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 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

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 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.

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: Mayor Les Bellah
511 W. Main Street
Kirkland, Illinois 60146
Mayor_bellah@mchsi.com

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

Scott A. Puma
Ancel, Glink, Diamond, Bush, DiCianni & Krafthefer, P.C.
175 Hawthorn Parkway, Suite 145
Vernon Hills, IL 60061
spuma@ancelglink.com

/s/Charles F. Helsten

ST. JOHN - MITTELHAUSER & ASSOCIATES

Privileged and Confidential

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.

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

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.

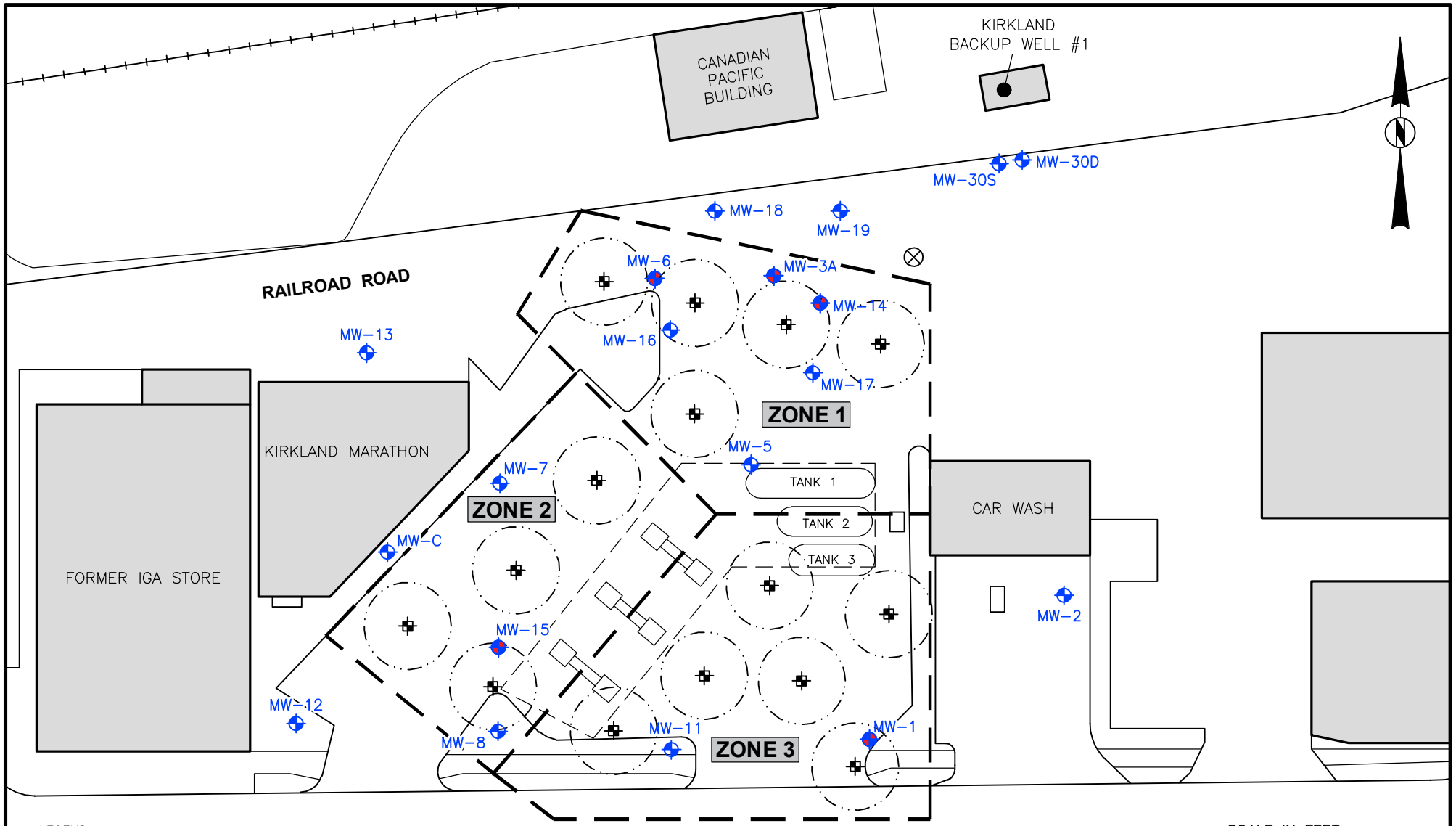
MONITORING AND SYSTEM MAINTENANCE

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

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.

FIGURES



LEGEND

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

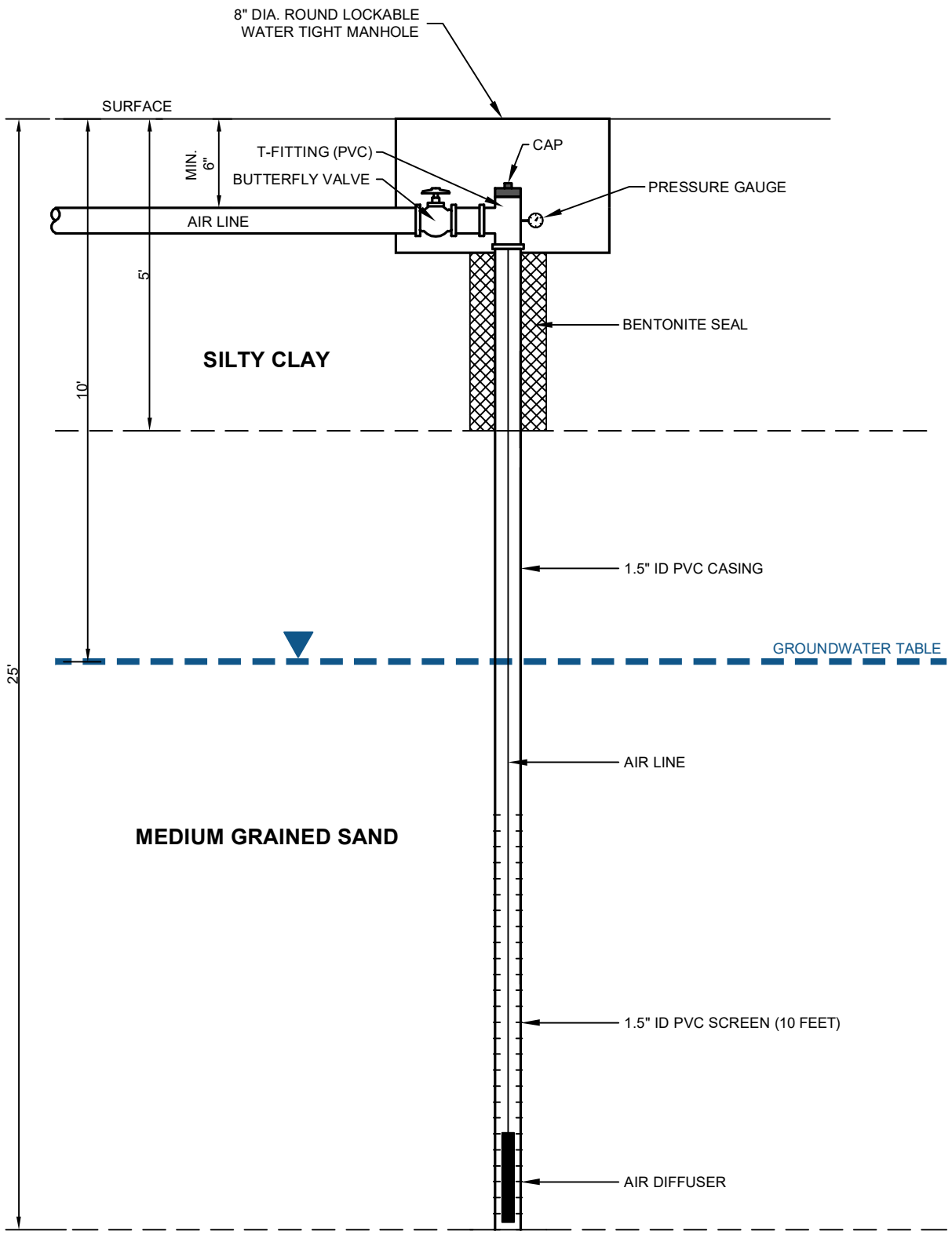
CHK BY	SRS
DWN BY	OS
DATE	2-20-17
SCALE	AS SHOWN
CAD NO.	16013.01J
PRJ NO.	15-16013

AIR SPARGING SYSTEM
CONCEPTUAL SITE MODEL

KIRKLAND QUICK STOP
411 MAIN STREET
KIRKLAND, ILLINOIS

SM&A
St. John - Mittelhauser & Associates

FIGURE
1



** NOT TO SCALE **

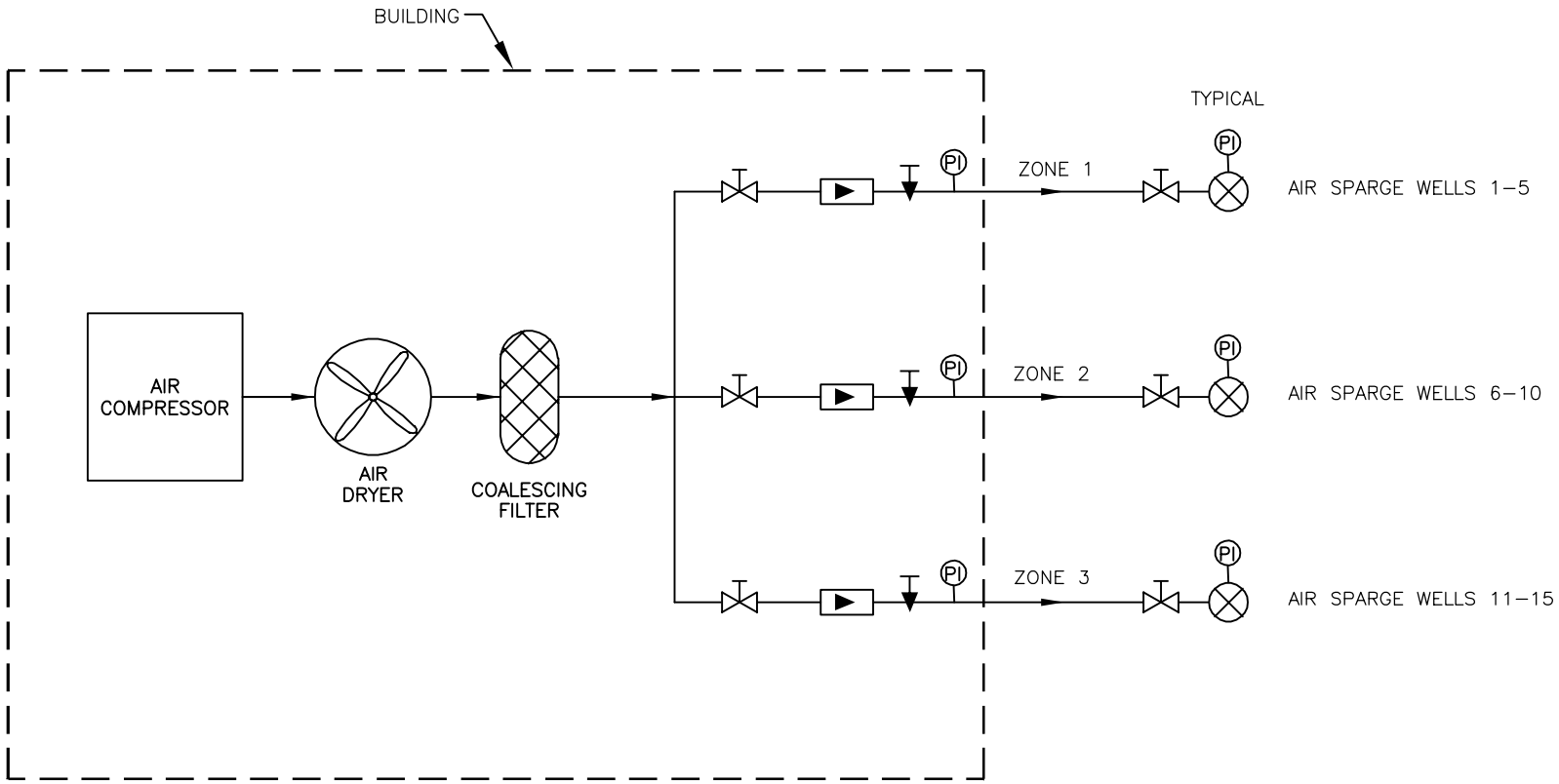
CHECK BY	SRS
DRAWN BY	OS
DATE	2–20–17
SCALE	N.T.S.
CAD NO.	16013.01L
PRJ NO.	15–16013

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