Hydrogeologic Investigation Report
Babcock Street Combined Sewer Overflow

Location:

ExxonMobil Oil Former Buffalo Terminal OU-3
503/625 Elk Street and 1 Babcock Street, Buffalo, New York
NYSDEC Site No. C915201D

Prepared for:

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1.0 SITE BACKGROUND

Operable Unit No. 3 (OU-3) of the ExxonMobil Former Buffalo Terminal Site (hereinafter referred to as the "Site") was formerly part of a petroleum refinery and bulk storage terminal that occupied approximately 89 acres of land extending from Elk Street southward to the Buffalo River. Petroleum refinery operations commenced circa 1880 at this location and, in 1892, most of the facility was acquired by Standard Oil Company, ExxonMobil's predecessor. All refinery operations had ceased at the facility by 1981, but the facility continued to be utilized by ExxonMobil as a distribution terminal until 2005, when the remaining active petroleum storage and distribution terminal facilities were acquired by Buckeye Partners, LLC (Buckeye).

Historical facility plans indicate that extensive petroleum storage and distribution facilities previously existed on the Site, as did a large storm water control and separator system that serviced the refinery property. With the exception of the active petroleum bulk storage (PBS) facilities operated by Buckeye, the PBS facilities were removed and the storm water system was abandoned in place in phases between 1993 and 2001.

In 2017, Elk Street Commerce Park, LLC (ESCP) entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC), as a volunteer, to remediate the Site. ESCP subsequently acquired all portions of the Site, excluding the portion owned by Buckeye, in several transactions that occurred in 2018 and 2019. Remediation of the Site was performed by ESCP in 2018-2019 in accordance with a NYSDEC-approved Remedial Action Work Plan (RAWP) dated December 2017 and revised May 2018. A Final Engineering Report (FER) summarizing and documenting the remedial program completed at the Site was filed in December 2019 and subsequently approved by NYSDEC. The Site is zoned industrial, encompasses approximately 33.12 acres and is located at 503/625/635 Elk Street and 1 Babcock Street in the City of Buffalo, Erie County, New York (see **Figure 1**).

The area of investigation, for the purpose of this Hydrogeologic Investigation, includes the western portion of the Site. This area includes the Babcock Street Combined Sewer Overflow (CSO), which is owned and operated by the Buffalo Sewer Authority (BSA). Based on observations at the Site, it appears that the deteriorated condition of the CSO structure is enabling communication between the structure and the surrounding subsurface. Specifically, fluctuating stages of the Buffalo River are believed to be flushing free-phase petroleum hydrocarbons from the subsurface into the CSO structure. The mechanism believed to be the driving force is the exfiltration of water from the river into the subsurface via the CSO structure during a high river stage, and the infiltration of groundwater and petroleum products back into the CSO structure from the subsurface during a low river stage.

This hydrogeologic investigation has been undertaken by ESCP in order to evaluate feasible options for eliminating further infiltration of petroleum products from the subsurface into the CSO and subsequently, to the Buffalo River. The specific goals of this investigation are to evaluate the stratigraphy in the area adjacent to the CSO and, to evaluate the distribution of petroleum hydrocarbons in the soils adjacent to a deteriorated portion of the CSO structure. Additional hydrogeologic information has also been obtained in order to update and refine the existing groundwater flow model to reflect Site conditions after the installation of a slurry wall in the area east

of the CSO structure. This updated hydrogeologic information will be used to more fully evaluate groundwater flow paths, including the effect of the existing slurry wall and CSO structure on local groundwater flow; and to ensure that an effective, long-term solution to this condition is developed for implementation.

2.0 SCOPE OF WORK

The infiltration of free-phase petroleum was noted primarily in the approximate 200 foot (ft.) segment of the CSO shown on **Figure 2**. This area correlates with the historical presence of petroleum documented in the Babcock Street Properties Area Investigation Report prepared by Roux Associates (June 2001). Additionally, historical information indicates that this area also contains the former channel of the Buffalo River (backfilled circa 1914-1917). This backfilled channel may function as a preferential migration pathway and/or accumulation point for subsurface dissolved and/or free-phase petroleum.

Considering the observations and information described above, the hydrogeologic investigation focused on the rectangular area shown on **Figure 3**. This area measures approximately 300 ft. in length and 50 ft. in width and straddles the CSO structure. This area falls between the OU-3 slurry wall (to the east) and, an area where petroleum-impacted soil was previously subjected to in-situ stabilization to the west. It is bounded on the south by a "hanging" sheet pile wall (installed just north of the CSO headwall structure) and extends toward the north to the approximate northern boundary of the former river channel.

The scope of the hydrogeologic investigation was outlined in the March 25, 2021 scope of work prepared by LaBella Associates, D.P.C and approved by NYSDEC with the condition that additional delineation efforts be applied if warranted. The investigations conducted within this area included:

- Advancement of a series of soil borings to define subsurface stratigraphy and evaluate the extent of gross petroleum impacts, and;
- Conducting a hydrogeologic investigation to update and refine the existing groundwater flow model and evaluate the effect of the CSO structure on local groundwater flow patterns.

2.1 Soil Boring Investigation

The soil boring investigation included a series of test borings advanced using direct-push drilling equipment along two (2) parallel lines running the length of the CSO through the investigation area. These borings were advanced on an approximate 30-foot spacing along lines oriented north-to-south. The borings were used to collect continuous macro-core samples from the ground surface until a basal clay unit was encountered generally at a depth range of 20-to-30 fbg (with variation) depending on location. This basal clay unit was the target into which the adjacent slurry wall (to the east) was keyed. The goal of the soil borings was to evaluate site stratigraphy and determine the lateral and vertical limits of gross petroleum impacts in each direction. Based on the observations made during the soil boring program, and, at the request of NYSDEC, additional soil borings were advanced to the west of the investigation area in order to better define the western extent of petroleum impacted soil.

At each borehole location, continuous soil core samples were retrieved in 5.0-foot intervals via a macro-core sampler lined with a dedicated acetate sleeve. The sleeve was subsequently cut-open and

the length of recovered soil core recorded. The soil core was evaluated for composition, visible impairment, olfactory indications of impairment, and detectable concentrations of volatile organic compounds (VOCs) via headspace screening with a photo-ionization detector (PID). On completion, sample tooling was washed using an Alconox and water solution prior to commencing with the next borehole. All decontamination fluids were containerized and transported to the on-site Groundwater Treatment Facility (GWTF) for treatment. Test boring logs were subsequently prepared for each boring to record location, depth, soil classifications, stratigraphy, depth at which groundwater is encountered, presence or absence of liquid phase petroleum (i.e., free product), evidence of impairment and total VOC concentrations via headspace screening.

2.2 Hydrogeologic Investigation

The March 25, 2021 scope of work proposed three (3) elements for the hydrogeologic investigation. This included hydraulic conductivity testing of selected existing monitoring wells on the western boundary of OU-3 (wells MW-3, ESCP-MW-7 & ESCP-MW-8); installation of new wells for pump testing (ESCP-CSO-MW-4) and related water level monitoring (ESCP-CSO-PZ-1; ESCP-CSO-PZ-2 & ESCP-CSO-PZ-3) during the proposed testing, and, associated pump testing. The purpose of the testing was to evaluate the spatial variability of the hydraulic conductivity (K) of the saturated site soil so that the inputs into an existing groundwater flow model can be refined. These tests would also help to evaluate the effect of the CSO structure on groundwater flow.

2.2.1 Hydraulic Conductivity Testing

Hydraulic conductivity testing (i.e. slug testing) was conducted via the proposed wells using a solid slug to displace water in the tested well. This slug was constructed of a 3.0-inch diameter solid PVC slug that was 4.0-feet in length, and displaced an approximate volume of 1.5 gallons in the tested wells. The testing was conducted by rapidly introducing the slug into the well and submerging it to a depth below the static water level. The slug was allowed to remain in the well while the displaced water levels returned (declined) back to static conditions. After re-establishing static conditions, the slug was rapidly removed from the well until the displaced water returned (increased) back to static conditions. The displaced water levels during the slug testing were recorded every 15 seconds during each test using electronic pressure transducers. A minimum of three (3) “falling head” and “rising head” tests were conducted on each well.

2.2.2 Well Installation

Four new wells were installed as part of the hydrogeologic investigation. This includes the test well (ESCP-CSO-MW-4) and three (3) piezometers (ESCP-CSO-PZ-1, ESCP-CSO-PZ-2 & ESCP-CSO-PZ-3). Each of the wells/piezometers were installed via hollow stem augers. At each drilled location, the augers were advanced down to the underlying clay layer. Well ESCP-CSO-MW-4 (the pump tested well) was constructed of 6.0-inch inside diameter (ID) continuous slot stainless steel well screen (# 20-slot) and PVC riser to grade. Piezometers were installed approximately 11 feet to the south (ESCP-CSO-PZ-1); approximately 11-feet to the north (ESCP-CSO-PZ-2); and approximately 35-feet to the east (ESCP-CSO-PZ-3) of ESCP-CSO-MW-4. Piezometers were constructed of 2.0-inch ID continuous slot (#20 slot) PVC well screen and riser to grade. The test well and two (2) of the piezometers (ESCP-CSO-PZ-1 and ESCP-CSO-PZ-2) were each installed in the area west of the slurry wall (and east of the CSO). Piezometer ESCP-CSO-PZ-3 was installed in the area east of the slurry wall. This area is hydraulically

isolated from the area west of the slurry wall where the test well is located.

The wells were installed by advancing the augers to the appropriate depth and removing the center plug. The well screen/casing assembly was installed inside of the augers and the sand pack placed as the augers were incrementally withdrawn from the borehole. Once the sand was confirmed to extend 1.0-to-2.0-feet above the well screen, a bentonite seal was placed over the sand pack and hydrated. Each well was finished with a steel, bolt-down road box set in a concrete pad. After completing their installation, each of the newly installed wells (and, existing well MW-24, which would also be used for water level monitoring during the subsequent pump testing) were developed in order to improve the hydraulic connection between the well screen/sand pack and the formation. The horizontal position of each well location, and top of well casing elevation, was subsequently surveyed. Well construction specifications for the newly installed well and piezometers are included in **Table 1** below; soil boring and well completion logs are included in **Appendix A**.

Table 1
Well Specifications

Location ID	Nominal Diameter (inches)	Screen Type & Material	Screen Slot Size[7] (inches)	Screen Length (feet)	Screened Interval (fbg)	Total Depth (fbg)
ESCP-CSO-MW4	6	Cont.-Slot (Vee-Wire) Type 304 SS	0.020	20	5.0-25	25
ESCP-CSO-PZ1	2	Cont.-Slot (Vee Wire) PVC	0.020	20	9.0-29	29
ESCP-CSO-PZ2	2	Cont.-Slot (Vee-Wire) PVC	0.020	20	7.0-27	27
ESCP-CSO-PZ3	2	Cont.-Slot (Vee Wire) PVC	0.020	20	5.0-25	25

Notes:
1. fbg: feet below grade;
2. PVC: polyvinyl chloride;
3. Sch.: Schedule;
4. PVC casing and screen will conform to ASTM D1785 (Standard Specification for Poly[Vinyl Chloride] Plastic Pipe, Schedules 40, 80, and 120) and ASTM F480 (Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Rations [SDR], Sch. 40 and Sch. 80);
5. Stainless steel screen will conform to ASTM A580/A580M (Standard Specification for Stainless Steel Wire);
6. All casing and screen will be proved with flush-threaded joints; and
7. Screen slot size and filter pack material for the new monitoring well and piezometers will be confirmed by the field geologist based on soil conditions encountered at each location.

2.2.3 Pump Testing

The pumping tests proposed for the site included initial short duration step testing followed by a constant rate pump test conducted over a longer duration. The purpose of the step testing was to use that short duration testing to determine the sustained yield of the tested well so that an appropriate flow rate for conducting the longer term constant rate pump test could be determined.

Step Testing:

The step testing proposed for well ESCP-CSO-MW-4 in the March 25, 2021 scope of work envisioned four (4) steps/flow rates. These include a starting flow rate estimated at 10 gallons per minute (gpm) with steps increasing incrementally to 15 gpm (Step-2), 20 gpm (Step-3) and 25 gpm (Step-4). The final yield for the test well was expected to fall in the 25 gpm range. However, during development of well ESCP-CSO-MW-4, continuous drawdown was noted at a flow rate estimated at 3.0 gpm. A similar

observation was made during development of monitoring well MW-24, which was to be used for monitoring liquid levels during the testing conducted via well ESCP-CSO-MW-4. Specifically, well MW-24 was easily pumped dry, at an estimated flow rate of 3.0 gpm, during development. Well MW-24 is located approximately 20 feet west of ESCP-CSO-MW-4.

Based on the observation that water levels continued to decline at a rate of 3.0 gpm and appeared to stabilize in well ESCP-CSO-MW-4 at a flow rate below 3.0 gpm, the step testing approach as proposed in the scope of work was modified. Based on these findings, a flow rate of 2.5 gpm was determined to be appropriate for conducting the 10-hour constant rate pump test.

Constant Rate Pump Testing:
The constant rate pump test was initiated on April 27, 2021 and lasted for a 10-hour duration. Prior to initiating the test, the tested well (ESCP-CSO-MW-4), three (3) piezometers (ESCP-CSO-PZ-1, ESCP-CSO-PZ-2 & ESCP-CSO-PZ-3), MH-1, and MW-24 were equipped with pressure transducers to collect liquid levels before, during and after completing the constant rate pump test. Pressure transducers collected liquid level measurements every 15-seconds for a minimum of 4 hours prior to initiating the test and after the test until recovery back to static conditions had been reached.

The constant rate pump test was initiated at 8:15 am on Tuesday, April 27th and terminated on that same day at 6:15 pm. The test duration was approximately 10-hours and at an average flow rate estimated at 2.5 gpm. After completing the constant rate test, the pressure transducers were retrieved and the data downloaded to a spreadsheet program for evaluation and review.

3.0 FINDINGS

3.1 Soil Boring Investigation

The soil boring investigation was conducted during the period between April 5 and 21, 2021. This included the advancement of a total of 28 soil borings. Ten (10) borings were advanced on a line in the area between the slurry wall and the CSO structure (CSO-SB-1 through CSO-SB-10); while nine (9) borings (CSO-SB-11 through CSO-SB-19) were advanced in a line in the area west-of the CSO structure. Each of these 19 soil borings were advanced to a depth sufficient to verify the basal clay into which the slurry wall was keyed. Nine (9) additional borings (CSO-SB-20 through CSO-SB-28) were distributed throughout the western portion of OU-3 in order to better define site stratigraphy and distribution of petroleum in the subsurface. One (1) of these borings (CSO-SB-20) did not encounter the basal clay unit. CSO-SB-20 was advanced down to a terminal depth of 35 fbg. Each of the other eight (8) soil borings confirmed the presence of the basal clay. **Figure 4** presents a contour map depicting the elevation of the top of the basal clay unit.

Evaluation of the soil boring logs developed from the soil boring program and well/piezometer installation (Appendix A) reveal a heterogeneous subsurface that includes fill (wood, brick, concrete & miscellaneous debris in a silty clay or silty, sandy, gravelly matrix); silty clay; silty/sandy gravel; interbedded brown clay with sandy gravel lensing; sandy gravel; and a basal continuous clay unit. **Figure 5** presents the locations of three (3) cross-sections that present the stratigraphic relationship of these units. These geologic cross-sections are shown in **Figure 6** (A-A'), **Figure 7** (B-B') and, **Figure**

8 (C-C'). Groundwater and/or petroleum product is present primarily within the interbedded brown clay with sandy gravel lensing and/or underlying sandy gravel.

Two (2) apparently distinct occurrences of free-phase petroleum product were noted in several of the soil borings installed as part of this investigation. This includes a "shallow" product that is amber in color and was observed near the water table during borehole advancement. A deeper occurrence of free-phase petroleum product that is black in color and has a "greasy" appearance was also noted. This material has a very "weathered" appearance and appears to be stratigraphically trapped by low permeability clays within the deeper portion of the interbedded brown clay with sandy gravel lensing (and/or, within the underlying sandy gravel unit). Both product occurrences were noted in the soil borings associated with each of the piezometers (ESCP-CSO-PZ-1; ESCP-CSO-PZ-2 and ESCP-CSO-PZ-3) as well as soil borings CSO-SB-8 and CSO-SB-16. The stratigraphically trapped dark product was also observed in CSO-SB-2, CSO-SB-12, CSO-SB-13, CSO-SB-14, and CSO-SB-26. **Figure 9** indicates the locations where product occurrences were noted during the soil boring program.

It is interesting to note that the piezometer installed at ESCP-CSO-PZ-2 was screened through the interbedded zone and into the underlying sandy gravel. This enabled the "shallow" amber product as well as the "deeper" underlying dark-colored (and stratigraphically trapped) product to enter the piezometer. The resulting thickness of product in PZ-2 during the pump testing activities was approximately 4.0 feet and was composed of both the "shallow" and "deeper" products. A sample of this floating product layer was collected via a sampling bailer after completing the pump test. This co-mingled product sample was collected and sent to the Buffalo, New York analytical laboratory facility of Eurofins TestAmerica Laboratories for determination of its specific gravity. The results, which are included in **Appendix B** verify that the dark product is lighter than water with a specific gravity of 0.84 grams per cubic centimeter (g/cm^3).

LaBella has initiated product recovery efforts via well ESCP-CSO-MW-4 and the three (3) piezometers (ESCP-CSO-PZ-1, ESCP-CSO-PZ-2 and ESCP-CSO-PZ-3) since completing the testing associated with the hydrogeologic investigation.

3.2 Hydrogeologic Investigation

3.2.1 Hydraulic Conductivity Testing

Two (2) episodes of hydraulic conductivity (i.e. slug) testing were conducted at the site. The first round of slug testing was conducted on April 19 & 20, 2021 and involved testing of wells MW-3, ESCP-MW-7 and ESCP-MW-8. The second round of slug testing was conducted on May 3, 2021 and involved monitoring well MW-24 and well ESCP-CSO-MW-4. These tests were added to the investigation after completing the pump test in order to provide additional information, for comparative purposes, based on observations made during the course of the investigation. Specifically, the slug test on well MW-24 was made to verify the anticipated low hydraulic conductivity (K) based on the well pumping dry during well development; the slug test on well ESCP-CSO-MW-4 was made for comparison with the pump test results. Stratigraphic and well completion logs for all of the wells tested are included in Appendix A.

As indicated previously, the displacement for the slug testing was via a solid PVC slug that was rapidly introduced into (and extracted from) the tested well while a pressure transducer recorded the water

level recovery back to static conditions. The recovery data, which was recorded in 15-second intervals, was downloaded from the pressure transducers into an excel spreadsheet and evaluated in terms of the drawdown observed over time. The time/drawdown data for each test was subsequently input into AQTESOLVE for windows (version 4.50.002) where it was analyzed via the Bouwer and Rice Method. This method of slug test analysis is suitable for fully or partially penetrating wells completed in an unconfined aquifer.

Hydraulic Conductivity or "K" is a measure of a soil's ability to transmit a volume of viscous fluid, over a given time period, through a two-dimensional planar surface. K values are typically given in units of cubic feet per day (ft^3/day) per square foot (ft^2) of soil material (ft^3/day/ft^2). After cancellation of like units, hydraulic conductivity values are represented as feet per day (ft/day) or centimeters per second (cm/sec). The slug testing results, which are summarized below in **Table 2**, indicate that the subsurface is spatially heterogeneous with relatively low K values determined for wells MW-3 and MW-24, a moderate K value determined for well ESCP-CSO-MW-4 and progressively higher K values determined for wells ESCP-MW-7 and ESCP-MW-8. Based on the soil materials encountered and screened at each location (as indicated in the attached soil boring and well completion logs), these results appear to be within the published K ranges for these types of soil materials.

Table 2
Summary of Slug Testing Results

Well ID	Slug IN/OUT	Hydraulic Conductivity*		Slug Test Results	
		cm/sec	ft/day	cm/sec	ft/day
MW-3	T-1 IN	4.35E-04	1.22	4.29E-04	1.22
	T-1 OUT	4.41E-04	1.25		
	T-2 IN	4.15E-04	1.17		
	T-2 OUT	4.18E-04	1.19		
	T-3 IN	4.23E-04	1.20		
	T-3 OUT	4.45E-04	1.26		
MW-24	T-1 IN	1.55E-04	0.44	2.69E-04	0.76
	T-1 OUT	3.53E-04	1.00		
	T-2 IN	1.74E-04	0.49		
	T-2 OUT	3.93E-04	1.11		
ESCP-CSO-MW-4	T-1 IN	3.65E-03	10.35	3.96E-03	11.22
	T-1 OUT	4.36E-03	12.34		
	T-2 IN	5.37E-03	15.23		
	T-2 OUT	2.46E-03	6.96		
ESCP-MW-7	T-1 IN	7.56E-03	21.44	9.55E-03	27.06
	T-1 OUT	1.23E-02	34.80		
	T-2 IN	1.33E-02	37.69		
	T-2 OUT	1.10E-03	3.13		
	T-3 IN	5.62E-03	15.94		
	T-3 OUT	1.74E-02	49.40		
ESCP-MW-8	T-1 IN	1.96E-02	55.43	2.55E-02	72.16
	T-1 OUT	2.47E-02	70.00		
	T-2 IN	1.85E-02	52.34		
	T-2 OUT	2.55E-02	72.29		
	T-3 IN	2.50E-02	70.88		
	T-3 OUT	3.95E-02	112.02		

Notes:
Slug tests conducted April 19 & 20, 2021 and May 3, 2021; pump test conducted April 27, 2021.
* Hydraulic conductivity given in centimeters per second and feet per day

The displacement data collected during the slug testing and AQTESOLVE outputs for each test are included in **Appendix C**.

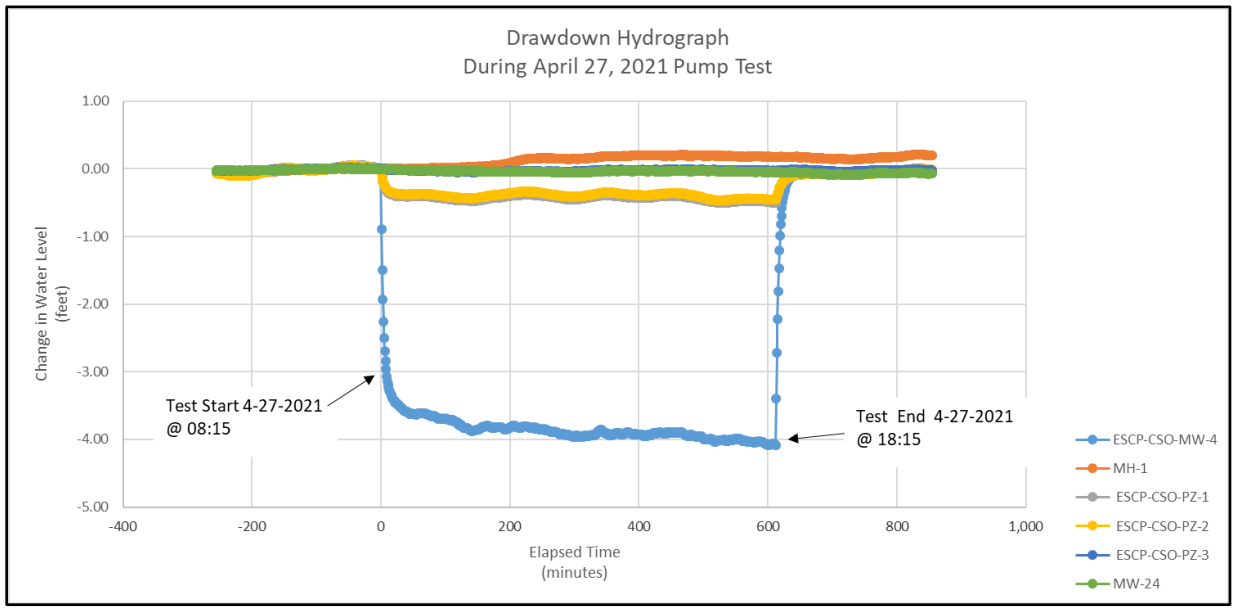
3.2.2 Step Testing

As indicated previously, the step testing on well ESCP-CSO-MW-4 was completed as part of the development for this well. At that time, declining water levels were observed while pumping the well at an approximate rate of 3.0 gpm. Consequently, water levels within this well were observed to stabilize when the flow rate was reduced to below 3.0 gpm, and a flow rate of 2.5 gpm was selected for conducting the constant rate pump test.

3.2.3 Constant Rate Pump Testing

The constant rate pump test was conducted on April 27, 2021 via well ESCP-CSO-MW-4 at a flow rate of 2.5 gpm. The test lasted for approximately 10 hours after which time the pumping was terminated and liquid levels allowed to return to static conditions. Liquid levels were recorded before, during and after the test in the tested well, piezometers to the north (ESCP-CSO-PZ-2) and south (ESCP-CSO-PZ-1) of the tested well, a monitoring well west of the tested well (MW-24), MH-1, and, a piezometer hydraulically isolated from the tested well located east of the slurry wall (ESCP-CSO-PZ-3).

Prior to commencing with the test, static liquid levels were recorded (for a minimum duration of four (4) hours) in order to document pre-test trends. After terminating the test, liquid levels were monitored for the full recovery period for the wells to return to static conditions. Additional liquid level monitoring was conducted to verify a return to the pre-test trends. As shown in the chart below, approximately 4.0-feet of drawdown were noted in the tested well.



During this testing period, drawdown was noted in piezometers ESCP-CSO-PZ-1 (approximately 11 feet south of the tested well) and ESCP-CSO-PZ-2 (located approximately 11 feet north of the tested well). Drawdown noted in well MW-24 (located approximately 20-feet west of the tested well) was negligible and drawdown was not noted in ESCP-CSO-PZ-3 (located approximately 35 feet east of the tested well

on the opposite side of the slurry wall). The liquid level within the CSO at MH-1 rose slightly (0.24 feet) during the course of the test, mirroring a similar rise in the river level observed during this time period.

Table 3 summarizes the static and end of test liquid levels/elevations recorded for the pump test. A static contour map (**Figure 10**) was prepared from liquid level measurements obtained prior to the start of the constant rate pump test. After approximately 10 hours of pumping via the tested well, 0.50 feet of drawdown were recorded in PZ-1 and 0.46 feet of drawdown were noted in PZ-2. The drawdowns observed during the pump test are included Table 3 below, and **Figure 11** presents an end of test contour via measurements obtained at the end of the constant rate pump test.

Table 3
Static and End of Test Liquid Levels

Well ID	TOC	Static		End of Test		Obs DD
		DTL	ELEV	DTL	ELEV	(feet)
ESCP-CSO-MW-4	584.98	12.51	572.47	16.58	568.40	(4.07)
ESCP-CSO-PZ-1	584.71	12.14	572.57	12.63	572.08	(0.50)
ESCP-CSO-PZ-2	587.17	14.14	573.03	14.50	572.67	(0.46)
ESCP-CSO-PZ-3	585.17	13.71	571.46	13.71	571.46	(0.02)
MW-24	586.72	14.00	572.72	13.96	572.76	(0.05)
MH-1	584.32	11.54	572.78	11.30	573.02	+0.24

Notes:
TOC elevations represent temporary risers installed for Pump Test
Elevations and depths given in feet relative to TOC

The data collected during the constant rate pump test, including the flow rates recorded at specific time intervals and the drawdown recorded via the pressure transducers, was loaded into an excel spreadsheet and subsequently used as input into AQTESOLVE. The pump test data were analyzed via the Jacob Straight Line Method.

In the Jacob Straight Line Method, the data are plotted on a semi-logarithmic time-drawdown graph. Time is plotted on the logarithmic x-axis, while drawdown is plotted on the arithmetic y-axis. A best-fit straight line is subsequently drawn through the data to encompass at least one complete log cycle of time. From the graph, the drawdown per log cycle of time is determined and used to estimate the transmissivity (T) via the following relation:

$$T = [264Q/(h_o\text{-}h)] \times 7.48$$

Where: Q = Pumping Rate (gpm)
$h_o - h$ = Drawdown per log cycle of time (ft)
T = Transmissivity (ft^2/day)

From the transmissivity, the hydraulic conductivity can be estimated through the relation:

$$K = T/b$$

Where: K = Hydraulic conductivity (ft/day)
T = Transmissivity (ft^2/day)
b = Saturated thickness (ft)

The time/drawdown graphs are used to estimate K from the data collected at each observation well. The K values calculated via AQTESOLVE for the pump test observations are summarized below in **Table 4**. Four (4) evaluations of the time-drawdown data are presented. These include an evaluation of the drawdown responses from all wells (as an "average" K for the site); an evaluation of the drawdown responses from both nearby piezometers (ESCP-CSO-PZ-1 & ESCP-CSO-PZ-2 - both of which responded similarly during the test); an evaluation of the drawdown response from well MW-24 (which responded with 0.05 feet of drawdown during the test); and well ESCP-CSO-MW-4 (the tested well).

Table 4
Summary of Pump Test Results

Well ID	cm/sec	ft/day
ALL WELLS	5.44E-03	15.42
PZ-1/PZ-2	3.66E-02	103.66
MW-24	2.16E-02	61.21
ESCP-CSO-MW-4	6.90E-03	19.54

Note:
Constant rate pump test conducted April 27, 2021

The drawdown data collected during the constant rate pump testing and AQTESOLVE outputs for the four (4) evaluations presented in Table 4 are included in Appendix C.

3.2.4 Discussion of Results

During the course of the constant rate pump test, it was noted that drawdown was not observed in well ESCP-CSO-PZ-3, completed within the containment area on the east side of the slurry wall. This lack of observed drawdown during the testing verifies that the interior portion of the containment area is hydraulically isolated from the area west of the slurry wall (i.e. where the pump testing was conducted). On the west side of the slurry wall, groundwater extraction via the tested well resulted in approximately 0.5-feet of observed drawdown in the two (2) nearby piezometers (ESCP-CSO-PZ-1 and ESCP-CSO-PZ-2). The tested well and both piezometers are located in the area between the slurry wall (to the east) and CSO structure to the west.

It is also observed that negligible drawdown was noted in well MW-24 during the constant rate pump test. As shown on Figure 3, the CSO structure is located between well MW-24 and well ESCP-CSO-MW-4. It is also thought that the deteriorated condition of the CSO structure has historically allowed both the exfiltration of water from the Buffalo River into the subsurface as well as infiltration of petroleum product and/or sheen from adjacent groundwater with subsequent transport to the River (depending on the stage of the River). LaBella believes that one possible explanation for the negligible drawdown observed in well MW-24 during the pump test is that exfiltrating water from the CSO structure during the test was serving as a constant head boundary to the tested well. An evaluation of the static contour map (Figure 10) and end of test contour map (Figure 11) supports the thought that leakage from the CSO structure may be serving as a constant head boundary.

Additional slug testing was also undertaken via well MW-24 and the tested well during the course of the investigation. This additional testing was conducted in order to provide comparative evaluation of

K determined via slug testing vs. pump testing. The slug test via well MW-24 was conducted to verify the low K anticipated based on the well pumping dry during well development; while the slug test via well ESCP-CSO-MW-4 was conducted for comparison with the pump test results. Comparing the results for well MW-24 indicates that the K determined via slug testing and pump testing differ by approximately two orders of magnitude. Based on the observations made during well development (i.e. well pumping dry at approximately 3.0 gpm) and the plot of the recovery data (presented in Appendix C), LaBella believes that the K of 2.69 x 10^{-4} centimeters per second (cm/sec or, 0.76 feet per day (ft/day)) determined via slug testing represents the more reliable result when compared to the 2.16 x 10^{-2} cm/sec (61.21 ft/day) determined for this same well via the pump testing. An evaluation of the K determined via slug testing and pump testing for well ESCP-CSO-MW-4 yields comparable results.

Table 5
Comparison of K determined via Slug Testing and Pump Testing

	K via Slug Testing		K via Pump Testing	
Well ID	**cm/sec**	**ft/day**	**ft/day**	**ft/day**
MW-24	2.69E-04	0.76	2.16E-02	61.21
ESCP-CSO-MW-4	3.96E-03	11.22	6.90E-03	19.54

Note:
Constant rate pump test conducted April 27, 2021; Slug testing conducted May 3, 2021.

4.0 SUMMARY AND CONCLUSIONS

The hydrogeologic investigation was conducted in the area that includes the western portion of Operable Unit No. 3 (OU-3) of the ExxonMobil Former Buffalo Terminal Site. This area includes the Babcock Street CSO structure. Based on observations made at the site, it appears that the deteriorated condition of the CSO structure is enabling communication between the structure and the surrounding subsurface. Specifically, fluctuating stages of the Buffalo River are believed to be flushing free-phase petroleum hydrocarbons from the subsurface into the CSO structure. The mechanism believed to be the driving force is the exfiltration of water from the river into the subsurface during a high river stage, and the infiltration of groundwater and petroleum products back into the CSO structure from the subsurface during a low river stage.

This purpose of this investigation was to collect additional information that will help to evaluate feasible options for eliminating further infiltration of petroleum products from the subsurface into the CSO structure and, consequently, to the Buffalo River. The specific goals of this investigation were to evaluate the stratigraphy in the area adjacent to the CSO structure and, to evaluate the distribution of petroleum hydrocarbons in the soil adjacent to the deteriorated portion of the CSO structure. Additional hydrogeologic information has also been obtained to update and refine an existing groundwater flow model that was developed prior to the installation of a slurry wall in the area east of the CSO structure. This updated flow model will be used to more fully evaluate groundwater flow paths (including the effect of the slurry wall and CSO structure on local groundwater flow) and, to ensure that an effective, long-term solution to this condition is developed for implementation.

The scope of the investigation was outlined in the March 25, 2021 scope of work prepared by LaBella Associates, D.P.C. and conditionally approved by the NYSDEC. This investigation included the advancement of a series of soil borings to define subsurface stratigraphy and evaluate the extent of gross petroleum impacts; and conducting hydraulic conductivity testing and a constant rate pump test in order to update and refine the existing groundwater flow model.

The soil boring program associated with the investigation included installation of 28 soil borings throughout the western portion of OU-3. Evaluation of the stratigraphy encountered at these locations revealed a heterogeneous subsurface that includes fill (wood, brick, concrete & miscellaneous debris in a silty clay or silty, sandy, gravelly matrix); silty clay; silty/sandy gravel; interbedded brown clay with sandy gravel lensing; sandy gravel; and an apparently continuous basal clay unit. Within this stratigraphic sequence, groundwater and/or petroleum product is present primarily within the interbedded brown clay with sandy gravel lensing and underlying sandy gravel.

Two (2) apparently distinct occurrences of free-phase petroleum product were noted in several of the soil borings installed. This includes a "shallow" product that is amber in color and is found near the water table. A "deeper" occurrence of free-phase petroleum product, that is dark gray to black in color and has a "greasy" appearance, was also noted in several soil borings. This deeper petroleum occurrence appears to be stratigraphically trapped by low permeability clays within the lower portion of the interbedded brown clay with sandy gravel lensing (and/or, within the underlying sandy gravel unit). A sample of this stratigraphically trapped dark product was collected and analyzed for specific gravity. Analysis of this material confirms that its density (0.84 g/cm^3) is lighter than water.

Observations made during development of the tested well (ESCP-CSO-MW-4) and re-development of a nearby existing monitoring well (MW-24) suggested that the anticipated yield for the planned constant rate pump test would be significantly lower than expected. This is because continuous drawdown was noted in well ESCP-CSO-MW-4 during development (at an estimated flow rate of 3.0 gpm) and well MW-24 was pumped to dryness at that rate. The drawdown noted in well ESCP-CSO-MW-4 was subsequently observed to stabilize when the flow rate was reduced below 3.0 gpm. As such, the step testing was not conducted as proposed in the March 25, 2021 scope of work. These observations resulted in a flow rate of approximately 2.5 gpm for conducting the constant rate pump test.

The slug testing results verify a subsurface that is spatially heterogeneous. Relatively low K values were determined for wells MW-3 (1.22 ft/day) and MW-24 (0.76 ft/day); a moderate K value (1.22 ft/day) was determined for well ESCP-CSO-MW-4; and progressively higher K values were determined for wells ESCP-MW-7 (27.06 ft/day) and ESCP-MW-8 (72.16 ft/day). Based on the soil materials encountered and screened at each location, these results appear to be consistent with published K ranges for these types of soil materials.

Observations during the constant rate pump test indicate that no drawdown was noted in well ESCP-CSO-PZ-3, completed on the east side of a recently installed slurry wall. The purpose of the slurry wall is to hydraulically isolate the eastern portion of OU-3 from the western portion and to increase the efficiency of remedial efforts in that portion of the site. A lack of observed drawdown in this portion of the site during the constant rate pump test (as represented via ESCP-CSO-PZ-3) confirms the integrity of the slurry wall. Additionally, the minimal drawdown noted in well MW-24, which is located on the

west side of the CSO structure, suggests that exfiltration from this structure may have been causing it to act as a constant head boundary during the pump testing.

Evaluation of the observed drawdown data collected from well MW-24 also yielded a K value (61.21 ft/day) that is not consistent with observation of the well being pumped to dryness during re-development. Subsequent slug testing resulted in a K value of 0.76 ft/day for the soil materials at this location. LaBella believes that this result (via slug testing) is a better representation of the K for the soil materials at this location. Conversely, the K values determined for well ESCP-CSO-MW-4 via slug testing (11.22 ft/day) and pump testing (19.54 ft/day) were comparable. Overall, the K values determined for the site via slug testing and pump testing (except as noted for well MW-24) are consistent with published values for the soil types screened.

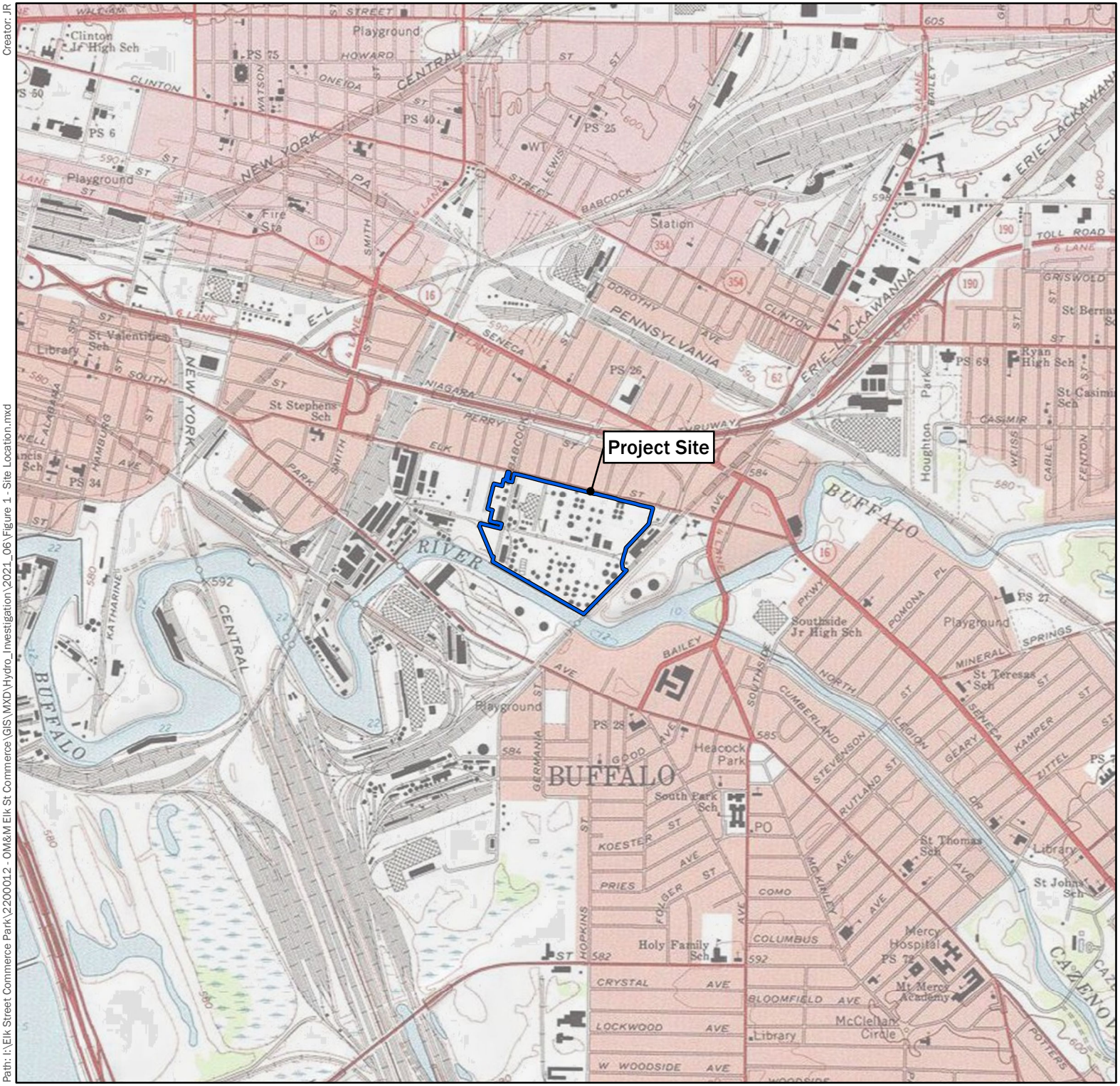
5.0 LIMITATIONS

The conclusions presented in this report are based on information gathered in accordance with generally acceptable professional consulting principles and practices. All conclusions reflect observable conditions existing at the time of the Site inspection. Information provided by outside sources (individuals, agencies, laboratories, etc.) as cited herein, was used in the assessment of the Site. The accuracy of the conclusions drawn from this assessment is, therefore, dependent upon the accuracy of information provided by these sources. Furthermore, LaBella is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to the performance of services.

This report is based upon the application of scientific principles and professional judgment to certain facts with resultant subjective interpretations. Professional judgments expressed herein are based upon the facts currently available with the limits of the existing data, scope of services, budget and schedule. To the extent that more definitive conclusions are desired by the Client than are warranted by the current available facts, it is specifically Labella's' intent that the conclusions and recommendations stated herein will be intended as guidance and not necessarily a firm course of action expect where explicitly stated as such. LaBella makes no warranties, expressed or implied including without limitation, warranties as to merchantability or fitness of a particular purpose. Furthermore, the information provided in this report is not be construed as legal advice.

This hydrogeologic investigation and report have been completed and prepared on behalf of and for the exclusive use of Elk Street Commerce Park, LLC. Any reliance on this report by a third party is at such party's sole risk.

FIGURES



Creator: JR

Path: I:\Elk Street Commerce Park\2200012 - OM&M Elk St Commerce\GIS\MXD\Hydro_Investigation\2021_06\Figure 1 - Site Location.mxd

LaBella
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Hydrogeologic Investigation Report

Babcock Street Combined Sewer Overflow Area ExxonMobil Former Buffalo Terminal Operable Unit No. 3

N

0 0.25 0.5 Miles

Legend

Project Site

Sources: LaBella 2021; USGS 2019.

Site Location

Figure 1

LaBella Project No: 2200012
Date: May 2021

Creator: JR

Path: I:\Elk Street Commerce Park\2200012 - OM&M Elk St Commerce\GIS\MXD\Hydro_Investigation\2021_06\Figure 2 - Hydrogeologic Investigation Area.mxd

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Hydrogeologic Investigation Report

Babcock Street Combined Sewer Overflow Area ExxonMobil Former Buffalo Terminal Operable Unit No. 3

N

0 50 100 Feet

Legend

- CSO Manhole
- Monitoring Well
- Stilling Well
- Babcock St. CSO Structure
- Slurry Wall
- Location of Product Infiltration into CSO Structure
- Investigation Area
- Operational Unit 3 (OU-3) Boundary

Sources: Bing 2020; Erie County 2020; LaBella 2021.

Hydrogeologic Investigation Area

Figure 2

LaBella Project No: 2200012
Date: May 2021

Creator: JR

Path: \\projects1\projectsAM\Elk Street Commerce Park\2200012 - OM&M Elk St Commerce\GIS\MXD\Hydro_Investigation\2021_06\Figure 3 - Site Map Hydrogeologic Investigation.mxd

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Hydrogeologic Investigation Report

Babcock Street Combined Sewer Overflow Area ExxonMobil Former Buffalo Terminal Operable Unit No. 3

N

0 50 100 Feet

Legend

- CSO Manhole
- Monitoring Well
- Pump Test Well
- Stilling Well
- Soil Boring
- Piezometer
- Babcock St. CSO Structure
- Slurry Wall
- Operational Unit 3 (OU-3) Boundary

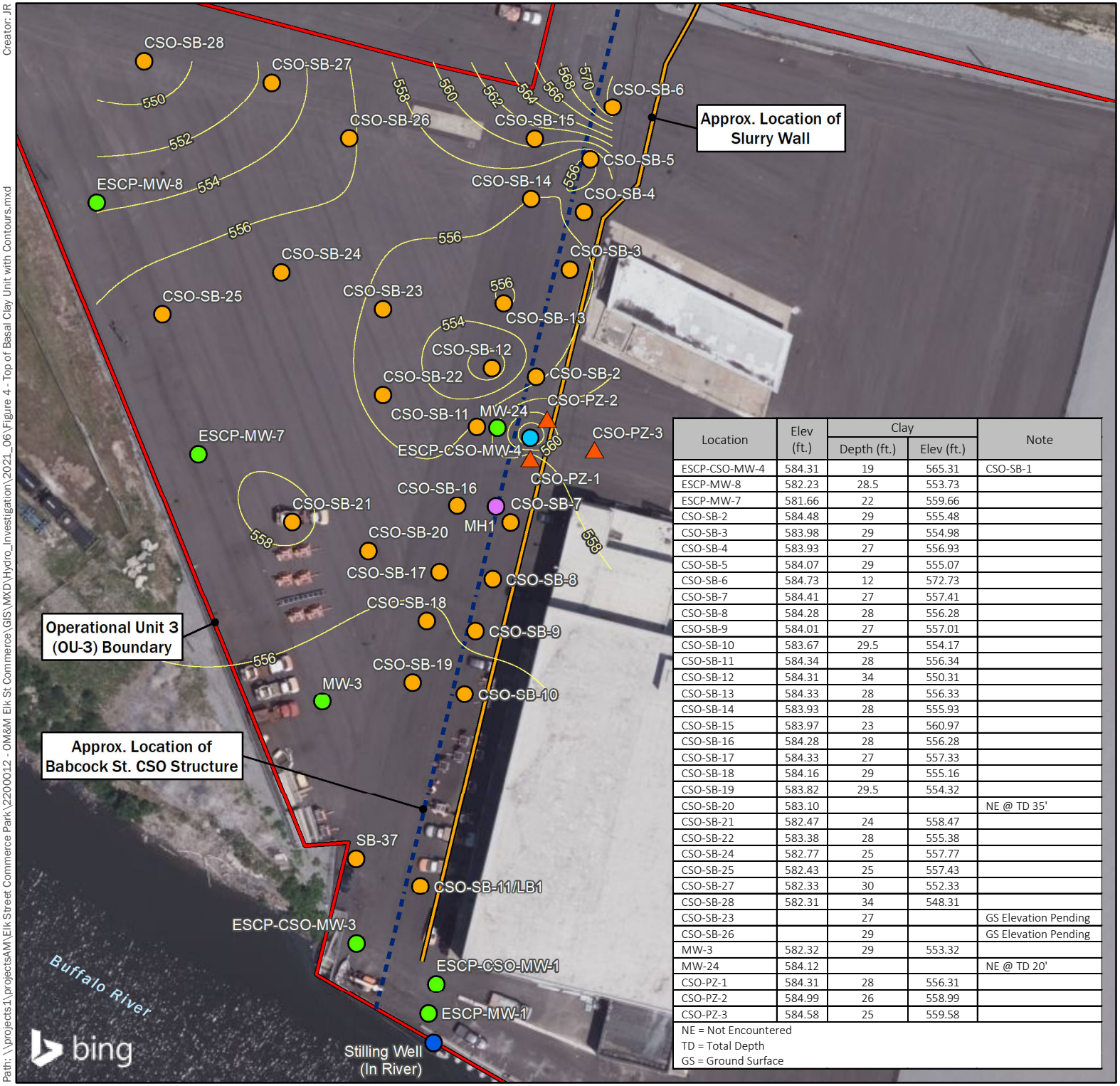
Note: Well ESCP-CSO-MW-4 installed at the borehole location for CSO-SB-1.

Sources: Bing 2020; Erie County 2020; LaBella 2021.

Site Map - Hydrogeologic Investigation

Figure 3

LaBella Project No: 2200012
Date: May 2021



Location	Elev (ft.)	Clay		Note
		Depth (ft.)	Elev (ft.)	
ESCP-CSO-MW-4	584.31	19	565.31	CSO-SB-1
ESCP-MW-8	582.23	28.5	553.73	
ESCP-MW-7	581.66	22	559.66	
CSO-SB-2	584.48	29	555.48	
CSO-SB-3	583.98	29	554.98	
CSO-SB-4	583.93	27	556.93	
CSO-SB-5	584.07	29	555.07	
CSO-SB-6	584.73	12	572.73	
CSO-SB-7	584.41	27	557.41	
CSO-SB-8	584.28	28	556.28	
CSO-SB-9	584.01	27	557.01	
CSO-SB-10	583.67	29.5	554.17	
CSO-SB-11	584.34	28	556.34	
CSO-SB-12	584.31	34	550.31	
CSO-SB-13	584.33	28	556.33	
CSO-SB-14	583.93	28	555.93	
CSO-SB-15	583.97	23	560.97	
CSO-SB-16	584.28	28	556.28	
CSO-SB-17	584.33	27	557.33	
CSO-SB-18	584.16	29	555.16	
CSO-SB-19	583.82	29.5	554.32	
CSO-SB-20	583.10			NE @ TD 35'
CSO-SB-21	582.47	24	558.47	
CSO-SB-22	583.38	28	555.38	
CSO-SB-24	582.77	25	557.77	
CSO-SB-25	582.43	25	557.43	
CSO-SB-27	582.33	30	552.33	
CSO-SB-28	582.31	34	548.31	
CSO-SB-23		27		GS Elevation Pending
CSO-SB-26		29		GS Elevation Pending
MW-3	582.32	29	553.32	
MW-24	584.12			NE @ TD 20'
CSO-PZ-1	584.31	28	556.31	
CSO-PZ-2	584.99	26	558.99	
CSO-PZ-3	584.58	25	559.58	

NE = Not Encountered
TD = Total Depth
GS = Ground Surface

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Hydrogeologic Investigation Report

Babcock Street Combined Sewer Overflow Area ExxonMobil Former Buffalo Terminal Operable Unit No. 3

N

0 50 100 Feet

Legend

- CSO Manhole
- Monitoring Well
- Pump Test Well
- Stilling Well
- Soil Boring
- Piezometer
- Top of Basal Clay Unit Elevation Contour (ft.)
- Babcock St. CSO Structure
- Slurry Wall
- Operational Unit 3 (OU-3) Boundary

Note: Well ESCP-CSO-MW-4 installed at the borehole location for CSO-SB-1.

Sources: Bing 2020; Erie County 2020; LaBella 2021.

Top of Basal Clay Unit

Figure 4

LaBella Project No: 2200012
Date: May 2021

Creator: JR

Path: \\projects1\projectsAM\Elk Street Commerce Park\2200012 - OM&M Elk St Commerce\GIS\MXD\Hydro_Investigation\2021_06\Figure 4 - Top of Basal Clay Unit with Contours.mxd

Creator: JR

Path: \\projects1\projectsAM\Elk Street Commerce Park\2200012 - OM&M Elk St Commerce\GIS\MXD\Hydro_Investigation\2021_06\Figure 5 - Lines of Cross Sections.mxd

LaBella
Powered by partnership.

Hydrogeologic Investigation Report

Babcock Street Combined Sewer Overflow Area ExxonMobil Former Buffalo Terminal Operable Unit No. 3

N

0 50 100 Feet

Legend

- CSO Manhole
- Monitoring Well
- Pump Test Well
- Stilling Well
- Soil Boring
- Piezometer
- Cross-Section Location
- Babcock St. CSO Structure
- Slurry Wall
- Operational Unit 3 (OU-3) Boundary

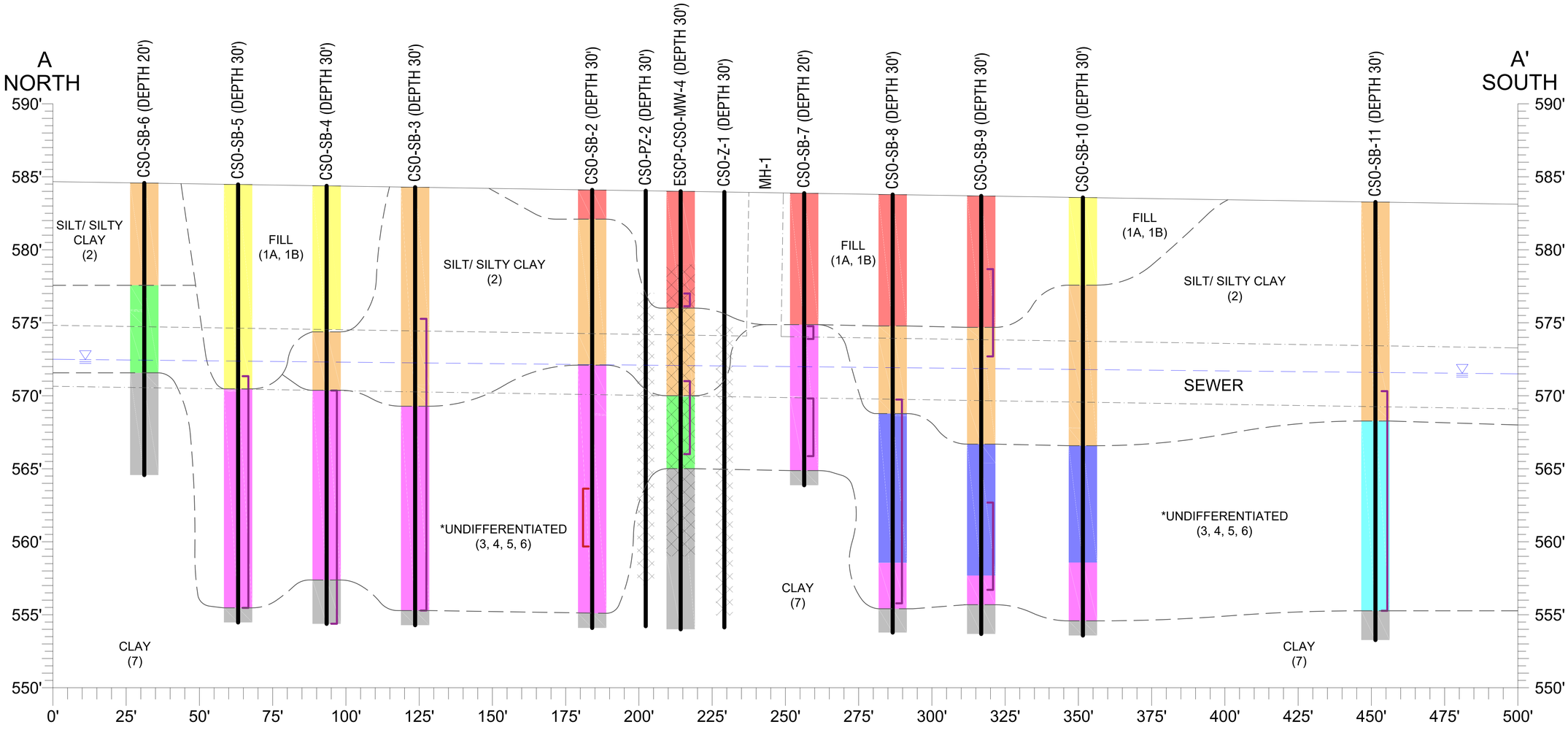
Note: Well ESCP-CSO-MW-4 installed at the borehole location for CSO-SB-1.

Sources: Bing 2020; Erie County 2020; LaBella 2021.

Lines of Cross-Sections

Figure 5

LaBella Project No: 2200012
Date: May 2021



GROUNDWATER
AMBER PRODUCT OBSERVED
DARK PRODUCT OBSERVED

* UNDIFFERENTIATED SILTY/SAND GRAVEL (3)/ INTERBEDDED BROWN CLAY AND SANDY GRAVEL LENSING (4)/ FINE SAND (5)/ SANDY GRAVEL (6)

1A = FILL - WOOD, BRICK, CONCRETE IN SILTY CLAY MATRIX
1B = FILL - WOOD, BRICK, CONCRETE IN SILTY SANDY GRAVELLY MATRIX
2 = SILT/SILTY CLAY
3 = SILTY/SANDY GRAVEL
4 = INTERBEDDED BROWN CLAY AND SANDY GRAVEL LENSING
5 = FINE SAND
6 = SANDY GRAVEL
7 = CLAY
SCREEN

NO.	REVISION	BY	DATE

LaBella
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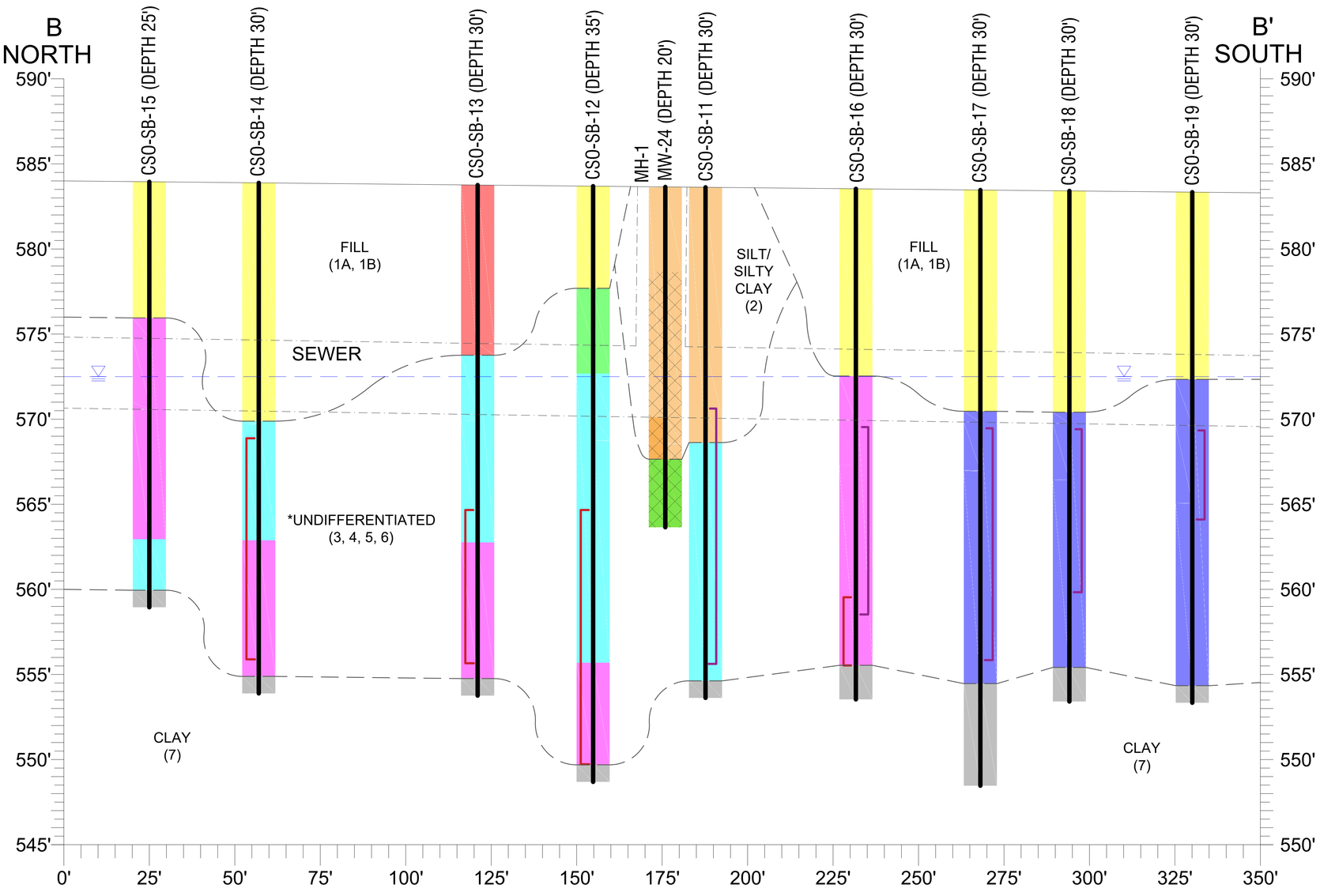
PROJECT/CLIENT
HYDROGEOLOGIC INVESTIGATION REPORT
BABCOCK STREET COMBINED SEWER OVERFLOW AREA
EXXONMOBILE FORMER BUFFALO TERMINAL OPERABLE UNIT NO. 3

DRAWING TITLE
CROSS SECTION A-A'

DESIGNED BY: RH
DRAWN BY: DRP
REVIEWED BY: RH
ISSUED FOR: FINAL
DATE: MAY, 2021

PROJECT/DRAWING NUMBER
2200012

FIGURE 6



GROUNDWATER
AMBER PRODUCT OBSERVED
DARK PRODUCT OBSERVED

* UNDIFFERENTIATED SILTY/SAND GRAVEL (3)/ INTERBEDDED BROWN CLAY AND SANDY GRAVEL LENSING (4)/ FINE SAND (5)/ SANDY GRAVEL (6)

1A = FILL - WOOD, BRICK, CONCRETE IN SILTY CLAY MATRIX

1B = FILL - WOOD, BRICK, CONCRETE IN SILTY SANDY GRAVELLY MATRIX

2 = SILT/SILTY CLAY

3 = SILTY/SANDY GRAVEL

4 = INTERBEDDED BROWN CLAY AND SANDY GRAVEL LENSING

5 = FINE SAND

6 = SANDY GRAVEL

7 = CLAY

SCREEN

NO.	REVISION	BY	DATE

LaBella
Powered by partnership.

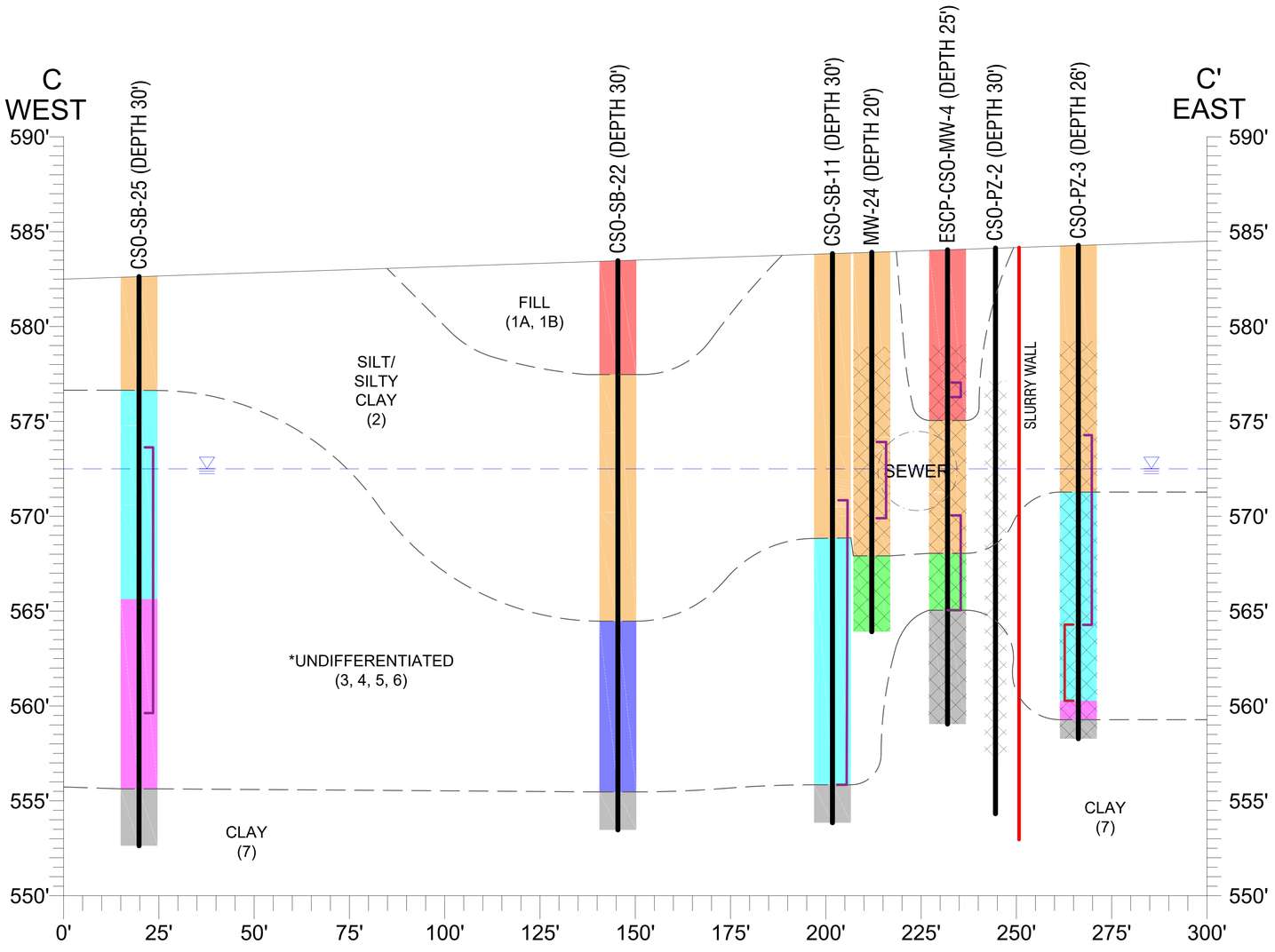
PROJECT/CLIENT
HYDROGEOLOGIC INVESTIGATION REPORT
BABCOCK STREET COMBINED SEWER OVERFLOW AREA
EXXONMOBILE FORMER BUFFALO TERMINAL OPERABLE UNIT NO. 3

DRAWING TITLE
CROSS SECTION B-B'

ISSUED FOR: FINAL
DATE: MAY, 2021
DESIGNED BY: RH
DRAWN BY: DRP
REVIEWED BY: RH

PROJECT/DRAWING NUMBER
2200012

FIGURE 7



GROUNDWATER
AMBER PRODUCT OBSERVED
DARK PRODUCT OBSERVED

* UNDIFFERENTIATED SILTY/SAND GRAVEL (3)/ INTERBEDDED BROWN CLAY AND SANDY GRAVEL LENSING (4)/ FINE SAND (5)/ SANDY GRAVEL (6)

1A = FILL - WOOD, BRICK, CONCRETE IN SILTY CLAY MATRIX
1B = FILL - WOOD, BRICK, CONCRETE IN SILTY SANDY GRAVELLY MATRIX
2 = SILT/SILTY CLAY
3 = SILTY/SANDY GRAVEL
4 = INTERBEDDED BROWN CLAY AND SANDY GRAVEL LENSING
5 = FINE SAND
6 = SANDY GRAVEL
7 = CLAY
SCREEN

NO.	REVISION	BY	DATE

LaBella
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PROJECT/CLIENT
HYDROGEOLOGIC INVESTIGATION REPORT
BABCOCK STREET COMBINED SEWER OVERFLOW AREA
EXXONMOBILE FORMER BUFFALO TERMINAL OPERABLE UNIT NO. 3

DRAWING TITLE
CROSS SECTION C-C'

DESIGNED BY: RH
DRAWN BY: DRP
REVIEWED BY: RH
ISSUED FOR: FINAL
DATE: MAY, 2021

PROJECT/DRAWING NUMBER
2200012

FIGURE 8

Creator: JR

Path: \\projects1\projectsAM\Elk Street Commerce Park\2200012 - OM&M Elk St Commerce\GIS\MXD\Hydro_Investigation\2021_06\Figure 9 - Product Occurrence During Soil Boring Program.mxd

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Hydrogeologic Investigation Report

Babcock Street Combined Sewer Overflow Area ExxonMobil Former Buffalo Terminal Operable Unit No. 3

N

0 50 100 Feet

Legend

- Amber, Shallow Product
- Black Stratigraphically Trapped Product
- Both Products Noted in Borehole
- Product Not Observed
- Babcock St. CSO Structure
- Slurry Wall
- Operational Unit 3 (OU-3) Boundary

Note: Well ESCP-CSO-MW-4 installed at the borehole location for CSO-SB-1.

Sources: Bing 2020; Erie County 2020; LaBella 2021.

Product Occurrence During Soil Boring Program

Figure 9

LaBella Project No: 2200012
Date: May 2021

LaBella
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Hydrogeologic Investigation Report

Babcock Street Combined Sewer Overflow Area ExxonMobil Former Buffalo Terminal Operable Unit No. 3

N

0 10 20 Feet

Legend

- CSO Manhole
- Monitoring Well
- Pump Test Well
- Piezometer
- Static Liquid Level Contour Prior to Pump Test (ft.)
- Babcock St. CSO Structure
- Slurry Wall
- Operational Unit 3 (OU-3) Boundary

Note: Well ESCP-CSO-MW-4 installed at the borehole location for CSO-SB-1.

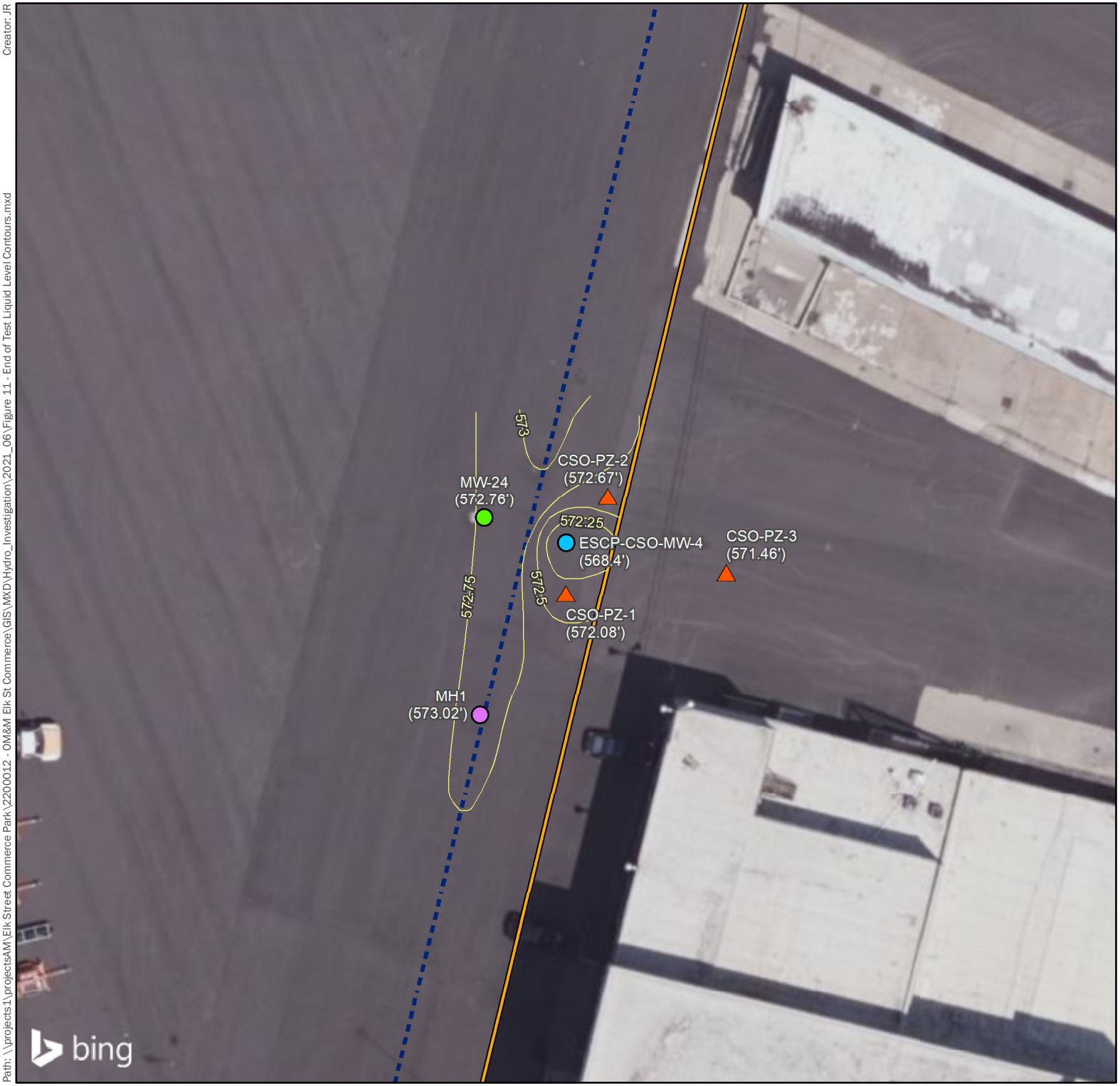
Sources: Bing 2020; Erie County 2020; LaBella 2021.

Static Liquid Level Contours Prior to Pump Test

Figure 10

LaBella Project No: 2200012
Date: May 2021

Path: \\projects1\projectsAM\Elk Street Commerce Park\2200012 - OM&M Elk St Commerce\GIS\MXD\Hydro_Investigation\2021_06\Figure 10 - Static Liquid Level Contours Prior to Pump Test.mxd
Creator: JR



Creator: JR

Path: \\projects1\projectsAM\Elk Street Commerce Park\2200012 - OM&M Elk St Commerce\GIS\MXD\Hydro_Investigation\2021_06\Figure 11 - End of Test Liquid Level Contours.mxd

LaBella
Powered by partnership.

Hydrogeologic Investigation Report

Babcock Street Combined Sewer Overflow Area ExxonMobil Former Buffalo Terminal Operable Unit No. 3

N

0 20 40 Feet

Legend

- CSO Manhole
- Monitoring Well
- Pump Test Well
- Piezometer
- End of Test Liquid Level Contour (ft.)
- Babcock St. CSO Structure
- Slurry Wall
- Operational Unit 3 (OU-3) Boundary

Note: Well ESCP-CSO-MW-4 installed at the borehole location for CSO-SB-1.

Sources: Bing 2020; Erie County 2020; LaBella 2021.

End of Test Liquid Level Contours

Figure 11

LaBella Project No: 2200012
Date: May 2021

APPENDIX 1

Soil Boring and Well Completion Logs

LaBella
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Soil Borings

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-1** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/5/2021 0915

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD:	Field Screening	OTHER:	-

DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	SAMPLE STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
0-5'	-	70%	-	Pavement, concrete, Fill- wood, gravel, trace of Clay, tar	2.6	
5'-10'	-	75%	-	Continued Fill- wood, tar, brick; 8' below grade, 2" sand lens with dark amber oil to impacted, gray, Silty Clay	667.5	
10'-15'	-	60%	-	Continued moist, gray, Silty Clay with organics (wood), to wet Sandy Gravel at 14' below grade, strong petroleum odor	267.8	Observed Groundwater at 14'
15'-20'	-	100%	-	Continued wet, gray, Sandy Silt and Gravel, trace dark amber oil, to smooth red/brown Clay at 19' below grade	131.6	Observed Clay at 19'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-2** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/5/2021 1020

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	80%	-	Pavement, concrete, Fill- wood, gravel, tar, to olive Silty Clay at 2' below grade	5.6	
5'-10'	-	90%	-	Olive Silty Clay with gravel to 9' below grade, with organics (wood- black stained), to moist red/brown Clay with Gravel continued from 9' below grade	184.2	
10'-15'	-	95%	-	Continued moist red/brown Clay with embedded Gravel, lens of Sandy Gravel, black stained. Beginning at 12', intermittent lenses of Clay and Sandy Gravel beds	267.4	Observed Groundwater at 15'
15'-20'	-	95%	-	Wet, gray, Sandy Gravel, to medium/fine Sand, black stained, strong petroleum odor	134.7	
20'-25'	-	50%	-	Continued wet, Sandy Gravel, gray, with black oil/grease at 22'-25'	122.9	
25'-30'	-	100%	-	Continued wet, black/gray, fine, Sandy Gravel to smooth red brown Clay at 29', petroleum odor	102.7	Observed Clay at 29'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-3** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/5/2021 1245

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	60%	-	Pavement, concrete, Sandy Gravel, to olive Silty Clay at 2' below grade	1.4	
5'-10'	-	70%	-	Silty/Sandy/Clay, moist, brown, petroleum odor	180.2	
10'-15'	-	75%	-	Continued moist red/brown Silty/Sandy/Clay with embedded Gravel, lens of Sandy Gravel, black stained with sheen, wet at 13'	139.6	Observed Groundwater at 13'
15'-20'	-	75%	-	Wet, gray, Sandy Gravel, black stained, with amber colored oil, sheen, strong petroleum odor	108.5	
20'-25'	-	75%	-	Continued wet, Sandy Gravel, gray, some residual oil and sheen	91.7	
25'-30'	-	75%	-	Continued wet, Sandy Gravel, gray, some residual oil and sheen to smooth red/brown Clay at 29'	24.9	Observed Clay at 29'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
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-	-	-	-	-	-		

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-4** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/5/2021 1405

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
0-5'	-	60%	-	Pavement, olive Silty Clay to moist, brown Silty Clay	11.8	
5'-10'	-	50%	-	Fill- concrete, brick; to black stained Silty Sand, some wood debris	198.2	
10'-15'	-	60%	-	Moist, brown, Clay, to wet Sandy Gravel at 14'	30.2	Observed Groundwater at 14'
15'-20'	-	90%	-	Wet, gray, Sandy Gravel, black stained, with amber colored oil, sheen, strong petroleum odor	53.3	
20'-25'	-	60%	-	Continued wet, Sandy Gravel, gray, some residual oil and sheen	114.4	
25'-30'	-	100%	-	Continued wet, Sandy Gravel, gray, some residual oil and sheen to smooth red/brown Clay at 27'	29.7	Observed Clay at 27'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
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GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-5** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/5/2021 1515

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
0-5'	-	95%	-	Pavement, Fill- brick, stone, concrete	10.4	
5'-10'	-	50%	-	Fill- concrete, brick; to medium Gravel	2.3	
10'-15'	-	30%	-	Moist to wet Sandy Gravel at 14', with sheen	144.5	Observed Groundwater at 14'
15'-20'	-	10%	-	Push	28.6	
20'-25'	-	10%	-	Push	7.8	
25'-30'	-	20%	-	Continued wet, Sandy Gravel, gray, some residual sheen to smooth red/brown Clay at 29'	13.4	Observed Clay at 29'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
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-	-	-	-	-	-		

GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-6** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/6/2021 0815

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	100%	-	Pavement, concrete, to olive, black stained Silt	44.8	
5'-10'	-	70%	-	Olive Silty/Sandy/Clay, with trace organics to wet, black, coarse Gravel	80.4	Observed Groundwater at 10'
10'-15'	-	60%	-	Wet, coarse, Gravel, to moist, smooth, red/brown Clay	6.8	Observed Clay at 12'
15'-20'	-	10%	-	Push	28.6	

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
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GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-7** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/6/2021 0855

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	80%	-	Pavement, concrete, to olive/brown, Silty Clay, with trace Gravel and organics	1.2	
5'-10'	-	60%	-	Fluff, to moist brown Clay, Sandy Gravel lens at 9', petroleum odor, black crystalline material with ash fill and amber colored oil at 9.5'	592.6	
10'-15'	-	40%	-	Fine, coarse grained, Sandy Gravel, with intermittent Clay lens, wet at 14'	355.8	Observed Groundwater at 14'
15'-20'	-	75%	-	Wet, intermittent Sandy Gravel and moist, brown, Clay lenses, sheen throughout	648.7	
20'-25'	-	5%	-	Push	-	
25'-30'	-	40%	-	Sandy Gravel to moist, red/brown, smooth Clay at 27'	103.4	Observed Clay at 27'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
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-	-	-	-	-	-		

GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-8** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR: LaBella LLC
DRILLER: Neal Short
LABELLA REPRESENTATIVE: Andy Janik
BORING LOCATION: Babcock Street CSO Outfall
GROUND SURFACE ELEVATION NA
START DATE: 4/6/2021 0945

TYPE OF EQUIPMENT: GP-6610DT
AUGER SIZE AND TYPE: Direct Push
OVERBURDEN SAMPING METHOD: Field Screening
DRIVE SAMPLER TYPE: Acetate liners
INSIDE DIAMETER: 1.5"
OTHER: -

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	95%	-	Pavement, concrete, to olive/brown, Silty Clay, with trace Gravel and ash Fill	14.6	
5'-10'	-	50%	-	Moist, ash fill, some Sandy Gravel at 9'	776.2	
10'-15'	-	10%	-	Moist, gray, Silty Clay	391.3	
15'-20'	-	95%	-	Wet, gray, fine Sand, saturated with amber colored oil	648.7	Observed Groundwater at 15'
20'-25'	-	95%	-	Wet, gray, fine Sand, saturated with amber colored oil to medium/coarse Gravel at 24'	596.7	
25'-30'	-	90%	-	Wet, gray, fine Sand, stained black with heavy sheening to medium/coarse Gravel, to moist, smooth, red/brown Clay at 28'	104.2	Observed Clay at 28'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
NA = Not Applicable WH = Weight of Hammer
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GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-9** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/6/2021 1040

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	85%	-	Pavement, concrete, to olive/brown, Silty Clay, with brick Fill	1.4	
5'-10'	-	70%	-	Fill to fine, gray/black, Sandy Silt, moist at 8' with sheen	358.6	
10'-15'	-	95%	-	Moist, gray, Silty Clay, trace organics	231.6	
15'-20'	-	100%	-	Moist, gray, Silty Sand, with organics and petroleum odor	78.8	
20'-25'	-	100%	-	Wet, gray, Silty Sand, saturated with amber colored oil to wet, Sandy Gravel at 23'	261.5	Observed Groundwater at 23'
25'-30'	-	100%	-	Wet, gray, Sandy Gravel, with heavy sheening to moist, smooth, red/brown Clay at 27'	521.2	Observed Clay at 27'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
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-	-	-	-	-	-		

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-10** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/6/2021 1225

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD:	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	75%	-	Pavement, concrete, to Fill with tan Sand	9.1	
5'-10'	-	70%	-	Tan Sand to moist, olive Silt with organics, some brown Clay	7.6	
10'-15'	-	75%	-	Gray, moist, Sandy/Silty/Clay to Silty Sand at 14'	347.6	
15'-20'	-	75%	-	Moist/wet, gray, medium Sand, with petroleum odor	490.2	Observed Groundwater at 16'
20'-25'	-	50%	-	Wet, gray, Silty Sand, to coarse Sand at 22', to well sorted Gravel at 25'	1.7	
25'-30'	-	95%	-	Wet, gray, Sandy Gravel, to moist, smooth, red/brown Clay at 29.5'	1.9	Observed Clay at 29.5'

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
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GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-11** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR: LaBella LLC
DRILLER: Neal Short
LABELLA REPRESENTATIVE: Andy Janik
BORING LOCATION: Babcock Street CSO Outfall
GROUND SURFACE ELEVATION NA
START DATE: 4/6/2021 1330

TYPE OF EQUIPMENT: GP-6610DT
AUGER SIZE AND TYPE: Direct Push
OVERBURDEN SAMPING METHOD: Field Screening
DRIVE SAMPLER TYPE: Acetate liners
INSIDE DIAMETER: 1.5"
OTHER: -

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	100%	-	Pavement, to brown, Sandy/Silty/Clay	2.6	
5'-10'	-	100%	-	Brown, Silty Clay	2.1	
10'-15'	-	60%	-	Moist/wet, brown, Clay with embedded Gravel; Sand and Gravel lensing with amber colored oil at 14'	474.4	Observed Groundwater at 14'
15'-20'	-	100%	-	Wet, gray, Silty Sand with amber colored oil and sheening	486.2	
20'-25'	-	85%	-	Wet, intermittent Brown Clay and Sandy Gravel lensing with sheen	19.3	
25'-30'	-	95%	-	Wet, gray, Sandy Gravel, with organic wood debris and sheen, to moist, smooth, red/brown Clay at 28'	68.9	Observed Clay at 28'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
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GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-12** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/6/2021 1440

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	90%	-	Pavement, to brown, Sandy/Silty/Clay, some brick	3.3	
5'-10'	-	85%	-	Moist, brown, Silt, with some Gravel, to brown Clay at 9.5'	2.4	
10'-15'	-	60%	-	Moist/wet, brown, Clay with embedded Gravel, petroleum odor	473.2	Observed Groundwater at 14'
15'-20'	-	60%	-	Wet, gray, Sandy Gravel and brown Clay lensing	70.3	
20'-25'	-	50%	-	Wet, Silty Sandy Gravel lensing, saturated with black oil/grease	164.9	
25'-30'	-	95%	-	Wet, gray, Sandy Gravel, saturated with black oil/grease, strong petroleum odor	28.3	
30'-35'	-	80%	-	Wet, gray, Sandy Gravel, saturated with black oil/grease, strong petroleum odor, to smooth, red/brown Clay at 34'	28.3	Observed Clay at 34'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
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-	-	-	-	-	-		

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-13** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/8/2021 0750

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	100%	-	Pavement, to brown, Sandy/Silty/Clay, some wood	6.9	
5'-10'	-	100%	-	Moist, brown, Silty/Sandy Fill, to moist gray Silty Clay at 9.5'	0.5	
10'-15'	-	90%	-	Moist, gray, Silty Clay, to intermittent Sandy Gravel and brown, Clay layers	21.2	Observed Groundwater at 13'
15'-20'	-	100%	-	Intermittent Sandy Gravel and brown, Clay layers continue to 18', then well sorted Gravel, wet throughout	71.9	
20'-25'	-	100%	-	Wet, well sorted Sandy Gravel, black oil/grease	120.4	
25'-30'	-	95%	-	Wet, gray, Sandy Gravel, saturated with black oil/grease, strong petroleum odor, to smooth, red/brown Clay at 28'	113.5	Observed Clay at 28'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-14** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/8/2021 0900

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	95%	-	Pavement, to brown, Silty Sandy Fill	1.6	
5'-10'	-	80%	-	Silty Sandy Fill, some concrete	2.8	
10'-15'	-	50%	-	Wet, Silty Sandy Fill to 13', then wet, gray, Sandy Gravel	118.4	Observed Groundwater at 13'
15'-20'	-	95%	-	Intermittent Sandy Gravel and brown, Clay layers continue to 19', then well sorted Gravel, wet throughout with black oil/grease	203.7	
20'-25'	-	50%	-	Wet, well sorted Sandy Gravel, trace black oil/grease	200.3	
25'-30'	-	100%	-	Wet, gray, Sandy Gravel, saturated with black oil/grease, strong petroleum odor, to smooth, red/brown Clay at 28'	71.4	Observed Clay at 28'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
NA = Not Applicable WH = Weight of Hammer
ND = Non Detect WR = Weight of Rod

GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-15** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/8/2021 0900

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	100%	-	Pavement/concrete, to brown, Silty Sandy Fill	1.3	
5'-10'	-	85%	-	Continued Silty Sandy Fill to moist, black, oily Silty Sand	21.9	
10'-15'	-	85%	-	Wet, gray, Sandy Gravel	28.6	Observed Groundwater at 13'
15'-20'	-	90%	-	Wet, medium Sand, some Gravel, trace of oil, to moist brown Clay at 19.5'	242.8	
20'-25'	-	100%	-	Wet, intermittent brown Clay and Sandy Gravel lenses to smooth, red/brown Clay at 23'	15.4	Observed Clay at 23'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
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GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-16** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/8/2021 1225

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	100%	-	Pavement/concrete, to brown, Silty Sandy Fill	1.8	
5'-10'	-	90%	-	Silty Sandy Fill	3.2	
10'-15'	-	95%	-	Wet, gray, Sandy Gravel and brown, Clay lensing, amber colored oil at 15'	763.1	Observed Groundwater at 15'
15'-20'	-	90%	-	Wet, fine Sand, some Gravel, saturated with amber colored oil	462.5	
20'-25'	-	90%	-	Wet, fine, gray Sand with sheen	267.3	
25'-30'	-	95%	-	Wet, fine, gray Sand with sheen, trace black oil/grease, to red/brown smooth Clay at 28'	252.8	Observed Clay at 28'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
NA = Not Applicable WH = Weight of Hammer
ND = Non Detect WR = Weight of Rod

GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-17** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/8/2021 1325

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	90%	-	Pavement/concrete, to brown, Silty Sandy Fill, with brick	1.9	
5'-10'	-	90%	-	Brown, Silty Sandy Fill, with brick, petroleum odor	200.3	
10'-15'	-	5%	-	Minimal recovery, brick in cap	-	
15'-20'	-	95%	-	Wet, fine, gray, Sand, saturated with free amber colored oil	667.2	Observed Groundwater at 15'
20'-25'	-	100%	-	Wet, fine, gray Sand with sheen, trace oil	739.4	
25'-30'	-	60%	-	Wet, fine, gray Sand with trace sheen	136.2	
30'-35'	-	50%	-	Wet, fine, gray Sand with trace sheen (fluff), smooth, red/brown Clay on outside of cap/liner (estimated Clay at 27')	136.2	Estimated Clay at 27'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
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ND = Non Detect WR = Weight of Rod

GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-18** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik / Brent Miller	START DATE:	4/9/2021 0750

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	90%	-	Pavement/concrete, to brown, Silty Sandy Fill, with brick	49.0	
5'-10'	-	90%	-	Brown, Silty Sandy Fill, with some coarse Gravel	2.6	
10'-15'	-	90%	-	Fill to fine, wet, gray, Sand	507.0	Observed Groundwater at 15'
15'-20'	-	100%	-	Wet, fine, gray, Sand, saturated with free amber colored oil	486.0	
20'-25'	-	100%	-	Wet, fine, gray, Sand, saturated with free amber colored oil	246.0	
25'-30'	-	50%	-	Wet, fine, gray Sand, to smooth, red/brown Clay at 29'	305.0	Observed Clay at 29'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-19** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik / Brent Miller	START DATE:	4/9/2021 0855

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	-

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	80%	-	Pavement/concrete, to brown, Silty Sandy Fill, with brick	4.5	
5'-10'	-	90%	-	Continued brown, Silty Sandy Fill	5.1	
10'-15'	-	90%	-	Moist, gray, Sandy Silt	256.0	
15'-20'	-	100%	-	Wet, fine, gray, Sand with sheen	280.0	Observed Groundwater at 16'
20'-25'	-	25%	-	Continued Wet, fine, gray, Sand	374.0	
25'-30'	-	90%	-	Wet, fine, gray Sand/Sandy Gravel, to smooth, red/brown Clay at 29.5'	102.0	Observed Clay at 29.5'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-20** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/9/2021 1030

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	**Additional boring resquested by NYSDEC**

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	90%	-	Pavement/concrete, to brown, Silty Sandy Fill, with brick	0.9	
5'-10'	-	70%	-	Continued brown, Silty Sandy Fill to moist, olive Sandy Silt	1.7	
10'-15'	-	95%	-	Moist, gray, fine Sand, some organics	8.8	
15'-20'	-	100%	-	Wet, fine, gray, Sand with sheen	213.6	Observed Groundwater at 15'
20'-25'	-	100%	-	Continued wet, fine, gray, Sand, trace oil with sheen	718.3	
25'-30'	-	80%	-	Wet, fluid, gray, fine Sand, trace oil with sheen	376.4	
30'-35'	-	40%	-	Wet, fluid, gray, fine Sand, to coarse Gravel	19.8	Clay not observed to 35'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
-	-	-	-	-	-	ND = Non Detect	WR = Weight of Rod

GENERAL NOTES

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LaBella
Powered by partnership.

300 PEARL STREET, BUFFALO, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

Elk Street Commerce Park, LLC
CSO Investigation

BORING: **CSO-SB-21**
SHEET 1 OF 1
JOB: **ESCP #2200012**
CHKD BY:

CONTRACTOR: LaBella LLC
DRILLER: Neal Short
LABELLA REPRESENTATIVE: Andy Janik

BORING LOCATION: Babcock Street CSO Outfall
GROUND SURFACE ELEVATION NA
START DATE: 4/9/2021 1115

TYPE OF EQUIPMENT: GP-6610DT
AUGER SIZE AND TYPE: Direct Push
OVERBURDEN SAMPING METHOD: Field Screening

DRIVE SAMPLER TYPE: Acetate liners
INSIDE DIAMETER: 1.5"
OTHER: **Additional boring resquested by NYSDEC**

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	80%	-	Pavement/concrete, to brown, Silty Fill	0.8	
5'-10'	-	80%	-	Moist, gray, Silt, with organics	0.7	
10'-15'	-	100%	-	Moist, gray, Silty Clay with organics and wood, to fine Sand	0.9	
15'-20'	-	100%	-	Wet, fine, gray, Sand with brown Clay lensing, to gray Silty Sand	0.9	Observed Groundwater at 17'
20'-25'	-	100%	-	Continued wet, fine, gray, Sand, to coarse Sand, smooth red/brown Clay encountered at 24'	0.6	Observed Clay at 24'
						Impacts NOT observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
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GENERAL NOTES

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BORING: CSO-SB-20

LaBella
Powered by partnership.

300 PEARL STREET, BUFFALO, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

Elk Street Commerce Park, LLC
CSO Investigation

BORING: **CSO-SB-22**
SHEET 1 OF 1
JOB: **ESCP #2200012**
CHKD BY:

CONTRACTOR: LaBella LLC
DRILLER: Neal Short
LABELLA REPRESENTATIVE: Andy Janik

BORING LOCATION: Babcock Street CSO Outfall
GROUND SURFACE ELEVATION NA
START DATE: 4/12/2021 0850

TYPE OF EQUIPMENT: GP-6610DT
AUGER SIZE AND TYPE: Direct Push
OVERBURDEN SAMPING METHOD: Field Screening

DRIVE SAMPLER TYPE: Acetate liners
INSIDE DIAMETER: 1.5"
OTHER: **Additional boring resquested by NYSDEC**

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	90%	-	Pavement/concrete, to brown, Silty Fill, black, tar-like lens at 2'	15.1	
5'-10'	-	80%	-	Moist, brown, Clay with embedded medium Gravel to gray, Silty Sand	0.1	
10'-15'	-	80%	-	Moist, brown, Clay with embedded Gravel to gray Silty Clay, to dense, gray, Silty Sand	1.5	
15'-20'	-	100%	-	Wet, gray, Silty Clay to gray, Silty Sand, to fine, gray Sand	-	Observed Groundwater at 15'
20'-25'	-	90%	-	Wet, fine, gray, Sand	0.6	
25'-30'	-	95%	-	Wet, fine, gray, Sand to moist, smooth, red/brown Clay at 28'	0.6	Observed Clay at 28'
						Impacts NOT observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
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GENERAL NOTES

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BORING: CSO-SB-22

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-23** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/12/2021 0955

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD:	Field Screening	OTHER:	**Additional boring resquested by NYSDEC**

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	95%	-	Pavement/concrete, mottled Fill with brick and glass, to brown Silty Clay	0.7	
5'-10'	-	85%	-	Moist, brown, Clay with embedded medium Gravel	0.2	
10'-15'	-	70%	-	Continued moist, brown, Clay with embedded Gravel to gray, Sandy Gravel	54.4	
15'-20'	-	95%	-	Wet, gray, Sandy Gravel, to gray, Silty Sand	-	Observed Groundwater at 15'
20'-25'	-	65%	-	Moist, brown, Clay with embedded Gravel to gray, Sandy Gravel with trace sheen	8.0	
25'-30'	-	100%	-	Wet, gray, Sandy Gravel with sheen to moist, smooth, red/brown Clay at 27'	0.7	Observed Clay at 27'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
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LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-24** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR: LaBella LLC
DRILLER: Neal Short
LABELLA REPRESENTATIVE: Andy Janik
BORING LOCATION: Babcock Street CSO Outfall
GROUND SURFACE ELEVATION NA
START DATE: 4/12/2021 1055

TYPE OF EQUIPMENT: GP-6610DT
AUGER SIZE AND TYPE: Direct Push
OVERBURDEN SAMPING METHOD: Field Screening
DRIVE SAMPLER TYPE: Acetate liners
INSIDE DIAMETER: 1.5"
OTHER: **Additional boring resquested by NYSDEC**

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	100%	-	Pavement/concrete, to brown Silty Clay	0.4	
5'-10'	-	80%	-	Moist, brown, Clay with embedded medium Gravel	0.3	
10'-15'	-	80%	-	Continued moist, brown, Clay with embedded Gravel to dense, gray Sandy Gravel	117.6	
15'-20'	-	95%	-	Wet, gray, Sandy Gravel, with moist, brown Clay lensing to fine, gray, Sand, sheen throughout	92.7	Observed Groundwater at 15'
20'-25'	-	80%	-	Wet, gray, Sandy Gravel with sheen, some organics (wood), to smooth red/brown Clay (in cap)	9.2	
25'-30'	-	40%	-	Wet, gray, Sandy Gravel (fluff), to moist, smooth, red/brown Clay	0.7	Observed Clay at 25'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	-	-	-

NOTES:
NA = Not Applicable WH = Weight of Hammer
ND = Non Detect WR = Weight of Rod

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-25** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/12/2021 1240

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	**Additional boring resquested by NYSDEC**

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	90%	-	Pavement/concrete, to stiff, brown Silty Clay, some organic lensing	0.3	
5'-10'	-	90%	-	Moist, brown, Clay with embedded medium Gravel	0.7	
10'-15'	-	100%	-	Continued moist, brown, Clay with embedded Gravel to dense, gray, wet, Sandy Gravel with sheen	32.8	Observed Groundwater at 15'
15'-20'	-	95%	-	Wet, fine gray, Sand with sheen, to moist, Sandy Silt	1.8	
20'-25'	-	60%	-	Wet, fine, gray, Sand with sheen to moist, smooth, red/brown Clay at 25'	13.2	Observed Clay at 25'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-26** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/12/2021 1325

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	**Additional boring resquested by NYSDEC**

DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	95%	-	Pavement/concrete, ash material, to brown, Silty Clay	2.3	
5'-10'	-	60%	-	Moist, brown, Clay with embedded medium Gravel	3.9	
10'-15'	-	70%	-	Continued moist, brown, Clay with embedded Gravel to Sandy Gravel lensing	1.2	
15'-20'	-	100%	-	Wet, fine, gray, Sandy Gravel, some Silt	12.9	Observed Groundwater at 15'
20'-25'	-	50%	-	Wet, fine, gray, Sandy Gravel, with black oil/grease	46.6	
25'-30'	-	70%	-	Wet, fine, gray, Sandy Gravel, with sheen, to smooth, red/brown Clay at 29'	6.7	Observed Clay at 29'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-27** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Chris Stone	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Heather Geoghegan	START DATE:	4/20/2021 0905

TYPE OF EQUIPMENT:	CME-55 LC	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	**Additional boring resquested by NYSDEC**

DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	SAMPLE STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
0-5'	-	80%	-	Pavement/concrete, black stained Sand and Gravel, some wood	0.0	
5'-10'	-	50%	-	Ash and Fill, some brown, Silty Sand	0.0	
10'-15'	-	55%	-	Ash, to moist, brown, Clay with embedded Gravel to Sandy Gravel lensing	0.0	Observed Groundwater at 15'
15'-20'	-	0%	-	No Recovery	-	
20'-25'	-	70%	-	Wet, fine, gray, well sorted Sandy Gravel, with some gray Silt	0.1	
25'-30'	-	0%	-	Red/brown Clay potentially at 30' (in cap)	0.2	Estimated Clay at 30'
30'-35'	-	0%	-	No Recovery	-	
						Impacts NOT observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
-	-	-	-	-	-	ND = Non Detect	WR = Weight of Rod

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-28** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Chris Stone	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Heather Geoghegan	START DATE:	4/21/2021 0705

TYPE OF EQUIPMENT:	CME-55 LC	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD	Field Screening	OTHER:	**Additional boring resquested by NYSDEC**

DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	SAMPLE STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
0-5'	-	75%	-	Pavement/concrete, black stained Sand and Gravel, with ash Fill, some wood	0.0	
5'-10'	-	70%	-	Ash and Fill	0.0	
10'-15'	-	75%	-	Ash and Fill, gray, wet Sand with trace Silty Clay	0.0	Observed Groundwater at 15'
15'-20'	-	100%	-	Wet, gray, medium/fine Silty Sand, to fine Silty Sand, slight sheen	0.0	
20'-25'	-	40%	-	Wet, fine, gray, fluid Sand, slight sheen	0.0	
25'-30'	-	60%	-	Wet, fine, gray, fluid Sand	0.0	
30'-35'	-	60%	-	Wet, fine, gray, Sand, to smooth, red/brown Clay at 34'	0.0	Observed Clay at 34'
						Impacts NOT observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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Well Completion Logs

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-SB-1** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/5/2021 0915

TYPE OF EQUIPMENT:	GP-6610DT	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD:	Field Screening	OTHER:	-

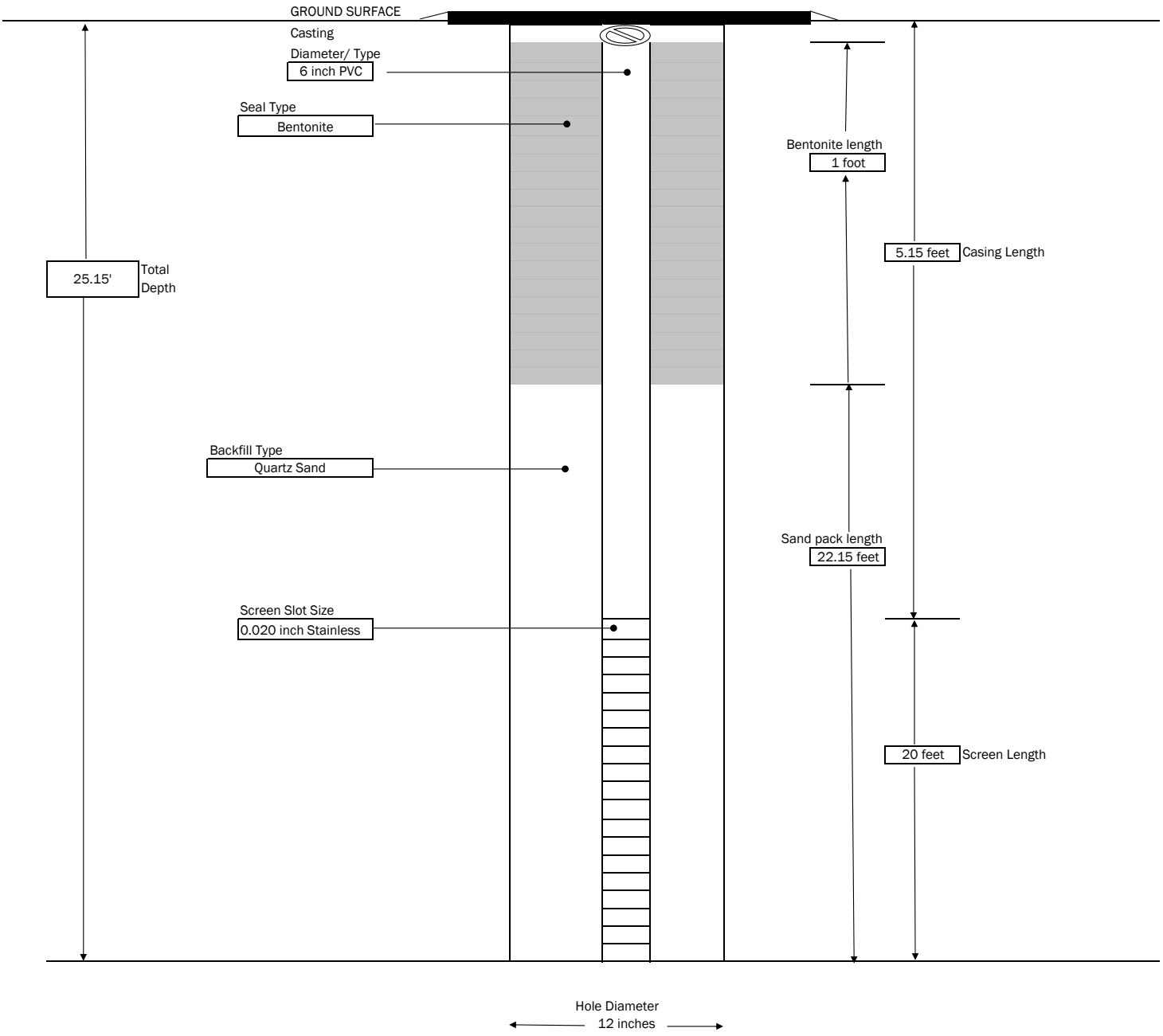
DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	SAMPLE STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
0-5'	-	70%	-	Pavement, concrete, Fill- wood, gravel, trace of Clay, tar	2.6	
5'-10'	-	75%	-	Continued Fill- wood, tar, brick; 8' below grade, 2" sand lens with dark amber oil to impacted, gray, Silty Clay	667.5	
10'-15'	-	60%	-	Continued moist, gray, Silty Clay with organics (wood), to wet Sandy Gravel at 14' below grade, strong petroleum odor	267.8	Observed Groundwater at 14'
15'-20'	-	100%	-	Continued wet, gray, Sandy Silt and Gravel, trace dark amber oil, to smooth red/brown Clay at 19' below grade	131.6	Observed Clay at 19'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	-	-	-		

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. 300 PEARL STREET, BUFFALO, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	**PROJECT** Elk Street Commerce Park, LLC Interim Corrective Measures	**MONITORING WELL :** CSO-SB-1 ESCP-MW-4 **SHEET** 1 OF 1 **JOB #** 2200012.2021-08
CONTRACTOR: LaBella Environmental LLC DRILLER: LABELLA REPRESENTATIVE:	BORING LOCATION: Babcock Street CSO Outfall GROUND SURFACE ELEVATION: NA DATUM: NA START DATE: 4/16/2021 1105 END DATE: 4/16/2021	TYPE OF DRILL RIG: CME55 AUGER SIZE AND TYPE: 8" ID Hollow Stem OVERBURDEN SAMPLING METHOD: Acetate liners



GENERAL NOTES:

1) NOT TO SCALE
2) DEPTHS ARE APPROXIMATE

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-PZ-1** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik	START DATE:	4/16/2021 1105

TYPE OF EQUIPMENT:	CME-55 LC	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push for Field Screen, 6.25" augers for PZ install	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD:	Field Screening	OTHER:	EOB=30', Screen set at 29', Sand to 7', Chips to 5' 20' of 2" V-Wire, 0.020 screen installed

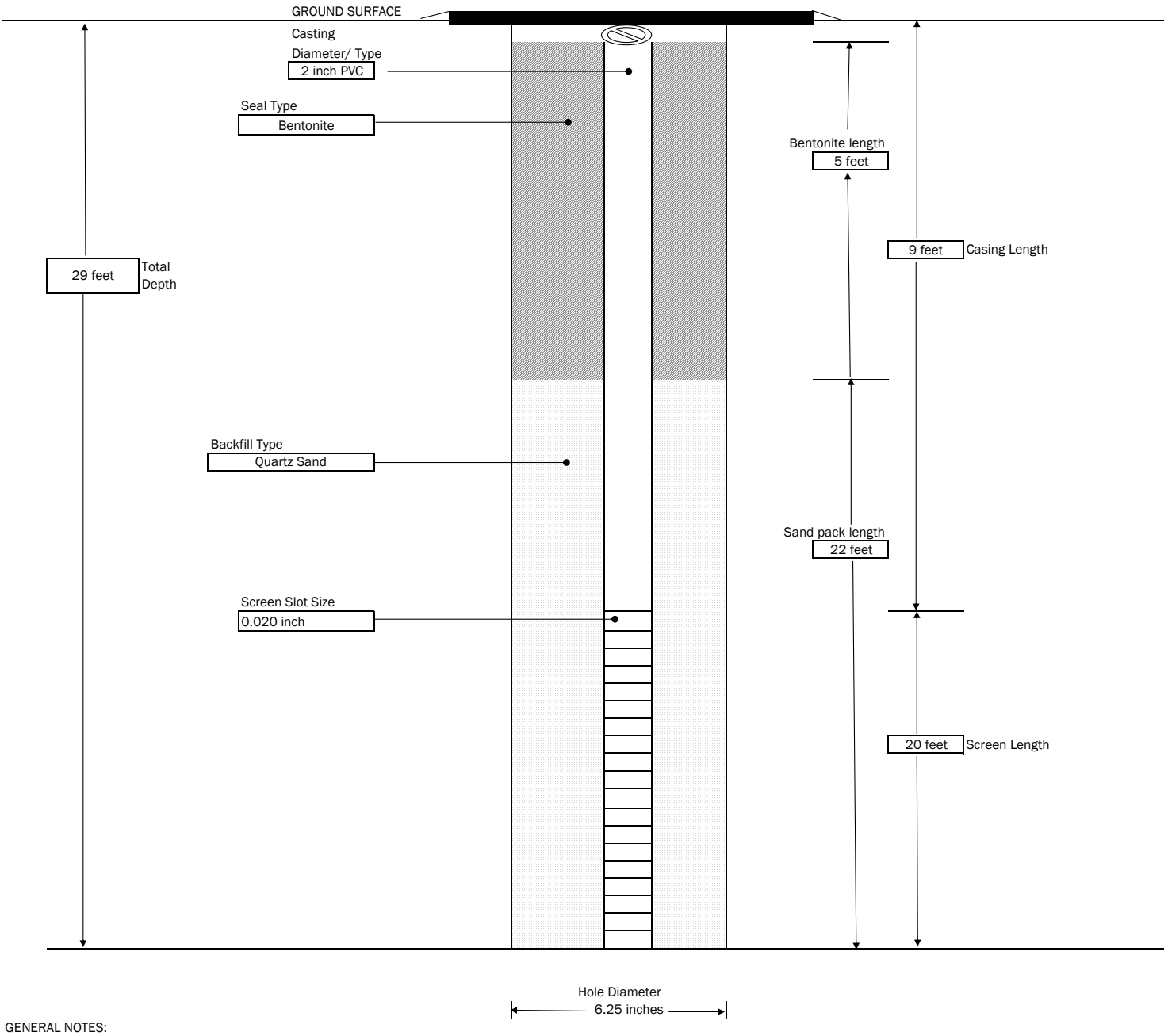
DEPTH	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
	BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE			
0-5'	-	-	-	-	-	0-5' Not Sampled
5'-10'	-	50%	-	Moist, ash Fill, black stained, with petroleum odor	205.0	
10'-15'	-	50%	-	Ash Fill, to brown Clay and Sandy Gravel lensing with amber colored oil, saturated	527.9	Observed groundwater at 14'
15'-20'	-	90%	-	Continued wet, gray, brown Clay and Sandy Gravel lensing with sheen	28.3	
20'-25'	-	60%	-	Wet, fine, gray, Sand with black oil/grease, to fine, Sandy Gravel	117.2	
25'-30'	-	70%	-	Continued wet, gray, Sandy Gravel with sheen, to smooth, red/brown Clay at 28'	6.4	Observed Clay at 28'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)			NOTES:	
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	NA = Not Applicable	WH = Weight of Hammer
						ND = Non Detect	WR = Weight of Rod
-	-	-	9'	30'	~14'		

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. 300 PEARL STREET, BUFFALO, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	**PROJECT** Elk Street Commerce Park, LLC Interim Corrective Measures	**MONITORING WELL :** **CSO-PZ-1** **SHEET** 1 OF 1 **JOB #** 2200012.2021-08
CONTRACTOR: LaBella Environmental LLC DRILLER: LABELLA REPRESENTATIVE:	BORING LOCATION: Babcock Street CSO Outfall GROUND SURFACE ELEVATION: NA DATUM: NA START DATE: 4/16/2021 1105 END DATE: 4/16/2021	TYPE OF DRILL RIG: CME55 AUGER SIZE AND TYPE: 6.25" Hollow Stem OVERBURDEN SAMPLING METHOD: Acetate liners



GENERAL NOTES:

1) NOT TO SCALE
2) DEPTHS ARE APPROXIMATE

LaBella Powered by partnership. **300 PEARL STREET, BUFFALO, NY** **ENVIRONMENTAL ENGINEERING CONSULTANTS**	Elk Street Commerce Park, LLC CSO Investigation	**BORING:** **CSO-PZ-2** SHEET 1 OF 1 **JOB:** **ESCP #2200012** CHKD BY:

CONTRACTOR:	LaBella LLC	BORING LOCATION: Babcock Street CSO Outfall	
DRILLER:	Neal Short	GROUND SURFACE ELEVATION	NA
LABELLA REPRESENTATIVE:	Andy Janik / Brent Miller	START DATE:	4/16/2021 0815

TYPE OF EQUIPMENT:	CME-55 LC	DRIVE SAMPLER TYPE:	Acetate liners
AUGER SIZE AND TYPE:	Direct Push for Field Screen, 6.25" augers for PZ install	INSIDE DIAMETER:	1.5"
OVERBURDEN SAMPING METHOD:	Field Screening	OTHER:	EOB=27', Screen set at 27', Sand to 5', Chips to 2.5' 20' of 2" V-Wire, 0.020 screen installed

DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
0-5'	-	-	-	-	-	0-5' Not Sampled
5'-10'	-	75%	-	Moist, ash Fill, to fine, gray Sand, to moist brown Clay with embedded Gravel	8.9	
10'-15'	-	75%	-	Brown Clay and Sandy Gravel lensing with amber colored oil, saturated	586.0	Observed groundwater at 14'
15'-20'	-	50%	-	Continued wet, gray, brown Clay and Sandy Gravel lensing	35.8	
20'-25'	-	75%	-	Wet, fine, gray, Sand with black oil/grease, to fine, Sandy Gravel	32.0	
25'-30'	-	70%	-	Continued wet, gray, Sandy Gravel with sheen, to smooth, red/brown Clay at 26'	13.6	Observed Clay at 26'
						Impacts observed at location

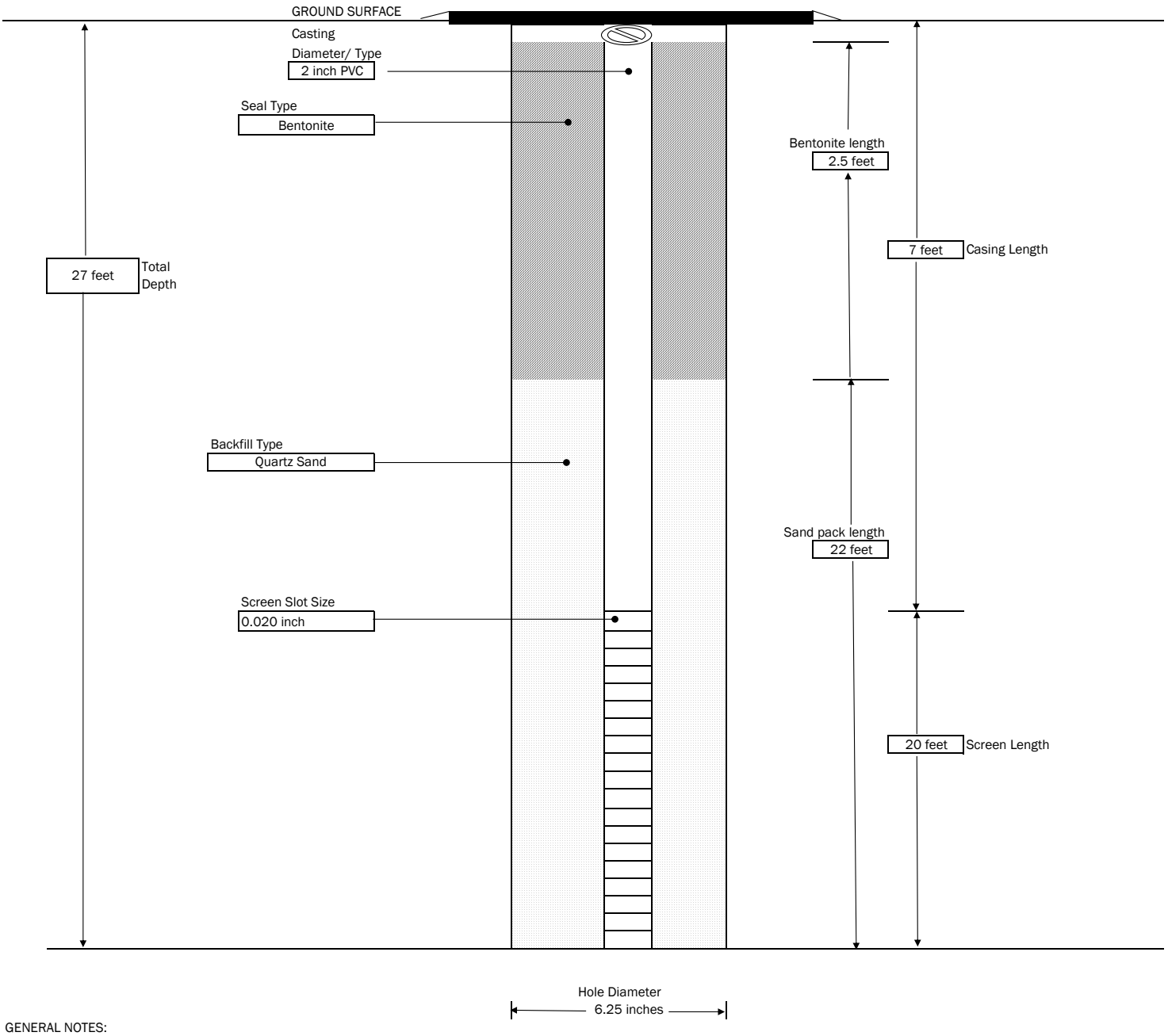
WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	7'	27'	~14'

NOTES:
NA = Not Applicable WH = Weight of Hammer
ND = Non Detect WR = Weight of Rod

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. 300 PEARL STREET, BUFFALO, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	**PROJECT** Elk Street Commerce Park, LLC Interim Corrective Measures	**MONITORING WELL :** CSO-PZ-2 **SHEET** 1 OF 1 **JOB #** 2200012.2021-08
CONTRACTOR: LaBella Environmental LLC DRILLER: LABELLA REPRESENTATIVE:	BORING LOCATION: Babcock Street CSO Outfall GROUND SURFACE ELEVATION: NA DATUM: NA START DATE: 4/16/2021 0805 END DATE: 4/16/2021	TYPE OF DRILL RIG: CME55 AUGER SIZE AND TYPE: 6.25" Hollow Stem OVERBURDEN SAMPLING METHOD: Acetate liners



GENERAL NOTES:

1) NOT TO SCALE
2) DEPTHS ARE APPROXIMATE

LaBella
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300 PEARL STREET, BUFFALO, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

Elk Street Commerce Park, LLC
CSO Investigation

BORING: **CSO-PZ-3**
SHEET 1 OF 1
JOB: **ESCP #2200012**
CHKD BY:

CONTRACTOR: LaBella LLC
DRILLER: Neal Short
LABELLA REPRESENTATIVE: Andy Janik / Brent Miller

BORING LOCATION: Babcock Street CSO Outfall
GROUND SURFACE ELEVATION NA
START DATE: 4/16/2021 0815

TYPE OF EQUIPMENT: CME-55 LC
AUGER SIZE AND TYPE: Split Spoon for Field Screen, 6.25" augers for PZ install
OVERBURDEN SAMPING METHOD: Field Screening

DRIVE SAMPLER TYPE: Split Spoon
INSIDE DIAMETER: 1.5"
OTHER: EOB=25', Screen set at 25', Sand to 4', Chips to 2'
20' of 2" V-Wire, 0.020 screen installed

DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	SAMPLE STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
0-4'	-	-	-	-	-	0-4' Not Sampled
4'-6'	1-2/3-3	50%	-	Moist, brown Clay with embedded Gravel	4.0	
6'-8'	3-4/3-4	50%	-	Moist, brown Clay with embedded Gravel	35.9	
8'-10'	1-1/2-2	50%	-	Moist, brown Clay with embedded Gravel	0.3	
10'-12'	2-2/2-2	95%	-	Moist, brown Clay with embedded Gravel, amber colored oil in Sand lens at 11.8'	66.9	
12'-14'	3-4/3-3	95%	-	Alternating, moist, brown, Clay with embedded Gravel and Sandy Gravel beds, wet at 13.5' with trace amber colored oil	114.6	
14'-16'	2-3/3-2	<5%	-	Moist/wet, gray Silty Sand, trace Gravel	16.3	Observed Groundwater at 16'
16'-18'	3-2/1-2	100%	-	Wet, fine Sand, some Gravel, heavy rainbow sheen	1.3	
18'-20'	1-1/1-1	5%	-	Wet, soft, brown, Clay with trace of Gravel and sheen	0.5	
20'-22'	1-1/1-2	50%	-	Wet, fine, gray, Sand with sheen to brown, Clay, some organics (black)	3.2	
22'-24'	3-2/5-5	30%	-	Wet, medium to coarse Gravel with black oil/grease	22.1	
24'-26'	5-3/1-1	50%	-	Wet, medium Sandy Gravel, to smooth, red/brown Clay at 25'	41.5	Observed Clay at 25'
						Impacts observed at location

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
-	-	-	5'	25'	~16'

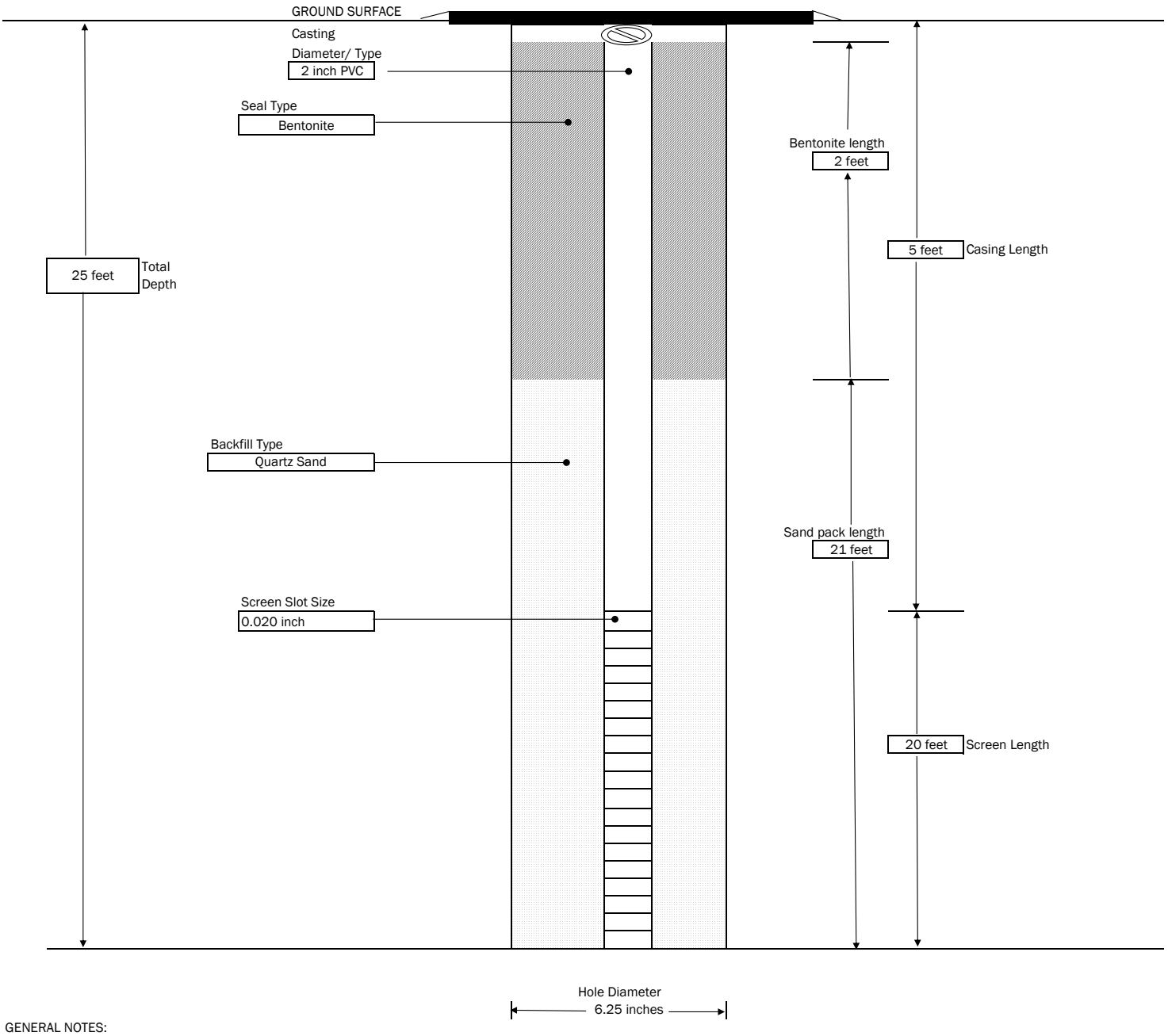
NOTES:
NA = Not Applicable WH = Weight of Hammer
ND = Non Detect WR = Weight of Rod

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

BORING: CSO-PZ-3

LaBella Powered by partnership. 300 PEARL STREET, BUFFALO, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	**PROJECT** Elk Street Commerce Park, LLC Interim Corrective Measures	**MONITORING WELL :** **CSO-PZ-3** **SHEET** 1 OF 1 **JOB #** 2200012.2021-08
CONTRACTOR: LaBella Environmental LLC DRILLER: LABELLA REPRESENTATIVE:	BORING LOCATION: Babcock Street CSO Outfall GROUND SURFACE ELEVATION: NA DATUM: NA START DATE: 4/16/2021 0815 END DATE: 4/16/2021	TYPE OF DRILL RIG: CME55 AUGER SIZE AND TYPE: 6.25" Hollow Stem OVERBURDEN SAMPLING METHOD: Acetate liners



GENERAL NOTES:

1) NOT TO SCALE
2) DEPTHS ARE APPROXIMATE

LaBella Powered by partnership

300 PEARL STREET, BUFFALO, NY
ENVIRONMENTAL ENGINEERING CONSULTA

Elk Street Commerce Park, LLC
Interim Corrective Measures

BORING: ESCP MW-7
SHEET 1 OF 1
JOB: 2200012.20-17
CHKD BY: HEG

CONTRACTOR: LaBella LLC
DRILLER: Neal Short
LABELLA REPRESENTATIVE: Heather Geoghegan

BORING LOCATION: Babcock Street CSO Outfall
GROUND SURFACE ELEVATION
START DATE: 10/21/2020 END DATE: 10/21/2020

TYPE OF EQUIPMENT: CME 55
AUGER SIZE AND TYPE: 4 inch
OVERBURDEN SAMPING METHOD: Split Spoon

DRIVE SAMPLER TYPE: 140 lbs Hammer
INSIDE DIAMETER: 2 ft x 2 inside diameter sampler
OTHER:

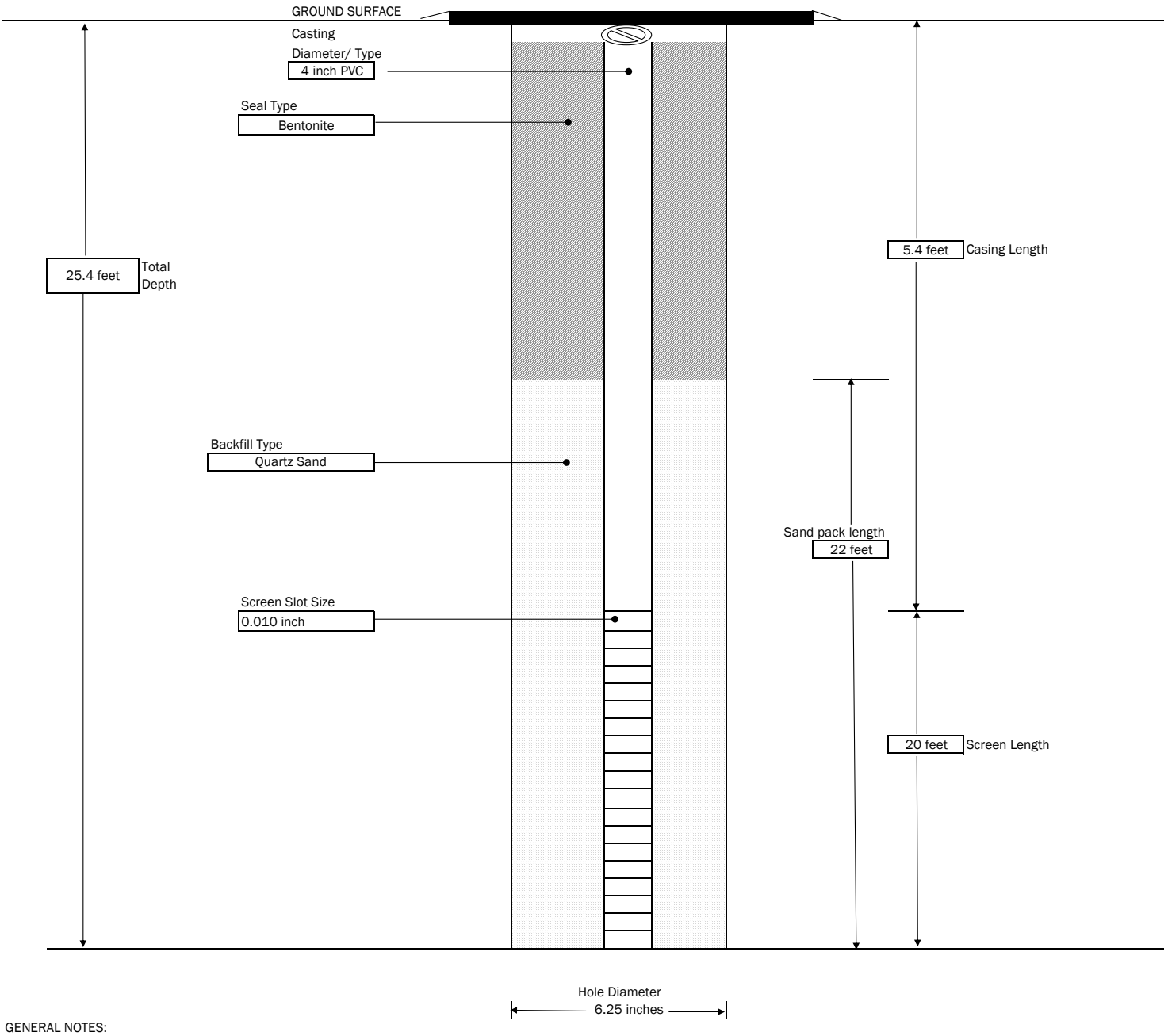
DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
2	NA	NA	NA	Pavement and course sand	0.0	
4	NA	NA	NA	Reddish brown Clay with silt, some wellrounded Pebbles		
6	NA	NA	NA	Reddish brown Clay with Silt, some wellrounded Pebbles	0.0	
8	NA	NA	NA	Gray-brown Clay with Silt, some wellrounded Pebbles		
10	NA	NA	NA	Gray-brown Clay with Silt, some wellrounded Pebbles	0.0	
12	NA	NA	NA	Gray-brown Clay with Silt, some wellrounded Pebbles	0.0	
14	NA	NA	NA	Gray-brown Clay with Silt, some wellrounded Pebbles	0.0	
16	NA	NA	NA	Garay-brown Clay with Silt, some wellrounded Pebbles, course Sand	0.0	Ground water @ ~15' bgs
18	NA	NA	NA	Gray-brown Silt, some wellrounded Pebbles, some course Sand, little Clay	0.0	
20	2 2 2 1	NA	NA	Gray-brown Silt, some wellrounded Pebbles, some course Sand, little Clay	0.0	
22	2 2 1 1	NA	NA	Gray-brown Silt, some wellrounded Pebbles, some course Sand, little Clay	0.0	
24	1 2 2 1	NA	NA	Gray to reddish brown Clay with some well rounded Pebbles	0.0	
26	NA	NA	NA	Gray to reddish brown Clay with some well rounded Pebbles	0.0	

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
10/21/2020	-	-	25	25	~15'

NOTES:
NA = Not Applicable
ND = Non Detect
WH = Weight of Hammer
WR = Weight of Rod

GENERAL NOTES
1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. 300 PEARL STREET, BUFFALO, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	**PROJECT** Elk Street Commerce Park, LLC Interim Corrective Measures	**MONITORING WELL :** **ESCP MW-7** **SHEET** 1 OF 1 **JOB #** 2200012.20-17
CONTRACTOR: LaBella Environmental LLC DRILLER: Neal Short LABELLA REPRESENTATIVE: Heather Geoghegan	ESCP MW-7 GROUND SURFACE ELEVATION: NA DATUM: NA START DATE: 10/21/2020 END DATE: 10/21/2020	TYPE OF DRILL RIG: CME55 AUGER SIZE AND TYPE: 4 inch 2'x2' inside diameter OVERBURDEN SAMPLING METHOD: Split spoon



GENERAL NOTES:

1) NOT TO SCALE
2) DEPTHS ARE APPROXIMATE

LaBella Powered by partnership.

300 PEARL STREET, BUFFALO, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

Elk Street Commerce Park, LLC
Interim Corrective Measures

BORING: ESCP MW-8
SHEET 1 OF 1
JOB: 2200012.20-17
CHKD BY: HEG

CONTRACTOR: LaBella LLC
DRILLER: Neal Short
LABELLA REPRESENTATIVE: Heather Geoghegan

BORING LOCATION: Babcock Street CSO Outfall
GROUND SURFACE ELEVATION NA
START DATE: 10/22/2020 10/22/2020

TYPE OF EQUIPMENT: CME 55
AUGER SIZE AND TYPE: 4 inch
OVERBURDEN SAMPING METHOD: Split Spoon

DRIVE SAMPLER TYPE: 140 lbs Hammer
INSIDE DIAMETER: 2 ft x 2 inside diameter sampler
OTHER:

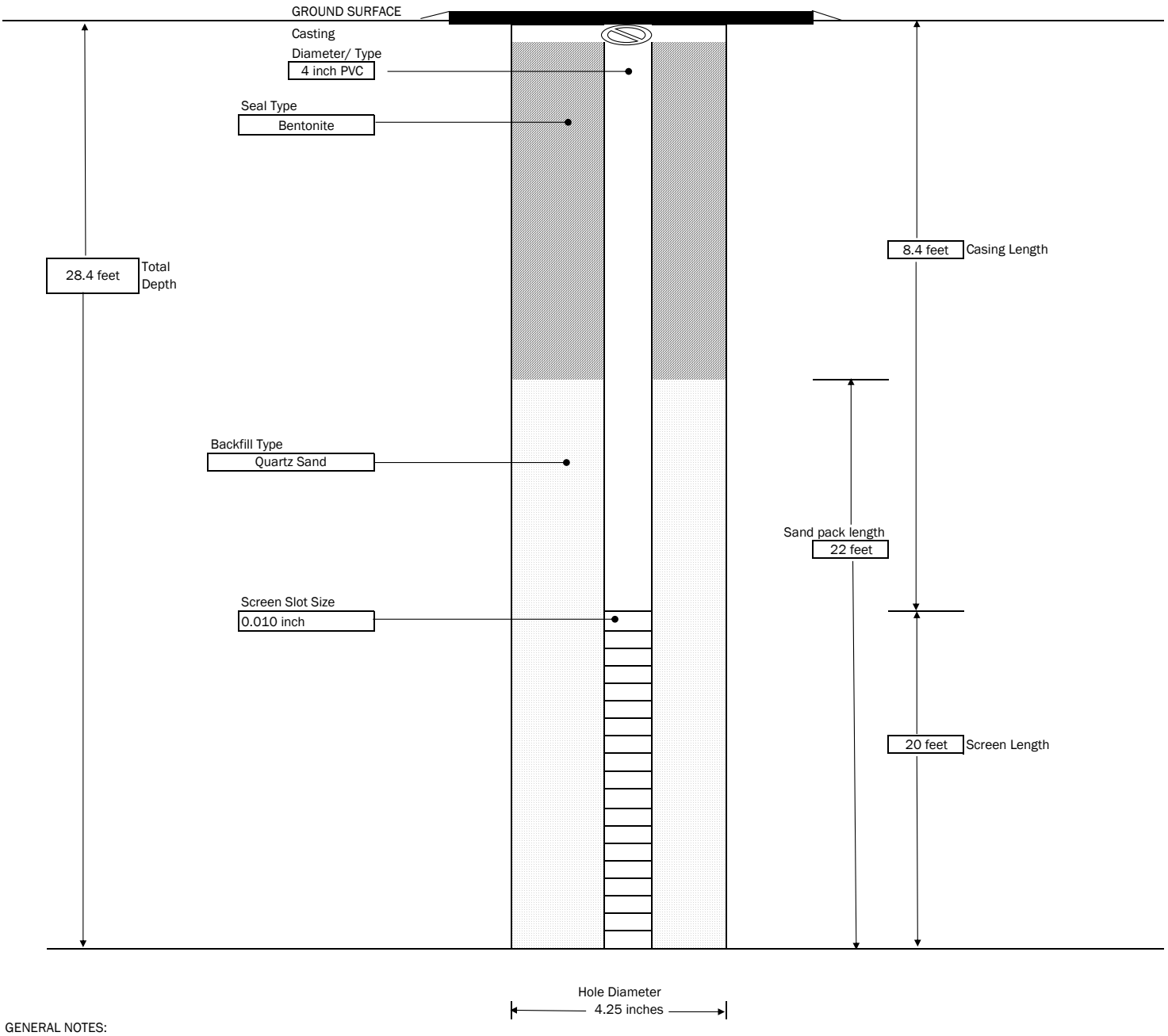
DEPTH	SAMPLE BLOW COUNT	SAMPLE RECOVERY	STRATA CHANGE	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	NOTES
2	5 5 1 2	14"		0-6" Pavement. 6-14" Brown, course medium Sand, some Silt, trace Clay Moist	0.1	
4	6 3 3 4	15"		Reddish gray, Clay, some well rounded to subangular Pebbles, trace couse medium Sand Moist	0.1	
6	2 2 2 2	18"		Reddish gray, Clay, some well rounded to subangular Pebbles Moist		
8	1 2 3 3	24"		Reddish gray, Clay, some well rounded to subangular Pebbles Moist	0.1	
10	1 1 2 2	10"		Reddish gray Clay, with trace well rounded to subangular Pebbles , trace course medium Sand, extremely plastic Moist	0.1	
12	1 4 15 3	13"		Reddish gray clay with trace well rounded to subangular Pebbles, some course medium Sand, extremely plastic Moist	0.1	
14	10 8 8 7	3'		Reddish gray, fragmented Rock, some course medium Sand, some, Clay, trace well rounded to subangular Pebbles. Wet	0.1	Ground Water @ ~ 14' bgs
16	3 11 16 10	14"		14.5-14.7' = Black, fragmented Rock and course meduim Sand, trace Clay. 14.7-15.4' = Reddish brown, course medium Sand with fragmented Rock, some surounded to subangular Pebbles	1.4	Possible Staining 14.5-14.7' Odor noted
18	6 3 4 5	19"		16-16.2' = Brown to gray, course medium Sand, some Silt. 16.2-17.7' = Grayish brown, Silt, trace course medium Sand, trace Clay, slighty plastic. Wet	0.2	
20	WH WH WH 3	3"		Large to medium Sand, some well rounded Pebbles Wet	NA	
22	2 2 1 2	19"		Brown, large to medium Sand, with trace Silt Wet	0.3	
24	2 3 6 10	14"		Brown, large to medium Sand, with trace Silt Wet	0.7	
26	1 4 6 10	14"		Brown to gray course medium Sand, Reddish brown Clay in tip of Spoon. Wet	0.3	
28	10 5 8 8	20"		28-28.6' = Brown, course Sand and Clay 28.6-30' = reddish gray Clay Moist	0.3	
30	WR WR WR WH	24"		Reddish brown to gray, Clay	0.0	

WATER LEVEL DATA			DEPTH (FT)		
DATE	TIME	ELASPED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED
10/22/2020	-	-	28'	28'	~14'

NOTES:
NA = Not Applicable WH = Weight of Hammer
ND = Non Detect WR = Weight of Rod

GENERAL NOTES
1) STRATIFICATION LINES REPRESENT APPROXMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCURE DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

LaBella Powered by partnership. 300 PEARL STREET, BUFFALO, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	**PROJECT** Elk Street Commerce Park, LLC Interim Corrective Measures	**MONITORING WELL :** **ESCP MW-8** **SHEET** 1 OF 1 **JOB #** 2200012.20-17
CONTRACTOR: LaBella Environmental LLC DRILLER: Neal Short LABELLA REPRESENTATIVE: Heather Geoghegan	ESCP MW-8 GROUND SURFACE ELEVATION: NA DATUM: NA START DATE: 10/22/2020 END DATE: 10/22/2020	TYPE OF DRILL RIG: CME55 AUGER SIZE AND TYPE: 4 inch 2'x2' inside diameter OVERBURDEN SAMPLING METHOD: Split spoon



GENERAL NOTES:

1) NOT TO SCALE
2) DEPTHS ARE APPROXIMATE

DATE STARTED 11/7/89
FINISHED 11/7/89
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS INC — SUBSURFACE LOG

HOLE NO. 3-MW
SURF. ELEV. 582.19
G.W. DEPTH see notes

PROJECT Mobil Oil Corporation
BTA-89-156

LOCATION One Babcock Street
Buffalo, New York

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	PID SAMPLE	SOIL OR ROCK CLASSIFICATION	NOTES	PID TOP OF AUGER
0			AUGERED					Asphaltic Concrete (0.2')		
		1	8	6	25	31	17.0-	Black CINDERS and Slag (moist, FILL)		
							17.2			BG
		2	9	13			6.0-	Brn. to black f-c Silty SAND, some f-c Gravel, little Cinders, tr. brick, tr. wood, tr. clay (moist, FILL)		
			14	9		27	6.2			
5		3	4	3			12.2	Contains tr. slag		
			3	4		6	12.4			BG
		4	4	5			3.0-			
			7	8		12	3.8	Black to gray organic SILT and Clay little f-m Sand (moist, medium)		
10		5	1	3			2.8-			
			3	5		6	3.0	Contains f-c Silty SAND laminations		BG
								Gray f-c Silty SAND, tr. gravel, tr. clay (moist-wet, loose)		
15		6	1	2			3.4-			
			4	5		6	3.6	Contains Clay laminations		BG
20		7	1	2						
			3	3		5	BG	Contains tr. organics (wood)		BG
									Note: Water put into borehole to displace "running " sands	
25		8	WOR	5						
			9	10		14	BG	Contains little f-c Gravel (firm)	WOR=Weight of Rods	
		9	4	7						BG
			8	11		15	BG			
30		10	WOR	WOR				Gray to brn. Silty CLAY, tr. sand (moist-wet, very soft)		
			WOR	WOR		<2	BG			
								Boring Complete at 32.0'	Free standing water recorded at 7.6' at Boring Completion	
								PID=organic vapors measured with Photoionization Detector (PID) measurements recorded in parts per million (ppm)	BG=Background BG=0.0-0.3ppm using Hnu with 11.7 eV probe	

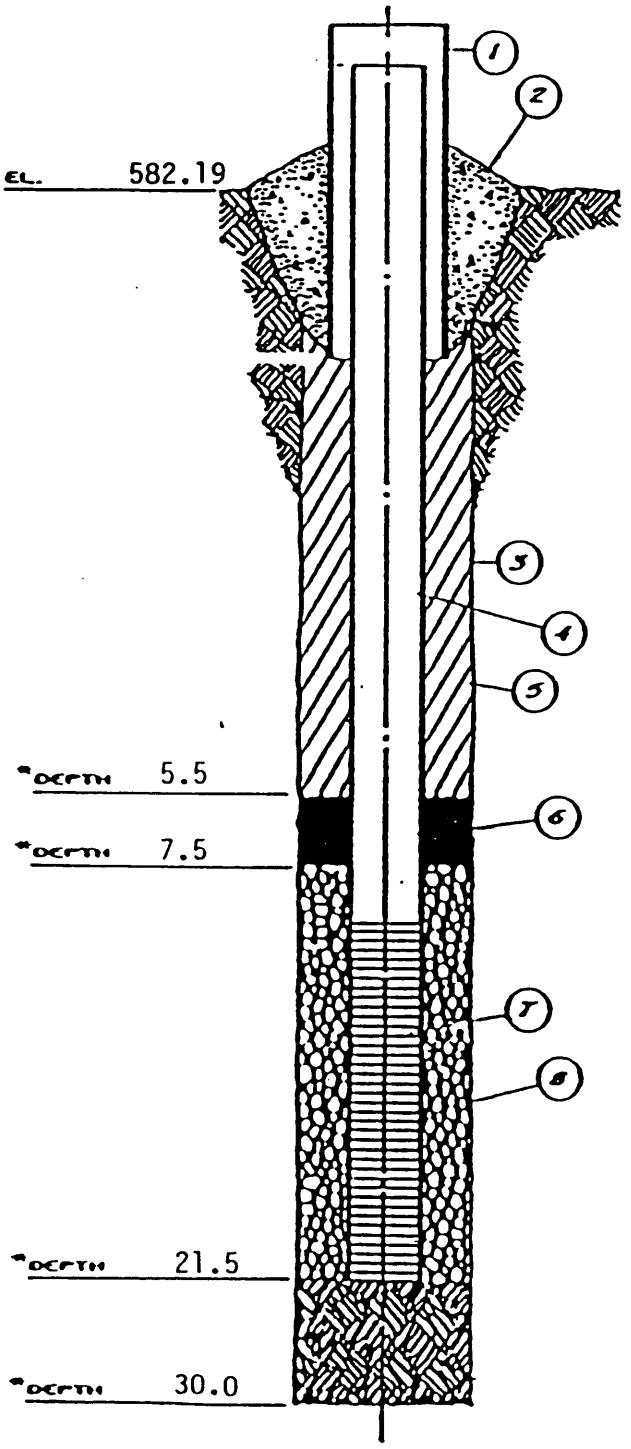
N = No blows to drive 2 " spoon 12 " with 140 lb pin wt. falling 30 " per blow.
C = No blows to drive ____ " casing ____ " with ____ lb weight falling ____ " per blow.
METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

CLASSIFICATION Visual by Geologist

MONITOR WELL COMPLETION REPORT :

WELL Nº 3-MW JOB Nº BTA-89-156

PROJECT Mobil Oil Corporation
One Babcock Street



1. Curb Box I.D. 6.0 INCHES.

2. SURFACE SEAL TYPE Cement Grout

3. BOREHOLE DIAMETER 10.0 INCHES.

4. RISER PIPE:
   a. Type Poly Vinyl Chloride
   b. I.D. 4.0 INCHES
   c. Length 5.5 FEET
   d. Joint Type Threaded

5. BACKFILL:
   a. Type Cement/Bentonite Grout

6. Type of SEAL Bentonite

7. SCREEN
   a. Type Poly Vinyl Chloride
   b. I.D. 4.0 INCHES
   c. Slot Size 0.020 INCHES
   d. Length 13.0 FEET

8. SCREEN FILTER TYPE #4 Quartzite Sand

*Depth in feet below grade.

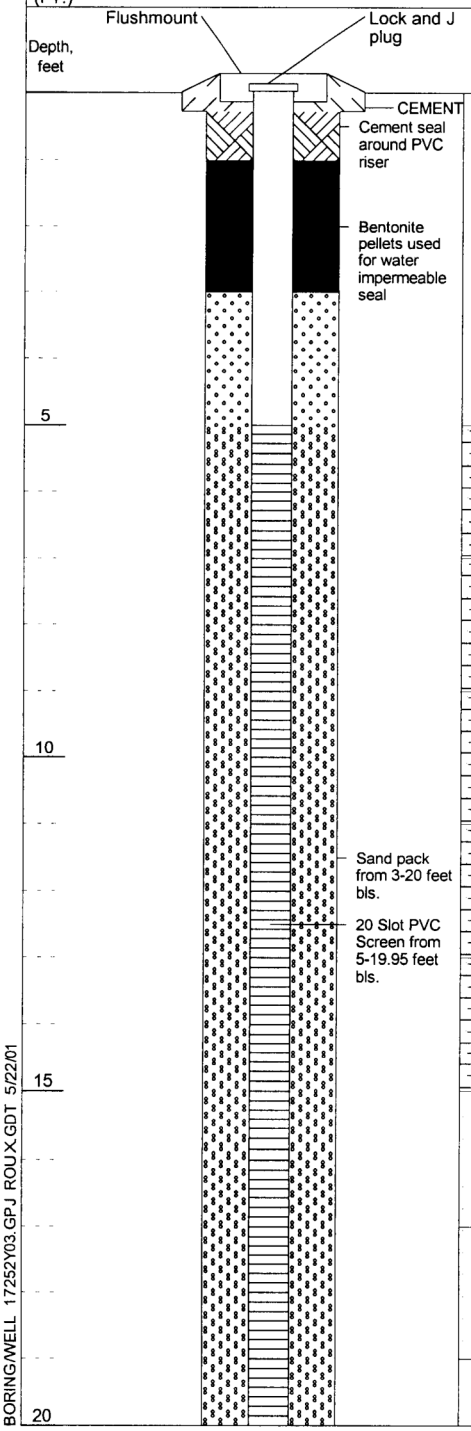
EMPIRE SOILS INVESTIGATIONS INC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

1377 Motor Parkway
Islandia, NY 11749
Telephone: 631-232-2600
Fax: 631-232-9898

WELL CONSTRUCTION LOG

WELL NO.: **MW-24**	NORTHING	EASTING		
PROJECT NO./NAME: **17252Y03 / ExxonMobil Buffalo Terminal**		LOCATION: **625 Elk Street**		
APPROVED BY: **N. Clarke**	LOGGED BY: **M. Falzone**	**Buffalo, New York**		
DRILLING CONTRACTOR/DRILLER: **SJB / Art**		GEOGRAPHIC AREA: **BSPA**		
DRILL BIT DIAMETER/TYPE: **2-in. /**	BOREHOLE DIAMETER: **10 1/4-inches**	DRILLING EQUIPMENT/METHOD: **ICME 75 / HSA**	SAMPLING METHOD: **2" Split Spoon**	START-FINISH DATE: **7/21/00-7/21/00**
CASING MAT./DIA.: **PVC / 4-inch**	SCREEN: TYPE **Slotted** MAT. **PVC**	TOTAL LENGTH **15.0**	DIA. **4-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (FT.)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN **/**	GW SURFACE / GRAVEL PACK



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
5		Olive-grey CLAY with some coarse to medium Sand, trace of fine to coarse Gravel, Wood noted; Moist	1, 6, 2	4	40% recovery
		Red-brown CLAY with little coarse Sand, trace angular Gravel	3, 2, 2, 2	42	Petroleum odor, 50% recovery
10		Red-brown CLAY with little soft medium to coarse Sand, trace angular Gravel; Wet	1, 1, 2	40	Petroleum odor, 25% recovery
		Red-brown/light-brown soft CLAY with some coarse Sand, little angular Gravel	2, 1, 3, 3	68	Sheen, petroleum odor, 60% recovery
		Red-brown/light-brown soft CLAY with some coarse Sand, little angular Gravel	1, 1, 1	5	Sheen, petroleum odor, 5% recovery
15		Olive-grey medium to coarse loose SAND with some angular Gravel, little Clay	1, 1, 1	68	Sheen, petroleum odor
		Olive-grey medium to coarse loose SAND with some angular Gravel, trace of Clay grading to a red-brown Till: Clay with little angular Gravel, trace fine Sand	1, 1, 1	0.0	
20					Bottom of boring at 19 feet bls., bottom of well at 19.95 feet bls.

BORING/WELL 17252Y03.GPJ ROUX.GDT 5/22/01

LaBella
Powered by partnership.

APPENDIX 2

Laboratory Report

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-184405-1
Client Project/Site: Waste Characterization

For:
LaBella Associates DPC
300 Pearl Street
Suite 130
Buffalo, New York 14202

Attn: Jessica Dombrowski

Authorized for release by:
5/14/2021 4:05:48 PM
Rebecca Jones, Project Management Assistant I
Rebecca.Jones@Eurofinset.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
Brian.Fischer@Eurofinset.com

Table of Contents

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QC Sample Results 7
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Definitions/Glossary

Client: LaBella Associates DPC
Project/Site: Waste Characterization

Job ID: 480-184405-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 480-184405-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-184405-1

Comments
No additional comments.

Receipt
The sample was received on 5/7/2021 11:30 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 16.2º C.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: LaBella Associates DPC
Project/Site: Waste Characterization

Job ID: 480-184405-1

Client Sample ID: PZ-2

Lab Sample ID: 480-184405-1

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Specific Gravity	0.8419		0.1000	0.1000	g/mL	1		D1429-87	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: LaBella Associates DPC
Project/Site: Waste Characterization

Job ID: 480-184405-1

Client Sample ID: PZ-2

Date Collected: 05/07/21 08:00
Date Received: 05/07/21 11:30

Lab Sample ID: 480-184405-1

Matrix: Waste

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Gravity	0.8419		0.1000	0.1000	g/mL			05/14/21 11:50	1

Method: D1429-87 - Specific Gravity

Lab Sample ID: LCS 480-581002/1
Matrix: Waste
Analysis Batch: 581002

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Specific Gravity			1.00	1.0001		g/mL		100	90 - 110		

Lab Sample ID: 480-184405-1 DU
Matrix: Waste
Analysis Batch: 581002

Client Sample ID: PZ-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Specific Gravity	0.8419			0.8432		g/mL				0.2	20

QC Association Summary

Client: LaBella Associates DPC
Project/Site: Waste Characterization

Job ID: 480-184405-1

General Chemistry

Analysis Batch: 581002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184405-1	PZ-2	Total/NA	Waste	D1429-87	
LCS 480-581002/1	Lab Control Sample	Total/NA	Waste	D1429-87	
480-184405-1 DU	PZ-2	Total/NA	Waste	D1429-87	

Lab Chronicle

Client: LaBella Associates DPC
Project/Site: Waste Characterization

Job ID: 480-184405-1

Client Sample ID: PZ-2

Date Collected: 05/07/21 08:00
Date Received: 05/07/21 11:30

Lab Sample ID: 480-184405-1

Matrix: Waste

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D1429-87		1	581002	05/14/21 11:50	SRA	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: LaBella Associates DPC
Job ID: 480-184405-1
Project/Site: Waste Characterization

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
D1429-87		Waste	Specific Gravity

Method Summary

Client: LaBella Associates DPC
Project/Site: Waste Characterization

Job ID: 480-184405-1

Method	Method Description	Protocol	Laboratory
D1429-87	Specific Gravity	ASTM	TAL BUF

Protocol References:

ASTM = ASTM International

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: LaBella Associates DPC
Project/Site: Waste Characterization

Job ID: 480-184405-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-184405-1	PZ-2	Waste	05/07/21 08:00	05/07/21 11:30	

>>> Select a Laboratory <<<
#N/A
#N/A
#N/A
#N/A

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☐Other:

Client Contact	Project Manager: Andrew Janik	Site Contact:Andrew Janik	Date: 5/7/2021	COC No:
LaBella	Tel:716-345-6709	Lab Contact:	Carrier:	1 of 1 COCs
300 Pearl Street, Suite 130	**Analysis Turnaround Time**			Sampler:Brent Miller
Buffalo NY 14202	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
716-551-6281	TAT if different from Below 5 DAY			Walk-in Client:
	☐ 2 weeks			Lab Sampling:
Project Name:ESCP	☐ 1 week			
Site:ESCP	☐ 2 days			Job / SDG No.:
P O # 2200012	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Specific Gravity	Sample Specific Notes:
PZ-2	5/7/2021	0800	G	OIL	1			X	THIS SAMPLE IS OIL.

480-184405 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐Return to Client ☑Disposal by Lab ☐Archive for _____ Months

Special Instructions/QC Requirements & Comments: Email report to ajanik@labellapc.com 5 day TAT

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: 1.2 Corr'd: _____ Therm ID No.: #1 ICE			
Relinquished by: Brent Miller	Company: LaBella	Date/Time: 5/7/21 1000	Received by: FOX #29	Company: FOX	Date/Time: 5/8/21 10am	
Relinquished by:	Company:	Date/Time:	Received by: Michelle Rybarczyk	Company:	Date/Time:	
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: Rec'd:	Company:	Date/Time: 5/8/21 1130	

Form No. CA-C-WI-002, Rev. 4.15, dated 9/27/2017

5/14/2021

Login Sample Receipt Checklist

Client: LaBella Associates DPC

Job Number: 480-184405-1

Login Number: 184405
List Number: 1
Creator: Kolb, Chris M

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	LABELLA
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

APPENDIX 3

Slug Test and Constant Rate Pump Test Data

LaBella
Powered by partnership.

Slug Test Data

Summary of Slug Test Results
Elk Street Commerce Park
Buffalo

Well ID	Slug IN/OUT	Hydraulic Conductivity*		Average Hydraulic Conductivity	
		cm/sec	ft/day	cm/sec	ft/day
MW-3	T-1 IN	4.35E-04	1.22	4.29E-04	1.22
	T-1 OUT	4.41E-04	1.25		
	T-2 IN	4.15E-04	1.17		
	T-2 OUT	4.18E-04	1.19		
	T-3 IN	4.23E-04	1.20		
	T-3 OUT	4.45E-04	1.26		
MW-24	T-1 IN	1.55E-04	0.44	2.69E-04	0.76
	T-1 OUT	3.53E-04	1.00		
	T-2 IN	1.74E-04	0.49		
	T-2 OUT	3.93E-04	1.11		
ESCP-CSO-MW-4	T-1 IN	3.65E-03	10.35	3.96E-03	11.22
	T-1 OUT	4.36E-03	12.34		
	T-2 IN	5.37E-03	15.23		
	T-2 OUT	2.46E-03	6.96		
ESCP-MW-7	T-1 IN	7.56E-03	21.44	9.55E-03	27.06
	T-1 OUT	1.23E-02	34.80		
	T-2 IN	1.33E-02	37.69		
	T-2 OUT	1.10E-03	3.13		
	T-3 IN	5.62E-03	15.94		
	T-3 OUT	1.74E-02	49.40		
ESCP-MW-8	T-1 IN	1.96E-02	55.43	2.55E-02	72.16
	T-1 OUT	2.47E-02	70.00		
	T-2 IN	1.85E-02	52.34		
	T-2 OUT	2.55E-02	72.29		
	T-3 IN	2.50E-02	70.88		
	T-3 OUT	3.95E-02	112.02		

Notes:
Slug tests conducted April 19 & 20, 2021 and May 3, 2021
* Hydraulic conductivity given in centimeters per second and feet per day

Slug Test Data
Well MW-3
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park

MW-3
TOC Elevation 584.51

Slug IN (4-19-2021 pm)						Slug OUT (4-19-2021 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized	Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement	Seconds	Minutes				Displacement
0	0.00	8.92	575.59	2.27	1.00	0	0.00	13.46	571.05	-2.27	1.00
15	0.25	8.99	575.52	2.20	0.97	15	0.25	13.38	571.13	-2.19	0.96
30	0.50	9.06	575.45	2.13	0.94	30	0.50	13.31	571.20	-2.12	0.94
45	0.75	9.12	575.39	2.07	0.91	45	0.75	13.25	571.26	-2.06	0.91
60	1.00	9.16	575.35	2.03	0.89	60	1.00	13.19	571.32	-2.00	0.88
75	1.25	9.22	575.29	1.97	0.87	75	1.25	13.13	571.38	-1.94	0.85
90	1.50	9.28	575.23	1.91	0.84	90	1.50	13.07	571.44	-1.88	0.83
105	1.75	9.34	575.17	1.85	0.82	105	1.75	13.02	571.49	-1.83	0.81
120	2.00	9.39	575.12	1.80	0.79	120	2.00	12.96	571.55	-1.77	0.78
135	2.25	9.45	575.06	1.74	0.77	135	2.25	12.91	571.60	-1.72	0.76
150	2.50	9.51	575.00	1.68	0.74	150	2.50	12.86	571.65	-1.67	0.73
165	2.75	9.58	574.93	1.61	0.71	165	2.75	12.80	571.71	-1.61	0.71
180	3.00	9.62	574.89	1.57	0.69	180	3.00	12.76	571.75	-1.57	0.69
195	3.25	9.67	574.84	1.52	0.67	195	3.25	12.71	571.80	-1.52	0.67
210	3.50	9.71	574.80	1.48	0.65	210	3.50	12.67	571.84	-1.48	0.65
225	3.75	9.76	574.75	1.43	0.63	225	3.75	12.62	571.89	-1.43	0.63
240	4.00	9.81	574.70	1.38	0.61	240	4.00	12.58	571.93	-1.39	0.61
255	4.25	9.85	574.66	1.34	0.59	255	4.25	12.53	571.98	-1.34	0.59
270	4.50	9.89	574.62	1.30	0.57	270	4.50	12.49	572.02	-1.30	0.57
285	4.75	9.93	574.58	1.26	0.56	285	4.75	12.46	572.05	-1.27	0.56
300	5.00	9.96	574.55	1.23	0.54	300	5.00	12.42	572.09	-1.23	0.54
315	5.25	10.00	574.51	1.19	0.52	315	5.25	12.38	572.13	-1.19	0.52
330	5.50	10.03	574.48	1.16	0.51	330	5.50	12.35	572.16	-1.16	0.51
345	5.75	10.07	574.44	1.12	0.49	345	5.75	12.32	572.19	-1.13	0.50
360	6.00	10.10	574.41	1.09	0.48	360	6.00	12.28	572.23	-1.09	0.48
375	6.25	10.13	574.38	1.06	0.47	375	6.25	12.24	572.27	-1.05	0.46
390	6.50	10.17	574.34	1.02	0.45	390	6.50	12.21	572.30	-1.02	0.45
405	6.75	10.20	574.31	0.99	0.44	405	6.75	12.18	572.33	-0.99	0.44
420	7.00	10.22	574.29	0.97	0.43	420	7.00	12.15	572.36	-0.96	0.42
435	7.25	10.25	574.26	0.94	0.41	435	7.25	12.12	572.39	-0.93	0.41
450	7.50	10.27	574.24	0.92	0.40	450	7.50	12.09	572.42	-0.90	0.40
465	7.75	10.30	574.21	0.89	0.39	465	7.75	12.07	572.44	-0.88	0.39
480	8.00	10.33	574.18	0.86	0.38	480	8.00	12.04	572.47	-0.85	0.37
495	8.25	10.35	574.16	0.84	0.37	495	8.25	12.01	572.50	-0.82	0.36
510	8.50	10.38	574.13	0.81	0.36	510	8.50	11.99	572.52	-0.80	0.35
525	8.75	10.40	574.11	0.79	0.35	525	8.75	11.97	572.54	-0.78	0.34
540	9.00	10.42	574.09	0.77	0.34	540	9.00	11.94	572.57	-0.75	0.33
555	9.25	10.45	574.06	0.74	0.33	555	9.25	11.92	572.59	-0.73	0.32
570	9.50	10.47	574.04	0.72	0.32	570	9.50	11.90	572.61	-0.71	0.31
585	9.75	10.49	574.02	0.70	0.31	585	9.75	11.88	572.63	-0.69	0.30
600	10.00	10.51	574.00	0.68	0.30	600	10.00	11.85	572.66	-0.66	0.29
615	10.25	10.52	573.99	0.67	0.29	615	10.25	11.83	572.68	-0.64	0.28
630	10.50	10.54	573.97	0.65	0.28	630	10.50	11.82	572.69	-0.63	0.28
645	10.75	10.56	573.95	0.63	0.28	645	10.75	11.80	572.71	-0.61	0.27
660	11.00	10.58	573.93	0.61	0.27	660	11.00	11.77	572.74	-0.58	0.26
675	11.25	10.60	573.91	0.59	0.26	675	11.25	11.76	572.75	-0.57	0.25
690	11.50	10.61	573.90	0.58	0.26	690	11.50	11.75	572.76	-0.56	0.24
705	11.75	10.63	573.88	0.56	0.25	705	11.75	11.72	572.79	-0.53	0.24
720	12.00	10.64	573.87	0.55	0.24	720	12.00	11.71	572.80	-0.52	0.23
735	12.25	10.66	573.85	0.53	0.23	735	12.25	11.69	572.82	-0.50	0.22
750	12.50	10.68	573.83	0.51	0.23	750	12.50	11.68	572.83	-0.49	0.21
765	12.75	10.69	573.82	0.50	0.22	765	12.75	11.66	572.85	-0.47	0.21
780	13.00	10.71	573.80	0.48	0.21	780	13.00	11.65	572.86	-0.46	0.20
795	13.25	10.72	573.79	0.47	0.21	795	13.25	11.64	572.87	-0.45	0.20
810	13.50	10.73	573.78	0.46	0.20	810	13.50	11.62	572.89	-0.43	0.19
825	13.75	10.74	573.77	0.45	0.20	825	13.75	11.61	572.90	-0.42	0.19
840	14.00	10.75	573.76	0.44	0.19	840	14.00	11.60	572.91	-0.41	0.18
855	14.25	10.77	573.74	0.42	0.19	855	14.25	11.59	572.92	-0.40	0.17
870	14.50	10.78	573.73	0.41	0.18	870	14.50	11.58	572.93	-0.39	0.17
885	14.75	10.79	573.72	0.40	0.18	885	14.75	11.56	572.95	-0.37	0.16
900	15.00	10.80	573.71	0.39	0.17	900	15.00	11.55	572.96	-0.36	0.16
915	15.25	10.81	573.70	0.38	0.17	915	15.25	11.54	572.97	-0.35	0.15
930	15.50	10.82	573.69	0.37	0.16	930	15.50	11.54	572.97	-0.35	0.15
945	15.75	10.83	573.68	0.36	0.16	945	15.75	11.52	572.99	-0.33	0.15
960	16.00	10.84	573.67	0.35	0.15	960	16.00	11.51	573.00	-0.32	0.14
975	16.25	10.85	573.66	0.34	0.15	975	16.25	11.50	573.01	-0.31	0.14
990	16.50	10.86	573.65	0.33	0.15	990	16.50	11.49	573.02	-0.30	0.13
1,005	16.75	10.86	573.65	0.33	0.14	1,005	16.75	11.48	573.03	-0.29	0.13
1,020	17.00	10.87	573.64	0.32	0.14	1,020	17.00	11.48	573.03	-0.29	0.13
1,035	17.25	10.88	573.63	0.31	0.13	1,035	17.25	11.47	573.04	-0.28	0.12
1,050	17.50	10.89	573.62	0.30	0.13	1,050	17.50	11.46	573.05	-0.27	0.12
1,065	17.75	10.90	573.61	0.29	0.13	1,065	17.75	11.45	573.06	-0.26	0.12
1,080	18.00	10.90	573.61	0.29	0.13	1,080	18.00	11.44	573.07	-0.25	0.11
1,095	18.25	10.91	573.60	0.28	0.12	1,095	18.25	11.44	573.07	-0.25	0.11
1,110	18.50	10.93	573.58	0.26	0.12	1,110	18.50	11.43	573.08	-0.24	0.11
1,125	18.75	10.93	573.58	0.26	0.12	1,125	18.75	11.42	573.09	-0.23	0.10
1,140	19.00	10.93	573.58	0.26	0.11	1,140	19.00	11.41	573.10	-0.22	0.10
1,155	19.25	10.94	573.57	0.25	0.11	1,155	19.25	11.41	573.10	-0.22	0.10
1,170	19.50	10.94	573.57	0.25	0.11	1,170	19.50	11.40	573.11	-0.21	0.09
1,185	19.75	10.95	573.56	0.24	0.10	1,185	19.75	11.40	573.11	-0.21	0.09
1,200	20.00	10.96	573.55	0.23	0.10	1,200	20.00	11.39	573.12	-0.20	0.09
1,215	20.25	10.97	573.54	0.22	0.10	1,215	20.25	11.38	573.13	-0.19	0.09
1,230	20.50	10.97	573.54	0.22	0.10	1,230	20.50	11.38	573.13	-0.19	0.08
1,245	20.75	10.97	573.54	0.22	0.09	1,245	20.75	11.37	573.14	-0.18	0.08
1,260	21.00	10.98	573.53	0.21	0.09	1,260	21.00	11.37	573.14	-0.18	0.08
1,275	21.25	10.98	573.53	0.21	0.09	1,275	21.25	11.36	573.15	-0.17	0.08
1,290	21.50	10.99	573.52	0.20	0.09	1,290	21.50	11.36	573.15	-0.17	0.07
1,305	21.75	10.99	573.52	0.20	0.09	1,305	21.75	11.35	573.16	-0.16	0.07
1,320	22.00	11.00	573.51	0.19	0.08	1,320	22.00	11.35	573.16	-0.16	0.07
1,335	22.25	11.00	573.51	0.19	0.08	1,335	22.25	11.34	573.17	-0.15	0.07
1,350	22.50	11.01	573.50	0.18	0.08	1,350	22.50	11.34	573.17	-0.15	0.07
1,365	22.75	11.01	573.50	0.18	0.08	1,365	22.75	11.33	573.18	-0.14	0.06
1,380	23.00	11.01	573.50	0.18	0.08	1,380	23.00	11.33	573.18	-0.14	0.06
1,395	23.25	11.02	573.49	0.17	0.08	1,395	23.25	11.33	573.18	-0.14	0.06
1,410	23.50	11.02	573.49	0.17	0.08	1,410	23.50	11.32	573.19	-0.13	0.06
1,425	23.75	11.03	573.48	0.16	0.07	1,425	23.75	11.32	573.19	-0.13	0.06
1,440	24.00	11.03	573.48	0.16	0.07	1,440	24.00	11.32	573.19	-0.13	0.06
1,455	24.25	11.03	573.48	0.16	0.07	1,455	24.25	11.31	573.20	-0.12	0.05
1,470	24.50	11.03	573.48	0.16	0.07	1,470	24.50	11.31	573.20	-0.12	0.05
1,485	24.75	11.04	573.47	0.15	0.07	1,485	24.75	11.30	573.21	-0.11	0.05
1,500	25.00	11.04	573.47	0.15	0.07	1,500	25.00	11.30	573.21	-0.11	0.05
1,515	25.25	11.05	573.46	0.14	0.06						
1,530	25.50	11.05	573.46	0.14	0.06						
1,545	25.75	11.05	573.46	0.14	0.06						
1,560	26.00	11.06	573.45	0.13	0.06						
1,575	26.25	11.06	573.45	0.13	0.06						
1,590	26.50	11.06	573.45	0.13	0.06						

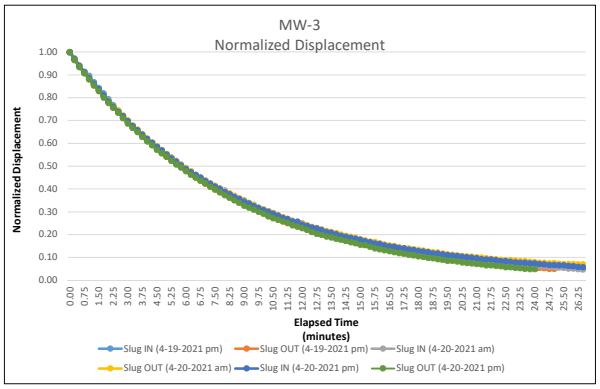
Slug Test Data
Well MW-3
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park

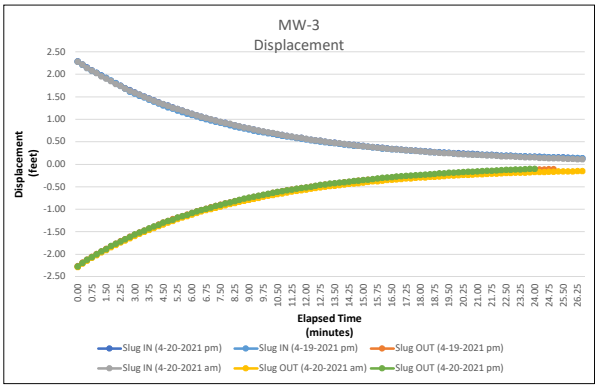
Slug IN (4-20-2021 am)						Slug OUT (4-20-2021 am)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized Displacement	Elapsed Time		DTW	GW Elev	Displacement	Normalized Displacement
Seconds	Minutes					Seconds	Minutes				
0	0.00	8.76	575.75	2.28	1.00	0	0.00	13.33	571.18	-2.29	1.00
15	0.25	8.83	575.68	2.21	0.97	15	0.25	13.25	571.26	-2.21	0.97
30	0.50	8.90	575.61	2.14	0.94	30	0.50	13.19	571.32	-2.15	0.94
45	0.75	8.96	575.55	2.08	0.91	45	0.75	13.12	571.39	-2.08	0.91
60	1.00	9.02	575.49	2.02	0.89	60	1.00	13.07	571.44	-2.03	0.88
75	1.25	9.09	575.42	1.95	0.86	75	1.25	13.00	571.51	-1.96	0.86
90	1.50	9.14	575.37	1.90	0.83	90	1.50	12.95	571.56	-1.91	0.83
105	1.75	9.20	575.31	1.84	0.81	105	1.75	12.88	571.63	-1.84	0.81
120	2.00	9.26	575.25	1.78	0.78	120	2.00	12.84	571.67	-1.80	0.78
135	2.25	9.31	575.20	1.73	0.76	135	2.25	12.78	571.73	-1.74	0.76
150	2.50	9.36	575.15	1.68	0.74	150	2.50	12.74	571.77	-1.70	0.74
165	2.75	9.41	575.10	1.63	0.71	165	2.75	12.69	571.82	-1.65	0.72
180	3.00	9.45	575.06	1.59	0.70	180	3.00	12.64	571.87	-1.60	0.70
195	3.25	9.50	575.01	1.54	0.68	195	3.25	12.59	571.92	-1.55	0.68
210	3.50	9.55	574.96	1.49	0.66	210	3.50	12.55	571.96	-1.51	0.66
225	3.75	9.59	574.92	1.45	0.64	225	3.75	12.50	572.01	-1.46	0.64
240	4.00	9.63	574.88	1.41	0.62	240	4.00	12.46	572.05	-1.42	0.62
255	4.25	9.67	574.84	1.37	0.60	255	4.25	12.42	572.09	-1.38	0.60
270	4.50	9.71	574.80	1.33	0.58	270	4.50	12.38	572.13	-1.34	0.59
285	4.75	9.75	574.76	1.29	0.57	285	4.75	12.34	572.17	-1.30	0.57
300	5.00	9.79	574.72	1.25	0.55	300	5.00	12.31	572.20	-1.27	0.55
315	5.25	9.81	574.70	1.23	0.54	315	5.25	12.27	572.24	-1.23	0.54
330	5.50	9.85	574.66	1.19	0.52	330	5.50	12.23	572.28	-1.19	0.52
345	5.75	9.89	574.62	1.15	0.51	345	5.75	12.20	572.31	-1.16	0.50
360	6.00	9.92	574.59	1.12	0.49	360	6.00	12.16	572.35	-1.12	0.49
375	6.25	9.96	574.55	1.08	0.48	375	6.25	12.13	572.38	-1.09	0.48
390	6.50	9.99	574.52	1.05	0.46	390	6.50	12.09	572.42	-1.05	0.46
405	6.75	10.02	574.49	1.02	0.45	405	6.75	12.06	572.45	-1.02	0.45
420	7.00	10.04	574.47	1.00	0.44	420	7.00	12.04	572.47	-1.00	0.44
435	7.25	10.08	574.43	0.96	0.42	435	7.25	12.01	572.50	-0.97	0.42
450	7.50	10.10	574.41	0.94	0.41	450	7.50	11.99	572.52	-0.95	0.41
465	7.75	10.13	574.38	0.91	0.40	465	7.75	11.95	572.56	-0.91	0.40
480	8.00	10.15	574.36	0.89	0.39	480	8.00	11.93	572.58	-0.89	0.39
495	8.25	10.18	574.33	0.86	0.38	495	8.25	11.91	572.60	-0.87	0.38
510	8.50	10.20	574.31	0.84	0.37	510	8.50	11.88	572.63	-0.84	0.37
525	8.75	10.23	574.28	0.81	0.36	525	8.75	11.86	572.65	-0.82	0.36
540	9.00	10.24	574.27	0.80	0.35	540	9.00	11.84	572.67	-0.80	0.35
555	9.25	10.27	574.24	0.77	0.34	555	9.25	11.81	572.70	-0.77	0.34
570	9.50	10.29	574.22	0.75	0.33	570	9.50	11.79	572.72	-0.75	0.33
585	9.75	10.32	574.19	0.72	0.32	585	9.75	11.77	572.74	-0.73	0.32
600	10.00	10.33	574.18	0.71	0.31	600	10.00	11.75	572.76	-0.71	0.31
615	10.25	10.35	574.16	0.69	0.30	615	10.25	11.73	572.78	-0.69	0.30
630	10.50	10.37	574.14	0.67	0.29	630	10.50	11.71	572.80	-0.67	0.29
645	10.75	10.39	574.12	0.65	0.28	645	10.75	11.69	572.82	-0.65	0.28
660	11.00	10.41	574.10	0.63	0.27	660	11.00	11.67	572.84	-0.63	0.27
675	11.25	10.43	574.08	0.61	0.27	675	11.25	11.65	572.86	-0.61	0.27
690	11.50	10.45	574.06	0.59	0.26	690	11.50	11.63	572.88	-0.59	0.26
705	11.75	10.46	574.05	0.58	0.25	705	11.75	11.62	572.89	-0.58	0.25
720	12.00	10.47	574.04	0.57	0.25	720	12.00	11.60	572.91	-0.56	0.25
735	12.25	10.50	574.01	0.54	0.24	735	12.25	11.59	572.92	-0.55	0.24
750	12.50	10.51	574.00	0.53	0.23	750	12.50	11.57	572.94	-0.53	0.23
765	12.75	10.52	573.99	0.52	0.23	765	12.75	11.56	572.95	-0.52	0.23
780	13.00	10.54	573.97	0.50	0.22	780	13.00	11.55	572.96	-0.51	0.22
795	13.25	10.55	573.96	0.49	0.21	795	13.25	11.53	572.98	-0.49	0.21
810	13.50	10.57	573.94	0.47	0.21	810	13.50	11.52	572.99	-0.48	0.21
825	13.75	10.58	573.93	0.46	0.20	825	13.75	11.51	573.00	-0.47	0.21
840	14.00	10.59	573.92	0.45	0.20	840	14.00	11.49	573.02	-0.45	0.20
855	14.25	10.60	573.91	0.44	0.19	855	14.25	11.48	573.03	-0.44	0.19
870	14.50	10.62	573.89	0.42	0.18	870	14.50	11.47	573.04	-0.43	0.19
885	14.75	10.63	573.88	0.41	0.18	885	14.75	11.46	573.05	-0.42	0.19
900	15.00	10.64	573.87	0.40	0.18	900	15.00	11.45	573.06	-0.41	0.18
915	15.25	10.66	573.85	0.38	0.17	915	15.25	11.44	573.07	-0.40	0.17
930	15.50	10.66	573.85	0.38	0.17	930	15.50	11.43	573.08	-0.39	0.17
945	15.75	10.68	573.83	0.36	0.16	945	15.75	11.42	573.09	-0.38	0.17
960	16.00	10.68	573.83	0.36	0.16	960	16.00	11.41	573.10	-0.37	0.16
975	16.25	10.70	573.81	0.34	0.15	975	16.25	11.40	573.11	-0.36	0.16
990	16.50	10.71	573.80	0.33	0.15	990	16.50	11.39	573.12	-0.35	0.15
1,005	16.75	10.71	573.80	0.33	0.14	1,005	16.75	11.38	573.13	-0.34	0.15
1,020	17.00	10.72	573.79	0.32	0.14	1,020	17.00	11.37	573.14	-0.33	0.14
1,035	17.25	10.73	573.78	0.31	0.14	1,035	17.25	11.36	573.15	-0.32	0.14
1,050	17.50	10.74	573.77	0.30	0.13	1,050	17.50	11.36	573.15	-0.32	0.14
1,065	17.75	10.75	573.76	0.29	0.13	1,065	17.75	11.35	573.16	-0.31	0.13
1,080	18.00	10.75	573.76	0.29	0.13	1,080	18.00	11.34	573.17	-0.30	0.13
1,095	18.25	10.76	573.75	0.28	0.12	1,095	18.25	11.34	573.17	-0.30	0.13
1,110	18.50	10.77	573.74	0.27	0.12	1,110	18.50	11.33	573.18	-0.29	0.13
1,125	18.75	10.78	573.73	0.26	0.11	1,125	18.75	11.32	573.19	-0.28	0.12
1,140	19.00	10.79	573.72	0.25	0.11	1,140	19.00	11.32	573.19	-0.28	0.12
1,155	19.25	10.79	573.72	0.25	0.11	1,155	19.25	11.31	573.20	-0.27	0.12
1,170	19.50	10.80	573.71	0.24	0.11	1,170	19.50	11.30	573.21	-0.26	0.11
1,185	19.75	10.80	573.71	0.24	0.10	1,185	19.75	11.29	573.22	-0.25	0.11
1,200	20.00	10.82	573.69	0.22	0.10	1,200	20.00	11.29	573.22	-0.25	0.11
1,215	20.25	10.82	573.69	0.22	0.10	1,215	20.25	11.28	573.23	-0.24	0.11
1,230	20.50	10.83	573.68	0.21	0.09	1,230	20.50	11.28	573.23	-0.24	0.10
1,245	20.75	10.83	573.68	0.21	0.09	1,245	20.75	11.27	573.24	-0.23	0.10
1,260	21.00	10.83	573.68	0.21	0.09	1,260	21.00	11.27	573.24	-0.23	0.10
1,275	21.25	10.84	573.67	0.20	0.09	1,275	21.25	11.26	573.25	-0.22	0.10
1,290	21.50	10.85	573.66	0.19	0.08	1,290	21.50	11.26	573.25	-0.22	0.10
1,305	21.75	10.85	573.66	0.19	0.08	1,305	21.75	11.25	573.26	-0.21	0.09
1,320	22.00	10.86	573.65	0.18	0.08	1,320	22.00	11.25	573.26	-0.21	0.09
1,335	22.25	10.87	573.64	0.17	0.08	1,335	22.25	11.24	573.27	-0.20	0.09
1,350	22.50	10.87	573.64	0.17	0.08	1,350	22.50	11.24	573.27	-0.20	0.09
1,365	22.75	10.87	573.64	0.17	0.07	1,365	22.75	11.24	573.27	-0.20	0.09
1,380	23.00	10.88	573.63	0.16	0.07	1,380	23.00	11.23	573.28	-0.19	0.08
1,395	23.25	10.88	573.63	0.16	0.07	1,395	23.25	11.23	573.28	-0.19	0.08
1,410	23.50	10.89	573.62	0.15	0.07	1,410	23.50	11.23	573.28	-0.19	0.08
1,425	23.75	10.89	573.62	0.15	0.06	1,425	23.75	11.22	573.29	-0.18	0.08
1,440	24.00	10.89	573.62	0.15	0.06	1,440	24.00	11.22	573.29	-0.18	0.08
1,455	24.25	10.90	573.61	0.14	0.06	1,455	24.25	11.21	573.30	-0.17	0.08
1,470	24.50	10.90	573.61	0.14	0.06	1,470	24.50	11.21	573.30	-0.17	0.08
1,485	24.75	10.91	573.60	0.13	0.06	1,485	24.75	11.21	573.30	-0.17	0.07
1,500	25.00	10.91	573.60	0.13	0.06	1,500	25.00	11.21	573.30	-0.17	0.07
1,515	25.25	10.91	573.60	0.13	0.06	1,515	25.25	11.21	573.30	-0.17	0.07
1,530	25.50	10.92	573.59	0.12	0.05	1,530	25.50	11.20	573.31	-0.16	0.07
1,545	25.75	10.92	573.59	0.12	0.05	1,545	25.75	11.20	573.31	-0.16	0.07
1,560	26.00	10.92	573.59	0.12	0.05	1,560	26.00	11.20	573.31	-0.16	0.07
1,575	26.25	10.93	573.58	0.11	0.05	1,575	26.25	11.20	573.31	-0.16	0.07
1,590	26.50	10.93	573.58	0.11	0.05	1,590	26.50	11.20	573.31	-0.16	0.07

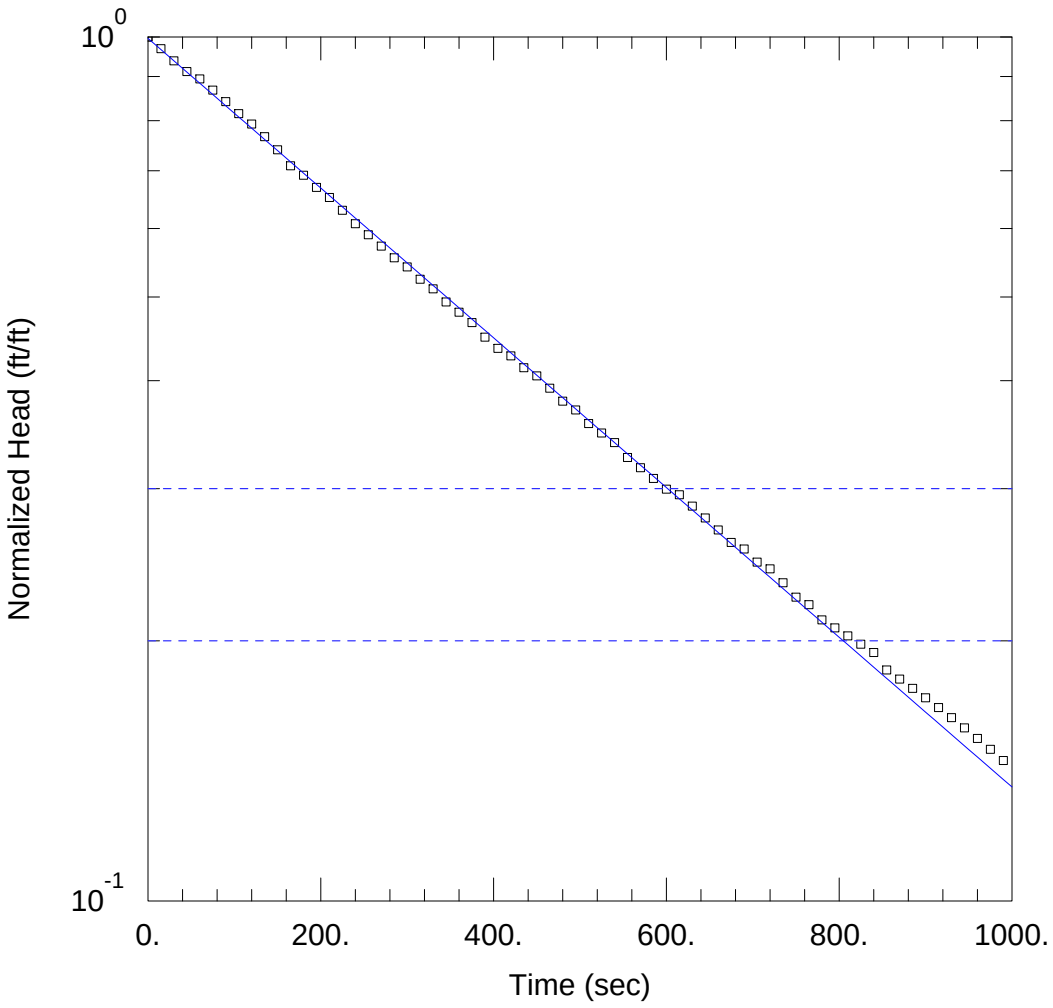
Slug Test Data
Well MW-3
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park

Slug IN (4-20-2021 pm)						Slug OUT (4-20-2021 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized	Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement	Seconds	Minutes				Displacement
0	0.00	8.85	575.66	2.29	1.00	0	0.00	13.42	571.09	-2.28	1.00
15	0.25	8.93	575.58	2.21	0.97	15	0.25	13.34	571.17	-2.20	0.96
30	0.50	8.99	575.52	2.15	0.94	30	0.50	13.27	571.24	-2.13	0.93
45	0.75	9.05	575.46	2.09	0.91	45	0.75	13.21	571.30	-2.07	0.91
60	1.00	9.11	575.40	2.03	0.88	60	1.00	13.14	571.37	-2.00	0.88
75	1.25	9.17	575.34	1.97	0.86	75	1.25	13.08	571.43	-1.94	0.85
90	1.50	9.23	575.28	1.91	0.84	90	1.50	13.03	571.48	-1.89	0.83
105	1.75	9.29	575.22	1.85	0.81	105	1.75	12.96	571.55	-1.82	0.80
120	2.00	9.35	575.16	1.79	0.78	120	2.00	12.91	571.60	-1.77	0.78
135	2.25	9.40	575.11	1.74	0.76	135	2.25	12.86	571.65	-1.72	0.76
150	2.50	9.45	575.06	1.69	0.74	150	2.50	12.81	571.70	-1.67	0.73
165	2.75	9.50	575.01	1.64	0.72	165	2.75	12.76	571.75	-1.62	0.71
180	3.00	9.55	574.96	1.59	0.69	180	3.00	12.70	571.81	-1.56	0.69
195	3.25	9.60	574.91	1.54	0.67	195	3.25	12.66	571.85	-1.52	0.67
210	3.50	9.64	574.87	1.50	0.66	210	3.50	12.62	571.89	-1.48	0.65
225	3.75	9.68	574.83	1.46	0.64	225	3.75	12.57	571.94	-1.43	0.63
240	4.00	9.72	574.79	1.42	0.62	240	4.00	12.53	571.98	-1.39	0.61
255	4.25	9.76	574.75	1.38	0.60	255	4.25	12.49	572.02	-1.35	0.59
270	4.50	9.81	574.70	1.33	0.58	270	4.50	12.44	572.07	-1.30	0.57
285	4.75	9.84	574.67	1.30	0.57	285	4.75	12.41	572.10	-1.27	0.56
300	5.00	9.88	574.63	1.26	0.55	300	5.00	12.37	572.14	-1.23	0.54
315	5.25	9.92	574.59	1.22	0.53	315	5.25	12.33	572.18	-1.19	0.52
330	5.50	9.95	574.56	1.19	0.52	330	5.50	12.30	572.21	-1.16	0.51
345	5.75	9.99	574.52	1.15	0.50	345	5.75	12.27	572.24	-1.13	0.49
360	6.00	10.03	574.48	1.11	0.49	360	6.00	12.23	572.28	-1.09	0.48
375	6.25	10.06	574.45	1.08	0.47	375	6.25	12.19	572.32	-1.05	0.46
390	6.50	10.09	574.42	1.05	0.46	390	6.50	12.16	572.35	-1.02	0.45
405	6.75	10.11	574.40	1.03	0.45	405	6.75	12.13	572.38	-0.99	0.44
420	7.00	10.15	574.36	0.99	0.43	420	7.00	12.11	572.40	-0.97	0.42
435	7.25	10.17	574.34	0.97	0.42	435	7.25	12.07	572.44	-0.93	0.41
450	7.50	10.20	574.31	0.94	0.41	450	7.50	12.05	572.46	-0.91	0.40
465	7.75	10.23	574.28	0.91	0.40	465	7.75	12.02	572.49	-0.88	0.38
480	8.00	10.26	574.25	0.88	0.39	480	8.00	11.99	572.52	-0.85	0.37
495	8.25	10.28	574.23	0.86	0.38	495	8.25	11.96	572.55	-0.82	0.36
510	8.50	10.31	574.20	0.83	0.36	510	8.50	11.94	572.57	-0.80	0.35
525	8.75	10.33	574.18	0.81	0.36	525	8.75	11.91	572.60	-0.77	0.34
540	9.00	10.35	574.16	0.79	0.34	540	9.00	11.88	572.63	-0.74	0.33
555	9.25	10.37	574.14	0.77	0.34	555	9.25	11.86	572.65	-0.72	0.32
570	9.50	10.40	574.11	0.74	0.32	570	9.50	11.84	572.67	-0.70	0.31
585	9.75	10.42	574.09	0.72	0.32	585	9.75	11.82	572.69	-0.68	0.30
600	10.00	10.44	574.07	0.70	0.31	600	10.00	11.80	572.71	-0.66	0.29
615	10.25	10.45	574.06	0.69	0.30	615	10.25	11.78	572.73	-0.64	0.28
630	10.50	10.48	574.03	0.66	0.29	630	10.50	11.76	572.75	-0.62	0.27
645	10.75	10.50	574.01	0.64	0.28	645	10.75	11.74	572.77	-0.60	0.26
660	11.00	10.52	573.99	0.62	0.27	660	11.00	11.73	572.78	-0.59	0.26
675	11.25	10.53	573.98	0.61	0.27	675	11.25	11.71	572.80	-0.57	0.25
690	11.50	10.55	573.96	0.59	0.26	690	11.50	11.69	572.82	-0.55	0.24
705	11.75	10.56	573.95	0.58	0.25	705	11.75	11.68	572.83	-0.54	0.23
720	12.00	10.58	573.93	0.56	0.24	720	12.00	11.66	572.85	-0.52	0.23
735	12.25	10.60	573.91	0.54	0.24	735	12.25	11.64	572.87	-0.50	0.22
750	12.50	10.61	573.90	0.53	0.23	750	12.50	11.62	572.89	-0.48	0.21
765	12.75	10.62	573.89	0.52	0.23	765	12.75	11.60	572.91	-0.46	0.20
780	13.00	10.64	573.87	0.50	0.22	780	13.00	11.59	572.92	-0.45	0.20
795	13.25	10.66	573.85	0.48	0.21	795	13.25	11.58	572.93	-0.44	0.19
810	13.50	10.67	573.84	0.47	0.21	810	13.50	11.57	572.94	-0.43	0.19
825	13.75	10.68	573.83	0.46	0.20	825	13.75	11.55	572.96	-0.41	0.18
840	14.00	10.70	573.81	0.44	0.19	840	14.00	11.55	572.96	-0.41	0.18
855	14.25	10.71	573.80	0.43	0.19	855	14.25	11.53	572.98	-0.39	0.17
870	14.50	10.72	573.79	0.42	0.19	870	14.50	11.52	572.99	-0.38	0.17
885	14.75	10.73	573.78	0.41	0.18	885	14.75	11.51	573.00	-0.37	0.16
900	15.00	10.74	573.77	0.40	0.18	900	15.00	11.49	573.02	-0.35	0.16
915	15.25	10.75	573.76	0.39	0.17	915	15.25	11.49	573.02	-0.35	0.15
930	15.50	10.76	573.75	0.38	0.17	930	15.50	11.47	573.04	-0.33	0.15
945	15.75	10.77	573.74	0.37	0.16	945	15.75	11.46	573.05	-0.32	0.14
960	16.00	10.78	573.73	0.36	0.16	960	16.00	11.45	573.06	-0.31	0.14
975	16.25	10.79	573.72	0.35	0.15	975	16.25	11.44	573.07	-0.30	0.13
990	16.50	10.80	573.71	0.34	0.15	990	16.50	11.43	573.08	-0.29	0.13
1,005	16.75	10.81	573.70	0.33	0.15	1,005	16.75	11.42	573.09	-0.28	0.12
1,020	17.00	10.82	573.69	0.32	0.14	1,020	17.00	11.41	573.10	-0.27	0.12
1,035	17.25	10.82	573.69	0.32	0.14	1,035	17.25	11.40	573.11	-0.26	0.12
1,050	17.50	10.83	573.68	0.31	0.13	1,050	17.50	11.39	573.12	-0.25	0.11
1,065	17.75	10.84	573.67	0.30	0.13	1,065	17.75	11.39	573.12	-0.25	0.11
1,080	18.00	10.85	573.66	0.29	0.13	1,080	18.00	11.38	573.13	-0.24	0.10
1,095	18.25	10.85	573.66	0.29	0.13	1,095	18.25	11.37	573.14	-0.23	0.10
1,110	18.50	10.86	573.65	0.28	0.12	1,110	18.50	11.36	573.15	-0.22	0.10
1,125	18.75	10.87	573.64	0.27	0.12	1,125	18.75	11.36	573.15	-0.22	0.10
1,140	19.00	10.87	573.64	0.27	0.12	1,140	19.00	11.35	573.16	-0.21	0.09
1,155	19.25	10.88	573.63	0.26	0.11	1,155	19.25	11.34	573.17	-0.20	0.09
1,170	19.50	10.89	573.62	0.25	0.11	1,170	19.50	11.33	573.18	-0.19	0.08
1,185	19.75	10.90	573.61	0.24	0.11	1,185	19.75	11.33	573.18	-0.19	0.08
1,200	20.00	10.90	573.61	0.24	0.11	1,200	20.00	11.33	573.18	-0.19	0.08
1,215	20.25	10.91	573.60	0.23	0.10	1,215	20.25	11.32	573.19	-0.18	0.08
1,230	20.50	10.91	573.60	0.23	0.10	1,230	20.50	11.31	573.20	-0.17	0.08
1,245	20.75	10.91	573.60	0.23	0.10	1,245	20.75	11.31	573.20	-0.17	0.07
1,260	21.00	10.92	573.59	0.22	0.10	1,260	21.00	11.30	573.21	-0.16	0.07
1,275	21.25	10.93	573.58	0.21	0.09	1,275	21.25	11.30	573.21	-0.16	0.07
1,290	21.50	10.94	573.57	0.20	0.09	1,290	21.50	11.29	573.22	-0.15	0.06
1,305	21.75	10.94	573.57	0.20	0.09	1,305	21.75	11.29	573.22	-0.15	0.07
1,320	22.00	10.94	573.57	0.20	0.09	1,320	22.00	11.28	573.23	-0.14	0.06
1,335	22.25	10.95	573.56	0.19	0.08	1,335	22.25	11.28	573.23	-0.14	0.06
1,350	22.50	10.95	573.56	0.19	0.08	1,350	22.50	11.27	573.24	-0.13	0.06
1,365	22.75	10.96	573.55	0.18	0.08	1,365	22.75	11.27	573.24	-0.13	0.06
1,380	23.00	10.96	573.55	0.18	0.08	1,380	23.00	11.26	573.25	-0.12	0.05
1,395	23.25	10.97	573.54	0.17	0.08	1,395	23.25	11.26	573.25	-0.12	0.05
1,410	23.50	10.97	573.54	0.17	0.08	1,410	23.50	11.25	573.26	-0.11	0.05
1,425	23.75	10.97	573.54	0.17	0.07	1,425	23.75	11.25	573.26	-0.11	0.05
1,440	24.00	10.97	573.54	0.17	0.07	1,440	24.00	11.25	573.26	-0.11	0.05
1,455	24.25	10.98	573.53	0.16	0.07						
1,470	24.50	10.98	573.53	0.16	0.07						
1,485	24.75	10.99	573.52	0.15	0.07						
1,500	25.00	10.99	573.52	0.15	0.07						
1,515	25.25	10.99	573.52	0.15	0.06						
1,530	25.50	10.99	573.52	0.15	0.06						
1,545	25.75	11.00	573.51	0.14	0.06						
1,560	26.00	11.00	573.51	0.14	0.06						
1,575	26.25	11.01	573.50	0.13	0.06						
1,590	26.50	11.01	573.50	0.13	0.06						

Slug Test Data
Well MW-3
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park







TEST 1, SLUG IN

Data Set: C:\...\MW-3 T-1 SLUG IN.aqt
Date: 05/05/21 Time: 14:05:57

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-3
Test Date: April 19, 2021

AQUIFER DATA

Saturated Thickness: 15.5 ft Anisotropy Ratio (Kz/Kr): 1.

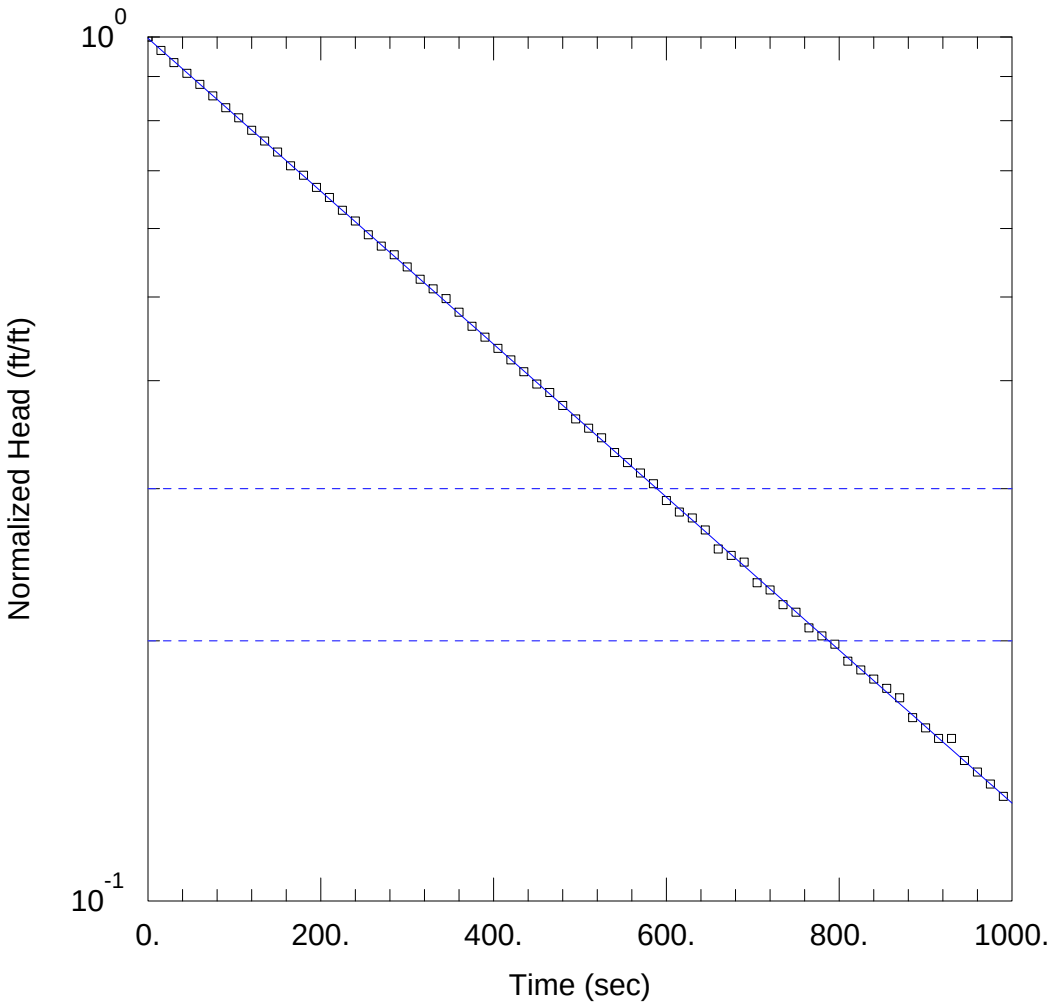
WELL DATA (MW-3 T-1 SLUG IN)

Initial Displacement: 2.27 ft
Total Well Penetration Depth: 10.44 ft
Casing Radius: 0.166 ft
Static Water Column Height: 10.44 ft
Screen Length: 10.44 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004348 cm/sec y0 = 2.261 ft



TEST 1, SLUG OUT

Data Set: C:\...\MW-3 T-1 SLUG OUT.aqt
Date: 05/05/21 Time: 14:05:11

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-3
Test Date: April 19, 2021

AQUIFER DATA

Saturated Thickness: 15.5 ft Anisotropy Ratio (Kz/Kr): 1.

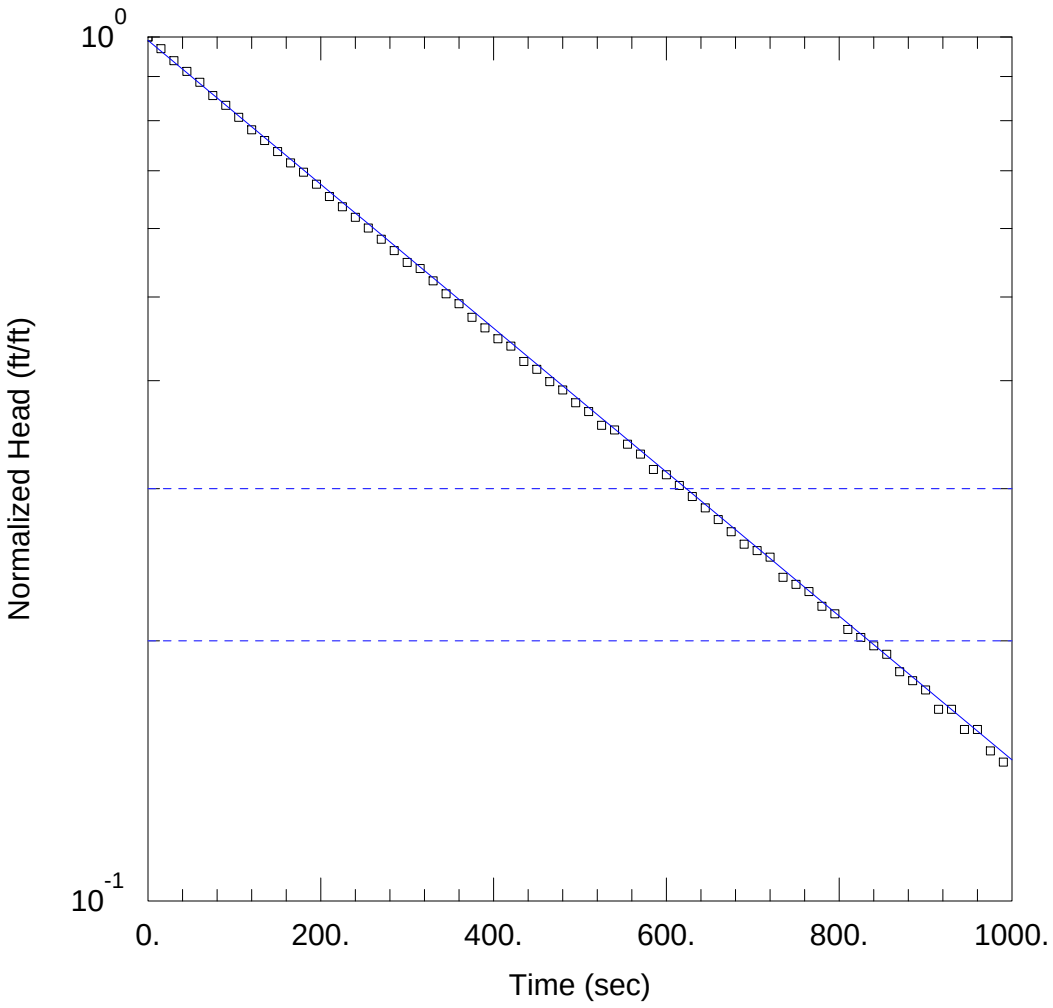
WELL DATA (MW-3 T-1 SLUG OUT)

Initial Displacement: 2.27 ft
Total Well Penetration Depth: 10.44 ft
Casing Radius: 0.166 ft
Static Water Column Height: 10.44 ft
Screen Length: 10.44 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004441 cm/sec y0 = 2.262 ft



TEST 2, SLUG IN

Data Set: C:\...\MW-3 T-2 SLUG IN.aqt
Date: 05/05/21 Time: 14:04:26

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-3
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 15.5 ft Anisotropy Ratio (Kz/Kr): 1.

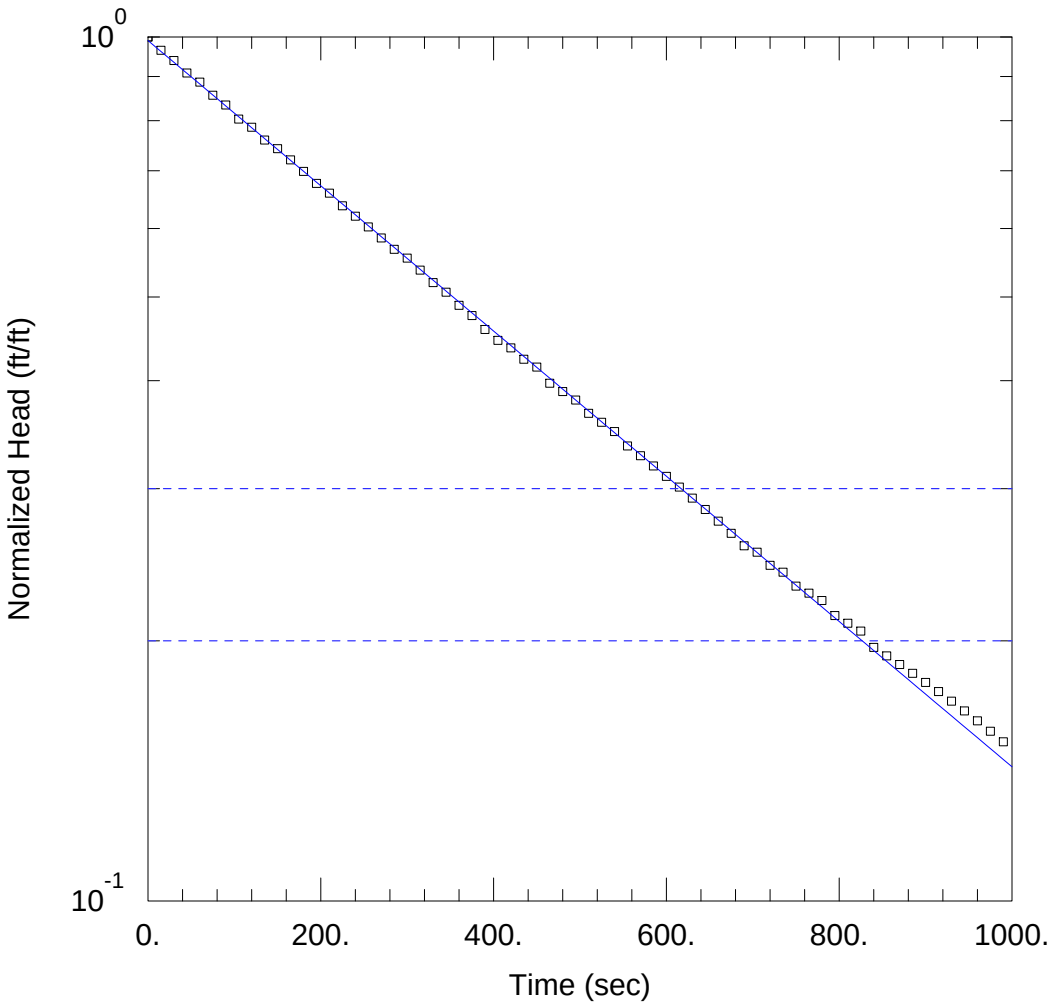
WELL DATA (MW-3 T-2 SLUG IN)

Initial Displacement: 2.28 ft
Total Well Penetration Depth: 10.59 ft
Casing Radius: 0.166 ft
Static Water Column Height: 10.59 ft
Screen Length: 10.59 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004146 cm/sec y0 = 2.259 ft



TEST 2, SLUG OUT

Data Set: C:\...\MW-3 T-2 SLUG OUT.aqt
Date: 05/05/21 Time: 14:03:57

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-3
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 15.5 ft Anisotropy Ratio (Kz/Kr): 1.

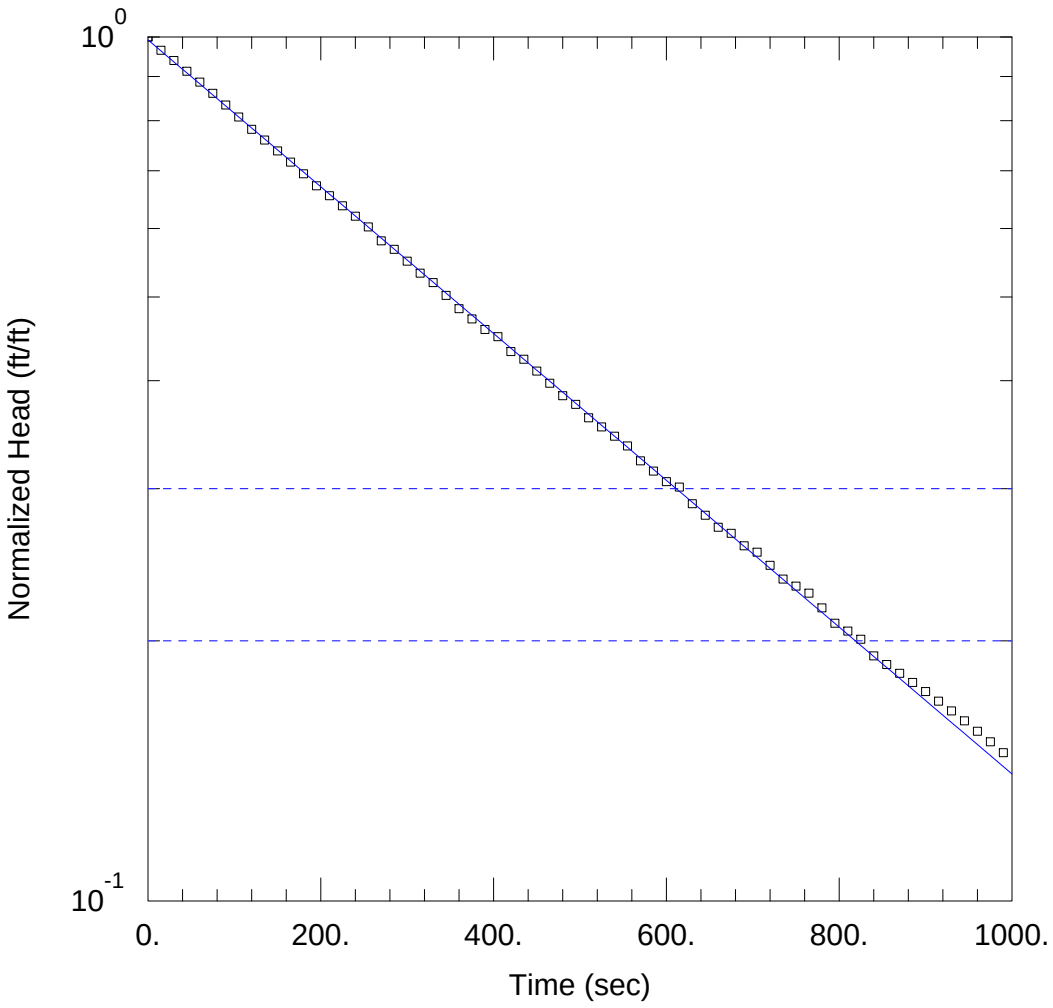
WELL DATA (MW-3 T-2 SLUG OUT)

Initial Displacement: 2.29 ft
Total Well Penetration Depth: 10.6 ft
Casing Radius: 0.166 ft
Static Water Column Height: 10.6 ft
Screen Length: 10.6 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004183 cm/sec y0 = 2.268 ft



TEST 3, SLUG IN

Data Set: C:\...\MW-3 T-3 SLUG IN.aqt
Date: 05/05/21 Time: 14:03:20

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-3
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 15.5 ft Anisotropy Ratio (Kz/Kr): 1.

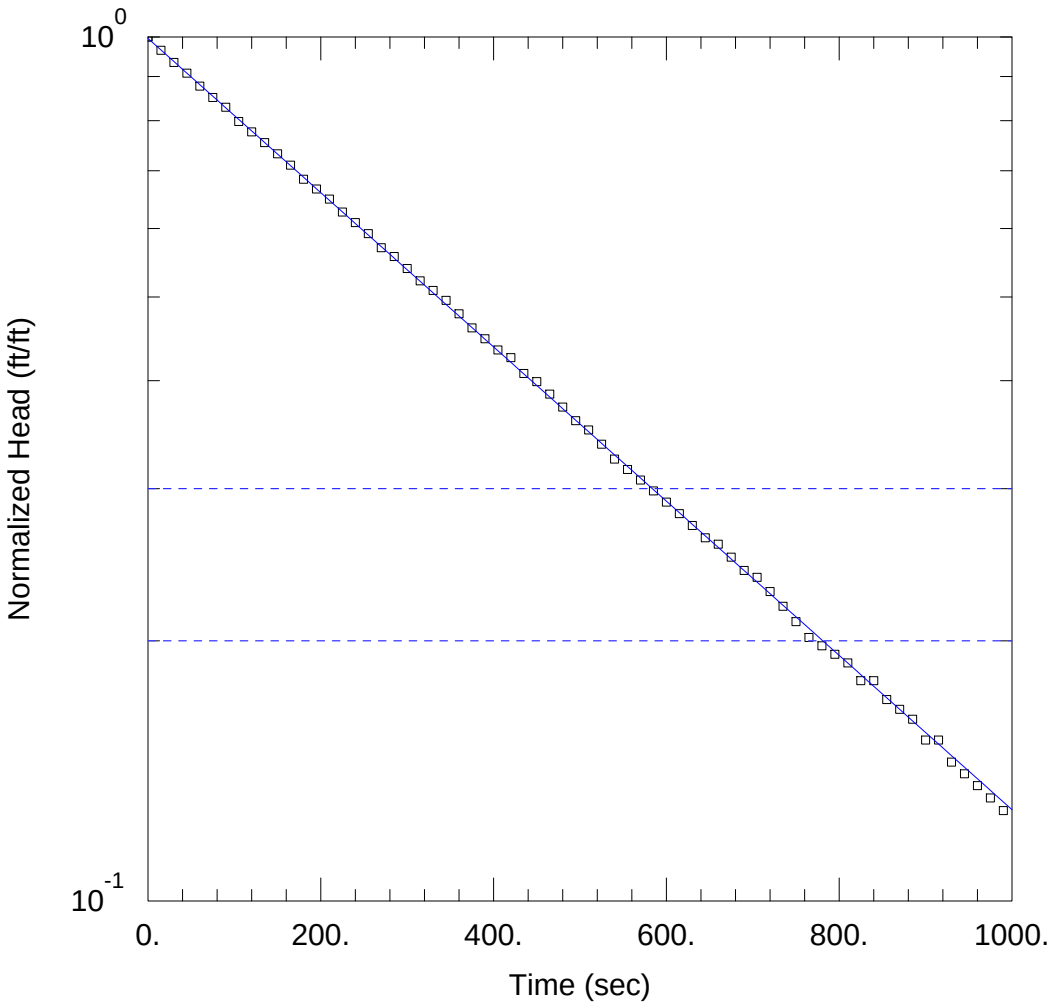
WELL DATA (MW-3 T-3 SLUG IN)

Initial Displacement: 2.29 ft
Total Well Penetration Depth: 10.6 ft
Casing Radius: 0.166 ft
Static Water Column Height: 10.6 ft
Screen Length: 10.6 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004228 cm/sec y0 = 2.272 ft



TEST 3, SLUG OUT

Data Set: C:\...\MW-3 T-3 SLUG OUT.aqt
Date: 05/05/21 Time: 14:02:32

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-3
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 15.5 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-3 T-3 SLUG OUT)

Initial Displacement: 2.28 ft
Total Well Penetration Depth: 10.59 ft
Casing Radius: 0.166 ft
Static Water Column Height: 10.59 ft
Screen Length: 10.59 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004445 cm/sec y0 = 2.271 ft

Slug Test Data
Well MW-24
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park

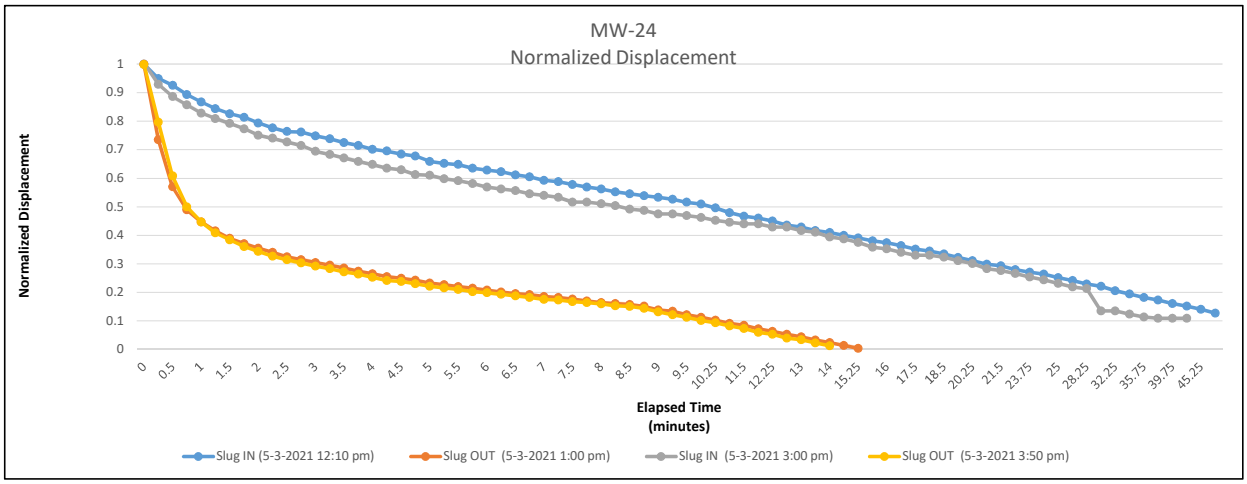
Slug IN (5-3-2021 12:10 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized Displacement
Seconds	Minutes				
0	0.00	12.41	-12.41	0.88	1.00
15	0.25	12.45	-12.45	0.84	0.95
30	0.50	12.48	-12.48	0.81	0.93
45	0.75	12.50	-12.50	0.79	0.89
60	1.00	12.53	-12.53	0.76	0.87
75	1.25	12.55	-12.55	0.74	0.84
90	1.50	12.56	-12.56	0.73	0.83
105	1.75	12.57	-12.57	0.72	0.81
120	2.00	12.59	-12.59	0.70	0.79
135	2.25	12.61	-12.61	0.68	0.78
150	2.50	12.62	-12.62	0.67	0.76
165	2.75	12.62	-12.62	0.67	0.76
180	3.00	12.63	-12.63	0.66	0.75
195	3.25	12.64	-12.64	0.65	0.74
210	3.50	12.65	-12.65	0.64	0.73
225	3.75	12.66	-12.66	0.63	0.71
240	4.00	12.67	-12.67	0.62	0.70
255	4.25	12.68	-12.68	0.61	0.70
270	4.50	12.69	-12.69	0.60	0.68
285	4.75	12.69	-12.69	0.60	0.68
300	5.00	12.71	-12.71	0.58	0.66
315	5.25	12.72	-12.72	0.57	0.65
330	5.50	12.72	-12.72	0.57	0.65
345	5.75	12.73	-12.73	0.56	0.64
360	6.00	12.74	-12.74	0.55	0.63
375	6.25	12.74	-12.74	0.55	0.62
390	6.50	12.75	-12.75	0.54	0.61
405	6.75	12.76	-12.76	0.53	0.61
420	7.00	12.77	-12.77	0.52	0.59
435	7.25	12.77	-12.77	0.52	0.59
450	7.50	12.78	-12.78	0.51	0.58
465	7.75	12.79	-12.79	0.50	0.57
480	8.00	12.79	-12.79	0.50	0.56
495	8.25	12.80	-12.80	0.49	0.55
510	8.50	12.81	-12.81	0.48	0.55
525	8.75	12.82	-12.82	0.47	0.54
540	9.00	12.82	-12.82	0.47	0.53
555	9.25	12.83	-12.83	0.46	0.53
570	9.50	12.84	-12.84	0.45	0.52
585	9.75	12.84	-12.84	0.45	0.51
615	10.25	12.85	-12.85	0.44	0.50
660	11.00	12.87	-12.87	0.42	0.48
690	11.50	12.88	-12.88	0.41	0.47
705	11.75	12.88	-12.88	0.41	0.46
735	12.25	12.89	-12.89	0.40	0.45
765	12.75	12.91	-12.91	0.38	0.44
780	13.00	12.91	-12.91	0.38	0.43
810	13.50	12.92	-12.92	0.37	0.42
840	14.00	12.93	-12.93	0.36	0.41
870	14.50	12.94	-12.94	0.35	0.40
915	15.25	12.95	-12.95	0.34	0.39
930	15.50	12.96	-12.96	0.33	0.38
960	16.00	12.96	-12.96	0.33	0.37
1,005	16.75	12.97	-12.97	0.32	0.36
1,050	17.50	12.98	-12.98	0.31	0.35
1,065	17.75	12.99	-12.99	0.30	0.34
1,110	18.50	13.00	-13.00	0.29	0.33
1,155	19.25	13.01	-13.01	0.28	0.32
1,215	20.25	13.02	-13.02	0.27	0.31
1,260	21.00	13.03	-13.03	0.26	0.30
1,290	21.50	13.03	-13.03	0.26	0.29
1,335	22.25	13.04	-13.04	0.25	0.28
1,425	23.75	13.05	-13.05	0.24	0.27
1,440	24.00	13.06	-13.06	0.23	0.26
1,500	25.00	13.07	-13.07	0.22	0.25
1,605	26.75	13.08	-13.08	0.21	0.24
1,695	28.25	13.09	-13.09	0.20	0.23
1,740	29.00	13.09	-13.09	0.20	0.22
1,935	32.25	13.11	-13.11	0.18	0.21
2,040	34.00	13.12	-13.12	0.17	0.19
2,145	35.75	13.13	-13.13	0.16	0.18
2,295	38.25	13.14	-13.14	0.15	0.17
2,385	39.75	13.15	-13.15	0.14	0.16
2,565	42.75	13.16	-13.16	0.13	0.15
2,715	45.25	13.17	-13.17	0.12	0.14
2,880	48.00	13.18	-13.18	0.11	0.13

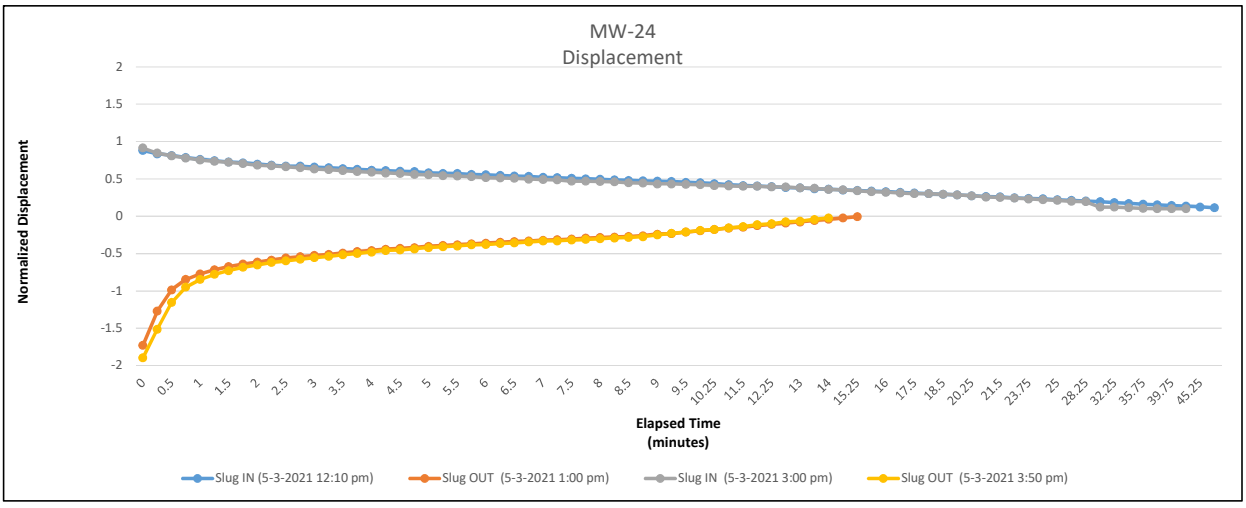
Slug OUT (5-3-2021 1:00 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized Displacement
Seconds	Minutes				
0	0.00	15.08	-15.08	-1.73	1.00
15	0.25	14.62	-14.62	-1.27	0.74
30	0.50	14.34	-14.34	-0.99	0.57
45	0.75	14.20	-14.20	-0.85	0.49
60	1.00	14.12	-14.12	-0.77	0.45
75	1.25	14.07	-14.07	-0.72	0.42
90	1.50	14.02	-14.02	-0.67	0.39
105	1.75	13.99	-13.99	-0.64	0.37
120	2.00	13.96	-13.96	-0.61	0.36
135	2.25	13.94	-13.94	-0.59	0.34
150	2.50	13.91	-13.91	-0.56	0.32
165	2.75	13.89	-13.89	-0.54	0.31
180	3.00	13.88	-13.88	-0.53	0.30
195	3.25	13.86	-13.86	-0.51	0.30
210	3.50	13.84	-13.84	-0.49	0.29
225	3.75	13.82	-13.82	-0.47	0.27
240	4.00	13.81	-13.81	-0.46	0.27
255	4.25	13.79	-13.79	-0.44	0.26
270	4.50	13.78	-13.78	-0.43	0.25
285	4.75	13.77	-13.77	-0.42	0.24
300	5.00	13.75	-13.75	-0.40	0.23
315	5.25	13.74	-13.74	-0.39	0.23
330	5.50	13.73	-13.73	-0.38	0.22
345	5.75	13.72	-13.72	-0.37	0.22
360	6.00	13.71	-13.71	-0.36	0.21
375	6.25	13.70	-13.70	-0.35	0.20
390	6.50	13.69	-13.69	-0.34	0.20
405	6.75	13.68	-13.68	-0.33	0.19
420	7.00	13.67	-13.67	-0.32	0.19
435	7.25	13.67	-13.67	-0.32	0.18
450	7.50	13.66	-13.66	-0.31	0.18
465	7.75	13.65	-13.65	-0.30	0.17
480	8.00	13.64	-13.64	-0.29	0.16
495	8.25	13.63	-13.63	-0.28	0.16
510	8.50	13.62	-13.62	-0.27	0.16
525	8.75	13.61	-13.61	-0.26	0.15
570	9.50	13.59	-13.59	-0.24	0.14
600	10.00	13.58	-13.58	-0.23	0.13
660	11.00	13.56	-13.56	-0.21	0.12
705	11.75	13.55	-13.55	-0.20	0.11
750	12.50	13.53	-13.53	-0.18	0.10
795	13.25	13.51	-13.51	-0.16	0.09
855	14.25	13.50	-13.50	-0.15	0.08
915	15.25	13.48	-13.48	-0.13	0.07
1,005	16.75	13.46	-13.46	-0.11	0.06
1,110	18.50	13.44	-13.44	-0.09	0.05
1,185	19.75	13.43	-13.43	-0.08	0.04
1,320	22.00	13.41	-13.41	-0.06	0.03
1,455	24.25	13.39	-13.39	-0.04	0.02
1,575	26.25	13.37	-13.37	-0.02	0.01
1,755	29.25	13.36	-13.36	-0.01	0.00

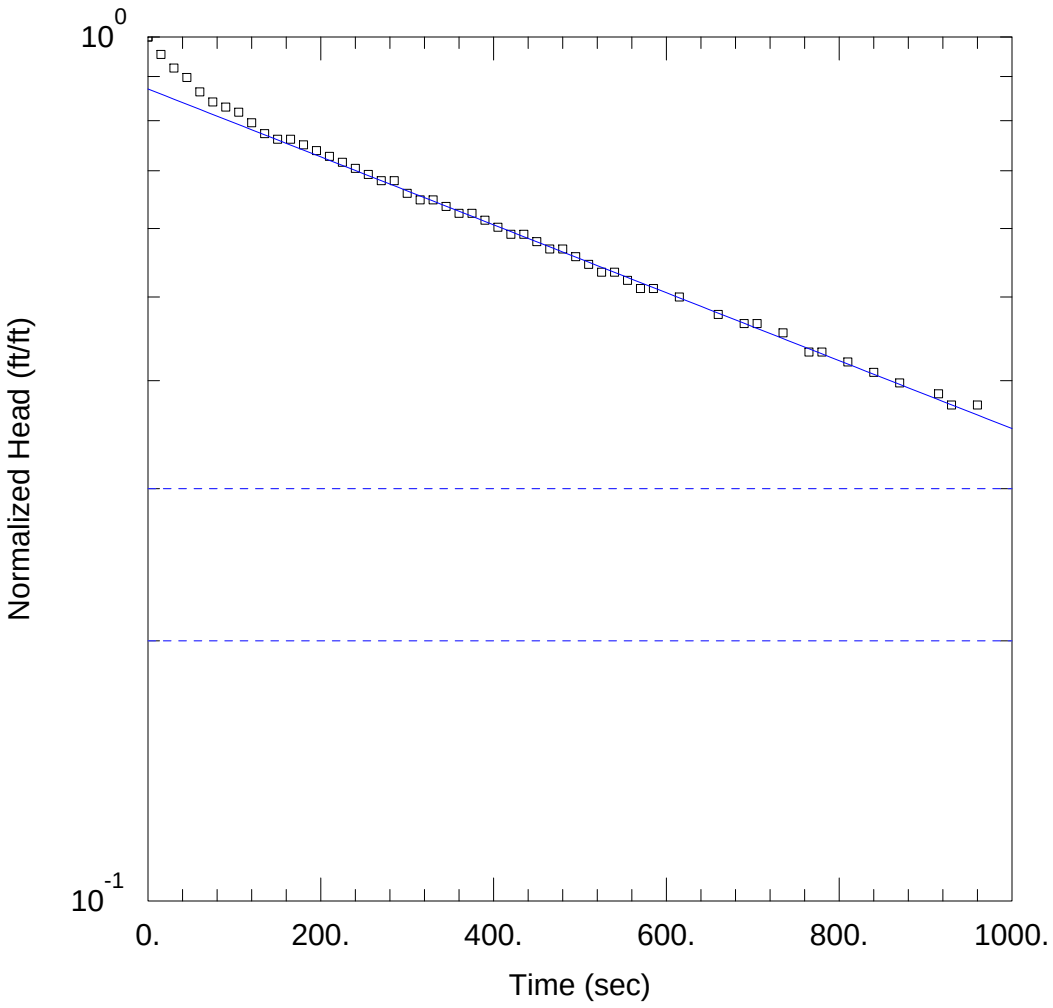
Slug Test Data
Well MW-24
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park

Slug IN (5-3-2021 3:00 pm)						Slug OUT (5-3-2021 3:50 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized	Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement	Seconds	Minutes				Displacement
0	0.00	12.36	-12.36	0.91	1.00	0	0.00	15.24	-15.24	-1.90	1.00
15	0.25	12.42	-12.42	0.85	0.93	15	0.25	14.85	-14.85	-1.51	0.80
30	0.50	12.46	-12.46	0.81	0.89	30	0.50	14.49	-14.49	-1.15	0.61
45	0.75	12.49	-12.49	0.78	0.86	45	0.75	14.29	-14.29	-0.95	0.50
60	1.00	12.52	-12.52	0.75	0.83	60	1.00	14.19	-14.19	-0.85	0.45
75	1.25	12.53	-12.53	0.74	0.81	75	1.25	14.12	-14.12	-0.78	0.41
90	1.50	12.55	-12.55	0.72	0.79	90	1.50	14.07	-14.07	-0.73	0.38
105	1.75	12.57	-12.57	0.70	0.77	105	1.75	14.03	-14.03	-0.69	0.36
120	2.00	12.59	-12.59	0.68	0.75	120	2.00	13.99	-13.99	-0.65	0.34
135	2.25	12.60	-12.60	0.67	0.74	135	2.25	13.96	-13.96	-0.62	0.33
150	2.50	12.61	-12.61	0.66	0.73	150	2.50	13.94	-13.94	-0.60	0.31
165	2.75	12.62	-12.62	0.65	0.72	165	2.75	13.92	-13.92	-0.58	0.30
180	3.00	12.64	-12.64	0.63	0.69	180	3.00	13.90	-13.90	-0.56	0.29
195	3.25	12.65	-12.65	0.62	0.68	195	3.25	13.88	-13.88	-0.54	0.28
210	3.50	12.66	-12.66	0.61	0.67	210	3.50	13.86	-13.86	-0.52	0.27
225	3.75	12.67	-12.67	0.60	0.66	225	3.75	13.84	-13.84	-0.50	0.26
240	4.00	12.68	-12.68	0.59	0.65	240	4.00	13.82	-13.82	-0.48	0.25
255	4.25	12.69	-12.69	0.58	0.64	255	4.25	13.80	-13.80	-0.46	0.24
270	4.50	12.70	-12.70	0.57	0.63	270	4.50	13.79	-13.79	-0.45	0.24
285	4.75	12.71	-12.71	0.56	0.61	285	4.75	13.78	-13.78	-0.44	0.23
300	5.00	12.71	-12.71	0.56	0.61	300	5.00	13.76	-13.76	-0.42	0.22
315	5.25	12.73	-12.73	0.54	0.60	315	5.25	13.75	-13.75	-0.41	0.22
330	5.50	12.73	-12.73	0.54	0.59	330	5.50	13.74	-13.74	-0.40	0.21
345	5.75	12.74	-12.74	0.53	0.58	345	5.75	13.72	-13.72	-0.38	0.20
360	6.00	12.75	-12.75	0.52	0.57	360	6.00	13.72	-13.72	-0.38	0.20
375	6.25	12.76	-12.76	0.51	0.56	375	6.25	13.71	-13.71	-0.37	0.19
390	6.50	12.76	-12.76	0.51	0.56	390	6.50	13.70	-13.70	-0.36	0.19
405	6.75	12.77	-12.77	0.50	0.55	405	6.75	13.69	-13.69	-0.35	0.18
420	7.00	12.78	-12.78	0.49	0.54	420	7.00	13.67	-13.67	-0.33	0.18
435	7.25	12.78	-12.78	0.49	0.53	435	7.25	13.67	-13.67	-0.33	0.17
450	7.50	12.80	-12.80	0.47	0.52	450	7.50	13.66	-13.66	-0.32	0.17
465	7.75	12.80	-12.80	0.47	0.52	465	7.75	13.65	-13.65	-0.31	0.16
480	8.00	12.81	-12.81	0.46	0.51	480	8.00	13.64	-13.64	-0.30	0.16
495	8.25	12.81	-12.81	0.46	0.50	495	8.25	13.63	-13.63	-0.29	0.15
510	8.50	12.82	-12.82	0.45	0.49	510	8.50	13.63	-13.63	-0.29	0.15
525	8.75	12.83	-12.83	0.44	0.49	540	9.00	13.61	-13.61	-0.27	0.14
540	9.00	12.84	-12.84	0.43	0.48	585	9.75	13.59	-13.59	-0.25	0.13
555	9.25	12.84	-12.84	0.43	0.48	630	10.50	13.57	-13.57	-0.23	0.12
570	9.50	12.84	-12.84	0.43	0.47	675	11.25	13.55	-13.55	-0.21	0.11
585	9.75	12.85	-12.85	0.42	0.46	735	12.25	13.53	-13.53	-0.19	0.10
600	10.00	12.86	-12.86	0.41	0.45	795	13.25	13.52	-13.52	-0.18	0.09
615	10.25	12.86	-12.86	0.41	0.45	870	14.50	13.50	-13.50	-0.16	0.08
630	10.50	12.87	-12.87	0.40	0.44	930	15.50	13.48	-13.48	-0.14	0.07
645	10.75	12.87	-12.87	0.40	0.44	1,050	17.50	13.45	-13.45	-0.11	0.06
660	11.00	12.88	-12.88	0.39	0.43	1,125	18.75	13.44	-13.44	-0.10	0.05
675	11.25	12.88	-12.88	0.39	0.43	1,290	21.50	13.42	-13.42	-0.08	0.04
705	11.75	12.89	-12.89	0.38	0.42	1,350	22.50	13.41	-13.41	-0.07	0.03
720	12.00	12.90	-12.90	0.37	0.41	1,530	25.50	13.38	-13.38	-0.04	0.02
765	12.75	12.91	-12.91	0.36	0.39	1,695	28.25	13.36	-13.36	-0.02	0.01
795	13.25	12.92	-12.92	0.35	0.39						
810	13.50	12.93	-12.93	0.34	0.38						
855	14.25	12.94	-12.94	0.33	0.36						
900	15.00	12.95	-12.95	0.32	0.35						
915	15.25	12.96	-12.96	0.31	0.34						
975	16.25	12.97	-12.97	0.30	0.33						
990	16.50	12.97	-12.97	0.30	0.33						
1,005	16.75	12.98	-12.98	0.29	0.32						
1,065	17.75	12.99	-12.99	0.28	0.31						
1,125	18.75	13.00	-13.00	0.27	0.30						
1,185	19.75	13.01	-13.01	0.26	0.28						
1,200	20.00	13.02	-13.02	0.25	0.28						
1,290	21.50	13.03	-13.03	0.24	0.27						
1,350	22.50	13.04	-13.04	0.23	0.25						
1,395	23.25	13.05	-13.05	0.22	0.24						
1,455	24.25	13.06	-13.06	0.21	0.23						
1,560	26.00	13.07	-13.07	0.20	0.22						
1,575	26.25	13.08	-13.08	0.19	0.21						
2,460	41.00	13.15	-13.15	0.12	0.14						
2,475	41.25	13.15	-13.15	0.12	0.14						
2,595	43.25	13.16	-13.16	0.11	0.12						
2,805	46.75	13.17	-13.17	0.10	0.11						
3,030	50.50	13.17	-13.17	0.10	0.11						
3,045	50.75	13.17	-13.17	0.10	0.11						
3,060	51.00	13.17	-13.17	0.10	0.11						

Slug Test Data
Well MW-24
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park







MW-24: TEST 1, SLUG IN

Data Set: C:\...\MW-24 T-1 SLUG IN.aqt
Date: 05/05/21 Time: 11:12:36

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-24
Test Date: May 3, 2021

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

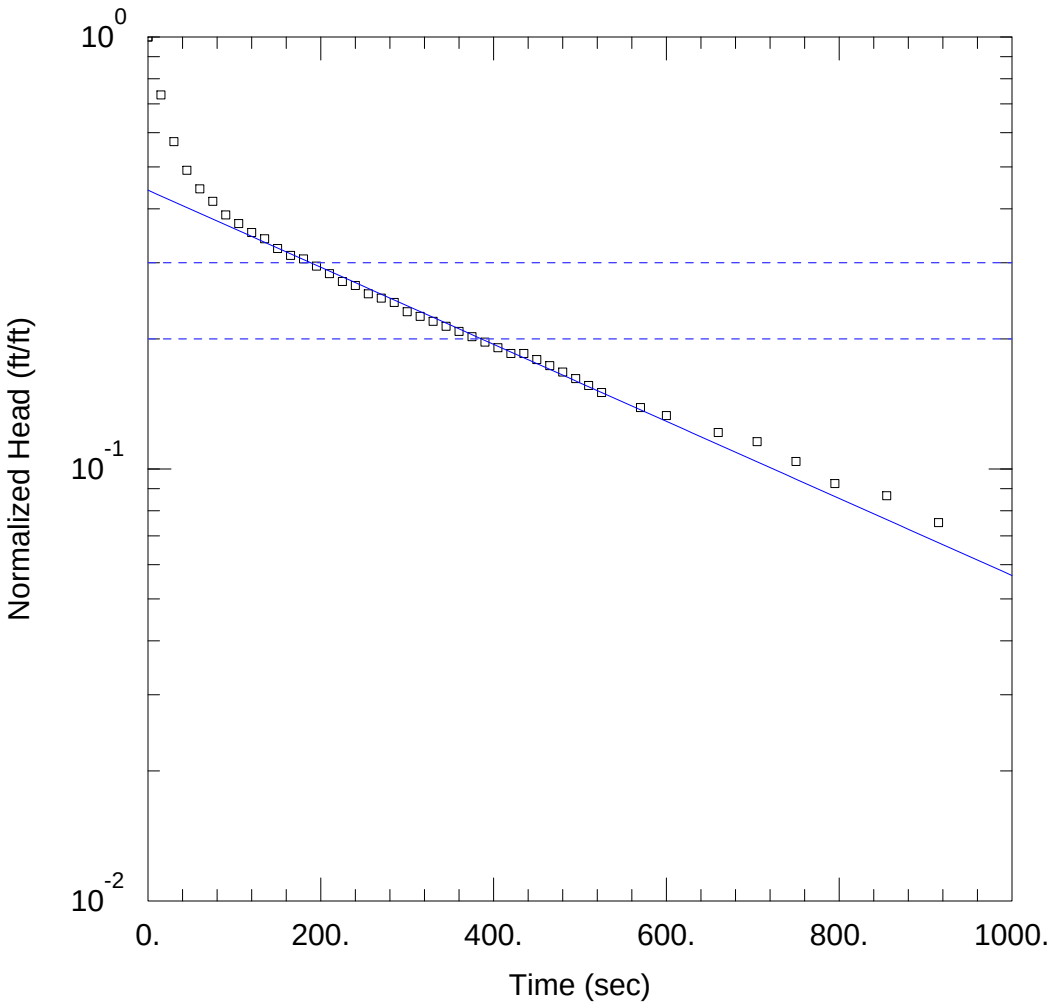
WELL DATA (MW-24 T-1 SLUG IN)

Initial Displacement: 0.88 ft
Total Well Penetration Depth: 7.3 ft
Casing Radius: 0.16 ft
Static Water Column Height: 7.3 ft
Screen Length: 7.3 ft
Well Radius: 0.33 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.0001554 cm/sec y0 = 0.766 ft



MW-24: TEST 1, SLUG OUT

Data Set: C:\...\MW-24 T-1 SLUG OUT.aqt
Date: 05/05/21 Time: 11:16:23

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-24
Test Date: May 3, 2021

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

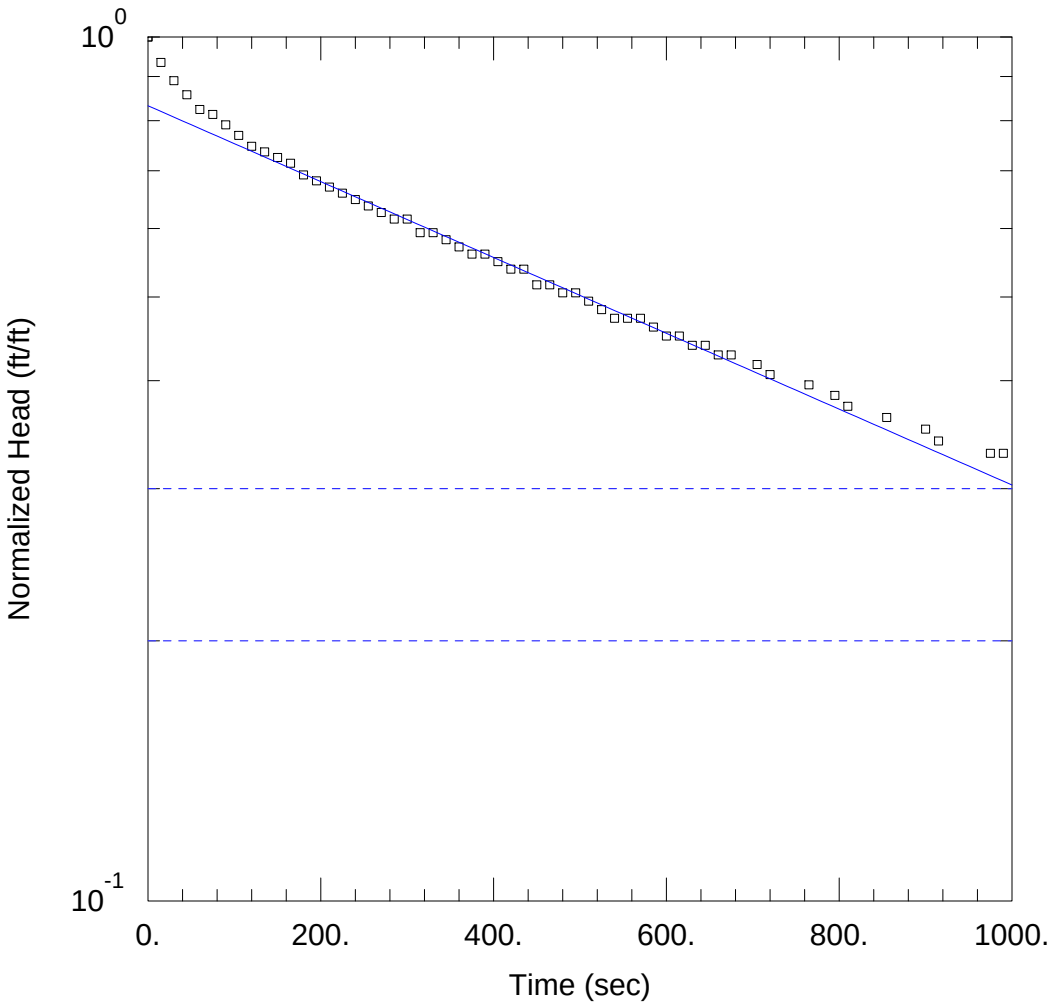
WELL DATA (MW-24 T-1 SLUG OUT)

Initial Displacement: 1.73 ft
Total Well Penetration Depth: 7.3 ft
Casing Radius: 0.16 ft
Static Water Column Height: 7.3 ft
Screen Length: 7.3 ft
Well Radius: 0.33 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.0003526 cm/sec y0 = 0.7643 ft



MW-24: TEST 2, SLUG IN

Data Set: C:\...\MW-24 T-2 SLUG IN.aqt
Date: 05/05/21 Time: 11:20:35

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-24
Test Date: May 3, 2021

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

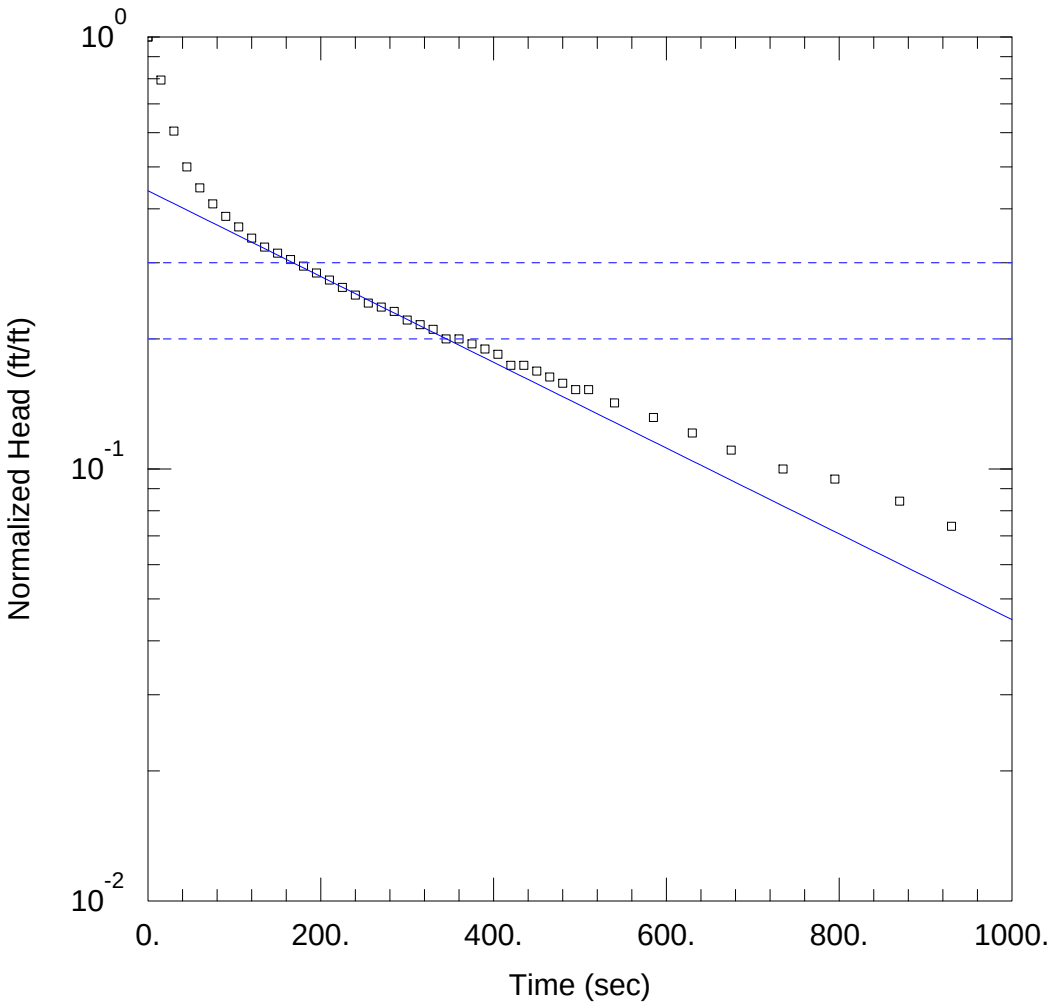
WELL DATA (MW-24 T-2 SLUG IN)

Initial Displacement: 0.91 ft
Total Well Penetration Depth: 7.3 ft
Casing Radius: 0.16 ft
Static Water Column Height: 7.3 ft
Screen Length: 7.3 ft
Well Radius: 0.33 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.0001735 cm/sec y0 = 0.7575 ft



MW-24: TEST 2, SLUG OUT

Data Set: C:\...\MW-24 T-2 SLUG OUT.aqt
Date: 05/05/21 Time: 11:24:02

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: MW-24
Test Date: May 3, 2021

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-24 T-2 SLUG OUT)

Initial Displacement: 1.9 ft
Total Well Penetration Depth: 7.3 ft
Casing Radius: 0.16 ft
Static Water Column Height: 7.3 ft
Screen Length: 7.3 ft
Well Radius: 0.33 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

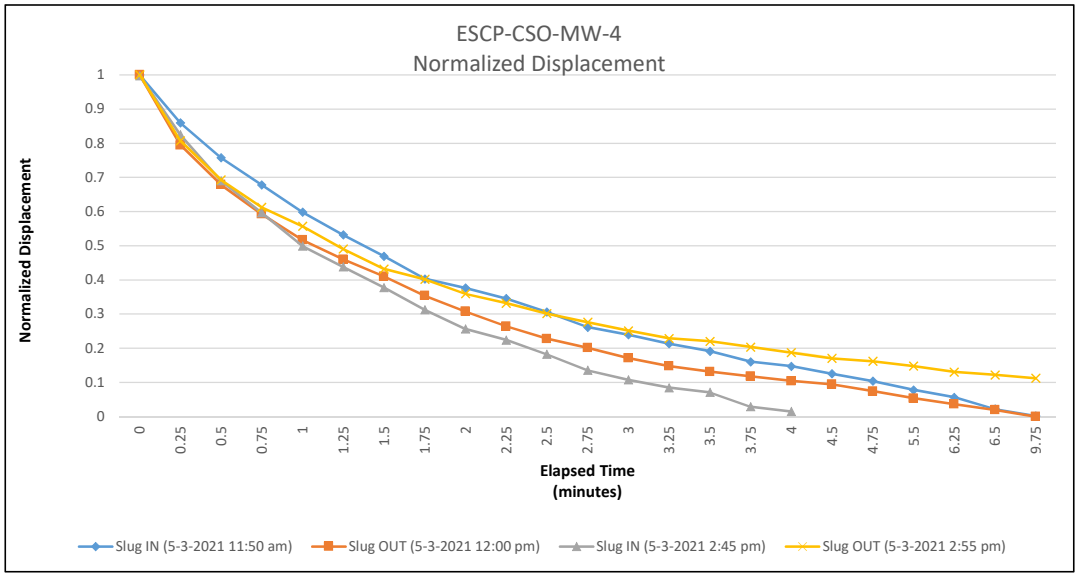
K = 0.0003925 cm/sec y0 = 0.8369 ft

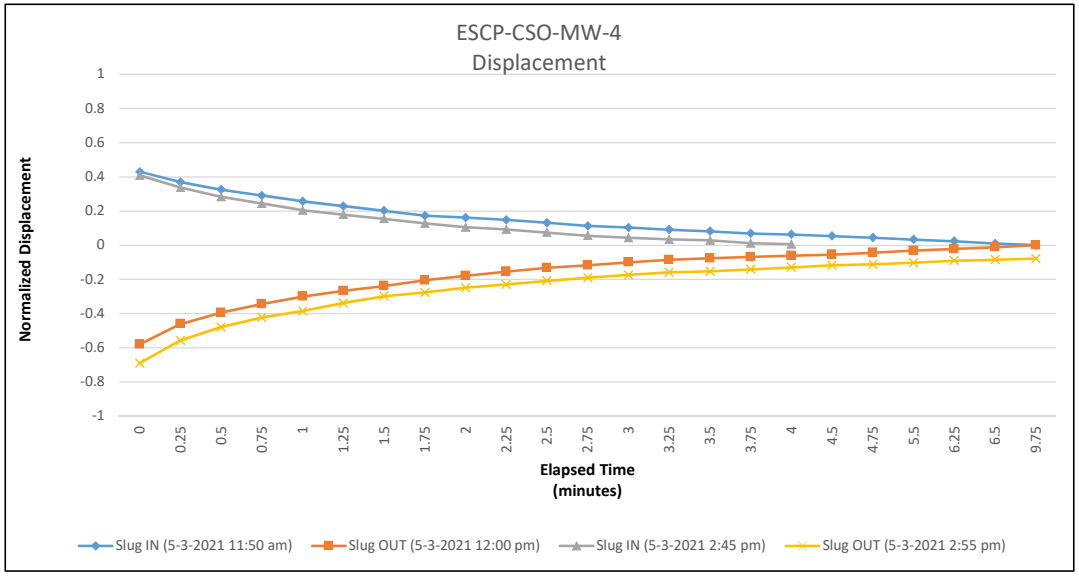
Slug Test Data
Well ESCP-CSO-MW-4
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park

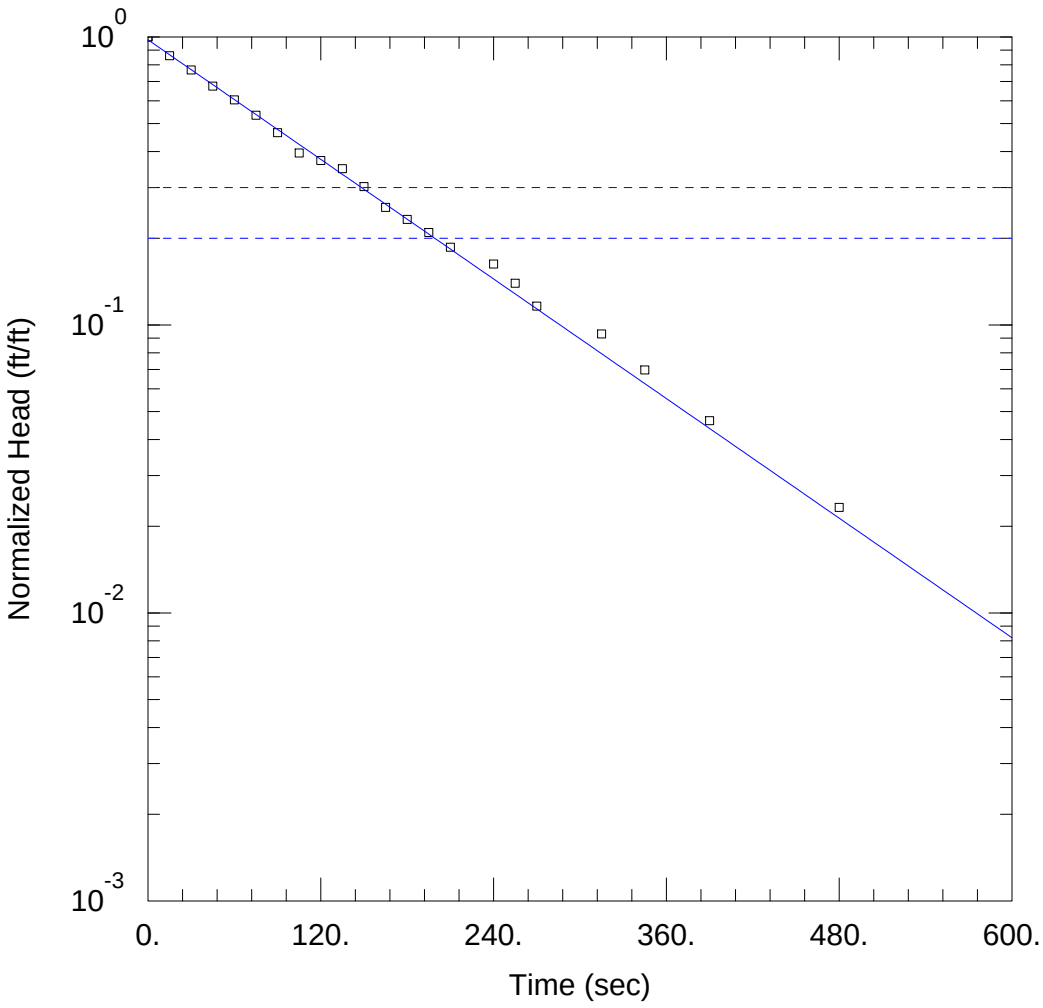
Slug IN (5-3-2021 11:50 am)						Slug OUT (5-3-2021 12:00 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized Displacement	Elapsed Time		DTW	GW Elev	Displacement	Normalized Displacement
Seconds	Minutes					Seconds	Minutes				
0	0.00	11.58	573.40	0.43	1.00	0	0.00	12.61	572.37	-0.58	1.00
15	0.25	11.64	573.34	0.37	0.86	15	0.25	12.49	572.49	-0.46	0.79
30	0.50	11.68	573.30	0.33	0.76	30	0.50	12.42	572.56	-0.39	0.68
45	0.75	11.72	573.26	0.29	0.68	45	0.75	12.37	572.61	-0.34	0.59
60	1.00	11.75	573.23	0.26	0.60	60	1.00	12.33	572.65	-0.30	0.52
75	1.25	11.78	573.20	0.23	0.53	75	1.25	12.30	572.68	-0.27	0.46
90	1.50	11.81	573.17	0.20	0.47	90	1.50	12.27	572.71	-0.24	0.41
105	1.75	11.84	573.14	0.17	0.40	105	1.75	12.24	572.74	-0.21	0.35
120	2.00	11.85	573.13	0.16	0.38	120	2.00	12.21	572.77	-0.18	0.31
135	2.25	11.86	573.12	0.15	0.35	135	2.25	12.18	572.80	-0.15	0.26
150	2.50	11.88	573.10	0.13	0.31	150	2.50	12.16	572.82	-0.13	0.23
165	2.75	11.90	573.08	0.11	0.26	165	2.75	12.15	572.83	-0.12	0.20
180	3.00	11.91	573.07	0.10	0.24	180	3.00	12.13	572.85	-0.10	0.17
195	3.25	11.92	573.06	0.09	0.21	195	3.25	12.12	572.86	-0.09	0.15
210	3.50	11.93	573.05	0.08	0.19	210	3.50	12.11	572.87	-0.08	0.13
240	4.00	11.94	573.04	0.07	0.16	225	3.75	12.10	572.88	-0.07	0.12
255	4.25	11.95	573.03	0.06	0.15	240	4.00	12.09	572.89	-0.06	0.10
270	4.50	11.96	573.02	0.05	0.13	255	4.25	12.08	572.90	-0.05	0.09
315	5.25	11.97	573.01	0.04	0.10	270	4.50	12.07	572.91	-0.04	0.07
345	5.75	11.98	573.00	0.03	0.08	315	5.25	12.06	572.92	-0.03	0.05
390	6.50	11.99	572.99	0.02	0.06	360	6.00	12.05	572.93	-0.02	0.04
480	8.00	12.00	572.98	0.01	0.02	375	6.25	12.04	572.94	-0.01	0.02
570	9.50	12.01	572.97	0.00	0.00	465	7.75	12.03	572.95	0.00	0.00

Slug IN (5-3-2021 2:45 pm)						Slug OUT (5-3-2021 2:55 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized Displacement	Elapsed Time		DTW	GW Elev	Displacement	Normalized Displacement
Seconds	Minutes					Seconds	Minutes				
0	0.00	11.62	573.36	0.41	1.00	0	0.00	12.72	572.26	-0.69	1.00
15	0.25	11.69	573.29	0.34	0.83	15	0.25	12.59	572.39	-0.56	0.81
30	0.50	11.75	573.23	0.28	0.69	30	0.50	12.51	572.47	-0.48	0.69
45	0.75	11.79	573.19	0.24	0.60	45	0.75	12.45	572.53	-0.42	0.61
60	1.00	11.83	573.15	0.20	0.50	60	1.00	12.41	572.57	-0.38	0.56
75	1.25	11.85	573.13	0.18	0.44	75	1.25	12.37	572.61	-0.34	0.49
90	1.50	11.88	573.10	0.15	0.38	90	1.50	12.33	572.65	-0.30	0.43
105	1.75	11.90	573.08	0.13	0.31	105	1.75	12.31	572.67	-0.28	0.40
120	2.00	11.92	573.06	0.11	0.26	120	2.00	12.28	572.70	-0.25	0.36
135	2.25	11.94	573.04	0.09	0.22	135	2.25	12.26	572.72	-0.23	0.33
150	2.50	11.96	573.02	0.07	0.18	150	2.50	12.24	572.74	-0.21	0.30
165	2.75	11.97	573.01	0.06	0.14	165	2.75	12.22	572.76	-0.19	0.28
180	3.00	11.99	572.99	0.04	0.11	180	3.00	12.20	572.78	-0.17	0.25
195	3.25	12.00	572.98	0.03	0.08	195	3.25	12.19	572.79	-0.16	0.23
210	3.50	12.00	572.98	0.03	0.07	210	3.50	12.18	572.80	-0.15	0.22
225	3.75	12.02	572.96	0.01	0.03	225	3.75	12.17	572.81	-0.14	0.20
240	4.00	12.02	572.96	0.01	0.02	240	4.00	12.16	572.82	-0.13	0.19
						270	4.50	12.15	572.83	-0.12	0.17
						285	4.75	12.14	572.84	-0.11	0.16
						330	5.50	12.13	572.85	-0.10	0.15
						375	6.25	12.12	572.86	-0.09	0.13
						390	6.50	12.11	572.87	-0.08	0.12
						585	9.75	12.11	572.87	-0.08	0.11

Slug Test Data
Well ESCP-CSO-MW-4
Hydrogeologic Investigation - Combined Sewer Outfall
Elk St. Commerce Park







ESCP-MW-4: TEST 1, SLUG IN

Data Set: C:\...\ESCP MW-4 T-1 SLUG IN.aqt
Date: 05/05/21 Time: 11:04:43

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-4
Test Date: May 3, 2021

AQUIFER DATA

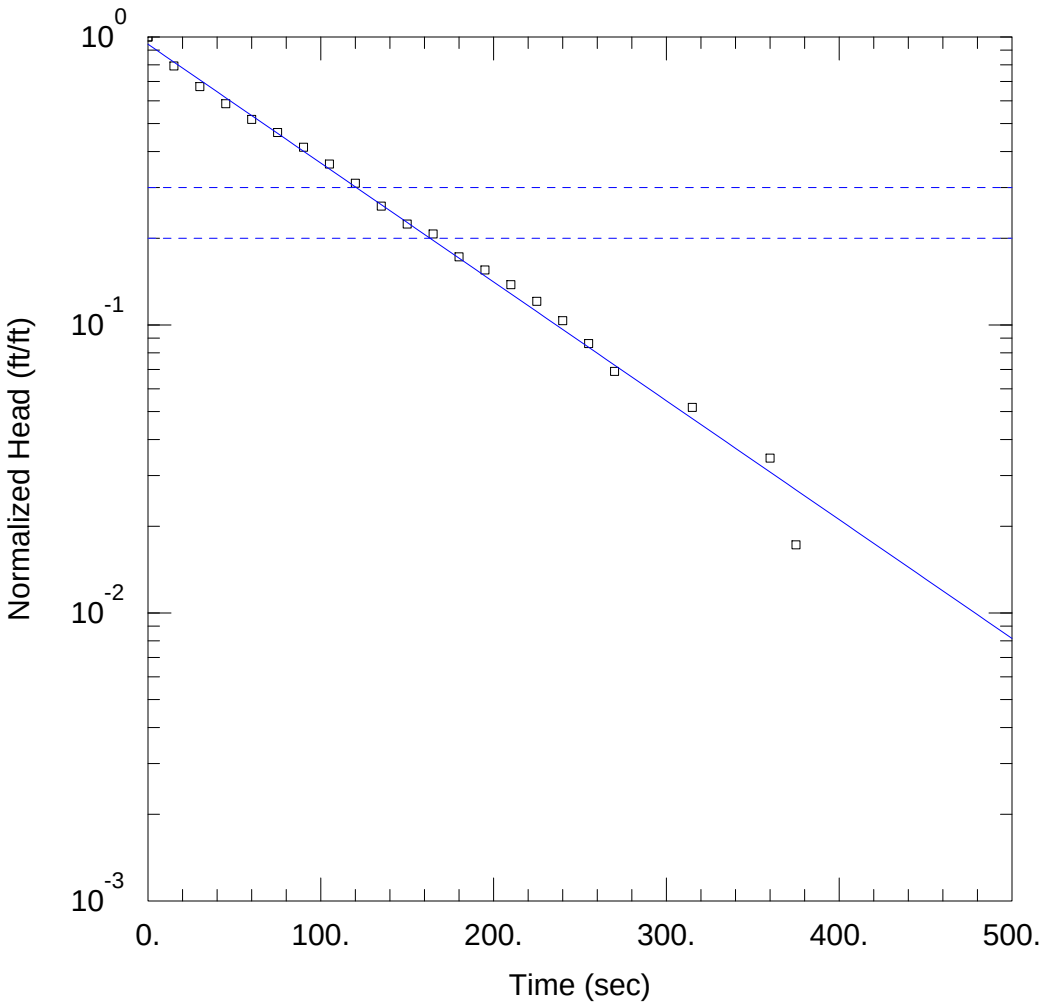
Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-4 T-1 SLUG IN)

Initial Displacement: 0.43 ft
Total Well Penetration Depth: 13.63 ft
Casing Radius: 0.25 ft
Static Water Column Height: 13.63 ft
Screen Length: 13.63 ft
Well Radius: 0.42 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.003652 cm/sec
y0 = 0.4203 ft



ESCP-MW-4: TEST 1, SLUG OUT

Data Set: C:\...\ESCP MW-4 T-1 SLUG OUT.aqt
Date: 05/05/21 Time: 11:03:55

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-4
Test Date: May 3, 2021

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

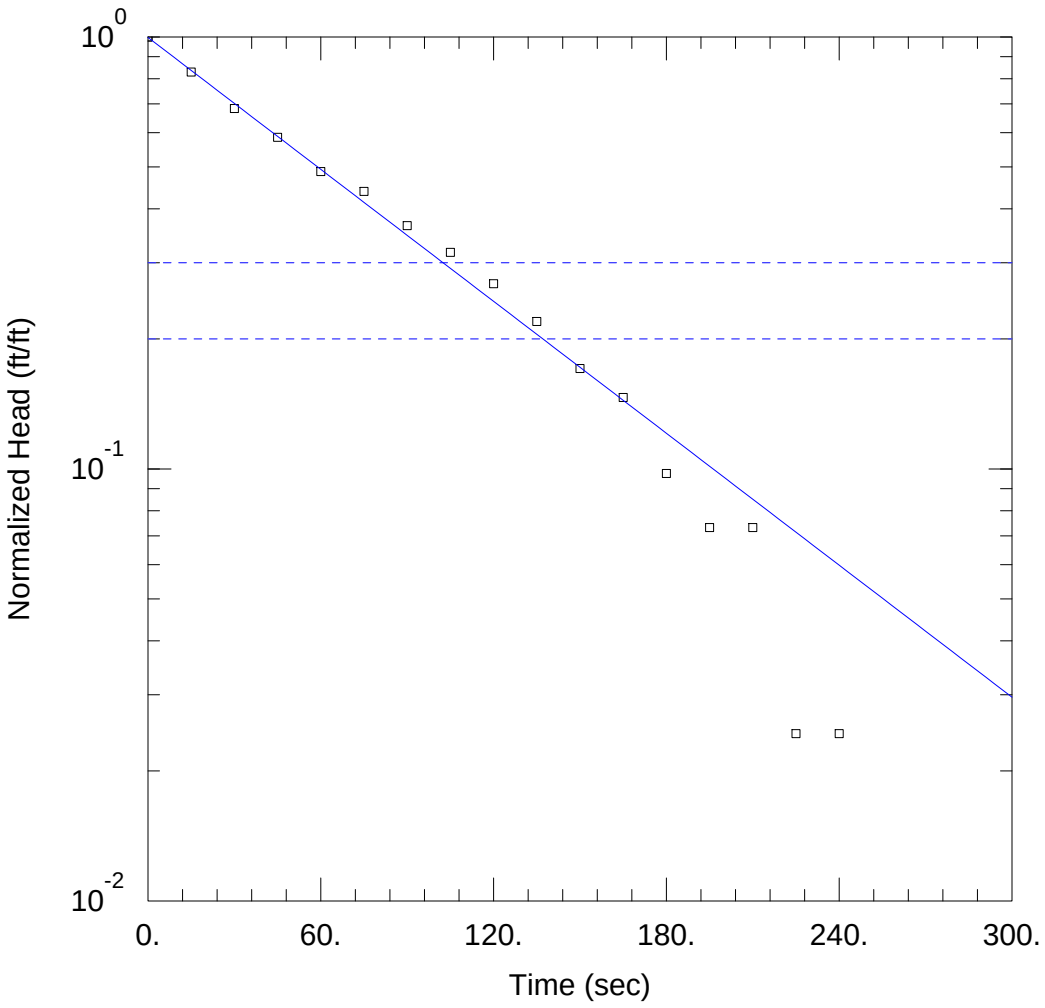
WELL DATA (ESCP MW-4 T-1 SLUG OUT)

Initial Displacement: 0.58 ft
Total Well Penetration Depth: 13.63 ft
Casing Radius: 0.25 ft
Static Water Column Height: 13.63 ft
Screen Length: 13.63 ft
Well Radius: 0.42 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.004355 cm/sec
y0 = 0.547 ft



ESCP-MW-4: TEST 2, SLUG IN

Data Set: C:\...\ESCP MW-4 T-2 SLUG IN.aqt
Date: 05/05/21 Time: 11:03:00

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-4
Test Date: May 3, 2021

AQUIFER DATA

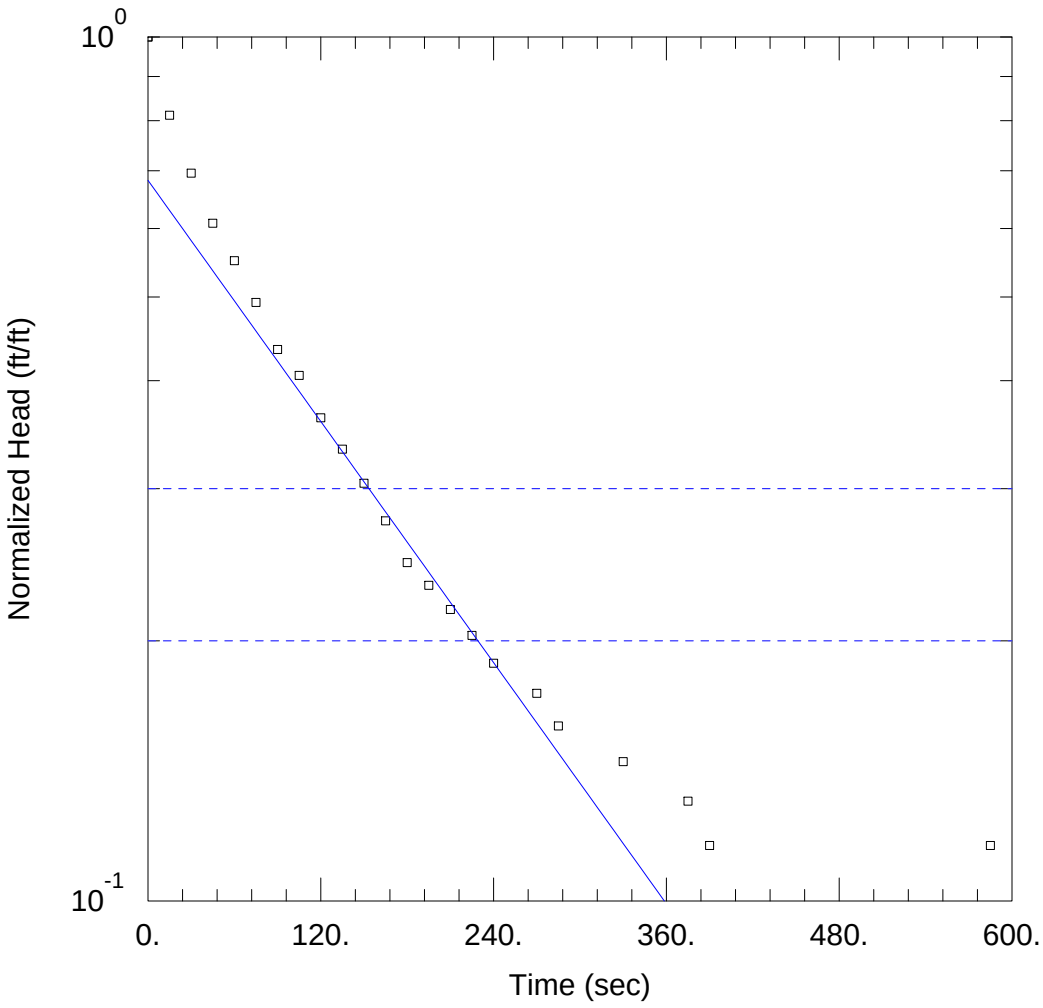
Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-4 T-2 SLUG IN)

Initial Displacement: 0.41 ft
Total Well Penetration Depth: 13.63 ft
Casing Radius: 0.25 ft
Static Water Column Height: 13.63 ft
Screen Length: 13.63 ft
Well Radius: 0.42 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.005373 cm/sec
y0 = 0.4089 ft



ESCP-MW-4: TEST 2, SLUG OUT

Data Set: C:\...\ESCP MW-4 T-2 SLUG OUT.aqt
Date: 05/05/21 Time: 11:01:44

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-4
Test Date: May 3, 2021

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-4 T-2 SLUG OUT)

Initial Displacement: 0.69 ft
Total Well Penetration Depth: 13.63 ft
Casing Radius: 0.25 ft
Static Water Column Height: 13.63 ft
Screen Length: 13.63 ft
Well Radius: 0.42 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.002455 cm/sec
y0 = 0.4708 ft

Slug Test Data
Elk Street Commerce Park
Buffalo, NY

ESCP-MW-7
TOC Elevation 584.13

Slug IN (4-19-2021 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement
0	0.00	8.44	575.69	1.49	1.00
15	0.25	9.46	574.67	0.47	0.32
30	0.50	9.60	574.53	0.33	0.22
45	0.75	9.68	574.45	0.25	0.17
60	1.00	9.75	574.38	0.18	0.12
75	1.25	9.78	574.35	0.15	0.10
90	1.50	9.80	574.33	0.13	0.09
105	1.75	9.83	574.30	0.10	0.07
120	2.00	9.84	574.29	0.09	0.06
135	2.25	9.85	574.28	0.08	0.05
150	2.50	9.86	574.27	0.07	0.05
165	2.75	9.87	574.26	0.06	0.04
180	3.00	9.87	574.26	0.06	0.04
195	3.25	9.87	574.26	0.06	0.04
210	3.50	9.88	574.25	0.05	0.03
225	3.75	9.89	574.24	0.04	0.03
240	4.00	9.89	574.24	0.04	0.03
255	4.25	9.89	574.24	0.04	0.03
270	4.50	9.89	574.24	0.04	0.03
285	4.75	9.89	574.24	0.04	0.03
300	5.00	9.89	574.24	0.04	0.03
315	5.25	9.90	574.23	0.03	0.02

Slug OUT(4-19-2021 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement
0	0.00	10.59	573.54	-0.66	1.00
15	0.25	10.25	573.88	-0.32	0.49
30	0.50	10.11	574.02	-0.18	0.27
45	0.75	10.04	574.09	-0.11	0.17
60	1.00	10.00	574.13	-0.07	0.11
75	1.25	9.97	574.16	-0.04	0.06
90	1.50	9.96	574.17	-0.03	0.04
105	1.75	9.94	574.19	-0.01	0.02
120	2.00	9.94	574.19	-0.01	0.01
135	2.25	9.93	574.20	0.00	0.00

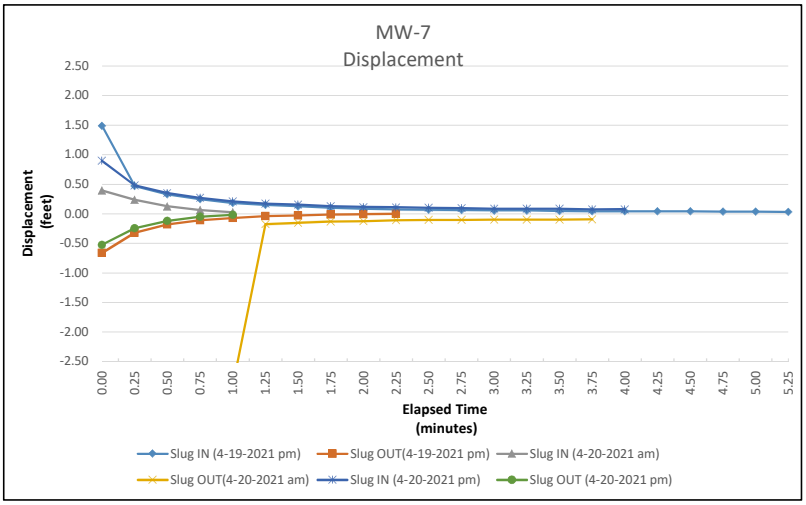
Slug IN (4-20-2021 am)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement
0	0.00	9.38	574.75	0.40	0.99
15	0.25	9.54	574.59	0.24	0.59
30	0.50	9.65	574.48	0.13	0.32
45	0.75	9.72	574.41	0.06	0.16
60	1.00	9.75	574.38	0.03	0.06

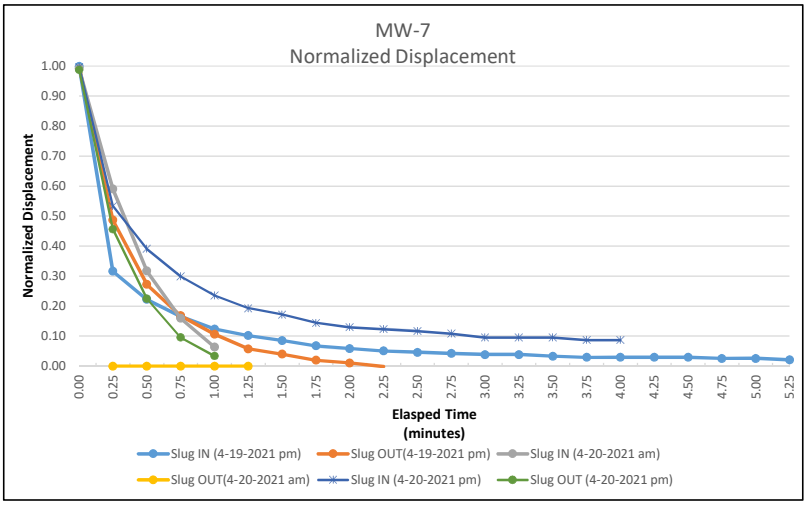
Slug OUT(4-20-2021 am)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement
0	0.00	14.29	569.84	-4.51	
15	0.25	21.74	562.39	-11.96	XD
30	0.50	17.79	566.34	-8.01	moved
45	0.75	15.20	568.93	-5.42	when
60	1.00	12.71	571.42	-2.93	removing
75	1.25	9.96	574.17	-0.18	slug
90	1.50	9.93	574.20	-0.15	
105	1.75	9.91	574.22	-0.13	
120	2.00	9.90	574.23	-0.12	
135	2.25	9.89	574.24	-0.11	
150	2.50	9.89	574.24	-0.11	
165	2.75	9.89	574.24	-0.11	
180	3.00	9.88	574.25	-0.10	
195	3.25	9.88	574.25	-0.10	
210	3.50	9.88	574.25	-0.10	
225	3.75	9.87	574.26	-0.09	

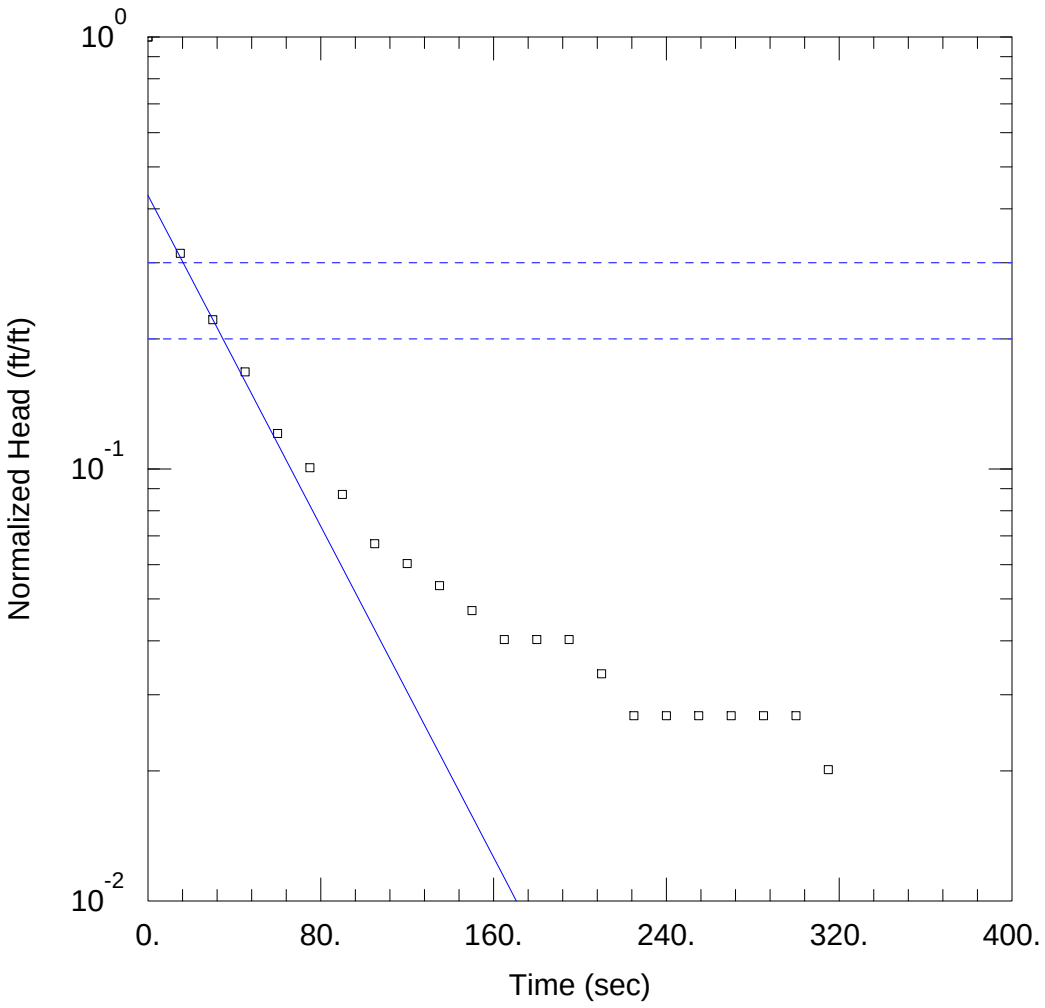
Slug IN (4-20-2021 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement
0	0.00	8.97	575.16	0.90	1.00
15	0.25	9.39	574.74	0.48	0.53
30	0.50	9.52	574.61	0.35	0.39
45	0.75	9.60	574.53	0.27	0.30
60	1.00	9.66	574.47	0.21	0.24
75	1.25	9.70	574.43	0.17	0.19
90	1.50	9.72	574.41	0.15	0.17
105	1.75	9.74	574.39	0.13	0.14
120	2.00	9.75	574.38	0.12	0.13
135	2.25	9.76	574.37	0.11	0.12
150	2.50	9.77	574.36	0.10	0.12
165	2.75	9.77	574.36	0.10	0.11
180	3.00	9.78	574.35	0.09	0.10
195	3.25	9.78	574.35	0.09	0.10
210	3.50	9.78	574.35	0.09	0.10
225	3.75	9.79	574.34	0.08	0.09
240	4.00	9.79	574.34	0.08	0.09

Slug OUT (4-20-2021 pm)					
Elapsed Time		DTW	GW Elev	Displacement	Normalized
Seconds	Minutes				Displacement
0	0.00	10.39	573.74	-0.52	0.99
15	0.25	10.11	574.02	-0.24	0.46
30	0.50	9.99	574.14	-0.12	0.23
45	0.75	9.92	574.21	-0.05	0.10
60	1.00	9.89	574.24	-0.02	0.03

Slug Test Data
Elk Street Commerce Park
Buffalo, NY







ESCP-MW-7: TEST 1, SLUG IN

Data Set: C:\...\ESCP MW-7 T-1 SLUG IN.aqt
Date: 05/05/21 Time: 11:57:32

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-7
Test Date: April 19, 2021

AQUIFER DATA

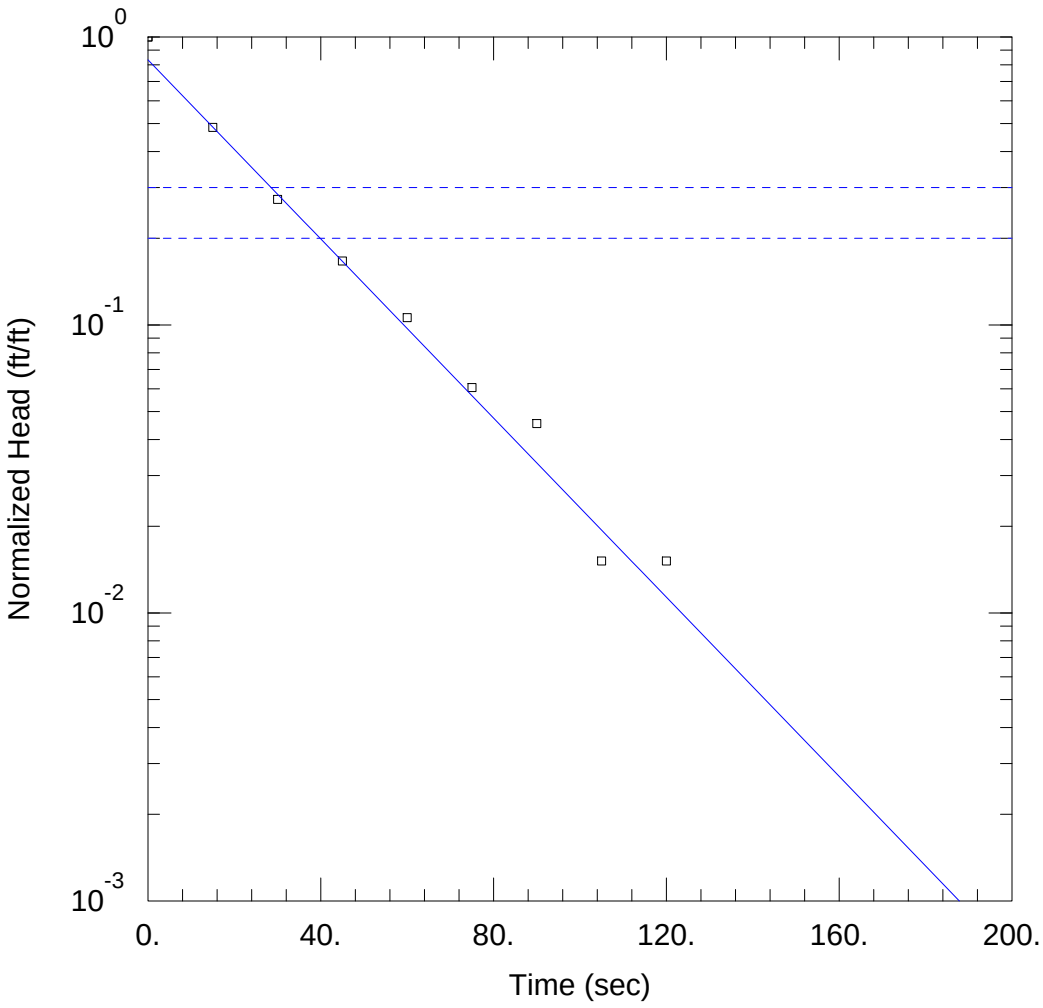
Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-7 T-1 SLUG IN)

Initial Displacement: 1.49 ft
Total Well Penetration Depth: 15.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 15.5 ft
Screen Length: 15.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.007564 cm/sec
y0 = 0.6402 ft



ESCP-MW-7: TEST 1, SLUG OUT

Data Set: C:\...\ESCP MW-7 T-1 SLUG OUT.aqt
Date: 05/05/21 Time: 11:56:55

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-7
Test Date: April 19, 2021

AQUIFER DATA

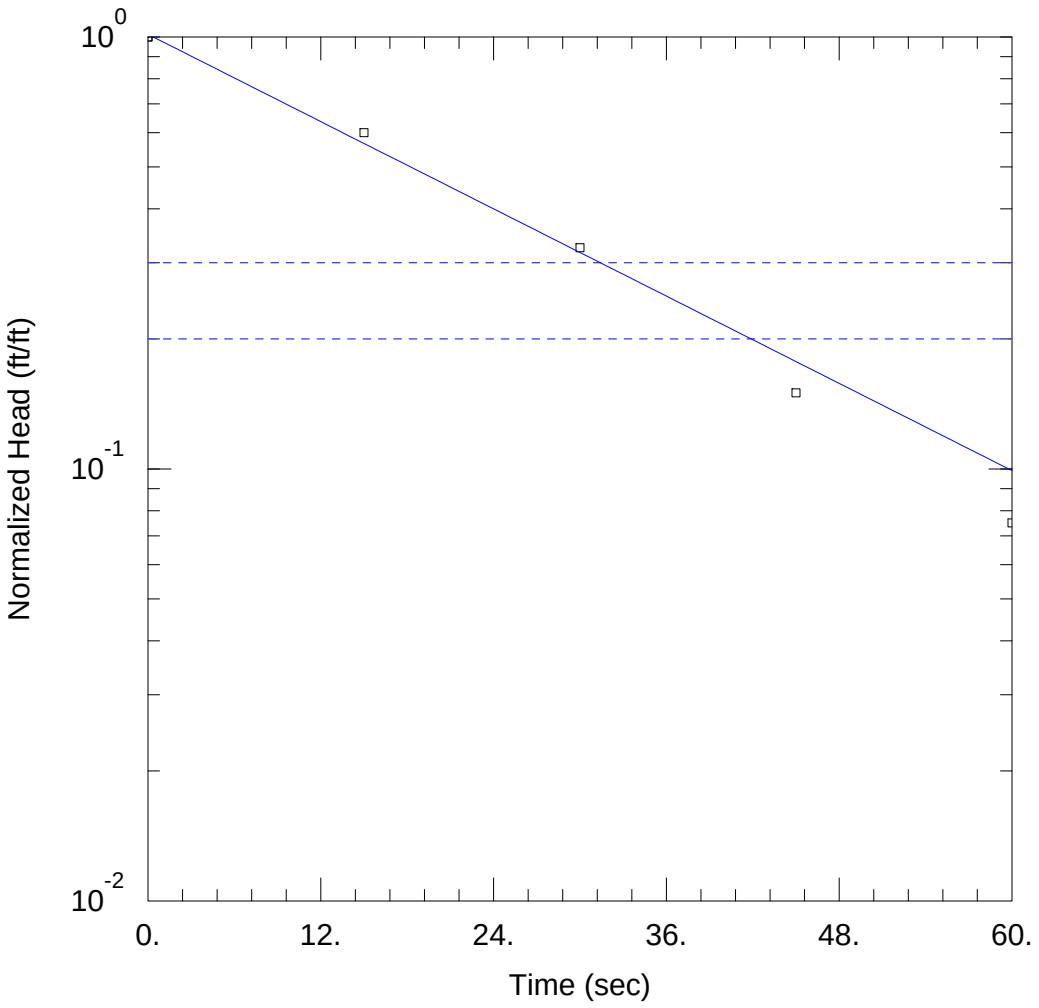
Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-7 T-1 SLUG OUT)

Initial Displacement: 0.66 ft
Total Well Penetration Depth: 15.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 15.5 ft
Screen Length: 15.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01228 cm/sec
y0 = 0.5493 ft



ESCP-MW-7: TEST 2, SLUG IN

Data Set: C:\...\ESCP MW-7 T-2 SLUG IN.aqt
Date: 05/05/21 Time: 11:55:39

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-7
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

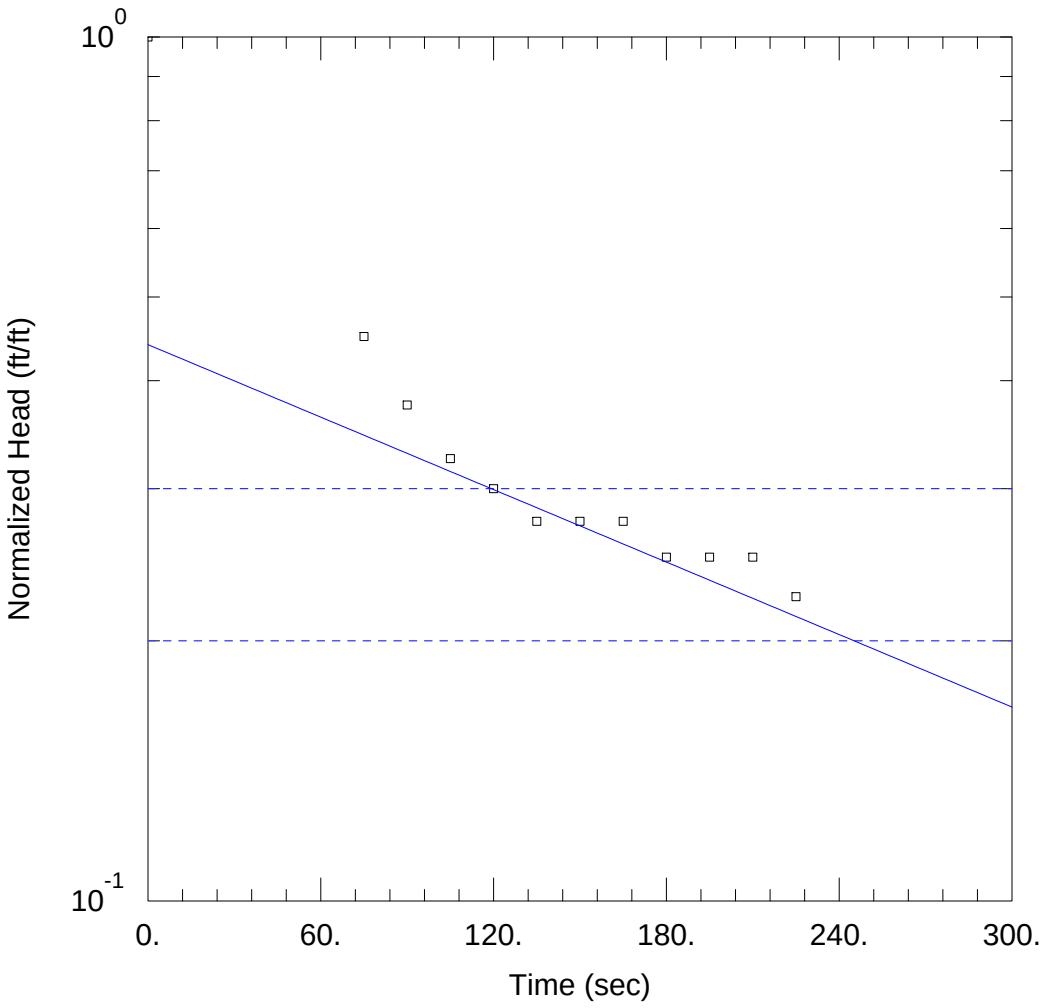
WELL DATA (ESCP MW-7 T-2 SLUG IN)

Initial Displacement: 0.4 ft
Total Well Penetration Depth: 15.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 15.5 ft
Screen Length: 15.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0133 cm/sec
y0 = 0.4056 ft



ESCP-MW-7: TEST 2, SLUG OUT

Data Set: C:\...\ESCP MW-7 T-2 SLUG OUT.aqt
Date: 05/05/21 Time: 11:54:48

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-7
Test Date: April 20, 2021

AQUIFER DATA

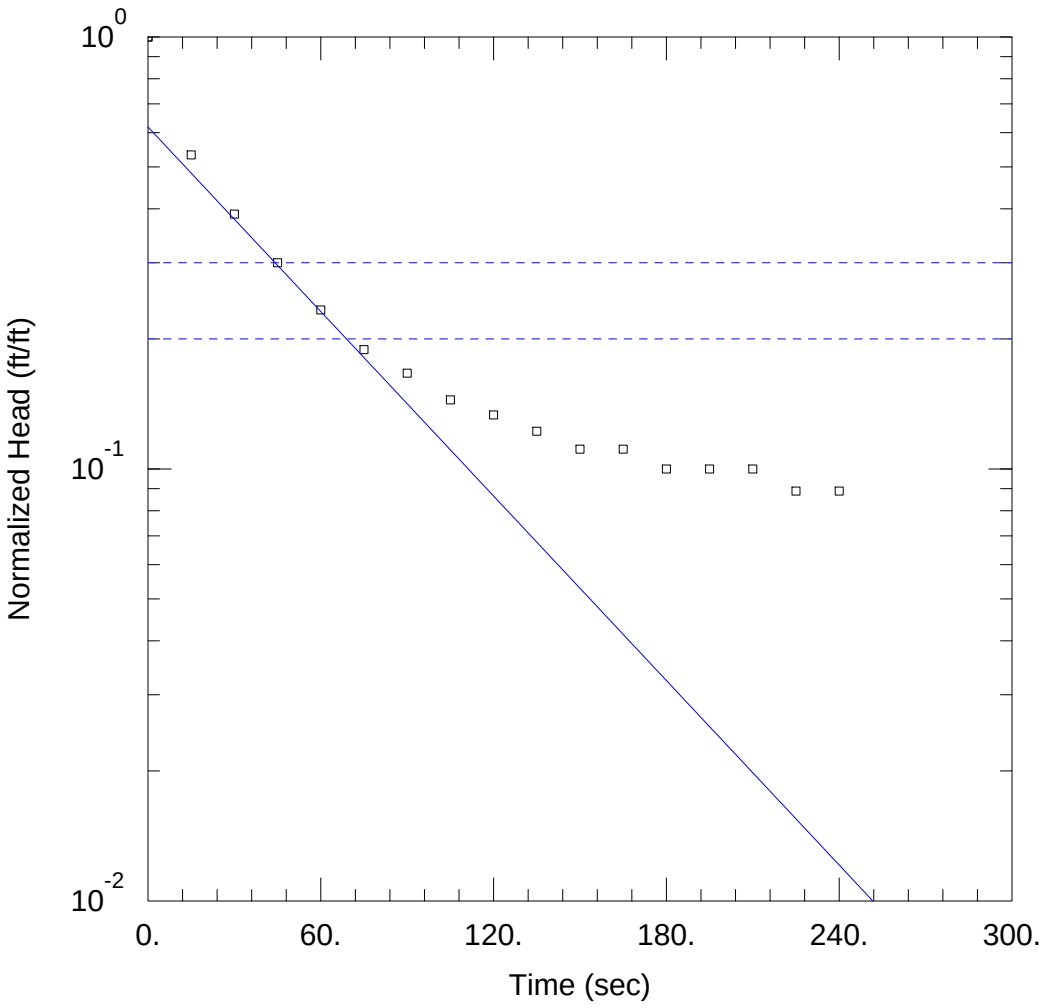
Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-7 T-2 SLUG OUT)

Initial Displacement: 0.4 ft
Total Well Penetration Depth: 15.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 15.5 ft
Screen Length: 15.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001104 cm/sec
y0 = 0.1761 ft



ESCP-MW-7: TEST 3, SLUG IN

Data Set: C:\...\ESCP MW-7 T-3 SLUG IN.aqt
Date: 05/05/21 Time: 11:53:37

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-7
Test Date: April 20, 2021

AQUIFER DATA

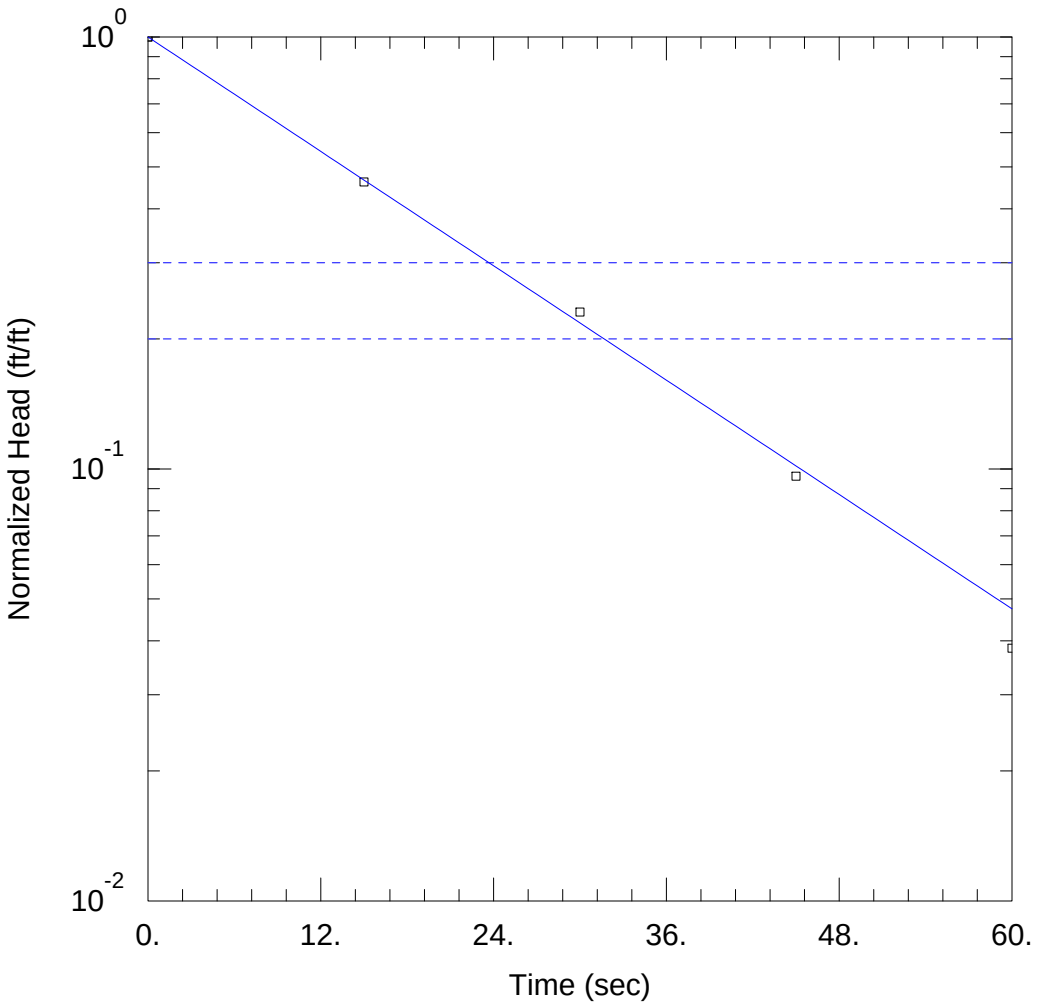
Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-7 T-3 SLUG IN)

Initial Displacement: 0.9 ft
Total Well Penetration Depth: 15.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 15.5 ft
Screen Length: 15.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.005623 cm/sec
y0 = 0.5567 ft



ESCP-MW-7: TEST 3, SLUG OUT

Data Set: C:\...\ESCP MW-7 T-3 SLUG OUT.aqt
Date: 05/05/21 Time: 11:52:08

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-7
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-7 T-3 SLUG OUT)

Initial Displacement: 0.52 ft
Total Well Penetration Depth: 15.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 15.5 ft
Screen Length: 15.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.01743 cm/sec
y0 = 0.5198 ft

Slug Test Data
Elk Street Commerce Park
Buffalo, NY

ESCP-MW-8

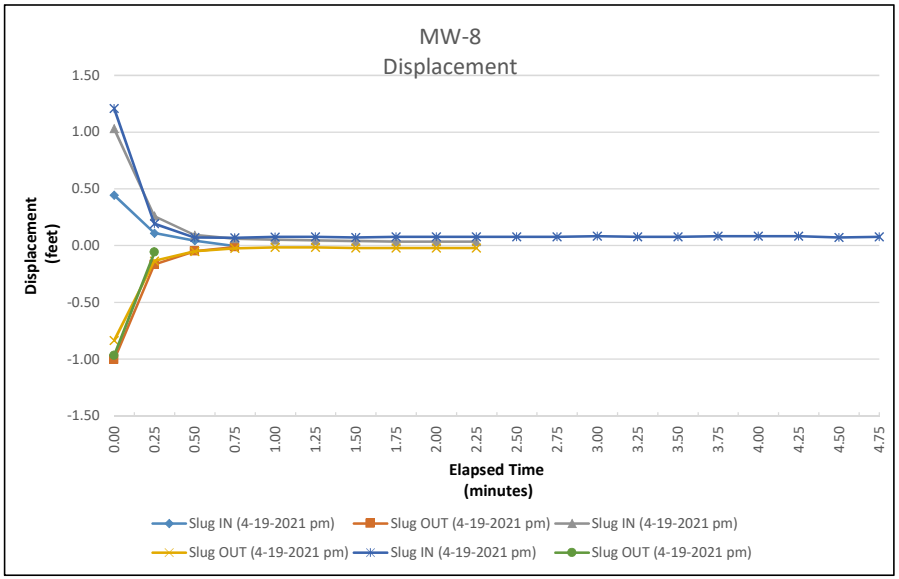
TOC Elevation **584.26** DTW measurements adjusted 0.25' in order to compensate for inadvertent transducer movement during testing.

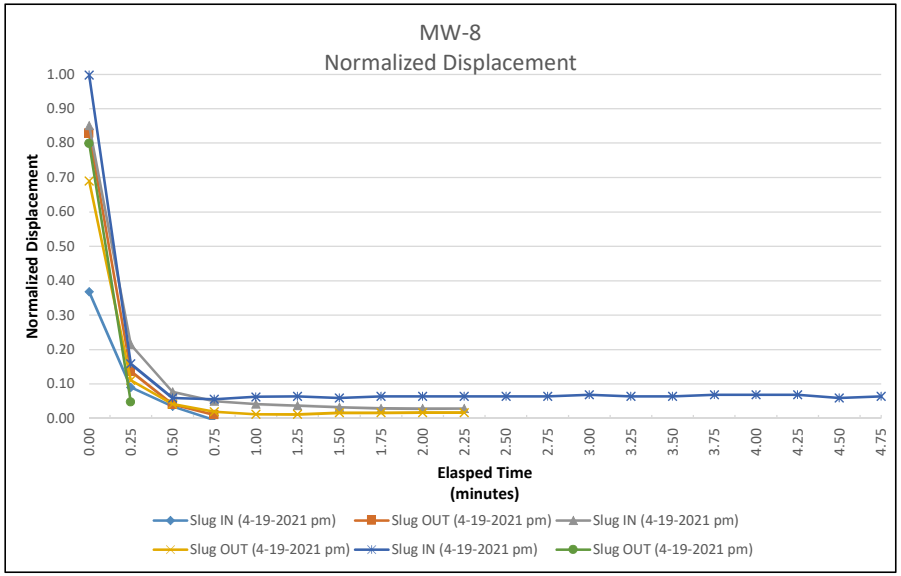
Slug IN (4-19-2021 pm)							Slug OUT (4-19-2021 pm)						
Elapsed Time		DTW	Adjusted DTW	Adjusted GW Elev	Displacement	Normalized Displacement	Elapsed Time		DTW	Adjusted DTW	Adjusted GW Elev	Displacement	Normalized Displacement
Seconds	Minutes						Seconds	Minutes					
0	0.00	10.20	10.20	574.06	0.45	0.37	0	0.00	11.90	11.65	572.61	-1.00	0.83
15	0.25	10.79	10.54	573.72	0.11	0.09	15	0.25	11.07	10.82	573.44	-0.17	0.14
30	0.50	10.86	10.61	573.65	0.04	0.04	30	0.50	10.95	10.70	573.56	-0.05	0.04
45	0.75	10.90	10.65	573.61	0.00	0.00	45	0.75	10.91	10.66	573.60	-0.01	0.01

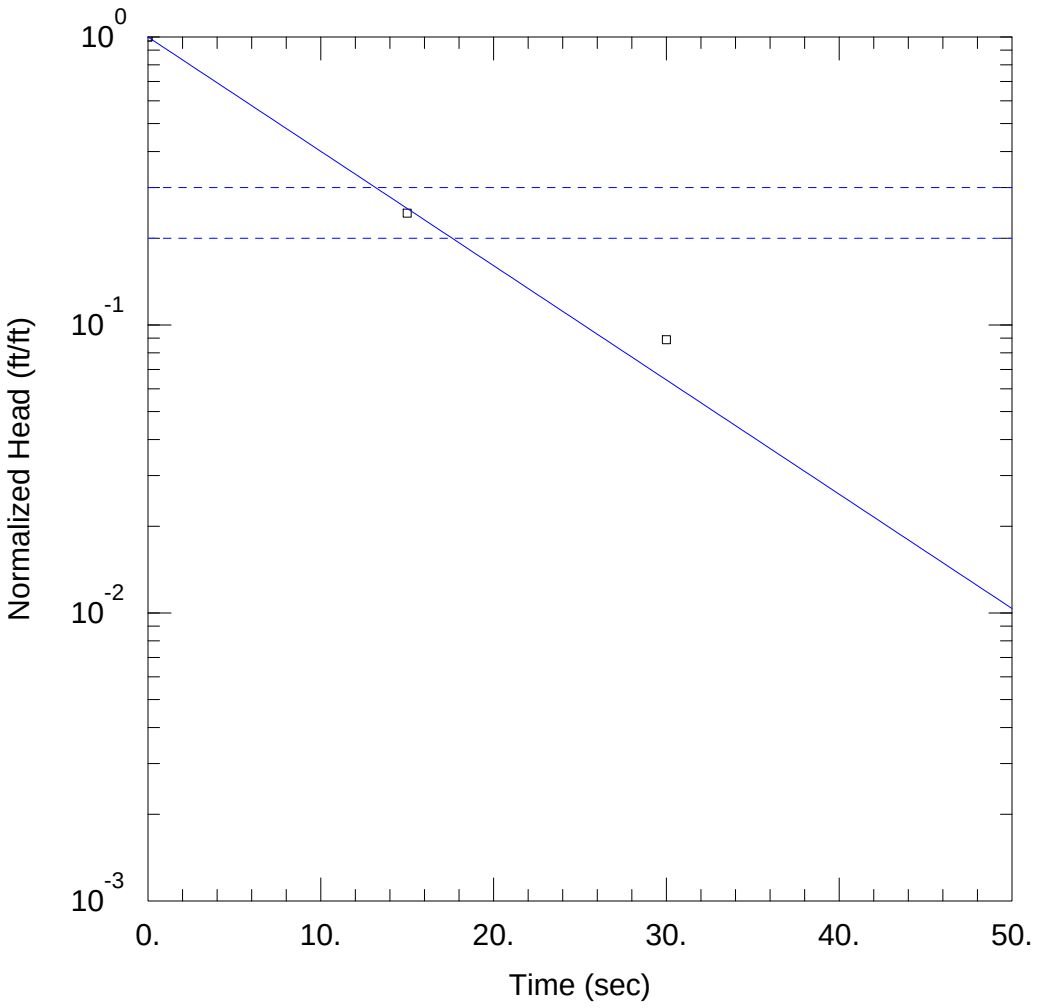
Slug IN (4-19-2021 pm)							Slug OUT (4-19-2021 pm)						
Elapsed Time		DTW	Adjusted DTW	Adjusted GW Elev	Displacement	Normalized Displacement	Elapsed Time		DTW	Adjusted DTW	Adjusted GW Elev	Displacement	Normalized Displacement
Seconds	Minutes						Seconds	Minutes					
0	0.00	9.87	9.62	574.64	1.03	0.85	0	0.00	11.74	11.49	572.77	-0.84	0.69
15	0.25	10.64	10.39	573.87	0.26	0.21	15	0.25	11.03	10.78	573.48	-0.13	0.11
30	0.50	10.81	10.56	573.70	0.09	0.08	30	0.50	10.95	10.70	573.56	-0.05	0.04
45	0.75	10.84	10.59	573.67	0.06	0.05	45	0.75	10.92	10.67	573.59	-0.02	0.02
60	1.00	10.85	10.60	573.66	0.05	0.04	60	1.00	10.91	10.66	573.60	-0.01	0.01
75	1.25	10.85	10.60	573.66	0.05	0.04	75	1.25	10.91	10.66	573.60	-0.01	0.01
90	1.50	10.86	10.61	573.65	0.04	0.03	90	1.50	10.92	10.67	573.59	-0.02	0.02
105	1.75	10.86	10.61	573.65	0.04	0.03	105	1.75	10.92	10.67	573.59	-0.02	0.02
120	2.00	10.86	10.61	573.65	0.04	0.03	120	2.00	10.92	10.67	573.59	-0.02	0.02
135	2.25	10.86	10.61	573.65	0.04	0.03	135	2.25	10.92	10.67	573.59	-0.02	0.02

Slug IN (4-19-2021 pm)							Slug OUT (4-19-2021 pm)						
Elapsed Time		DTW	Adjusted DTW	Adjusted GW Elev	Displacement	Normalized Displacement	Elapsed Time		DTW	Adjusted DTW	Adjusted GW Elev	Displacement	Normalized Displacement
Seconds	Minutes						Seconds	Minutes					
0	0.00	9.69	9.44	574.82	1.21	1.00	0	0.00	11.87	11.62	572.64	-0.97	0.80
15	0.25	10.71	10.46	573.80	0.19	0.16	15	0.25	10.96	10.71	573.55	-0.06	0.05
30	0.50	10.83	10.58	573.68	0.07	0.06							
45	0.75	10.83	10.58	573.68	0.07	0.06							
60	1.00	10.82	10.57	573.69	0.08	0.06							
75	1.25	10.82	10.57	573.69	0.08	0.06							
90	1.50	10.83	10.58	573.68	0.07	0.06							
105	1.75	10.82	10.57	573.69	0.08	0.06							
120	2.00	10.82	10.57	573.69	0.08	0.06							
135	2.25	10.82	10.57	573.69	0.08	0.06							
150	2.50	10.82	10.57	573.69	0.08	0.06							
165	2.75	10.82	10.57	573.69	0.08	0.06							
180	3.00	10.82	10.57	573.69	0.08	0.07							
195	3.25	10.82	10.57	573.69	0.08	0.06							
210	3.50	10.82	10.57	573.69	0.08	0.06							
225	3.75	10.82	10.57	573.69	0.08	0.07							
240	4.00	10.82	10.57	573.69	0.08	0.07							
255	4.25	10.82	10.57	573.69	0.08	0.07							
270	4.50	10.83	10.58	573.68	0.07	0.06							
285	4.75	10.82	10.57	573.69	0.08	0.06							

Slug Test Data
Elk Street Commerce Park
Buffalo, NY







ESCP-MW-8: TEST 1, SLUG IN

Data Set: C:\...\ESCP MW-8 T-1 SLUG IN.aqt
Date: 05/05/21 Time: 12:06:29

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-8
Test Date: April 19, 2021

AQUIFER DATA

Saturated Thickness: 14. ft Anisotropy Ratio (Kz/Kr): 1.

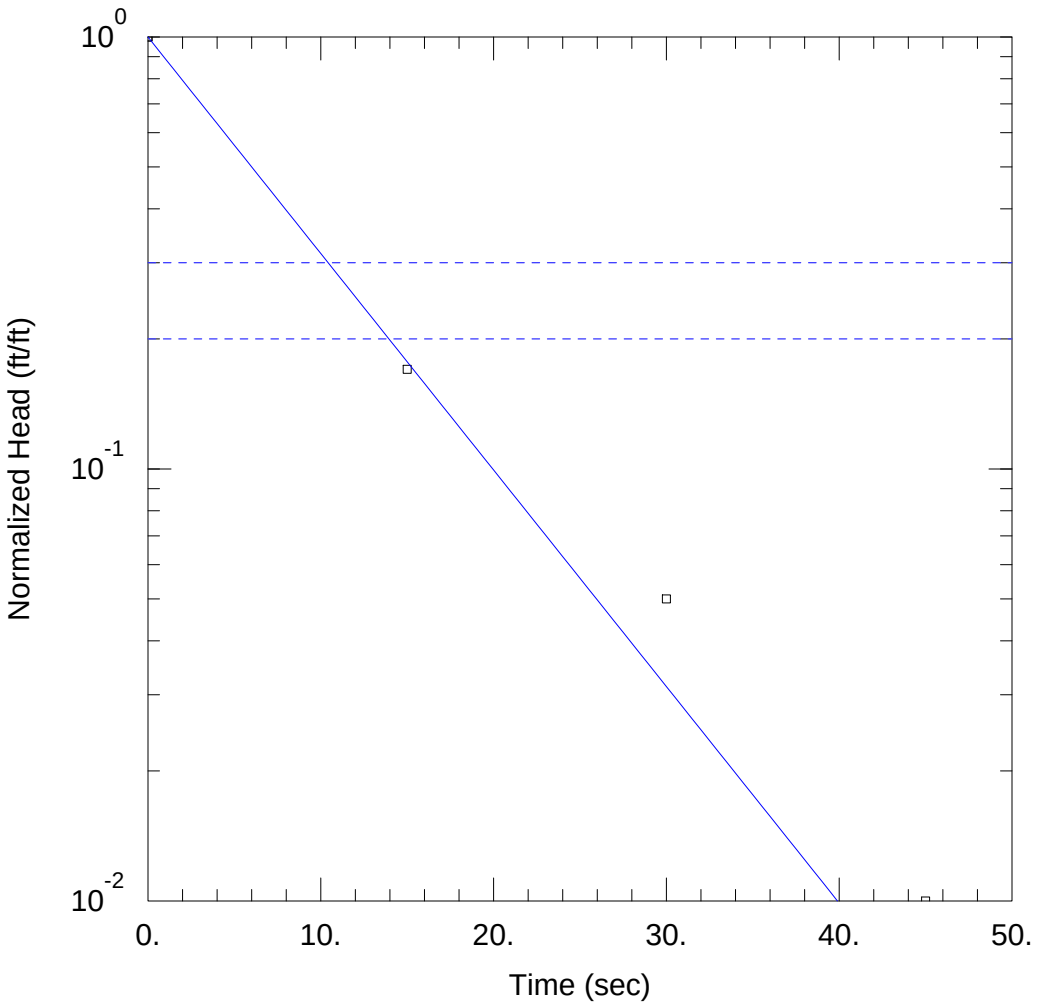
WELL DATA (ESCP MW-8 T-1 SLUG IN)

Initial Displacement: 0.45 ft
Total Well Penetration Depth: 17.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 17.5 ft
Screen Length: 17.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.01956 cm/sec y0 = 0.4495 ft



ESCP-MW-8: TEST 1, SLUG OUT

Data Set: C:\...\ESCP MW-8 T-1 SLUG OUT.aqt
Date: 05/05/21 Time: 12:05:45

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-8
Test Date: April 19, 2021

AQUIFER DATA

Saturated Thickness: 14. ft Anisotropy Ratio (Kz/Kr): 1.

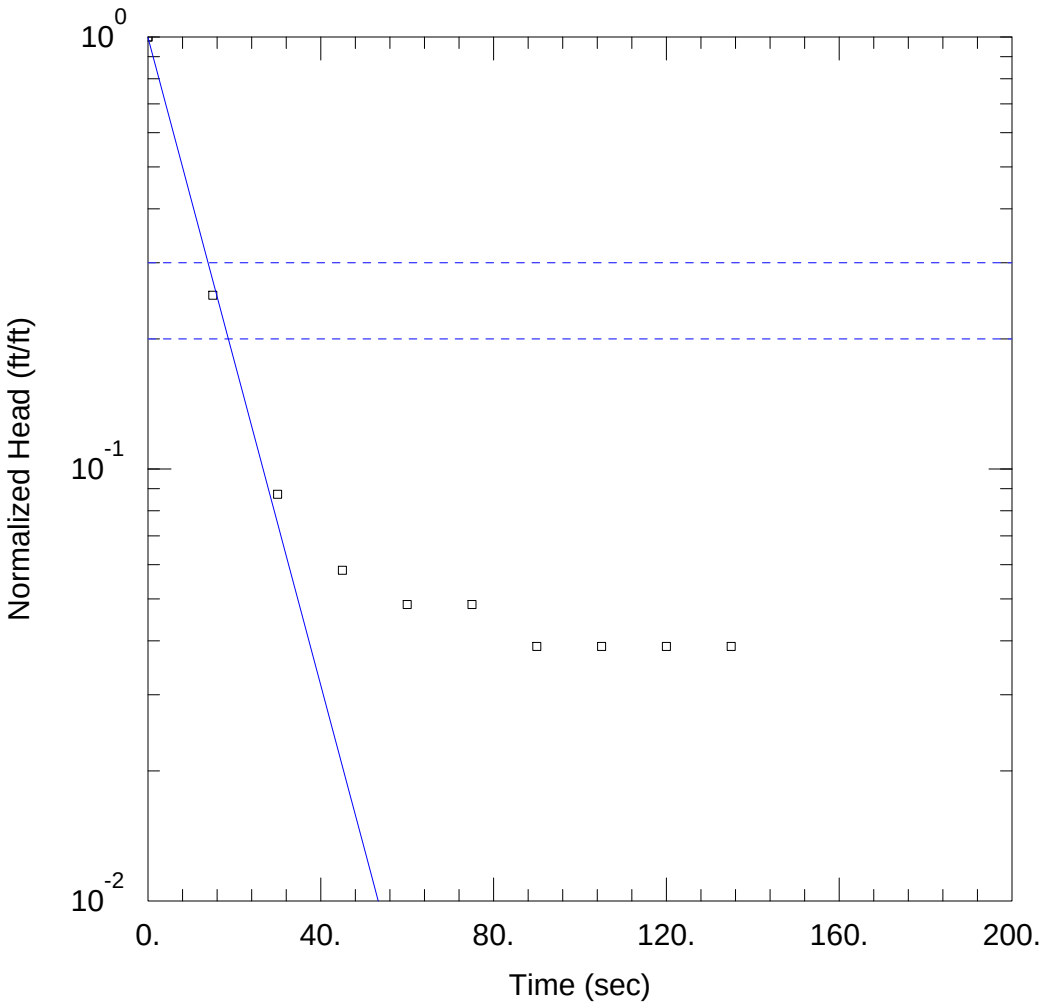
WELL DATA (ESCP MW-8 T-1 SLUG OUT)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 17.5 ft
Screen Length: 17.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0247 cm/sec y0 = 0.9994 ft



ESCP-MW-8: TEST 2, SLUG INT

Data Set: C:\...\ESCP MW-8 T-2 SLUG IN.aqt
Date: 05/05/21 Time: 12:05:01

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-8
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 14. ft Anisotropy Ratio (Kz/Kr): 1.

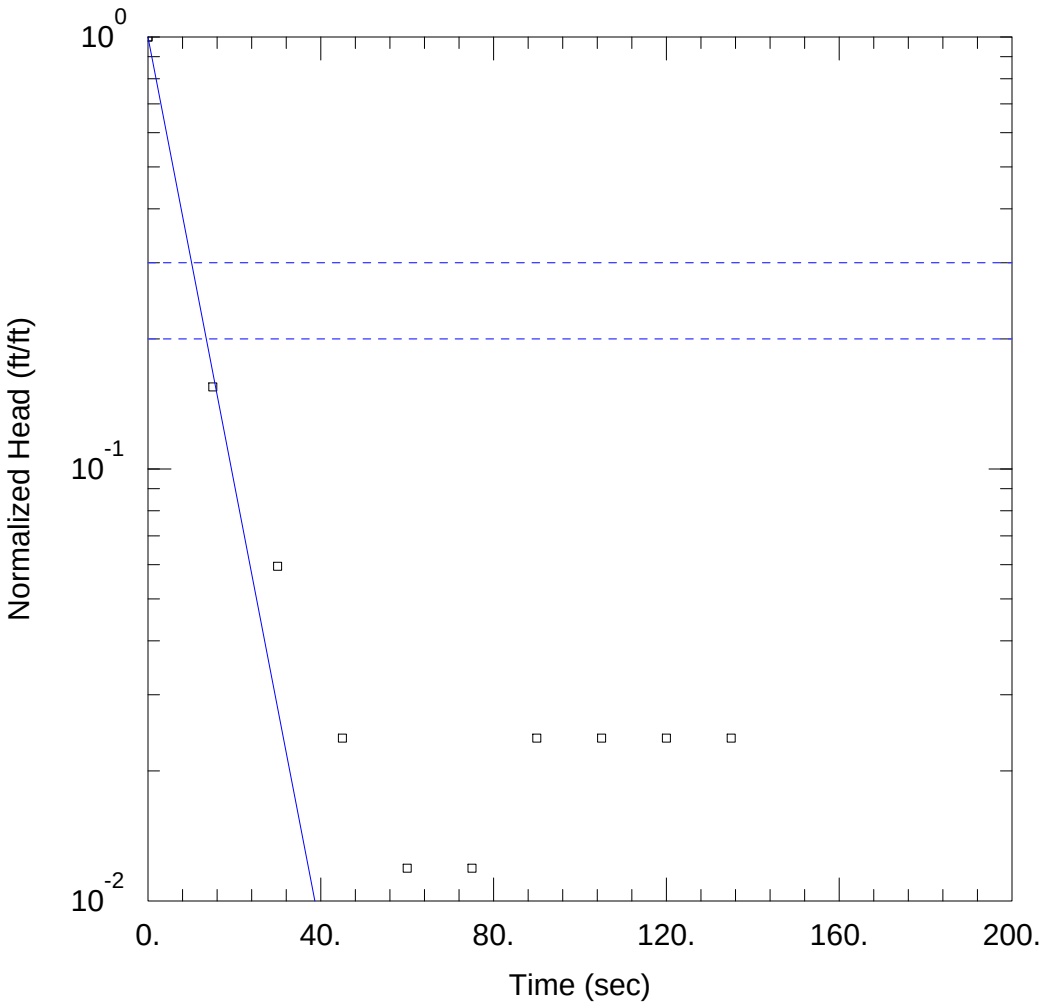
WELL DATA (ESCP MW-8 T-1 SLUG IN)

Initial Displacement: 1.03 ft
Total Well Penetration Depth: 17.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 17.5 ft
Screen Length: 17.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.01847 cm/sec y0 = 1.026 ft



ESCP-MW-8: TEST 2, SLUG OUT

Data Set: C:\...\ESCP MW-8 T-2 SLUG OUT.aqt
Date: 05/05/21 Time: 12:04:23

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-8
Test Date: April 20, 2021

AQUIFER DATA

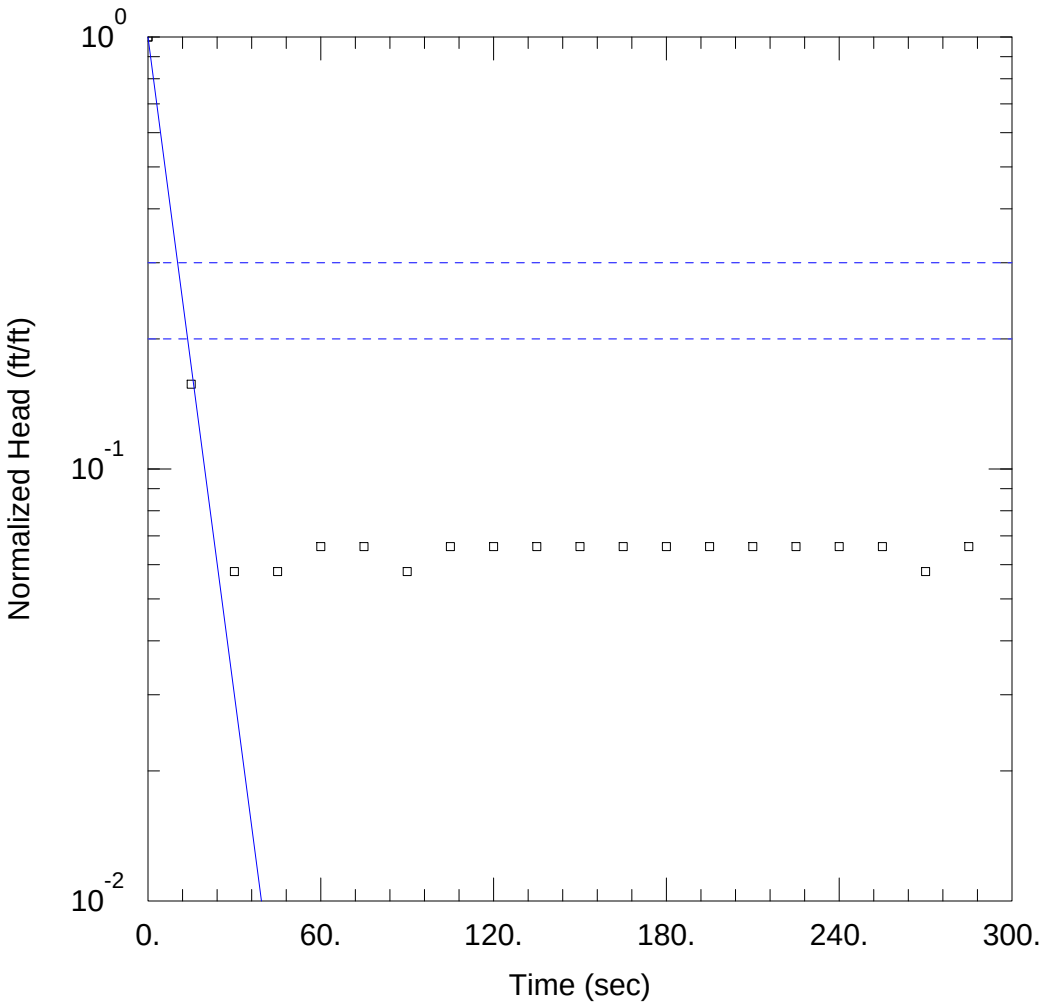
Saturated Thickness: 14. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-8 T-1 SLUG OUT)

Initial Displacement: 0.84 ft
Total Well Penetration Depth: 17.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 17.5 ft
Screen Length: 17.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.02551 cm/sec
y0 = 0.8391 ft



ESCP-MW-8: TEST 3, SLUG IN

Data Set: C:\...\ESCP MW-8 T-3 SLUG IN.aqt
Date: 05/05/21 Time: 12:03:42

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-8
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 14. ft Anisotropy Ratio (Kz/Kr): 1.

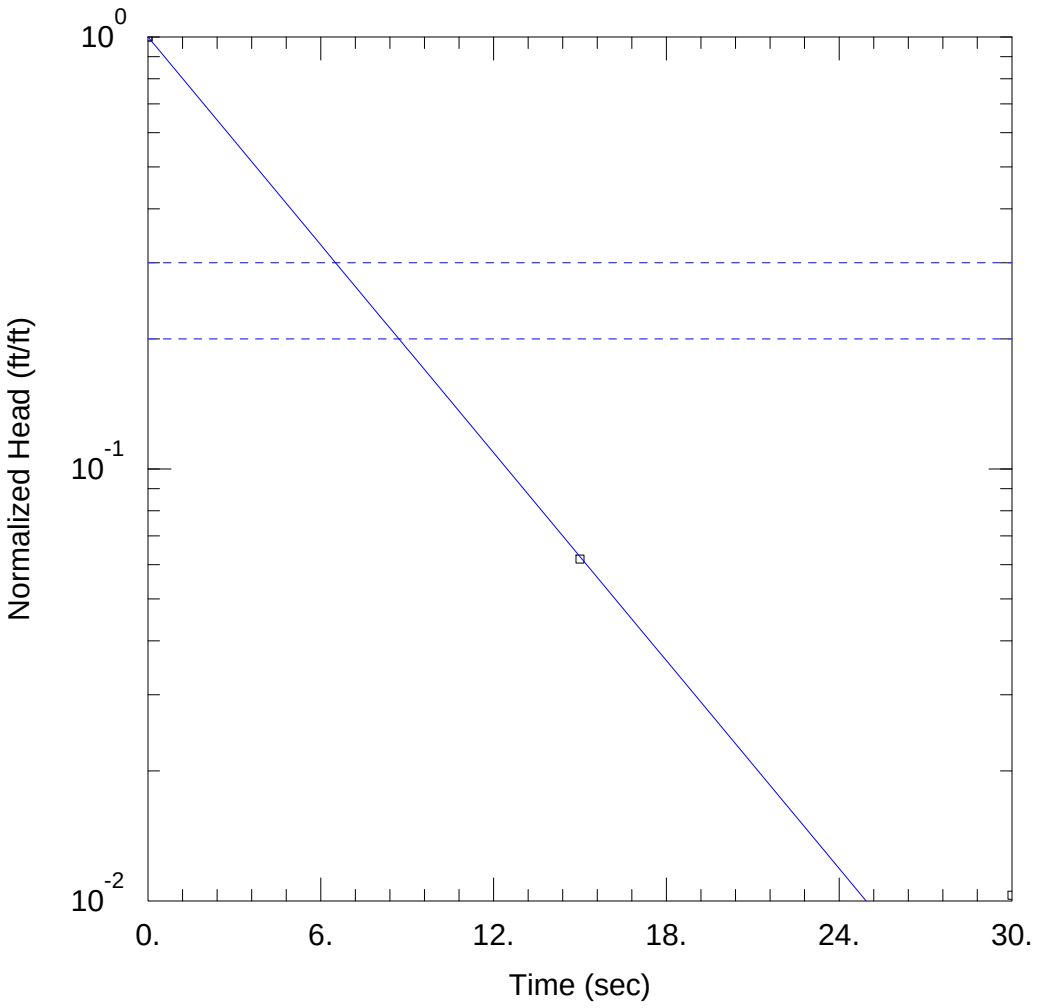
WELL DATA (ESCP MW-8 T-3 SLUG IN)

Initial Displacement: 1.21 ft
Total Well Penetration Depth: 17.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 17.5 ft
Screen Length: 17.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.02501 cm/sec y0 = 1.208 ft



ESCP-MW-8: TEST 3, SLUG OUT

Data Set: C:\...\ESCP MW-8 T-3 SLUG OUT.aqt
Date: 05/05/21 Time: 12:02:55

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-MW-8
Test Date: April 20, 2021

AQUIFER DATA

Saturated Thickness: 14. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ESCP MW-8 T-3 SLUG OUT)

Initial Displacement: 0.97 ft
Total Well Penetration Depth: 17.5 ft
Casing Radius: 0.166 ft
Static Water Column Height: 17.5 ft
Screen Length: 17.5 ft
Well Radius: 0.41 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.03953 cm/sec y0 = 0.97 ft

LaBella
Powered by partnership.

Pump Test Data

Summary of Hydraulic Conductivity Testing Results
Elk Street Commerce Park
Buffalo, NY

Well ID	Slug IN/OUT	Hydraulic Conductivity*		Average Hydraulic Conductivity			
				Slug Test Results		Pump Test Results	
		cm/sec	ft/day	cm/sec	ft/day	cm/sec	ft/day
MW-3	T-1 IN	4.35E-04	1.22	4.29E-04	1.22	NA	NA
	T-1 OUT	4.41E-04	1.25				
	T-2 IN	4.15E-04	1.17				
	T-2 OUT	4.18E-04	1.19				
	T-3 IN	4.23E-04	1.20				
	T-3 OUT	4.45E-04	1.26				
MW-24	T-1 IN	1.55E-04	0.44	2.69E-04	0.76	2.16E-02	61.21
	T-1 OUT	3.53E-04	1.00				
	T-2 IN	1.74E-04	0.49				
	T-2 OUT	3.93E-04	1.11				
ESCP-CSO-MW-4	T-1 IN	3.65E-03	10.35	3.96E-03	11.22	6.90E-03	19.54
	T-1 OUT	4.36E-03	12.34				
	T-2 IN	5.37E-03	15.23				
	T-2 OUT	2.46E-03	6.96				
ESCP-MW-7	T-1 IN	7.56E-03	21.44	9.55E-03	27.06	NA	NA
	T-1 OUT	1.23E-02	34.80				
	T-2 IN	1.33E-02	37.69				
	T-2 OUT	1.10E-03	3.13				
	T-3 IN	5.62E-03	15.94				
	T-3 OUT	1.74E-02	49.40				
ESCP-MW-8	T-1 IN	1.96E-02	55.43	2.55E-02	72.16	NA	NA
	T-1 OUT	2.47E-02	70.00				
	T-2 IN	1.85E-02	52.34				
	T-2 OUT	2.55E-02	72.29				
	T-3 IN	2.50E-02	70.88				
	T-3 OUT	3.95E-02	112.02				
ESCP-CSO-PZ-1	NA	NA	NA	NA	NA	3.66E-02	103.66
ESCP-CSO-PZ-2	NA	NA	NA	NA	NA	3.66E-02	103.66

Notes:
Slug tests conducted April 19 & 20, 2021 and May 3, 2021; pump test conducted April 27, 2021.
* Hydraulic conductivity given in centimeters per second and feet per day
NA = Not Applicable

AQTESOLVE Inputs - Pump Test ESCP-CSO-MW-4
April 27, 2021
Elk Street Commerce Park
Buffalo, NY

OBSERVED DRAWDOWN

ESCP-CSO-MW-4		MH-1		ESCP-CSO-PZ-1		ESCP-CSO-PZ-2		MW-24		ESCP-SCO-PZ-3	
Elapsed Time	DD	Elapsed Time	DD	Elapsed Time	DD	Elapsed Time	DD	Elapsed Time	DD	Elapsed Time	DD
0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
1	0.90	1	0.00	1	0.05	1	0.07	1	0.00	1	0.00
2	1.50	2	0.00	2	0.12	2	0.12	2	0.01	2	0.00
3	1.93	3	0.00	3	0.18	3	0.17	3	0.00	3	0.00
4	2.26	4	0.00	4	0.21	4	0.20	4	0.01	4	0.00
5	2.51	5	0.00	5	0.25	5	0.23	5	0.01	5	0.00
6	2.70	6	0.01	6	0.27	6	0.25	6	0.01	6	0.00
7	2.84	7	0.00	7	0.29	7	0.27	7	0.01	7	0.00
8	2.97	8	0.01	8	0.31	8	0.28	8	0.01	8	0.01
9	3.07	9	0.00	9	0.33	9	0.29	9	0.01	9	0.00
10	3.14	10	0.00	10	0.34	10	0.31	10	0.01	10	0.01
15	3.33	15	0.00	15	0.37	15	0.34	15	0.01	15	0.02
25	3.47	25	0.00	25	0.40	25	0.37	25	0.01	25	0.02
35	3.56	35	0.00	35	0.41	35	0.38	35	0.02	35	0.02
45	3.62	45	0.00	45	0.41	45	0.39	45	0.02	45	0.02
55	3.64	55	0.01	55	0.41	55	0.38	55	0.02	55	0.03
65	3.63	65	0.01	65	0.41	65	0.38	65	0.02	65	0.03
75	3.65	75	0.01	75	0.42	75	0.38	75	0.02	75	0.03
85	3.70	85	0.01	85	0.43	85	0.40	85	0.03	85	0.03
95	3.71	95	0.01	95	0.44	95	0.41	95	0.04	95	0.04
105	3.73	105	0.01	105	0.46	105	0.42	105	0.04	105	0.04
115	3.78	115	0.02	115	0.46	115	0.43	115	0.04	115	0.05
125	3.83	125	0.03	125	0.47	125	0.43	125	0.03	125	0.04
135	3.86	135	0.02	135	0.47	135	0.43	135	0.04	135	0.05
145	3.84	145	0.03	145	0.46	145	0.42	145	0.04	145	0.04
155	3.80	155	0.04	155	0.45	155	0.40	155	0.04	155	0.04
165	3.82	165	0.05	165	0.43	165	0.39	165	0.04	165	0.05
175	3.82	175	0.06	175	0.42	175	0.38	175	0.05	175	0.05
185	3.86	185	0.07	185	0.41	185	0.37	185	0.05	185	0.03
195	3.80	195	0.10	195	0.40	195	0.35	195	0.04	195	0.04
205	3.83	205	0.12	205	0.38	205	0.34	205	0.04	205	0.03
215	3.81	215	0.14	215	0.38	215	0.34	215	0.04	215	0.03
225	3.82	225	0.15	225	0.38	225	0.34	225	0.04	225	0.04
235	3.85	235	0.16	235	0.39	235	0.35	235	0.04	235	0.03
245	3.85	245	0.16	245	0.40	245	0.36	245	0.04	245	0.04
255	3.89	255	0.16	255	0.42	255	0.38	255	0.04	255	0.04
265	3.90	265	0.15	265	0.43	265	0.40	265	0.05	265	0.04
275	3.93	275	0.15	275	0.44	275	0.41	275	0.05	275	0.04
285	3.94	285	0.15	285	0.45	285	0.41	285	0.06	285	0.05
295	3.94	295	0.14	295	0.45	295	0.41	295	0.05	295	0.04
305	3.96	305	0.15	305	0.44	305	0.40	305	0.05	305	0.03
315	3.94	315	0.16	315	0.42	315	0.38	315	0.05	315	0.03
325	3.92	325	0.17	325	0.41	325	0.37	325	0.04	325	0.03
335	3.89	335	0.18	335	0.40	335	0.35	335	0.04	335	0.02
345	3.94	345	0.19	345	0.39	345	0.35	345	0.04	345	0.01
355	3.91	355	0.19	355	0.40	355	0.36	355	0.04	355	0.01
365	3.93	365	0.19	365	0.41	365	0.37	365	0.03	365	0.02
375	3.90	375	0.19	375	0.43	375	0.39	375	0.04	375	0.02
385	3.92	385	0.20	385	0.43	385	0.39	385	0.03	385	0.01
395	3.93	395	0.20	395	0.43	395	0.39	395	0.03	395	0.02
405	3.94	405	0.19	405	0.43	405	0.40	405	0.03	405	0.02
415	3.91	415	0.20	415	0.42	415	0.38	415	0.04	415	0.01
425	3.90	425	0.20	425	0.40	425	0.37	425	0.04	425	0.02
435	3.89	435	0.19	435	0.40	435	0.37	435	0.04	435	0.01
445	3.89	445	0.19	445	0.40	445	0.36	445	0.04	445	0.01
455	3.89	455	0.20	455	0.41	455	0.37	455	0.03	455	0.01
465	3.95	465	0.18	465	0.43	465	0.38	465	0.04	465	0.01
475	3.95	475	0.20	475	0.44	475	0.40	475	0.03	475	0.01
485	3.96	485	0.20	485	0.46	485	0.42	485	0.03	485	0.01
495	4.01	495	0.19	495	0.49	495	0.45	495	0.04	495	0.02
505	4.03	505	0.20	505	0.49	505	0.46	505	0.04	505	0.02
515	4.01	515	0.19	515	0.50	515	0.47	515	0.04	515	0.02
525	4.03	525	0.19	525	0.49	525	0.46	525	0.04	525	0.02
535	4.00	535	0.19	535	0.48	535	0.45	535	0.04	535	0.02
545	3.99	545	0.19	545	0.48	545	0.45	545	0.04	545	0.03
555	4.03	555	0.18	555	0.47	555	0.44	555	0.05	555	0.02
565	4.04	565	0.18	565	0.48	565	0.44	565	0.05	565	0.02
575	4.03	575	0.18	575	0.48	575	0.44	575	0.05	575	0.02
585	4.07	585	0.18	585	0.48	585	0.44	585	0.05	585	0.03
595	4.07	595	0.17	595	0.50	595	0.46	595	0.05	595	0.02

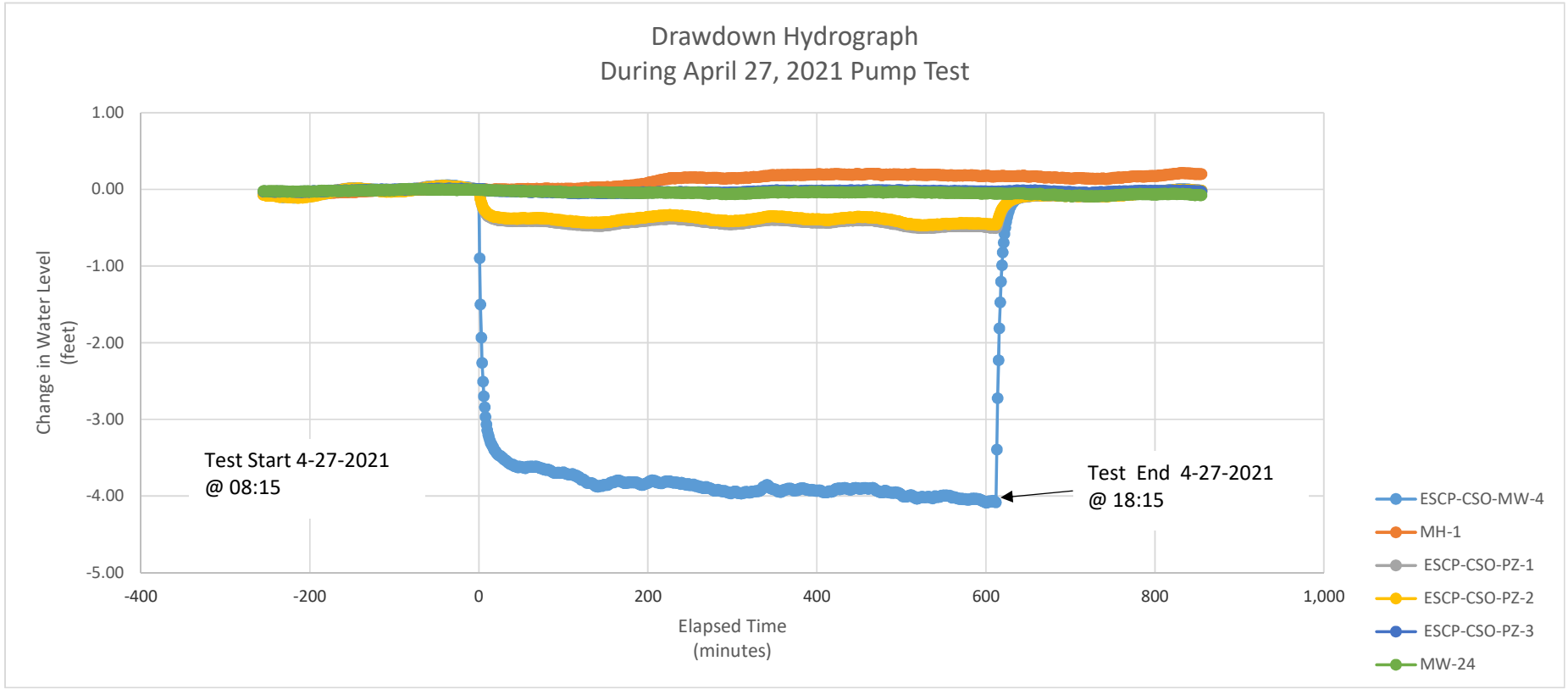
FLOW RATE

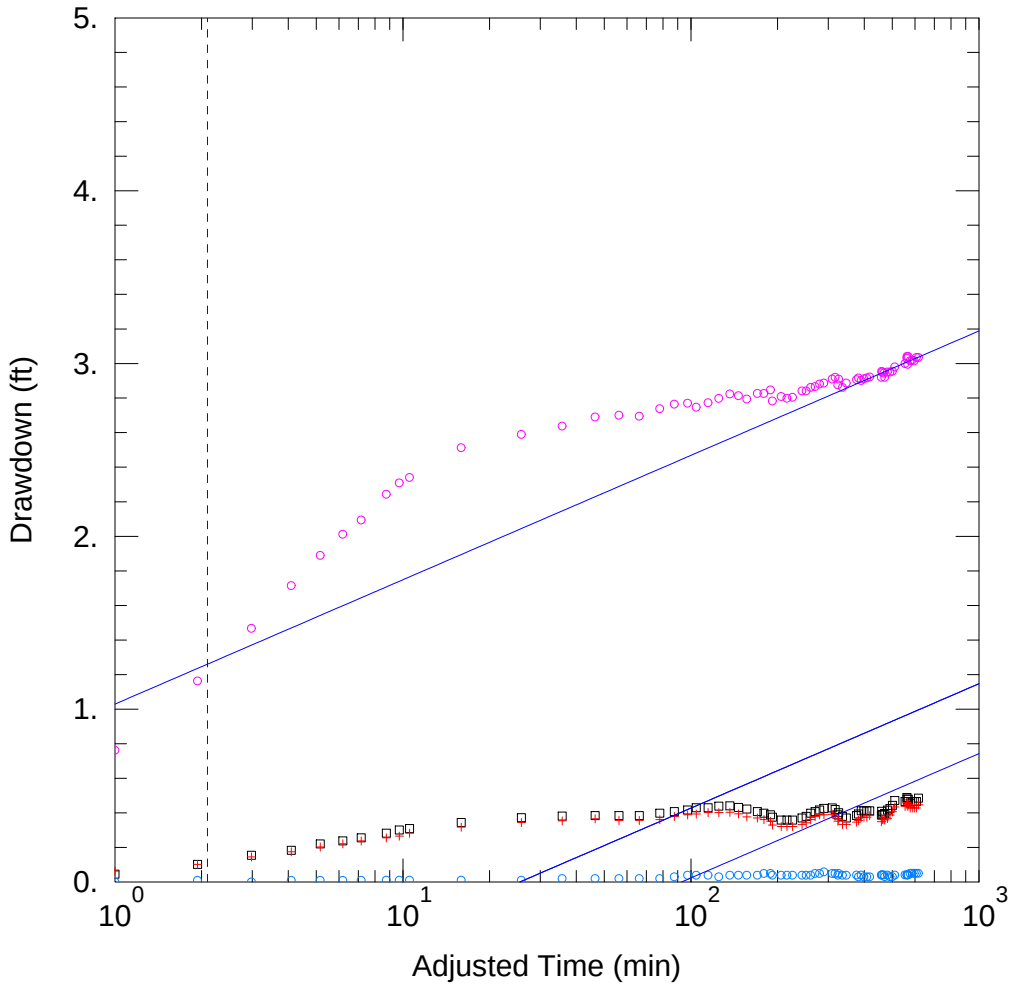
Elapsed Time (minutes)	**Flow Rate** (GPM)
0	2.70
1	2.83
2	2.80
3	2.74
4	2.71
5	2.70
6	2.70
7	2.61
8	2.60
9	2.61
10	2.54
40	2.52
65	2.49
95	2.52
125	2.51
155	2.49
185	2.52
200	2.51
215	2.51
230	2.49
260	2.49
290	2.47
320	2.49
350	2.46
380	2.46
410	2.42
440	2.44
470	2.44
500	2.40
530	2.42
600	2.44

AQTESOLVE Inputs - Pump Test ESCP-CSO-MW-4
April 27, 2021
Elk Street Commerce Park
Buffalo, NY

RECOVERY

ESCP-CSO-MW-4		MH-1		ESCP-CSO-PZ-1		ESCP-CSO-PZ-2		MW-24		ESCP-SCO-PZ-3	
Elapsed Time	DD	Elapsed Time	DD	Elapsed Time	DD	Elapsed Time	DD	Elapsed Time	DD	Elapsed Time	DD
596	3.39	596	0.18	596	0.49	596	0.44	596	0.49	596	0.03
597	2.72	597	0.18	597	0.45	597	0.40	597	0.45	597	0.03
598	2.23	598	0.18	598	0.40	598	0.37	598	0.40	598	0.02
599	1.81	599	0.18	599	0.36	599	0.34	599	0.36	599	0.03
600	1.47	600	0.18	600	0.33	600	0.31	600	0.33	600	0.03
601	1.20	601	0.18	601	0.31	601	0.28	601	0.31	601	0.03
602	0.99	602	0.18	602	0.28	602	0.26	602	0.28	602	0.02
603	0.82	603	0.18	603	0.26	603	0.24	603	0.26	603	0.02
604	0.69	604	0.18	604	0.24	604	0.22	604	0.24	604	0.02
605	0.58	605	0.18	605	0.22	605	0.21	605	0.22	605	0.03
606	0.50	606	0.18	606	0.21	606	0.19	606	0.21	606	0.02
607	0.42	607	0.17	607	0.19	607	0.19	607	0.19	607	0.02
608	0.36	608	0.17	608	0.18	608	0.18	608	0.18	608	0.02
609	0.32	609	0.17	609	0.17	609	0.16	609	0.17	609	0.02
610	0.28	610	0.17	610	0.17	610	0.15	610	0.17	610	0.02
611	0.25	611	0.17	611	0.16	611	0.15	611	0.16	611	0.02
612	0.22	612	0.17	612	0.15	612	0.14	612	0.15	612	0.02
613	0.20	613	0.17	613	0.14	613	0.14	613	0.14	613	0.02
614	0.18	614	0.17	614	0.14	614	0.13	614	0.14	614	0.02
615	0.17	615	0.17	615	0.13	615	0.13	615	0.13	615	0.02
616	0.16	616	0.17	616	0.13	616	0.12	616	0.13	616	0.02
617	0.14	617	0.17	617	0.12	617	0.12	617	0.12	617	0.02
618	0.13	618	0.17	618	0.12	618	0.12	618	0.12	618	0.02
619	0.13	619	0.17	619	0.12	619	0.11	619	0.12	619	0.01
620	0.12	620	0.17	620	0.11	620	0.10	620	0.11	620	0.02
621	0.11	621	0.18	621	0.11	621	0.10	621	0.11	621	0.01
622	0.11	622	0.18	622	0.10	622	0.11	622	0.10	622	0.02
623	0.11	623	0.18	623	0.11	623	0.10	623	0.11	623	0.02
624	0.11	624	0.18	624	0.11	624	0.10	624	0.11	624	0.02
625	0.09	625	0.18	625	0.10	625	0.09	625	0.10	625	0.02


Drawdown Hydrograph
During April 27, 2021 Pump Test
Change in Water Level (feet)
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-400
-200
0
200
400
600
800
1,000
Elapsed Time (minutes)
Test Start 4-27-2021
@ 08:15
Test End 4-27-2021
@ 18:15
ESCP-CSO-MW-4
MH-1
ESCP-CSO-PZ-1
ESCP-CSO-PZ-2
ESCP-CSO-PZ-3
MW-24



BABCOCK STREET COMBINED SEWER OVERFLOW

Data Set: C:\...\Pump Test - PZ-3 REM w-REC.aqt
Date: 05/06/21 Time: 16:29:24

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-CSO-MW-4
Test Date: April 27, 2021

AQUIFER DATA

Saturated Thickness: 8. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ESCP-CSO-MW-4	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
PZ-1	0	-11
PZ-2	0	11
MW-24	-21	0
ESCP-CSO-MW-4	0	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T= 1.375 ft²/

Data Set: C:\Program Files (x86)\HydroSOLVE\AQTESOLV Std 4.0\Elk St Commerce Park\Pump Test\PT w-Recovery\Pump Test -
Title: Babcock Street Combined Sewer Overflow
Date: 05/06/21
Time: 16:29:55

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Date: April 27, 2021
Test Well: ESCP-CSO-MW-4

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: ESCP-CSO-MW-4

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.25 ft
Well Radius: 0.42 ft

Fully Penetrating Well

No. of pumping periods: 32

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	2.7	185.	2.52
1.	2.83	200.	2.51
2.	2.8	215.	2.51
3.	2.74	230.	2.49
4.	2.71	260.	2.49
5.	2.7	290.	2.47
6.	2.7	320.	2.49
7.	2.61	350.	2.46
8.	2.6	380.	2.46
9.	2.61	410.	2.42
10.	2.54	440.	2.44
40.	2.52	470.	2.44
65.	2.49	500.	2.4
95.	2.52	530.	2.42
125.	2.51	595.	0.
155.	2.49	600.	0.

OBSERVATION WELL DATA

No. of observation wells: 4

Observation Well No. 1: PZ-1

X Location: 0. ft
Y Location: -11. ft

Radial distance from ESCP-CSO-MW-4: 11. ft

Fully Penetrating Well

No. of Observations: 99

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.05	415.	0.42
2.	0.12	425.	0.4
3.	0.18	435.	0.4
4.	0.21	445.	0.4
5.	0.25	455.	0.41
6.	0.27	465.	0.43
7.	0.29	475.	0.44
8.	0.31	485.	0.46
9.	0.33	495.	0.49
10.	0.34	505.	0.49
15.	0.37	515.	0.5
25.	0.4	525.	0.49
35.	0.41	535.	0.48
45.	0.41	545.	0.48
55.	0.41	555.	0.47
65.	0.41	565.	0.48
75.	0.42	575.	0.48
85.	0.43	585.	0.48
95.	0.44	595.	0.5
105.	0.46	596.	0.49
115.	0.46	597.	0.45
125.	0.47	598.	0.4
135.	0.47	599.	0.36
145.	0.46	600.	0.33
155.	0.45	601.	0.31
165.	0.43	602.	0.28
175.	0.42	603.	0.26
185.	0.41	604.	0.24
195.	0.4	605.	0.22
205.	0.38	606.	0.21
215.	0.38	607.	0.19
225.	0.38	608.	0.18
235.	0.39	609.	0.17
245.	0.4	610.	0.17
255.	0.42	611.	0.16
265.	0.43	612.	0.15
275.	0.44	613.	0.14
285.	0.45	614.	0.14
295.	0.45	615.	0.13
305.	0.44	616.	0.13
315.	0.42	617.	0.12
325.	0.41	618.	0.12
335.	0.4	619.	0.12
345.	0.39	630.	0.11
355.	0.4	631.	0.11
365.	0.41	632.	0.1
375.	0.43	633.	0.11
385.	0.43	634.	0.11
395.	0.43	635.	0.1
405.	0.43		

Observation Well No. 2: PZ-2

X Location: 0. ft
Y Location: 11. ft

Radial distance from ESCP-CSO-MW-4: 11. ft

Fully Penetrating Well

No. of Observations: 98

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.07	405.	0.4
2.	0.12	415.	0.38
3.	0.17	425.	0.37
4.	0.2	435.	0.37
5.	0.23	445.	0.36
6.	0.25	455.	0.37
7.	0.27	465.	0.38
8.	0.28	475.	0.4
9.	0.29	485.	0.42
10.	0.31	495.	0.45
15.	0.34	505.	0.46
25.	0.37	515.	0.47
35.	0.38	525.	0.46
45.	0.39	535.	0.45
55.	0.38	545.	0.45
65.	0.38	555.	0.44
75.	0.38	565.	0.44
85.	0.4	575.	0.44
95.	0.41	585.	0.44
105.	0.42	595.	0.46
115.	0.43	596.	0.44
125.	0.43	597.	0.4
135.	0.43	598.	0.37
145.	0.42	599.	0.34
155.	0.4	600.	0.31
165.	0.39	601.	0.28
175.	0.38	602.	0.26
185.	0.37	603.	0.24
195.	0.35	604.	0.22
205.	0.34	605.	0.21
215.	0.34	606.	0.19
225.	0.34	607.	0.19
235.	0.35	608.	0.18
245.	0.36	609.	0.16
255.	0.38	610.	0.15
265.	0.4	611.	0.15
275.	0.41	612.	0.14
285.	0.41	613.	0.14
295.	0.41	614.	0.13
305.	0.4	615.	0.13
315.	0.38	616.	0.12
325.	0.37	617.	0.12
335.	0.35	618.	0.12
345.	0.35	619.	0.11
355.	0.36	620.	0.1
365.	0.37	621.	0.1
375.	0.39	622.	0.11
385.	0.39	623.	0.1
395.	0.39	624.	0.1

Observation Well No. 3: MW-24

X Location: -21. ft
Y Location: 0. ft

Radial distance from ESCP-CSO-MW-4: 21. ft

Fully Penetrating Well

No. of Observations: 99

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.	415.	0.04
2.	0.01	425.	0.04
3.	0.	435.	0.04

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
4.	0.01	445.	0.04
5.	0.01	455.	0.03
6.	0.01	465.	0.04
7.	0.01	475.	0.03
8.	0.01	485.	0.03
9.	0.01	495.	0.04
10.	0.01	505.	0.04
15.	0.01	515.	0.04
25.	0.01	525.	0.04
35.	0.02	535.	0.04
45.	0.02	545.	0.04
55.	0.02	555.	0.05
65.	0.02	565.	0.05
75.	0.02	575.	0.05
85.	0.03	585.	0.05
95.	0.04	595.	0.05
105.	0.04	596.	0.05
115.	0.04	597.	0.05
125.	0.03	598.	0.05
135.	0.04	599.	0.05
145.	0.04	600.	0.05
155.	0.04	601.	0.05
165.	0.04	602.	0.05
175.	0.05	603.	0.05
185.	0.05	604.	0.05
195.	0.04	605.	0.05
205.	0.04	606.	0.05
215.	0.04	607.	0.05
225.	0.04	608.	0.05
235.	0.04	609.	0.05
245.	0.04	610.	0.05
255.	0.04	611.	0.05
265.	0.05	612.	0.05
275.	0.05	613.	0.05
285.	0.06	614.	0.05
295.	0.05	615.	0.05
305.	0.05	616.	0.05
315.	0.05	617.	0.05
325.	0.04	618.	0.05
335.	0.04	619.	0.05
345.	0.04	620.	0.05
355.	0.04	621.	0.05
365.	0.03	622.	0.05
375.	0.04	623.	0.05
385.	0.03	624.	0.05
395.	0.03	625.	0.06
405.	0.03		

Observation Well No. 4: ESCP-CSO-MW-4

X Location: 0. ft
Y Location: 0. ft

Radial distance from ESCP-CSO-MW-4: 0. ft

Fully Penetrating Well

No. of Observations: 99

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.9	415.	3.91
2.	1.5	425.	3.9
3.	1.93	435.	3.89
4.	2.26	445.	3.89
5.	2.51	455.	3.89

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.	2.7	465.	3.95
7.	2.84	475.	3.95
8.	2.97	485.	3.96
9.	3.07	495.	4.01
10.	3.14	505.	4.03
15.	3.33	515.	4.01
25.	3.47	525.	4.03
35.	3.56	535.	4.
45.	3.62	545.	3.99
55.	3.64	555.	4.03
65.	3.63	565.	4.04
75.	3.65	575.	4.03
85.	3.7	585.	4.07
95.	3.71	595.	4.07
105.	3.73	596.	3.39
115.	3.78	597.	2.72
125.	3.83	598.	2.23
135.	3.86	599.	1.81
145.	3.84	600.	1.47
155.	3.8	601.	1.2
165.	3.82	602.	0.99
175.	3.82	603.	0.82
185.	3.86	604.	0.69
195.	3.8	605.	0.58
205.	3.83	606.	0.5
215.	3.81	607.	0.42
225.	3.82	608.	0.36
235.	3.85	609.	0.32
245.	3.85	610.	0.28
255.	3.89	611.	0.25
265.	3.9	612.	0.22
275.	3.93	613.	0.2
285.	3.94	614.	0.18
295.	3.94	615.	0.17
305.	3.96	616.	0.16
315.	3.94	617.	0.14
325.	3.92	618.	0.13
335.	3.89	619.	0.13
345.	3.94	620.	0.12
355.	3.91	621.	0.11
365.	3.93	622.	0.11
375.	3.9	623.	0.11
385.	3.92	624.	0.11
395.	3.93	625.	0.09
405.	3.94		

SOLUTION

Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	1.275	cm^2/sec
S	0.03899	

K = T/b = 0.00523 cm/sec
Ss = S/b = 0.004873 1/ft

NOTES

Estimated with observations from test wel, MW-24 and PZ-1, PZ-2l

Data Set: C:\Program Files (x86)\HydroSOLVE\AQTESOLV Std 4.0\Elk St Commerce Park\Pump Test\PT w-Recovery\Pump Test -
Title: Babcock Street Combined Sewer Overflow
Date: 05/06/21
Time: 16:22:54

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Date: April 27, 2021
Test Well: ESCP-CSO-MW-4

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: ESCP-CSO-MW-4

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.25 ft
Well Radius: 0.42 ft

Fully Penetrating Well

No. of pumping periods: 32

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	2.7	185.	2.52
1.	2.83	200.	2.51
2.	2.8	215.	2.51
3.	2.74	230.	2.49
4.	2.71	260.	2.49
5.	2.7	290.	2.47
6.	2.7	320.	2.49
7.	2.61	350.	2.46
8.	2.6	380.	2.46
9.	2.61	410.	2.42
10.	2.54	440.	2.44
40.	2.52	470.	2.44
65.	2.49	500.	2.4
95.	2.52	530.	2.42
125.	2.51	595.	0.
155.	2.49	600.	0.

OBSERVATION WELL DATA

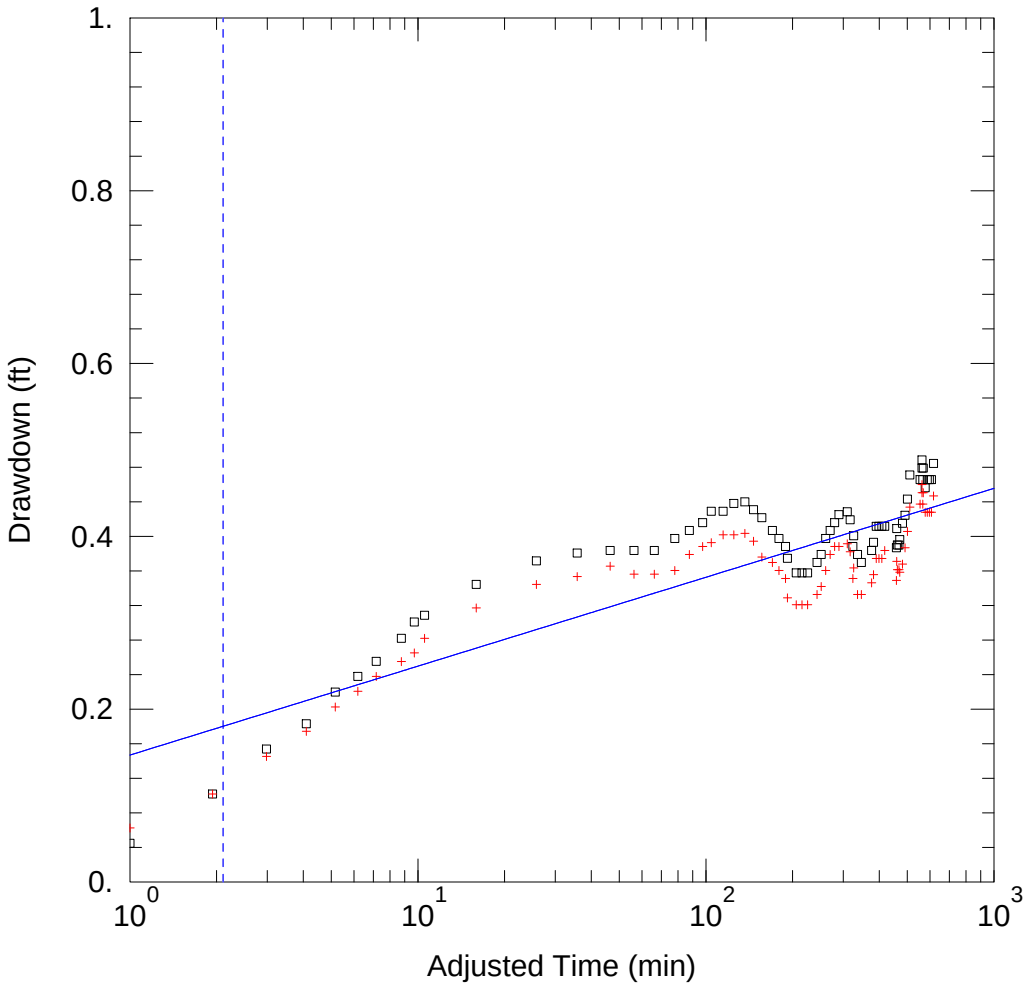
No. of observation wells: 2

Observation Well No. 1: PZ-1

X Location: 0. ft
Y Location: -11. ft

Radial distance from ESCP-CSO-MW-4: 11. ft

Fully Penetrating Well



BABCOCK STREET COMBINED SEWER OVERFLOW

Data Set: C:\...\Pump Test - PZ-1 & PZ-2 w-REC.aqt
Date: 05/06/21 Time: 16:22:23

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-CSO-MW-4
Test Date: April 27, 2021

AQUIFER DATA

Saturated Thickness: 8. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ESCP-CSO-MW-4	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ PZ-1	0	-11
+ PZ-2	0	11

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 8.919 cm^2/sec S = 0.0004003

No. of Observations: 99

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.05	415.	0.42
2.	0.12	425.	0.4
3.	0.18	435.	0.4
4.	0.21	445.	0.4
5.	0.25	455.	0.41
6.	0.27	465.	0.43
7.	0.29	475.	0.44
8.	0.31	485.	0.46
9.	0.33	495.	0.49
10.	0.34	505.	0.49
15.	0.37	515.	0.5
25.	0.4	525.	0.49
35.	0.41	535.	0.48
45.	0.41	545.	0.48
55.	0.41	555.	0.47
65.	0.41	565.	0.48
75.	0.42	575.	0.48
85.	0.43	585.	0.48
95.	0.44	595.	0.5
105.	0.46	596.	0.49
115.	0.46	597.	0.45
125.	0.47	598.	0.4
135.	0.47	599.	0.36
145.	0.46	600.	0.33
155.	0.45	601.	0.31
165.	0.43	602.	0.28
175.	0.42	603.	0.26
185.	0.41	604.	0.24
195.	0.4	605.	0.22
205.	0.38	606.	0.21
215.	0.38	607.	0.19
225.	0.38	608.	0.18
235.	0.39	609.	0.17
245.	0.4	610.	0.17
255.	0.42	611.	0.16
265.	0.43	612.	0.15
275.	0.44	613.	0.14
285.	0.45	614.	0.14
295.	0.45	615.	0.13
305.	0.44	616.	0.13
315.	0.42	617.	0.12
325.	0.41	618.	0.12
335.	0.4	619.	0.12
345.	0.39	630.	0.11
355.	0.4	631.	0.11
365.	0.41	632.	0.1
375.	0.43	633.	0.11
385.	0.43	634.	0.11
395.	0.43	635.	0.1
405.	0.43		

Observation Well No. 2: PZ-2

X Location: 0. ft
Y Location: 11. ft

Radial distance from ESCP-CSO-MW-4: 11. ft

Fully Penetrating Well

No. of Observations: 98

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.07	405.	0.4
2.	0.12	415.	0.38
3.	0.17	425.	0.37
4.	0.2	435.	0.37
5.	0.23	445.	0.36
6.	0.25	455.	0.37
7.	0.27	465.	0.38
8.	0.28	475.	0.4
9.	0.29	485.	0.42
10.	0.31	495.	0.45
15.	0.34	505.	0.46
25.	0.37	515.	0.47
35.	0.38	525.	0.46
45.	0.39	535.	0.45
55.	0.38	545.	0.45
65.	0.38	555.	0.44
75.	0.38	565.	0.44
85.	0.4	575.	0.44
95.	0.41	585.	0.44
105.	0.42	595.	0.46
115.	0.43	596.	0.44
125.	0.43	597.	0.4
135.	0.43	598.	0.37
145.	0.42	599.	0.34
155.	0.4	600.	0.31
165.	0.39	601.	0.28
175.	0.38	602.	0.26
185.	0.37	603.	0.24
195.	0.35	604.	0.22
205.	0.34	605.	0.21
215.	0.34	606.	0.19
225.	0.34	607.	0.19
235.	0.35	608.	0.18
245.	0.36	609.	0.16
255.	0.38	610.	0.15
265.	0.4	611.	0.15
275.	0.41	612.	0.14
285.	0.41	613.	0.14
295.	0.41	614.	0.13
305.	0.4	615.	0.13
315.	0.38	616.	0.12
325.	0.37	617.	0.12
335.	0.35	618.	0.12
345.	0.35	619.	0.11
355.	0.36	620.	0.1
365.	0.37	621.	0.1
375.	0.39	622.	0.11
385.	0.39	623.	0.1
395.	0.39	624.	0.1

SOLUTION

Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	8.919	cm^2/sec
S	0.0004003	

K = T/b = 0.03658 cm/sec
Ss = S/b = 5.003E-5 1/ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	Approx. C.I.	t-Ratio	
T	8.919	0.4362	+/- 0.8628	20.45	cm^2/sec
S	0.0004003	0.0001427	+/- 0.0002822	2.806	

C.I. is approximate 95% confidence interval for parameter
t-ratio = estimate/std. error
No estimation window

K = T/b = 0.03658 cm/sec
Ss = S/b = 5.003E-5 1/ft

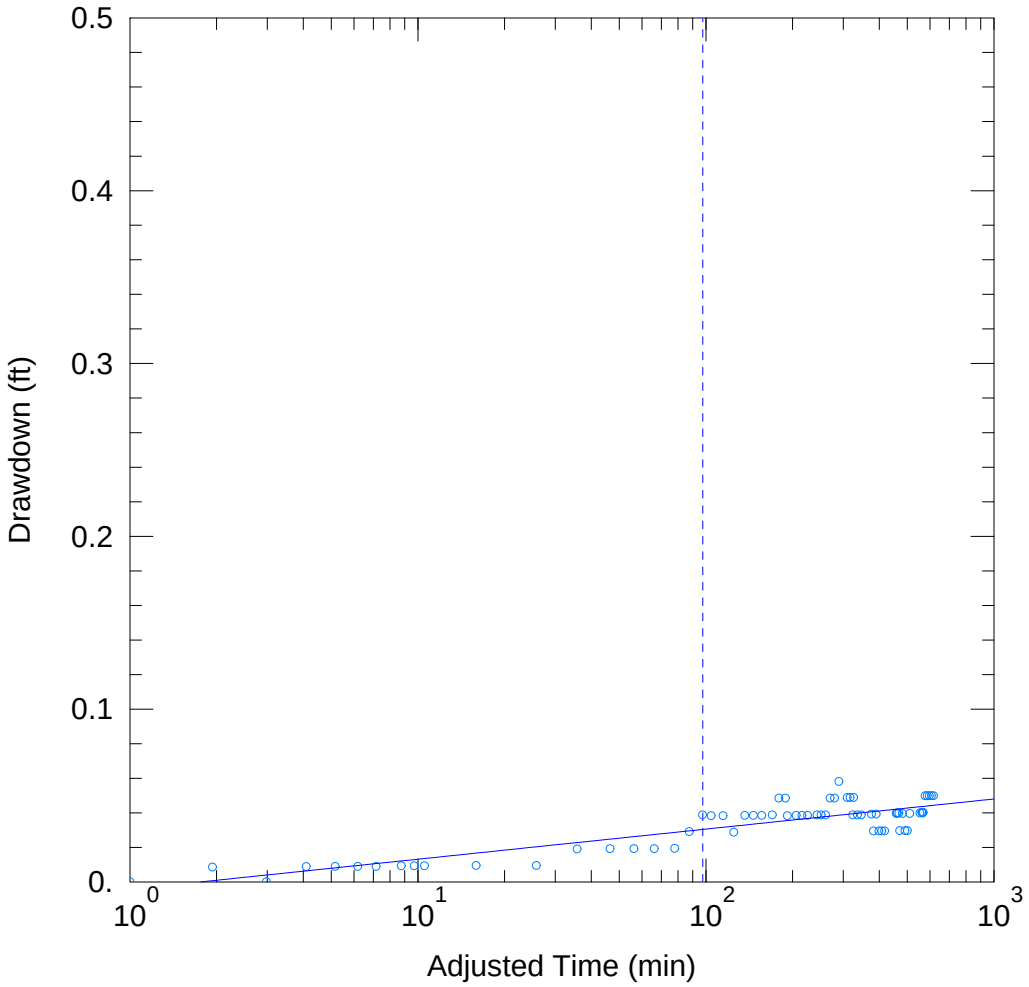
Parameter Correlations

	T	S
T	1.00	-0.97
S	-0.97	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.2939 ft^2
Variance . . . . . 0.002161 ft^2
Std. Deviation . . . . . 0.04649 ft
Mean . . . . . 0.0002647 ft
No. of Residuals. 138
No. of Estimates. 2



BABCOCK STREET COMBINED SEWER OVERFLOW

Data Set: C:\...\Pump Test - MW-24 w-REC.aqt
Date: 05/06/21 Time: 16:32:18

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-CSO-MW-4
Test Date: April 27, 2021

AQUIFER DATA

Saturated Thickness: 8. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ESCP-CSO-MW-4	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
○ MW-24	-21	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 52.66 cm^2/sec S = 0.03053

Data Set: C:\Program Files (x86)\HydroSOLVE\AQTESOLV Std 4.0\Elk St Commerce Park\Pump Test\PT w-Recovery\Pump Test -
Title: Babcock Street Combined Sewer Overflow
Date: 05/06/21
Time: 16:32:44

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Date: April 27, 2021
Test Well: ESCP-CSO-MW-4

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: ESCP-CSO-MW-4

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.25 ft
Well Radius: 0.42 ft

Fully Penetrating Well

No. of pumping periods: 32

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	2.7	185.	2.52
1.	2.83	200.	2.51
2.	2.8	215.	2.51
3.	2.74	230.	2.49
4.	2.71	260.	2.49
5.	2.7	290.	2.47
6.	2.7	320.	2.49
7.	2.61	350.	2.46
8.	2.6	380.	2.46
9.	2.61	410.	2.42
10.	2.54	440.	2.44
40.	2.52	470.	2.44
65.	2.49	500.	2.4
95.	2.52	530.	2.42
125.	2.51	595.	0.
155.	2.49	600.	0.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: MW-24

X Location: -21. ft
Y Location: 0. ft

Radial distance from ESCP-CSO-MW-4: 21. ft

Fully Penetrating Well

No. of Observations: 99

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.	415.	0.04
2.	0.01	425.	0.04
3.	0.	435.	0.04
4.	0.01	445.	0.04
5.	0.01	455.	0.03
6.	0.01	465.	0.04
7.	0.01	475.	0.03
8.	0.01	485.	0.03
9.	0.01	495.	0.04
10.	0.01	505.	0.04
15.	0.01	515.	0.04
25.	0.01	525.	0.04
35.	0.02	535.	0.04
45.	0.02	545.	0.04
55.	0.02	555.	0.05
65.	0.02	565.	0.05
75.	0.02	575.	0.05
85.	0.03	585.	0.05
95.	0.04	595.	0.05
105.	0.04	596.	0.05
115.	0.04	597.	0.05
125.	0.03	598.	0.05
135.	0.04	599.	0.05
145.	0.04	600.	0.05
155.	0.04	601.	0.05
165.	0.04	602.	0.05
175.	0.05	603.	0.05
185.	0.05	604.	0.05
195.	0.04	605.	0.05
205.	0.04	606.	0.05
215.	0.04	607.	0.05
225.	0.04	608.	0.05
235.	0.04	609.	0.05
245.	0.04	610.	0.05
255.	0.04	611.	0.05
265.	0.05	612.	0.05
275.	0.05	613.	0.05
285.	0.06	614.	0.05
295.	0.05	615.	0.05
305.	0.05	616.	0.05
315.	0.05	617.	0.05
325.	0.04	618.	0.05
335.	0.04	619.	0.05
345.	0.04	620.	0.05
355.	0.04	621.	0.05
365.	0.03	622.	0.05
375.	0.04	623.	0.05
385.	0.03	624.	0.05
395.	0.03	625.	0.06
405.	0.03		

SOLUTION

Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	52.66	cm^2/sec

S 0.03053

K = T/b = 0.216 cm/sec
Ss = S/b = 0.003816 1/ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	Approx. C.I.	t-Ratio	
T	52.66	3.519	+/- 7.025	14.96	cm^2/sec
S	0.03053	0.007447	+/- 0.01486	4.099	

C.I. is approximate 95% confidence interval for parameter
t-ratio = estimate/std. error
No estimation window

K = T/b = 0.216 cm/sec
Ss = S/b = 0.003816 1/ft

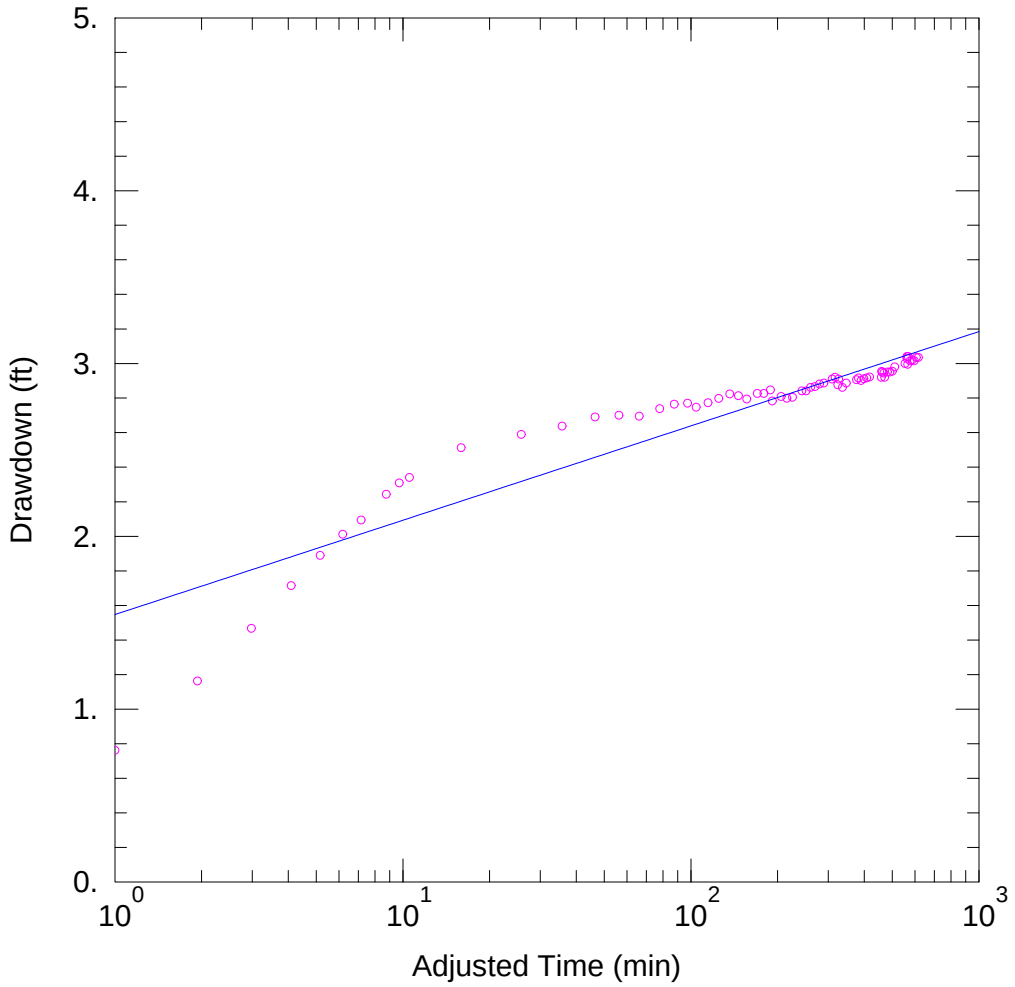
Parameter Correlations

	T	S
T	1.00	-0.89
S	-0.89	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.003618 ft^2
Variance . . . . . 5.399E-5 ft^2
Std. Deviation . . . . . 0.007348 ft
Mean . . . . . -2.341E-5 ft
No. of Residuals. 69
No. of Estimates. 2



BABCOCK STREET COMBINED SEWER OVERFLOW

Data Set: C:\...\Pump Test - ESCP-MW-4 w-REC.aqt
Date: 05/06/21 Time: 16:11:23

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Well: ESCP-CSO-MW-4
Test Date: April 27, 2021

AQUIFER DATA

Saturated Thickness: 8. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
ESCP-CSO-MW-4	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
○ ESCP-CSO-MW-4	0	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 1.681 cm^2/sec S = 0.002026

Data Set: C:\Program Files (x86)\HydroSOLVE\AQTESOLV Std 4.0\Elk St Commerce Park\Pump Test\PT w-Recovery\Pump Test -
Title: Babcock Street Combined Sewer Overflow
Date: 05/06/21
Time: 16:12:29

PROJECT INFORMATION

Company: LaBella Associates, D.P.C.
Client: Elk Street Commerce Park
Project: 2200012-2021-08
Location: Babcock Street Combined Sewer
Test Date: April 27, 2021
Test Well: ESCP-CSO-MW-4

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: ESCP-CSO-MW-4

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.25 ft
Well Radius: 0.42 ft

Fully Penetrating Well

No. of pumping periods: 32

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	2.7	185.	2.52
1.	2.83	200.	2.51
2.	2.8	215.	2.51
3.	2.74	230.	2.49
4.	2.71	260.	2.49
5.	2.7	290.	2.47
6.	2.7	320.	2.49
7.	2.61	350.	2.46
8.	2.6	380.	2.46
9.	2.61	410.	2.42
10.	2.54	440.	2.44
40.	2.52	470.	2.44
65.	2.49	500.	2.4
95.	2.52	530.	2.42
125.	2.51	595.	0.
155.	2.49	600.	0.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: ESCP-CSO-MW-4

X Location: 0. ft
Y Location: 0. ft

Radial distance from ESCP-CSO-MW-4: 0. ft

Fully Penetrating Well

No. of Observations: 99

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.9	415.	3.91
2.	1.5	425.	3.9
3.	1.93	435.	3.89
4.	2.26	445.	3.89
5.	2.51	455.	3.89
6.	2.7	465.	3.95
7.	2.84	475.	3.95
8.	2.97	485.	3.96
9.	3.07	495.	4.01
10.	3.14	505.	4.03
15.	3.33	515.	4.01
25.	3.47	525.	4.03
35.	3.56	535.	4.
45.	3.62	545.	3.99
55.	3.64	555.	4.03
65.	3.63	565.	4.04
75.	3.65	575.	4.03
85.	3.7	585.	4.07
95.	3.71	595.	4.07
105.	3.73	596.	3.39
115.	3.78	597.	2.72
125.	3.83	598.	2.23
135.	3.86	599.	1.81
145.	3.84	600.	1.47
155.	3.8	601.	1.2
165.	3.82	602.	0.99
175.	3.82	603.	0.82
185.	3.86	604.	0.69
195.	3.8	605.	0.58
205.	3.83	606.	0.5
215.	3.81	607.	0.42
225.	3.82	608.	0.36
235.	3.85	609.	0.32
245.	3.85	610.	0.28
255.	3.89	611.	0.25
265.	3.9	612.	0.22
275.	3.93	613.	0.2
285.	3.94	614.	0.18
295.	3.94	615.	0.17
305.	3.96	616.	0.16
315.	3.94	617.	0.14
325.	3.92	618.	0.13
335.	3.89	619.	0.13
345.	3.94	620.	0.12
355.	3.91	621.	0.11
365.	3.93	622.	0.11
375.	3.9	623.	0.11
385.	3.92	624.	0.11
395.	3.93	625.	0.09
405.	3.94		

SOLUTION

Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	1.681	cm^2/sec

S 0.002026

K = T/b = 0.006895 cm/sec
Ss = S/b = 0.0002532 1/ft

NOTES

Observations in tested well