Via: email

September 30, 2019

File: ASC-458 102l

Mr. Ben Pilon
BPE Developments
141 Hickson Avenue
Kingston, Ontario
K7K 2N7

Subject: Response to Draft Technical Comments from Malroz Engineering Inc.
Hydrogeological Study – Proposed Unity Farm, Inn and Spa
2285 Battersea Road, Kingston, Ontario

Dear Mr. Pilon:

We present our comments on the Draft Technical Review from Malroz Engineering Inc. (Malroz) regarding the above captioned property.

We reviewed the following Malroz document:

Review of Malroz Engineering Inc., Draft Peer Review of the Documents Related to the Proposed Unity Inn & Spa, 2285 Battersea Road, Glenburnie, Ontario K0H 1S0, dated June 28, 2019.

We understand that the Unity Inn and Spa is proposed to be a sustainable Farm, Spa and Inn offering guests accommodations in a tranquil, relaxing space where the historic, new and rustic modern are combined to provide a retreat experience. The development will incorporate a 27 suite Inn with a spa offering a thermal experience in outdoor pools and saunas and indoor treatments and massage therapy. The Farmhouse Table restaurant will provide guests with farm to table meals with produce grown on-site and locally sourced. The Unity Farm, Inn and Spa plans to create a versatile space for events and corporate retreats. The Unity Farm, Inn and Spa facilities will be accessible by a landscaped path throughout the property winding around the development and the tranquil modern “tiny living” private cabins.

We offer the following comments in order of the Malroz Draft Technical Review:

1305 Princess Street, Kingston, ON
K7M 3E3
(613) 561 7088
www.ascenvironmental.ca

2.0 Comments

2.1 Servicing Options

1. The proponent should outline all water supply needs for the site and evaluate the provision of onsite services to support the full proposed development.

Since submission of the Hydrogeological Study, modifications to the proposed development include:

- The Unity Inn and Spa development (Phase I, II and III) will encompass approximately 13.7 hectares consisting of a 27-suite inn, a spa, a restaurant, a conference center, and 40 "tiny living" rental cabins. The site will include farmland, vineyards, gardens, and accessory buildings; one of which will include a fruit and vegetable stand, a craft winery and craft brewery.

- Water supply to the development will be supplied via on-site well water supply for the operations with the exception of the Spa outdoor pools which will be filled with City of Kingston municipal water, and subsequent "make-up" water may be supplied via on-site wells through storage tanks.

Based on the proposed development modifications, the estimated wastewater flows have been calculated using the Ontario Building Code (**OBC**) Table 8.2.1.3.B for non-residential occupancies (incorporating both laundry and toilet use). Table 1 shows the project distribution and theoretical flows for each proposed use.

The proponent plans to make use of on-site storage tanks housed in the lower level of the maintenance building. Initial water taking for storage purposes, prior to full operations start-up, will not exceed 15,000 L/day. The proponent will have the ability to store approximately 50,000 litres of water in storage tanks, to supplement the initial operations. As shown in Table 1, maximum daily water taking would not exceed 37,279 L/day, including make-up water for spa pools (if taken from wells) for full site development.

A site location plan shows the property limits of the proposed site development and a Concept Plan shows the distribution of the development. These are presented in Appendix A.

Unity Inn/Spa - Theoretical Flow Calculations as per O.B.C 8.2.1.3.A/B

Building Part	Occupancy Type	Description	Unit Flow	Number of Units	*Flow L/day	Diverted to Grey Water L/Day (30%)	Net Daily Flow L/Day
Cabins	Residential	Per Cottage	250	40	10000	3000	7000
Hotel	Residential	Per Room	250	27	6750	2025	4725
Indoor Restaurant	Commercial	Restaurant (not 24 hr), per seat	125	68	8500	2550	5950
Indoor Lounge	Commercial	Bar and cocktail lounge, per seat	125	10	1250	375	875
Outdoor Patio	Commercial	Restaurant (not 24 hr), per seat	125	50	6250	1875	4375
Roof Top Patio	Commercial	Restaurant (not 24 hr), per seat	125	60	7500	2250	5250
Conference Center	Commercial	With Food Per Seat	36	140	5040	1512	3528
Spa	Commercial	Per Person	40	80	3200	960	2240
Inn and Spa Staff	Commercial	Per Employee Per 8 hr Shift	75	14	1050	315	735
Farm Produce Sales	Commercial	Total Space	1400	1	1400	420	980
+Brewery/Winery	Commercial	Total Space	796	1	796	239	557
Kitchen / Laundry Staff	Other	Per non-resident staff per 8-hour shift	40	38	1520	456	1064
• Spa Make-up Water	Commercial	Spa daily Make up Water	8000	1	-	100%	0
						Net Flow/Day	**37,279**

NB – Prior to operations start-up water taking will be undertaken at a rate of 15,000 L/day for on-site storage and initial use in the distribution system. Maximum daily water taking from wells during full capacity operations would not exceed 37,279 L/day.

+ Brewery/Winery

The proposed brewery/winery will be housed in the existing wooden barn (designated Z on Concept Plan in Appendix A). Water requirements during the brewing/cleaning process are expected to be approximately 3.5 L water/1 L of beer (Craftbrewers.com), this does not include irrigation, which would be from precipitation and stormwater ponds. The Craft brewery operation is proposed to produce approximately 5,500 litres of beer per month (based on a consumption of 50 L/day in the restaurants and 1000 L/week sold packaged from the brewery) resulting in a water taking requirement of approximately 19,425 L/month (627 L/day). Water requirements for the wine production process are similar to the brewery process and on this basis, with anticipated wine production of 1500L/month, the resulting water requirement would be 5,250 L/month (169 L/day). The winery is expected to be a seasonal operation.

- Spa - Make-up Water

It is proposed that the Spa pools will initially be filled with water sourced from the City of Kingston municipal water supply, delivered using water trucks. On-site water storage tanks servicing the Spa will be housed in the lower level of the maintenance building (Designated J on Concept Plan), these will be used to store and provide make-up water for the pools during routine maintenance. This proposed supply system would be completely separate from the domestic well water supply system.

The five (5) pools servicing the Spa will have a volume capacity of approximately 79,848 L. It is anticipated that two 40,000 L water supply trucks would be required to initially fill the Spa pools and then make-up water would be supplied on an as needed basis from the on-site storage supply tanks.

Referencing Ontario Regulation 495/17: Public Spas, Section 7.(1), every operator of a public spa with a volume that exceeds 4,000 litres shall add make-up water to the spa during each operating day in an amount that is not less than 30 litres per bather use, to a maximum of 20 per cent of the total spa volume. On this basis, an approximate maximum of 8,000 litres of make-up water would be required on a daily basis for the five pools.

If make-up water is supplied via the well water distribution system, this would result in an additional supply requirement of approximately 8,000 L/day. It is expected that 100% of the Spa make-up water would be diverted to recycled water.

Approximately 30% of the maximum daily requirement will consist of recycled water from the distribution system. On this basis, the net total daily flow requirements for the proposed Farm, Inn and Spa development would be 37,279 L/day (see Table 1 – above).

Based on the results of the 48-hour pumping tests (August and September 2018), and subsequent levelogger monitoring data showing no significant response in the deeper test well (TW01) during the month of August 2019 (see Appendix B); sufficient long-term groundwater supply is available to meet the total daily demand for the proposed development.

2. The consultant does not identify how, should offsite water sources be permitted, the offsite water will be separated from onsite sources.

Based on our understanding of the proposed development, where off-site water is used to supply Spa pools, the proponent has proposed installing multiple 26,500-litre tanks in the water storage room of the Maintenance building to be used for separate spa make-up water storage, domestic water storage, and grey water storage. The make-up water will be managed through a separate storage and distribution system to refill the Spa pools. As indicated above, daily make-up water for the Spa pools would not exceed 8,000 l/day.

2.2 Groundwater Quantity

The groundwater quantity at the Site was assessed through three pumping tests: two 48-hour tests (note that partial data was provided for the pumping test at well TW02; see comment 6) were completed in two recently drilled wells (TW01 and TW02), and a third 6-hour test in an on-site well (TW03). Wells were pumped at a rate of approximately 30 L/min and onsite and nearby water levels were recorded using an in-well water levelogger.

Results from well TW01 show that the maximum drawdown reached during the test was 4.1 m. The well recovered to 95% of pre-pumping conditions in approximately 1440 minutes after 48 hours of pumping.

Results from well TW02 show that the maximum drawdown reached during the test was 0.09 m. The well recovered to 95% of pre-pumping conditions in approximately 1930 minutes after 24 hours of pumping.

Results from well TW03 show that the maximum drawdown reached during the test was 3.45 m. The well recovered to 95% of pre-pumping condition in approximately 505 minutes after 8.4 hours of pumping.

During each of the pumping tests, nearby onsite and offsite wells were monitored (where possible) to assess for potential interference from the proposed water takings. ASC reported

decreases and increases in water levels for offsite wells and attributed this to domestic water usage, which can be common for daily domestic well use.

ASC concluded that no significant drawdown of the onsite well supply was observed during the pumping tests, which included pumping 100% of the proposed daily design requirement (47,500 litres). They further concluded that the pumping will not result in an unacceptable interference to offsite water supplies.

3. *Section 1.4 of the hydrogeological study identifies a peak daily water demand of 75,375 litres, in accordance with the Ontario Building Code. The report further identifies that 29,960 litres per day will be recycled, resulting in a peak daily water taking from groundwater of 45,415 litres.*

During the site visit, the proposed development was identified to include a brewery, a winery and potentially an open loop groundwater geothermal system. The hydrogeologic study considered for this review does not evaluate for a water demand beyond those outlined on Page 4, in the Table titled 'Anticipated Flow Calculations Based on Site Use for Phase 1 and Phase 2 of Development' which does not include a winery, open loop geothermal system or brewery.

> Referencing Table 1.0 the anticipated daily water requirements for the craft brewery and winery, are approximately 800 L/day, with 30% being recycled for a net daily requirement of 560 L/day.
>
> An open loop groundwater geothermal system is not proposed for the development.

The anticipated flow calculations indicate that the spa, with bathhouse, showers and toilets, will have a demand of 150 litres per day. This appears to be low and the peak number of patrons to the spa should be re-evaluated.

> Referencing Table 1.0 (and OBC Table 8.2.1.3) the proposed anticipated daily flows for the Spa, with bathhouse, showers and toilets is 4,250 L/day based on a peak demand of 80 patrons and 14 staff servicing the spa.

Page 37, item 8, identifies that the re-use water will supply toilets and laundry. Supporting calculations on the demand for toilet water is not provided (laundry is shown as 7,500 litres per day) and should be included.

> Laundry and toilet water use are included in the daily design flow calculations for the occupancy type listed in the Table above, sourced from OBC Table 8.2.1.3.

A Permit to Take Water (PTTW) from the MECP is required for water takings of 50,000 litres or more in any 24-hour period. As well, both closed and open-loop groundwater geothermal systems can require approvals and/or licensed installers though the MECP.

We concur with Malroz that where water takings exceed the proposed daily requirements, a Permit to Take Water would be required, and an application would be undertaken to meet MECP requirements. Based on the anticipated long-term use requirements for the proposed development, a PTTW is unlikely. Prior to commencing operations, water taking (approximately 25, 000 L/day) will be conducted to fill on-site storage tanks. Water supply from the storage tanks and wells will be used to meet initial start-up operation requirements. Based on this approach, water taking from wells will be less than 50,000 L/day and a PTTW will not be necessary.

As mentioned above, an open-loop geothermal system is not being considered for the development. We concur with Malroz that MECP approval would be required for a closed loop geothermal system.

Considering the site is projecting a peak of 45,415 litres per day of groundwater takings and that there are potential additional water supply needs for tubs, a brewery and winery, or other uses, the proponent should consider the requirement to obtain a PTTW and other approvals. Should additional groundwater use beyond those identified on Page 4, in the Table titled 'Anticipated Flow Calculations Based on Site Use for Phase 1 and Phase 2 of Development', further adequate study should be undertaken.

Based on the proposed development modifications, the proponent is projecting a peak requirement of 37,279 L/day of groundwater takings including make-up water for pools, and processing/cleaning water for brewery and winery as shown on Table 1 above.

We concur with Malroz that where water takings exceed 50,000 L/day, a Permit to Take Water would be required. Based on the proposed initial water taking (storage) prior to start-up, and 30% recycling from the water distribution system resulting in a peak daily operational requirement well below 50,000 L/day. On this basis, we believe that additional studies are not required for the proposed development based on the anticipated use; and the results from 48 hour pumping tests showing sufficient long term yield potential, and recent water well monitoring results from proposed supply wells during August 2019 showing no significant response to water levels during the dry summer period in the deeper aquifer.

4. *Page 44 recommends a groundwater monitoring program for during and post-site development. However, a detailed monitoring program was not provided in the report. The proponent should provide a proposed monitoring program for review. The monitoring program should include a protocol for responding to water taking concerns from the construction phase and operations phase of the development.*

Based on the proposed site development plans, we recommend that the groundwater monitoring program be undertaken during the construction phase and post-site development to incorporate a prescriptive framework for responding to water taking concerns. We recommend the following groundwater monitoring program:

- Communication with neighbouring residents north (upgradient), west (cross gradient) and south (down gradient) of the proposed development to confirm participation in the groundwater monitoring program. We propose to install level loggers in neighbouring wells to measure groundwater levels on a daily basis so as to respond to potential water taking concerns.

  We propose downloading data from level loggers on a monthly basis to chart in order to monitor seasonal changes and address potential water taking concerns. We anticipate a one-two year groundwater level monitoring program during/post development stage.

- Installation of level loggers in on-site wells to measure and monitor groundwater levels during site construction activities and the operations phase of development to assess potential impact on the water supply aquifer.

- Where water taking concerns are identified from the construction and/or operations phase of the development, ASC personnel will liaise with the property owner (Client), and neighbouring residents to review data, discuss water taking and make recommendations for potential remedial actions, if required.

  Water level monitoring reports would be prepared and results of the neighbouring and on-site monitoring data would be presented in an excel format to facilitate review and discussion .

  The monitoring reports would include the following:

- Location and site maps (to scale) showing monitoring locations;
- Tabular and graphical summaries of data in excel format;

- and if required recommendations for remedial action and changes to the monitoring program.

  We recommend reporting monitoring results to the Client on a six-month basis during construction and quarterly during the first year of operation, reducing to annual reporting for the second year of operation.

- Based on the results of the proposed groundwater monitoring program, sampling and analyses of neighbouring wells may be considered where concerns are identified to assess changes in groundwater quality of neighbouring and on-site wells; during and following site development.

- We also recommend surface discharge water sampling and analyses of surface water parameters identified by MECP to assess the overall performance of the treatment system and stormwater management system.

5. Groundwater monitoring in on-site and off-site wells was undertaken as a part of the hydrogeologic assessment. The following details should be provided in the pumping test and water level monitoring data tables (eg: Appendix F) to facilitate evaluation:

i. water level measurements from a datum (eg. metres below ground, metres below top of casing, etc.),

ii. depth of well,

iii. clarification regarding the units of numbers stated in cell following "pumping started at".

Details for i and ii are included in revised data tables included in Appendix B, and units stated in cell following "pumping started at" refer to the 24-hour time clock (i.e. 17:12, is 5:12 PM).

6. The consultant describes the pumping test at TW02 as lasting 48 hours, however, although field water quality monitoring data for 48 hours was provided (table D1), the groundwater monitoring data only reflected 24 hours (table D2 and Figure 1 TW2 Pumping Test Drawdown). The consultant should clarify and provide the additional data, if available.

Groundwater monitoring data for the full 48 hours for TW02 is shown in Appendix C, attached.

7. The report does not identify whether additional water supply wells are considered or not. Should additional wells be installed at the site, we recommend that they be assessed for water, quantity, and interference by a qualified hydrogeologist.

At present based on the current water supply needs, no additional wells are proposed for the development. If development plans change and additional water supply is required, we concur with Malroz where additional wells are installed at the property, these be assessed for water quantity, quality and interference by a qualified hydrogeologist.

Groundwater Quality

Groundwater quality was assessed by the consultant through sampling of groundwater collected during the pumping tests at each of the on-site wells. Groundwater samples were collected from the 48-hour pumping tests (wells TW01 and TW02) after the first hour and subsequently at twelve-hour intervals. Two groundwater samples were collected from the 6-hour pumping test (TW03), the first within the first hour and the second within the last hour of pumping.

Groundwater samples were also collected from 19 off-site, nearby wells before and after the pumping test programs. Samples collected prior to pumping tests were used to characterize the pre-development groundwater quality, which served as a benchmark to evaluate for changes following the pumping test program. Results of the groundwater sample lab analyses were compared to the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG)

Analytical results from the three sampled on-site wells exceeded the ODWSOG for hardness, iron, TDS, conductivity, and chloride. Slightly elevated fluoride concentrations were also detected.

The consultant recommended that all water supply systems be equipped with water treatment systems to address the parameters exceeding the ODWSOG. A reverse osmosis system was recommended, in particular, to treat the elevated sodium and chloride concentrations

9. During the site visit, it was noted that a water treatment system will be installed at the site to treat and condition the groundwater. Considering that the site will be open to the public, as a commercial operation, the proponent must seek the appropriate approval from the MECP and/or health unit for the drinking water system. We recommend that this information be provided to the City.

We concur with Malroz that the appropriate approvals will be necessary from the MECP for operation of the drinking water system.

10. Should additional wells be installed at the site, we recommend that they be assessed for water quality by a qualified hydrogeologist, considering the reported water quality.

We concur with Malroz where additional wells are installed at the property, these be assessed for water quality by a qualified hydrogeologist.

Closure

This document provides response to the Draft peer review comments from Malroz, for the proposed development hydrogeology study located at 2285 Battersea Road, Kingston, Ontario.

Professional judgement, experience with similar investigations, and available data collected within the scope of work form the basis of this document. *ASC* has prepared this document using information understood to be factual and correct, and shall not be responsible for information or facts that were inaccurate, concealed or not fully revealed at the time of our work.

Environmental conditions can be expected to change over time. The findings and conclusions of this document are valid only at the time at which this work was conducted. If future work is undertaken, or additional information becomes available, *ASC* shall be requested to re-evaluate the conclusions and make amendments if required.

ASC makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

This document has been prepared by *ASC* for the use of *BPE Developments* and *its assigns*. Unauthorized reuse of this document for any other purposes, or by third parties, without the express written consent of *ASC*, shall be at such party's sole risk without liability to *ASC*. We trust that this information is sufficient for your present needs. If you have questions or concerns regarding this matter please contact the undersigned.

Yours truly,

ASC Environmental Inc.

LICENSED PROFESSIONAL ENGINEER
P. N. JOHNSTON
PROVINCE OF ONTARIO

Paul N. Johnston, M.Sc., P.Eng., QP ESA
Principal/Project Manager

Attachments: Appendix A – Drawings
Appendix B – Support Documentation
Appendix C - TW02 Groundwater Monitoring Data

APPENDIX A
Figures 1 - 11

ASC ENVIRONMENTAL

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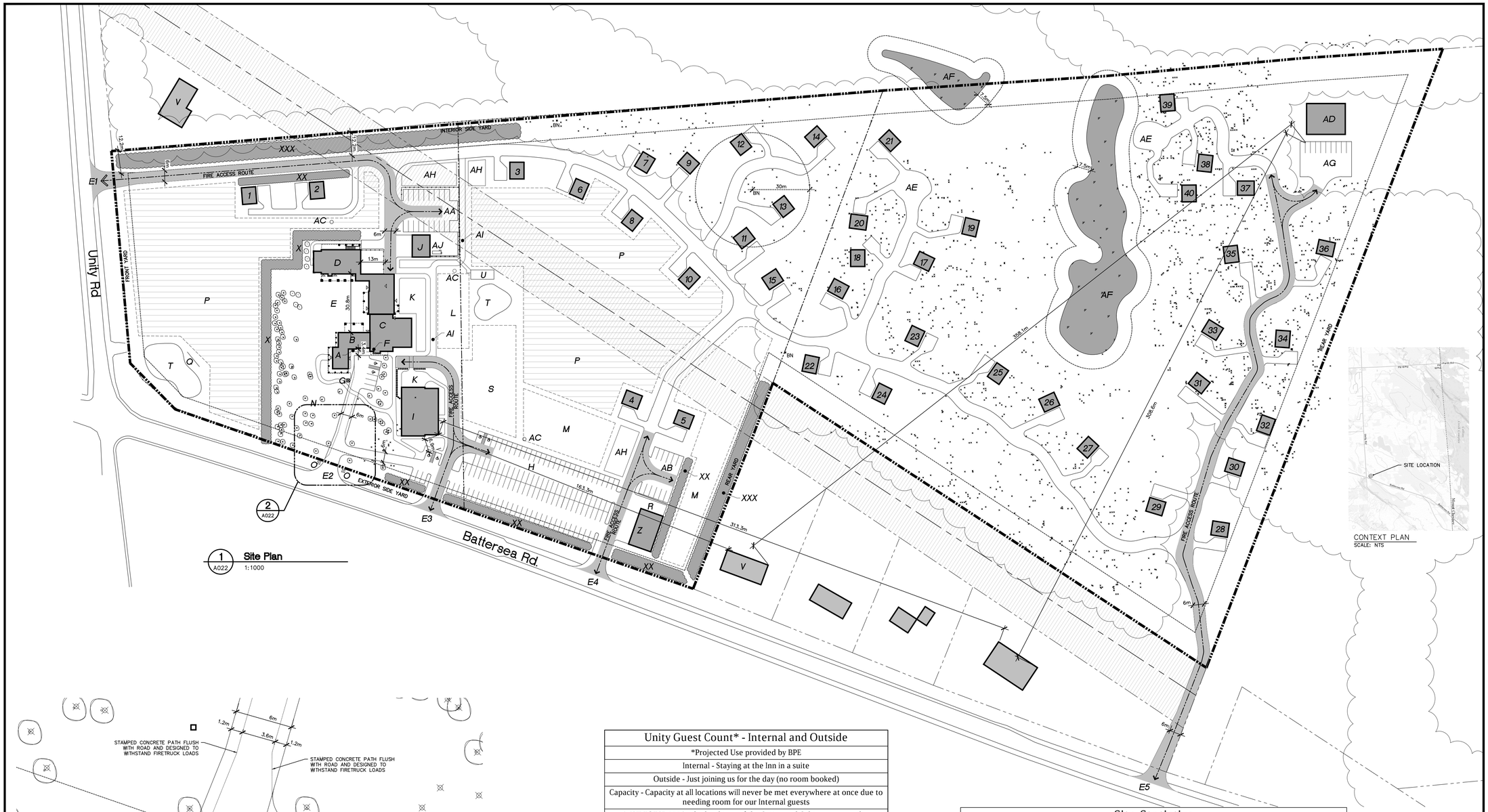
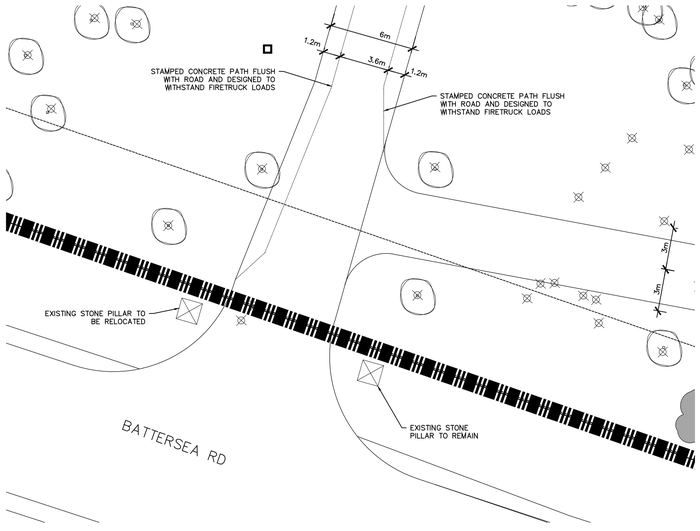
Tel: (613) 561- 7088



1 A022 **Site Plan**
1:1000



2 A022 **Main Entrance Plan**
1:200

Unity Guest Count* - Internal and Outside					
*Projected Use provided by BPE					
Internal - Staying at the Inn in a suite					
Outside - Just joining us for the day (no room booked)					
Capacity - Capacity at all locations will never be met everywhere at once due to needing room for our Internal guests					
MAX TOTAL ***As the bookings of the Suites and Cabins goes up, the availability for the amenities to the public goes down***					
	Phase 1		Phase 2 & 3		
	Outside	Internal	Internal		Capacity
Hotel Rooms		56		56	56
Cabins		10		80	80
Event Venue			75		150
Restaurant	30		10		100
Roof Patio	30		10		60
Corp BR	15		5		40
Corp Venue	60		20		100
Staff/Laundry/kitch	15		18		18
Hotel Rec/Office	2		2		3
Spa treatment rooms	5		5		5
Spa Sauna/Hot tubs	15		5		40
Spa Mani Pedi	4		2		6
Spa Yoga	5		2		12
Spa Quiet	5		2		20
Giftshop	2		1		10
Maintenance Buildings	0		0		0
	188	66	157	136	700
MAX TOTAL	254		293		

Site Statistics

Building Location (Legend)	Maj. Occ.	Building Uses	Area (m2)	Capacity		
				Phase 1	Phase 2	Phase 3
B,C,D,I	C	Hotel Suites (27)		56	56	56
#	C	Cabins (40)		10	30	80
S	A	Event Venue	TBD			150
C	A	Restaurant	230	60	60	60
C	A	Rooftop Patio	120	60	60	60
I	A	Corporate Boardroom	74	40	40	40
I	A	Corporate Venue Space	126	100	100	100
D	C	Staff Room, Laundry & Kitchen		18	18	18
C	C	Hotel Reception/Office	18	3	3	3
C	D	Spa (Treatment Rooms)	120	5	5	5
D,E	D	Spa (Saunas)	75	40	40	40
D	D	Spa (Mani/Pedi Room)	44	6	6	6
D	D	Spa (Yoga Studio)	53	12	12	12
D	D	Spa (Quiet Room)	95	20	20	20
I	E	Gift Shop	68	10	10	10
J	F2	Maintenance Shed 1				
Z	F2	Maintenance Shed 2				
		Totals	1023	440	460	660

sza
Shoalts and Zaback Architects Ltd

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DRAWING LEGEND

A. EMERGENCY ENTRANCE & DELIVERIES
B. RENOVATED FARMHOUSE INN
C. INN RECEPTION & RESTAURANT
D. SPA QUIET ROOM, TREATMENT ROOM & YOGA STUDIO
E. SPA COURTYARD
F. MAIN INN RECEPTION/ENTRANCE & FIRE DEPARTMENT ENTRANCE
G. FIRE HYDRANT LOCATION
H. INN & SPA PARKING (123 SPACES)
I. CORPORATE VENUE, GIFT SHOP & SUITES
J. RELOCATED SMALL BARN MAINTENANCE SHED
K. OUTDOOR PATIO
L. FLOWER CUTTING OR AGRICULTURE
M. SUNFLOWER FIELDS OR AGRICULTURE (1 ACRE)
N. OUTDOOR GARDENS AND SEATING
O. EXISTING STONE PILLARS
P. VINEYARD OR AGRICULTURE (5 ACRES)
Q. SIGN
R. BUS PARKING (1)
S. VEGETABLE CUTTING OR AGRICULTURE
T. POND
U. 16'X40' WATER TREATMENT BUILDING
V. APPROXIMATE LOCATION OF NEIGHBOURING HOUSE
W. APPROXIMATE LOCATION OF SEPTIC SYSTEM
X. LILACS OR AGRICULTURE
XX. TREES AND SHRUBS
XXX. TREES AND SHRUBS AND FENCE
Y. RESERVED
Z. NEW MAINTENANCE SHED (RECONSTRUCTED BARN WITH RECLAIMED BARN BOARD CLADDING)
AA. EMPLOYEE PARKING (18)
AB. SERVICE PARKING (12)
AC. NEW WELL LOCATION
AD. EVENT VENUE
AE. TURNAROUND
AF. APPROXIMATE LOCATION OF WETLAND
AG. EVENT PARKING (10 SPACES)
AH. SNOW STORAGE
AI. GOLF CART PATH
AJ. MAIN BUILDING CHILLER

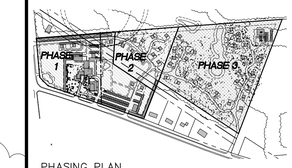
CABINS 1–5 (PHASE 1)
CABINS 6–15 (PHASE 2)
CABINS 16–40 (PHASE 3)

ENTRANCE LEGEND

E1. UNITY ENTRANCE
E2. MAIN GUEST ENTRANCE
E3. APPROX LOCATION OF EXISTING BARN ENTRANCE & FIRE DEPARTMENT ACCESS
E4. APPROX LOCATION OF EXISTING FIELD ENTRANCE & FIRE DEPARTMENT ACCESS
E5. PHASE 3 BACK ACCESS

APPROXIMATE LOCATION OF WETLAND (AS PROVIDED BY BPE)
ELECTRICAL EASEMENT
BUILDING
FUTURE VINEYARD (OR AGRICULTURE)
6m WIDE FIRE ACCESS ROUTE (12m TURNING RADIUS TO CENTRE OF ROAD)
APPROXIMATE LOCATION OF TREE LINE
EXIT DOOR LOCATION

CONTEXT PLAN
SCALE: NTS



PHASING PLAN
SCALE: 1:8000

Revision	Description	Date

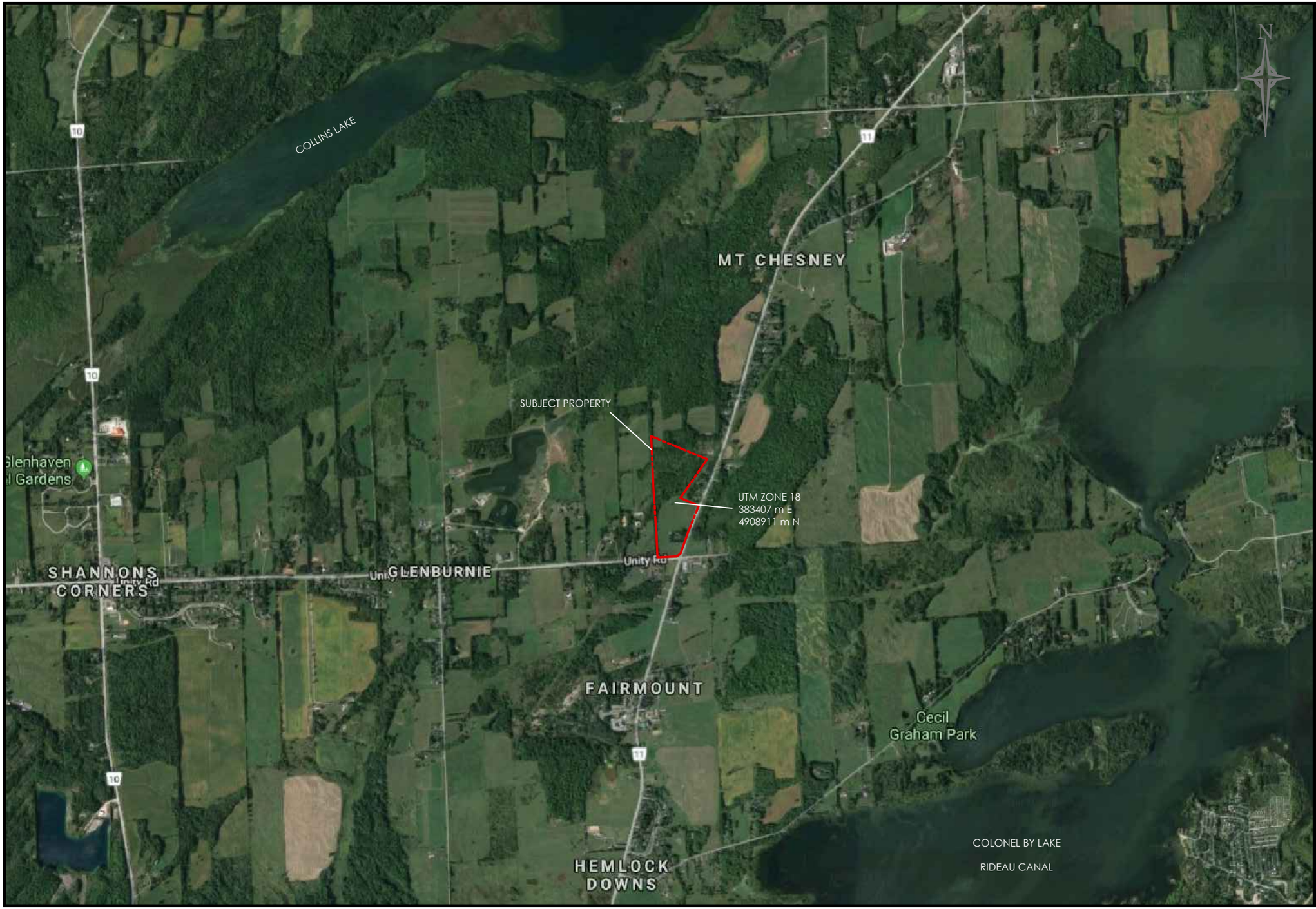
Project
Unity Inn & Spa

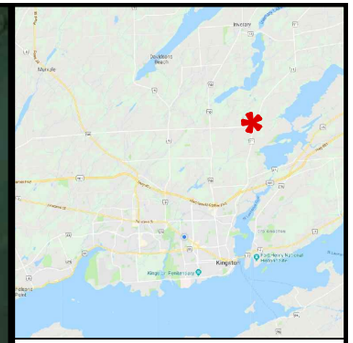
Location
2285 Battersea Rd
Glenburnie, ON

Client
BPE Development

Drawing
Site Plan Phase 3

Drawn by: ---
Date: January 22, 2019
File Name: A020 Site phase 3b
Scale: 1:1000
Client Project #: Client Proj. #
Drawing Number: A022
Project #: 17091
Revision #: --





LEGEND

SUBJECT PROPERTY LOCATION

SUBJECT PROPERTY LINE

DRAWING TITLE
Site Location Plan

FIGURE NO.	DRAWN BY
01	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	0 METRES 525
DATE 1-Feb-2019	

ASC ENVIRONMENTAL
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LEGEND

- SUBJECT PROPERTY LOCATION
- SUBJECT PROPERTY LINE
- PROPERTY LINE
- BENCHMARK (ASSUMED ELEVATION 132.00 m)

DRAWING TITLE
Site Layout Plan - Phase I & II

FIGURE NO.	DRAWN BY
02	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	0 METRES 45
DATE 1-Feb-2019	

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LEGEND

- SUBJECT PROPERTY LOCATION
- SUBJECT PROPERTY LINE
- STUDY AREA (PART 1 AND 2)
- PROPERTY LINE
- TW /OW — TEST WELL/OBSERVATION WELL LOCATION
- BENCHMARK (ASSUMED ELEVATION 132.00 m)

DRAWING TITLE
Test Well Location Plan

FIGURE NO.	DRAWN BY
03	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

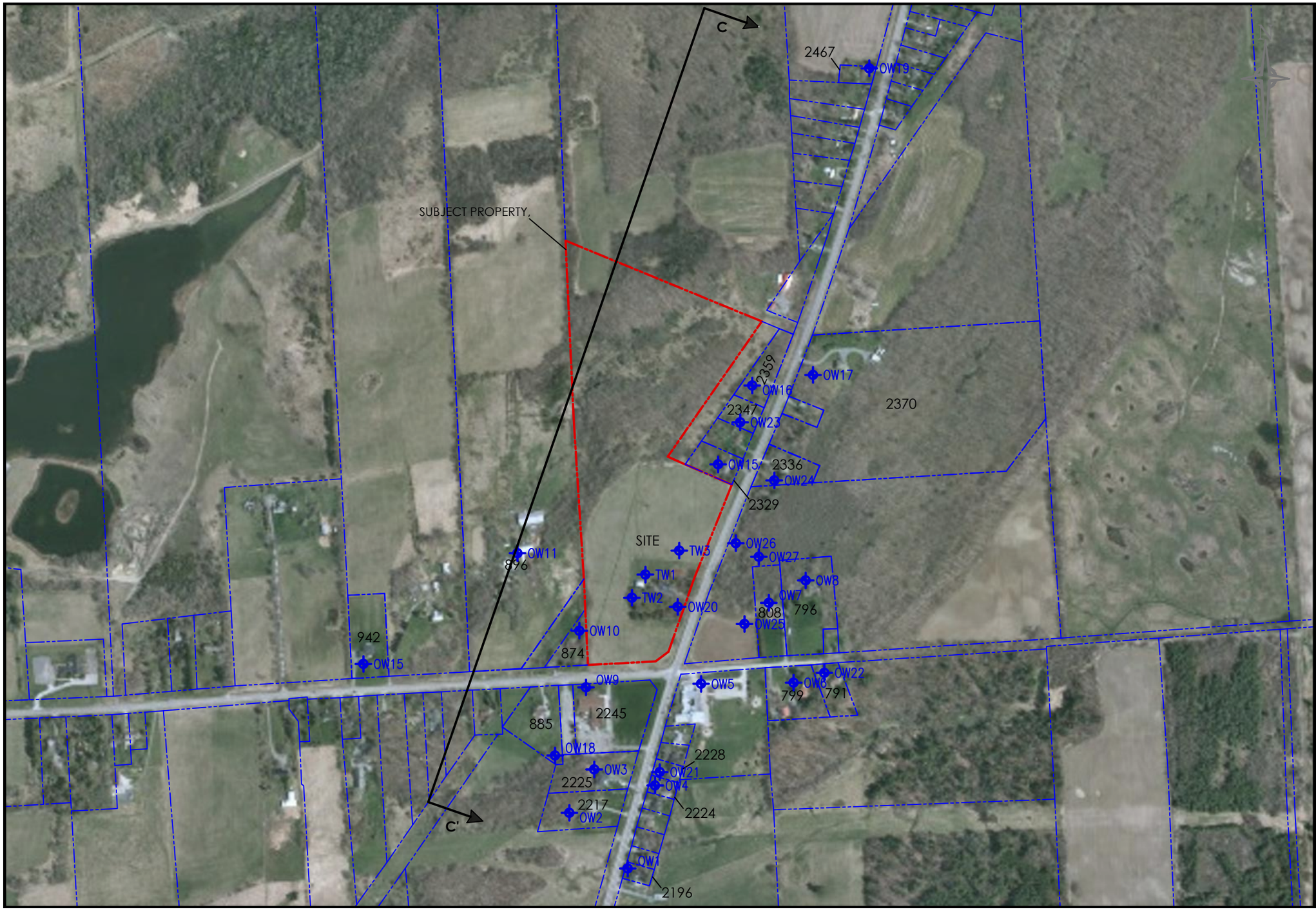
CLIENT
BPE Development

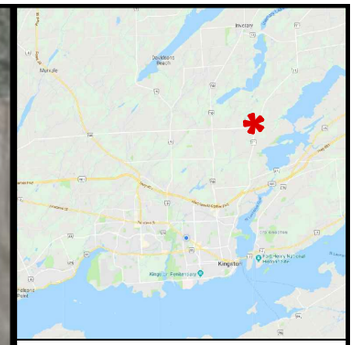
LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	0 METRES 45
DATE 1-Feb-2019	

ASC ENVIRONMENTAL
1305 Princess Street
Kingston, ON, K7M 3E3

(613)634-5596
www.ascenvironmental.ca





LEGEND

- SUBJECT PROPERTY LOCATION
- SUBJECT PROPERTY LINE
- PROPERTY LINE
- TW1 TEST WELL/OBSERVATION WELL LOCATION

DRAWING TITLE
Observation Well Location Plan

FIGURE NO.	DRAWN BY
04	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	0 METRES 150
DATE 24-Sep-2019	

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LEGEND

- SUBJECT PROPERTY LOCATION
- SUBJECT PROPERTY LINE
- PROPERTY LINE
- TW1 100.32 m — TEST/OBSERVATION WELL LOCATION, GROUNDWATER ELEVATION
- 100.00 m — POTENTIOMETRIC SURFACE
- BENCHMARK (ASSUMED ELEVATION 132.00 m)

DRAWING TITLE
Test Well Location Plan

FIGURE NO.	DRAWN BY
05	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	0 METRES 60
DATE 1-Feb-2019	

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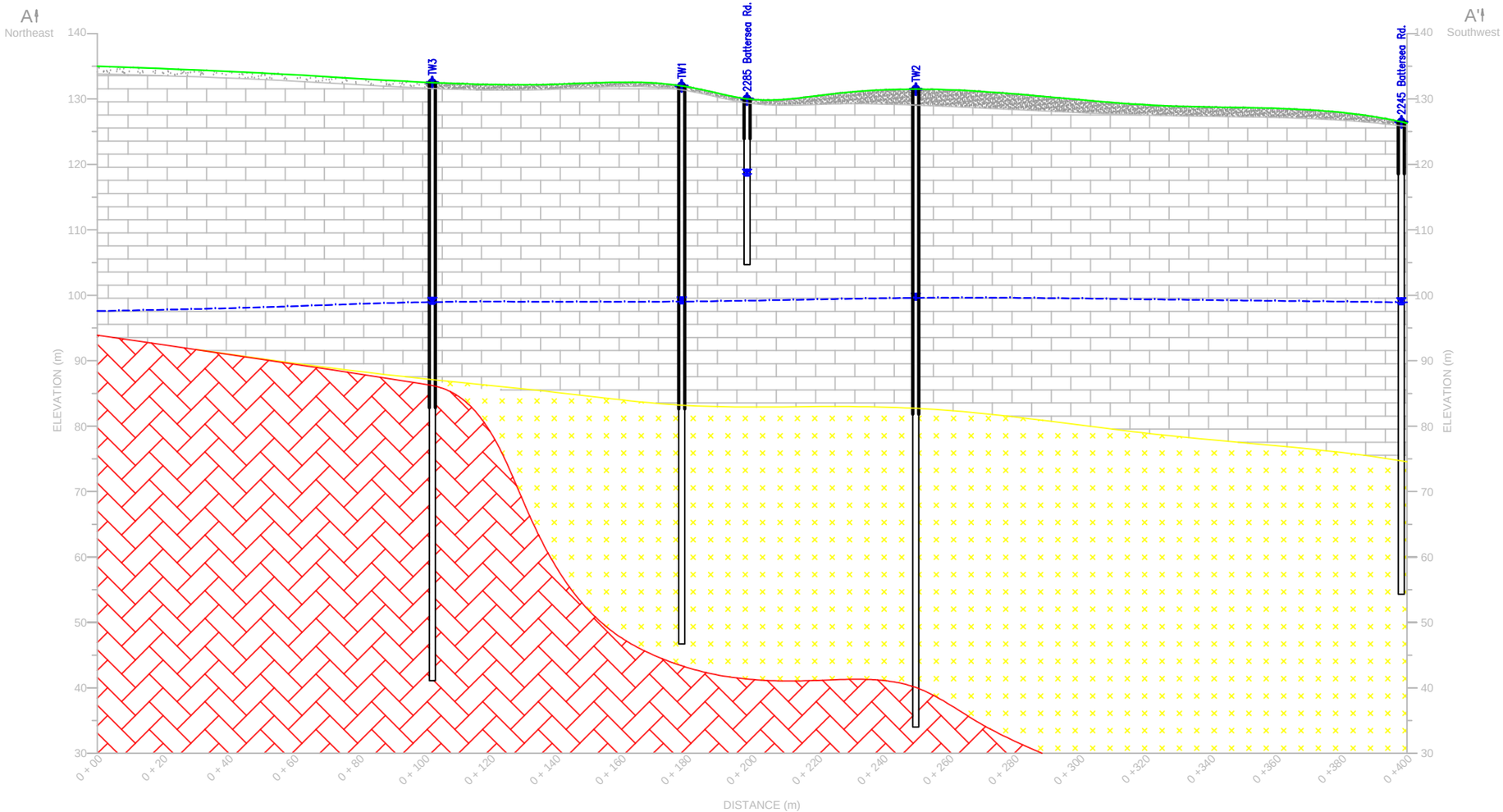
Facing Southeast



LEGEND

- SUBJECT PROPERTY LOCATION
- GROUND SURFACE
- SOIL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK
- GRANITE BEDROCK
- GROUNDWATER ELEVATION (04-DEC-18)
- TW1 WELL LOCATION
- WELL CASING

DRAWING TITLE
A-A' Northeast-Southwest Hydrogeological Cross-Section - Test Wells

FIGURE NO.	DRAWN BY
06	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

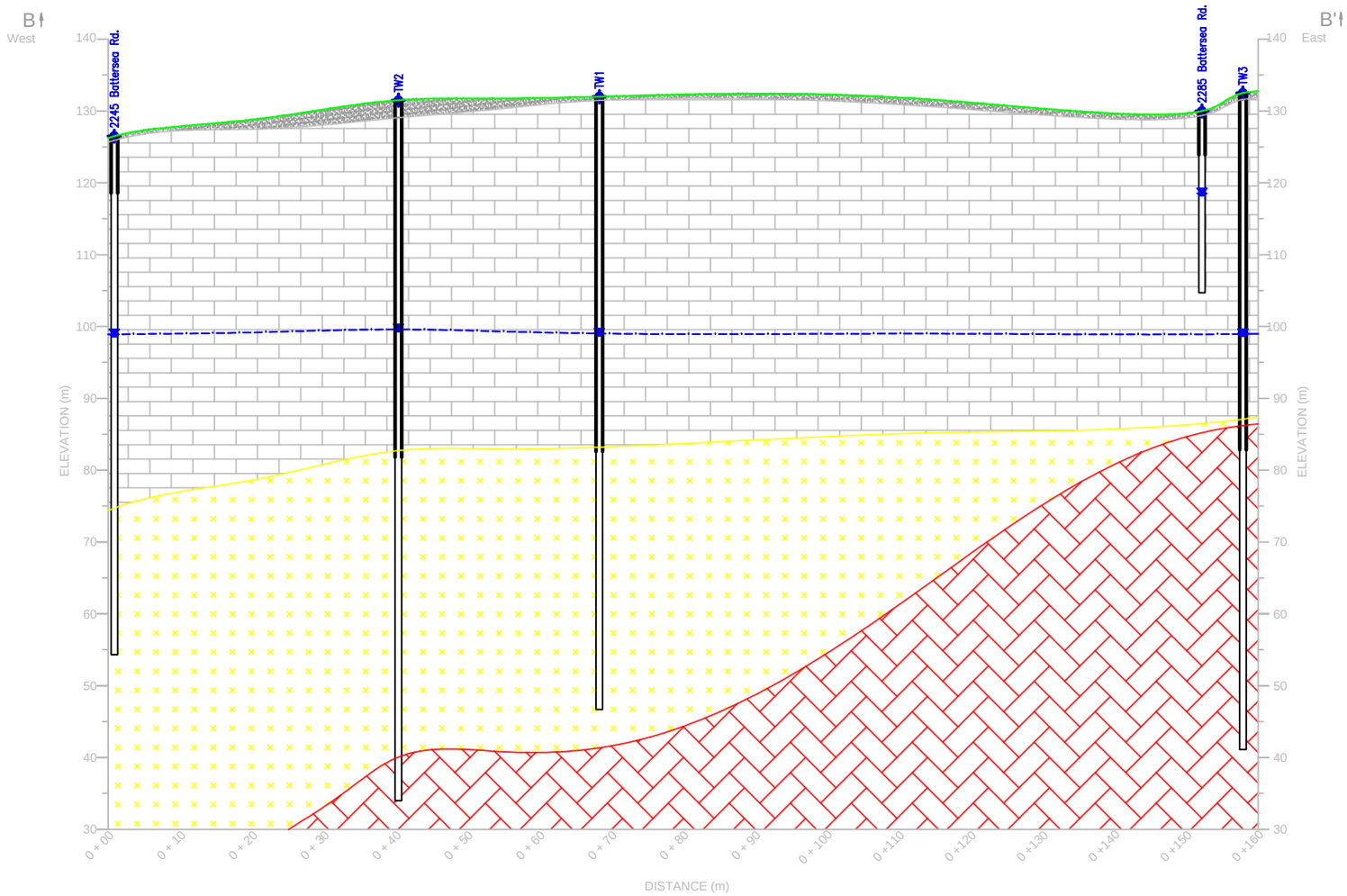
PROJECT NO.	SCALE:
ASC-458	Not to Scale
DATE 1-Feb-2019	

ASC ENVIRONMENTAL
1305 Princess Street
Kingston, ON, K7M 3E3

(613)634-5596
www.ascenvironmental.ca

NOTES: ELEVATIONS REFERENCED TO BENCHMARK LOCATED AT TOP OF CONCRETE PAD LOCATED AT NORTH SIDE BUILDING ENTRANCE, WITH AN ASSUMED ELEVATION OF 132.00 m

Facing North



LEGEND

- SUBJECT PROPERTY LOCATION
- GROUND SURFACE
- SOIL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK
- GRANITE BEDROCK
- GROUNDWATER ELEVATION (04-DEC-18)
- TW1 WELL LOCATION
- WELL CASING

DRAWING TITLE
B-B' Northwest-Southeast Hydrogeological Cross-Section - Test Wells

FIGURE NO.	DRAWN BY
07	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	Not to Scale
DATE: 1-Feb-2019	

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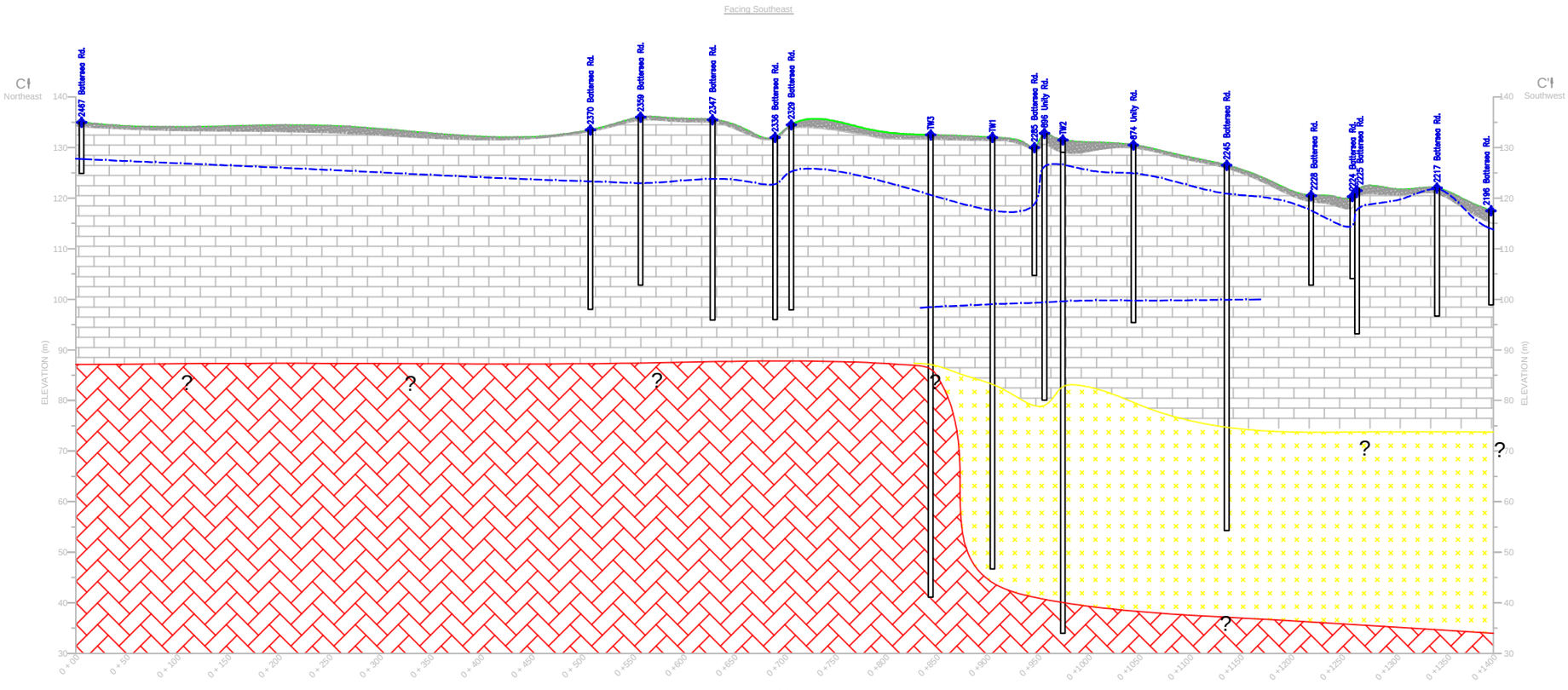
Kingston, ON, K7M 3E3

(613)634-5596
www.ascenvironmental.ca

NOTES: ELEVATIONS REFERENCED TO BENCHMARK LOCATED AT TOP OF CONCRETE PAD LOCATED AT NORTH SIDE BUILDING ENTRANCE, WITH AN ASSUMED ELEVATION OF 132.00 m



LEGEND

- SUBJECT PROPERTY LOCATION
- GROUND SURFACE
- SOIL
- LIMESTONE BEDROCK
- SANDSTONE BEDROCK
- GRANITE BEDROCK
- GROUNDWATER ELEVATION (04-DEC-18)
- TW1 WELL LOCATION
- WELL CASING

DRAWING TITLE
C-C' Northeast-Southwest Hydrogeological Cross-Section - Observation Wells

FIGURE NO.	DRAWN BY
08	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	Not to Scale
DATE 1-Feb-2019	

NOTES: ELEVATIONS REFERENCED TO BENCHMARK LOCATED AT TOP OF CONCRETE PAD LOCATED AT NORTH SIDE BUILDING ENTRANCE, WITH AN ASSUMED ELEVATION OF 132.00 m

ASC ENVIRONMENTAL
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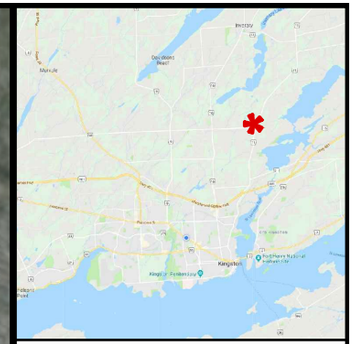
TEST PIT	DEPTH TO BEDROCK (m)
TP1	1.60
TP2	0.90
TP3	0.65
TP4	0.65
TP5	0.95
TP6	1.70
TP7	0.50
TP8	1.20
TP9	1.55
TP10	0.70
TP11	0.65
TP12	0.30
TP13	0.40
TP14	0.40



LEGEND

- SUBJECT PROPERTY LOCATION
- SUBJECT PROPERTY LINE
- PROPERTY LINE
- TP1 TEST PIT LOCATION

DRAWING TITLE
Test Pit Location Plan

FIGURE NO.
09

DRAWN BY
J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Developments Inc.

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.
ASC-458

SCALE:
0 METRES 45

DATE
1-Feb-2019

ASC ENVIRONMENTAL
1305 Princess Street
Kingston, ON, K7M 3E3

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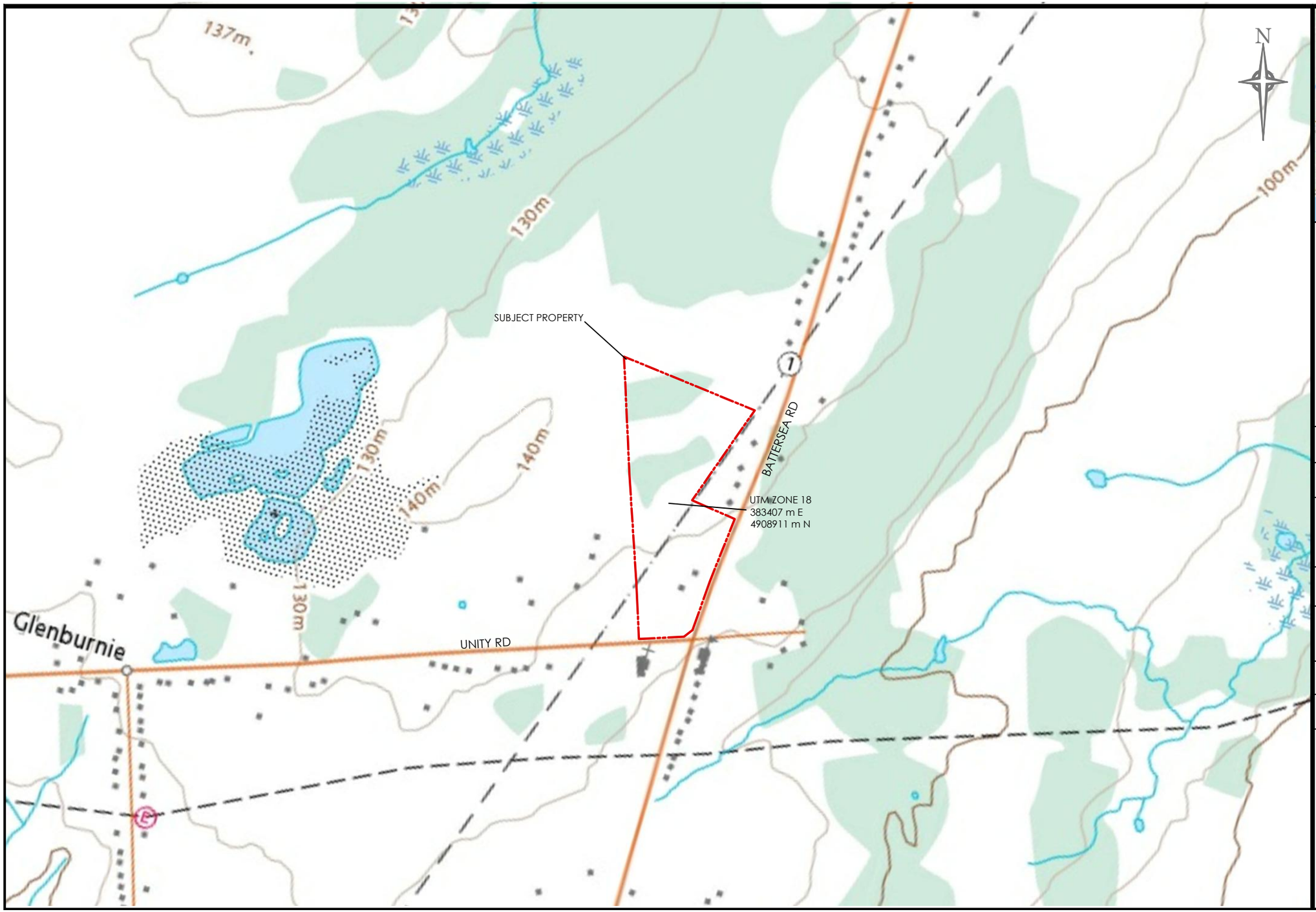

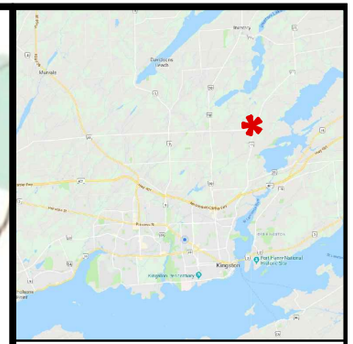

LEGEND

SUBJECT PROPERTY LOCATION

SUBJECT PROPERTY LINE

DRAWING TITLE
Topographic Plan

FIGURE NO.	DRAWN BY
10	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	0 METRES 225
DATE: 1-Feb-2019	

ASC ENVIRONMENTAL
1305 Princess Street
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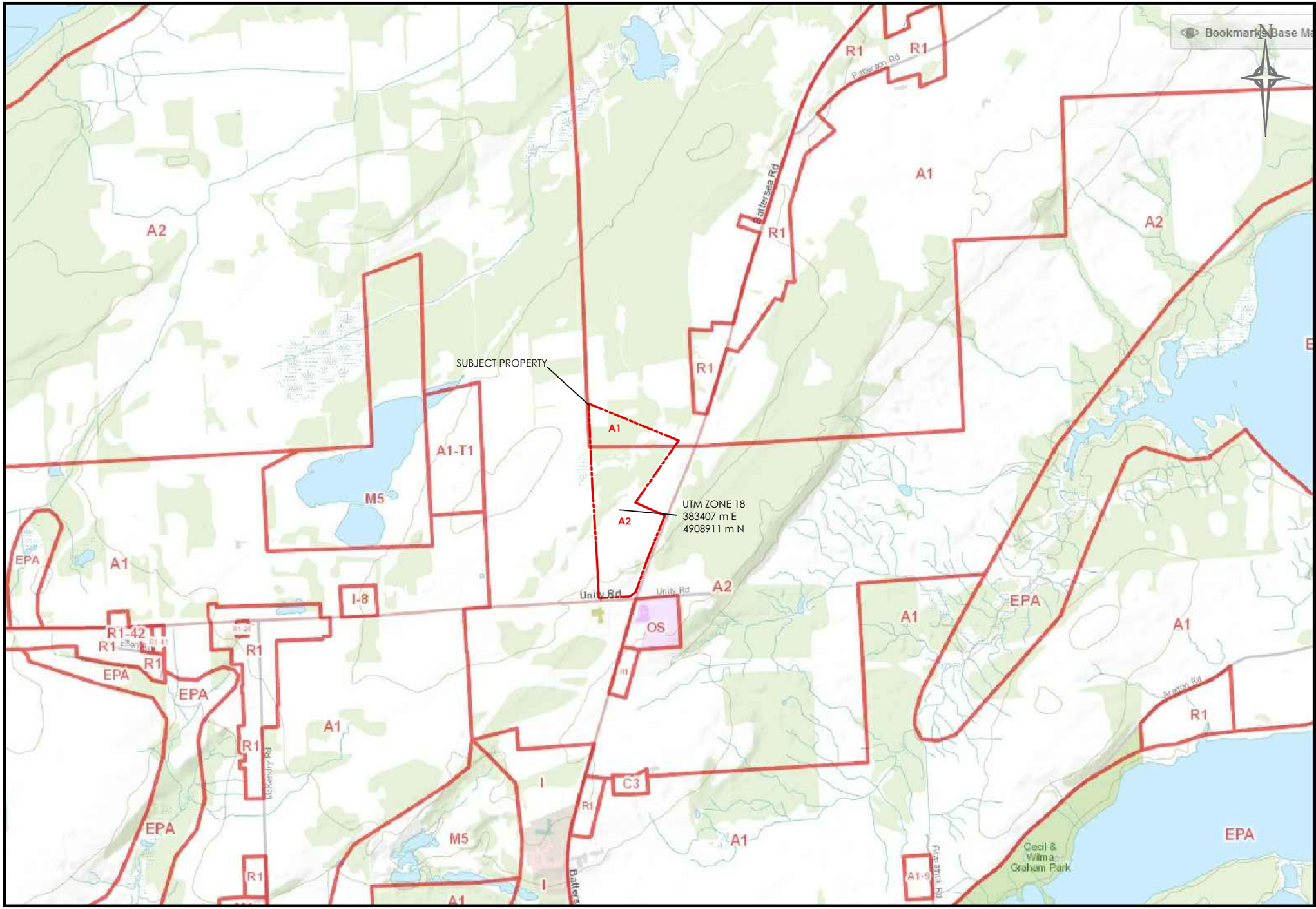

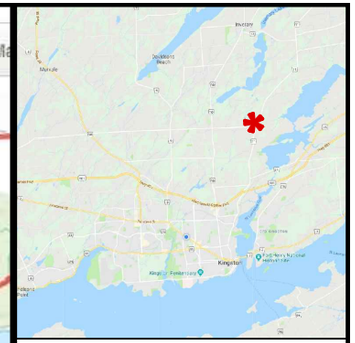

LEGEND

- SUBJECT PROPERTY LOCATION
- SUBJECT PROPERTY LINE
- ZONE BOUNDARY

NOTES

EPA - Environmental Protection Area Zone
OS - Open Space Zone
A1 - Restricted Agricultural Zone
A2 - General Agricultural Zone
C3 - Marine Commercial Zone
R1 - Residential Type 1 Zone
I - Institutional Zone
M5 - Extractive Industrial Zone

DRAWING TITLE
Zoning Plan

FIGURE NO.	DRAWN BY
11	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	0 METRES 327
DATE	
1-Feb-2019	

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1305 Princess Street
Kingston, ON, K7M 3E3

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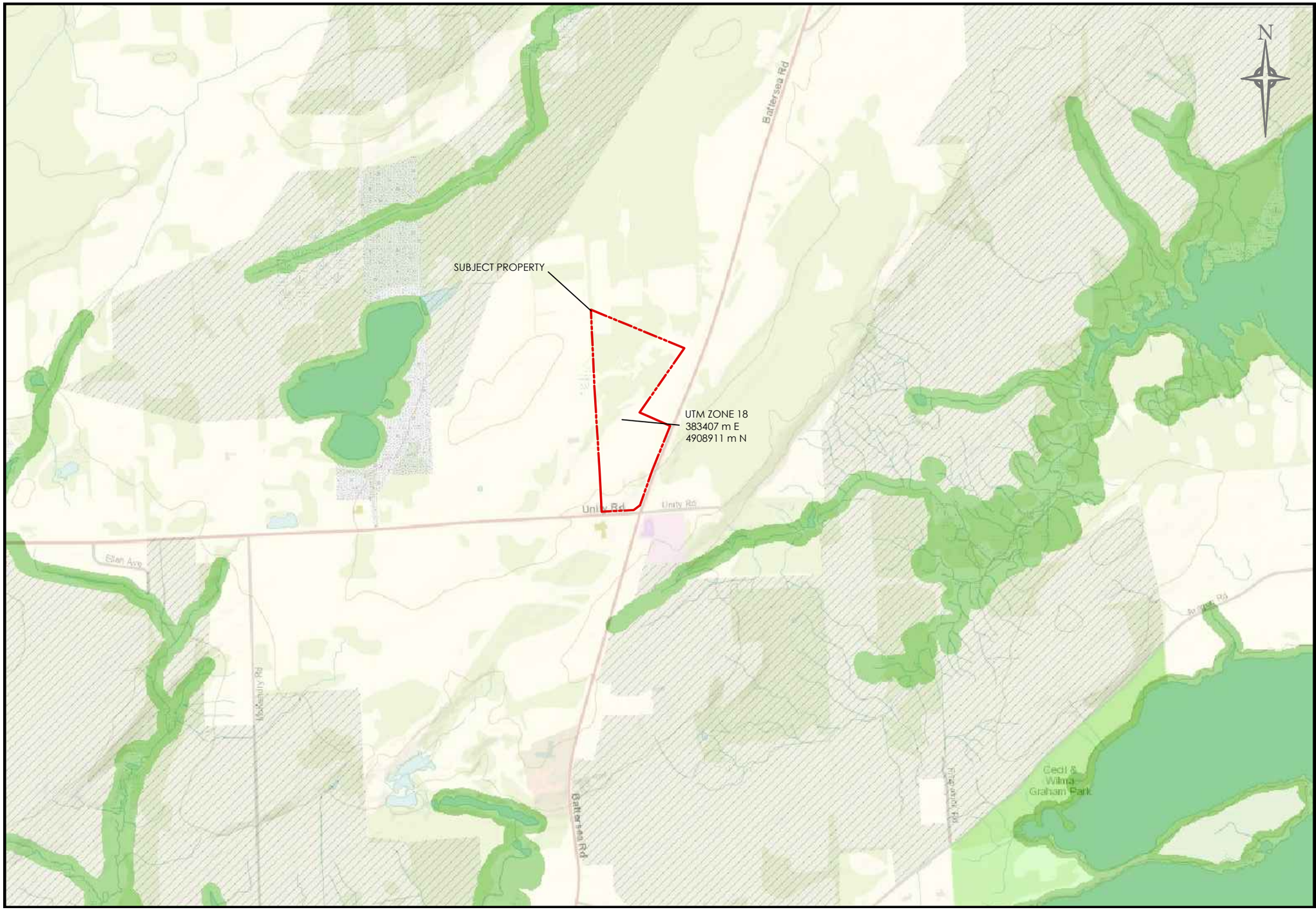

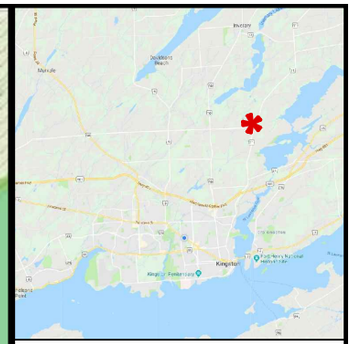

LEGEND

- SUBJECT PROPERTY LOCATION
- SUBJECT PROPERTY LINE
- PRIME AGRICULTURAL AREA
- ENVIRONMENTAL PROTECTION AREA
- INSTITUTIONAL
- MINERAL RESOURCE
- OPEN SPACE

DRAWING TITLE
Land-Use Plan

FIGURE NO.	DRAWN BY
12	J. F.

PROJECT
Hydrogeological Study, Servicing Options and Terrain Analysis

CLIENT
BPE Development

LOCATION
2285 Battersea Road, Kingston, ON

PROJECT NO.	SCALE:
ASC-458	0 METRES 315
DATE	
1-Feb-2019	

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1305 Princess Street
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APPENDIX B
Support Documentation

1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 561- 7088

Well I.D.	Elevation (m)	Well Depth (m)	Groundwater Elevation (m)									
			7-Aug-18		17-Sep-18		16-Nov-18		4-Dec-18		28-Jan-19	
			Static Water Level [TOC] (m)	Groundwater Elevation (m)	Static Water Level [TOC] (m)	Groundwater Elevation (m)	Static Water Level [TOC] (m)	Groundwater Elevation (m)	Static Water Level [TOC] (m)	Groundwater Elevation (m)	Static Water Level [TOC] (m)	Groundwater Elevation (m)
TW1	133.288	85.300	35.220	**98.068**	35.540	**97.748**	32.96	**100.328**	32.964	**100.324**	33.482	**99.806**
TW2	131.609	97.500	-	**-**	34.442	**97.167**	31.9	**99.709**	31.897	**99.712**	32.339	**99.270**
TW3	133.818	91.400	-	**-**	-	**-**	33.53	**100.288**	33.528	**100.290**	33.437	**100.381**
2196 Battersea Rd. (OW1)	117.500	18.600	5.150	**112.350**	4.900	**112.600**	-	**-**	3.540	**113.960**	-	**-**
2217 Battersea Rd. (OW2)	122.000	25.300	5.050	**116.950**	5.430	**116.570**	-	**-**	0.220	**121.780**	-	**-**
2225 Battersea Rd. (OW3)	121.500	28.300	5.620	**115.880**	6.550	**114.950**	-	-	3.610	**117.890**	-	**-**
2224 Battersea Rd. (OW4)	118.500	16.200	4.950	**113.550**	5.370	**113.130**	-	-	4.080	**114.420**	-	**-**
799 Unity Rd. (OW6)	122.000	25.300	13.540	**108.460**	13.840	**108.160**	-	**-**	8.450	**113.550**	-	**-**
808 Unity Rd. (OW7)	123.500	20.400	12.435	**111.065**	11.540	**111.960**	-	-	6.157	**117.343**	-	**-**
796 Unity Rd. (OW8)	122.500	25.900	10.140	**112.360**	11.410	**111.090**	-	-	5.710	**116.790**	-	**-**
2245 Battersea Rd. (OW9)	125.500	72.200	27.750	**97.750**	29.010	**96.490**	-	-	26.594	**98.906**	-	**-**
874 Unity Rd. (OW10)	130.500	35.100	13.335	**117.165**	8.961	**121.539**	-	-	5.590	**124.910**	-	**-**
896 Unity Rd. (OW11)	136.500	90.800	12.512	**123.988**	12.314	**124.186**	-	-	10.110	**126.390**	-	**-**
942 Unity Rd. (OW14)	135.000	25.600	17.456	**117.544**	18.014	**116.986**	-	-	11.480	**123.520**	-	**-**
2329 Battersea Rd. (OW15)	134.500	36.600	21.869	**112.631**	22.520	**111.980**	-	-	9.240	**125.260**	-	**-**
2359 Battersea Rd. (OW16)	136.000	33.200	26.676	**109.324**	25.270	**110.730**	-	-	13.030	**122.970**	-	**-**
2370 Battersea Rd. (OW17)	133.500	35.500	22.311	**111.189**	22.700	**110.800**	-	-	10.200	**123.300**	-	**-**
885 Unity Rd. (OW18)	126.000	45.700	8.748	**117.252**	8.380	**117.620**	-	-	2.910	**123.090**	-	**-**
2467 Battersea Rd. (OW19)	135.000	Unknown	-	**-**	10.410	**124.590**	-	-	7.280	**127.720**	-	**-**
2285 Battersea Rd. (OW20)	129.818	25.300	-	**-**	14.508	**115.310**	-	-	11.445	**118.373**	12.110	**117.708**
2228 Battersea Rd. (OW21)	120.500	17.700	-	**-**	5.720	**114.780**	-	-	2.980	**117.520**	-	**-**
791 Unity Rd. (OW22)	121.500	40.20	-	**-**	19.220	**102.280**	-	-	14.018	**107.482**	-	**-**
2347 Battersea Rd. (OW23)	135.500	39.600	-	**-**	24.460	**111.040**	-	-	11.700	**123.800**	-	**-**
2336 Battersea Rd. (OW24)	132.000	36.000	-	**-**	21.260	**110.740**	-	-	9.250	**122.750**	-	**-**

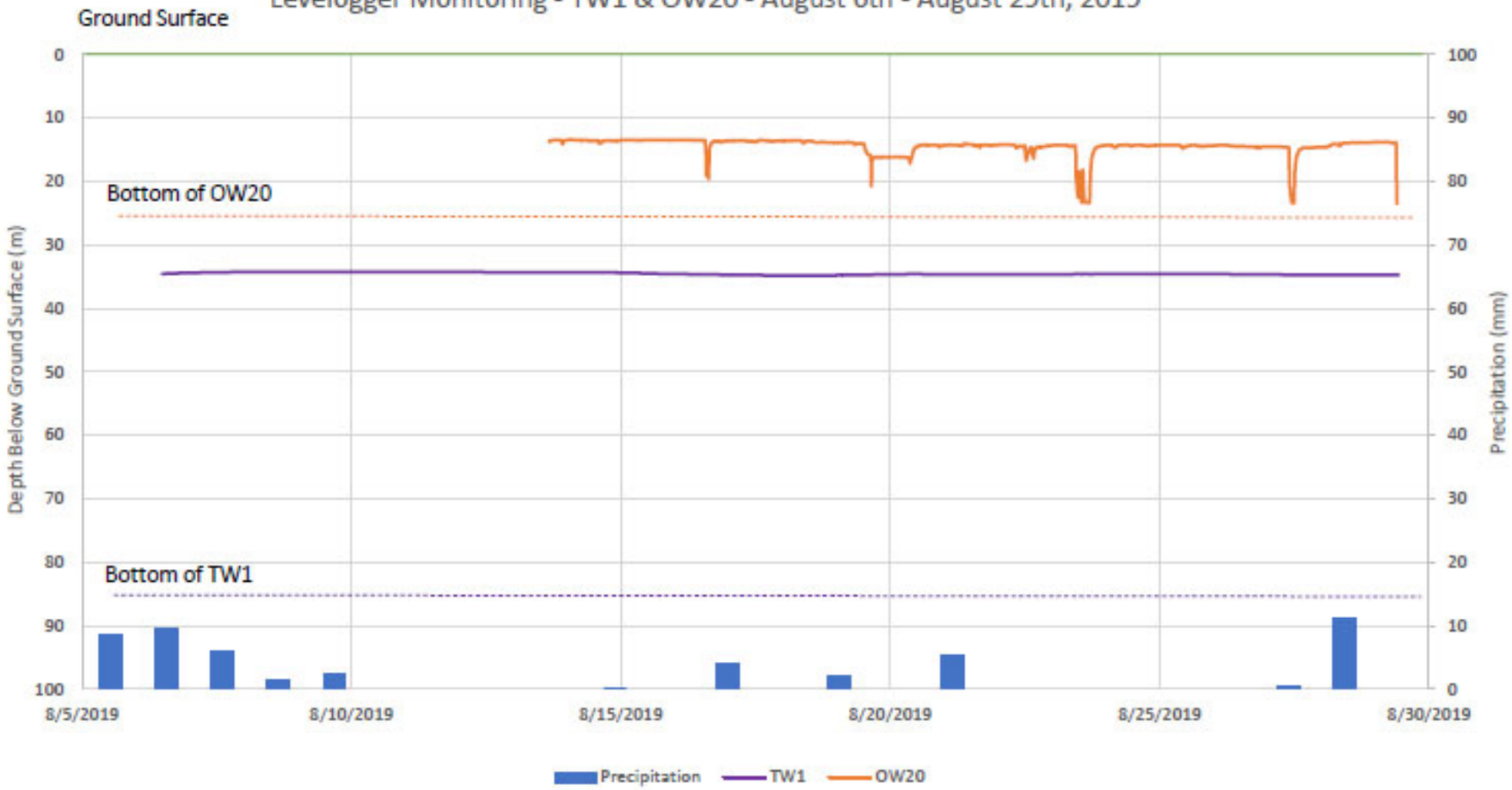
Notes:

"-" denotes not measured

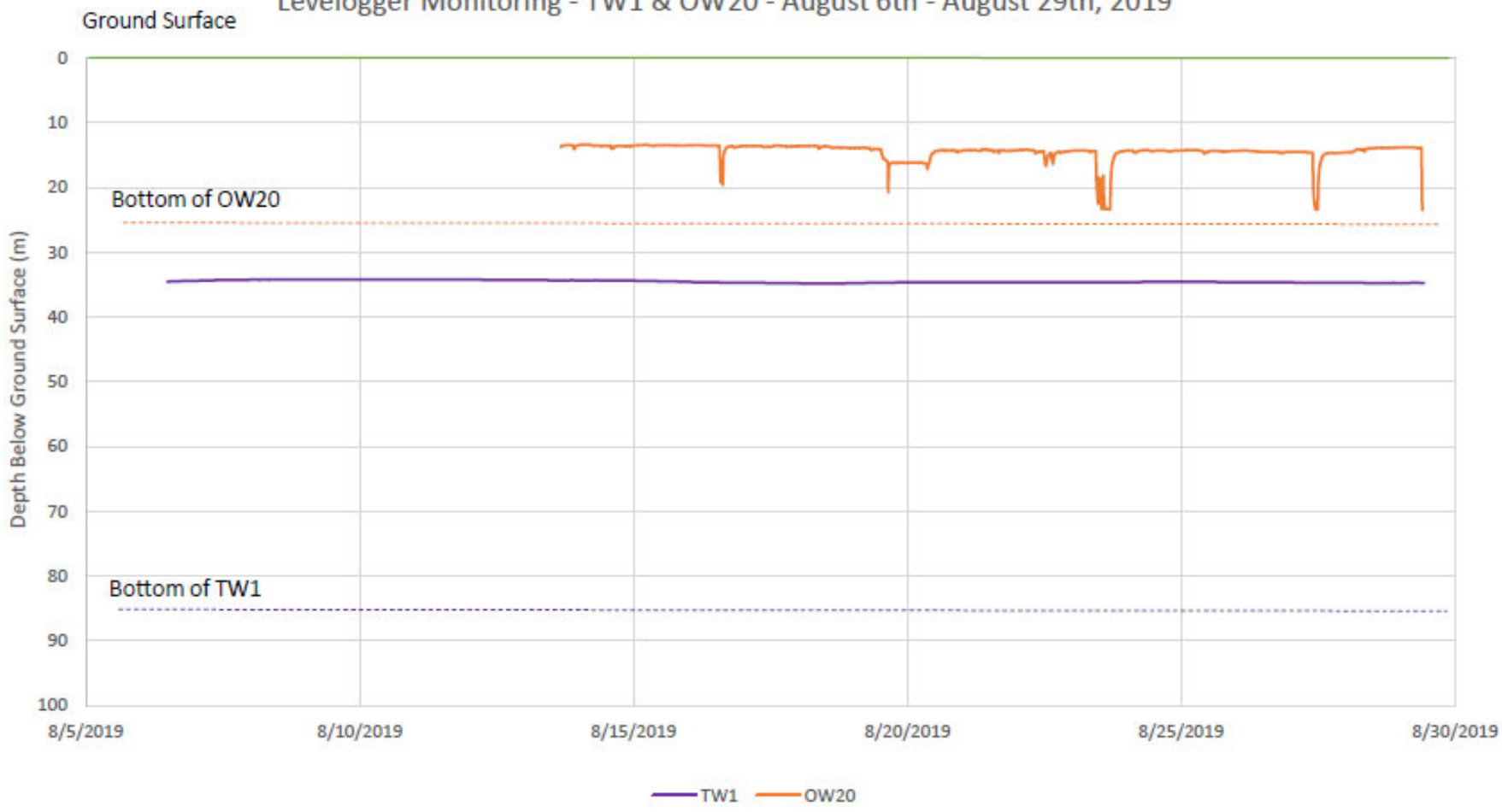
Static water level measurements were taken from top of well casing (denoted as TOC in column title), and groundwater elevations were calculated from the casing elevation

Elevations referenced to geodetic datum

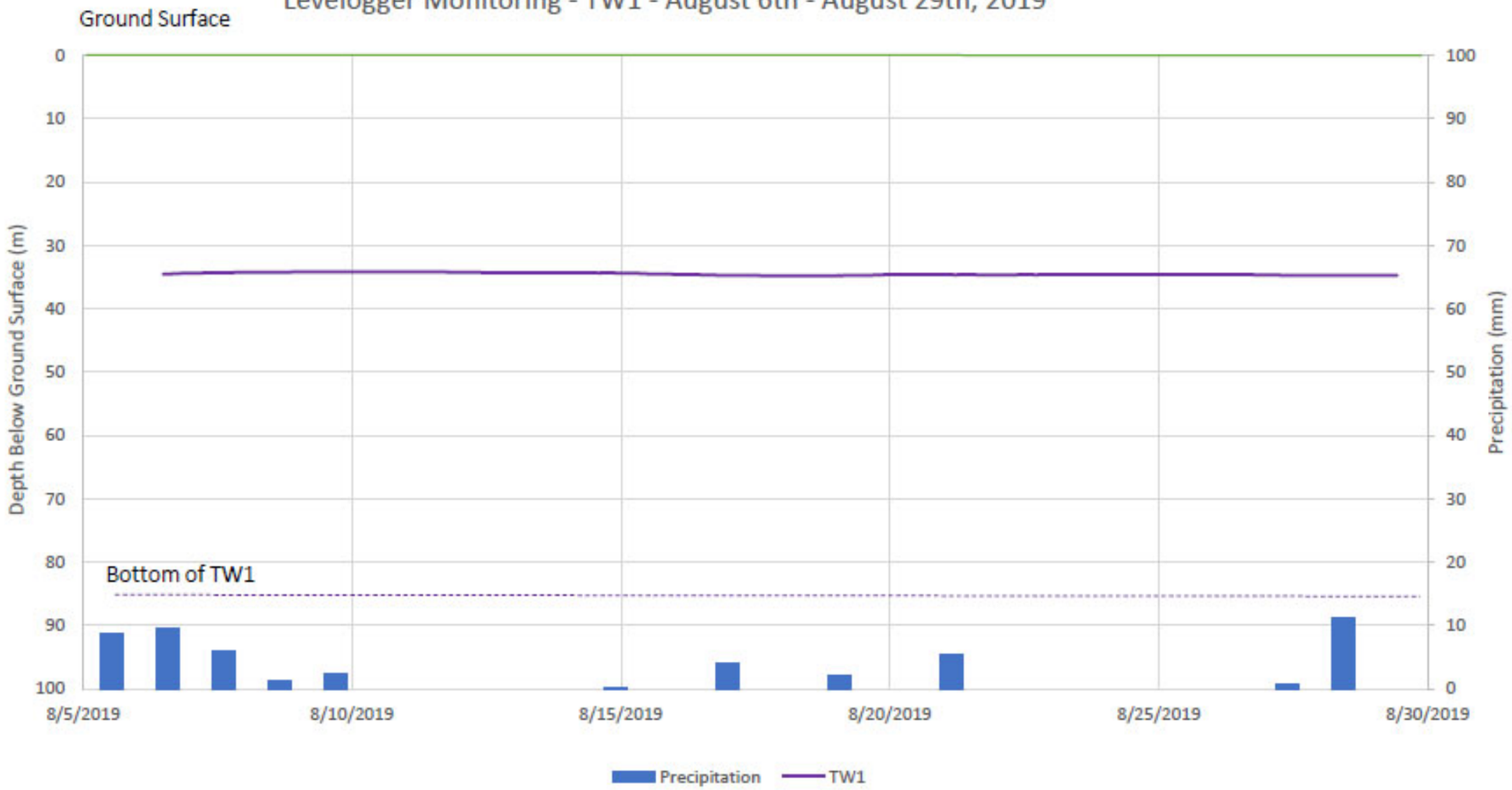
ASC - 458 - BPE Development, 2285 Battersea, Kingston, Ontario
Levelogger Monitoring - TW1 & OW20 - August 6th - August 29th, 2019

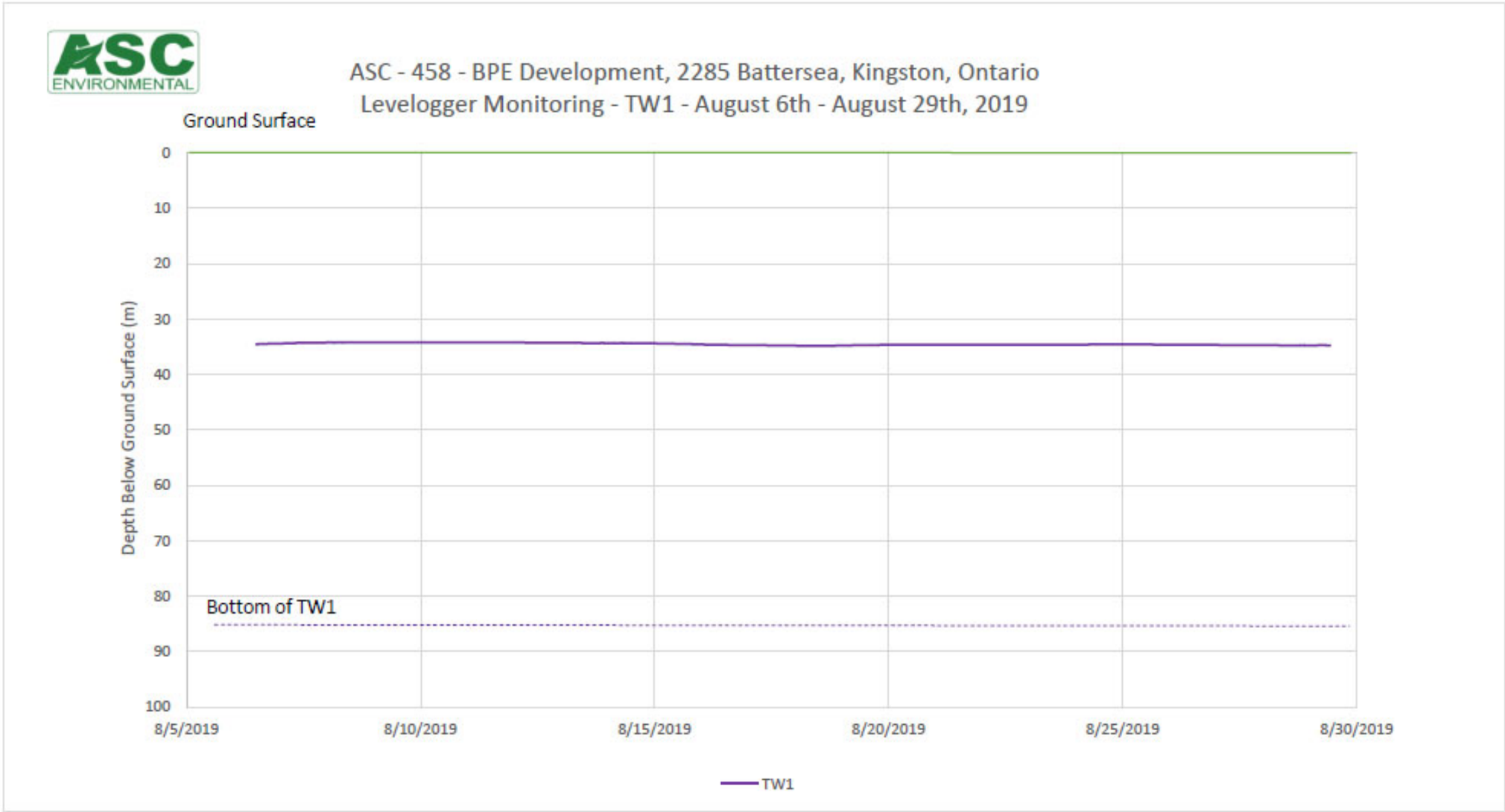


ASC - 458 - BPE Development, 2285 Battersea, Kingston, Ontario
Levelogger Monitoring - TW1 & OW20 - August 6th - August 29th, 2019

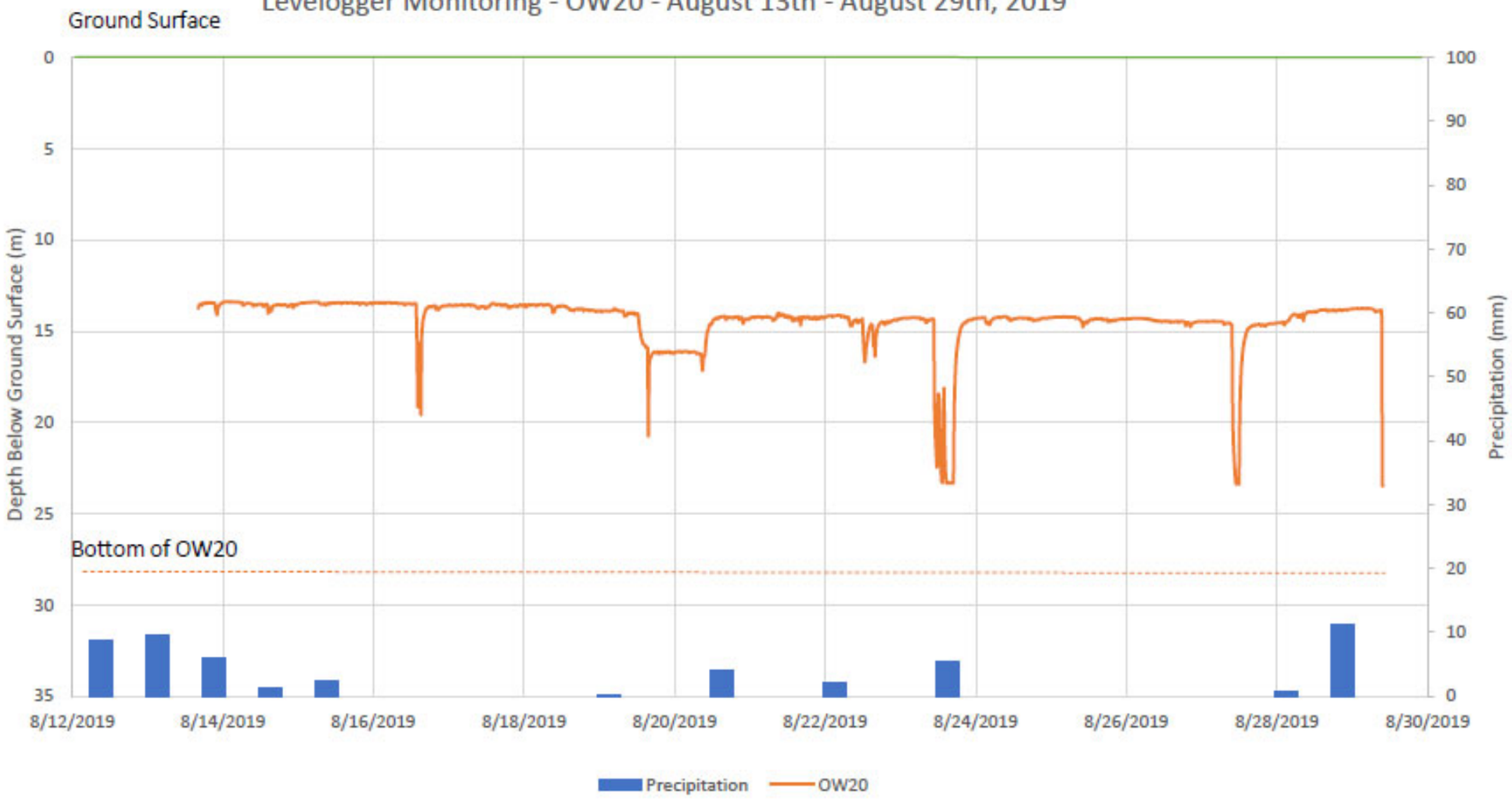


ASC - 458 - BPE Development, 2285 Battersea, Kingston, Ontario
Levelogger Monitoring - TW1 - August 6th - August 29th, 2019




ASC - 458 - BPE Development, 2285 Battersea, Kingston, Ontario
Levelogger Monitoring - TW1 - August 6th - August 29th, 2019
Ground Surface
Depth Below Ground Surface (m)
0
10
20
30
40
50
60
70
80
90
100
Bottom of TW1
8/5/2019
8/10/2019
8/15/2019
8/20/2019
8/25/2019
8/30/2019
TW1

ASC - 458 - BPE Development, 2285 Battersea, Kingston, Ontario
Levelogger Monitoring - OW20 - August 13th - August 29th, 2019



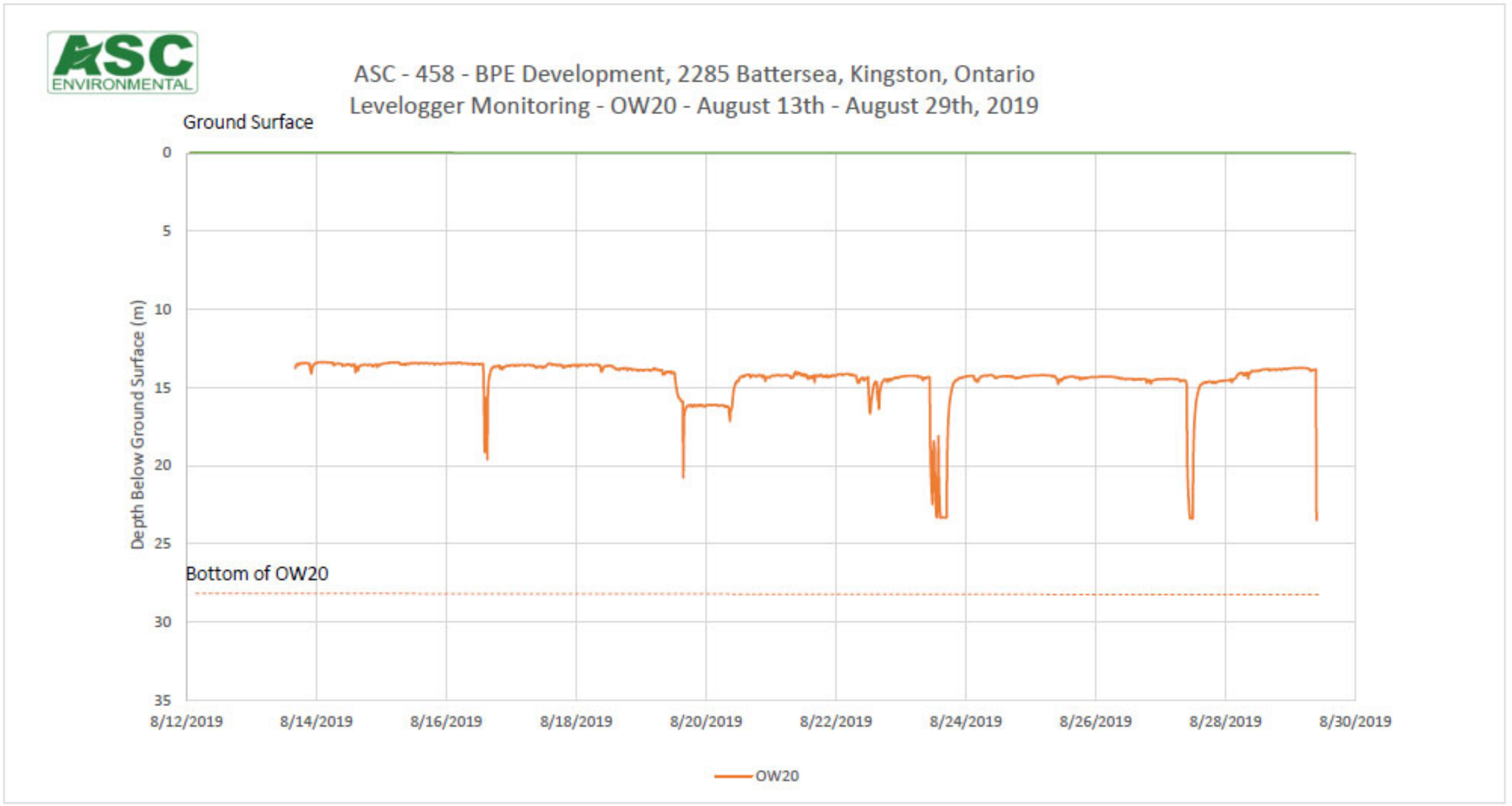

ASC - 458 - BPE Development, 2285 Battersea, Kingston, Ontario
Levelogger Monitoring - OW20 - August 13th - August 29th, 2019
Ground Surface
Bottom of OW20
Depth Below Ground Surface (m)
0
5
10
15
20
25
30
35
8/12/2019
8/14/2019
8/16/2019
8/18/2019
8/20/2019
8/22/2019
8/24/2019
8/26/2019
8/28/2019
8/30/2019
OW20

Table D3. Observation well drawdown during pumping test.

	Pumping Test - Drawdown		Test Well:	TW1
	Project No.:	ASC-458	Date:	7-Aug-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	17 12	PM

OW1 (2196 Battersea Rd.) Well Depth - 18.6 m						OW2 (2217 Battersea Rd.) Well Depth - 25.3 m					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
16.896	5.150	0.000	12	35	0	16.568	5.050	0.000	12	45	0
16.980	5.176	0.026	18	16	64	16.850	5.136	0.086	18	19	67
16.950	5.166	0.016	20	55	223	17.750	5.410	0.360	21	0	228
17.000	5.182	0.032	22	46	334	18.050	5.502	0.452	22	50	338
16.900	5.151	0.001	24	22	430	17.300	5.273	0.223	24	28	436
16.850	5.136	-0.014	26	10	538	15.900	4.846	-0.204	26	14	542
16.750	5.105	-0.045	28	51	699	16.800	5.121	0.071	28	55	703
16.850	5.136	-0.014	30	16	784	17.200	5.243	0.193	30	20	788
16.800	5.121	-0.029	31	57	885	16.950	5.166	0.116	32	0	888
16.800	5.121	-0.029	33	23	971	16.950	5.166	0.116	33	33	981
26.550	8.092	2.942	35	23	1091	18.500	5.639	0.589	35	28	1096
16.530	5.038	-0.112	36	53	1181	17.050	5.197	0.147	36	57	1185
16.550	5.044	-0.106	38	19	1267	16.200	4.938	-0.112	38	22	1270
16.500	5.029	-0.121	39	57	1365	17.300	5.273	0.223	40	0	1368
16.200	4.938	-0.212	41	54	1482	15.300	4.663	-0.387	41	57	1485
16.050	4.892	-0.258	43	48	1596	15.100	4.602	-0.448	43	50	1598
16.000	4.877	-0.273	45	22	1690	14.650	4.465	-0.585	45	28	1696
15.950	4.862	-0.288	47	17	1805	12.850	3.917	-1.133	47	22	1810
16.000	4.877	-0.273	48	40	1888	14.700	4.481	-0.569	48	45	1893
16.850	5.136	-0.014	51	21	2049	13.200	4.023	-1.027	51	25	2053
15.900	4.846	-0.304	53	25	2173	14.100	4.298	-0.752	53	30	2178
16.450	5.014	-0.136	55	51	2319	13.260	4.042	-1.008	55	56	2324
15.850	4.831	-0.319	57	49	2437	13.200	4.023	-1.027	57	52	2440
15.750	4.801	-0.349	59	22	2530	13.300	4.054	-0.996	59	26	2534
15.000	4.572	-0.578	60	58	2626	13.025	3.970	-1.080	61	4	2632
15.518	4.730	-0.420	62	24	2712	12.795	3.900	-1.150	62	27	2715
18.373	5.600	0.450	63	45	2793	13.419	4.090	-0.960	63	51	2799
OW3 (2225 Battersea Rd.) Well Depth - 28.3 m						**OW4 (2224 Battersea Rd.) Well Depth - 16.2 m**					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
18.438	5.620	0.000	13	33	0	16.240	4.950	0.000	12	55	0
18.500	5.639	0.019	18	40	88	16.850	5.136	0.186	18	45	93
18.550	5.654	0.034	21	5	233	16.850	5.136	0.186	21	10	238
18.500	5.639	0.019	22	57	345	16.850	5.136	0.186	23	0	348
18.300	5.578	-0.042	24	38	446	16.750	5.105	0.155	24	33	441
18.350	5.593	-0.027	26	25	553	16.750	5.105	0.155	26	30	558
18.250	5.563	-0.057	28	59	707	16.600	5.060	0.110	29	2	710
21.600	6.584	0.964	30	25	793	17.200	5.243	0.293	30	27	795
19.750	6.020	0.400	32	3	891	16.910	5.154	0.204	32	6	894
20.950	6.386	0.766	33	43	991	17.400	5.304	0.354	33	40	988
18.700	5.700	0.080	35	35	1103	16.900	5.151	0.201	35	30	1098
18.880	5.755	0.135	37	2	1190	17.500	5.334	0.384	37	5	1193
18.800	5.730	0.110	38	26	1274	16.900	5.151	0.201	38	28	1276
18.830	5.739	0.119	40	4	1372	17.200	5.243	0.293	39	10	1318
18.700	5.700	0.080	42	5	1493	16.500	5.029	0.079	42	0	1488
15.750	4.801	-0.819	43	55	1603	15.650	4.770	-0.180	44	0	1608
15.400	4.694	-0.926	45	37	1705	15.300	4.663	-0.287	45	44	1712
15.300	4.663	-0.957	47	25	1813	14.100	4.298	-0.652	47	28	1816
15.250	4.648	-0.972	48	50	1898	15.100	4.602	-0.348	48	54	1902
15.050	4.587	-1.033	51	27	2055	14.900	4.542	-0.408	51	31	2059
14.900	4.542	-1.078	53	34	2182	15.750	4.801	-0.149	53	38	2186
15.400	4.694	-0.926	56	1	2329	14.750	4.496	-0.454	56	5	2333
15.100	4.602	-1.018	57	57	2445	14.700	4.481	-0.469	58	0	2448
15.100	4.602	-1.018	59	33	2541	14.700	4.481	-0.469	59	30	2538
15.100	4.602	-1.018	61	7	2635	14.800	4.511	-0.439	61	5	2633
14.698	4.480	-1.140	62	32	2720	14.436	4.400	-0.550	62	35	2723
14.698	4.480	-1.140	63	54	2802	14.436	4.400	-0.550	63	56	2804
15.256	4.650	-0.970	64	30	2838	14.469	4.410	-0.540	64	5	2813

ASC ENVIRONMENTAL	Pumping Test - Drawdown		Test Well:	TW1
	Project No.:	ASC-458	Date:	7-Aug-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	17 12	PM

OW5 (2252 Battersea Rd.) Well Depth - N/A

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
22.375	6.820	0.000	13 11	0
22.650	6.904	0.084	18 48	96
22.700	6.919	0.099	21 18	246
22.650	6.904	0.084	23 5	353
22.550	6.873	0.053	24 43	451
22.550	6.873	0.053	26 34	562
22.400	6.828	0.008	29 6	714
22.620	6.895	0.075	30 30	798
24.200	7.376	0.556	32 7	895
24.800	7.559	0.739	33 53	1001
23.250	7.087	0.267	35 41	1109
22.950	6.995	0.175	37 8	1196
22.900	6.980	0.160	38 31	1279
22.950	6.995	0.175	39 14	1322
19.950	6.081	-0.739	42 8	1496
19.500	5.944	-0.876	44 3	1611
19.450	5.928	-0.892	47 31	1819
19.250	5.867	-0.953	48 57	1905
19.050	5.806	-1.014	51 33	2061
19.300	5.883	-0.937	53 37	2185
19.300	5.883	-0.937	56 9	2337
19.200	5.852	-0.968	58 2	2450
19.100	5.822	-0.998	59 36	2544
19.100	5.822	-0.998	61 12	2640
18.734	5.710	-1.110	62 38	2726
18.766	5.720	-1.100	63 59	2807
18.766	5.720	-1.100	64 30	2838

OW6 (799 Unity Rd.) Well Depth - 25.3 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
44.423	13.540	0.000	13 15	0
45.850	13.975	0.435	17 15	3
49.400	15.057	1.517	21 21	249
44.900	13.686	0.146	23 7	355
44.600	13.594	0.054	24 53	461
44.500	13.564	0.024	26 36	564
44.500	13.564	0.024	29 10	718
44.500	13.564	0.024	30 35	803
44.690	13.622	0.082	32 11	899
44.700	13.625	0.085	33 57	1005
45.150	13.762	0.222	35 50	1118
45.900	13.990	0.450	37 11	1199
44.900	13.686	0.146	38 34	1282
45.200	13.777	0.237	39 20	1328
44.500	13.564	0.024	42 20	1508
43.700	13.320	-0.220	44 8	1616
42.650	13.000	-0.540	46 5	1733
42.200	12.863	-0.677	47 35	1823
41.750	12.725	-0.815	49 0	1908
41.440	12.631	-0.909	51 37	2065
41.650	12.695	-0.845	53 45	2193
41.200	12.558	-0.982	56 12	2340
41.050	12.512	-1.028	58 7	2455
41.050	12.512	-1.028	59 48	2556
41.100	12.527	-1.013	61 15	2643
40.568	12.365	-1.175	62 41	2729
40.568	12.365	-1.175	64 1	2809
40.682	12.400	-1.140	65 40	2908

OW7 (808 Unity Rd.) Well Depth - 20.4 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
40.797	12.435	0.000	13 20	0
41.400	12.619	0.184	19 3	111
41.300	12.588	0.153	21 25	253
41.700	12.710	0.275	23 10	358
41.450	12.634	0.199	24 57	465
41.200	12.558	0.123	26 47	575
41.100	12.527	0.092	29 19	727
41.000	12.497	0.062	30 38	806
42.760	13.033	0.598	32 14	902
40.100	12.222	-0.213	34 4	1012
39.800	12.131	-0.304	35 58	1126
41.400	12.619	0.184	37 19	1207
41.300	12.588	0.153	38 39	1287
41.600	12.680	0.245	40 35	1403
42.100	12.832	0.397	42 31	1519
42.400	12.924	0.489	44 10	1618
41.500	12.649	0.214	46 8	1736
41.250	12.573	0.138	47 37	1825
40.900	12.466	0.031	49 4	1912
40.450	12.329	-0.106	51 39	2067
40.250	12.268	-0.167	53 49	2197
40.700	12.405	-0.030	56 22	2350
42.000	12.802	0.367	58 21	2469
40.950	12.482	0.047	59 58	2566
40.400	12.314	-0.121	61 20	2648
39.764	12.120	-0.315	62 45	2733
40.453	12.330	-0.105	64 5	2813
39.436	12.020	-0.415	67 25	3013

OW8 (796 Unity Rd.) Well Depth - 25.9 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
33.268	10.140	0.000	13 26	0
39.840	12.143	2.003	19 6	114
40.800	12.436	2.296	21 30	258
40.300	12.283	2.143	23 13	361
40.050	12.207	2.067	25 1	469
39.800	12.131	1.991	26 50	578
39.550	12.055	1.915	29 24	732
39.550	12.055	1.915	30 36	804
40.490	12.341	2.201	32 16	904
41.100	12.527	2.387	34 13	1021
40.200	12.253	2.113	36 0	1128
40.050	12.207	2.067	37 23	1211
40.750	12.421	2.281	38 41	1289
40.300	12.283	2.143	40 32	1400
40.600	12.375	2.235	42 28	1516
40.800	12.436	2.296	44 12	1620
40.000	12.192	2.052	46 11	1739
39.750	12.116	1.976	47 41	1829
39.400	12.009	1.869	49 7	1915
39.050	11.902	1.762	51 43	2071
38.700	11.796	1.656	53 52	2200
38.120	11.619	1.479	56 28	2356
41.400	12.619	2.479	58 25	2473
39.500	12.040	1.900	59 55	2563
39.200	11.948	1.808	61 8	2636
39.698	12.100	1.960	62 49	2737
39.764	12.120	1.980	64 10	2818
28.740	8.760	-1.380	65 50	2918

ASC ENVIRONMENTAL	Pumping Test - Drawdown		Test Well:	TW1
	Project No.:	ASC-458	Date:	7-Aug-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	17 12	PM

OW9 (2245 Battersea Rd.) Well Depth 72.2 m					OW10 (874 Unity Rd.) Well Depth - 35.1 m				
WL	WL	DD	Time	ET	WL	WL	DD	Time	ET
(ft)	(m)	(m)	H:Min	(min)	(ft)	(m)	(m)	H:Min	(min)
91.043	27.750	0.000	13 44	0	43.750	13.335	0.000	14 21	0
91.500	27.889	0.139	19 15	123	42.550	12.969	-0.366	19 20	128
91.450	27.874	0.124	21 35	263	43.600	13.289	-0.046	21 40	268
92.500	28.194	0.444	23 30	378	43.150	13.152	-0.183	23 35	383
92.050	28.057	0.307	25 8	476	42.325	12.901	-0.434	25 22	490
91.900	28.011	0.261	26 55	583	42.400	12.924	-0.411	27 0	588
91.900	28.011	0.261	29 29	737	42.400	12.924	-0.411	29 33	741
91.900	28.011	0.261	30 55	823	44.000	13.411	0.076	31 0	828
93.950	28.636	0.886	32 27	915	43.300	13.198	-0.137	32 30	918
92.050	28.057	0.307	34 24	1032	43.900	13.381	0.046	34 28	1036
92.000	28.042	0.292	36 5	1133	43.900	13.381	0.046	36 20	1148
92.200	28.103	0.353	37 28	1216	43.650	13.305	-0.030	37 31	1219
92.100	28.072	0.322	38 50	1298	43.500	13.259	-0.076	38 56	1304
92.000	28.042	0.292	40 43	1411	44.200	13.472	0.137	41 0	1428
92.050	28.057	0.307	42 34	1522	43.700	13.320	-0.015	42 35	1523
92.050	28.057	0.307	44 27	1635	51.800	15.789	2.454	44 35	1643
92.900	28.316	0.566	46 23	1751	50.450	15.377	2.042	46 28	1756
92.350	28.148	0.398	47 47	1835	44.700	13.625	0.290	47 55	1843
92.300	28.133	0.383	49 13	1921	47.850	14.585	1.250	49 20	1928
94.000	28.651	0.901	51 44	2072	47.450	14.463	1.128	51 53	2081
92.500	28.194	0.444	53 57	2205	48.200	14.691	1.356	54 3	2211
92.450	28.179	0.429	56 34	2362	48.100	14.661	1.326	56 38	2366
93.700	28.560	0.810	58 11	2459	48.150	14.676	1.341	58 30	2478
92.750	28.270	0.520	60 3	2571	45.700	13.929	0.594	60 10	2578
92.700	28.255	0.505	61 23	2651	46.400	14.143	0.808	61 28	2656
94.488	28.800	1.050	62 54	2742	45.932	14.000	0.665	62 59	2747
94.521	28.810	1.060	64 14	2822	46.260	14.100	0.765	64 20	2828
88.583	27.000	-0.750	68 3	3051	46.100	14.051	0.716	68 10	3058

OW11 (896 Unity Rd.)					OW12 (904 Unity Rd. A)				
WL	WL	DD	Time	ET	WL	WL	DD	Time	ET
(ft)	(m)	(m)	H:Min	(min)	(ft)	(m)	(m)	H:Min	(min)
41.050	12.512	0.000	14 46	0	54.350	16.566	0.000	14 54	0
41.070	12.518	0.006	19 24	132	54.250	16.535	-0.030	19 29	137
41.050	12.512	0.000	21 55	283	54.350	16.566	0.000	10 0	-432
41.050	12.512	0.000	23 40	388	54.300	16.551	-0.015	11 44	-328
41.080	12.521	0.009	25 29	497	54.600	16.642	0.076	25 37	505
41.090	12.524	0.012	27 5	593	54.450	16.596	0.030	27 10	598
40.850	12.451	-0.061	29 38	746	54.400	16.581	0.015	29 44	752
40.850	12.451	-0.061	31 25	853	54.300	16.551	-0.015	31 30	858
41.900	12.771	0.259	32 36	924	54.250	16.535	-0.030	32 37	925
40.800	12.436	-0.076	34 35	1043	54.300	16.551	-0.015	34 45	1053
40.800	12.436	-0.076	36 25	1153	54.300	16.551	-0.015	36 30	1158
40.800	12.436	-0.076	37 35	1223	54.450	16.596	0.030	37 39	1227
40.800	12.436	-0.076	38 57	1305	54.400	16.581	0.015	39 3	1311
40.600	12.375	-0.137	41 5	1433	54.300	16.551	-0.015	41 13	1441
40.600	12.375	-0.137	42 35	1523	54.400	16.581	0.015	42 40	1528
40.800	12.436	-0.076	44 43	1651	54.250	16.535	-0.030	44 48	1656
48.200	14.691	2.179	46 34	1762	54.000	16.459	-0.107	46 40	1768
40.750	12.421	-0.091	48 0	1848	53.700	16.368	-0.198	48 5	1853
40.750	12.421	-0.091	49 30	1938	53.500	16.307	-0.259	49 35	1943
40.950	12.482	-0.030	51 58	2086	53.120	16.191	-0.375	52 2	2090
40.800	12.436	-0.076	54 8	2216	52.850	16.109	-0.457	54 20	2228
40.900	12.466	-0.046	56 43	2371	52.600	16.032	-0.533	56 59	2387
40.800	12.436	-0.076	58 34	2482	52.400	15.972	-0.594	58 40	2488
40.600	12.375	-0.137	60 23	2591	52.200	15.911	-0.655	60 35	2603
40.600	12.375	-0.137	61 35	2663	52.100	15.880	-0.686	61 38	2666
40.518	12.350	-0.162	63 4	2752	51.542	15.710	-0.856	63 8	2756
40.387	12.310	-0.202	64 25	2833	51.345	15.650	-0.916	64 30	2838
40.730	12.415	-0.098	67 56	3044	51.500	15.697	-0.869	65 43	2911

	Pumping Test - Drawdown		Test Well:	TW1
	Project No.:	ASC-458	Date:	7-Aug-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	17 12	PM

OW13 (904 Unity Rd. B)

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
62.050	18.913	0.000	14 54	0
60.960	18.581	-0.332	19 29	137
61.350	18.699	-0.213	10 0	-432
54.300	16.551	-2.362	11 44	-328
60.400	18.410	-0.503	25 37	505
60.300	18.379	-0.533	27 10	598
60.400	18.410	-0.503	29 44	752
61.900	18.867	-0.046	31 30	858
61.800	18.837	-0.076	32 37	925
61.600	18.776	-0.137	34 45	1053
61.600	18.776	-0.137	36 30	1158
60.200	18.349	-0.564	39 3	1311
60.400	18.410	-0.503	41 13	1441
61.300	18.684	-0.229	42 40	1528
70.500	21.488	2.576	44 48	1656
57.300	17.465	-1.448	46 40	1768
65.900	20.086	1.173	48 5	1853
65.100	19.842	0.930	49 35	1943
63.950	19.492	0.579	52 2	2090
63.350	19.309	0.396	54 20	2228
63.300	19.294	0.381	56 59	2387
62.500	19.050	0.137	58 40	2488
62.500	19.050	0.137	60 35	2603
63.100	19.233	0.320	61 38	2666
63.123	19.240	0.327	63 8	2756
63.320	19.300	0.387	64 30	2838
62.650	19.096	0.183	65 43	2911

OW14 (942 Unity Rd.) Well Depth - 25.6 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
57.270	17.456	0.000	15 10	0
57.550	17.541	0.085	19 33	141
58.400	17.800	0.344	22 0	288
59.050	17.998	0.543	23 50	398
58.250	17.755	0.299	25 42	510
57.800	17.617	0.162	27 25	613
56.750	17.297	-0.158	29 54	762
58.500	17.831	0.375	31 37	865
59.050	17.998	0.543	32 45	933
57.200	17.435	-0.021	34 56	1064
59.150	18.029	0.573	36 33	1161
57.900	17.648	0.192	37 45	1233
57.830	17.627	0.171	39 10	1318
57.800	17.617	0.162	41 30	1458
57.800	17.617	0.162	42 45	1533
55.400	16.886	-0.570	44 53	1661
54.400	16.581	-0.875	46 45	1773
53.325	16.253	-1.202	48 10	1858
52.950	16.139	-1.317	49 40	1948
53.770	16.389	-1.067	52 8	2096
53.880	16.423	-1.033	54 26	2234
53.400	16.276	-1.180	57 7	2395
54.200	16.520	-0.936	58 44	2492
53.000	16.154	-1.301	60 40	2608
52.600	16.032	-1.423	61 42	2670
52.559	16.020	-1.436	63 13	2761
52.379	15.965	-1.491	64 38	2846
53.400	16.276	-1.180	67 32	3020

OW15 (2329 Battersea Rd.) Well Depth - 36.6m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
71.750	21.869	0.000	15 50	0
75.787	23.100	1.231	20 35	203
74.950	22.845	0.975	22 20	308
75.150	22.906	1.036	24 0	408
74.950	22.845	0.975	25 53	521
74.350	22.662	0.792	27 32	620
73.950	22.540	0.671	29 59	767
74.750	22.784	0.914	32 56	944
74.800	22.799	0.930	35 4	1072
74.400	22.677	0.808	36 37	1165
74.400	22.677	0.808	37 56	1244
74.100	22.586	0.716	39 21	1329
75.100	22.890	1.021	41 43	1471
74.800	22.799	0.930	43 2	1550
75.450	22.997	1.128	44 58	1666
77.750	23.698	1.829	46 50	1778
79.150	24.125	2.256	48 22	1870
74.300	22.647	0.777	49 45	1953
73.300	22.342	0.472	52 19	2107
73.150	22.296	0.427	54 31	2239
73.150	22.296	0.427	57 21	2409
72.550	22.113	0.244	58 56	2504
73.000	22.250	0.381	60 50	2618
71.700	21.854	-0.015	62 0	2688
71.129	21.680	-0.189	63 18	2766
71.588	21.820	-0.049	64 42	2850
71.850	21.900	0.030	67 16	3004

OW16 (2359 Battersea Rd.) Well Depth - 33.2 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
87.520	26.676	0.000	16 15	0
84.678	25.810	-0.866	20 30	198
87.850	26.777	0.101	22 29	317
83.990	25.600	-1.076	24 5	413
83.700	25.512	-1.164	26 2	530
83.150	25.344	-1.332	27 35	623
82.750	25.222	-1.454	30 3	771
83.550	25.466	-1.210	33 0	948
83.800	25.542	-1.134	35 0	1068
83.850	25.557	-1.119	36 40	1168
83.850	25.557	-1.119	38 0	1248
83.300	25.390	-1.286	39 24	1332
83.900	25.573	-1.103	41 37	1465
83.500	25.451	-1.225	42 58	1546
87.500	26.670	-0.006	45 2	1670
84.600	25.786	-0.890	46 58	1786
83.750	25.527	-1.149	48 26	1874
83.450	25.436	-1.241	49 50	1958
82.100	25.024	-1.652	52 23	2111
83.000	25.298	-1.378	54 36	2244
82.000	24.994	-1.682	57 26	2414
81.400	24.811	-1.865	59 1	2509
81.700	24.902	-1.774	60 53	2621
80.500	24.536	-2.140	61 56	2684
80.741	24.610	-2.066	63 23	2771
80.151	24.430	-2.246	64 46	2854
82.100	25.024	-1.652	67 11	2999

	Pumping Test - Drawdown		Test Well:	TW1
	Project No.:	ASC-458	Date:	7-Aug-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	17 12	PM

OW17 (2370 Battersea Rd.) Well Depth - 33.5m						OW18 (885 Unity Rd.) Well Depth 45.7 m					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
73.200	22.311	0.000	16	24	0	28.700	8.748	0.000	19	55	163
75.525	23.020	0.709	20	20	188	28.733	8.7577	0.010	20	55	223
75.050	22.875	0.564	22	34	322	28.720	8.7539	0.006	22	55	343
74.450	22.692	0.381	24	10	418	28.734	8.758	0.010	24	55	463
73.950	22.540	0.229	25	58	526	28.731	8.757	0.010	25	55	523
73.650	22.449	0.137	27	35	623	28.749	8.763	0.015	27	55	643
73.300	22.342	0.030	30	6	774	28.750	8.763	0.015	30	55	823
74.100	22.586	0.274	33	6	954	28.735	8.758	0.011	33	55	1003
74.000	22.555	0.244	35	20	1088	28.763	8.767	0.019	35	55	1123
74.000	22.555	0.244	36	45	1173	28.795	8.777	0.029	36	55	1183
73.600	22.433	0.122	38	5	1253	28.831	8.788	0.040	38	55	1303
73.850	22.509	0.198	39	30	1338	28.848	8.793	0.045	39	55	1363
74.100	22.586	0.274	41	35	1463	28.882	8.803	0.055	41	55	1483
74.000	22.555	0.244	42	55	1543	28.896	8.8074	0.060	42	55	1543
74.300	22.647	0.335	45	6	1674	28.878	8.802	0.054	45	55	1723
74.300	22.647	0.335	47	0	1788	28.856	8.7953	0.048	47	55	1843
73.200	22.311	0.000	48	31	1879	28.188	8.5917	-0.156	48	55	1903
72.900	22.220	-0.091	49	57	1965	28.930	8.8178	0.070	49	55	1963
72.030	21.955	-0.357	52	27	2115	28.344	8.6391	-0.109	52	55	2143
71.600	21.824	-0.488	54	41	2249	28.909	8.8116	0.064	54	55	2263
72.900	22.220	-0.091	57	32	2420	28.861	8.7967	0.049	57	55	2443
70.750	21.565	-0.747	59	5	2513	28.849	8.7933	0.046	59	55	2563
71.300	21.732	-0.579	60	57	2625	28.846	8.7922	0.044	60	55	2623
69.300	21.123	-1.189	61	53	2681	27.845	8.4871	-0.261	61	55	2683
69.324	21.130	-1.181	63	27	2775	28.311	8.6291	-0.119	63	55	2803
68.996	21.030	-1.281	64	49	2857	27.679	8.4365	-0.311	64	55	2863
69.200	21.092	-1.219	67	4	2992	28.554	8.7034	-0.044	67	40	3028

Table D3. Observation well drawdown during pumping test.

	Pumping Test - Drawdown		Test Well:	TW2
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10:33	AM

OW1 (2196 Battersea Rd.) Well Depth - 18.6 m					OW2 (2217 Battersea Rd.) Well Depth - 25.3 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
16.076	4.900	0.000	9:25	0	17.815	5.430	0.000	9:20	0
16.043	4.890	-0.010	13:0	147	16.371	4.990	-0.440	12:56	143
16.142	4.920	0.020	15:13	280	16.535	5.040	-0.390	15:9	276
16.043	4.890	-0.010	15:26	293	15.748	4.800	-0.630	17:3	390
16.010	4.880	-0.020	19:52	559	16.535	5.040	-0.390	19:55	562
16.076	4.900	0.000	21:57	684	15.781	4.810	-0.620	22:0	687
16.076	4.900	0.000	23:23	770	15.945	4.860	-0.570	23:28	775
16.043	4.890	-0.010	24:53	860	15.650	4.770	-0.660	24:56	863
16.076	4.900	0.000	27:14	1001	15.059	4.590	-0.840	27:17	1004
16.109	4.910	0.010	29:18	1125	15.354	4.680	-0.750	29:21	1128
16.207	4.940	0.040	31:30	1257	15.223	4.640	-0.790	31:38	1265
16.400	4.999	0.099	35:12	1479	17.060	5.200	-0.230	35:15	1482
16.400	4.999	0.099	37:24	1611	16.350	4.983	-0.447	37:30	1617
16.207	4.940	0.040	40:17	1784	16.200	4.938	-0.492	40:20	1787
16.273	4.960	0.060	41:37	1864	15.978	4.870	-0.560	41:40	1867
16.175	4.930	0.030	47:10	2197	15.978	4.870	-0.560	47:13	2200
16.207	4.940	0.040	50:8	2375	15.650	4.770	-0.660	50:13	2380
16.240	4.950	0.050	52:36	2523	15.125	4.610	-0.820	52:40	2527
16.800	5.121	0.221	56:21	2748	15.092	4.600	-0.830	56:27	2754
16.800	5.121	0.221	59:12	2919	16.817	5.126	-0.304	59:33	2940

OW3 (2225 Battersea Rd.) Well Depth - 28.3 m					OW4 (2224 Battersea Rd.) Well Depth - 16.2 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
21.490	6.550	0.000	9:15	0	17.618	5.370	0.000	9:25	0
23.228	7.080	0.530	12:54	141	17.651	5.380	0.010	13:2	149
22.507	6.860	0.310	15:4	271	17.749	5.410	0.040	15:15	282
21.490	6.550	0.000	17:20	407	17.749	5.410	0.040	17:29	416
20.833	6.350	-0.200	20:0	567	17.651	5.380	0.010	20:10	577
23.163	7.060	0.510	22:3	690	17.684	5.390	0.020	22:7	694
20.801	6.340	-0.210	23:30	777	17.684	5.390	0.020	23:33	780
20.866	6.360	-0.190	25:0	867	17.585	5.360	-0.010	25:6	873
20.669	6.300	-0.250	27:22	1009	17.651	5.380	0.010	27:26	1013
20.768	6.330	-0.220	29:25	1132	17.618	5.370	0.000	29:29	1136
22.966	7.000	0.450	31:45	1272	17.881	5.450	0.080	31:48	1275
29.500	8.992	2.442	35:20	1487	18.300	5.578	0.208	35:22	1489
25.000	7.620	1.070	37:33	1620	18.300	5.578	0.208	37:38	1625
23.556	7.180	0.630	40:23	1790	18.143	5.530	0.160	40:26	1793
21.686	6.610	0.060	41:47	1874	18.373	5.600	0.230	41:51	1878
21.030	6.410	-0.140	47:17	2204	17.848	5.440	0.070	47:21	2208
21.096	6.430	-0.120	50:17	2384	17.848	5.440	0.070	50:18	2385
20.965	6.390	-0.160	52:45	2532	17.848	5.440	0.070	52:48	2535
22.100	6.736	0.186	56:31	2758	18.700	5.700	0.330	56:35	2762
23.400	7.132	0.582	59:30	2937	18.400	5.608	0.238	59:50	2957

	Pumping Test - Drawdown		Test Well:	TW2
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10 33	AM

OW5 (2252 Battersea Rd.) Well Depth - 36.5 m						OW6 (799 Unity Rd.) Well Depth - 25.3 m					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
29.003	8.840	0.000	9	40	0	45.407	13.840	0.000	9	12	0
27.986	8.530	-0.310	11	57	84	45.472	13.860	0.020	11	53	80
28.215	8.600	-0.240	15	20	287	45.440	13.850	0.010	13	54	201
26.575	8.100	-0.740	16	32	359	45.308	13.810	-0.030	16	28	355
27.887	8.500	-0.340	18	40	487	45.374	13.830	-0.010	18	30	477
24.705	7.530	-1.310	20	15	582	45.374	13.830	-0.010	20	18	585
25.197	7.680	-1.160	22	12	699	45.341	13.820	-0.020	22	15	702
24.705	7.530	-1.310	23	40	787	45.276	13.800	-0.040	23	43	790
24.705	7.530	-1.310	25	11	878	45.210	13.780	-0.060	25	14	881
25.000	7.620	-1.220	27	34	1021	45.144	13.760	-0.080	27	38	1025
24.705	7.530	-1.310	29	34	1141	45.899	13.990	0.150	29	37	1144
26.378	8.040	-0.800	31	55	1282	45.505	13.870	0.030	32	0	1287
27.500	8.382	-0.458	35	30	1497	46.800	14.265	0.425	35	33	1500
27.800	8.473	-0.367	37	40	1627	45.800	13.960	0.120	37	48	1635
						45.308	13.810	-0.030	40	34	1801
						45.440	13.850	0.010	41	30	1857
						45.440	13.850	0.010	47	27	2214
						45.341	13.820	-0.020	50	25	2392
						45.341	13.820	-0.020	52	55	2542
						45.800	13.960	0.120	56	45	2772
						45.800	13.960	0.120	60	5	2972

OW7 (808 Unity Rd.) Well Depth - 20.4 m						OW8 (796 Unity Rd.) Well Depth - 25.9 m					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
38.222	11.650	0.000	9	10	0	37.434	11.410	0.000	20	45	0
38.484	11.730	0.080	11	56	83	37.369	11.390	-0.020	22	20	707
38.255	11.660	0.010	13	46	193	37.270	11.360	-0.050	23	50	797
38.353	11.690	0.040	16	26	353	37.106	11.310	-0.100	25	19	886
43.865	13.370	1.720	18	35	482	36.942	11.260	-0.150	27	47	1034
38.550	11.750	0.100	20	20	587	36.844	11.230	-0.180	29	44	1151
38.550	11.750	0.100	22	18	705	37.172	11.330	-0.080	32	10	1297
38.353	11.690	0.040	23	46	793	37.700	11.491	0.081	35	421	1888
38.287	11.670	0.020	25	17	884	37.700	11.491	0.081	38	1	1648
38.123	11.620	-0.030	27	42	1029	37.336	11.380	-0.030	40	37	1804
37.992	11.580	-0.070	29	40	1147	37.402	11.400	-0.010	41	5	1832
38.287	11.670	0.020	32	5	1292	37.402	11.400	-0.010	47	34	2221
39.000	11.887	0.237	36	38	1565	37.172	11.330	-0.080	50	34	2401
38.900	11.857	0.207	38	58	1705	37.172	11.330	-0.080	53	0	2547
38.419	11.710	0.060	40	34	1801	37.900	11.552	0.142	56	55	2782
38.484	11.730	0.080	42	0	1887	38.000	11.582	0.172	59	55	2962
38.550	11.750	0.100	45	31	2098						
38.320	11.680	0.030	50	28	2395						
38.320	11.680	0.030	53	58	2605						
39.200	11.948	0.298	57	50	2837						
39.100	11.918	0.268	60	50	3017						

ASC ENVIRONMENTAL	Pumping Test - Drawdown			Test Well:	TW2
	Project No.:	ASC-458		Date:	17-Sep-2018
	Client:	BPE Development		Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON		10:33	AM

OW9 (2245 Battersea Rd.) Well Depth - 72.2 m					OW10 (874 Unity Rd.) Well Depth - 35.1 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
95.177	29.010	0.000	9:45	0	29.400	8.961	0.000	9:40	0
92.848	28.300	-0.710	12:2	89	28.543	8.700	-0.261	12:23	110
92.651	28.240	-0.770	14:0	207	28.543	8.700	-0.261	14:14	221
93.241	28.420	-0.590	16:36	363	28.806	8.780	-0.181	16:52	379
92.913	28.320	-0.690	18:30	477	28.412	8.660	-0.301	18:35	482
96.621	29.450	0.440	20:51	618	28.314	8.630	-0.331	20:55	622
93.340	28.450	-0.560	22:32	719	28.150	8.580	-0.381	22:36	723
93.176	28.400	-0.610	23:59	806	28.150	8.580	-0.381	24:3	810
93.176	28.400	-0.610	25:29	896	28.084	8.560	-0.401	25:33	900
94.062	28.670	-0.340	27:57	1044	28.117	8.570	-0.391	28:4	1051
93.438	28.480	-0.530	29:53	1160	29.167	8.890	-0.071	29:57	1164
93.406	28.470	-0.540	32:16	1303	29.035	8.850	-0.111	32:19	1306
94.100	28.682	-0.328	36:2	1529	29.700	9.053	0.091	35:57	1524
105.600	32.187	3.177	38:26	1673	29.300	8.931	-0.030	38:31	1678
93.832	28.600	-0.410	40:45	1812	29.265	8.920	-0.041	40:46	1813
93.701	28.560	-0.450	42:10	1897	28.773	8.770	-0.191	42:16	1903
94.029	28.660	-0.350	45:45	2112	28.675	8.740	-0.221	45:49	2116
94.390	28.770	-0.240	50:43	2410	28.543	8.700	-0.261	50:46	2413
94.094	28.680	-0.330	53:9	2556	28.675	8.740	-0.221	53:14	2561
95.100	28.986	-0.024	57:5	2792					
94.700	28.865	-0.145	60:35	3002					

OW11 (896 Unity Rd.) Well Depth - 21.6 m					OW14 (942 Unity Rd.) Well Depth - 25.6 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
40.400	12.314	0.000	9:39	0	59.100	18.014	0.000	9:16	0
39.993	12.190	-0.124	12:19	106	57.316	17.470	-0.544	12:6	93
39.961	12.180	-0.134	14:5	212	55.774	17.000	-1.014	14:19	226
41.371	12.610	0.296	16:0	327	55.741	16.990	-1.024	16:40	367
39.928	12.170	-0.144	16:44	371	56.923	17.350	-0.664	18:48	495
39.961	12.180	-0.134	18:58	505	56.004	17.070	-0.944	21:13	640
39.895	12.160	-0.154	21:0	627	56.135	17.110	-0.904	22:44	731
39.928	12.170	-0.144	22:40	727	55.446	16.900	-1.114	24:10	817
39.895	12.160	-0.154	24:6	813	55.085	16.790	-1.224	25:41	908
39.895	12.160	-0.154	25:37	904	55.938	17.050	-0.964	28:11	1058
39.862	12.150	-0.164	28:6	1053	57.054	17.390	-0.624	30:6	1173
40.026	12.200	-0.114	30:0	1167	56.266	17.150	-0.864	32:31	1318
46.457	14.160	1.846	32:25	1312	56.200	17.130	-0.884	35:49	1516
40.250	12.268	-0.046	35:53	1520	56.800	17.313	-0.701	38:40	1687
40.900	12.466	0.152	38:36	1683	56.168	17.120	-0.894	40:57	1824
39.961	12.180	-0.134	40:54	1821	55.709	16.980	-1.034	42:26	1913
40.026	12.200	-0.114	42:20	1907	55.676	16.970	-1.044	45:58	2125
40.092	12.220	-0.094	45:54	2121	55.315	16.860	-1.154	50:53	2420
40.059	12.210	-0.104	50:50	2417	58.850	17.937	-0.076	53:29	2576
40.400	12.314	0.000	53:25	2572	56.600	17.252	-0.762	57:27	2814
40.650	12.390	0.076	57:23	2810	56.400	17.130	-0.884	60:58	3025
40.800	12.436	0.122	60:30	2997					

ASC ENVIRONMENTAL	Pumping Test - Drawdown			Test Well:	TW2
	Project No.:	ASC-458		Date:	17-Sep-2018
	Client:	BPE Development		Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON		10 33	AM

OW15 (2329 Battersea Rd.) Well Depth - 36.6 m					OW16 (2359 Battersea Rd.) Well Depth - 33.2 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
73.885	22.520	0.000	9 0	0	82.907	25.270	0.000	8 50	0
74.114	22.590	0.070	12 50	137	83.235	25.370	0.100	12 35	122
74.147	22.600	0.080	14 53	260	83.136	25.340	0.070	14 40	247
74.409	22.680	0.160	17 16	403	83.530	25.460	0.190	17 3	390
74.672	22.760	0.240	21 19	646	83.497	25.450	0.180	21 38	665
74.606	22.740	0.220	22 48	735	83.366	25.410	0.140	23 1	748
73.950	22.540	0.020	24 15	822	82.710	25.210	-0.060	24 30	837
73.491	22.400	-0.120	25 46	913	82.415	25.120	-0.150	25 57	924
72.867	22.210	-0.310	28 17	1064	81.923	24.970	-0.300	28 28	1075
74.869	22.820	0.300	30 10	1177	85.630	26.100	0.830	30 23	1190
73.786	22.490	-0.030	32 36	1323	86.056	26.230	0.960	32 52	1339
74.600	22.738	0.218	36 6	1533	83.300	25.390	0.120	36 23	1550
74.000	22.555	0.035	38 46	1693	83.400	25.420	0.150	39 5	1712
74.475	22.700	0.180	41 0	1827	82.874	25.260	-0.010	41 9	1836
73.983	22.550	0.030	42 30	1917	83.038	25.310	0.040	43 43	1990
73.917	22.530	0.010	48 2	2249	82.743	25.220	-0.050	48 17	2264
73.589	22.430	-0.090	50 58	2425	82.448	25.130	-0.140	51 9	2436
73.800	22.494	-0.026	53 35	2582	82.600	25.176	-0.094	53 48	2595
74.600	22.738	0.218	57 35	2822	83.600	25.481	0.211	57 45	2832
74.400	22.677	0.157	61 5	3032	83.500	25.451	0.181	61 29	3056

OW17 (2370 Battersea Rd.) Well Depth - 33.5 m					OW18 (885 Unity Rd.) Well Depth - 45.7 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
74.475	22.700	0.000	8 45	0	27.493	8.380	0.000	8 27	0
74.639	22.750	0.000	12 33	120	28.219	8.601	0.221	12 27	114
74.344	22.660	0.000	14 36	243	31.365	9.56	1.180	14 27	234
74.639	22.750	0.000	17 5	392	30.115	9.179	0.799	17 27	414
74.508	22.710	0.000	21 40	667	30.655	9.344	0.964	21 27	654
74.344	22.660	0.000	23 4	751	31.267	9.530	1.150	23 27	774
73.852	22.510	0.000	24 35	842	31.761	9.681	1.301	24 27	834
73.589	22.430	0.000	26 1	928	31.652	9.6474	1.267	26 27	954
73.228	22.320	0.000	28 32	1079	31.773	9.6845	1.305	28 27	1074
73.983	22.550	0.000	30 27	1194	30.774	9.3799	1.000	30 27	1194
74.700	22.769	0.000	33 51	1398	32.036	9.7646	1.385	33 27	1374
74.700	22.769	0.000	35 6	1473	30.594	9.3251	0.945	35 27	1494
74.800	22.799	0.000	39 15	1722	30.857	9.4052	1.025	39 27	1734
74.147	22.600	0.000	41 15	1842	31.163	9.4986	1.119	41 27	1854
74.475	22.700	0.000	42 47	1934	30.870	9.4091	1.029	42 27	1914
73.983	22.550	0.000	48 21	2268	31.850	9.708	1.328	48 27	2274
74.114	22.590	0.000	51 12	2439	32.039	9.7655	1.386	51 27	2454
73.950	22.540	0.000	53 55	2602	31.096	9.478	1.098	53 27	2574
74.700	22.769	0.000	57 52	2839	30.152	9.1904	0.810	57 27	2814
74.500	22.708	0.000	63 34	3181	29.668	9.0428	0.663	63 27	3174

	Pumping Test - Drawdown		Test Well:	TW2
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10 33	AM

OW19 (2467 Battersea Rd.) Well Depth - N/A					OW20 (2285 Battersea Rd.) Well Depth - 25.3 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
34.154	10.410	0.000	8 40	0	47.600	14.508	0.000	8 51	0
34.022	10.370	-0.040	12 30	117	49.377	15.05	0.542	13 11	158
34.088	10.390	-0.020	14 29	236	48.130	14.67	0.162	15 28	295
34.186	10.420	0.010	16 52	379	46.949	14.310	-0.198	17 35	422
34.088	10.390	-0.020	19 8	515	46.457	14.160	-0.348	19 50	557
34.121	10.400	-0.010	21 46	673	46.457	14.160	-0.348	21 55	682
34.088	10.390	-0.020	23 8	755	46.457	14.160	-0.348	23 19	766
34.022	10.370	-0.040	24 38	845	46.293	14.110	-0.398	24 50	857
34.022	10.370	-0.040	26 9	936	46.293	14.110	-0.398	27 8	995
34.022	10.370	-0.040	28 36	1083	46.490	14.170	-0.338	29 14	1121
34.121	10.400	-0.010	30 31	1198	48.800	14.874	0.366	34 0	1407
34.400	10.485	0.075	33 56	1403	53.600	16.337	1.829	36 27	1554
34.400	10.485	0.075	35 3	1470	46.490	14.170	-0.338	39 22	1729
34.121	10.400	-0.010	39 20	1727	47.671	14.53	0.022	41 22	1849
34.121	10.400	-0.010	41 18	1845	47.080	14.35	-0.158	42 56	1943
34.121	10.400	-0.010	42 51	1938	46.719	14.24	-0.268	47 6	2193
34.121	10.400	-0.010	48 25	2272	46.588	14.2	-0.308	50 3	2370
34.121	10.400	-0.010	51 15	2442	46.719	14.24	-0.268	52 32	2519
34.350	10.470	0.060	53 59	2606	49.800	15.179	0.671	58 0	2847
34.800	10.607	0.197	57 55	2842	50.200	15.301	0.792	61 41	3068
34.500	10.516	0.106	63 30	3177					

TW1 Well Depth - 85.3 m					OW21 (2228 Battersea Rd.) Well Depth - 17.7 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
116.600	35.540	0.000	9 1	0	18.766	5.720	0.000	9 26	0
119.000	36.271	0.732	12 0	87	18.898	5.76	0.040	12 4	91
121.200	36.942	1.402	15 30	297	18.963	5.78	0.060	15 19	286
122.100	37.216	1.676	18 7	454	18.898	5.760	0.040	17 27	414
122.150	37.231	1.692	19 45	552	18.734	5.710	-0.010	20 12	579
122.450	37.323	1.783	21 53	680	18.734	5.710	-0.010	22 9	696
122.590	37.365	1.826	23 16	763	18.701	5.700	-0.020	23 35	782
122.800	37.429	1.890	24 48	855	18.701	5.700	-0.020	25 8	875
121.900	37.155	1.615	27 6	993	18.668	5.690	-0.030	27 30	1017
122.000	37.186	1.646	29 11	1118	18.635	5.680	-0.040	29 31	1138
122.300	37.277	1.737	33 39	1386	19.127	5.830	0.110	31 51	1278
123.400	37.612	2.073	36 30	1557	19.700	6.005	0.285	35 26	1493
123.400	37.612	2.073	39 30	1737	19.900	6.066	0.346	37 40	1627
123.600	37.673	2.134	41 24	1851	19.357	5.9	0.180	40 24	1791
123.600	37.673	2.134	42 58	1945	19.324	5.89	0.170	41 54	1881
123.750	37.719	2.179	47 3	2190	18.996	5.79	0.070	47 24	2211
123.760	37.722	2.182	50 1	2368	18.832	5.74	0.020	50 23	2390
123.800	37.734	2.195	52 30	2517	18.832	5.74	0.020	52 50	2537
124.000	37.795	2.256	58 2	2849	19.550	5.959	0.239	56 38	2765
120.400	36.698	1.158	61 45	3072	19.500	5.944	0.224	59 0	2907

	Pumping Test - Drawdown		Test Well:	TW2
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10 33	AM

OW22 (791 Unity Rd.) Well Depth 40.2 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
63.058	19.220	0.000	9 5	0
63.025	19.210	-0.010	11 47	74
65.617	20.000	0.780	13 13	160
62.795	19.140	-0.080	16 22	349
63.156	19.250	0.030	18 10	457
63.156	19.250	0.030	20 34	601
62.959	19.190	-0.030	22 25	712
63.058	19.220	0.000	23 55	802
62.861	19.160	-0.060	25 24	891
62.828	19.150	-0.070	27 53	1040
62.861	19.160	-0.060	29 49	1156
66.831	20.370	1.150	32 2	1289
63.300	19.294	0.074	35 36	1503
63.300	19.294	0.074	37 51	1638
62.795	19.140	-0.080	40 31	1798
63.058	19.220	0.000	41 1	1828
64.797	19.750	0.530	47 40	2227
62.927	19.180	-0.040	50 36	2403
63.600	19.180	-0.040	56 5	2732
63.300	19.294	0.074	60 48	3015

OW23 (2347 Battersea Rd.) Well Depth - 39.6 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
80.249	24.460	0.000	8 55	0
80.413	24.51	0.050	12 34	121
97.999	29.87	5.410	14 47	254
80.938	24.670	0.210	17 6	393
81.102	24.720	0.260	21 33	660
80.873	24.650	0.190	22 56	743
80.184	24.440	-0.020	24 24	831
79.856	24.340	-0.120	25 53	920
79.331	24.180	-0.280	28 24	1071
79.757	24.310	-0.150	30 18	1185
80.249	24.460	0.000	32 50	1337
80.700	24.597	0.137	36 20	1547
80.300	24.475	0.015	37 1	1588
80.282	24.47	0.010	41 7	1834
80.446	24.52	0.060	43 40	1987
80.217	24.45	-0.010	48 12	2259
79.921	24.36	-0.100	51 6	2433
80.100	24.414	-0.046	53 44	2591
102.200	31.151	6.691	57 43	2830
81.000	24.689	0.229	63 21	3168

OW24 (2336) Well Depth - 36.0 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
69.751	21.260	0.000	12 45	0
70.079	21.360	0.100	14 59	266
67.651	20.620	-0.640	17 12	399
72.638	22.140	0.880	21 23	650
72.802	22.190	0.930	22 51	738
71.982	21.940	0.680	24 20	827
71.818	21.890	0.630	25 49	916
71.850	21.900	0.640	28 22	1069
72.375	22.060	0.800	30 14	1181
69.980	21.330	0.070	32 43	1330
70.600	21.519	0.259	36 8	1535
70.300	21.427	0.167	38 53	1700
71.391	21.760	0.500	41 3	1830
70.702	21.550	0.290	42 36	1923
72.178	22.000	0.740	48 6	2253
72.080	21.970	0.710	51 2	2429
72.190	22.004	0.744	53 39	2586
70.100	21.366	0.106	57 40	2827
70.000	21.336	0.076	61 14	3041

Table D3. Observation well drawdown during pumping test.

	Pumping Test - Drawdown		Test Well:	TW3
	Project No.:	ASC-458	Date:	4-Dec-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10:45	PM

OW1 (2196 Battersea Rd.) Well Depth - 18.6 m						OW2 (2217 Battersea Rd.) Well Depth - 25.3 m					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
11.614	3.540	0.000	7	35	0	0.722	0.220	0.000	7	40	0
11.614	3.540	0.000	11	48	63	0.591	0.180	-0.040	13	51	186
11.581	3.530	-0.010	14	24	219	0.650	0.198	-0.022	16	43	358
11.713	3.570	0.030	18	33	468	0.591	0.180	-0.040	18	30	465
OW3 (2225 Battersea Rd.) Well Depth - 28.3 m						**OW4 (2224 Battersea Rd.) Well Depth - 16.2 m**					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
11.844	3.610	0.000	10	18	0	13.386	4.080	0.000	7	55	0
11.778	3.590	-0.020	13	58	193	11.286	3.440	-0.640	11	53	68
11.900	3.627	0.017	16	41	356	11.319	3.450	-0.630	14	25	220
11.385	3.470	-0.140	18	23	458	11.581	3.530	-0.550	18	36	471
TW2						**OW6 (799 Unity Rd.) Well Depth - 25.3 m**					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
104.650	31.897	0.000	10	9	0	27.723	8.450	0.000	8	55	0
108.800	33.162	1.265	12	22	97	27.756	8.460	0.010	12	6	81
109.900	33.498	1.600	13	27	162	27.723	8.450	0.000	14	0	195
110.900	33.802	1.905	14	32	227	27.800	8.473	0.023	15	30	285
111.500	33.985	2.088	15	25	280	27.840	8.486	0.036	16	20	335
112.200	34.199	2.301	16	39	354	30.900	9.418	0.968	18	0	435
110.600	33.711	1.814	17	28	403						
109.400	33.345	1.448	18	10	445						
108.300	33.010	1.113	19	15	510						
OW7 (808 Unity Rd.) Well Depth - 20.4 m						**OW8 (796 Unity Rd.) Well Depth - 25.9 m**					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
20.200	6.157	0.000	10	16	0	18.734	5.710	0.000	10	0	0
20.604	6.280	0.123	12	24	99	18.963	5.780	0.070	12	18	93
20.997	6.400	0.243	14	48	243	18.832	5.740	0.030	16	5	320
20.850	6.355	0.198	15	33	288	19.000	5.791	0.081	18	20	455
20.800	6.340	0.183	16	22	337						
20.700	6.309	0.152	18	10	445						
OW9 (2245 Battersea Rd.) Well Depth 72.2 m						**OW10 (874 Unity Rd.) Well Depth - 35.1 m**					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
87.250	26.594	0.000	10	15	0	18.340	5.590	0.000	9	51	0
108.850	33.177	6.584	12	35	110	17.946	5.470	-0.120	13	44	179
106.950	32.598	6.005	13	35	170	17.946	5.470	-0.120	15	26	281
99.300	30.267	3.673	14	40	235	18.450	5.624	0.034	15	37	292
90.300	27.523	0.930	15	37	292	18.250	5.563	-0.027	16	28	343
88.300	26.914	0.320	16	45	360	18.500	5.639	0.049	17	46	421
87.650	26.716	0.122	17	52	427						

OW11 (896 Unity Rd.)					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
33.169	10.110	0.000	8	35	0
33.563	10.230	0.120	13	36	171
33.301	10.150	0.040	15	20	275
33.300	10.150	0.040	16	32	347
33.300	10.150	0.040	17	40	415

OW14 (942 Unity Rd.) Well Depth - 25.6 m					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
37.664	11.480	0.000	10	8	0
36.417	11.100	-0.380	13	27	162
36.500	11.125	-0.355	16	37	352
36.500	11.125	-0.355	17	45	420

OW15 (2329 Battersea Rd.) Well Depth - 36.6m					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
30.315	9.240	0.000	9	45	0
30.906	9.420	0.180	14	5	200
37.150	11.323	2.083	15	14	269
31.102	9.480	0.240	15	47	302
37.100	11.308	2.068	16	3	318
31.496	9.600	0.360	18	7	442

OW16 (2359 Battersea Rd.) Well Depth - 33.2 m					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
42.749	13.030	0.000	8	10	0
43.537	13.270	0.240	14	13	208
45.450	13.853	0.823	15	21	276
43.963	13.400	0.370	15	38	293
43.090	13.134	0.104	16	12	327
45.177	13.770	0.740	17	49	424

OW17 (2370 Battersea Rd.) Well Depth - 33.5m					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
33.465	10.200	0.000	9	30	0
33.497	10.210	0.000	13	10	145
33.793	10.300	0.000	16	32	347
33.924	10.340	0.000	17	44	419

OW18 (885 Unity Rd.) Well Depth 45.7 m					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
9.547	2.910	0.000	8	43	0
10.564	3.220	0.310	12	40	115
8.760	2.67	-0.240	13	40	175
8.727	2.660	-0.250	14	45	240
10.400	3.170	0.260	15	45	300
9.350	2.850	-0.060	16	50	365
10.892	3.320	0.410	17	32	407

OW19 (2467 Battersea Rd.) Well Depth - N/A					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
23.885	7.280	0.000	9	23	0
23.852	7.270	-0.010	14	20	215
23.885	7.280	0.000	16	53	368
23.950	7.300	0.020	17	35	410

OW20 (2285 Battersea Rd.) Well Depth - 25.3 m					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
37.550	11.445	0.000	10	3	0
39.500	12.040	0.594	12	30	105
38.750	11.811	0.366	13	30	165
37.750	11.506	0.061	14	34	229
37.750	11.506	0.061	15	27	282
37.750	11.506	0.061	16	42	357
36.800	11.217	-0.229	17	50	425

TW1 Well Depth - 85.3 m					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
108.150	32.964	0.000	10	6	0
112.300	34.229	1.265	12	20	95
113.450	34.580	1.615	13	25	160
114.450	34.884	1.920	14	30	225
115.100	35.082	2.118	15	22	277
115.750	35.281	2.316	16	37	352
112.550	34.305	1.341	19	19	514

OW21 (2228 Battersea Rd.) Well Depth - 17.7 m					
WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)
9.777	2.980	0.000	10	18	0
9.777	2.98	0.000	11	58	73
9.810	2.99	0.010	14	31	226
9.840	2.999	0.019	15	26	281
9.990	3.045	0.065	16	16	331
9.875	3.010	0.030	18	28	463

OW22 (791 Unity Rd.) Well Depth 40.2 m						OW23 (2347 Battersea Rd.) Well Depth - 39.6 m					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
45.990	14.018	0.000	10	18	0	38.386	11.700	0.000	8	5	0
45.669	13.920	-0.098	12	12	87	39.140	11.93	0.230	14	3	198
43.570	13.280	-0.738	16	0	315	39.337	11.99	0.290	15	41	296
46.250	14.097	0.079	18	25	460	39.450	12.024	0.324	15	17	272
						39.300	11.979	0.279	16	9	324
						39.797	12.130	0.430	17	55	430
OW24 (2336) Well Depth - 36.0 m						**OW25 (2280 Battersea Rd.) Well Depth - 18.3 m**					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
30.348	9.250	0.000	10	16	0	7.218	2.200	0.000	10	27	0
33.465	10.200	0.950	13	4	139	7.119	2.170	-0.030	12	32	107
33.530	10.220	0.970	15	5	260	7.152	2.180	-0.020	16	11	326
33.840	10.314	1.064	15	48	303						
33.890	10.330	1.080	16	5	320						
33.694	10.270	1.020	17	59	434						
OW26 (2280 Battersea Rd.) Well depth - 39.32 m						**OW27 (2280 Battersea Rd.) Well depth - 24.7 m**					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
26.200	7.986	0.000	10	30	0	17.040	5.194	0.000	10	32	0
25.919	7.900	-0.086	12	36	111	15.820	4.822	-0.372	12	45	120
25.919	7.900	-0.086	14	56	251	15.850	4.831	-0.363	16	22	337
26.000	7.925	-0.061	15	45	300	16.250	4.953	-0.241	18	47	482
26.000	7.925	-0.061	16	45	360						
26.083	7.950	-0.036	18	42	477						

APPENDIX C
TW02 Pumping Test

1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 561- 7088

Table D1. Water Quality Field Measurements.

ASC ENVIRONMENTAL	Field Water Quality Analysis				Test Well:	TW2	
	Project No.:	ASC-458			Date:	17-Sep-18	
	Client:	BPE Development			Recorded By: J.P.		
	Location:	2285 Battersea Road, Kingston, ON					
	Started pumping 30 L/min at 10:33 am						
Pumping Test Elapsed Time (min)	Odour	Temperature (°C)	pH	Conductivity (µS)	Total Dissolved Solids (ppm)	Turbidity NTU	Chlorine (Total) (mg/L)
0	None	12.4	8.22	>3999	>	78	>2.2
50	None	13.3	7.93	3154	1560	53	0.83
128	None	12.6	8.20	3036	1525	14	0.17
170	Sulphur	13.4	8.17	3025	1514	19	0.12
230	None	13.0	8.35	3053	1499	37	0.03
290	None	12.7	8.20	2985	1499	5	0.17
350	None	13.5	8.24	2967	1481	1	0.07
440	None	12.1	8.01	2995	1475	38	0.00
500	None	11.5	8.00	3011	1478	6	0.00
559	None	10.8	7.78	2952	1476	0	0.00
619	None	10.0	7.78	2954	1426	0	0.00
675	None	10.0	7.76	2956	1470	0	0.00
735	None	11.0	7.81	2958	1478	0	0.00
795	None	10.8	7.76	2995	1472	0	0.00
855	None	10.7	7.81	2955	1477	0	0.00
915	None	10.7	7.80	2940	1437	0	0.00
975	None	10.7	7.82	2930	1466	0	0.00
1035	None	10.6	7.80	2949	1474	0	0.00
1095	None	10.7	7.85	2932	1466	0	0.00
1155	None	10.7	7.75	2929	1464	0	0.00
1215	None	10.6	7.86	2920	1460	0	0.00
1280	None	11.3	8.21	2926	1460	4	0.00
1340	None	11.7	8.17	2943	1467	4	0.00
1405	None	12.6	8.42	3002	1468	0	0.00
1474	None	12.1	8.72	2925	1462	31	0.00
1539	None	11.7	8.48	2919	1453	0	0.00
1610	None	13.3	8.54	2925	1465	3	0.00
1670	None	12.8	8.56	2919	1462	2	0.00
1730	None	11.6	8.51	2927	1457	0	0.00
1765	None	11.9	7.49	2902	1440	0	0.00
1850	None	11.7	7.64	2915	1457	0	0.00
1910	None	11.7	8.07	2933	1459	0	0.00
1965	None	10.7	7.88	2910	1456	0	0.00
2025	None	10.7	7.88	2904	1452	0	0.00
2085	None	10.7	7.88	2896	1453	0	0.00
2145	None	10.6	7.89	2905	1453	0	0.00
2205	None	10.5	7.88	2897	1449	0	0.00
2265	None	10.6	7.87	2911	1455	0	0.00
2325	None	10.4	7.90	2906	1452	0	0.00
2385	None	10.4	8.01	2898	1452	0	0.00
2445	None	10.3	7.97	2897	1449	0	0.00
2505	None	10.3	7.98	2909	1454	0	0.00
2565	None	10.3	7.94	2896	1447	0	0.00
2625	None	10.2	7.91	2892	1447	0	0.00
2685	None	10.2	8.15	2892	1446	0	0.00
2745	None	10.5	8.40	2890	1439	0	0.00
2805	None	10.8	8.55	2888	1439	0	0.00
2865	None	11.5	8.48	2876	1438	0	0.00

Notes	1	<	indicates values lower than minimum detection limits of analysis equipment
	2	-	not analyzed

Field Analysis Equipment	
Chlorine :	Hach DR 890 Colorimeter, DPD Total Chlorine Reagent
Temp./pH/Cond./TDS :	Hanna HI 98130 Meter
Turbidity :	Hach DR 890 Colorimeter

Table D2. Test Well drawdown during pumping test.

	Pumping Test - Drawdown		Test Well: TW2	
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Recorded By: J.P.	
	Location:	2285 Battersea Road, Kingston, ON		

Pumping Rate (Q) (L/min)	Elapsed Time (ET) (min)	Well Level (WL) (m)	Drawdown (DD) (m)
30	0	34.44	0.00
30	1	34.44	0.00
30	2	34.44	0.00
30	3	34.44	0.00
30	4	34.45	0.00
30	5	34.45	0.00
30	10	34.45	0.01
30	15	34.45	0.01
30	20	34.45	0.01
30	25	34.46	0.02
30	30	34.46	0.02
30	35	34.46	0.02
30	40	34.46	0.02
30	45	34.45	0.01
30	50	34.46	0.02
30	60	34.46	0.02
30	70	34.46	0.02
30	80	34.46	0.02
30	90	34.46	0.02
30	100	34.46	0.02
30	150	34.46	0.02
30	200	34.47	0.03
30	300	34.48	0.04
30	400	34.50	0.05
30	500	34.50	0.06
30	600	34.51	0.07
30	700	34.51	0.07
30	800	34.51	0.07
30	900	34.52	0.07
30	1000	34.53	0.08
30	1100	34.53	0.09
30	1200	34.54	0.10
30	1300	34.54	0.09
30	1400	34.53	0.09
30	1500	34.54	0.10
30	2876	34.46	0.02
Well Depth: 97.5 m			

ASC Environmental Inc.
ASC-458 - BPE Development, 2285 Battersea Road, Kingston, Ontario
Figure 1 TW2 Pumping Test Drawdown

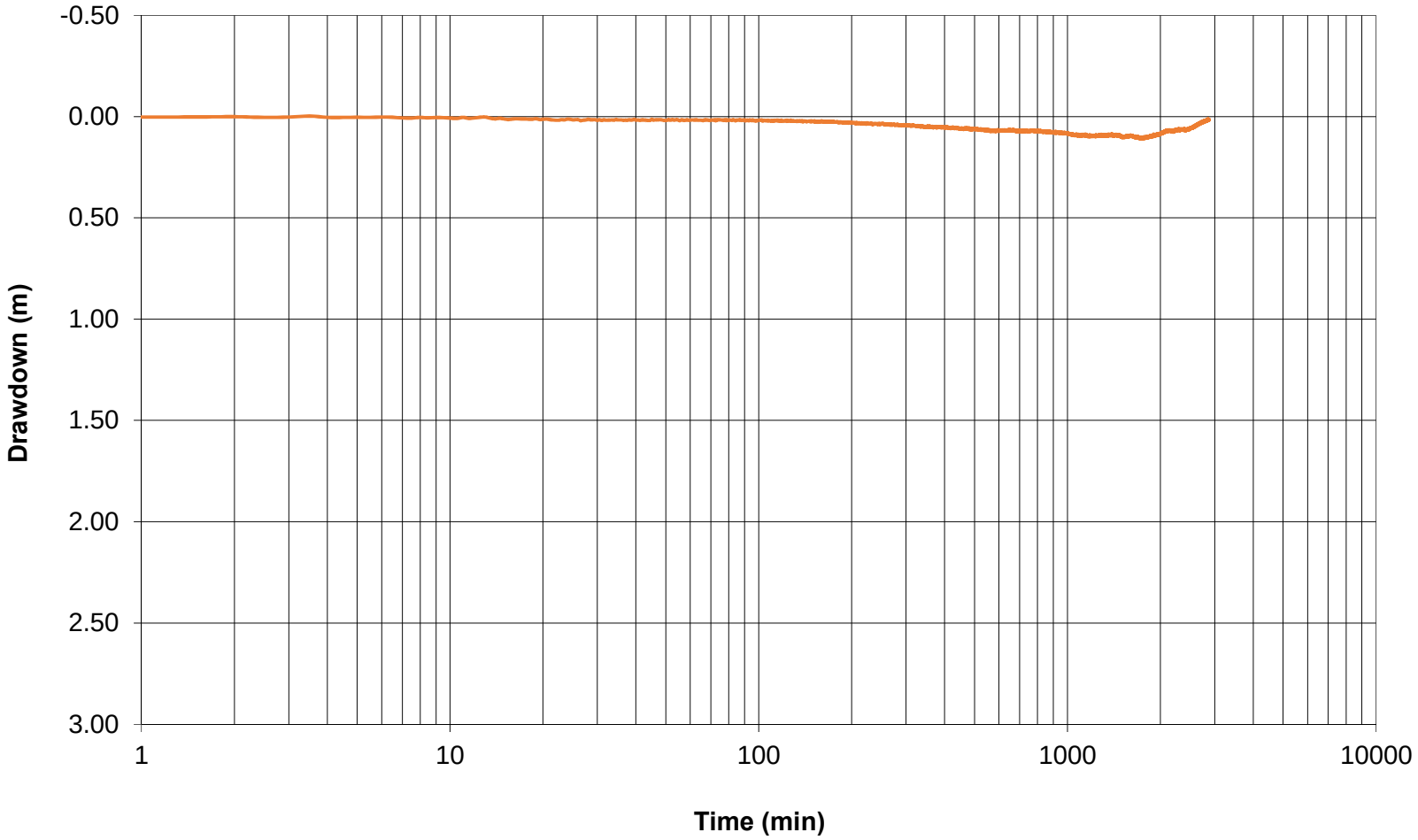


Table D3. Observation well drawdown during pumping test.

	Pumping Test - Drawdown		Test Well:	TW2
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10:33	AM

OW1 (2196 Battersea Rd.) Well Depth - 18.6 m					OW2 (2217 Battersea Rd.) Well Depth - 25.3 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
16.076	4.900	0.000	9:25	0	17.815	5.430	0.000	9:20	0
16.043	4.890	-0.010	13:0	147	16.371	4.990	-0.440	12:56	143
16.142	4.920	0.020	15:13	280	16.535	5.040	-0.390	15:9	276
16.043	4.890	-0.010	15:26	293	15.748	4.800	-0.630	17:3	390
16.010	4.880	-0.020	19:52	559	16.535	5.040	-0.390	19:55	562
16.076	4.900	0.000	21:57	684	15.781	4.810	-0.620	22:0	687
16.076	4.900	0.000	23:23	770	15.945	4.860	-0.570	23:28	775
16.043	4.890	-0.010	24:53	860	15.650	4.770	-0.660	24:56	863
16.076	4.900	0.000	27:14	1001	15.059	4.590	-0.840	27:17	1004
16.109	4.910	0.010	29:18	1125	15.354	4.680	-0.750	29:21	1128
16.207	4.940	0.040	31:30	1257	15.223	4.640	-0.790	31:38	1265
16.400	4.999	0.099	35:12	1479	17.060	5.200	-0.230	35:15	1482
16.400	4.999	0.099	37:24	1611	16.350	4.983	-0.447	37:30	1617
16.207	4.940	0.040	40:17	1784	16.200	4.938	-0.492	40:20	1787
16.273	4.960	0.060	41:37	1864	15.978	4.870	-0.560	41:40	1867
16.175	4.930	0.030	47:10	2197	15.978	4.870	-0.560	47:13	2200
16.207	4.940	0.040	50:8	2375	15.650	4.770	-0.660	50:13	2380
16.240	4.950	0.050	52:36	2523	15.125	4.610	-0.820	52:40	2527
16.800	5.121	0.221	56:21	2748	15.092	4.600	-0.830	56:27	2754
16.800	5.121	0.221	59:12	2919	16.817	5.126	-0.304	59:33	2940

OW3 (2225 Battersea Rd.) Well Depth - 28.3 m					OW4 (2224 Battersea Rd.) Well Depth - 16.2 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
21.490	6.550	0.000	9:15	0	17.618	5.370	0.000	9:25	0
23.228	7.080	0.530	12:54	141	17.651	5.380	0.010	13:2	149
22.507	6.860	0.310	15:4	271	17.749	5.410	0.040	15:15	282
21.490	6.550	0.000	17:20	407	17.749	5.410	0.040	17:29	416
20.833	6.350	-0.200	20:0	567	17.651	5.380	0.010	20:10	577
23.163	7.060	0.510	22:3	690	17.684	5.390	0.020	22:7	694
20.801	6.340	-0.210	23:30	777	17.684	5.390	0.020	23:33	780
20.866	6.360	-0.190	25:0	867	17.585	5.360	-0.010	25:6	873
20.669	6.300	-0.250	27:22	1009	17.651	5.380	0.010	27:26	1013
20.768	6.330	-0.220	29:25	1132	17.618	5.370	0.000	29:29	1136
22.966	7.000	0.450	31:45	1272	17.881	5.450	0.080	31:48	1275
29.500	8.992	2.442	35:20	1487	18.300	5.578	0.208	35:22	1489
25.000	7.620	1.070	37:33	1620	18.300	5.578	0.208	37:38	1625
23.556	7.180	0.630	40:23	1790	18.143	5.530	0.160	40:26	1793
21.686	6.610	0.060	41:47	1874	18.373	5.600	0.230	41:51	1878
21.030	6.410	-0.140	47:17	2204	17.848	5.440	0.070	47:21	2208
21.096	6.430	-0.120	50:17	2384	17.848	5.440	0.070	50:18	2385
20.965	6.390	-0.160	52:45	2532	17.848	5.440	0.070	52:48	2535
22.100	6.736	0.186	56:31	2758	18.700	5.700	0.330	56:35	2762
23.400	7.132	0.582	59:30	2937	18.400	5.608	0.238	59:50	2957

	Pumping Test - Drawdown		Test Well:	TW2
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10 33	AM

OW5 (2252 Battersea Rd.) Well Depth - 36.5 m						OW6 (799 Unity Rd.) Well Depth - 25.3 m					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
29.003	8.840	0.000	9	40	0	45.407	13.840	0.000	9	12	0
27.986	8.530	-0.310	11	57	84	45.472	13.860	0.020	11	53	80
28.215	8.600	-0.240	15	20	287	45.440	13.850	0.010	13	54	201
26.575	8.100	-0.740	16	32	359	45.308	13.810	-0.030	16	28	355
27.887	8.500	-0.340	18	40	487	45.374	13.830	-0.010	18	30	477
24.705	7.530	-1.310	20	15	582	45.374	13.830	-0.010	20	18	585
25.197	7.680	-1.160	22	12	699	45.341	13.820	-0.020	22	15	702
24.705	7.530	-1.310	23	40	787	45.276	13.800	-0.040	23	43	790
24.705	7.530	-1.310	25	11	878	45.210	13.780	-0.060	25	14	881
25.000	7.620	-1.220	27	34	1021	45.144	13.760	-0.080	27	38	1025
24.705	7.530	-1.310	29	34	1141	45.899	13.990	0.150	29	37	1144
26.378	8.040	-0.800	31	55	1282	45.505	13.870	0.030	32	0	1287
27.500	8.382	-0.458	35	30	1497	46.800	14.265	0.425	35	33	1500
27.800	8.473	-0.367	37	40	1627	45.800	13.960	0.120	37	48	1635
						45.308	13.810	-0.030	40	34	1801
						45.440	13.850	0.010	41	30	1857
						45.440	13.850	0.010	47	27	2214
						45.341	13.820	-0.020	50	25	2392
						45.341	13.820	-0.020	52	55	2542
						45.800	13.960	0.120	56	45	2772
						45.800	13.960	0.120	60	5	2972

OW7 (808 Unity Rd.) Well Depth - 20.4 m						OW8 (796 Unity Rd.) Well Depth - 25.9 m					
WL	WL	DD	Time		ET	WL	WL	DD	Time		ET
(ft)	(m)	(m)	H:Min		(min)	(ft)	(m)	(m)	H:Min		(min)
38.222	11.650	0.000	9	10	0	37.434	11.410	0.000	20	45	0
38.484	11.730	0.080	11	56	83	37.369	11.390	-0.020	22	20	707
38.255	11.660	0.010	13	46	193	37.270	11.360	-0.050	23	50	797
38.353	11.690	0.040	16	26	353	37.106	11.310	-0.100	25	19	886
43.865	13.370	1.720	18	35	482	36.942	11.260	-0.150	27	47	1034
38.550	11.750	0.100	20	20	587	36.844	11.230	-0.180	29	44	1151
38.550	11.750	0.100	22	18	705	37.172	11.330	-0.080	32	10	1297
38.353	11.690	0.040	23	46	793	37.700	11.491	0.081	35	421	1888
38.287	11.670	0.020	25	17	884	37.700	11.491	0.081	38	1	1648
38.123	11.620	-0.030	27	42	1029	37.336	11.380	-0.030	40	37	1804
37.992	11.580	-0.070	29	40	1147	37.402	11.400	-0.010	41	5	1832
38.287	11.670	0.020	32	5	1292	37.402	11.400	-0.010	47	34	2221
39.000	11.887	0.237	36	38	1565	37.172	11.330	-0.080	50	34	2401
38.900	11.857	0.207	38	58	1705	37.172	11.330	-0.080	53	0	2547
38.419	11.710	0.060	40	34	1801	37.900	11.552	0.142	56	55	2782
38.484	11.730	0.080	42	0	1887	38.000	11.582	0.172	59	55	2962
38.550	11.750	0.100	45	31	2098						
38.320	11.680	0.030	50	28	2395						
38.320	11.680	0.030	53	58	2605						
39.200	11.948	0.298	57	50	2837						
39.100	11.918	0.268	60	50	3017						

ASC ENVIRONMENTAL	Pumping Test - Drawdown			Test Well:	TW2
	Project No.:	ASC-458		Date:	17-Sep-2018
	Client:	BPE Development		Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON		10:33	AM

OW9 (2245 Battersea Rd.) Well Depth - 72.2 m					OW10 (874 Unity Rd.) Well Depth - 35.1 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
95.177	29.010	0.000	9:45	0	29.400	8.961	0.000	9:40	0
92.848	28.300	-0.710	12:2	89	28.543	8.700	-0.261	12:23	110
92.651	28.240	-0.770	14:0	207	28.543	8.700	-0.261	14:14	221
93.241	28.420	-0.590	16:36	363	28.806	8.780	-0.181	16:52	379
92.913	28.320	-0.690	18:30	477	28.412	8.660	-0.301	18:35	482
96.621	29.450	0.440	20:51	618	28.314	8.630	-0.331	20:55	622
93.340	28.450	-0.560	22:32	719	28.150	8.580	-0.381	22:36	723
93.176	28.400	-0.610	23:59	806	28.150	8.580	-0.381	24:3	810
93.176	28.400	-0.610	25:29	896	28.084	8.560	-0.401	25:33	900
94.062	28.670	-0.340	27:57	1044	28.117	8.570	-0.391	28:4	1051
93.438	28.480	-0.530	29:53	1160	29.167	8.890	-0.071	29:57	1164
93.406	28.470	-0.540	32:16	1303	29.035	8.850	-0.111	32:19	1306
94.100	28.682	-0.328	36:2	1529	29.700	9.053	0.091	35:57	1524
105.600	32.187	3.177	38:26	1673	29.300	8.931	-0.030	38:31	1678
93.832	28.600	-0.410	40:45	1812	29.265	8.920	-0.041	40:46	1813
93.701	28.560	-0.450	42:10	1897	28.773	8.770	-0.191	42:16	1903
94.029	28.660	-0.350	45:45	2112	28.675	8.740	-0.221	45:49	2116
94.390	28.770	-0.240	50:43	2410	28.543	8.700	-0.261	50:46	2413
94.094	28.680	-0.330	53:9	2556	28.675	8.740	-0.221	53:14	2561
95.100	28.986	-0.024	57:5	2792					
94.700	28.865	-0.145	60:35	3002					

OW11 (896 Unity Rd.) Well Depth - 21.6 m					OW14 (942 Unity Rd.) Well Depth - 25.6 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
40.400	12.314	0.000	9:39	0	59.100	18.014	0.000	9:16	0
39.993	12.190	-0.124	12:19	106	57.316	17.470	-0.544	12:6	93
39.961	12.180	-0.134	14:5	212	55.774	17.000	-1.014	14:19	226
41.371	12.610	0.296	16:0	327	55.741	16.990	-1.024	16:40	367
39.928	12.170	-0.144	16:44	371	56.923	17.350	-0.664	18:48	495
39.961	12.180	-0.134	18:58	505	56.004	17.070	-0.944	21:13	640
39.895	12.160	-0.154	21:0	627	56.135	17.110	-0.904	22:44	731
39.928	12.170	-0.144	22:40	727	55.446	16.900	-1.114	24:10	817
39.895	12.160	-0.154	24:6	813	55.085	16.790	-1.224	25:41	908
39.895	12.160	-0.154	25:37	904	55.938	17.050	-0.964	28:11	1058
39.862	12.150	-0.164	28:6	1053	57.054	17.390	-0.624	30:6	1173
40.026	12.200	-0.114	30:0	1167	56.266	17.150	-0.864	32:31	1318
46.457	14.160	1.846	32:25	1312	56.200	17.130	-0.884	35:49	1516
40.250	12.268	-0.046	35:53	1520	56.800	17.313	-0.701	38:40	1687
40.900	12.466	0.152	38:36	1683	56.168	17.120	-0.894	40:57	1824
39.961	12.180	-0.134	40:54	1821	55.709	16.980	-1.034	42:26	1913
40.026	12.200	-0.114	42:20	1907	55.676	16.970	-1.044	45:58	2125
40.092	12.220	-0.094	45:54	2121	55.315	16.860	-1.154	50:53	2420
40.059	12.210	-0.104	50:50	2417	58.850	17.937	-0.076	53:29	2576
40.400	12.314	0.000	53:25	2572	56.600	17.252	-0.762	57:27	2814
40.650	12.390	0.076	57:23	2810	56.400	17.130	-0.884	60:58	3025
40.800	12.436	0.122	60:30	2997					

ASC ENVIRONMENTAL	Pumping Test - Drawdown			Test Well:	TW2
	Project No.:	ASC-458		Date:	17-Sep-2018
	Client:	BPE Development		Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON		10 33	AM

OW15 (2329 Battersea Rd.) Well Depth - 36.6 m					OW16 (2359 Battersea Rd.) Well Depth - 33.2 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
73.885	22.520	0.000	9 0	0	82.907	25.270	0.000	8 50	0
74.114	22.590	0.070	12 50	137	83.235	25.370	0.100	12 35	122
74.147	22.600	0.080	14 53	260	83.136	25.340	0.070	14 40	247
74.409	22.680	0.160	17 16	403	83.530	25.460	0.190	17 3	390
74.672	22.760	0.240	21 19	646	83.497	25.450	0.180	21 38	665
74.606	22.740	0.220	22 48	735	83.366	25.410	0.140	23 1	748
73.950	22.540	0.020	24 15	822	82.710	25.210	-0.060	24 30	837
73.491	22.400	-0.120	25 46	913	82.415	25.120	-0.150	25 57	924
72.867	22.210	-0.310	28 17	1064	81.923	24.970	-0.300	28 28	1075
74.869	22.820	0.300	30 10	1177	85.630	26.100	0.830	30 23	1190
73.786	22.490	-0.030	32 36	1323	86.056	26.230	0.960	32 52	1339
74.600	22.738	0.218	36 6	1533	83.300	25.390	0.120	36 23	1550
74.000	22.555	0.035	38 46	1693	83.400	25.420	0.150	39 5	1712
74.475	22.700	0.180	41 0	1827	82.874	25.260	-0.010	41 9	1836
73.983	22.550	0.030	42 30	1917	83.038	25.310	0.040	43 43	1990
73.917	22.530	0.010	48 2	2249	82.743	25.220	-0.050	48 17	2264
73.589	22.430	-0.090	50 58	2425	82.448	25.130	-0.140	51 9	2436
73.800	22.494	-0.026	53 35	2582	82.600	25.176	-0.094	53 48	2595
74.600	22.738	0.218	57 35	2822	83.600	25.481	0.211	57 45	2832
74.400	22.677	0.157	61 5	3032	83.500	25.451	0.181	61 29	3056

OW17 (2370 Battersea Rd.) Well Depth - 33.5 m					OW18 (885 Unity Rd.) Well Depth - 45.7 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
74.475	22.700	0.000	8 45	0	27.493	8.380	0.000	8 27	0
74.639	22.750	0.000	12 33	120	28.219	8.601	0.221	12 27	114
74.344	22.660	0.000	14 36	243	31.365	9.56	1.180	14 27	234
74.639	22.750	0.000	17 5	392	30.115	9.179	0.799	17 27	414
74.508	22.710	0.000	21 40	667	30.655	9.344	0.964	21 27	654
74.344	22.660	0.000	23 4	751	31.267	9.530	1.150	23 27	774
73.852	22.510	0.000	24 35	842	31.761	9.681	1.301	24 27	834
73.589	22.430	0.000	26 1	928	31.652	9.6474	1.267	26 27	954
73.228	22.320	0.000	28 32	1079	31.773	9.6845	1.305	28 27	1074
73.983	22.550	0.000	30 27	1194	30.774	9.3799	1.000	30 27	1194
74.700	22.769	0.000	33 51	1398	32.036	9.7646	1.385	33 27	1374
74.700	22.769	0.000	35 6	1473	30.594	9.3251	0.945	35 27	1494
74.800	22.799	0.000	39 15	1722	30.857	9.4052	1.025	39 27	1734
74.147	22.600	0.000	41 15	1842	31.163	9.4986	1.119	41 27	1854
74.475	22.700	0.000	42 47	1934	30.870	9.4091	1.029	42 27	1914
73.983	22.550	0.000	48 21	2268	31.850	9.708	1.328	48 27	2274
74.114	22.590	0.000	51 12	2439	32.039	9.7655	1.386	51 27	2454
73.950	22.540	0.000	53 55	2602	31.096	9.478	1.098	53 27	2574
74.700	22.769	0.000	57 52	2839	30.152	9.1904	0.810	57 27	2814
74.500	22.708	0.000	63 34	3181	29.668	9.0428	0.663	63 27	3174

	Pumping Test - Drawdown		Test Well:	TW2
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10 33	AM

OW19 (2467 Battersea Rd.) Well Depth - N/A					OW20 (2285 Battersea Rd.) Well Depth - 25.3 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
34.154	10.410	0.000	8 40	0	47.600	14.508	0.000	8 51	0
34.022	10.370	-0.040	12 30	117	49.377	15.05	0.542	13 11	158
34.088	10.390	-0.020	14 29	236	48.130	14.67	0.162	15 28	295
34.186	10.420	0.010	16 52	379	46.949	14.310	-0.198	17 35	422
34.088	10.390	-0.020	19 8	515	46.457	14.160	-0.348	19 50	557
34.121	10.400	-0.010	21 46	673	46.457	14.160	-0.348	21 55	682
34.088	10.390	-0.020	23 8	755	46.457	14.160	-0.348	23 19	766
34.022	10.370	-0.040	24 38	845	46.293	14.110	-0.398	24 50	857
34.022	10.370	-0.040	26 9	936	46.293	14.110	-0.398	27 8	995
34.022	10.370	-0.040	28 36	1083	46.490	14.170	-0.338	29 14	1121
34.121	10.400	-0.010	30 31	1198	48.800	14.874	0.366	34 0	1407
34.400	10.485	0.075	33 56	1403	53.600	16.337	1.829	36 27	1554
34.400	10.485	0.075	35 3	1470	46.490	14.170	-0.338	39 22	1729
34.121	10.400	-0.010	39 20	1727	47.671	14.53	0.022	41 22	1849
34.121	10.400	-0.010	41 18	1845	47.080	14.35	-0.158	42 56	1943
34.121	10.400	-0.010	42 51	1938	46.719	14.24	-0.268	47 6	2193
34.121	10.400	-0.010	48 25	2272	46.588	14.2	-0.308	50 3	2370
34.121	10.400	-0.010	51 15	2442	46.719	14.24	-0.268	52 32	2519
34.350	10.470	0.060	53 59	2606	49.800	15.179	0.671	58 0	2847
34.800	10.607	0.197	57 55	2842	50.200	15.301	0.792	61 41	3068
34.500	10.516	0.106	63 30	3177					

TW1 Well Depth - 85.3 m					OW21 (2228 Battersea Rd.) Well Depth - 17.7 m				
WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)	WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
116.600	35.540	0.000	9 1	0	18.766	5.720	0.000	9 26	0
119.000	36.271	0.732	12 0	87	18.898	5.76	0.040	12 4	91
121.200	36.942	1.402	15 30	297	18.963	5.78	0.060	15 19	286
122.100	37.216	1.676	18 7	454	18.898	5.760	0.040	17 27	414
122.150	37.231	1.692	19 45	552	18.734	5.710	-0.010	20 12	579
122.450	37.323	1.783	21 53	680	18.734	5.710	-0.010	22 9	696
122.590	37.365	1.826	23 16	763	18.701	5.700	-0.020	23 35	782
122.800	37.429	1.890	24 48	855	18.701	5.700	-0.020	25 8	875
121.900	37.155	1.615	27 6	993	18.668	5.690	-0.030	27 30	1017
122.000	37.186	1.646	29 11	1118	18.635	5.680	-0.040	29 31	1138
122.300	37.277	1.737	33 39	1386	19.127	5.830	0.110	31 51	1278
123.400	37.612	2.073	36 30	1557	19.700	6.005	0.285	35 26	1493
123.400	37.612	2.073	39 30	1737	19.900	6.066	0.346	37 40	1627
123.600	37.673	2.134	41 24	1851	19.357	5.9	0.180	40 24	1791
123.600	37.673	2.134	42 58	1945	19.324	5.89	0.170	41 54	1881
123.750	37.719	2.179	47 3	2190	18.996	5.79	0.070	47 24	2211
123.760	37.722	2.182	50 1	2368	18.832	5.74	0.020	50 23	2390
123.800	37.734	2.195	52 30	2517	18.832	5.74	0.020	52 50	2537
124.000	37.795	2.256	58 2	2849	19.550	5.959	0.239	56 38	2765
120.400	36.698	1.158	61 45	3072	19.500	5.944	0.224	59 0	2907

	Pumping Test - Drawdown		Test Well:	TW2
	Project No.:	ASC-458	Date:	17-Sep-2018
	Client:	BPE Development	Pumping start time	
	Location:	2285 Battersea Road, Kingston, ON	10 33	AM

OW22 (791 Unity Rd.) Well Depth 40.2 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
63.058	19.220	0.000	9 5	0
63.025	19.210	-0.010	11 47	74
65.617	20.000	0.780	13 13	160
62.795	19.140	-0.080	16 22	349
63.156	19.250	0.030	18 10	457
63.156	19.250	0.030	20 34	601
62.959	19.190	-0.030	22 25	712
63.058	19.220	0.000	23 55	802
62.861	19.160	-0.060	25 24	891
62.828	19.150	-0.070	27 53	1040
62.861	19.160	-0.060	29 49	1156
66.831	20.370	1.150	32 2	1289
63.300	19.294	0.074	35 36	1503
63.300	19.294	0.074	37 51	1638
62.795	19.140	-0.080	40 31	1798
63.058	19.220	0.000	41 1	1828
64.797	19.750	0.530	47 40	2227
62.927	19.180	-0.040	50 36	2403
63.600	19.180	-0.040	56 5	2732
63.300	19.294	0.074	60 48	3015

OW23 (2347 Battersea Rd.) Well Depth - 39.6 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
80.249	24.460	0.000	8 55	0
80.413	24.51	0.050	12 34	121
97.999	29.87	5.410	14 47	254
80.938	24.670	0.210	17 6	393
81.102	24.720	0.260	21 33	660
80.873	24.650	0.190	22 56	743
80.184	24.440	-0.020	24 24	831
79.856	24.340	-0.120	25 53	920
79.331	24.180	-0.280	28 24	1071
79.757	24.310	-0.150	30 18	1185
80.249	24.460	0.000	32 50	1337
80.700	24.597	0.137	36 20	1547
80.300	24.475	0.015	37 1	1588
80.282	24.47	0.010	41 7	1834
80.446	24.52	0.060	43 40	1987
80.217	24.45	-0.010	48 12	2259
79.921	24.36	-0.100	51 6	2433
80.100	24.414	-0.046	53 44	2591
102.200	31.151	6.691	57 43	2830
81.000	24.689	0.229	63 21	3168

OW24 (2336) Well Depth - 36.0 m

WL (ft)	WL (m)	DD (m)	Time H:Min	ET (min)
69.751	21.260	0.000	12 45	0
70.079	21.360	0.100	14 59	266
67.651	20.620	-0.640	17 12	399
72.638	22.140	0.880	21 23	650
72.802	22.190	0.930	22 51	738
71.982	21.940	0.680	24 20	827
71.818	21.890	0.630	25 49	916
71.850	21.900	0.640	28 22	1069
72.375	22.060	0.800	30 14	1181
69.980	21.330	0.070	32 43	1330
70.600	21.519	0.259	36 8	1535
70.300	21.427	0.167	38 53	1700
71.391	21.760	0.500	41 3	1830
70.702	21.550	0.290	42 36	1923
72.178	22.000	0.740	48 6	2253
72.080	21.970	0.710	51 2	2429
72.190	22.004	0.744	53 39	2586
70.100	21.366	0.106	57 40	2827
70.000	21.336	0.076	61 14	3041

Table D4. Test well recovery after pumping test.

ASC ENVIRONMENTAL	**Pumping Test - Recovery**			**Test Well:**	**TW2**
	Project No.:	ASC-458		Date:	17-Sep-18
	Client:	BPE Development			Recorded By: J.P.
	Location:	2285 Battersea Road, Kingston, ON			
		Test Well			
Pumping	Elapsed Time (min/sec)	Well Level (WL) (m)	Drawdown (m)		
0	0	34.46	0.02		
0	1	34.46	0.02		
0	2	34.46	0.02		
0	3	34.45	0.01		
0	4	34.46	0.02		
0	5	34.46	0.02		
0	10	34.46	0.02		
0	20	34.46	0.01		
0	30	34.46	0.02		
0	40	34.46	0.02		
0	50	34.46	0.02		
0	60	34.46	0.02		
0	70	34.46	0.02		
0	80	34.46	0.02		
0	90	34.46	0.01		
0	100	34.46	0.02		
0	200	34.46	0.02		
0	300	34.47	0.03		
0	400	34.47	0.03		
0	500	34.42	-0.02		
0	600	34.41	-0.03		
0	700	34.41	-0.03		
0	800	34.41	-0.03		
0	900	34.41	-0.03		
0	1000	34.42	-0.02		
0	1500	34.47	0.03		
0	1927	34.53	0.09		
WL at 95% Recovery =		34.450 m			

ASC Environmental Inc.
ASC-458 - BPE Development, 2285 Battersea Road, Kingston, Ontario
Figure 3 Test Well 2 Recovery