borin | g No. | | 5B-21/MW- | 15 | | | |
|----------------------|-------|---------|-----------|--------------------|--|--|-------------------|-----------|-----------------|-------------------------------|-----------|---------|--|
| | | | | | Site Name: | Kirkland (| Quick Stop | Driller: | UTGO | C&S Drilling Mark and Bart | | | |
| | | | | | tocation: | 411 W | Main St. | Dril Name | | | | | |
| | | | | | | | nd, IL | v | Sampling Depth: | | 20 | | |
| | | | | | MW Diameter: | | n . | Total Dep | | 17 11 4 | 20 | | |
| | | GEO-TH | INK, LLC | | WW Diameter. | | Tom Mangan and Al | | , com a spini | | 20 | | |
| | ***** | | | - | in Agreem | The state of the Australia of the Austra | | | | | | | |
| | 6. | 11 Stev | ens Stree | rt. | Field Staff: | | one | Date: | | | 4/20/2015 | | |
| | | | II. 60134 | | | | | | | | | | |
| | | | | | Sampler Length: 4' macrocore | | | GW Level | | approx. 9.5' bgs | | | |
| | | | GROUN | D ELEVATION (ft | | 1 1111 | | PLE DATA | 063 | | | | |
| BELOW | | | T | | | | MW | Zastri | | 1 1 2 2 2 2 | | 1337 7 | |
| BELOW GRND | | arti. | | | SAMPLE DESCRIPTION | | | SMP | Rec. | PID | Penetrm | Moistur | |
| SURFACE | | STRA | | 5 | | | | ID No. | (%) | (ppm) | Reading | Conten | |
| | FILL | 0 | 4.5' | 200 02000 | ASPHALT (0 - 3") FILL. Light tan slity sand and gravel base (3" - 14") | | | | | | | | |
| 1.0 | 1,771 | | 7.5 | FILL. Light tan | slity sand and gravel bas | e (3" - 14") | | | 22.1 | 122 | | | |
| | | | | | clay, black sand, mixed | | | | 63% | 0.9 | | | |
| 2.0 | | | { | and s | ilty sand. Moist. No odo | or. | | | | (0' - 4') | | | |
| | | | 1 1 | | 0.8315 (0.31 (0.31 (0.00)) | | | | | 1000 | | | |
| 3.0 | | 1. A | 1 | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 4.0 | | | | | | | | | | | | | |
| | | | | | | A | | The Lat | | Transfer in | | | |
| 5.0 | CL | 4.5 | 5.9 | | it, some fine to coarse sa | | 4' - 6' | 63% | 8.0 | | | | |
| | | | 9.00 | gravel. Brov | vn, medium consistency, | | to lab | | (4'-8') | | | | |
| 6.0 | | A EVEN | 123 | plasticity, mois | t. No odor. May be fill o | | 10.1171 | | 100 | | | | |
| | SW | 5.9 | 10 | SAND, fine to | medium grained, with co | arse sand, | | | | | | | |
| 7.0 | 17-11 | 44.7 | 1777 | some gravel. | Light brown, loose, sligh | tly moist. | | | | | | | |
| or accommodel action | | | | ٨ | Aild odor starting at 8'. | | | | | | | | |
| 8.0 | | | 1 | May b | e fill or reworked materi | al. | | | | | | | |
| - | | | | 27675 | | | | | | | | | |
| 9.0 | | | | | | | | | 63% | 166.0 | | | |
| | | | 1 1 | 1 1 | Becoming wet at 9.5'. | | | | 2273 | (8' - 12') | | | |
| 10.0 | 1 | | | | | | | 1 | | 4. 39.0 | | | |
| | sw | 10 | 16.5 | SAND, fine to | medium grained, with co | arse sand. | | 10' - 11' | | | | | |
| 11.0 | 577 | 143 | 44.0 | | el. Gray, loose, slightly r | | | to lab | | (4) | | | |
| | | | | A. J. H. W. STATES | y strong petroleum ador | | | 15775 | | | | | |
| 12.0 | | | | 7.0 | , mong penoreum acom | | | | | | | | |
| 2210 | | | | Gray fine | sand between 12.75' and | 113.5 | 1 | | 27 | | | | |
| 13.0 | | | | , warmy mile | | | | | 65% | 179.0 | | | |
| 13.0 | | | | | | | | | 03/11 | (12' - 16') | | | |
| 14.0 | | | 1 | Color changes | to light brown with redo | lish lenses | | 1 1 | | 144 - 107 | | | |
| 24.0 | | | | color changes | slight odor at 13.5'. | and relises, | | | | | | | |
| 15.0 | | | | | augint door at 13.3 ; | | | | | | | | |
| 13.0 | | | | | | | | | | | | | |
| 16.0 | | | | | | * | | | | | | | |
| 16.0 | | | | | | | + | 1 | - | - | | | |
| 17.0 | SP | 100 | 10 | CAND Can | land Brown Lane | No odes | | | 63% | 0.0 | | | |
| 17.0 | SP | 16.5 | 18 | SAND, fine gra | alned. Brown, loose, wet | . NO DOOF. | | 1 | D376 | 9.5 | | | |
| 100 | | | | | | | | | | (10 - 20) | | | |
| 18.0 | £141 | 10 | 10 5 | CAND Goots | madicas perland collection | oses sand | | | | | | | |
| | SW | 18. | 18.5 | | medium grained, with co | | | | | | | | |
| 19.0 | | | | | Brown, loose, sl. moist. | | | | | | | | |
| | | | | | Brown clay plug between 18.4' - 18.5'. No sample recovery from 18.5' to 20'. Fell out | | | 1 1 | | | | | |
| 20.0 | | | | No sample r | | | | - | | | | | |
| | | | | | | | | | | | | | |
| NOTES: | | | | | of sampler. 16'. End of sampling at 2 ID Hollow Stem Auger. | 0'. | | | | Telephone No | (630) 200 | 3-5 | |

| Monitoring | Well | Construction |
|------------|------|--------------|
| | | |

| 8 | 18 | ft bgs | 2" ID #10-slot PVC screen |
|------|-------|--------|--|
| 0.25 | 8 | ft bgs | 2" ID sch. 40 PVC casing |
| 6 | 18 | ft bgs | filter sand |
| 1 | 6 | ft bgs | bentonite |
| O | 1 | ft bgs | flush mount pro casing, concreted in place |

 $t_{\rm Ei}^{\mu}$



| | | | | | In 1 N | W 11 1. | | | la .u.ni | - 31 | т . | 0.04 (4.04) | |
|------------|----------|---|-----------|--|--|--|--|--------------|--|---|--------------|-----------------------------|---|
| | | | | | Proj. No. | Kirkland | | | Soil Borin | g No. | <u> </u> | 8-21/MW- | |
| | | | | | Site Name: | Kirkland (411 W | - | | Driller: Dril Nami | | ļ | C&S Drilling Mark and Ba | |
| | | | | | tocation: | | nd, IL | | Sampling | | | 20 | 11 L |
| | | | | | MW Diameter: | | n n | | Total Der | | 20 | | |
| | 1 | GEO-TH | link, LLC | • | | Tom Man | | | | 7010, 1700, 177 | | | |
| | | 11 Stav | ens Stre | | Field Staff: | ŧ | one Date: | | | e: | | 4/20/2015 | |
| | | | II. 6013 | | | | | | | *************************************** | | | *************************************** |
| | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 0023 | • | Sampler Length: | 4' mad | rocori | 3 | GW Level |) : | la | pprox. 9.5' i | ogs |
| BELOW | <u> </u> | | GROU | ND ELEVATION (ft. NO | I | | | I | · | | PLE DATA | | |
| BELOW GRND | | | | | And the second s | | | | SMP | Rec. | PID | Penetrm | Moisture |
| SURFACE | | STRA | r I | SAMPLE DESCRIPTION | | | M | | ID No. | (%) | (ppm) | Reading | Content |
| | FILL | 0 | 4.5' | A5PHALT (0 - 3") | | | T | ` | | | | | |
| 1.0 | | | | | y sand and gravel base (| | | | | | | | |
| | | | | | FILL Brown clay, black sand, mixed with coal | | | 1 | | 63% | 0.9 | | |
| 2.0 | | | | and silty | sand. Moist. No odor. | | | | | | (0' - 4') | | |
| 3.0 | | | | | | | | | | | | | |
| <u></u> | | ' | | | | | | | | | | | |
| 4.0 | | | | | | | | | | | | | |
| | | | | | , | | | \top | | | 1 | | |
| 5.0 | CL | 4.5 | 5.9 | CLAY, with silt, so | | | 4'-6' | 63% | 8.0 | | | | |
| ***** | | | | gravel. Brown, r | | | tolab | | (4' - 8') | | | | |
| 6.0 | | | | plasticity, moist. N | , | | | | | | | | |
| | sw | 5.9 | 10 | · | llum grained, with coars | | | | | | | | |
| 7.0 | | | | _ | nt brown, loose, slightly | moist. | | | | | | | |
| 8.0 | | | | | Mild odor starting at 8'. May be fill or reworked material. | | | | | | | | |
| | | | | 1410 4 00 111 | ┝╼┝ | - | | | | | | | |
| 9.0 | | | | | | | | | | 63% | 166.0 | | |
| | | | | Beco | oming wet at 9.5'. | | | 1 | | | (8' - 12') | | |
| 10.0 | | | | | | ~~~ | | | | | | | |
| | sw | 10 | 16.5 | | lium grained, with coars | | | | 10' - 11' | | | | |
| 11.0 | | | | _ | Gray, loose, slightly mo | lst. | | | to lab | | | | |
| 12.0 | | | | Very str | ong petroleum odor. | | | | | | | | |
| 12.0 | | | | Grav fine sand | d between 12.75' and 1 | 3.51 | | - | - | *************************************** | | | |
| 13.0 | | | | , Gray intersent | | | | | 1 | 65% | 179.0 | | |
| | | | | , | | | | 1 | | -,- | (12' - 16') | | |
| 14.0 | | | | Color changes to l | ight brown with reddish | lenses, | | | | | | | |
| | | | | slig | ght odor at 13.5'. | | | | | | | | |
| 15.0 | | | | | | | | 1 | | | | | |
| 160 | | | | | • | | | ı | | | | | |
| 16,0 | | | | | | | ┝ | + | | | 1 | - | |
| 17.0 | SP | 16.5 | 18 | SAND, fine graine | d. Brown, loose, wet. N | lo ador. | | | | 63% | 9.5 | | |
| | | | | z y a g. witte | SAND, fine grained. Brown, loose, wet. No odor. | | | | | | (16' - 20') | | |
| 18.0 | | - | | | | | | | | | | | |
| | sw | 18 | 18.5 | | SAND, fine to medium grained, with coarse sand, | | | | | | | • | |
| 19.0 | | | | some gravel. Brown, loose, sl. moist. No odor. | | | | | | | | | |
| 200 | | | | Brown clay plug between 18.4' - 18.5'. | | | | | | | | | |
| 20.0 | | | | No sample recovery from 18.5' to 20'. Fell out of sampler. | | | | | | | | | |
| NOTES: | L | L | | End of drilling at 16'. | End of sampling at 20'. | , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | LL | | I | 7 | elephone No | (630) 208-5 | 050 |
| | | | | Drilled w/ 4 1/4" ID H | | | | | | • | abreate un | . (204) KVQ"3 | |
| | | | | | | | | | | | | | |

| • | | 18 | ft bgs | 2" ID #10-siot PVC screen |
|---|---|----|--------------------|---|
| • | | 8 | ft bgs | 2" ID sch. 40 PVC cosing |
| | | 18 | ft bgs | filter sand |
| | | 6 | ft bgs | bentonite |
| | • | 1 | ft bgs | flush mount pro casing, concreted in place |
| | • | • | . 8 . 18 . 6 | 8 ft bgs 18 ft bgs 6 ft bgs |

| | | | | | Proj. Na. | Kirkland (| Qulck S | top | Soil Borir | ig No. |) | 58-23/MW-: | 16 |
|--------------|-----------|--------|-----------|---|--|------------|----------------|--------------|--------------|---------------------------------------|--------------|-------------|---|
| | | | | | Site Name: | Kirkland (| | _ | Driller: | | | C&S Drillin | В |
| | | | | | Location: | 411 W | Main 5 | t. | Drll Nam | C , | | Mark and Ba | art |
| | | | | | | | ind, IL | | Sampling | Depth: | 20 ' | | |
| | | GEO.TL | IINK, LLC | | MW Diameter: | | <u>}*</u> | | Total Depth: | | | 20 | |
| | | | | | Field Staff: | Tom Man | gan an one | d Al | Date: | | 4/22/2015 | | : |
| | | | ens Stree | | 71610 31811. | | 7116 | | Date. | | | 4/11/2010 | |
| | Ģ | enevə, | II. 60134 | 4 | Commission I amounts | 41 | | | C144 4 | 1. | l . | nanenu Bi h | |
| | Γ | | GOOLIN | ND ELEVATION (ft. N | | | | | GW Leve | l . | SAMPLE DATA | | |
| BELOW | | | GNOOL | AD ELEVATION (IC. IN | | T T | | T T | | 1 . | | | |
| BELOW GRND | ŀ | | _ | | | M | | SMP | Rec. | PID | Penetrm | Moisture | |
| SURFACE | - | STRAT | | SAMPLE DESCRIPTION | | | DI | ^ | ID No. | (%) | (ppm) | Reading | Conten |
| 1.0 | FILL | 0 | 4.5' | | ASPHALT (0 - 3") FILL Light tan slity sand and gravel base (3" - 15") | | | 1 | | | | | |
| 5.7 | | | | - | , - | | . | | | 54% | 0.0 | | |
| 2.0 | | | | 71001 010117 010 | FILL. Brown clay, black sand, mixed with coal (15" - 26") | | | | | | (2'-3') | | , |
| 3.0 | | | | | | | l i | 1 | | | | | |
| 3.0 | | | | Emply can | nple tune from 26" - 48 | ı | | | | | | | |
| 4.0 | | | | citipty sail | ipie tulie Holli 20 - 40 | • | | | | | | | |
| | CL | 4 | 8 | CLAY, with silt and | little fine to coarse san | d. Brown | | † | | | 1 | | |
| 5.0 | | | | with many small dis | | | 4'-6' | 58% | 0.0 | | | | |
| | | | | gray mottles, | some small black (pyrol | | | to lab | | (4' - 7') | | | |
| 6.0 | | | 1 1 | nodules. Medium | consistency, medium (| | | | | | | | |
| ***** | | | | ver | | | | 6' - 8' | | 1 | | | |
| 7.0 | | | | | | | | 1 | to lab | | 1 | | |
| 8.0 | : | | | | | | | | | | | | |
| | \$M | 8 | 10 | SILTY SAND, fine to medium grained, with trace | | | | 1 | | · · · · · · · · · · · · · · · · · · · | | | *************************************** |
| 9.0 | | | | coarse sand and little gravel. Brown, medium | | | | | | 73% | 0.0 | | |
| *** | | | | den | ise, wet. No odor. | | | | | | (8' - 10') | | |
| 10.0 | | | | | | | | | | | | | |
| | SP/ SM | 10 | 12 | | edium grained, with sil | | | 1 | | | 0.7 | | |
| 11.0 | 2141 | | 1 1 | | i littie gravel. Brown, m se, wet. No odor. | i&Ginu) | | | | | (10' - 12') | | |
| 12.0 | | | | Qen | ise, wet. No ooot. | | | | ! | | (10 - 12) | | |
| | SP | 12 | 14.5 | . SAND, fine to m | edium grained, with so | me slit. | \vdash | + | <u> </u> | | | | *************************************** |
| 13.0 | ,-: | | " " | | and and little gravel. Bro | | | | | 67% | 0.2 | | |
| | | | | | dense, wet. Very slight | | | | | | (12' - 14') | | |
| 14.0 | | | | | oming brown at 14'. | | | | | | | | |
| ************ | | | | | | |] | | | | 0.0 | | |
| 15.0 | SM | 14.5 | 16 | | grained, with trace grav | | | | | | (14' - 16') | | |
| | | i | | • | ttle medium sand. Bro | wn, | | | | | | | |
| 16.0 | | | | medium | i dense, wet. No odor. | • | - | - | ļ | | ļ | ļ | |
| 17.0 | SP | 16 | 18 | CAND | grained, with trace grav | ol trace | | | | 50% | 0.0 | | |
| 17.0 | ٦٣ | 10 | 10 | | | | | | | 3U76 | (16' - 20') | | |
| 18.0 | | | | fine sand, and trace coarse sand. Brown, medium dense, no odor. | | | | | | | (10 - 20) | | |
| | i | | | medium dense, no odor. Becoming more gravelly with depth, theri no | | | | | | | | | |
| 19.0 | | | | gravel between 19' - 20'. | | | | | | | | } | |
| i | | | | | | | | | | | | | |
| 20.0 | | | | | | | 1 1 | | 1 1 | | 1 |) | l |
| 20.0 | | | | | | | 世 | 士 | | | | <u> </u> | |

| 6 | | 16 | ft bgs | 2" ID #10-slot PVC screen |
|------|---|----|--------|--|
| 0.25 | - | 6 | ft bgs | 2" ID sch. 40 PVC casing |
| 4 | - | 16 | ft bgs | filter sand |
| 1 | | 4 | ft bgs | bentonite |
| 0 | | 1 | ft bgs | flush mount pro casing, concreted in place |

120

| | | | | | Incal No. | Vieldand C | Tulek C | | Soll Borin | a No | | B-24/MW- | 17 |
|---------------------|-------|------------|----------|-------------------------|--|-------------------|-----------|--------------|---------------------------------|-------------|--|---------------|----------|
| | | | | | Proj. No. Site Name: | Kirkland C | | | Driller: | ig ivo. | | C&S Drillin | |
| | | | | | Location: | 411 W | | | Dril Name | | Mark and Bart | | |
| | | | | | LOCATION: | | nd, IL | | | | 20 | | |
| | | | | | MAIN Diamentary | | 110, IL | | Sampling Depth: Total Depth: | | | 20 | , |
| | | SEO-TH | IINK, LL | c | MW Diameter: | | | | 10tal Dep | en: | 20 | | |
| | ***** | ***** | | **** | | Tom Mangan and Al | | | | | | | |
| | 6 | 1 Stev | ens Stro | eet | Fleid Staff: | 5to | ine | | Date: | | | 4/22/2015 | |
| | G | eneva. | 11. 6013 | 34 | | | | | | | | | |
| | | • | | | Sampler Length: | 4' mac | rocore | | GW Level |): | ; | approx. 8' b | gs |
| DELOW. | | ·····b···· | GROU | IND ELEVATION (h. NG | | | | | | | PLE DATA | | |
| BELOW BELOW GRND | | | | | | | | | | Rec. | PID | Penetrm | Molsture |
| SURFACE | | STRAT | . 1 | CANA | DIE DECCRIPTION | | MV DI/ | | SMP ID No. | (%) | (mgg) | Reading | Content |
| SURFACE | FILL | O | 2 | | PLE DESCRIPTION SPHALT (0 - 3") | | 701 | ` | 10 180, | (70) | (ppin) | Reading | Content |
| 1.0 | PILL | U | 4 | Fill Haht tan silts | rsand and grave) base (| 3" - 14") | | | | | | | |
| | | | | | , black sand, mixed wit | | | l | 1 1 | 90% | 0.4 | | |
| 2.0 | | | | 7122. 0(011) 210) | (14" - 24") | ., 400. | | | | | (0' - 4') | | |
| | CL | 2 | 6 | CLAY, with elit | Dark brown, soft, med | lium | | 1 | 1 1 | | '- '' | | |
| 3.0 | | ~ | | | , very maist. No odor. | | | 1 |) l | | | | |
| | | | | μισουτιγ | 1 very ministry ma court | | | 1 | | | | | |
| 4.0 | | | | Recoming brown u | vith reddish-brown and | eravish- | | | | | | | |
| -710 | | | | - | on mottles at 3.5'. | D. 4th (All). | - - | 1 | | | | | |
| 5.0 | | | | | isistency to stiff atartin | eat St. | | l | 4'-6' | 65% | 0.0 | | |
| | | | | | gravel starting at 5'. | P = (>) | | | to lab | | (4' - 6') | | |
| 6.0 | | | | citie i | elette Braket Harring of 5 ! | | | | | | 17. 37 | | |
| | SP | 6 | 8 | SAND fine to may | dium grained, with little | roarea | | | | | 0.2 | | |
| 7.0 | ٠, | ٠ | ٠ | · · | i, and trace slit. Tan, m | | | | | | (6' - 8') | | |
| | | | | | e, moist. No odor. | COIDIN | | | 1 1 | | (, , | | |
| 8.0 | | | | delis | c, moist. No odon | | | | 1 1 | | | | |
| | SP | 8 | 10 | SAND, medium gra | SAND, medium grained, with some fine and coarse | | | | | | | | |
| 9.0 | • | - | | - | sand, some gravel, and trace silt. Brown, medium | | | | 1 1 | 85% | 1.2 | | |
| | | | | | se, wet. No odor. | | | | 1 1 | | (8' - 10') | ' | |
| 10.0 | | | | | e sand starting at 9.3'. | | | | | | , | | |
| , | SP | 10 | 15.5 | | ined, with little to some | gravel. | | ľ | | | 1 | | |
| 11.0 | _, | | | | d coarse sand. Gray, m | - | | | 10' - 12' | | 7.9 | | |
| | | | | | dense, wet. Mild odor. | | | | to lab | | (10' - 12') | | |
| 12.0 | | | | | •••••• | | | l | | | ,, | | |
| | | | | | | | \vdash | 1 | \ | | | | |
| 13.0 | | | | l ' , | | | 1 1 | 1 | | 88% | 3.0 | | |
| | | | | Ì | | | | 1 | | | (12' - 14') | | |
| 14.0 | | | | | | | | | | | l' ' | | |
| | | | | Bla | ck from 14' - 15'. | | | 1 | | | 3,6 | | |
| 15.0 | | | | | | | | | | | (14' - 15') | | |
| | | | | Brow | n from 15' - 15.5'. | | | | | | 1,1 | | 1 |
| 16.0 | CL | 15.5 | 20 | | fine to medium sand, a | nd trace | 1 | | | | (15' - 16') | | |
| | | | | | n, medium consistency, | | | Т | | | 1 | | |
| 17.0 | | | | | plasticity, wet. No odor. | | | | | 94% | 2,1 | 1 | |
| | | | | , | himmanish sing, is mani- | | | | | | (16' - 20') | 1 | |
| 18.0 | | | | | | | | | | | 1 | 1 | |
| | | | | | · | | | | | | | | |
| 19.0 | | | | | | | | | | | | | |
| | | | l | Thin (1") ia | | 1 | | | | | | | |
| 20.0 | L | | L | | | | | | | | | | |
| | | | | | | | | | | | | | |
| NOTES: | | | | End of drilling at 17'. | End of sampling at 20'. | | | | | 7 | elephone No | . (630) 208-5 | 050 |
| <u> </u> | | | | Drilled w/ 4 1/4" ID H | ollow Stem Auger. | | | | | | | | |
| | | | | | | | | | | | | | |

| | ****** | | | |
|------|--------|----|--------|---------------------------------------|
| 7 | • | 17 | ft bgs | 2" ID #10-slot PVC screen |
| 0.25 | • | 7 | ft bgs | 2" ID sch. 40 PVC casing |
| S | | 17 | ft bgs | filter sand |
| 1 | | 5 | ft bgs | bentonite |
| n | | 1 | ft hos | flush mount pro-casing concreted in p |

| | | | | | Proj. No. | Kirkland (| Quic | Stop | Soil Borin | g No. | 9 | B-32/MW+: | 18 | |
|----------------|--------------------|--------|-------------|---|----------------------------|---|-------------------------------|-----------------|---------------|--------|--|--|----------|--|
| | | | | | Site Name: | Kirkland | irkland Quick Stop Driller: | | | | C&S Drilling | | | |
| | | | | | Location: | 411 W | Mair | St. | Dril Name | 9 | Mark and Bart | | | |
| | | | | | | Kirki | ind, | L | Sampling | Depth: | | 18 | | |
| | | | | | | | | 2" Total Depth: | | | 18 | | | |
| | (| GEO-TH | IINK, LLC | , | | Tom Man | | | | | 1 | | | |
| | 611 Stevens Street | | | et | Field Staff: | 1 | one | and Ai | Date: | | 4/20/2015 | | | |
| | | | 11.60134 | | | | | | 1 | | - | | | |
| | | | | | Sampler Length: | 4' ma: | croco | re | GW Level | l: | 1 . | pprox. 8' b | RS | |
| 5.21.5 | | | GROUN | ND ELEVATION (ft. NO | | .1 | | | | | | PLE DATA | | |
| BELOW | | | T | | <u> </u> | | T | | | | | | | |
| BELOW GRND | | | - 1 | | | | 1 ' | NW | SMP | Rec. | PID | Penetrm | Moistur | |
| SURFACE | | STRAT | | | PLE DESCRIPTION | | <u> </u> | DIA | ID No. | (%) | (ppm) | Reading | Conten | |
| | FILL | Q | 4 | | SPHALT (0 - 3") | | | - 1 | | | | | | |
| 1.0 | | | !! | | k sand with coal (3" - 6" | - | 11 | - [| i | | | | | |
| | | | | | sh gray clay. Mild odor | | 1 1 | 1 | | 75% | 3.5 | | | |
| 2.0 | | | | FILL. Black and | brown sand, Molst. (1 | 5' - 4') | 11 | - 1 | 1'-3' | | (1' - 3') | | | |
| | | | | | | | 1 | - 1 | tolab | | | | | |
| 3.0 | | | | | | | | 1 | | | 0.7 | | | |
| | | | | | | | | - 1 | | | (3' - 4') | | | |
| 4.0 | | | | | | | | | | | | | | |
| | 1 | | . | | | • | П | \neg | | | | ************************************** | | |
| 5.0 | OL | 4 | 4.5 | TOPSOIL. Clay w/ silt. Moist. No odor. | | | | - 1 | | 83% | 0.6 | | | |
| | CL | 4.5 | 7.5 | CLAY, with silt and trace fine sand. Brown, | | | | - 1 |] [| | (4.5' - 7') | | | |
| 6.0 | | | , | medium consistency, medium plasticity, very moist to wet. Yellow-brown and gray mottles, black (pyrolusite) | | | | | 1 | | | | | |
| | | | | | | | | - 1 | 6'-8' | | 1 | | | |
| 7.0 | | | | | | | | - 1 | tolab | | | | | |
| | | | | | arting at 5'. Gravel at 7 | | 1 1 | | .0,20 | | | | | |
| 8.0 | SP | 7.5 | 11.5 | SAND, medium grained, with some fine and coarse | | | | | | | | | | |
| 9,0 | | /.5 | 22.5 | , , , | | | | - | | | | | | |
| | | | | sand, some gravel, trace silt. Light brown to reddish | | | | | | 92% | 0.8 | | | |
| 9.0 | | | | orown, | dense, wet. No odor. | | 1 | | 1 1 | 9276 | | | | |
| | | | 1 | • | | | | - 1 | | | (8' - 10') | | | |
| 10.0 | | | | | | | | - 1 | | | | | 1 | |
| | | | | Becoming grayis | h brown with mild ado | r at 10'. | | | | | 0.9 | | | |
| 11.0 | | | 1 | | | | | 1 | | | (10' - 12') | | | |
| **** | | | | | | | J | | | | | | | |
| 12.0 | 5M | 11.5 | 12 | SILTY SAND, fine | grained. Dense, wet. I | No odor. | | | | | <u> </u> | | <u></u> | |
| | SP | 12 | 14 | ; SAND, fine to m | edium grained. Light b | rown, | | | | | | | l | |
| 13.0 | l | | | medium | dense, wet. No odor. | | | | | 77% | 0.6 | | | |
| | | | | | | | | | [. I | | (12' - 16') | | | |
| 14.0 | | | | | | | | | | | 1 | | | |
| | CL | 14 | 14.75 | SANDY CLAY, fl | ne grained, with silt. B | rown, | 1 | | | | | | | |
| 15.0 | ١ | | | • | ency, medium plasticit | | | | | | 1 | 1 | | |
| | SP | 14.75 | 15.5 | *************************************** | n to course grained. Bi | - | 1 | | | | | | | |
| 16.0 | CL | 15.5 | 18 | | grained, with silt. Bro | | 1 | | | | | | 1 | |
| | 1 | | - | • | tency, medium plasticit | • | 1 | | 1 | | | | <u> </u> | |
| 17.0 | İ | | | masant pengia | and the security broughter | ,, ,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | | 58% | 0.4 | l | | |
| 47.0 | ĺ | | | A" soom of house | n fine to medium sand | 21 16'0" | | | | 2079 | (16' - 18') | 1 | | |
| 18.0 | 1 | | | - SCOULDINGM | in the to medium adilu | u, 10 3 | | | | | 1, | | 1 | |
| 10.0 | 1 | | | 1H | and ellipse scame at 1915 | n . 1 | | | | | | l | | |
| **** | ł | | | 1" soiter | and silter seam at 17'6 | | | | | | | | | |
| 19.0 | ł | | | | | | | | | | 1 | l | 1 | |
| | ł | | | | | | | | | | | | | |
| | l | | | | | | <u> </u> | ot | | | | ļ | <u> </u> | |
| 20.0 | | | | | | | | | | | | | | |
| 20.0 NOTES: | | | | · | End of sampling at 18' | | | | | | elephone No | <u> </u> | <u></u> | |

| 7 | - | 17 | ft bgs | 2" ID #10-slot PVC screen |
|------|---|----|--------|---|
| 0,25 | | 7 | ft bgs | 2" ID sch. 40 PVC casing |
| 5 | | 17 | ft bgs | filter sand |
| 1 | | 5 | ft bgs | bentanite |
| 0 | | 1 | ft has | flush mount pro casing, concreted in pl |

| | | | | | Proj. No. | Kirkland (| Quicl | k Stop | Soil Borin | g No. | \$ | 8-34/MW-: | 19 |
|---|----------|--------|----------|---|--|---------------------|----------|---------------|------------|---|------------------|---------------|--------------|
| | | | | | Site Name: | Kirkland Quick Stop | | | Driller: | | C&S Drilling | | |
| | | | | | Location: | 411 W Main St. | | | Orll Name | 1 | Mark and Bart | | |
| | | | | | | Kirkland, IL | | | Sampling | Depth: | | 19' | |
| | | | | _ | MW Diameter: | 2* | | | Total Dep | th: | | 19' | |
| | (| SEO-TH | INK, LLC | • | Tom Mang | | | and A | 1 | | | | |
| | | | | | Fleld Staff: | | one | , | Date: | | | 4/23/2015 | ; |
| | | | ens Stre | | 7.5.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3. | | | | 1 | | | | |
| | G | eneva, | II. 6013 | 4 | Samulas Lamenti | 4' mad | | | GW Level | | l . | врргох. 8' б | ne. |
| | | | GROW | ND ELEVATION (ft. NO | Sampler Length: | 4 1114 | .1000 | 110 | GW CEVE | <u> </u> | | PLE DATA | Вэ |
| BELOW | | | ONOU. | IND ELEVATION (IL. IN | 340/. | | Г | | T T | | T | | |
| ELOW GRND | | | - 1 | | | | | MW | 5MP | Rec. | PID | Penetrm | Moisture |
| SURFACE | | STRAT | | | PLE DESCRIPTION | | <u> </u> | DIA | ID No. | (%) | (ppm) | Reading | Content |
| | FILL | 0 | 4.5 | | SPHALT (0" - 3") | 20 567 | | | | | | | |
| 1.0 | | | 1 | | y sand and gravel base (| | | | 1 | 90% | 1.6 | | |
| 2.0 | | | · / | | silt, sand, and gravel. (| | Ш | | 1 | 3076 | (0' - 4') | | |
| | | | | moist. Layers of L | plack slag and cinders of | iservea. | | | 1 | | (0 -4) | | |
| 3.0 | | | | | | | 1 | | | | | | |
| 3.0 | | | - 1 | Laure (6") of val | low brown medium san | duith | 1 | | | | | | |
| 4.0 | | | I | | Layer (6") of yellow-brown medium sand with little gravel at 3' - 3.5'. | | | | | | | | |
| | | | - 1 | IIV () s | Bigseigt 2 - 7'2' | | Н | - | | *************************************** | | | |
| 5.0 | CL | 4,5 | 6.5 | SILTY SANDY CLAY | fine grained, with trace | medium | 1 1 | | | 69% | 0.6 | | |
| <u> </u> | | ,,,, | | SILTY SANDY CLAY, fine grained, with trace medium sand. Brown, medium consistency, medium | | | | | | | (4' - 6') | | |
| 6.0 | | | 1 | plasticity, moist. No odor. | | | | | 5' - 7' | |] '' -' | | |
| | | | 1 | Thin (1/4") seams of brown sand @ 5.5' and 5.7'. | | | | | tolab | | 0.1 | | |
| 7.0 | SP | 6.5 | 12 | SAND, fine to medium grained, with little gravel | | | | | | | (6' - 7') | | |
| | | | | and trace silt. Reddish-brown, loose, moist. | | | | | 1 | | ' ' | | |
| 8.0 | | | . 1 | | No odar. | | | | | | | | |
| | | | | be | coming wet Ø 8'. | | | | | | | | |
| 9.0 | | | ' I | Thin (3') s | eam of fine sand @ 8.5° | 1 | | | , , | 92% | 0.5 | | |
| | | | | | Color is brownish-gray @ 9.5' - 10'. | | | | | | (8' - 10') | | |
| 10.0 | | | | Thin (1') seam of | reddish-brown fine sand | @ 10'. | | | | | İ | | 1 |
| | | | | Color change | es to brownish-gray at 1 | oʻ. | | | | | 0.6 | | ŀ |
| 11.0 | | | | Thin (1") seam of silty fine sand @ 10.5'. | | | | | | | (10' - 12') | | |
| | | | | | | | | | | | | | |
| 12.0 | | | | | | | | $\sqcup \bot$ | | | | | |
| | 5P | 12 | 13 | , SAND, medium g | rained. Brown, medium | dense, |] | | | | | | |
| 13.0 | | | | · | wet. No odor. | | 1 | | | 92% | 0.7 | | |
| | SP | 13 | 14 | SAND, fine gra | ained, with trace to little | silt. | | | 1 | | (12' - 14') | 1 | 1 |
| 14.0 | | | | | , med. Dense, wet. No | | | | i l | | | | |
| | | | | | vn and medium/coarse | | | | | | | | |
| 15.0 | SP | 14 | 15 | , , | e grained, w/ little grave | | | | | | | | |
| **** | | | | | ense, wet. No odor. Silt | | 1 | ΙI | | | 0.5 | 1 | 1 |
| 16.0 | Cr | 15 | 15.8 | SILTY SANDY CLAY, fine grained. Brown, wet. | | | | \sqcup | | | (14' - 16') | . | <u> </u> |
| ************* | SP | 15.8 | 16.5 | | grained. Brown, wet. N | | - | | | | 1 | 1 | 1 |
| 17.0 | SP | 16.5 | 19 | • | to coarse grained, with | • | | | 1 | 71% | 2.0 | | |
| | | | | | flum dense, wet. No od | or. | | | 16' - 18' | | (16' - 18') | 1 | |
| 18.0 | | | | Becar | ning siltier @ 17.25'. | | 1 | | to lab | | | 1. | |
| *************************************** | | | | | 1 1 111 111 | ٠. | 1 | | | | 0.7 | | |
| 19.0 | | | | More gra | vel and cobbles @ 18.5 | <u> </u> | - | | | | (18' - 19') | | |
| 300 | { | | | **- | | | | | | | | 1 | |
| 20.0 | | | | No re- | covery from 19' - 20'. | | +- | \vdash | | | - | | |
| | Ь | L | Ll | Park of deliberation | F_J_1_1 | /hh 41 | <u> </u> | | | L | I Calcabas a Mis | (630) 200 5 | 050 |
| NOTES: | | | | | End of sampling at 19' 4 1/4" ID Hollow Stem | | 1211 0 | ur Ol | | 1 | lelephone No | . (ann) 108-2 | UÇU |

| 6 | • | 16 | ft bgs | 2" ID #10-slot PVC screen |
|------|---|----|--------|--|
| 0.25 | - | 6 | ft bgs | 2" ID sch. 40 PVC casing |
| 4 | • | 16 | ft bgs | filter sand |
| 1 | • | 4 | ft bgs | bentonite |
| 0 | • | 1 | ft bgs | flush mount pro casing, concreted in place |

| | | | | | Proj. No. | Kirkland C | nick | Ston | Soil Boring | e No. | Ś | B-38/MW-2 | 20 | |
|------------|----------------|------------|-----------|---|--|--|--------------------|--------------------|--------------|--------|---------------|---------------------------------------|--------------|--|
| | | Site Name: | | | | Kirkland Quick Stop | | | Oriller: | , 1101 | C&S Drilling | | | |
| | | | | | Location: | | | | Dril Name | | Mark and Bart | | | |
| | | | | | | The second line with the secon | | | Sampling | Depth: | 18' | | | |
| | | | | | MW Dlameter: | 2 | | | Total Dep | | | 18' | | |
| | GEO-THINK, LLC | | | | Tom Manga | | | -d 61 | | | | · · · · · · · · · · · · · · · · · · · | | |
| | | | | | Field Staff: | Sto | - | 110 70 | Date: | | | 4/23/2015 | | |
| | | | ens Stree | | | | | | | | | | | |
| | G | eneva, | 11. 60134 | 1 | Samaler Langths | 4' mac | | - & | GW Level: | | | pprox. 8' b | ne | |
| | | | GROUN | ND ELEVATION (ft. NO | Sampler Langth: | 1 4 mac | roca | е | GAN TOAS! | · | | PLE DATA | 8> | |
| BELOW | | | <u> </u> | AD CECANION IN NO | | | | | г | | 1 | | | |
| BELOW GRND | | | | | | | | 1W | SMP | Rec- | PID | Penetrm | Moisture | |
| SURFACE | | STRAT | | | PLE DESCRIPTION | | 1 | IA . | ID No. | (%) | (ppm) | Reading | Content | |
| 1.0 | FILL | 0 | 6.5 | FILL Clay, with si | lt, trace to little fine to Brown with reddish-br | coarse | | | | | | | | |
| 1.0 | | | | | ottles, medium consist | | | | | 94% | 0.3 | | | |
| 2.0 | | | | | asticity, moist to very n | | | | | 3470 | (0' - 2') | | | |
| 4.0 | | | ļ | still, mediam pi | No odor. | iuist. | | | | | (0 + 2) | | | |
| 3.0 | | 1 | | | Ma ador. | | | | | | 0,0 | | | |
| | | - 1 | | Thin (1") conmi | of slag and coal throug | hout | | | 1 1 | | (2' - 4') | | | |
| 4.0 | | | | ithirit \ Jeania | or ying and con minor | mout. | | | | | 12 14) | | | |
| | | - | - 1 | | | • | \vdash | _ | | | | | | |
| 5.0 | | 1 | 1 | | | | | | 1 1 | 25% | 0.0 | | | |
| | | Ì | - 1 | Note: Bottom 3' of O' - 4' sample appeared to have | | | | - | | | (5' - 6') | | | |
| 6.0 | | | | fallen out o | | - | 1 | | (3 - 0) | | | | | |
| | | | . | tonen out i | a sample wille millon | •• | | | | | | | | |
| 7.0 | SM | 6.5 | 9 | SILTY SAND, fine t | o medium grained, wit | h coarse | | - 1 | | | | | | |
| | | | - | sand and trace gra | | | | | | | | | | |
| 8.0 | | | | 20.12 0.12 1.22 0.2 | | - | | | | | | | | |
| | | | 1 | | No odor. | | 1 | $\neg \vdash \neg$ | | | | | | |
| 9.0 | | | - 1 | ¥ | | | | | 8' - 10' | 52% | 0.3 | | | |
| | ŞP | 9 | 9.5 | SAND, fine /med | . grained. Brown, wet | loose. | | | tolab | | (8' - 10') | | | |
| 10.0 | SP | 9.5 | 12.5 | SAND, medlu | m to coarse grained, w | ith | | | | | · ' | | | |
| | | | | some gravel. Brown, wet, loose. No odor. | | | | | | | | | | |
| 11.0 | | | | | | | | | | | | | | |
| | | | | | | | | | | | , | | | |
| 12.0 | | | | | | | \Box | | | | | | | |
| | | | | <u> </u> | | | Π | | | | | ļ | | |
| 13.0 | CL | 12.5 | 16 | | , fine grained, with trac | | | | | 77% | 0.3 | | | |
| | | | | • | parse sand. Brown, stif | f, medium | | - 1 | | | (12' - 14') | 1 | 1 | |
| 14.0 | | | | | city, wet. No ador. | | | 1 | | | | | | |
| | | | | , , | fine to medium grained | f sand at | | ĺ | 1 1 | | 1 | | | |
| 15.0 | | | | 14 | '. Wet, no odor. | | | - | 1 1 | | | | | |
| | | | | | | | | | 1 1 | | 0.1 | | | |
| 16.0 | | | | A11 = 1111 + 11 | | | $\left - \right $ | | ├ ──{ | | (14' - 16') | | <u> </u> | |
| | WL | 16 | 16.5 | | and. Brown, no plast., | | 1 I | | | 656 | 0.0 | | 1 | |
| 17.0 | CL | 16.5 | 17.5 | | f, fine grained, with tra | | | | 171 (0) | 56% | (16' 17') | | | |
| 100 | ML | 17.5 | 18 | and tr med/c sand. Brown, stiff, med plast., moist. 17' - 18' (16' - 17') | | | | | | | | | | |
| 18.0 | IVIL | 17.3 | 1 40 | SILT. Brown, medium consistency to stiff, no plasticity, wet. No odor. | | | | | | 0.1 | | | | |
| 19.0 | { | | | no pia: | outry, wet. No boot. | | | ļ | | | (17' - 18') | | | |
| 23.0 | { | l | | | | | | 1 | | | 111, -101 | | | |
| 20.0 | • | | | | | | | 1 | | | | | | |
| 20.0 | | | ┝──┼ | | | | + | - - | 1 | | 1 | | | |
| NOTES: | L | · | · | End of drilling at 161. | End of sampling at 18 | (bottom 2' | fell o | ut of | _ll | T | elephone No | . (630) 209-5 | i050 | |
| | | | | | | | | | | | | | | |

| 6 | | 16 | ft bgs | 2" ID #10-slot PVC screen |
|------|---|----|--------|--|
| 0.25 | - | 5 | ft bgs | 2" ID sch. 40 PVC casing |
| 4, | - | 16 | ft bgs | filter sand |
| 1 | | 4 | ft bgs | bentonite |
| 0 | • | 3 | ft bgs | flush mount pro casing, concreted in place |

| | | | | | Drol No | Virting 4 | Out- | L Ct- | | Soil Borir | 3 a No | 61 | 3-30D/MW- | 200 |
|---------------|------|----------|----------|----------------------|---------------------------|--|------------|---------|------------|------------|----------|-----------|--------------|----------|
| | | | | | Proj. No. Site Name: | Kirkland | | | - | | ig rių. | 31 | C&S Drilling | |
| Í | | | | | Location: | 411 W | | | | Orll Nam | <u> </u> | l | Mark and Ba | |
| | | | | | | Xirki: | _ | _ | - | Sampling | | · | 35 | |
| | | | | | MW Diameter: | | 2" | <u></u> | - | Total De | | | 35 | |
| i | 1 | GEO-TI | iink, ll | С | | Tom Man | | and | Δ1 | | | | | · |
| | 6 | 11 Stav | ens Str | | Field Staff: | 1 | DNG DNG | allu | <i>r</i> u | Date: | | | 4/21/2015 | |
| | | | 1. 601 | · · | | 4' macroc | ore. | 2' 50 | iit | | | | | , T |
| | | | , | • | Sampler Length: | | rrel | , | | GW Leve | 1: | | арргох. 7' b | ZS. |
| BELOW | | | GROU | ND ELEVATION (ft. NO | | | | | | | | | IPLE DATA . | 4 |
| BELOW GRND | | | | | | | П | MW | | SMP | Rec. | PID | Penetrm | Moisture |
| SURFACE | | STRA' | · | SANA | IPLE DESCRIPTION | | | DIA | | ID No. | (%) | (ppm) | Reading | Content |
| JOHNACE | | 7110 | i | | SPHALT (0" - 3") | ······································ | - | | | 1D 140. | (79) | /thint/ | neading | Content |
| 1.0 | FILL | 1 | 4 | | gravel, clay, and coal) (| 3" - 3') | | | | | | | | |
| | | | 1 1 | | No odor. | | | | | | 44% | | | |
| 2.0 | | | | | | | | | | | | 0.0 | | |
| ********* | | | | Bottom 2' of sam | ple missing. Believed to | o be fill. | | | | | | (0' - 4') | | |
| 3.0 | | | | | | | | | | | | 1 | | |
| 4.0 | | | | | | | | | | | | | | |
| 7.0 | FILL | 4 | 5.5 | Fill beown clausel | th slit and sand. Molst. | No odor | - | Н | _ | | | 0.5 | | |
| 5.0 | FILE | ' |] 3.5 | rice, blowit clay wi | urancana sana, worse, | 140 0001. | l | | | | | (4' - 6') | | |
| | | | | | | | | | | | 81% | (4 -0) | · | |
| 6.0 | SP | 5.5 | 8 | SAND, medium | to coarse grained, with | some | 1 | | | | Q270 | 1 | | |
| | | | Ĭ | | t brown, medium dens | | | | | 6' - 8' | | | | |
| 7.0 | | | | | very moist. No odor. | • | | | | tolab | | 0.5 | | |
| | | | | Thin slity: | sand seams at 6' and 7'. | • | | | | | | (6' - 8') | | |
| 8.0 | | | | | | | | | | | | | | |
| | | 8 | 26 | Blind dril | led. See log for SB30S. | | | | | | | | | |
| 9.0 | | | 1 1 | | | | | | | | | | | |
| | | | | | | , | | | | | | | | |
| 10.0 | | | | | | • | | | | | | | | |
| 11.0 | | | | | b. | | | | | | | | | |
| 7 7.70 | | | | | | | | | | | | | | |
| 12.0 | | | | | | | | | | | | | | |
| | | | | : | | | | | | | | | · | |
| 13.0 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 14.0 | · | | | | | | | | | | | | | |
| 444 | | | | | | | | | | ٠. | | | | |
| 15.0 | | | | | | | | | | | | | | |
| ************* | | | | | • | | | | | | | | | |
| 16.0 | | | | | | | <u> </u> | Ш | | | | | | |
| | | | | | | | ١. | | | | | | | |
| 17.0 | | | | | | | | ll | | [| | | | |
| 18.0 | | | | | | | | ll | | | | | 1 | |
| 70.0 | | 1 | | | | | 1 | | į | | | | | |
| 19.0 | · ' | 1 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 20.0 | | 1 | | | | | 1 | 1 | | | | | | |

| | · | | | | Proj. No. | Kirkland (| Julck Stop | Soll Borin | g No. | SB | -30D/MW-3 | 30D |
|------------|----|--------|------------------|---|---|------------|----------------------|------------|--------|--------------------|---------------|---------------|
| | | | | | Site Name: | Kirkland (| Quick Stop | Driller: | | | C&S Drilling | } |
| | | | | | Location: | 411 W | Maln St. | Dril Name | 9 | ٨ | Aark and Ba | irt |
| | | | | | | Kirkla | ind, IL | Sampling | Depth: | | 35 | |
| | | | | | MW Diameter: | 2 | t s | Total Dep | th: | | 35 | |
| | 0 | SEO-TH | INK, LU | - | | Tom Man | gan and Al | | | | - | |
| | | | | | Field Staff: | | one | Date: | | | 4/21/2015 | |
| | | | ens Stre | | | | ore, 2' split | | | | | - |
| | G | eneva, | II. 6 013 | 4 | Sampler Length: | 4 | ore, z spiit rrel | GW Level | l. | ١. | approx. 7' b | ne |
| | | | CPAII | NO ELEVATION (ft. N | | | ı (Ç | GAN PRAG | | | PLE DATA | 52 |
| BELOW | | | GKOO | HO ELEVATION (II. IV | 5407. | | T | 1 1 | | 1 | | |
| BELOW GRND | | | | | | | MW | SMP | Rec. | PID | Penetrm | Moisture |
| SURFACE | | STRAT | | SAN | IPLE DESCRIPTION | | DIA | ID No. | (%) | (ppm) | Reading | Content |
| 21.0 | | | | | ₩ | | | | | | 1 | |
| 22.0 | | | | | | | | | | | • | |
| 23.0 | | | | | | | | | | | | |
| 24.0 | | | | | | x | | | | | | |
| 25.0 | | | | | | | | | 1 | | | |
| 26.0 | | | | | | | | | | | | |
| 27.0 | SP | 26 | 28 | little to some fine | ed, with some medium gravel. Brown, medi | | | | 33% | 0,5 (26' - 28') | | |
| 28.0 | | | | | wet. No ador. | | | 1 | | (20 - 28) | | |
| 26.0 | SP | 28 | 30 | SAND medium or | ained, with fine to coa | rea graval | +++ | | | | | |
| 29.0 | 3, | 20 | 30 | | parse sand. Brown, de No odor. | | | | 63% | D.8 (28' - 30') | | |
| 30.0 | | | | 2" seam of h | rown sandy silt at 29.8 | 3'. wet. | | | | 1,20 - 30 / | | |
| | CL | 30 | 35 | | (l) (fine grained sand), | | 1-1-1- | 1 | | 1 | | |
| 31.0 | | | | little medium | to coarse sand, some cobbles. Gray, very l | fine to | | | 38% | 0.7 (30' - 32') | | |
| 32.0 | | | | (actually saturate | ed), medium plasticity | . No odor. | | | 0% | 1 | | |
| 33.0 | | | | | | | | | | ļ | | |
| 34.0 | | | | | | | | | 83% | - | | |
| 35.0 | 1 | | | | | | $\bot \bot \bot$ | | | | | |
| NOTES: | L | L | L | End of drilling at 33' Drilled w/ 4 1/4" ID | . End of sampling at 3 | 5'. | | 1 | ١ | Telephone No | . (630) 208-S | 050 |

| Monitoring | (Well Cons | truction | | |
|------------|------------|----------|--------|--|
| 26 | | 31 | ft bgs | 2" ID #10-slot PVC screen |
| 0.25 | - | 26 | ft bgs | 2" ID sch. 40 PVC casing |
| 31 | | 35 | ft bgs | natural collapse |
| 24.7 | • | 31 | ft bgs | filter sand |
| 22.4 | • | 24.7 | ft bgs | bentonite |
| 5 . | - | 22.4 | ft bgs | cement/bentonite grout |
| 1 | | 5 | ft bgs | bentonite |
| n | _ | 3 | ft hes | flush mount pro casing, concreted in place |

| | | - | | | Incal No. | Vieteland C | ulak i | · | Soll Borin | a No | Cp | -305/MW- | nos |
|------------------|--|--------|-----------|----------------------|--|-------------------|---|------------|---------------|---------------------------------------|-------------|--------------|--|
| | | | | | Proj. No. Site Name: | Kirkland C | | | | R 140' | | C&S Drilling | A-C-A-0444444444444444444444444444444444 |
| | | | | | Location: | 411 W A | | | Oril Name | | | Aark and Ba | |
| 1 | | | | | | Kirkia | | | Sampling | | | 26' | |
| • | | | | | MW Diameter: | 2 | | | Total Dep | | , | 26' | |
| ļ | (| GEO-TH | IINK, LLC | ; | | Tom Mane | an ai | nd Al | | | | | |
| | | | | | Fleid Staff: | Sto | | , . | Date: | | | 4/20/2015 | |
| | | | ens Stre | ** | | | | a alle | | | | | |
| | ٥ | eneva, | II. 6013 | 4 | Sampler Length: | 4' macroco bar | - | spiir | GW Lavel: | | | ipprox. 7' b | DC |
| | T | | GROU | ND ELEVATION (ft. NO | | 1 201 | (6) | | dir cares | | | PLE DATA | 5.ª |
| BELOW | | | | | | | | | T T | | PID | Penetrm | |
| BELOW GRND | | | . 1 | | | 1 | | IW IA | SMP ID No. | Rec. (%) | (ppm) | Reading | Moisture Content |
| SURFACE | | STRAT | | | PLE DESCRIPTION SPHALT (0" - 3") | | | TA T | ID NO. | [76] | (ppin) | Keading | Content |
| 1.0 | FILL | 1 | 3 | Fill (black sand, | gravel, clay, and coal) (| 3" - 3') | -) | |] | | | | |
| | | | | | No odor. | | 1 | 1 | | 71% | | | |
| 2.0 | | | | | | | | 1 | | | | | |
| |] | | | | | | | 1 | | | | | |
| 3.0 | | | | | | | - [| | | | 0.2 | | |
| | CL | 3 | 4 | | ace fine sand. Brown, r | 1 | | | | | (3' - 4') | | |
| 4.0 | - | | | | m plasticity, very moist | | - | + | | | 0.0 | | |
| E 0 | CL | 4 | 6 | | ms of fine sand and tra | | | | 4'-6' | | (4' - 6') | | |
| 5.0 | | | | | brownish-gray and man us, some black (pyroius) | | - 1 | 1 | to lab | 92% | (4 - 0) | | |
| 6.0 | 1 1 | | | | et starting at 4'. No odd | | | | 10.110 | 3270 | | | |
| 0.0 | 5M | 6 | 6.5 | | grained, with trace grav | | - | | 1 1 | | | | |
| 7.0 | 5W | 6.5 | 8 | | oarse grained, with litt | | | | | | 0.1 | | |
| | | | | | dense, very moist. No | | | | | | (6' - 8') | | |
| 8.0 | | | | | | | | | | · · · · · · · · · · · · · · · · · · · | | | |
| **************** | SP | 8 | 14 | | lined, with fine and coa | | | | | | | | |
| 9,0 | | | | | e silt. Brown, medium | dense, | | | | | 0.1 | | |
| 48.0 | | | | • | wet. No odor. | | 1 | | 1 | 71% | (8' - 12') | | |
| 10.0 | | | | E" tours of li | ight brown sand at 7' (S | ره | | 1. | 10'-11' | | | | |
| 11.0 | | | 1 1 | o layer of ii | Rut prown send at y fa | r). | | - | tolab | | | | |
| 11.0 | | | | | | | | 1 | 10,130 | | | | |
| 12.0 | 1 | 1 | l | | | | 1 | | | | | | |
| | 1 | | | | | | | 7 | | | | | |
| 13.0 |] | | | | 1 | | | | | | 0.1 | | |
| |]] | | | | | | | | | 58% | (12' - 16') | | |
| 14.0 | | | | | | | | - | | | | | |
| | ML | 14 | 15 | | ice fine sand. Brown, s | ilff, | | | | | | 1 | |
| 15.0 | 5M | 15 | 16 | | sticity, wet. No odor. e grained, with little cla | v and | | | | | | 1 | |
| 16.0 | 3141 | 12 | 10 | | Brown, loose, wet. No | | | | | |] | | |
| 20.0 | SP | 16 | 20 | | edium grained, with tra | | | | | | ~ | - | |
| 17.0 | 1 | ~ | ~ | | lium dense, wet. No oc | | | | | | 0.0 | | |
| | 1 | | | | | | | | 1 1 | 50% | (16' - 20') | | |
| 18.0 |] | | | | | | | | | | | | |
| |] | | | 1 | | • | | | | | I | | |
| 19.0 | - | | | | | | | | | | | | |
| | | | | | | | | - 1 | | | | | |
| 20.0 | <u></u> | | | | | | $oldsymbol{ol}}}}}}}}}}}}}}}}}$ | | | | 1 | L | <u> </u> |

Ċ.

| | | | | -,,,,,,,,,,,,,, | Proj. No. | Kirkland C | Quic | Stop | Soll Borin | ig No. | St | -30\$/MW- | 305 |
|--------------------------------------|----|--------|------|---|---|------------------|--------------|-----------|---------------|-------------|--|--------------------|---------------------|
| | | | | | Site Name: | Kirkland C | Quic | k Stop | Driller: | | | C&S Drilling | 3 |
| | | | | | Location: | 411 W | Mair | 1 St. | Drll Nam | e | 1 | Aark and Ba | rt |
| | | | | | | Kirkla | nd, | IL | Sampling | Dopth: | | 26' | |
| | | | | _ | MW Diameter: | , 2 | ?" | | Total Dep | oth: | | 26' | |
| | | SEO-TH | · | | Field Staff: | Tom Man Sto | gan one | and Al | Date: | | | 4/20/2015 | i |
| | | eneva, | | | 5ampler Length: | 4' macroco ba | ore, rrel | 2' split | GW Leve | l; | | зрргох. 7' b | gs |
| BELOW | | | GROU | ND ELEVATION (ft. No | GVD): | | | | , | | SAN | PLE DATA | |
| BELOW GRND SURFACE | | STRAT | , | SAM | PLE DESCRIPTION | | | MW DIA | SMP ID No. | Rec. {%} | PID (ppm) | Penetrm Reading | Moisture Content |
| 21.0 22.0 23.0 24.0 25.0 | SP | | 25.5 | and coarse san medium | grained, with trace to lit d, trace silt. Brown, loc dense, wet. No odor. of gravelly sand at 22'. | | | | | 88% | 0.3 (20' - 24') 0.0 (24' - 26') | | |
| 26.0 | 5W | 25.5 | 26 | SAND, fine to coars | e grained, w/ gravel and | d cobbles. | | | | | | | |
| | | | | | es of brown silty/sandy | clay. | | | L | | | | |
| NOTES: | | | | End of drilling at 33'. Drilled w/ 4 1/4" ID H | End of sampling at 35', ollow Stem Auger. | | | | | Т | elephone No. | (630) 208-5 | 050 |

| 7 | | 17 | ft bgs | 2" ID #10-slot PVC screen |
|------|---|-----|--------|--|
| 0.25 | • | 7 | ft bgs | 2" ID sch. 40 PVC casing |
| 17 | • | 26 | ft bgs | natural collapse |
| 4,9 | - | 17 | ft bgs | filter sand |
| 1 | • | 4.9 | ft bgs | bentonite |
| 0 | - | 1 | ft bgs | flush mount pro casing, concreted in place |
| | | | | |



| BOR | ING NO.: MW-31 | WELL NO.: | A THE PARTY NAMED IN COLUMN TWO | | OJECT NO |).:15 | -16013 | | THE RESERVE THE PERSON | | - | E: Kirkland | |
|---|---|------------------------------|--------------------------------------|---------------------------|---------------------------|--------|------------------|--------|------------------------|----------|------------|--------------|--|
| - | ID. NO.: | FEDE | RAL ID. NO | 0.: | | 1. | | | SIT | E LO | | l: Kirkland, | 100 |
| 200 | RDINATES: | 1 1 1 1 | | LOU | AD.: Kirkla | | TITUDE | : " | | | University | NGITUDE: | W 800 MASS 980 // |
| DRIL | LING CO.: C.S Drilling | | | SE | C.: 26 | | : T42 N | R | R3 E | | | | 763.90 MSL |
| - | LER: M. Natali | DRILLI | | of the Contraction of the | drich D-120 ATE: 8/8/1 | _ | | | | | THEORY | IOLE DIA.: | Market Committee |
| | RT DATE: 8/8/16 RT TIME (hours):0900 | | 11313 | | ME (hours | | 45 | | | | | ED BY: M. I | |
| - | KUP: 2.98 ft AGS | TOP of | the second large state of the second | | ATION: 766 | | 1000 | | | | - | - | AL: 2.0'-26.8' |
| RISE | R DIA./MTL./LGTH.: 2' | /PVC/4.98' | | | | sc | REEN | | | /C/0. | | | |
| - | | | | - | | - | | SAMPL | Col Branch | | | (ppm) | |
| DEPTH (ft) | DESCRIP | TION | GRAPHIC | ELEVATION | WELL | NUMBER | RECOVERY (ft) | METHOD | MOISTURE | BLOW CNT | SCAN | HEADSPACE | REMARKS |
| A Same | | | | | | | | | | | | | |
| 0 | TOPSOIL (0.0'-1.6') Black, moist, stiff, org to high plasticity | anics, medium | | 763.90 762.3 | 27,57,57 | A | 3.9/4 | HSA | M | | 0,2 | | |
| 2 1111111111111111111111111111111111111 | SILTY CLAY (1.6'-5.5 Tan, moist, stiff, high Grades hard at 2.4' |) CL plasticity | | 102,9 | | В | | HSA | М | | 0.1 | 6 | |
| 6 military | Grades with fine grain SANDY CLAY (6.5'-7. Brown, moist, stiff, lo | 4') SC | , | 757.4 | | С | 3/4 | HSA | M | | 0.1 | | |
| 8 | SAND (7.4'-10.3') SW Brown, moist, fine gra with fine and coarse | ined, dense, gravel, some | | 756,5 | | _ | | HOA | IVI | | 0.2 | - | |
| trail trail | medium grained sand grained sand Saturated at 9.2' | , trace coarse | | | | Ε | 3.4/4 | HSA | M | | 0.4 | # | |
| 10 | SAND (10.3'-11.0') SF Brown, saturated, fine medium dense SAND (11.0'-19.8') SV | grained, | 1000 | 753,6 752,9 | | F | | HSA | M/S | ** | | - | |
| 12- | Brown, saturated, fine grained, some fine ar | to coarse d coarse grave | at | | | | | | | | | | |
| 14 | Sand seam; Fine grain 12.8'-13.3' Sand seam; Coarse of 13.3'-13.5' With fine gravel at 13 | rained | | | | G | 3/4 | HSA | S | * | 1 | *** | |
| ititi | | | | | | Н | | HSA | S | 44 | 4 | | |



| BOR | ING NO.: MW-31 WELL NO.: MW | /-31 | PR | OJECT NO | .:15 | -16013 | SAMPL | | OJEC | | E: Kirkland D (ppm) | |
|--------------|---|---------|----------------|----------|--------|------------------|--------|-----|------------------|------|------------------------|---------|
| DEPTH (ft) | DESCRIPTION | GRAPHIC | ELEVATION | WELL | NUMBER | RECOVERY (ft) | METHOD | 1 | BLOW CNT (6") | SCAN | HEADSPACE | REMARKS |
| | Sand seam; Fine grained from 16.6'-16.9' | | | | i | 1.7/2 | HSA | s | + | - | | |
| 18 | | | 744,1 | | J | 2.8/4 | HSA | s | | | - | |
| 20- | CLAYEY SILT (19.8'-21.4') ML Tan, saturated, some fine grained sand, medium plasticity Gravel seam; Fine and coarse gravel | | 742.5 | | к | | HSA | s | | _ | _ | |
| 22- | from 21.0'-21.1' SAND (21.4'-24.4') SP Tan, saturated, fine grained, dense | 2411 | 1312.0 | | | 2.944 | HSA | s | | | | |
| 24- | Grades to trace clay at 23.9' | AZIA? | 739,5 | | L | 2.8/4 | под | 5 | 1 | | | |
| 26 | SANDY GRAVEL (24.4'-26.0') GC Dark gray to black, saturated, fine to medium grained sand, fine and coarse gravel Silty clay seam; Dark gray, very hard, trace fine gravel from 24,8'-25.3' | | 737,9 | | М | | HSA | s | | ** | - | |
| The state of | Grades gray at 25.3' SAND (26.0'-26.7') SP Gray, saturated, fine grained, dense | | 737,2 736,6 | | Z | 2/2 | HSA | S/M | - | 1 | 2 | |
| 28 | SAND (26.7'-27.3') SW Gray, saturated, fine to coarse grained sand, dense SILTY CLAY (27.3'-28.0') CL Gray, moist, very hard, high plasticity, | | 735.9 | | | | | | | | | |
| 30 | trace fine gravel End of Boring at 28.0' | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |



| BORING NO.: SB-20B | | NO.: 15-16013 | | _ | | | | | Kirkland | | |
|---|------------------|------------------------------------|------------|--------|------------------|--------|----------|------------------|-------------|---------------|------------------------|
| SITE ID. NO.: | FEDERALI | D. NO.: | | LAT | TUDE: | | UCAT | ION: | Kirkland, | IL SITUDE: | 0 |
| COORDINATES: | | QUAD.: | | | | | 71 | | 0.51 5-1.51 | SAN A F | TABLE AND SHAPE OF THE |
| DRILLING CO.: C.S Drilling | Legarine | SEC.: 26 | 3 | T.: | T42 N | R.: | R3 E | - | | | : 763.72 MSL |
| DRILLER: M. Natali | DRILLING | EQUIP.: Diedrich FINISH DATE: 8 | | | | | _ | | BOREHO | | |
| START DATE: 8/8/16 START TIME (hours):1250 | | FINISH TIME (h | ours): | 405 | | | | | CHECKE | DBY: C | . Clark |
| | | | | | | SAMPLE | S | | | (ppm) | |
| (E) HL DESCR | RIPTION | GRAPHIC | ELEVATION | NUMBER | RECOVERY (ft) | МЕТНОВ | MOISTURE | BLOW CNT (6") | SCAN | HEADSPACE | REMARKS |
| 0 BLIND DRILL (0.0'-16.0' |) | | 763,72 | | | | | | | | |
| | | | X 32 300 7 | | | | 1 | | | | |
| - | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
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| , 3 | | | | | | | | | | | |
| 4- | | | | | | | | | | | |
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| 6- | | | | | | | | | | | |
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| 8- | | | | A | | HSA | | | | | |
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| 3 | | | | | | | | | | | [|
| 3 | | | | | | | | | | | |
| 4- | | | | | | | | | | | |
| (A) | | | | | | | | | | | |
| 4 | | | 1.01 | | | | | | | | |
| 3 | | | | | | | | | | | |
| 6 SAND (16.0'-19.6') SP | | W. 7. 4. | 747,7 | - | _ | - | _ | | - | - | |
| Brown, saturated, fine g | rained, some med | dium | | | (3.1 | | F | | | | |
| and coarse gravel Trace coarse gravel at 1 | 6.4' | 1.301 | | В | 2/2 | HSA | s | | | 4 | |
| - I and sounds graves at 1 | 17/1 | 2.5.2.3 | | | | 1 | | | | | |
| 8 | | 4.7.4. | | - | | - | | - | | | |
| | | 1,74 | | W | 1,115 | | | | 100 | | |
| - | | 0.00 | | С | 3.4/4 | HSA | s | | | - | |
| | | mizz | 744.1 | | | | | | | | |
| SILTY CLAY (19.6'-20.0' Tan, saturated, stiff, hig | JUL | 11111// | 743.7 | 1 | | 1 1 | | 1 | 1 | | |

Page: 1 of 2

Boring No: SB-20B



| BOR | ING NO.: SB-20B PROJECT NO.: 15 | 16013 | | _ | | | | AME: | Kirkland | | |
|---------------|--|---------|-------------------------|--------|------------------|--------|----------|------------------|----------|-------------|---------|
| DEPTH (ft) | DESCRIPTION | GRAPHIC | ELEVATION | NUMBER | RECOVERY (ft) | METHOD | MOISTURE | BLOW CNT (6") | SCAN | HEADSPACE 3 | REMARKS |
| 22 | CLAYEY SILT (20.0'-24.2') ML Tan, saturated, soft, trace fine grained sand Red rust mottles from 20.3'-20.4' Grades gray at 20.9' | | | D | | HSA | s | - | - | - | |
| 4 | | | 730 5 | E | 3.6/4 | HSA | sw | + | | + | |
| 6 | SANDY CLAY (24.2'-25.1') GC Gray, saturated to wet, fine grained sand, stiff, medium plasticity, with fine and coarse gravel, with silt, some coarse grained sand SILTY CLAY (25.1'-26.0') CL Gray, moist, very stiff, trace fine gravel | | 739,5 738,6 737,7 | F | | HSA | w/s | 1 | - | - | |
| 88 | End of Boring at 26.0' | | | | | | | | | | |
| 2- | | | | | | | | | | | |
| 4 Internation | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 88- | | | | | | | | | | | |
| 0 | | | | | | | | | | | |
| 42 | | | | | | | | | | | |

Page: 2 of 2

Boring No: SB-20B



ATTACHMENT C

BAT



BEST AVAILABLE TECHNOLOGY

The surficial lithology occurrence in the vicinity of the Site consists of fill and cohesive, silty clay to a depth of approximately five to seven feet below ground surface (bgs). Underlying these surficial cohesive soils is a relatively homogenous layer of coarse grained sand and gravel to a depth of approximately 30 feet bgs. Below the sand and gravel is a relatively impermeable glacial till extending to a depth of approximately 70 feet bgs. Groundwater is present within the sand and gravel lithologies at a depth of approximately seven to nine feet bgs. The groundwater encountered within the sand and gravel lithologies is unconfined and flows to the north-northwest towards the South Branch of the Kishwakee River.

Groundwater samples collected at the Site in August and November 2016 identified the presence of concentrations of benzene and PNAs above their respective Tier 1 Class I GROs. Specifically, this includes benzene in monitoring wells MW-1, MW-3A, and MW-15 (August only) and various PNAs in monitoring wells MW-1 (November only), MW-6 and MW-14. Field parameters collected during the sampling event indicate the dissolved oxygen concentration ranged from 0.02 mg/l to 0.39 mg/l in the five monitoring wells identified above. This indicates that the constituents of concern are undergoing aerobic biodegradation where indigenous, naturally occurring microorganisms in the groundwater system are using the available DO to biodegrade the petroleum hydrocarbon occurrence within the area where DO concentrations are depleted. The lack of further benzene and PNA migration in groundwater at the site is attributable to the general availability of dissolved oxygen in the shallow glacial groundwater. The location of the monitoring wells and groundwater analytical sampling data, including dissolved oxygen, is summarized on Figures 7 and 8.

Based on the analytical results and the lithology below the Site, aerobic biodegradation of the contaminants of concern is being hindered by the depletion of DO within the area of petroleum impact. Therefore, SMA recommends the use of an air sparge system to increase the DO concentrations within the area to fully aerobically biodegrade the residual concentration of the remaining benzene and PNAs.



AIR SPARGING

Air Sparging is a proven technology to remediate Sites where groundwater is contaminated with aerobically biodegradable hydrocarbons. The technology is most effective at Sites with relatively homogenous coarse grained materials with an aquifer thickness greater than five feet and where the water table is at least five-feet or greater below the ground surface. All three of these characteristics are present at the Blake site.

Air Sparging works by injecting compressed air into the groundwater system below the Site. The compressed air enters the groundwater system through a diffuser that creates smaller air bubbles to maximize the surface area and contact with the groundwater, and allow greater migration of the air away from the sparge points without dissolving first into the groundwater. As the compressed air more completely mixes with the groundwater system, oxygen dissolves into the groundwater (to its aqueous solubility of approximately 11 mg/L) thereby increasing the DO content of the groundwater. The DO is then transported via groundwater flow downgradient from the injection point. The DO in the groundwater is then available to facilitate natural aerobic biodegradation of the site contaminants in groundwater.

At an compressed air injection rate of one (1) standard cubic foot per minute (SCFM), as much as 10 kg/day of oxygen could be introduced into the system.¹ Given the low flow rate, long contact time, and the low concentrations of VOCs present at the site (highest benzene result in groundwater at the site is 0.076 mg/L – MW-3A), only a very small amount of vapor will be produced in the subsurface. Due to this fact, low-flow air-sparging systems are commonly installed without solvent vapor capture systems because they are not necessary.¹

The advantages of Air Sparging include:

- Rapidly increases the dissolved oxygen content within the groundwater below the Site, thereby promoting the biodegradation of the hydrocarbons by indigenous bacteria;
- Specifically well-suited to the petroleum-based contaminants and the coarse-grained layer that exists beneath the surficial silt/clay layer at the Site;

¹ Battelle, 2001, Final Air Sparging Guidance Document, NFESC Technical Report, TR-2193-ENV, Prepared for the Naval Facilities Engineering Command, August.



- Proven technology to remediate the residual concentrations of benzene and PNAs in the groundwater to meet their respective Class I GROs;
- Does not require the injection of surfactants, bacteria, oxygen releasing compounds, or other non-naturally occurring constituents within the setback of the municipal wells;
- The low COC concentrations at the Site will only require low-flow rate air sparging at the site and will not require the use of a soil vapor extraction system;
- Simplicity in system design and operation;
- Is not impacted by freezing temperatures; and
- Minimal cost as compared to other technologies.

Best Available Technology (BAT) Analysis

The report prepared by Battelle for the Department of Defense defines the pros and cons of air-sparging compared to ten different remedial technologies. After reviewing the document and the attributes/constraints of the Site, it is SMA's opinion that air-sparging represents the BAT to achieve the remediation goals at the site. Below is a brief outline of why air-sparging is better for the Site than other available technologies.

- Pump and Treat This technology could provide a means of reducing the benzene levels at the site. However, it would not effect a significant reduction in the PNA levels at the site because these chemicals exist mostly as bound to small organic matter and soils beneath the site and are not readily water soluble. A reduction in PNAs would likely only occur within a small radius of influence around each extraction well, and the remediation would not be uniform across the site.
- In Situ Chemical Oxidation (ISCO)
 ISCO would likely serve to destroy much of the COCs present at the site. However, it generally is not uniformly effective and generally requires excavation and mixing of the soils at the site with the chemical oxidants. Furthermore, the introduction of additional chemicals near the set-back zone of the municipal well is of concern. Accordingly, the injection of ISCO is not a feasible solution at the Site.
- Enhanced In Situ Aerobic Bioremediation (EISAB)
 Air-sparging is a form of enhanced EISAB, which requires no further introduction of chemicals (other than air) near the municipal well set-back zone.



- Nutrient Addition for Enhanced In Situ Aerobic Bioremediation
 This method typically involves the injection of microbes, carbon sources
 (oils/fats/surfactants), and vitamins into the subsurface. This was proposed previously
 and rejected by the Illinois Pollution Control Board (IPCB). Again, this method would
 involve the injection of chemicals near and within the CWS set-back zones.
- In-Well Air Stripping/Groundwater Circulating Wells This method would effectively eliminate the benzene contamination migrating off the Site. However, the source area of petroleum hydrocarbon at the Site would remain unremediated and result in the operation of this system for a prolonged period of time. The PNAs present at the Site do not have appreciable vapor pressures, which means that they will not volatilize with air-stripping and would not be effectively remediated by this technology..
- Monitored Natural Attenuation
 This is effectively going on currently at the Site. SMA has presented figures showing the DO concentrations and COC concentrations at the site. These figures show that the indigenous microbes have depleted the DO at the source area while aerobically degrading the petroleum COCs there. Consequently, the existing DO levels are currently too low to effectively degrade the remaining contaminants to below the Class I GROs within the impacted area at the site. SMA believes that increasing the DO concentrations with air-sparging will allow further biodegradation of the hydrocarbon mass within the source area to a point where the Class I GROs can be met within groundwater on site in the existing groundwater monitoring network.
- Phytoremediation
 This treatment technology uses vegetation to breakdown COCs, and is not a feasible solution at the site because it cannot be implemented at the portion of the site where the great majority of the remaining petroleum hydrocarbon resides.
- Reactive Barriers
 This treatment technology would require that a large-scale excavation take place at the Site, and downgradient of the source zone (i.e. in the alley near the Canadian Pacific R.R. building) and would not reduce concentrations within the source area that currently exceed the Class I GROs. Additionally, the introduction of chemical oxidants would be necessary at the location of the barrier.
- Surfactant Enhanced Aquifer Remediation (SEAR)
 This method is similar to pump and treat, but requires the injection of a chemical surfactant to enhance COC recovery. This is not feasible near the municipal well setback zone and it is highly probable that a significant amount of the remaining hydrocarbon mass in the source area is smeared across the capillary fringe due to seasonal fluctuation of the water table. The AS technology will remediate the capillary fringe. It is questionable if surfactant circulation and removal will be effective in the capillary fringe.



- In Situ Thermal Treatment This method essentially heats the groundwater to the point that VOCs change phase to gaseous vapor and then are removed via vapor extraction within the source area. This method would be effective for benzene removal. However, the low volatilities and high boiling points of the PNAs would result in the technology being ineffective for these compounds.
- Two-Phase (Dual-Phase) Extraction This method removes both the vapors from the soil and the liquid COCs from the groundwater via an extraction well. This technology is typically used at sites with recoverable, separate-phase petroleum hydrocarbon and likely will not be effective in meeting the Class I GROs at the Site. Additionally, it will not effect the reduction of the PNAs for the reasons discussed above.

After reviewing and analyzing the list of potential technologies above, SMA believes that it has demonstrated that air sparging is the best available control technology for application at the Site.

Costs

The cost estimate below is based on the installation and operation of an Air Sparging system for a period of 2 years. The estimate is based on the installation of 12 – 15 air injection stingers via 1-inch diameter monitoring wells located within of the area(s) of concern on site. The full system installation and operation and maintenance for two years is also included.

| Took | Cost E | Estimate | | | | |
|----------------------|----------|-----------|--|--|--|--|
| Task | Low | High | | | | |
| System Installation | \$40,000 | \$65,000 | | | | |
| System O&M (2 Years) | \$40,000 | \$80,000 | | | | |
| Total | \$80,000 | \$145,000 | | | | |