

Integrating Data from the South Carolina Department of Natural Resources into the National Ground-Water Monitoring Network



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Background

On October 1, 2015 the South Carolina Department of Natural Resources (DNR) entered into a cooperative agreement with the United States Geological Survey (USGS) to become a new data provider for the National Ground-Water Monitoring Network (NGWMN). The award was for a one-year period to identify and classify wells in existing DNR networks that could be integrated into the NGWMN and to establish web services to provide the data to the NGWMN web portal. The award period ended on September 30, 2016. This report documents the activities undertaken by DNR during the award period.

The NGWMN “is a product of the Subcommittee on Ground Water of the Federal Advisory Committee on Water Information (ACWI). The NGWMN is a compilation of selected groundwater monitoring wells from Federal, State, and local groundwater monitoring networks across the nation. The NGWMN Data Portal provides access to groundwater data from multiple, dispersed databases in a web-based mapping application. The portal contains current and historical data including water levels, water quality, lithology, and well construction.”

Existing DNR Groundwater Monitoring Networks

Continuous Groundwater Level Monitoring Network

DNR maintains a network of wells to monitor groundwater levels of the major aquifers in the State. Data from the network are used to assess groundwater availability, monitor drought conditions, and calibrate hydrologic models. Water levels in most network wells have been measured since the mid-to-late 1990s, and about one-third of the wells have water-level data going back more than 20 years, with one as far back as 1955. Measurements prior to the mid-1990s were made primarily by the USGS in wells that were originally maintained by that agency and which later became part of the DNR groundwater network.

Water levels are measured both manually and automatically. The majority of wells in the network are equipped with automated data recorders (ADRs), which measure and record water levels every hour. Data stored in these recorders are downloaded during periodic site visits, usually once every two months, at which time manual measurements are also made to verify the accuracy of the water-level recorders. Water levels in wells not equipped with ADRs are measured manually during periodic site visits, typically on a bimonthly basis, using an electric measuring tape or pressure gauge. Locations of wells in the South Carolina Groundwater Monitoring Network are identified in Figure 1.

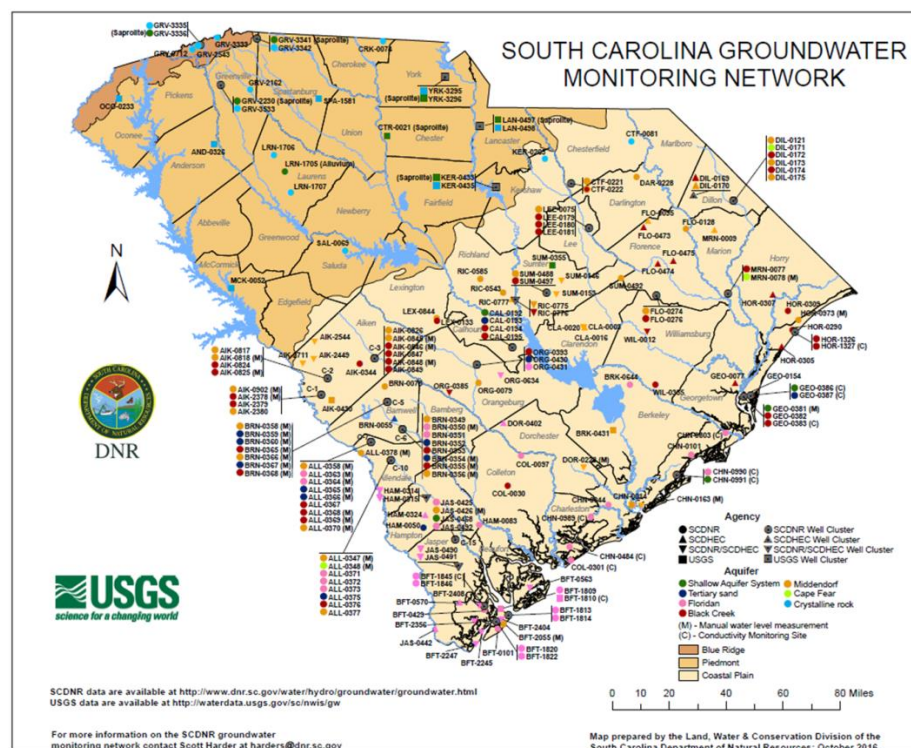


Figure 1. Locations of wells in the South Carolina Groundwater Monitoring Network.

Goals of the DNR Monitoring Network

Increase the number of groundwater-level monitoring wells

An overall goal of the program is to have an adequate number of wells in the network to generate accurate, statewide potentiometric maps of each aquifer. Because there are currently not enough wells in the existing network, the development of potentiometric maps is dependent upon water-level data collected from wells that are owned by outside entities, such as municipalities, industries, and private citizens. These additional wells are not always available to be measured and can be permanently lost to abandonment over time. It is expected to take many years to accomplish this goal. Currently, about 135 wells are used to make a potentiometric map of the Middendorf aquifer, 100 to make a Black Creek map, and 200 to make a Floridan map. A shorter-term goal is to establish at least one complete well-cluster site in each of the 28 Coastal Plain counties. A complete cluster site is one that has a core, preferably to bedrock, and nearby wells screened in each of the major aquifers.

Develop a network of drought-assessment monitoring wells

Another long-term goal is to have a statewide, real-time drought-assessment network composed of relatively shallow monitoring wells that are linked to the office via telemetry systems. These wells should preferably be screened in the shallow (water-table) aquifer system, be located on higher ground between streams where groundwater levels are less directly influenced by surface water, and be located away from major pumping centers. The purpose of this network would be to provide near real-time groundwater levels to water managers, drought committee members, and the State Drought Coordinator before, during, and after droughts. Such information will be used, along with other hydrologic and meteorological data, to assess the severity of droughts. Six such sites have been established and five other sites are under construction.

Develop a network of saltwater-intrusion monitoring wells

Another long-term goal is to develop a saltwater-intrusion network composed of monitoring wells located along the coast that are equipped with conductivity probes. Water samples will be collected periodically to ground-truth the conductivity data, and fluid conductivity and temperature geophysical logs will be obtained annually or biennially from the wells. Initially, the goal will be to develop a network of wells that are completed in the shallow aquifer system and in the uppermost confined aquifer in the area. The uppermost confined aquifer is the Floridan aquifer in Jasper and Beaufort Counties (Upper and Middle Floridan aquifers), the lower part of the Tertiary sand aquifer in Colleton and Charleston Counties (Gordon aquifer), and the Black Creek aquifer in Georgetown

and Horry Counties (Crouch Branch aquifer). Over time, wells from deeper aquifers and wells farther inland will be added to the network. This network will provide information to water managers and planners about the occurrence and movement of saltwater into freshwater aquifers along the coast.

Potentiometric Mapping Well Network

Given the sparse spatial distribution of monitoring sites in the DNR groundwater Monitoring Network it is necessary to utilize other existing wells in order to generate Potentiometric Maps of the Major Aquifers in South Carolina. This network of wells is referred to as the Potentiometric Well Network. These wells are not owned or maintained by DNR but are made available by the owners for gathering water level data. Measurements are typically taken on a three-year interval rotating between the major aquifers of the coastal plain. Measurements are made manually using an electric measuring tape, steel measuring tape or pressure gauge. Data are collected by the DNR, the Savannah River National Laboratory, the South Carolina Department of Health and Environmental Control (DHEC), and the USGS.

NGWMN Site Selection and Monitoring Category Classification

Based on the Guidance provided by the NGWMN sites were selected from both the DNR Groundwater Monitoring Network and the Potentiometric Mapping Well Networks. Sites were selected based on their period of record, anticipated future monitoring, spatial distribution and value to answering trans-boundary issues. After sorting sites based on period of record and anticipated future availability of the monitoring sites, wells were evaluated for inclusion or exclusion in the NGWMN by a committee of hydrologist from DNR. Sites from the Groundwater Monitoring Network are considered Trend Sites for the frequency of data collection. Surveillance Sites were selected from wells in the Potentiometric Mapping Well Networks. The resulting selection identified 137 Trend and 301 Surveillance wells for inclusion into the NGWMN.

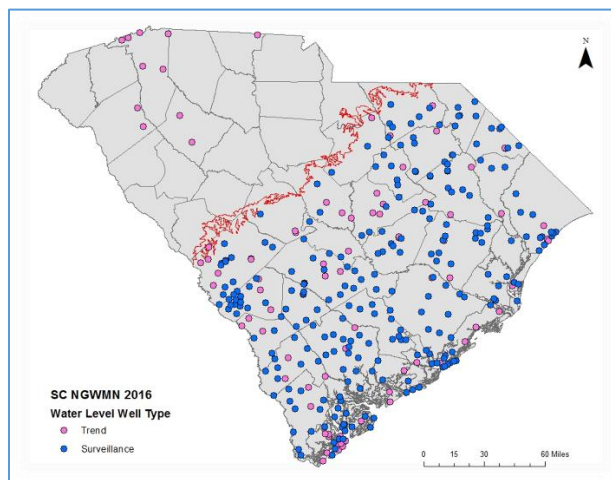


Figure 2. Sites selected for inclusion in the NGWMN.

NGWMN Subnetwork Classification

Using the guidance provided from the NGWMN, the wells selected for inclusion in the National network were classified into Subcategories. A committee of hydrologists from DNR examined the data available for each well. Hydrographs were created and examined to identify wells that had documented anthropogenic changes. Potentiometric maps were used to identify wells that are located within a documented cone of depression. Additionally, water-use data collected from DHEC was examined to identify wells where changes in water levels may be anticipated.

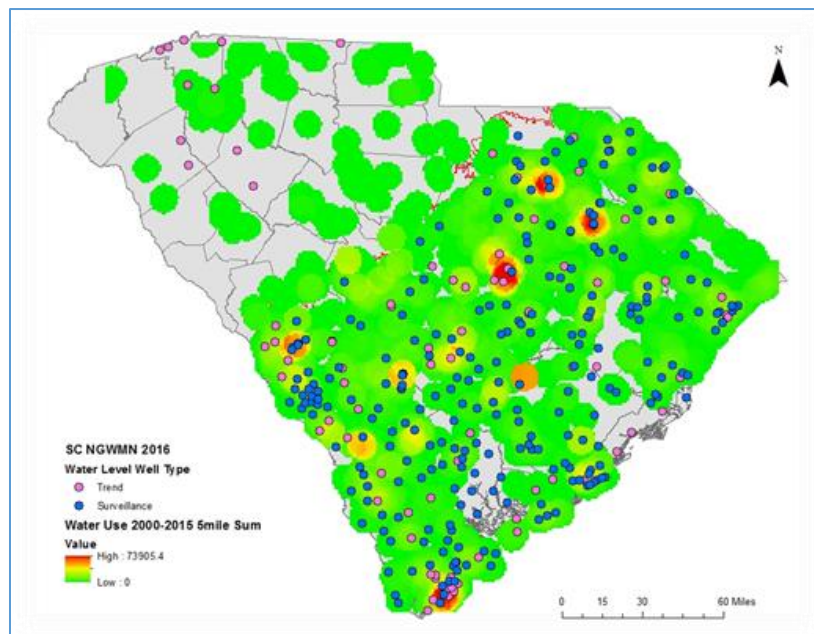


Figure 3: Water use from DHEC is overlain on wells identified for inclusion in the NGWMN.

Wells located away from areas of high reported water use and where no documented declines in water levels were observed, were assigned to the Background Subnetwork. Wells that had data suggesting anthropogenic impacts or in areas of high water demand were assigned to the Suspected/ Anticipated Changes Subnetwork. Wells with documented declines or wells that were located within cones of depression identified by potentiometric mapping were assigned to the Documented Changes Subnetwork. The maps in figures 4 through 10 show the location and subnetwork classification of wells included in the NGWMN separated by local aquifer designation.

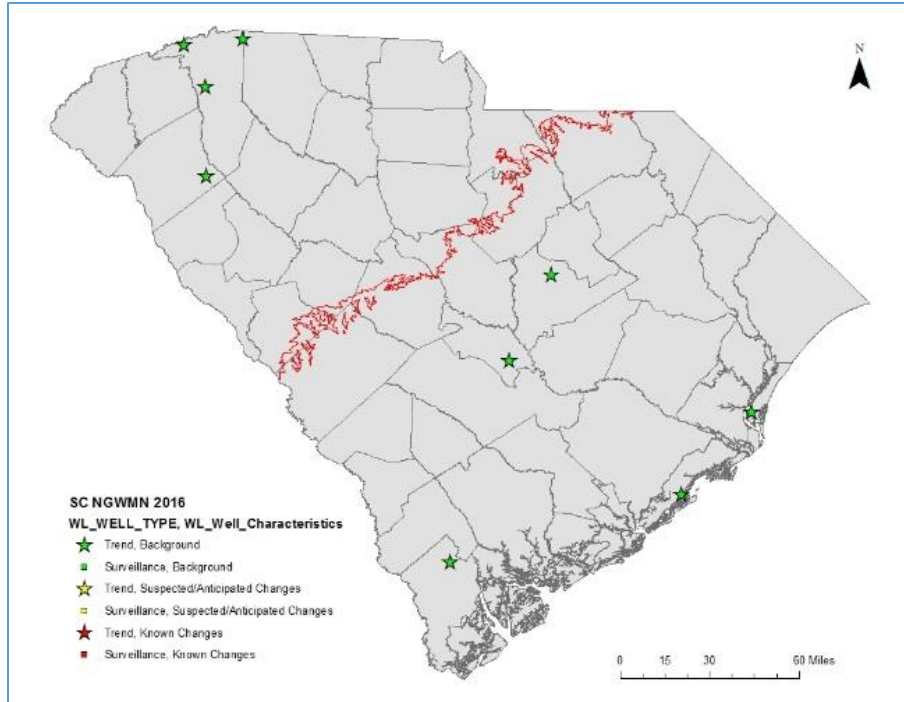


Figure 4. Surficial wells.

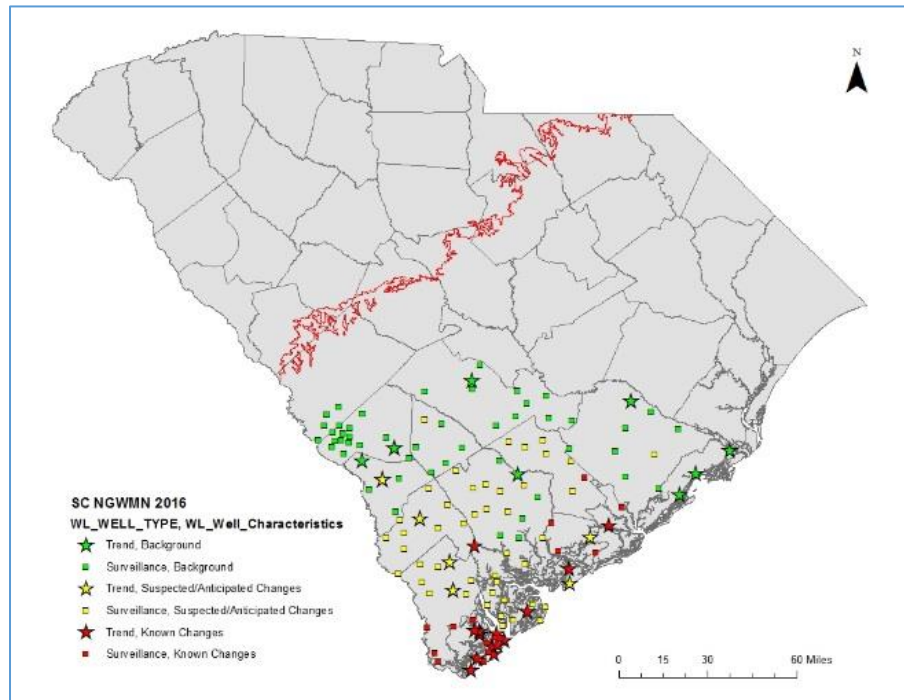


Figure 5. Floridan wells.

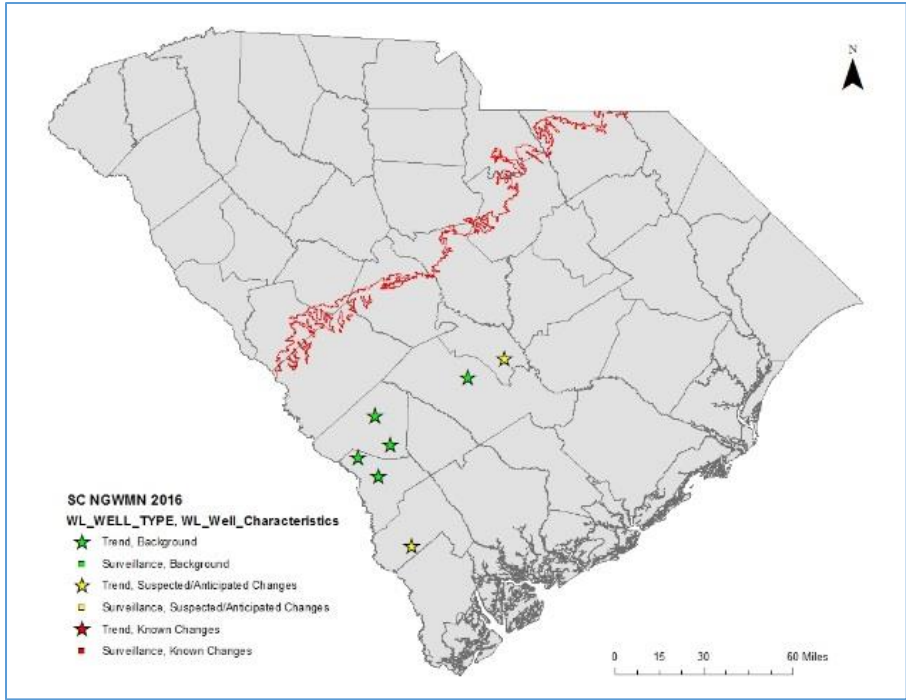


Figure 6. Tertiary Sand wells.

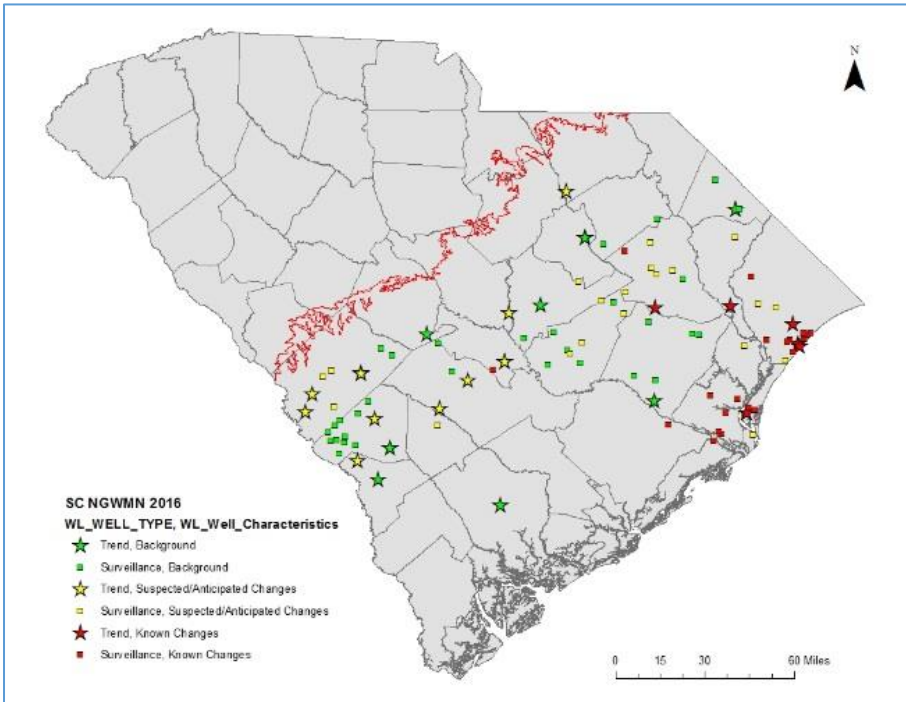


Figure 7. Black Creek wells.

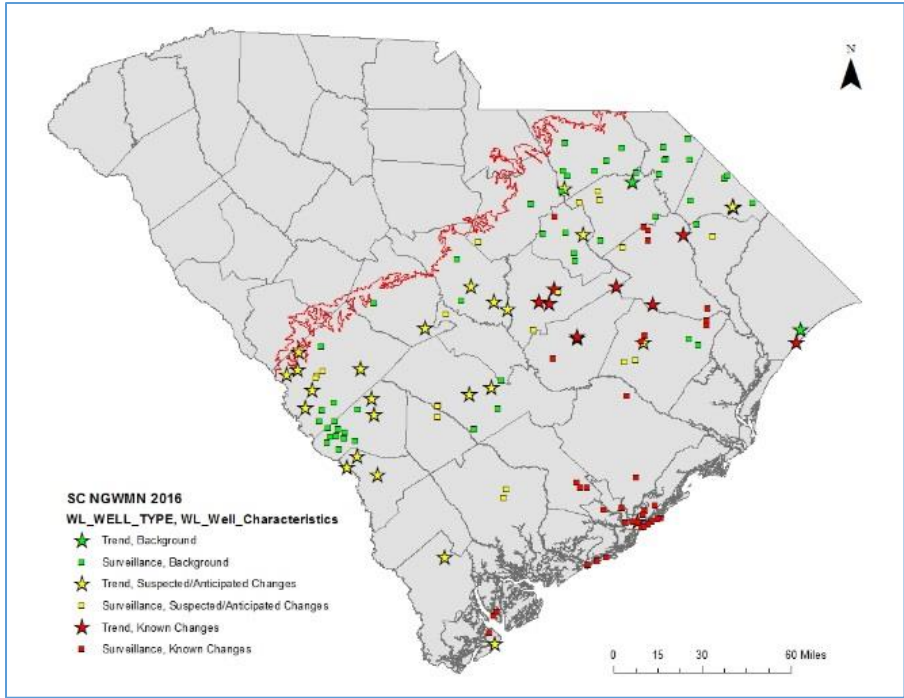


Figure 8. Middendorf wells.

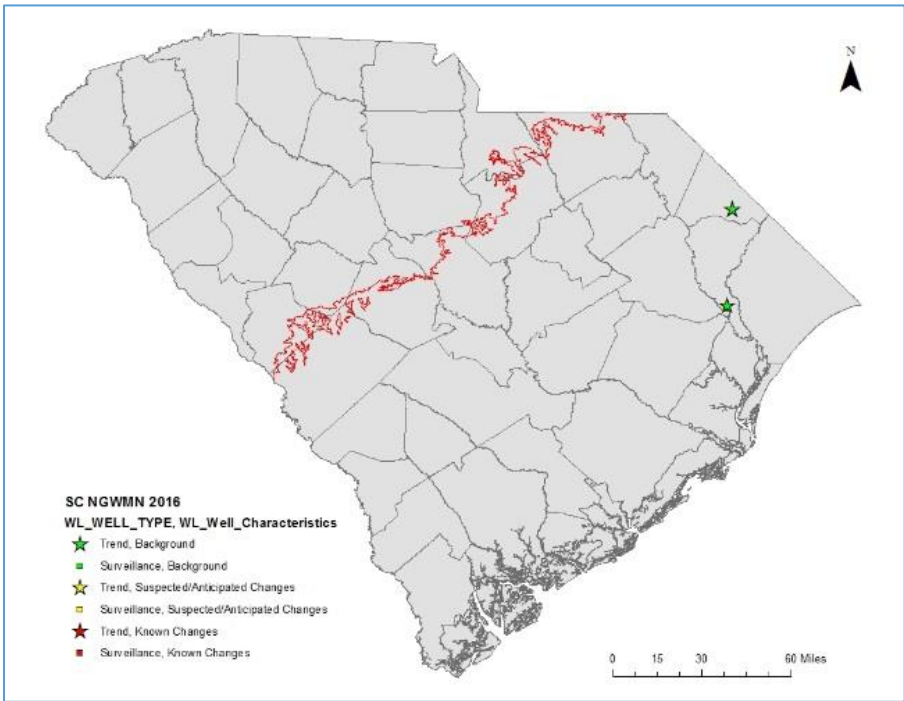


Figure 9. Cape Fear wells.

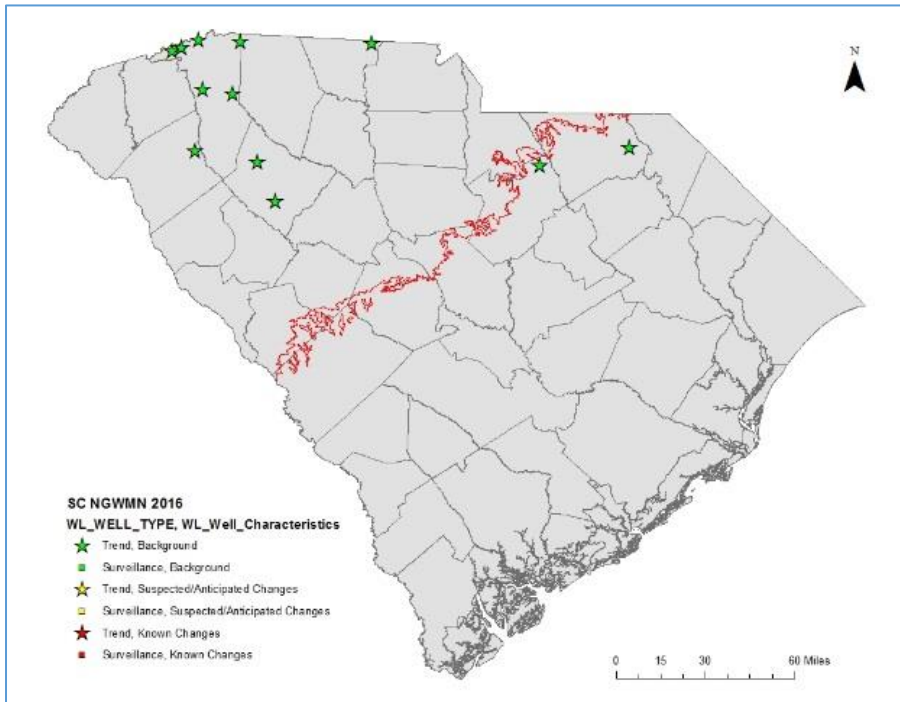


Figure 10: Crystalline rock wells and their classification.

Field Techniques for Water Level Data Collection

Site Visits

All DNR monitoring network sites classified as Trend Sites in the NGWMN are currently visited at least six times per year. During each site visit and for every well, a manual water-level measurement is taken from the designated measuring point and recorded in a field book along with the date and time of the measurement. For wells equipped with ADRs, current or real-time readings are obtained from the ADRs (for both water-level sensors and barometric sensors, if applicable) and recorded in a field book. Data are downloaded from the ADRs and evaluated on site to check instrument performance. For pressure transducers, the sum of the sensor's current water-level reading (height of water above probe, corrected for barometric pressure, if applicable) and corresponding manual measurement (depth to water) is calculated during each site visit. This sum, called the cable length, should be the same value for each site visit. Comparing cable length values from consecutive site visits is a means of assessing transducer performance. A minor change in cable length (0.2 ft or less for most transducers) indicates that a potential instrument fault may exist, but the ADR is not typically replaced. When cable-length tolerances are exceeded repeatedly after additional site visits, either the ADR is recalibrated, or an instrument failure is confirmed, in which case the transducer is replaced and the associated records are not added to the groundwater database. For newer transducers, the cable-length variations observed between consecutive site visits typically have been less than 0.10 ft. Site maintenance includes replacing saturated desiccant packs at sites equipped with vented transducers; the desiccant prevents the buildup of moisture in the transducer's vent tube, which can cause faulty water-level readings and damage the equipment. Other maintenance procedures include checking for battery failure, communication errors, and spurious data spikes caused by lightning or other electromagnetic interference. Malfunctioning equipment, either ADRs or direct-read cables, are diagnosed and replaced or repaired as needed. Any issues with or changes to instrumentation are documented in a field book. A complete description of standard field operating procedures is included in Appendix B. ADR water-level probes used in the DNR network include: Schlumberger® Diver®, Solinst® Levellogger®, and In-Situ® AquaTroll®, which also measures conductivity.

DNR sites that are classified in the NGWMN as Surveillance Sites are typically visited once every three years around November. These sites are manually measured using a variety of E-tapes, Steel Tapes and Pressure Gauges. Wells are required to be shut down and allowed to recover before measurements are taken. Measurements are recorded on field sheets provided by DNR.

Automated Measurements

Two types of water-level sensors—shaft encoders and pressure transducers—historically have been used for automated monitoring stations whose readings are calibrated to manual measurements. By the summer of 2014, all shaft encoders were removed and replaced with pressure transducers. Shaft encoders measure depth to water and consist of a float, counterweight, cable, and pulley assembly. The float and counterweight hang freely inside the well, connected by a cable that runs over a pulley mounted near the top of the well. As the water

level in the well changes, the float also moves, causing the pulley to rotate. The rotation of the pulley is measured optically or electronically, and that movement is translated into a measurement of the change in water level. Shaft encoders have a rated accuracy and resolution of 0.01 ft (feet).

Pressure transducers are installed in wells at fixed depths, below the expected range of water levels, and provide a measurement of the height of water above the sensor. The sensor contains a semiconductor strain gage: Changes in the height of water above the sensor changes the pressure on the sensor, which deforms the crystalline lattice of the sensor's silicon diaphragm, changing the sensor's electrical resistance (piezoresistive effect) to a constant input voltage, thus changing the output voltage. Water depth is computed from the output voltage measurement. Three brands of pressure transducers currently are utilized within the network: Schlumberger® Divers®, Solinst® Leveloggers®, and In-Situ® AquaTrolls®. Pressure transducers are deployed in wells using direct-read cables, which eliminates the need to remove the sensor from the well in order to download data. Most transducers in the network have a measurement range of 0–65 ft and an accuracy and resolution of less than 0.07 ft and 0.01 ft, respectively. Most transducers are not vented to the atmosphere and thus measure the combined pressure of both the water column and the atmosphere. Because unvented transducers require barometric compensation to remove the effect of atmospheric pressure, barometric data are collected at strategic sites throughout the State. Efforts are made to ensure that a barometric monitoring site is located within 20 miles of each unvented monitoring well. Vented transducers, which have sensors open to the atmosphere via a vent tube and thus require no barometric compensation, are installed in a few wells along the coast. Water-level and barometric transducers are synchronized with one another and record data every hour. Shaft encoders also recorded water levels every hour. A copy of the Standard Operating Procedures can be found in Appendix B

Manual Measurements

Manual water-level measurements or “tape downs” are typically made using an electric tape, which consists of a pair of wires set inside an insulated sheath, the outside of which is marked like a measuring tape. The wires are attached to a steel probe at the bottom of the tape, but the design of the probe is such that there is a small gap between the two wires, keeping an electric circuit open. The tape is lowered into the well until the probe reaches water, which completes the electrical circuit and sounds a buzzer, indicating that the tape has reached water. The operator then reads the depth measurement on the tape, indicating depth of water from the measuring point. Where well construction will not allow for the use of an electric tape a steel tape may be used. At some sites, the groundwater is under enough pressure to cause the water level in a well to rise above the height of the well casing, and if the well were uncapped, water would flow freely from the well. Water levels in these flowing artesian wells cannot be measured using the typical tape-down procedure; instead, a pressure gage is attached to the well and the water pressure inside the well is measured. The water pressure is then used to calculate to what height the water would rise if the well casing were high enough to contain it.

Groundwater Monitoring Network Data Processing and Storage

Collected data is typically processed and further reviewed for quality assurance within one to two weeks after a site visit. All data that have passed quality assurance checks are entered into an Oracle database that uses Microsoft Access as a user interface. The instrumentation history of each well is documented in the database. Documentation includes the

types and models of instruments deployed, dates of operation and performance history. In addition, the original field notes are kept and maintained for each well site, and copies are periodically produced in case field books are lost or damaged.

Data processing and storage for manual and automatically recorded data are as follows: Manual measurements, along with the date and time of the measurement, are entered into the Oracle database. These measurements indicate the depth to water from a specific measuring point on the well. The measuring point height (MPH) in feet above or below land surface for each well is stored in the database. An Access query is used to subtract the MPH from the raw manual measurement to compute a water level in feet below or above land surface. Changes in the MPH height, if any, are documented within the database. For ADR Data, the logged hourly measurements are stored in both raw-data and processed-data files. The raw-data files contain uncorrected (uncompensated) hourly measurements and reflect the readings and the performance of various sensors as they were originally stored in data loggers. Raw data are stored mainly “as is” and are archived at the DNR for insight into hardware conditions and for quality assurance. Processed data files consist of hourly water-level data that have been corrected (compensated) for barometric pressure (unvented transducers only). Computer software, specific to each brand of instrument deployed, is used to generate barometrically compensated files, which are also archived at the DNR. The software is also used to plot and review both the raw and compensated data at each ADR site as a final quality assurance check prior to entering the data in the database. When appropriate, data are winnowed of measurement anomalies and unreliable data thought to be the result of hardware failures. The real-time ADR reading (after barometric compensation, where applicable) is entered into the database and is used along with the corresponding manual measurement to compute a cable length value. The computed cable length value is confirmed to be within the allowed tolerance before any hourly data are added to the database (typically ± 0.20 ft). Logged hourly water-level measurements (after compensation, where appropriate) are imported into the Oracle database. These measurements reflect the height of the water column above the sensor and are permanently stored in the database. The well’s MPH and the transducer’s cable length value are used to convert the hourly readings to water levels in feet below or above land surface, which are also permanently stored in the database. Statistics Daily average water levels, in feet above or below land surface, are calculated from the hourly data for those days missing 7 or fewer hourly measurements. Monthly average water levels are calculated for each month having 5 or fewer days of missing record, while monthly high and low water-level values are recorded for each month having at least one day of data. Yearly averages are computed for each calendar year having 60 or fewer missing days of record, while yearly highs and lows are recorded for each year with at least one day of data. No statistics are calculated for wells that are manually measured owing to the relatively small number of data values available for such wells. Data collected from the network are available on the DNR website at <http://www.dnr.sc.gov/water/hydro/groundwater/index.html>.

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Appendix A: Sites Selected for inclusion in the National Groundwater Monitoring Network and Selected Attributes

Site ID	Latitude	Longitude	National Aquifer Name	Local Aquifer Name	Well Depth (Ft)	Aquifer_Type	WL Well Characteristics	WL_WELL_TYPE
AIK-0817	33.43806	-81.77083	Southeastern Coastal Plain Aquifer System	MIDDENDORF	535	Semiconfined	Suspected/Anticipated Changes	Trend
AIK-0824	33.43778	-81.77083	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	365	Semiconfined	Suspected/Anticipated Changes	Trend
AIK-0826	33.54306	-81.48556	Southeastern Coastal Plain Aquifer System	MIDDENDORF	500	Semiconfined	Suspected/Anticipated Changes	Trend
AIK-0847	33.54278	-81.48528	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	193	Unconfined	Suspected/Anticipated Changes	Trend
AIK-0849	33.54222	-81.48500	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	97	Unconfined	Suspected/Anticipated Changes	Trend
AIK-2379	33.35278	-81.81000	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	266	Semiconfined	Suspected/Anticipated Changes	Trend
AIK-2380	33.35278	-81.80972	Southeastern Coastal Plain Aquifer System	MIDDENDORF	385	Confined	Suspected/Anticipated Changes	Trend
AIK-2449	33.53944	-81.85500	Southeastern Coastal Plain Aquifer System	MIDDENDORF	339	Unconfined	Suspected/Anticipated Changes	Trend
AIK-2544	33.62528	-81.85000	Southeastern Coastal Plain Aquifer System	MIDDENDORF	142	Unconfined	Suspected/Anticipated Changes	Trend
AIK-2711	33.51389	-81.92083	Southeastern Coastal Plain Aquifer System	MIDDENDORF	239	Unconfined	Suspected/Anticipated Changes	Trend
ALL-0358	33.11333	-81.50611	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1123	Confined	Suspected/Anticipated Changes	Trend
ALL-0363	33.11361	-81.50611	Floridan aquifer system	FLORIDAN	105	Unconfined	Background	Trend
ALL-0365	33.11361	-81.50611	Southeastern Coastal Plain Aquifer System	TERTIARY SAND	333	Confined	Background	Trend
ALL-0367	33.11333	-81.50611	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	566	Confined	Suspected/Anticipated Changes	Trend
ALL-0371	33.02472	-81.38472	Floridan aquifer system	FLORIDAN	217	Unconfined	Background	Trend
ALL-0372	33.02472	-81.38444	Floridan aquifer system	FLORIDAN	155	Confined	Background	Trend
ALL-0373	33.02500	-81.38417	Floridan aquifer system	FLORIDAN	372	Confined	Suspected/Anticipated Changes	Trend
ALL-0375	33.02500	-81.38500	Southeastern Coastal Plain Aquifer System	TERTIARY SAND	583	Confined	Background	Trend
ALL-0376	33.02500	-81.38472	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	994	Confined	Background	Trend
ALL-0377	33.02472	-81.38444	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1199	Confined	Suspected/Anticipated Changes	Trend
ALL-0378	33.06139	-81.56389	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1060	Confined	Suspected/Anticipated Changes	Trend
AND-0326	34.62267	-82.48188	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	398	Unconfined	Background	Trend
BFT-0101	32.16806	-80.74056	Floridan aquifer system	FLORIDAN	442	Confined	Known Changes	Trend
BFT-0429	32.26417	-80.82000	Floridan aquifer system	FLORIDAN	300	Confined	Known Changes	Trend
BFT-0563	32.37444	-80.54722	Floridan aquifer system	FLORIDAN	212	Confined	Known Changes	Trend
BFT-1809	32.26750	-80.72278	Floridan aquifer system	FLORIDAN	890	Confined	Known Changes	Trend
BFT-1813	32.23278	-80.67722	Floridan aquifer system	FLORIDAN	600	Confined	Known Changes	Trend
BFT-1814	32.23278	-80.67722	Floridan aquifer system	FLORIDAN	210	Confined	Known Changes	Trend
BFT-1820	32.20472	-80.74917	Floridan aquifer system	FLORIDAN	600	Confined	Known Changes	Trend
BFT-1822	32.20472	-80.74917	Floridan aquifer system	FLORIDAN	260	Confined	Known Changes	Trend
BFT-1845	32.28056	-80.82167	Floridan aquifer system	FLORIDAN	600	Confined	Known Changes	Trend
BFT-1846	32.28056	-80.82167	Floridan aquifer system	FLORIDAN	180	Confined	Known Changes	Trend
BFT-2055	32.19111	-80.70417	Southeastern Coastal Plain Aquifer System	MIDDENDORF	3708	Confined	Suspected/Anticipated Changes	Trend
BFT-2245	32.14806	-80.83778	Floridan aquifer system	FLORIDAN	250	Confined	Known Changes	Trend
BFT-2247	32.09028	-80.87194	Floridan aquifer system	FLORIDAN	261	Confined	Known Changes	Trend
BFT-2404	32.21306	-80.71722	Floridan aquifer system	FLORIDAN	261	Confined	Known Changes	Trend
BFT-2408	32.28444	-80.85139	Floridan aquifer system	FLORIDAN	232	Confined	Known Changes	Trend
BRK-0644	33.40417	-79.93389	Floridan aquifer system	FLORIDAN	93	Unconfined	Background	Trend
BRN-0078	33.39972	-81.42167	Southeastern Coastal Plain Aquifer System	MIDDENDORF	775	Confined	Suspected/Anticipated Changes	Trend
BRN-0349	33.17889	-81.31417	Floridan aquifer system	FLORIDAN	1045	Confined	Suspected/Anticipated Changes	Trend
BRN-0351	33.17861	-81.31472	Floridan aquifer system	FLORIDAN	95	Unconfined	Background	Trend
BRN-0352	33.17889	-81.31472	Southeastern Coastal Plain Aquifer System	TERTIARY SAND	293	Confined	Background	Trend

BRN-0353	33.17861	-81.31500	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	588	Confined	Background	Trend
BRN-0358	33.32056	-81.40778	Southeastern Coastal Plain Aquifer System	MIDDENDORF	847	Confined	Suspected/Anticipated Changes	Trend
BRN-0360	33.32083	-81.40778	Southeastern Coastal Plain Aquifer System	TERTIARY SAND	140	Unconfined	Background	Trend
BRN-0365	33.32111	-81.40750	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	537	Confined	Suspected/Anticipated Changes	Trend
BRN-0367	33.32111	-81.40778	Southeastern Coastal Plain Aquifer System	TERTIARY SAND	285	Confined	Background	Trend
CAL-0192	33.59861	-80.64778	Surficial aquifer system	SHALLOW	49	Unconfined	Background	Trend
CAL-0193	33.59861	-80.64778	Southeastern Coastal Plain Aquifer System	TERTIARY SAND	100	Confined	Suspected/Anticipated Changes	Trend
CAL-0194	33.59861	-80.64778	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	254	Confined	Suspected/Anticipated Changes	Trend
CAL-0195	33.59861	-80.64778	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	360	Confined	Suspected/Anticipated Changes	Trend
CHN-0044	32.79583	-80.07056	Floridan aquifer system	FLORIDAN	434	Confined	Known Changes	Trend
CHN-0101	33.04583	-79.56250	Floridan aquifer system	FLORIDAN	91	Unconfined	Background	Trend
CHN-0163	32.78806	-79.87167	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1919	Confined	Known Changes	Trend
CHN-0484	32.58194	-80.30611	Floridan aquifer system	FLORIDAN	560	Confined	Known Changes	Trend
CHN-0803	33.15583	-79.36389	Floridan aquifer system	FLORIDAN	112	Unconfined	Background	Trend
CHN-0989	32.73722	-80.17778	Floridan aquifer system	FLORIDAN	531	Confined	Suspected/Anticipated Changes	Trend
CHN-0990	32.94083	-79.65694	Floridan aquifer system	FLORIDAN	265	Confined	Background	Trend
CHN-0991	32.94056	-79.65694	Surficial aquifer system	SHALLOW	45	Unconfined	Background	Trend
CLA-0016	33.69389	-80.21278	Southeastern Coastal Plain Aquifer System	MIDDENDORF	610	Confined	Known Changes	Trend
CLA-0020	33.70000	-80.21361	Southeastern Coastal Plain Aquifer System	MIDDENDORF	650	Confined	Known Changes	Trend
COL-0030	32.89639	-80.67833	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	1340	Confined	Background	Trend
COL-0097	33.04778	-80.59778	Floridan aquifer system	FLORIDAN	500	Confined	Background	Trend
COL-0301	32.51167	-80.29944	Floridan aquifer system	FLORIDAN	545	Confined	Suspected/Anticipated Changes	Trend
CRK-0074	35.15529	-81.44278	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	265	Unconfined	Background	Trend
CTF-0081	34.64306	-79.91167	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	193	Unconfined	Background	Trend
CTF-0221	34.42889	-80.28278	Southeastern Coastal Plain Aquifer System	MIDDENDORF	260	Confined	Suspected/Anticipated Changes	Trend
CTF-0222	34.42889	-80.28278	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	175	Semiconfined	Suspected/Anticipated Changes	Trend
DAR-0228	34.45861	-79.88000	Southeastern Coastal Plain Aquifer System	MIDDENDORF	186	Confined	Background	Trend
DIL-0121	34.32833	-79.28306	Southeastern Coastal Plain Aquifer System	MIDDENDORF	294	Confined	Suspected/Anticipated Changes	Trend
DIL-0171	34.33028	-79.28694	Southeastern Coastal Plain Aquifer System	CAPE_FEAR	555	Confined	Background	Trend
DIL-0172	34.33028	-79.28694	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	175	Semiconfined	Background	Trend
DIL-0173	34.33028	-79.28694	Southeastern Coastal Plain Aquifer System	CAPE_FEAR	380	Confined	Background	Trend
DIL-0174	34.33028	-79.28694	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	75	Unconfined	Background	Trend
DIL-0175	34.33028	-79.28694	Southeastern Coastal Plain Aquifer System	MIDDENDORF	325	Confined	Suspected/Anticipated Changes	Trend
FLO-0128	34.19556	-79.58056	Southeastern Coastal Plain Aquifer System	MIDDENDORF	695	Confined	Known Changes	Trend
FLO-0274	33.85556	-79.76722	Southeastern Coastal Plain Aquifer System	MIDDENDORF	560	Confined	Known Changes	Trend
FLO-0276	33.85611	-79.76667	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	250	Confined	Known Changes	Trend
GEO-0381	33.33583	-79.24472	Surficial aquifer system	SHALLOW	43	Unconfined	Background	Trend
GEO-0382	33.33583	-79.24472	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	730	Confined	Known Changes	Trend
GEO-0383	33.33583	-79.24472	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	560	Confined	Known Changes	Trend
GRV-0712	35.10655	-82.62637	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	450	Unconfined	Background	Trend
GRV-2162	34.90461	-82.26334	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	281	Unconfined	Background	Trend
GRV-2230	34.92440	-82.44460	Surficial aquifer system	SHALLOW	20	Unconfined	Background	Trend
GRV-2543	35.12633	-82.57135	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	50	Unconfined	Background	Trend
GRV-3333	35.16612	-82.47139	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	264	Unconfined	Background	Trend

GRV-3335	35.12500	-82.57371	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	110	Unconfined	Background	Trend
GRV-3336	35.12500	-82.57371	Surficial aquifer system	SHALLOW	20	Unconfined	Background	Trend
GRV-3341	35.16075	-82.22469	Surficial aquifer system	SHALLOW	80	Unconfined	Background	Trend
GRV-3342	35.16075	-82.22469	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	334	Unconfined	Background	Trend
GRV-3533	34.92440	-82.44460	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	243	Unconfined	Background	Trend
HAM-0050	32.68000	-81.18889	Southeastern Coastal Plain Aquifer System	TERTIARY SAND	968	Semiconfined	Suspected/Anticipated Changes	Trend
HAM-0083	32.69722	-80.85083	Floridan aquifer system	FLORIDAN	156	Confined	Known Changes	Trend
HAM-0314	32.83028	-81.16583	Floridan aquifer system	FLORIDAN	122	Unconfined	Suspected/Anticipated Changes	Trend
HAM-0315	32.83028	-81.16583	Floridan aquifer system	FLORIDAN	568	Semiconfined	Suspected/Anticipated Changes	Trend
HOR-0290	33.67056	-78.93972	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	459	Confined	Known Changes	Trend
HOR-0309	33.76778	-78.96639	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	375	Confined	Known Changes	Trend
HOR-0973	33.72139	-78.90278	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1331	Confined	Background	Trend
HOR-1326	33.65722	-78.92681	Southeastern Coastal Plain Aquifer System	MIDDENDORF	600	Confined	Known Changes	Trend
HOR-1327	33.65708	-78.92686	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	440	Confined	Known Changes	Trend
JAS-0425	32.61778	-80.99583	Floridan aquifer system	FLORIDAN	225	Confined	Suspected/Anticipated Changes	Trend
JAS-0426	32.61833	-80.99583	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1994	Confined	Suspected/Anticipated Changes	Trend
JAS-0468	32.61778	-80.99583	Surficial aquifer system	SHALLOW	24	Unconfined	Background	Trend
JAS-0490	32.48167	-80.97278	Floridan aquifer system	FLORIDAN	558	Confined	Suspected/Anticipated Changes	Trend
JAS-0491	32.48167	-80.97278	Floridan aquifer system	FLORIDAN	220	Confined	Suspected/Anticipated Changes	Trend
JAS-0492	32.61806	-80.99556	Floridan aquifer system	FLORIDAN	600	Confined	Suspected/Anticipated Changes	Trend
KER-0263	34.55833	-80.44361	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	455	Unconfined	Background	Trend
LEE-0075	34.20250	-80.17444	Southeastern Coastal Plain Aquifer System	MIDDENDORF	356	Confined	Suspected/Anticipated Changes	Trend
LEE-0179	34.20222	-80.17444	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	243	Unconfined	Background	Trend
LEE-0180	34.20222	-80.17444	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	202	Unconfined	Background	Trend
LEE-0181	34.20222	-80.17444	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	75	Unconfined	Background	Trend
LEX-0823	33.73556	-81.10556	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	225	Confined	Background	Trend
LEX-0844	33.74611	-81.10750	Southeastern Coastal Plain Aquifer System	MIDDENDORF	522	Confined	Suspected/Anticipated Changes	Trend
LRN-1705	34.49074	-82.42902	Surficial aquifer system	SHALLOW	39	Unconfined	Background	Trend
LRN-1706	34.57085	-82.11377	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	168	Unconfined	Background	Trend
LRN-1707	34.38128	-82.00628	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	223	Unconfined	Background	Trend
MRN-0077	33.86194	-79.33056	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	356	Confined	Known Changes	Trend
MRN-0078	33.86194	-79.33056	Southeastern Coastal Plain Aquifer System	CAPE_FEAR	1038	Confined	Background	Trend
ORG-0079	33.41889	-80.85194	Southeastern Coastal Plain Aquifer System	MIDDENDORF	979	Confined	Suspected/Anticipated Changes	Trend
ORG-0385	33.36889	-81.03083	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	535	Confined	Suspected/Anticipated Changes	Trend
ORG-0393	33.50806	-80.86500	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	463	Confined	Suspected/Anticipated Changes	Trend
ORG-0430	33.50806	-80.86500	Southeastern Coastal Plain Aquifer System	TERTIARY SAND	275	Confined	Background	Trend
ORG-0431	33.50806	-80.86500	Floridan aquifer system	FLORIDAN	93	Unconfined	Background	Trend
ORG-0634	33.45444	-80.71833	Southeastern Coastal Plain Aquifer System	MIDDENDORF	256	Confined	Suspected/Anticipated Changes	Trend
RIC-0543	33.87500	-80.70222	Southeastern Coastal Plain Aquifer System	MIDDENDORF	420	Confined	Suspected/Anticipated Changes	Trend
RIC-0585	33.94889	-80.84083	Southeastern Coastal Plain Aquifer System	MIDDENDORF	403	Confined	Suspected/Anticipated Changes	Trend
RIC-0775	33.83722	-80.62528	Southeastern Coastal Plain Aquifer System	MIDDENDORF	607	Confined	Suspected/Anticipated Changes	Trend
RIC-0776	33.83722	-80.62528	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	107	Confined	Suspected/Anticipated Changes	Trend
SAL-0069	34.08786	81.66992	Piedmont and Blue Ridge crystalline-rock aquifers	CRYSTALLINE_ROCK	480	Unconfined	Background	Trend
SUM-0146	33.93611	-80.34556	Southeastern Coastal Plain Aquifer System	MIDDENDORF	554	Confined	Known Changes	Trend

SUM-0153	33.86500	-80.37667	Southeastern Coastal Plain Aquifer System	MIDDENDORF	643	Confined	Known Changes	Trend
SUM-0355	34.01639	-80.40194	Surficial aquifer system	SHALLOW	47	Unconfined	Background	Trend
SUM-0488	33.87444	-80.43778	Southeastern Coastal Plain Aquifer System	MIDDENDORF	546	Confined	Known Changes	Trend
SUM-0492	33.94556	-79.98000	Southeastern Coastal Plain Aquifer System	MIDDENDORF	522	Confined	Known Changes	Trend
SUM-0497	33.87444	-80.43778	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	100	Unconfined	Background	Trend
WIL-0012	33.67139	-79.82778	Southeastern Coastal Plain Aquifer System	MIDDENDORF	525	Confined	Suspected/Anticipated Changes	Trend
WIL-0355	33.40250	-79.77833	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	869	Confined	Background	Trend
AIK-0470	33.53000	-81.70583	Southeastern Coastal Plain Aquifer System	MIDDENDORF	433	Semiconfined	Suspected/Anticipated Changes	Surveillance
AIK-0497	33.55028	-81.65722	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	290	Semiconfined	Suspected/Anticipated Changes	Surveillance
AIK-0643	33.37722	-81.64056	Southeastern Coastal Plain Aquifer System	MIDDENDORF	625	Semiconfined	Background	Surveillance
AIK-0831	33.51000	-81.73917	Southeastern Coastal Plain Aquifer System	MIDDENDORF	485	Semiconfined	Suspected/Anticipated Changes	Surveillance
AIK-0859	33.37722	-81.64083	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	390	Semiconfined	Suspected/Anticipated Changes	Surveillance
AIK-0865	33.28667	-81.72194	Southeastern Coastal Plain Aquifer System	MIDDENDORF	695	Confined	Background	Surveillance
AIK-0867	33.37722	-81.64083	Floridan aquifer system	FLORIDAN	56	Unconfined	Background	Surveillance
AIK-0869	33.37722	-81.64083	Floridan aquifer system	FLORIDAN	147	Unconfined	Background	Surveillance
AIK-0871	33.37722	-81.64083	Southeastern Coastal Plain Aquifer System	MIDDENDORF	460	Confined	Background	Surveillance
AIK-0875	33.21444	-81.75889	Floridan aquifer system	FLORIDAN	135	Unconfined	Background	Surveillance
AIK-0877	33.21417	-81.75889	Floridan aquifer system	FLORIDAN	55	Unconfined	Background	Surveillance
AIK-0889	33.28667	-81.72194	Floridan aquifer system	FLORIDAN	195	Unconfined	Background	Surveillance
AIK-0892	33.33750	-81.70861	Southeastern Coastal Plain Aquifer System	MIDDENDORF	710	Confined	Background	Surveillance
AIK-0894	33.33778	-81.70861	Floridan aquifer system	FLORIDAN	285	Unconfined	Background	Surveillance
AIK-0897	33.33778	-81.70861	Floridan aquifer system	FLORIDAN	105	Unconfined	Background	Surveillance
AIK-2450	33.52472	-81.70889	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	430	Semiconfined	Suspected/Anticipated Changes	Surveillance
AIK-2468	33.66028	-81.36972	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	357	Semiconfined	Background	Surveillance
AIK-2564	33.62806	-81.30556	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	415	Semiconfined	Background	Surveillance
AIK-2712	33.49722	-81.74750	Southeastern Coastal Plain Aquifer System	MIDDENDORF	239	Semiconfined	Suspected/Anticipated Changes	Surveillance
AIK-2720	33.65389	-81.71556	Southeastern Coastal Plain Aquifer System	MIDDENDORF	115	Unconfined	Background	Surveillance
ALL-0330	33.02667	-81.28667	Floridan aquifer system	FLORIDAN	280	Confined	Background	Surveillance
ALL-0408	32.97500	-81.45833	Floridan aquifer system	FLORIDAN	296	Confined	Background	Surveillance
ALL-0442	32.86389	-81.30556	Floridan aquifer system	FLORIDAN	140	Confined	Background	Surveillance
BAM-0022	33.31583	-81.13861	Floridan aquifer system	FLORIDAN	302	Confined	Suspected/Anticipated Changes	Surveillance
BAM-0026	33.10306	-81.01278	Floridan aquifer system	FLORIDAN	225	Confined	Background	Surveillance
BAM-0027	33.28833	-81.04083	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	550	Confined	Suspected/Anticipated Changes	Surveillance
BAM-0031	33.29667	-81.03667	Floridan aquifer system	FLORIDAN	172	Confined	Background	Surveillance
BAM-0033	33.18250	-81.18500	Floridan aquifer system	FLORIDAN	175	Confined	Background	Surveillance
BAM-0068	33.05583	-81.09833	Floridan aquifer system	FLORIDAN	326	Confined	Background	Surveillance
BAM-0077	33.30611	-81.03556	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1010	Confined	Suspected/Anticipated Changes	Surveillance
BAM-0081	33.17639	-80.91694	Floridan aquifer system	FLORIDAN	160	Confined	Background	Surveillance
BFT-0010	32.32972	-80.70778	Southeastern Coastal Plain Aquifer System	MIDDENDORF	3455	Confined	Known Changes	Surveillance
BFT-0011	32.35250	-80.69028	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2796	Confined	Known Changes	Surveillance
BFT-0133	32.52361	-80.71861	Floridan aquifer system	FLORIDAN	110	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0181	32.30667	-80.68250	Floridan aquifer system	FLORIDAN	117	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0420	32.55278	-80.72833	Floridan aquifer system	FLORIDAN	262	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0441	32.24917	-80.72778	Floridan aquifer system	FLORIDAN	218	Confined	Known Changes	Surveillance

BFT-0452	32.39806	-80.43750	Floridan aquifer system	FLORIDAN	103	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0454	32.24861	-80.73139	Southeastern Coastal Plain Aquifer System	MIDDENDORF	3114	Confined	Known Changes	Surveillance
BFT-0455	32.33139	-80.46750	Floridan aquifer system	FLORIDAN	102	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0488	32.40861	-80.51333	Floridan aquifer system	FLORIDAN	100	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0559	32.43111	-80.67333	Floridan aquifer system	FLORIDAN	62	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0564	32.33556	-80.62361	Floridan aquifer system	FLORIDAN	207	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0566	32.35222	-80.69333	Floridan aquifer system	FLORIDAN	232	Confined	Suspected/Anticipated Changes	Surveillance
BFT-0570	32.30139	-80.97056	Floridan aquifer system	FLORIDAN	334	Confined	Known Changes	Surveillance
BFT-0709	32.13167	-80.79444	Floridan aquifer system	FLORIDAN	204	Confined	Known Changes	Surveillance
BFT-0787	32.24889	-80.69917	Floridan aquifer system	FLORIDAN	240	Confined	Known Changes	Surveillance
BFT-0844	32.33694	-80.85500	Floridan aquifer system	FLORIDAN	160	Confined	Known Changes	Surveillance
BFT-1736	32.40750	-80.77111	Floridan aquifer system	FLORIDAN	100	Confined	Suspected/Anticipated Changes	Surveillance
BFT-1925	32.46944	-80.74111	Floridan aquifer system	FLORIDAN	123	Confined	Suspected/Anticipated Changes	Surveillance
BFT-2309	32.17611	-80.76806	Floridan aquifer system	FLORIDAN	248	Confined	Known Changes	Surveillance
BFT-2314	32.22167	-80.77833	Floridan aquifer system	FLORIDAN	226	Confined	Known Changes	Surveillance
BRK-0035	33.14000	-79.79639	Floridan aquifer system	FLORIDAN	110	Confined	Suspected/Anticipated Changes	Surveillance
BRK-0046	33.40556	-79.92611	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1265	Confined	Known Changes	Surveillance
BRK-0048	33.17056	-80.29167	Floridan aquifer system	FLORIDAN	394	Confined	Background	Surveillance
BRK-0089	33.28528	-79.69500	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	894	Confined	Known Changes	Surveillance
BRK-0141	33.34694	-79.81444	Floridan aquifer system	FLORIDAN	44	Unconfined	Background	Surveillance
BRK-0166	33.27194	-79.96444	Floridan aquifer system	FLORIDAN	102	Semiconfined	Background	Surveillance
BRK-0174	33.03056	-79.96806	Floridan aquifer system	FLORIDAN	248	Confined	Background	Surveillance
BRK-0523	33.15750	-80.02500	Floridan aquifer system	FLORIDAN	220	Confined	Background	Surveillance
BRK-0595	32.97306	-79.77639	Floridan aquifer system	FLORIDAN	185	Confined	Background	Surveillance
BRK-0647	33.26167	-79.65750	Floridan aquifer system	FLORIDAN	80	Unconfined	Background	Surveillance
BRK-0654	33.00611	-79.87639	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1790	Confined	Known Changes	Surveillance
BRN-0062	33.22722	-81.36083	Floridan aquifer system	FLORIDAN	271	Confined	Background	Surveillance
BRN-0243	33.20222	-81.57778	Southeastern Coastal Plain Aquifer System	MIDDENDORF	940	Confined	Background	Surveillance
BRN-0246	33.21250	-81.62417	Southeastern Coastal Plain Aquifer System	MIDDENDORF	896	Confined	Background	Surveillance
BRN-0295	33.12694	-81.22917	Floridan aquifer system	FLORIDAN	200	Confined	Background	Surveillance
BRN-0303	33.24583	-81.61611	Southeastern Coastal Plain Aquifer System	MIDDENDORF	775	Confined	Background	Surveillance
BRN-0312	33.34444	-81.50028	Southeastern Coastal Plain Aquifer System	MIDDENDORF	865	Confined	Background	Surveillance
BRN-0313	33.25306	-81.67250	Southeastern Coastal Plain Aquifer System	MIDDENDORF	855	Confined	Background	Surveillance
BRN-0314	33.19111	-81.51306	Southeastern Coastal Plain Aquifer System	MIDDENDORF	960	Confined	Background	Surveillance
BRN-0322	33.21361	-81.62222	Floridan aquifer system	FLORIDAN	209	Confined	Background	Surveillance
BRN-0323	33.20222	-81.57778	Floridan aquifer system	FLORIDAN	323	Confined	Background	Surveillance
BRN-0324	33.31056	-81.60611	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	570	Confined	Background	Surveillance
BRN-0325	33.31056	-81.60611	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	505	Confined	Background	Surveillance
BRN-0328	33.20222	-81.57778	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	655	Confined	Background	Surveillance
BRN-0331	33.21417	-81.62361	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	625	Confined	Background	Surveillance
BRN-0335	33.14667	-81.60750	Southeastern Coastal Plain Aquifer System	MIDDENDORF	820	Confined	Background	Surveillance
BRN-0341	33.20222	-81.57778	Floridan aquifer system	FLORIDAN	223	Semiconfined	Background	Surveillance
BRN-0345	33.21417	-81.62306	Floridan aquifer system	FLORIDAN	164	Semiconfined	Background	Surveillance
BRN-0362	33.34444	-81.50028	Floridan aquifer system	FLORIDAN	145	Semiconfined	Background	Surveillance

BRN-0363	33.40306	-81.43944	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	455	Confined	Background	Surveillance
BRN-0379	33.21056	-81.65722	Southeastern Coastal Plain Aquifer System	MIDDENDORF	875	Confined	Background	Surveillance
BRN-0380	33.28583	-81.63500	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	395	Confined	Background	Surveillance
BRN-0384	33.18250	-81.67861	Southeastern Coastal Plain Aquifer System	MIDDENDORF	705	Confined	Background	Surveillance
BRN-0388	33.34444	-81.50000	Floridan aquifer system	FLORIDAN	303	Confined	Background	Surveillance
BRN-0389	33.34444	-81.50028	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	625	Confined	Background	Surveillance
BRN-0390	33.25278	-81.67222	Floridan aquifer system	FLORIDAN	93	Unconfined	Background	Surveillance
BRN-0394	33.24611	-81.61611	Floridan aquifer system	FLORIDAN	341	Confined	Background	Surveillance
BRN-0396	33.24583	-81.61611	Floridan aquifer system	FLORIDAN	189	Unconfined	Background	Surveillance
BRN-0398	33.27500	-81.57333	Floridan aquifer system	FLORIDAN	265	Confined	Background	Surveillance
BRN-0399	33.27500	-81.57333	Floridan aquifer system	FLORIDAN	155	Unconfined	Background	Surveillance
BRN-0402	33.14667	-81.60722	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	683	Confined	Background	Surveillance
BRN-0404	33.14667	-81.60722	Floridan aquifer system	FLORIDAN	296	Confined	Background	Surveillance
BRN-0405	33.14667	-81.60750	Floridan aquifer system	FLORIDAN	86	Unconfined	Background	Surveillance
BRN-0406	33.19111	-81.51333	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	647	Confined	Background	Surveillance
BRN-0408	33.19111	-81.51333	Floridan aquifer system	FLORIDAN	255	Confined	Background	Surveillance
BRN-0409	33.19111	-81.51306	Floridan aquifer system	FLORIDAN	141	Semiconfined	Background	Surveillance
BRN-0415	33.18250	-81.67861	Floridan aquifer system	FLORIDAN	143	Confined	Background	Surveillance
BRN-0416	33.18250	-81.67861	Floridan aquifer system	FLORIDAN	60	Unconfined	Background	Surveillance
BRN-0417	33.22944	-81.57528	Southeastern Coastal Plain Aquifer System	MIDDENDORF	975	Confined	Background	Surveillance
BRN-0418	33.22944	-81.57528	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	600	Confined	Background	Surveillance
BRN-0419	33.22972	-81.57528	Floridan aquifer system	FLORIDAN	320	Confined	Background	Surveillance
BRN-0420	33.22972	-81.57528	Floridan aquifer system	FLORIDAN	235	Semiconfined	Background	Surveillance
BRN-0424	33.21083	-81.65750	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	590	Confined	Background	Surveillance
BRN-0427	33.21083	-81.65750	Floridan aquifer system	FLORIDAN	190	Confined	Background	Surveillance
BRN-0429	33.21056	-81.65750	Floridan aquifer system	FLORIDAN	66	Unconfined	Background	Surveillance
BRN-0430	33.28583	-81.63472	Southeastern Coastal Plain Aquifer System	MIDDENDORF	830	Confined	Background	Surveillance
BRN-0431	33.28583	-81.63500	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	575	Confined	Background	Surveillance
BRN-0432	33.28583	-81.63500	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	495	Confined	Background	Surveillance
BRN-0433	33.28583	-81.63500	Floridan aquifer system	FLORIDAN	205	Confined	Background	Surveillance
BRN-0434	33.28583	-81.63472	Floridan aquifer system	FLORIDAN	140	Semiconfined	Background	Surveillance
BRN-0436	33.25278	-81.67250	Floridan aquifer system	FLORIDAN	235	Confined	Background	Surveillance
BRN-0437	33.25306	-81.67250	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	570	Confined	Background	Surveillance
CAL-0002	33.55750	-80.71667	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	285	Confined	Known Changes	Surveillance
CAL-0115	33.81222	-80.98194	Southeastern Coastal Plain Aquifer System	MIDDENDORF	341	Semiconfined	Suspected/Anticipated Changes	Surveillance
CAL-0196	33.48583	-80.65972	Southeastern Coastal Plain Aquifer System	MIDDENDORF	870	Confined	Background	Surveillance
CHN-0002	32.85583	-79.96139	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2026	Confined	Known Changes	Surveillance
CHN-0172	32.84778	-80.06417	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1843	Confined	Known Changes	Surveillance
CHN-0173	32.84528	-79.82694	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1870	Confined	Known Changes	Surveillance
CHN-0174	32.58056	-80.15972	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2261	Confined	Known Changes	Surveillance
CHN-0178	32.78417	-79.94306	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2013	Confined	Known Changes	Surveillance
CHN-0182	33.20056	-79.43556	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	801	Confined	Known Changes	Surveillance
CHN-0183	32.86806	-79.76556	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1840	Confined	Known Changes	Surveillance
CHN-0185	32.82056	-79.83750	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1980	Confined	Known Changes	Surveillance

CHN-0186	32.59972	-80.10583	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2220	Confined	Known Changes	Surveillance
CHN-0187	32.78750	-79.78722	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2023	Confined	Known Changes	Surveillance
CHN-0219	32.80444	-79.73361	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1990	Confined	Known Changes	Surveillance
CHN-0363	32.81056	-80.40194	Floridan aquifer system	FLORIDAN	406	Confined	Known Changes	Surveillance
CHN-0366	32.67361	-80.36306	Floridan aquifer system	FLORIDAN	610	Confined	Known Changes	Surveillance
CHN-0387	32.66028	-80.14583	Floridan aquifer system	FLORIDAN	557	Confined	Known Changes	Surveillance
CHN-0460	32.88167	-79.98861	Floridan aquifer system	FLORIDAN	325	Confined	Known Changes	Surveillance
CHN-0601	32.75944	-79.84889	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1955	Confined	Known Changes	Surveillance
CHN-0603	32.77694	-79.80972	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2030	Confined	Known Changes	Surveillance
CHN-0604	32.80111	-79.75417	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2200	Confined	Known Changes	Surveillance
CHN-0635	32.76444	-79.83278	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2018	Confined	Known Changes	Surveillance
CHN-0801	32.61444	-80.05250	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2154	Confined	Known Changes	Surveillance
CHN-0849	32.79167	-79.89861	Southeastern Coastal Plain Aquifer System	MIDDENDORF	2033	Confined	Known Changes	Surveillance
CLA-0025	33.59417	-80.35472	Southeastern Coastal Plain Aquifer System	MIDDENDORF	750	Confined	Known Changes	Surveillance
CLA-0027	33.68833	-80.19389	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	670	Confined	Suspected/Anticipated Changes	Surveillance
CLA-0030	33.88556	-80.01000	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	420	Confined	Background	Surveillance
CLA-0033	33.65111	-80.28028	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	216	Confined	Background	Surveillance
CLA-0036	33.58111	-80.39444	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	491	Confined	Background	Surveillance
CLA-0061	33.82833	-79.94833	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	393	Confined	Suspected/Anticipated Changes	Surveillance
CLA-0063	33.89222	-80.07806	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	475	Confined	Suspected/Anticipated Changes	Surveillance
CLA-0146	33.63528	-80.26694	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	750	Confined	Suspected/Anticipated Changes	Surveillance
CLA-0148	33.73833	-80.35833	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	242	Confined	Background	Surveillance
CLA-0213	33.58861	-80.20611	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	210	Confined	Background	Surveillance
COL-0049	32.95083	-80.63444	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1670	Confined	Suspected/Anticipated Changes	Surveillance
COL-0050	32.91167	-80.64722	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1768	Confined	Suspected/Anticipated Changes	Surveillance
COL-0073	33.00083	-80.78222	Floridan aquifer system	FLORIDAN	720	Confined	Suspected/Anticipated Changes	Surveillance
COL-0092	32.66167	-80.65722	Floridan aquifer system	FLORIDAN	610	Confined	Suspected/Anticipated Changes	Surveillance
COL-0096	32.73583	-80.45222	Floridan aquifer system	FLORIDAN	604	Confined	Suspected/Anticipated Changes	Surveillance
COL-0170	32.61083	-80.55361	Floridan aquifer system	FLORIDAN	561	Confined	Suspected/Anticipated Changes	Surveillance
COL-0232	33.06722	-80.95389	Floridan aquifer system	FLORIDAN	510	Confined	Suspected/Anticipated Changes	Surveillance
COL-0255	32.93694	-80.48111	Floridan aquifer system	FLORIDAN	400	Confined	Background	Surveillance
COL-0269	32.86389	-80.65333	Floridan aquifer system	FLORIDAN	500	Confined	Suspected/Anticipated Changes	Surveillance
COL-0273	32.87750	-80.77833	Floridan aquifer system	FLORIDAN	500	Confined	Suspected/Anticipated Changes	Surveillance
COL-0788	32.96694	-80.69528	Floridan aquifer system	FLORIDAN	460	Confined	Suspected/Anticipated Changes	Surveillance
COL-0789	32.73528	-80.59111	Floridan aquifer system	FLORIDAN	560	Confined	Background	Surveillance
COL-0792	32.82972	-80.56639	Floridan aquifer system	FLORIDAN	430	Confined	Background	Surveillance
COL-0793	33.11361	-80.70333	Floridan aquifer system	FLORIDAN	125	Confined	Background	Surveillance
COL-0794	32.98083	-80.85306	Floridan aquifer system	FLORIDAN	475	Confined	Suspected/Anticipated Changes	Surveillance
COL-0795	32.74889	-80.69556	Floridan aquifer system	FLORIDAN	540	Confined	Background	Surveillance
COL-0796	32.85250	-80.84556	Floridan aquifer system	FLORIDAN	560	Confined	Suspected/Anticipated Changes	Surveillance
COL-0797	32.99250	-80.55639	Floridan aquifer system	FLORIDAN	400	Confined	Suspected/Anticipated Changes	Surveillance
CTF-0044	34.56333	-80.03083	Southeastern Coastal Plain Aquifer System	MIDDENDORF	130	Unconfined	Background	Surveillance
CTF-0056	34.62667	-79.94056	Southeastern Coastal Plain Aquifer System	MIDDENDORF	23	Unconfined	Background	Surveillance
CTF-0080	34.51528	-80.10361	Southeastern Coastal Plain Aquifer System	MIDDENDORF	335	Semiconfined	Background	Surveillance

CTF-0189	34.51806	-80.28972	Southeastern Coastal Plain Aquifer System	MIDDENDORF	90	Unconfined	Background	Surveillance
CTF-0197	34.65194	-80.27917	Southeastern Coastal Plain Aquifer System	MIDDENDORF	130	Unconfined	Background	Surveillance
CTF-0224	34.49167	-80.26500	Southeastern Coastal Plain Aquifer System	MIDDENDORF	228	Unconfined	Background	Surveillance
CTF-0313	34.41667	-80.30056	Southeastern Coastal Plain Aquifer System	MIDDENDORF	271	Semiconfined	Background	Surveillance
DAR-0094	34.37194	-80.07333	Southeastern Coastal Plain Aquifer System	MIDDENDORF	316	Confined	Suspected/Anticipated Changes	Surveillance
DAR-0096	34.50583	-79.85611	Southeastern Coastal Plain Aquifer System	MIDDENDORF	380	Semiconfined	Background	Surveillance
DAR-0098	34.16944	-80.06722	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	220	Unconfined	Background	Surveillance
DAR-0118	34.28778	-79.74667	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	110	Unconfined	Background	Surveillance
DAR-0212	34.36083	-80.19472	Southeastern Coastal Plain Aquifer System	MIDDENDORF	517	Confined	Suspected/Anticipated Changes	Surveillance
DAR-0221	34.28806	-79.74167	Southeastern Coastal Plain Aquifer System	MIDDENDORF	430	Confined	Background	Surveillance
DAR-0230	34.17306	-80.07056	Southeastern Coastal Plain Aquifer System	MIDDENDORF	425	Confined	Background	Surveillance
DAR-0231	34.41528	-80.08194	Southeastern Coastal Plain Aquifer System	MIDDENDORF	317	Confined	Suspected/Anticipated Changes	Surveillance
DIL-0028	34.32944	-79.26472	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	104	Unconfined	Background	Surveillance
DIL-0070	34.47278	-79.40167	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	147	Unconfined	Background	Surveillance
DIL-0079	34.34500	-79.16833	Southeastern Coastal Plain Aquifer System	MIDDENDORF	302	Confined	Background	Surveillance
DIL-0129	34.46833	-79.33167	Southeastern Coastal Plain Aquifer System	MIDDENDORF	307	Confined	Background	Surveillance
DIL-0132	34.48250	-79.31500	Southeastern Coastal Plain Aquifer System	MIDDENDORF	278	Confined	Background	Surveillance
DIL-0170	34.36333	-79.53417	Southeastern Coastal Plain Aquifer System	MIDDENDORF	272	Confined	Background	Surveillance
DOR-0030	33.18306	-80.55278	Floridan aquifer system	FLORIDAN	550	Confined	Suspected/Anticipated Changes	Surveillance
DOR-0049	32.96389	-80.27500	Floridan aquifer system	FLORIDAN	350	Confined	Suspected/Anticipated Changes	Surveillance
DOR-0051	33.20694	-80.64472	Floridan aquifer system	FLORIDAN	370	Confined	Suspected/Anticipated Changes	Surveillance
DOR-0058	33.11083	-80.28556	Floridan aquifer system	FLORIDAN	344	Confined	Suspected/Anticipated Changes	Surveillance
DOR-0068	33.21333	-80.44944	Floridan aquifer system	FLORIDAN	295	Confined	Suspected/Anticipated Changes	Surveillance
DOR-0088	32.95944	-80.20194	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1760	Confined	Known Changes	Surveillance
DOR-0155	33.14972	-80.42722	Floridan aquifer system	FLORIDAN	306	Confined	Suspected/Anticipated Changes	Surveillance
DOR-0221	32.95889	-80.16278	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1764	Confined	Known Changes	Surveillance
DOR-0228	32.98472	-80.21972	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1830	Confined	Known Changes	Surveillance
DOR-0240	33.03083	-80.20556	Floridan aquifer system	FLORIDAN	390	Confined	Known Changes	Surveillance
FLO-0085	34.13500	-79.94194	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	535	Confined	Known Changes	Surveillance
FLO-0095	34.23694	-79.81306	Southeastern Coastal Plain Aquifer System	MIDDENDORF	379	Confined	Known Changes	Surveillance
FLO-0146	34.16972	-79.78833	Southeastern Coastal Plain Aquifer System	MIDDENDORF	660	Confined	Known Changes	Surveillance
FLO-0148	33.83111	-79.44444	Southeastern Coastal Plain Aquifer System	MIDDENDORF	506	Confined	Known Changes	Surveillance
FLO-0153	34.13694	-79.93861	Southeastern Coastal Plain Aquifer System	MIDDENDORF	480	Confined	Suspected/Anticipated Changes	Surveillance
FLO-0156	33.93306	-79.93972	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	225	Confined	Suspected/Anticipated Changes	Surveillance
FLO-0207	34.04722	-79.78611	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	218	Confined	Suspected/Anticipated Changes	Surveillance
FLO-0209	34.21972	-79.78833	Southeastern Coastal Plain Aquifer System	MIDDENDORF	720	Confined	Known Changes	Surveillance
FLO-0298	34.17222	-79.78889	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	198	Confined	Suspected/Anticipated Changes	Surveillance
FLO-0317	33.99444	-79.60139	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	474	Confined	Background	Surveillance
FLO-0474	34.01861	-79.75472	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	140	Confined	Suspected/Anticipated Changes	Surveillance
FLO-0475	34.03556	-79.66194	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	190	Confined	Suspected/Anticipated Changes	Surveillance
GEO-0077	33.40417	-79.29306	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	748	Confined	Known Changes	Surveillance
GEO-0078	33.42389	-79.44917	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	585	Confined	Known Changes	Surveillance
GEO-0095	33.33944	-79.36250	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	680	Confined	Known Changes	Surveillance
GEO-0153	33.36333	-79.22833	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	567	Confined	Known Changes	Surveillance

GEO-0154	33.34972	-79.19472	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	594	Confined	Known Changes	Surveillance
GEO-0232	33.23444	-79.38917	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	840	Confined	Known Changes	Surveillance
GEO-0233	33.24806	-79.40222	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	874	Confined	Known Changes	Surveillance
GEO-0249	33.66194	-79.24667	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	739	Confined	Suspected/Anticipated Changes	Surveillance
GEO-0296	33.22750	-79.20500	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	707	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0051	32.56167	-81.28806	Floridan aquifer system	FLORIDAN	130	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0072	32.97806	-81.11278	Floridan aquifer system	FLORIDAN	551	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0073	32.89917	-81.00528	Floridan aquifer system	FLORIDAN	200	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0076	32.80583	-80.90972	Floridan aquifer system	FLORIDAN	216	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0079	32.78528	-81.05806	Floridan aquifer system	FLORIDAN	219	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0174	32.82333	-81.28306	Floridan aquifer system	FLORIDAN	220	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0180	32.76167	-81.25750	Floridan aquifer system	FLORIDAN	299	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0181	32.73361	-81.36111	Floridan aquifer system	FLORIDAN	120	Confined	Suspected/Anticipated Changes	Surveillance
HAM-0261	32.68278	-81.25583	Floridan aquifer system	FLORIDAN	205	Confined	Suspected/Anticipated Changes	Surveillance
HOR-0207	33.71750	-78.85972	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	745	Confined	Known Changes	Surveillance
HOR-0225	33.99861	-79.20222	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	355	Confined	Known Changes	Surveillance
HOR-0304	33.69083	-78.89583	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	620	Confined	Known Changes	Surveillance
HOR-0305	33.58611	-79.00972	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	716	Confined	Suspected/Anticipated Changes	Surveillance
HOR-0307	33.84944	-79.05750	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	438	Confined	Suspected/Anticipated Changes	Surveillance
HOR-0332	33.71194	-78.88528	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	766	Confined	Known Changes	Surveillance
HOR-0409	33.68806	-78.98194	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	611	Confined	Known Changes	Surveillance
HOR-0419	33.62972	-78.96528	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	756	Confined	Known Changes	Surveillance
HOR-0548	33.68139	-78.99583	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	421	Confined	Known Changes	Surveillance
HOR-0666	33.68833	-79.11917	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	585	Confined	Known Changes	Surveillance
HOR-1041	33.86417	-79.16361	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	583	Confined	Suspected/Anticipated Changes	Surveillance
HOR-1325	33.72111	-78.90306	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	800	Confined	Known Changes	Surveillance
JAS-0298	32.45917	-80.89667	Floridan aquifer system	FLORIDAN	170	Confined	Suspected/Anticipated Changes	Surveillance
JAS-0351	32.52028	-81.15222	Floridan aquifer system	FLORIDAN	160	Confined	Suspected/Anticipated Changes	Surveillance
JAS-0397	32.52611	-80.86806	Floridan aquifer system	FLORIDAN	140	Confined	Suspected/Anticipated Changes	Surveillance
JAS-0402	32.46361	-81.10750	Floridan aquifer system	FLORIDAN	200	Confined	Suspected/Anticipated Changes	Surveillance
JAS-0403	32.60500	-81.16278	Floridan aquifer system	FLORIDAN	180	Confined	Suspected/Anticipated Changes	Surveillance
JAS-0406	32.59333	-81.05861	Floridan aquifer system	FLORIDAN	200	Confined	Suspected/Anticipated Changes	Surveillance
JAS-0420	32.29778	-81.12028	Floridan aquifer system	FLORIDAN	220	Confined	Known Changes	Surveillance
JAS-0421	32.13139	-81.05667	Floridan aquifer system	FLORIDAN	270	Confined	Known Changes	Surveillance
JAS-0499	32.17306	-81.07639	Floridan aquifer system	FLORIDAN	256	Confined	Known Changes	Surveillance
KER-0098	34.35417	-80.47833	Southeastern Coastal Plain Aquifer System	MIDDENDORF	95	Unconfined	Background	Surveillance
KER-0100	34.16833	-80.79444	Southeastern Coastal Plain Aquifer System	MIDDENDORF	232	Unconfined	Suspected/Anticipated Changes	Surveillance
LEE-0036	34.29028	-80.34167	Southeastern Coastal Plain Aquifer System	MIDDENDORF	263	Semiconfined	Known Changes	Surveillance
LEE-0060	34.11000	-80.22611	Southeastern Coastal Plain Aquifer System	MIDDENDORF	470	Confined	Background	Surveillance
LEE-0073	34.07167	-80.22111	Southeastern Coastal Plain Aquifer System	MIDDENDORF	458	Confined	Background	Surveillance
LEE-0079	34.21111	-80.27361	Southeastern Coastal Plain Aquifer System	MIDDENDORF	347	Confined	Background	Surveillance
LEE-0178	34.20972	-80.41250	Southeastern Coastal Plain Aquifer System	MIDDENDORF	406	Confined	Background	Surveillance
LEX-0838	33.86806	-81.40722	Southeastern Coastal Plain Aquifer System	MIDDENDORF	185	Unconfined	Background	Surveillance
MLB-0027	34.56333	-79.53528	Southeastern Coastal Plain Aquifer System	MIDDENDORF	128	Unconfined	Background	Surveillance

MLB-0031	34.66889	-79.54333	Southeastern Coastal Plain Aquifer System	MIDDENDORF	104	Unconfined	Background	Surveillance
MLB-0110	34.49306	-79.71944	Southeastern Coastal Plain Aquifer System	MIDDENDORF	115	Unconfined	Background	Surveillance
MLB-0112	34.62639	-79.68944	Southeastern Coastal Plain Aquifer System	MIDDENDORF	320	Unconfined	Background	Surveillance
MLB-0139	34.56778	-79.67944	Southeastern Coastal Plain Aquifer System	MIDDENDORF	142	Unconfined	Background	Surveillance
MLB-0140	34.56611	-79.68583	Southeastern Coastal Plain Aquifer System	MIDDENDORF	135	Unconfined	Background	Surveillance
MRN-0009	34.18472	-79.40611	Southeastern Coastal Plain Aquifer System	MIDDENDORF	633	Confined	Suspected/Anticipated Changes	Surveillance
MRN-0068	34.24667	-79.50028	Southeastern Coastal Plain Aquifer System	MIDDENDORF	420	Confined	Background	Surveillance
MRN-0070	34.19389	-79.29333	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	464	Confined	Suspected/Anticipated Changes	Surveillance
ORG-0009	33.32306	-80.41139	Floridan aquifer system	FLORIDAN	265	Confined	Background	Surveillance
ORG-0048	33.46667	-80.86111	Floridan aquifer system	FLORIDAN	127	Confined	Background	Surveillance
ORG-0108	33.34861	-80.67972	Southeastern Coastal Plain Aquifer System	MIDDENDORF	955	Confined	Background	Surveillance
ORG-0383	33.36806	-81.03111	Southeastern Coastal Plain Aquifer System	MIDDENDORF	946	Confined	Suspected/Anticipated Changes	Surveillance
ORG-0389	33.36250	-81.03306	Southeastern Coastal Plain Aquifer System	MIDDENDORF	966	Confined	Suspected/Anticipated Changes	Surveillance
ORG-0461	33.24722	-80.81944	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1015	Confined	Background	Surveillance
ORG-0509	33.55194	-80.95389	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	410	Confined	Background	Surveillance
ORG-0548	33.68639	-81.03528	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	445	Confined	Background	Surveillance
ORG-0635	33.45694	-80.59500	Floridan aquifer system	FLORIDAN	220	Confined	Background	Surveillance
ORG-0636	33.39389	-80.54250	Floridan aquifer system	FLORIDAN	205	Confined	Background	Surveillance
ORG-0637	33.58194	-80.81639	Floridan aquifer system	FLORIDAN	260	Confined	Background	Surveillance
ORG-0638	33.43278	-80.42861	Floridan aquifer system	FLORIDAN	295	Confined	Background	Surveillance
ORG-0639	33.30944	-80.27944	Floridan aquifer system	FLORIDAN	110	Confined	Background	Surveillance
ORG-0640	33.33222	-80.60556	Floridan aquifer system	FLORIDAN	250	Confined	Background	Surveillance
ORG-0641	33.28556	-80.71889	Floridan aquifer system	FLORIDAN	330	Confined	Background	Surveillance
ORG-0642	33.45222	-81.13694	Floridan aquifer system	FLORIDAN	210	Confined	Background	Surveillance
RIC-0293	33.87889	-80.89333	Southeastern Coastal Plain Aquifer System	MIDDENDORF	152	Unconfined	Background	Surveillance
RIC-0729	34.08278	-80.91722	Southeastern Coastal Plain Aquifer System	MIDDENDORF	22	Unconfined	Background	Surveillance
SUM-0119	33.91750	-80.32111	Southeastern Coastal Plain Aquifer System	MIDDENDORF	620	Confined	Suspected/Anticipated Changes	Surveillance
SUM-0230	33.73694	-80.46944	Southeastern Coastal Plain Aquifer System	MIDDENDORF	760	Confined	Suspected/Anticipated Changes	Surveillance
SUM-0288	33.98583	-80.21333	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	325	Semiconfined	Suspected/Anticipated Changes	Surveillance
SUM-0296	33.71056	-80.53222	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	625	Confined	Background	Surveillance
SUM-0297	33.71056	-80.53222	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	189	Confined	Background	Surveillance
WIL-0016	33.72667	-79.54944	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	465	Confined	Background	Surveillance
WIL-0037	33.74889	-79.45083	Southeastern Coastal Plain Aquifer System	MIDDENDORF	891	Confined	Known Changes	Surveillance
WIL-0051	33.78750	-79.80417	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	257	Confined	Background	Surveillance
WIL-0118	33.67250	-79.83694	Southeastern Coastal Plain Aquifer System	MIDDENDORF	953	Confined	Known Changes	Surveillance
WIL-0177	33.52556	-79.89278	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	694	Confined	Background	Surveillance
WIL-0193	33.72167	-79.51000	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	610	Confined	Background	Surveillance
WIL-0196	33.50083	-79.76944	Southeastern Coastal Plain Aquifer System	BLACK_CREEK	248	Confined	Background	Surveillance
WIL-0203	33.70417	-79.81389	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1072	Confined	Known Changes	Surveillance
WIL-0207	33.57639	-79.93639	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1129	Confined	Suspected/Anticipated Changes	Surveillance
WIL-0208	33.58361	-79.87083	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1052	Confined	Suspected/Anticipated Changes	Surveillance
WIL-0211	33.68167	-79.55722	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1005	Confined	Background	Surveillance
WIL-0212	33.65361	-79.50194	Southeastern Coastal Plain Aquifer System	MIDDENDORF	1025	Confined	Background	Surveillance
WIL-0213	33.77278	-79.44806	Southeastern Coastal Plain Aquifer System	MIDDENDORF	886	Confined	Known Changes	Surveillance

Appendix B: DNR Standard Operating Procedures for ADR Water Level Network Wells

1. Site visits should be made a minimum of 6 times per year, approximately once every two months. Additional site visits may be necessary to repair/replace malfunctioning equipment or do perform additional site maintenance.
2. Appropriate quality control and quality assurance measures should be implemented during each site visit:
 - a. For sites with pressure transducers, cable length values should be determined during the time of visit and compared to previous cable length estimates to evaluate the sensor's performance. The cable length value is the sum of 1) the depth of water above probe as measured by the transducer and 2) the depth to water from the measuring point (manual measurement).
 - b. For sites with unvented pressure transducers and no barometric instrument installed on site, a measurement must be taken from a spare barometric instrument that is transported from site to site. This measurement will allow an estimate of the depth of water above probe, and thus, an estimate of the cable length value during each site visit.
 - c. For transducers with pressure ranges rated at 65 feet (20 meters) or less, ADRs should be replaced if cable length values deviate by more than ± 0.20 ft for two consecutive downloads.
 - d. For transducers with pressure ranges rated at 210 meters, ADRs should be replaced if cable length values deviate by more than ± 0.70 ft. for two consecutive downloads.
 - e. Clock accuracy should be checked during each site visit for each ADR instrument. In most cases, a one or two minute error is acceptable. Clocks off by more than a few minutes should be reset.
 - f. For wells that are tidally influenced, the manual measurement and the real-time ADR reading must be collected simultaneously in order to compute accurate cable length values.
3. Model numbers and serial numbers should be documented for all installed ADRs and associated equipment (direct read cables, for example). Any changes to instrumentation must be clearly documented (date and time of change, model and serial numbers of any instrumentation removed along with model and serial numbers of any instrumentation added).
4. Efforts should be made to ensure that enough inventory is immediately available to replace faulty ADR equipment in the field to avoid the additional loss of data.
5. Under normal circumstances, data collected during a site visit should be checked for quality control and quality assurance or sent to the Columbia office for review within two weeks of the site visit.

6. If ADR instrumentation at a given site is determined to be malfunctioning while reviewing data in the office, efforts should be made to replace or repair the ADR instruments as soon as possible. This may require additional site visits.
7. Clocks for all instrumentation will be programmed in Eastern Standard Time. Do not correct for Daylight Savings.
8. For sites with unvented pressure transducers, desiccant packs must be replaced once every 6–8 weeks to prevent moisture from accumulating in the transducer’s vent tube. Excess moisture can cause faulty ADR readings and can potentially damage the transducer.
9. Site maintenance, such as clearing vegetation and ensuring site security, should be performed as necessary during each visit.