BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

BLAKE LEASING COMPANY, LLC, Petitioner, v. ILLINOIS ENVIRONMENTAL PROTECTION AGENCY and VILLAGE OF KIRKLAND, Respondent.	)	PCB 2016-100 (Water Well Setback Exception)

NOTICE OF FILING

PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board Illinois EPA's ILLINOIS EPA'S RESPONSE, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

By: /s/ Joanne M. Olson
Joanne M. Olson
Assistant Counsel
Division of Legal Counsel

Date: January 26, 2017

Joanne M. Olson #6293500
Illinois Environmental Protection Agency
Division of Legal Counsel
1021 N. Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-5544

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ILLINOIS EPA'S RESPONSE

NOW COMES the ILLINOIS ENVIRONMENTAL PROTECTION AGENCY ("Illinois EPA" or "Agency"), by and through its counsel, and pursuant to Sections 14.2 of the Environmental Protection Act ("Act") (415 ILCS 5/14.2) and 35 Ill. Adm. Code 106.306, hereby submits its response to BLAKE LEASING COMPANY, LLC's ("Petitioner" or "Blake") Amended Petition for Water Well Setback Exception Pursuant to 415 ILCS 5/14.2(c) ("Petition").

I. INTRODUCTION

Blake Leasing Company filed a petition with the Illinois Pollution Control Board ("Board") on April 29, 2016, requesting an exception to the minimum setback zone for two community water supply wells owned and operated by the Village of Kirkland. The wells are identified as Well #1 (Agency ID# 11424) and Well #2 (Agency ID# 11425) both of which have 400 foot minimum setback zones. The original petition sought to construct and operate 47 injection wells for remediation of leaking underground storage tanks.

On June 15, 2016, the Agency filed its Response recommending the Board deny the petition because the Petitioner failed to adequately describe the risk to groundwater or the affected wells, demonstrate that compliance with the setback zone would pose an arbitrary and unreasonable hardship, demonstrate that enhanced bioremediation is the Best Available Technology (BAT), and demonstrate that use of the injection wells would pose no significant hazard. On August 11, 2016, the Board ordered the Petitioner to file an amended petition addressing the Agency's and Board's concerns. The Petitioner filed its amended petition on January 6, 2017. The amended petition seeks an exception to the minimum setback zone for Well #1 to install an injection well to use an air sparging system to remediate the residual petroleum constituents on the property. An injection well is a potential route, as defined in Section 3.350 of the Act, and therefore cannot be placed within the setback zone of the community water supply well without an exception from the Board.

II. LEGAL BACKGROUND

Section 14.2 of the Act establishes minimum setback zones of 200 or 400 feet for all new potential routes; no new potential routes may be placed, without a wavier or exception, within 200 or 400 feet of an existing community water supply or other potable water supply well (415 ILCS 5/14.2(a)). The exception process is set forth in Section 14.2(c) of the Act and Subpart C of Part 106 of the Board's procedural rules.

To obtain an exception from the minimum setback zone for community water supply wells, the owner of the new potential route must file a petition with the Board and Agency (415 ILCS 5/14.2(c)). 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. Id. The Board's regulations further specify that

the petition must state the nature of the petitioner's operation, the scope of the evaluation supporting the exception, the nature of the exception, and the reasons for the exception (35 Ill. Adm. Code 106.304). The petitioner is required to serve a copy of the petition on all water supplies affected by the proposed exception (415 ILCS 5/14.2(c)) (35 Ill. Adm. Code 106.302(b)).

Both the Act and the Board's regulations set forth the burden of proof. The petitioner must show (1) compliance with the setback zone would pose an arbitrary and unreasonable hardship; (2) petitioner will use best available technology; (3) the maximum feasible setback zone will be utilized; and (4) the location of the potential source or route does not constitute a significant hazard to the potable water supply well. (415 ILCS 5/14.2(c)) (35 Ill. Adm. Code 106.310).

III. FACTUAL BACKGROUND

The subject property is a gas station owned by the Petitioner, located at 411 West Main Street, Kirkland, Illinois. Petitioners assert that active remediation of the property is in response to a release of petroleum product from underground storage tanks formerly located at the property. Pursuant to Section 14.2(d) of the Act, a minimum setback zone of 400 feet has been assigned to both Well #1 (11424) and Well #2 (11425). As such, the entire Blake property falls within the minimum setback zone of Well #1 and a portion of the Blake property falls within the minimum setback zone of Well #2.

As requested by the Agency in its response to the initial petition, the Petitioner has provided additional explanation of available remedial technologies, current groundwater quality data, well logs for production wells and monitoring wells near the site, and conducted pump tests to allow more thorough evaluation of hydrologeologic conditions at the Kirkland Quick Stop and

Kirkland Well #1 (11424) and Well #2 (11425). The data has allowed the Agency to evaluate conditions at the site relative to the exception requirements for the installation of air sparging injection wells for the purpose of groundwater remediation. The Agency's opinions of the adequacy of the Petitioner's demonstrations are discussed in subsequent Sections.

Before moving to the specific demonstrations made by the Petitioner for the injection wells, the Agency believes the pump tests performed by the Petitioner warrant more detailed discussion, as they may also relate directly to a possible subsequent petition for the installation of underground petroleum storage tanks within the minimum setback zone of Well #1. The Petitioner ran two separate pump tests for Well #1 and Well #2, using nearby monitoring wells (MW-30D and MW-31, respectively) completed in the sand and gravel aquifer to observe drawdown.

The pump test for Well #2 was run over a six day period and included four pumping periods and was terminated during the fifth pumping period, with a total production of just over 600,000 gallons of water. Prior to beginning the pump test the MW-31 displayed a rhythmic diurnal fluctuation of about 0.05 feet, between 755.42 and 755.37 feet in elevation. A measured difference of 0.01 feet is the accepted limit of accuracy for groundwater measurement. This limitation is recognized by the Board rules for the adoption of maximum setback zones (35 Ill. Adm. Code Part 671). The initial short pumping event at Well #2 altered the noted diurnal cycle to some degree. Each subsequent pumping cycle depressed the natural fluctuation further, and resulted in downward trending water level in MW-31. The final elevation in MW-31 at the end of the pump test was 755.32 feet compared to a natural high of 755.42 and a natural low of 755.37. The Agency agrees with the Petitioner that the relatively small measured decline in groundwater level in MW-31 (compared to a nine foot groundwater level drop in Well #2) does

not indicate a direct hydraulic connection between Well #2 and its bedrock aquifer and the sand and gravel aquifer, but there does appear to be some communication between the two aquifers.

Because it is a backup well only, and the water had to be pumped to waste, the pump test for Well #1 was run over only a 22 hour period and included one pumping period of about 17.5 minutes, with a total production of just over 6,400 gallons of water. No diurnal cycle was noted in MW-30D. The groundwater elevation at the beginning of the monitored period was 758.05, but gradually dropped over about two hours to an elevation between 758.01 and 758.03. Periodic spikes and drops in groundwater elevation are recorded. The Petitioner suggests these may be due to vibrations from passing heavy trucks, though no definitive cause is provided. Coincident with the beginning of the Well #1 pumping event a groundwater elevation spike occurs. This could also be due to a heavy truck or possibly vibration from the Well #1 pump. However, unlike other elevation spike events, the elevation does not drop and immediately restabilize. The groundwater elevation continues to drop sharply during the entire 17 minutes that Well #1 is pumping. Once pumping in Well #1 stops, the groundwater elevation begins to rise sharply again. Unfortunately, the monitoring in MW-30D was terminated too quickly to determine if the groundwater elevation would restabilize in its pre-pumping range. Disregarding the spurious data spike, the groundwater elevation in MW-30D dropped 0.05 feet from 758.01feet to 757.96 feet in about 17 minutes. This is the same amount of drawdown recorded at MW-31 after ten times the water volume had been withdrawn. The Agency believes this data indicates a more direct hydraulic connection between the sand and gravel aquifer and the bedrock aquifer proximate to Well #1 than is indicated near Well #2. Because Well #1 is 120 years old, the hydraulic link could be from faulty casing in the subsurface or from preferential flow along the casing which would not have been grouted during well installation that long ago.

This apparent connection between the sand and gravel aquifer and Well #1 gives completion of the groundwater remediation added importance. If pumping at Well #1 were increased due to drought conditions, which might also impact water levels in the sand and gravel aquifer, the Agency is concerned that contaminated groundwater could be drawn into Well #1.

IV. NOTIFICATION OF WATER SUPPLY

A Certificate of Service attached to the Amended Petition indicates that the Village of Kirkland has been provided with a copy of the petition by certified mail, return receipt requested. The Agency notes that the Board asked the Petitioner, in response to its initial petition, to confirm that the proposed injection wells are not within the setback zone of any wells other than those owned by the Village of Kirkland. The Petitioner confirmed the absence of additional setback zones proximate to the subject property. The Agency believes the Petitioner has adequately addressed this requirement.

V. POTENTIAL IMPACTS TO GROUNDWATER AND WELLS

The Act requires that the Petitioner describe the potential impact of the injection wells to groundwater in general and specifically the affected wells. The Petitioner has provided additional analytical and hydrogeologic information to evaluate the potential for impacts to groundwater and the wells. This groundwater monitoring has confirmed the continued presence of petroleum related contaminants in certain areas of the property, which must be reduced to the concentrations required by regulation. The Agency agrees that the petroleum products present at the subject property can cause harm and the contaminants should be removed or reduced to within regulatory limits. The Petitioner has proposed the use of air sparging to activate naturally occurring bacteria in the subsurface that will break down the petroleum related compounds. The Petitioner proposes to use compressed air for the injection process. The Agency does not believe

compressed air will have significant detrimental impacts to the wells or the groundwater in general. The Agency believes the Petitioner has adequately addressed this requirement.

VI. ARBITRARY AND UNREASONABLE HARDSHIP

The Petitioner states that only with further remediation can it achieve complete closure. The Agency acknowledges and agrees that some form of active remediation is appropriate and required by regulation. The Petitioner further argues that the risk from air sparging is much less than the risk from petroleum products currently existing in the groundwater and soils. The removal of this risk provides a qualitative increase in value of the subject property to the owners and the Village of Kirkland as a whole. In addition, the Petitioner has provided a more exhaustive explanation of the effectiveness of air sparging and the complications of other remedial alternatives, which adds credence to a finding that the prohibition of injection wells for air sparging within a minimum setback zone may well represent an arbitrary and unreasonable hardship. Given this information, the Agency believes the Petitioner has adequately addressed this requirement. The Agency does note however, that if or when an exception petition is filed with the Board for the installation of underground storage tanks within a minimum setback zone, the Agency believes a more quantitative assessment of benefits and value would be appropriate.

VII. BEST AVAILABLE TECHNOLOGY

The Petitioner has submitted a thorough examination of remedial options that could potentially be used at the site. The Petitioner has made a well-reasoned argument that air sparging is the BAT. The Agency believes the Petitioner has adequately addressed this requirement. The Agency notes that should the Board grant an exception for the use of air sparging at this site, it is the Petitioner's soul responsibility to get approval for that remedial method from the Agency's Leaking Underground Storage Tank Section.

VIII. MAXIMUM FEASIBLE SETBACK

In the setback zone exception process, 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. In the opinion of the Agency, the distance between the air sparging injection wells and the community water supply wells is not as important as assuring that the petroleum contaminants are fully remediated within applicable setback zones. The Petitioner provided data indicating where petroleum related contaminants remain within the subsurface. Though the Amended Petition contained a great deal of additional information that the Agency had requested, it does not appear to contain a map indicating the number and location of proposed air sparging wells. The Agency believes to fully address this requirement the Petitioner must provide a map displaying the proposed air sparging system.

IX. SIGNIFICANT HAZARD

Closely related to the demonstration of no significant hazard is the description in the Petition of the possible impacts that the potential route may have on groundwater and the potable wells. As discussed in Section III, the Petitioner has provided additional monitoring data and hydrogeologic data in its Amended Petition. In the Agency's opinion, the data provided by the Petitioner illustrates that there is some hydrologic connection between the upper sand and gravel aquifer and the bedrock aquifer utilized by the Kirkland community Wells #1 and #2. This connection emphasizes the need for remediation of the remaining petroleum constituents. The Agency believes the introduction of compressed air into the subsurface for the purpose of remediation will provide an overall benefit to groundwater quality and will not pose a significant

hazard to the community wells. The Agency believes the Petitioner has adequately addressed this requirement.

X. RECOMMENDATION

The Agency recommends that the Board grant the Amended Petition provided the Petitioner submits a map of the proposed air sparging system to the Board and the Agency before the public hearing.

WHEREFORE, the Illinois EPA respectfully submits its Response.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/Joanne M. Olson
Joanne M. Olson
Assistant Counsel
Division of Legal Counsel

Joanne M. Olson #6293500
Illinois Environmental Protection Agency
Division of Legal Counsel
1021 N. Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-5544

CERTIFICATE OF SERVICE

Joanne M. Olson, Assistant Counsel for the Illinois EPA, herein certifies that she has served a copy of the foregoing NOTICE OF FILING and ILLINOIS EPA'S RESPONSE upon

Village of Kirkland
Attn: Mayor Les Bellah
511 W. Main Street
Kirkland, Illinois 60146

Charles F. Helsten
Hinshaw & Culbertson LLP
100 Park Avenue
P.O. Box 1389
Rockford, IL 61105-1389

Brad Halloran
Hearing Officer
Brad.Halloran@illinois.gov

by placing a true copy in an envelope duly addressed bearing proper first class postage in the United States mail at Springfield, Illinois on January 26, 2017, or by sending an email from my email account (joanne.olson@illinois.gov) to the email addresses designated below with the following attached as a 11 page PDF document in an e-mail transmission on or before 5:00 pm on January 26, 2017.

/s/Joanne M. Olson
Joanne M. Olson