

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
APPLICATION FOR A WATER ALLOCATION PERMIT

VIOLATIONS ARE SUBJECT TO PENALTY PROVIDED BY 7 DEL. C. CHAPTER 60

MAIL TO:

OFFICIAL USE ONLY:

WATER ALLOCATIONS BRANCH
DNREC - DIVISION OF WATER
89 KINGS HIGHWAY
DOVER, DE 19901
(302) 739-9945
http://www.dnrecstate.de.us

DNREC ALLOCATION NO. _____
DRBC DOCKET NO. D- _____ - _____ CP

PLEASE TYPE OR PRINT

1. Owner Name Artesian Water Company, Inc
Address 664 Churchmans Road
City Newark State DE Zip 19702 Phone # 302-453-6900
2. Project Name Vines at Sandhill
Address 19009 Vines Ave
City Milton State DE Zip 19968 Telephone # (302) 453-6900
3. Date of Application 3/21/2024 Peter M. Demicco, P.G,
310 Newark Road, Landenberg, PA 19350
4. Name, address, and telephone # of geologist (or engineer): 908-507-9992
5. Attach a map (USGS 7 1/2 minute quadrangle only) with clearly marked locations of all facilities (wells, streams, and pond intakes). Applications for irrigation systems must also show the acreage served by each facility. All applications must show, if applicable, the locations of service areas, water tanks, interconnections, and property/corporate boundaries.
Attached: Exhibit A1 and A2
6. Purpose (check): Public Industrial Process Industrial Cooling Irrigation
 Commercial Contaminant /Recovery Other _____
7. Facility information: (attach additional sheet(s) if needed)

A. Facility Local ID	B. Facility Permit No.	C. Maximum Pump Capacity (GPM)	D. Maximum Use (GPD)	E. Acreage Total/Irrigated
Well #1	259605	450	648,000	N/A
Well # 2	281267	1,000	1,440,000	N/A
Well # 3	261531	1,000	1,440,000	N/A

8. Requested rates(MG): _____ Day 1.440 Month 43.2 Year 518.0
Sub-Total _____ System Total _____
9. For irrigation projects only: Total tillable acreage: N/A Irrigated acreage: N/A

- 10. What is the estimated consumptive use, as a percentage of the total withdrawal? 9.3%
- 11. Can water be transferred from facilities other than those listed in #8 (above)? NO If so, give the name and location, the use for the water, and list average daily, monthly, and yearly flows. (Interconnections with other systems should be marked on the map attached for #6).
- 12. Discuss the feasibility of interconnecting with other systems. (not applicable to irrigation projects). As demand in the area grows, the SandHill system will be interconnected with the Northern Sussex regional system.
- 13. For each well listed in #8 (above), attach copies of Completion Reports and pumping test reports as specified in the Well Permit. If these reports do not exist, attach all available information about the wells or intakes. Included in the Aquifer Test Reports, attached as Exhibit B (Well #1), Exhibit C (Well #2), Exhibit D (Well #3)
- 14. Attach copies of the latest reports on chemical and bacteriological analyses for the water from each facility. (not applicable to irrigation wells and irrigation surface-intakes). Included in the Aquifer Test Reports, attached as Exhibit B (Well #1), Exhibit C (Well #2), Exhibit D (Well #3)
- 15. Describe all treatment the withdrawn water will receive prior to use. Chlorine for disinfection, NAOH for PH adjustment, Phosphate for corrosion control.
- 16. Describe the method of treatment for this project's waste water. If the waste water is discharged to surface waters or lands, attach copies of the latest chemical and bacteriological analyses of the effluent, including temperature (DMRs), and where appropriate the disposal project study. Otherwise, name the treatment facility for this waste water. Artesian Waste Water Management, Inc (AWMI)
- 17. Are all facilities listed in #7 (above) individually metered? Yes. Identify those not metered and submit a proposed schedule for meter installation.
- 18. For public supply projects only: what percent of individual service-connections are metered? 100% If not 100%, give a schedule of when it will be 100%. What is the present population? 500 in five years? 15,000. This assumes that the Vines At Sandhill wells will be interconnected with the Northern sussex regional system.
- 19. Conservation Program for projects with total system water withdrawals over of 1.0 mgd. Attach the appropriate program description. (not applicable to irrigation projects). On file at DNREC

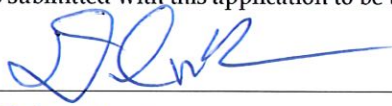
A. **Public water supply systems:** A Conservation Program which provides for the monitoring, prevention, and repair of leakage throughout the system, provides customer information relating to water conservation and water-saving devices. On file at DNREC

B. **Industrial, Commercial and other water supply projects:** A Conservation Program which provides for the investigation of all feasible conservation measures, and provides for the implementation of those feasible as soon as possible. A description of leak-detection monitoring and all feasible process-modifications for minimizing both water usage and loss.

- 20. Drought Emergency Plan for projects with total system water withdrawal over 1.0 mgd. Attach the following plan description. (not applicable to irrigation projects). On file at DNREC

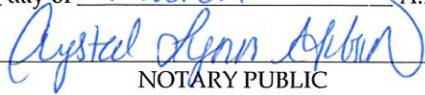
A. Identification of all priority uses for water throughout the system or service are, priority locations, water usage restriction schedules, implementation procedures, and any alternate sources of water.

21. AFFIDAVIT
 I, Daniel Konstanski, P.E., hereby affirm this application and any plans, reports, or documents submitted with this application to be true and correct to the best of my knowledge and belief.

Signature 

Date 3/26/24

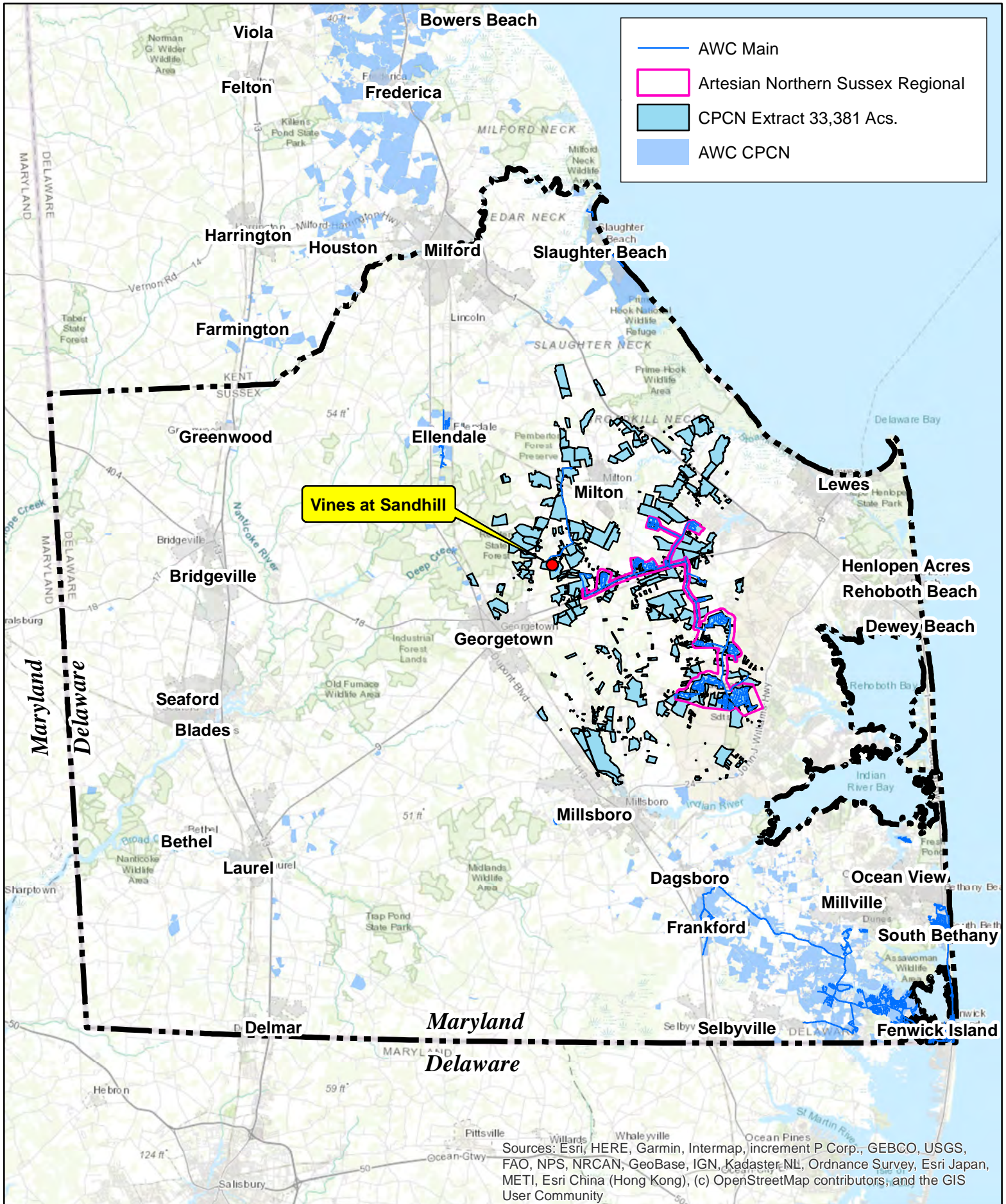
SWORN TO AND SUBSCRIBED before me the 26th day of March A.D., 24.


 NOTARY PUBLIC

*Applications for withdrawal for agricultural irrigation are not required to be notarized.



Vines at Sandhill

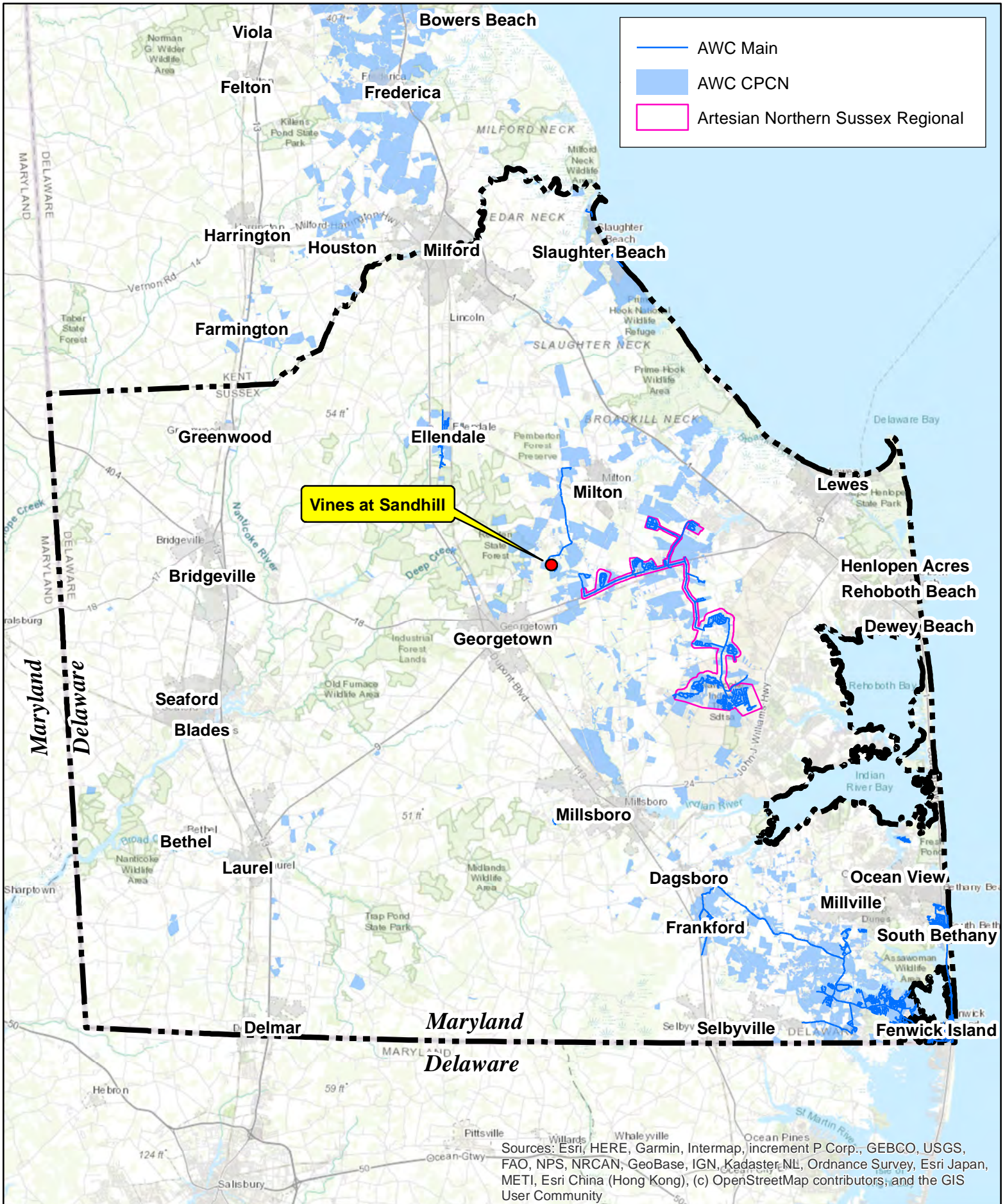


VinesatSandhill_Loc.mxd

Location Map

Vines at Sandhill

Exhibit A2_ Vines at Sandhill Site Map



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong). (c) OpenStreetMap contributors, and the GIS User Community

**SAND HILL VALLEY ESTATES
REPORT ON WATER SUPPLY PRODUCTION WELL
&
AQUIFER TESTING PROGRAM**

Prepared For:

**Artesian Water Company
664 Churchmans Road
Newark, DE 19702**

Prepared By:

**Peter M. Demicco, CPG
Ground Water Associates, LLC
804 Bradford Lane
Newark, Delaware 19711**

March 2018

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**Peter M. Demicco, PG
Delaware PG License No. S4-000406**

March 2018

TABLE OF CONTENTS

Page

1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION	4
3.0 HYDROGEOLOGIC FRAMEWORK.....	6
3.1 LOCATION AND DESCRIPTION OF THE STUDY AREA	6
3.2 GEOLOGIC SETTING.....	6
3.3 HYDROLOGIC SETTING	7
4.0 WELL CONSTRUCTION.....	9
4.1 8-INCH PSW CONSTRUCTION DATA.....	9
5.0 AQUIFER TESTING PROCEDURES.....	11
6.0 TEST DATA AND ANALYSIS.....	13
6.1 DATA FROM STEP TEST.....	13
6.2 TEST WELL CONSTANT RATE TEST ANALYSIS	13
6.2.1 Detailed Aquifer Test Analyses.....	14
6.2.2 Test Well Recovery Analyses.....	16
6.3 WATER QUALITY RESULTS.....	17
7.0 SUMMARY OF AQUIFER TEST.....	19
8.0 REFERENCES	21

LIST OF FIGURES

Figure No.

1. Site Topographic Location Map
2. Site Plan Water Supply Designated Location Plot Plan
3. Site Plan Location of Wells used for Aquifer Testing
4. Regional Aerial Photograph, 2015
5. Historic 1992 Aerial Photograph
6. Area Geological Map
7. Area Geological Cross-Section of the Estates at Sand Hill Valley
8. Time versus Drawdown Sand Hill Valley Test Well
9. Cooper-Jacob drawdown Match for New Public Supply Test Well
10. Tartakovsky-Neuman Match for new PSW Test Well
11. Neuman Match for new PSW Test Well
12. Time Versus Drawdown 6-Inch Observation Well
13. Cooper-Jacob drawdown Match for 6-Inch Observation Well
14. Tartakovsky-Neuman Match 6-inch Observation Well
15. Neuman Match 6-inch Observation Well
16. Distance versus Drawdown - Sandhill Test
17. Residual Drawdown t/t' Recovery Plot PSW Well
18. Residual Drawdown t/t' Recovery Plot 6-inch Observation Well
19. Hydrograph of 6-inch Observation Well Recovery Plot

APPENDICES

Appendix No.

1. Well Drilling Permits, Completion Reports, Geologist Logs and ½ Mile Well Search
2. Water Quality Results
3. Weather Data, In Situ Files Title Sheets (Full data files on disk)

Appendix 3 includes attached Data Disk

1.0 EXECUTIVE SUMMARY

This report presents the results of installation and aquifer testing of a Public Supply Well (PSW) for the proposed Sand Hill Estates (Sand Hill) water supply. The total development includes 393 single family units on a total of 262 acres located west of Milton, Delaware on Huff Road. This aquifer test report details the installation of a public supply well for site water resources and hydrogeologic data required for the water allocation permit application. The PSW has been located within a designated utility easement of approximately 1.8 acres. The water supply and waste water CPCN is with Artesian Resources Corporation.

The water supply for the subdivision includes both the public water supply wells and 4 six-inch irrigation wells. The PSW and a backup PSW will be located on the public supply easement. A 1000 gallon per minute (gpm) well is also proposed for the site fire protection. The aquifer test indicates a 1000 gpm well can be installed at this site. Interconnection to another water supply system will not occur in the immediate future. The irrigation wells will have a separate allocation from the public supply well(s) as the owner is installing an on-site irrigation system to maintain lawns and common areas. Wastewater will be removed from the site and treated in a regional treatment facility operated by Artesian Wastewater Management, Inc.

The testing program included the installation of the PSW within the 1.8 acre water easement. The 8-inch diameter PVC well was completed using mud-rotary drilling techniques. The well was completed to 105 feet below grade (bg) with 25 feet of screen set from 80 to 105 feet bg. The gravel pack was extended to 75 feet bg and the well was grouted to the surface. The testing included a 48-hour constant rate test and recovery. Water samples for the Division of Water were obtained near the end of the test. A step test was not conducted due to generator failure. Given the high capacity of the PSW, a step test was unnecessary to evaluate the well yield.

For the aquifer test an existing site irrigation well was used as an observation well. The 6-inch PVC well used for the irrigation system aquifer testing in 2016 (See GWA, 2017) was monitored

during this test. This well is located 200 feet from the public supply well location. It is completed in the same aquifer zone.

The proposed homes have 3 bedrooms and estimated occupancy is 3.5 people per home. Estimated water use is 350 gpd for each proposed unit based on a conservatively high 100 gpd per person. Generally, water use is less than 100 gpd per person due to use of water conserving fixtures in all new construction. With 393 proposed units, potable water use is estimated at 137,550 gpd. Base monthly potable water use is estimated at 4.126 million gallons per month (mgm).

The Sand Hill site is located within the Atlantic Coastal Plain Physiographic Province. The Province is characterized by largely unconsolidated sedimentary units of both marine and fluvial origin. The two shallowest geologic units at the site are the Lynch Heights and Beaverdam Formations. The well search records from DNREC indicate no agricultural allocations within a ½ mile radius of the site and domestic wells on the order of 60 to 75 feet deep.

The constant rate test was conducted from 1500 hours on December 5 to 1500 hours on December 7, 2017 for a total elapsed time of 48 hours at 460 gpm. The static water level was 12.62 feet below the top of casing (TOC), roughly 10 to 10½ feet bg. In summary, the drawdown in the well after 48 hours was 15.90 feet at a pumping level of 28.52 feet TOC, roughly 26½ feet from grade. The 48-hour specific capacity for the well is 28.93 gpm/ft of drawdown. Estimates of aquifer coefficients from the PSW may be affected by well efficiency which is low based on the distance versus drawdown plot. Curve matching yields a result of roughly 14,200 ft²/day to 14,500 ft²/day.

The 6-inch observation well showed only 1.86 feet of drawdown influence over 48-hours at a distance of 200 feet. These data indicate no interference between the PSW and the irrigation wells will occur. The graphs are typical of a water table response with gravity drainage effects starting early in the test. The possible cessation of gravity drainage may be observed over the last

few hours of the test. There is no indication of induced infiltration from the stream area or impacts from weather events. Curve matching using Aqtesolve results in a transmissivity of 13,400 ft²/day with a storage coefficient of 1.7×10^{-3} and the specific yield (S_y) of 0.14. The horizontal to vertical conductivity (K_z/K_v) is low at 0.04 on the curve matching plot.

The distance-versus-drawdown plot has a calculated transmissivity of 16,200 ft²/day with a storage coefficient of 0.018. The projection of the plotted line back to the Test Well indicates the inefficiency of this well. However, this well site would easily yield 1000 gpm if the well diameter was sufficient to install a 1000 gpm pump even with the inefficiency. The inefficiency result is not unexpected as the well is only an 8-inch well, drilled by mud-rotary methods with small machine cut slots and developed for only a few hours. The plot projects impact from the test extending only to 2,000 feet indicating very minor off-site influence will occur.

In summary, the aquifer time versus drawdown graphs indicate a high transmissivity on the order to 13,000 to 16,000 ft²/day. The storage coefficients and plots are indicative of a water table aquifer. Specific yield and the ratio of vertical to horizontal hydraulic conductivity results were somewhat variable and may be related to varying degrees of shallow silt and clay stringers noted in the upper 20 feet of material at the site. The time versus drawdown plots indicate no impact of any rainfall events during the test. These plots, along with the recovery data, indicate leakage from the adjoining stream did not occur during the test. Again, surficial silt and clay stringers and wetland soils prevented leakage of water from the stream corridor back into the aquifer. The distance versus drawdown plot shows no interference will occur to off-site domestic wells with off-site drawdowns shown to be less than 1 foot.

2.0 INTRODUCTION

This report presents the results of the first PSW installation and 48-hour aquifer test for the proposed Sand Hill water supply (Figure 1). The total development includes 393 single family units on a total of 262 acres located west of Milton, Delaware on Huff Road. Three phases of construction are proposed.

This aquifer test report details the exploration of the site for water resources and the hydrogeologic data required for the allocation permit application. The PSW will be located within the designated utility easement of approximately 1.8 acre. Figure 2 illustrates the location of the 150 foot Well Head Protection area. The designated water resource utility easement location is in the northeastern section of the development near Huff Road as shown on Figure 3. The water supply and waste water CPCN are with Artesian Resources Corporation.

The water supply for the subdivision includes both the public water supply wells and 4 six-inch irrigation wells. The PWS and PSW backup will be located on the site in the water supply easement. Interconnection to another water supply system is not planned in the immediate future. A 1000 gpm well is also proposed for the site for fire protection. This well will also be in the water supply easement. The 1000 gpm well will operate only during a fire emergency and not operate when the other water supply wells are operating to prevent interference.

The irrigation wells will be controlled separately from the public supply well(s). The owner is installing an on-site irrigation system to maintain lawns and common areas. A separate water allocation and aquifer test were conducted for this allocation (see GWA, 2017).

Wastewater will be removed from the site and treated in a regional treatment facility operated by Artesian Wastewater Management, Inc. On-site disposal is not proposed for this subdivision.

The testing program included the installation of the first PWS in the water supply easement. An 8-inch PVC well was installed using mud rotary drilling methods. An existing 6-inch irrigation well was monitored as an observation well for the test. The 6-inch well was used for the allocation permit aquifer test well (GWA, 2017). This well is located 200 feet from the public supply well location (Figure 2).

The proposed homes have 3 bedrooms and estimated occupancy is 3.5 people per home. Estimated water use is 350 gpd for each proposed unit based on a conservatively 100 gpd per person. Generally, water use is less than 100 gpd per person due to use of water conserving fixtures in all new construction. With 393 proposed units, potable water use is estimated at 137,550 gpd, which is equivalent to roughly 100 gpm. Base monthly potable water use is estimated at 4.126 million gallons per month (mgm).

3.0 HYDROGEOLOGIC FRAMEWORK

3.1 LOCATION AND DESCRIPTION OF THE STUDY AREA

The Estates at Sand Hill Valley are located in the Georgetown Hundred in Sussex County southwest of Milton, Delaware. The site of the public supply well is located in the northeastern corner of the site as illustrated on Figure 3. The area is predominately forested and rural residential in nature as shown on the Google Earth 2015 aerial photograph (Figure 4). A historic 1995 aerial photograph illustrates little land use change in the past two decades near the site (Figure 5). The well search records from DNREC (Appendix 1) indicate no agricultural allocations within a ½ mile radius of the site. The domestic well records in Appendix 1 indicate these wells are generally 60 to 75 feet deep within the Columbia aquifer.

3.2 GEOLOGIC SETTING

The Estates of Sand Hill Valley are located within the Atlantic Coastal Plain Physiographic Province. The Province is characterized by largely unconsolidated sedimentary units of both marine and fluvial origin. The two shallowest geologic units at the site are the Lynch Heights and Beaverdam Formations. Figure 6 presents the geologic map of the area from Ramsey and Tomlinson (2011). Figure 7 presents the geologic cross-section from Ramsey and Tomlinson (2011), which is located close to the site.

The geologic map indicates the site is underlain by predominately the Beaverdam Formation with a thin veneer of Lynch Heights Formation. At the proposed public supply well site, erosion has removed most to all the Lynch Heights Formation. A quaternary sand dune exists to the northwest side of the site.

The Lynch Heights Formation is described in Ramsey and Tomlinson (2011) as “loose, fine to very fine, moderately silty, pale-yellow to yellow sand that ranges from 2 to 15 feet in thickness north of US Rt. 9 and east of Gravel Hill Road.” The Beaverdam Formation is described in Ramsey and Tomlinson (2011) as a “heterogeneous unit ranging from very coarse sand with pebbles to silty clay. The predominant lithologies at the land surface are white to mottled light-gray and reddish-brown, silty to clayey, fine to coarse sand. Laminae and beds of very coarse sand with pebbles to gravel are common as are laminae and beds of bluish-gray to light-gray silty clay.” The Beaverdam Formation is thought to be Pliocene in age.

The underlying unit is the Manokin Formation of late Miocene age. This unit is generally subdivided into an upper unit (Tmu) that is a white to brown medium sand and a lower unit (Tml) that is typically gray silt to very fine sands (Ramsey, 2011). Some difficulty exists in the differentiation of the Beaverdam from some of the white Manokin sands found within the Tmu where the two units are in contact.

3.3 HYDROLOGIC SETTING

The surficial Lynch Heights and Beaverdam formations, where saturated, form the water table Columbia aquifer. This aquifer forms the principal water supply for much of Sussex County, Delaware. The Columbia aquifer can be highly productive and receives abundant rainfall recharge. The upper Manokin unit Tmu can be included in this water table aquifer when in direct contact with the sands of the Beaverdam Formation.

The well records within ½ mile of the site indicate only the Columbia aquifer is being used as a water supply. The only well records exceeding 100 feet are geothermal wells (See Appendix 1).

The water quality of the Columbia aquifer is generally good in this area of Delaware. Nitrate concentrations can become an issue in areas of intensive agricultural usage. In areas where surficial clays and marsh deposits exist, elevated concentration of iron and manganese can

become an aesthetic issue. The Manokin aquifer in this region tends to have elevated iron and manganese concentrations and requires treatment.

4.0 WELL CONSTRUCTION

4.1 8-INCH PSW CONSTRUCTION DATA

The new PSW was drilled to a total depth of 125 feet under DNREC Permit 259605 (Appendix 1). The first 10 feet of material encountered was a yellow silt with fine sand. The drilling cuttings did not show any evidence of clay or silt stringers or tan to brown sands of the Lynch Heights Formation. From the surface to a depth of 35 feet, the material was a yellow, fine sand and little coarse sand with trace to little silt. From 35 to 100 feet the sand became lighter in color with increasing amounts of coarse sand and fine gravel. The silt content remained near 5 to 15 percent throughout the entire depth to 100 feet. White fine sand that looked like weathered feldspar was noted throughout the well drilling. At 100 feet, the driller reported orange coarse sand to a depth of 110 feet. From 110 to 125 feet, the drilling log reports gray silt and clay.

The PSW was completed with 25 feet of 45-slot, 8-inch PVC screen set from 80 to 105 feet below grade. Number 2 well gravel was installed to a depth of 75 feet below grade and the well completed with bentonite grout from 75 feet to grade. The well was air lift developed for several hours. With a depth to water of 8 feet from grade (10½ feet from TOC), a centrifugal pump was used to develop the well until clear water was obtained.

The PSW was the fourth well drilled on this property. Three wells were drilled during the testing for the irrigation system (see GWA, 2017). The first well installed was a 6-inch test well for future irrigation of the lawns of the development. This well was used for the irrigation water allocation aquifer test and as the observation well for this test. The well was drilled by mud rotary methods under permit number 254008. The Columbia aquifer at this well only went to a depth of 95 feet bg.

A 2-inch observation well was located 200 feet from the Test Well near the proposed location of the public supply well. The 2-inch well was drilled to a depth of 125 feet under permit number 254678. The 2-inch well contained fine to coarse sand to a depth of 105 feet with 10 to 15 feet of fine sand underneath the coarse sands. A change was noted by the driller to softer sand at 105 feet. From 105 to 115 feet, a white to brown fine sand changing to orange fine sand from 115 to 120 feet below grade was noted. From 120 to 125 feet a gray silt/fine sand returned in the drilling mud. The fine sand below 105 feet is believed to belong to the Miocene Manokin Formation. Based on drilling results, the 2-inch Well was screened from 80 to 105 feet bg.

A second, 4-inch observation well was located at 800 feet southwest from the 6-inch irrigation well. The 4-inch well was drilled to a depth of 85 feet under permit number 254796. The DNREC permit and completion report are included in Appendix 1. From 20 feet to 83 feet below grade the material was dominated by white to light tan fine to medium and fine to coarse sand with varying admixtures of gravel and a trace 5 to 15 percent white silt. The formation appeared to be getting coarser with depth. A change was noted by the driller at 83 feet. From 83 to 85 feet, a gray silt/fine sand returned in the drilling mud. The gray fine sand and silt below 83 feet is interpreted to belong to the Miocene Manokin Formation. Based on drilling results, the 4-inch Well was screened from 61 to 81 feet below grade in the coarse material in the base of the Columbia Aquifer.

The drilling program indicated that the Columbia Formation is deepening to the northeast or east towards the location of the public supply well. The drilling records of domestic and irrigation wells within a half mile of the site indicate that the depth of the Columbia aquifer is more typically on the order of 60 to 75 feet. The location of the PSW and 2-inch Well appear deeper than average.

5.0 AQUIFER TESTING PROCEDURES

Data from a 2-day constant rate aquifer test were used to develop the hydrogeologic analysis of the Columbia aquifer for the Sand Hill public water allocation permit. The test included the 2-day constant rate test and a recovery period. A step test was going to be conducted the morning of the constant rate test, but the generator failed. A larger generator arrived on site later in the day to start the constant rate test. The test included installation of water level pressure transducers into the 8-inch PSW and the 6-inch observation well on December 5, 2017. In-Situ 700-Series Professional Trolls were used for the testing. The data loggers were set to record on 5-minute intervals in the log cycle.

The PSW was equipped with a 400 gpm pump designed to operate at 50 to 60 psi of a water system. The pump was set to a depth of roughly 55 feet. An In-Situ 700 Series Professional Troll transducer was set into the well above the pump to a depth of roughly 48 feet. There was 38 feet of water above the pressure transducer at this setting. An 8-inch by 5-inch free discharging orifice was set up roughly 700 to 800 feet from the well at the overflow spill way of the storm water ponds at the site. Splash pads were installed to prevent any soil erosion or turbidity being added to the discharge. The free discharge orifice was leveled, and a manometer tube set up and marked for between 400 and 450 gpm. A sample tap, pump pressure gauge and flow control valve were set up at the well head.

For the start of the test, both pressure transducers were synchronized to start recording at the same time on a logarithmic time schedule. A 1-minute maximum duration between measurements was set for the PSW transducer for the step test. A moderate amount of pump pressure was maintained behind the flow control valve to prevent a high flow surge of water while the long length of discharge hose was being filled with water. Communications were set

up to monitor flow as soon as possible after the start of the test. Flow adjustments, if needed, could be made within a few minutes of test start.

The start of the step test was begun on December 5, 2017 at 09:30 hours. The pump ran for only a few minutes before the generator shut down. The generator failed on a high temperature alarm. The start of the step test was tried several times until 12:00 hours. The wells were allowed to recover for most of the day and a larger generator secured.

The pressure transducers were reset to start recording for the constant rate test at 1500 hours on December 5th. The pump was started at 1500 hours at the time the transducers began recording data. The initial flow rate was closer to 460 gpm for the first few minutes of the test, probably due to movement of the valve at the well head. The flow rate was left to run at 460 gpm for the test and was maintained at the rate for the balance of the test.

The water levels in each well were checked and compared to water levels being recorded by the pressure transducers. In general, the water levels measured and being recorded were within a tenth of a foot.

The recovery period was started after 48 hours of the constant rate test at 1500 hours on December 7, 2017. The transducers were reset to record at a logarithmic rate for the start of recovery. The maximum duration of time for recording water level data was again set at 5 minutes in the log cycle. The pump was shut down at 1500 hours when the transducers began recording at the logarithmic rate. Water level recovery was continued through roughly 0900 hours on December 8, 2017 for the PSW and until December 10, at 1500 hours for the 6-inch observation well.

Data manipulation was minimal to develop time versus drawdown plots. Small jumps in observation well water levels were correlated to m-Scope measurements of the wells. Barometric effects were not expected or noted due to the water table nature of the aquifer. No

long term, large-scale trends were observed in the extended recovery data from the 6-inch observation well, and therefore, no long-term corrections to water level data were applied to account for any background trend.

6.0 TEST DATA AND ANALYSIS

6.1 DATA FROM STEP TEST

Several attempts to complete a step test were started and stopped by the overheating generator. The first step was started with an orifice reading of 5 inches, 225 gpm. A total of 7.75 feet of drawdown was recorded after 3 minutes. The specific capacity was 29.0 gpm/ft of drawdown. The generator was tried again at 11:50 hours and ran for close to 10 minutes. The orifice level was 6¹/₄ to 6¹/₂ inches for a flow rate of 250 gpm. The recorded drawdown was 8.5 feet after 10 minutes for a specific capacity of 29.4 gpm/ft of drawdown. The failed step test did indicate that the well has sufficient yield to conduct the test at 400 gpm.

6.2 TEST WELL CONSTANT RATE TEST ANALYSIS

The constant rate test was conducted from 1500 hours on December 5 until 1500 hours on December 7, 2017 for a total elapsed time of 48 hours. Aqua Tech maintained the generator and flow rate during the test at 460 gpm. The static water level was 12.62 feet below the top of casing (TOC) or roughly 10 feet below grade. With a pump set 55 feet below grade and the transducer set at 48 feet below grade, the total available drawdown for the test was 38 feet. In summary, the drawdown in the well after 48 hours was 15.90 feet at a pumping level of 28.90 feet TOC, roughly 26¹/₂ feet from grade. The 48-hour specific capacity for the well is 28.93 gpm/ft of drawdown. At a flow rate of 460 gpm, less than half of the available drawdown was used during the 48 hours of the test.

6.2.1 DETAILED AQUIFER TEST ANALYSES

Figure 8 presents the time versus drawdown plot from the Test Well during the 48-hour constant rate test. The initial flow rate was 460 gpm, 21 inches on the orifice. The flow rate of 460 gpm could be sustained so the flow was not adjusted at the test start to avoid impact on the time versus drawdown plots. The graph is a typical water table response to pumping with gravity drainage beginning at one minute into the test. The calculated transmissivity on Figure 8 (8,100 ft²/day) is impacted by well inefficiency and is not considered representative of true aquifer conditions. Water levels in the Test Well dropped only slightly during the balance of the test, typical of a water table gravity drainage response. Appendix 3 presents the data from the test.

Figure 9 presents the time-versus-drawdown plot from the Test Well from Aqtesolv for Windows using the Cooper-Jacob method. The transmissivity is calculated at 8,000 ft²/day. The Aqtesolv plot shows the vertical dashed line where “*u*” is less than 0.01 where the calculated aquifer coefficients are considered valid. The Cooper-Jacob method time versus drawdown plots are close to *u* less than 0.01. However, well efficiency is also impacting the early time drawdown and the plot only gives a low approximation of transmissivity.

Figure 10 presents the same data using the Tartakovsky-Neuman curve matching results from the Test Well. The transmissivity is 14,500 ft²/day. The curve matching plot also presents the specific yield (*S_y*) of the aquifer as 0.102. The horizontal to vertical conductivity (*K_z/K_v*) is 0.034 on the plot. The Tartakovsky-Neuman *kD* value is for leakage from the unsaturated zone and is calculated as 5.1 (dimensionless). As *kD* approaches infinity, the Tartakovsky-Neuman solution approaches the Neuman unconfined curve matching model. The low *kD* value indicates that leakage from the unsaturated zone does impact the solution of the equation. Alternatively, the time-drawdown data could be impacted by the underlying Manokin sand found beneath this well.

Figure 11 presents the Neuman solution for the Test Well. The Neuman solution results are similar to the Tartakovsky-Neuman results. The Neuman curve match is not as close as the Tartakovsky-Neuman solution. The results from the curve matching is interpreted to have been impacted by water moving upward from the underlying Manokin sand.

Figure 12 presents the time versus drawdown graph from the 6-inch observation well. The graph is typical of a water table response with gravity drainage effects starting early in the test. The possible cessation of gravity drainage over the last few hours of the test may be observed. The early time-drawdown transmissivity is estimated at 16,200 ft²/day and a storage coefficient of 5.1 e⁻⁴.

Figure 13 presents the time-versus-drawdown plot from the 6-inch observation well from Aqtesolv for Windows using the Cooper-Jacob method. The transmissivity is calculated at 16,300 ft²/day and a storage coefficient of 5.6 e⁻⁴. The Aqtesolv plot shows the vertical dashed line where “*u*” is less than 0.01 where the calculated aquifer coefficients are considered valid. The Cooper-Jacob method time versus drawdown plots are not considered valid based on this analysis but does give an approximation of aquifer coefficients.

Figure 14 presents the same data using the Tartakovsky-Neuman curve matching results from the 6-inch observation well. The transmissivity is calculated at 13,300 ft²/day with a storage coefficient of 1.7e⁻³. These values are considered more representative of the aquifer than the Cooper-Jacob results above. The curve matching plot also presents the specific yield (*S_y*) of the aquifer as 0.14. The horizontal to vertical conductivity (*K_z/K_v*) is 0.04 on the plot. The Tartakovsky-Neuman *kD* value is for leakage from the unsaturated zone and is calculated as 5.1 (dimensionless). As *kD* approaches infinity, the Tartakovsky-Neuman solution approaches the Neuman unconfined curve matching model. The low *kD* value indicates that leakage from the unsaturated zone does impact the solution of the equation.

Figure 15 presents the Neuman solution for the 6-inch observation well. The Neuman solution results in a transmissivity of 14,500 ft²/day with a storage coefficient of 1.98 e⁻³. The curve matching plot also presents the specific yield (S_y) of the aquifer as 0.15. The horizontal to vertical conductivity (K_z/K_v) is 0.031 on the plot. The curve match from the Neuman plot does fit as well as the Tartakovsky-Neuman plot for this well. The results presented by the Tartakovsky-Neuman solution indicates some contribution of water to the aquifer from unsaturated zone leakage.

Figure 16 presents the distance-versus-drawdown plot from the aquifer test at the end of 48 hours. The transmissivity is calculated at 16,200 ft²/day with a storage coefficient of 0.018. The projection of the graph back to the Test Well indicates the inefficiency of this well. This result is not unexpected as the well is only a 8-inch well, drilled by mud-rotary methods with small machine cut slots and developed for only a few hours. The plot projects impact from the test extending only to 2000 feet and, generally, very minor off-site impacts are indicated.

6.2.2 TEST WELL RECOVERY ANALYSES

The recovery test data were obtained for approximately 18 hours from 1500 hours on December 7 through 0900 hours on December 8, 2017 for the PSW. For the 6-inch observation well. the recovery data were obtained for approximately 72 hours from 1500 hours on December 7 through 1450 hours on December 10, 2017. The recovery data were plotted as residual drawdown versus t/t'.

Figure 17 presents the t/t' residual drawdown recovery plot for the PSW. Transmissivity is calculated as 8,100 ft²/day from this plot. The low value is due to well inefficiency. The zero intercept is projected to be to the right of the graph origin, an effect from the vertical recharge to the aquifer from gravity drainage. However, the valve to prevent backflow to the well was not immediately closed and may have resulted in a surge of water into the well.

Figure 18 presents the t/t' residual drawdown plot for the 6-inch observation well. The calculated transmissivity is 16,200 ft²/day, which is essentially in the same range as the time versus drawdown result. The zero intercept is projected to be to the right of the graph origin. Again, this is due to the gravity drainage leakage during the drawdown test. During the recovery, water levels began to decline slightly. The impact is roughly a tenth of a foot and is not considered significant for aquifer test analysis.

The extended recovery data in the 6-inch observation well was collected to evaluate long term trends. In general, the recovery water did not indicate any long-term trends. Rainfall data from Georgetown on the Delaware Environmental Observation System indicated rainfall of 0.63 inches on November 22. However, only minor rainfall occurred through the test period. On December 5, only 0.18 inch of rainfall was recorded. Not until December 10 was a rainfall event exceeding 0.5 inches occurred. The hydrograph of the extended recovery period may be reflecting a rise in water levels in response to the December 10 rainfall (Figure 19).

6.3 WATER QUALITY RESULTS

A water quality sample was obtained at the end of the constant rate test and delivered immediately to Suburban Testing Laboratory in Reading, Pennsylvania. The results are included in Appendix 2. The sample included the components of the primary and secondary drinking water quality standards.

The nitrate concentration is 5.68 mg/l which is nearly identical to initial testing from the Irrigation 6-inch well. pH is low at 5.41 and total dissolved solids are also low at 112.0 mg/l. Iron and manganese below detection at <0.1 and <0.01 mg/l, respectively. Sodium and chlorides were also low at 6.84 and 9.58 mg/l, respectively. Low hardness, reflective of the low total

dissolved solids was measured. Calcium hardness was 18 mg/l and total hardness was 24 mg/l. Treatment for low pH and low hardness will be required for this public supply.

7.0 SUMMARY OF AQUIFER TEST

A Public Supply Well has been installed and an aquifer test performed at the Estates of Sand Hill Valley. The well was tested at a rate of 460 gpm for a period of 48 hours and drawdown was recorded in one observation well. The well had a static water level 12.62 feet below TOC, roughly 10 feet below grade. With a pump set 55 feet below grade and the transducer set at 48 feet below grade, the total available drawdown for the test was roughly 38 feet.

The pumping level was 28.90 feet TOC, roughly 26 ½ feet below grade. The 48-hour drawdown was 15.90 feet at the end of the test. The specific capacity at the end 48-hours was 28.93 gpm/ft of drawdown. The top of the screen is located at 80 feet below grade with a static water level 10 to 10 ½ feet below grade. The available drawdown in the well is over 65 feet. The drawdown in the well after 48 hours was roughly 25 percent of the available drawdown at a flow rate of 460 gpm. An additional 1000 gpm fire protection well can be installed at this location as long as the casing is large enough to fit a 1000 gpm pump.

Aquifer time versus drawdown plots indicate a high transmissivity on the order to 13,000 to 16,000 ft²/day. The storage coefficients and plots are indicative of a water table aquifer. Specific yield and the ratio of vertical to horizontal hydraulic conductivity results were somewhat variable and may be related to varying degrees of shallow silt and clay stringers noted in the upper 20 feet of material at the site and the presence or absence of fine Manokin sands at the base of the aquifer at the public supply easement area. The time versus drawdown plots indicate no outside impact events during the test such as induced infiltration or rainfall. These plots along with the recovery data indicate induced recharge leakage from the adjoining stream did not occur during the test. Again, surficial silt and clay stringers and the clay soils of the wetlands prevented leakage from the stream corridor.

The distance-versus drawdown graph indicates a moderate degree of inefficiency in the PSW. This result is not unexpected as the well is only an 8-inch well, drilled by mud-rotary methods with small machine cut slots and developed for only a few hours. A highly efficient reverse rotary well at the site with near 90 percent efficiency would be expected to have only 7 or 8 feet of drawdown at 460 gpm over two days of pumping. These data indicate a 1000 gpm fire protection well can be installed at this site.

The distance versus drawdown plot projects impact from the test extending only to 2000 feet. Very minor off-site impacts are indicated from this plot. The small amount of off-site drawdown illustrates that interference on existing domestic wells near the site will not occur. The small amount of drawdown under the stream and presence of silt and clay stringers prevents induced infiltration of surface water.

Water quality data at the site currently indicate no significant issues with nitrate contamination or naturally occurring iron and manganese. The total dissolved solid concentration is relatively low as is the pH. The need for hardness addition with pH adjustment is indicated from the water quality results.

8.0 REFERENCES

Aqtesolve for Windows Version 4.50, 2009, Hydrosolve, Inc.,

Driscoll, F. G., 1986, Groundwater and Wells: Johnson Division, St Paul, Minnesota.

Ground Water Associates, LLC, 2017, Estates of Sand Hill Valley report on aquifer testing Program: Ground Water Associates, LLC, Newark, DE, 25 p.

Ramsey, K. W. and Tomlinson, J. L., 2011, Geologic map of the Harbeson Quadrangle, Delaware: Delaware Geological Survey Geological Map Series No. 17, Delaware Geological Survey, Newark, Delaware, Map with discussion, Scale 1:24000.

Ramsey, K. W., 2001, Geologic map of the Ellendale and Milton Quadrangles, Delaware: Delaware Geological Survey Geological Map Series No. 11, Delaware Geological Survey, Newark, Delaware, Map with discussion, Scale 1:24000.

Walton, W. C., 1962, Selected analytical methods for well and aquifer evaluation: Illinois State Water Survey Bulletin 49, 81 p.

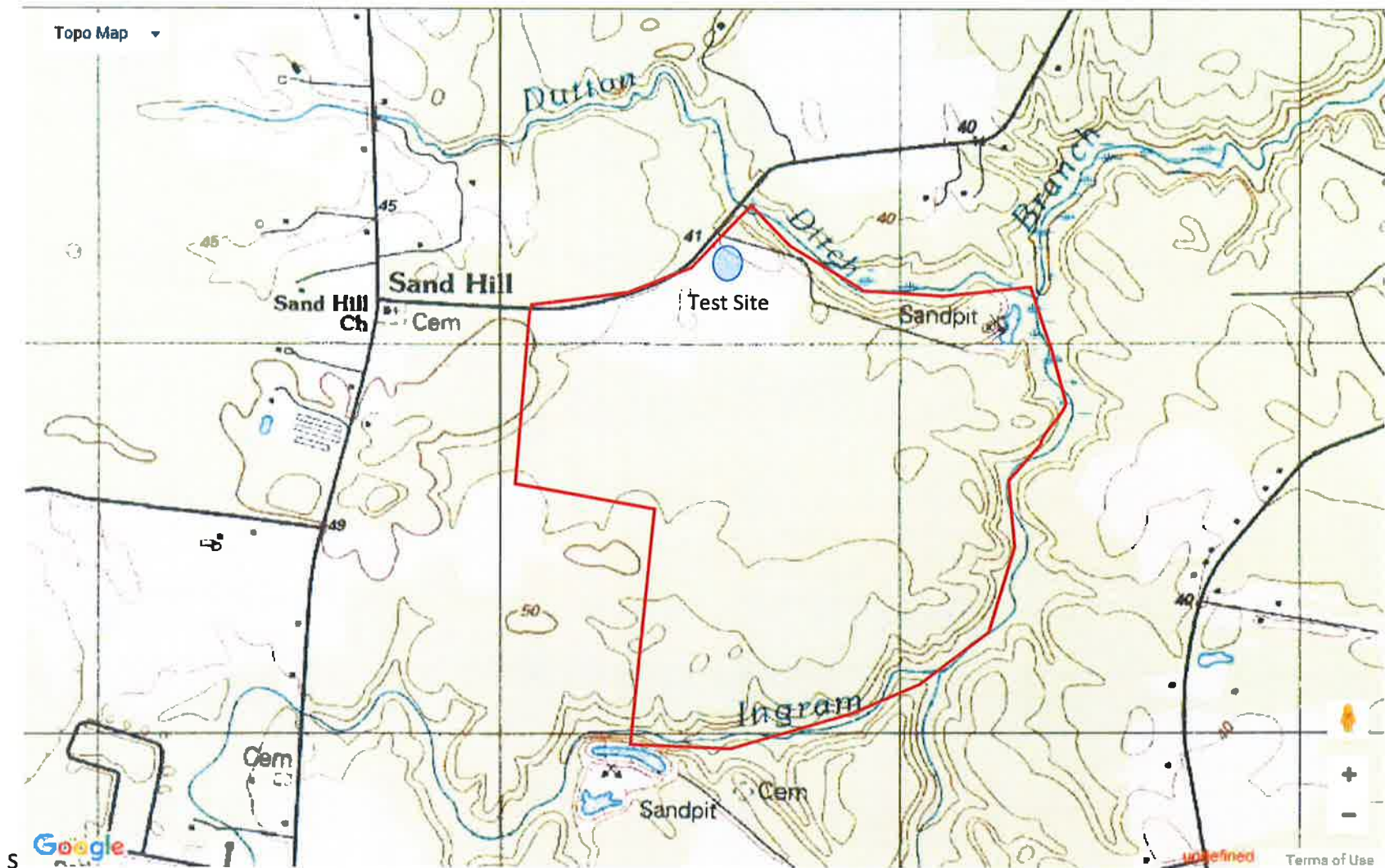


Figure 1: Site Topographic Location Map

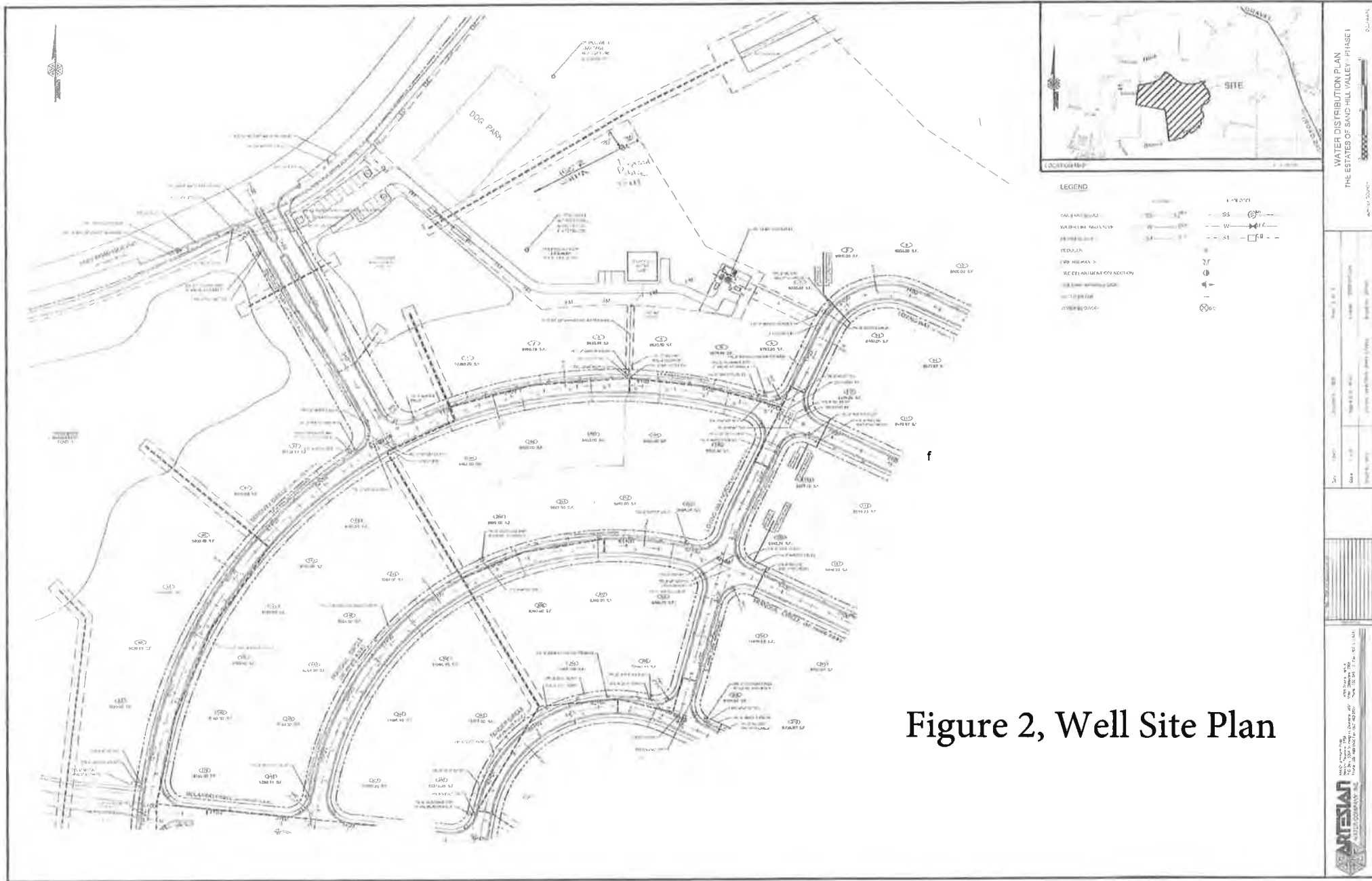


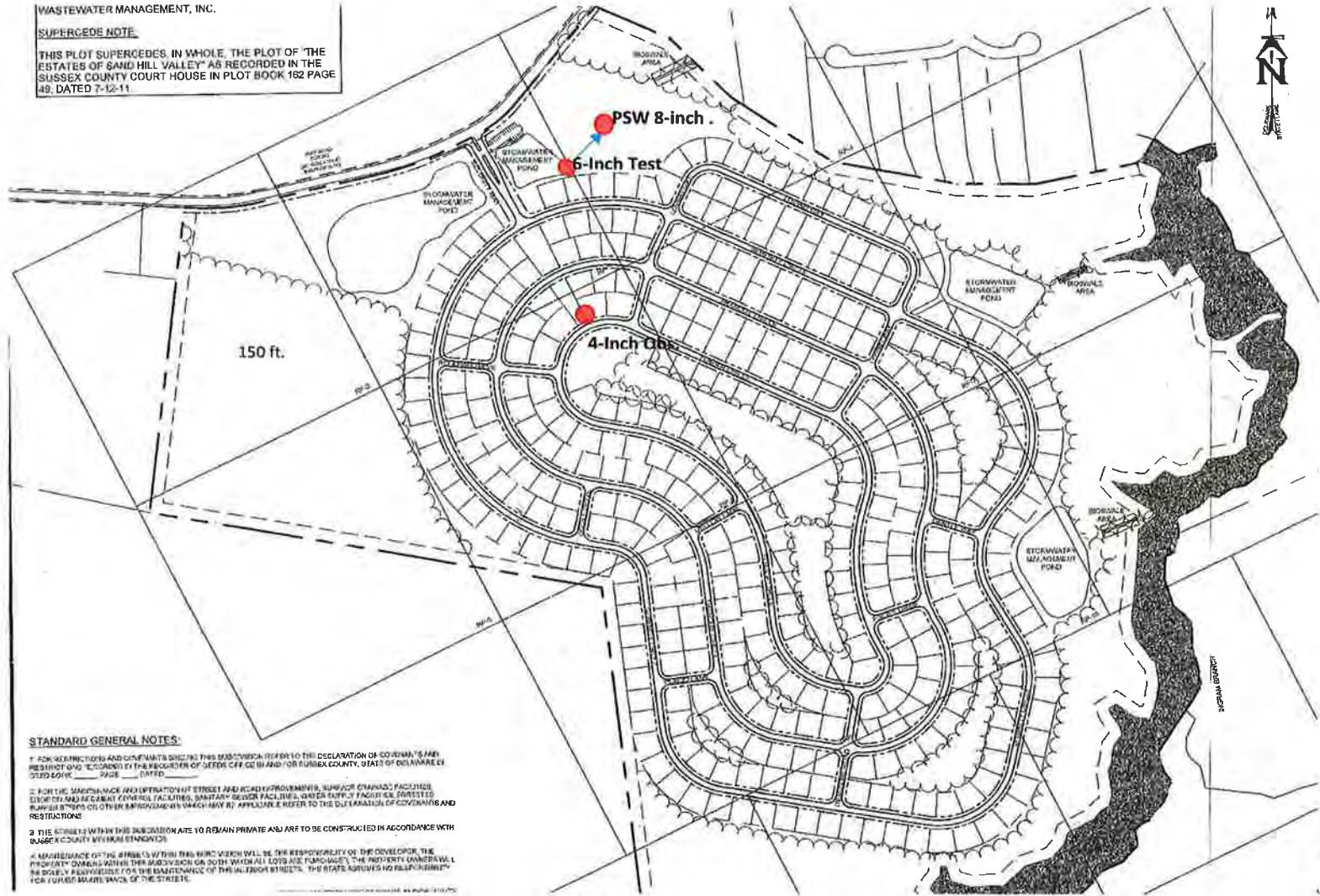
Figure 2, Well Site Plan

Doc: 10000 10th Street, Suite 100, San Diego, CA 92121

WASTEWATER MANAGEMENT, INC.

SUPERCEDING NOTE

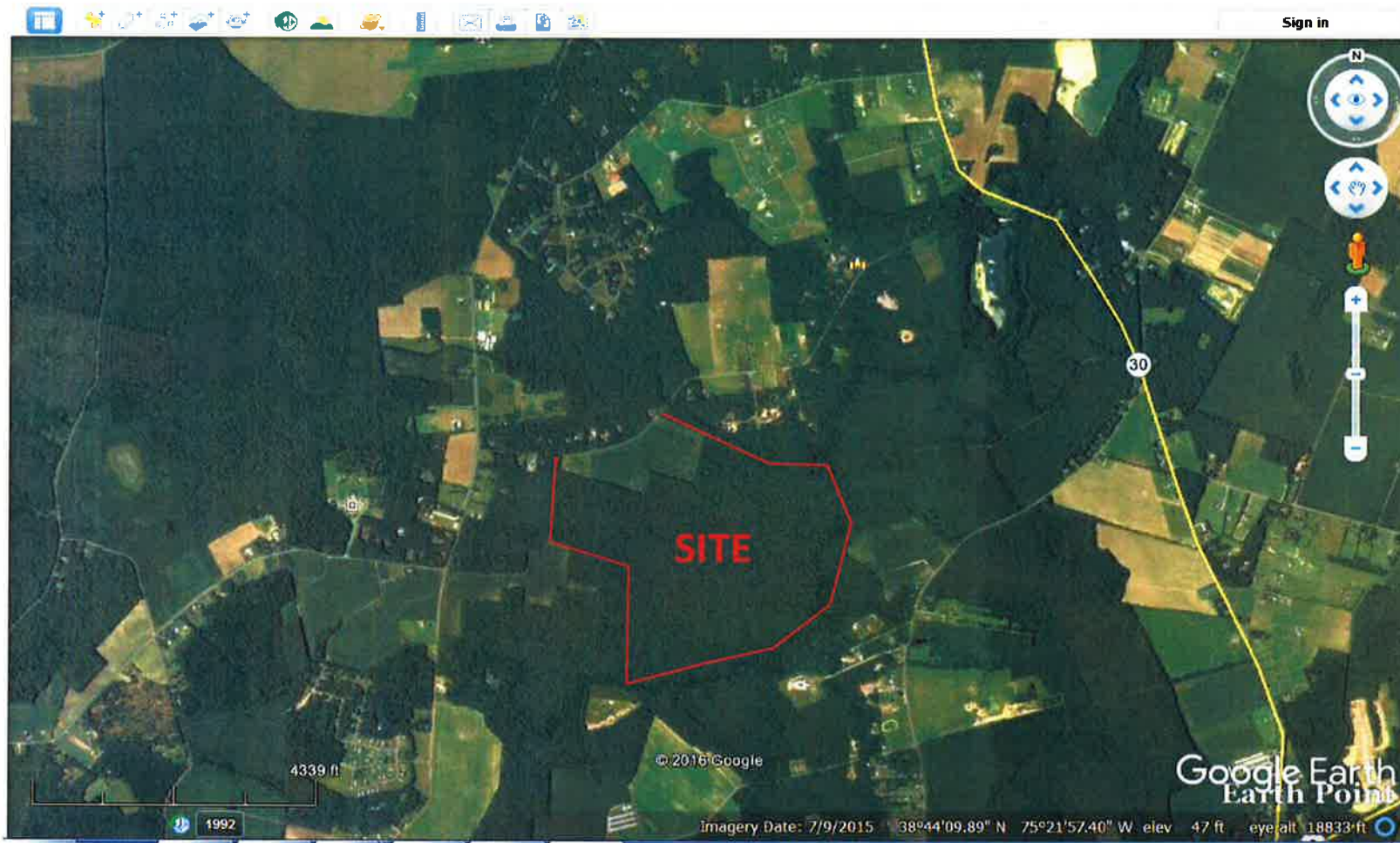
THIS PLOT SUPERCEDES IN WHOLE, THE PLOT OF "THE ESTATES OF SAND HILL VALLEY" AS RECORDED IN THE SUSSEX COUNTY COURT HOUSE IN PLOT BOOK 162 PAGE 49, DATED 7-12-11



STANDARD GENERAL NOTES

1. ALL REVISIONS AND COMMENTS SHOWING THIS SUBDIVISION REFER TO THE DECLARATION OF COVENANTS AND RESTRICTIONS RECORDED IN THE REGISTER OF DEEDS OFFICE IN AND FOR LUMBUR COUNTY, STATE OF DELAWARE, PLAT BOOK _____ PAGE _____ DATED _____.
2. FOR THE MAINTENANCE AND OPERATION OF STREETS AND ROAD IMPROVEMENTS, SURFACE STORMWATER FACILITIES, SEWERAGE AND SANITATION FACILITIES, FACILITIES, SANITARY SEWER FACILITIES, WATER SUPPLY FACILITIES, UTILITIES, PUBLIC UTILITIES OR OTHER IMPROVEMENTS (WHICH MAY BE APPLICABLE) REFER TO THE DECLARATION OF COVENANTS AND RESTRICTIONS.
3. THE STREETS WITHIN THE SUBDIVISION ARE TO REMAIN PRIVATE AND ARE TO BE CONSTRUCTED IN ACCORDANCE WITH SUBSEX COUNTY MUNICIPAL ORDINANCES.
4. MAINTENANCE OF THE STREETS WITHIN THIS MAP WHICH WILL BE THE RESPONSIBILITY OF THE DEVELOPER, THE PROPERTY OWNERS WITHIN THE SUBDIVISION OR BOTH (WHERE ALL LOTS ARE PARCELS), THE PROPERTY OWNER WILL BE SOLELY RESPONSIBLE FOR THE MAINTENANCE OF THE PAVED STREETS. THE STATE ASSUMES NO RESPONSIBILITY FOR FUTURE MAINTENANCE OF THE STREETS.

Figure 3, Site Plot Plan Well Location Map



Approximate Site Boundary

Figure 4 Aerial Regional Map



Approximate Site Boundary

Figure 5 Historic Aerial Regional Map

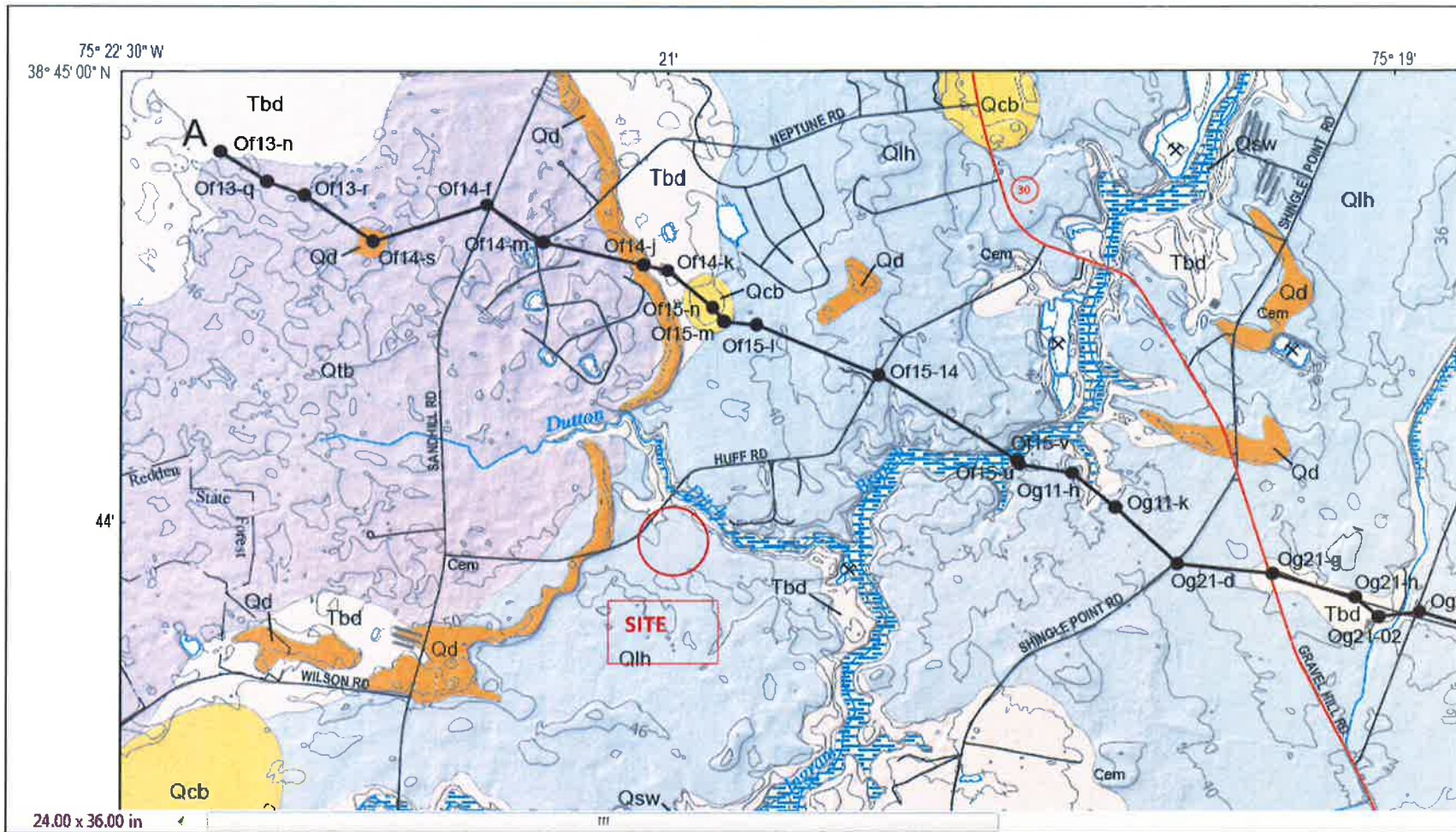
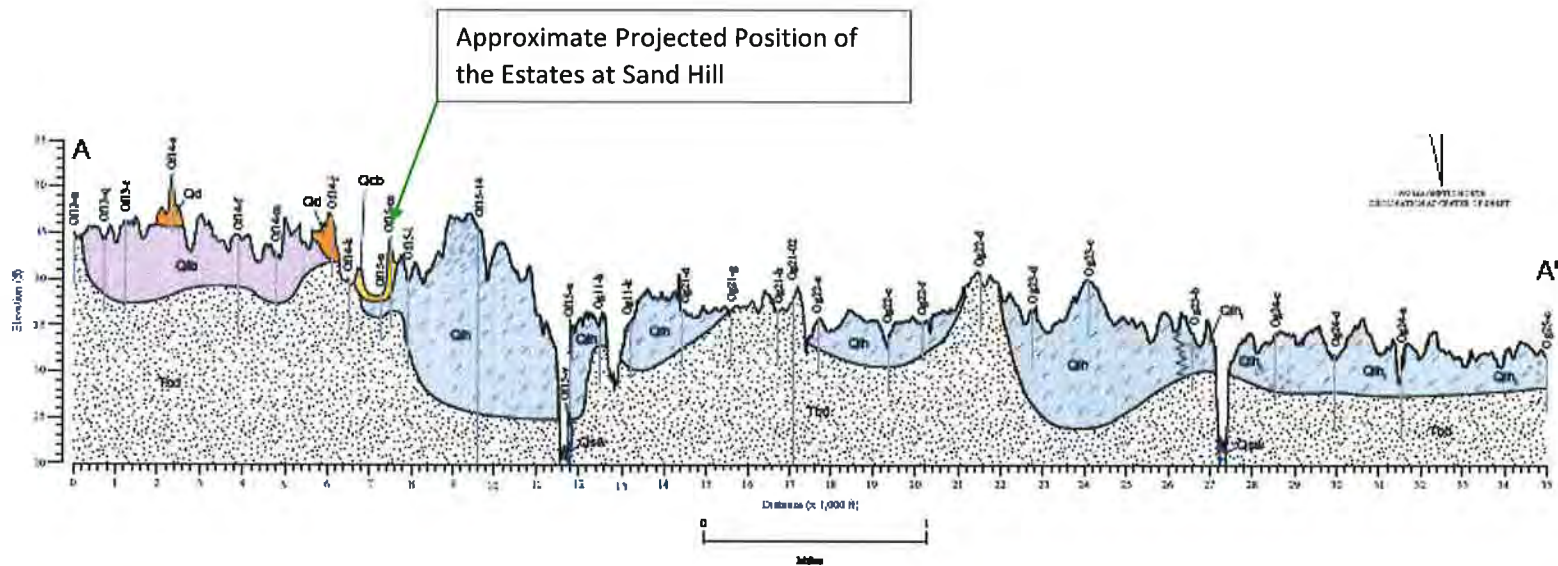


Figure 6 Geologic Map of the Sand Hill

Source: From Ramsey and Tomlinson, 2011



Source: From Ramsey and Tomlinson, 2011

Figure 7 Geologic Cross-Section of the Sand Hill Estates

Time versus Drawdown Sand Hill Valley Test Well

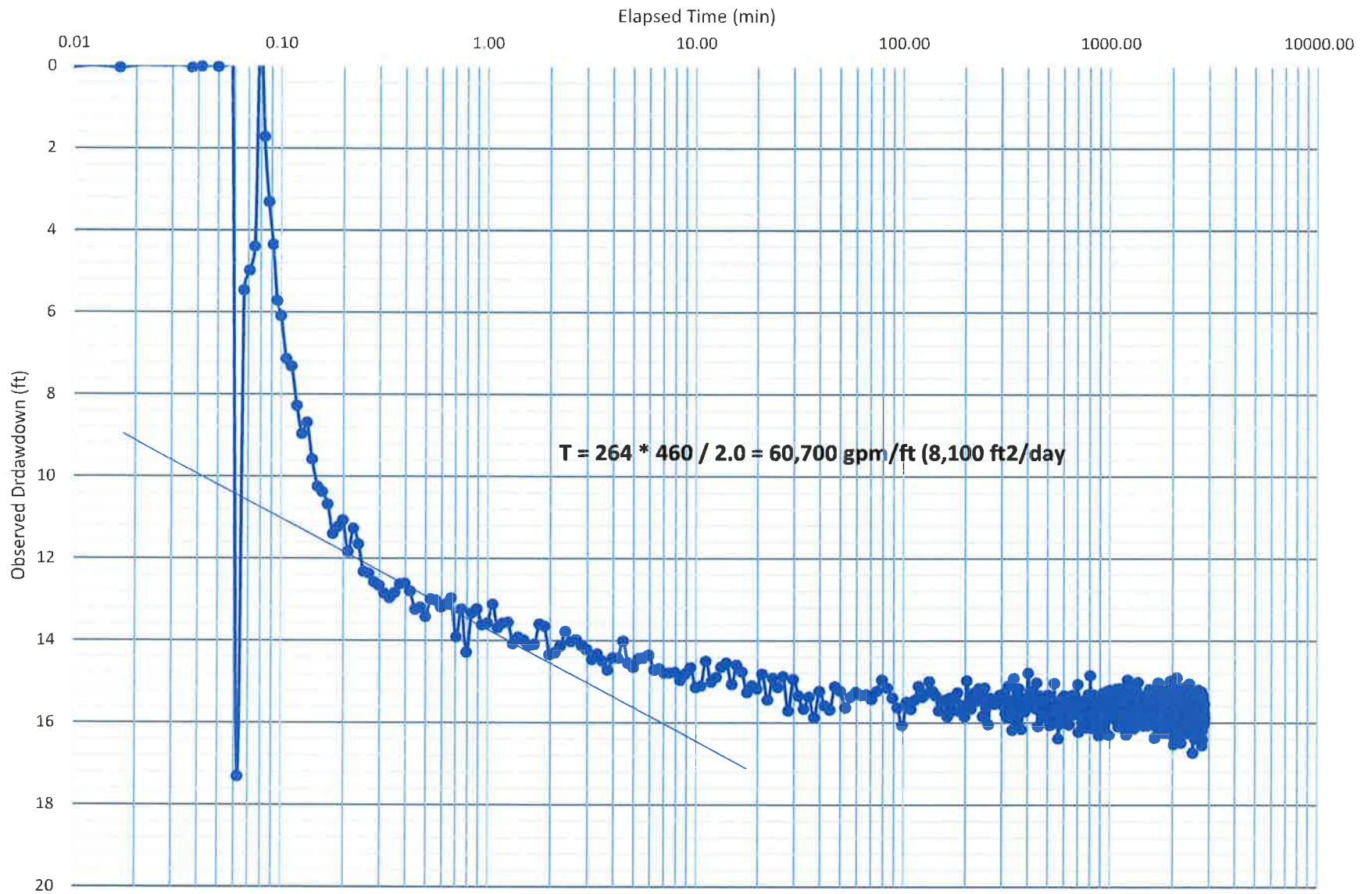
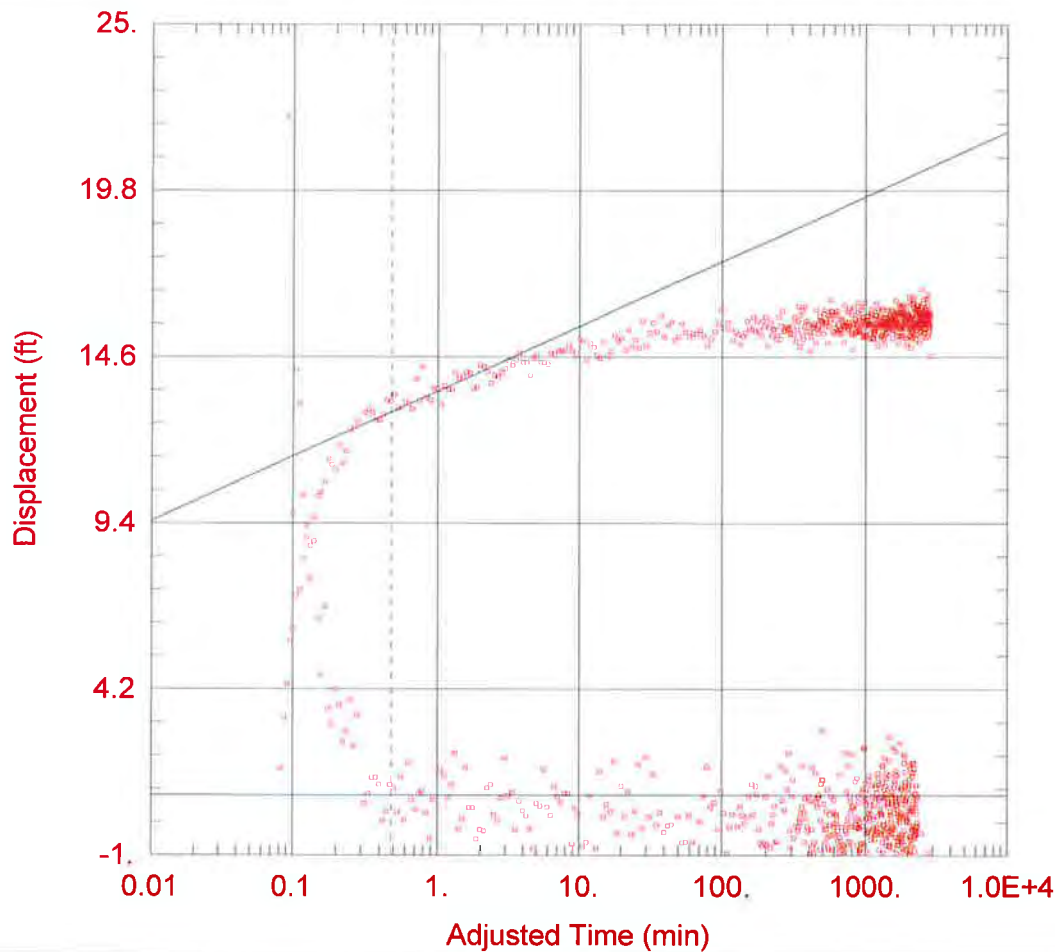


Figure 8



WELL TEST ANALYSIS

Data Set: E:\...\Sand Hill 2.aqt
 Date: 03/08/18 Time: 08:53:15

PROJECT INFORMATION

Company: GWA, LLC
 Client: Sand Hill Valley
 Location: Milton
 Test Well: Supply Well
 Test Date: December 2017

SOLUTION

Aquifer Model: Confined
 Solution Method: Cooper-Jacob
 T = 8000. ft²/day
 S = 2.678E-6

AQUIFER DATA

Saturated Thickness: 90. ft

Anisotropy Ratio (Kz/Kr): 0.01413

WELL DATA

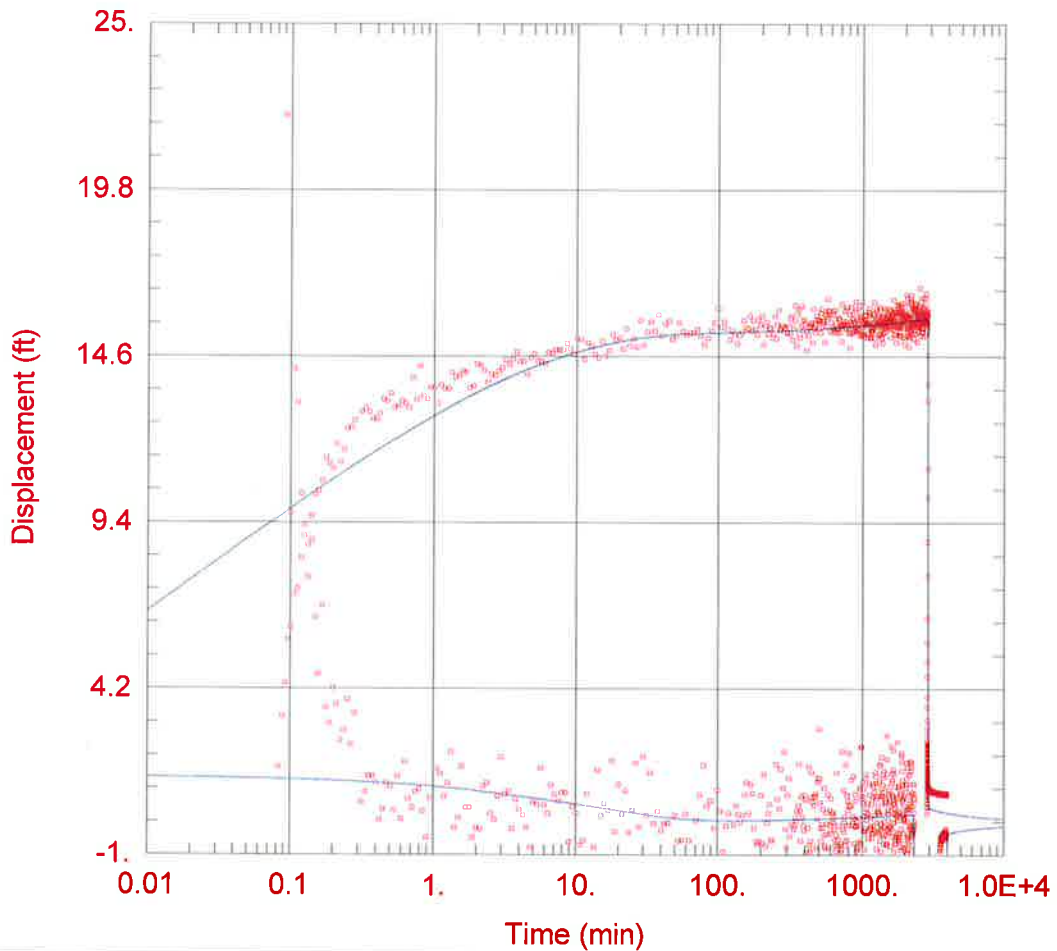
Figure 9

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)
New Well	0	0

Well Name	X (ft)	Y (ft)
New Well	0	0



WELL TEST ANALYSIS

Data Set: E:\...\Sand Hill 2.aqt
 Date: 03/08/18 Time: 09:00:21

PROJECT INFORMATION

Company: GWA, LLC
 Client: Sand Hill Valley
 Location: Milton
 Test Well: Supply Well
 Test Date: December 2017

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Tartakovsky-Neuman
 T = 1.45E+4 ft²/day
 S = 0.002332
 Sy = 0.1021
 Kz/Kr = 0.03428
 kD = 5.123

AQUIFER DATA

Saturated Thickness: 90. ft

Anisotropy Ratio (Kz/Kr): 0.03428

WELL DATA

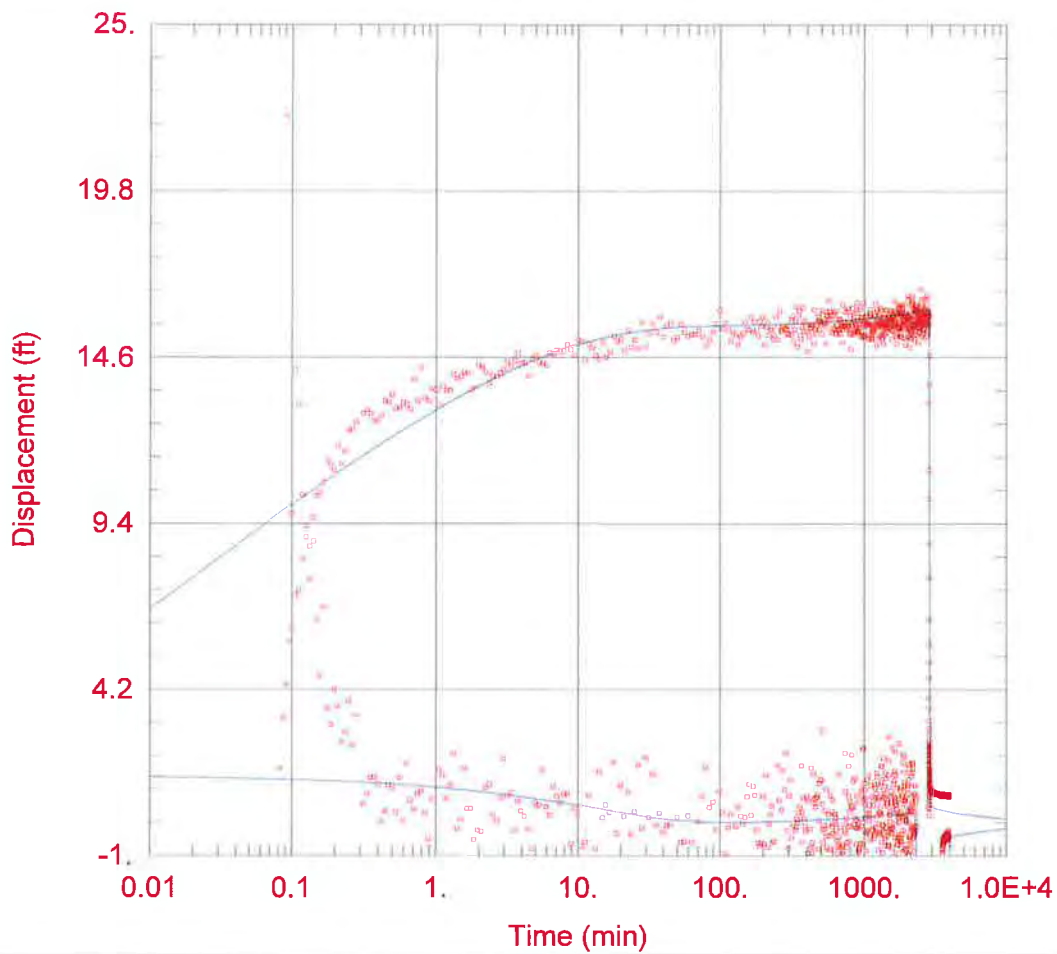
Figure 10

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)
New Well	0	0

Well Name	X (ft)	Y (ft)
New Well	0	0



WELL TEST ANALYSIS

Data Set: E:\...\Sand Hill 2.aqt
 Date: 03/08/18 Time: 08:57:49

PROJECT INFORMATION

Company: GWA, LLC
 Client: Sand Hill Valley
 Location: Milton
 Test Well: Supply Well
 Test Date: December 2017

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Neuman
 T = 1.423E+4 ft²/day
 S = 0.002332
 Sy = 0.1021
 Kz/Kr = 0.03428

AQUIFER DATA

Saturated Thickness: 90. ft

WELL DATA

Figure 11

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
New Well	0	0	New Well	0	0

6-Inch Observation Well Sand Hill Valley Well Test

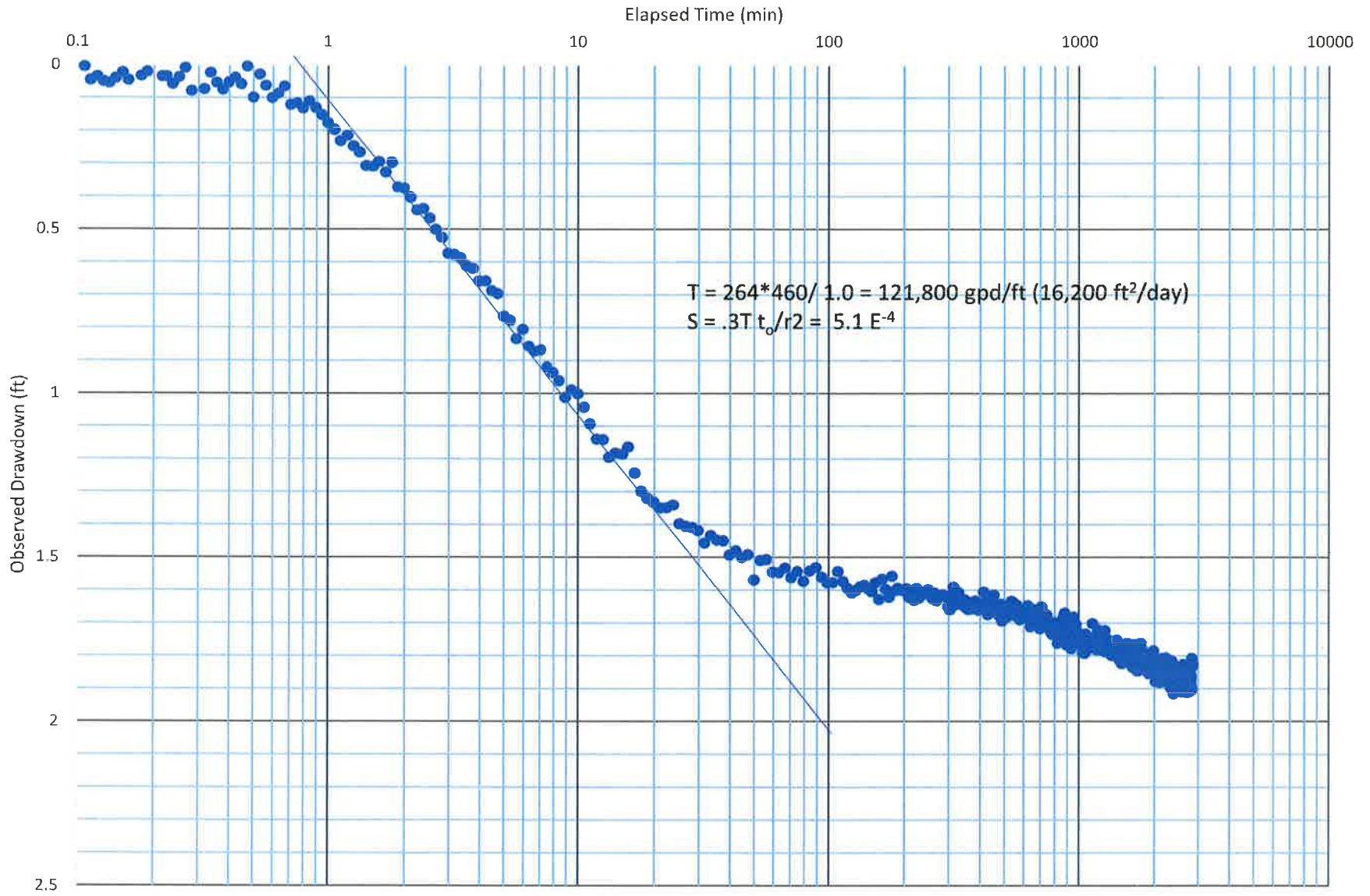
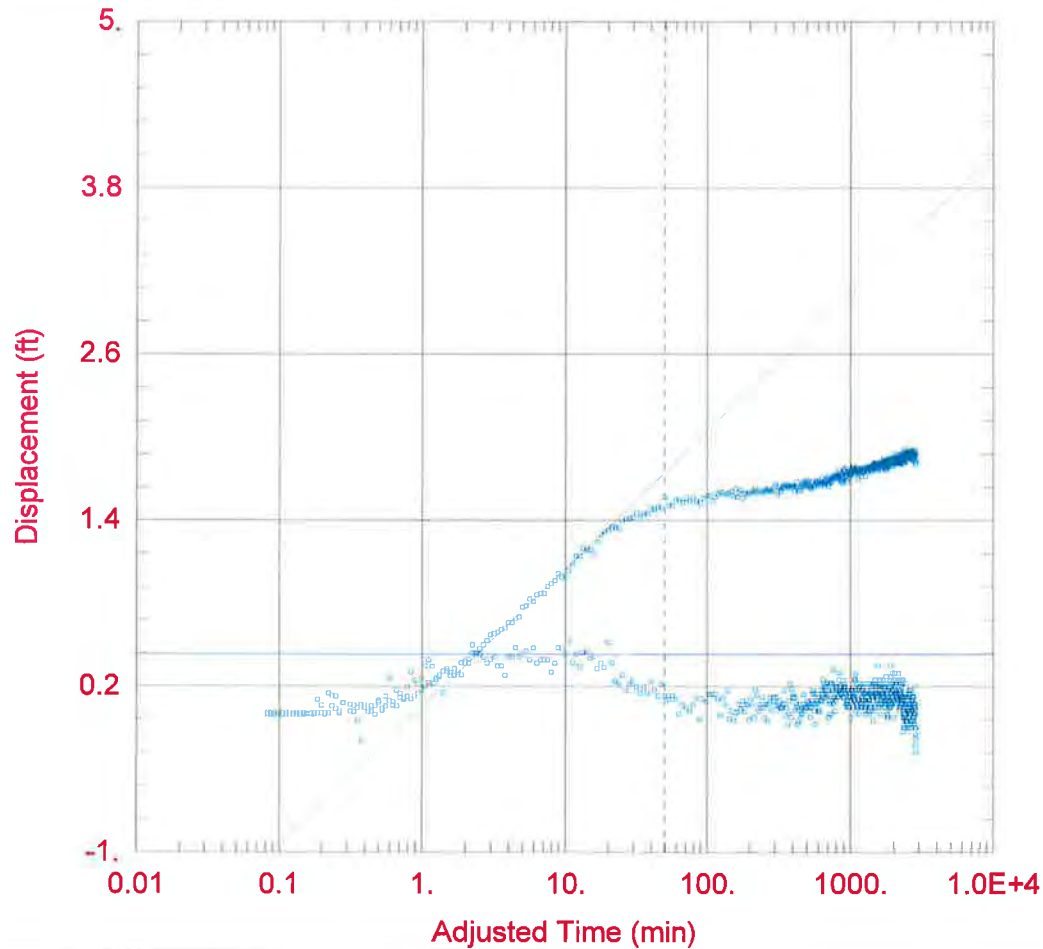


Figure 12



WELL TEST ANALYSIS

Data Set: E:\...\Sand Hill 2.aqt
 Date: 03/08/18 Time: 08:46:03

PROJECT INFORMATION

Company: GWA, LLC
 Client: Sand Hill Valley
 Location: Milton
 Test Well: Supply Well
 Test Date: December 2017

SOLUTION

Aquifer Model: Confined
 Solution Method: Cooper-Jacob
 $T = 1.628E+4 \text{ ft}^2/\text{day}$
 $S = 0.0005645$

AQUIFER DATA

Saturated Thickness: 90. ft

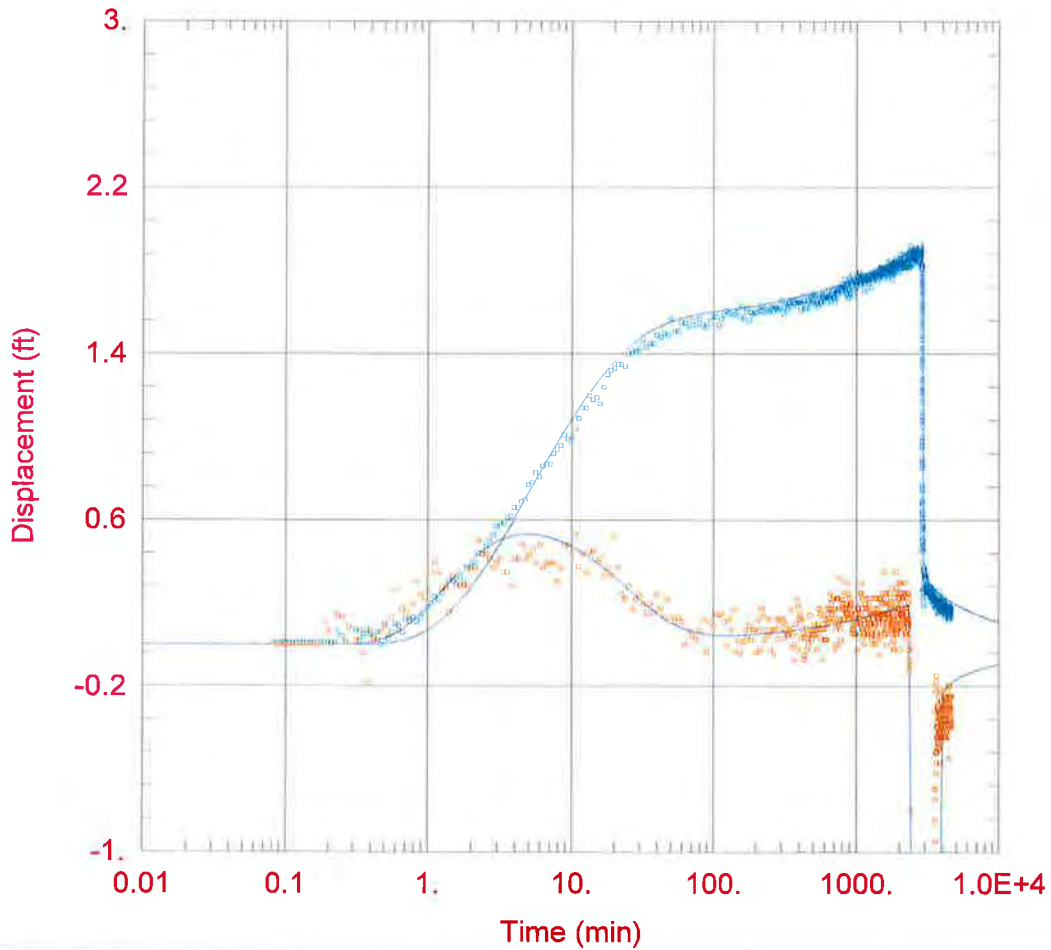
Anisotropy Ratio (K_z/K_r): 0.01274

WELL DATA

Figure 13

Observation Wells

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
New Well	0	0	Obs Well	200	0



WELL TEST ANALYSIS

Data Set: E:\...\Sand Hill 2.aqt
 Date: 03/08/18 Time: 17:27:09

PROJECT INFORMATION

Company: GWA, LLC
 Client: Sand Hill Valley
 Location: Milton
 Test Well: Supply Well
 Test Date: December 2017

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Tartakovsky-Neuman
 T = 1.45E+4 ft²/day
 S = 0.001985
 Sy = 0.1485
 Kz/Kr = 0.03141
 kD = 5.123

AQUIFER DATA

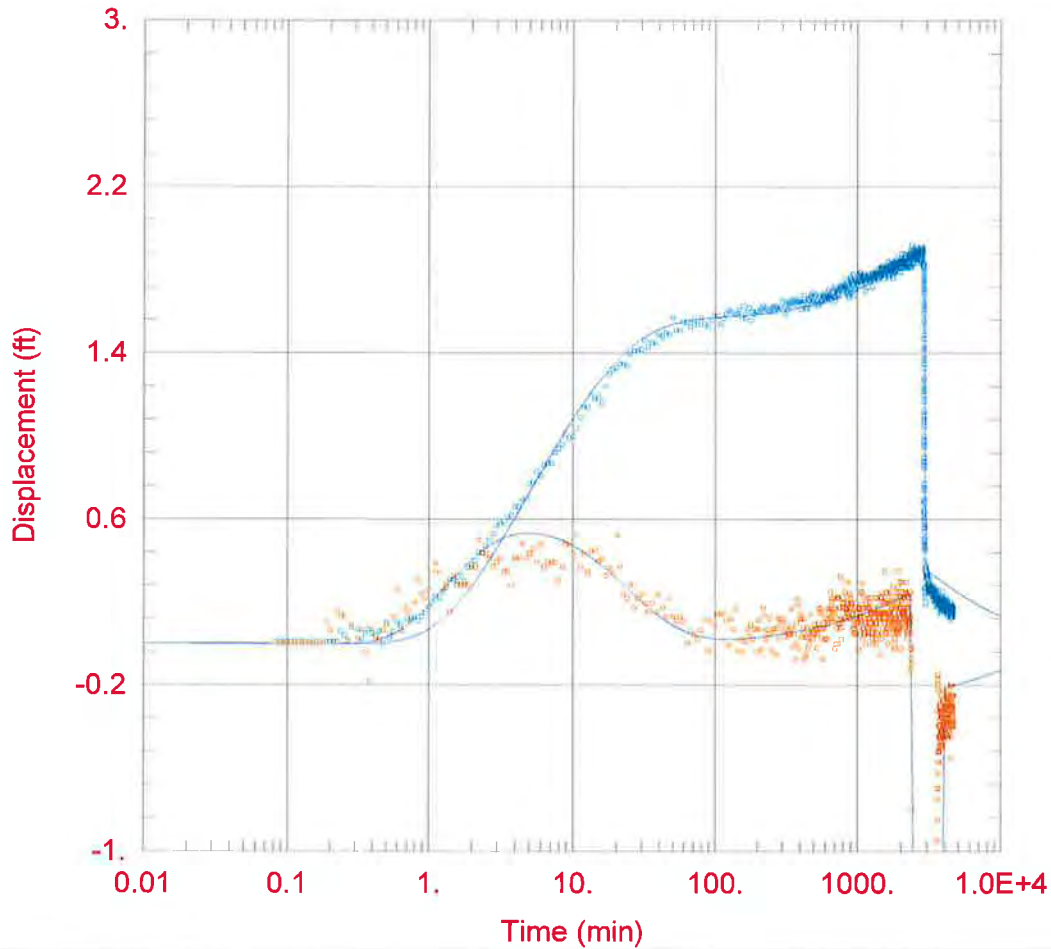
Saturated Thickness: 90. ft

Anisotropy Ratio (Kz/Kr): 0.03141

WELL DATA

Figure 14

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
New Well	0	0	Obs Well	200	0



WELL TEST ANALYSIS

Data Set: E:\...\Sand Hill 2.aqt
 Date: 03/08/18 Time: 17:25:52

PROJECT INFORMATION

Company: GWA, LLC
 Client: Sand Hill Valley
 Location: Milton
 Test Well: Supply Well
 Test Date: December 2017

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Neuman
 T = 1.45E+4 ft²/day
 S = 0.001985
 Sy = 0.1485
 Kz/Kr = 0.03141

AQUIFER DATA

Saturated Thickness: 90. ft

WELL DATA

Figure 15

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
New Well	0	0	• Obs Well	200	0

Drawdown versus Drawdown Sand Hill 48-Hour Test

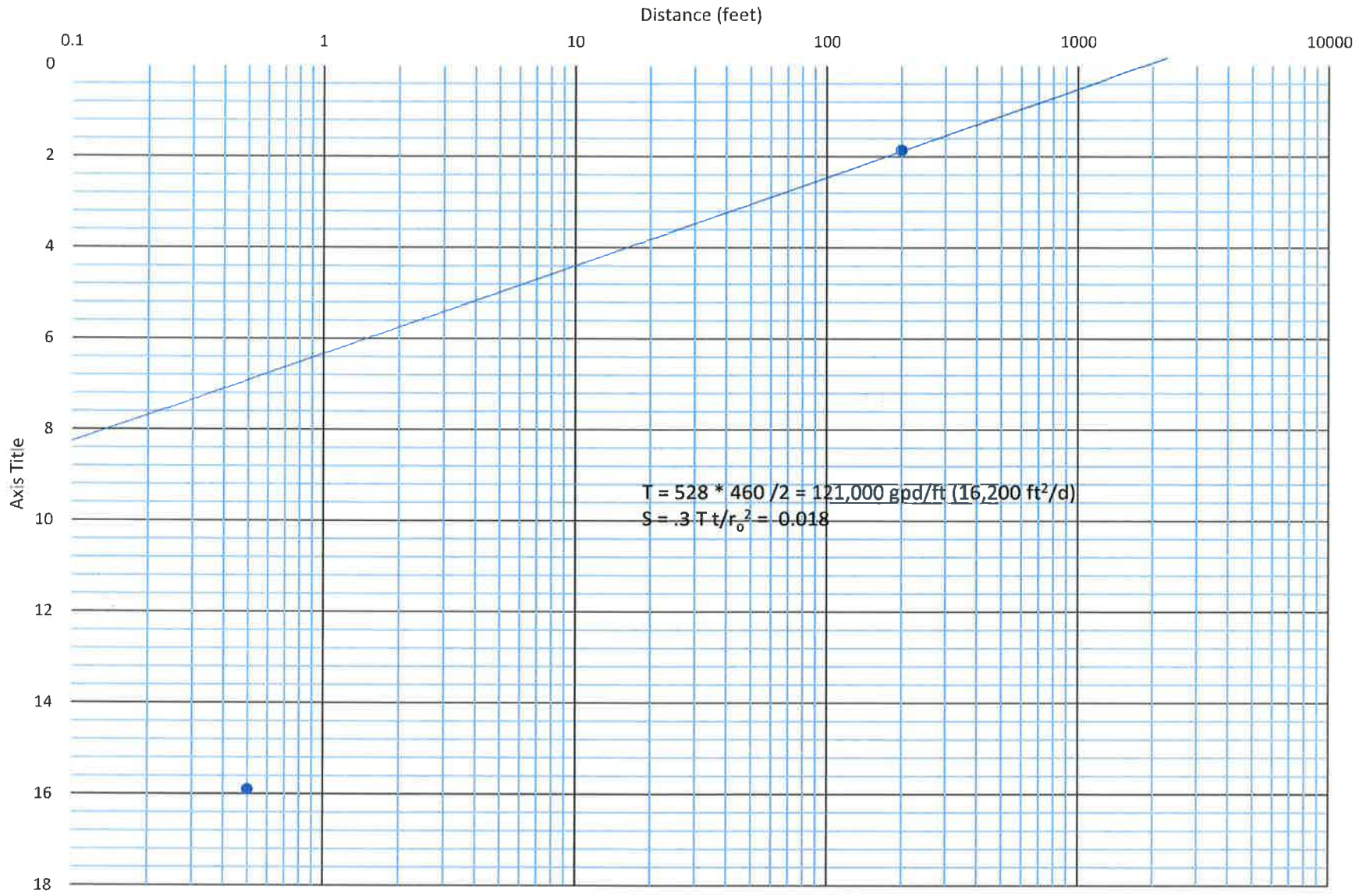


Figure 16

Residual Drawdown t/t' Recovery Graph

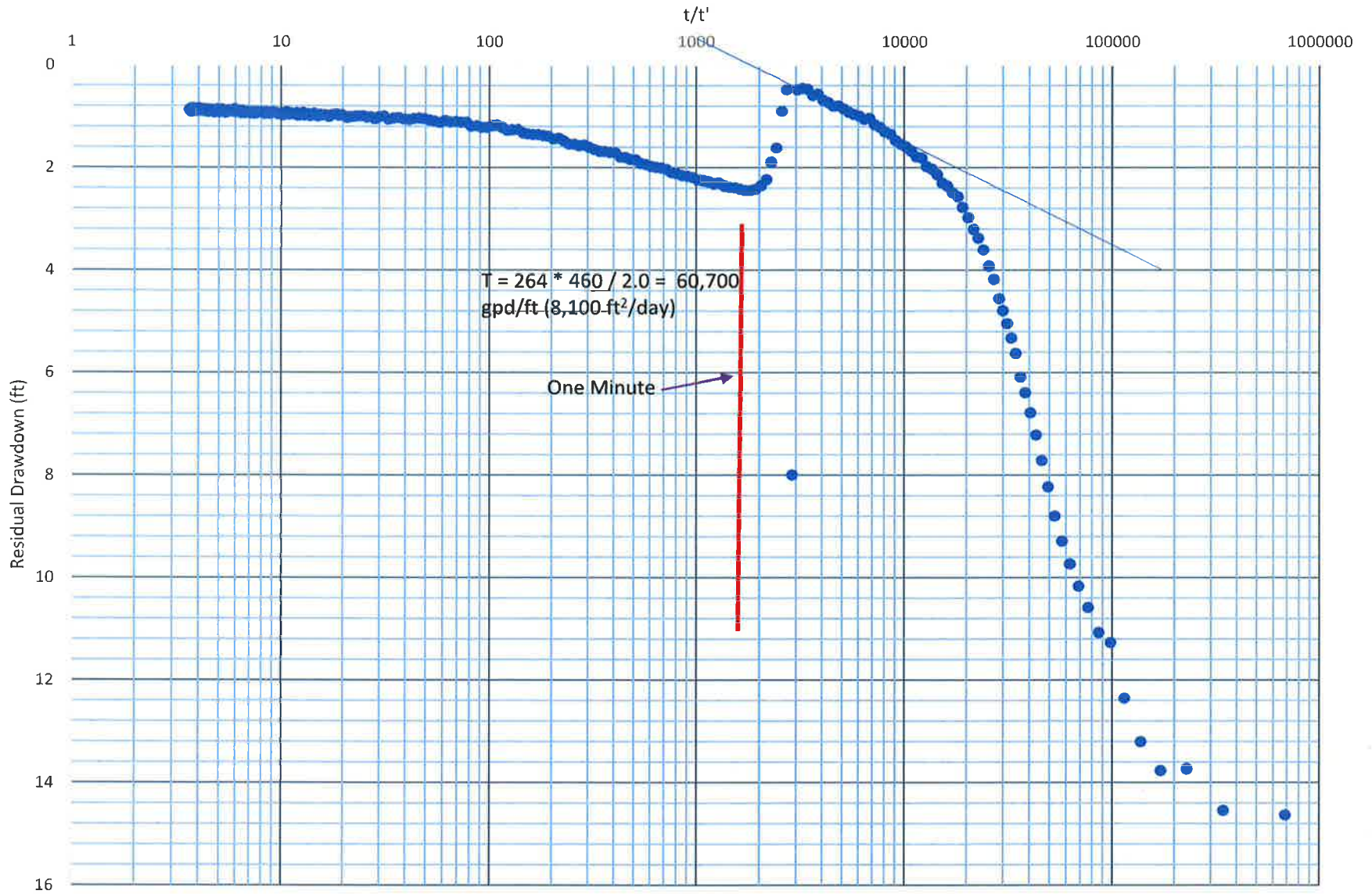


Figure 17

6-Inch Observation Well Recovery t/t' Residual Drawdown Graph

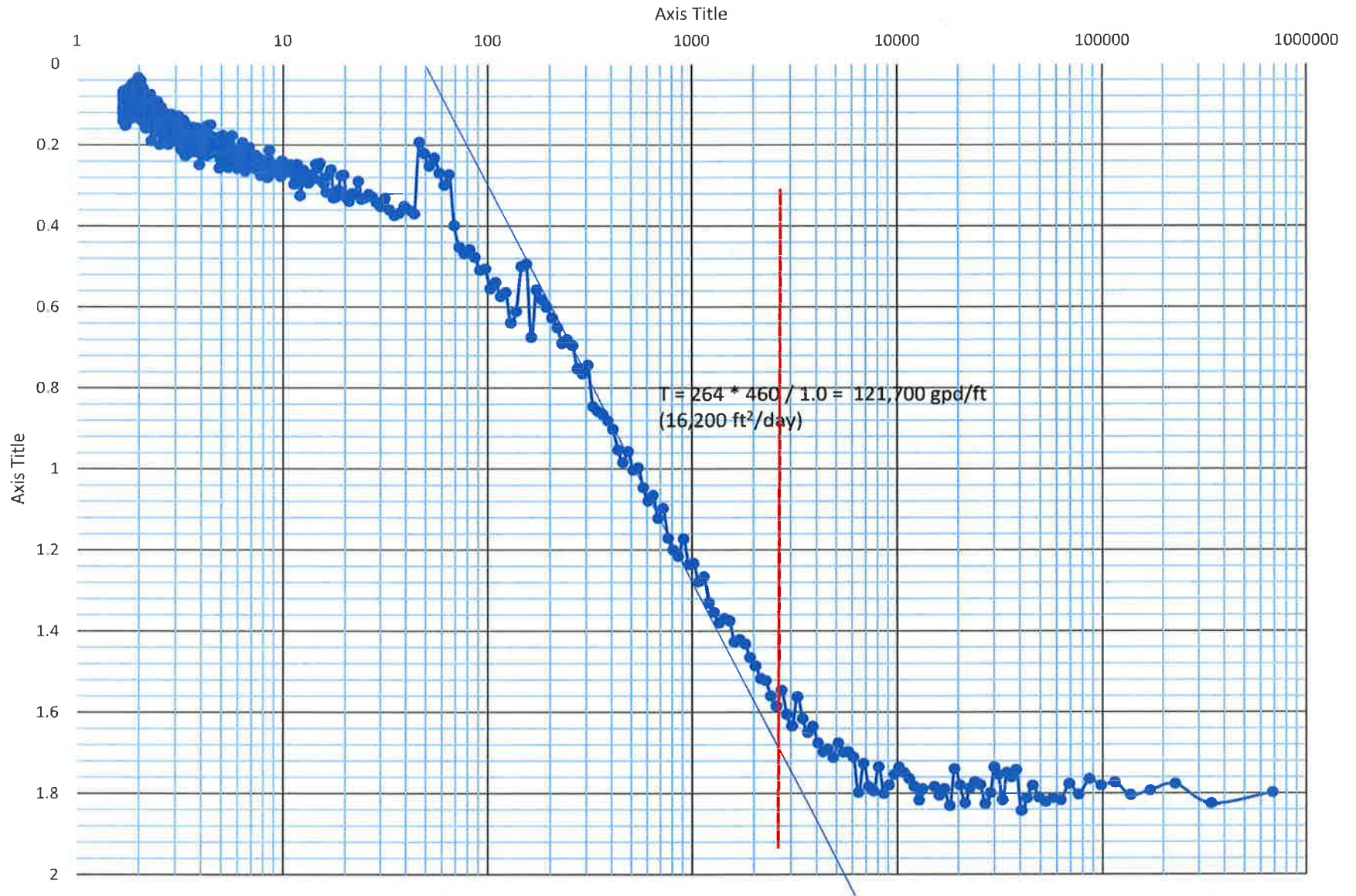


Figure 18

Hydrograph of 6-Inch Observation Well - Recovery Plot

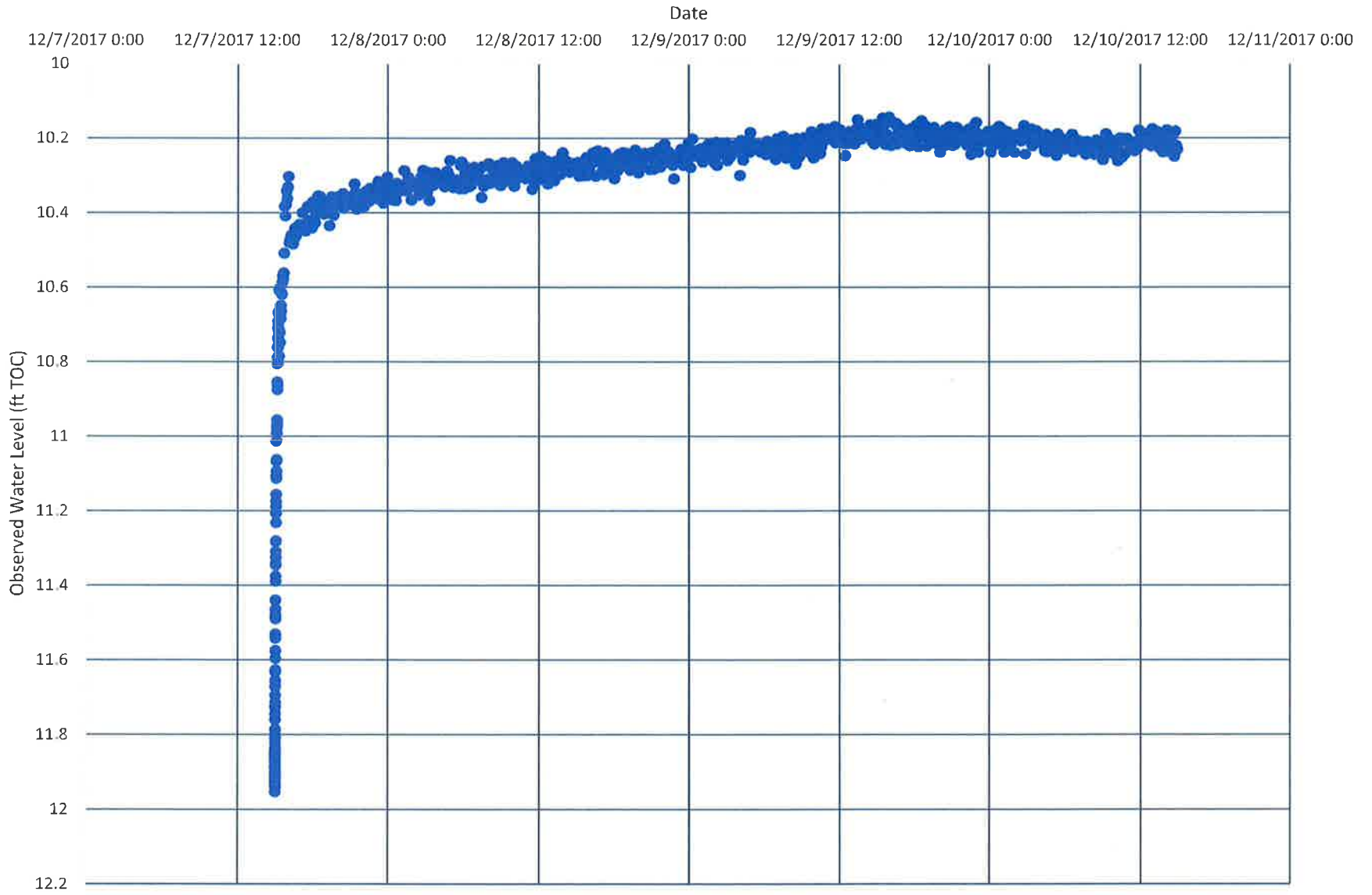


Figure 19

Appendix 1

Well Drilling Permits, Completion Reports & Well Search

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

http://www.dnrec.state.de.us/


APPLICATION MUST BE SUBMITTED
AND PERMIT RECEIVED BEFORE
DRILLING IS STARTED.

WELL COMPLETION REPORT

- OFFICIAL USE ONLY -

PAGE # ____ OF ____ PAGES

PERMIT #: _____

Owner: Sandhill Real Estate Investments Llc					LOCATION MAP - ROAD MAP														
Address: 16181 Hudson Road, 16181 Hudson Road Milton DE US 19968					County: Sussex														
Telephone:					Tax Parcel: 1-35-10.00-0063.00														
Email:					Lot #:														
Permit #: 259605					WELL HEAD COMPLETION														
Local ID:					Type: Other														
Licensed Preparer / WC: Aquatech Water Specialties, LLC					Other: Pitless Unit														
License #: 4427					Well Head Completed: 24.00 in. Above Ground Surface														
Well Driller in Charge:					Was the Well Tag attached in accordance with current regulations?														
License #: 3					Yes														
Construction Method: Mud Rotary					Comments: Authorization #3629575														
Total Depth of Excavation: 125.00 feet																			
Construction Date: 10/4/2017																			
<table border="1"> <thead> <tr> <th>Casing</th> <th>Top</th> <th>Bottom</th> <th>Diameter</th> <th>Material</th> </tr> </thead> <tbody> <tr> <td>Inner Casing</td> <td>12.00</td> <td>80.00</td> <td>8.00</td> <td>PVC</td> </tr> </tbody> </table>					Casing	Top	Bottom	Diameter	Material	Inner Casing	12.00	80.00	8.00	PVC					
Casing	Top	Bottom	Diameter	Material															
Inner Casing	12.00	80.00	8.00	PVC															
Screen Material: PVC					Diameter: 8.00														
Top: 80.00					Bottom: 105.00														
Type of Grout: Bentonite																			
Top: 0.00					Bottom: 75.00														
Gravel Pack Interval:																			
Top: 75.00					Bottom: 105.00														
Type of Non-Grout Backfill of Well Annulus: None																			
Top: 0.00					Bottom: 0.00														
Screen Slot Size: 0																			
Gravel Pack Size: 2																			
Static Water Level: 9.00 ft. Below Ground Surface																			
Date: 10/4/2017																			
Pumping Water Level: 29.0000 ft.					X: 205971.14														
Date: 10/4/2017					Y: 81383.01														
After: 48.00 hrs.																			
Pumping at: 400.00 GPM																			
Was a Geophysical Log Taken? No																			
Parcel Size: Greater than 0.5 Acre																			
Proposed Well will be:																			
330.00 Feet of the FRONT property line																			
270.00 Feet of the BACK property line																			
314.00 Feet of the LEFT property line																			
500.00 Feet of the RIGHT property line																			
340.00 Feet from the NEAREST road																			
0.00 Feet from the SEPTIC TANK and all components																			
0.00 Feet from the SEPTIC DRAINFIELD/CESSPOOL																			
50.00 Feet from the CENTRAL SEWER LINE																			
I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.																			
<i>B. Little</i> Signature - Licensed Preparer/Well Contractor					10/4/17 Date														
<i>April G. DiNunzio Executive V.P.</i> Signature - Property Owner					3/23/18 Date														
																			

Ref#: 27547

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

<http://www.dnrec.state.de.us/>

APPLICATION MUST BE SUBMITTED
AND PERMIT RECEIVED BEFORE
DRILLING IS STARTED.

WELL COMPLETION REPORT

- OFFICIAL USE ONLY -

PAGE # ____ OF ____ PAGES

PERMIT #: _____

FORMATION LOG

Formation Type:	TopSoil	Other:	
Formation Type With:	Sand	Other:	
From:	0.00	To:	1.00
Color:	Brown		
Texture		Other:	
To:		Other:	
Cement:		Other:	
Sorting:		Other:	
Hardness:		Other:	
Comment:			
Formation Type:	Silt	Other:	
Formation Type With:	Sand	Other:	
From:	1.00	To:	10.00
Color:	Yellow		
Texture		Other:	
To:		Other:	
Cement:		Other:	
Sorting:		Other:	
Hardness:		Other:	
Comment:			
Formation Type:	Fine Sand	Other:	
Formation Type With:	Sand	Other:	Coarse
From:	10.00	To:	35.00
Color:	Yellow		
Texture		Other:	
To:	Fine	Other:	
Cement:		Other:	
Sorting:		Other:	
Hardness:		Other:	
Comment:			
Formation Type:	Fine Sand	Other:	
Formation Type With:	Sand	Other:	Coarse
From:	35.00	To:	100.00
Color:	Light Yellow		
Texture		Other:	
To:	Fine	Other:	
Cement:		Other:	
Sorting:		Other:	
Hardness:		Other:	
Comment:			
Formation Type:	Coarse Sand	Other:	
Formation Type With:	Sand	Other:	
From:	100.00	To:	110.00
Color:	Orange		
Texture		Other:	
To:	Coarse	Other:	
Cement:		Other:	
Sorting:		Other:	
Hardness:		Other:	
Comment:			

Ref#: 27547

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

<http://www.dnrec.state.de.us/>

APPLICATION MUST BE SUBMITTED
AND PERMIT RECEIVED BEFORE
DRILLING IS STARTED.

WELL COMPLETION REPORT

- OFFICIAL USE ONLY -

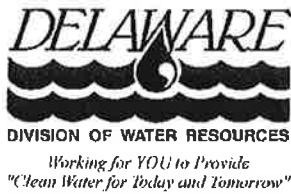
PAGE # _____ OF _____ PAGES

PERMIT #: _____

Comment:

Formation Type:	Silt	Other:	
Formation Type With:	Clay	Other:	
From:	110.00	To:	125.00
Color:	Gray		
Texture		Other:	
To:		Other:	
Cement:		Other:	
Sorting:		Other:	
Hardness:		Other:	
Comment:			

Ref#: 27547



**PERMIT
254796**



Tax Map Number: 1-35-10.00-0063.00

OWNER COPY

Pursuant to provisions of Title 7, Delaware Code, Chapter 60, permission is hereby granted to:

**Sandhill Real Estate Investments Llc
Huff Road, Milton, DE 19968 US**

to construct, operate and maintain 1 Agricultural (Within CPCN) Well in a total of 1 boring

This permit is only valid for construction upon obtaining an Authorization Number from Delaware DNREC.

Construction must be completed on or before 6/23/2017, one year from permit issuance date.

A permit extension can be obtained on or before the date above by contacting Delaware DNREC.

Construction must be done by a person duly licensed by the Delaware DNREC for such activity.

All current regulations governing well construction shall be followed.

All attached permit conditions shall be complied with.

The applicant is responsible for obtaining all additionally required permits and approvals.

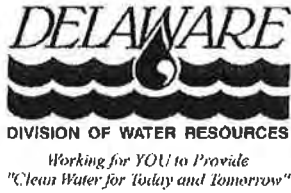
Should the well identification tag become detached and irrecoverable from the well(s), the property owner is responsible to contact the Water Supply section of DNREC at 302-739-9944 for a replacement.

6/23/2016

AUTHORIZED SIGNATURE

DATE

"Working for You to Provide Clean Water for Today and Tomorrow"



PERMIT 254796



Owner/Well Driller Combined Responsibility Conditions

- §1 The approval of this permit does not relieve the responsible party from the requirement for obtaining all permits that are required by federal, state, county, and local governments. The responsible party shall comply with any and all federal, state, county, and local statutes, ordinances, zoning procedures, orders, regulations, rules.
- §2 The issuance of this permit does not guarantee the performance of the permitted well to the standards required by the project. The Department has no knowledge of subsurface conditions or of the constructability of the proposed well.
- §3 This permit is valid only for the specific operations and processes applied for and indicated on the application form and attached drawings. Any unauthorized deviations from the approved project or violations of permit conditions may constitute grounds for revocation. Upon revocation, the well will be ordered abandoned.
- §12 The well casing shall be finished and maintained at least 8 inches above grade.
- §15 The annular space of this well shall be pressure grouted a minimum of 20 feet below grade with a slurry of neat cement, bentonite cement or bentonite and water, in accordance with the Regulations Governing the Construction and Use of Wells.
- §52 If identifiable contamination is detected during construction, and the contamination was not anticipated or evaluated during the permit application and approval process, the well driller shall cease work and notify the Emergency Response Hotline immediately by calling 1-800-662-8802, followed by the Water Supply Section 302-739-9944.
- §54 Representatives of DNREC, the Delaware Geological Survey or the U.S. Geological Survey may inspect the well and/or conduct tests such as but not limited to geophysical logging and sampling, at any reasonable time after serving advance notice.
- §93 The well shall not, at any time, be interconnected with any portion of any building's plumbing and/or any water utility's service connection.
- §99 The well(s) shall be located at least ten feet from a gravity sewer line, and shall be at least fifty feet from an sewer force main.

Owner Responsible Conditions

- §25 The well(s) shall be capped securely at all times.
- §57 Water taken from this well is not to be used for human consumption.
- §58 The well shall not be used for the processing or preparation of food for sale.
- §64 This permit and all conditions shall transfer to future owners of this property, identified by Tax ID# 1-35-10.00-0063.00.

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

http://www.dnrec.state.de.us/

APPLICATION MUST BE SUBMITTED
AND PERMIT RECEIVED BEFORE
DRILLING IS STARTED.

APPLICATION FOR A PERMIT
TO CONSTRUCT A WELL

- OFFICIAL USE ONLY -


PAGE # OF PAGES
PERMIT #: **254796**

Owner: Sandhill Real Estate Investments Llc	LOCATION MAP - ROAD MAP			
Address: 16181 Hudson Road Milton DE US 19968	County: Sussex	Tax Parcel: 1-35-10.00-0063.00		
Telephone:	Lot #:			
Email:	Subdivision: The Estate of Sand Hill Village			
Licensed Preparer / WC: Aquatech Water Specialties, LLC	ADC Map Grid:			
License #: 4427	Name of Nearest Town: Georgetown			
Date of Application: 5/30/2016	Distance to Nearest Town: 3.50			
Estimated Construction Date: 5/30/2016	X: 205869.54	Y: 81173.48		
Purpose: Permanent				
Use: Agricultural Standard				
Use Other:				
Is an Emergency well? No				
Is a Replacement well? No				
Reason:				
Is public water available? No				
Utility:				
On public sewage? No				
Septic Permit #: Vacant Land				
PROPOSED WELL CONSTRUCTION:				
Approximate Total Depth: 100.00 feet				
Maximum capacity: 200.00 (GPM)				
Max. Daily Withdrawal: 288,000.00 (GPD)				
Casing	Top	Bottom	Diameter	Material
Inner Casing	0.00	80.00	6.00	PVC
Screen Material: PVC	Parcel Size: Greater than 0.5 Acre			
Top: 80.00	Proposed Well will be:			
Bottom: 100.00	320.00	Feet of the FRONT property line		
Type of Grout: Bentonite	2843.00	Feet of the BACK property line		
Top: 0.00	700.00	Feet of the LEFT property line		
Bottom: 20.00	2114.00	Feet of the RIGHT property line		
Gravel Pack Interval:	330.00	Feet from the NEAREST road		
Top: 80.00	0.00	Feet from the SEPTIC TANK and all components		
Bottom: 100.00	0.00	Feet from the SEPTIC DRAINFIELD/CESSPOOL		
Type of Non-Grout Backfill of Well Annulus: Cuttings	10.00	Feet from the CENTRAL SEWER LINE		
Top: 20.00	map scanned			
Bottom: 80.00				
Will the operation of this well by itself or in combination with any other well(s), owned or operated by the permittee, withdraw greater than 1,000,000 gallons in any 24hr. period? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.				
Signature - Licensed Preparer/Well Contractor				Date
Signature - Property Owner				Date

Hand. file


Ref#: 18866

MONITORING WELL LOG

 Ground Water Associates, LLC	PROJECT NO: Estates At Sand Hill Valley		WELL ID: 2-Inch Obs. Well	
	PROJECT NAME: Aquifer Test at Sand Hill		LOCATION SKETCH	
COMPLETION DATE: 7/11/2016	TOTAL DEPTH OF BOREHOLE: 125.0 Feet	MONITORING DEVICE: None	GEOLOGIST / OFFICE: P. Demicco	
DRILLING CONTRACTOR / DRILLER: Aquatech Water Specialties, LLC		DRILLING EQUIPMENT: None	DRILLING METHOD / BIT: Mud Rotary	
SAMPLING METHOD: Mud Rotary wash samples	DEPTH TO GROUNDWATER: 7 1/2 feet	GROUND SURFACE ELEVATION:	PERMIT NO: 254678	
MEMO:				


DEPTH (Feet)	RECOVERY (feet)	BLOW COUNTS	PID (PPM)	SOIL DESCRIPTION <small>Color, Texture, Moisture, Etc</small>	WELL CONSTRUCTION	
0						0
2				0 - 10 SAND fine to medium, trace silt Brown to light brown, Driller reports clay stringers between 8 to 10 feet		2
4			4			
6			6			
8			8			
10				10 - 20 SAND, fine to medium, trace coarse Sand, trace Silt Tan and white color		10
12			12			
14			14			
16			16			
18				20 - 30 SAND, fine to medium/coarse, trace Silt Clean white sand	PVC casing 2"	18
20			20			
22			22			
24			24			
26				30 - 40 SAND, fine to medium/coarse, trace Silt Clean white sand Fine sand zone 40 to 41 feet		26
28			28			
30			30			
32			32			
34				40 - 50 SAND, fine to coarse, trace Silt Clean white sand Fine sand zone 45 to 47 feet		34
36			36			
38			38			
40			40			
42						42
44			44			
46			46			
48			48			
50					grout	50

MONITORING WELL LOG

 Ground Water Associates, LLC	PROJECT NO.:		WELL ID: 2-Inch Obs. Well	
	PROJECT NAME: Aquifer Test at Sand Hill		LOCATION SKETCH	
COMPLETION DATE: 7/11/2016	TOTAL DEPTH OF BOREHOLE: 125.0 Feet	MONITORING DEVICE: None	GEOLOGIST / OFFICE: P. Demicco	
DRILLING CONTRACTOR / DRILLER: Aquatech Water Specialties, LLC	DRILLING EQUIPMENT: 0	DRILLING METHOD / BIT: Mud Rotary		
SAMPLING METHOD: Mud Rotary wash samples	DEPTH TO GROUNDWATER 7 1/2 feet	GROUND SURFACE ELEVATION 0	PERMIT NO 254678	
MEMO: 0				


DEPTH (Feet)	RECOVERY (feet)	BLOW COUNTS	PID (PPM)	SOIL DESCRIPTION <small>Color, Texture, Moisture, Etc.</small>	WELL CONSTRUCTION	50	
52				50 - 60 SAND fine to coarse, trace Gravel, trace Silt White to tan clean sand,	grout	52	
54						Pack sand	54
56							56
58						58	
60				60 - 70 SAND fine to coarse, trace/little Gravel, trace Silt tan to white, more gravel 65 to 70 feet	sand pack	60	
62							62
64							64
66							66
68				70 - 80 SAND fine to coarse little/some Gravel, trace Silt brown to light brown very coarse gravelly zone	sand pack	68	
70							70
72							72
74							74
76				80 - 90 SAND and GRAVEL, trace Silt Light brown to tan, very coarse zone	PVC Screen	76	
78							78
80							80
82							82
84				90 - 95 SAND fine to coarse. Little/some Gravel, trace Silt Light brown to tan	80'-105'	84	
86							86
88							88
90							90
92				95 - 100 SAND fine to coarse. Little/some Gravel, trace Silt Light brown to tan	2-inch PVC	92	
94							94
96							96
98							98
100						100	

MONITORING WELL LOG

 Ground Water Associates, LLC	PROJECT NO.:		WELL ID: 2-Inch Obs Well	
	PROJECT NAME: Aquifer Test at Sand Hill		LOCATION SKETCH	
COMPLETION DATE: 7/11/2016	TOTAL DEPTH OF BOREHOLE: 125.0 Feet	MONITORING DEVICE: None	GEOLOGIST / OFFICE: P. Demicco	
DRILLING CONTRACTOR / DRILLER: Aquatech Water Specialties, LLC		DRILLING EQUIPMENT: 0	DRILLING METHOD / BIT: Mud Rotary	
SAMPLING METHOD: Mud Rotary wash samples	DEPTH TO GROUNDWATER: 7 1/2 feet	GROUND SURFACE ELEVATION: 0	PERMIT NO. 254678	
MEMO: 0				


DEPTH (Feet)	RECOVERY (feet)	BLOW COUNTS	PID (PPM)	SOIL DESCRIPTION Color, Texture, Moisture, Etc.	WELL CONSTRUCTION		
					100	102	104
102				100 - 105 SAND and GRAVEL, trace Silt pea gravel noted Light brown to tan	sand pack	2-inch PVC	sand pack
104							
106							
108				105 - 110 SAND fine, little Silt. Very soft Brown, Driller reports soft drilling			
110							
112				110 - 115 SAND fine, trace/little Silt. Very soft Brown, rapid color change to orange then gray			
114							
116				115 - 120 SAND fine, trace/little silt. Very soft Color change to medium gray			
118							
120							
122				120 - 125 SAND fine, little silt. Very soft Gray			
124							
126							
128				Total depth 125'			
130							
132							
134							
136							
138							
140							
142							
144							
146							
148							
150							

MONITORING WELL LOG

 Ground Water Associates, LLC		PROJECT NO: Estates At Sand Hill Valley		WELL ID: 4-Inch Obs. Well	
		PROJECT NAME: Aquifer Test at Sand Hill		LOCATION SKETCH	
COMPLETION DATE: 7/11/2016	TOTAL DEPTH OF BOREHOLE: 83.0 Feet	MONITORING DEVICE: None	GEOLOGIST / OFFICE: P. Demicco		
DRILLING CONTRACTOR / DRILLER: Aquatech Water Specialties, LLC		DRILLING EQUIPMENT:	DRILLING METHOD / BIT: Mud Rotary		
SAMPLING METHOD: Mud Rotary wash samples	DEPTH TO GROUNDWATER: 7 1/2 feet	GROUND SURFACE ELEVATION:	PERMIT NO. 254796		
MEMO:					


DEPTH (Feet)	RECOVERY (feet)	BLOW COUNTS	PID (PPM)	SOIL DESCRIPTION <small>Color, Texture, Moisture, Etc</small>	WELL CONSTRUCTION	
0						
2						
4				0 - 10 SAND fine, little/trace silt Orange to tan. Silt and clay stringers throughout		
6						
8					grout	grout
10						
12						
14				10 - 20 SAND, fine to coarse, trace coarse sand, trace/little silt Orange and tan color Silt/clay stringers noted		
16						
18						
20						
22						
24				20 - 30 SAND, fine to coarse, trace silt Clean tan sand. White weathered K-Feldspar noted		
26						
28						
30						
32						
34				30 - 40 SAND, fine to coarse, trace Gravel, trace silt Clean white sand		
36						
38						
40						
42						
44				40 - 50 SAND, fine to coarse, Trace/little Gravel, trace silt Clean white sand		
46						
48					grout	grout
50						

MONITORING WELL LOG

 Ground Water Associates, LLC		PROJECT NO.:		WELL ID: 4-Inch Obs. Well	
		PROJECT NAME: Aquifer Test at Sand Hill		LOCATION SKETCH	
COMPLETION DATE: 7/11/2016	TOTAL DEPTH OF BOREHOLE: 83.0 Feet	MONITORING DEVICE: None	GEOLOGIST / OFFICE: P. Demicco		
DRILLING CONTRACTOR / DRILLER: Aquatech Water Specialties, LLC		DRILLING EQUIPMENT: 0	DRILLING METHOD / BIT: Mud Rotary		
SAMPLING METHOD: Mud Rotary wash samples	DEPTH TO GROUNDWATER 7 1/2 feet	GROUND SURFACE ELEVATION 0	PERMIT NO. 254796		
MEMO: 0					

DEPTH (Feet)	RECOVERY (feet)	BLOW COUNTS	PID (PPM)	SOIL DESCRIPTION <small>Color, Texture, Moisture, Etc</small>	WELL CONSTRUCTION	50
52					PVC casing	52
54				50 - 60 SAND fine to coarse, some Gravel, trace silt Tan to White clean sand,		54
56						56
58					sand pack	58
60					Pack sand	60
62				60 - 70 SAND and GRAVEL, trace silt tan to white		62
64						64
66						66
68						68
70						70
72					sand pack	72
74				70 - 80 SAND fine to coarse littl Gravel, trace silt white to light tan	PVC Screen	74
76						76
78					61'-81'	78
80						80
82				80 - 83 SAND and GRAVEL, trace silt Tan/white, very coarse zone		82
84				83 - 85 SAND fine, little/some silt Gray, driller noted tougher drilling		84
86						86
88				Total depth 85'		88
90						90
92						92
94						94
96						96
98						98
100						100

MONITORING WELL LOG

 Ground Water Associates, LLC		PROJECT NO:		WELL ID: 4-Inch Obs. Well	
		PROJECT NAME: Aquifer Test at Sand Hill		LOCATION SKETCH	
COMPLETION DATE: 7/11/2016	TOTAL DEPTH OF BOREHOLE: 83.0 Feet	MONITORING DEVICE: None	GEOLOGIST / OFFICE: P. Demicco		
DRILLING CONTRACTOR / DRILLER: Aquatech Water Specialties, LLC		DRILLING EQUIPMENT: 0	DRILLING METHOD / BIT: Mud Rotary		
SAMPLING METHOD: Mud Rotary wash samples	DEPTH TO GROUNDWATER: 7 1/2 feet	GROUND SURFACE ELEVATION: 0	PERMIT NO: 254796		
MEMO: 0					

DEPTH (Feet)	RECOVERY (feet)	BLOW COUNTS	PID (PPM)	SOIL DESCRIPTION Color, Texture, Moisture, Etc	WELL CONSTRUCTION			
					2-inch PVC	sand pack	sand pack	
102								102
104								104
106								106
108								108
110								110
112								112
114								114
116								116
118								118
120								120
122								122
124								124
126								126
128								128
130								130
132								132
134								134
136								136
138								138
140								140
142								142
144								144
146								146
148								148
150								150

DNREC Well Search

PermitNu mb	Local Well#	WellType	Owner	TotalD epth	TotalDe p_1	DGSI d	TaxID	SepticPerm	wellauthco	WellStatu s	EstMa xCapa	EstDail yUs	Requires Al	EstConstru	ProposedDr
104930		Agricultural - Standard	Wilkins, Wayne	0.00	75.00					Active	20	800	NO	7/31/1995	Mud Rotary
105066		Agricultural - Standard	Payne, George M	0.00	50.00					Active	15	300	NO	8/12/1995	Mud Rotary
105585		Agricultural - Standard	Coar, Harry	0.00	67.00					Active	20	800	NO	9/26/1995	Mud Rotary
215142		Agricultural - Standard	Capstone Homes Llc	60.00	42.00		2-35-24.00-0039.10		3310250	Complete	25	2000	NO		Mud Rotary
254008		Agricultural - Standard	Sandhill Real Estate Inve	100.00	0.00		1-35-10.(Vacant Land		5049472	Complete	20	28800	NO	3/17/2016	Mud Rotary
56542		Agricultural - Standard	Coar, Harry	0.00	73.00					Active	10	300	NO	5/15/1984	Jetted
60780		Agricultural - Standard	Phillips, John O	0.00	67.00					Active	10	400	NO	5/8/1985	Mud Rotary
62627		Agricultural - Standard	Wilkens, Danny	0.00	80.00					Active	20	2000	NO	10/25/1985	Jetted
85979		Agricultural - Standard	Wilkins, Daniel W & Joai	0.00	63.00					Active	25	300	NO	2/20/1991	Mud Rotary
96522		Agricultural - Standard	Wilson, Rodney	0.00	65.00					Active	15	400	NO	8/6/1993	Mud Rotary
254796		Agricultural - Within CPCN	Sandhill Real Estate Inve	100.00	0.00		1-35-10.(Vacant Land		4257751	Complete	200	#####	NO	5/30/2016	
102851		Domestic - Standard	Palmer, Ted	0.00	55.00					Active	10	400	NO	2/10/1995	Mud Rotary
105067		Domestic - Standard	Payne, George M	0.00	62.00					Active	15	300	NO	8/12/1995	Mud Rotary
105584		Domestic - Standard	Coar, David	0.00	70.00					Active	20	800	NO	9/26/1995	Mud Rotary
106349		Domestic - Standard	Pride, Bonnie	0.00	60.00					Active	20	400	NO	1/25/1996	Mud Rotary
106494		Domestic - Standard	Huff, Richard M	0.00	65.00					Active	10	300	NO	12/5/1995	Mud Rotary
108688		Domestic - Standard	Jones, Thomas E	0.00	76.00					Active	15	400	NO	6/27/1996	Mud Rotary
152905		Domestic - Standard	Hearn, Joyce	0.00	70.00		1-35-10.00-0062.03			Active	20	800	NO	9/17/1997	Mud Rotary
153944		Domestic - Standard	Jones, Daniel & Patricia	0.00	70.00					Active	10	700	NO	10/3/1997	Mud Rotary
160982		Domestic - Standard	Breasure, Brad & Angie	0.00	68.00					Active	15	400	NO	10/16/1998	Mud Rotary
166538		Domestic - Standard	Breasure, Brad & Angie	0.00	65.00					Active	20	400	NO	7/28/1999	Mud Rotary
176057		Domestic - Standard	Hayes, Charles H	0.00	95.00					Active	10	300	NO	1/22/2001	Mud Rotary
183410		Domestic - Standard	Hayes, Charles H	0.00	75.00					Active	10	200	NO	3/1/2002	Mud Rotary
186384		Domestic - Standard	Huff, Richard & Diane	0.00	62.00					Active	15	400	NO	8/14/2002	Mud Rotary
199013		Domestic - Standard	Hludzinski, Robert	0.00	50.00					Active	10	300	NO	2/4/2004	Mud Rotary
203149		Domestic - Standard	Hludzinski, Robert	0.00	50.00					Active	10	300	NO	8/20/2004	Mud Rotary
209924	0	Domestic - Standard	Downey Jr, E Paul	75.00	0.00	0	1-35-10.(203396			Permit Exp	15	800	NO	5/9/2005	Mud Rotary
213867	0	Domestic - Standard	Morley, Kenneth A	90.00	72.00	0	1-35-10.(209408		6027686	Complete	30	432	NO	3/21/2006	Mud Rotary
215755		Domestic - Standard	HPH Resources LLC	80.00	0.00		2-35-24.(209550			Permit Exp	30	400	NO		Mud Rotary
220583		Domestic - Standard	Anglin, Raymond K	60.00	60.00		2-35-24.(207261		6020225	Complete	25	750	NO		Mud Rotary
225400		Domestic - Standard	Downey Jr, E Paul	75.00	92.00		1-35-10.(203396		5486115	Complete	25	3000	NO		Mud Rotary
228616		Domestic - Standard	Greer, Richard	40.00	60.00		1-35-07.(216063		3555928	Complete	10	400	NO		Mud Rotary
231537	Lot 5	Domestic - Standard	Capstone Homes LLC	60.00	60.00		2-35-00.(217525		4463285	Complete	10	250	NO		Mud Rotary
235390		Domestic - Standard	Bsp Properties LLC	60.00	60.00		2-35-24.(219178		5044848	Complete	10	1000	NO		Mud Rotary
240710	Parcel	Domestic - Standard	Capstone Homes Llc	60.00	57.00		2-35-24.(221328-s		6041623	Complete	0	1500	NO	9/5/2012	Mud Rotary
241547	Lot 12	Domestic - Standard	Glinka, Gary & Pamela	50.00	60.00		2-35-24.(221762-s		6008753	Complete	0	600	NO	11/16/2012	Mud Rotary
243077		Domestic - Standard	Sweetman, Steven H	60.00	55.00		2-35-24.(222527		3772568	Complete	0	350	NO	4/8/2013	Unknown
243677		Domestic - Standard	Dernoeden, Peter H	60.00	58.00		2-35-24.(222904		6563223	Complete	0	1500	NO	6/4/2013	Unknown
250032	lot 4	Domestic - Standard	Melnick, Anthony C	60.00	60.00		2-35-24.(229403		3116105	Complete	10	300	NO	3/23/2015	Mud Rotary
250369	lot 8	Domestic - Standard	Kidd, Brian	60.00	0.00		2-35-24.(229658			Complete	20	300	NO	5/8/2015	Mud Rotary
250827	lot 9	Domestic - Standard	Bsp Properties Llc	60.00	56.00		2-35-24.(229187		3432358	Complete	20	1500	NO	6/3/2015	Mud Rotary
251000	lot 3	Domestic - Standard	Pinewood Properties	60.00	0.00		2-35-24.(230006		4304119	Complete	20	300	NO	6/15/2015	Mud Rotary

DNREC Well Search

PermitNu	Local		TotalD	TotalDe	DGSI		WellStatu	EstMa	EstDail	Requires					
mb	WellI	WellType	Owner	ept	p_1	d	TaxID	SepticPerm	wellauthco	s	xCapa	yUs	AI	EstConstru	ProposedDr
252068	Lot 3	Domestic - Standard	Horner, Dennis	50.00	55.00		1-35-07.(	230291	7381611	Completed	10	1000	NO	9/4/2015	Mud Rotary
255022	Lot 14	Domestic - Standard	Pinewood Properties	60.00	0.00		2-35-24.(	232459	6697102	Completed	20	300	NO	6/22/2016	Mud Rotary
255690		Domestic - Standard	Bsp Properties Llc	60.00	0.00		2-35-24.(	232926	6458400	Issued	20	300	NO	8/30/2016	
256014		Domestic - Standard	Donges, Howard	100.00	0.00		1-35-07.(	232189	3827667	Completed	20	28800	NO	9/22/2016	
47692		Domestic - Standard	Bayliff, Craig W	0.00	64.00					Active	10	400	NO	2/12/1981	Mud Rotary
48308		Domestic - Standard	Wilkins, Daniel W	0.00	50.00					Active	15	500	NO	5/28/1981	Jetted
51050		Domestic - Standard	Hitchens, Donald	0.00	60.00					Active	0	0	NO	5/26/1982	Jetted
57249		Domestic - Standard	Moore, Wilson	0.00	61.00					Active	4	300	NO	6/3/1984	Driven
60930		Domestic - Standard	Mccabe, Joseph E	0.00	60.00					Active	12	400	NO	6/14/1985	Washed
62456		Domestic - Standard	Barnett, T D H	0.00	64.00					Active	15	300	NO	8/26/1985	Jetted
64112		Domestic - Standard	Rose, Daniel M	0.00	55.00					Active	15	400	NO	3/17/1986	Mud Rotary
64354		Domestic - Standard	Huff, Douglas M	0.00	50.00					Active	12	400	NO	4/3/1986	Washed
67617		Domestic - Standard	Mccabe, Harold E	0.00	50.00					Active	12	400	NO	12/17/1986	Washed
75686		Domestic - Standard	Stevens, P J	0.00	50.00					Active	15	400	NO	11/9/1988	Mud Rotary
79763		Domestic - Standard	Hitchens, Sonya T	0.00	60.00					Active	15	300	NO	11/4/1989	Washed
80218		Domestic - Standard	Hunsberger, William R	0.00	64.00					Active	15	600	NO	9/21/1989	Mud Rotary
80746		Domestic - Standard	Black, Joseph & Betty L	0.00	60.00					Active	12	400	NO	11/8/1989	Mud Rotary
83706		Domestic - Standard	Rust, Fred E	0.00	65.00					Active	10	400	NO	10/8/1990	Mud Rotary
84253		Domestic - Standard	Metz, Michael E	0.00	72.00					Active	20	800	NO	9/20/1990	Mud Rotary
84412		Domestic - Standard	Moore, Wilson	0.00	80.00					Active	15	400	NO	10/3/1990	Mud Rotary
88606		Domestic - Standard	Cannon, Edward K	0.00	60.00					Active	30	500	NO	9/26/1991	Mud Rotary
89426		Domestic - Standard	Lowe, Virginia	0.00	65.00					Active	15	400	NO	12/12/1991	Mud Rotary
93147		Domestic - Standard	Unruh, John E	0.00	65.00					Active	10	400	NO	11/17/1992	Mud Rotary
93245		Domestic - Standard	Metz, William E	0.00	70.00					Active	20	800	NO	11/27/1992	Mud Rotary
97651		Domestic - Standard	Wing, Valerie A	0.00	60.00					Active	15	400	NO	11/2/1993	Mud Rotary
97770		Domestic - Standard	Bartell, Irving	0.00	61.00					Active	15	300	NO	11/20/1993	Mud Rotary
35374		Domestic - Standard	Huff, Richard & Diane	0.00	75.00					Active	10	400	NO	2/9/1976	Jetted
35375		Domestic - Standard	Huff, Richard M	0.00	75.00					Active	10	400	NO	2/7/1976	Jetted
215888		Geothermal - Closed Loop	HPH Resources LLC	200.00	200.00		2-35-24.(	209550	2890256	Completed	0	0	NO		Mud Rotary
225665	Huff R	Geothermal - Closed Loop	Downey Jr, E Paul	180.00	180.00		1-35-10.(	203396	4620636	Completed	0	0	NO		Mud Rotary
212053		Geothermal - Recharge	Maple Homes LLC	80.00	60.00		2-35-24.(	206892	4921983	Active	0	0	YES	12/27/2005	Mud Rotary
212052		Geothermal - Supply	Maple Homes LLC	80.00	60.00		2-35-24.(	206892	4919498	Active	34	1200	YES	12/27/2005	Mud Rotary
254677		Irrigation - Standard	Sandhill Real Estate Inve	100.00	0.00		1-35-10.(	Vacant Land		Voided	20	28800	NO	5/17/2016	
254678	123	Irrigation - Standard	Sandhill Real Estate Inve	100.00	0.00		1-35-10.(	Vacant Land	4255046	Completed	20	28800	NO	5/31/2016	Mud Rotary
90894		Irrigation - Standard	Hitchens, Sonya T	0.00	48.00					Active	25	10000	NO	5/13/1992	Mud Rotary
213645	0	Monitor - Standard	Huff Jr, Richard M	50.00	43.00	0	2-35-24.00-0038.05			Completed	5	0	NO	3/7/2006	Mud Rotary
213646	0	Monitor - Standard	Huff Jr, Richard M	50.00	37.00	0	2-35-24.00-0038.05			Completed	5	0	NO	3/7/2006	Augered
213647	0	Monitor - Standard	Huff Jr, Richard M	50.00	30.00	0	2-35-24.00-0038.05			Completed	5	0	NO	3/7/2006	Mud Rotary
213648	0	Monitor - Standard	Huff Jr, Richard M	50.00	33.00	0	2-35-24.00-0038.05			Completed	5	0	NO	3/7/2006	Augered
213649	0	Monitor - Standard	Huff Jr, Richard M	50.00	32.00	0	2-35-24.00-0038.05			Completed	5	0	NO	3/7/2006	Augered
213650	0	Monitor - Standard	Huff Jr, Richard M	50.00	35.00	0	2-35-24.00-0038.05			Completed	5	0	NO	3/7/2006	Augered
213651	0	Monitor - Standard	Huff Jr, Richard M	50.00	38.00	0	2-35-24.00-0038.05			Completed	5	0	NO	3/7/2006	Augered

DNREC Well Search

PermitNu	Local		TotalD	TotalDe	DGSi		WellStatu	EstMa	EstDail	Requires					
mb	WellI	WellType	Owner	epth	p_1	d	TaxID	SepticPerm	wellauthco	s	xCapa	yUs	Al	EstConstru	ProposedDr
216092	OB-1	Observation - Standard	Sposato, John F	25.00	25.00		1-35-10.(n/a		4347052	Complete	0	0	NO		Augered
216093	OB-2	Observation - Standard	Sposato, John F	25.00	25.00		1-35-10.(n/a		4347052	Complete	0	0	NO		Augered
216094	OB-3	Observation - Standard	Sposato, John F	25.00	20.00		1-35-10.(n/a		4347052	Complete	0	0	NO		Augered
216095	OB-4	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216096	OB-5	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216097	OB-6	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216098	OB-7	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216099	OB-8	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216100	OB-9	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216101	OB-10	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216102	OB-11	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216103	OB-12	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216104	OB-13	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216105	OB-14	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216106	OB-15	Observation - Standard	Sposato, John F	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216112	OB-1	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216113	OB-2	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216114	OB-3	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216115	OB-4	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216116	OB-5	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216117	OB-1	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216118	OB-2	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216119	OB-3	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216120	OB-4	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216121	OB-5	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216122	OB-1	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216123	OB-2	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216124	OB-3	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216125	OB-4	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216126	OB-5	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216127	OB-6	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216128	OB-7	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216129	OB-8	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216130	OB-9	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
216131	OB-10	Observation - Standard	Redard, Judy L	25.00	0.00		1-35-10.(n/a			Voided	0	0	NO		Augered
228754	HBS #	Soil Borings - Standard	DOT Sussex	140.00	150.00		2-35-24.(n/a		3743017	Well Aban	0	0	NO		Augered

DNREC Well Search

Formation	Pump Maker	PumpI ntake	PumpT estRa	PumpR atedC	PumpTestTi	PumpingW at	Retain Well	StaticW ate	WaterLevel	WellTerm un	WellTermin n	Replaceme e	Repla WellA			WellComm en
													cedW o	band an_1	WellAb LocalID	
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	30.00	0.00	0.200000000000	12.00	N	8.00	7/11/2006	8.00	Pitless Adap	N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	N	0.00		0.00		N				This parcel d
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00		0.00		0.00		N				I've uploade
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	30.00	0.00	1.000000000000	0.00	0	-7.00	9/17/1997	12.00	Pitless Adaptor					LOT 4
Undetermined		1.00	50.00	5.00	2.000000000000	12.00	0	-10.00	10/3/1997	8.00	Pitless Adaptor					lot 5
Undetermined		0.00	20.00	0.00	1.000000000000	25.00	0	8.00	10/16/1998	0.00	Pitless Adaptor					CR 252
Undetermined		3.00	80.00	8.00	1.000000000000	23.00	0	12.00	7/28/1999	12.00	Standard T					lot 4
Undetermined		2.00	20.00	10.00	2.000000000000	0.00	0	-13.00	1/22/2001	8.00	Pitless Adaptor					CR 252
Undetermined		50.00	20.00	20.00	2.000000000000	9.00	0	9.00	3/1/2002	8.00	Pitless Adaptor					Lot 3
Undetermined		0.00	75.00	0.00	2.000000000000	20.00	0	-14.00	8/14/2002	8.00	Other					Lot A
Undetermined		0.00	40.00	0.00	2.000000000000	30.00	0	12.00	2/4/2004	12.00	Pitless Adaptor					Lot 7-B
Undetermined		0.00	50.00	0.00	2.000000000000	30.00	0	12.00	8/20/2004	12.00	Pitless Adaptor					Lot 1
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	0	0.00	5/9/2005	0.00	Standard T	Y				Bad Water
Undetermined		0.00	40.00	0.00	2.000000000000	28.00	0	9.00	7/7/2006	12.00	Pitless Adap	Y				Bad Water
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	N	0.00		0.00		N				
Undetermined		0.00	30.00	0.00	0.200000000000	12.00	N	2.00	9/5/2007	12.00	Pitless Adap	N				
Undetermined		0.00	80.00	0.00	2.000000000000	79.00	N	15.00	8/25/2008	8.00	Pitless Adap	N				
Undetermined		0.00	50.00	0.00	0.500000000000	7.00	N	7.00	6/26/2009	12.00	Pitless Adap	N				
Undetermined		0.00	60.00	0.00	1.000000000000	18.00	N	8.00	6/14/2010	24.00	Pitless Adap	N				
Undetermined		0.00	70.00	0.00	1.000000000000	30.00	N	15.00	5/31/2011	8.00	Pitless Adap	N				
Undetermined		0.00	30.00	0.00	1.000000000000	25.00	N	15.00	10/2/2012	12.00	Pitless Adap	N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	N	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	N	0.00		0.00		N				
Undetermined		0.00	40.00	0.00	2.000000000000	25.00	N	12.00	8/2/2013	12.00	Pitless Adap	N				
Undetermined		0.00	30.00	0.00	2.000000000000	40.00	N	18.00	9/2/2015	12.00	Pitless Adap	N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	N	0.00		0.00		N				
Undetermined		0.00	60.00	0.00	2.000000000000	18.00	N	7.00	8/6/2015	12.00	Pitless Adap	N				
Undetermined		0.00	0.00	0.00	0.000000000000	0.00	N	0.00		0.00		N				

DNREC Well Search

Formation	Pump Maker	PumpI ntake	PumpT estRa	PumpR atedC	PumpTestTi	PumpingW at	Retain Well	StaticW ate	WaterLevel	WellTerm un	WellTermin n	Replaceme e	Repla WellA			WellComm en
													cedW	band o	WellAb an_1		LocalID
Undetermined		0.00	40.00	0.00	2.0000000000	15.00	N	10.00	4/14/2016	8.00	Pitless Adap	N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	N	0.00		0.00		N				
		0.00	0.00	0.00	0.0000000000	0.00		0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00		0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00	Pitless Adap	Y			Cr 249	
Undetermined		0.00	30.00	0.00	0.5000000000	20.00	0	7.00	5/28/1981	0.00	Other				Cr 253	
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		Y				
Undetermined		0.00	40.00	0.00	2.0000000000	28.00	0	11.00	2/9/1976	12.00	None				Cr 252	
Undetermined		0.00	45.00	0.00	2.0000000000	27.00	0	11.00	2/7/1976	12.00	None				Cr 252	
		0.00	0.00	0.00	0.0000000000	0.00	N	0.00	8/22/2006	0.00	None	N				
		0.00	0.00	0.00	0.0000000000	0.00	N	0.00	9/23/2008	-36.00	Other	N				
Undetermined: NONE		0.00	50.00	0.00	0.0000000000	15.00		9.00	2/23/2006	8.00	Pitless Adaptor			Bad Water		1
Undetermined: GOULC		30.00	50.00	25.00	0.0000000000	15.00		9.00	2/23/2006	8.00	Pitless Adaptor			Bad Water		1
		0.00	0.00	0.00	0.0000000000	0.00		0.00		0.00		N				This parcel
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	N	0.00		0.00		N			123	This parcel
Undetermined		0.00	0.00	0.00	0.0000000000	0.00	0	0.00		0.00		N				
Undetermined		0.00	20.00	0.00	1.0000000000	29.00	0	12.00	4/10/2006	24.00	Pad Mount	Y		Bad Wat MWA		
Undetermined		0.00	50.00	0.00	1.0000000000	23.00	0	10.00	4/17/2006	24.00	Pad Mount	Y		Bad Wat MWB		
Undetermined		0.00	70.00	0.00	1.0000000000	22.00	0	9.00	4/13/2006	24.00	Pad Mount	Y		Bad Wat MWC		
Undetermined		0.00	50.00	0.00	1.0000000000	28.00	0	10.00	4/13/2006	24.00	Pad Mount	Y		Bad Wat MWD		
Undetermined		0.00	50.00	0.00	1.0000000000	28.00	0	10.00	4/12/2006	24.00	Pad Mount	Y		Bad Wat MWE		
Undetermined		0.00	30.00	0.00	1.0000000000	27.00	0	10.00	4/12/2006	24.00	Pad Mount	Y		Bad Wat MWF		
Undetermined		0.00	25.00	0.00	1.0000000000	29.00	0	10.00	4/11/2006	24.00	Pad Mount	Y		Bad Wat MWG		

DNREC Well Search

AppRecDate	LocReviewD	ProposedCo	PermitAppr	ActualC ons	Completion	Aband onRep	Recla ssify	TestTe mp	GMZ	WellPit	Replace m_1	AllocRe vie	Sample d	AgPrecDi CPCN	Floodpla st	in	SmallLot
7/26/1995	7/26/1995	7/26/1995	7/26/1995		7/31/1995		No	No	No	No	No	No	No	No	No	No	No
8/8/1995	8/8/1995	8/8/1995	8/8/1995		8/12/1995		No	No	No	No	No	No	No	No	No	No	No
9/12/1995	9/12/1995	9/12/1995	9/12/1995		9/26/1995		No	No	No	No	No	No	No	No	No	No	No
6/8/2006	6/12/2006	6/20/2006	6/20/2006		7/13/2006		No	No	No	No	No	No	No	No	No	No	No
3/17/2016	3/17/2016	3/18/2016	3/18/2016		4/13/2016		No	Yes	No	No	No	No	Yes	Yes	No	No	No
2/29/1984	2/29/1984	2/29/1984	2/29/1984		5/15/1984		No	No	No	No	No	No	No	No	No	No	No
4/29/1985	4/29/1985	4/29/1985	4/29/1985		5/8/1985		No	No	No	No	No	No	No	No	No	No	No
9/9/1985	9/9/1985	9/9/1985	9/9/1985		10/25/1985		No	No	No	No	No	No	No	No	No	No	No
2/20/1991	2/20/1991	2/20/1991	2/20/1991		2/20/1991		No	No	No	No	No	No	No	No	No	No	No
8/3/1993	8/3/1993	8/3/1993	8/3/1993		8/6/1993		No	No	No	No	No	No	No	No	No	No	No
5/31/2016	5/31/2016	5/31/2016	6/23/2016		7/28/2016		No	No	No	No	No	No	Yes	No	No	No	No
1/17/1995	1/17/1995	1/17/1995	1/17/1995		2/10/1995		No	No	No	No	No	No	No	No	No	No	No
8/8/1995	8/8/1995	8/8/1995	8/8/1995		8/12/1995		No	No	No	No	No	No	No	No	No	No	No
9/12/1995	9/12/1995	9/12/1995	9/12/1995		9/26/1995		No	No	No	No	No	No	No	No	No	No	No
11/15/1995	11/15/1995	11/15/1995	11/15/1995		1/25/1996		No	No	No	No	No	No	No	No	No	No	No
12/5/1995	12/5/1995	12/5/1995	12/5/1995		12/5/1995		No	No	No	No	No	No	No	No	No	No	No
5/28/1996	5/28/1996	5/28/1996	5/28/1996		6/27/1996		No	No	No	No	No	No	No	No	No	No	No
8/14/1997	10/31/2013	8/14/1997	8/14/1997		9/17/1997		No	No	No	No	No	No	No	No	No	No	No
9/25/1997	1/31/2014	9/25/1997	9/25/1997		10/3/1997		No	No	No	No	No	No	No	No	No	No	No
10/7/1998	1/31/2014	10/7/1998	10/7/1998		10/16/1998		No	No	No	No	No	No	No	No	No	No	No
7/16/1999	1/31/2014	7/16/1999	7/16/1999		7/28/1999		No	No	No	No	No	No	No	No	No	No	No
12/11/2000	1/31/2014	12/11/2000	12/11/2000		1/22/2001		No	No	No	No	No	No	No	No	No	No	No
1/10/2002	1/31/2014	1/10/2002	1/10/2002		3/1/2002		No	No	No	No	No	No	No	No	No	No	No
5/22/2002	5/22/2002	5/22/2002	5/22/2002		8/14/2002		No	No	No	No	No	No	No	No	No	No	No
1/29/2004	1/29/2004	1/29/2004	1/29/2004		2/4/2004		No	No	No	No	No	No	No	No	No	No	No
8/3/2004	8/3/2004	8/3/2004	8/3/2004		8/20/2004		No	No	No	No	No	No	No	No	No	No	No
5/9/2005	5/9/2005	5/11/2005	5/11/2005				Yes	No	No	No	No	No	No	No	No	No	No
3/21/2006	3/22/2006	3/23/2006	3/23/2006		7/28/2006		Yes	No	No	No	No	No	No	No	No	No	No
7/24/2006	7/24/2006	7/24/2006	7/24/2006				Yes	No	No	No	No	No	No	No	No	No	No
8/8/2007	8/9/2007	8/14/2007	8/14/2007		9/14/2007		Yes	No	No	No	No	No	No	No	No	No	No
8/18/2008	8/18/2008	8/22/2008	8/22/2008		8/28/2008		Yes	No	No	No	No	No	No	No	No	No	No
6/25/2009	6/25/2009	6/25/2009	6/25/2009		8/3/2009		Yes	No	No	No	No	No	No	No	No	No	No
5/24/2010	5/24/2010	5/27/2010	5/27/2010		6/10/2010		Yes	No	No	No	No	No	No	No	No	No	No
5/6/2011	5/6/2011	5/11/2011	5/11/2011		5/25/2011		Yes	No	No	No	No	No	No	No	No	No	No
8/30/2012	8/30/2012	9/10/2012	9/10/2012		10/1/2012		Yes	No	No	No	No	No	No	No	No	No	No
11/19/2012	11/19/2012	11/21/2012	11/21/2012		4/2/2013		Yes	No	No	No	No	No	No	No	No	No	No
4/8/2013	4/8/2013	5/7/2013	5/7/2013		5/13/2013		Yes	No	No	No	No	No	No	No	No	No	No
5/29/2013	5/29/2013	6/3/2013	6/3/2013		8/1/2013		Yes	No	No	No	No	No	No	No	No	No	No
3/24/2015	3/24/2015	3/24/2015	3/24/2015		8/28/2015		Yes	No	No	No	No	No	No	No	No	No	No
4/21/2015	4/21/2015	4/21/2015	4/21/2015		6/22/2016		Yes	No	No	No	No	No	No	No	No	No	No
5/27/2015	5/27/2015	6/2/2015	6/2/2015		8/3/2015		Yes	No	No	No	No	No	No	No	No	No	No
6/9/2015	6/9/2015	6/15/2015	6/15/2015		10/6/2015		Yes	No	No	No	No	No	No	No	No	No	No

DNREC Well Search

AppRecDat	ActualC	Aband	Recla	TestTe	Replace	AllocRe	Sample	AgPrecDi	Floodpla									
e	LocReviewD	ProposedCo	PermitAppr	ons	Completion	onRep	ssify	Potable	mp	GMZ	WellPit	m_1	vie	d	CPCN	st	in	SmallLot
9/4/2015	9/4/2015	9/8/2015	9/8/2015		3/31/2016			Yes	No	No	No	No	No	No	No	No	No	No
6/22/2016	6/22/2016	6/24/2016	6/24/2016		11/16/2016			Yes	No	No	No	No	No	No	No	No	No	No
8/24/2016	8/24/2016	8/24/2016	8/26/2016					Yes	No	No	No	No	No	No	No	No	No	No
9/22/2016	9/22/2016	9/22/2016	9/23/2016		11/16/2016			Yes	No	No	No	No	No	No	No	No	No	No
2/4/1981	2/4/1981	2/4/1981	2/4/1981		2/12/1981			No	No	No	No	No	No	No	No	No	No	No
4/27/1981	4/27/1981	4/27/1981	4/27/1981		5/28/1981			No	No	No	No	No	No	No	No	No	No	No
6/1/1982	6/1/1982	6/1/1982	6/1/1982		5/26/1982			No	No	No	No	No	No	No	No	No	No	No
6/1/1984	6/1/1984	6/1/1984	6/1/1984		6/3/1984			No	No	No	No	No	No	No	No	No	No	No
5/10/1985	5/10/1985	5/10/1985	5/10/1985		6/14/1985			No	No	No	No	No	No	No	No	No	No	No
8/30/1985	8/30/1985	8/30/1985	8/30/1985		8/26/1985			No	No	No	No	No	No	No	No	No	No	No
2/27/1986	2/27/1986	2/27/1986	2/27/1986		3/17/1986			No	No	No	No	No	No	No	No	No	No	No
3/24/1986	3/24/1986	3/24/1986	3/24/1986		4/3/1986			No	No	No	No	No	No	No	No	No	No	No
12/1/1986	12/1/1986	12/1/1986	12/1/1986		12/17/1986			No	No	No	No	No	No	No	No	No	No	No
8/31/1988	8/31/1988	8/31/1988	8/31/1988		11/9/1988			No	No	No	No	No	No	No	No	No	No	No
8/1/1989	8/1/1989	8/1/1989	8/1/1989		11/4/1989			No	No	No	No	No	No	No	No	No	No	No
9/15/1989	9/15/1989	9/15/1989	9/15/1989		9/21/1989			No	No	No	No	No	No	No	No	No	No	No
10/31/1989	10/31/1989	10/31/1989	10/31/1989		11/8/1989			No	No	No	No	No	No	No	No	No	No	No
7/23/1990	7/23/1990	7/23/1990	7/23/1990		10/8/1990			No	No	No	No	No	No	No	No	No	No	No
7/17/1990	7/17/1990	7/17/1990	7/17/1990		9/20/1990			No	No	No	No	No	No	No	No	No	No	No
9/21/1990	9/21/1990	9/21/1990	9/21/1990		10/3/1990			No	No	No	No	No	No	No	No	No	No	No
9/27/1991	9/27/1991	9/27/1991	9/27/1991		9/26/1991			No	No	No	No	No	No	No	No	No	No	No
12/10/1991	12/10/1991	12/10/1991	12/10/1991		12/12/1991			No	No	No	No	No	No	No	No	No	No	No
10/30/1992	10/30/1992	10/30/1992	10/30/1992		11/17/1992			No	No	No	No	No	No	No	No	No	No	No
11/9/1992	11/9/1992	11/9/1992	11/9/1992		11/27/1992			No	No	No	No	No	No	No	No	No	No	No
11/1/1993	11/1/1993	11/1/1993	11/1/1993		11/2/1993			No	No	No	No	No	No	No	No	No	No	No
11/8/1993	11/8/1993	11/8/1993	11/8/1993		11/20/1993			No	No	No	No	No	No	No	No	No	No	No
1/5/1976	1/5/1976	1/5/1976	1/5/1976		2/9/1976			No	No	No	No	No	No	No	No	No	No	No
1/5/1975	1/5/1975	1/5/1975	1/5/1975		2/7/1976			No	No	No	No	No	No	No	No	No	No	No
7/28/2006	7/31/2006	8/4/2006	8/4/2006		8/31/2006			No	No	No	No	No	No	No	No	No	No	No
9/8/2008	9/9/2008	9/23/2008	9/23/2008		10/15/2008			No	No	No	No	No	No	No	No	No	No	No
10/21/2005	10/24/2005	11/4/2005	11/4/2005		12/27/2005			No	No	No	No	No	No	No	No	No	No	No
10/21/2005	10/24/2005	11/4/2005	11/4/2005		12/27/2005			Yes	No	No	No	No	No	No	No	No	No	No
5/18/2016	5/18/2016	5/18/2016						No	Yes	No	No	No	Yes	No	Yes	Yes	No	No
5/18/2016	5/18/2016	5/25/2016	5/25/2016		7/28/2016			No	Yes	No	No	No	Yes	No	Yes	Yes	No	No
4/27/1992	4/27/1992	4/27/1992	4/27/1992		5/13/1992			No	No	No	No	No	No	No	No	No	No	No
3/7/2006	3/7/2006	3/22/2006	3/22/2006		5/2/2006			No	No	No	No	No	No	Yes	No	No	No	No
3/7/2006	3/7/2006	3/22/2006	3/22/2006		4/24/2006			No	No	No	No	No	No	Yes	No	No	No	No
3/7/2006	3/7/2006	3/22/2006	3/22/2006		5/2/2006			No	No	No	No	No	No	Yes	No	No	No	No
3/7/2006	3/7/2006	3/22/2006	3/22/2006		5/2/2006			No	No	No	No	No	No	Yes	No	No	No	No
3/7/2006	3/7/2006	3/22/2006	3/22/2006		4/24/2006			No	No	No	No	No	No	Yes	No	No	No	No
3/7/2006	3/7/2006	3/22/2006	3/22/2006		4/24/2006			No	No	No	No	No	No	Yes	No	No	No	No
3/7/2006	3/7/2006	3/22/2006	3/22/2006		4/24/2006			No	No	No	No	No	No	Yes	No	No	No	No

DNREC Well Search

Injection	PCIV	Emerg ncy	Confin ed	Review able	Existing	ScreenTo p	ScreenBas e	ScreenMa te	MinWellD ia	MaxWell Dia	X	Y	Latitude	longitude	LocationMe	ModGrid
No	No	No	No	No	No	60.00	75.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	40.00	50.00	PVC	4.00	4.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	57.00	67.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	30.00	40.00	PVC	2.00	2.00	206186.00000	81627.00000	38.735338	-75.345520	GIS High Acc	150-110
No	No	No	No	No	No	75.00	95.00	PVC	6.00	6.00	206140.47000	81203.62000	38.731524	-75.346048	Photo Interp	150-110
No	No	No	No	No	No	67.00	73.00	Galvanized	1.20	1.20	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	62.00	67.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	74.00	80.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	58.00	63.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	55.00	65.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	61.00	81.00	PVC	4.00	4.00	205869.54000	81173.46000	38.731254	-75.349164	Photo Interp	150-110
No	No	No	No	No	No	45.00	55.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	50.00	60.00	PVC	4.00	4.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	64.00	70.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	50.00	60.00	PVC	2.00	2.00	205257.65000	81186.98000	38.731380	-75.356201	GIS High Acc	150-110
No	No	No	No	No	No	55.00	65.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	71.00	76.00	PVC	4.00	4.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110
No	No	No	No	No	No	60.00	70.00	PVC	4.00	4.00	205472.33103	81346.19766	38.732813	-75.353731	GPS-Differer	154-116
No	No	No	No	No	No	0.00	70.00	PVC	2.00	2.00	205038.37236	81244.53377	38.731900	-75.358722	GPS-Differer	150-110
No	No	No	No	No	No	55.00	65.00	PVC	4.00	4.00	205019.99494	81075.16467	38.730374	-75.358935	GPS-Differer	150-110
No	No	No	No	No	No	55.00	65.00	PVC	2.00	2.00	205101.25011	81229.24749	38.731761	-75.357999	GPS-Differer	150-110
No	No	No	No	No	No	74.00	84.00	PVC	4.00	4.00	205216.51511	81228.04508	38.731750	-75.356674	GPS-Differer	150-110
No	No	No	No	No	No	65.00	75.00	PVC	2.00	2.00	205153.83997	81220.44996	38.731682	-75.357395	GPS-Differer	150-110
No	No	No	No	No	No	57.00	62.00	PVC	4.00	4.00	206160.00000	81582.40000	38.734936	-75.345820	GIS High Acc	150-110
No	No	No	No	No	No	43.00	50.00	PVC	4.00	4.00	205316.00000	81416.10000	38.733443	-75.355528	GIS High Acc	154-116
No	No	No	No	No	No	49.00	55.00	PVC	4.00	4.00	205320.00000	81390.70000	38.733215	-75.355482	GIS High Acc	154-116
No	No	No	No	Yes	No	0.00	0.00		0.00	0.00	205355.00000	81403.20000	38.733327	-75.355079	GIS High Acc	154-116
No	No	No	No	Yes	No	65.00	72.00	PVC	4.00	4.00	205412.00000	81403.10000	38.733326	-75.354423	GIS High Acc	154-116
No	No	No	No	No	No	0.00	0.00		0.00	0.00	206337.00000	81703.80000	38.736028	-75.343782	GIS High Acc	154-116
No	No	No	No	No	No	50.00	60.00	PVC	2.00	2.00	206195.00000	81350.40000	38.732846	-75.345419	Address Mat	150-110
No	No	No	No	No	No	73.00	83.00	PVC	4.00	4.00	205386.00000	81369.70000	38.733025	-75.354723	Address Mat	154-116
No	No	No	No	No	No	30.00	60.00	PVC	4.00	4.00	205080.00000	81427.30000	38.733546	-75.358241	Address Mat	154-116
No	No	No	No	No	No	50.00	60.00	PVC	4.00	4.00	206310.00000	81315.50000	38.732531	-75.344096	Address Mat	150-110
No	No	No	No	No	No	55.00	60.00	PVC	4.00	4.00	206226.00000	81635.50000	38.735414	-75.345060	Address Mat	150-110
No	No	No	No	No	No	47.00	57.00	PVC	4.00	4.00	206163.58000	81572.69000	38.734848	-75.345779	Address Mat	150-110
No	No	No	No	No	No	50.00	60.00	PVC	4.00	4.00	206079.90000	81428.60000	38.733551	-75.346743	Address Mat	150-110
No	No	No	No	No	No	45.00	55.00	PVC	4.00	4.00	206071.70000	81343.60000	38.732785	-75.346838	Address Mat	150-110
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205568.13000	81908.70000	38.737879	-75.352624	Address Mat	154-116
No	No	No	No	No	No	55.00	60.00	PVC	4.00	4.00	206294.26000	81448.72000	38.733731	-75.344277	Address Mat	150-110
No	No	No	No	No	No	50.00	60.00	PVC	4.00	4.00	206164.34000	81340.58000	38.732758	-75.345772	Address Mat	150-110
No	No	No	No	No	No	46.00	56.00	PVC	4.00	4.00	206099.33000	81368.75000	38.733012	-75.346520	Address Mat	150-110
No	No	No	No	No	No	75.00	85.00	PVC	4.00	4.00	206240.49000	81439.11000	38.733645	-75.344895	Address Mat	150-110

DNREC Well Search

Injection	PCIV	Emerg ncy	Confin ed	Review able	Existing	ScreenTo p	ScreenBas e	ScreenMa te	MinWellD ia	MaxWell Dia	X	Y	Latitude	Longitude	Location	Me	ModGrid
No	No	No	No	No	No	50.00	55.00	PVC	4.00	4.00	205169.10000	81321.47000	38.732592	-75.357218	Photo Interp	154-116	
No	No	No	No	No	No	68.00	78.00	PVC	4.00	4.00	206169.74000	81444.00000	38.733689	-75.345709	Photo Interp	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	206164.14000	81514.07000	38.734320	-75.345773	Photo Interp	150-110	
No	No	No	No	No	No	92.00	100.00	PVC	4.00	4.00	205117.73000	81318.22000	38.732563	-75.357809	Photo Interp	154-116	
No	No	No	No	No	No	59.00	64.00	PVC	2.00	2.00	205800.01000	81123.52000	38.730805	-75.349964	Interpolation	150-110	
No	No	No	No	No	No	40.00	50.00	PVC	2.00	2.00	205800.01000	81123.52000	38.730805	-75.349964	Interpolation	150-110	
No	No	No	No	No	No	50.00	60.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	51.00	61.00	Galvanized	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	50.00	60.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	54.00	64.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	45.00	55.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	40.00	50.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	40.00	50.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	40.00	50.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	50.00	60.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	66.00	70.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	75.00	80.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	50.00	60.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	60.00	65.00	PVC	4.00	4.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	55.00	65.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	64.00	70.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	55.00	60.00	PVC	4.00	4.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	56.00	61.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	71.00	75.00	Galvanized	2.00	2.00	206187.00000	81623.50000	38.735306	-75.345509	GIS High Acc	150-110	
No	No	No	No	No	No	71.00	75.00	Galvanized	2.00	2.00	206005.00000	81598.10000	38.735078	-75.347602	GIS High Acc	150-110	
No	No	No	Yes	No	No	0.00	0.00		0.00	0.00	206333.00000	81710.20000	38.736086	-75.343828	GIS High Acc	154-116	
No	No	No	Yes	Yes	No	0.00	0.00		0.00	0.00	205367.00000	81380.30000	38.733121	-75.354941	Address Mat	154-116	
No	No	No	No	Yes	No	50.00	60.00	PVC	4.00	4.00	205533.00000	81931.20000	38.738082	-75.353027	GIS High Acc	154-116	
No	No	No	No	Yes	No	50.00	60.00	PVC	4.00	4.00	205527.00000	81903.70000	38.737835	-75.353097	GIS High Acc	154-116	
No	No	No	No	Yes	No	0.00	0.00		0.00	0.00	205863.19000	81198.86000	38.731483	-75.349237	Photo Interp	150-110	
No	No	No	No	Yes	No	80.00	105.00	PVC	2.00	2.00	206091.79000	80913.11000	38.728907	-75.346610	Address Mat	150-110	
No	No	No	No	No	No	38.00	48.00	PVC	2.00	2.00	205952.74000	80751.78000	38.727455	-75.348211	Interpolation	150-110	
No	No	No	No	No	No	10.00	30.00	PVC	4.00	4.00	205758.00000	81606.20000	38.735153	-75.350442	GIS High Acc	154-116	
No	No	No	No	No	No	15.00	35.00	PVC	4.00	4.00	205758.00000	81606.20000	38.735153	-75.350442	GIS High Acc	154-116	
No	No	No	No	No	No	10.00	30.00	PVC	4.00	4.00	205758.00000	81606.20000	38.735153	-75.350442	GIS High Acc	154-116	
No	No	No	No	No	No	13.00	33.00	PVC	4.00	4.00	205758.00000	81606.20000	38.735153	-75.350442	GIS High Acc	154-116	
No	No	No	No	No	No	12.00	32.00	PVC	4.00	4.00	205758.00000	81606.20000	38.735153	-75.350442	GIS High Acc	154-116	
No	No	No	No	No	No	15.00	35.00	PVC	4.00	4.00	205758.00000	81606.20000	38.735153	-75.350442	GIS High Acc	154-116	
No	No	No	No	No	No	15.00	35.00	PVC	4.00	4.00	205758.00000	81606.20000	38.735153	-75.350442	GIS High Acc	154-116	

DNREC Well Search

Injection	PCIV	Emerg	Confin	Review	Existing	ScreenTo	ScreenBas	ScreenMa	MinWellD	MaxWell	X	Y	Latitude	Longitude	Location	Me	ModGrid
		ncy	ed	able		p	e	te	ia	Dia							
No	No	No	No	No	No	15.00	25.00	PVC	2.00	2.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	15.00	25.00	PVC	2.00	2.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	15.00	20.00	PVC	2.00	2.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205848.00000	81281.40000	38.732227	-75.349410	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205822.00000	81340.50000	38.732759	-75.349709	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205822.00000	81340.50000	38.732759	-75.349709	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205822.00000	81340.50000	38.732759	-75.349709	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205822.00000	81340.50000	38.732759	-75.349709	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205359.00000	81228.10000	38.731750	-75.355034	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205359.00000	81228.10000	38.731750	-75.355034	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205359.00000	81228.10000	38.731750	-75.355034	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205359.00000	81228.10000	38.731750	-75.355034	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205412.00000	81234.60000	38.731808	-75.354425	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205412.00000	81234.60000	38.731808	-75.354425	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205412.00000	81234.60000	38.731808	-75.354425	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205412.00000	81234.60000	38.731808	-75.354425	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205412.00000	81234.60000	38.731808	-75.354425	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	205467.00000	81139.90000	38.730955	-75.353793	GIS High Acc	150-110	
No	No	No	No	No	No	0.00	0.00		0.00	0.00	206008.00000	81623.90000	38.735311	-75.347567	Address Mat	150-110	

DNREC Well Search

Watershed	basin	USGSHydro	LicenseNu	OwnerAddr	gravelTo	GravelMa	InnerCas	InnerCas	InnerCas						
		l	m	WellContra	e	GroutTop	GroutBase	GroutMater	p	gravelBase	te	in	_1	_2	
Broadkill Riv Delaware	Ba 02040207	282		S Preston En Rt 4 Box 234		0.00	20.00	Bentonite		60.00	75.00	Gravel	0.00	60.00	PVC
Broadkill Riv Delaware	Ba 02040207	1004		Morris Well 203 Old Laur		0.00	30.00	Bentonite		38.00	50.00	Gravel	0.00	40.00	PVC
Broadkill Riv Delaware	Ba 02040207	13		Daiseys Well Rt 4 Box 231		0.00	45.00	Bentonite		0.00	0.00		0.00	57.00	PVC
Broadkill Riv Delaware	Ba 02040207	319		Weber's We 18834 Coast		0.00	30.00	Bentonite		30.00	40.00	Gravel	0.00	30.00	PVC
Broadkill Riv Delaware	Ba 02040207	4427		Aquatech W 16181 Hudsc		0.00	50.00	Bentonite		73.00	95.00	Gravel	0.00	75.00	PVC
Broadkill Riv Delaware	Ba 02040207	5456		Charles I Dai Rt 4 Box 231		0.00	0.00			0.00	0.00		0.00	67.00	Galvanized
Broadkill Riv Delaware	Ba 02040207	7		Burns Well C Rd 2 Box 11:		0.00	60.00	Bentonite		60.00	67.00	Gravel	0.00	62.00	PVC
Broadkill Riv Delaware	Ba 02040207	1		White Drillin Rd 4 Box 11:		0.00	72.00	Natural		72.00	80.00	Gravel	0.00	74.00	PVC
Broadkill Riv Delaware	Ba 02040207	435		Jesco 22531 Briarv		0.00	58.00	Bentonite		58.00	63.00	Gravel	0.00	58.00	PVC
Broadkill Riv Delaware	Ba 02040207			Rd 4 Box 12:		0.00	40.00	Bentonite		55.00	65.00	Gravel	0.00	55.00	PVC
Broadkill Riv Delaware	Ba 02040207	4427		Aquatech W 16181 Hudsc		0.00	50.00	Bentonite		59.00	81.00	Gravel	12.00	61.00	PVC
Broadkill Riv Delaware	Ba 02040207	282		S Preston En Rt 3 Box 110		0.00	20.00	Bentonite		45.00	55.00	Gravel	0.00	45.00	PVC
Broadkill Riv Delaware	Ba 02040207	1004		Morris Well 203 Old Laur		0.00	30.00	Bentonite		48.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	13		Daiseys Well Rt 4 Box 250		0.00	45.00	Bentonite		0.00	0.00		0.00	64.00	PVC
Broadkill Riv Delaware	Ba 02040207	104		Phillip Sharp Rd3 Box 213		0.00	40.00	Bentonite		50.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	1004		Morris Well 309 Chestnu		0.00	25.00	Bentonite		50.00	65.00	Gravel	0.00	55.00	PVC
Broadkill Riv Delaware	Ba 02040207			PO Box 1051		0.00	40.00	Bentonite		71.00	76.00	Gravel	0.00	71.00	PVC
Broadkill Riv Delaware	Ba 02040207	13		Daiseys Well 717 Washing		0.00	54.00	Bentonite		0.00	0.00		0.00	60.00	PVC
Broadkill Riv Delaware	Ba 02040207	7		Burns Well C Rt 1 Box 321		0.00	65.00	Bentonite		65.00	70.00	Gravel	0.00	65.00	PVC
Broadkill Riv Delaware	Ba 02040207	1051		United Well 30 Patriot Pa		0.00	50.00	Bentonite		50.00	65.00	Gravel	0.00	55.00	PVC
Broadkill Riv Delaware	Ba 02040207	104		Phillip Sharp 30 Patriot Pa		0.00	45.00	Bentonite		55.00	65.00	Gravel	0.00	55.00	PVC
Broadkill Riv Delaware	Ba 02040207	8		Allied Water 18523 Grave		0.00	20.00	Bentonite		69.00	84.00	Gravel	0.00	74.00	PVC
Broadkill Riv Delaware	Ba 02040207	282		S Preston En 18523 Grave		0.00	20.00	Bentonite		65.00	75.00	Gravel	0.00	65.00	PVC
Broadkill Riv Delaware	Ba 02040207			22978 Huff F		0.00	40.00	Bentonite		57.00	62.00	Gravel	0.00	57.00	PVC
Broadkill Riv Delaware	Ba 02040207	101		Lifetime We 11037 Coon		0.00	43.00	Bentonite		43.00	50.00	Gravel	0.00	43.00	PVC
Broadkill Riv Delaware	Ba 02040207	101		Lifetime We 11037 Coon		0.00	49.00	Bentonite		49.00	55.00	Gravel	0.00	49.00	PVC
Broadkill Riv Delaware	Ba 02040207	1		White Drillin 667 C Street		0.00	0.00			0.00	0.00		0.00	0.00	
Broadkill Riv Delaware	Ba 02040207	4427		Aquatech W 1 Ashford Dr		0.00	25.00	Bentonite		62.00	72.00	Gravel	0.00	65.00	PVC
Broadkill Riv Delaware	Ba 02040207	830		Water Syste 604 Wagam		0.00	0.00			0.00	0.00		0.00	0.00	
Broadkill Riv Delaware	Ba 02040207	319		Weber's We 8106 Bondaj		0.00	40.00	Bentonite		50.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	1		White Drillin 22595 Huff F		0.00	25.00	Bentonite		65.00	83.00	Gravel	0.00	73.00	PVC
Broadkill Riv Delaware	Ba 02040207	5331		RT Absher Jr 8331 Sand H		0.00	40.00	Bentonite		40.00	60.00	Gravel	0.00	30.00	PVC
Broadkill Riv Delaware	Ba 02040207	789		Atlantic Wel 28350 Lewe:		0.00	40.00	Bentonite		40.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	201		John's Well I 102 Kings Cr		0.00	55.00	Bentonite		55.00	60.00	Gravel	0.00	55.00	PVC
Broadkill Riv Delaware	Ba 02040207	789		Atlantic Wel 18834 Coast		0.00	30.00	Bentonite		30.00	57.00	Gravel	0.00	47.00	PVC
Broadkill Riv Delaware	Ba 02040207	5331		RT Absher Jr 30404 Pearl		0.00	49.00	Bentonite		49.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	5331		RT Absher Jr 75 East Shor		0.00	40.00	Bentonite		40.00	55.00	Gravel	0.00	45.00	PVC
Broadkill Riv Delaware	Ba 02040207	789		Atlantic Wel 2234 Daisy F		0.00	30.00	Bentonite		35.00	58.00	Gravel	0.00	58.00	PVC
Broadkill Riv Delaware	Ba 02040207	101		Lifetime We 10222 Woon		0.00	55.00	Bentonite		55.00	60.00	Gravel	0.00	55.00	PVC
Broadkill Riv Delaware	Ba 02040207	5416		Willey & Cor 12 Swiggets		0.00	20.00	Bentonite		47.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	789		Atlantic Wel 102 Kings Cr		0.00	30.00	Bentonite		35.00	56.00	Gravel	0.00	46.00	PVC
Broadkill Riv Delaware	Ba 02040207	5416		Willey & Cor 626C Admir		0.00	20.00	Bentonite		73.00	85.00	Gravel	0.00	75.00	PVC

DNREC Well Search

Watershed	basin	USGSHydro	LicenseNu	OwnerAddr	gravelTo	GravelMa	InnerCas	InnerCas	InnerCas				
		l	m	WellContra	GroutTop	GroutBase	GroutMater p	gravelBase	te	in	_1	_2	
Broadkill Riv Delaware	Ba 02040207	201	201	John's Well I 246 South R	0.00	48.00	Bentonite	48.00	55.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	5416	5416	Willey & Cor 626 C Admir	0.00	20.00	Bentonite	65.00	80.00	Gravel	0.00	68.00	PVC
Broadkill Riv Delaware	Ba 02040207	5416	5416	Willey & Cor 102 Kings Cr	0.00	0.00		0.00	0.00		0.00	0.00	
Broadkill Riv Delaware	Ba 02040207	4427	4427	Aquatech W 2645 Parksic	0.00	90.00	Bentonite	90.00	100.00	Gravel	12.00	92.00	PVC
Broadkill Riv Delaware	Ba 02040207	4058	4058	Walter E We Rd 4 Box 13f	0.00	0.00		59.00	64.00	Gravel	0.00	59.00	PVC
Broadkill Riv Delaware	Ba 02040207	4058	4058	Walter E We 321 East Ma	0.00	0.00		40.00	50.00	Gravel	0.00	40.00	PVC
Broadkill Riv Delaware	Ba 02040207	50	50	Ernest L Smi Rd 4 Box 80,	0.00	0.00		50.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207			Rd4 Box 128	0.00	0.00		51.00	61.00	Gravel	0.00	51.00	Galvanized
Broadkill Riv Delaware	Ba 02040207	257	257	Wooten's W Rd 2 Box 21,	3.00	20.00	Neat Cemen	0.00	0.00		0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	50	50	Ernest L Smi Rd 4 Box 10f	0.00	54.00	Natural	54.00	64.00	Gravel	0.00	54.00	PVC
Broadkill Riv Delaware	Ba 02040207			PO Box 51, F	5.00	25.00	Bentonite	45.00	50.00	Gravel	0.00	45.00	PVC
Broadkill Riv Delaware	Ba 02040207	257	257	Wooten's W 76 Sussex Dr	3.00	20.00	Neat Cemen	0.00	0.00		0.00	40.00	PVC
Broadkill Riv Delaware	Ba 02040207	257	257	Wooten's W 722 East Ma	3.00	20.00	Neat Cemen	0.00	0.00		0.00	40.00	PVC
Broadkill Riv Delaware	Ba 02040207			Rd 2 Box 10f	0.00	20.00	Bentonite	40.00	50.00	Gravel	0.00	40.00	PVC
Broadkill Riv Delaware	Ba 02040207	50	50	Ernest L Smi PO Box 166,	0.00	40.00	Bentonite	55.00	60.00	Gravel	0.00	0.00	
Broadkill Riv Delaware	Ba 02040207	1	1	White Drillin Rd 4 Box 13f	0.00	40.00	Bentonite	50.00	64.00	Gravel	0.00	0.00	
Broadkill Riv Delaware	Ba 02040207	257	257	Wooten's W 24708 Black	3.00	70.00	Bentonite	0.00	0.00		0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	282	282	S Preston En Rt 1 Box 205	0.00	40.00	Bentonite	55.00	65.00	Gravel	0.00	0.00	
Broadkill Riv Delaware	Ba 02040207	13	13	Daiseys Well Rd 4 Box 12f	3.00	60.00	Bentonite	0.00	0.00		0.00	66.00	PVC
Broadkill Riv Delaware	Ba 02040207			Rd4 Box 128	0.00	40.00	Bentonite	75.00	80.00	Gravel	0.00	75.00	PVC
Broadkill Riv Delaware	Ba 02040207	319	319	Weber's We Rd 4, Box 13	0.00	50.00	Bentonite	50.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207			PO Box 8, Se	0.00	40.00	Bentonite	60.00	65.00	Gravel	0.00	60.00	PVC
Broadkill Riv Delaware	Ba 02040207	282	282	S Preston En RT3, Box 14f	0.00	20.00	Bentonite	55.00	65.00	Gravel	0.00	55.00	PVC
Broadkill Riv Delaware	Ba 02040207	13	13	Daiseys Well Rt 4 Box 121	3.00	40.00	Bentonite	0.00	0.00		0.00	64.00	PVC
Broadkill Riv Delaware	Ba 02040207			Rd 4, Box 12	0.00	40.00	Bentonite	55.00	60.00	Gravel	0.00	55.00	PVC
Broadkill Riv Delaware	Ba 02040207	50	50	Ernest L Smi Rd 4 Box 13f	0.00	20.00	Bentonite	20.00	55.00	Gravel	0.00	56.00	PVC
Broadkill Riv Delaware	Ba 02040207	1	1	White Drillin 22978 Huff f	0.00	0.00		70.00	75.00	Gravel	0.00	71.00	Galvanized
Broadkill Riv Delaware	Ba 02040207	1	1	White Drillin 309 Chestnu	0.00	0.00		70.00	75.00	Gravel	0.00	71.00	Galvanized
Broadkill Riv Delaware	Ba 02040207	319	319	Weber's We 604 Wagamu	0.00	200.00	Bentonite	0.00	0.00		0.00	200.00	PVC
Broadkill Riv Delaware	Ba 02040207			22595 Huff f	0.00	180.00	Bentonite	0.00	0.00		0.00	180.00	PVC
Broadkill Riv Delaware	Ba 02040207	319	319	Weber's We 301 Holly Sti	0.00	50.00	Bentonite	50.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	319	319	Weber's We 301 Holly Sti	0.00	50.00	Bentonite	50.00	60.00	Gravel	0.00	50.00	PVC
Broadkill Riv Delaware	Ba 02040207	4427	4427	Aquatech W 16181 Hudsr	0.00	0.00		0.00	0.00		0.00	0.00	
Broadkill Riv Delaware	Ba 02040207	4427	4427	Aquatech W 16181 Hudsr	0.00	50.00	Bentonite	78.00	105.00	Gravel	12.00	80.00	PVC
Broadkill Riv Delaware	Ba 02040207	123	123	Milam Well | PO Box 166,	0.00	20.00	Bentonite	38.00	48.00	Gravel	0.00	38.00	PVC
Broadkill Riv Delaware	Ba 02040207	14	14	A C Schultes 604 Wagamu	0.00	10.00	Bentonite	10.00	43.00	Gravel	0.00	10.00	PVC
Broadkill Riv Delaware	Ba 02040207	14	14	A C Schultes 604 Wagamu	0.00	13.00	Bentonite	13.00	37.00	Gravel	0.00	15.00	PVC
Broadkill Riv Delaware	Ba 02040207	14	14	A C Schultes 604 Wagamu	0.00	8.00	Bentonite	8.00	30.00	Gravel	0.00	10.00	PVC
Broadkill Riv Delaware	Ba 02040207	14	14	A C Schultes 604 Wagamu	0.00	10.00	Bentonite	10.00	33.00	Gravel	0.00	13.00	PVC
Broadkill Riv Delaware	Ba 02040207	14	14	A C Schultes 604 Wagamu	0.00	10.00	Bentonite	10.00	32.00	Gravel	0.00	12.00	PVC
Broadkill Riv Delaware	Ba 02040207	14	14	A C Schultes 604 Wagamu	0.00	12.00	Bentonite	12.00	35.00	Gravel	0.00	15.00	PVC
Broadkill Riv Delaware	Ba 02040207	14	14	A C Schultes 604 Wagamu	0.00	12.00	Bentonite	12.00	38.00	Gravel	0.00	15.00	PVC

DNREC Well Search

Watershed	basin	USGSHydro	LicenseNu	OwnerAddr	gravelTo	GravelMa	InnerCas	InnerCas	InnerCas				
		l	m	WellContra	GroutTop	GroutBase	GroutMater	p	gravelBase	te	in	_1	_2
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	13.00	Bentonite	13.00	25.00	Gravel	0.00	15.00	PVC	
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	13.00	Bentonite	13.00	25.00	Gravel	0.00	15.00	PVC	
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	14.00	Bentonite	14.00	20.00	Gravel	0.00	15.00	PVC	
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	134	Duffield Assr 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	134	Duffield Assr 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	134	Duffield Assr 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	134	Duffield Assr 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	134	Duffield Assr 16181 Hudsc	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	5291	Feldmann Br 18 Cripple Ci	0.00	0.00		0.00	0.00		0.00	0.00		
Broadkill Riv Delaware	Ba 02040207	999	Delaware Ge 23697 DuPo	0.00	0.00		0.00	0.00		0.00	0.00		

Appendix 2

Water Quality Results



OVER 100 YEARS OF SUPERIOR SERVICE

Artesian Water Company Artesian Wastewater Management Artesian Utility Development Artesian Water Pennsylvania
 Artesian Water Maryland Artesian Wastewater Maryland Artesian Consulting Engineers

Comprehensive Water Analysis Report

Location: Sandhill Valley Well
Sample Tap: Well Tap
Sampled By: Kenny Haggerty
Reason Sampled: Check

PWSID:
Water Type: RAW
Date/Time Sampled: 12-07-17 0910 hrs
Date/Time Received: 12-07-17 1400 hrs
WSF ID:
Sample Point Code:

Inorganic Constituents

<u>Test Description</u>	<u>Result</u>	<u>Det. Limit</u>	<u>Units</u>	<u>Analyzed Dt./Tm.</u>	<u>By</u>	<u>Analytical Method and/or Remarks</u>
Alkalinity-Total	17	1	ppm	12-20-17 1140 hrs	AW	SM 2320 B
Carbon Dioxide		1	ppm	Automatic Calculation		SM 4500-CO ₂ D
Chlorine-Free	N/A	0.01	ppm	12-07-17 0910 hrs	KH	EPA 330.5 (equivalent), Hach Procedure
Chlorine-Total	N/A	0.01	ppm	12-07-17 0910 hrs	KH	EPA 330.5 (equivalent), Hach Procedure
pH Value	5.82	n/a	pH units	12-07-17 0910 hrs	KH	SM 4500-H ⁺ B
Phosphate-Total	0.20	0.03	ppm	12-18-17 1515 hrs	TT	EPA 365.2 (equivalent), Hach Procedure
Calcium	18	1	ppm	12-20-17 1037 hrs	AW	SM 3500-Ca D (adapted), Hach Procedure
Hardness						
Hardness-Total	24	1	ppm	12-20-17 1040 hrs	AW	SM 2340 C (equivalent), Hach Procedure

Physical Examination

Conductivity	110	0	umhos/cm	12-20-17 1200 hrs	AW	SM 2510 B
Temperature	13.0	n/a	deg-C	12-07-17 0910 hrs	KH	SM 2550 B
Flow Rate	400	n/a	gpm	12-07-17 0910 hrs	KH	Meter Reading

Miscellaneous Analyses

Saturated Air: Negative Result Pres./Abs. of saturated air at sample time

Date Form Printed: March 14, 2018

() – Maximum Limit
 “ND” – Read as “Analyte Not Detected”
 “NT” – Read as “Analyte Not Tested For”

Virginia Eisenbrey
 Assistant Director of Operations



Results Report

Order ID: 7121399

Artesian Water Company
664 Churchmans Road
Newark, DE 19702

Project: Sandhill Valley Kit 17

Attn: Kenny Haggerty

Regulatory ID:

Sample Number: 7121399-01

Site: Sandhill Valley Well

Sample ID:

Collector: KRH

Collect Date: 12/07/2017 9:10 am

Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
EPA 524.2									
1,1,1,2-Tetrachloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1,1-Trichloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1,2,2-Tetrachloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1,2-Trichloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1-Dichloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1-Dichloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1-Dichloropropene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2,3-Trichlorobenzene	< 1	ug/L	EPA 524.2	1	1	12/15/17		12/15/17 0:00	SUB
1,2,3-Trichloropropene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2,4-Trichlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2,4-Trimethylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dibromo-3-chloropropane	< 5	ug/L	EPA 524.2	5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dibromoethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dichlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dichloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dichloropropane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,3,5-Trimethylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,3-Dichlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,3-Dichloropropane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,4-Dichlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
2,2-Dichloropropane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
2-Chlorotoluene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
4-Chlorotoluene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
4-Isopropyltoluene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Benzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Bromobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Bromochloromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Bromodichloromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Bromoform	< 1	ug/L	EPA 524.2	1	1	12/15/17		12/15/17 0:00	SUB
Bromomethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Carbon tetrachloride	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chlorodibromomethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chloroform	1.7	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chloromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
cis-1,2-Dichloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB

Report Generated On: 01/08/2018 2:43 pm

7121399

STL_Results Revision #1.6

Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7121399-01 Site: Sandhill Valley Well Sample ID:
 Collector: KRH Collect Date: 12/07/2017 9:10 am Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
EPA 524.2 (Continued)									
cis-1,3-Dichloropropene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Dibromomethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Dichlorodifluoromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Ethylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Hexachlorobutadiene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Isopropylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
m&p-Xylene	< 1	ug/L	EPA 524.2	1	1	12/15/17		12/15/17 0:00	SUB
Methylene chloride	< 5	ug/L	EPA 524.2	5	1	12/15/17		12/15/17 0:00	SUB
Methyl-t-butyl ether	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Naphthalene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
n-Butylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
n-Propylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
o-Xylene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
sec-Butylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Styrene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
tert-Butylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Tetrachloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Toluene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
trans-1,2-Dichloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
trans-1,3-Dichloropropene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Trichloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Trichlorofluoromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Vinyl Chloride	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: 4-Bromofluorobenzene	10	ug/L	EPA 524.2	104%	1	79-122	12/15/17 0:00
Surrogate: Dibromofluoromethane	10	ug/L	EPA 524.2	105%	1	90-115	12/15/17 0:00
Surrogate: Toluene-D8	10	ug/L	EPA 524.2	105%	1	92-113	12/15/17 0:00

Inorganics

Chloride	9.58	mg/L	EPA 300.0	5.00	1	12/08/17	CEK	12/08/17 1:26	APR
Color	< 5	Y Color Units	SM 2120-B	5	1	12/08/17	CEK	12/08/17 14:31	CEK
Cyanide, Free	< 0.005	mg/L	OIA1677-DW	0.005	1	12/14/17	RCE	12/14/17 17:39	rce
Fluoride	< 0.20	mg/L	EPA 300.0	0.20	1	12/08/17	CEK	12/08/17 1:26	APR
MBAS	< 0.05	X mg/L	SM 5540C	0.05	1	12/08/17	RCE	12/08/17 9:47	RCE
Nitrate as N	5.68	mg/L	EPA 300.0	1.00	1	12/08/17	APR	12/08/17 1:26	APR
Nitrite as N	< 0.10	mg/L	EPA 300.0	0.10	1	12/08/17	APR	12/08/17 1:26	APR
Odor, 40 °C	< 1	TON	SM 2150-B	1	1	12/08/17	TML	12/08/17 9:13	TML
Sulfate	< 5.00	mg/L	EPA 300.0	5.00	1	12/08/17	CEK	12/08/17 1:26	APR
Total Dissolved Solids (TDS)	112	mg/L	SM 2540-C	25.0	1	12/13/17	MMR	12/13/17 16:01	MMR
Turbidity	< 0.50	NTU	EPA 180.1	0.50	1	12/08/17	RJS	12/08/17 9:03	RJS

Metals

Aluminum	< 0.010	mg/L	EPA 200.8	0.010	1	12/17/17	RPV	12/17/17 14:23	RPV
Antimony	< 0.0004	mg/L	EPA 200.8	0.0004	1	12/17/17	RPV	12/17/17 14:23	RPV

Report Generated On: 01/08/2018 2:43 pm 7121399
 STL_Results Revision #1.6 Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7121399-01 Site: Sandhill Valley Well Sample ID:
 Collector: KRH Collect Date: 12/07/2017 9:10 am Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
Metals (Continued)									
Arsenic	< 0.001	mg/L	EPA 200.8	0.001	1	12/17/17	RPV	12/17/17 14:23	RPV
Barium	0.115	mg/L	EPA 200.8	0.010	1	12/17/17	RPV	12/17/17 14:23	RPV
Beryllium	< 0.0004	mg/L	EPA 200.8	0.0004	1	12/17/17	RPV	12/17/17 14:23	RPV
Cadmium	< 0.0004	mg/L	EPA 200.8	0.0004	1	12/17/17	RPV	12/17/17 14:23	RPV
Chromium	0.001	mg/L	EPA 200.8	0.001	1	12/17/17	RPV	12/17/17 14:23	RPV
Iron	< 0.100	mg/L	EPA 200.7	0.100	1	12/13/17	RJS	12/13/17 16:54	RJS
Manganese	< 0.010	mg/L	EPA 200.8	0.010	1	12/17/17	RPV	12/17/17 14:23	RPV
Mercury	< 0.0002	mg/L	SM 3112-B	0.0002	1	12/13/17	AER	12/13/17 15:37	AER
Nickel	0.001	mg/L	EPA 200.8	0.001	1	12/17/17	RPV	12/17/17 14:23	RPV
Selenium	< 0.002	mg/L	EPA 200.8	0.002	1	12/17/17	RPV	12/17/17 14:23	RPV
Silver	< 0.001	mg/L	EPA 200.8	0.001	1	12/17/17	RPV	12/19/17 19:19	RPV
Sodium	6.48	mg/L	EPA 200.7	0.400	1	12/13/17	RJS	12/14/17 18:15	RJS
Thallium	< 0.0004	mg/L	EPA 200.8	0.0004	1	12/17/17	RPV	12/17/17 14:23	RPV
Zinc	< 0.010	mg/L	EPA 200.8	0.010	1	12/17/17	RPV	12/17/17 14:23	RPV

Microbiology

Total Coliform, Enumeration

Total Coliform	< 1	MPN/100mL	SM 9223-B	1	1	12/07/17	JSC	12/07/17 20:17	JSC
E. coli	< 1	MPN/100mL	SM 9223-B	1	1	12/07/17	JSC	12/07/17 20:17	JSC

Semivolatiles

SOC 504.1

1,2-Dibromoethane (EDB)	< 0.0199	µg/L	EPA 504.1	0.0199	1	12/19/17	MEB	12/19/17 20:51	MWS
1,2-Dibromo-3-chloropropane (DBCP)	< 0.0199	µg/L	EPA 504.1	0.0199	1	12/19/17	MEB	12/19/17 20:51	MWS

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: 1,1,1,2-Tetrachloroethane	0.2783	µg/L	EPA 504.1	112%	1	70-130	12/19/17 20:51

SOC 505

PCBs (as Aroclors) [2C]	< 0.2017	µg/L	EPA 505	0.2017	1	12/18/17	LAS	12/18/17 22:50	MWS
Toxaphene [2C]	< 2.017	µg/L	EPA 505	2.017	1	12/18/17	LAS	12/18/17 22:50	MWS

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Tetrachloro-m-xylene [2C]	0.8069	µg/L	EPA 505	80%	1	70-130	12/18/17 22:50

SOC 515.3

Dalapon	< 1.25	µg/L	EPA 515.3	1.25	1	12/08/17	LAS	12/09/17 4:15	DMH
2,4-D	< 1.25	µg/L	EPA 515.3	1.25	1	12/08/17	LAS	12/09/17 4:15	DMH
Pentachlorophenol	< 0.12	µg/L	EPA 515.3	0.12	1	12/08/17	LAS	12/09/17 4:15	DMH
2,4,5-TP (Silvex)	< 0.31	µg/L	EPA 515.3	0.31	1	12/08/17	LAS	12/09/17 4:15	DMH
Picloram	< 1.25	µg/L	EPA 515.3	1.25	1	12/08/17	LAS	12/09/17 4:15	DMH
Dinoseb	< 1.25	µg/L	EPA 515.3	1.25	1	12/08/17	LAS	12/09/17 4:15	DMH

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
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Report Generated On: 01/08/2018 2:43 pm 7121399
 STL_Results Revision #1.6 Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7121399-01	Site: Sandhill Valley Well	Sample ID:
Collector: KRH	Collect Date: 12/07/2017 9:10 am	Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
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Semivolatiles (Continued)

SOC 515.3 (Continued)

Surrogate Recoveries (Continued)	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: 2,4-Dichlorophenylacetic Acid (DCAA)	27.4	µg/L	EPA 515.3	110%	1	70-130	12/09/17 4:15

SOC 525.2

Alachlor	< 0.50	µg/L	EPA 525.2	0.50	1	12/19/17	MAG	12/20/17 13:43	TRP
Atrazine	< 0.25	µg/L	EPA 525.2	0.25	1	12/19/17	MAG	12/20/17 13:43	TRP
Benzo(a)pyrene	< 0.05	µg/L	EPA 525.2	0.05	1	12/19/17	MAG	12/20/17 13:43	TRP
Chlordane	< 0.05	µg/L	EPA 525.2	0.05	1	12/19/17	MAG	12/20/17 13:43	TRP
di(2-Ethylhexyl) adipate	< 1.50	µg/L	EPA 525.2	1.50	1	12/19/17	MAG	12/20/17 13:43	TRP
di(2-Ethylhexyl) phthalate	< 1.50	µg/L	EPA 525.2	1.50	1	12/19/17	MAG	12/20/17 13:43	TRP
Endrin	< 0.10	µg/L	EPA 525.2	0.10	1	12/19/17	MAG	12/20/17 13:43	TRP
Gamma-BHC (Lindane)	< 0.05	µg/L	EPA 525.2	0.05	1	12/19/17	MAG	12/20/17 13:43	TRP
Heptachlor	< 0.10	µg/L	EPA 525.2	0.10	1	12/19/17	MAG	12/20/17 13:43	TRP
Heptachlor epoxide	< 0.05	µg/L	EPA 525.2	0.05	1	12/19/17	MAG	12/20/17 13:43	TRP
Hexachlorobenzene	< 0.25	µg/L	EPA 525.2	0.25	1	12/19/17	MAG	12/20/17 13:43	TRP
Hexachlorocyclopentadiene	< 0.25	µg/L	EPA 525.2	0.25	1	12/19/17	MAG	12/20/17 13:43	TRP
Methoxychlor	< 0.25	µg/L	EPA 525.2	0.25	1	12/19/17	MAG	12/20/17 13:43	TRP
Simazine	< 0.18	µg/L	EPA 525.2	0.18	1	12/19/17	MAG	12/20/17 13:43	TRP

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: Pyrene-d10	5.25	µg/L	EPA 525.2	105%	1	50-150	12/20/17 13:43
Surrogate: Triphenylphosphate	5.13	µg/L	EPA 525.2	103%	1	50-150	12/20/17 13:43
Surrogate: 1,3-Dimethyl-2-Nitrobenzene	4.58	µg/L	EPA 525.2	92%	1	50-150	12/20/17 13:43
Surrogate: Perylene-d12	4.61	µg/L	EPA 525.2	92%	1	50-150	12/20/17 13:43

SOC 531.2

Oxamyl (vydate)	< 5.0	µg/L	EPA 531.2	5.0	1	12/19/17	TRP	12/19/17 23:59	TRP
Carbofuran	< 5.0	µg/L	EPA 531.2	5.0	1	12/19/17	TRP	12/19/17 23:59	TRP

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: BDMC (surr)	50.9	µg/L	EPA 531.2	102%	1	70-130	12/19/17 23:59

Report Generated On: 01/08/2018 2:43 pm
STL_Results Revision #1.6

7121399
Effective: 07/09/2014





SUBURBAN TESTING LABS

Sample Number: 7121399-02
Collector: LF-STL

Site: Trip Blank
Collect Date: 12/07/2017 9:10 am

Sample ID:
Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
EPA 524.2									
1,1,1,2-Tetrachloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1,1-Trichloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1,2,2-Tetrachloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1,2-Trichloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1-Dichloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1-Dichloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,1-Dichloropropene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2,3-Trichlorobenzene	< 1	ug/L	EPA 524.2	1	1	12/15/17		12/15/17 0:00	SUB
1,2,3-Trichloropropane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2,4-Trichlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2,4-Trimethylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dibromo-3-chloropropane	< 5	ug/L	EPA 524.2	5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dibromoethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dichlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dichloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,2-Dichloropropane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,3,5-Trimethylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,3-Dichlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,3-Dichloropropane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
1,4-Dichlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
2,2-Dichloropropane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
2-Chlorotoluene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
4-Chlorotoluene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
4-Isopropyltoluene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Benzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Bromobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Bromochloromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Bromodichloromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Bromoform	< 1	ug/L	EPA 524.2	1	1	12/15/17		12/15/17 0:00	SUB
Bromomethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Carbon tetrachloride	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chlorobenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chlorodibromomethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chloroethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chloroform	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Chloromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
cis-1,2-Dichloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
cis-1,3-Dichloropropene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Dibromomethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Dichlorodifluoromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Ethylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Hexachlorobutadiene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Isopropylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
m&p-Xylene	< 1	ug/L	EPA 524.2	1	1	12/15/17		12/15/17 0:00	SUB
Methylene chloride	< 5	ug/L	EPA 524.2	5	1	12/15/17		12/15/17 0:00	SUB
Methyl-t-butyl ether	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB

Report Generated On: 01/08/2018 2:43 pm
STL_Results Revision #1.6

7121399
Effective: 07/09/2014





Sample Number: 7121399-02	Site: Trip Blank	Sample ID:
Collector: LF-STL	Collect Date: 12/07/2017 9:10 am	Sample Type: Grab

Department / Test / Parameter	Result	Units	Method	R.L.	DF	Prep Date	By	Analysis Date	By
EPA 524.2 (Continued)									
Naphthalene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
n-Butylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
n-Propylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
o-Xylene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
sec-Butylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Styrene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
tert-Butylbenzene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Tetrachloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Toluene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
trans-1,2-Dichloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
trans-1,3-Dichloropropene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Trichloroethene	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Trichlorofluoromethane	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB
Vinyl Chloride	< 0.5	ug/L	EPA 524.2	0.5	1	12/15/17		12/15/17 0:00	SUB

Surrogate Recoveries	Results	Units	Method	%Recovery	DF	Limits (%Recovery)	Analysis Date
Surrogate: 4-Bromofluorobenzene	10	ug/L	EPA 524.2	100%	1	79-122	12/15/17 0:00
Surrogate: Dibromofluoromethane	11	ug/L	EPA 524.2	105%	1	90-115	12/15/17 0:00
Surrogate: Toluene-D8	10	ug/L	EPA 524.2	101%	1	92-113	12/15/17 0:00

Data Qualifiers:	
X	MBAS, calculated as LAS, mol wt 342g/mol.
Y	The pH was measured at 5.41

Sample Receipt Conditions:
All samples met the sample receipt requirements for the relevant analyses.

Work Order Memo
 SUB: EPA 524.2 performed by Lab ID# 68-03330
 ** This report has been Amended (Rev1) and replaces all previous reports for this order ID **

All results meet the requirements of STL's TNI (NELAC) Accredited Quality System unless otherwise noted. If your results contain any data qualifiers or comments, you should evaluate useability relative to your needs.

If collectors initials include "STL", samples have been collected in accordance with STL SOP SL0015.

All results reported on an As Received (Wet Weight) basis unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of STL.

Results are considered Preliminary unless report is signed by authorized representative of STL.

Report Generated On: 01/08/2018 2:43 pm 7121399
 STL_Results Revision #1.6 Effective: 07/09/2014





SUBURBAN
TESTING LABS

Reviewed and Released By:

Alana Kopicz
Project Manager

Alana M. Kopicz

Report Generated On: 01/08/2018 2:43 pm 7121399
STL_Results Revision #1.6 Effective: 07/09/2014





**SUBURBAN
TESTING LABS**

②

Chain of Custody Record

1037F MacArthur Road, Reading, PA 19605
Phone: 610-375-8378 - Fax: 610-375-4090 - suburbantestinglabs.com

TAT (Circle One): Standard - 24hr - 48hr - 72hr - Other _____
(Additional charges may apply for rush TAT. If not specified, standard TAT will apply.)

ORDER ID: 7121399



Client Name / Address: Artesian Water Company 664 Churchmans Road Newark, DE 19702 Client Project Manager: Kenny Haggerty	Phone: (302) 453-6900 Fax:	Project Name / Address: Sandhill Valley Kit 17 Payment / P.O. Info: SPECIAL PROJECTS
---	---	--

Project Description:

Order Comments: Added via by AMK 12/04/2017 20:06

Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
7121399-01	Sample Name	SANDHILL VALLEY WELL	12-7-17 0910	KRH	Potable Water	Grab	
Container Type / Preservation			Preservation Check		Analysis - Method		Field Results



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
500mL P & HNO3		A			[Group Analysis] IOC Group - varies Inorganics Chloride - EPA 300.0 Color, Visual - SM 2120-B Cyanide, Free - OIA1677-DW - CI negative Fluoride - EPA 300.0 MBAS - SM 5540C Odor - SM 2150-B Sulfate - EPA 300.0 TDS - SM 2540-C Turbidity - EPA 180.1 Metals Aluminum, 200.8 - EPA 200.8 Antimony, 200.8 - EPA 200.8 Arsenic, 200.8 - EPA 200.8 Barium, 200.8 - EPA 200.8 Beryllium, 200.8 - EPA 200.8 Cadmium, 200.8 - EPA 200.8 Chromium, 200.8 - EPA 200.8 Iron, 200.7 - EPA 200.7 Manganese, 200.8 - EPA 200.8 Mercury, 3112 - SM 3112-B Nickel, 200.8 - EPA 200.8 Selenium, 200.8 - EPA 200.8 Silver, 200.8 - EPA 200.8 Sodium 200.7 - EPA 200.7 Thallium, 200.8 - EPA 200.8 Zinc, 200.8 - EPA 200.8 Microbiology Total Coliform, Enumeration - SM 9223-B Semivolatiles SOC 504.1 - EPA 504.1 SOC 505 - EPA 505 SOC 515.3 - EPA 515.3 SOC 525.2 - EPA 525.2 SOC 531.2 - EPA 531.2 Volatiles VOA, 524.2, Regulated - EPA 524.2		
500mL P		B					
500mL P & NaOH & NaAs		C					
1L P		D					
500mL GA		E					
40ml VOA & Na2S2O3		F					
40ml VOA & Na2S2O3		G					
40ml VOA & Na2S2O3		H					
40ml VOA & Na2S2O3		I					
40ml VOA & Na2S2O3		J					
40ml VOA & Na2S2O3		K					
500mL GA & Na2S2O3		L					
1L GA & Sodium Sulfite & HCl at sampling		M					
1L GA & Sodium Sulfite & HCl at sampling		N					
250mL GA & Na2S2O3 & C6H7K		O					
120mL Sterile & Na2S2O3	KS	P					
500mL P		Q					
40ml VOA & AA & HCl at sampling		R					
40ml VOA & AA & HCl at sampling		S					

PH < 2
PH > 12

CI negative
USE 12-7-17

CI negative
USE 12-7-17

TRIP BLANK.

WKO TAT = 15

Cool Sample(s) to 10 C



Sample Number	Sample Description - Site ID	Sampling Location	Collect Date/Time	Sampler's Initials	Matrix	Sample Type	Composite Start Date / Time
Relinquished By:	Kenneth R. Haggerty	Count: 20	Date: 12-7-17	Temp (°C):	Sample Conditions	Sample Type Key	Reporting Options
Received By:			Time: 1400				
Relinquished By:	D. Wilson	20	Date: 12/7/17	Temp (°C): 7.3	Number of Containers \ Cooler received matches number on COC? <input checked="" type="radio"/> Y <input type="radio"/> N	G = Grab 8HC = 8 Hr. Composite 24HC = 24 Hr. Composite	<input type="checkbox"/> SDWA Reporting PWSID <input type="checkbox"/> Email <input type="checkbox"/> Other _____
Received in Lab By:			Time: 1415	7.6	Sample labels and COC free of discrepancies? <input checked="" type="radio"/> Y <input type="radio"/> N		
Relinquished By:	D. Wilson	20	Date: 12/7/17	Temp (°C): 31.6	All Containers Intact? <input checked="" type="radio"/> Y <input type="radio"/> N	D = Distribution S = Entry Point R = Raw C = Check S = Special M = Maximum Residence	
Received in Lab By:			Time: 1615	Acceptable?: <input checked="" type="radio"/> Y <input type="radio"/> N	VOC vials for VOA analysis free of headspace, if applicable? <input type="radio"/> Y <input type="radio"/> N		
Received in Lab By:	[Signature]		Date: 12-7-17	Temp (°C):			
			Time: 1415	Acceptable?: <input checked="" type="radio"/> Y <input type="radio"/> N			

Signing this form indicates your agreement with STL's Standard Terms and Conditions (www.suburbantestinglabs.com/resources/standard-terms-and-conditions.html) unless otherwise specified in writing.

Shaded areas are for STL use only

PH DRW 12/7/17

Appendix 3

**Weather Data and In-Situ Data Files Header
Data Disk with In-Situ Files Attached on Disk**

November 2017 Georgetown Weather Station

Daily Station Statistics for November, 2017

Day	Avg Temp	Max Temp	Min Temp	HDD	CDD	Heat Index	Wind Chill	Avg Wind Speed	Avg Wind Dir	Peak Wind Gust	Rainfall
	(°F)	(°F)	(°F)	(base 65 °F)	(base 65 °F)	(°F)	(°F)	(mph)	(°)	(mph)	(in)
1	56	67.4 (14:25)	40.2 (01:40)	9	0	N/A	38.3 (02:30)	4.8	113.4 (ESE)	15.9 (12:35)	0
2	66	76.7 (14:00)	59.3 (24:00)	0	1	N/A	N/A	4.7	159.1 (SSE)	12.6 (13:15)	0
3	65.2	77.5 (14:50)	54.1 (06:25)	0	0.2	N/A	N/A	4.9	221.8 (SW)	22.8 (23:05)	0
4	54.6	60.6 (15:35)	46.5 (07:50)	10.4	0	N/A	N/A	6.4	23.1 (NNE)	16.6 (01:00)	0
5	61.3	70.0 (14:55)	55.3 (02:30)	3.7	0	N/A	N/A	3.4	97.8 (E)	9.9 (09:30)	0.1
6	63.6	69.0 (15:30)	55.5 (24:00)	1.4	0	N/A	N/A	7.8	225.3 (SW)	19.9 (08:40)	0
7	47	55.1 (00:05)	43.8 (06:00)	18	0	N/A	38.3 (23:15)	8.8	355.5 (N)	20.9 (19:25)	1.1
8	45.9	49.4 (16:30)	42.2 (07:20)	19.1	0	N/A	36.2 (06:50)	8.6	357.5 (N)	20.9 (01:20)	0.01
9	52	60.0 (12:25)	44.6 (02:20)	13	0	N/A	N/A	3.7	28.4 (NNE)	12.3 (11:25)	0
10	41.4	52.5 (00:50)	28.4 (24:00)	23.6	0	N/A	19.7 (23:20)	10.4	317.1 (NW)	26.4 (13:10)	0.02
11	30	39.5 (14:20)	22.2 (06:55)	35	0	N/A	13.1 (06:10)	4.9	334.3 (NNW)	18.6 (01:45)	0
12	35.7	46.9 (13:40)	24.7 (02:05)	29.3	0	N/A	24.7 (02:05)	1.2	355.0 (N)	6.3 (09:55)	0
13	42.4	46.5 (14:20)	35.5 (00:05)	22.6	0	N/A	34.6 (03:40)	6.4	327.5 (NNW)	14.3 (15:00)	0.37
14	42.5	50.3 (13:20)	36.4 (23:30)	22.5	0	N/A	31.9 (05:10)	6.2	342.0 (NNW)	18.9 (09:45)	0
15	45.9	54.3 (14:25)	36.4 (00:05)	19.1	0	N/A	33.1 (00:30)	5.5	2.3 (N)	16.4 (10:15)	0
16	51.2	60.2 (14:10)	42.7 (23:50)	13.8	0	N/A	38.0 (24:00)	7.3	269.0 (W)	20.9 (14:55)	0
17	41.9	50.1 (13:00)	29.4 (23:55)	23.1	0	N/A	26.9 (21:30)	7.9	290.9 (WNW)	22.2 (09:55)	0
18	48.8	63.7 (24:00)	29.1 (00:50)	16.2	0	N/A	26.1 (03:30)	11.9	179.2 (S)	36.2 (23:20)	0
19	52.5	65.7 (02:50)	39.3 (22:30)	12.5	0	N/A	34.7 (23:15)	17.5	260.7 (W)	36.9 (00:30)	0.05
20	42.1	49.2 (15:25)	35.3 (07:20)	22.9	0	N/A	32.7 (06:55)	8.5	253.2 (WSW)	28.1 (02:35)	0
21	49.8	59.8 (13:55)	37.4 (06:30)	15.2	0	N/A	33.2 (06:30)	8.6	178.5 (S)	26.9 (11:00)	0
22	51.8	59.0 (13:40)	35.8 (24:00)	13.2	0	N/A	31.5 (23:20)	9.5	294.7 (WNW)	27.7 (13:50)	0.63
23	33.7	42.0 (15:30)	26.5 (23:50)	31.3	0	N/A	24.3 (05:15)	4	296.0 (WNW)	14.5 (09:35)	0
24	37.1	53.7 (15:05)	25.3 (06:05)	27.9	0	N/A	25.3 (06:05)	1.4	115.1 (ESE)	6.7 (13:55)	0
25	44.6	61.2 (13:45)	27.8 (06:25)	20.4	0	N/A	27.8 (06:25)	4.5	214.1 (SW)	17.7 (14:00)	0

November 2017 Georgetown Weather Station

26	45.5	53.4 (12:15)	32.1 (23:45)	19.5	0	N/A	27.7 (24:00)	6.8	278.5 (W)	22.7 (01:50)	0
27	42.3	55.8 (13:45)	30.5 (06:15)	22.7	0	N/A	27.1 (06:15)	4.4	247.5 (WSW)	16.1 (12:30)	0
28	46.2	61.6 (14:00)	30.1 (05:35)	18.8	0	N/A	28.2 (02:15)	5.1	144.2 (SE)	16.1 (13:20)	0
29	52.2	66.2 (13:40)	37.7 (23:05)	12.8	0	N/A	34.0 (23:15)	6.3	252.1 (WSW)	18.3 (14:50)	0
30	49.4	60.6 (14:35)	40.0 (07:10)	15.6	0	N/A	34.8 (03:30)	4.9	114.2 (ESE)	13.3 (10:05)	0

Monthly Station Statistics

Temperature	Precipitation	Miscellaneous
Avg Temp (°F) 48	Total Monthly Rainfall (in) 2.38	Avg Wind Speed (mph) 6.5
Highest Max Temp (°F) 77.5 (3rd)	Total Yearly Rainfall (in) 40.16	Avg Wind Dir (°) 294.7 (WNW)
Lowest Min Temp (°F) 22.2 (11th)	Max Rainfall (in) 1.10 (7th)	Peak Wind Gust (mph) 36.9 (19th)
Max Temp ≥ 0 Days	Rainfall ≥ 0.01 in: 8 Days	Max Heat Index (°F) N/A
Max Temp ≤ 0 Days	Rainfall ≥ 0.25 in: 3 Days	Min Wind Chill (°F) 13.1 (11th)
Min Temp ≤ 32°F: 10 Days	Rainfall ≥ 1 in: 1 Days	Total Monthly HDD (base 65 °F) 515.9
Min Temp ≤ 0°F: 0 Days		Total Yearly HDD (base 65 °F) 3033.3
		Total Monthly CDD (base 65 °F) 1.3
		Total Yearly CDD (base 65 °F) 1281.6

Note: All observations were obtained from the Delaware Environmental Observing System network

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December Georgetown Weather Data

Daily Station Statistics for December, 2017

Day	Avg Temp (°F)	Max Temp (°F)	Min Temp (°F)	HDD (base 65 °F)	CDD (base 65 °F)	Heat Index (°F)	Wind Chill (°F)	Avg Wind Speed (mph)	Avg Wind Dir (°)	Peak Wind Gust (mph)	Rainfall (in)
1	45.7	54.2 (14:10)	30.9 (24:00)	19.3	0	N/A	30.9 (24:00)	5.2	319.8 (NW)	18.9 (10:45)	0.01
2	40.2	54.2 (13:30)	28.1 (05:25)	24.8	0	N/A	28.1 (05:25)	1.4	8.0 (N)	8.3 (11:35)	0
3	41	55.3 (14:50)	31.0 (24:00)	24	0	N/A	31.0 (02:50)	2.1	317.8 (NW)	9.2 (13:05)	0.02
4	40.4	55.2 (14:15)	27.9 (06:25)	24.6	0	N/A	26.7 (02:10)	2.3	45.5 (NE)	9.2 (15:00)	0.01
5	58.3	67.1 (11:45)	40.3 (00:35)	6.7	0	N/A	38.6 (00:20)	10	162.9 (SSE)	28.3 (11:40)	0.18
6	46.2	61.1 (00:05)	38.6 (23:20)	18.8	0	N/A	36.2 (20:15)	8.2	260.7 (W)	25.1 (05:45)	0.02
7	40.7	47.7 (14:25)	34.8 (20:35)	24.3	0	N/A	29.9 (18:10)	5	234.5 (SW)	15.8 (12:15)	0
8	35	40.0 (12:10)	30.6 (22:30)	30	0	N/A	24.3 (17:45)	3.3	336.7 (NNW)	11.0 (01:55)	0
9	30.5	32.0 (09:25)	29.5 (19:00)	34.5	0	N/A	19.5 (11:45)	5	336.2 (NNW)	19.5 (11:45)	0.02
10	31.6	38.0 (13:50)	25.9 (07:05)	33.4	0	N/A	21.0 (08:05)	6.3	230.9 (SW)	19.2 (13:55)	0.58
11	35.7	44.6 (14:40)	27.0 (07:10)	29.3	0	N/A	23.5 (07:35)	4.2	182.4 (S)	11.1 (23:50)	0
12	41	48.0 (11:00)	26.8 (24:00)	24	0	N/A	11.9 (23:55)	10.7	226.9 (SW)	32.4 (21:25)	0.01
13	27.2	32.2 (23:35)	22.0 (05:50)	37.8	0	N/A	7.2 (05:35)	13.5	254.7 (WSW)	30.0 (10:30)	0
14	35	43.8 (10:50)	27.8 (21:15)	30	0	N/A	19.2 (19:25)	9.2	281.8 (WNW)	27.0 (11:15)	0
15	28.4	34.0 (11:25)	21.4 (23:40)	36.6	0	N/A	14.7 (17:25)	5.9	348.1 (NNW)	19.8 (16:40)	0
16	32.3	42.5 (14:05)	21.2 (00:35)	32.7	0	N/A	15.0 (00:35)	6.9	211.0 (SSW)	21.4 (13:55)	0.05
17	37.7	48.2 (13:30)	27.1 (06:35)	27.3	0	N/A	25.1 (08:00)	2	155.4 (SSE)	7.2 (11:15)	0
18	44.3	54.2 (14:25)	38.7 (04:05)	20.7	0	N/A	37.0 (03:55)	3.2	227.6 (SW)	10.9 (13:25)	0
19	47.5	59.5 (14:05)	33.9 (06:10)	17.5	0	N/A	33.5 (08:20)	5.2	212.5 (SSW)	15.2 (13:05)	0
20	43.9	51.8 (06:15)	27.0 (23:55)	21.1	0	N/A	26.2 (20:45)	5.6	281.5 (WNW)	18.4 (11:45)	0
21	32.6	43.3 (14:25)	24.5 (07:25)	32.4	0	N/A	19.5 (07:30)	3.1	340.8 (NNW)	10.0 (10:55)	0
22	41.8	58.7 (15:05)	25.0 (01:40)	23.2	0	N/A	20.6 (02:05)	3.8	131.5 (SE)	19.9 (13:25)	0
23	56.1	65.7 (19:15)	46.2 (00:25)	8.9	0	N/A	N/A	12.5	188.4 (S)	35.4 (19:15)	0.03
24	42.2	47.4 (00:05)	40.1 (07:40)	22.8	0	N/A	32.6 (06:25)	8.2	7.7 (N)	19.5 (01:40)	0.06
25	35.6	41.2 (00:05)	30.9 (23:25)	29.4	0	N/A	20.7 (22:25)	13.4	271.1 (W)	36.0 (10:35)	0

December Georgetown Weather Data

26	30.4	36.4 (14:10)	25.3 (21:00)	34.6	0	N/A	20.1 (05:45)	6.2	263.9 (W)	17.6 (13:20)	0
27	25.7	29.1 (13:55)	18.0 (23:30)	39.3	0	N/A	8.1 (23:35)	6.5	356.9 (N)	15.8 (12:35)	0
28	17.2	23.0 (14:30)	9.1 (23:30)	47.8	0	N/A	3.3 (06:40)	7.2	315.6 (NW)	22.3 (12:50)	0
29	19.9	30.7 (14:45)	8.6 (01:30)	45.1	0	N/A	2.2 (01:30)	4.5	300.5 (WNW)	21.1 (15:30)	0
30	23.3	29.1 (15:05)	15.3 (01:45)	41.7	0	N/A	8.3 (23:40)	5.2	306.4 (NW)	25.6 (20:55)	0
31	18.3	23.0 (00:05)	9.9 (23:55)	46.7	0	N/A	1.5 (19:45)	11.4	312.4 (NW)	22.7 (09:40)	0

Monthly Station Statistics

Temperature		Precipitation		Miscellaneous	
Avg Temp (°F)	36.3	Total Monthly Rainfall (in)	0.99	Avg Wind Speed (mph)	6.4
Highest Max Temp (°F)	67.1 (5th)	Total Yearly Rainfall (in)	0	Avg Wind Dir (°)	279.8 (W)
Lowest Min Temp (°F)	8.6 (29th)	Max Rainfall (in)	0.58 (10th)	Peak Wind Gust	36.0 (25th)
Max Temp ≥	0 Days	Rainfall ≥ 0.01 in:	11 Days	Max Heat Index (°F)	N/A
Max Temp ≤	6 Days	Rainfall ≥ 0.25 in:	1 Days	Min Wind Chill (°F)	1.5 (31st)
Min Temp ≤ 32°F:	24 Days	Rainfall ≥ 1 in:	0 Days	Total Monthly HDD (base 65)	889.5
Min Temp ≤ 0°F:	0 Days			Total Yearly HDD (base 65)	3922.8
				Total Monthly CDD (base 65 °F)	0
				Total Yearly CDD (base 65 °F)	1281.6

Note: All observations were obtained from the Delaware Environmental Observing System network

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Public Supply Well 1 Drawdown Data

Report Date: 2/26/2018 8:29
Report User Name: Peter
Report Computer Name: PETER-PC2
Application: WinSitu.exe
Application Version: 5.6.27.1

Log File Properties

File Name Test well CR12_Append_2017-12-07_14-46-16-700.wsl
Create Date 12//2017 14:46

Device Properties

Device Level TROLL 700
Site Sand Hill Development
Device Name
Serial Number 383456
Firmware Version 3
Hardware Version 4
Device Address 1
Device Comm Cfg 19200 8 Even
Used Memory 3
Used Battery 16

Log Configuration

Log Name Test well CR12
Created By Peter
Computer Name PETER-PC2
Application WinSitu.exe
Application Version 5.6.27.1
Create Date 12/5/2017 2:53:33 PM Eastern Standard Time
Log Setup Time Zone Eastern Standard Time
Notes Size(bytes) 4096
Overwrite when full Disabled
Scheduled Start Time 12/5/2017 3:00:00 PM Eastern Standard Time
Scheduled Stop Time 12/8/2017 3:00:00 PM Eastern Standard Time
Type True Logarithmic
Duration Days: 3 hrs: 00 mins: 00 secs: 00
Max Interval Days: 0 hrs: 00 mins: 05 secs: 00

Level Reference Settings At Log Creation

Level Measurement Method Level Depth To Water
Specific Gravity 0.999
Level Reference Method Set new reference
Level Reference Value 12.62 (ft)
Level Reference Head Pressure 16.4282 (PSI)

Other Log Settings

Depth of Probe: 37.9412 (ft)
Head Pressure: 16.4321 (PSI)
Temperature: 14.2506 (C)

Log Notes:

Date and Time	Note
12/5/2017 14:53	Used Battery: 16% Used Memory: 4% User Name: Peter
12/5/2017 15:07	Log Download - Used Battery: 16% Used Memory: 4% User Name: Peter
12//2017 14:14	Log Download - Used Battery: 17% Used Memory: 4% User Name: Peter
12//2017 14:45	Used Battery: 17% Used Memory: 4% User Name: Peter
12//2017 14:45	Manual Stop Command

Log Data:

Record Count 698

Sensors 1

Public Supply Well 1 Drawdown Data

1

383456 Pressure/Temp 100 PSIG (/0m/231ft)

Time Zone: Eastern Standard Time

Date and Time	Elapsed Time Seconds	Sensor: Pres(G) 231ft SN#: 383456 Temperature (C)	Sensor: Pres(G) 231ft SN#: 383456 Level Depth To Water	Sensor: Pres(G) 231ft SN#: 383456 Pressure (PSI)
12/5/2017 15:00	0	14.244	12.608	16.434
12/5/2017 15:00	0.25	14.24	12.628	16.425
12/5/2017 15:00	0.5	14.219	12.653	16.414
12/5/2017 15:00	0.75	14.248	12.598	16.438
12/5/2017 15:00	1	14.255	12.644	16.418
12/5/2017 15:00	1.25	14.251	12.589	16.442
12/5/2017 15:00	1.5	14.243	12.588	16.442
12/5/2017 15:00	1.75	14.257	12.594	16.439
12/5/2017 15:00	2	14.267	12.588	16.442
12/5/2017 15:00	2.25	14.249	12.645	16.418
12/5/2017 15:00	2.5	14.287	12.617	16.429
12/5/2017 15:00	2.75	14.24	12.596	16.438
12/5/2017 15:00	3	14.28	12.623	16.427
12/5/2017 15:00	3.25	14.251	12.6	16.437
12/5/2017 15:00	3.5	14.283	12.605	16.435
12/5/2017 15:00	3.75	14.277	29.923	8.934
12/5/2017 15:00	4	14.281	18.071	14.067
12/5/2017 15:00	4.25	14.247	17.588	14.277
12/5/2017 15:00	4.5	14.28	17.001	14.531
12/5/2017 15:00	4.75	14.255	11.722	16.817
12/5/2017 15:00	5	14.266	14.328	15.688
12/5/2017 15:00	5.25	14.286	15.918	15
12/5/2017 15:00	5.5	14.254	16.955	14.551
12/5/2017 15:00	5.75	14.267	18.32	13.959
12/5/2017 15:00	6	14.275	18.696	13.797
12/5/2017 15:00	6.36	14.264	19.746	13.342
12/5/2017 15:00	6.72	14.288	19.921	13.266
12/5/2017 15:00	7.14	14.264	20.884	12.849
12/5/2017 15:00	7.56	14.231	21.57	12.552
12/5/2017 15:00	7.98	14.252	21.294	12.671
12/5/2017 15:00	8.46	14.27	22.192	12.282
12/5/2017 15:00	9	14.26	22.857	11.995
12/5/2017 15:00	9.48	14.29	22.987	11.938
12/5/2017 15:00	10.08	14.259	23.29	11.807
12/5/2017 15:00	10.68	14.28	24.012	11.494
12/5/2017 15:00	11.28	14.279	23.842	11.568
12/5/2017 15:00	11.94	14.254	23.678	11.639
12/5/2017 15:00	12.66	14.301	24.444	11.307
12/5/2017 15:00	13.44	14.256	23.88	11.552
12/5/2017 15:00	14.22	14.251	24.263	11.386
12/5/2017 15:00	15.06	14.277	24.934	11.095
12/5/2017 15:00	15.96	14.282	24.977	11.076
12/5/2017 15:00	16.92	14.238	25.187	10.986
12/5/2017 15:00	17.88	14.261	25.266	10.951
12/5/2017 15:00	18.96	14.273	25.464	10.866
12/5/2017 15:00	20.1	14.261	25.569	10.82
12/5/2017 15:00	21.3	14.299	25.445	10.874
12/5/2017 15:00	22.56	14.301	25.237	10.964
12/5/2017 15:00	23.88	14.295	25.221	10.971
12/5/2017 15:00	25.32	14.288	25.411	10.889
12/5/2017 15:00	26.82	14.293	25.852	10.697
12/5/2017 15:00	28.38	14.279	25.801	10.719
12/5/2017 15:00	30.06	14.299	26.028	10.621
12/5/2017 15:00	31.86	14.309	25.602	10.806
12/5/2017 15:00	33.72	14.3	25.629	10.794
12/5/2017 15:00	35.76	14.327	25.796	10.722
12/5/2017 15:00	37.86	14.335	25.725	10.752
12/5/2017 15:00	40.08	14.323	25.575	10.817
12/5/2017 15:00	42.48	14.365	26.523	10.407
12/5/2017 15:00	45	14.333	25.844	10.701

8 Inch Public Supply Well Recovery Data

Report Date: 2/26/2018 8:29
Report User Name Peter
Report Computer | PETER-PC2
Application: WinSitu.exe
Application Version | 5.6.27.1

Log File Properties

File Name Test Well Rec_Append_2017-12-14_10-24-45-294.wsl
Create Date 12/14/2017 10:24

Device Properties

Device Level TROLL 700
Site Sand Hill Development
Device Name
Serial Number 383456
Firmware Version 3
Hardware Version 4
Device Address 1
Device Comm Cfg 19200 8 Even 1 (Modbus-RTU)
Used Memory 4
Used Battery 17

Log Configuration

Log Name Test Well Rec
Created By Peter
Computer Name PETER-PC2
Application WinSitu.exe
Application Version 5.6.27.1
Create Date 12/7/2017 2:47:46 PM Eastern Standard Time
Log Setup Time Zone Eastern Standard Time
Notes Size(bytes) 4096
Overwrite when full Disabled
Scheduled Start Time 12/7/2017 3:00:00 PM Eastern Standard Time
Scheduled Stop Time 12/10/2017 3:00:00 PM Eastern Standard Time
Type True Logarithmic
Duration Days: 3 hrs: 00 mins: 00 secs: 00
Max Interval Days: 0 hrs: 00 mins: 05 secs: 00

Level Reference Settings At Log Creation

Level Measurement Level Depth To Water
Specific Gravity 0.999
Level Reference McSet new reference
Level Reference Value 28.52 (ft)
Level Reference Head Pressure 9.87124 (PSI)

Other Log Settings

Depth of Probe: 21.9756 (ft)
Head Pressure: 9.51748 (PSI)

8 Inch Public Supply Well Recovery Data

Temperature: 14.649 (C)

Log Notes:

Date and Time	Note
12/7/2017 14:47	Used Battery: 17% Used Memory: 6% User Name: Peter
12/7/2017 15:14	Log Download - Used Battery: 17% Used Memory: 6% User Name: Peter
12/7/2017 15:26	Log Download - Used Battery: 17% Used Memory: 6% User Name: Peter

Log Data:

Record Count 989

Sensors 1

1 383456 Pressure/Temp 100 PSIG (70m/231ft)

Time Zone: Eastern Standard Time

Date and Time	Elapsed Time Seconds	Sensor: Pre SN#: 383456	Sensor: Pre SN#: 383456	Sensor: Pres(G) SN#: 383456	231ft Temperature Level Dept Pressure (PSI)
12/7/2017 15:00	0	14.618	27.371	10.369	
12/7/2017 15:00	0.251	14.629	27.243	10.424	
12/7/2017 15:00	0.501	14.66	27.154	10.463	
12/7/2017 15:00	0.751	14.636	26.334	10.818	
12/7/2017 15:00	1.001	14.635	26.378	10.799	
12/7/2017 15:00	1.251	14.629	25.812	11.044	
12/7/2017 15:00	1.501	14.637	24.961	11.413	
12/7/2017 15:00	1.751	14.64	23.881	11.88	
12/7/2017 15:00	2.001	14.657	23.686	11.965	
12/7/2017 15:00	2.251	14.669	23.197	12.177	
12/7/2017 15:00	2.501	14.658	22.784	12.355	
12/7/2017 15:00	2.751	14.652	22.349	12.544	
12/7/2017 15:00	3.001	14.648	21.901	12.738	
12/7/2017 15:00	3.251	14.631	21.411	12.95	
12/7/2017 15:00	3.501	14.629	20.842	13.197	
12/7/2017 15:00	3.751	14.646	20.329	13.419	
12/7/2017 15:00	4.001	14.661	19.83	13.635	
12/7/2017 15:00	4.251	14.642	19.395	13.823	
12/7/2017 15:00	4.501	14.665	19.005	13.992	
12/7/2017 15:00	4.751	14.643	18.697	14.125	
12/7/2017 15:00	5.001	14.673	18.237	14.325	
12/7/2017 15:00	5.251	14.649	17.938	14.454	
12/7/2017 15:00	5.501	14.651	17.656	14.576	
12/7/2017 15:00	5.751	14.666	17.403	14.686	
12/7/2017 15:00	6.001	14.663	17.171	14.786	
12/7/2017 15:00	6.36	14.63	16.793	14.95	
12/7/2017 15:00	6.721	14.678	16.538	15.061	
12/7/2017 15:00	7.14	14.613	16.216	15.2	
12/7/2017 15:00	7.56	14.657	15.989	15.298	

6-Inch Existing Irrigation Well Drawdown Data

Report Date: 2/26/2018 8:28
Report User Name: Peter
Report Computer Name: PETER-PC2
Application: WinSitu.exe
Application Version: 5.6.27.1

Log File Properties

File Name 6-inchg obs CTR2_Append_2017-12-07_14-37-23-280.wsl
Create Date 12/7/2017 14:37

Device Properties

Device Level TROLL 700
Site Sand Hill Development
Device Name
Serial Number 383470
Firmware Version 3
Hardware Version 4
Device Address 1
Device Comm Cfg 19200 8 Even
Used Memory 12
Used Battery 16

Log Configuration

Log Name 6-inchg obs CTR2
Created By Peter
Computer Name PETER-PC2
Application WinSitu.exe
Application Version 5.6.27.1
Create Date 12/5/2017 2:48:19 PM Eastern Standard Time
Log Setup Time Zone Eastern Standard Time
Notes Size(bytes) 4096
Overwrite when full Disabled
Scheduled Start Time 12/5/2017 3:00:00 PM Eastern Standard Time
Scheduled Stop Time 12/8/2017 3:00:00 PM Eastern Standard Time
Type True Logarithmic
Duration Days: 3 hrs: 00 mins: 00 secs: 00
Max Interval Days: 0 hrs: 00 mins: 05 secs: 00

Level Reference Settings At Log Creation

Level Measurement N Level Depth To Water
Specific Gravity 0.999
Level Reference Mod Set new reference
Level Reference Value 10.13 (ft)
Level Reference Head Pressure 8.76106 (PSI)

6-Inch Existing Irrigation Well Drawdown Data

Other Log Settings

Depth of Probe: 20.204 (ft)
 Head Pressure: 8.75021 (PSI)
 Temperature: 15.0825 (C)

Log Notes:

Date and Time	Note
12/5/2017 14:48	Used Battery: 16% Used Memory: 14% User Name: Peter
12/5/2017 15:15	Log Download - Used Battery: 16% Used Memory: 14% User Name: Peter
12/7/2017 14:36	Used Battery: 17% Used Memory: 14% User Name: Peter
12/7/2017 14:36	Manual Stop Command

Log Data:

Record Count	696
Sensors	1
	1 383470 Pressure/Temp 100

Time Zone: Eastern Standard Time

Date and Time	Elapsed Time Seconds	Sensor: Pres(G) 231ft SN#: 383470 Temperature (C)	Sensor: Pres(G) 231 SN#: 383470 Level Depth To Wat
12/5/2017 15:00	0	15.051	10.145
12/5/2017 15:00	0.251	15.096	10.111
12/5/2017 15:00	0.501	15.103	10.156
12/5/2017 15:00	0.751	15.104	10.131
12/5/2017 15:00	1.001	15.109	10.095
12/5/2017 15:00	1.251	15.126	10.164
12/5/2017 15:00	1.501	15.136	10.121
12/5/2017 15:00	1.751	15.112	10.074
12/5/2017 15:00	2.001	15.106	10.115
12/5/2017 15:00	2.251	15.12	10.148
12/5/2017 15:00	2.501	15.104	10.171
12/5/2017 15:00	2.751	15.127	10.159
12/5/2017 15:00	3.001	15.123	10.136
12/5/2017 15:00	3.251	15.101	10.125
12/5/2017 15:00	3.501	15.135	10.125
12/5/2017 15:00	3.751	15.148	10.118
12/5/2017 15:00	4.001	15.125	10.103
12/5/2017 15:00	4.251	15.15	10.145

6-Inch Existing Irrigation Well Recovery Data

Report Date: 2/26/2018 8:29
Report User Name: Peter
Report Computer Name: PETER-PC2
Application: WinSitu.exe
Application Version: 5.6.27.1

Log File Properties

File Name 6-inch REC_Append_2017-12-14_10-22-04-968.wsl
Create Date 12/14/2017 10:22

Device Properties

Device Level TROLL 700
Site Sand Hill Development
Device Name
Serial Number 383470
Firmware Version 3
Hardware Version 4
Device Address 1
Device Comm Cfg 19200 8 Even 1 (Modbus-RTU)
Used Memory 14
Used Battery 17

Log Configuration

Log Name 6-inch REC
Created By Peter
Computer Name PETER-PC2
Application WinSitu.exe
Application Version 5.6.27.1
Create Date 12/7/2017 2:39:15 PM Eastern Standard Time
Log Setup Time Zone Eastern Standard Time
Notes Size(bytes) 4096
Overwrite when full Disabled
Scheduled Start Time 12/7/2017 3:00:00 PM Eastern Standard Time
Scheduled Stop Time 12/10/2017 3:00:00 PM Eastern Standard Time
Type True Logarithmic
Duration Days: 3 hrs: 00 mins: 00 secs: 00
Max Interval Days: 0 hrs: 00 mins: 05 secs: 00

Level Reference Settings At Log Creation

Level Measurement Level Depth To Water
Specific Gravity 0.999
Level Reference M Set new reference
Level Reference Va 11.9 (ft)
Level Reference Head P 7.98874 (PSI)

6-Inch Existing Irrigation Well Recovery Data

Other Log Settings

Depth of Probe: 18.3883 (ft)
 Head Pressure: 7.96386 (PSI)
 Temperature: 15.1318 (C)

Log Notes:

Date and Time Note
 12/7/2017 14:39 Used Battery: 17% Used Memory: 15% User Name: Peter
 12/7/2017 15:20 Log Download - Used Battery: 17% Used Memory: 15% User Name: Peter

Log Data:

Record Count 989

Sensors

1
 1 383470 Pressure/Temp 100 PSIG (70m/231ft)

Time Zone: Eastern Standard Time

Date and Time	Elapsed Time Seconds	Sensor: Pre Sensor: Pre Sensor: Pres(G) 231ft SN#: 38347 SN#: 38347 SN#: 383470			
		Temperatu	Level	Deptl	Pressure (PSI)
12/7/2017 15:00	0	15.153	11.926	7.977	
12/7/2017 15:00	0.251	15.119	11.908	7.985	
12/7/2017 15:00	0.501	15.132	11.935	7.974	
12/7/2017 15:00	0.751	15.146	11.887	7.994	
12/7/2017 15:00	1.001	15.155	11.903	7.987	
12/7/2017 15:00	1.251	15.134	11.914	7.983	
12/7/2017 15:00	1.501	15.126	11.883	7.996	
12/7/2017 15:00	1.751	15.136	11.891	7.993	
12/7/2017 15:00	2.001	15.148	11.875	8	
12/7/2017 15:00	2.251	15.122	11.913	7.983	
12/7/2017 15:00	2.501	15.143	11.887	7.994	
12/7/2017 15:00	2.751	15.141	11.927	7.977	
12/7/2017 15:00	3.001	15.145	11.922	7.979	
12/7/2017 15:00	3.251	15.145	11.931	7.975	
12/7/2017 15:00	3.501	15.162	11.92	7.98	
12/7/2017 15:00	3.751	15.16	11.891	7.993	
12/7/2017 15:00	4.001	15.151	11.922	7.979	
12/7/2017 15:00	4.251	15.151	11.953	7.966	
12/7/2017 15:00	4.501	15.152	11.852	8.01	
12/7/2017 15:00	4.751	15.13	11.87	8.002	