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 15, 2017, pursuant to a prior Order of this Honorable Board, Blake Leasing Company, LLC – Real Estate Series as owner of Kirkland Quick Stop, submitted its list of likely exhibits for the May 23, 2017 Hearing on the above-captioned matter, a copy of such exhibits which are attached hereto and served upon you. .

Dated: May 15, 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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815-490-4900
chelsten@hinshawlaw.com

CERTIFICATE OF SERVICE

I, Charles F. Helsten, an attorney, certify that I have served the attached list of likely exhibits 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 15, 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

ILLINOIS POLLUTION CONTROL BOARD

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	)	(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 February 23, 2017, in response to the Illinois Environmental Protection Agency's January 26, 2017 Response to the Petitioner herein, as well as in response to Hearing Officer Brad Halloran's Order of February 14, 2017, Blake Leasing Company, LLC – Real Estate Series as owner of Kirkland Quick Stop, submits its Technical Memorandum in Support of the Use of Air Sparging at the Kirkland Quick Stop Site in Kirkland, Illinois, referred to in the Petitioner's January 5, 2017 Amended Petition, a copy of which Memorandum is attached and served upon you.

Dated: February 23, 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 Technical Memorandum on the named parties below via email and by certified mail, return receipt requested, by 5:00 p.m. on February 23, 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

Electronic Filing: Received, Clerk's Office 5/15/2017

ST. JOHN - MITTELHAUSER & ASSOCIATES

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TECHNICAL MEMORANDUM

Date: February 23, 2017

From: Ron St. John, Steve Swenson; St. John – Mittelhauser & Associates, Inc.

RE: Conceptual Approach to Remediate the Saturated Sand Unit through the use of Air Sparging at the Kirkland Quick Stop Site in Kirkland, Illinois

This Technical Memorandum has been developed to provide additional details related to the conceptual approach for the installation and operation of an air sparging system at the Site. The air sparge system works by injecting compressed air into the shallow groundwater below the Site to increase the dissolved oxygen (DO) content of that groundwater and increase the natural biological degradation of the petroleum products impacting the groundwater. The compressed air enters the groundwater system through a diffuser piped to the base and within each sparge well. The diffuser creates smaller air bubbles to maximize the surface area and contact with the groundwater in order to get greater diffusion of DO into the groundwater. Installing the diffuser to a depth of 15 feet below the water table results in greater lateral migration of the air away from the sparge points as the air bubbles migrate upward toward the water table. As the compressed air more completely mixes with the groundwater system, oxygen dissolves into the groundwater thereby increasing the DO content of the groundwater. The DO is then available for use by the microbial population in groundwater and is transported via groundwater flow downgradient from the air sparge well.

Analytical results of groundwater samples collected at the Site in August and November 2016 indicated aerobic biodegradation of the contaminants of concern are being hindered by the depletion of DO within the area of petroleum impacts. Therefore, the use of an air sparge system will increase the DO concentration within the area to fully aerobically biodegrade the residual concentrations of benzene and polynuclear aromatic hydrocarbons (PNAs) identified at certain wells on-site.

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CONCEPTUAL APPROACH

The conceptual approach for this Site consists of installing a total of 15 air sparge (AS) wells. The AS wells would be placed in areas identified during the August and November 2016 sampling events with low DO concentrations. The AS wells will be configured in three separate zones, each zone will contain four to six AS wells. The proposed locations of the AS wells are shown on Figure 1.

Each AS well will consist of a 1.5-inch diameter, 10-foot long, 0.010 slot PVC well screen coupled with a 1.5-inch PVC riser and locking cap. Compressed air will be injected into the groundwater system below the Site through a ¼ inch air supply line equipped with an air diffuser. The air supply line and air diffuser will be placed inside the AS well with the air diffuser set at a depth of approximately 1-foot from the base of the AS well. Each AS well will be fitted with a butterfly valve and pressure gage to monitor and control the volume of air being injected into the groundwater system. Finally, each AS well will be protected with an 8-inch diameter flush mount cover. Each AS well within a zone will be connected to a common air supply line and buried approximately 6 inches below ground surface. A schematic of a typical AS well is provided on Figure 2.

Compressed air will be provided by an air compressor. An air dryer and coalescing filter will be connected to the air supply line from the air compressor to remove any moisture, oil, or other contaminants that may impact the operation of the system. A manifold system will be used to distribute the compressed air to each of the three zones. Each zone will be controlled by a butterfly valve, a pressure regulator (to drop the air pressure from approximately 150 PSI to a usable 10-12 PSI) and a solenoid valve with controller to allow each zone to be cycled independently and at predetermined intervals. It is anticipated that each zone will operate for approximately 4 – 6 hours per day every 3 days. The system flow diagram is provided in Figure 3.

MONITORING AND SYSTEM MAINTENANCE

Upon installation of the system, SMA will make weekly visits to the Site for a period of one month. The purpose of the site visits is to conduct operation and maintenance (O&M) activities

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and system adjustments to ensure the air supply is being distributed equally across all AS wells within a zone. After the first month of operation, SMA will reduce the Site visits to once every two weeks.

To monitor overall system effectiveness, SMA will collect DO readings with a downhole probe during each site visit from those monitoring wells (not AS wells) with historically low concentrations of DO (i.e. <0.5 mg/l). The DO readings will be recorded and graphed over time to monitor the transportation of the DO via groundwater flow downgradient of the AS wells thereby facilitating the natural aerobic biodegradation of the site contaminants in groundwater.

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FIGURES

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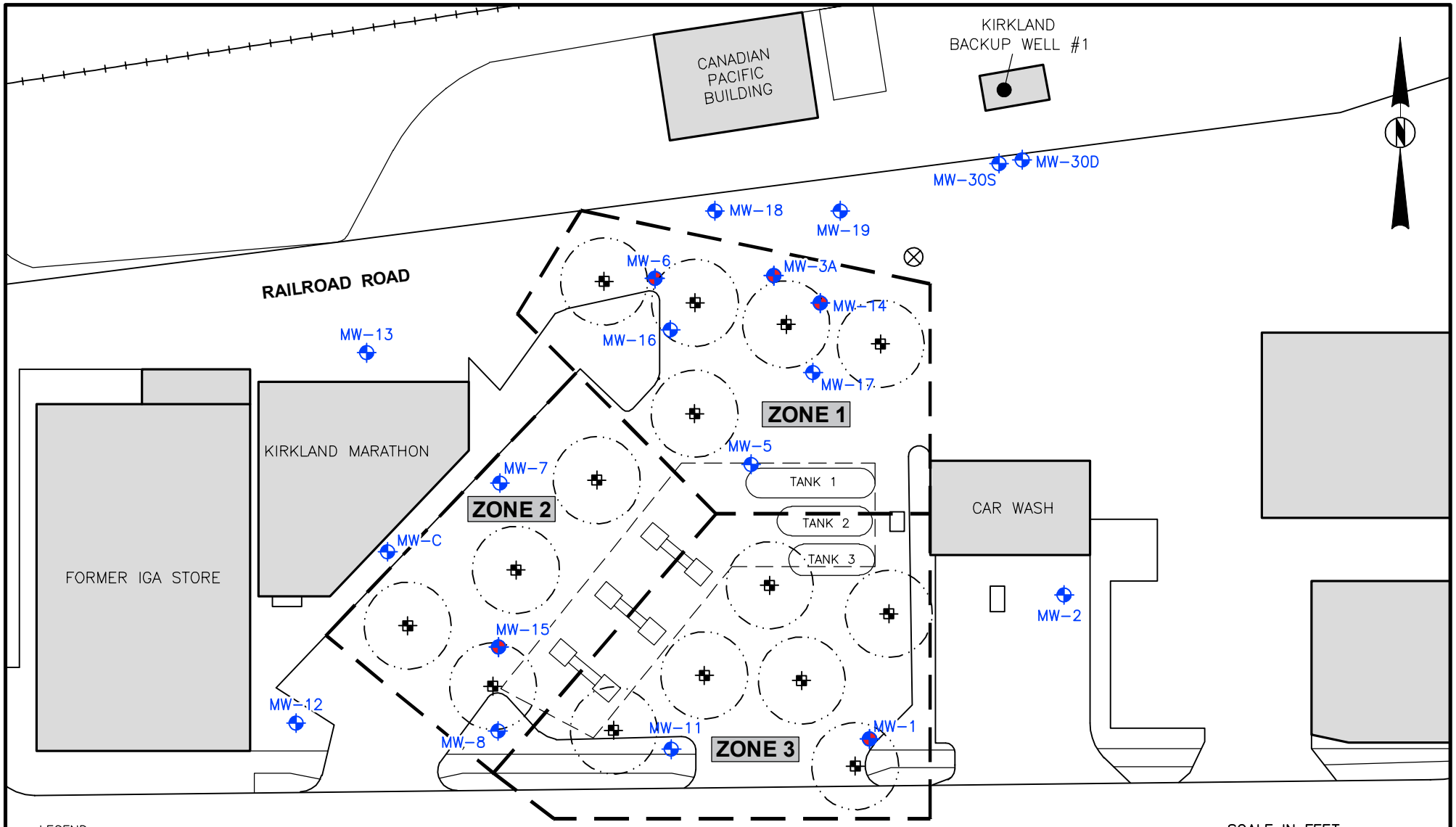

LEGEND

- MONITORING WELL LOCATION
- MONITORING WELL LOCATION THAT EXCEEDS GRO
- SOIL BORING LOCATION
- STORM SEWER LOCATION
- AIR SPARGING WELL
- ANTICIPATED RADIUS OF INFLUENCE

CHK BY	SRS
DWN BY	OS
DATE	2-20-17
SCALE	AS SHOWN
CAD NO.	16013.01J
PRJ NO.	15-16013

AIR SPARGING SYSTEM
CONCEPTUAL SITE MODEL

KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS

SM&A
ST. JOHN - MITTELHAUSER & ASSOCIATES

FIGURE
1

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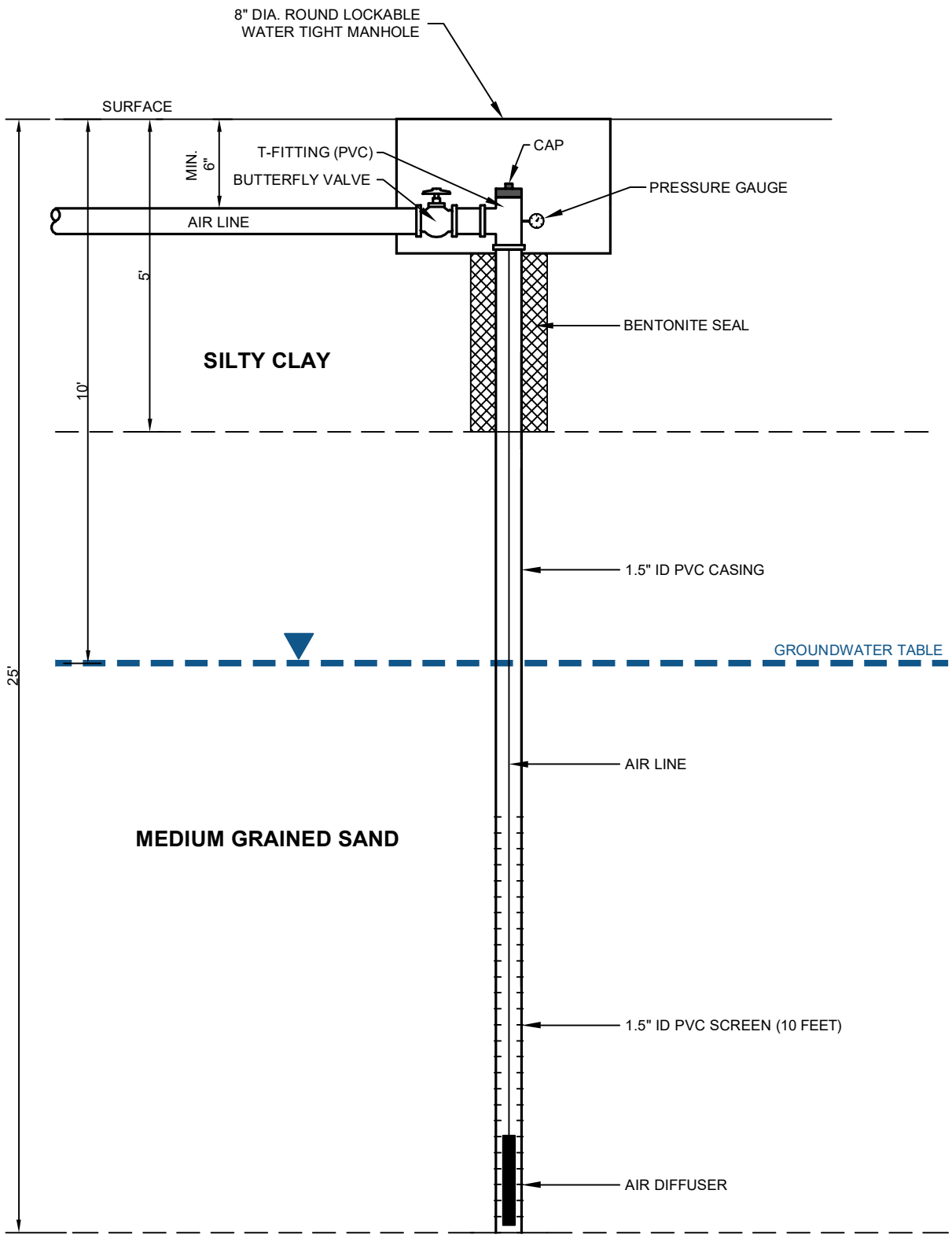


** NOT TO SCALE **

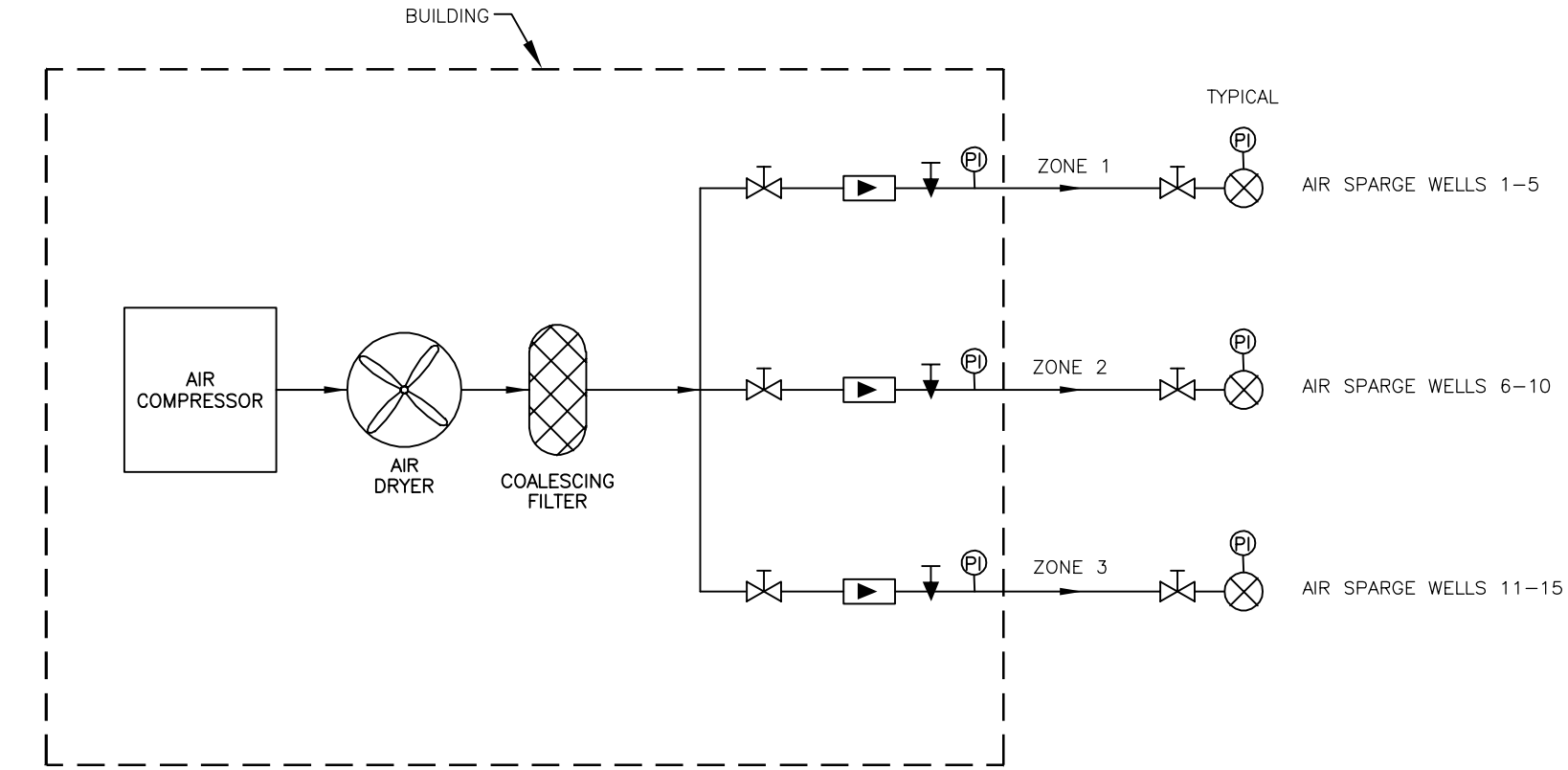
CHECK BY	SRS
DRAWN BY	OS
DATE	2–20–17
SCALE	N.T.S.
CAD NO.	16013.01L
PRJ NO.	15–16013

AIR SPARGE WELL CONSTRUCTION DIAGRAM

KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS

SM&A
St. John · Mittelhauser & Associates

FIGURE
2



LEGEND

- BUTTERFLY VALVE
- PI — PRESSURE INDICATOR
- AS WELL
- SOLENOID VALVE
- PRESSURE REGULATOR

CHK BY	SRS
DWN BY	OS
DATE	2–20–17
SCALE	AS SHOWN
CAD NO.	16013.01K
PRJ NO.	15–16013

SYSTEM FLOW DIAGRAM

KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS

SM&A
St. John · Mittelhauser & Associates

FIGURE
3

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 March 17, 2017, the Petitioner, Blake Leasing Company, LLC – Real Estate Series as owner of Kirkland Quick Stop, submits its Responses to Illinois Pollution Control Board's Questions of February 23, 2017, a copy of which are attached and served upon you.

Dated: March 17, 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 above Notice of Filing and attached Responses to Illinois Pollution Control Board's Questions of February 23, 2017 on the named parties below via email and by certified mail, return receipt requested, by 5:00 p.m. on March 17, 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

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.	)	

PETITIONER'S RESPONSES TO ILLINOIS POLLUTION CONTROL BOARD'S QUESTIONS OF FEBRUARY 23, 2017

NOW COMES Petitioner, Blake Leasing Company, LLC – Real Estate Series as owner of Kirkland Quick Stop, by and through its attorneys, Hinshaw & Culbertson, LLP, and submits its Responses to Illinois Pollution Control Board's Questions of February 23, 2017, which are attached hereto.

Dated: March 17, 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 above Responses to Illinois Pollution Control Board's Questions of February 23, 2017 on the named parties below via email and by certified mail, return receipt requested, by 5:00 p.m. on March 17, 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

ST. JOHN - MITTELHAUSER & ASSOCIATES

TECHNICAL MEMORANDUM

Date: March 17, 2017

From: Ron St. John, Steve Swenson; St. John – Mittelhauser & Associates, Inc.

RE: Written Responses to the Illinois Pollution Control Board Questions dated February 23, 2017 for Blake Leasing Company, LLC v. Illinois Environmental Protection Agency and Village of Kirkland; PCB 16-100 (Water Well Setback Exception).

In accordance with the Illinois Pollution Control Board (IPCB) order dated February 23, 2017, Blake Leasing is providing the following written responses to questions posed by the IPCB.

1. *The amended petition (Am. Pet.) states, "Active remediation was initially requested because it was believed that the Subject Property was located within the setback zone of the Village of Kirkland emergency backup water supply well, referred to as Well #11424, (Well #1) and the main Village supply well, referred to as Well #11425 (Well #2)." Am. Pet. at 2. It also asserts, "Testing results performed in August 2016 demonstrated and confirmed that both the area of residual contamination and the UST system owned and operated by the Petitioner are outside the minimum setback zone for Well #2, the primary Village Community Well." Am. Pet. at 3, 11. However, the Amended petition does not identify the applicable well or wells.*

   Blake must clearly state which well or wells require a water well setback exception pursuant to 415 ILCS 14.2(c).

   Response: Groundwater samples collected in August and November 2016, identified the presence of benzene and/or PNA constituents above their respective Tier 1, Class I Groundwater Remediation Objectives (GROs) in monitoring wells MW-1, MW-3A, MW-6, MW-14, and MW-15 that are located within the setback of the Emergency Backup Well #1 (11424). The groundwater sampling results for March 2017 were similar to the previous two sampling events, except that, there were no GROs exceeded in MW-14 and there were minor PNA concentrations that exceeded the GROs in MW-5 (located in more of the central portion of the site). The location of these monitoring wells is provided on Figure 1 that accompanies this Technical Memorandum. Note that Figure 1 is actually comprised of three figures related to the following sampling dates, Figure 1A (August 2016), Figure 1B (November/December 2016) and Figure 1C (March 2017). These figures will collectively be referred to as Figure 1 throughout the remainder of this Technical Memorandum unless one of the specific sampling dates is referenced.

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The more recent groundwater sampling performed by low-flow methods over the last three sampling events (August and November 2016 and March 2017) indicate that the monitoring wells closest to the Kirkland Emergency Backup Well #1, MW-30S and MW-30D, are not impacted by PNAs above the GROs. This data indicates that the PNA sample results in excess of the GROs from prior sampling events at wells MW-30S and MW-30D were the result of analyzing turbid samples and was caused by purging well volumes with bailers during sampling. This issue of turbid groundwater samples impacting the laboratory analytical results for PNAs is discussed in greater detail in the responses to IPCB question #7, below.

2. *Should the "Technical Report", Exhibit A to the amended petition, be dated January 5, 2017 rather than 2016?*

Response: Yes, the "Technical Report", Exhibit A to the amended petition should be dated January 5, 2017.

3. *Blake Leasing states that the proposed air sparging includes the installation of 12-15 air injection stingers via 1-inch diameter monitoring wells. Am. Pet. at 10, Exh. A. Att. C. Blake states, "the Petitioner will utilize the maximum feasible alternative setback as required by this Board to encompass and address the entire KQS site." Am. Pet. at 11. In its response (IEPA Resp.) IEPA explains, "the maximum feasible setback is considered to assure that the greatest possible distance between a potential source or potential route, and a potable well is maintained. In the case of injective remedial technologies, the maximum feasible distance is necessarily as close as the contaminants of remedial concern." IEPA Resp. at 8.*

   (a) *Consistent with the IEPA's response to Blake's amended petition, Blake must submit a map displaying the proposed air sparging system. IEPA Resp. at 8, 9. The map must delineate the number, location, and depth of each planned air sparging injection point along with the location and number of all potable water supply wells. If possible, the map should also overlay the areas of highest contaminant concentration.*

   Response:

   - The number and location of the planned air sparging wells, including the identification of monitoring wells exceeding their GROs are shown on Figure 1. The location of Emergency Backup Well #1 (11424) and its minimum setback is also identified on Figure 1.
   - A conceptual construction diagram of the proposed air sparging wells, including lithology, sparge interval, and total depth is shown on Figure 2 attached to this Technical Memorandum.

   (b) *Identify any wells, in addition to Municipal Water Supply Well #2 and Emergency Backup Well # 1, which require a water well setback exception. Provide precise information about the number, location, depth, and use for these additional wells.*

Response: The only potable water well that requires a water well setback exception is Emergency Backup Well #1. The area of groundwater impact and the proposed air sparging wells are outside the 400-foot setback of Municipal Water Supply Well #2. The locations of the Emergency Backup Well #1 and the Municipal Water Supply Well #2 are shown on Figure 3 of this Technical Memorandum.

The Village of Kirkland utilizes an additional well identified as Water Supply Well #3 for the distribution of water to the community on a routine basis. Water Supply Well #3 is located approximately 1.25 miles to the west of the Village and was drilled and connected to the Kirkland water system in 2005. Water Supply Wells #2 and #3 are used by the Village of Kirkland on a rotating basis to supply all water to the Village.

Potable water well records were obtained from the Illinois State Geological Survey (ISGS) and the Illinois State Water Survey (ISWS). Based on the well records, the only potable water well(s) within 1,000 feet of the Site are the Kirkland Emergency Backup Well #1 and Water Supply Well #2. Beyond 1,000 feet from the Site, the ISGS and ISWS records indicate that the nearest potable water well is located approximately 1,130 feet east-northeast of the Site.

In addition to the ISGS and ISWS, SMA contacted the Village of Kirkland Water Department[1] to identify any potable water wells not included in the ISGS and ISWS records. SMA was informed that there are only three addresses within the Village that do not have a water meter (and are not hooked up to the Village supplied water system) and have a private well. The locations for these three homes are identified on Figure 4. The closest of these three private water wells to the site is located approximately 900 feet to the south-southeast of the KQS site. The location of this private well is hydraulically upgradient in the upper, glaciofluvial aquifer from the KQS site and approximately 615 feet outside the setback of the Kirkland Backup Well #1 (11424) and 950 feet outside the setback of Kirkland Well #2 (11425). Logs for potable water wells #2 and #3 on Figure 4 were not available in either the ISGS or ISWS records.

(c) *Submit a legible well survey and clearly identify, by number, any potable water supply wells affected by the requested exception.*

Response: As discussed in item 3(b) above, the only potable water supply well that requires an exemption is Emergency Backup Well #1. The location of Emergency Backup Well #1, the 400-foot setback zone, and the KQS Site are provided on Figure 3.

(d) *Quantify, in feet, the maximum feasible alternative setback between the injection locations and Municipal Water Supply Well #2, Emergency Backup Well # 1, and any other potable wells for which setback requirements would be affected by the requested exception.*

[1] Personal Communication with Chris DeMunn, Kirkland Water Department, March 13, 2017.

Response: No air sparging wells will be installed within the 400-foot setback zone of Municipal Water Supply Well #2 so no setback exception is needed for this municipal water source. The maximum feasible alternative setback between the air sparging wells and Emergency Backup Well #1 is approximately 80 feet. The location of the proposed air sparging system with respect to the Emergency Backup Well #1 is shown on Figure 1.

4. *Explain why air sparging is the best available control technology for the Blake site over the previously proposed enhanced bioremediation with a detailed comparison of the two technologies.*

Response: In the Corrective Action Plan (CAP) submitted for the site in September 2015, enhanced bioremediation consisting of the injection of hydrocarbon degrading bacteria, an enzyme-based surfactant and nutrient product (OESI) and an oxygen releasing compound was proposed. The IEPA expressed concerns related to this proposed approach in its June 15, 2016 response, noting:

> *The BioRenova MSDS indicates the solution is composed of calcium peroxide (75% minimum) and calcium hydroxide (25% minimum). An internet search of those compounds indicates that their pH is 11.7 standard units ("SU") and 12.4 SU respectively. The MSDS for OESI indicates that pH over 11.7 is incompatible with this material.*

In addition, the IEPA questioned if enhanced bioremediation was the BAT, noting that from 2002 through 2009, bioremediation and oxygen releasing compounds were injected at the Site on multiple occasions for the purpose of groundwater remediation and had demonstrated little progress over those 7 years. Given these general facts, the comments on the part of IEPA are understandable. However, some clarifying details related to the previous bioremediation efforts at the site are provided below (through previously submitted reports and verbal communication with the prior consultant working at the KQS site [Trans Environmental, Ltd.]):

- During the bioremediation efforts from 2002 through 2009 at the site, hydrocarbon bacterial agent was injected into wells MW-3A, MW-5, MW-6 and MW-8 (and likely others) within the area of the site that exhibited benzene and PNA impacts in groundwater.
- Oxygen Release Compound (ORC) socks were installed in some wells at the site.
- Water was withdrawn from some impacted wells at the site through use of a vacuum truck.

A review of these methodologies employed from 2002 through 2009 indicates that they are not likely to have been successful for the following reasons:

- The injection of a petroleum hydrocarbon biological inoculum or agent into monitoring wells within the impacted area of the site was not appropriate because SMA has subsequently determined that the groundwater there is

depleted of dissolved oxygen and the microorganisms would likely have all died shortly after injection. Moreover, there is no record that Trans Environmental, Ltd. ever measured dissolved oxygen concentrations in groundwater at the site, and it is unlikely that it could have effectively made these determinations because it sampled wells by bailer method and purging volumes. Additionally, numerous studies have shown that hydrocarbon-degrading microorganisms are ubiquitous in the subsurface and are capable of degrading a broad range of petroleum hydrocarbons, and that indigenous microorganisms have a distinct advantage over injected microorganisms because they are well adapted to the physical and chemical conditions in the subsurface where they inherently reside. As a result, attempts to enhance petroleum hydrocarbon biodegradation often meet with less than anticipated success.[2]

- It appears that ORC socks were hung in certain non-impacted monitoring wells at the site in an attempt to increase the dissolved oxygen concentrations in groundwater. These efforts were likely to have been unproductive since they would rely on the diffusion of the ORC from a few 2-inch monitoring wells to supply sufficient dissolved oxygen to the entire zone experiencing depleted dissolved oxygen conditions at the site (approximately 20,000 ft^2 in size) and would rely on only the natural groundwater flow to distribute that dissolved oxygen. Since diffusion in groundwater is a very weak process, the distribution of dissolved oxygen from these socks would only result in narrow bands of dissolved oxygen moving downgradient from the monitoring wells where they are installed with little lateral spreading and little overall impact on the depleted dissolved oxygen area.

- Pumping and treating groundwater is often used to contain impacted groundwater at sites but is generally be understood to be ineffective at remediating sites. Randomly vacuuming undetermined amounts of impacted groundwater from monitoring wells at the site is unlikely to have had much impact on the overall amount of petroleum hydrocarbon in the subsurface at the site.

A review of the analytical data collected by SMA at the KQS site indicates aerobic biodegradation of the contaminants of concern is being hindered by the depletion of dissolved oxygen within the area of impact as shown on Figures 1. This indicates that the constituents of concern are undergoing aerobic biodegradation where dissolved oxygen is available to indigenous, naturally occurring microorganisms in groundwater. These microorganisms biodegrade the petroleum hydrocarbons when sufficient dissolved oxygen concentrations are available. The lack of further benzene and PNA migration in groundwater to downgradient locations from the site is attributable to the general availability of dissolved oxygen in the shallow glacial groundwater outside the depleted zone on site.

Air sparging is a proven remediation technology to increase the dissolved oxygen in the groundwater at Sites with relatively consistent, coarse-grained sediments, an aquifer thickness greater than 5 feet, and where the water table is greater than 5 feet below the

[2] Wiedemeier, T.H., H.S. Rifai; C.J. Newell and J.T. Wilson. 1999. Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface; John Wiley & Sons.

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ground surface.[3] All of these characteristics are present at the Site. In addition, air sparging offers the following advantages over the previously proposed use of enhanced bioremediation:

- Providing a relatively continuous supply of naturally occurring air to rapidly increase and maintain the dissolved oxygen content within the groundwater below the Site, thereby promoting the biodegradation of the hydrocarbons by indigenous bacteria.
- Is well-suited to the petroleum-based contaminants and the coarse-grained layer that exists beneath the surficial silt/clay layer at the Site.
- Is a proven technology to remediate the residual concentrations of benzene and PNAs in the groundwater to meet their respective 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.
- Requires minimal cost when compared to other remedial options.

5. *Provide a detailed justification for the placement of the air sparging wells in relation to the areas of contamination at the Blake site. How does placement of the air sparging wells address the plume of contamination at the site?*

Response: The air sparging system will consist of 3 zones, each with 4 – 6 air sparging wells (15 air sparging wells total). The proposed air sparging well locations at the site can be reviewed on Figure 1. The basis for the air sparging well locations are:

- Located within areas of the Site where dissolved oxygen measurements indicate the dissolved oxygen content of the groundwater below the Site is <0.5 mg/l.
- Located in close proximity to the area of contaminant impact (monitoring wells MW-1, MW-3A, MW-6, MW-14, and MW-15).

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

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6. *Indicate whether IEPA will require Blake Leasing to obtain an Underground Injection Control Permit for Class V injection wells pursuant to 35 Ill. Adm. Code 704.147.*

Response: Yes, upon approval of this petition by the IPCB, Blake Leasing will obtain an Underground Injection Control Permit for Class V Injections wells pursuant to 35 IAC 704.147. A copy of the Class V Injection Well Permit will be included in the Amended Corrective Action Plan & Budget submitted to the Illinois EPA LUST Section.

7. *Elaborate on the conclusion that "turbidity is likely to have caused the low level detections of PNA compounds slightly above Class I GROs". Am. Pet. Exh. A at 7-8.*

(a) *Provide additional sampling reports to support this conclusion, if available.*

Response: It is known that the aqueous solubility of PNAs (a subset of polycyclic aromatic hydrocarbons, or PAHs) decreases with increasing molecular weight of the PNA in question, and that PNAs are considered hydrophobic or insoluble in aqueous solutions.[4,5] As a result, the mobility of PNAs in the subsurface is the result of adsorption onto sediment particles which are *suspended* in the groundwater; the PNAs are not actually *dissolved* in the groundwater.[6,7] Many studies have shown that the increased turbidity observed in surface waters (i.e. a flooded river) after a precipitation event is also coupled with an increased hydrophobic organic pollutant load (i.e. PNAs) within the water body.[8] This happens because the PNAs are actually bound to the sediment particles entering the water body due to run-off.[9] The same holds true for groundwater, where an increase in the turbidity of a well (due to improper development, a disturbance, or the absence of a properly installed sand filter-pack), is often coupled with an increase in the observed levels of PNAs in the well. This has been observed at the Kirkland Site in wells MW-30S and MW-30D as can be seen from a review of Table 1, below.

Date Sampled	MW-30S		MW-30D	
	Turbidity (NTU)	PNA Levels	Turbidity (NTU)	PNA Levels
3-Aug-16	101.98	< Class I GROs	56.85	< Class I GROs
15-Nov-16	520.53	**> Class I GROs**	113.38	**> Class I GROs**
23-Dec-16	5.1	< Class I GROs	8.42	< Class I GROs
7-Mar-17	7.8	< Class I GROs	7.9	< Class I GROs

Table 1: Sampling events for MW-30S and MW-30D showing turbidity versus Class I GRO exceedances for PNAs.

[4] J. Masih et al. Aerosol and Air Quality Res., **12**, (2012), p 515 -525.
[5] J. Masih et al. J. Hazardous Mater., **177**, (2010), p 190-198.
[6] J.C. Means et al. Science, **215** (1982), p 968-970.
[7] R.P. Schwarzenbach et al. Environmental Organic Chemistry, John Wiley and Sons, Inc, 1993.
[8] See Rugner et el. Science of the Total Environment, **490**, (2014), p 191-198., and associated citations.
[9] K. Schwarz et al. Environmental Pollution **159**, (2011), p 133-139.

The November 2016 sampling event conducted by SMA resulted in samples with elevated turbidity levels in MW-30S and MW-30D, which also corresponded to PNA concentrations that slightly exceeded the GROs. However, if the above table is examined, it is clear that when these wells were re-sampled in December 2016 and greater care was taken to ensure that the turbidity levels of samples was kept low, the PNA GROs were not exceeded.

(b) *If no additional sampling reports exist, comment on an exception condition requiring such sampling as a part of the remediation plan.*

Response: See response to 7a above. Ample data exists to support our assertion regarding the positive and direct correlation between turbidity and PNA concentrations.

(c) *What techniques will sampling technicians employ to "be watchful of turbidity during future sampling events"? Am. Pet. Exh. A at 8.*

Response: As noted above, prior environmental consultants on the Site conducted groundwater sampling using bailers to both purge and sample the wells. Sampling the wells in this fashion leads to the disturbance of the sediments surrounding the screened interval of the well, and has the potential to yield turbid samples and sediment/silt build-up in the bottom of the well. As described above in point 7(a) above, this also has the potential to increase the number of wells showing exceedances of the GROs for PNA concentrations. In fact, during the first sampling event that SMA conducted and in anticipation of using low-flow sampling methods, SMA personnel recorded the total depths for the site wells. This showed that many of the wells had multiple feet of sediment build up (relative to their completion depths) due to years of siltation that likely resulted from continuous bailer usage.

In the future, SMA will only use low-flow sampling techniques in order to collect groundwater samples at the Site. During low-flow sampling, the instrument records groundwater quality parameters (dissolved oxygen, specific conductivity, temperature, pH, dissolved oxygen, oxidation reduction potential, and turbidity) which are observable by sampling personnel in real-time. When purging initially commences, the turbidity readings are often higher due to the disturbance of the low-flow pump having been recently lowered into the well. Consequently, groundwater samples will not be acquired before the turbidity readings have returned to a lower level.

8. *Regarding groundwater monitoring:*

(a) *Describe, in detail, how Blake will determine if the air sparging is successful. List and explain the criteria that will be used to make that determination?*

Response: Currently there are 12 monitoring wells on site that exhibit depleted dissolved oxygen conditions: MW-1, MW-2, MW-3A, MW-5, MW-6, MW-7, MW-8, MW-11, MW-13, MW-14, MW-15, and MW-C. All these wells have

exhibited dissolved oxygen concentrations of less than 0.5 mg/L. A review of Figure 1 indicates that the proposed air sparging system wells are in the immediate vicinity of these 12 monitoring wells or hydraulically upgradient from them. As a result, the initial criteria for monitoring the success of the air sparging system will be increased dissolved oxygen concentrations in the groundwater at these 12 wells that currently exhibit depleted dissolved oxygen concentrations.

All of the monitoring wells at the Site have been and will continue to be sampled for BTEX and PNAs using low flow technologies on a quarterly basis. During groundwater sampling, field parameter data, including pH, conductivity, temperature, dissolved oxygen, redox potential, and turbidly will be collected. In addition, during system maintenance of the air sparging system, dissolved oxygen measurements will be collected from select monitoring wells, including MW-12 (upgradient /background), MW-1, MW-3A, MW-6, MW-14, and MW-15 (within the area of impact), and MW-30 / MW-30D (downgradient). To obtain these dissolved oxygen measurements, a peristaltic pump will be utilized to simulate low flow purging of the well and insure a representative sample of the glaciofluvial groundwater is acquired and a downhole dissolved oxygen probe will be utilized to collect the data. This dissolved oxygen data collection will be performed at least once a month for the first six months and on an as needed basis thereafter. It is anticipated that these dissolved oxygen measurements will allow better balancing and operation of the air sparging system.

An increase in the dissolved oxygen of the five monitoring wells within the area of impact will indicate that conditions have been made favorable for aerobic biodegradation to occur. The primary success of the air sparging system will be based on quarterly groundwater sampling of the site monitoring wells. SMA expects to observe significant improvement in the groundwater quality within the first year of groundwater sampling after the dissolved oxygen concentrations within the source area are consistently realized above 1 mg/L.

(b) *Provide comprehensive information about the potential for contaminant rebound after the air sparging has begun.*

Response: It is assumed that this comment was intended to ask about the potential for contaminant rebound after the air sparging system is shut off, and considering this, it is possible that there could be contaminant rebound to concentrations exceeding the GROs once the air sparging system is shut off. Should a confirmed exceedance occur, air sparging will be resumed until four consecutive quarters of groundwater samples demonstrate compliance after the system is shut off.

(c) *Explain how long Blake anticipates remediation will take?*

Response: It is anticipated that it may take 6 to 12 months for dissolved oxygen levels to consistently be sustained above 1 mg/L within the treatment zone. After sustaining consistently elevated dissolved oxygen levels in the groundwater, SMA anticipates the GROs will be achieved within six months. After that, it is

anticipated that four consecutive quarters of groundwater sampling will be required to demonstrate compliance with GROs . As a result, SMA estimates that it will likely take 24 to 30 months to complete the entire remediation process.

(d) *Comment on an exception condition requiring a minimum of four consecutive quarters of groundwater sampling to demonstrate compliance with the Groundwater Remediation Objectives after the air sparging injections have been discontinued.*

Response: Blake Leasing, LLC – Real Estate Series believes it is reasonable to demonstrate compliance with the Groundwater Remediation Objectives for four consecutive quarters of groundwater sampling after the air sparging has been discontinued, with remediation of the Site then being considered complete.

(e) *Explain whether the air sparging injections may change the character of the groundwater supply for the Village of Kirkland.*

Response: Only ambient air will be injected into the groundwater system below the Site to promote natural aerobic degradation of the benzene and PNAs. Therefore, no changes to the character of the groundwater supply for Kirkland are anticipated. Additionally, the Village of Kirkland wells are completed into the bedrock units below the site to a depth of between 630 feet and 737 feet below the surface grade and have surface casings that extend through the unconsolidated glacial deposits well into the bedrock. Based on these well completion details and the hydraulic testing performed by SMA at the site, SMA believes there is no direct hydraulic connection between the bedrock and glacial units at the site.[10]

9. *Regarding well closure:*

(a) *Indicate whether the air sparging wells will be abandoned and sealed after receipt of the NFR letter from IEPA.*

Response: Upon receipt of the NFR letter from the IEPA, Blake Leasing will abandon all monitoring and air sparging wells at the Site in accordance with the Illinois Department of Public Health and the DeKalb County Health Department requirements. Upon completion, well abandonment forms will be completed and submitted to the DeKalb County Health Department.

(b) *Comment on an exception condition requiring the wells to be properly abandoned and sealed upon IEPA's issuance of a NFR letter.*

Response: Please see response to item 9 (a) above.

[10] 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; St. John – Mittelhauser & Associates, Inc. January 5, 2017.

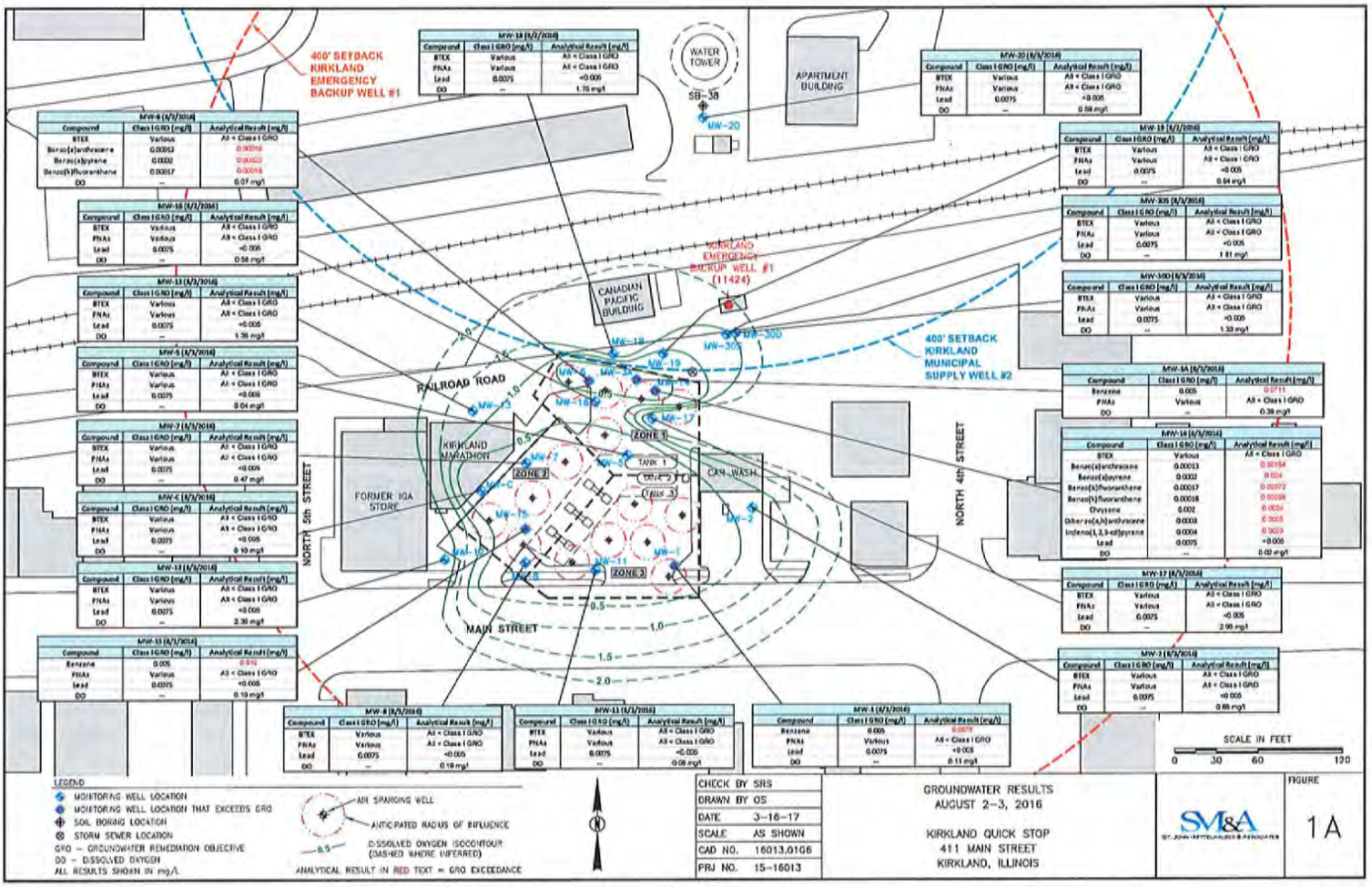
ST. JOHN - MITTELHAUSER & ASSOCIATES

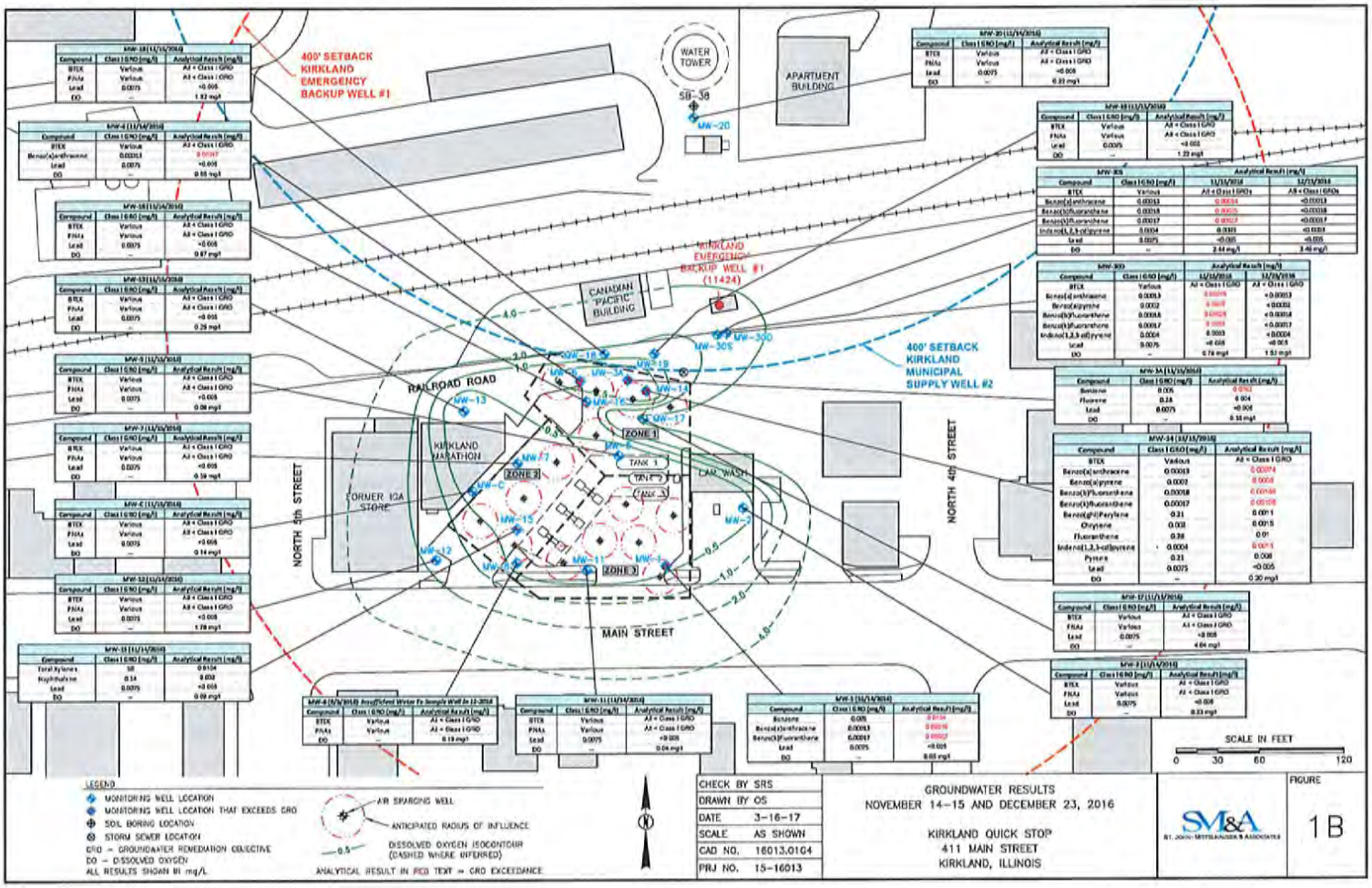
(c) *Comment on an exception condition terminating the water well setback exception automatically upon IEPA's issuance of a NFR letter.*

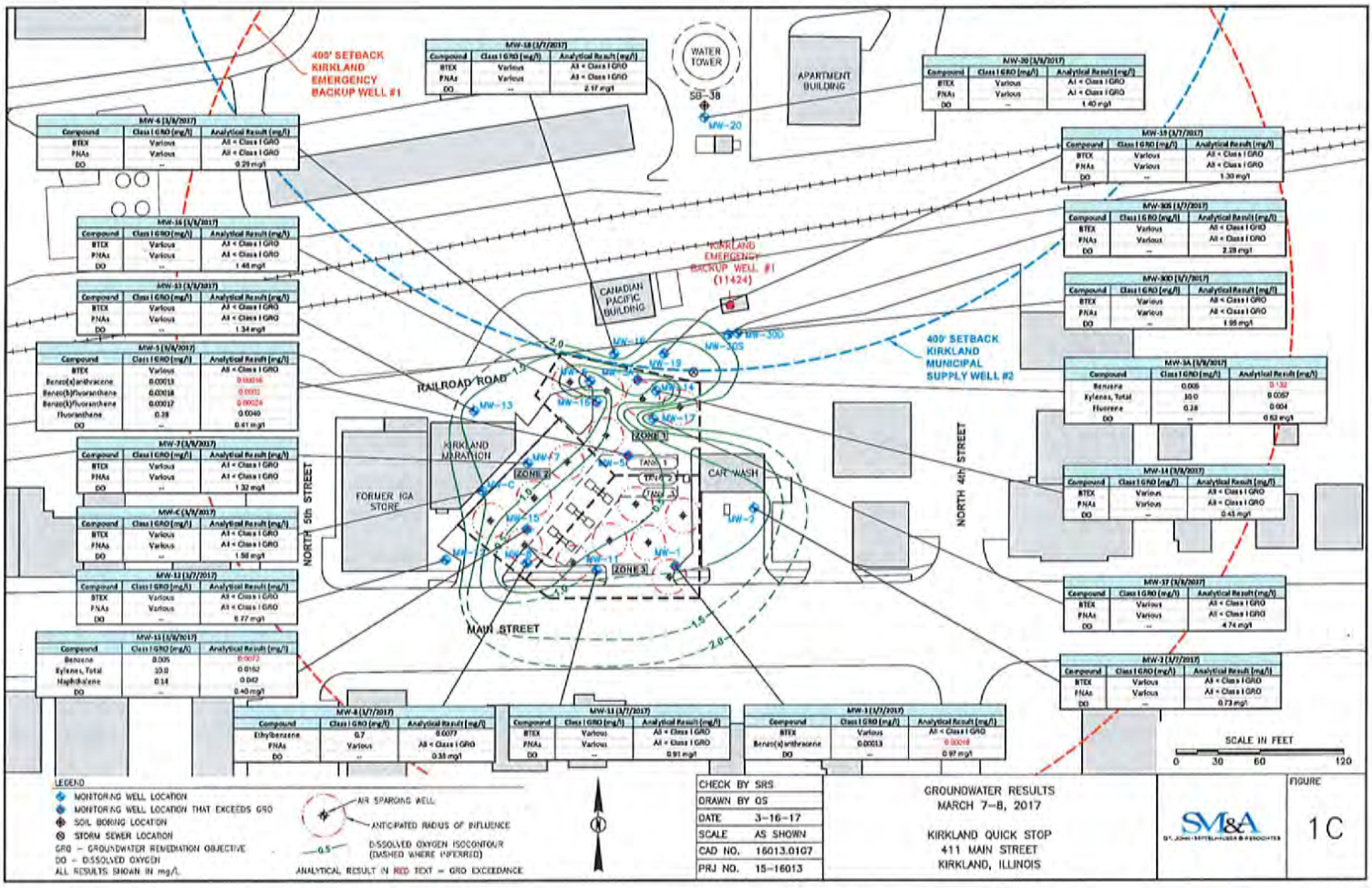
Response: Blake Leasing concurs that the exception condition for the water well setback exception for the air sparging wells be automatically terminated upon IEPA's issuance of an NFR letter.

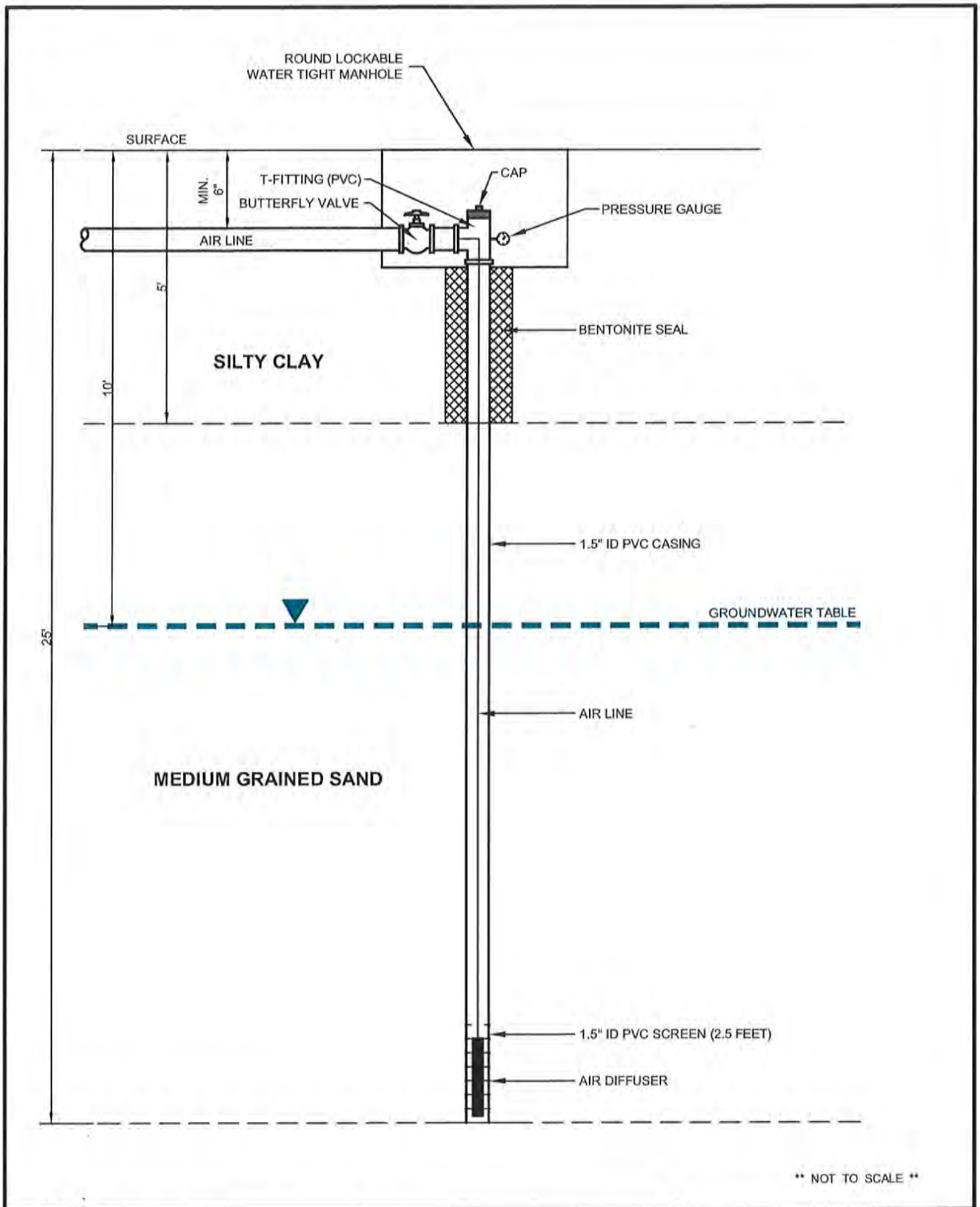
SM&A
ST. JOHN - MITTELHAUSER & ASSOCIATES

FIGURES


400' SETBACK KIRKLAND EMERGENCY BACKUP WELL #1
WATER TOWER
SB-38
MW-20
APARTMENT BUILDING
KIRKLAND EMERGENCY BACKUP WELL #1 (11424)
CANADIAN PACIFIC BUILDING
MW-30D
MW-30S
400' SETBACK KIRKLAND MUNICIPAL SUPPLY WELL #2
RAILROAD ROAD
KIRKLAND MARATHON
FORMER IGA STORE
CAR WASH
NORTH 5th STREET
NORTH 4th STREET
MAIN STREET
ZONE 1
ZONE 2
ZONE 3
TANK 1
TANK 2
TANK 3
SCALE IN FEET
0 30 60 120
LEGEND
MONITORING WELL LOCATION
MONITORING WELL LOCATION THAT EXCEEDS GRO
SOIL BORING LOCATION
STORM SEWER LOCATION
GRO – GROUNDWATER REMEDIATION OBJECTIVE
DO – DISSOLVED OXYGEN
ALL RESULTS SHOWN IN mg/L
AIR SPARGING WELL
ANTICIPATED RADIUS OF INFLUENCE
DISSOLVED OXYGEN ISOCONTOUR (DASHED WHERE INFERRED)
ANALYTICAL RESULT IN RED TEXT = GRO EXCEEDANCE
CHECK BY SRS
DRAWN BY OS
DATE 3-16-17
SCALE AS SHOWN
CAD NO. 16013.01G6
PRJ NO. 15-16013
GROUNDWATER RESULTS
AUGUST 2-3, 2016
KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS
SMA
FIGURE
1A

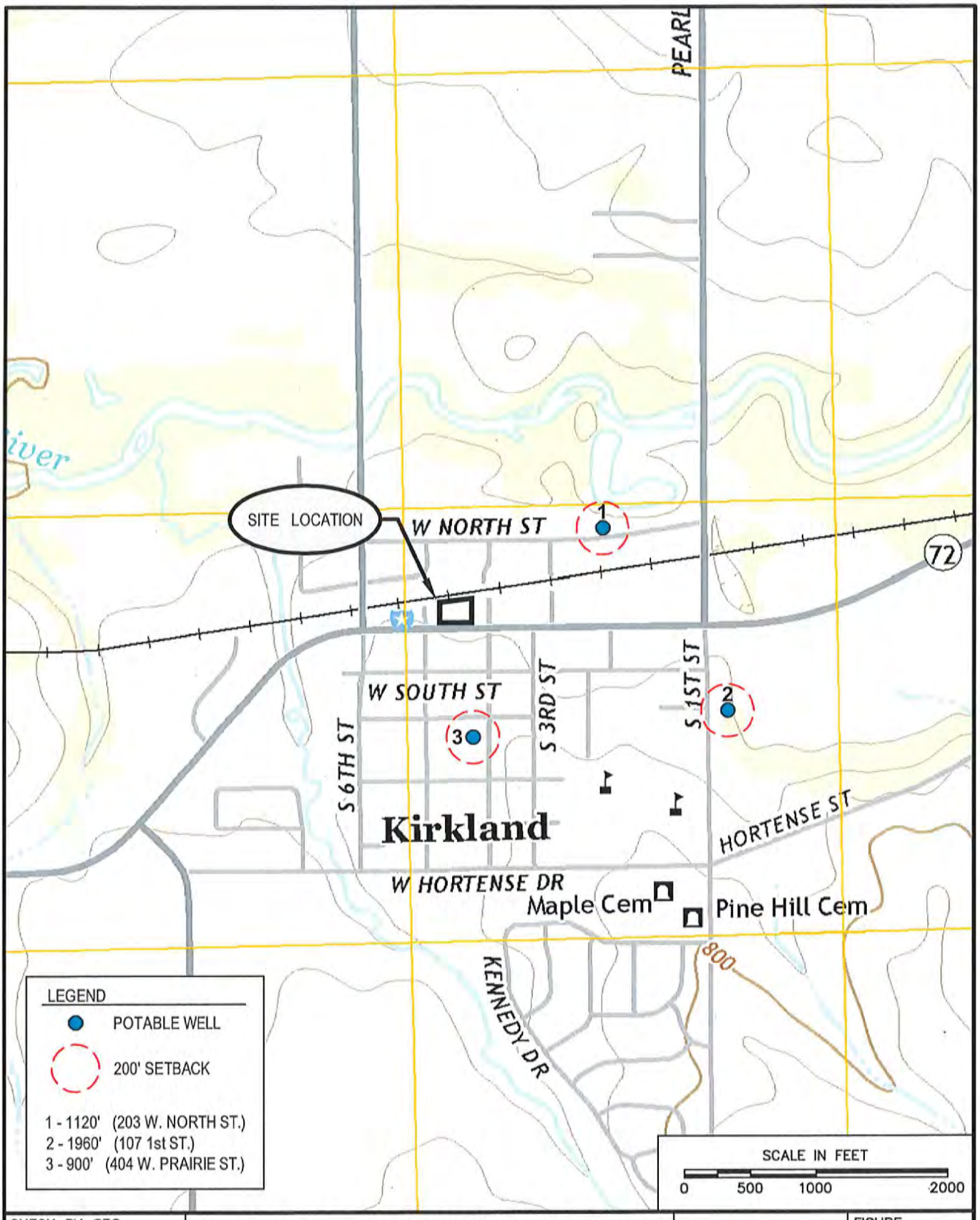

400' SETBACK
KIRKLAND
EMERGENCY
BACKUP WELL #1
WATER TOWER
APARTMENT BUILDING
SB-38
MW-20
KIRKLAND EMERGENCY BACKUP WELL #1 (11424)
CANADIAN PACIFIC BUILDING
MW-30S
400' SETBACK
KIRKLAND
MUNICIPAL
SUPPLY WELL #2
RAILROAD ROAD
KIRKLAND MARATHON
FORMER IGA STORE
CAR WASH
TANK 1
TANK 2
TANK 3
ZONE 1
ZONE 2
ZONE 3
NORTH 5th STREET
NORTH 4th STREET
MAIN STREET
MW-1
MW-2
MW-3
MW-3A
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19
SCALE IN FEET
0 30 60 120
LEGEND
MONITORING WELL LOCATION
MONITORING WELL LOCATION THAT EXCEEDS CRO
SOIL BORING LOCATION
STORM SEWER LOCATION
CRO = GROUNDWATER REMEDIATION OBJECTIVE
DO = DISSOLVED OXYGEN
ALL RESULTS SHOWN IN mg/L
AIR SPARGING WELL
ANTICIPATED RADIUS OF INFLUENCE
DISSOLVED OXYGEN ISOCONTOUR (DASHED WHERE INFERRED)
ANALYTICAL RESULT IN RED TEXT = CRO EXCEEDANCE
CHECK BY SRS
DRAWN BY OS
DATE 3-16-17
SCALE AS SHOWN
CAD NO. 16013.01G4
PRJ NO. 15-16013
GROUNDWATER RESULTS
NOVEMBER 14-15 AND DECEMBER 23, 2016
KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS
SM&A
FIGURE
1B


400' SETBACK KIRKLAND EMERGENCY BACKUP WELL #1
WATER TOWER
APARTMENT BUILDING
SB-38
MW-20
KIRKLAND EMERGENCY BACKUP WELL #1 (11424)
CANADIAN PACIFIC BUILDING
MW-30D
MW-30S
400' SETBACK KIRKLAND MUNICIPAL SUPPLY WELL #2
RAILROAD ROAD
KIRKLAND MARATHON
FORMER IGA STORE
CAR WASH
NORTH 5th STREET
NORTH 4th STREET
MAIN STREET
ZONE 1
ZONE 2
ZONE 3
TANK 1
TANK 2
TANK 3
SCALE IN FEET
0 30 60 120
LEGEND
MONITORING WELL LOCATION
MONITORING WELL LOCATION THAT EXCEEDS GRO
SOIL BORING LOCATION
STORM SEWER LOCATION
GRO - GROUNDWATER REMEDIATION OBJECTIVE
DO - DISSOLVED OXYGEN
ALL RESULTS SHOWN IN mg/L
AIR SPARGING WELL
ANTICIPATED RADIUS OF INFLUENCE
DISSOLVED OXYGEN ISOCONTOUR (DASHED WHERE INFERRED)
ANALYTICAL RESULT IN RED TEXT = GRO EXCEEDANCE
CHECK BY SRS
DRAWN BY GS
DATE 3-16-17
SCALE AS SHOWN
CAD NO. 16013.0107
PRJ NO. 15-16013
GROUNDWATER RESULTS
MARCH 7-8, 2017
KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS
SM&A
FIGURE
1C



CHECK BY SRS	AIR SPARGE WELL CONSTRUCTION DIAGRAM	SM&A St. John | Mittelhauser & Associates	FIGURE
DRAWN BY OS			
DATE 3-16-17	KIRKLAND QUICK STOP		2
SCALE N.T.S.	411 MAIN STREET		
CAD NO. 16013.01L2	KIRKLAND, ILLINOIS		
PRJ NO. 15-16013			


AGRICULTURAL
WEST NORTH STREET
NORTH 4th STREET
MW-31
KIRKLAND MUNICIPAL SUPPLY WELL #2 (11425)
400' SETBACK KIRKLAND MUNICIPAL SUPPLY WELL #2
WATER TOWER
APARTMENT BUILDING
SB-3B
MW-20
KIRKLAND EMERGENCY BACKUP WELL #1 (11424)
CANADIAN PACIFIC BUILDING
MW-30D
MW-30S
RAILROAD ROAD
MW-18
MW-6
MW-3A
MW-19
MW-13
MW-16
MW-14
MW-17
KIRKLAND MARATHON
MW-5
TANK 1
TANK 2
TANK 3
CAR WASH
MW-7
MW-C
MW-15
MW-2
FORMER IGA STORE
MW-12
MW-11
MW-1
MW-8
NORTH 4th STREET
400' SETBACK KIRKLAND EMERGENCY BACKUP WELL #1
MAIN STREET
NORTH 5th STREET
SCALE IN FEET
0 30 60 120
LEGEND
MONITORING WELL LOCATION
SOIL BORING LOCATION
STORM SEWER LOCATION
TANK 1: 4,000/3,000-GAL. PREMIUM
TANK 2: 10,000-GAL. REGULAR
TANK 3: 8,000-GAL. DIESEL
CHECK BY: CC
DRAWN BY: OS
DATE: 3-16-17
SCALE: AS SHOWN
CAD NO.: 16013.01E
PRJ NO.: 15-16013
SM&A
ST. JOHN · MITTELHAUSER & ASSOCIATES
KIRKLAND WELLS #1 AND #2 AND 400 FOOT SETBACK ZONES
KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS
FIGURE
3



CHECK BY	SRS
DRAWN BY	OS
DATE	3-16-17
SCALE	N.T.S.
CAD NO.	16013.01N
PRJ NO.	15-16013

HOMES WITHIN THE VILLAGE OF KIRKLAND THAT HAVE POTABLE WELL WATER SUPPLIES

KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS

SM&A
ST. JOHN · MITTELHAUSER & ASSOCIATES

FIGURE
4

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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.	)	

AMENDED NOTICE OF FILING

To: See Attached Certificate of Service

PLEASE TAKE NOTICE that on April 24, 2017, the Petitioner, Blake Leasing Company, LLC – Real Estate Series as owner of Kirkland Quick Stop, submits its Response to IEPA's March 23, 2017 Response and Comments, along with Cost Estimates for Proposed Revised Remedial Activities, a copy of which is attached and served upon you.

Dated: April 24, 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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815-490-4900
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CERTIFICATE OF SERVICE

I, Charles F. Helsten, an attorney, certify that I have served the above Amended Notice of Filing and attached Response to IEPA's March 23, 2017 Response and Comments, along with Cost Estimates for Proposed Revised Remedial Activities, via email and 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

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ST. JOHN - MITTELHAUSER & ASSOCIATES

TECHNICAL MEMORANDUM

Date: April 21, 2017

From: Ron St. John, Steve Swenson; St. John – Mittelhauser & Associates, Inc.

RE: Written Responses to the Illinois EPA's Response dated March 23rd, 2017 to the Petitioner's Responses to the Illinois Pollution Control Board Questions for Blake Leasing Company, LLC v. Illinois Environmental Protection Agency and Village of Kirkland; PCB 16-100 (Water Well Setback Exception)

Blake Leasing, LLC - Real Estate Series is providing the following written responses to the Illinois EPA response dated March 23, 2017.

In its response to the Board Question 1, Blake responds that injection wells will only be located within the setback zone of Well #1 (11424). Referring to Figure 1a, the Agency notes that monitoring wells MW-1 and MW-15, which have exceedances of remedial objectives, have injection wells both up gradient and down gradient of their locations. However, MW-3a, MW-12 and MW-6, which have higher concentrations of contaminants and consistently exceed remedial objectives do not have injection wells immediately down gradient of their locations. The Agency acknowledges that much of the Blake property where the injection wells are proposed has low dissolved oxygen (DO) concentrations, however, the majority of monitoring wells in that area do not have exceedances of remedial objectives. Even though MW-18 has higher levels of DO, MW-19 periodically falls below the 1.0 mg/L DO that Blake has established as the threshold for natural biologic action to take place. The Agency also recognizes that Blake's property ends just north of MW-3a, MW-14 and MW-6. Blake has installed monitoring wells between its property and railroad property, therefore Blake appears to have access to this area. The Agency believes that it is defensible to install injection wells in the same area. […] The Agency is aware that installation of injection wells in this area may be within the setback zone of Well #2 (11425). The Agency believes that Blake has presented information that adequately demonstrates the safety and likely efficacy of the proposed air sparging. In the interest of achieving remediation goals as has been proposed, the Agency fully supports the installation of these injection wells within the setback zones of both Wells #1 (11424) and #2 (11425), as needed to meet those goals.

Response: Blake Leasing agrees with the assessment of the proposed air sparging system for the Kirkland Quick Stop Site (KQS) performed by the Agency in its response letter dated March 23rd, 2017. As a result, Blake Leasing has incorporated the recommendations made by the Agency into the current air

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Phone: (630) 427-8100 Fax: (630) 427-8129

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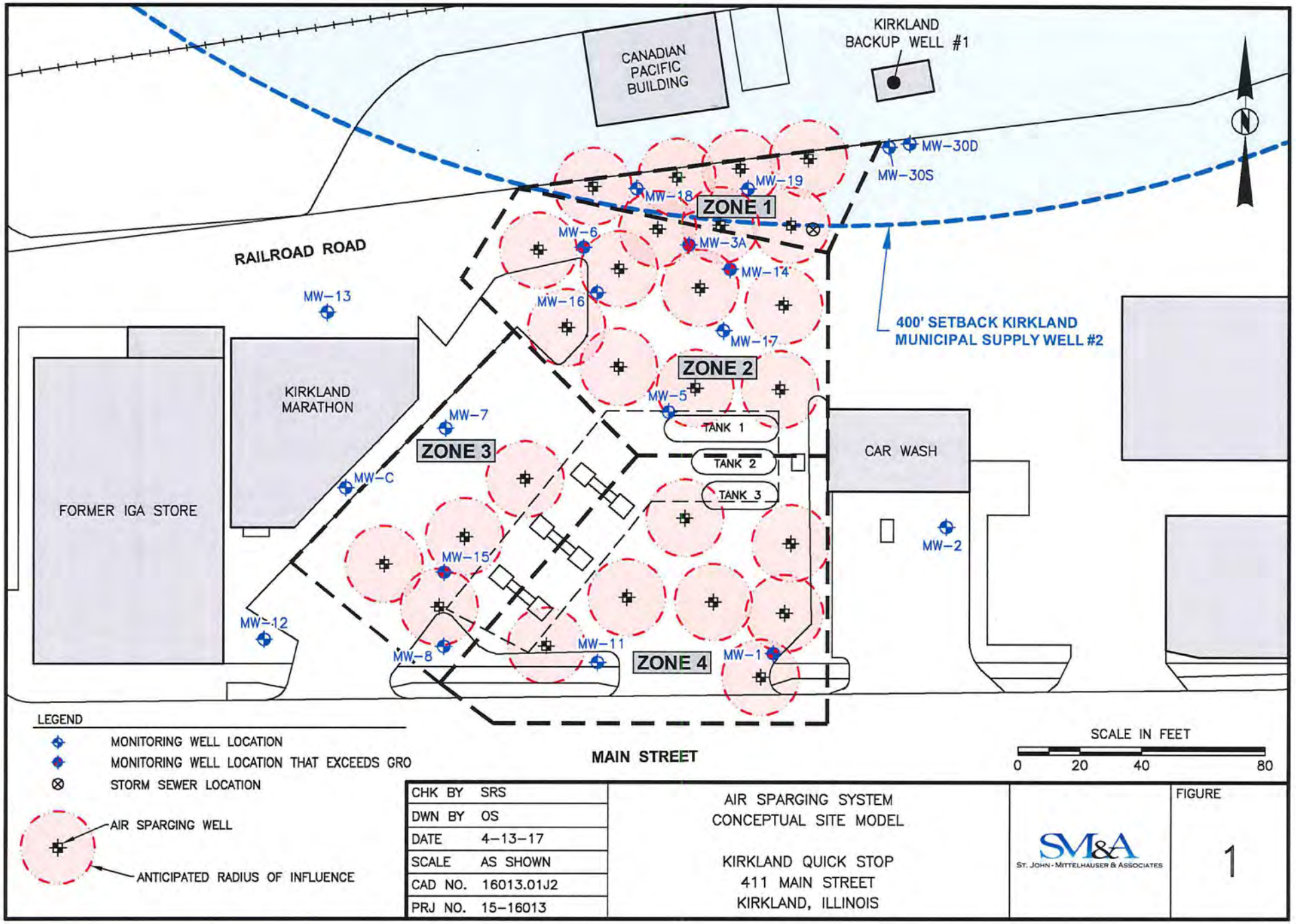
sparging system design. Modifications include:

- Increasing the total number of air injection wells from 15 wells in the prior design to 26 in the current design
- Including four (4) new air injection wells on the KQS property and in the adjacent alleyway within the setback zone of Well #1 (11424)
- Including five (5) new air injection wells in the adjacent alleyway within the setback zone of Well #2 (11425)
- Including two (2) new air injection wells in the adjacent alleyway within the setback zone of Well#1 (11424), having radii of influence that will overlap the setback zone of Well #2 (11425)

Additional air injection wells (Zone 1 and Zone 2, Figure 1) have been added to the KQS property and the alleyway that exists to the north, as recommended by the Agency. As the Agency also pointed out in its response, some of the newly proposed injection wells will be within the setback zone of Well #2 (11425), which is also shown on Figure 1. The dissolved oxygen concentrations are below 1.0 mg/L throughout much of the vicinity surrounding monitoring wells MW-6, MW-3A, MW-14, and slightly down gradient (generally to the north) of these points. Low-level petroleum hydrocarbon impacts have been observed in these wells, and the increased dissolved oxygen in the subsurface there will expedite the natural attenuation of these contaminants.

Four (4) additional injection wells have been added to the on-site/alleyway well network outside of the setback zone for Well #2 (11425), but within the setback zone of Well #1 (11424), to increase the air sparging coverage there. Under the combined radii of influence for the revised injection well network, the areas surrounding the on-site monitoring wells with intermittent, low-level petroleum hydrocarbon impacts (MW-1, MW-5, and MW-15) will be covered to the fullest extent possible (taking into account the existing service station infrastructure).

In summary, revised air sparging system design now includes a total of 26 injection wells (15 injection wells were included in the prior system design). Five (5) of these injection wells have proposed locations within the setback zone of Well #2 (11425), and an additional two (2) wells will have radii of influence which will overlap the setback zone. Together, these seven (7) injection wells will increase the dissolved oxygen in the petroleum impacted region in the vicinity of MW-6, MW-3A, MW-14, MW-18 and MW-19. The increased dissolved oxygen levels should also ensure continued compliance in the down gradient monitoring wells MW-18 and MW-19, which do not show exceedances of the remedial objectives.



CHK BY	SRS
DWN BY	OS
DATE	4-13-17
SCALE	AS SHOWN
CAD NO.	16013.01J2
PRJ NO.	15-16013

AIR SPARGING SYSTEM
CONCEPTUAL SITE MODEL

KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS

SM&A
ST. JOHN - MITTELHAUSER & ASSOCIATES

FIGURE
1

Owner/Operator and Licensed Professional Engineer/Geologist Budget Certification Form

I hereby certify that I intend to seek payment from the UST Fund for costs incurred while performing corrective action activities for Leaking UST incident 891717. I further certify that the costs set forth in this budget are for necessary activities and are reasonable and accurate to the best of my knowledge and belief. I also certify that the costs included in this budget are not for corrective action in excess of the minimum requirements of 415 ILCS 5/57, no costs are included in this budget that are not described in the corrective action plan, and no costs exceed Subpart H: Maximum Payment Amounts, Appendix D Sample Handling and Analysis amounts, and Appendix E Personnel Titles and Rates of 35 Ill. Adm. Code 732 or 734. I further certify that costs ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 732.606 or 734.630 are not included in the budget proposal or amendment. Such ineligible costs include but are not limited to:

Costs associated with ineligible tanks.
Costs associated with site restoration (e.g., pump islands, canopies).
Costs associated with utility replacement (e.g., sewers, electrical, telephone, etc.).
Costs incurred prior to IEMA notification.
Costs associated with planned tank pulls.
Legal fees or costs.
Costs incurred prior to July 28, 1989.
Costs associated with installation of new USTs or the repair of existing USTs.

Owner/Operator: Blake Leasing Compnay, LLC - Real Estate Series

Authorized Representative: John Blake Title: Owner

Signature: [signature] Date: 4/20/2017

Subscribed and sworn to before me the 20th day of April 2017

[signature] (Notary Public)

Seal:

OFFICIAL SEAL
DENICE A KRUSEMEIER
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:12/23/19

In addition, I certify under penalty of law that all activities that are the subject of this plan, budget, or report were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan, budget, or report and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in the plan, budget, or report has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 Ill. Adm. Code 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

L.P.E./L.P.G.: Steven R. Swenson L.P.E./L.P.G. Seal:

L.P.E./L.P.G. Signature: [signature] Date: 4-21-17

Subscribed and sworn to before me the 21st day of April 2017

[signature] (Notary Public)

Seal:

LICENSED PROFESSIONAL GEOLOGIST
STEVEN R. SWENSON
196-001387
3/31/19
ILLINOIS

OFFICIAL SEAL
DENICE A KRUSEMEIER
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:12/23/19

The Illinois EPA is authorized to require this information under 415 ILCS 5/1. Disclosure of this information is required. Failure to do so may result in the delay or denial of any budget or payment requested hereunder.

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Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

General Information for the Budget and Billing Forms

LPC #: 0370305005 County: DeKalb

City: Kirkland Site Name: Blake Leasing Co. LLC - Real Estate Series

Site Address: Kirkland Quick Stop 411 West Main Street, Kirkland, Illinois 60146

IEMA Incident No.: 891717

IEMA Notification Date: 9-7-89

Date this form was prepared: April 14, 2017

This form is being submitted as a (check one, if applicable):

- ☒ Budget Proposal
- ☐ Budget Amendment (Budget amendments must include only the costs over the previous budget.)
- ☐ Billing Package

Please provide the name(s) and date(s) of report(s) documenting the costs requested:

Name(s): Technical Report Technical Memorandums

Date(s): Jan 5, 2017 2/23/17 3/17/17 4/21/17

This package is being submitted for the site activities indicated below:

35 Ill. Adm. Code 734:

- ☐ Early Action
- ☐ Free Product Removal after Early Action
- ☐ Site Investigation . . . . . Stage 1: ☐ Stage 2: ☐ Stage 3: ☐
- ☒ Corrective Action Actual Costs

35 Ill. Adm. Code 732:

- ☐ Early Action
- ☐ Free Product Removal after Early Action
- ☐ Site Classification
- ☐ Low Priority Corrective Action
- ☐ High Priority Corrective Action

35 Ill. Adm. Code 731:

- ☐ Site Investigation
- ☐ Corrective Action

General Information for the Budget and Billing Forms

The following address will be used as the mailing address for checks and any final determination letters regarding payment from the Fund.

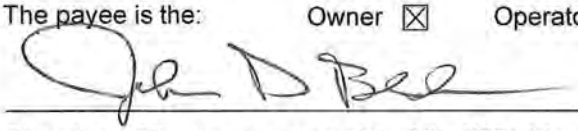
Pay to the order of: Blake Leasing Company, LLC - Real Estate Series

Send in care of: John D. Blake

Address: 6807 Rote Road

City: Rockford State: IL Zip: 61107

The payee is the: Owner ☒ Operator ☒ (Check one or both.)



Signature of the owner or operator of the UST(s) (required)

W-9 must be submitted.
Click here to print off a W-9 Form.

Number of petroleum USTs in Illinois presently owned or operated by the owner or operator; any subsidiary, parent or joint stock company of the owner or operator; and any company owned by any parent, subsidiary or joint stock company of the owner or operator:

Fewer than 101: ☒ 101 or more: ☐

Number of USTs at the site: 14 (Number of USTs includes USTs presently at the site and USTs that have been removed.)

Number of incidents reported to IEMA for this site: One

Incident Numbers assigned to the site due to releases from USTs: 891717

Please list all tanks that have ever been located at the site and tanks that are presently located at the site.

Product Stored in UST	Size (gallons)	Did UST have a release?	Incident No.	Type of Release Tank Leak / Overfill / Piping Leak
Gasoline	2,000	Yes ☐ No ☒		
Gasoline	1,000	Yes ☐ No ☐		
Diesel Fuel	1,000	Yes ☒ No ☐	891717	Piping Leak
Gasoline	5,000	Yes ☐ No ☒		
Gasoline	5,000	Yes ☐ No ☒		
Gasoline	500	Yes ☒ No ☐	891717	Tank Leak
Gasoline	500	Yes ☐ No ☒		
Gasoline	500	Yes ☐ No ☒		
Gasoline	500	Yes ☐ No ☒		

Product Stored in UST	Size (gallons)	Did UST have a release?	Incident No.	Type of Release Tank Leak / Overfill / Piping Leak
Gasoline	300	Yes ☐ No ☒		
Gasoline	10,000	Yes ☐ No ☒		
Gasoline	4,000	Yes ☐ No ☒		
Diesel Fuel	6,000	Yes ☐ No ☒		
Gasoline	3,000	Yes ☐ No ☒		
		Yes ☐ No ☐		
		Yes ☐ No ☐		
		Yes ☐ No ☐		
		Yes ☐ No ☐		

Add More Rows | Undo Last Add

Electronic Filing: Received, Clerk's Office 5/15/2017

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above
Blake Leasing Company LLC - Real Estate Series

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:
☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate
☑ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ **P**
Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.
☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
Exempt payee code (if any)
Exemption from FATCA reporting code (if any)
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)
6807 Rote RD

Requester's name and address (optional)

6 City, state, and ZIP code
Rockford, Illinois 61107

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number
			–			–				

or

Employer identification number
4	5	–	3	6	3	5	9	4	4

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here Signature of U.S. person ▶ [signature] Date ▶ 4/19/2017

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at *www.irs.gov/fw9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

Electronic Filing: Received, Clerk's Office 5/15/2017

ST. JOHN - MITTELHAUSER & ASSOCIATES

COST SUMMARY

Date: April 19th, 2017

From: Ron St. John, Steve Swenson; St. John – Mittelhauser & Associates, Inc.

RE: Costs Associated with Amended Petition for a Water Well Setback Exception to Facilitate Remediation of LUST Incident 891717

On behalf of Blake Leasing Company, LLC (Blake Leasing), SMA is providing the following summary of costs incurred by Blake Leasing in support of the Amended Petition for a Water Well Setback Exception. All costs are based on maximum payment amounts (July 1, 2016 through June 30, 2017) and are summarized on Illinois EPA Leaking Underground Storage Tank (LUST) budgetary forms. Copies of the budgetary forms are attached to this cost summary. Upon approval of the costs, Blake Leasing will submit a reimbursement package to the Illinois EPA LUST Section for payment of the approved costs. Activities associated with the incurred costs include:

- Conducted a review of available documents, including the Petition for Water Well Setback Exception submitted to the Illinois Pollution Control Board (IPCB) on March 21, 2016 and subsequent submittals from Blake Leasing Company, IPCB, and the Illinois EPA through June 15, 2016;

- Reviewed historic groundwater analytical data, sampling methodology, soil boring logs, monitoring well construction diagrams. Developed updated analytical data spreadsheets, base maps, contaminant (taple) maps, and regional geologic cross sections;

- Collected groundwater samples from 17 monitoring wells at the Site in August 2016. Groundwater samples were collected using low-flow technology to facilitate the collection of field parameters (pH, conductivity, temperature, dissolved oxygen, and turbidity). Groundwater samples were submitted for laboratory analysis for the presence of benzene, toluene, ethyl benzene, and total xylenes (BTEX), polynuclear aromatic hydrocarbons (PNAs); total / dissolved lead and total / dissolved iron;

- Met with Kirkland Department of Public Works to discuss the status of Emergency Well #1 and obtain permission to install monitoring well MW-31 adjacent to Municipal Well #2 and conduct pump test on each to determine if there is a hydraulic connection between the shallow groundwater occurrence and the deeper bedrock aquifers in which Emergency Backup Supply Well #1 and Municipal Supply Well #2 are completed;

1401 Branding Avenue, Downers Grove, IL 60515
Phone: (630) 427-8100 Fax: (630) 427-8129

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- Completed the installation and development of monitoring well MW-31. Completed pump tests on Emergency Backup Supply Well #1 and Municipal Supply Well #2 and analyzed data;

- Completed and submitted a draft Technical Report in August 2016 to Blake Leasing;

- Collection of groundwater samples from 17 monitoring wells at the Site in November 2016. Groundwater sample collection and laboratory analysis completed in the same manner as August 2016;

- Resampled monitoring wells MW-30S and MW-30D in December 2016 due to elevated turbidity during November 2016 sampling event;

- Finalized and submitted a Technical Report (dated January 5, 2016) in support of Blake Leasing's Amended Petition, submitted to the IPCB on January 6, 2016. The Technical Report provided a detailed discussion of the geology and hydrogeology (regional and site specific), analysis of groundwater samples collected in August, November, and December 2016, evaluation of the routes of exposure, and the selected remedial measure (including cost and technical feasibility);

- Review of IPCB's January 26, 2017 response to the Amended Petition and drafted a Technical Memorandum dated February 23, 2017 outlining SMA's conceptual approach to remediate the saturated sand unit through the use of air sparging;

- Reviewed IPCB's February 23, 2017 questions regarding the Technical Report and responded with a Technical Memorandum dated March 17, 2017. The Technical Memorandum provided additional information regarding the proposed air sparging system including system design and injection well placement, further discussion regarding air sparging as the "best available technology", timing, and clarification on the issue of turbidity in the groundwater samples;

- Reviewed Illinois EPA's response to SMA's Technical Memorandum dated March 17, 2017 regarding placement of additional air sparging wells within the setback zone of Municipal Supply Well #2. Drafted response concurring with Illinois EPA's assessment and provided updated figure of air sparging well locations; and

- Provided a summary of costs incurred associated with Amended Petition for a Water Well Setback Exception (IPCB Case 16-100).

Electronic Filing: Received, Clerk's Office 5/15/2017

ST. JOHN - MITTELHAUSER & ASSOCIATES

ILLINOIS EPA LUST SECTION BUDGETARY FORMS

Analytical Costs Form

Laboratory Analysis	Number of Samples		Cost ($) per Analysis		Total per Parameter
Chemical Analysis					
BETX Soil with MTBE EPA 8260		X		=	
BETX Water with MTBE EPA 8260		X		=	
COD (Chemical Oxygen Demand)		X		=	
Corrosivity		X		=	
Flash Point or Ignitability Analysis EPA 1010		X		=	
Fraction Organic Carbon Content (f_{oc}) ASTM-D 2974-00		X		=	
Fat, Oil, & Grease (FOG)		X		=	
LUST Pollutants Soil - analysis must include volatile, base/ neutral, polynuclear aromatics and metals list in Section 732. Appendix B and 734.Appendix B		X		=	
Dissolved Oxygen (DO)		X		=	
Paint Filter (Free Liquids)		X		=	
PCB / Pesticides (combination)		X		=	
PCBs		X		=	
Pesticides		X		=	
pH		X		=	
Phenol		X		=	
Polynuclear Aromatics PNA, or PAH SOIL EPA 8270		X		=	
Polynuclear Aromatics PNA, or PAH WATER EPA 8270	70	X	112.50	=	$7,875.00
Reactivity		X		=	
SVOC - Soil (Semi-Volatile Organic Compounds)		X		=	
SVOC - Water (Semi-Volatile Organic Compounds)		X		=	
TKN (Total Kjeldahl) "nitrogen"		X		=	
TPH (Total Petroleum Hydrocarbons)		X		=	
VOC (Volatile Organic Compounds) - Soil (Non-Aqueous)		X		=	
VOC (Volatile Organic Compounds) - Water		X		=	
BTEX	74	X	45.00	=	$3,330.00
		X		=	
		X		=	
		X		=	
		X		=	
Geo-Technical Analysis					
Soil Bulk Density (p_b) ASTM D2937-94		X		=	
Ex-situ Hydraulic Conductivity / Permeability		X		=	
Moisture Content (w) ASTM D2216-92 / D4643-93		X		=	
Porosity		X		=	
Rock Hydraulic Conductivity Ex-situ		X		=	
Sieve / Particle Size Analysis ASTM D422-63 / D1140-54		X		=	
Soil Classification ASTM D2488-90 / D2487-90		X		=	
Soil Particle Density (p_s) ASTM D854-92		X		=	
		X		=	
		X		=	
		X		=	

Analytical Costs Form

Metals Analysis					
Soil preparation fee for Metals TCLP Soil (one fee per soil sample)		X		=	
Soil preparation fee for Metals Total Soil (one fee per soil sample)		X		=	
Water preparation fee for Metals Water (one fee per water sample)		X		=	
Arsenic TCLP Soil		X		=	
Arsenic Total Soil		X		=	
Arsenic Water		X		=	
Barium TCLP Soil		X		=	
Barium Total Soil		X		=	
Barium Water		X		=	
Cadmium TCLP Soil		X		=	
Cadmium Total Soil		X		=	
Cadmium Water		X		=	
Chromium TCLP Soil		X		=	
Chromium Total Soil		X		=	
Chromium Water		X		=	
Cyanide TCLP Soil		X		=	
Cyanide Total Soil		X		=	
Cyanide Water		X		=	
Iron TCLP Soil		X		=	
Iron Total Soil		X		=	
Iron Water	67	X	15.02	=	$1,006.34
Lead TCLP Soil		X		=	
Lead Total Soil		X		=	
Lead Water	70	X	22.53	=	$1,577.10
Mercury TCLP Soil		X		=	
Mercury Total Soil		X		=	
Mercury Water		X		=	
Selenium TCLP Soil		X		=	
Selenium Total Soil		X		=	
Selenium Water		X		=	
Silver TCLP Soil		X		=	
Silver Total Soil		X		=	
Silver Water		X		=	
Metals TCLP Soil (a combination of all metals) RCRA		X		=	
Metals Total Soil (a combination of all metals) RCRA		X		=	
Metals Water (a combination of all metals) RCRA		X		=	
Dissolved Iron	67	X	15.02	=	$1,006.34
Dissolved Lead	70	X	22.53	=	$1,577.10
		X		=	
		X		=	
Other					
EnCore® Sampler, purge-and-trap sampler, or equivalent sampling device		X		=	
Sample Shipping per sampling event[1]		X		=	

[1]A sampling event, at a minimum, is all samples (soil and groundwater) collected in a calendar day.

Total Analytical Costs: $ 16,371.88

Budget Summary

Choose the applicable regulation: (•) 734 ( ) 732

734	Free Product	Stage 1 Site Investigation	Stage 2 Site Investigation	Stage 3 Site Investigation	Corrective Action
Drilling and Monitoring Well Costs Form	$	$	$	$	$ 2,607.10
Analytical Costs Form	$	$	$	$	$ 16,371.88
Remediation and Disposal Costs Form	$	$	$	$	$
UST Removal and Abandonment Costs Form	$	$	$	$	$
Paving, Demolition, and Well Abandonment Costs Form	$	$	$	$	$
Consulting Personnel Costs Form	$	$	$	$	$ 74,863.19
Consultant's Materials Costs Form	$	$	$	$	$ 9,896.44
Handling Charges Form	Handling charges will be determined at the time a billing package is submitted to the Illinois EPA. The amount of allowable handling charges will be determined in accordance with the Handling Charges Form.				
Total	$	$	$	$	$ 103,738.61

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 12, 2017, in response to the Illinois Pollution Control Board's Questions of May 9, 2017, Blake Leasing Company, LLC – Real Estate Series as owner of Kirkland Quick Stop, submitted its Technical Memorandum of May 12, 2017 and Revised Figure 3, a copy of which are attached and served upon you.

Dated: May 12, 2017

Respectfully submitted,

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

/s/Charles F. Helsten
Charles F. Helsten
One of Its Attorneys

Charles F. Helsten
HINSHAW & CULBERTSON LLP
100 Park Avenue
P.O. Box 1389
Rockford, IL 61105-1389
815-490-4900
chelsten@hinshawlaw.com

CERTIFICATE OF SERVICE

I, Charles F. Helsten, an attorney, certify that I have served the attached Technical Memorandum of May 12, 2017 and Revised Figure 3 on the named parties below via email and by certified mail, return receipt requested, by 5:00 p.m. on May 12, 2017, by depositing the attached in the U.S. Mail at Rockford, Illinois, with proper postage or delivery charge prepaid.

Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Joanne M. Olson
Illinois Environmental Protection Agency
Division of Legal Counsel
1021 N. Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276
Joanne.Olson@Illinois.Gov

Brad Halloran
Hearing Officer
James R. Thompson Center
100 W. Randolph, Suite 11-500
Chicago, Illinois 60601
Brad.Halloran@Illinois.Gov

Village of Kirkland
Attn: Ryan Block, Village President
511 W. Main Street
Kirkland, Illinois 60146
Ryanblock.kirkland@gmail.com

Don Brown
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, IL 60601
Don.Brown@Illinois.Gov

Bradford S. Stewart
Zukowski, Rogers, Flood & McArdle
50 Virginia Street
Crystal Lake, IL 60014
bstewart@zrfmlaw.com

/s/Charles F. Helsten

ST. JOHN - MITTELHAUSER & ASSOCIATES

TECHNICAL MEMORANDUM

Date: May 12, 2017

From: Ron St. John, Steve Swenson; St. John – Mittelhauser & Associates, Inc.

RE: Written Responses to the Illinois Pollution Control Board's Questions to Blake Leasing Company, LLC of May 9, 2017

Blake Leasing, LLC - Real Estate Series provides the following written responses to the Illinois Pollution Control Board's Questions of May 9, 2017.

1. *Quantify, in feet, the maximum feasible alternative setback between the injection locations and Municipal Water Supply Well #2 and Emergency Backup Well #1.*

   Response: The maximum feasible alternative setbacks between the injection locations and Municipal Water Supply Well #2 and Emergency Backup Well #1 are, respectively as follows:

   - Municipal Water Supply Well #2 (11425): 370 Feet
   - Emergency Backup Well #1 (11424): 30 Feet

2. *Revise Figure 3 to Petitioner's Response (March 17, 2017) to Illinois Pollution Control Board's Questions of February 23, 2017 to reflect the modified air sparging system.*

   Response: Figure 3 has been revised to include the modified air sparging system and the maximum feasible alternative setback distances. Revised Figure 3 is attached to this Technical Memorandum

1401 Branding Avenue, Downers Grove, IL 60515
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FIGURE

AGRICULTURAL

WEST NORTH STREET

NORTH 4th STREET

MW-31

KIRKLAND MUNICIPAL SUPPLY WELL #2 (11425)

400' SETBACK KIRKLAND MUNICIPAL SUPPLY WELL #2

WATER TOWER

APARTMENT BUILDING

SB-38

MW-20

370'

KIRKLAND EMERGENCY BACKUP WELL #1 (11424)

30'

CANADIAN PACIFIC BUILDING

MW-18

MW-30D

MW-30S

ZONE 1

MW-19

MW-6

MW-3A

MW-16

MW-14

MW-17

ZONE 2

MW-5

TANK 1

TANK 2

TANK 3

RAILROAD ROAD

MW-13

KIRKLAND MARATHON

MW-7

ZONE 3

MW-C

CAR WASH

MW-2

FORMER IGA STORE

MW-15

MW-12

MW-11

MW-1

MW-8

ZONE 4

MAIN STREET

NORTH 4th STREET

400' SETBACK KIRKLAND EMERGENCY BACKUP WELL #1

NORTH 5th STREET

SCALE IN FEET

0 30 60 120

LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- STORM SEWER LOCATION
- AIR SPARGING WELL
- ANTICIPATED RADIUS OF INFLUENCE

TANK 1: 4,000/3,000-GAL. PREMIUM
TANK 2: 10,000-GAL. REGULAR
TANK 3: 6,000-GAL. DIESEL

CHECK BY:	CC
DRAWN BY:	OS
DATE:	5-11-17
SCALE:	AS SHOWN
CAD NO.:	16013.01E2
PRJ NO.:	15-16013

ST. JOHN - MITTELHAUSER & ASSOCIATES

KIRKLAND WELLS #1 AND #2
AND 400 FOOT SETBACK ZONES

411 MAIN STREET
KIRKLAND, ILLINOIS

FIGURE 3