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Turkey Point Plant

Comprehensive Post-Uprate Monitoring Report

Units 3 & 4 Uprate Project

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ACRONYMS AND ABBREVIATIONS

%	percent
?	questionable data
≥	greater than or equal to
°C	degrees Celsius
µg/L	micrograms per liter
µm	micrometer
µmho/cm	micromhos per centimeter
µmols/m^2/sec	micromole per square meter per second
µS/cm	microSiemens per centimeter
‰	parts per mille
1x1	1-meter by 1-meter (subplot)
20x20	20-meter by 20-meter (plot)
5x5	5-meter by 5-meter (subplot)
ADaPT	Automated Data Processing Tool
ADVM	Acoustic Doppler velocity meter
Agencies	South Florida Water Management District, the Florida Department of Environmental Protection, and Miami-Dade County Department of Environmental Resources Management
ANPP	aboveground net primary productivity
ANOVA	analysis of variance
Annual Monitoring Report	Florida Power & Light Company Turkey Point Plant Annual Monitoring Report for the Units 3 and 4 Uprate Project
AO	Administrative Order
AT100	Aqua TROLL® 100 (probe)
AT200	Aqua TROLL® 200 (probe)
B	bottom
Ba	barium

BAS	Biscayne Aquifer/Surficial Aquifer System
BBCA	Braun-Blanquet Cover Abundance
BBSW	Biscayne Bay Surface Water
BDL	below detection limit
BNP	Biscayne National Park
BRL	Brooks Rand Labs
C	carbon
Ca/Mg	calcium/magnesium ratio
$CaCO_3$	calcium carbonate
cc	cubic centimeter
CCS	cooling canal system
CCV	continuing calibration verification
cdb	culm diameter at the plant base
cm	centimeter(s)
CO_2	carbon dioxide
CRM	certified reference material
CWP	circulating water pump
D	deep
DERM	(Miami-Dade County) Department of Environmental Resources Management
df	degrees of freedom
dbh	diameter at breast height
DIC	dissolved inorganic carbon
DO	dissolved oxygen
DQO	data quality objective
DUS	Data Usability Summary
E	Estimated automated value
E & E	Ecology and Environment, Inc.
EB	equipment blank
EDMS	Electronic Data Management System
e.g.	for example
EPA	(United States) Environmental Protection Agency

f/s	foot/feet per second
F.A.C.	Florida Administrative Code
FAS	Floridan Aquifer system
FCEB	field cleaned equipment blank
FD	field duplicate
FDEP	Florida Department of Environmental Protection
FDOA	Florida Department of Health-Bureau of Radiation Control
Fe	Iron
FPL	Florida Power & Light Company
FPL database	Florida Power and Light, Electronic Data Management System database
ft	foot/feet
ft/d	foot/feet per day
ft^3/s	cubic feet/feet per second
G-III	Class 3 groundwater
gal	gallon
g/cm^3	grams per cubic centimeter
g/m^2	grams per square meter
GIS	geographic information system
g/L	grams per liter
gpm	gallon(s) per minute
GPS	global positioning system
GW	groundwater
^3H	tritium
HCl	hydrochloric acid
i.e.	that is
IC	initial calibration
ICV	initial calibration verification
ID	interceptor ditch
J	estimated analytical value
K	potassium

km	kilometer
km/hr	kilometer(s) per hour
lb	pound
LCS	laboratory control sample
Li	Lithium
LNWR	Loxahatchee National Wildlife Refuge
LT500	Level TROLL® 500 (probe)
m	meter(s)
M	Intermediate
MDL	method detection limit
mgd	million gallons per day
mg/kg	milligrams per kilogram
mg/L	milligram(s) per liter
mL	milliliter(s)
Monitoring Plan	Groundwater, Surface Water, and Ecological Monitoring Plan for the Florida Power & Light Company Turkey Point Nuclear Power Plant (2009)
mph	miles per hour
m/s	meters per second
MS	matrix spike
MS	Microsoft
MSD	matrix spike duplicates
mS/cm	milliSiemens per centimeter
µS/cm	microSiemens per centimeter
mV	millivolt(s)
MW	megawatt(s)
NA	Not Applicable
Na/Cl	sodium/chloride ratio
NAVD 88	North American Vertical Datum of 1988
ND	Not Detected
NE	Northeast

NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NEXRAD	next generation weather radar
NH_3	Ammonia
NIST	National Institute of Standards and Technology
NO_x	nitrate-nitrite
NRC	Nuclear Regulatory Commission
NTU	nephelometric turbidity unit(s)
NW	Northwest
OP	orthophosphate
ORP	oxidation reduction potential
PAR	photosynthetically active radiation
pCi/L	picocuries per liter
PDS	post-digestion spike
PERA	(Miami-Dade County) Permitting, Environment and Regulatory Affairs (formerly DERM; now RER)
ppt	parts per thousand
PQL	practical quantitation limits
PSS-78	Practical Salinity Scale of 1978
PSU	practical salinity unit(s)
PushPoint Sampler	PushPoint Sampler PPX36 (M.H.E. Products, East Tawas, Michigan)
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RER	(Miami-Dade County) Department of Regulatory and Economic Resources (formerly PERA)
RPD	relative percent difference
S	shallow (well)
SAV	submerged aquatic vegetation
S.C.	specific conductance

SD	serial dilution
SDG	sample delivery group
SE	southeast
SFWMD	South Florida Water Management District
SG	specific gravity
SOP	standard operating procedure
Std Dev	Standard Deviation
SW	surface water; *also* southwest
SWI	Shannon-Wiener Index (of Diversity)
T	top
TDS	total dissolved solids
TestAmerica	TestAmerica Laboratories, Inc.
TKN	total Kjeldahl nitrogen
TN	total nitrogen
TP	total phosphorus
TPGW	Turkey Point groundwater
TPM-1	Turkey Point Meteorological Station
TPRF	Turkey Point rain fall
TPSWC	Turkey Point Surface Water Canal
TPSWCCS	Turkey Point Surface Water Cooling Canal System
TPSWID	Turkey Point Surface Water Interceptor Ditch
Turkey Point	Florida Power & Light Company Turkey Point Power Plant
U	non-detected analytical result
USGS	United States Geological Survey
W_L	water level (feet NAVD 88)

EXECUTIVE SUMMARY

Florida Power & Light Company (FPL) has prepared this Annual Post-Uprate Monitoring Report pursuant to Conditions of Certification IX and X of its Power Plant Site Certification for the FPL Turkey Point Units 3 and 4 Nuclear Power Plant and Unit 5 Combined Cycle Plant (PA 03-45A2). In 2009, a Monitoring Plan was developed with input from the Florida Department of Environmental Protection (FDEP), the South Florida Water Management District (SFWMD), Miami-Dade County's Department of Regulatory and Economic Resources (RER) (collectively, the Agencies), and FPL. A minimum of two years of monitoring was required prior to the completion of the Uprate. The Monitoring Plan requires the collection of groundwater, surface water, meteorological, flow, and ecological data in and around the plant to assess Pre-Uprate and Post-Uprate conditions and to compare data between the two time frames. In instances where changes occurred between Pre- and Post-Uprate monitoring periods, such changes cannot be presumed to be solely attributable to the uprate of Units 3 and 4. Other factors such as weather patterns, water quality changes related to algae and turbidity, plant outages, and canal sedimentation all influence the hydrology and water quality within and potentially surrounding the cooling canal system (CCS). Comprehensive review of all the data is necessary to fully understand trends and variations in the data record.

Monitoring was initiated in June 2010 and the majority of automated stations were in place by August 2010. This monitoring has been continuous and has extended through May 2015. Based on the timing of the uprate at Units 3 and 4, data collected prior to February 26, 2012, are part of the Pre-Uprate period, while data collected between February 26, 2012, and May 27, 2013, are referred to as part of the Interim Operating period. Data collected after May 27, 2013, are referred to as part of the Post-Uprate period.

FPL prepared a Comprehensive Pre-Uprate Report (FPL 2012a), which provided details on Pre-Uprate conditions. FPL subsequently prepared an Annual Post-Uprate Monitoring Report (2014a), which documented findings from June 2013 through May 2014 and identified any notable changes as they related to the Uprate. A Comprehensive Post-Uprate report is required after at least two years of Post-Uprate data collection. This report provides a comprehensive summary of the Post-Uprate findings from June 2013 to May 2015 and, where applicable, comparisons are made between the Post-Uprate and Pre-Uprate periods.

During the Post-Uprate, automated water quality and water level data were recorded at 1-hour intervals at 14 well clusters (42 wells) and 20 surface water stations; meteorological data were collected at one automated meteorological station. Water samples were collected quarterly at 47 groundwater wells and 18 surface water stations. To continue assessing the contributions of tritium via rainfall and vapor exchange, water samples were collected from seven rainfall collectors and five evaporation pans located at varying distances from the CCS. Ecological monitoring was conducted semi-annually in Biscayne Bay and quarterly in the marsh and mangrove areas. Data quality objectives (DQOs) identified in the Quality Assurance Project

Plan (QAPP) (precision, accuracy, timeliness, availability, reliability, etc.) have consistently been met, and any exceptions are discussed within this report. As required by the Monitoring Plan, components of water and salt inflow and outflow from the CCS were calculated on a daily basis. The water and salt budgets help explain the hydrologic dynamics within the CCS and may be used to assess the effect of climatic or operational changes on the CCS water levels and salinities.

After review of the Comprehensive Pre-Uprate Report (FPL 2012a), the Agencies agreed to a reduction in sites and parameters (SFWMD 2013a). Tables 3.0-1 and 3.0-2 provide a summary of the Post-Uprate sampling locations and analyses. Samples continued to be collected and analyzed for sodium, chloride, and tritium every quarter, and ions and nutrients were measured twice a year during the semi-annual events for both groundwater and surface water (Tables 3.0-1 and 3.0-2). Total dissolved solids (TDS) in groundwater and silica in surface water continued to be collected in the Post-Uprate semi-annual events.

While there have been a few changes in the monitoring/data during the Post-Uprate period, most, if not all, are unrelated to the actual Uprate. The most significant finding is the increase in temperature and specific conductance in the CCS. The Post-Uprate temperatures near the plant discharge into the CCS and near the plant intake were 4.5 degrees Celsius (ºC) and 3.2ºC warmer, respectively, than the Pre-Uprate period. While Pre- and Post-Uprate averages may not be directly comparable because they do not cover the same number of months, the Post-Uprate water temperatures were consistently warmer. The increase in CCS surface water temperatures during the Post-Uprate period cannot be explained by the Uprate since the total heat rejection rate to the CCS from Turkey Point Units 1, 2, 3, and 4, operating at full capacity prior to the Uprate monitoring period, would have been higher than the Post-Uprate heat rejection rate to the CCS for Units 1, 3, and 4 operating at full capacity. Unit 2 was dedicated to operate in a synchronous condenser mode (i.e., not producing steam heat) in the beginning of 2011, thereby requiring no heat rejection from the CCS. FPL's observations have concluded that the temporal increase in average CCS temperature in 2014 (during the Post-Uprate Monitoring period) was the result of a series of events that degraded CCS water quality and negatively affected the heat exchange capacity of the CCS, including the following: lower than average precipitation into the CCS during 2011 through early 2014; reduced circulation within the CCS; periods of degraded water quality in the CCS during 2012 and 2013 (increased salinity, turbidity, and algal concentration); and decreased CCS heat exchange efficiency from historical levels in 2013 and 2014, likely due to significant blockages and increased sediment levels principally in the northern segments of the CCS.

With an increase in CCS surface water temperatures, the rate of evaporation had increased, causing specific conductance and salinity to rise during the Post-Uprate monitoring period. Specific conductance values exceeded 120,000 microSiemens per centimeter (µS/cm) by the end of May 2014. This equates to salinity greater than 90 (PSS-78 [Practical Salinity Scale of 1978]). The specific conductance and salinity levels were significantly reduced by a three-week freshening effort in the fall of 2014 (pumping L-31E Canal water into the CCS) combined with some significant rainfall events; however, the values rebounded during an extremely dry winter and spring and, by April 2015, specific conductance values had exceeded 120,000 µS/cm. The average specific conductance in the CCS was more than 30% higher than the average specific conductance value during the Pre-Uprate period, and the maximum CCS Post-Uprate value is more than 40% higher than the maximum CCS Pre-Uprate value. FPL continued to implement freshening and canal thermal exchange improvement actions through 2015, including the addition of fresher water from on-site wells and the L-31E Canal, along with improvements to the flow distribution within the CCS (sediment removal and throttle adjustments). These actions significantly reduced salinity in the CCS to mid-30 (PSS-78 Scale) ranges, improved heat exchange efficiency, and stabilized water quality within the CCS.

As previously reported by FPL (2014a), groundwater data collected below Biscayne Bay indicate a presence of CCS water not previously detected in the uprate monitoring period in the area fronting the northern half of the CCS at depth (more than 100 feet below Bay bottom). While water quality at these depths has historically been equal to seawater (i.e., TPGW-10D), minor increases in specific conductance, chloride, sodium, and tritium were first observed in the Interim Operating period and are attributed to the lower pumpage rates at the plant during the Uprate outages. The outages resulted in higher-than-normal CCS water levels along the eastern portion of the CCS during a 16-month period from 2012 to 2013. There were no increases in salinity trends or tritium observed in the shallow monitoring wells in Biscayne Bay or in porewater samples collected in the Bay during the Interim or Post-Uprate period, which indicates there is no upward movement of the CCS into shallow groundwater intervals or into the Bay and, thus, no groundwater effect on the Bay.

Groundwater samples west of the CCS still indicate the presence of hypersaline CCS water at depth. Farther west of the CCS (out approximately 3 miles), there remains influence of CCS water in decreasing salinity concentrations at depth. Two of the three wells (TPGW-8 and TPGW-9) farthest from the CCS show no indication of CCS water. These wells are located approximately 6 miles to the west and are fresh at all depths; the third well (TPGW-7), located approximately 4.5 miles west of the CCS, was fresh at all depths during the Pre-Uprate period, but is now slightly brackish at the deep interval. However, the most recent tritium data collected through March 2015 indicate CCS water is not present at that location. This change does not appear to be related to the Uprate, but may be a function of regional water withdrawals, water management practices, the long-term operation of the CCS, lag effects of droughts, and sea level rise.

A shallow, fresh water lens still exists throughout the Model Lands west of the CCS and is supported by the induction logging conducted for this project and the continuous specific conductance profiling done in several historical wells for the interceptor ditch (ID) monitoring. This lens is approximately 10 to 20 feet deep west of the ID canal and thickens towards the west. The persistence of fresh groundwater immediately west of the hypersaline waters in the CCS is an indication that the ID operations have been successful in preventing westward saline migration from the CCS in the upper portion of the aquifer.

There continues to be no discernable effects of the CCS on Biscayne Bay surface water quality at monitoring stations located out in the Bay. For most surface water stations around the CCS, there was no readily apparent change in the influence of CCS water via the groundwater pathway during the Post-Uprate period, as compared to the Pre-Uprate data. There were two locations in the surface water canal stations immediately adjacent to the south end of the CCS (TPSWC-4, located in the S-20 Canal, and TPSWC-5, located in the Card Sound Canal) where there appeared to be some CCS water present/influence during the Pre- and Post-Uprate monitoring periods. Regardless, water quality and tritium data collected during the Pre- and Post-Uprate monitoring period at TPBBSW-4, located at the mouth of the S-20 Canal and Card Sound Canal in Biscayne Bay, did not show evidence of CCS water. This indicates influence immediately adjacent to the CCS but minimal, if any, influence in Biscayne Bay.

There were increases in specific conductance in the L-31E Canal during the Post-Uprate dry season, similar to observations during the Pre-Uprate period. However, several of the L-31E Canal stations exhibited their highest specific conductance values during the Pre-Uprate period. There does not appear to be a meaningful correlation between specific conductance and tritium; changes in specific conductance are not accompanied by similar and consistent responses in tritium. Tritium values in the L-31E Canal are within values that may be associated with atmospheric influences, so the presence of CCS water, if any, is not discernable.

The data support the conclusion that the CCS does not have any ecological impact on the surrounding areas, and there is no evidence of CCS water in the surrounding marsh and mangroves areas from a groundwater pathway. Ecological findings in the Pre- and Post-Uprate periods for Biscayne Bay and the marsh and mangrove areas surrounding Turkey Point are generally similar, and any differences appear to be predominantly a function of site-specific conditions (i.e., low nutrients, lack of substrate for seagrass) and seasonal and meteorological effects.

1. INTRODUCTION

Florida Power & Light Company (FPL) submits this Comprehensive Post-Uprate Monitoring Report, dated March 2016, for the Units 3 and 4 Uprate Project. This monitoring report has been prepared in accordance with the FPL Turkey Point Power Plant (Turkey Point) Groundwater, Surface Water, and Ecological Monitoring Plan, referred to herein as the Monitoring Plan (South Florida Water Management District [SFWMD] 2009a) and modifications (SFWMD 2013a, b, c). The Monitoring Plan requires the collection of groundwater, surface water, meteorological, and ecological data in and around the plant to establish Pre-Uprate and Post-Uprate conditions and determine the horizontal and vertical effects and extent of the cooling canal system (CCS) water. For further details, refer to the Monitoring Plan and the Fifth Supplemental Agreement (SFWMD 2009a, 2009b).

The purpose of this Comprehensive Post-Uprate Monitoring Report is to summarize the Post-Uprate monitoring efforts through May 31, 2015, to present and summarize the data, and to discuss results. This report also incorporates information presented in the February 2015 FPL semi-annual data delivery (FPL 2015a), and the Annual Post-Uprate Monitoring Report (FPL 2014a) and associated addendum (FPL 2015b). Information from the Comprehensive Pre-Uprate Report (FPL 2012a) is also included, where applicable, for comparisons with the Post-Uprate period. Data collected prior to February 26, 2012, are part of the Pre-Uprate period, while data collected between February 26, 2012, and May 27, 2013, are part of the Interim Operating period. Data collected after May 27, 2013, are part of the Post-Uprate period.

Table 1.1-1 summarizes the Post-Uprate monitoring conducted through May 2015**.** Data were collected in accordance with the FPL Quality Assurance Project Plan (QAPP) (FPL 2011b; FPL 2013b) and consistently met the data quality objectives (DQOs) in the QAPP. Any notable modifications to field protocols not incorporated in the 2013 revision of the QAPP are discussed in the December 2013 field audit (FPL 2014b).

1.1 Brief Overview of Automated Monitoring Network

FPL has installed an extensive automated monitoring network to collect groundwater, surface water, meteorological, and hydrologic data over a broad area surrounding Turkey Point. A brief overview of each component of the monitoring network is provided below, and further discussion regarding the monitoring results is included in Section 2 of this report. Time-series graphs for the entire monitoring period (Pre-Uprate, Interim Operating period, and Post-Uprate) are incorporated in Section 2 to allow review of trends and any differences between the Pre- and Post-Uprate periods.

1.1.1 Groundwater

From February through June 2010, FPL installed 42 wells in 14 well clusters (Turkey Point groundwater [TPGW-1 to TPGW-14]) at and around Turkey Point (Figure 1.1-1). Coordinates of each station are provided in Appendix A. The locations were determined based on site conditions and extensive coordination among FPL and Florida Department of Environmental Protection (FDEP), SFWMD, and Miami-Dade County's Department of Regulatory and Economic Resources (RER) (collectively, the Agencies). The placement of station locations in Biscayne Bay was also coordinated with Biscayne National Park (BNP).

Three separate wells were installed at each location: a shallow well (S); an intermediate depth well (M); and a deep well (D). The borehole for the deep well was drilled first, and down-hole geophysical methods were used to help determine high flow zones and other subsurface characteristics. Based on a collaborative effort among FPL, JLA Geoscience, Inc., and the SFWMD, screen depths were established, with screen lengths varying from 2 to 5 feet (ft) based on site conditions. Table 1.1-2 provides a brief summary of the well construction information, and further details are provided in the JLA Geosciences, Inc. (2010) Geology and Hydrogeology report.

Following well completion, the top of each well casing was surveyed and infrastructure (probes, telemetry, solar panels, and other elements) was installed to facilitate the automated collection of groundwater quality and stage data at 15-minute intervals. The measured water quality parameters are actual conductance and temperature. Specific conductance, salinity, density, and total dissolved solids (TDS) are calculated by the instrumentation based on the measured parameters. Groundwater data are remotely transmitted via telemetry, typically each day, and are uploaded to FPL's Electronic Data Management System (EDMS).

Data collection methods at these groundwater stations have remained unchanged from the Pre-Uprate to Post-Uprate monitoring period, other than adjusting the stations to record data at 1-hour intervals instead of 15-minute intervals in consultation with the Agencies. This change was implemented system-wide from February through April of 2013.

1.1.2 Surface Water

Per the Monitoring Plan and as shown on Figure 1.1-2, automated surface water stations were installed at the following locations:

- Seven stations in the CCS;
- Five stations in adjacent canals;
- Three stations in the Interceptor Ditch (ID); and
- Five stations in Biscayne Bay.

In addition, a non-automated station was set up at the Card Sound Road Canal (Turkey Point surface water canal [TPSWC]-6).

The locations of the monitoring stations were jointly determined with the Agencies and provide broad coverage of the key water bodies in the project area. Two additional automated-only stations (Turkey Point Biscayne Bay surface water [TPBBSW-10 and TPBBSW-14]) were added in February 2011 to record conditions in Biscayne Bay; these stations are co-located with TPGW-10 and TPGW-14.

Following submittal of the Comprehensive Pre-Uprate Report and at FPL's request, the SFWMD provided a letter to FPL on June 3, 2013 (SFWMD 2013a), allowing several modifications that included the following:

- Discontinuation of monitoring at TPBBSW-1 and TPBBSW-2; and
- Discontinuation of monitoring at the bottom of stations of the Turkey Point surface water Cooling Canal System at TPSWCCS-4, TPSWCCS-5, and both the top and bottom stations at TPSWCCS-6.

The automated surface water stations record the same water quality data parameters as the groundwater stations. Stage data are recorded at all Post-Uprate monitoring locations, except stations TPBBSW-4 and TPBBSW-5 in Biscayne Bay, which do not have the infrastructure to support stage recorders or a telemetry system; data at these Biscayne Bay locations are retrieved manually at approximately six-week intervals and uploaded to the FPL EDMS. Data from the other stations are typically transmitted via telemetry daily onto a secure server system and are automatically uploaded into the EDMS. Similar to the automated groundwater stations, the frequency of data recorded was changed prior to the start of the Post-Uprate period from 15-minute to hourly intervals.

1.1.3 Meteorological

One meteorological station that includes instrumentation to measure solar radiation, wind speed, wind direction, air temperature, relative humidity, and rainfall was installed near the center of the CCS (Turkey Point meteorological station [TPM-1]). Data were collected at 15-minute intervals from the inception (July 2010) to April 2013, when the frequency was changed to hourly intervals to be consistent with the other automated stations. Data from the meteorological station are automatically uploaded daily into the EDMS as well.

While TPM-1 measures rainfall, data from the SFWMD Next Generation Radar (NEXRAD) is typically used for most analysis. FPL and the SFWMD previously determined that the NEXRAD data provided better information for the water budget analysis. The NEXRAD data (daily rainfall totals over selected areas) is provided by the SFWMD to FPL bi-annually.

To help assess the contributions of tritium via rainfall and vapor exchange, seven rainfall collectors were installed around the CCS and five evaporation pans were installed at various locations. The monitoring at these stations has remained the same since they were installed during the Pre-Uprate monitoring period. Figure 1.1-3 shows the locations of the above-mentioned stations.

1.2 Quarterly Water Quality Sampling

The monitoring network for groundwater and surface water supports the collection of water samples for laboratory analysis. During the Post-Uprate monitoring period, samples were collected from the 42 new groundwater wells and the 21 surface water stations noted in Section 1.1.2, above. Samples were also collected from two depths at five existing historical wells (L-3, L-5, G-21, G-28, and G-35) as part of FPL's routine sampling for the ID operation. The samples were analyzed for a variety of laboratory and field parameters (Table 1.2-1), depending on the locations and whether the effort was a quarterly or semi-annual event. Table 1.2-1 also shows changes in laboratory and field parameters during the various monitoring periods, as described below.

Following review of the Comprehensive Pre-Uprate Report, the SFWMD (2013a), in consultation with the Agencies, agreed to reduce some of the monitoring requirements as follows:

- Elimination of Biscayne Bay surface water quality monitoring stations TPBBSW-1 and TPBBSW-2 and associated sampling;
- Elimination of TPSWCCS-4 and TPSWCCS-5 bottom stations;
- Elimination of both the top and bottom stations for water quality parameters at TPSWCCS-6; and
- Reduction of the number of parameters to be analyzed (Table 1.2-1).

All other monitoring requirements remained the same. In June 2014, FPL opted to resume the collection of water quality parameters at the top station at TPSWCCS-6.

Results of the Post-Uprate monitoring conducted in June 2013, September 2013, December 2013, March 2014, June 2014, September 2014, December 2014, and March 2015 are included in Section 3 of this report. Analytical results prior to June 2013 can be found in the semi-annual data deliverables (FPL 2013a) and the Comprehensive Pre-Uprate Report (FPL 2012a).

1.3 Ecological Monitoring

The Monitoring Plan and QAPP outline an ecological monitoring program in the wetlands and Biscayne Bay around the CCS that includes marsh vegetation, mangroves, tree islands, submerged aquatic vegetation, and benthic fauna. Figure 1.3-1 shows the sampling locations and Table 1.1-1 includes the ecological parameters measured during Post-Uprate monitoring. Based on information in the Comprehensive Pre-Uprate Report and per FPL's request, the SFWMD approved several reductions in the ecological monitoring for the Post-Uprate monitoring period (SFWMD 2013b). These reductions, in consultation with the Agencies, were initiated for the Post-Uprate monitoring and include the following:

- Reduction in frequency of vegetation sampling in the saline wetlands (mangroves) from semi-annual to annual, with sampling to be conducted at the end of wet/growing season (November);
- Reduction of porewater sampling in mangroves and tree islands from quarterly to semi-annually;
- Reduction of parameters to be analyzed in porewater, which initially included a broad suite of physical parameters, cations, anions, tracer suite constituents, and nutrients. The Post-Uprate monitoring includes physical parameters (specific conductance and temperature) and chemical parameters (nutrients, tritium, sodium, and chloride);
- Elimination of faunal sampling during the Post-Uprate monitoring period; and
- Reduction of submerged aquatic vegetation (SAV) and semi-annual porewater sampling from five transects to two at each of the four existing Bay sites (to be collected at 'a' and 'b' transects).

During the Post-Uprate monitoring period, plant community characteristics (composition, cover, canopy, height, productivity), leaf characteristics, nutrient content in the leaves, and porewater quality were assessed in 12 transects in marsh and mangrove areas around the CCS (Figure 1.3-1). Two (one each in the marsh and mangrove) of these transects are in reference areas. This monitoring is conducted quarterly to annually, depending on the parameter.

In Biscayne Bay, during the Post-Uprate monitoring period, SAV, coral and sponge community composition and cover, nutrient content in seagrass leaves and sediment, light attenuation, and porewater quality were assessed in eight transects that paralleled the shoreline (Figure 1.3-1). This monitoring is conducted twice per year.

This report presents the results of the marsh and mangrove monitoring conducted in August 2013, November 2013, February 2014, May 2014, August 2014, November 2014, February 2015, and May 2015 and Biscayne Bay monitoring conducted in September 2013, April 2014, September 2014, and April 2015. Where appropriate, comparisons with Pre-Uprate findings are included.

Results prior to June 2013 can be found in the semi-annual data deliverables (FPL 2013a) and the Comprehensive Pre-Uprate Report (FPL 2012a). Details on the transect plot setups, sampling methods, and materials can also be found in the Comprehensive Pre-Uprate Report (FPL 2012a).

1.4 Hydrogeologic Assessment

1.4.1 Post-Uprate Hydrogeological Observations and Extent of CCS Water

With the aid of data collected as part of the well installation efforts, automated data and analytical results, the United States Geological Survey (USGS) induction logs, and other supporting documentation, FPL conducted an initial assessment of the hydrogeologic conditions in the area surrounding Turkey Point and the CCS in the Comprehensive Pre-Uprate Report (FPL 2012a). Additional information is provided in this Post-Uprate Report.

1.4.2 CCS Water and Salt Budget

FPL has worked closely with the Agencies to develop an acceptable methodology for the CCS water and salt budgets. This methodology was presented in the Comprehensive Pre-Uprate Report (FPL 2012a), and that same methodology has been used to assess the Post-Uprate water and salt budget. Estimated monthly water budgets and salt loads from June 2013 through May 2015 are included in Section 5.

1.5 Interceptor Ditch Operation

The ID is located immediately west of the CCS and is designed to prevent seasonal inland movement of saltwater from the CCS into the historically fresh/upper portion of the Biscayne aquifer. Shallow saline groundwater is intercepted by the ID and pumped back to the CCS during the dry season or other times when the natural gradients are low and the potential for saltwater intrusion exists. Details of the ID operation are found in the 1983 Agreement (the Agreement) between the SFWMD and FPL. On October 14, 2009, the Agreement was modified to expand the monitoring program as part of the Turkey Point Units 3 and 4 Uprate Project, and well G-35 was added as part of the historical monitoring network. FPL submitted a revised operations plan to the SFWMD in 2011 that considered the effects of water density; FPL began following that plan in December 2011. Subsequent refinements were made in 2012 (minor change in pumping triggers), and FPL has been following the updated version since December 2012.

FPL has been collecting groundwater data west of the CCS and recording ID pumping as part of the ID operation since 1972. Results have been included in reports that were submitted on a quarterly and an annual basis to the SFWMD. With SFWMD's concurrence, these results are now integrated into the Annual Uprate Reports and include findings from the previous year (June-May). ID operation information/results for June 2014 through May 2015 are provided in Section 6 of this report.

1.6 Data Quality Objectives and Acceptance Criteria

DQOs, along with acceptance criteria, are identified in the project QAPP (FPL 2013b). The DQOs include the following:

- Precision;
- Accuracy;
- Analytical Sensitivity;
- Completeness;
- Representativeness;
- Comparability;
- Availability;
- Reliability;

- Maintainability; and
- Timeliness

Quality guidelines that reflect quantifiable goals have been established for some of the DQOs. DQOs have consistently been met, and any exceptions are discussed within this report. A summary of performance in meeting the DQOs is described below.

Precision

Precision is a measure of mutual agreement (reproducibility) between duplicate or co-located measurements of the same analyte. The closer the numerical values of the measurements are to each other, the more precise the measurement.

To assess precision of the automated probes being used to collect time-series water quality and water level data, field measurements are taken during sampling events and/or during cleaning and calibration events to compare the results with the automated probe. Temperature readings on the automated probe are checked against the reading of a National Institute of Standards and Technology (NIST)-certified thermometer during cleaning and calibration events. During sampling events, specific conductance values are recorded with a second probe and compared with the automated values for informational purposes. Any major discrepancies between the automated probe and the second probe are reviewed; however, the values are sometimes different due to differences in sample collection location (the second probe readings for specific conductance are in the flow-through cell, the automated readings are in the well).

For verification of water level precision of the automated probes, water level measurements are recorded with a water level indicator at different times during cleaning and calibration and are compared with the probe reading. Water levels are recorded on the water level indicator and probe before pulling the probes for cleaning and after replacement of the probes following cleaning. This helps verify that the automated water level probes have recorded data with good precision prior to cleaning and confirms that the reference levels are set correctly after cleaning. If the difference between the verification water level reading (before the probe is pulled for cleaning) is greater than 0.1 ft from the automated probe reading, the data are qualified as estimated (E) back to the previous cleaning and calibration event or, at minimum, back to an interim point where there is an unexplained shift in the data. The precision continues to improve over time; however, the biggest challenge has been associated with the surface water stations in Biscayne Bay and the CCS. Occasionally, wave action at these surface water body locations affect the water-level indicator readings, making verification of the automated reading difficult. Only a limited amount of water level data (<1%) is qualified as questionable due to verification failures. However, as the probes have aged, there has been a slight increase in qualifying water level data due to verification readings. FPL is systematically conducting factory calibrations and replacing the older probes, where appropriate, to address this issue.

The precision of laboratory samples is established by the evaluation of field and laboratory duplicate samples. If the relative percent difference (RPD) between the sample and the duplicate result differ by more than 20%, the results for that analyte in both samples are qualified as questionable (?). While a small percentage of sample data has been qualified due to high duplicate RPDs, overall, the analytical results are comparable to duplicate samples for those samples using the same method. These precision results indicate the sampling and analytical procedures are consistently performed and repeatable. Details are provided in the Data Usability Summary (DUS) reports issued for each event.

The precision for ecological samples is determined by a 5% check on all field vegetation measurements. In the marsh and mangrove, plots are randomly selected each event to be re-measured to determine precision. Individuals conducting the first set of measurements on the plot are not allowed to re-measure the same plants. Biscayne Bay SAV plots are reassessed by a second diver following behind the first person to conduct an independent Braun-Blanquet assessment. Scientists involved in the SAV measurements also participate in the annual inter-Agency calibration exercise (previous exercises were conducted with the USGS, SFWMD, and RER in May 2014 and May 2015 as part of the Post-Uprate period) as an additional level of precision determination.

Accuracy

Accuracy is the measure of bias in a measurement system. The closer the value of a measurement is to the true value, the more accurate the measurement.

The instrumentation for all the automated station instruments and field equipment meets the requirements for accuracy per the QAPP. All stations were surveyed with vertical control established to second order closure (accuracy within hundredths of a foot), with the exception of three groundwater cluster stations located in Biscayne Bay due to their distance from shore. The top of the groundwater wells and surface water stilling wells at these Biscayne Bay stations were surveyed with global positioning system (GPS) instruments to an accuracy of 0.1 ft.

To assess accuracy of the automated stations being used to collect time-series water quality data, each of the 71 probes is checked against standards of known specific conductance values (verification) and then recalibrated, as necessary, during each cleaning and calibration event. Approximately 98% of the probes for the entire monitoring effort have passed the verification check conducted during cleaning and calibration by being within 5% of the known standards. When values differ by more than 5% and less than 30%, the probe data are qualified as estimated. When values differ by more than 30%, the data are qualified as questionable. In both cases, data are qualified back to the previous cleaning and calibration event or, at a minimum, back to an interim point where there is an unexplained shift in the data. Specific data have been qualified as questionable (?) for this reason in only a few instances; these data are not used in any analyses.

Similarly, probe temperature readings are compared with a highly accurate NIST-certified thermometer during each cleaning and calibration event. If a temperature verification measurement on the NIST thermometer is more than 0.5 degree Celsius (°C) different than the automated probe reading, the data are qualified as questionable. Rarely have the water quality data been qualified for not meeting a field instrument temperature verification reading.

Accuracy of the analytical results is evaluated using percent recoveries of analytes added (termed "spiked") to samples (matrix spikes [MSs]) or reagents (laboratory control samples [LCSs]) and carried through the extraction and analysis procedure. Laboratory-established acceptance criteria (within method requirements) are used for LCS and MS percent recoveries. LCS percent recoveries have consistently passed acceptance criteria for all analyses, indicating the laboratories' extraction and analytical procedures and materials have met method requirements.

The comprehensive review of the analytical data performed by the SFWMD in February 2013 (SFWMD 2013d) noted issues with the matrix spiking procedures. As a result, a Corrective Action Plan (CAP) was proposed by the laboratory that included a modified calibration and spiking regime and modified batching procedures (i.e., analyzing similar salinity samples together). Since the CAP's implementation in June 2013, the calibrations ranges and spiking concentrations have been tailored to the anticipated concentration of the samples, resulting in more accurate and usable MS data. In addition to the laboratory corrective actions addressing MS/matrix spike duplicates (MSDs), the data validation procedure was also modified in the June 2013 QAPP revision (FPL 2013b). Prior to the 2013 QAPP revision, MS qualification was limited to the parent or native sample. The revision requires qualification of similar salinity samples run in the same batch. While the matrix spiking regime has resulted in many fewer failures, the validation modification has resulted in qualifying additional samples. The net difference of the number of MS/MSD qualified data is essentially the same, although the data are more accurate and usable.

Accuracy is conveyed in an analytical result through the use of significant figures. The laboratory traditionally reports all analytical results with two significant figures (e.g., 32,000 milligrams per liter [mg/L]). In this case, the result is understood to be ± 1,000 mg/L. As a result of the June 2013 changes to the Monitoring Plan, the laboratory now reports a third digit to aid in Post-Uprate analysis of the data (e.g., 32,200 mg/L). However, this third digit is not considered significant. This third digit can be misconstrued as indicating a false level of accuracy of, from the example above, ± 100. Therefore, the actual level of accuracy needs to be considered when using the three-digit analytical results.

In addition to recoveries, accuracy is evaluated using technical comparison checks, including cation and anion charge balance; cations, anions, and TDS compared with the specific conductance; total ammonia less than total Kjeldahl nitrogen (TKN); and orthophosphate (OP) less than total phosphorus (TP). Many cation and anion results, particularly in the high salinity samples, have been qualified as estimated (J) due to ion charge and conductance comparisons. Comparison of TDS/specific conductance and ammonia/TKN were generally acceptable over the course of the project.

Regarding the phosphorous results, in the initial monitoring events, the OP results were frequently reported above the TP results; this is not possible, as OP is a subset of TP. Since the background correction method modification in March 2011, the OP and TP comparisons have been mostly within the criteria, although the lab continues to have intermittent issues with the project matrices and the low concentrations of the target analytes. There are multiple reasons why quality criteria were not met, which leads to difficulty in isolating a particular source of the issues. There were cases where the samples were diluted (to compensate for the complex matrix), which resulted in elevated method detection limits (MDLs) when reported as not-detected and many of the errors involved results that were either at or near the MDL.

Following laboratory audits in early 2012, the standard operating procedure (SOP) for TP was modified to account for saline interference seen in some samples. The method and instrumentation employed can only partially separate TP from a saline baseline shift. The laboratory determined the automated integration performed was quantifying the elevated saline baseline rather that the TP peak. The method modification with the new integration technique occurred prior to the September 2012 semiannual event. The TP results for saline samples since the modification have been markedly lower, in general. Therefore, the TP results prior to this modification should be considered biased high, with more uncertainty associated with the saline sample results. The modifications to the OP and TP methods noted above resulted in an increase in accuracy of the results. The consistency of acceptable matrix spike recoveries, an indicator of accuracy, for these methods has improved significantly following the modifications.

Similarly, the accuracy of fluoride and sulfide results has also been in improved as a result of method modifications. These modifications are discussed in more detail in the following Analytical Sensitivity section as achieving the project-required MDL was the main reason for the modification. Prior to the modifications, results for these analytes were often reported as not detected, but at a detection limit above the project requirement. With the modifications, results for fluoride and sulfide have been consistently meeting project requirements with detections in the range not seen prior to the modifications. Therefore, the accuracy and usability of these data has greatly improved.

Accuracy can also be evaluated using field blanks, which can indicate bias in the associated analytical results. Field blank results over the course of the project and for the majority of analytes, have confirmed proper sampling and handling techniques. However, beginning in late 2013, some nitrogen analytes (i.e., ammonia, TKN) were being detected in some field blanks. Many of the associated sample results have been qualified as estimated (J) due to these detections. After a review of sampling and analytical procedures, and following discussions with the laboratory, it was determined the system used to generate the deionized water provided by the laboratory for use in the field blanks was not providing adequate water quality. Countermeasures were implemented to address the issue and, starting in the May 2015 event, the laboratory has verified deionized water quality via analyses conducted for all project analytes. The laboratory periodically provides a complete analyte report to ensure the quality of the deionized water used for the project.

To further evaluate laboratory accuracy, FPL requested that TestAmerica Laboratories, Inc. (TestAmerica) analyze certified reference material (CRM) samples for nutrients in saline waters. In June 2012, the laboratory analyzed CRMs for ammonia, TP, OP, nitrate/nitrite, and TKN and reported acceptable recoveries for the nutrients tested using the methods and procedures employed on the project. To comply with the June 2013 QAPP revision (FPL 2013b), the laboratory has continued analyzing CRMs on an annual basis, with the first report submitted in

November 2014; recoveries for chloride, sodium, ammonia, TP, OP, nitrate/nitrite, and TKN were within acceptability limits.

Along with the data validation procedures described above, the TestAmerica laboratory has been periodically audited over the course of the project to ensure continued data quality. In general, the laboratory has performed well in the audits by following all method and QAPP requirements. For instances where issues were noted, the laboratory has incorporated corrective actions, some of which are detailed above, that have resulted in improved data quality over the course of the project. The most recent laboratory audit, performed by FPL in March 2015, confirmed the laboratory continues to follow all method and QAPP requirements to provide accurate and usable data.

Analytical Sensitivity

For data validation, qualification, and reporting purposes, analytical sensitivity is expressed by MDLs. An MDL is set so that the minimum concentration of an analyte reported is within 99% confidence that the analyte is greater than zero.

Project-required MDLs are listed in Table 3.2-1 of the QAPP (FPL 2013b). The MDLs are based on applicable criteria, MDLs listed in the Automated Data Processing Tool (ADaPT), Florida Administrative Code (F.A.C.) 62-4.246(3), and stated laboratory capabilities. While the majority of analytical detection limits have met the QAPP requirements, a few have been difficult to achieve due to the saline nature of the samples. This is particularly an issue with the trace metals, some nutrients (i.e., ammonia, nitrate/nitrite), and a few other analytes. The laboratory has had to dilute the saline samples to keep instruments from being overloaded with the major ionic constituents (i.e., chloride, sodium), which is not an uncommon situation. This has resulted in some data reported as "not detected" (U) but with detection limits above the QAPP requirements. In addition, these dilutions increase the uncertainty, or error, associated with a result.

To address this issue and achieve the required MDLs, TestAmerica has made several changes to protocols/methods over the course of the project. The analytical methods for fluoride and sulfide have been changed to achieve the required MDLs. Starting in September 2013, the fluoride method was changed to SM 4500 F C (previously United States Environmental Protection Agency [EPA] Method 300). The sulfide method change to EPA Method 376.2 (previously SM 4500 S) was delayed due to laboratory issues until September 2014. Since the method change, the MDLs for non-detected results have consistently been below QAPP requirements, resulting in more usable data. The MDL for total ammonia, which was intended to be modified as well, was not updated in the June 2013 QAPP due to an oversight. Future revisions of the QAPP should include this modification. As noted in the previous section, the laboratory has started batching samples and tailoring calibration ranges, within method requirements, to fit project samples and reduce the frequency of dilutions needed.

Completeness

Completeness is expressed as the percentage of valid or usable measurement to planned measurements. The higher the percentage, the more complete the measurement process. The number of planned measurements is based on when the infrastructure is in place and functional. Per the QAPP, the completeness goal for automated water quality measurements and the meteorological data is 90%. The completeness goal for the analytical data is 95%. As described below, the completeness goals have been met. In addition, water quality samples and ecological data also have a high degree of completeness, as described further below.

The automated water quality data are 94% complete for the entire monitoring period from June 2010 (or when stations came online) through May 2015. The percent completeness is higher in the Post-Uprate monitoring period compared to the Comprehensive Pre-Uprate Report (FPL 2012a), which had 89% completion from June 2010 through June 2012. However, more recent increases in log resets or electronic failures have resulted in the loss of some data. There continue to be issues with specific conductance oscillations resulting in unusable data related to probe or cable malfunctions or radio frequency wave interferences, but to a lesser extent than previously reported. A small percentage of specific conductance or temperature data have also been qualified for short periods of time as unusable due to factors such as: the overtopping of wells from seasonally high tide events (TPGW-3 and TPGW-12) and excessive rain events (TPGW-7); data recorded during a cleaning and calibration or sampling event, and likely affected by those activities; clogging of stilling well; sensors blocked by sediment or other obstructions; probe malfunction; and, to a lesser extent, calibration failure. FPL will be replacing all of the automated probes in the first half of 2016 and will be installing new risers and stilling wells, which are anticipated to reduce questionable or lost data.

Meteorological data at TPM-1 are more than 90% complete for the entire monitoring period. The meteorological station was out of service during only a few events. The anemometer failed on April 30, 2013, and the entire unit, which contained all the sensors, except for photosynthetically active radiation (PAR), was returned to the factory on June 11, 2013. The anemometer was repaired, and the meteorological station was operational approximately two weeks later. Based on ongoing concerns by FPL about potential underreporting of the rain sensor, the entire unit was sent to the factory for replacement of the rain sensor; the unit was out from July 30, 2014, through August 8, 2014. Lastly, in late October 2014, the battery failed for several days and data were lost. As discussed in more detail below, the hourly data reported by TPM-1 from April 9, 2013, through the Post-Uprate period do not properly reflect rainfall conditions, and the hourly data are unusable. However, daily rainfall totals from TPM-1 are good and should be used, instead.

All planned groundwater and surface water stations were sampled during the Post-Uprate monitoring period from June 2013 through May 2015. All planned porewater stations were sampled over the same period, with the exception of two stations (F3-4 and F6-4) in the May 2014 event due to a lack of porewater. No analytical data have been qualified as unusable during the Post-Uprate period, with the exception of one OP data point from the March 2014 surface water sampling. This results in a completion rate of almost 100% (more than 99% for the entire monitoring period), which is consistent with the completion rate during the Pre-Uprate period.

All the planned ecological measurements have been made. Field data and samples are checked before leaving the field so no field measurements are missing and no analytical data have been qualified as unusable during the Post-Uprate period. This results in a completion rate of 100% in meeting the project objectives (more than 99% for the entire monitoring period).

Representativeness

Representativeness is a qualitative parameter that expresses the degree to which data accurately and precisely represent the environmental condition. The sampling locations and techniques, as outlined in the Monitoring Plan and the QAPP, provide data that are representative of conditions in the CCS and the surrounding environment.

Groundwater wells are placed in discrete high-flow zones and are spatially distributed to reflect changes in groundwater levels and quality across the landscape. Automated data are collected at 15-minute to 1-hour intervals, an adequate duration to reflect temporal changes in water levels, water quality, and various meteorological parameters.

In February 2015, FPL purged a majority of the wells. Following purging, changes in water levels were observed in several well clusters (most notably in the deep and intermediate depth wells at TPGW-2, TPGW-3, TPGW-6, TPGW-10 (deep only), and TPGW-12). FPL suspects that there was some stratification in the upper portion of the well casing that does not fully reflect the current water density in the formation. This stratification can impact water level readings. Depending upon the density of the water and extent of stratification, water level readings could be higher or lower; however, the hourly and seasonal patterns of an individual well are not affected. Further discussion is provided in Section 2.

During quarterly sampling events, specific conductance is recorded when samples are pumped. These values are later compared to data from the automated probes for each location. There have been a few instances in which the sampling and automated values have differed by 30% or greater. In some cases, such as with surface water sites, probes are typically inside stilling wells, and samples are taken from outside of the stilling wells. These differences in readings may be attributable to a reduction in water exchange between open water and the stilling well. This reduction in water exchange could be caused by biological fouling. If this is the case, the sample taken outside the well would be more representative of the environment than the water within the stilling well. New stilling wells are being installed for all surface water stations in 2016. These new stilling wells will have larger openings to enhance water circulation.

As mentioned above, FPL had concerns about the potential under-reporting of the rainfall sensor at TPM-1. FPL replaced the sensor in July/August 2014, but the rainfall values still seemed low. Rainfall was subsequently measured over a short-term period at a location adjacent to TPM-1 and the results were compared. The findings revealed reasonably close comparisons between the replaced sensor and the rainfall gauge, but there were some differences. Upon further investigation and reviewing the reporting code of the meteorological station, FPL found that the sensor reporting had not been properly set by YSI in April 2013, which resulted in under-reporting the hourly results. Rainfall was being measured correctly, but only reporting the last 15 minutes of each hour. This coding also affects lull wind speed, wind speed during gusts, average wind speed, and hail hits, since they are only being recorded at the last 15 minutes of each hour (basically a measurement each hour, but includes only data averaged over 15 minutes and not over the hour). Hourly rainfall data and hail hits are not representative of hourly totals and are not included in this report. In lieu of hourly rainfall data, FPL is including the daily totals from TPM-1, which were correctly measured and are representative of rainfall at that location. Wind lull and gust and average and maximum wind speed are not dependent on cumulative hourly totals and, thus, the measurements, even if just for 15 minutes each hour instead of the full hour, are still usable and representative of field conditions.

Comparability

Comparability is a qualitative parameter expressing the confidence with which one set of data can be compared to another. Nearly all the data, unless qualified as "?" or unusable for other reasons, are comparable. Methods of data collection and analysis have primarily remained consistent over the entire monitoring effort, including the Post-Uprate monitoring period. Some refinements in data collection have helped improve efficiency or verify precision. Below is a discussion of the impact of these data collection refinements on data comparability. Since the Pre-and Post-Uprate data will be compared in some instances, comparability of data between both time periods is important.

The most notable analytical data that may not be directly comparable are some of the nutrient results. As noted in the "Accuracy" section above, the method of analysis for OP was modified to address sample background, beginning with the collection of data in the March 2011 sampling event; OP data collected prior to March 2011 using the original method are not directly comparable to data collected during and after the March 2011 event. The data prior to the March 2011 event are believed to be biased high due to background fluorescence levels interfering with the analysis.

The most recent data that may not be directly comparable are the fluoride and sulfide results. As noted in the "Analytical Sensitivity" section above, the original analytical methods were changed to alternative methods in the September 2013 and September 2014 sampling events, respectively. The high concentration of other cations in some samples had been causing the laboratory to dilute samples that would result in non-detect results with MDLs elevated above the QAPP-required MDL. The alternative methods have resulted in lower detection limits and little interference from other sample components. The data prior to the September 2013 event are believed to be usable and not biased either way; however, the elevated MDLs limit the usefulness of the data in some cases.

Nitrate/nitrite samples collected in March 2012, and in subsequent events, were filtered in the field. Previously, the samples were distilled in the laboratory and not filtered in the field. It is expected that the results are similar. Rarely does one find insoluble forms unless they are large

particulates that would not be analyzed in any case; large particulates would have to be removed, as they would interfere with the analysis. This was further demonstrated by the March 2012 RER split samples. The samples were analyzed as filtered and unfiltered for ammonia and nitrate/nitrite, with essentially identical results. Therefore, the ammonia and nitrate/nitrite results from both method variations are considered comparable.
The frequency of automated reporting in the groundwater and surface water stations was reduced from 15-minute intervals in the Pre-Uprate monitoring period to 1-hour intervals in the Post-Uprate monitoring period. This change in frequency does not impact the comparability of data from the two periods, since both time intervals adequately capture site conditions.

Availability

Availability is the percentage of time that a system or function is available for service, according to established criteria and the probability that the system is operating satisfactorily at any point in time, excluding times when the system is under repair. This DQO primarily applies to the automated systems.

The stations that report automated water level and water quality still collectively have a high degree of availability. These systems operate around the clock, the probes have been reliable, and spare probes and cables are usually on-hand to fix a problem station. Other than the issue with the rain sensor's reporting, the meteorological station has been reliable, with limited down-time; thus the station has a high degree of available data on solar radiation, wind speed and direction, air temperature, relative humidity, and daily rainfall.

Reliability

Reliability is the probability of a system performing a specified function without failure for a specified period of time. A "failure" occurs when a measurement or control action does not comply with established accuracy, completeness, or timeliness standards. This DQO primarily applies to the automated systems.

Collectively, the stations that report automated water level and water quality are still reliable in the context of data usability. The associated probes that measure and record the data meet the accuracy requirements and exhibit high percent completeness. As previously indicated, some stations have recurring issues with oscillating specific conductance data; however, only a small percentage of the data are qualified "?". Reporting of the automated data from the stations on telemetry has typically been on a daily basis. However, a handful of stations still have signal issues, and the data have not been consistently reported within 24 hours. Even though the data may not have been electronically transmitted within 24 hour of collection, in most instances, the data are available (stored internally on the probe) and are eventually uploaded to the EDMS when a phone connection is made or when the data are manually downloaded. The quality guideline for reliability, as stated in the QAPP, is difficult to judge since it reflects a mean time between failures of 18 to 24 months, depending on the system. While there have been "failures" in less than 18 months, the majority of the data are usable and the Agencies are not making any decisions based on the raw data that are being transmitted via telemetry.

The meteorological station at TPM-1 has been reliable, with only a few outages and limited loss of data. The integrated meteorological unit has been out of service for factory repairs on just two occasions over the entire monitoring period: once to repair a malfunctioning anemometer and another time to replace the rainfall sensor. These repairs resulted in the loss of about three weeks of data. As previously discussed, FPL recently discovered that the sensor was correctly measuring rainfall, but only reporting the last 15 minutes of each hour due to a coding error. This error was fixed on June 17, 2015.

Maintainability

Maintainability is the ease with which a component or equipment can be modified to correct faults. The quality guideline per the QAPP for completion of repairs to components or equipment is seven days for 95% of all incidents, with the exception of remote stations accessible only by boat or airboat. However, given the size of the system, the remote locations of some stations, and the occasional need for extended troubleshooting efforts, strict compliance with the guideline is still not always possible or even appropriate. The automated groundwater and surface water stations (inshore) are easier to maintain than some of the other systems. Note that some of the oscillation and daily reporting issues have required, and continue to require, extensive troubleshooting.

On an approximate weekly basis, FPL checks for any automated groundwater and surface water stations that are on telemetry but are not reporting. Often, the lack of reporting is related to low signal strength or loss of modem connection the previous day, and not to an equipment malfunction. Typically, the data are still available, as data are stored on the probe; these data are uploaded when the system eventually reports. On a regular basis, FPL looks at time series plots of the data to see if there are any unusual data trends or oscillations requiring troubleshooting and repair efforts.

Timeliness

Timeliness is the promptness of reporting a measurement after it is made, reporting deficiencies, submitting reports or other project documentation, addressing corrective actions, and reporting deviations within the timeframes specified in the QAPP or within the Monitoring Plan or the Agreement.

Per the QAPP, the analytical data have been consistently provided to the Agencies within 48 hours following FPL's receipt of the data from the laboratory. While much of the data from the primary laboratory is in ADaPT format, such data have not undergone a full quality assurance (QA)/quality control (QC) review at the time it is first submitted to the Agencies. Since the samples are analyzed by various laboratories, the results are received at different times, with tritium sample analyses taking the longest to obtain. Once sample results are obtained for a sampling event, a full QA/QC check of the data is conducted, and FPL generates DUS reports. The data are further assessed during the preparation of semi-annual and annual reports; occasionally, suspect results are found and subsequently qualified.

The automated systems report values at 1-hour intervals and, for those systems on telemetry, upload the results daily. As previously discussed, low signal strength or other issues have prevented various telemetry units from consistently reporting every day. While the raw data can be viewed by the Agencies in FPL's electronic database, the data are not official until FPL has conducted a full QA/QC review. If additional errors are noted in the data following the QA/QC process, the results are updated in the database or DUS report, as applicable, and are included in an errata or the subsequent annual report.

Reports have been submitted to the Agencies per the timeframes outlined in the QAPP or in accordance with revised schedules agreed to by the Agencies. Once there is concurrence that corrective actions from field and laboratory audits are needed, corrective action is typically implemented immediately or by the next sampling event.

TABLES

Table 1.1-1. Summary of Annual Post-Uprate Monitoring Efforts

Monitoring Effort	Month											
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Automated Data Collection	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Groundwater and Surface Water Sampling (Uprate Stations)	Field parameters, TDS (GW only), sodium, chloride and tritium			Field parameters, TDS (GW only), anions, cations, silica (SW only), tritium and nutrients[1]			Field parameters, TDS (GW only), sodium, chloride, and tritium			Field parameters, TDS (GW only), anions, cations, silica (SW only), tritium and nutrients[1]		
Historic Groundwater Well Sampling (G and L series wells)	Field parameters, TDS (GW only), sodium, chloride and tritium			Field parameters, TDS (GW only), anions, cations, silica (SW only), tritium and nutrients[1]			Field parameters, TDS (GW only), sodium, chloride, and tritium			Field parameters, TDS (GW only), anions, cations, silica (SW only), tritium and nutrients[1]		
Ecological Marsh and Mangrove Monitoring			Marsh measurements Marsh pore water (field parameters, sodium, chloride, and tritium)			Marsh and mangrove measurements Marsh and mangrove pore water (field parameters, sodium, chloride, tritium, and nutrients) Marsh and mangrove vegetation (nutrients)			Marsh measurements Marsh pore water (field parameters, sodium, chloride and tritium)			Marsh measurements Marsh and mangrove pore water (field parameters, sodium, chloride, tritium, and nutrients) Marsh Vegetation (nutrients)
Ecological Biscayne Bay Monitoring				Seagrass measurements Porewater (field parameters, sodium, chloride, tritium, and nutrients) Vegetation (nutrients)							Seagrass measurements Porewater (field parameters, sodium, chloride, tritium, and nutrients)	
Meteorological Station	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Rainfall Collector Sampling	Tritium			Tritium			Tritium			Tritium		
Evaporation Pan Sampling	Tritium	Tritium	Tritium	Tritium	Tritium	Tritium	Tritium	Tritium	Tritium	Tritium	Tritium	Tritium

Notes:
Automated data collection includes groundwater and surface water quality and stage.
[1]Nutrients sampled at all surface water stations, but in groundwater at selected well clusters.

Table 1.1-2. Well Construction Summary

Monitoring Well	Top of Casing Elevation (ft NAVD 88)	Depth to Top of Screen from TOC (ft)	Depth to Bottom of Screen from TOC (ft)	Screen Length (ft)	Top of Screen Elevation (ft NAVD 88)	Bottom of Screen Elevation (ft NAVD 88)	Elevation Screen Midpoint (ft NAVD 88)
TPGW-1S	3.82	32.0	34.0	2	-28.18	-30.18	-29.18
TPGW-1M	3.92	52.1	54.1	2	-48.18	-50.18	-49.18
TPGW-1D	4.20	85.3	89.3	4	-81.10	-85.10	-83.10
TPGW-2S	1.36	24.7	28.7	4	-23.34	-27.34	-25.34
TPGW-2M	1.18	50.5	52.5	2	-49.32	-51.32	-50.32
TPGW-2D	1.14	85.5	87.5	2	-84.36	-86.36	-85.36
TPGW-3S	1.44	27.1	31.1	4	-25.66	-29.66	-27.66
TPGW-3M	1.22	54.7	58.7	4	-53.48	-57.48	-55.48
TPGW-3D	1.10	86.6	88.6	2	-85.50	-87.50	-86.5
TPGW-4S	2.24	23.2	25.2	2	-20.96	-22.96	-21.96
TPGW-4M	1.82	38.1	43.1	5	-36.28	-41.28	-38.78
TPGW-4D	1.92	61.6	65.6	4	-59.68	-63.68	-61.68
TPGW-5S	5.35	28.6	32.6	4	-23.25	-27.25	-25.25
TPGW-5M	5.07	49.3	54.3	5	-44.23	-49.23	-46.73
TPGW-5D	5.22	67.0	72.0	5	-61.78	-66.78	-64.28
TPGW-6S	1.56	22.3	24.3	2	-20.74	-22.74	-21.74
TPGW-6M	1.52	48.7	52.7	4	-47.18	-51.18	-49.18
TPGW-6D	1.59	81.9	85.9	4	-80.31	-84.31	-82.31
TPGW-7S	1.36	21.8	25.8	4	-20.44	-24.44	-22.44
TPGW-7M	1.25	47.7	51.7	4	-46.45	-50.45	-48.45
TPGW-7D	1.19	79.7	83.7	4	-78.51	-82.51	-80.51
TPGW-8S	1.98	16.8	20.8	4	-14.82	-18.82	-16.82
TPGW-8M	2.12	34.9	36.9	2	-32.78	-34.78	-33.78
TPGW-8D	2.01	49.2	53.2	4	-47.19	-51.19	-49.19
TPGW-9S	3.63	14.9	18.9	4	-11.27	-15.27	-13.27

Table 1.1-2. Well Construction Summary

Monitoring Well	Top of Casing Elevation (ft NAVD 88)	Depth to Top of Screen from TOC (ft)	Depth to Bottom of Screen from TOC (ft)	Screen Length (ft)	Top of Screen Elevation (ft NAVD 88)	Bottom of Screen Elevation (ft NAVD 88)	Elevation Screen Midpoint (ft NAVD 88)
TPGW-9M	3.53	34.3	36.3	2	-30.77	-32.77	-31.77
TPGW-9D	3.52	47.9	49.9	2	-44.38	-46.38	-45.38
TPGW-10S*	8.3	36.4	38.4	2	-28.10	-30.10	-29.10
TPGW-10M*	8.3	60.4	64.4	4	-52.10	-56.10	-54.10
TPGW-10D*	8.3	126.5	130.5	4	-118.20	-122.20	-120.10
TPGW-11S*	8.7	39.4	43.4	4	-30.70	-34.70	-32.70
TPGW-11M*	8.7	90.4	94.4	4	-81.70	-85.70	-83.70
TPGW-11D*	8.7	122.4	126.4	4	-113.70	-117.70	-115.70
TPGW-12S	0.52	21.6	23.6	2	-21.08	-23.08	-22.08
TPGW-12M	0.73	55.8	59.8	4	-55.07	-59.07	-57.07
TPGW-12D	0.76	89.8	93.8	4	-89.04	-93.04	-91.04
TPGW-13S	2.19	29.8	33.8	4	-27.61	-31.61	-29.61
TPGW-13M	2.13	56.7	60.7	4	-54.57	-58.57	-56.57
TPGW-13D	2.18	84.9	88.9	4	-82.72	-86.72	-84.72
TPGW-14S*	8.8	32.5	36.5	4	-23.70	-27.70	-25.70
TPGW-14M*	8.8	56.3	60.3	4	-47.50	-51.50	-49.50
TPGW-14D*	8.6	102.2	106.2	4	-93.60	-97.60	-95.60

Note:
* Offshore wells surveyed using GPS are only accurate to 0.1 foot.

Key:
D = Deep. NAVD 88 = North American Vertical Datum of 1988.
ft = Feet. S = Shallow.
M = Intermediate. TOC = Top of casing.

Table 1.2-1. Analytical Changes in Post-Uprate Monitoring

Pre-Uprate and Interim Operating Period (June 2010-May 2013)		Post-Uprate (June 2013 onwards)	
Quarterly Event Analytes	**Semi-Annual Analytes**	**Quarterly Event Analytes**	**Semi-Annual Analytes**
Barium, Iron	Barium, Iron [Arsenic, Beryllium, Cadmium, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Thallium, Vanadium, Zinc] [1], Silica [2]	-	Silica [2]
-	Mercury	-	-
-	Hexavalent Chromium	-	-
Calcium, Magnesium, Potassium, Sodium, Boron, Strontium	Calcium, Magnesium, Potassium, Sodium, Boron, Strontium	Sodium only	Calcium, Magnesium, Potassium, Sodium, Boron, Strontium
Bromide, Chloride, Fluoride, Sulfate	Bromide, Chloride, Fluoride, Sulfate	Chloride only	Bromide, Chloride, Fluoride, Sulfate
Sulfide	Sulfide	-	Sulfide
Alkalinity/Bicarbonate	Alkalinity/Bicarbonate	-	Alkalinity/Bicarbonate
TDS (groundwater only)	TDS (groundwater only)	TDS (groundwater only)	TDS (groundwater only)
-	DIC	-	-
-	TKN [3]	-	TKN [3]
-	Nitrate/Nitrite [3]	-	Nitrate/Nitrite [3]
-	Total Phosphorous [3]	-	Total Phosphorous [3]
-	Ortho-Phosphate [3]	-	Ortho-Phosphate [3]
-	Total Ammonia [3]	-	Total Ammonia [3]
-	Gross Alpha [2]	-	-
-	Ammonium [3,4]	-	Ammonium [3,4]

Table 1.2-1. Analytical Changes in Post-Uprate Monitoring

Pre-Uprate and Interim Operating Period (June 2010-May 2013)		Post-Uprate (June 2013 onwards)	
Quarterly Event Analytes	Semi-Annual Analytes	Quarterly Event Analytes	Semi-Annual Analytes
-	Un-Ionized Ammonia [3,4]	-	Un-Ionized Ammonia [3,4]
-	Total Nitrogen [3,4]	-	Total Nitrogen [3,4]
δ^2H	δ^2H	-	-
$\delta^{18}O$	$\delta^{18}O$	-	-
$\delta^{13}C$	$\delta^{13}C$	-	-
$^{87}Sr/^{86}Sr$	$^{87}Sr/^{86}Sr$	-	-
δ^3H	δ^3H	δ^3H	δ^3H

Notes:
Quarterly events occur in June and December; Semi-Annual events occur in March and September.
- Parameters not sampled.
[1] Trace elements (besides Ba and Fe) were analyzed semi-annually at TPGW-1, 2, 3, 10, 13, and 14 by Method 200.7 prior to September 2012, then by 1640 for September 2012 and March 2013.
[2] Silica and Gross Alpha analyzed in the Cooling Canal (TPSWCCS) samples only. Gross alpha sampled only for 1 year (2010-2011).
[3] Nutrients sampled semi-annually at TPGW-1, 2, 3, 10, 13, 14 and all Surface Water (SW) stations. One time only sampling for June 2013 quarterly event in clusters TPGW-4, 5, 6, 7, 8, and 9.
[4] Total Nitrogen = TKN + Nitrate/Nitrite; Ammonium, and Un-ionized Ammonia are calculated using total ammonia values.

Key:
$\delta^{13}C$ = Carbon isotope.
$\delta^{18}O$ = Oxygen isotope.
δ^2H = Hydrogen Isotope.
δ^3H = Tritium.
$^{87}Sr/^{86}Sr$ = Strontium isotope
DIC = Dissolved Inorganic Carbon.
TDS = Total Dissolved Solids.
TKN = Total Kjeldahl Nitrogen.
.

FIGURES

Figure 1.1-1. Locations of Groundwater Monitoring Stations.

Note: Stations in parentheses (TPBBSW-1 and -2) and bottom stations with asterisks in the CCS (i.e. TPSWCCS-4B, -5B, -6B) were eliminated in June 2013 per SFWMD letter dated 6/3/13. 6-2015

Figure 1.1-2. Locations of Surface Water Monitoring Stations.

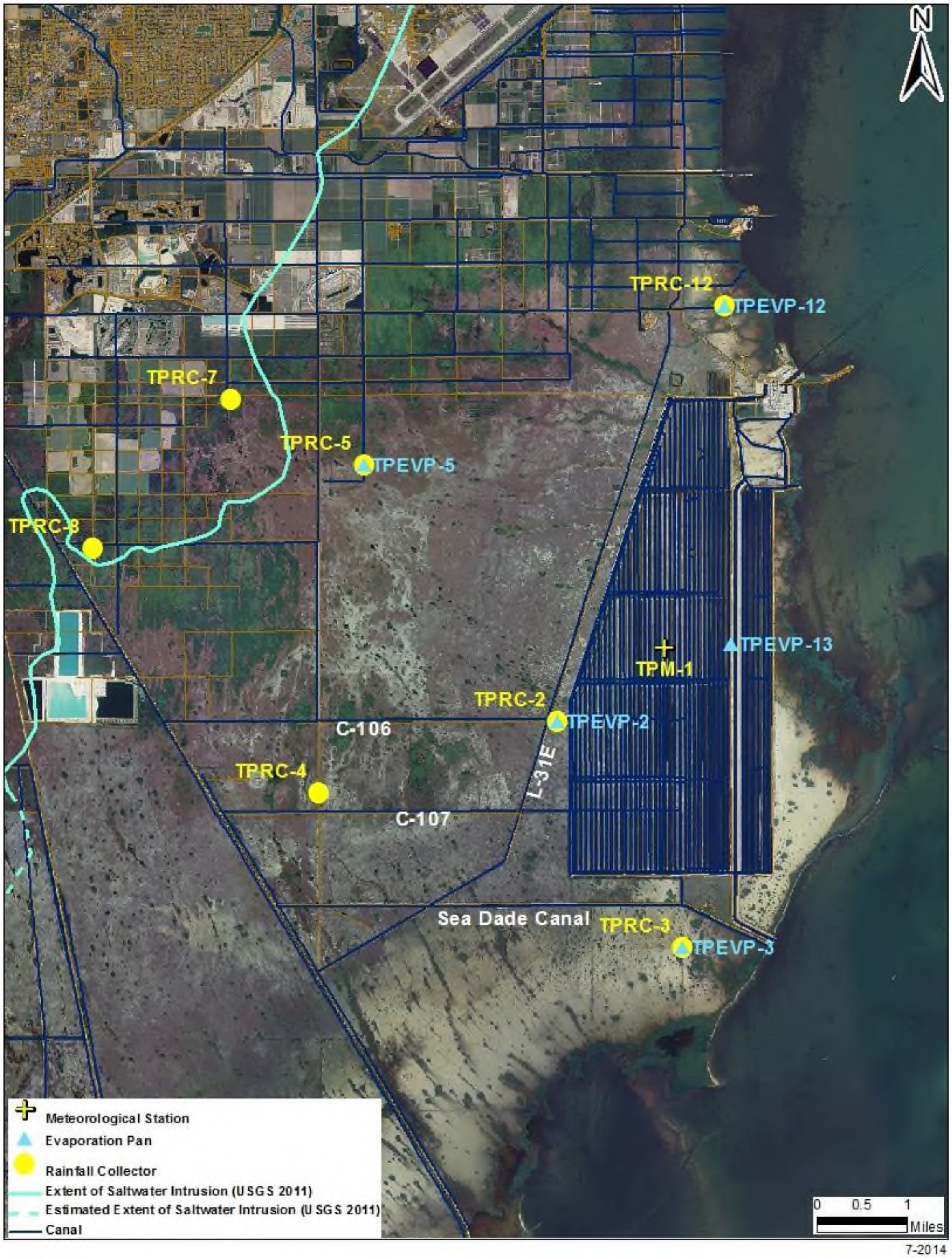


Figure 1.1-3. Locations of the Meteorological Station, Rainfall Gauges, Rainfall Collectors, and Evaporation Pans.

Note: Stations in parentheses (BB1 to BB4, lines c to e) were eliminated in September 2013 per SFWMD letter dated 6/17/13. 7-2014

Figure 1.3-1. Ecological Transect Locations.

2. AUTOMATED DATA COLLECTION

2.1 Groundwater Quality

2.1.1 Instrumentation and Data Collection Methods

Automated groundwater monitoring stations were installed at 14 well clusters in a total of 42 wells (three wells per cluster) from February to August 2010. In each well, two probes manufactured by In-Situ, Inc. (an Aqua TROLL® 100 [AT100] and a Level TROLL® 500 [LT500]) were deployed primarily between June and September 2010 and set to record water quality parameters and water levels, respectively. Readings were initially set to record data at 15-minute intervals but, in consultation with the Agencies, were changed in early 2013 to 1-hour intervals. The probes were connected by cable to a telemetry unit, and the data at each of these sites are transmitted remotely by cellular phone service to a central database once per day. The telemetry units are powered with 12-volt batteries that are recharged by solar panels. Figure 2.1-1 shows automated groundwater stations with telemetry.

From June 2013 through May 2015, in most cases, the automated station data were recorded and stored in the instrument; however, due to intermittent connectivity to the network, the data were not always transmitted to the FPL database on a daily basis. If the system does not reconnect after these connectivity failures, FPL has to download and manually patch in the data. When connection failures occur, data are typically downloaded from probes during the cleaning and calibration events. In some cases, data were lost due to probe electronic resets or component failures, which are increasing as the probes age.

To ensure system operability, FPL returned probes for factory recalibration, instrument checks, and diagnostics several years ago and is, again, systematically sending the probes to be rechecked at the factory. In addition, probes that continually malfunction are being replaced along with those that fail factory diagnostic checks and calibration. The potential for probe failure increases with age, and a number of the probes have been in use for nearly five years. New probes are scheduled to be installed at all stations in the first half of 2016.

2.1.2 Results and Discussion

All raw data are made available to the Agencies upon receipt by FPL and are subsequently reviewed for accuracy. Depending on the results, some of the data are qualified using the qualification codes outlined in the QAPP (FPL 2013b). While the number of measurements reviewed is substantially less now that the data are being recorded at hourly intervals instead of 15-minute intervals (three times reduction in data), the validation and qualification of data continue to be a substantial undertaking. For example, each groundwater well generates 144 data points each day. For the 42 wells, this results in 6,048 data points generated by the groundwater stations daily, or approximately 2.2 million data points annually. Both the surface and the groundwater stations currently generate in excess of approximately 3 million data points per year. Data validation and qualification of the automated data is a lengthy, multi-step process. See the Comprehensive Pre-Uprate Report (FPL 2012a) and the QAPP (FPL 2013b) for a detailed description.

Appendix B shows the water quality field verification/calibration logs for the Post-Uprate monitoring period. Only a small percentage of the groundwater quality data has been qualified as questionable (“?”). The reasons for using the “?” qualifier include: erroneous data caused by overtopping of certain wells during seasonally high tide events (TPGW-3 and TPGW-12) and excessive rain events (TPGW-2, TPGW-6, and TPGW-7); data recorded during a cleaning/calibration or sampling event and likely affected by those activities; probe malfunction; or, to a lesser extent, probe failure.

Figures 2.1-2 through 2.1-15 are time-series graphs of specific conductance and temperature at each well. The graphs depict validated data and exclude data that have been qualified as questionable. Appendix C shows which data were qualified, while Appendix D shows time-series graphs of the two parameters, but with all reported data, including estimated (“E”) and questionable (“?”) (i.e., eliminated) data. The time-series graphs show data from the beginning of station reporting in 2010 (various dates depending on station startup) through May 2015. This includes the Pre-Uprate, Interim Operating (shaded in grey on figures), and the Post-Uprate monitoring periods. This entire time-series display allows for a comparison between Pre- and Post-Uprate monitoring periods. FPL has included the raw time-series data in separate Excel files with this report to facilitate closer review of the time-series results by the Agencies and to allow the adjustment of graphic scales presented herein and/or focus on a specific time interval.

Tables 2.1-1, 2.1-2, and 2.1-3 show statistical summaries for time-series automated specific conductance, temperature, and salinity data, respectively. The tables include monthly average values for each monitoring well (specific conductance and salinity) and the minimum, maximum, average, and standard deviation for the Post-Uprate monitoring period (data from June 2013 through May 2015); these summaries were calculated where at least 21 days of data were available for that month. The salinity values are presented, since readers often relate more directly to salinity than to specific conductance. The standard deviation for a few salinity and temperature values is shown as zero, but that is a function of rounding/significant digits. Figures 2.1-16, 2.1-17, and 2.1-18 show the average value and standard deviation for specific conductance, temperature, and salinity, respectively, to facilitate a spatial visualization of the average automated groundwater results for the Post-Uprate period. For general comparisons, the Pre-Uprate averages and standard deviations (June 2010 through February 2012) are also shown on these figures. There may be minor differences between the Pre-Uprate values presented in this report and the Pre-Uprate values in earlier reports (FPL 2012a, 2014a), based on differences in the months that comprise each time period used to calculate the averages and standard deviations. These calculations have been included in separate Excel files along with this report.

Although Tables 2.1-1 through 2.1-3 and Figures 2.1-16 through 2.1-18 are informative, care should be used in drawing definitive conclusions when comparing these two data sets (Pre-

Uprate and Post-Uprate) because the Post-Uprate period covers a longer time span and includes an unequal number of months and seasons compared with the Pre-Uprate period. That said, the groundwater quality parameters are less subject to meteorological and seasonal changes compared with surface water quality parameters, thus reducing some time-dependent variability when comparing Pre- and Post-Uprate average groundwater values for most of the groundwater stations.

Overall, the qualified groundwater specific conductance data, as shown by the time-series plots and low standard deviations, indicated generally consistent readings for the vast majority of wells throughout the entire monitoring period (June 2010 to May 2015). The salinity results track the specific conductance results because salinity is calculated based on specific conductance and temperature. Nearly all of the specific conductance time-series plots exhibit very little change over time. As reported in the previous Annual Post-Uprate Monitoring Report (FPL 2014a), groundwater wells TPGW-1S, TPGW-7D, TPGW-10D, and TPGW-11D were the notable exceptions and are discussed further below. TPGW-2S, TPGW-8S, and TPGW-12S also exhibited some changes, as discussed below.

Specific conductance values at TPGW-1S ranged from approximately 39,000 microSiemens per centimeter (µS/cm) to 60,000 µS/cm in the Post-Uprate period (47,000 µS/cm to 64,000 µS/cm in the Pre-Uprate period). While not seen in most of the other wells, some of this variability may be seasonally driven (Figure 2.1-2), as higher specific conductance values were reported at the end of the dry season and lower specific conductance values were reported at the end of the wet season during the Interim and the Post-Uprate operating periods. Overall, specific conductance at TPGW-1S was lower in the Post-Uprate monitoring period than the Pre-Uprate period, but this may be just a function of the difference in time periods between the two monitoring periods.

At TPGW-7D, specific conductance was consistently around 600 µS/cm during the Pre-Uprate and Interim Operating periods, but the values increased during the Post-Uprate monitoring period (Figure 2.1-8). At the end of May 2015, specific conductance in the deep well was approximately 6,500 µS/cm, which was approximately 1,200 µS/cm higher than in May 2014. Annual induction logs by the USGS (Appendix E) show a notable increase in bulk conductivity at depth in this well. It is not clear if the increase in specific conductance at TPGW-7D is the result of the lag effects of the 2011 drought or some other factor. No changes in specific conductance were noted in the shallow and intermediate depth wells at this location. Further discussion of this topic is in Section 5. There were no notable changes in tritium concentrations through March 2015; an increase would have potentially indicated CCS water entering into the well (see Section 3). Per the Comprehensive Pre-Uprate Report (FPL 2012a), tritium is being used as a tracer of CCS water. While a tritium value of 22.6 picocuries per liter (pCi/L) was recorded in March 2015 (second highest value for that station), it was lower than a value reported in September 2011, when the well was fresh.

Biscayne Bay deep well TPGW-10D and, to a lesser extent, TPGW-11D, showed steady increases in specific conductance values beginning in the Interim Operating period and continuing through May 2015 in the Post-Uprate monitoring period (Figures 2.1-11 and 2.1-12). At TPGW-10D, the specific conductance value during the Pre-Uprate period was consistently around 55,000 µS/cm (average 55,119 µS/cm and standard deviation of 560 µS/cm), but by the summer of 2014, the specific conductance values had gradually risen above 68,000 µS/cm; these values have since leveled off (Post-Uprate average of average 66,757 µS/cm). At TPGW-11D, the specific conductance value during the Pre-Uprate period was consistently around 58,000 µS/cm (average of 58,010 µS/cm and standard deviation of 577 µS/cm), but by the summer 2014, the specific conductance values had gradually risen above 63,000 µS/cm and have since leveled off (Post-Uprate average of average 62,331 µS/cm). The increases in specific conductance beginning in the Interim Operating period and continuing into the Post-Uprate period for both wells appear to be influenced by the CCS. This conclusion is supported by corresponding increases in tritium through March 2015. Tritium in both TPGW-10D and TPGW-11D seems to have leveled off somewhat in the last three or four quarters of monitoring. Further discussion of these wells is provided in Sections 3 and 5 of this report.

There has also been an increase in the specific conductance in TPGW-12S between the Pre- and Post-Uprate. The average specific conductance was 44,966 µS/cm during the Post-Uprate compared to 41,281 µS/cm in the Pre-Uprate, an approximately 9% increase. However, this trend was not observed in either the accompanying automated temperature data or quarterly tritium values from this site. In actuality, tritium values are declining, with the lowest value recorded in March 2015. The specific conductance values observed indicate that the water may be originating from the surrounding saline scrub mangrove forests or Biscayne Bay, but does not appear to be highly influenced by the CCS, based on the tritium data.

While the specific conductance values for several of the above-mentioned wells have notably increased, the average specific conductance in most groundwater wells between Pre-and Post-Uprate periods are similar (typically within 5%), with almost 40% of the wells being slightly lower in the Post-Uprate period. Several of the wells have specific conductance values that have dropped more than 5%. For example, TPGW-2S showed a little more variability in specific conductance during the Interim and Post-Uprate operating periods, with values being a little lower than the Pre-Uprate period. The average specific conductance in the Pre-Uprate and Post-Uprate periods at TPGW-2S were 73,321 µS/cm and 67,646 µS/cm, respectively, which reflects nearly an 8% drop. Specific conductance at TPGW-8S also has been gradually declining, with values exceeding 3,500 µS/cm in October 2010 and, as of May 2015, values approaching 1,500 µS/cm. The change in average values between the Pre-Uprate (2,878 µS/cm) and Post-Uprate period (1,887 µS/cm) at TPGW-8S represent a 35% drop in specific conductance. As discussed in Section 3 (and earlier reports [FPL 2012a]), the specific conductance in TPGW-8 appears to be influenced by calcium, not marine water.

Similar to previous observations, specific conductance in the wells closest to the CCS and Biscayne Bay were higher than in the wells located farther away. Outer well clusters TPGW-7 (excluding TPGW-7D), TPGW-8, and TPGW-9 have groundwater that can be characterized as fresh and do not appear to be affected by saltwater intrusion. Monitoring wells TPGW-1M, TPGW-1D, TPGW-2S, TPGW-2M, TPGW-2D, TPGW-3S, TPGW-3M, TPGW-3D, TPGW-12M, TPGW-12D, TPGW-13S, TPGW-13M, and TPGW-13D still consistently show higher salinity water, with specific conductance values typically in excess of 60,000 µS/cm during the entire monitoring period. The specific conductance values in well cluster TPGW-13 were the highest, with average values in the Post-Uprate period near 80,000 µS/cm. This is consistent with the Pre-Uprate monitoring period, although the Pre-Uprate averages were collectively about 2.5% higher than the Post-Uprate averages.

The majority of the wells that appear to be influenced by marine water consistently had higher specific conductance values with depth, although the intermediate and deep zones often had similar values. Well cluster TPGW-13 (located in the CCS) remains one of the exceptions, where the average specific conductance values over the monitoring period were slightly higher in the shallow zone, but the values between all zones were within 10% of each other. This is not unexpected at TPGW-13, given the overlying hypersaline conditions in the CCS.

The time-series graph for TPGW-13S (Figure 2.1-14) shows several jumps or drops in specific conductance values, changes that are directly associated with cleaning/calibration events in late 2014 and early 2015. Most of these relatively small jumps and drops are associated with inherent instrument tolerances as a result of probe calibration (e.g., from October 8 through December 10, 2014) rather than actual specific conductance changes. Specific conductance values that are within 5% of a known calibration standard are deemed acceptable per the QAPP, and values greater than 5% but less than 30% are deemed as estimated values. There was a more gradual 5% rise in specific conductance over several weeks after a cleaning calibration event in mid-April 2015, but it is too early to tell if that rise is associated with the cleaning and calibration of the probe or represents a real change. While the specific conductance in TPGW-13 is anticipated to ultimately rise in response to the increase in CCS specific conductance, that response had yet to be clearly observed by the end of the reporting period.

As seen in the Pre-Uprate monitoring period, groundwater temperatures in the intermediate and, particularly, in the deep zones, still exhibited little to no change over the monitoring period, and many appear flat-lined on the time-series plots. The temperatures in the shallow zone wells typically varied up to 1°C and reflected minor seasonal influences; groundwater temperatures were typically higher near the end/beginning of the year and decreased to their lowest levels when air temperatures were warmer, which is the opposite of what would be expected if there was an immediate response in groundwater temperature to air temperature. This trend may reflect a lag in the response of the shallow groundwater (20 to 40 ft below ground surface) to winter and summer air and surface water temperatures.

The highest groundwater temperatures still occurred in well cluster TPGW-13, with minimum values at or above 29°C. While the temperature at this well cluster is influenced by the CCS, the increasingly warming CCS surface waters noted in Section 2.2 do not appear to have resulted in a corresponding increase in groundwater temperature. A gradual downward trend in temperature in the intermediate and deep well, which has been recorded since the beginning of monitoring in 2010, continues (Figure 2.1-14). The shallow well at TPGW-13 did show a seasonal increase in temperature, reaching 30.4°C in March 2015, but that is similar to the temperature recorded in March 2011 (30.5°C) and March 2012 (30.3°C). During the two-year Post-Uprate monitoring period, the average temperature in TPGW-13S was 29.7°C (30.0°C in the Pre-Uprate monitoring period). By comparison, the average groundwater temperatures during the Post-Uprate monitoring period in TPGW-10S (Biscayne Bay well), TPGW-1S (near CCS), and TPGW-9S (westernmost well) were 26.2°C, 25.7°C, and 24.6°C, respectively. In the Pre-Uprate monitoring period, the average groundwater temperatures were similar, with values of 26.1°C, 25.6°C, and 24.7°C at TPGW-10S, TPGW-1S, and TPGW-9S, respectively.

While TPGW-13 still exhibits the highest groundwater temperature, wells TPGW-2D and TPGW-2M continue to have the next-highest temperatures. Well cluster TPGW-2 did not follow the same general groundwater temperature trends exhibited by the other well clusters, indicating an external influence. Since groundwater in TPGW-2M and TPGW-2D are warmer than other sources, such as Biscayne Bay groundwater or freshwater groundwater, it appears that the CCS may be influencing the groundwater temperatures in those wells. Similar to the findings for TPGW-13, the groundwater temperatures at TPGW-2M and TPGW-2D have gradually declined since the beginning of monitoring. TPGW-2S temperatures fluctuate, but more erratically than all the other wells, with values ranging from 25.6°C to 27.5°C over five years of monitoring, but a lower range of 1.1°C during the Post-Uprate period.

To assess differences between wells over time, Figures 2.1-19 through 2.1-25 show comparisons of specific conductance and temperature in shallow- and deep-interval wells. Figure 2.1-19 shows that, of the wells in Biscayne Bay, TPGW-14 has the highest specific conductance values and the highest temperatures at depth. Figures 2.1-20 through 2.1-23 show changes across the landscape, and include wells in Biscayne Bay and in the CCS and wells farther inland. The figures illustrate how much higher the specific conductance and the temperatures are in the CCS well cluster TPGW-13 than in the other wells. The figures also show how the specific conductance and the temperature values generally decrease in wells with distance from the coast. Figure 2.1-24 shows plots of wells in or near the CCS. Figure 2.1-25 compares Biscayne Bay surface water specific conductance values and temperatures with the same parameters from Biscayne Bay groundwater for Uprate stations. The plots show how much less the groundwater specific conductance values and temperatures fluctuate compared with surface water values, indicating the buffering effects that groundwater has compared to surface water. The observed general trends between the Pre- and the Post-Uprate monitoring periods, based on Figures 2.1-19 and 2.1-25, are similar.

2.2 SURFACE WATER QUALITY

2.2.1 Instrumentation and Data Collection Methods

As determined jointly with the Agencies, automated surface water quality stations were established throughout the Turkey Point landscape. Currently, all stations record water quality and stage data, with the exception of Biscayne Bay stations TPBBSW-4 and TPBBSW-5, which record only water quality parameters. As previously stated, water quality parameter stations TPBBSW-1 and TPBBSW-2 have been eliminated for the Post-Uprate monitoring period and are not discussed any further. While a number of the sites that record surface water data have two probes (top and bottom), some have only one probe, depending on surface water depth and other considerations. When two probes are used at one location, one probe is placed near the surface and typically measures water quality parameters and pressure/water level (In-situ, Inc., Aqua TROLL® AT200 [AT200]), while the second probe is placed 1 ft from the bottom and measures water quality parameters (AT100) only. When only one probe is deployed at a location, with the exception of the Biscayne Bay stations, it is generally an AT200 placed approximately1 ft from the bottom. Table 2.2-1 summarizes the probes currently used at each surface water station and the parameters measured.

Similar to the groundwater sites, most of the probes are connected to a telemetry system that typically uploads once a day for most sites (Figure 2.2-1). Currently, 28 surface water probes (AT100s and AT200s) are deployed throughout the monitoring area, generating more than 1 million data points each year.

For logistical reasons, two of the current automated surface water quality sites in Biscayne Bay (TPBBSW-4 and TPBBSW-5) are not connected to a telemetry system. Per the QAPP Plan (FPL 2013b), these probes are set up similar to the BNP salinity monitoring network stations (Biscayne National Park 2007), which are equipped with probes that record specific conductance and temperature just above the sediment surface. Rather than installing platforms or pilings, the probes are attached to a cement paver/pad and are placed at pre-determined locations on the bottom of the Bay. The probes are changed out approximately every six to eight weeks and returned to the field office where they are cleaned and calibrated, and the data are manually uploaded into the FPL EDMS.

2.2.2 Results and Discussion

The automated surface water data are qualified and validated in the same manner as the automated groundwater data. Appendix B shows the water quality field verification/calibration logs. Figures 2.2-2 to 2.2-21 show time-series graphs of specific conductance and temperature at each surface water station. These graphs depict validated data and exclude data that have been qualified as questionable. Appendix C shows what data were qualified, while Appendix D shows time-series graphs of the three parameters, but with all reported data. The time-series graphs show data from the beginning of station reporting in 2010 (various dates depending on station startup) through May 2015. This shows the Pre-Uprate, Interim Operating (shaded in grey on figures), and Post-Uprate monitoring periods. This entire time-series display allows Pre- and Post-Uprate monitoring periods to be compared. Note that the salinity results for all surface water stations track the specific conductance results because salinity is calculated based on specific conductance and temperature. Thus, most of the discussion focuses on specific conductance and temperature. Similar to the groundwater data, FPL has included the raw time-series data in separate Excel files along with this report to facilitate closer review of the time-series results by the Agencies and allow the adjustment of graphic scales to focus on a specific time interval.

Tables 2.2-2 through 2.2-4 show statistical summaries of the time-series data for specific conductance, temperature, and salinity, respectively. The tables include monthly average values for each monitoring station and the minimum, maximum, average, and standard deviations for the Post-Uprate monitoring period (data from June 2013 through May 2015). The salinity values are presented, since readers often relate more directly to salinity than to specific conductance. Figures 2.2-22 through 2.2-24 show the average value and standard deviation for specific conductance, temperature, and salinity, respectively, for the Post-Uprate period to facilitate a spatial visualization of the average automated surface water data results. For general comparisons, these figures also include the average and standard deviation for the Pre-Uprate monitoring period from June 2010 to February 2012. As previously discussed in Section 2.1, care should be used when comparing the information in these tables and figures and when drawing conclusions about the Pre- and Post-Uprate periods. This is particularly true for the surface water stations, which are more directly affected than groundwater stations by local meteorological conditions and surface water discharges, which vary from month to month. Statistical data have been included in separate Excel files along with this report.

Compared with the groundwater time-series graphs, the surface water time-series graphs show greater variability in the data, most of which is related to seasonal and meteorological conditions. For example, in Biscayne Bay, the highest specific conductance values occur near the end of the dry season, and the lowest values are near the end of the wet season, with minimum and maximum values during the Post-Uprate monitoring period ranging from 22,315 µS/cm to 69,581 µS/cm. The single highest value was recorded at BBSW-5, which is a “background” station in Card Sound. Station BBSW-4, which is slightly deeper than the other Post-Uprate Biscayne Bay stations, had the highest average specific conductance (52,585 µS/cm) in the Post-Uprate period. Station BBSW-10, which is affected more by freshwater canal discharges to the north of Turkey Point, had the lowest average specific conductance (47,807 µS/cm) in the Post-Uprate period.

The average Post-Uprate specific conductance of all the Biscayne Bay stations combined was 50,658 µS/cm. This equates to an average salinity of 33.8 on the practical salinity units (PSS-78) scale. There were some times in the Post-Uprate period where specific conductance values were lower than those in the Pre-Uprate period. For example, the average specific conductance value in May 2015 was approximately 10% lower than values recorded in May 2011 when comparing all the Bay sites monitored over the five years. Three of the five Biscayne Bay stations’ specific conductance maximum values were also reported in the Pre-Uprate period. While there are monthly and seasonal variations from year to year, there was not a notable difference in overall specific conductance values in Biscayne Bay (other than possibly BBSW-14) between Pre- and Post-Uprate. This is consistent with water quality analytical results discussed in Section 3.

Figure 2.2-25 compares surface water specific conductance values at Biscayne Bay stations. Station TPBBSW-10B (measured near the surface) continues to have the greatest variability, as it is affected the most by surface water discharges from canals north of the area. TPBBSW-14 has at times exhibited fresher water compared with the Biscayne Bay surface water stations, but the specific conductance was similar to the adjacent Biscayne Bay stations during the Post-Uprate monitoring. Figure 2.2-26 compares Biscayne Bay specific conductance values with CCS specific conductance values.

The most significant finding for surface water in the Post-Uprate period is the increase in specific conductance in the CCS compared with the Pre-Uprate and Interim Operating periods. The average specific conductance for the Post-Uprate monitoring period for all CCS stations combined was 100,508 µS/cm. This average excludes those stations that were permanently or temporarily decommissioned near the start of the Post-Uprate monitoring period (TPSWCCS-4B, TPSWCCS-5B, TPSWCCS-6T, and TPSWCCS-6B). During the Pre-Uprate period, the average specific conductance value for similar Post-Uprate sites combined was 76,733 µS/cm. While the specific conductance has notably increased in the CCS in comparison with the Pre-Uprate period, the specific conductance in Biscayne Bay is not too dissimilar in the Pre- and the Post-Uprate periods (Figure 2.2-27). Figure 2.2-27 shows specific conductance in the CCS and Biscayne Bay for equivalent time periods (January through May) during part of the dry season in 2011 (Pre-Uprate period), 2014 (Post-Uprate period), and 2015 (Post-Uprate period).

The rise of specific conductance in the CCS during the Post-Uprate period was abated to some extent due to a short-term freshening effort conducted from September 25 through October 15, 2014 by FPL with approval from the SFWMD and Miami-Dade County. Water deemed available by the SFWMD from the L-31E Canal system was pumped from the L-31E (north) Canal under SW 344th Street into the L-31E (south) Canal and then pumped into the CCS. Flows ranged from 13 million gallons per day (mgd) to a maximum of 105.6 mgd, for a total volume of 914 million gallons of freshwater pumped (FPL 2014 c, d, e, f). FPL also pumped 3 to 4 mgd of Floridan Aquifer water into the CCS during this same time period. As a result of this freshening effort, coupled with rain events over the nearly three-week period, the average specific conductance values dropped by 27% at TPSWCCS-1 and by 17% at TPSWCCS-6. On October 24, 2014, a rainfall event measuring around 4 inches dropped the CCS specific conductance values approximately 10% over just a few days. Figure 2.2-28 shows the effectiveness of the freshening and the more immediate effect of heavy rainfall events on lowering specific conductance levels in the CCS.

In the L-31E Canal stations (TPSWC-1, TPSWC-2, and TPSWC-3), the specific conductance values were reflective of "predominantly freshwater" the majority of the time based on FDEP criteria; however, slightly more saline to brackish conditions, particularly at the bottom of the canal, were noted during several periods, most notably during the dry season. This is the same throughout the entire monitoring period (Pre-Uprate, Interim, or Post-Uprate periods). Figure 2.2-29 compares time-series specific conductance and temperature values for the different surface water stations in the L-31E Canal. The highest specific conductance levels are consistently recorded at TPSWC-3, followed by TPSWC-2. During the dry season in 2014 and 2015, specific conductance at TPSWC-1 and TPSWC-3 were not as high as the levels recorded near the end of the very dry season in 2011, during the Pre-Uprate period, when maximum specific conductance values were 3,158 µS/cm (TPSWC-1B) and 22,776 µS/cm (TPSWC-3B). In the dry season of 2014, however, TPSWC-2 exhibited values in excess of those recorded in June 2011, with 2014 levels exceeding 10,000 µS/cm.

Figures 2.2-7 through 2.2-9 show some departure between the surface water values and bottom specific conductance values at these stations. However, some of the bottom data (most notably at TPSWC-2B and TPSWC-3B), over the past year in particular, may be suspect since the quarterly field sampling results show much lower specific conductance values than the automated values. The automated readings are recorded inside a stilling well, and quarterly field samples are collected outside of the stilling well. While the automated probes pass calibration, the difference between the quarterly results and the automated results could be due to plugging/less exchange in the stilling well. The automated data have not been qualified as unusable or estimated, but FPL may revisit this once the stilling wells are replaced and subsequent trends are established.

During the temporary freshening effort from September 25, 2014 through October 15, 2014, and using the top stations, the specific conductance values at TPSWC-1, TPSWC-2, and TPSWC-3 increased by at least 25% to 30%, but all values were still below FDEP's fresh surface water standard of 1,275 µS/cm. Most of this increase was caused by an increase in specific conductance of the source water from L-31E north, which reached more than 1,400 µS/cm on October 10, 2014, and remained at more than 900 µS/cm by the end of pumping on October 15, 2014 (FPL 2014c, d, e, f).

As discussed in the Comprehensive Pre-Uprate Report (FPL 2012a), tritium concentrations were reviewed to help determine if the source of the water with the higher specific conductance in June 2011 was from the CCS or regional influences from Biscayne Bay. There was no commensurate increase in tritium concentrations in any of the L-31E stations in the June 2011 data, which might indicate regional Biscayne Bay influences instead of a CCS influence. The data for TPSWC-1 through TPSWC-3 was examined concurrently with tritium results through March 2015. While there is a trend of higher tritium values in the dry season compared with the wet season, there is no clear correlation between tritium and specific conductance (see Section 3 for more details). For example, the highest tritium values were observed in March 2012, when the rise in specific conductance was the lowest of any dry season during the entire monitoring period. In December 2010, when specific conductance values were low, the tritium concentrations were higher than most of the other dry season values. It is also of interest that both TPSWC-1 (which has the lowest specific conductance values) followed by TPSWC-2, have higher tritium concentrations than TPSWC-3 the majority of the time. If the higher specific conductance water was coming from the CCS via a groundwater pathway, it is not unreasonable to expect that the tritium concentration would be correspondingly higher at those locations with higher specific conductance water; this, however, is not what was observed. While it cannot be conclusively determined there is no influence of the CCS on the L-31E via a groundwater pathway, there is compelling evidence that the tritium concentrations measured in L-31E are via atmospheric deposition. The tritium concentrations are in line with those found in the nearby evaporation pan located at TPGW-2 (see Section 3.4).

At tidal or formerly tidal canal stations TPSWC-4 and TPSWC-5, the specific conductance values were more variable than the L-31E stations. TPSWC-4 is affected by releases from the S-20 structure and can transition quickly from saline to fresh or brackish conditions. On January 23, 2014, FPL installed a fixed weir downstream of TPSWC-4 and the site is no longer as tidally influenced. Towards the end of the dry season in 2014 (April/May 2014), the specific conductance at this station increased rapidly from around 20,000 µS/cm to values similar to those reported in Biscayne Bay during that period. Since May 2014, the specific conductance increased in June to values slightly in excess of those measured in Biscayne Bay, but subsequently dropped below Biscayne Bay values for the rest of the period.

TPSWC-5 reflects marine conditions and, during the Post-Uprate period, seemed to more closely follow specific conductance of nearby Biscayne Bay stations; however, on occasion (most notably in the wet season), values at the bottom are higher than those found in Biscayne Bay. This phenomenon was most pronounced in the Pre-Uprate and Interim Operating periods. The water at TPSWC-5 is more than 20 ft deep and is located at the end of this dead-end canal. The deep water depths and restrictions in flushing may contribute to the observed specific conductance values at this station.

The ID specific conductance values are affected by pumping of the ID, which is conducted mostly in the dry season to maintain a seaward gradient between the L-31E Canal and the ID. During non-pumping periods, the water in the ID is fresh to brackish, but during periods of heavy pumping, the water becomes saline in the pumped segments. Specific conductance values in the ID are always below the values in the CCS and reflect a mixing of CCS water, freshwater, and Biscayne Bay water. Specific conductance values in the Post-Uprate dry seasons were lower than the values in the Pre-Uprate dry season in 2011 and 2012. Figure 2.2-30 compares the time-series specific conductance and temperature values for the different surface water stations in the ID. Figures 2.2-31 through 2.2-33 compare time-series specific conductance and temperature values for the ID, the L-31E, and the CCS at ID operation transect A stations (TPSWID-1, TPSWC-1, and TPSWCCS-1), transect C stations (TPSWID-2, TPSWC-2, and TPSWCCS-7), and transect E stations (TPSWID-3, TPSWC-3, and TPSWCCS-3), respectively. The figures show that CCS specific conductance values are highest in the CCS and lowest in the L-31E Canal. The figures also show the temperature differences between the water bodies as the CCS cools from transect A to transect C. Discussion of the ID operation is included Section 6 of this report.

Water temperatures at all stations are greatly affected by meteorological conditions and reflect seasonal trends, as expected. In Biscayne Bay, the average monthly water temperature in August 2014 was 31.7°C (based on the combined average of the Biscayne Bay Post-Uprate monitoring stations). In January 2015, the average monthly Biscayne Bay water temperature was 22.6°C. Pre-and Post-Uprate water temperatures in Biscayne Bay are similar.

Similar to other surface water bodies, the range in temperature varies monthly, and CCS surface water temperatures are warmer in the summer months and cooler in the winter months. For example, the average temperature in the CCS (based on the combined average of all the currently active CCS Uprate monitoring stations) was 38.5°C in August 2014 and 29.9°C in January 2015. Water temperatures in the CCS are always higher than air temperatures and the other surface water station temperatures. Within the CCS, the water temperature varies based on location. CCS water is pumped from the intake side of the plant and routed through condensers to cool the power units. As the water passes through the condensers, it is heated and eventually discharged on the west side of the plant back into the CCS. The water cools as it is routed through the CCS. At TPSWCCS-1B (near plant discharge into CCS) and TPSWCCS-6 (on return canal to plant in-take), the average Post-Uprate temperatures were 39.0°C and 30.5°C, respectively. Over the course of the Post-Uprate period, this equates to an average 8.5°C change between TPSWCCS-1 and TPSWCCS-6. In April 2015, these temperatures were 40.8°C (TPSWCCS-1B) and 32.1°C (TPSWCCS-6T). In comparison, the average Pre-Uprate temperatures at TPSWCCS-1B and

TPSWCCS-6T are much cooler, with 34.4°C and 27.2°C, respectively (a 7.2°C change) over the entire Pre-Uprate period, and 35.6°C and 28.9°C, respectively, for April 2011. Note that the average temperatures for the entire Pre- and Post-Uprate periods do not have the same number of months per season and, thus, the results can be affected by the number of summer and winter months being included in the average. To reduce some of the bias, Figure 2.2-34 compares the CCS water temperatures and air temperatures at TPSWCCS-1 and TPSWCCS-6 for the same seasonal time intervals. The results show that, while the CCS water temperatures are influenced by air temperature, the increase in CCS water temperatures during the Post-Uprate period do not correspond with commensurately higher air temperatures. The increase in CCS surface water temperatures during the Post-Uprate period cannot be explained by the Uprate because the total heat rejection rate to the CCS from Turkey Point Units 1, 2, 3, and 4, operating at full capacity prior to the Uprate, would have been higher than the Post-Uprate heat rejection rate to the CCS for Units 1, 3, and 4, operating at full capacity. Unit 2 has been dedicated to operate in a synchronous condenser mode (i.e., not producing steam heat). Appendix F provides information on plant outages and operations.

There are no temperature effects on Biscayne Bay from the warmer CCS waters; however, if there was an effect, it would most likely be evident during the cooler months. Figure 2.2-35 shows the water temperatures from December 2014 through May 2015 for representative Biscayne Bay stations used for the Uprate monitoring. A similar period from December 2013 through May 2104 was evaluated in the previous Post-Uprate Annual Report (FPL 2014a). Surface water temperatures from a SFWMD Biscayne Bay monitoring station several miles north of the site (BBCW-10) are included on Figure 2.2-35. Similar to the Pre-Uprate period and the December 2013 through May 2014 Post-Uprate period, the Turkey Point Biscayne Bay monitoring stations during the Post-Uprate period track very closely with both the SFWMD station and the maximum air temperatures recorded at meteorological station TPM-1. The figure also shows how much higher the CCS water temperatures are compared with the air temperatures and the Biscayne Bay water temperatures.

Figure 2.2-36 shows the information presented on Figure 2.2-35 in a different manner to enable a review of the differences in temperatures between the CCS and the Biscayne Bay stations and between the Biscayne Bay stations and air temperatures. For the comparison, the maximum air temperature is used since the Biscayne Bay stations more closely follow the upper range of the daily air temperature. The figure shows that TPSWCCS-1 is consistently between 10°C and 15°C warmer than Biscayne Bay, while Bay water temperatures are almost always slightly cooler than the maximum air temperatures. Air temperatures both drop and recover more quickly, and to a greater degree, than water temperatures. Thus, those cases where the Biscayne Bay temperatures are warmer than the maximum air temperatures often reflect the effects of a quicker drop in air temperature in response to meteorological conditions. More importantly, however, differences between the northern “background” SFWMD surface water station (BBCW-10) and the ambient air temperatures follow the same pattern and are of a similar magnitude as FPL Biscayne Bay station TPBBSW-3. In summary, these results suggest that air temperatures are driving water temperatures in Biscayne Bay and do not indicate any readily evident CCS water temperature effects in Biscayne Bay.

Water temperatures in the L-31E Canal (Figure 2.2-29) vary among stations, but are collectively, on average, within 0.1°C of the average of the Biscayne Bay temperatures for the Post-Uprate period. There is some temperature stratification in L-31E Canal, in part due to the canal depths and typically limited flow. The near-surface water temperatures are almost always warmer than the bottom temperatures, and the surface temperature exhibits more daily variability in response to air temperature changes. In the Post-Uprate period, the lowest average bottom temperature was 25.6°C at TPSWC-1, and the highest average surface temperature was 27.1°C at TPSWC-3. Similar to Biscayne Bay, the L-31E stations are slightly warmer in the Post-Uprate period compared with the Pre-Uprate period.

The water temperatures in the two tidal canal stations (TPSWC-4 and TPSWC-5) were also affected by air temperatures, but TPSWC-4 was also affected by discharges from S-20. Generally, the surface water temperatures at TPSWC-4 and TPSWC-5 were slightly higher than, or similar to, the bottom-water temperatures. The phenomenon reported in the Pre-Uprate period (FPL 2012a), where the bottom temperature at TPSWC-5 was notably higher than the surface temperature on several occasions for several months at a time, was not observed in the Post-Uprate period. At TPSWC-4, the average Post-Uprate temperature is approximately 1°C to 2°C warmer than the any Biscayne Bay station or L-31E Canal station. Station TPSWC-5 is also warmer than the Biscayne Bay and L-31E stations, but to a lesser extent. This is similar to what was observed during the Pre-Uprate period; however, the temperature differences between the other stations were not as high. Given the higher temperatures and immediate proximity to the CCS, these stations may be influenced by the warmer CCS temperatures.

Water temperatures at the ID stations are, on average, warmer than the L-31E stations and Biscayne Bay stations, with TPSWID-1B having the highest average non-CCS water temperature in the Post-Uprate period of 28.3°C. While the ID stations are most affected by air temperature, they are also affected by the CCS. The time-series plots (Figure 2.2-19 through 2.2-21) show that there were periods when the bottom-water temperatures in the ID rose (i.e., December 2011) along with an increase in specific conductance in the ID. This is in response to pumping and the influence of the CCS. However, this trend is not always observed. The findings between the Pre- and Post-Uprate period are similar. The presence of cooler and generally lower water temperature was observed at the bottom of station TPSWID-2 during the wet seasons. This potentially reflects a greater groundwater influence at that time of year for this location.

2.3 WATER LEVELS

2.3.1 Instrumentation and Data Collection Methods

Water levels provide insight into groundwater hydrology and groundwater and surface water interactions; levels are collected at all groundwater and most surface water stations for the Uprate Project monitoring effort. Currently, only two water quality stations in Biscayne Bay do not have stage recorders.

Water pressure is currently measured at 1-hour intervals, and water levels are calculated from the pressure data. The results are typically transmitted on a regular basis via telemetry. LT500 and

AT200 probes are used to record water pressure/levels. Further details on the probes, water level calculations, cleaning and calibration, and level setting procedures are discussed in the Comprehensive Pre-Uprate Report (FPL 2012a).

2.3.2 Results and Discussion

2.3.2.1 Groundwater

Data validation and qualification of the automated water level data is a multi-step process and details can be found in the Comprehensive Pre-Uprate Report (FPL 2012a) and the QAPP (FPL 2013b). A small percentage of the automated water level data was qualified as questionable during the Post-Uprate period, and most qualifications involved associated probes that did not pass field verification checks. When the probes are cleaned, the water level is checked with a water level indicator prior to pulling the probe and after the probe is reinstalled. The water level readings from the water level indicator are compared with the automated probe readings. The probes and automated readings are generally within 0.03 ft. If the difference between the verification water level reading (before the probe is pulled for cleaning) is greater than 0.1 ft from the automated probe reading, the data are qualified as estimated back to the previous cleaning and calibration event or, at minimum, back to an interim point where there is an unexplained shift in the data. Values that are off by more than 0.2 ft are qualified as questionable back to the previous cleaning and calibration event or, at minimum, back to an interim point where there is an unexplained shift in the data. As the probes age, more drift appears to occur. FPL is systematically sending the probes to the factory for recalibration and system checks. Any probes that do not pass these checks are disposed and new probes are purchased. Some data also are occasionally qualified as questionable when the water levels exceed the top of casing (i.e., overtopping of wells TPGW-3 and TPGW-12 during seasonally high tide events and TPGW-2, TPGW-6 and TPGW-7 following very heavy rain/flooding events). Nevertheless, the stage data are more than 90% complete and meet the QAPP completeness goal.

The accuracy of the land-based station survey is better than 0.1 ft and is typically within hundredths of a foot. Well locations in the Bay may have a lower level of accuracy because those stations could only be surveyed with GPS units. Thus, the survey accuracy limits should be considered when interpreting the results to hundredths of a foot or, in the case of the Biscayne Bay wells, to several tenths of a foot.

Figures 2.3-1 through 2.3-14 are time-series graphs of water elevations at all automated groundwater stations. These graphs are based on refined validated data and exclude data that were qualified as questionable or were recorded during a cleaning/calibration event. Appendix C shows what data were qualified, while Appendix D shows time-series graphs with all reported data. The time-series graphs show data from the beginning of station reporting in 2010 (various dates depending on station startup) through May 2015. The graphs show the Pre-Uprate monitoring period, Interim Operating period (gray shaded area on figures), and Post-Uprate monitoring period. This entire time-series display allows Pre- and Post-Uprate monitoring periods to be compared. To facilitate closer review of the time-series results by the Agencies and to allow the adjustment of graphic scales presented herein and/or focus on a specific time interval, FPL has included the raw time-series data in separate MS Excel files with this report.

In February 2015, FPL purged the majority of the wells and recorded drops in water levels, most notably in the deep and intermediate wells at TPGW-2, TPGW-3, TPGW-6 and TPGW-12 and the deep well in TPGW-10. There was also a smaller change in water levels in TPGW-13 shallow and deep wells. While not completely confirmed, what is suspected to have caused this drop in water levels is the purging of the wells, which removed less dense water that had accumulated in the well casing and was overlying the formation water. This less dense water was from formation water of lower specific conductance than being measured currently or fresher water that overtopped or leaked into the well either during high tides or heavy rain. Since the water level is a function of the pressure in the aquifer at the screened interval and the density of the overlying water, a change in density can affect the height of the water column. This is one of the challenges of measuring water levels when different water densities come into play. This is even more challenging when a well is screened at a narrow discrete interval because the water in the casing can only evacuate through that narrow screen at depth and not at overlying parts of the aquifer. Water levels for deep and intermediate wells at TPGW-2, TPGW-3, and TPGW-12 and the deep well at TPGW-10 have been adjusted and qualified as calculated and estimated values. No correction has been applied to the shallow and deep wells at TPGW-13 since it is not clear how much of the data is affected. A "!" qualifier may ultimately be applied to some of the data indicating that the values, while accurate, may not be fully reflective of the pressure in the aquifer. Before this qualifier is used, however, more data needs to be collected. While the issue cannot be completely eliminated, FPL will be converting wells clusters TPGW-2, TPGW-3, TPGW-12, and TPGW-13 from flush-mounted wells to stick-up wells. Flush-mounted wells at TPGW-6 are located within a few feet of a paved road, and stick-up wells are not viable. FPL will continue efforts to waterproof these wells to the greatest extent possible, but water will still enter the wells. FPL will also purge all wells once a year, and wells that historically exhibit density changes of more than 5% will be purged several times a year.

Findings regarding groundwater levels presented in the Comprehensive Pre-Uprate Report (FPL 2012a) and last year's Post-Uprate Report (FPL 2014a) are still valid. These findings include:

- Water levels change very quickly in response to rainfall events. This is most evident in stations not significantly influenced by tides (TPGW-1, TPGW-2, TPGW-4 through TPGW-9, and TPGW-13). Typically, where there is a spike in water levels on the time-series graphs, there is a corresponding rainfall event.
- At each well cluster, fluctuations in stage for all three depth intervals track closely, indicating good hydrologic connection between intervals.
- Water levels at stations in or immediately adjacent to Biscayne Bay (TPGW-3, TPGW-10, TPGW-11, TPGW-12, and TPGW-14) exhibited tidal influence at all three depths (Figures 2.3-3, 2.3-10, 2.3-11, 2.3-12, and 2.3-14). The amplitude of the tidal changes decreases across the landscape from north to south. Thus, TPGW-10 has a larger range of water levels than TPGW-14.
- The stations that are freshest and located farthest from the coast (TPGW-7, TPGW-8, and TPGW-9) exhibit fewer water level differences among the shallow, intermediate, and

deep wells (Figures 2.3-7, 2.3-8, and 2.3-9, respectively). The differences in water levels among the shallow, intermediate, and deep wells at other locations are influenced by the density differences in the formation water.

- Wells located between the westernmost wells and the CCS, such as TPGW-4 and TPGW-5, have brackish water in the intermediate and deep zones overlain by much fresher water in the shallow zone. The shallow zone water elevations in these wells are always higher than the deep zone (Figures 2.3-4 and 2.3-5).

Two other observations made for the Post-Uprate period are as follows:

- While nearly all the wells clearly had their lowest recorded groundwater levels at the end of a very dry period in May/June 2011, TPGW-13 had the lowest water level readings of a single well in April/May 2014 during the Post-Uprate period.
- The water levels in the three wells at TPGW-13 were typically lower in the Post-Uprate period compared with the Pre-Uprate period (Figure 2-3.15).

To provide insight into the differences in groundwater water levels over the landscape, time-series plots from selected stations are illustrated on Figures 2.3-16 to 2.3-19. Each figure represents a transect of well clusters. Many of these figures are self-explanatory and support the discussion above. All the time-series data that are reported reflect actual measured water levels and have not been converted to freshwater head equivalents.

To provide some initial insight into the groundwater and surface water interactions, Figures 2.3-20 and 2.3-21 illustrate the differences between surface water levels and groundwater levels in the CCS and Biscayne Bay. Figure 2.3-20 shows a time-series plot of surface water stage at TPSWCCS-2 and TPGW-13S. The results indicate that groundwater elevations at TPGW-13S are higher more often than at the corresponding surface water station in the CCS (TPSWCCS-2). Over the entire time period, a trend of the CCS water levels being higher than the groundwater at TPGW-13S during the dry season or near the end of the dry season is apparent. The most significant departure in elevations occurred in March and April 2015 when the well was purged. This drop in water levels could be linked to a change in water density in the well column before and after purging (i.e., stratified water in the well-casing prior to purging and uniform hypersaline water after purging). However, the source of any fresher water that may have entered the well to cause stratification is unclear. This well is not over-topped during flooding, and the density of the water in the formation at this location has changed only slightly over the monitoring period. It is possible that a small amount of water could leak into the well cover during heavy rainfall, but that has not been observed in the field. Also of interest is that after a heavy rainfall in late April 2015, the groundwater and surface water levels converged again, either by coincidence or a return to pre-purging conditions.

Figure 2.3-21 shows daily average surface water levels in TPBBSW-3 and TPGW-11, which are in Biscayne Bay. The daily average eliminates the hourly tidal fluctuations and facilitates a visual comparison among these stations. The plot illustrates that the groundwater levels in the Bay stations are directly influenced by surface water stage.

2.3.2.2 Surface Water

Figures 2.3-22 through 2.3-39 are time-series graphs of all surface water stations where data from automated stage recorders are available. These graphs are based on validated data and exclude data that are qualified as questionable. Appendix C shows what data were qualified, while Appendix D shows time-series graphs of the three parameters, but with all reported data. The time-series graphs show data from the beginning of station reporting in 2010 (various dates depending on station startup) through May 2015. This shows the Pre-Uprate, Interim Operating (gray shaded area on figures), and the Post-Uprate monitoring periods. This entire time-series display allows Pre- and Post-Uprate monitoring periods to be compared. All the time-series graphs are based on actual levels and do not reflect freshwater head equivalents. In order to facilitate closer review of the time-series results by the Agencies and allow the adjustment of graphic scales presented herein and/or focus on a specific time interval, FPL has included the raw time-series data in separate Excel files with this report.

The precision and accuracy of the surface water levels, particularly those associated with stations affected by wave activity, may be slightly lower than for groundwater stations. While wave activity is dampened in stilling wells, some oscillation occurs and that can affect the ability to consistently get precise verification readings with a water level indicator. Some data end up being qualified as estimated if a verification reading is off by more than 0.1 ft when it may not need to be qualified. The setting of the reference levels are affected by waves, which can cause inaccurate readings.

Findings regarding surface water levels presented in the Comprehensive Pre-Uprate Report (FPL 2012a) and last year's Post-Uprate report (FPL 2014a) are still valid. These findings include the following:

- Diurnal water level variations were observed at all tidally influenced stations, including those located in Biscayne Bay (north to south: TPBBSW-10, TPBBSW-3, and TPBBSW-14) and tidal canal stations (TPSWC-4 [until January 23, 2014 when a weir was constructed downstream] and TPSWC-5). The tidal range declines across the landscape from north to south. At TPBBSW-10, tide ranges during spring tide and neap tides can be more than 2.0 ft and less than 0.5 ft, respectively.
- The effect of rainfall is masked in most tidal stations; however, its effect is evident at TPSWC-4 because this station is downstream of S-20 discharges. Rainfall effects are also evident on all onshore surface water stations where water level increases have been observed following significant rainfall events in the L-31E Canal, CCS, and ID.
- Water levels in the CCS vary spatially, depending upon whether the station is located on the plant discharge or intake side of the canal. Water levels on the plant discharge side have lower ranges in variability (less than 1 ft at TPSWCCS-1) than stations on the intake side (up to approximately 2 ft at TPSWCCS-6 [4 ft during Pre-Uprate]). Water levels on the discharge side of the CCS are also typically at least 1 ft higher than those on the CCS plant intake side (Figure 2.3-40). Following heavy rain events, during the rainy season, and during outages, the difference in water levels between TPSWCCS-1 and TPSWCCS-6 is less than at other times of the year.

- Water levels in the CCS and L-31E Canal exhibit little response to tidal influences in Biscayne Bay surface water. This suggests the hydrogeologic connection with Biscayne Bay is limited or not as direct as may have been expected, such as for the CCS.

Another observation made in the Post-Uprate period was related to the response of the CCS to the addition of water sources (pumped and rainfall) during the interim freshening effort (September 25, 2014 through October 15, 2014). Figure 2.3-41 shows a gradual rise in water level during pumping along with rapid increases associated with rain events. On September 25, 2014, prior to pumping, the water elevation at TPSWCCS-1 was -0.19 ft North American Vertical datum of 1988 (NAVD 88). On October 14, 2014, the next to last day of pumping, the water level was 0.041 ft—an increase of 0.23 ft. On the last day of pumping, there was a modest rainfall of more than 2 inches which, along with pumping, increased the water elevation by almost 0.2 ft that day. After pumping ceased, there was another rainfall exceeding 4 inches, and the water elevation jumped from 0.131 ft NAVD 88 to 0.527 NAVD 88 by the end of the day—a jump of almost 0.4 ft.

Lastly, water elevations in the CCS at TPSWCCS-1 were, on-average, lower during the Post-Uprate period (-0.20 ft NAVD 88) than during the Pre-Uprate period (-0.002 ft NAVD 88). Conversely, at TPSWCCS-6, the water elevations were, on-average, higher during the Post-Uprate period (-1.04 ft NAVD 88) than during the Pre-Uprate period (-1.37 ft NAVD 88). In other words, on-average, there was less of a rise in water level on the discharge side of the plant into the CCS and less of a drawdown on the intake side of the plant during the Post-Uprate period.

2.4 METEOROLOGICAL DATA

One of the most important meteorological parameters is the amount of precipitation in the CCS and surrounding areas. Rainfall timing, duration, and amounts provide some insight into the area's hydrology and the CCS water budget. Additionally, meteorological data, such as barometric pressure, wind speed, and light levels (i.e., PAR) are useful in determining water losses and gains in the CCS and in establishing a water budget.

A meteorological station (TPM-1) was set up in the middle of the CCS, co-located with TPGW-13 and TPSWCCS-2. Four additional rainfall gauges were initially set up in the vicinity of the plant to determine the spatial and temporal variability in rainfall onshore and offshore near the Turkey Point Plant, but those gauges have been eliminated in favor of the SFWMD NEXRAD rainfall data that are used for the water budget.

Additional rainfall data were also obtained from the on-site Turkey Point meteorological stations by the FPL Land Utilization Building (LU) and one south of the CCS (SD), as well as Homestead Air Force Base, SFWMD's S-20 gauge, and the NEXRAD data provided by the SFWMD. All of these stations represent rainfall at the locations specified (Figure 2.4-1), with the exception of the NEXRAD data, which is an integrated measure of rainfall in radar cells that encompass the CCS.

2.4.1 Instrumentation and Data Collection Methods

Meteorological station TPM-1 consists of a weather transmitter (WXT520, Vaisala, Inc., Helsinki, Finland) and a quantum sensor (190SA, LI-COR, Inc., Lincoln, Nebraska) attached to a datalogger (CR1000, Campbell Scientific, Ltd., Logan, Utah) and telemetry system, mounted 15 ft above the ground surface; the range of parameters measured is listed in Table 2.4-1. Technical specifications on the instrumentation are provided in Appendix I of the QAPP (FPL 2013b).

Monitoring at TPM-1 has been nearly continuous since the station was activated on July 26, 2010. There have been only a few occasions that any components of the station were not operating. The first occasion was when the anemometer was out from April 30 through June 11, 2013, and the entire system was sent to the factory for repairs (June 11, 2013 through June 26, 2013). Because of concerns that the rainfall sensor was not working correctly, the entire unit was sent back to the factory for testing from July 30, 2014 to August 8, 2014.

The station was originally set to report data at 15-minute intervals, but was changed to report data at hourly intervals starting on April 9, 2013. Data are uploaded via telemetry to the FPL database on a daily basis. Rainfall data from LU-South, Homestead Air Force Base, and S-20 are also on hourly intervals, while the NEXRAD data provided by the SFWMD are on monthly increments.

2.4.2 Results and Discussion

Rainfall (based on daily readings) and temperature (Figure 2.4-2), relative humidity, barometric pressure (Figure 2.4-3), and PAR (Figure 2.4-4) for TPM-1 are shown for the entire period for comparative purposes.

As discussed last year in the Post-Uprate Annual Report (FPL 2014a), the amount of rainfall observed at TPM-1 during the Post-Uprate period was significantly lower than at the surrounding stations, which led FPL to question whether the rainfall sensor at this station was under-reporting. In late July 2014, FPL had the rain sensor replaced; however, subsequently reported rainfall totals still remained low compared with surrounding stations. Upon further assessment, FPL found that the reporting code programmed into the instrument by the equipment vendor had not fully incorporated the changes needed to report data at 1-hour intervals. The result of this coding error was that the rainfall was being properly measured, but the hourly results were only being reported for the last 15 minutes of each hour. Since the rainfall totals are cumulative over the hour, this resulted in under-reporting the hourly measurements. FPL had previously summed the hourly measurements to determine daily and monthly rainfall totals. However, based on further discussions with the vendor, it appears that daily totals were reported correctly; the daily rainfall totals back to April 9, 2013, have been retrieved and the rainfall information has been updated and corrected.

Tables 2.4-2 and 2.4-3 show rainfall information (daily and monthly values respectively) from meteorological station TPM-1. During the two-year Post-Uprate period, there were 23 days (or about 4% of the time) when the daily rainfall totals exceeded one inch (Table 2.4-3). The highest rainfall in the Post-Uprate period was in July 2013, when 10.62 inches of monthly rainfall were recorded at TPM-1 (Table 2.4-3). Based on the daily rainfall values, a total of 49.7 and 42.3 inches of rain were measured and recorded at TPM-1 from June 2013 through May 2014 and June 2014 and May 2015, respectively. These rainfall amounts are much higher than previously reported (FPL 2014a), although they may actually may be slightly low since the rain gauge was out of service for part of June 2013 and part of August 2014 (about three weeks total).

These updated rainfall totals were compared with data recorded at nearby stations (LU-South, S-20 Gauge, and Homestead Air Force Base) and NEXRAD data over the CCS since August 2010 (Table 2.4-4). The results show some differences between stations, as may be expected over this large of an area. Figure 2.4-5 summarizes this information for the various stations and compares the rainfall data for the Pre- and Post-Uprate period.

Air temperatures (approximately 16 ft above ground) in the middle of the CCS at TPM-1 ranged from 2.8°C to 33.9°C for the period of record (Figure 2.4-2). The minimum temperature was observed on December 14, 2010, during the morning hours of a cold front passing through the area. The warmest temperature was observed on July 29, 2014 (July through September are usually the warmest of the year with a monthly average higher than 28°C). The average air temperature from July 2013 through May 2015 was 25.5°C, which is similar to the average air temperature reported from the Pre-Uprate period (average of 25.6°C).

Relative humidity at TPM-1 was an average of 73% from July 2013 through May 2015. This is similar to the Pre-Uprate period where the relative humidity was 72% (Figure 2.4-3). Humidity was generally highest after a rainfall and lowest after the passage of a cold front in the winter and early spring months.

The prevailing wind directions from July 2013 through May 2015 were from the east and east-southeast (i.e., predominantly onshore), which is similar to the Pre-Uprate period (Figure 2.4-6). Average wind speed for this period, at approximately 16 feet above the ground, was 8.9 miles per hour (mph). The lull wind speeds averaged 4.3 mph, but several instances of strong wind gusts were observed, some in excess of 45 mph. Most of the wind was between 7 to 11 knots (8.1 to 12.7 mph; 41% of records), followed by 4 to 7 knots (4.6 to 8.1 mph; 30% of records) for the Post-Uprate duration; this was similar to the Pre-Uprate observations (7 to 11 knots: 44%; 4 to7 knots: 26%) (Figure 2.4-7).

TABLES

Table 2.1-1. Statistical Summary of Automated Groundwater Specific Conductance (µS/cm).

Well	2013 Avg Monthly Value							2014 Avg Monthly Value												2015 Avg Monthly Value					Post-Uprate Average			
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Min	Max	Avg	Std Dev
TPGW-1S	58971	54288	46582	40260	41060	48528	51298	51568			51056	52005				39997	42018	44176	46285	45857	47210	50281	50073	56280	39352	60685	48409	5525
TPGW-1M	71887	71961	71864	71762	71828	71397	71235	71477	71503	71332	71108	71250	71804	71651			71777	71306	70915	70481			69922	70055	69176	73123	71360	635
TPGW-1D	71396	71326	71279	71252	71102	70457	70430	70630	70702	70628	70024	70467	71351	71356	70837	70847	71401	71592	71040	70480	70310	70243	69975	69860	69666	71867	70806	543
TPGW-2S	68408	67317	66043	67014	67748	67767	67682	67390	67403	67550	68212	69203	67618	64469	63298	64417	67627	69597	69726	66960	68090	68860	72787	68079	59193	76575	67646	2140
TPGW-2M	75344	74854	74787	75345	75261	74745	74864	74341	74163	74268	74612	74901				74417	73905	74417	75159	75038	75409	75655	76097	76157	73376	76557	74926	625
TPGW-2D	76417	75732	74835	75444	75995	75484	75574	75514	75429	75301	74739	74795	75123	74444	74816	74961	74852	74836			75948	75545	76440	76933	72701	77288	75423	717
TPGW-3S	64058	63567	64082	65116	65315	63875	62868	61476	60304	61449	60074	61994	61420	61145	61543	61447	61818	61963	60781	59990	60771	60951	60057	59554	54694	65637	61944	1819
TPGW-3M	68387	68073	68120	68582	68484	67767	67692	67506	67325	67233	67671	67334	66828	67520	67852		67440	67939	66858	66278	66328	66443	66639	66736	65912	69883	67452	722
TPGW-3D	69585	69109	69211	69652	69694	69167	69149	68783	68605	68729	68769	68636	68090	68003	68392	68434		69044	68174	67703	67650	67287	67534		66215	72418	68630	711
TPGW-4S	1538	1559			1854	2006	1859	1746	1966	2654	3135	3516	3963	1983		2018	1967	1967			3015	4013	5242	2634	1251	6899	2516	1029
TPGW-4M	38751	38773				38501	38511	38583	38577	39192	39809	39428	38803	38822	38606	38714	38803	38822	38639	38615	38791	38868			38145	39885	38813	363
TPGW-4D	43230	43358	42977	42357	42636	42899	42882	42999	43017	42878	42513	42285	42368	42598	42558	42537	42822	42969	42664	42540	42203	42007	41744	42076	41577	43504	42637	411
TPGW-5S	942	943	922	1003	905	885	863	837	797	790	791	818	842	791				678	728	691	784	758	713	693	620	1173	819	120
TPGW-5M	32821	32868	32936	32696	32683	32664	32629	32510	32475	32550	32267	32084	32033	32065				31428	31560	32042	32217	32015	31675	31472	30782	33004	32270	464
TPGW-5D	34344	34199	34312	34613	34487	34394	34170	34258	34360	34643	34595	34577	34503	34365				33723	34004	34753	34613	34593	34909	35068	33113	35519	34435	359
TPGW-6S	1082	1104	1150	1210	1207	1177	1183	1204	1215	1195	1171	1185	1158	1137	1203	1259	1273	1287	1285	1254	1253	1231	1328	1315	991	1384	1210	65
TPGW-6M	22535	22518	22534	22512	22641	22535	22623	22808	22846	22749	22607	22524	22607	22798	22651	22543	22662	22551	22453	22467	22351	22397	22316	22308	22096	22943	22565	151
TPGW-6D	23288	23315	23311	23307	23343	23610	23589	23467	23458	23453	23461	23527	23516	23474	23276	23299	23397	23438	23268	23206	23453	23628	23659	23720	22819	23777	23432	148
TPGW-7S	529	530	525	526					545	555	563	557	550	549	536	541	536	528	540	543	538	537	554	559	498	573	541	12
TPGW-7M	618	637	614	589	589	581	614	615	598	592	602	592	592	609	602	580	599	623	590	586	560	562	539	546	520	670	594	26
TPGW-7D	595	596	812	912	1140	1402	1653		3191	3517	3959	4195	4404	4562	4808	5071	5082	5491	5823	6070	6197	6304	6415	6514	526	6551	3760	2081
TPGW-8S	2039	1845	1984	1971	2221	2073	1930	2105	1992	2067	2049	1957	1829	1809	1742	1663	1612	1736	1730	1840			1634	1503	1347	2302	1887	193
TPGW-8M	634		644	656	652	624	624	634	636	632	620	615	609	612	649	649	643	642	644	645	657	666	633	618	606	671	636	17
TPGW-8D	649	638	667	682	683	670	662	665	660	656	656		690	679	671	674	678	682	639	646	651	671	645	641	226	706	664	26
TPGW-9S	597	592	584	583	597	601	601	613	612	613	615	603	589	593	601	602	603	614	608	603	599	599	597	591	567	625	600	11
TPGW-9M	604	618	630	638	635	600	595	554	538	558	583	588	582	596	646	651	640	639	617	608	615	623	598	610	516	654	607	31
TPGW-9D	631	638	638		632	617	617		617	619		625	616	654	699	670	684	679	636	615	628	651	652	642	592	791	640	27
TPGW-10S	52468	52958	53057	52817	52791	52809	52974	53146	52965	52672	52505	53801	53253	52828	53254	53157	52771	51789	51519	53260	53509	53127	53208	52597	51040	54584	52878	589
TPGW-10M	55058	55001	55101	55093	55171	54797	55256	55624	55513	55409	55361	55926	55308	55004	55545	55308	55274	54494	53901	56402	56336	55419	54712	54621	53683	57788	55225	632
TPGW-10D	64717	65063	65204	65172	65295	65731	66325	66623	66422	66346	66294	66057	66740	67304	68445	68267	68001	67694	67587	68281	68562	67815	67594	67612	63546	68908	66757	1210
TPGW-11S	55416	55320	55584	55271	55072	54937	55347	55638	56541	55330	54574	55794	55565	55402	55113	55186	55266	54219	53652			54885	55101	55300	53534	56686	55190	652
TPGW-11M	56638	56598	57632	57124	56703	57008	57255	57411	57768	58371	58758	57234	56981	56875	57959	57402	56555	56273	56079			57580	57413	57053	55715	59098	57200	696
TPGW-11D	61371	61345	61175	61229	61300	61863	62163	62349	63257	62606	62228	62440	62687	62839	62529	62544	62536	62816	63011			62869	63055	63270	60938	63556	62331	683
TPGW-12S								43745	43966	44278	44950	45847	45498	45369	44964	45147							46353	47253	38893	51568	44966	1111
TPGW-12M	64219	64766	65118	64905	64284	61452	61123	61660	61658	61289	60141	57997	59498	62293	62400	61434	60721	60043	58806	59627			57474	58875	56264	65554	61322	2287
TPGW-12D	64750	64677	64716	64326	64428			64582	64361	64483	64489	64185	64363	64549	64646	64560	64524	64531	64319	64371			66204	66695	63205	67675	64650	633
TPGW-13S	83681	83930	83896	84093	84097		82961	82321	82076	81825	81708	81802	83311	82409	81326	81543	84318	86258	84346	83255	82982	82559	84246	86574	80943	87463	83245	1458
TPGW-13M	79112	79426	79264	78816	78739	78752	78771	78448	78320	78060	77693	77771	77933	77919	77978	78018	78868					77150	77858	78326	76356	82175	78331	644
TPGW-13D	80765	81290	81157				80897	80004	79742	79399	79112	79039	78829	78882	79083	79312	79709	79887	80613	81065	80485	79346	79394	79199	77542	82488	79857	844
TPGW-14S	57606	58032	57687	57512	57303	57053	57301	57454	57573	57629	57607	56707	56778	56804	57286	56953	56475	55814	55441	57019	57364	57402	57105	56488	55305	58231	57100	645
TPGW-14M	62941	63035	62718	62090	61900	61857	62340	62075	62089	62185	62249	61608	61371	61602	62075	61600	61525	61445	61185	61735	61558	62101	61294	60843	60175	64095	61901	610
TPGW-14D	73590	73673	73701	73963	73922	73389	73238		74058	73624	73221	73767	73173	72266	72887	72615	72161	72562	72780	72835	72887	73491	73450	73324	71789	74537	73236	576

Key:

Avg = Average. Min = Minimum. Max = Maximum. Std Dev = Standard Deviation.

Table 2.1-2. Statistical Summary of Automated Groundwater Temperature (°C)

	2013 Avg Monthly Value							2014 Avg Monthly Value												2015 Avg Monthly Value					Post-Uprate Average			
Well	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Min	Max	Avg	Std Dev
TPGW-1S	25.7	25.6	25.5	25.5	25.5	25.6	25.7	25.7	25.7	25.8	25.8	25.8				25.6	25.6	25.7	25.8	25.8	25.8	25.8	25.8	25.9	25.5	25.9	25.7	0.1
TPGW-1M	25.9	25.9	25.9	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.9	25.9	25.9	25.9			25.8	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.8	25.9	25.9	0.0
TPGW-1D	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.8	25.8	25.9	25.9	0.0
TPGW-2S	26.0	25.8	25.7	25.8	25.8	25.9	26.0	26.0	26.1	26.1	26.1	26.4	26.5	26.1	26.0	26.0	25.9	26.3	26.7	26.6	26.5	26.5	26.6	26.4	25.7	26.9	26.2	0.3
TPGW-2M	26.9	26.8	26.7	26.7	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6				26.6	26.6	26.6	26.7	26.8	26.8	26.9	26.9	27.0	26.6	27.0	26.7	0.1
TPGW-2D	27.1	27.1	27.1	27.1	27.1	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	26.9	26.9	26.9	26.9	26.9	26.9	27.0	27.0	27.0	27.0	26.9	27.1	27.0	0.1
TPGW-3S	25.7	25.7	25.7	25.8	25.9	25.9	26.0	26.1	26.1	26.0	25.9	25.8	25.7	25.7	25.8	25.9	26.0	26.1	26.2	26.2	26.0	25.9	25.8	25.7	25.6	26.2	25.9	0.2
TPGW-3M	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.9	25.8	0.0
TPGW-3D	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.6	25.7	25.7	0.0
TPGW-4S	24.9	24.8			25.0	25.1	25.2	25.3	25.2	25.1	25.0	25.0	24.8	24.7		24.9	25.0	25.1			25.3	25.3	25.2	25.0	24.6	25.3	25.0	0.2
TPGW-4M	24.8	24.8			24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.6	24.6	24.6	24.6	24.6	24.7	24.7			24.6	24.8	24.7	0.0
TPGW-4D	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	0.0
TPGW-5S	23.6	23.5	23.5	23.5	23.5	23.6	23.7	23.7	23.8	23.7	23.6	23.6	23.6	23.5				23.6	23.7	23.7	23.7	23.5	23.5	23.5	23.4	23.8	23.6	0.1
TPGW-5M	23.7	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.7	23.7	23.6	23.6				23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.7	23.6	0.0
TPGW-5D	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7				23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	0.0
TPGW-6S	23.1	23.1	23.2	23.3	23.4	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.4	23.3	23.3	23.4	23.4	23.5	23.5	23.6	23.5	23.5	23.5	23.5	23.1	23.6	23.4	0.1
TPGW-6M	23.6	23.6	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.4	23.4	23.4	23.5	23.5	23.4	23.6	23.5	0.0
TPGW-6D	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.6	23.5	0.0
TPGW-7S	23.7	23.7	23.7	23.7					23.9	23.9	23.8	23.8	23.8	23.8	23.8	23.8	23.9	23.9	23.9	24.0	24.0	23.9	23.8	23.7	23.7	24.0	23.8	0.1
TPGW-7M	23.8	23.8	23.8	23.8	23.8	23.8	23.7	23.7	23.7	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.9	23.9	23.9	23.7	24.0	23.8	0.0
TPGW-7D	23.8	23.8	23.8	23.8	23.8	23.8	23.8		23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	0.0
TPGW-8S	23.6	23.5	23.6	23.7	23.8	23.9	23.9	23.9	23.8	23.6	23.5	23.5	23.6	23.6	23.6	23.7	23.9	24.0	24.1	24.0			23.5	23.5	23.5	24.1	23.7	0.2
TPGW-8M	23.7		23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.6	23.7	23.7	0.0
TPGW-8D	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7		23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.6	23.9	23.7	0.0
TPGW-9S	24.4	24.4	24.5	24.7	24.9	25.0	25.0	24.9	24.8	24.5	24.3	24.3	24.4	24.3	24.2	24.6	24.8	25.0	25.1	24.9	24.6	24.3	24.3	24.3	24.1	25.1	24.6	0.3
TPGW-9M	23.9	23.8	23.8	23.8	23.8	23.8	23.8	23.9	23.9	23.9	23.9	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.9	23.9	23.9	23.9	23.8	23.8	23.7	23.9	23.8	0.0
TPGW-9D	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.9	24.0	23.9	23.9	23.9	23.9	24.0	24.0	24.0	23.9	23.9	23.9	24.0	24.0	0.0
TPGW-10S	25.8	25.9	25.9	26.0	26.2	26.3	26.4	26.4	26.4	26.3	26.2	26.1	26.1	26.1	26.1	26.2	26.3	26.5	26.5	26.5	26.5	26.2	26.0	26.0	25.8	26.6	26.2	0.2
TPGW-10M	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	25.9	26.0	26.0	26.0	26.0	25.9	26.1	25.9	0.0
TPGW-10D	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.7	25.6	0.0
TPGW-11S	25.2	25.2	25.2	25.3	25.4	25.5	25.6	25.6	25.5	25.4	25.4	25.4	25.4	25.4	25.5	25.5	25.6	25.7	25.8			25.4	25.3	25.4	25.1	25.9	25.5	0.2
TPGW-11M	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3			25.3	25.3	25.3	25.3	25.3	25.3	0.0
TPGW-11D	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.3	25.2	25.3	25.3	25.2	25.2	25.2			25.2	25.2	25.2	25.2	25.3	25.3	0.0
TPGW-12S	25.9	25.8	25.8	25.9			26.0	26.1	26.1	26.1	26.0	25.9	25.9	25.9	25.9								25.9	25.9	25.8	26.1	25.9	0.1
TPGW-12M	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	25.9	25.9	26.0	26.0	26.0	26.0	25.9	25.9	25.9			25.9	25.9	25.9	26.0	26.0	0.0
TPGW-12D	26.0	26.0	26.0	26.0	26.0			26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0			26.0	26.0	26.0	26.1	26.0	0.0
TPGW-13S	29.5	29.4	29.3	29.3	29.3	29.3	29.4	29.4	29.5	29.5	29.5	29.6	29.8	29.7	29.6	29.6	29.7	29.9	30.3	30.3	30.4	30.4	30.4	30.3	29.3	30.5	29.7	0.4
TPGW-13M	29.4	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2				29.3	29.3	29.3	29.2	29.4	29.2	0.1
TPGW-13D	29.1	29.1	29.1				29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.0	29.1	29.1	0.0
TPGW-14S	25.8	25.9	26.0	26.0	26.2	26.3	26.4	26.4	26.4	26.3	26.2	26.0	26.0	26.1	26.1	26.2	26.4	26.6	26.6	26.6	26.5	26.4	26.3	26.2	25.7	26.7	26.2	0.2
TPGW-14M	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.3	26.3	26.3	26.3	26.2	26.3	26.2	0.0
TPGW-14D	26.3	26.3	26.4	26.4	26.3	26.3	26.3		26.4	26.4	26.4	26.4	26.4	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.4	26.3	0.0

Key:
Avg = Average. Min = Minimum. Max = Maximum. Std Dev = Standard Deviation.

Table 2.1-3. Statistical Summary of Automated Groundwater Salinity (PSS-78)

Well	2013 Avg Monthly Value							2014 Avg Monthly Value												2015 Avg Monthly Value					Post-Uprate Average			
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Min	Max	Avg	Std Dev
TPGW-1S	40.1	36.5	30.8	26.1	26.7	32.2	34.3	34.5			34.1	34.8				25.9	27.4	29.0	30.5	30.2	31.2	33.5	33.3	38.0	25.5	41.4	32.1	4.1
TPGW-1M	50.3	50.3	50.3	50.2	50.2	49.9	49.7	49.9	50.0	49.8	49.6	49.8	50.2	50.1			50.2	49.8	49.5	49.1			48.7	48.8	48.1	51.3	49.8	0.5
TPGW-1D	49.9	49.8	49.8	49.8	49.6	49.1	49.1	49.3	49.3	49.3	48.8	49.1	49.8	49.8			50.1	50.0	49.6	49.1	49.0	49.0	48.7	48.6	48.5	50.3	49.4	0.5
TPGW-2S	47.5	46.6	45.6	46.4	47.0	47.0	46.9	46.7	46.7	46.8	47.3	48.1	46.9	44.4	43.5	44.3	46.9	48.5	48.6	46.4	47.3	47.9	51.0	47.2	40.3	54.1	46.9	1.7
TPGW-2M	53.1	52.7	52.7	53.1	53.0	52.6	52.7	52.3	52.1	52.2	52.5	52.7				52.4	51.9	52.4	53.0	52.9	53.2	53.4	53.7	53.8	51.5	54.1	52.8	0.5
TPGW-2D	54.0	53.4	52.7	53.2	53.7	53.2	53.3	53.3	53.2	53.1	52.6	52.7	52.9	52.4	52.7	52.8	52.7	52.7			53.6	53.3	54.0	54.4	51.0	54.7	53.2	0.6
TPGW-3S	44.0	43.7	44.1	44.9	45.0	43.9	43.1	42.0	41.1	42.0	41.0	42.4	42.0	41.8	42.1	42.0	42.3	42.4	41.5	40.9	41.5	41.6	40.9	40.5	36.8	45.3	42.4	1.4
TPGW-3M	47.5	47.2	47.3	47.6	47.5	47.0	46.9	46.8	46.6	46.6	46.9	46.6	46.2	46.8	47.0		46.7	47.1	46.3	45.8	45.8	45.9	46.1	46.2	45.5	48.7	46.7	0.6
TPGW-3D	48.4	48.0	48.1	48.5	48.5	48.1	48.1	47.8	47.6	47.7	47.8	47.7	47.2	47.2	47.5	47.5		48.0	47.3	46.9	46.9	46.6	46.8		45.7	50.7	47.7	0.6
TPGW-4S	0.8	0.8			1.0	1.0	1.0	0.9	1.0	1.4	1.7	1.9	2.1	1.0		1.0	1.0	1.0			1.6	2.2	2.9	1.4	0.6	3.8	1.3	0.6
TPGW-4M	25.0	25.0				24.8	24.9	24.9	24.9	25.3	25.8	25.5	25.1	25.1	24.9	25.0	25.1	25.1	24.9	24.9	25.1	25.1			24.6	25.8	25.1	0.3
TPGW-4D	28.3	28.4	28.1	27.6	27.8	28.0	28.0	28.1	28.1	28.0	27.7	27.6	27.6	27.8	27.8	27.8	28.0	28.1	27.8	27.8	27.5	27.4	27.2	27.4	27.1	28.5	27.8	0.3
TPGW-5S	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4				0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.6	0.4	0.1
TPGW-5M	20.8	20.8	20.9	20.7	20.7	20.7	20.7	20.6	20.6	20.6	20.4	20.3	20.3	20.3				19.8	19.9	20.3	20.4	20.2	20.0	19.9	19.4	20.9	20.4	0.3
TPGW-5D	21.9	21.8	21.9	22.1	22.0	21.9	21.8	21.8	21.9	22.1	22.1	22.0	22.0	21.9				21.4	21.6	22.2	22.1	22.1	22.3	22.4	21.0	22.7	21.9	0.3
TPGW-6S	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.5	0.7	0.6	0.0
TPGW-6M	13.8	13.8	13.8	13.8	13.8	13.8	13.8	14.0	14.0	13.9	13.8	13.8	13.8	14.0	13.9	13.8	13.9	13.8	13.7	13.7	13.7	13.7	13.6	13.6	13.5	14.0	13.8	0.1
TPGW-6D	14.3	14.3	14.3	14.3	14.3	14.5	14.5	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.3	14.3	14.4	14.4	14.3	14.2	14.4	14.5	14.5	14.6	14.0	14.6	14.4	0.1
TPGW-7S	0.3	0.3	0.3	0.3					0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.0
TPGW-7M	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
TPGW-7D	0.3	0.3	0.4	0.5	0.6	0.7	0.8		1.7	1.9	2.1	2.3	2.4	2.5	2.6	2.8	2.8	3.0	3.2	3.3	3.4	3.5	3.5	3.6	0.3	3.6	2.0	1.2
TPGW-8S	1.1	0.9	1.0	1.0	1.2	1.1	1.0	1.1	1.0	1.1	1.1	1.0	0.9	0.9	0.9	0.8	0.8	0.9	0.9	0.9			0.8	0.8	0.7	1.2	1.0	0.1
TPGW-8M	0.3		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
TPGW-8D	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.3	0.3	0.0
TPGW-9S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
TPGW-9M	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
TPGW-9D	0.3	0.3	0.3		0.3	0.3	0.3		0.3	0.3		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.0
TPGW-10S	35.1	35.5	35.6	35.4	35.4	35.4	35.5	35.7	35.5	35.3	35.2	36.2	35.7	35.4	35.7	35.7	35.4	34.6	34.4	35.8	35.9	35.6	35.7	35.2	34.1	36.7	35.5	0.4
TPGW-10M	37.1	37.1	37.1	37.1	37.2	36.9	37.3	37.5	37.4	37.4	37.3	37.8	37.3	37.1	37.5	37.3	37.3	36.7	36.2	38.1	38.1	37.4	36.8	36.8	36.1	39.2	37.2	0.5
TPGW-10D	44.6	44.8	44.9	44.9	45.0	45.4	45.8	46.1	45.9	45.8	45.8	45.6	46.2	46.6	47.5	47.4	47.2	46.9	46.8	47.4	47.6	47.0	46.8	46.8	43.6	47.9	46.2	1.0
TPGW-11S	37.4	37.3	37.5	37.2	37.1	37.0	37.3	37.5	38.2	37.3	36.7	37.6	37.5	37.3	37.1	37.2	37.3	36.5	36.0			37.0	37.1	37.3	35.9	38.3	37.2	0.5
TPGW-11M	38.3	38.3	39.0	38.7	38.3	38.6	38.8	38.9	39.2	39.6	39.9	38.7	38.6	38.5	39.3	38.9	38.2	38.0	37.9			39.0	38.9	38.6	37.6	40.2	38.7	0.5
TPGW-11D	41.9	41.9	41.8	41.8	41.9	42.3	42.5	42.7	43.4	42.9	42.6	42.8	43.0	43.1	42.8	42.8	42.8	43.1	43.2			43.1	43.2	43.4	41.6	43.6	42.7	0.5
TPGW-12S								28.7	28.8	29.1	29.5	30.2	29.9	29.9	29.6	29.7							30.6	31.2	25.2	34.5	29.6	0.8
TPGW-12M	44.2	44.6	44.9	44.7	44.2	42.0	41.8	42.2	42.2	41.9	41.0	39.3	40.5	42.7	42.8	42.0	41.5	40.9	40.0	40.6			38.9	40.0	38.0	45.2	41.9	1.8
TPGW-12D	44.6	44.5	44.6	44.3	44.3			44.5	44.3	44.4	44.4	44.2	44.3	44.4	44.5	44.5	44.4	44.4	44.3	44.3			45.7	46.1	43.4	46.9	44.5	0.5
TPGW-13S	60.1	60.3	60.3	60.5	60.5		59.5	59.0	58.8	58.6	58.5	58.6	59.8	59.1	58.2	58.4	60.7	62.3	60.7	59.8	59.6	59.2	60.7	62.6	57.9	63.4	59.8	1.2
TPGW-13M	56.3	56.6	56.4	56.1	56.0	56.0	56.0	55.8	55.7	55.4	55.1	55.2	55.3	55.3	55.4	55.4	56.1					54.7	55.3	55.7	54.0	58.9	55.7	0.5
TPGW-13D	57.7	58.1	58.0				57.8	57.0	56.8	56.5	56.3	56.2	56.1	56.1	56.3	56.5	56.8	56.9	57.6	57.9	57.4	56.5	56.5	56.4	55.0	59.1	56.9	0.7
TPGW-14S	39.0	39.4	39.1	39.0	38.8	38.6	38.8	38.9	39.0	39.1	39.1	38.4	38.4	38.4	38.8	38.6	38.2	37.7	37.4	38.6	38.9	38.9	38.7	38.2	37.3	39.5	38.7	0.5
TPGW-14M	43.2	43.3	43.0	42.5	42.4	42.3	42.7	42.5	42.5	42.6	42.7	42.2	42.0	42.1	42.5	42.1	42.1	42.0	41.8	42.3	42.1	42.5	41.9	41.6	41.0	44.1	42.4	0.5
TPGW-14D	51.7	51.7	51.8	52.0	51.9	51.5	51.4		52.1	51.7	51.4	51.8	51.3	50.6	51.1	50.9	50.5	50.8	51.0	51.1	51.1	51.6	51.6	51.5	50.2	52.4	51.4	0.5

Key:

Avg = Average. Min = Minimum. Max = Maximum. Std Dev = Standard Deviation.

Table 2.2-1. Probe Types/Automated Measurements at Surface Water Stations for Post-Uprate Monitoring Period

Surface Water Site	Probe	Parameters Measured
TPSWC-1T	AT200	Water Quality, Stage
TPSWC-1B	AT100	Water Quality
TPSWC-2T	AT200	Water Quality, Stage
TPSWC-2B	AT100	Water Quality
TPSWC-3T	AT200	Water Quality, Stage
TPSWC-3B	AT100	Water Quality
TPSWC-4T	AT200	Water Quality, Stage
TPSWC-4B	AT100	Water Quality
TPSWC-5T	AT200	Water Quality, Stage
TPSWC-5B	AT100	Water Quality
TPSWID-1T	AT200	Water Quality, Stage
TPSWID-1B	AT100	Water Quality
TPSWID-2T	AT200	Water Quality, Stage
TPSWID-2B	AT100	Water Quality
TPSWID-3T	AT200	Water Quality, Stage
TPSWID-3B	AT100	Water Quality
TPSWCCS-1B	AT200	Water Quality, Stage
TPSWCCS-2B	AT200	Water Quality, Stage
TPSWCCS-3B	AT200	Water Quality, Stage
TPSWCCS-4T	AT200	Water Quality, Stage
TPSWCCS-5T	AT200	Water Quality, Stage
TPSWCCS-6T	AT200	Water Quality, Stage
TPSWCCS-7B	AT200	Water Quality, Stage
TPBBSW-3B	AT200	Water Quality, Stage
TPBBSW-4B	AT100	Water Quality
TPBBSW-5B	AT100	Water Quality
TPBBSW-10B	AT200	Water Quality, Stage
TPBBSW-14B	AT200	Water Quality, Stage

Note:
Pre-Uprate station probes TPBBSW-1B, TPBBSW-2B, TPSWCCS-4B, TPSWCCS-5B, and TPSWCCS-6B are not shown since they were eliminated for the Post-Uprate monitoring.

Key:
AT - Aqua TROLL®. T – Top.
B – Bottom.

Table 2.2-2. Statistical Summary of Automated Surface Water Specific Conductance (µS/cm)

	2013 Avg Monthly Value							2014 Avg Monthly Value												2015 Avg Monthly Value					Post-Uprate Average			
Well	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Min	Max	Avg	Std Dev
TPBBSW-3B	53150	51154	51982	48521	43861	43577	45257	44408	50470	53640	57614	58836	58773	57969	58299	56089	50107	43592	44106	46843	48143	53640	56257	54537	35166	60557	51289	5749
TPBBSW-4B			50868	51220	50044	47911	47979	48985	50050	51881	56384	58224	58369	57437	56582	55273	52447	47696	47725	50430	51810	54204	56883	53650	39614	59751	52585	3737
TPBBSW-5B	48304		45880	48113	48211	46820	45653	47433	48232	49206	53290	57686	59279	55986	53299	54154	60906	48153	47072	49238	50636	53419	56144	53167	40553	69581	51237	4744
TPBBSW-10B	51363	48222	48609	41957	36042	38377	37433	40049	44732	49396	56455	61453	59112	56159	56046	55774	45137	39416	39915	42954	45351			53282	22315	63296	47802	8583
TPBBSW-14B	48640	48092	45786	46241	47742	42631	45778	44621	48657	52212	55969	58905	58396	56921	55759	54835	51838	44047	43497	47380	49249	52896	55378	53562	37975	60196	50324	5106
TPSWC-1T	388	445	650	527	483	673	703	676	691	850	1118	1619	1848	909	513	553	685	581	854	860	990	1200	1575	1449	333	2180	860	411
TPSWC-1B	764	711	809	787	733	895	647	916	954	971	1121	1407	1338	1262	1080	743	914	1386	1367	1140	1061	1137		1187	561	1649	1017	260
TPSWC-2T	592	586	511	571	579	862	689	683	783	978	1740	6555	6991	1090	548	633	831	708	947	869	875	1539	2613	1562	393	10952	1424	1871
TPSWC-2B	952	840	715	933	1002	1237	1150	790	807	1044	1986	8828	9597	5300	2040	1896	2146	1571	2579	2494	2528	2869	3079	3239	444	11585	2475	2393
TPSWC-3T	594	630	498	588	749	1378	713	809	1061	1605	3247	6963	6905	1075	582	682	823	777	1297	978	1315	2556	3611	1291	377	9977	1693	1908
TPSWC-3B	3361	2299	2028	2124	3047	3728	3885	3031	3115	3082	5149	17445	16601	14592	9794	7487	6700	6267	6101	5143	6731	7068	6671	7356	1335	18295	6417	4343
TPSWC-4T	39424	32492	31131	35865			26788	26092	18401	17734	26948	58883	51753	28946	26123	40151	36725	38085	43252	38569	46874	48692	50495	43260	15508	62425	36802	12006
TPSWC-4B	43774	34951	35021	39177	31219	42239	30746	29103	16739	17706	28219	59245	53099	30507	28133	42138	39090	41154	44696	40482			50943	45061	6351	66755	37753	12169
TPSWC-5T	51015	48124	48105	50335	48906	46429	47597	48816	49975	52166	55285	58462	58720	56192				48671	48739	49965			56735	54878	40486	59596	51432	4046
TPSWC-5B	54610	53293	55156	50645	48431	46400	45080	48703	49367	51551	54597	56934	57399	56887	56499	55332	53963	50216	47836	50128			57292	55472	42690	59354	52452	3846
TPSWCCS-1B	78187	83032	83049	85815	89202	93389	93156	97288	102182	108457	117225	118451	120496	115994	114265	115976	96098	92939	98370	103132	106393	109912	117576	109492	72545	123461	101815	13077
TPSWCCS-2B	77366	81440	82142	85770	88842	92632	91941	96670	101899	109417	117333	119002	122000	116846	114785	117230	101861	93368	99875	104722	108573	111664	120231	110666	71802	125724	102482	13797
TPSWCCS-3B	76447	80998	80340	82861	84994	90438	90513	89712	91944	100496	109999	117386	119943	114327	114306	118025	107249	94204	100117	104309	107733	110696	122206	111664	71469	127386	100629	14256
TPSWCCS-4T	76883	80806	79428	83627	89089	93915	91611	95228	100060	95094	116521	118056	117105	109978	113674	120466	102971	95845	102471	107163	109760	111424	119257	106424	66629	126549	101290	14001
TPSWCCS-5T	74402	79098	77156	82986	86102	90271	87738	87113	88185	96678	99844	111813	119237	115621	111720	114018	100904	92370	93625	98182	103873	108728	112429	104386	72146	124712	97155	13550
TPSWCCS-6T													119783	114192	113440	115366	101260	93041	98373	103144	107659	111899	119194		72007	124791	106844	11696
TPSWCCS-7B	78082	82279	83288	85972	89183	93681	93820	96763	101357	106114		111010	107030	110412	115989	115391	96791	93490	99655	104626	105308	108419	118410	110272	43516	126064	99678	12181
TPSWID-1T	3580	4030	3427	3384	3256	3840	3453	3809	4152	7587	7206	8389	9464	7788	5421	5234	4753	8375	8933	7942	7827	9794	13699	12069	2763	19621	6523	3023
TPSWID-1B	12153	9139	3805	5289	5828	4019	3821	5493	7917	16152	14297	19343	22346	16079	9945	7855	7880	15674	13948	10625	17159	20920			1847	24856	11499	6038
TPSWID-2T	3382	3811	2473	3113	2901	3267	2958	3665	3590	3435	3867	4787	5019	5666	4812	4230	4153	6489		4485	4403	5506	10588	6539	2069	14460	4490	1855
TPSWID-2B	13807	10562	7621	6227	4799	3460	3684	4009	5605	5875	5992	8166	10427	10668	9314	7518	8029	16037	8831	6909	6156	13064	32372	18066	2824	47259	9473	6672
TPSWID-3T	3413	3254	2454	2476	4120	6690	2964	3198	3199	3250	3575	6112	5223	4242	4239	3991	5477	9749	8861	4547					2309	14922	4531	2204
TPSWID-3B	3408	3263	2497	2621	5103	8375	3353	3243	3230	3285	4073	18249	8657	4637	5534	6159	14713	30625	10616	4994	13767	20227	38357	9839	2253	46547	9474	10052

Key:

Avg = Average. Max = Maximum. Min = Minimum. Std Dev = Standard Deviation.

Table 2.2-3. Statistical Summary of Automated Surface Water Temperature (^oC)

Well	2013 Avg Monthly Value							2014 Avg Monthly Value												2015 Avg Monthly Value					Post-Rate Average			
	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Min	Max	Avg	Std Dev
TPBBSW-3B	29.6	29.1	30.0	29.5	27.6	24.8	24.0	20.5	24.7	24.2	26.2	27.5	29.6	31.0	31.6	29.5	27.4	23.0	22.2	22.3	20.3	25.8	27.8	27.8	12.0	34.0	26.5	3.7
TPBBSW-4B			30.0	29.5	27.9	24.8	24.0	20.9	24.8	24.6	26.3	27.5	29.6	31.0	31.6	29.6	27.7	23.2	22.1	22.8	20.3	26.1	27.8	27.7	16.4	33.3	26.4	3.4
TPBBSW-5B	30.0		30.4	29.9	28.1	25.1	24.3	21.3	25.0	24.8	26.6	27.8	29.9	31.5	31.9	29.8	27.9	23.6	22.3	22.8	20.6	26.2	28.0	28.1	15.9	34.5	26.8	3.5
TPBBSW-10B	29.8	29.6	30.2	29.9	27.9	24.6	24.0	20.4	24.9	24.3	26.3	27.5	29.5	30.9	31.7	29.6	27.7	23.0	22.6	22.5	20.3			27.9	14.4	34.5	26.6	3.7
TPBBSW-14B	29.7	29.4	30.1	29.6	27.9	24.8	24.0	20.9	24.9	24.6	26.4	27.5	29.7	31.1	31.6	29.6	27.7	23.3	22.2	22.8	20.4	26.2	27.9	27.8	15.6	33.5	26.7	3.5
TPSWC-1T	29.5	29.3	29.9	28.9	27.6	25.1	24.1	21.4	24.8	25.4	27.4	28.8	29.3	29.8	30.5	28.6	26.9	23.4	22.2	22.9	21.3	26.6	28.7	28.1	18.0	33.1	26.7	3.1
TPSWC-1B	27.0	27.7	28.9	27.9	27.0	24.9	23.6	21.0	22.7	24.6	26.0	27.6	27.6	28.2	29.2	27.9	26.6	23.3	21.8	22.5	20.7	24.6		26.2	19.1	29.7	25.6	2.6
TPSWC-2T	29.7	29.8	30.0	29.1	27.8	25.0	24.2	21.4	25.0	25.2	27.3	28.9	30.0	30.8	31.5	29.2	27.4	23.3	22.1	22.8	21.0	26.5	28.5	28.4	17.3	34.4	26.9	3.4
TPSWC-2B	28.4	28.6	29.2	28.4	27.3	24.8	23.5	20.7	23.6	24.7	26.8	29.9	30.1	29.6	30.3	28.5	26.7	22.7	21.0	22.5	20.3	25.7	27.8	26.6	18.2	31.9	26.3	3.2
TPSWC-3T	30.3	30.1	30.5	29.7	28.2	25.1	24.1	21.4	24.8	25.4	27.4	28.5	30.3	30.8	31.7	29.6	27.7	23.6	22.1	23.1	21.3	26.7	28.6	28.5	17.8	34.3	27.1	3.4
TPSWC-3B	29.7	29.7	29.9	29.1	27.5	24.8	23.5	20.5	23.3	25.0	27.5	29.8	31.2	30.1	30.9	28.9	27.2	22.9	21.9	22.5	21.0	26.4	28.4	27.1	18.2	33.1	26.6	3.5
TPSWC-4T	27.9	28.6	28.7	29.8			26.0	22.8	25.4	25.6	27.9	29.3	30.8	32.1	30.6	33.2	31.1	25.9	24.2	24.9	21.8	27.6	29.6	32.1	17.4	36.0	28.0	3.4
TPSWC-4B	27.8	28.6	28.7	30.1	29.2	26.2	25.9	22.8	25.5	25.8	27.9	29.3	31.1	32.1	30.7	32.6	30.6	25.7	24.0	25.2			29.6	31.5	17.6	36.4	28.1	3.2
TPSWC-5T	30.0	29.8	30.5	30.0	28.6	25.3	24.6	21.6	25.1	25.4	26.8	28.3	30.4	31.4	32.3		28.3	23.9	22.7	23.5			29.0	28.9	18.8	34.2	27.4	3.4
TPSWC-5B	27.8	30.0	30.6	30.2	28.8	25.8	24.7	21.6	24.1	25.1	26.1	27.9	29.9	31.6	32.1	30.5	28.9	25.1	22.6	23.6			28.6	28.7	19.2	33.3	27.3	3.2
TPSWCCS-1B	41.7	41.1	42.0	41.6	40.7	37.5	36.5	34.3	39.5	37.7	37.7	40.0	42.9	42.8	42.7	41.0	36.7	35.3	35.2	36.3	34.5	38.8	40.8	37.8	26.5	46.3	39.0	3.4
TPSWCCS-2B	35.3	35.4	36.5	36.5	34.4	31.2	31.4	29.3	33.5	31.2	32.2	35.0	37.8	38.6	39.0	37.1	33.0	30.3	30.3	30.5	28.9	33.2	35.3	32.2	21.4	45.0	33.7	3.9
TPSWCCS-3B	34.6	34.6	35.5	35.1	33.0	29.8	29.9	27.8	32.1	30.9	32.8	33.8	36.6	37.8	37.8	36.1	32.9	29.0	28.3	28.8	26.8	31.8	34.4	32.1	19.8	41.8	32.6	3.8
TPSWCCS-4T	33.1	33.0	33.9	33.7	31.6	28.4	28.5	26.2	30.4	29.2	30.8	32.4	35.0	36.2	36.8	34.9	31.5	27.6	27.5	27.4	26.1	30.5	32.9	31.8	17.4	40.8	31.2	3.8
TPSWCCS-5T	33.0	32.9	33.9	33.6	31.5	28.3	28.4	26.0	30.2	29.1	30.8	32.3	34.8	36.1	36.6	34.6	31.2	27.4	27.2	27.2	25.8	30.2	32.6	31.6	17.8	40.1	31.0	3.7
TPSWCCS-6T	32.5	32.3	33.3	33.1	31.0	27.9	27.7	25.4	29.5	28.5	30.1	31.8	34.3	35.5	36.1	34.2	30.8	26.8	26.5	26.6	25.0	29.6	32.1		18.6	38.8	30.5	3.7
TPSWCCS-7B	37.8	37.5	38.5	38.4	36.7	33.3	33.2	31.4	35.7			36.0	39.0	40.2	40.3	38.3	34.5	32.4	32.0	32.5	30.9	35.1	37.0	34.9	22.9	45.7	35.7	3.7
TPSWID-1T	30.4	30.2	31.1	29.8	28.3	25.5	24.8	22.8	25.8	26.0	27.7	28.6	29.6	31.3	31.8	30.0	28.0	25.1	23.0	23.7	22.4	27.0	28.8	28.5	17.8	34.4	27.5	3.1
TPSWID-1B	30.3	29.9	30.8	30.1	28.8	25.2	24.4	23.0	25.9	27.7	28.2	29.4	30.0	32.6	32.5	30.6	29.0	27.7	24.3	24.4	25.9	29.3	29.9	29.8	20.2	34.2	28.3	2.9
TPSWID-2T	29.6	29.6	30.2	29.6	28.5	25.8	25.2	23.4	25.8	25.7	27.2	28.5	29.3	29.9	31.0	29.6	28.0	25.0	23.2	24.1	22.8	26.7	27.8	28.4	20.5	32.9	27.3	2.6
TPSWID-2B	27.6	27.4	27.4	27.6	27.8	25.6	25.1	23.1	25.6	26.2	27.1	28.0	27.8	27.3	27.2	28.1	27.7	27.1	23.0	24.3	22.8	26.5	26.6	27.8	20.4	28.9	26.5	1.7
TPSWID-3T	29.4	29.3	30.1	29.5	28.6	25.8	24.8	23.1	25.6	25.6	27.0	28.3	29.6	30.2	31.2	29.6	28.3	24.7	23.0	23.7	22.0	26.8	28.7	28.6	18.3	33.3	27.3	2.8
TPSWID-3B	28.6	28.5	29.1	28.6	28.4	25.8	24.5	22.7	25.2	25.2	26.4	28.2	29.1	28.6	28.3	29.5	27.8	27.3	22.6	23.3	23.0	26.6	27.5	28.2	20.5	31.7	26.8	2.4

Key:

Avg = Average. Max = Maximum. Min = Minimum. Std Dev = Standard Deviation.

Table 2.2-4. Statistical Summary of Automated Surface Water Salinity (PSS-78).

	2013 Avg Monthly Value							2014 Avg Monthly Value												2015 Avg Monthly Value					Post-Uprate Average			
Well	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Min	Max	Avg	Std Dev
TPBBSW-3B	35.7	34.2	34.9	32.3	28.8	28.5	29.7	29.0	33.6	36.0	39.1	40.0	40.0	39.4	39.7	38.0	33.4	28.5	28.8	30.8	31.7	36.0	38.1	36.7	22.5	41.4	34.3	4.4
TPBBSW-4B			34.0	34.3	33.4	31.7	31.7	32.4	33.3	34.7	38.1	39.6	39.7	39.0	38.4	37.3	35.2	31.5	31.5	33.5	34.4	36.5	38.5	36.1	25.6	40.8	35.2	2.9
TPBBSW-5B	32.1		30.3	31.9	32.0	30.9	30.0	31.2	31.9	32.7	35.8	39.2	40.4	37.9	35.9	36.5	41.7	31.8	31.0	32.6	33.6	35.9	38.0	35.7	26.4	48.5	34.2	3.6
TPBBSW-10B	34.4	32.1		27.4	23.2	24.8	24.1	25.9	29.4	32.8	38.2	42.1	40.3	38.0	38.0	37.8	29.8	25.5	25.8	28.0	29.7			35.8	13.6	43.6	31.8	6.4
TPBBSW-14B	32.3	31.9	30.2	30.6	31.6	27.8	30.1	29.2	32.3	34.9	37.8	40.1	39.7	38.6	37.7	37.0	34.7	28.8	28.4	31.2	32.5	35.5	37.4	36.0	24.4	41.1	33.6	3.9
TPSWC-1T	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.6	0.8	0.9	0.5	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.8	0.7	0.2	1.1	0.4	0.2
TPSWC-1B	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.5	0.5	0.5	0.6	0.7	0.7	0.6	0.5	0.4	0.5	0.7	0.7	0.6	0.5	0.6		0.6	0.3	0.8	0.5	0.1
TPSWC-2T	0.3	0.3	0.2	0.3	0.3	0.4	0.3	0.3	0.4	0.5	0.9	3.7	3.9	0.5	0.3	0.3	0.4	0.3	0.5	0.4	0.4	0.8	1.4	0.8	0.2	6.3	0.7	1.1
TPSWC-2B	0.5	0.4	0.4	0.5	0.5	0.6	0.6	0.4	0.4	0.5	1.0	5.0	5.5	2.9	1.1	1.0	1.1	0.8	1.3	1.3	1.3	1.5	1.6	1.7	0.2	6.7	1.3	1.4
TPSWC-3T	0.3	0.3	0.2	0.3	0.4	0.7	0.4	0.4	0.5	0.8	1.7	3.9	3.9	0.5	0.3	0.3	0.4	0.4	0.7	0.5	0.7	1.3	1.9	0.7	0.2	5.7	0.9	1.1
TPSWC-3B	1.8	1.2	1.0	1.1	1.6	2.0	2.1	1.6	1.6	1.6	2.8	10.4	9.9	8.6	5.6	4.2	3.7	3.5	3.4	2.8	3.7	3.9	3.7	4.1	0.7	11.0	3.6	2.6
TPSWC-4T	25.6	20.7	19.7	23.1			16.7	16.2	11.1	10.6	17.1	40.1	34.7	18.3	16.5	26.1	23.7	24.6	28.3	24.9	30.9	32.3	33.7	28.4	9.2	42.9	23.9	8.5
TPSWC-4B	28.8	22.4	22.5	25.4	20.0	27.6	19.4	18.3	10.0	10.6	18.0	40.4	35.7	19.4	17.9	27.6	25.3	26.8	29.3	26.3			34.1	29.7	3.5	46.2	24.6	8.6
TPSWC-5T	34.1	32.0	32.0	33.6	32.5	30.6	31.5	32.3	33.2	34.9	37.3	39.8	40.0	38.1				32.2	32.3	33.2			38.5	37.0	26.2	40.7	34.4	3.1
TPSWC-5B	36.8	35.8	37.3	33.8	32.2	30.6	29.6	32.2	32.8	34.4	36.8	38.6	39.0	38.6	38.3	37.4	36.3	33.4	31.6	33.3			38.9	37.5	27.8	40.4	35.2	2.9
TPSWCCS-1B	55.8	59.8	59.9	62.2	65.1	68.7	68.5	72.0	76.6	82.2	90.4	91.7	93.7	89.4	87.8	89.4	71.1	68.3	73.0	77.3	80.2	83.6	90.9	83.2	51.1	96.6	76.5	11.8
TPSWCCS-2B	55.0	58.4	59.0	62.1	64.7	67.8	67.3	71.3	76.1	82.8	90.3	92.0	95.0	90.1	88.2	90.4	76.2	68.4	74.2	78.5	81.9	85.0	93.2	84.1	50.4	98.5	76.9	12.4
TPSWCCS-3B	54.3	58.0	57.5	59.6	61.4	65.9	66.0	65.2	67.3	74.8	83.5	90.4	93.0	87.7	87.7	91.1	81.0	69.1	74.3	78.0	81.0	84.1	95.1	85.0	50.2	100.1	75.2	12.8
TPSWCCS-4T	54.6	57.8	56.7	60.2	64.8	68.8	66.9	69.8	74.3	70.1	89.4	91.0	90.2	83.6	87.1	93.4	77.1	70.4	76.3	80.5	82.7	84.6	92.2	80.2	46.3	99.3	75.7	12.5
TPSWCCS-5T	52.5	56.4	54.8	59.7	62.3	65.7	63.5	62.8	64.0	71.4	74.3	85.1	92.2	88.9	85.2	87.3	75.2	67.4	68.5	72.5	77.4	82.2	85.8	78.3	50.7	97.6	72.1	12.0
TPSWCCS-6T													92.7	87.5	86.8	88.5	75.5	67.9	72.6	76.8	80.7	85.0	92.1		50.5	97.5	80.6	10.5
TPSWCCS-7B	55.7	59.2	60.0	62.3	65.0	68.8	69.0	71.5	75.7	80.0		84.7	81.0	84.1	89.3	88.8	71.7	68.6	74.1	78.5	79.1	82.1	91.6	83.8	28.6	99.0	74.4	10.9
TPSWID-1T	1.9	2.2	1.8	1.8	1.7	2.1	1.8	2.0	2.2	4.3	4.0	4.7	5.4	4.4	3.0	2.9	2.6	4.7	5.1	4.5	4.4	5.6	8.0	7.0	1.4	11.9	3.6	1.8
TPSWID-1B	7.1	5.2	2.0	2.9	3.2	2.2	2.0	3.0	4.4	9.6	8.4	11.7	13.7	9.6	5.7	4.4	4.4	9.3	8.2	6.1	10.3	12.7	15.7	12.1	0.9	17.3	7.2	4.2
TPSWID-2T	1.8	2.0	1.3	1.6	1.5	1.7	1.6	2.0	1.9	1.8	2.1	2.6	2.7	3.1	2.6	2.3	2.2	3.6		2.4	2.4	3.0	6.1	3.6	1.1	8.5	2.4	1.1
TPSWID-2B	8.1	6.1	4.3	3.4	2.6	1.8	2.0	2.2	3.1	3.2	3.3	4.6	6.0	6.1	5.3	4.2	4.5	9.6	5.0	3.8	3.4	7.7	20.7	11.0	1.5	31.3	5.5	4.3
TPSWID-3T	1.8	1.7	1.3	1.3	2.2	3.7	1.6	1.7	1.7	1.7	1.9	3.4	2.9	2.3	2.3	2.1	3.0	5.6	5.0	2.5					1.2	8.8	2.5	1.3
TPSWID-3B	1.8	1.7	1.3	1.4	2.8	4.7	1.8	1.7	1.7	1.7	2.2	11.1	5.0	2.5	3.0	3.4	8.9	19.4	6.1	2.7	8.2	12.3	24.8	5.7	1.2	30.7	5.6	6.5

Key:

Avg = Average. Max = Maximum. Min = Minimum. Std Dev = Standard Deviation.

Table 2.4-1. Parameters Collected at Hourly Intervals Reported by the Meteorological Station at TPM-1.

Parameter	Units	Accuracy	Resolution
Rainfall – Amount	inches	Better than 5%, weather dependent	0.001
Relative Humidity	%	± 3	0.1
Temperature	°Celsius	± 0.3	± 0.1
Barometric Pressure	mmHg	0.5	0.5
Wind Speed- Average	mph	1 ft/sec	0.3 ft/sec
Wind Speed- Gusts and Lull	mph	1 ft/sec	0.3 ft/sec
Wind Direction	degrees	± 3	1
Light Level	µmol m^{-2} s^{-1}	5-10 µA/100 µmol m^{-2} s^{-1}	NA
Hail	Hits	1	1

Key:
ft/sec = Feet per second.
mmHg = Millimeters of mercury.
mph = Miles per hour.
NA = Not applicable.
µmol m^{-2} s^{-1} = Micromoles per meter square per second.

Table 2.4-2. Rainfall Recorded at the Meteorological Station TPM-1.

Month	Date	Year	Rain (in)
7	27	2010	0.001
7	30	2010	0.001
8	3	2010	0.341
8	5	2010	0.13
8	8	2010	0.984
8	9	2010	3.075
8	10	2010	1.215
8	11	2010	0.001
8	15	2010	0.007
8	16	2010	0.214
8	17	2010	0.007
8	20	2010	0.16
8	21	2010	0.06
8	22	2010	0.217
8	23	2010	0.375
8	24	2010	0.02
8	26	2010	0.019
8	27	2010	0.351
8	28	2010	0.213
8	29	2010	0.084
8	30	2010	1.46
8	31	2010	0.014
9	1	2010	0.098
9	3	2010	0.479
9	4	2010	0.002
9	5	2010	0.168
9	6	2010	1.569
9	7	2010	0.114
9	8	2010	1.38
9	9	2010	0.005
9	10	2010	0.002
9	14	2010	0.004
9	15	2010	0.006
9	16	2010	0.119
9	17	2010	0.117
9	18	2010	0.041
9	19	2010	0.036
9	22	2010	0.016
9	23	2010	1.354
9	24	2010	0.019
9	25	2010	0.017
9	26	2010	0.112
9	27	2010	0.113
9	28	2010	0.363
9	29	2010	7.344
9	30	2010	0.008
10	6	2010	0.004
10	12	2010	0.57
10	13	2010	0.198
10	14	2010	0.063
10	17	2010	0.003
10	23	2010	0.303
10	24	2010	0.027
10	25	2010	0.088
10	26	2010	0.001
10	27	2010	0.14
10	28	2010	0.022
10	29	2010	0.898
10	31	2010	0.006
11	1	2010	0.053
11	3	2010	4.358
11	4	2010	0.854
11	5	2010	0.005
11	11	2010	0.002
11	12	2010	0.001
11	18	2010	0.079
11	22	2010	0.019
11	23	2010	0.021
11	24	2010	0.102
11	27	2010	0.008
11	29	2010	0.001
12	1	2010	0.008
12	5	2010	0.005
12	9	2010	0.075
12	12	2010	0.045
12	18	2010	0.221

Month	Date	Year	Rain (in)
12	26	2010	0.182
1	3	2011	0.002
1	6	2011	0.061
1	8	2011	0.002
1	17	2011	2.829
1	19	2011	0.028
1	21	2011	0.005
1	24	2011	0.016
1	26	2011	0.584
2	11	2011	0.063
2	12	2011	0.131
2	14	2011	0.001
2	17	2011	0.034
2	24	2011	0.001
2	25	2011	0.006
3	2	2011	0.155
3	4	2011	0.004
3	5	2011	0.152
3	10	2011	0.329
3	18	2011	0.002
3	19	2011	0.002
3	20	2011	0.001
3	21	2011	0.111
3	22	2011	0.037
3	28	2011	0.55
3	29	2011	0.3
4	1	2011	0.449
4	5	2011	0.138
4	7	2011	0.001
4	13	2011	1.184
4	17	2011	0.069
4	25	2011	0.001
4	29	2011	0.001
4	30	2011	0.005
5	1	2011	0.01
5	3	2011	0.001
5	6	2011	0.151
5	7	2011	0.001
5	8	2011	0.019

Month	Date	Year	Rain (in)
5	10	2011	0.001
5	11	2011	0.037
5	12	2011	0.018
5	13	2011	0.074
5	14	2011	0.022
5	15	2011	0.298
5	16	2011	0.009
5	17	2011	0.024
5	18	2011	0.858
5	19	2011	0.02
5	20	2011	0.004
5	21	2011	0.005
5	22	2011	0.006
5	23	2011	0.001
5	24	2011	0.003
5	25	2011	0.001
5	26	2011	0.045
5	27	2011	0.073
5	28	2011	0.131
5	29	2011	0.124
5	30	2011	0.266
5	31	2011	0.201
6	1	2011	0.008
6	2	2011	0.141
6	3	2011	0.007
6	5	2011	0.001
6	6	2011	0.019
6	16	2011	0.055
6	17	2011	0.055
6	18	2011	0.085
6	19	2011	0.003
6	20	2011	0.164
6	21	2011	0.082
6	22	2011	0.012
6	23	2011	0.001
6	24	2011	0.006
6	25	2011	0.102
6	26	2011	0.055
6	27	2011	0.100

Month	Date	Year	Rain (in)
6	28	2011	0.028
6	29	2011	0.605
6	30	2011	0.050
7	1	2011	0.064
7	2	2011	0.530
7	3	2011	0.048
7	4	2011	0.004
7	5	2011	0.330
7	6	2011	1.520
7	7	2011	3.874
7	8	2011	0.001
7	9	2011	0.008
7	10	2011	0.001
7	11	2011	0.394
7	12	2011	0.003
7	13	2011	0.380
7	15	2011	0.002
7	16	2011	0.002
7	17	2011	0.248
7	18	2011	1.343
7	19	2011	0.905
7	20	2011	0.140
7	21	2011	0.308
7	22	2011	0.047
7	23	2011	0.003
7	24	2011	0.103
7	25	2011	0.015
7	26	2011	0.001
7	27	2011	0.038
7	28	2011	0.146
7	29	2011	0.183
8	1	2011	0.003
8	2	2011	0.026
8	3	2011	0.255
8	5	2011	0.001
8	6	2011	1.472
8	7	2011	0.627
8	8	2011	0.968
8	9	2011	0.009
8	10	2011	0.028
8	11	2011	0.058
8	12	2011	0.070
8	13	2011	0.080
8	14	2011	0.599
8	15	2011	0.550
8	16	2011	0.116
8	17	2011	0.001
8	18	2011	0.033
8	19	2011	0.452
8	20	2011	0.098
8	21	2011	0.010
8	22	2011	0.170
8	23	2011	0.004
8	24	2011	0.007
8	25	2011	0.301
8	26	2011	0.301
8	27	2011	0.224
8	29	2011	0.684
8	30	2011	2.080
9	1	2011	0.017
9	2	2011	1.758
9	3	2011	0.003
9	8	2011	0.206
9	9	2011	0.022
9	10	2011	0.001
9	12	2011	0.359
9	13	2011	0.339
9	14	2011	0.006
9	16	2011	0.003
9	18	2011	0.057
9	19	2011	0.199
9	20	2011	0.004
9	21	2011	0.127
9	22	2011	1.472
9	23	2011	0.684
9	25	2011	1.182
9	26	2011	0.148
9	27	2011	0.196

Month	Date	Year	Rain (in)
9	29	2011	0.006
9	30	2011	0.144
10	6	2011	0.008
10	7	2011	0.460
10	8	2011	6.333
10	9	2011	0.073
10	10	2011	0.016
10	11	2011	0.010
10	12	2011	0.010
10	13	2011	0.019
10	15	2011	1.053
10	16	2011	1.633
10	17	2011	0.382
10	18	2011	0.350
10	19	2011	1.330
10	22	2011	0.002
10	23	2011	0.003
10	28	2011	0.619
10	29	2011	0.139
10	30	2011	0.007
11	1	2011	0.021
11	2	2011	0.010
11	4	2011	0.004
11	5	2011	0.117
11	6	2011	0.032
11	7	2011	0.004
11	8	2011	0.002
11	9	2011	0.006
11	13	2011	0.003
11	15	2011	0.001
11	17	2011	0.014
11	18	2011	0.052
11	19	2011	0.013
11	20	2011	0.037
11	24	2011	0.005
11	29	2011	0.001
12	1	2011	0.001
12	2	2011	0.003
12	4	2011	0.035

Month	Date	Year	Rain (in)
12	5	2011	0.043
12	7	2011	0.043
12	9	2011	0.061
12	10	2011	0.164
12	12	2011	0.001
12	13	2011	0.164
12	14	2011	0.013
12	16	2011	0.001
12	17	2011	0.007
12	18	2011	0.016
12	21	2011	0.003
12	22	2011	0.002
12	23	2011	0.001
12	27	2011	0.001
12	31	2011	0.001
1	2	2012	0.001
1	4	2012	0.022
1	5	2012	0.001
1	7	2012	0.004
1	10	2012	0.005
1	11	2012	0.009
1	12	2012	0.067
1	13	2012	0.283
1	14	2012	0.001
1	17	2012	0.006
1	18	2012	0.012
1	19	2012	0.013
1	21	2012	0.005
1	22	2012	0.001
1	23	2012	0.004
1	25	2012	0.001
1	26	2012	0.001
1	28	2012	0.017
1	29	2012	0.996
1	30	2012	0.004
2	1	2012	0.001
2	2	2012	0.009
2	3	2012	0.003
2	4	2012	0.001

Month	Date	Year	Rain (in)
2	5	2012	0.140
2	6	2012	1.861
2	7	2012	0.443
2	9	2012	1.007
2	10	2012	1.789
2	11	2012	0.475
2	13	2012	0.003
2	15	2012	0.002
2	20	2012	0.001
2	22	2012	0.003
2	24	2012	0.001
2	25	2012	0.168
2	26	2012	0.001
2	28	2012	0.017
2	29	2012	0.012
3	1	2012	0.003
3	3	2012	0.005
3	4	2012	0.167
3	5	2012	0.007
3	7	2012	0.088
3	8	2012	0.078
3	9	2012	0.002
3	10	2012	0.005
3	11	2012	0.069
3	12	2012	0.074
3	14	2012	0.026
3	15	2012	0.120
3	16	2012	0.009
3	17	2012	0.001
3	18	2012	0.004
3	19	2012	0.212
3	21	2012	0.003
3	22	2012	0.001
3	23	2012	0.003
3	25	2012	0.002
3	26	2012	0.002
3	27	2012	0.087
3	28	2012	0.001
3	30	2012	0.012

Month	Date	Year	Rain (in)
3	31	2012	0.002
4	1	2012	0.008
4	2	2012	0.002
4	5	2012	0.734
4	6	2012	0.002
4	7	2012	0.004
4	9	2012	0.001
4	10	2012	0.003
4	13	2012	0.001
4	14	2012	2.235
4	15	2012	0.004
4	16	2012	0.015
4	17	2012	0.026
4	18	2012	0.002
4	19	2012	0.003
4	21	2012	3.482
4	22	2012	0.405
4	23	2012	0.002
4	24	2012	0.015
4	25	2012	0.012
4	26	2012	0.004
4	27	2012	0.009
4	28	2012	1.185
4	29	2012	1.889
4	30	2012	2.444
5	1	2012	0.004
5	4	2012	0.003
5	6	2012	0.010
5	7	2012	0.012
5	8	2012	0.425
5	10	2012	0.003
5	11	2012	0.013
5	12	2012	0.005
5	13	2012	0.003
5	15	2012	0.005
5	16	2012	0.081
5	17	2012	2.308
5	18	2012	0.119
5	19	2012	0.611

Month	Date	Year	Rain (in)
5	20	2012	0.688
5	21	2012	0.007
5	22	2012	0.904
5	23	2012	0.186
5	24	2012	2.896
5	25	2012	0.045
5	26	2012	0.026
5	27	2012	0.052
5	28	2012	0.104
5	29	2012	0.171
5	30	2012	0.138
5	31	2012	0.594
6	1	2012	1.298
6	2	2012	0.209
6	3	2012	0.182
6	4	2012	0.264
6	5	2012	0.167
6	6	2012	0.096
6	7	2012	0.226
6	8	2012	0.161
6	9	2012	0.28
6	10	2012	0.164
6	11	2012	0.083
6	12	2012	0.097
6	13	2012	0.079
6	14	2012	0.315
6	15	2012	0.28
6	16	2012	0.051
6	17	2012	0.001
6	18	2012	0.004
6	19	2012	0.066
6	20	2012	2.167
6	21	2012	0.785
6	22	2012	0.573
6	23	2012	1.035
6	24	2012	0.006
6	25	2012	0.001
6	26	2012	0.001
6	27	2012	0.022

Month	Date	Year	Rain (in)
6	28	2012	0.174
6	29	2012	0.113
6	30	2012	0.001
7	1	2012	0.001
7	2	2012	0.001
7	3	2012	0.014
7	4	2012	0.035
7	5	2012	0.036
7	6	2012	0.009
7	7	2012	0.012
7	8	2012	0.004
7	9	2012	1.412
7	10	2012	0.536
7	11	2012	1.090
7	12	2012	0.061
7	13	2012	0.002
7	14	2012	0.040
7	15	2012	0.090
7	16	2012	1.652
7	17	2012	1.248
7	18	2012	0.018
7	19	2012	0.007
7	20	2012	0.948
7	21	2012	0.387
7	22	2012	0.992
7	23	2012	0.021
7	24	2012	0.001
7	25	2012	0.003
7	26	2012	0.003
7	27	2012	0.002
7	30	2012	0.114
8	2	2012	0.001
8	3	2012	0.005
8	4	2012	0.008
8	5	2012	0.626
8	6	2012	1.278
8	7	2012	0.005
8	8	2012	0.001
8	9	2012	0.019

Month	Date	Year	Rain (in)
8	10	2012	1.437
8	11	2012	0.394
8	13	2012	0.019
8	14	2012	0.028
8	15	2012	0.019
8	16	2012	0.001
8	17	2012	0.007
8	18	2012	0.634
8	19	2012	0.002
8	20	2012	0.004
8	21	2012	0.035
8	22	2012	0.023
8	23	2012	0.005
8	24	2012	0.192
8	25	2012	1.780
8	26	2012	3.690
8	27	2012	2.053
8	28	2012	0.090
8	29	2012	0.099
8	30	2012	0.015
8	31	2012	0.061
9	2	2012	0.004
9	3	2012	0.058
9	4	2012	0.006
9	5	2012	0.006
9	6	2012	0.006
9	7	2012	0.017
9	8	2012	0.003
9	10	2012	0.001
9	11	2012	0.167
9	12	2012	0.041
9	13	2012	1.287
9	15	2012	0.017
9	16	2012	0.502
9	18	2012	0.259
9	19	2012	1.414
9	20	2012	0.492
9	21	2012	0.198
9	22	2012	0.737

Month	Date	Year	Rain (in)
9	23	2012	1.634
9	24	2012	0.020
9	25	2012	0.007
9	26	2012	0.032
9	27	2012	0.011
9	28	2012	0.019
9	29	2012	0.026
9	30	2012	0.012
10	1	2012	0.345
10	2	2012	0.295
10	3	2012	0.008
10	4	2012	0.003
10	5	2012	0.005
10	6	2012	0.001
10	7	2012	0.004
10	8	2012	0.139
10	9	2012	0.006
10	10	2012	0.568
10	12	2012	0.005
10	13	2012	0.022
10	14	2012	0.037
10	15	2012	0.002
10	16	2012	0.617
10	17	2012	0.041
10	18	2012	0.010
10	19	2012	0.453
10	20	2012	0.009
10	21	2012	0.001
10	22	2012	0.001
10	23	2012	0.012
10	24	2012	0.358
10	25	2012	1.810
10	26	2012	0.110
10	27	2012	0.006
10	29	2012	0.002
11	1	2012	0.001
11	4	2012	0.002
11	5	2012	0.004
11	11	2012	0.010

Month	Date	Year	Rain (in)
11	12	2012	0.018
11	13	2012	0.001
11	14	2012	0.018
11	16	2012	0.122
11	17	2012	0.091
11	18	2012	0.024
11	19	2012	0.004
11	21	2012	0.002
11	23	2012	0.001
11	27	2012	0.007
11	28	2012	0.168
11	29	2012	0.506
11	30	2012	0.345
12	1	2012	0.007
12	2	2012	0.003
12	3	2012	0.001
12	4	2012	0.005
12	5	2012	0.024
12	6	2012	0.003
12	7	2012	0.326
12	8	2012	0.173
12	9	2012	0.006
12	10	2012	0.003
12	11	2012	0.012
12	12	2012	0.015
12	15	2012	0.026
12	16	2012	0.002
12	18	2012	0.011
12	19	2012	0.002
12	20	2012	0.003
12	21	2012	0.003
12	24	2012	0.001
12	25	2012	0.005
12	26	2012	0.002
12	28	2012	0.002
12	29	2012	0.002
12	30	2012	0.003
1	2	2013	0.049
1	3	2013	0.009

Month	Date	Year	Rain (in)
1	4	2013	0.003
1	5	2013	0.003
1	7	2013	0.002
1	8	2013	0.033
1	10	2013	0.004
1	13	2013	0.004
1	16	2013	0.012
1	17	2013	0.134
1	19	2013	0.017
1	20	2013	0.008
1	21	2013	0.004
1	22	2013	0.001
1	23	2013	0.010
1	26	2013	0.012
1	29	2013	0.002
1	30	2013	0.004
1	31	2013	0.003
2	3	2013	0.004
2	4	2013	0.003
2	6	2013	0.012
2	8	2013	0.003
2	9	2013	0.002
2	10	2013	0.013
2	12	2013	0.072
2	13	2013	0.006
2	14	2013	0.079
2	15	2013	0.748
2	16	2013	0.175
2	17	2013	0.001
2	19	2013	0.001
2	20	2013	0.009
2	21	2013	0.006
2	22	2013	0.005
2	24	2013	0.002
2	27	2013	0.012
2	28	2013	0.078
3	1	2013	0.045
3	2	2013	0.006
3	3	2013	0.005

Month	Date	Year	Rain (in)
3	4	2013	0.003
3	5	2013	0.003
3	6	2013	0.005
3	7	2013	0.002
3	8	2013	0.005
3	11	2013	0.001
3	12	2013	0.003
3	18	2013	0.015
3	19	2013	0.376
3	20	2013	0.028
3	21	2013	0.004
3	22	2013	0.036
3	23	2013	0.008
3	24	2013	0.011
3	25	2013	0.635
3	26	2013	0.003
3	27	2013	0.014
3	28	2013	0.016
3	29	2013	0.033
3	30	2013	0.004
4	1	2013	0.391
4	3	2013	0.003
4	4	2013	0.002
4	5	2013	1.740
4	7	2013	0.004
4	10	2013	0.002
4	11	2013	0.006
4	12	2013	0.015
4	13	2013	0.005
4	14	2013	0.338
4	15	2013	0.004
4	16	2013	0.313
4	17	2013	0.005
4	18	2013	1.451
4	19	2013	0.004
4	20	2013	0.053
4	21	2013	0.699
4	22	2013	0.000
4	23	2013	0.182

Month	Date	Year	Rain (in)
4	24	2013	0.061
4	25	2013	0.000
4	26	2013	0.001
4	27	2013	0.008
4	28	2013	0.037
4	29	2013	0.011
4	30	2013	0.034
5	1	2013	0.352
5	2	2013	0.035
5	3	2013	1.094
5	4	2013	0.560
5	5	2013	0.003
5	6	2013	0.003
5	7	2013	0.012
5	8	2013	0.011
5	9	2013	0.013
5	10	2013	0.012
5	11	2013	0.065
5	12	2013	0.019
5	13	2013	0.013
5	14	2013	0.114
5	15	2013	0.001
5	16	2013	0.000
5	17	2013	0.004
5	18	2013	1.011
5	19	2013	0.005
5	20	2013	0.073
5	21	2013	0.184
5	22	2013	0.247
5	23	2013	4.09
5	24	2013	0.01
5	25	2013	0.01
5	26	2013	0.00
5	27	2013	0.01
5	28	2013	0.08
5	29	2013	0.35
5	30	2013	2.83
5	31	2013	1.32
6	1	2013	0.00

Month	Date	Year	Rain (in)
6	2	2013	0.00
6	3	2013	0.10
6	4	2013	0.07
6	5	2013	0.53
6	6	2013	0.01
6	7	2013	1.35
6	8	2013	0.39
6	9	2013	0.04
6	10	2013	0.17
6	11	2013	0.47
6	12	2013	0.00
6	13	2013	0.00
6	14	2013	0.00
6	15	2013	0.00
6	16	2013	0.00
6	17	2013	0.00
6	18	2013	0.00
6	19	2013	0.00
6	20	2013	0.00
6	21	2013	0.00
6	22	2013	0.00
6	23	2013	0.00
6	24	2013	0.00
6	25	2013	0.00
6	26	2013	0.00
6	27	2013	0.00
6	28	2013	0.09
6	29	2013	0.00
6	30	2013	0.01
7	1	2013	0.01
7	2	2013	0.05
7	3	2013	0.34
7	4	2013	0.15
7	5	2013	0.87
7	6	2013	1.21
7	7	2013	0.04
7	8	2013	0.00
7	9	2013	0.00
7	10	2013	0.02

Month	Date	Year	Rain (in)
7	11	2013	0.19
7	12	2013	0.12
7	13	2013	0.15
7	14	2013	0.42
7	15	2013	0.09
7	16	2013	0.18
7	17	2013	0.34
7	18	2013	3.12
7	19	2013	0.61
7	20	2013	0.55
7	21	2013	0.00
7	22	2013	0.00
7	23	2013	0.00
7	24	2013	0.00
7	25	2013	0.03
7	26	2013	0.00
7	27	2013	0.01
7	28	2013	0.02
7	29	2013	0.00
7	30	2013	2.11
7	31	2013	0.01
8	1	2013	0.01
8	2	2013	0.00
8	3	2013	0.31
8	4	2013	0.44
8	5	2013	0.00
8	6	2013	0.06
8	7	2013	1.71
8	8	2013	0.00
8	9	2013	0.01
8	10	2013	0.18
8	11	2013	0.01
8	12	2013	0.00
8	13	2013	0.01
8	14	2013	0.00
8	15	2013	0.27
8	16	2013	0.84
8	17	2013	0.01
8	18	2013	0.03

Month	Date	Year	Rain (in)
8	19	2013	0.01
8	20	2013	0.69
8	21	2013	0.13
8	22	2013	0.09
8	23	2013	0.07
8	24	2013	0.13
8	25	2013	0.101
8	26	2013	0.001
8	27	2013	0.075
8	28	2013	0.056
8	29	2013	1.148
8	30	2013	0.002
8	31	2013	0.012
9	1	2013	0.033
9	2	2013	0.007
9	3	2013	0.144
9	4	2013	0.003
9	5	2013	0.407
9	6	2013	0.012
9	7	2013	0.002
9	8	2013	0.962
9	9	2013	0.006
9	10	2013	0.014
9	11	2013	0.028
9	12	2013	0.102
9	13	2013	0.302
9	14	2013	0.004
9	15	2013	0.016
9	16	2013	0.368
9	17	2013	1.100
9	18	2013	0.173
9	19	2013	0.002
9	20	2013	0.404
9	21	2013	0.554
9	22	2013	0.006
9	23	2013	0.015
9	24	2013	1.796
9	25	2013	0.015
9	26	2013	0.013

Month	Date	Year	Rain (in)
9	27	2013	0.006
9	28	2013	0.000
9	29	2013	0.338
9	30	2013	0.108
10	1	2013	0.001
10	2	2013	0.411
10	3	2013	0.002
10	4	2013	0.018
10	5	2013	0.011
10	6	2013	0.001
10	7	2013	0.005
10	8	2013	0.007
10	9	2013	0.673
10	10	2013	0.007
10	11	2013	0.015
10	12	2013	0.020
10	13	2013	0.008
10	14	2013	0.004
10	15	2013	0.008
10	16	2013	0.007
10	17	2013	0.008
10	18	2013	0.010
10	19	2013	0.007
10	20	2013	0.500
10	21	2013	0.000
10	22	2013	0.005
10	23	2013	0.017
10	24	2013	0.526
10	25	2013	1.062
10	26	2013	0.000
10	27	2013	0.004
10	28	2013	0.001
10	29	2013	0.005
10	30	2013	0.018
10	31	2013	0.001
11	1	2013	0.018
11	2	2013	0.016
11	3	2013	0.000
11	4	2013	0.001

Month	Date	Year	Rain (in)
11	5	2013	0.488
11	6	2013	0.024
11	7	2013	0.000
11	8	2013	0.000
11	9	2013	0.000
11	10	2013	0.403
11	11	2013	0.411
11	12	2013	0.001
11	13	2013	0.000
11	14	2013	0.664
11	15	2013	0.000
11	16	2013	0.002
11	17	2013	0.006
11	18	2013	0.001
11	19	2013	0.002
11	20	2013	0.829
11	21	2013	0.000
11	22	2013	0.061
11	23	2013	0.934
11	24	2013	0.000
11	25	2013	1.169
11	26	2013	0.087
11	27	2013	0.045
11	28	2013	2.282
11	29	2013	0.000
11	30	2013	0.000
12	1	2013	0.846
12	2	2013	0.002
12	3	2013	0.001
12	4	2013	0.009
12	5	2013	0.009
12	6	2013	0.002
12	7	2013	0.000
12	8	2013	0.006
12	9	2013	0.079
12	10	2013	0.001
12	11	2013	0.001
12	12	2013	0.000
12	13	2013	0.000

Month	Date	Year	Rain (in)
12	14	2013	0.016
12	15	2013	0.000
12	16	2013	0.078
12	17	2013	0.078
12	18	2013	0.002
12	19	2013	0.001
12	20	2013	0.000
12	21	2013	0.002
12	22	2013	0.000
12	23	2013	0.000
12	24	2013	0.000
12	25	2013	0.004
12	26	2013	0.308
12	27	2013	1.432
12	28	2013	0.011
12	29	2013	0.001
12	30	2013	0.040
12	31	2013	0.000
1	1	2014	0.006
1	2	2014	0.001
1	3	2014	0.010
1	4	2014	0.000
1	5	2014	0.028
1	6	2014	0.274
1	7	2014	0.497
1	8	2014	0.039
1	9	2014	0.272
1	10	2014	0.102
1	11	2014	0.000
1	12	2014	0.000
1	13	2014	0.007
1	14	2014	0.000
1	15	2014	0.001
1	16	2014	0.072
1	17	2014	0.000
1	18	2014	0.002
1	19	2014	0.000
1	20	2014	0.000
1	21	2014	0.000

Month	Date	Year	Rain (in)
1	22	2014	0.176
1	23	2014	0.000
1	24	2014	0.000
1	25	2014	0.000
1	26	2014	0.011
1	27	2014	0.000
1	28	2014	0.000
1	29	2014	0.000
1	30	2014	0.250
1	31	2014	0.703
2	1	2014	0.000
2	2	2014	0.000
2	3	2014	0.000
2	4	2014	0.001
2	5	2014	0.000
2	6	2014	0.000
2	7	2014	0.000
2	8	2014	0.003
2	9	2014	0.094
2	10	2014	0.001
2	11	2014	0.000
2	12	2014	0.000
2	13	2014	0.996
2	14	2014	0.076
2	15	2014	0.001
2	16	2014	0.001
2	17	2014	0.000
2	18	2014	0.000
2	19	2014	0.002
2	20	2014	0.000
2	21	2014	0.001
2	22	2014	0.000
2	23	2014	0.014
2	24	2014	0.001
2	25	2014	0.000
2	26	2014	0.000
2	27	2014	0.000
2	28	2014	0.418
3	1	2014	0.104

Month	Date	Year	Rain (in)
3	2	2014	0.000
3	3	2014	0.002
3	4	2014	0.000
3	5	2014	0.001
3	6	2014	0.060
3	7	2014	0.451
3	8	2014	0.000
3	9	2014	0.000
3	10	2014	0.001
3	11	2014	0.000
3	12	2014	0.001
3	13	2014	0.000
3	14	2014	0.001
3	15	2014	0.002
3	16	2014	0.006
3	17	2014	0.000
3	18	2014	0.003
3	19	2014	0.373
3	20	2014	0.002
3	21	2014	0.009
3	22	2014	0.003
3	23	2014	0.117
3	24	2014	0.009
3	25	2014	0.036
3	26	2014	0.602
3	27	2014	0.003
3	28	2014	0.000
3	29	2014	0.002
3	30	2014	0.295
3	31	2014	0.017
4	1	2014	0.002
4	2	2014	0.002
4	3	2014	0.002
4	4	2014	0.002
4	5	2014	0.002
4	6	2014	0.003
4	7	2014	0.000
4	8	2014	0.256
4	9	2014	0.112

Month	Date	Year	Rain (in)
4	10	2014	0.000
4	11	2014	0.004
4	12	2014	0.001
4	13	2014	0.002
4	14	2014	0.002
4	15	2014	0.000
4	16	2014	0.001
4	17	2014	0.003
4	18	2014	0.179
4	19	2014	0.011
4	20	2014	0.011
4	21	2014	0.008
4	22	2014	0.005
4	23	2014	0.013
4	24	2014	0.008
4	25	2014	0.010
4	26	2014	0.028
4	27	2014	0.025
4	28	2014	0.027
4	29	2014	0.022
4	30	2014	0.019
5	1	2014	0.008
5	2	2014	0.013
5	3	2014	0.008
5	4	2014	0.384
5	5	2014	0.081
5	6	2014	0.043
5	7	2014	0.025
5	8	2014	0.008
5	9	2014	0.003
5	10	2014	0.004
5	11	2014	0.000
5	12	2014	0.003
5	13	2014	0.028
5	14	2014	0.032
5	15	2014	0.530
5	16	2014	0.657
5	17	2014	0.018
5	18	2014	0.005

Month	Date	Year	Rain (in)
5	19	2014	0.002
5	20	2014	0.002
5	21	2014	0.002
5	22	2014	0.003
5	23	2014	0.003
5	24	2014	0.000
5	25	2014	0.000
5	26	2014	0.000
5	27	2014	0.000
5	28	2014	0.026
5	29	2014	0.000
5	30	2014	0.004
5	31	2014	0.000
6	1	2014	0.000
6	2	2014	0.066
6	3	2014	0.457
6	4	2014	0.009
6	5	2014	0.002
6	6	2014	0.002
6	7	2014	0.000
6	8	2014	0.325
6	9	2014	0.106
6	10	2014	0.041
6	11	2014	0.083
6	12	2014	0.035
6	13	2014	0.535
6	14	2014	0.036
6	15	2014	0.120
6	16	2014	0.007
6	17	2014	0.007
6	18	2014	0.068
6	19	2014	0.044
6	20	2014	1.090
6	21	2014	0.232
6	22	2014	0.488
6	23	2014	0.255
6	24	2014	0.065
6	25	2014	0.045
6	26	2014	0.030

Month	Date	Year	Rain (in)
6	27	2014	0.000
6	28	2014	0.000
6	29	2014	0.000
6	30	2014	0.229
7	1	2014	1.622
7	2	2014	0.000
7	3	2014	0.000
7	4	2014	0.001
7	5	2014	0.003
7	6	2014	0.001
7	7	2014	0.000
7	8	2014	0.796
7	9	2014	0.001
7	10	2014	0.567
7	11	2014	0.051
7	12	2014	0.028
7	13	2014	0.134
7	14	2014	0.170
7	15	2014	0.192
7	16	2014	0.297
7	17	2014	0.002
7	18	2014	0.000
7	19	2014	1.270
7	20	2014	0.003
7	21	2014	0.000
7	22	2014	0.038
7	23	2014	1.101
7	24	2014	0.002
7	25	2014	0.110
7	26	2014	0.038
7	27	2014	0.000
7	28	2014	0.000
7	29	2014	0.000
7	30	2014	0.000
7	31	2014	0.003
8	1	2014	0.000
8	2	2014	0.000
8	3	2014	0.000
8	4	2014	0.000

Month	Date	Year	Rain (in)
8	5	2014	0.000
8	6	2014	0.000
8	7	2014	0.000
8	8	2014	0.000
8	9	2014	0.000
8	10	2014	0.005
8	11	2014	0.001
8	12	2014	0.000
8	13	2014	0.008
8	14	2014	0.002
8	15	2014	0.501
8	16	2014	0.000
8	17	2014	0.002
8	18	2014	0.001
8	19	2014	0.000
8	20	2014	0.000
8	21	2014	0.003
8	22	2014	0.001
8	23	2014	0.001
8	24	2014	0.027
8	25	2014	0.000
8	26	2014	0.415
8	27	2014	0.019
8	28	2014	0.000
8	29	2014	0.968
8	30	2014	0.003
8	31	2014	0.032
9	1	2014	0.019
9	2	2014	0.092
9	3	2014	0.039
9	4	2014	0.009
9	5	2014	0.001
9	6	2014	0.000
9	7	2014	0.049
9	8	2014	0.209
9	9	2014	0.180
9	10	2014	0.008
9	11	2014	1.103
9	12	2014	0.378

Month	Date	Year	Rain (in)
9	13	2014	0.229
9	14	2014	0.629
9	15	2014	0.000
9	16	2014	0.011
9	17	2014	0.006
9	18	2014	0.143
9	19	2014	0.075
9	20	2014	0.447
9	21	2014	0.002
9	22	2014	0.038
9	23	2014	0.075
9	24	2014	0.806
9	25	2014	0.065
9	26	2014	0.042
9	27	2014	0.412
9	28	2014	0.123
9	29	2014	0.402
9	30	2014	0.060
10	1	2014	0.107
10	2	2014	0.078
10	3	2014	0.572
10	4	2014	0.021
10	5	2014	0.031
10	6	2014	0.004
10	7	2014	0.002
10	8	2014	0.031
10	9	2014	0.003
10	10	2014	0.032
10	11	2014	0.009
10	12	2014	0.032
10	13	2014	0.001
10	14	2014	0.010
10	15	2014	0.014
10	16	2014	0.904
10	17	2014	0.000
10	18	2014	0.009
10	19	2014	0.003
10	29	2014	0.243
10	30	2014	0.000

Month	Date	Year	Rain (in)
10	31	2014	0.000
11	1	2014	0.001
11	2	2014	0.000
11	3	2014	0.000
11	4	2014	0.000
11	5	2014	0.000
11	6	2014	0.004
11	7	2014	0.068
11	8	2014	0.000
11	9	2014	0.000
11	10	2014	0.150
11	11	2014	0.142
11	12	2014	0.000
11	13	2014	0.046
11	14	2014	0.000
11	15	2014	0.001
11	16	2014	0.000
11	17	2014	0.000
11	18	2014	0.033
11	19	2014	0.000
11	20	2014	0.011
11	21	2014	0.000
11	22	2014	0.188
11	23	2014	0.045
11	24	2014	0.002
11	25	2014	0.000
11	26	2014	0.000
11	27	2014	0.000
11	28	2014	0.000
11	29	2014	0.000
11	30	2014	0.000
12	1	2014	0.000
12	2	2014	0.001
12	3	2014	0.001
12	4	2014	0.298
12	5	2014	0.005
12	6	2014	0.001
12	7	2014	0.000
12	8	2014	0.000

Month	Date	Year	Rain (in)
12	9	2014	0.000
12	10	2014	0.000
12	11	2014	0.000
12	12	2014	0.000
12	13	2014	0.000
12	14	2014	0.000
12	15	2014	0.000
12	16	2014	0.000
12	17	2014	0.000
12	18	2014	0.000
12	19	2014	0.000
12	20	2014	0.000
12	21	2014	0.000
12	22	2014	0.000
12	23	2014	0.000
12	24	2014	0.000
12	25	2014	0.201
12	26	2014	2.037
12	27	2014	0.000
12	28	2014	0.000
12	29	2014	0.000
12	30	2014	0.022
12	31	2014	0.000
1	1	2015	0.001
1	2	2015	0.000
1	3	2015	0.002
1	4	2015	0.000
1	5	2015	0.000
1	6	2015	0.198
1	7	2015	0.000
1	8	2015	0.000
1	9	2015	0.000
1	10	2015	0.007
1	11	2015	0.000
1	12	2015	0.001
1	13	2015	0.027
1	14	2015	1.702
1	15	2015	0.000
1	16	2015	0.000

Month	Date	Year	Rain (in)
1	17	2015	0.000
1	18	2015	0.017
1	19	2015	0.000
1	20	2015	0.000
1	21	2015	0.002
1	22	2015	0.090
1	23	2015	0.000
1	24	2015	0.000
1	25	2015	0.013
1	26	2015	0.000
1	27	2015	0.046
1	28	2015	0.000
1	29	2015	0.002
1	30	2015	0.000
1	31	2015	0.000
2	1	2015	0.001
2	2	2015	0.000
2	3	2015	0.015
2	4	2015	0.072
2	5	2015	0.029
2	6	2015	0.352
2	7	2015	0.004
2	8	2015	0.000
2	9	2015	0.000
2	10	2015	0.254
2	11	2015	0.002
2	12	2015	0.000
2	13	2015	0.000
2	14	2015	0.000
2	15	2015	0.000
2	16	2015	0.000
2	17	2015	0.000
2	18	2015	0.011
2	19	2015	1.306
2	20	2015	0.000
2	21	2015	0.000
2	22	2015	0.010
2	23	2015	0.123
2	24	2015	0.002

Month	Date	Year	Rain (in)
2	25	2015	0.000
2	26	2015	0.000
2	27	2015	0.000
2	28	2015	0.000
3	1	2015	0.265
3	2	2015	0.000
3	3	2015	0.000
3	4	2015	0.000
3	5	2015	0.000
3	6	2015	0.000
3	7	2015	0.000
3	8	2015	0.575
3	9	2015	0.074
3	10	2015	0.065
3	11	2015	0.001
3	12	2015	0.000
3	13	2015	0.407
3	14	2015	0.000
3	15	2015	0.000
3	16	2015	0.010
3	17	2015	0.000
3	18	2015	1.630
3	19	2015	0.000
3	20	2015	0.003
3	21	2015	0.000
3	22	2015	0.001
3	23	2015	0.000
3	24	2015	0.001
3	25	2015	0.096
3	26	2015	0.000
3	27	2015	0.005
3	28	2015	0.986
3	29	2015	0.000
3	30	2015	0.000
3	31	2015	0.001
4	1	2015	0.000
4	2	2015	0.001
4	3	2015	0.002
4	4	2015	0.002

Month	Date	Year	Rain (in)
4	5	2015	0.000
4	6	2015	0.001
4	7	2015	0.000
4	8	2015	0.000
4	9	2015	0.000
4	10	2015	0.002
4	11	2015	0.000
4	12	2015	0.000
4	13	2015	0.000
4	14	2015	0.009
4	15	2015	0.012
4	16	2015	0.002
4	17	2015	0.000
4	18	2015	0.002
4	19	2015	0.001
4	20	2015	0.000
4	21	2015	0.000
4	22	2015	0.514
4	23	2015	0.044
4	24	2015	0.088
4	25	2015	0.121
4	26	2015	0.002
4	27	2015	0.017
4	28	2015	0.079
4	29	2015	0.372
4	30	2015	6.684
5	1	2015	0.006
5	2	2015	0.015
5	3	2015	0.020
5	4	2015	0.003
5	5	2015	0.023
5	6	2015	1.095
5	7	2015	0.030
5	8	2015	0.028
5	9	2015	0.052
5	10	2015	0.025
5	11	2015	0.005
5	12	2015	0.006
5	13	2015	0.002

Month	Date	Year	Rain (in)
5	14	2015	0.027
5	15	2015	0.090
5	16	2015	0.000
5	17	2015	0.046
5	18	2015	0.016
5	19	2015	0.011
5	20	2015	0.032
5	21	2015	0.039
5	22	2015	0.120

Month	Date	Year	Rain (in)
5	23	2015	0.069
5	24	2015	0.183
5	25	2015	0.006
5	26	2015	0.002
5	27	2015	0.001
5	28	2015	0.003
5	29	2015	0.000
5	30	2015	0.000
5	31	2015	0.150

Table 2.4-3. Post-Uprate Monthly Rainfall Totals TPM-1 (based on daily rainfall totals).

Post-Uprate							
June 2013 - May 2014				June 2014 - May 2015			
Month	# of Rain Days[1]	Amount (inches)[1]	# of Rain Days Greater than 1 Inch[1]	Month	# of Rain Days[2]	Amount (inches)[2]	# of Rain Days Greater than 1 Inch[2]
13-Jun	10	3.23	1	14-Jun	25	4.38	1
13-Jul	18	10.62	3	14-Jul	22	6.43	3
13-Aug	15	6.39	2	14-Aug	16	1.99	0
13-Sep	16	6.94	2	14-Sep	28	5.65	1
13-Oct	11	3.36	1	14-Oct	19	2.11	0
13-Nov	11	7.44	2	14-Nov	12	0.69	0
13-Dec	13	2.93	1	14-Dec	8	2.57	1
14-Jan	12	2.45	0	15-Jan	13	2.11	1
14-Feb	7	1.61	0	15-Feb	13	2.18	1
14-Mar	17	2.10	0	15-Mar	15	4.12	1
14-Apr	19	0.76	0	15-Apr	19	7.96	1
14-May	19	1.89	0	15-May	28	2.11	1
TOTALS	**168**	**49.73**	**12**	**TOTALS**	**218**	**42.28**	**11**

Notes:

[1] Rainfall data was missing from 6/11/2013 through 6/26/2013 as a result of the unit repair.

[2] Rainfall data was missing from 7/30/2014 through 8/8/2014 as a result of the unit repair.

Table 2.4-4. Monthly Rainfall in and around the CCS (in inches).

Month	NEXRAD[1] (inches)	TPM-1[2,3] (inches)	LU-South (inches)	S-20 Gauge (inches)	Homestead Air Force (inches)	LU (inches)
Aug-10	NA	8.95	NA	8.76	6.94	NA
Sep-10	13.15	13.49	NA	15.70	11.67	NA
Oct-10	2.40	2.32	NA	2.77	2.62	NA
Nov-10	4.39	5.50	6.12	3.11	3.37	6.12
Dec-10	0.69	0.54	1.00	0.72	0.47	1.00
Jan-11	3.32	3.53	2.81	4.57	4.03	2.81
Feb-11	0.10	0.24	0.11	0.08	0.12	0.11
Mar-11	1.24	1.64	1.13	1.19	1.23	1.13
Apr-11	1.65	1.85	0.06	0.92	1.09	0.06
May-11	1.13	2.40	0.37	1.23	1.12	0.37
Jun-11	1.35	2.93	0.42	2.17	2.67	0.42
Jul-11	7.68	10.64	8.47	5.87	5.59	8.47
Aug-11	6.52	9.24	6.32	3.04	9.55	6.32
Sep-11	6.19	6.93	4.95	8.6	4.66	4.95
Oct-11	8.84	13.25	14.5	7.78	12.27	14.50
Nov-11	0.23	0.32	0.61	1.12	0.74	0.61
Dec-11	0.33	0.56	1.32	0.43	0.28	1.32
Jan-12	0.45	1.45	0.92	0.30	0.06	0.92
Feb-12	5.60	5.94	5.42	5.82	6.37	5.42
Mar-12	0.45	0.98	1.25	2.18	2.57	1.25
Apr-12	8.45	12.49	11.69	7.07	10.64	11.69
May-12	7.26	9.41	4.39	9.90	9.85	4.39
Jun-12	5.21	8.90	NA	6	10.73	NA
Jul-12	5.14	8.74	9.35	13.17	11.38	9.35
Aug-12	6.94	12.53	9.21	9.27	15.86	9.21
Sep-12	5.00	6.98	8.95	12.18	9.43	8.95
Oct-12	2.44	4.87	3.63	4.44	5.88	3.63
Nov-12	0.27	1.32	0.69	0.81	1.65	0.69
Dec-12	0.32	0.64	0.46	0.55	0.63	0.46
Jan-13	0.18	0.31	0.52	0.41	0.26	0.52
Feb-13	0.85	1.23	1.42	1.15	0.96	1.42
Mar-13	0.93	1.26	1.06	1.25	2.16	1.06
Apr-13	3.89	5.37	4.84	6.38	5.92	4.84
May-13	8.59	12.52	7.68	14.54	15.60	7.68
Jun-13	3.15	3.23	4.05	5.06	6.63	4.69
Jul-13	8.31	10.62	8.61	8.60	10.27	7.80
Aug-13	4.47	6.39	6.40	3.07	1.88	5.64
Sep-13	4.41	6.94	5.74	4.68	6.31	6.56
Oct-13	1.28	3.36	2.47	1.32	1.09	2.28
Nov-13	5.42	7.44	5.71	4.81	3.67	5.28
Dec-13	0.78	2.93	2.58	2.97	2.50	2.54
Jan-14	1.47	2.45	1.87	3.00	3.28	2.16
Feb-14	1.67	1.61	1.82	2.58	2.25	1.82
Mar-14	1.18	2.10	1.42	1.75	1.65	1.66
Apr-14	0.40	0.76	0.99	0.31	0.35	0.29
May-14	1.30	1.89	1.75	2.00	1.90	1.34
Jun-14	4.42	4.38	7.14	5.85	9.63	4.42
Jul-14	11.39	6.43	10.76	6.40	6.94	11.39
Aug-14	3.17	1.99	4.24	3.60	2.95	3.17
Sep-14	5.21	5.65	5.89	4.00	6.19	5.21
Oct-14	8.89	2.11	8.33	6.96	4.63	8.89
Nov-14	0.68	0.69	0.68	2.75	2.05	0.89
Dec-14	1.72	2.57	3.04	1.68	2.83	1.72
Jan-15	1.68	2.11	1.77	2.18	1.31	1.68
Feb-15	1.57	2.18	1.85	1.59	1.87	1.57
Mar-15	1.09	4.12	1.79	1.41	1.79	1.09
Apr-15	4.80	7.96	8.88	4.09	4.09	4.80
May-15	0.62	2.11	1.79	0.67	0.35	0.62

Notes:

[1] NEXRAD data,averaged over the whole CCS, provided by SFWMD.

[2] Rainfall meter was only recording the last 15-minutes of data for each hour of 4/9/2013 15:00 through 6/17/2015 13:00, so rainfall data are underreported for this period.

[3] Data were missing from 6/11/2013 - 6/26/2013, and from 7/30/14 – 8/8/14 as a result of unit repair.

FIGURES

Land-based station.

Typical control panel and telemetry system.

Typical automated probe and cable.

Biscayne Bay groundwater station.

Figure 2.1-1. Automated Groundwater Stations.

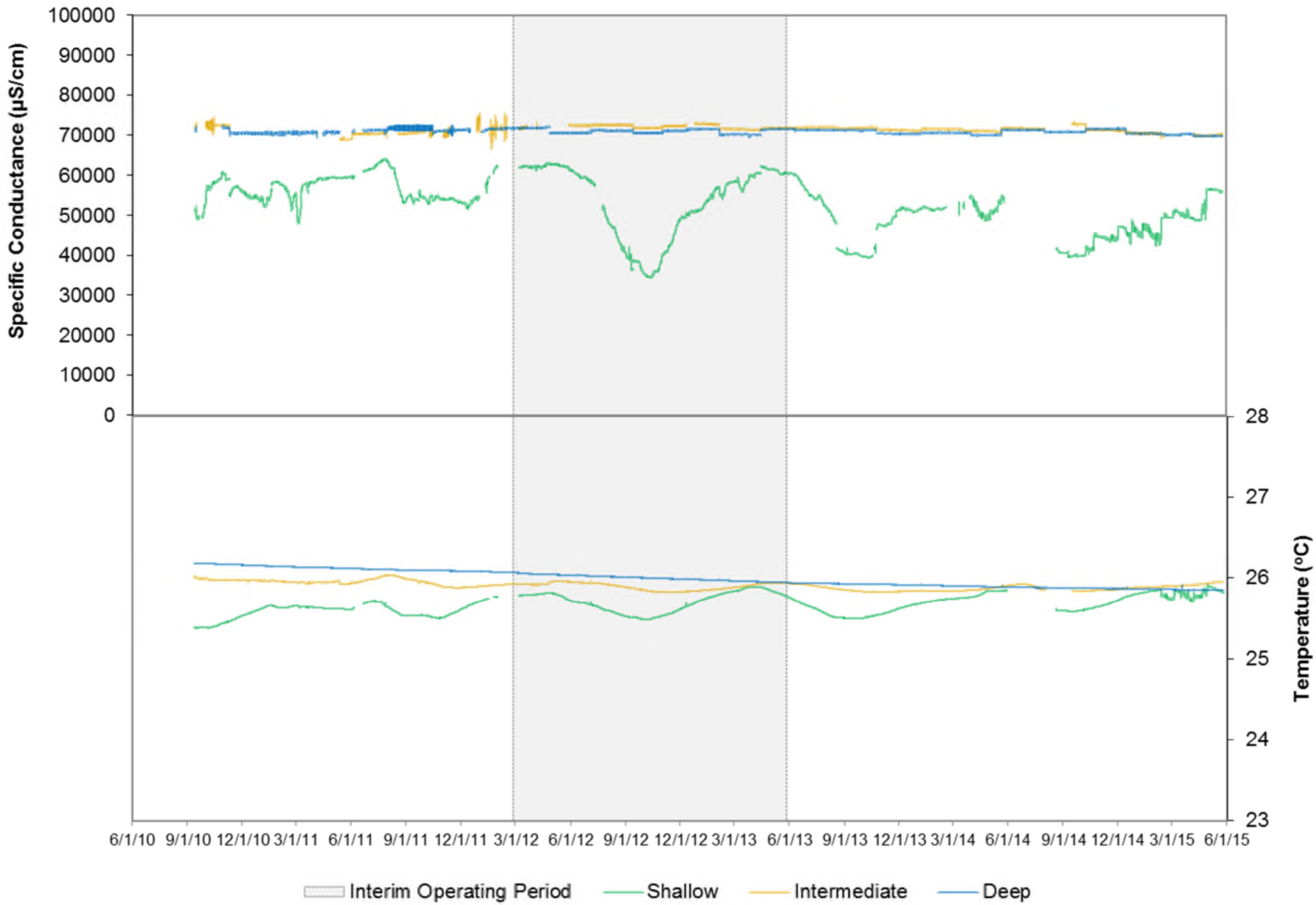


Figure 2.1-2. TPGW-1 Specific Conductance and Temperature.

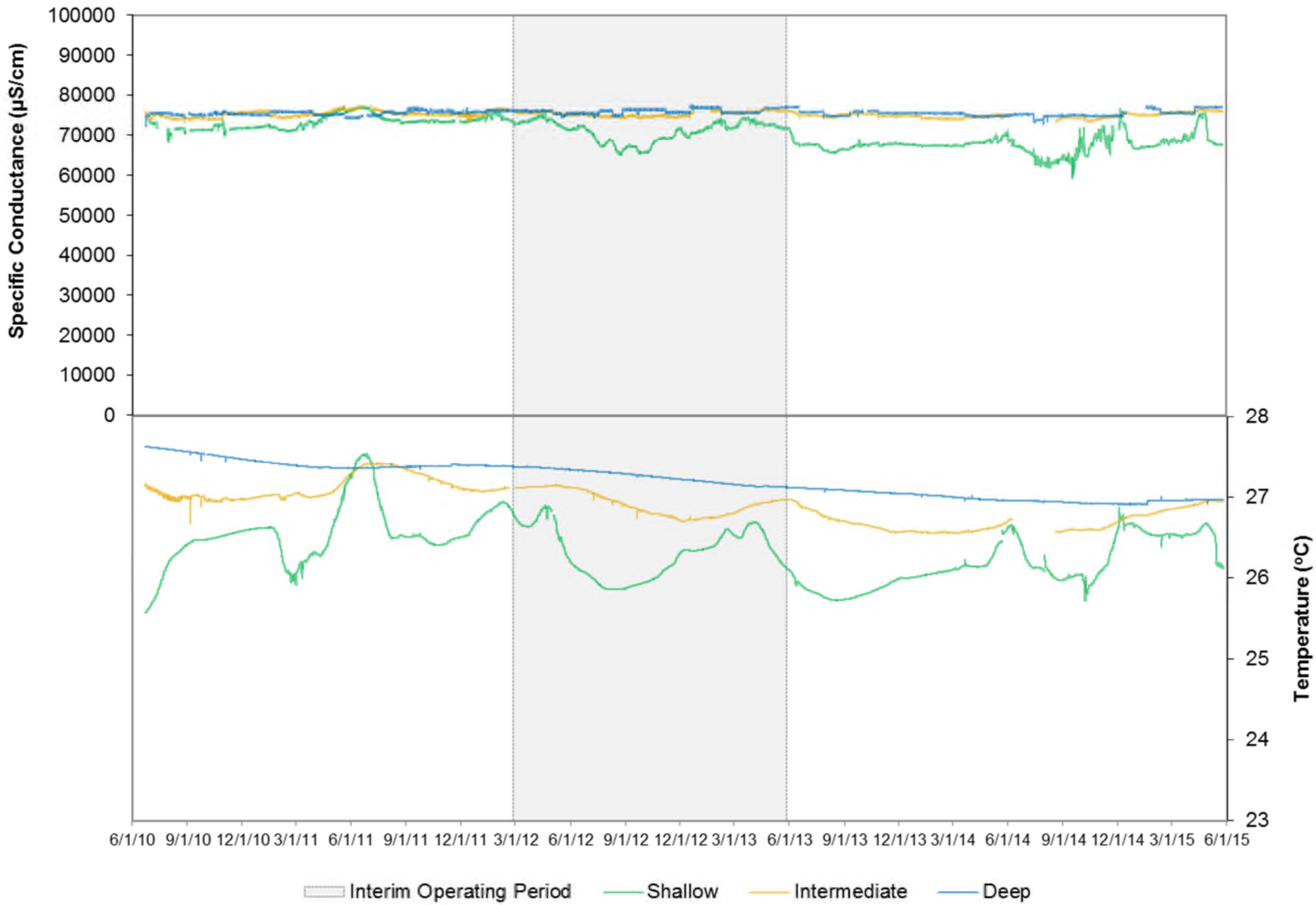


Figure 2.1-3. TPGW-2 Specific Conductance and Temperature.

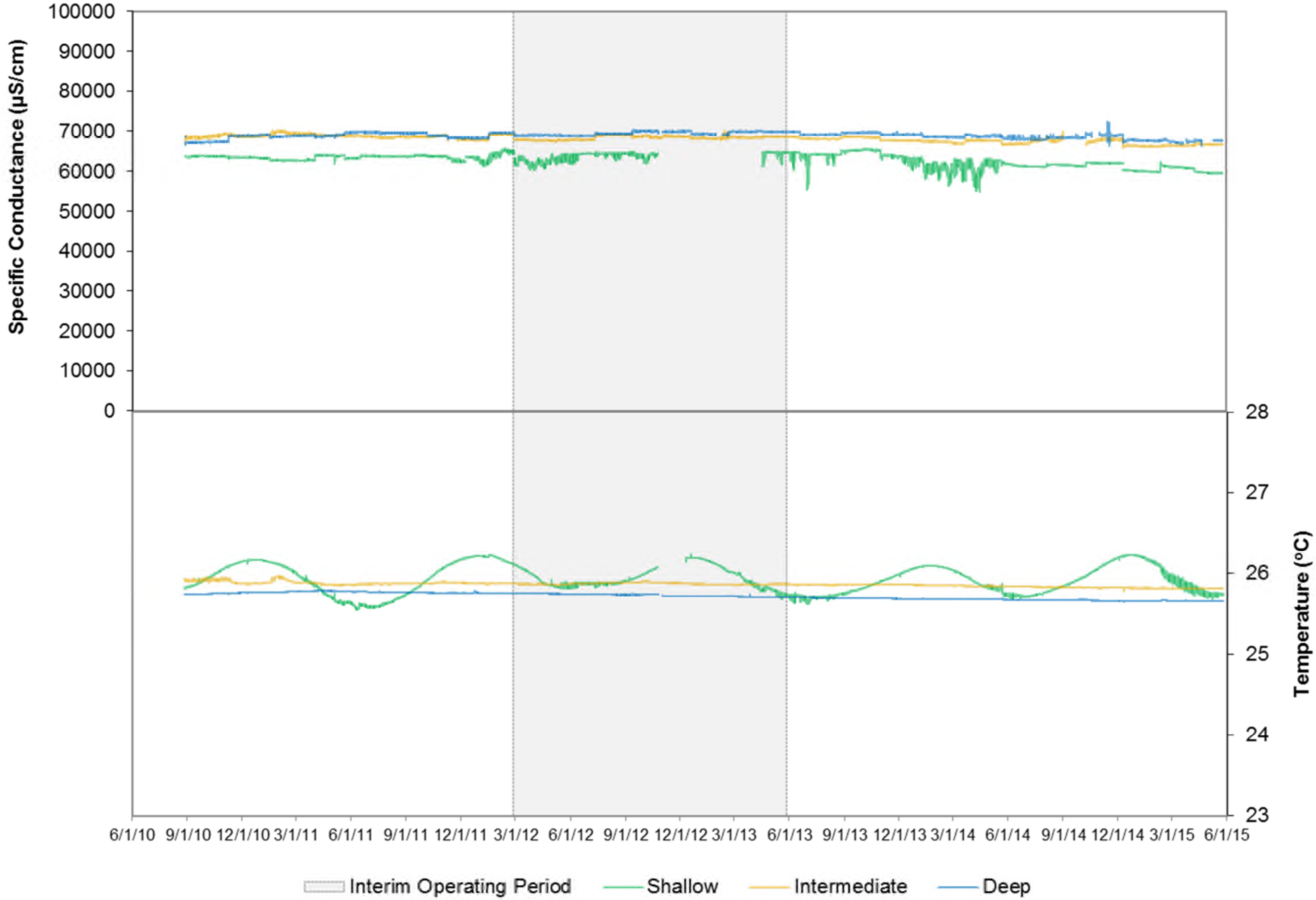


Figure 2.1-4. TPGW-3 Specific Conductance and Temperature.

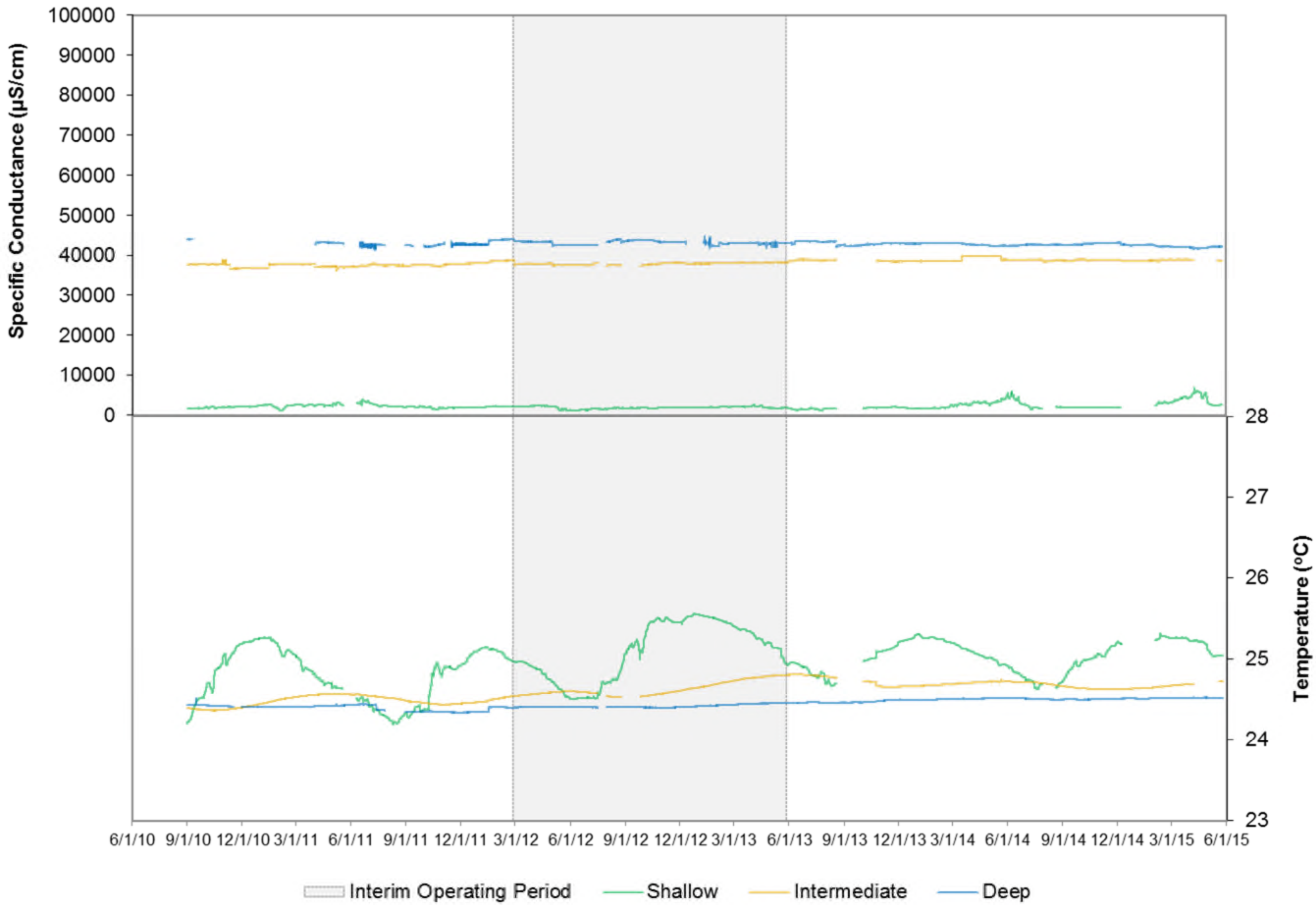


Figure 2.1-5. TPGW-4 Specific Conductance and Temperature.

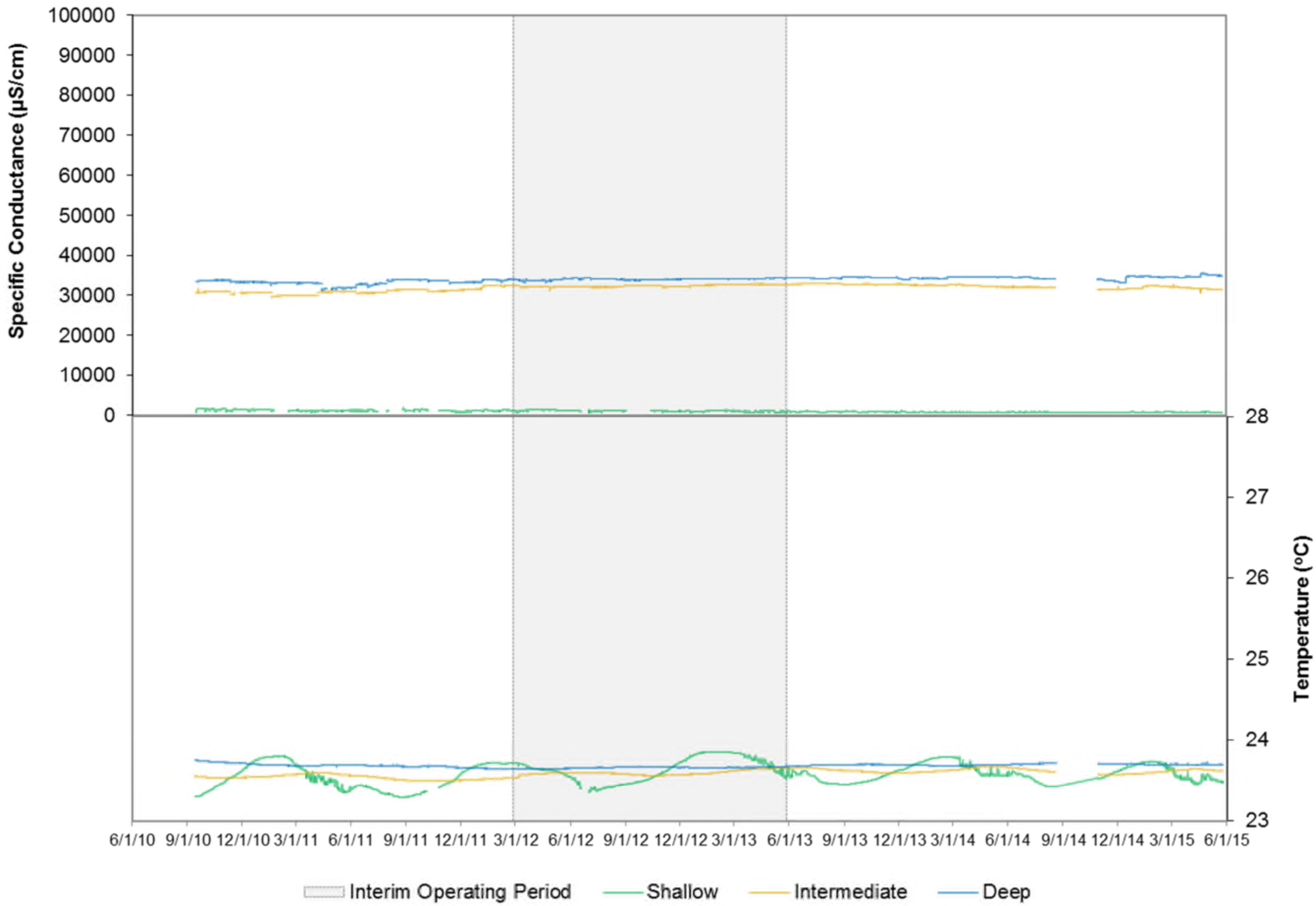


Figure 2.1-6. TPGW-5 Specific Conductance and Temperature.

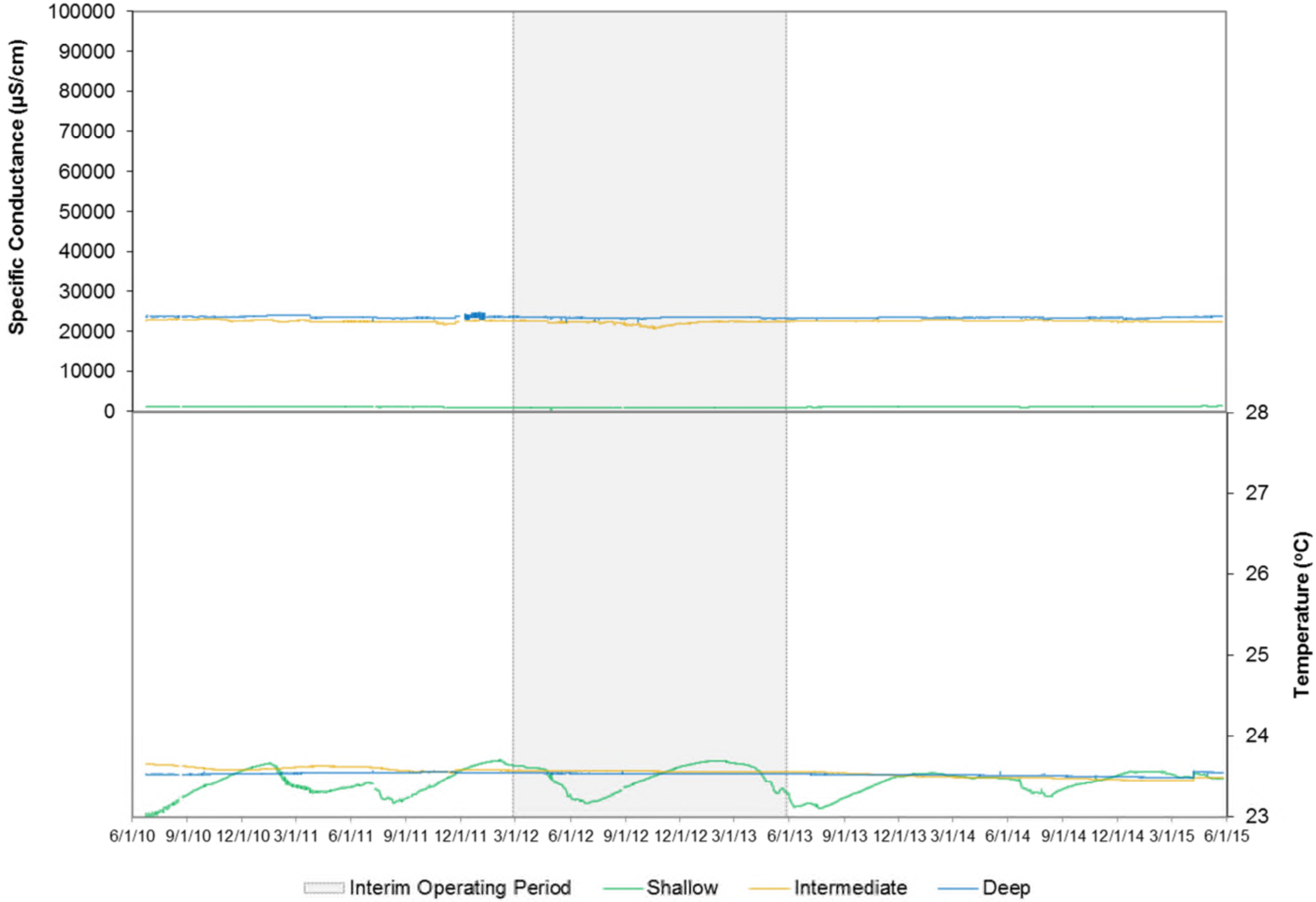


Figure 2.1-7. TPGW-6 Specific Conductance and Temperature.

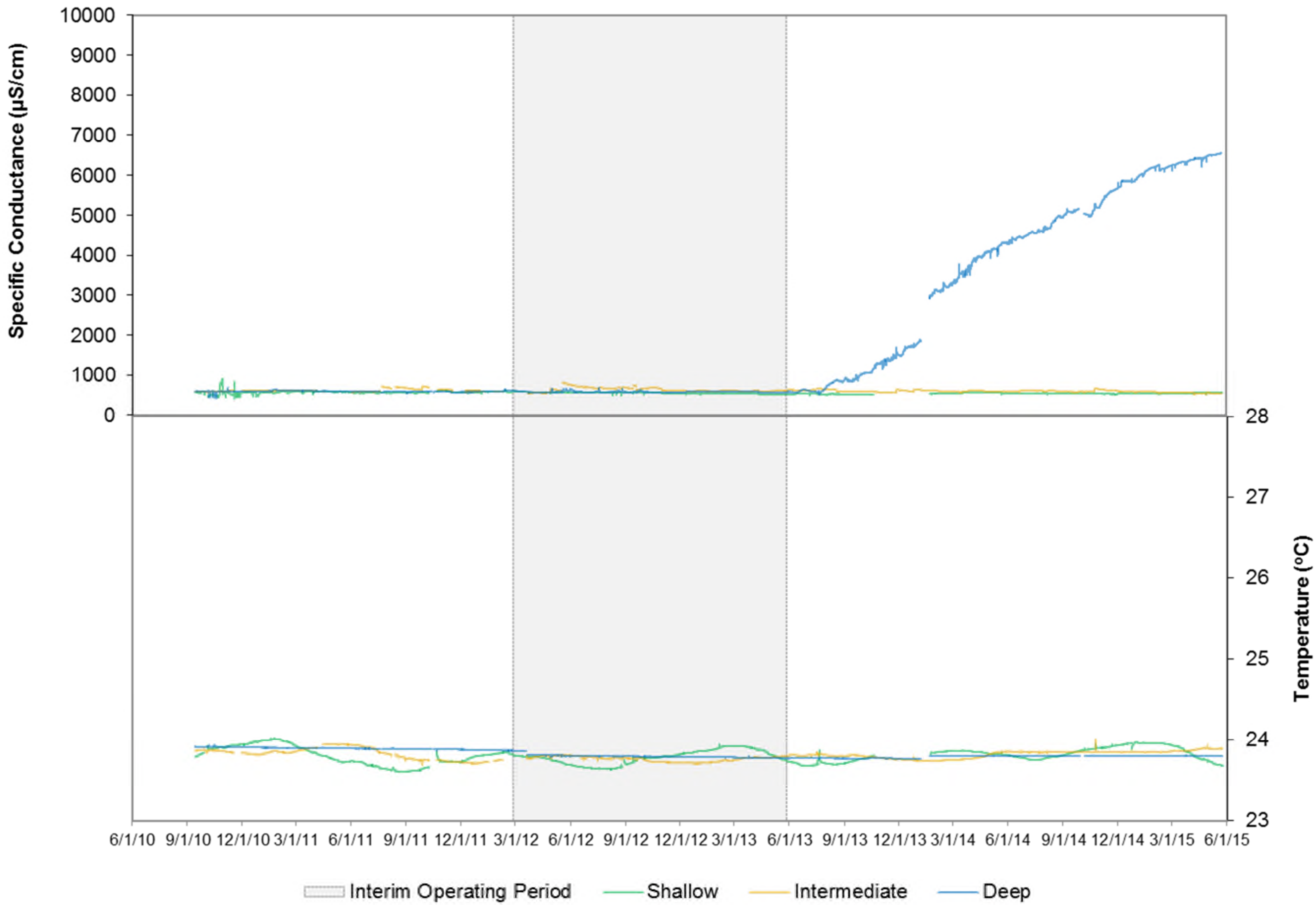


Figure 2.1-8. TPGW-7 Specific Conductance and Temperature.

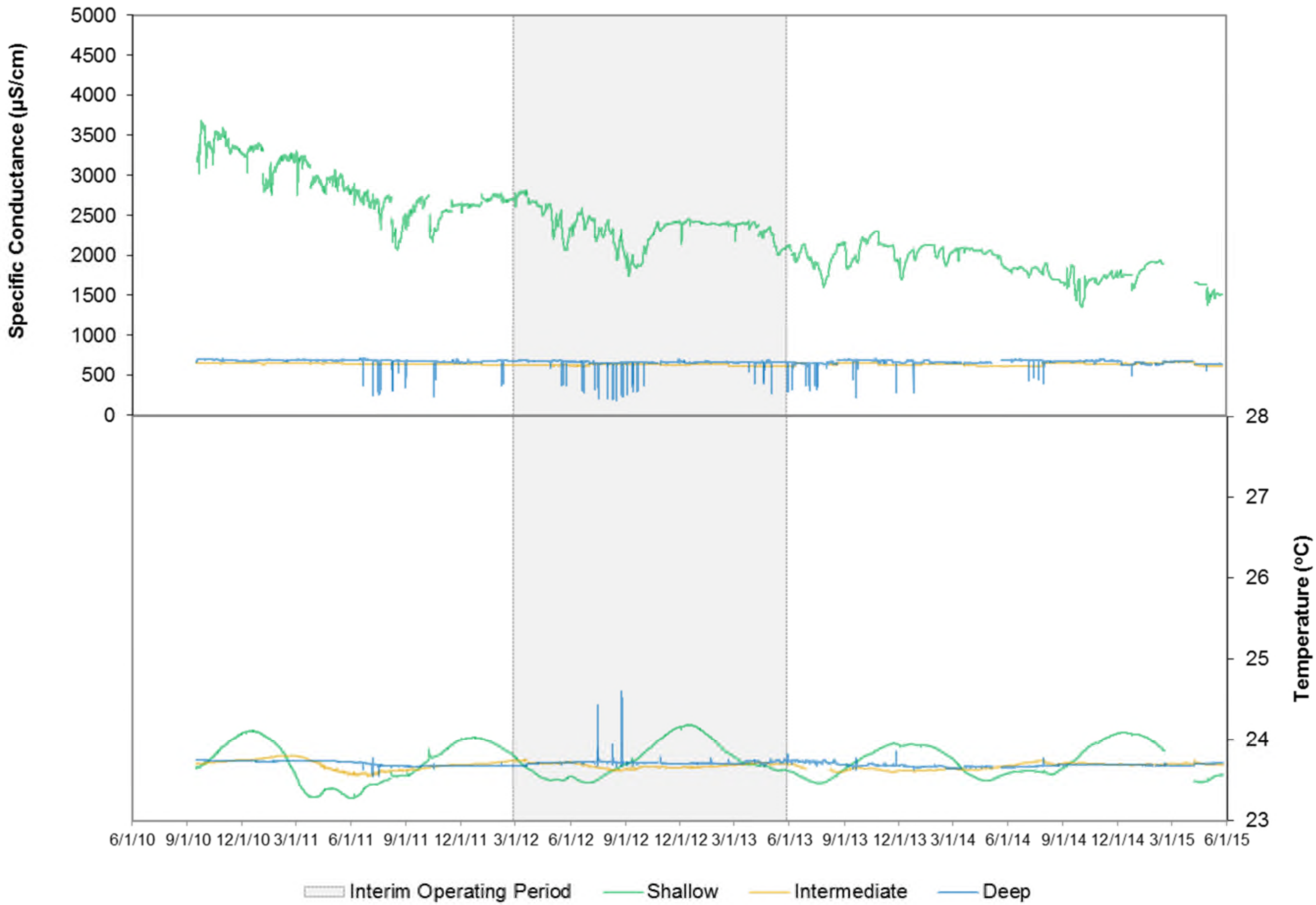


Figure 2.1-9. TPGW-8 Specific Conductance and Temperature.

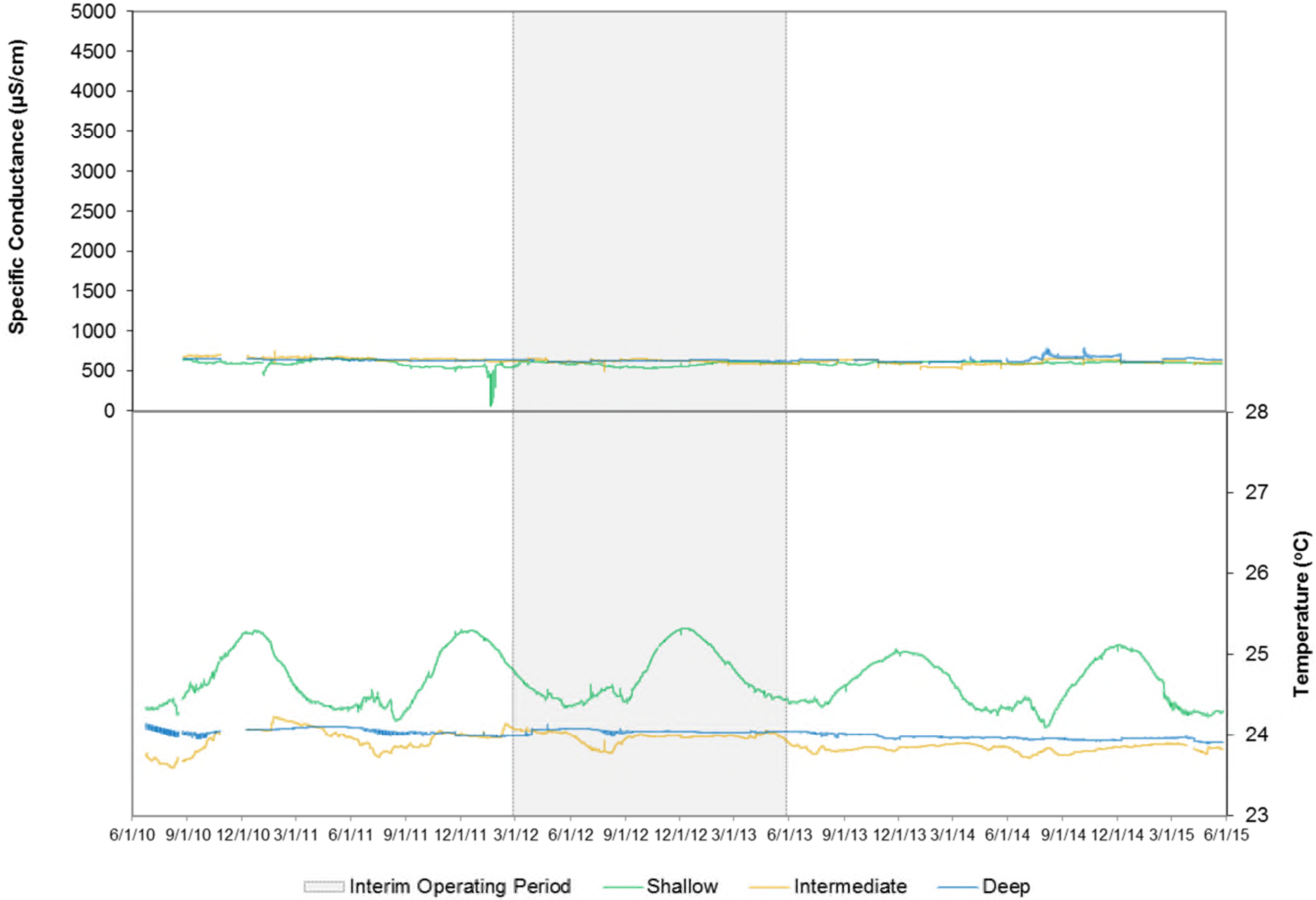


Figure 2.1-10. TPGW-9 Specific Conductance and Temperature.

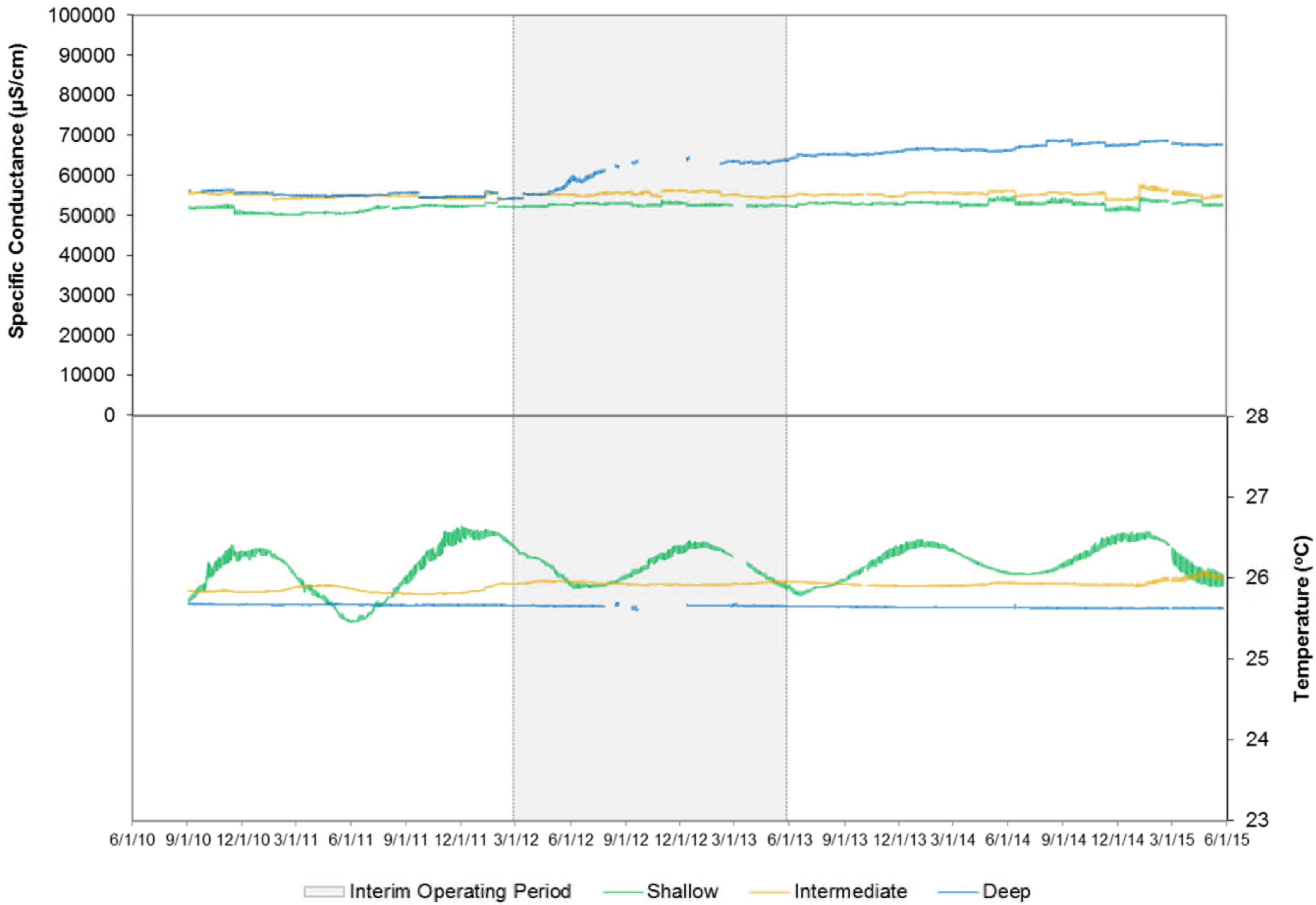


Figure 2.1-11. TPGW-10 Specific Conductance and Temperature.

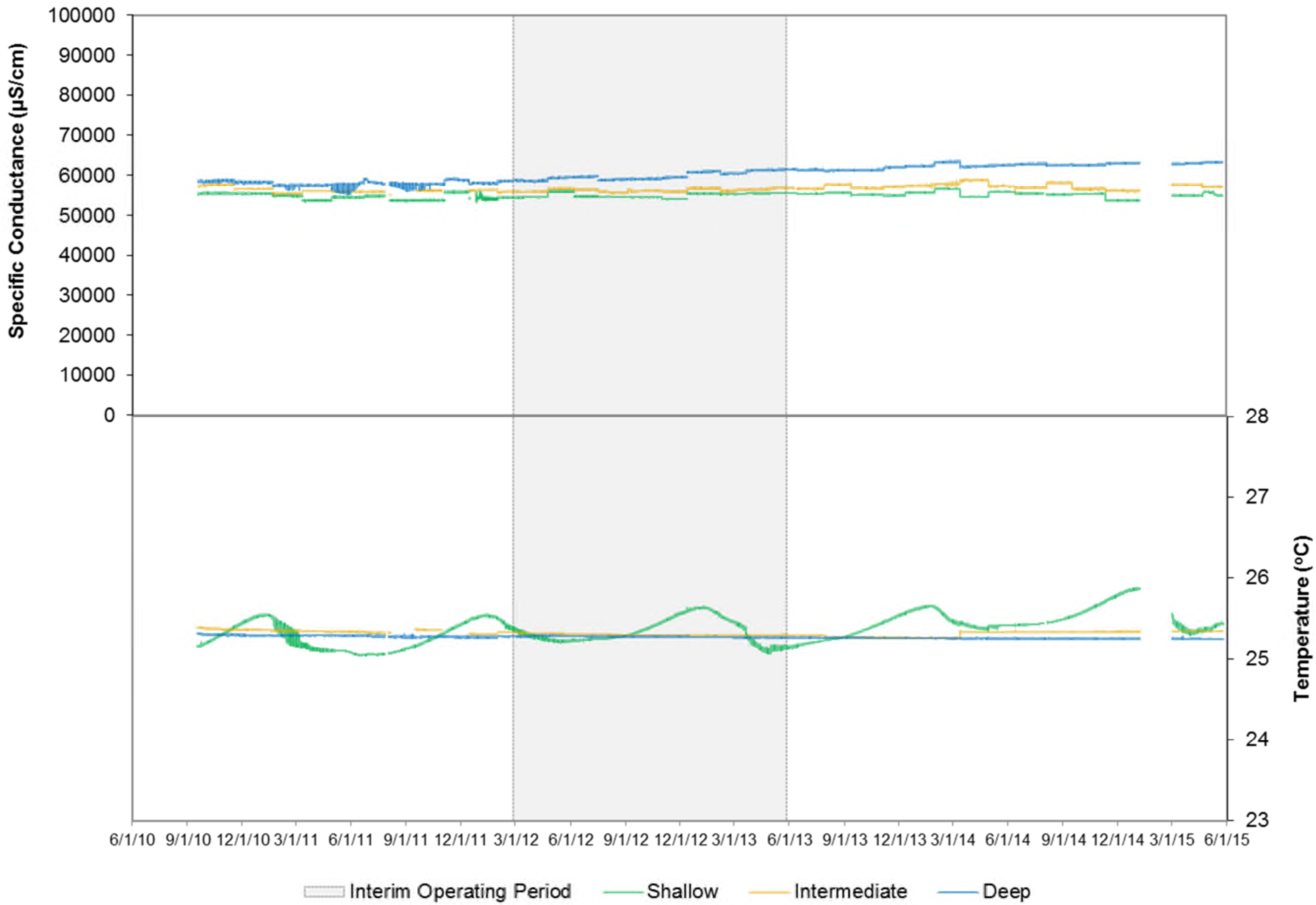


Figure 2.1-12. TPGW-11 Specific Conductance and Temperature.

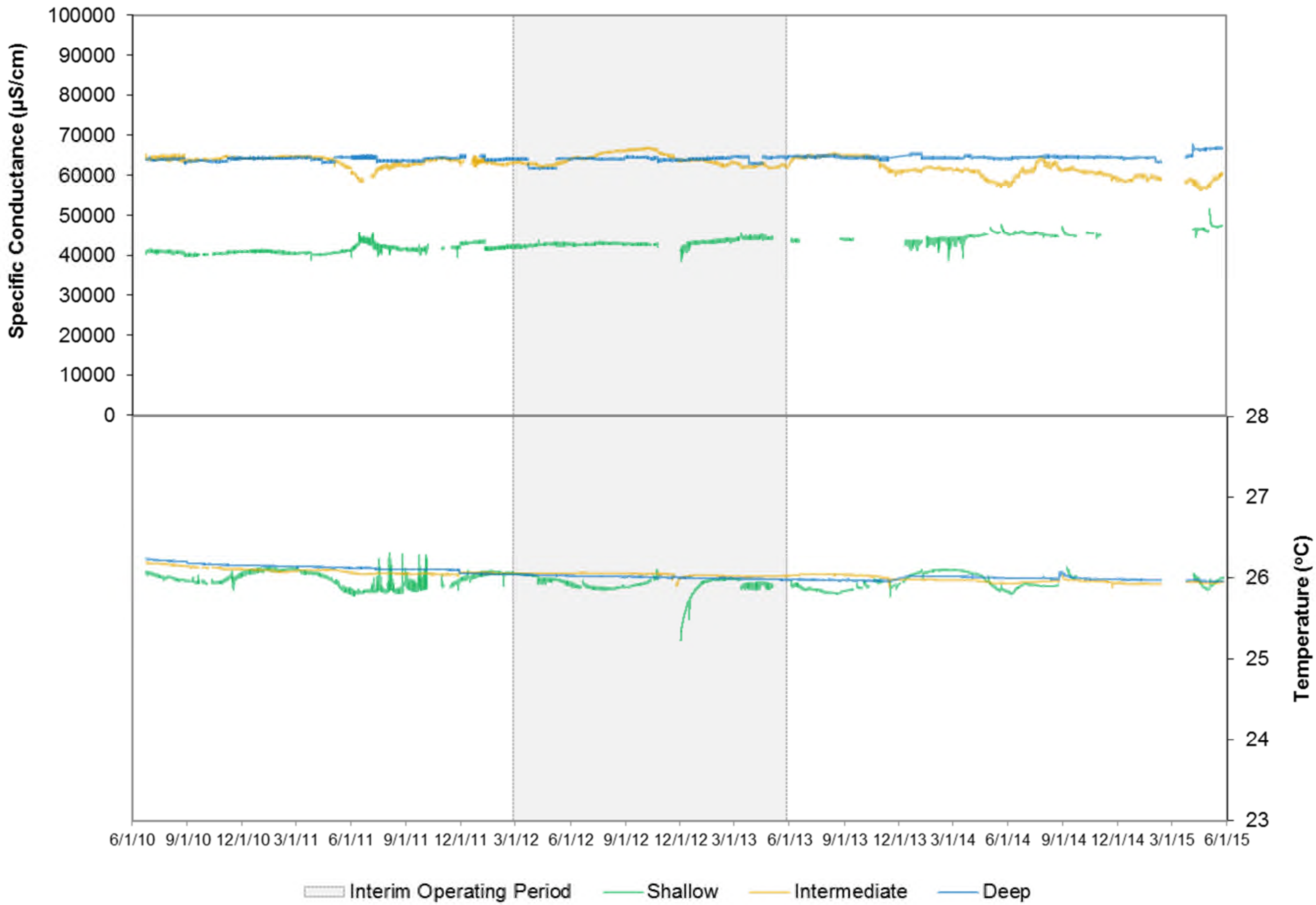


Figure 2.1-13. TPGW-12 Specific Conductance and Temperature.

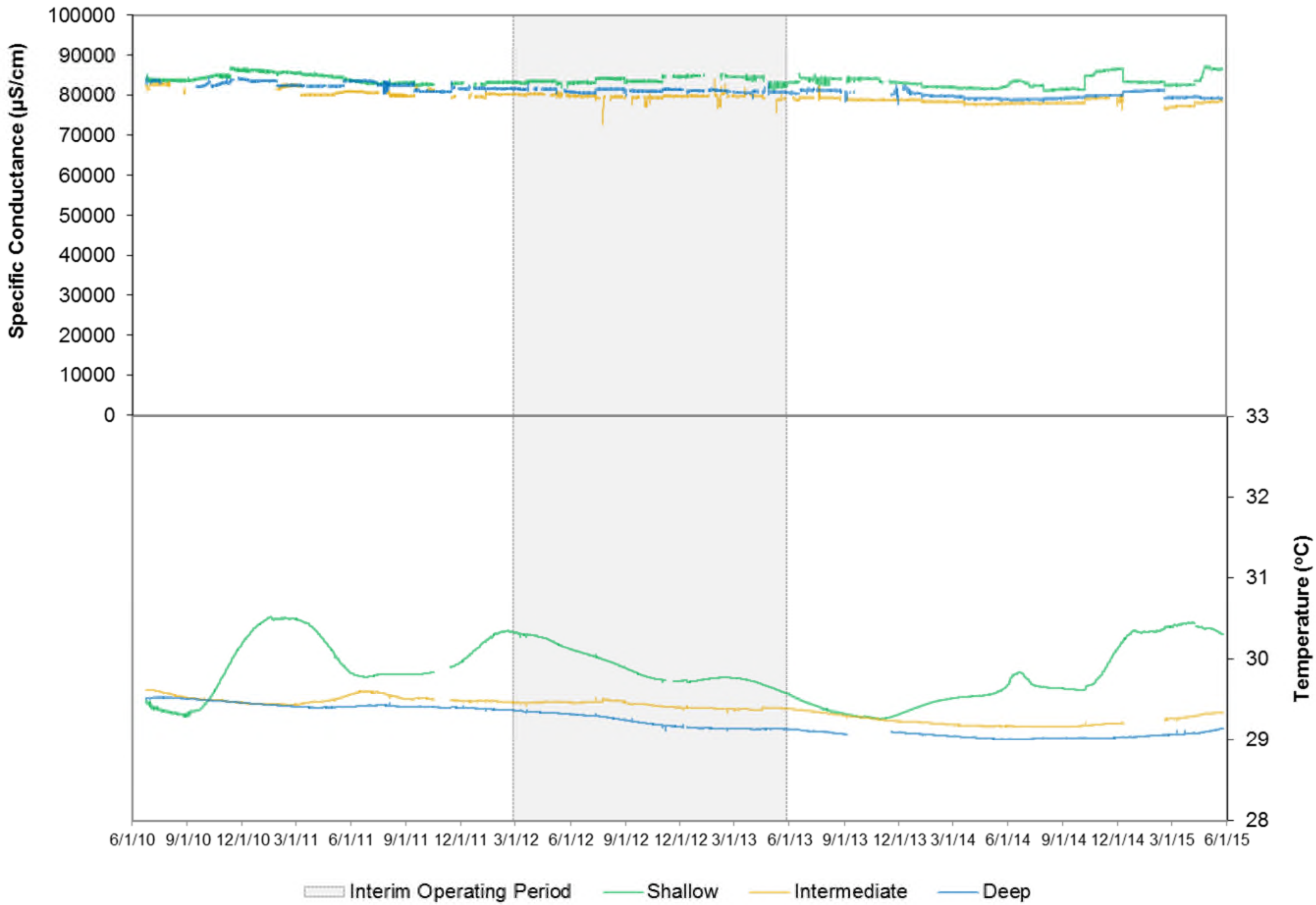


Figure 2.1-14. TPGW-13 Specific Conductance and Temperature.

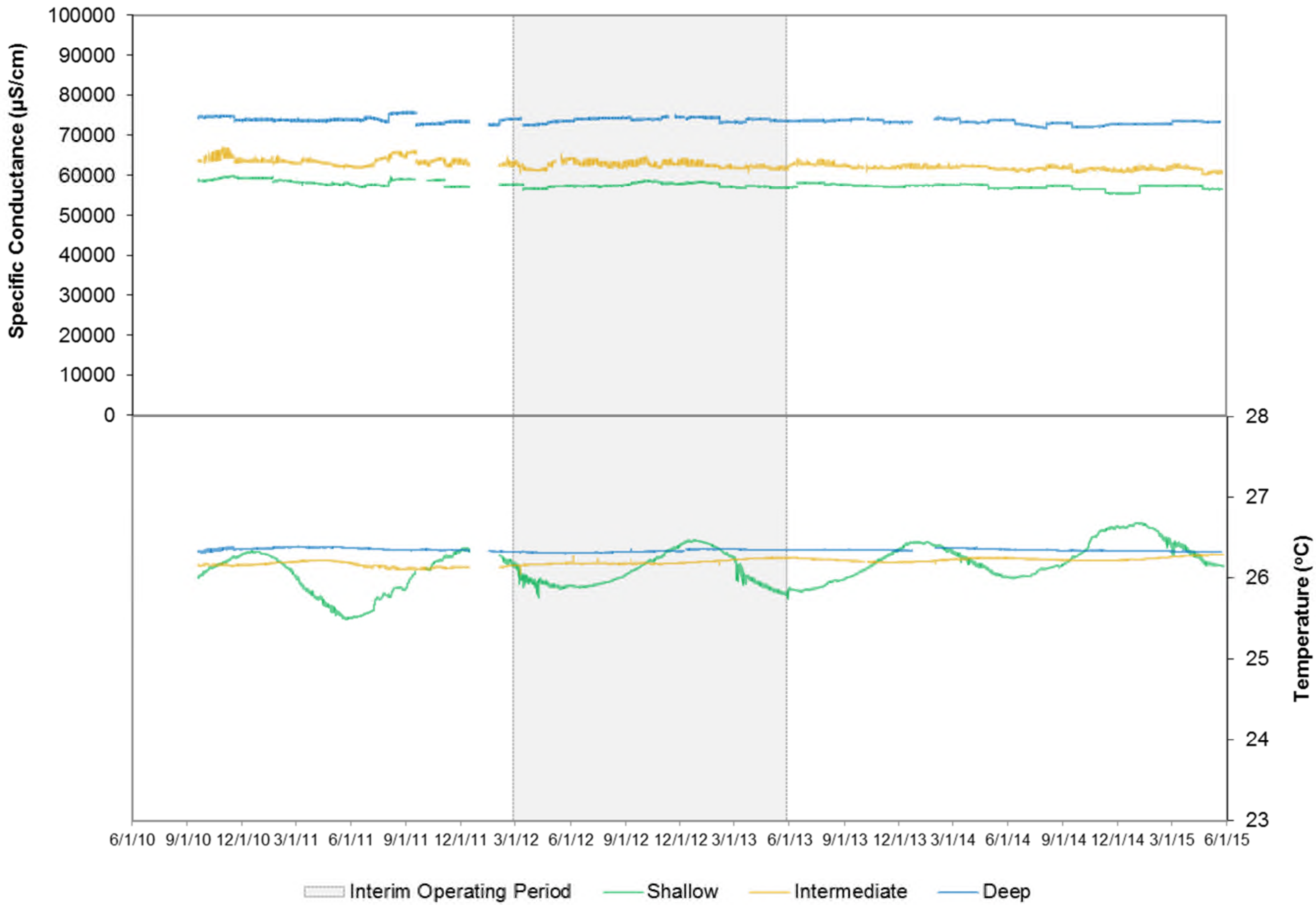
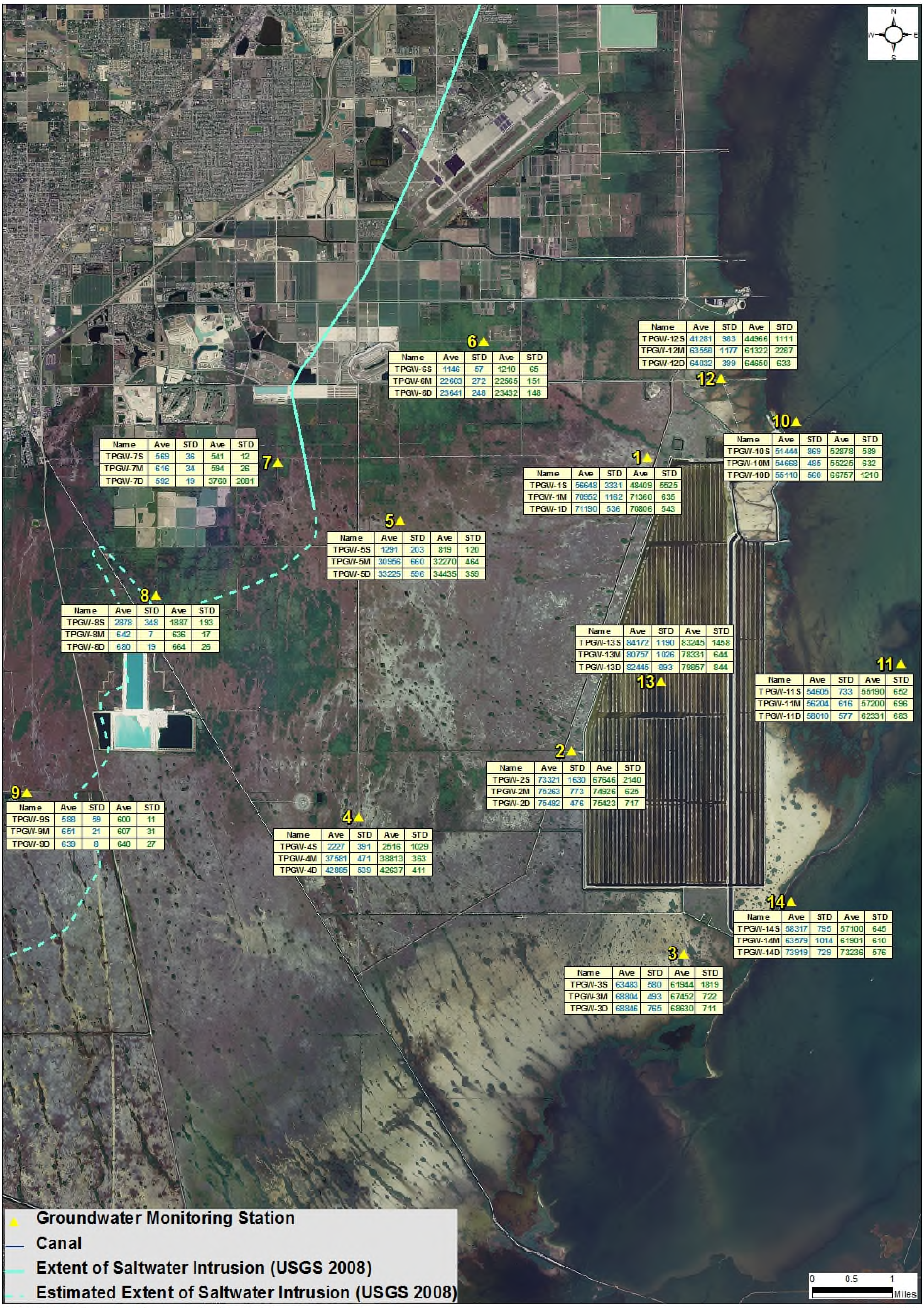


Figure 2.1-15. TPGW-14 Specific Conductance and Temperature.



Note: 1) Ave: Average; STD: Standard deviation.
2) Pre-Uprate events values (blue) are from June 2010 to February 2012; Post-Uprate events values (green) are from June 2013 to May 2015.
3) Samples collected at 3 depths (S: shallow; M: intermediate and D: deep).

Figure 2.1-16. Average and Standard Deviation of Specific Conductance Values (µS/cm) for Groundwater Stations Pre- and Post-Uprate.

Note: 1) Ave: Average; STD: Standard deviation.
2) Pre-Uprate events values (blue) are from June 2010 to February 2012; Post-Uprate events values (green) are from June 2013 to May 2015.
3) Samples collected at 3 depths (S: shallow; M: intermediate and D: deep).

7-2015

Figure 2.1-17. Average and Standard Deviation of Temperature (^oC) for Groundwater Stations Pre- and Post-Uprate.

Note: 1) Ave: Average; STD: Standard deviation. 7-2015

2) Pre-Uprate events values (blue) are from June 2010 to February 2012; Post-Uprate events values (green) are from June 2013 to May 2015.

3) Samples collected at 3 depths (S: shallow; M: intermediate and D: deep).

Figure 2.1-18. Average and Standard Deviation of Salinity (PSS-78) for Groundwater Stations Pre- and Post-Uprate.

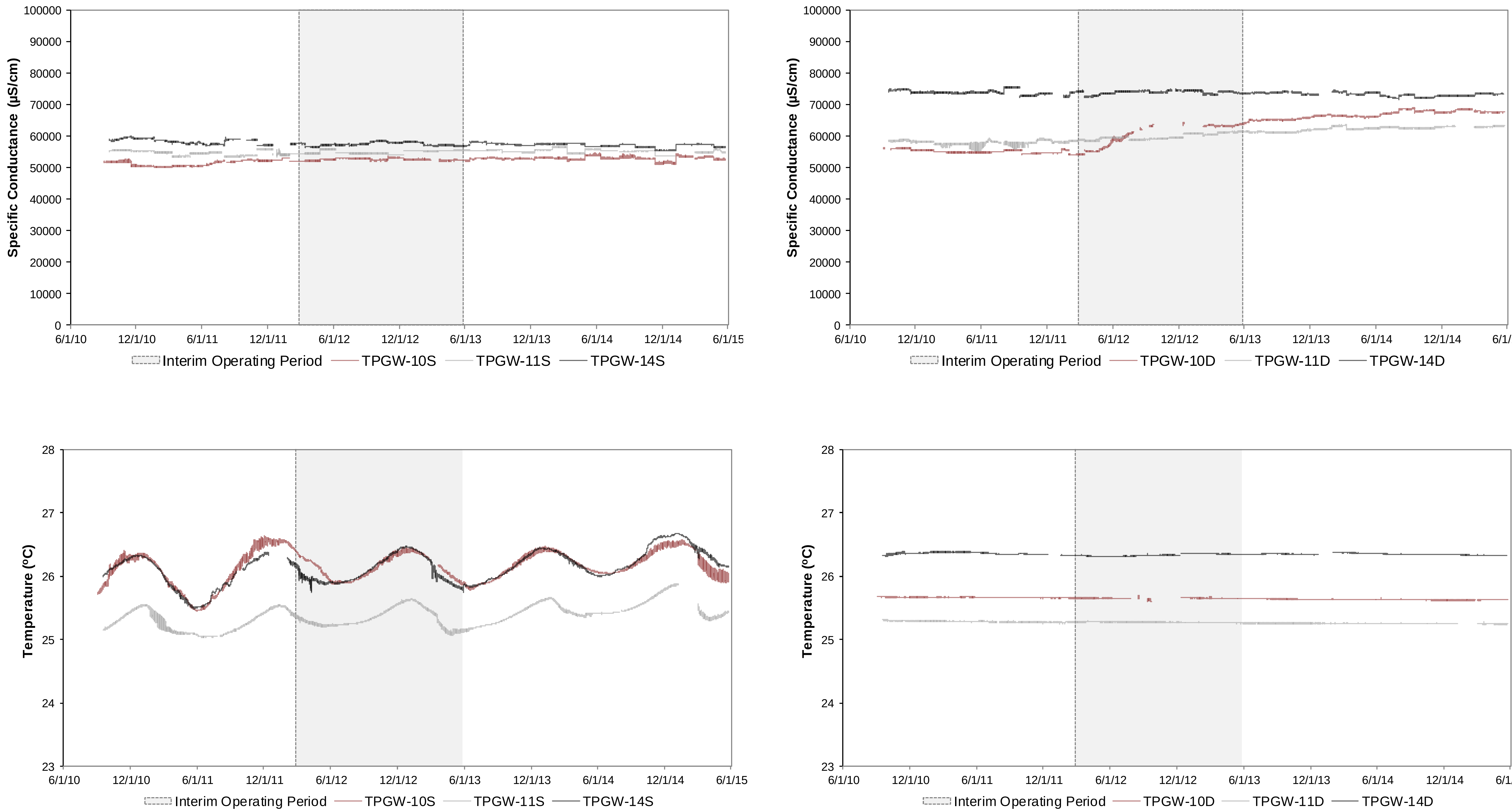


Figure 2.1-19. Comparison of Specific Conductance and Temperature in Biscayne Bay Shallow and Deep Wells TPGW-10, TPGW-11, and TPGW-14.

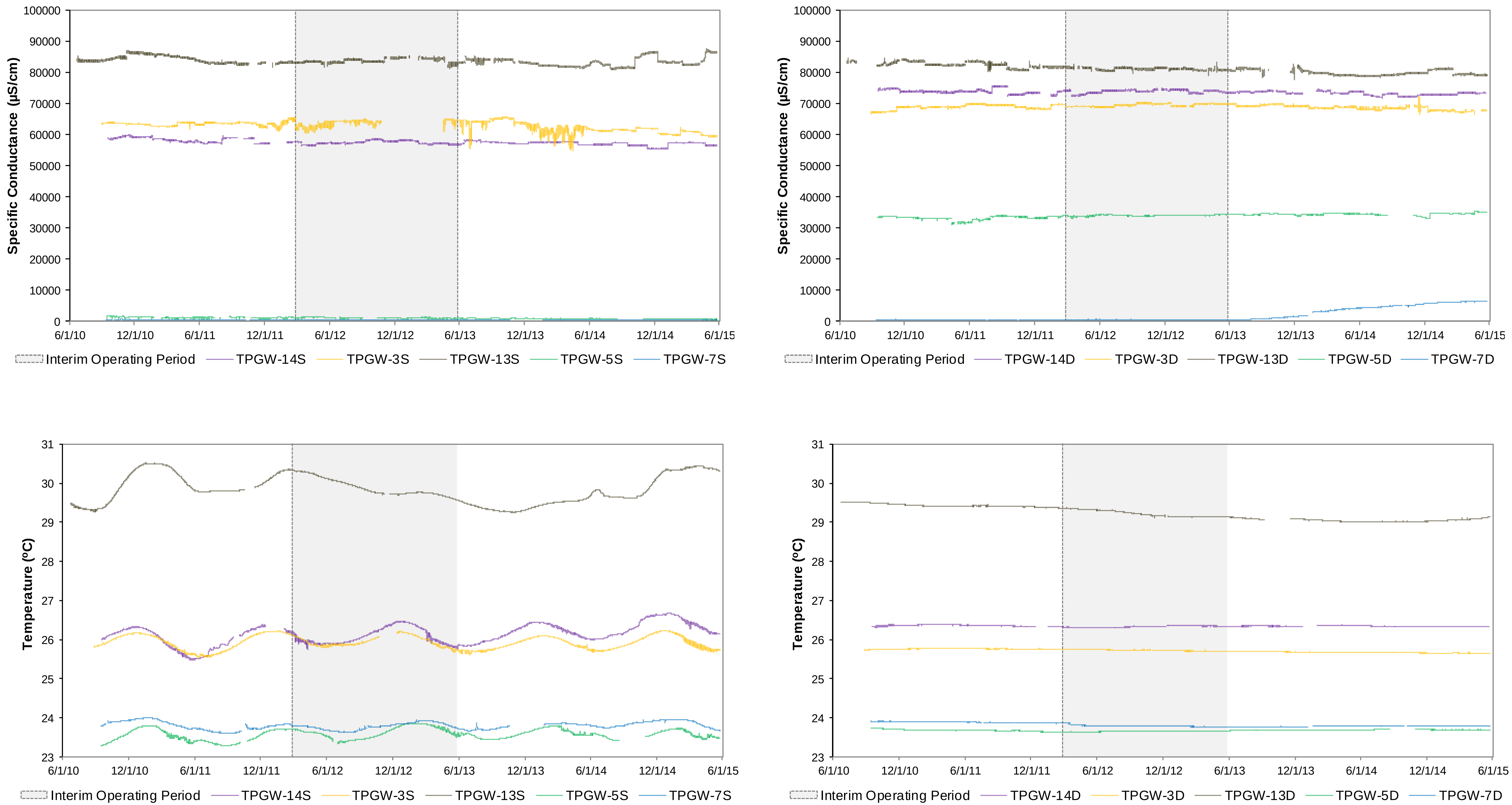


Figure 2.1-20. Comparison of Specific Conductance and Temperature across the Landscape in Shallow and Deep Wells TPGW-14, TPGW-3, TPGW-13, TPGW-5, and TPGW 7.

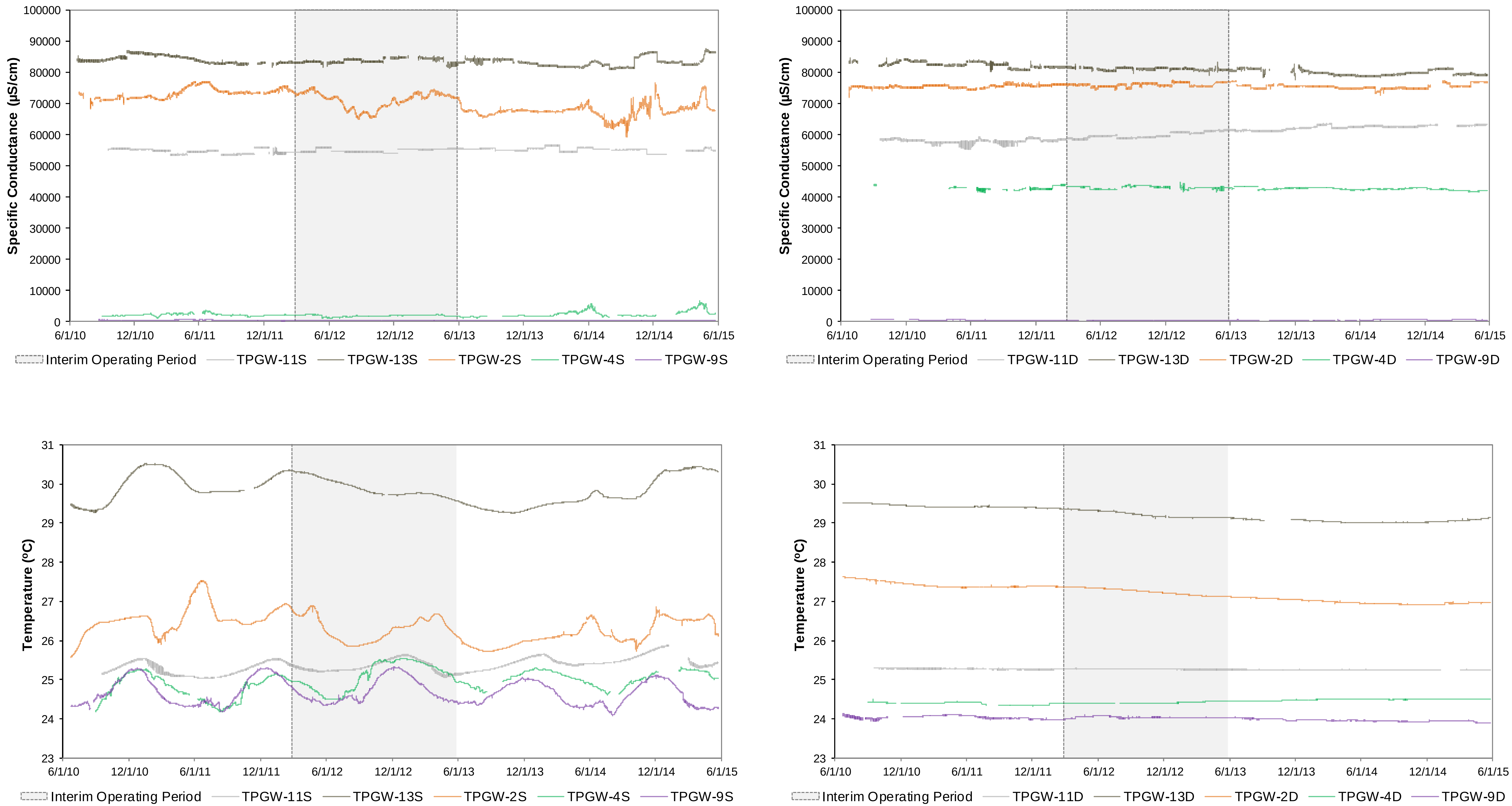


Figure 2.1-21. Comparison of Specific Conductance and Temperature across the Landscape in Shallow and Deep Wells TPGW-11, TPGW-13, TPGW-2, TPGW-4, and TPGW-9.

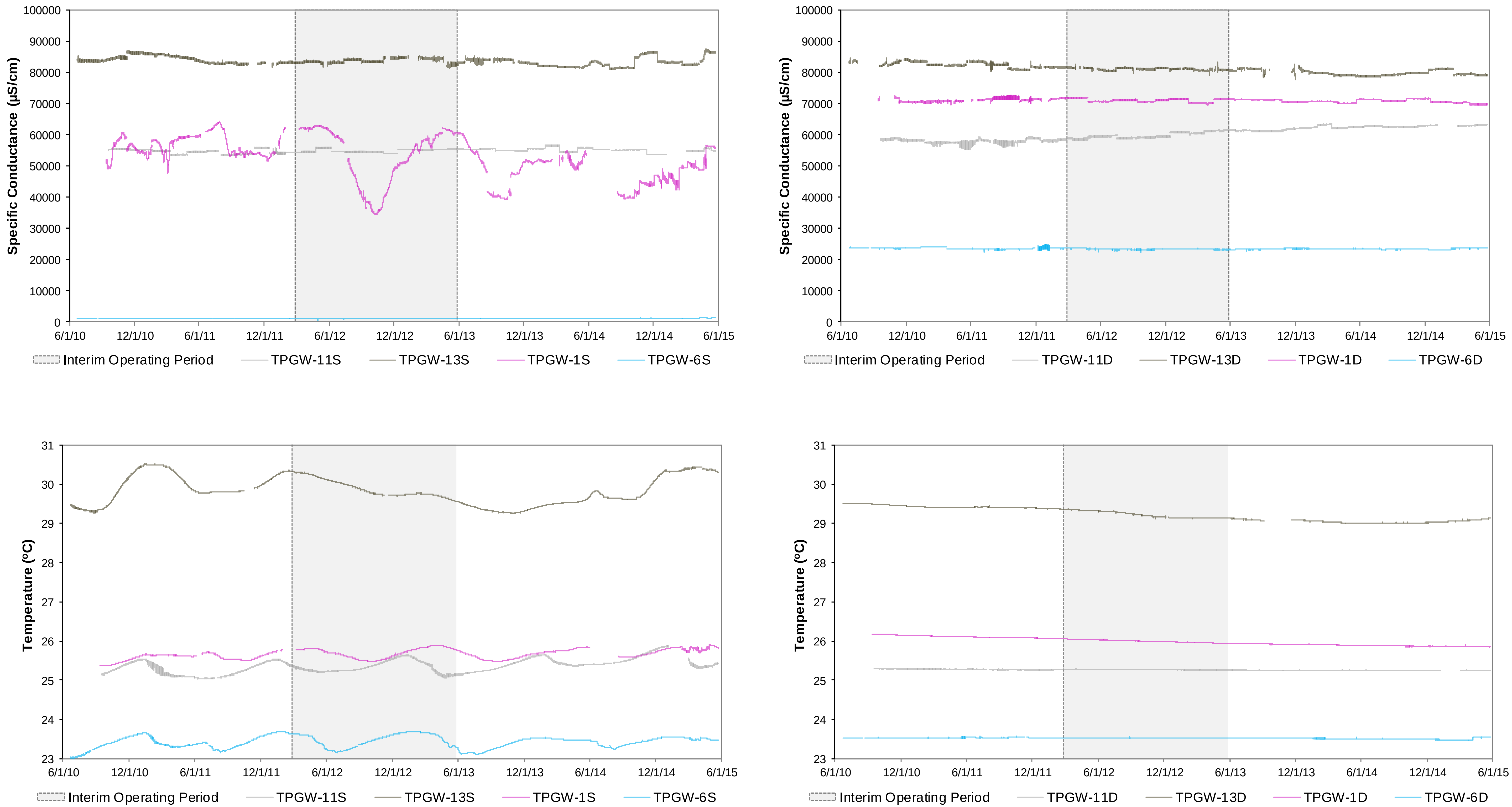


Figure 2.1-22. Comparison of Specific Conductance and Temperature across the Landscape in Shallow and Deep Wells TPGW-11, TPGW-13, TPGW-1, and TPGW-6.

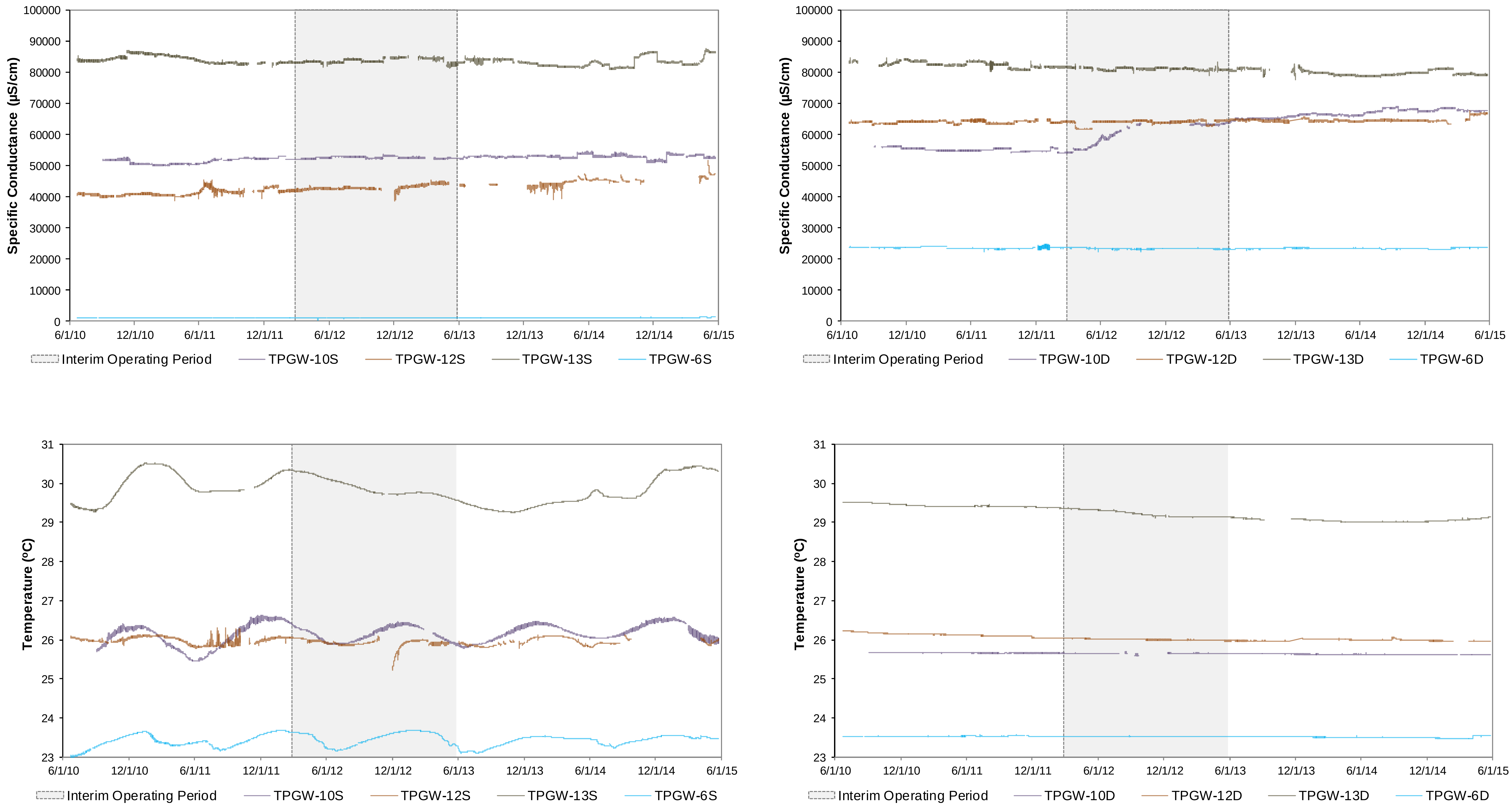


Figure 2.1-23. Comparison of Specific Conductance and Temperature across the Landscape in Shallow and Deep Wells TPGW-10, TPGW-12, TPGW-13, and TPGW-6.

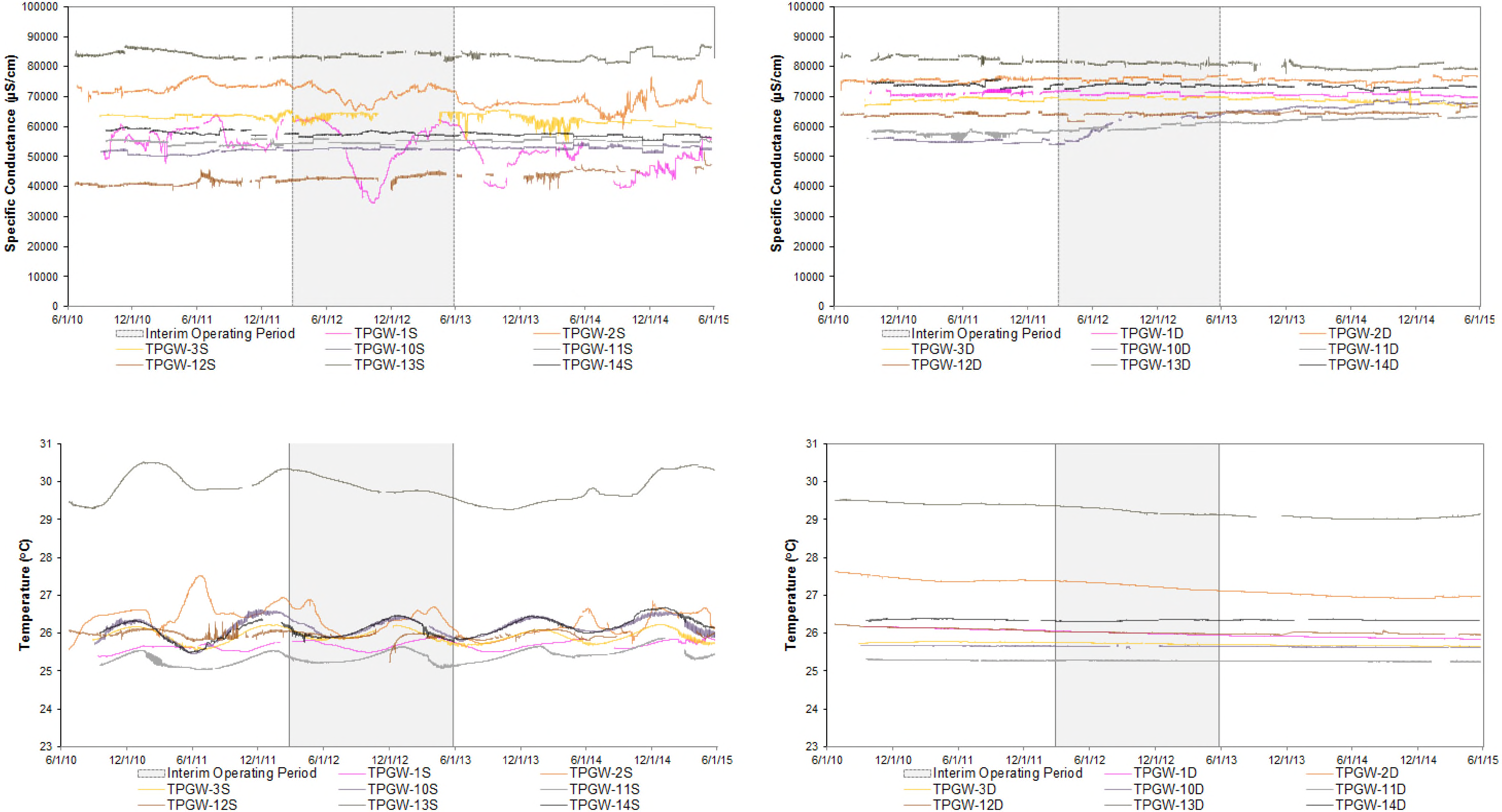


Figure 2.1-24. Comparison of Specific Conductance and Temperature across the Landscape in Shallow and Deep Wells Close to the CCS - TPGW-1, TPGW-2, TPGW-3, TPGW 10, TPGW-11, TPGW-12, TPGW-13, and TPGW-14.

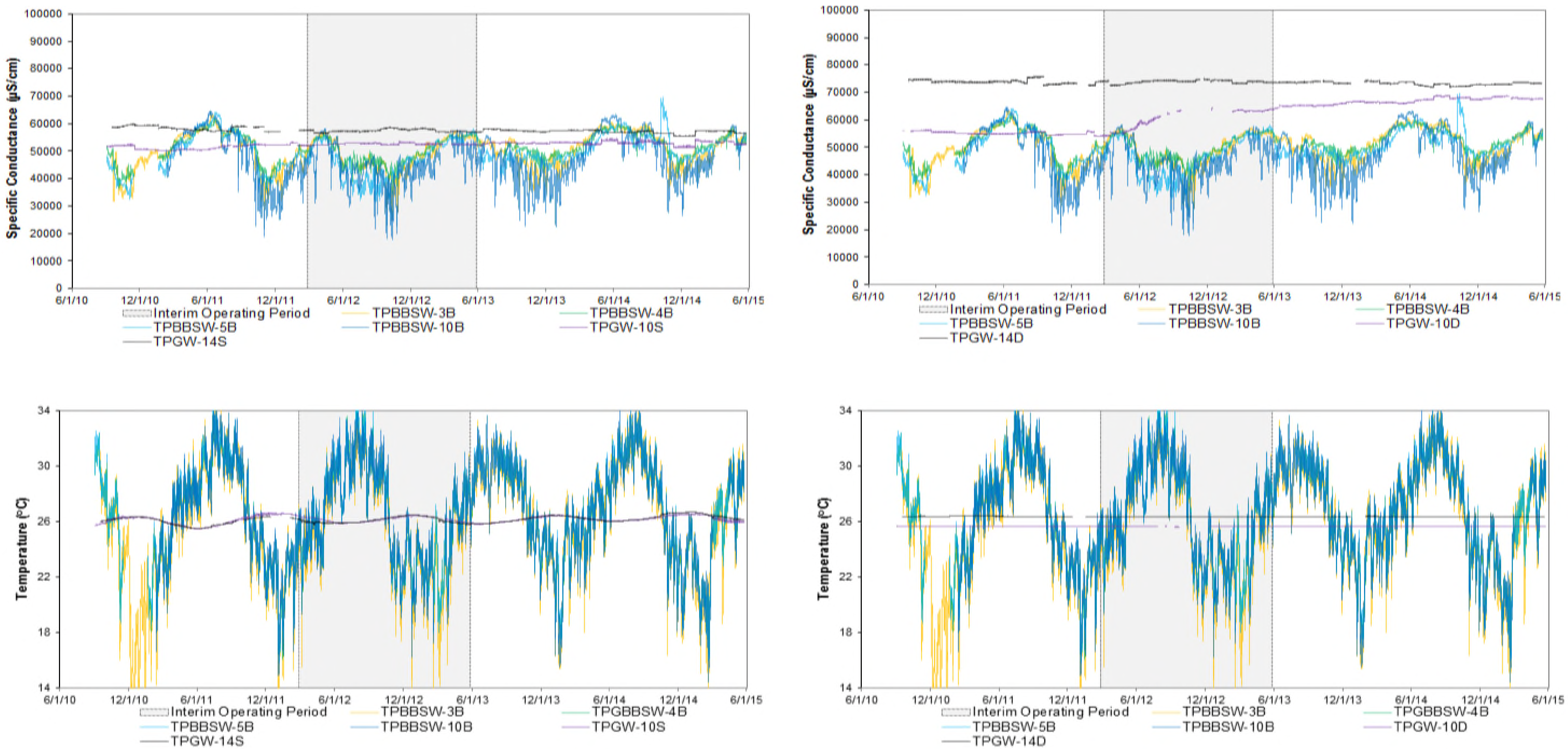
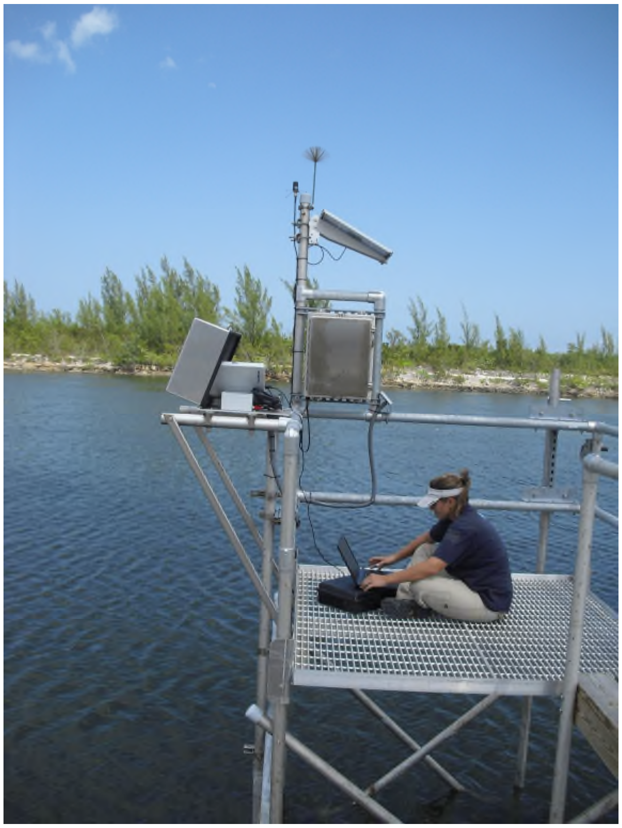


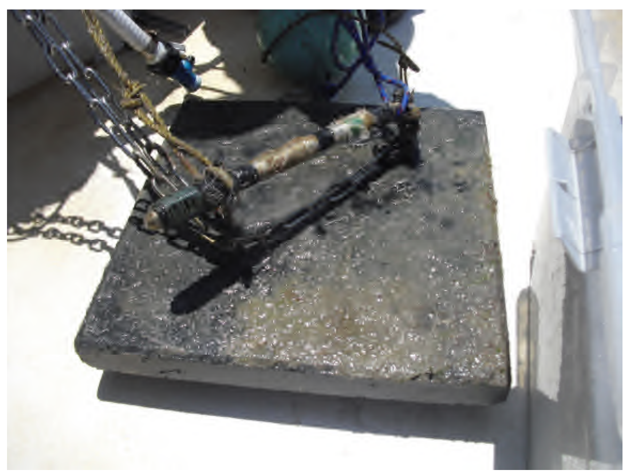
Figure 2.1-25. Comparison of Specific Conductance and Temperature in Biscayne Bay Surface Water and Biscayne Bay Shallow and Deep Wells TPGW-10 and TPGW-14.



Typical automated station in the CCS.

Close-up photo of automated station panel.

Top view of probes in stilling well.



Biscayne Bay non-telemetry setup.

Figure 2.2-1. Automated Surface Water Stations.

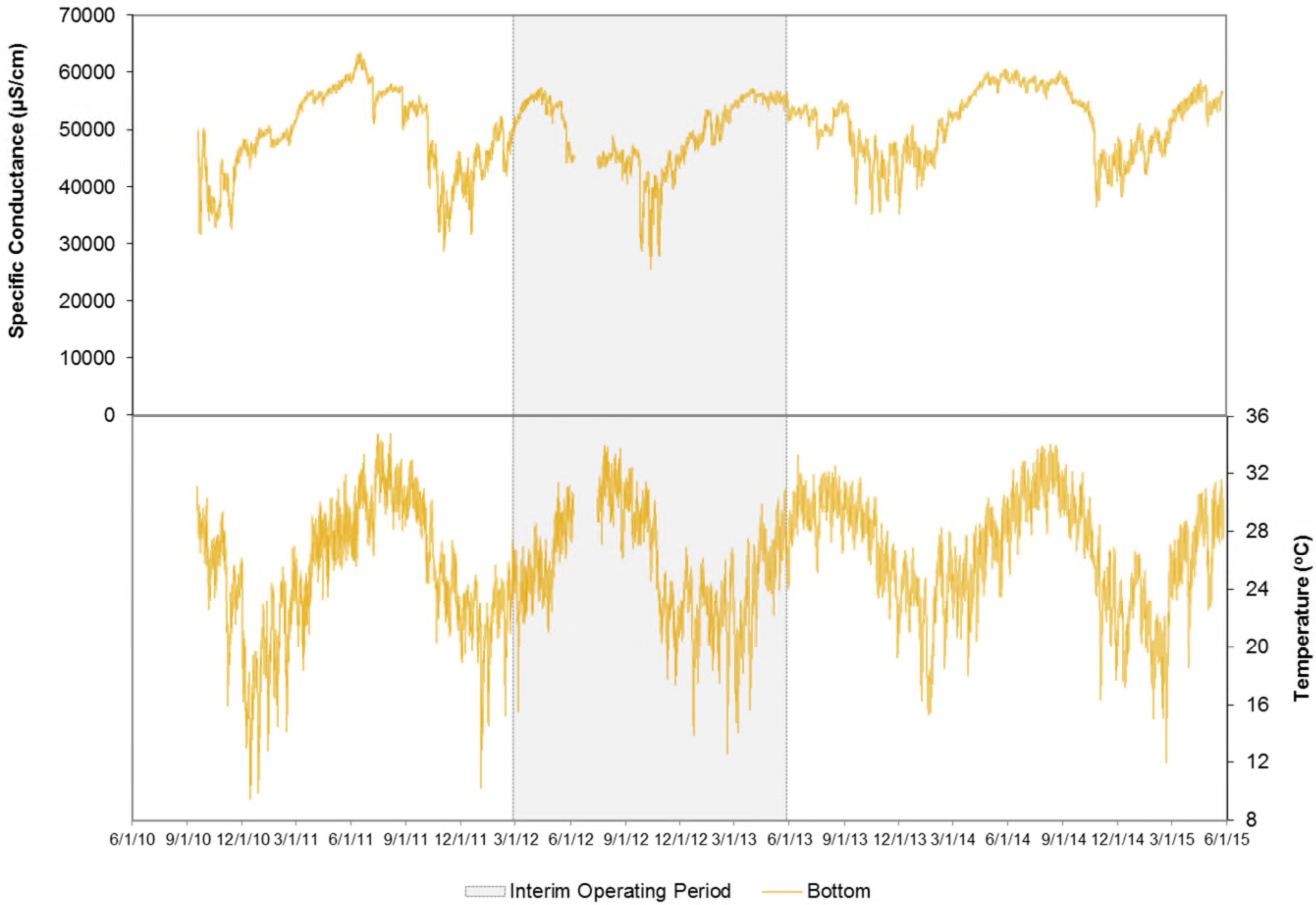


Figure 2.2-2. TPBBSW-3 Specific Conductance and Temperature.

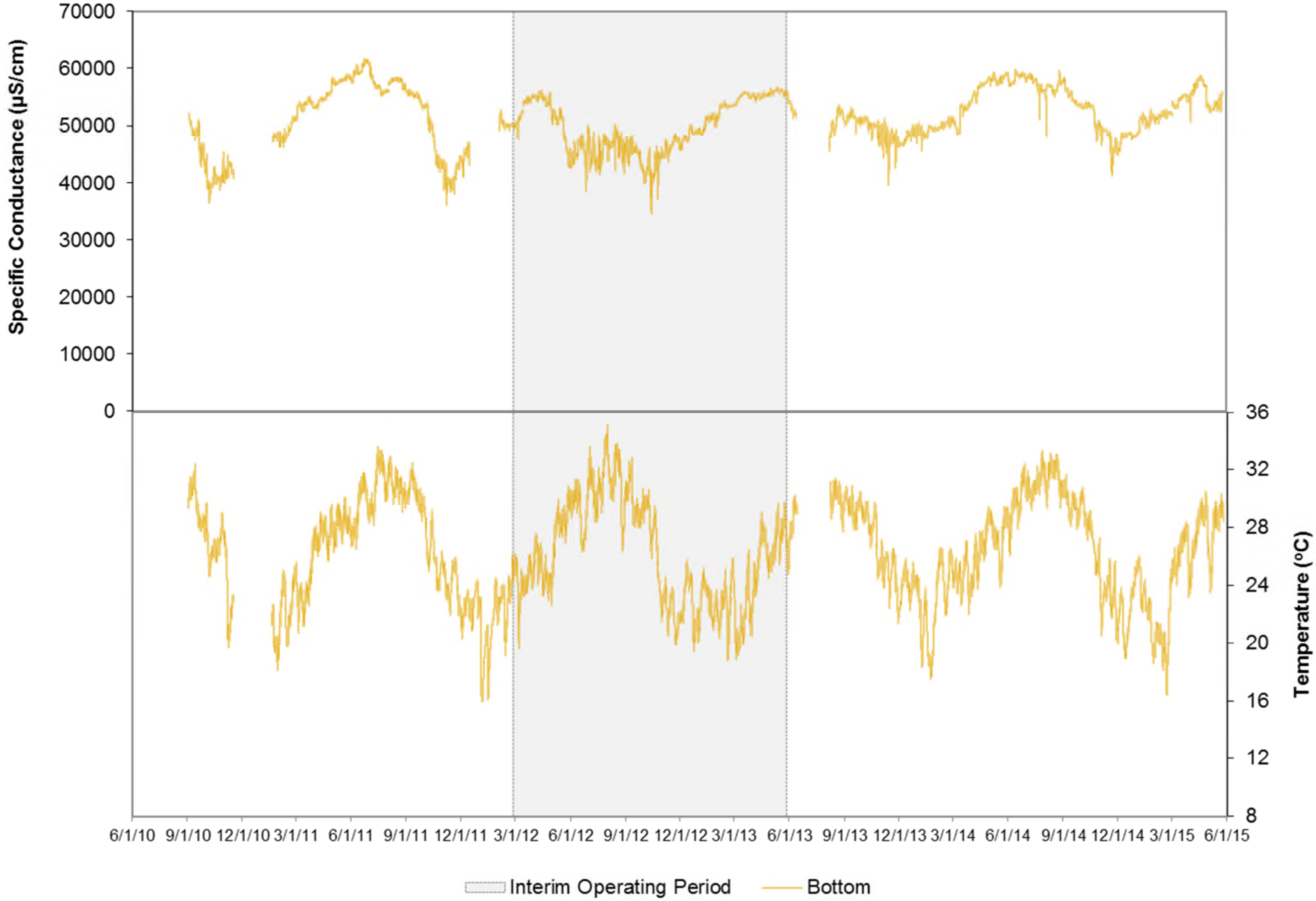


Figure 2.2-3. TPBBSW-4 Specific Conductance and Temperature.

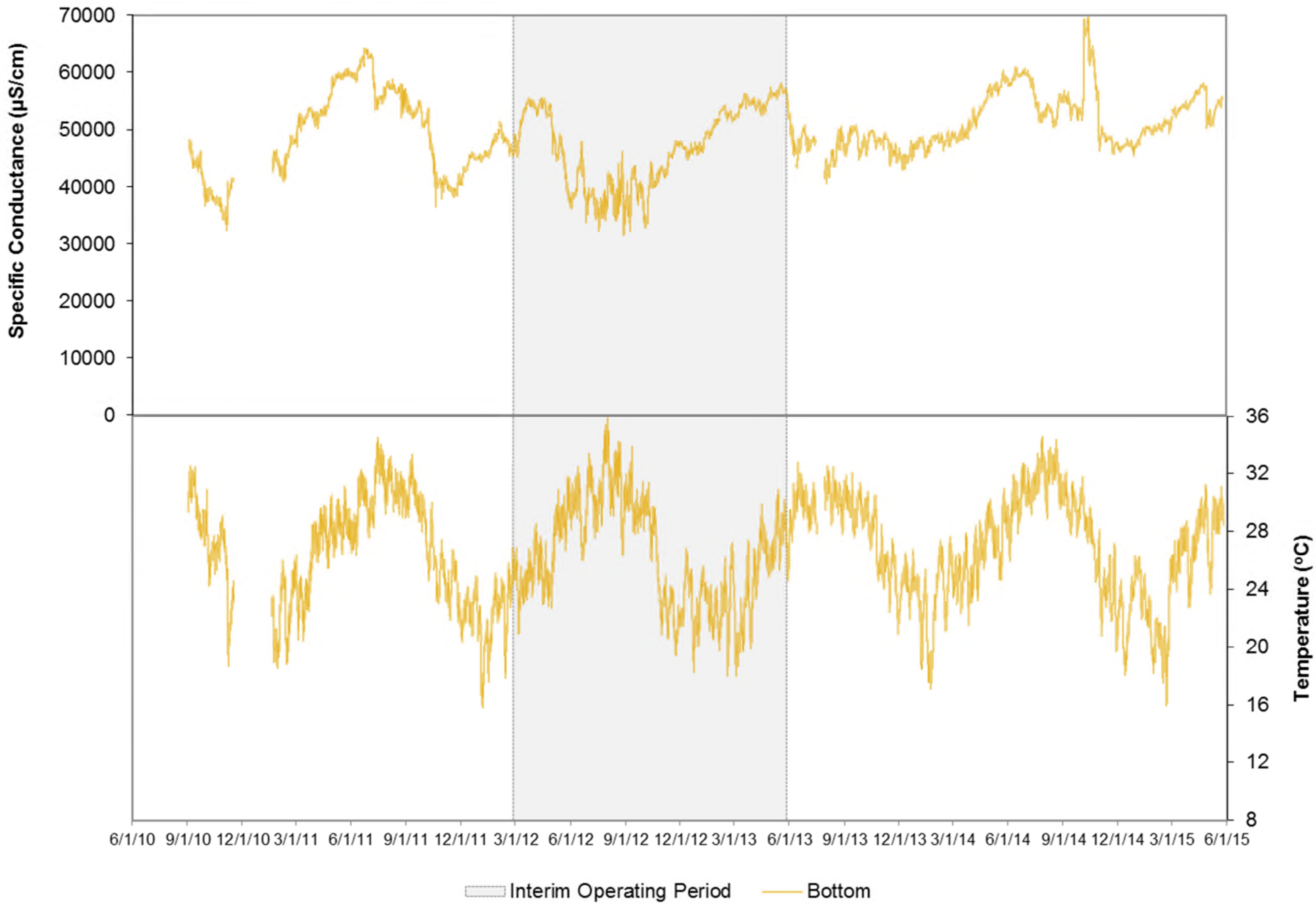


Figure 2.2-4. TPBBSW-5 Specific Conductance and Temperature.

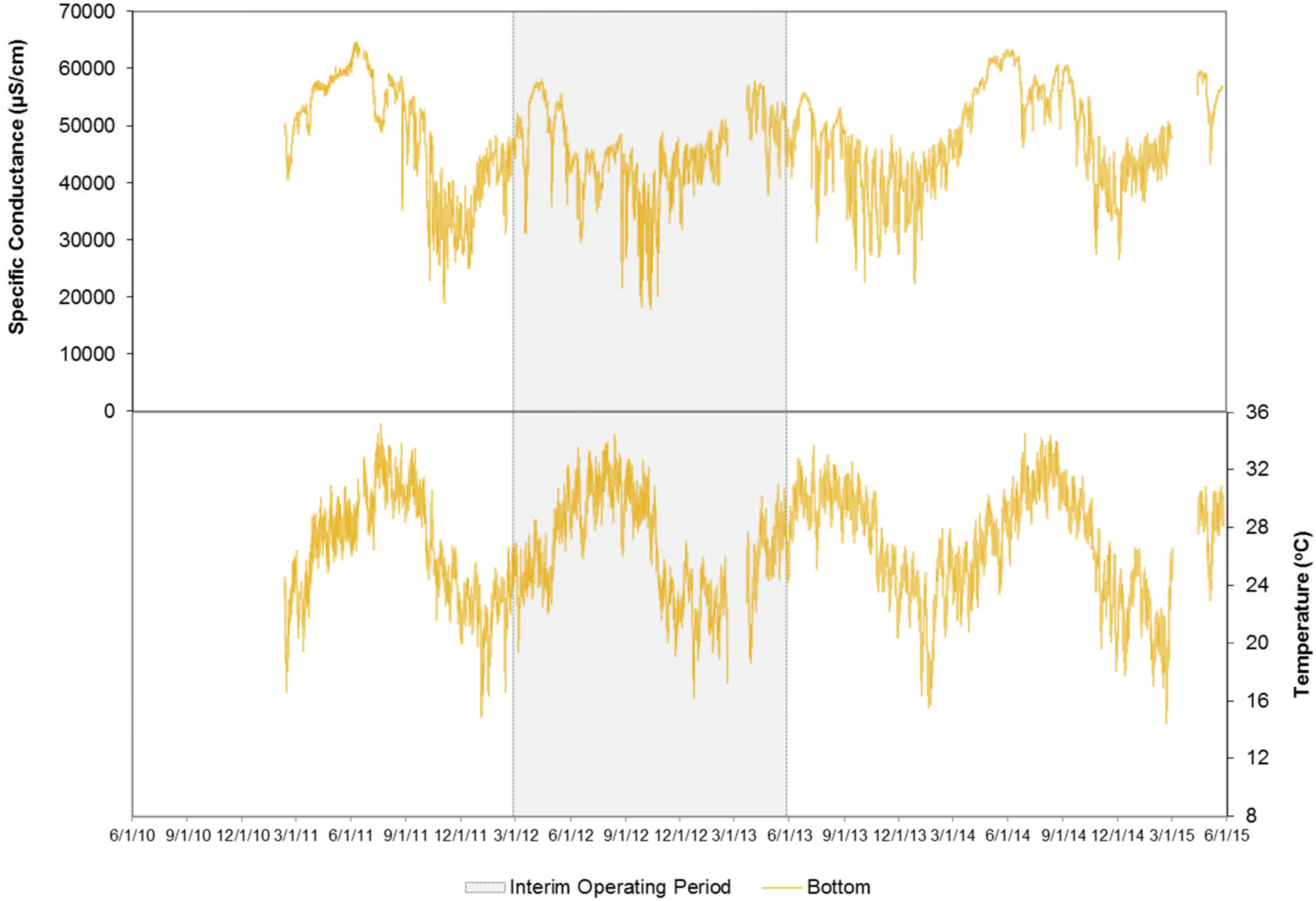


Figure 2.2-5. TPBBSW-10 Specific Conductance and Temperature.

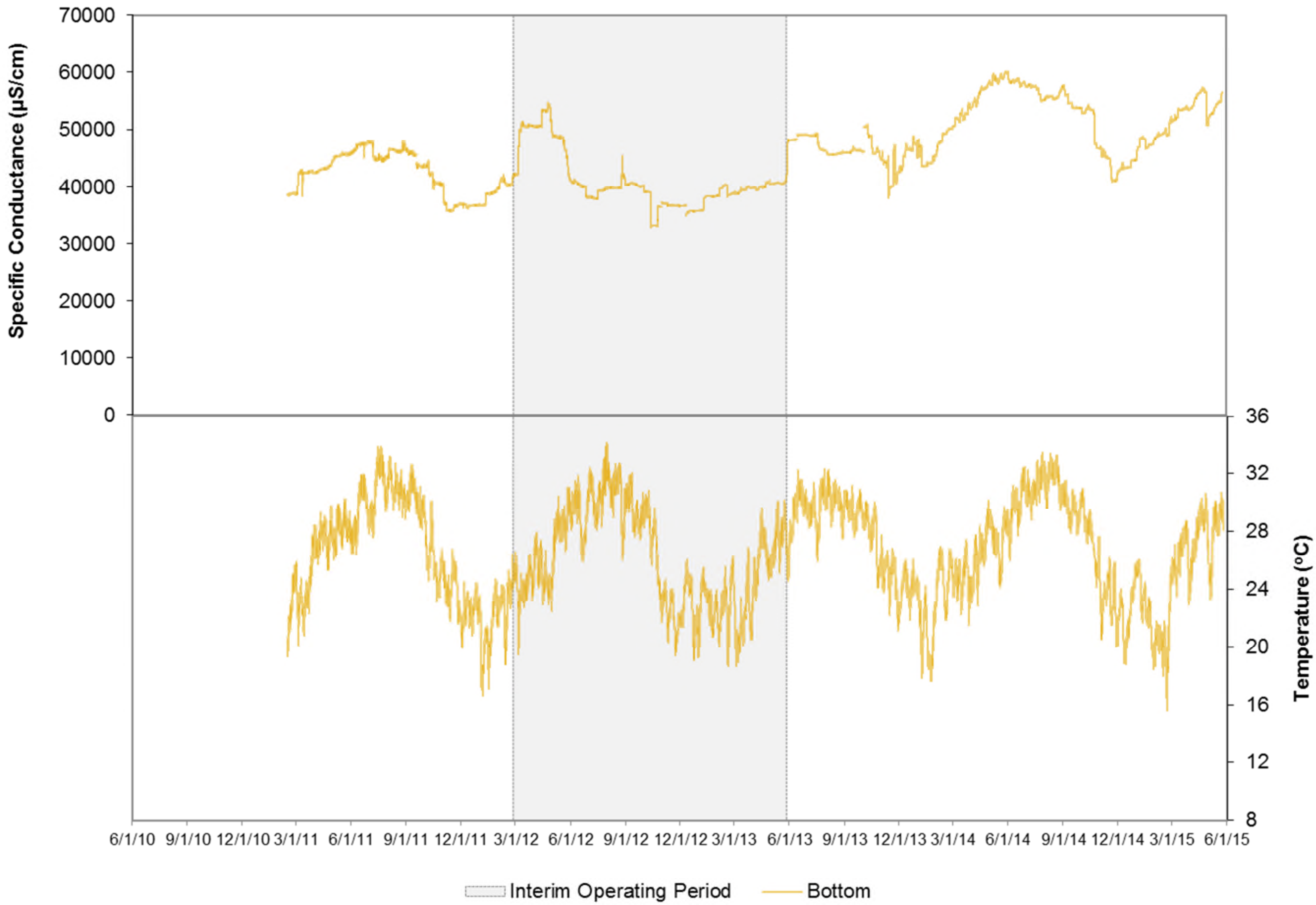


Figure 2.2-6. TPBBSW-14 Specific Conductance and Temperature.

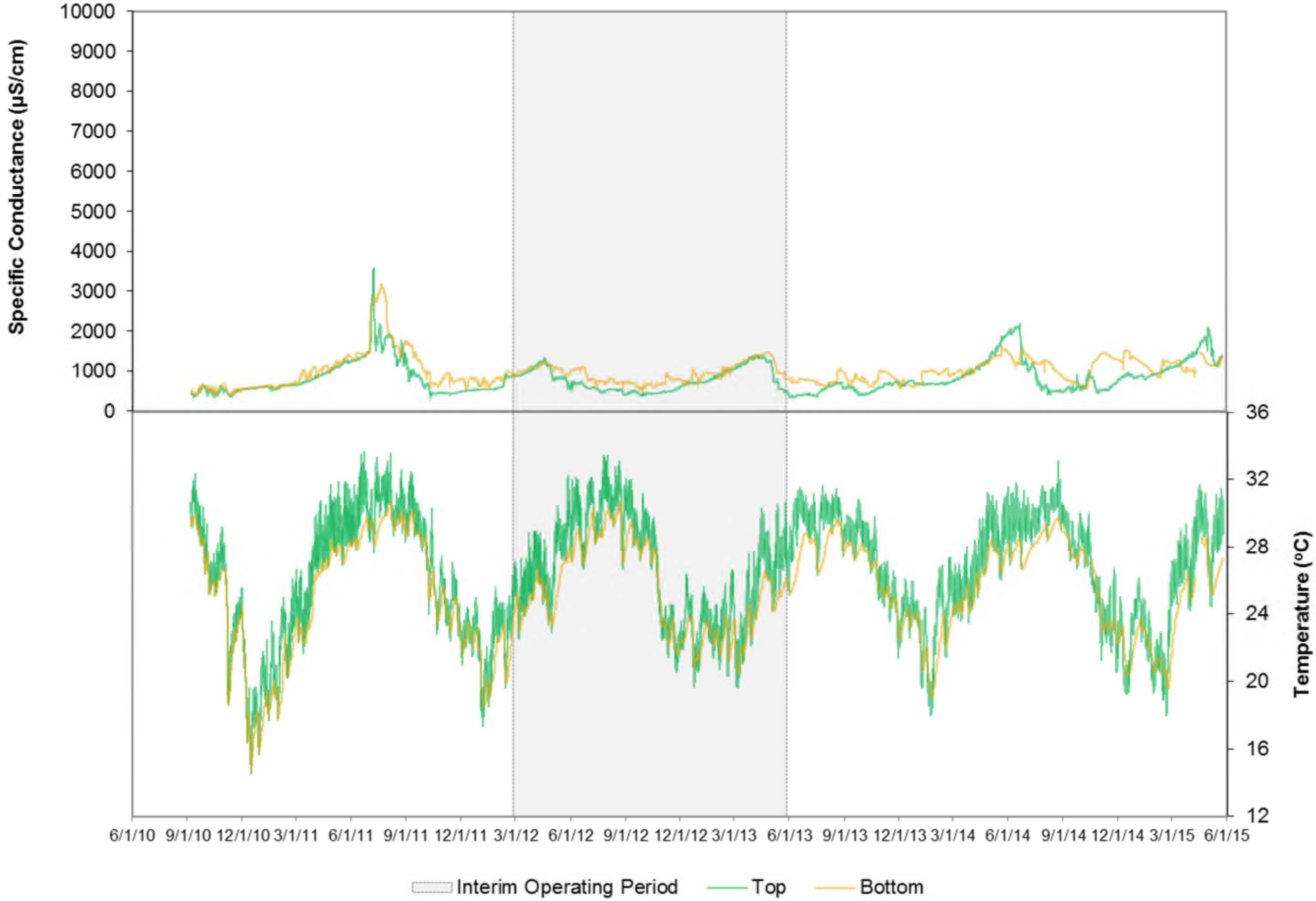


Figure 2.2-7. TPSWC-1 Specific Conductance and Temperature.

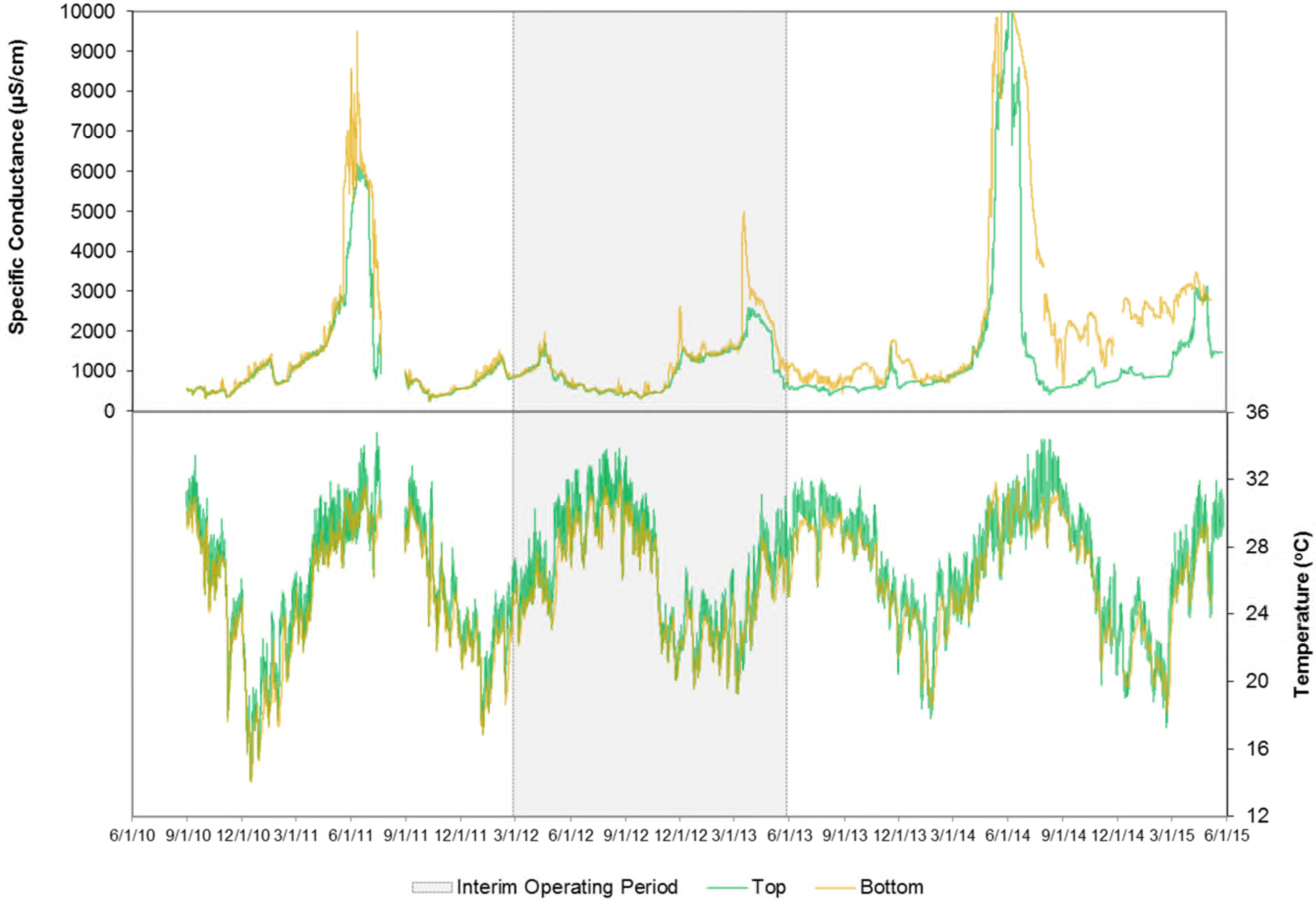


Figure 2.2-8. TPSWC-2 Specific Conductance and Temperature.

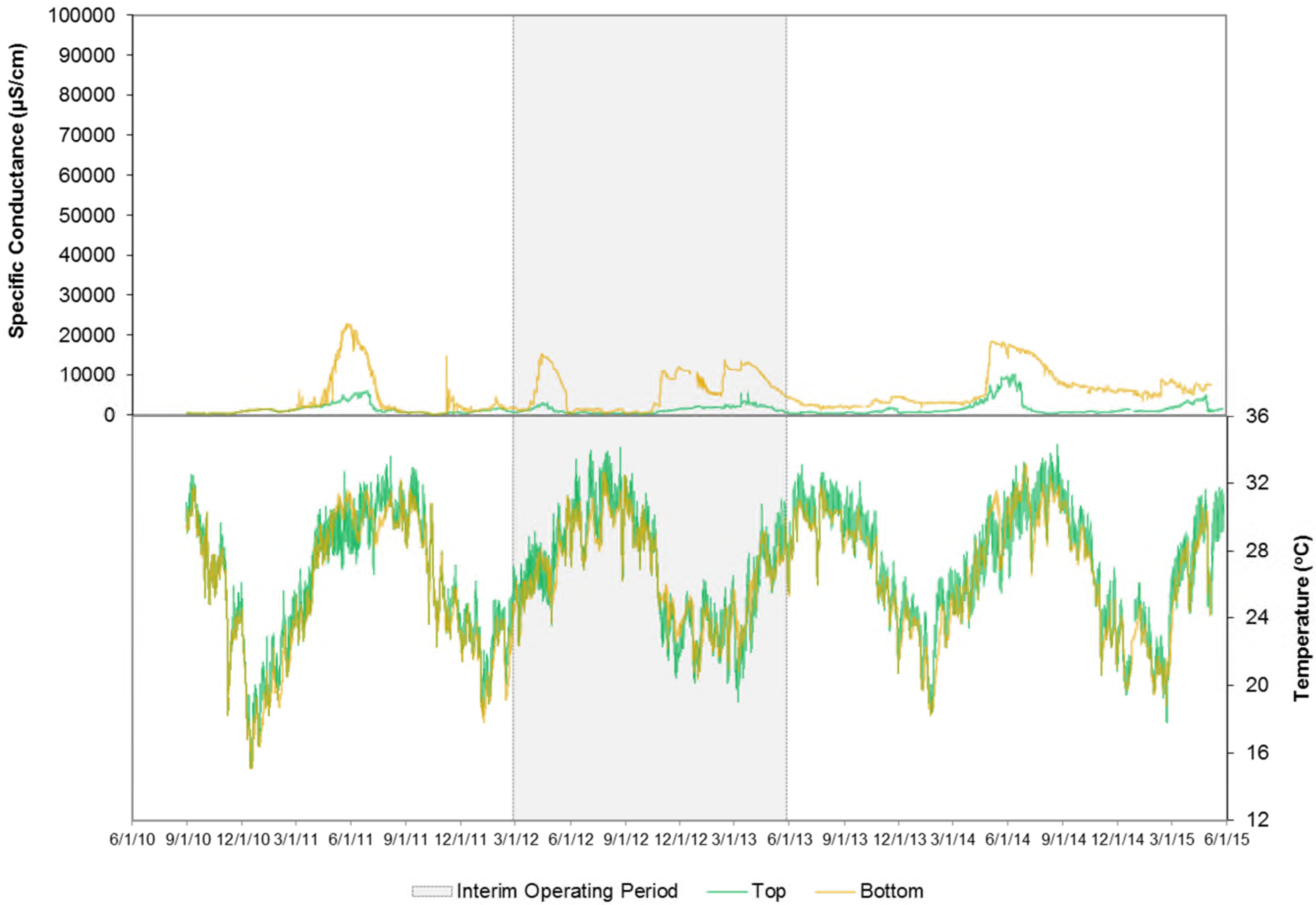


Figure 2.2-9. TPSWC-3 Specific Conductance and Temperature.

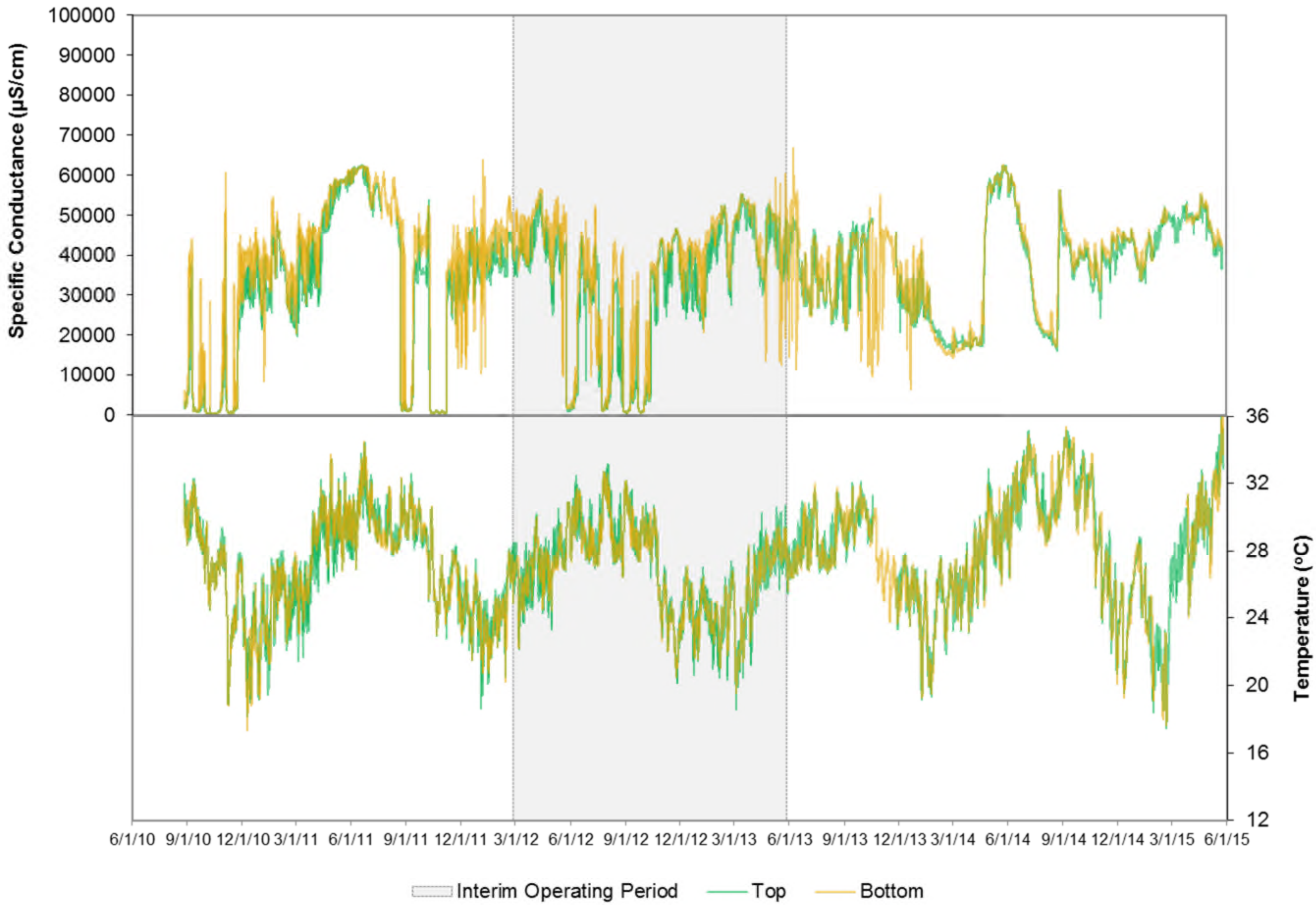


Figure 2.2-10. TPSWC-4 Specific Conductance and Temperature.

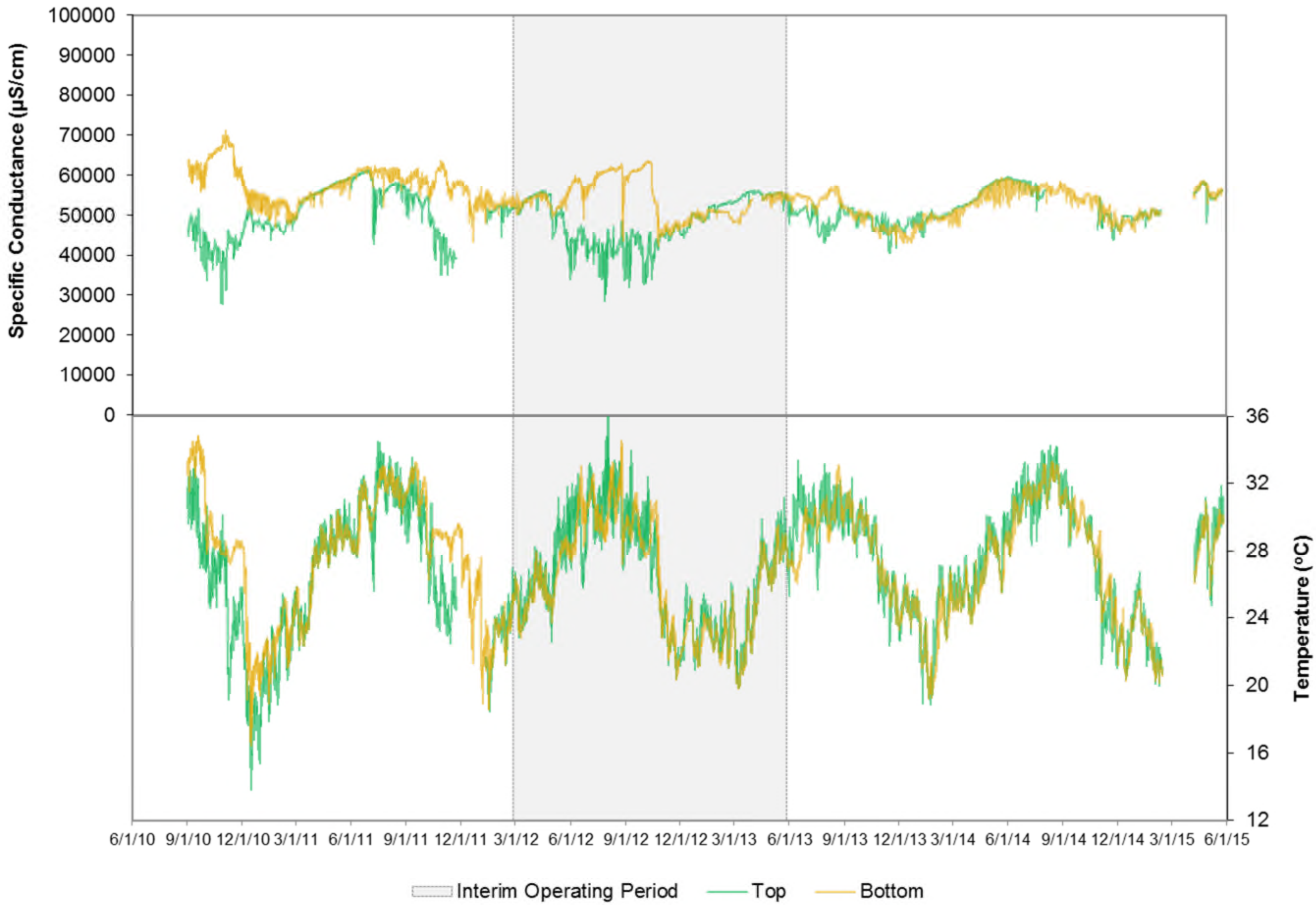


Figure 2.2-11. TPSWC-5 Specific Conductance and Temperature.

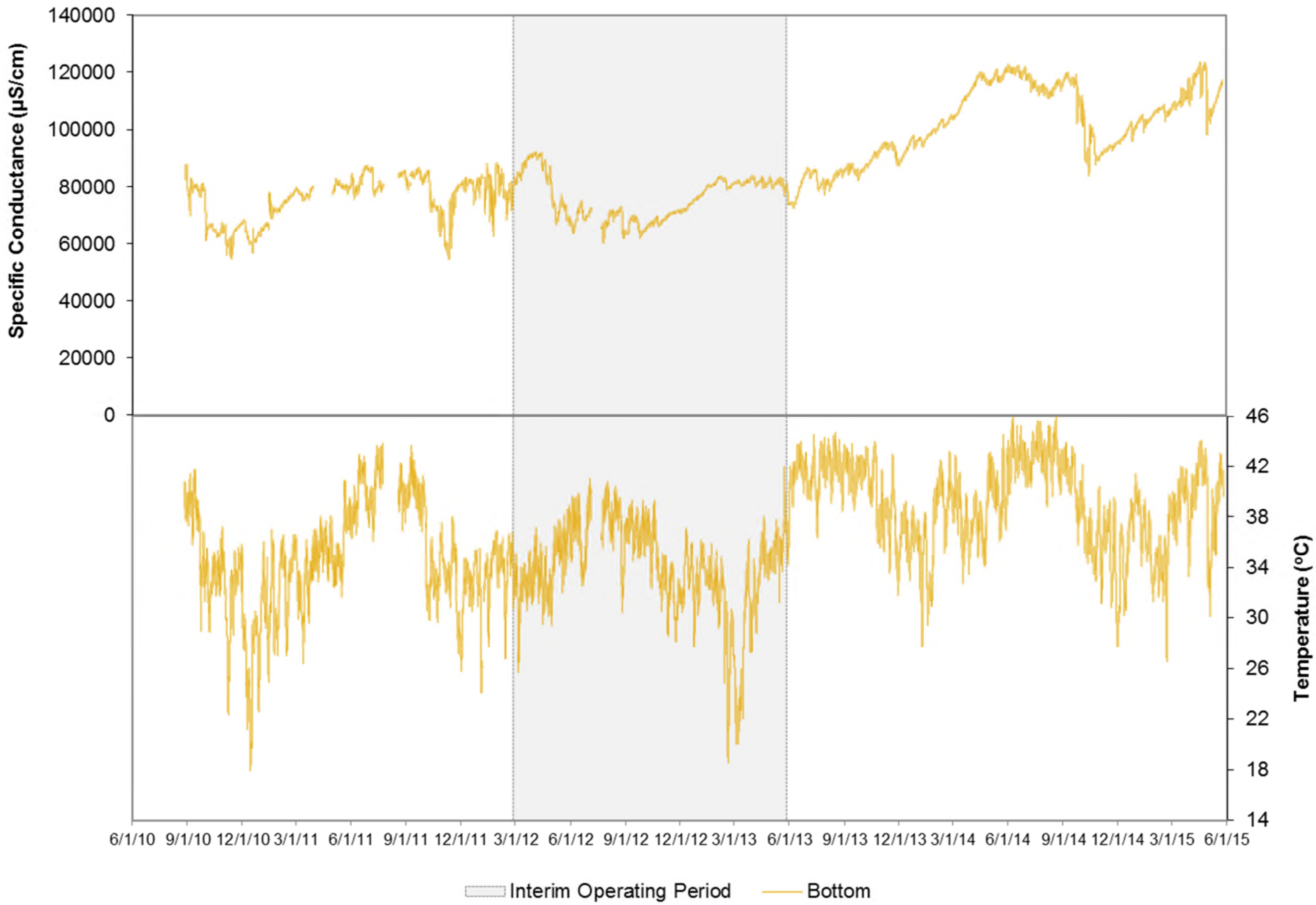


Figure 2.2-12. TPSWCCS-1 Specific Conductance and Temperature.

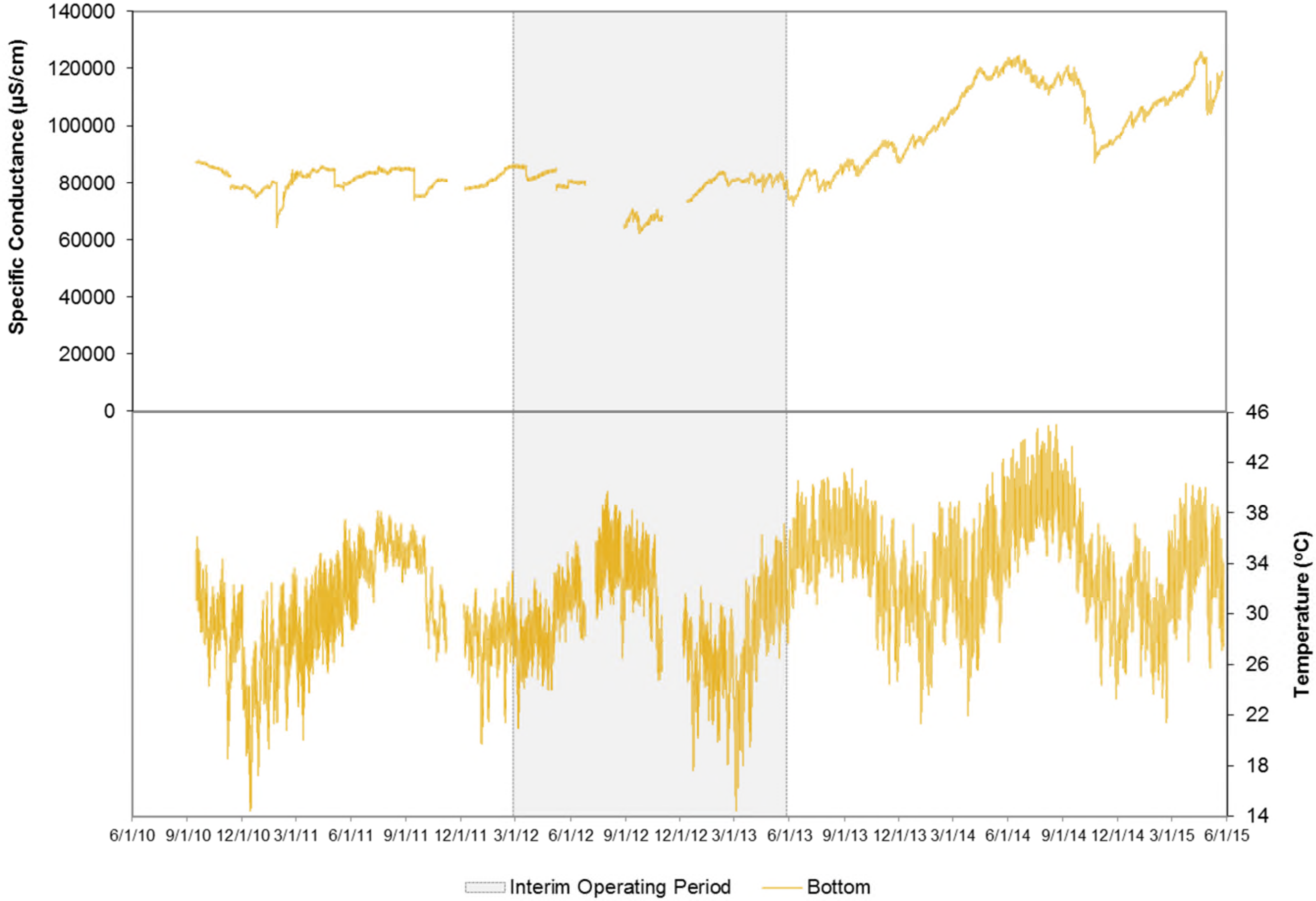


Figure 2.2-13. TPSWCCS-2 Specific Conductance and Temperature.

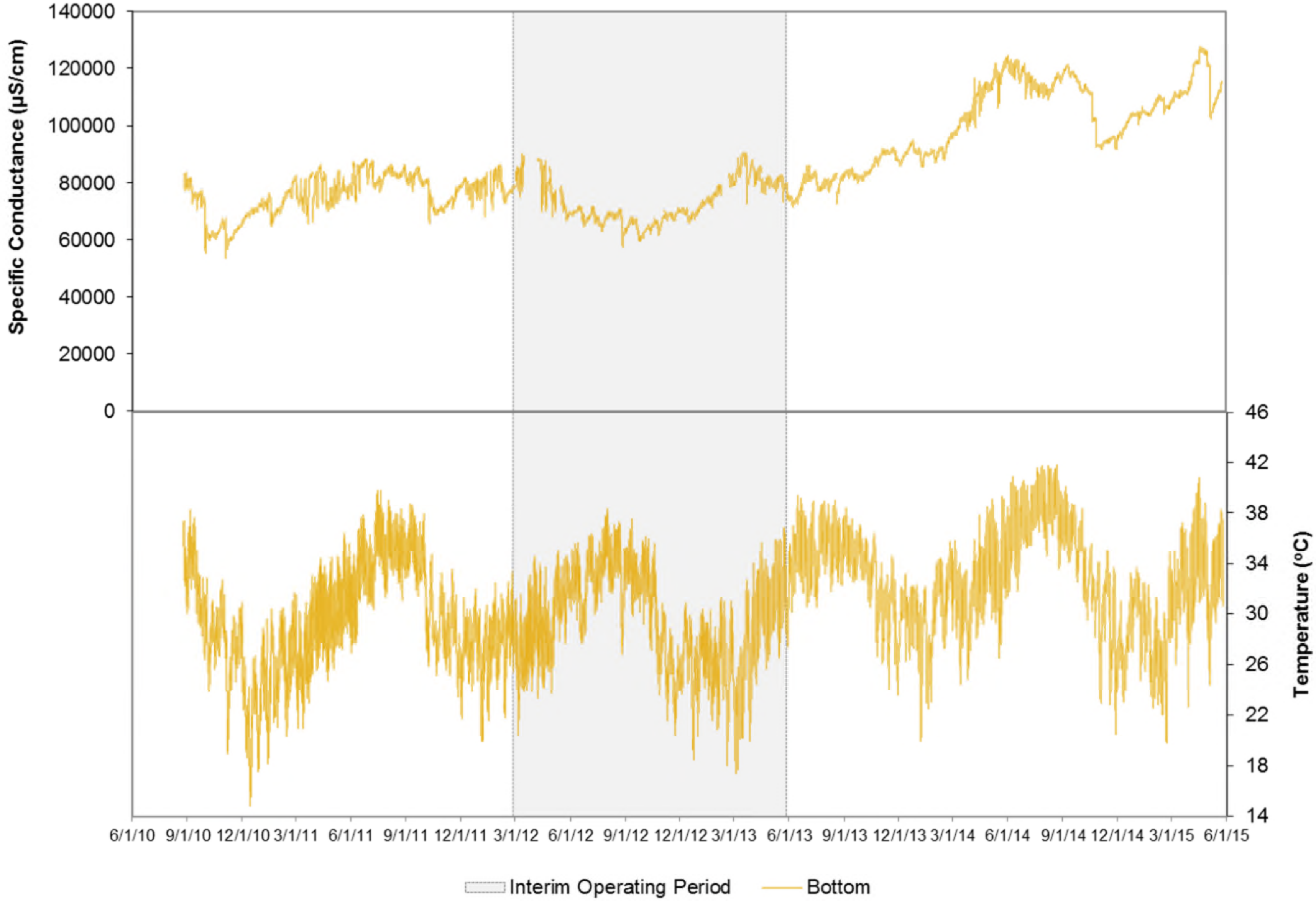


Figure 2.2-14. TPSWCCS-3 Specific Conductance and Temperature.

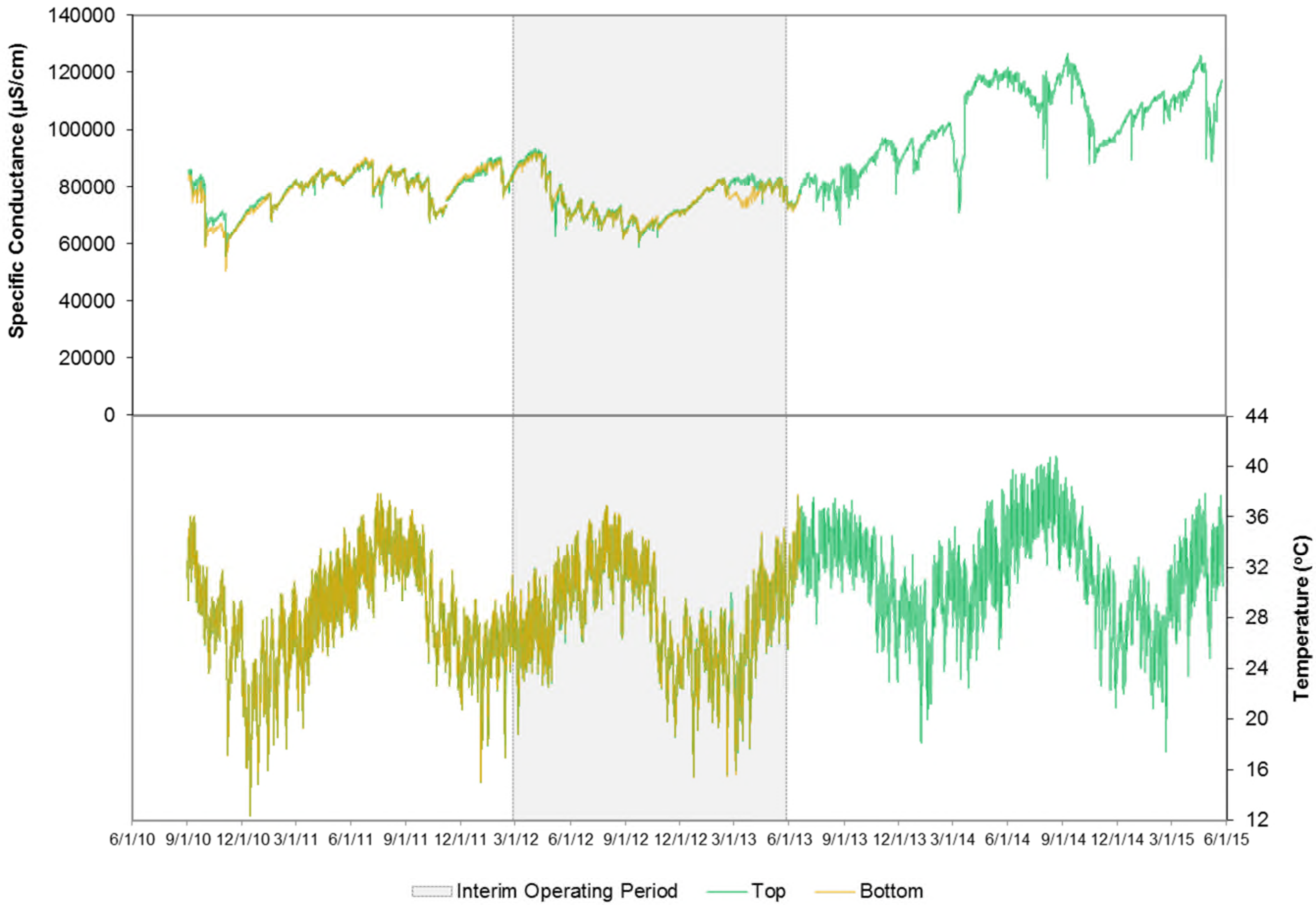


Figure 2.2-15. TPSWCCS-4 Specific Conductance and Temperature.

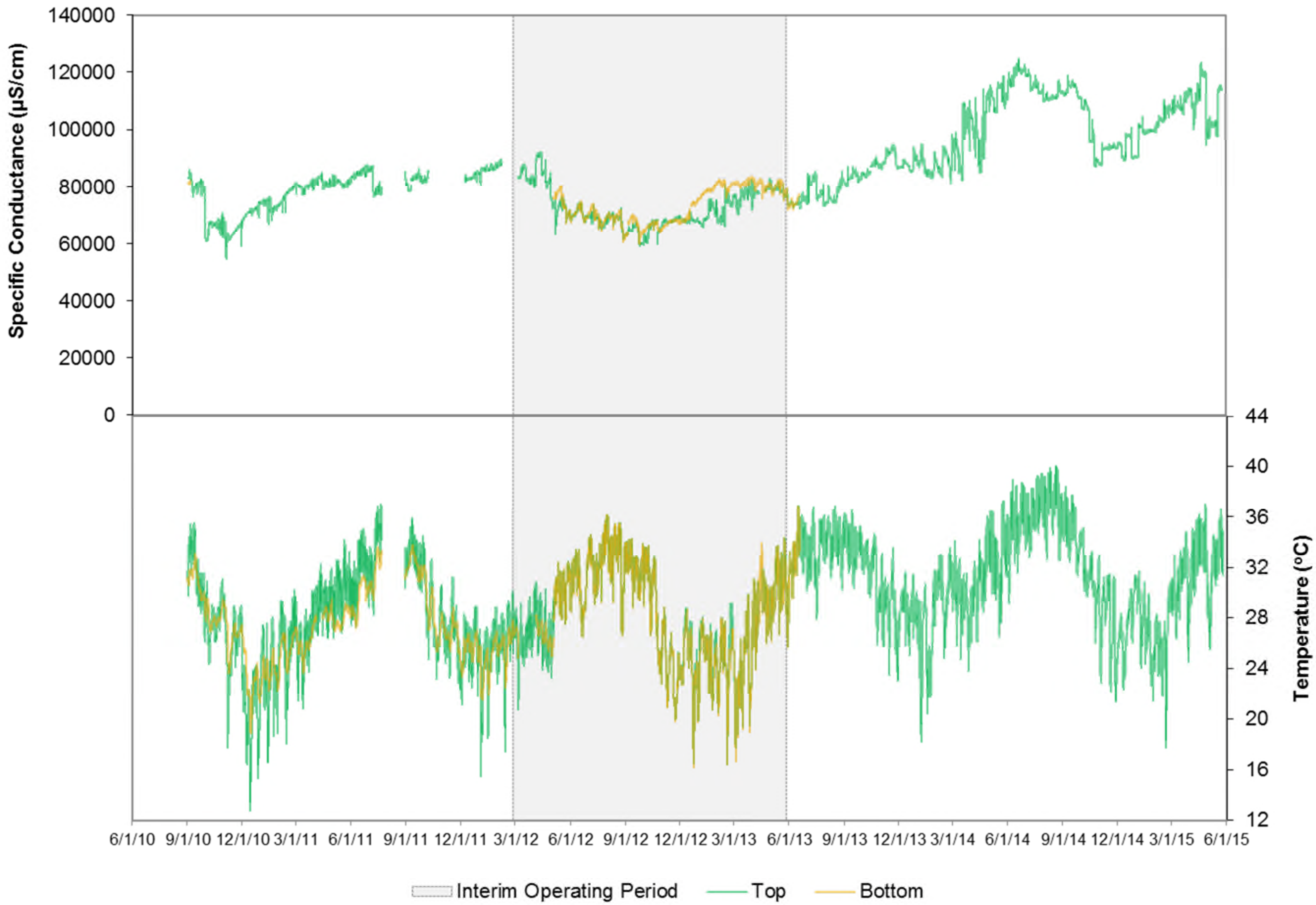


Figure 2.2-16. TPSWCCS-5 Specific Conductance and Temperature.

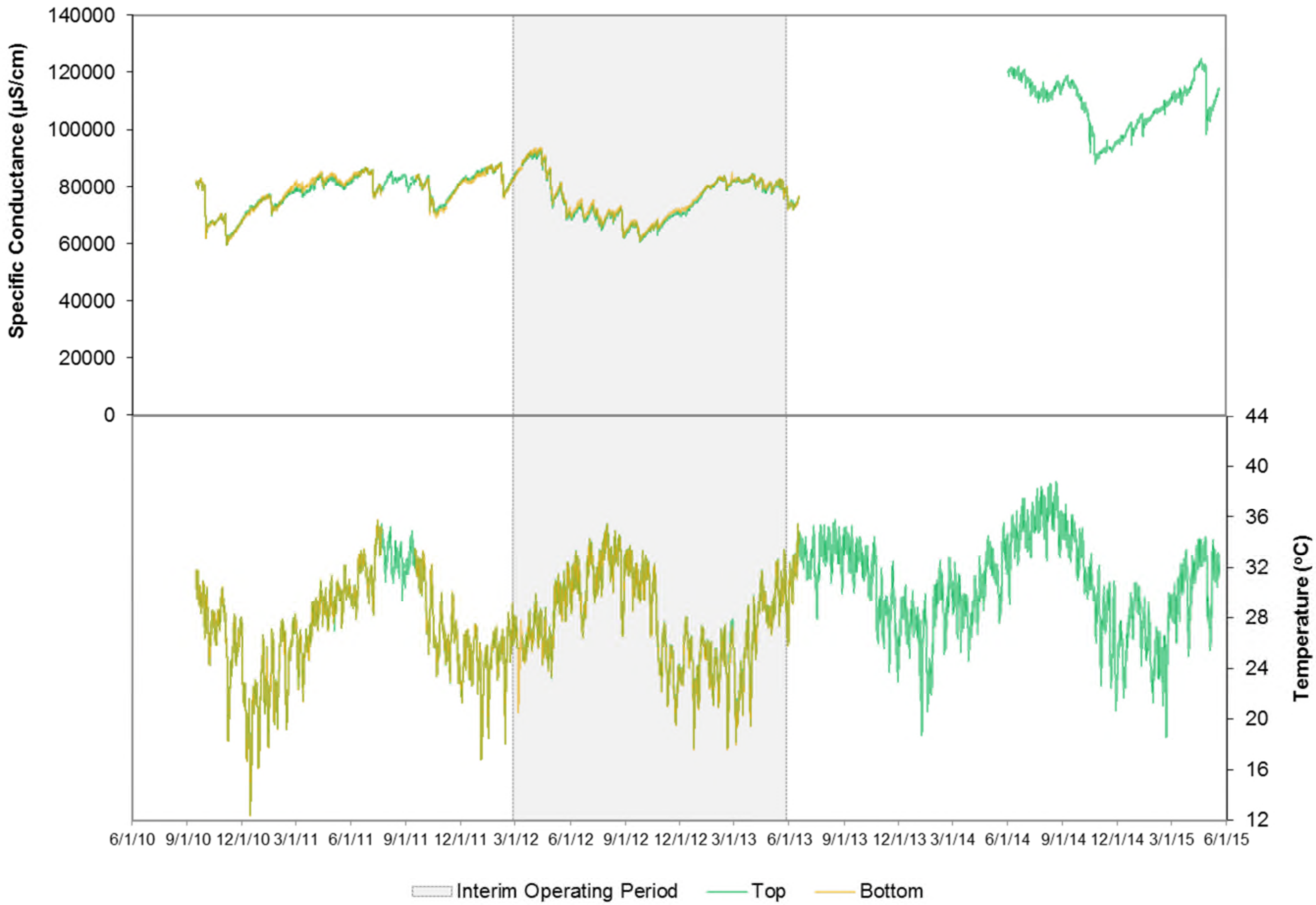


Figure 2.2-17. TPSWCCS-6 Specific Conductance and Temperature.

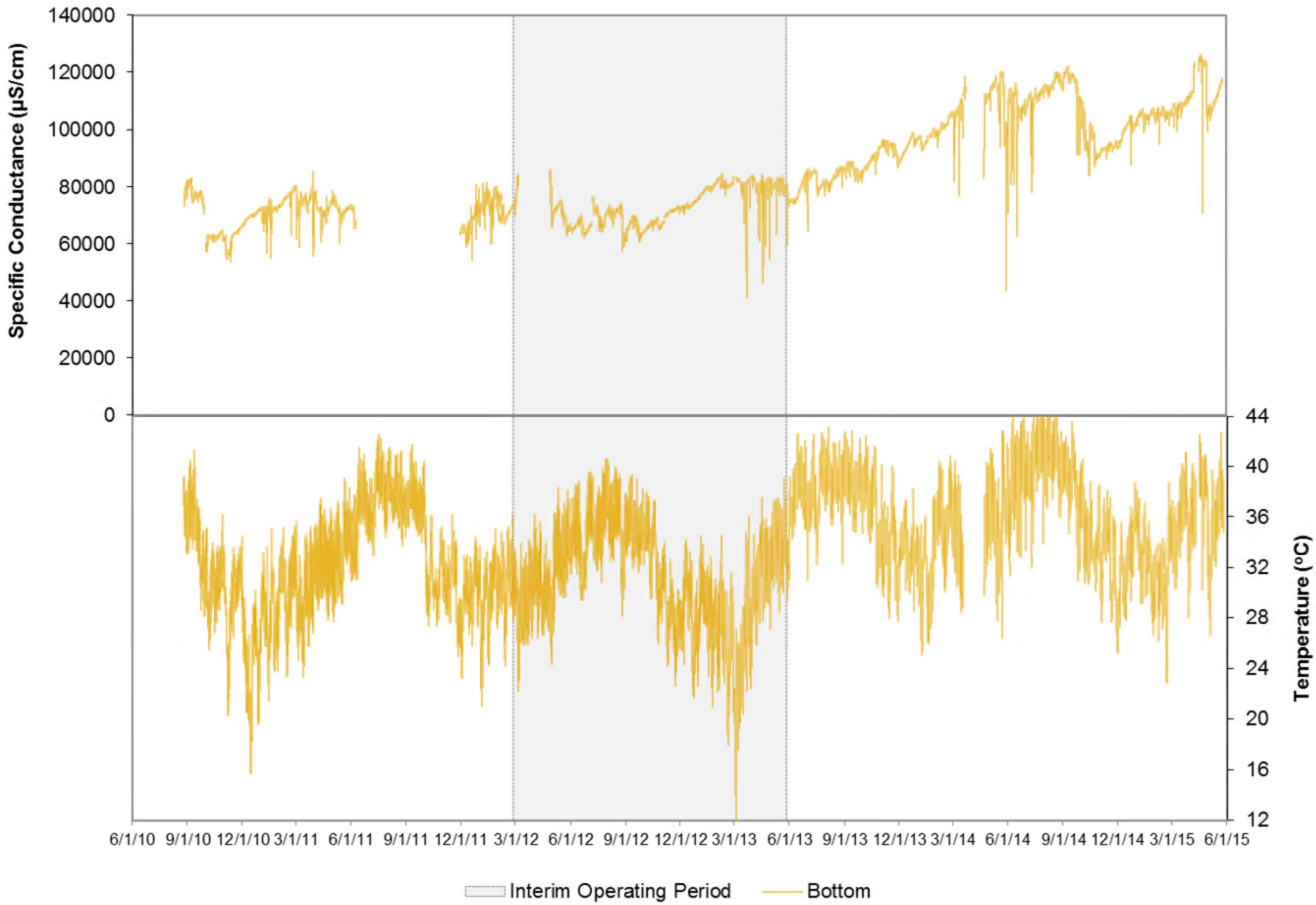


Figure 2.2-18. TPSWCCS-7 Specific Conductance and Temperature.

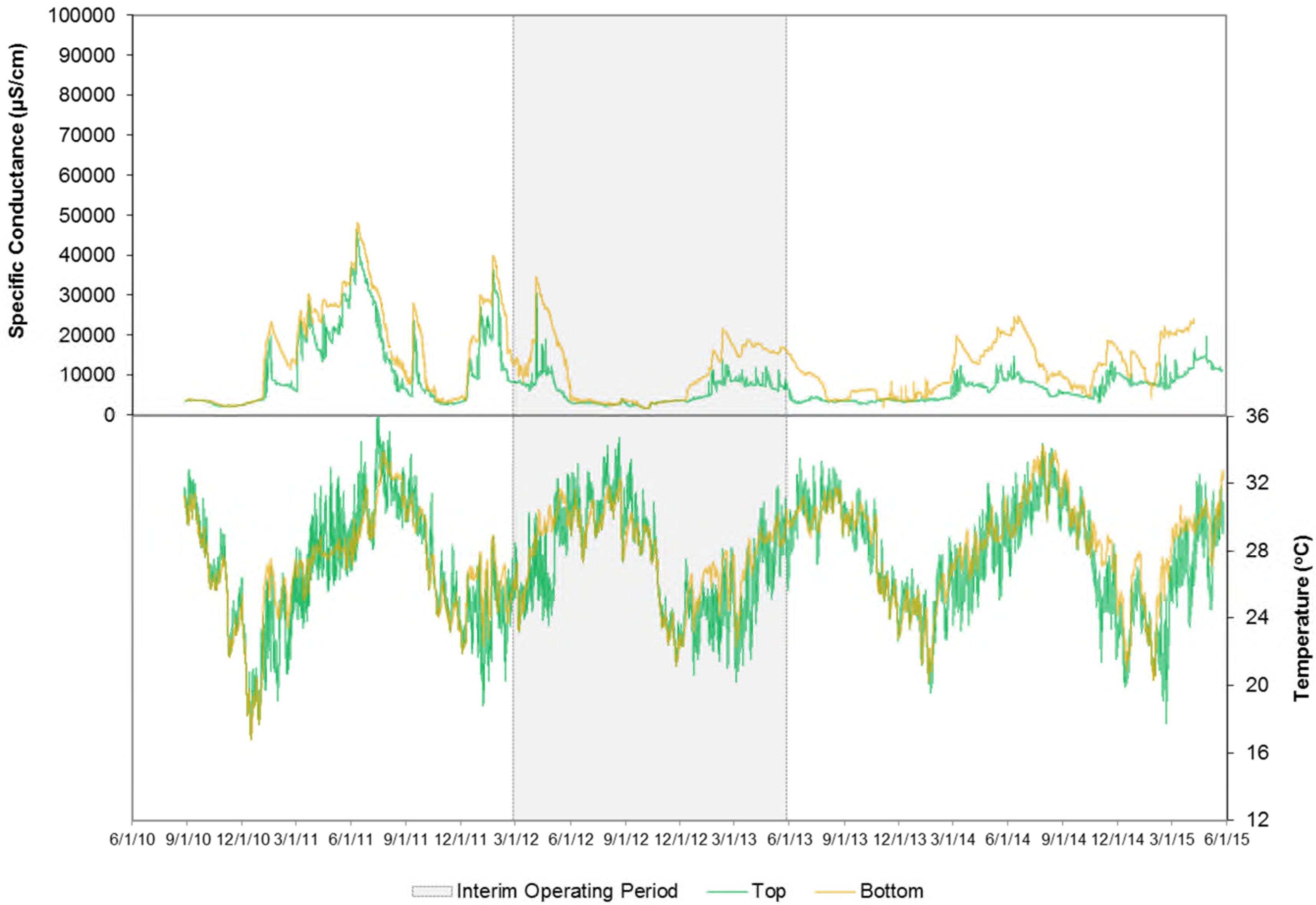


Figure 2.2-19. TPSWID-1 Specific Conductance and Temperature.

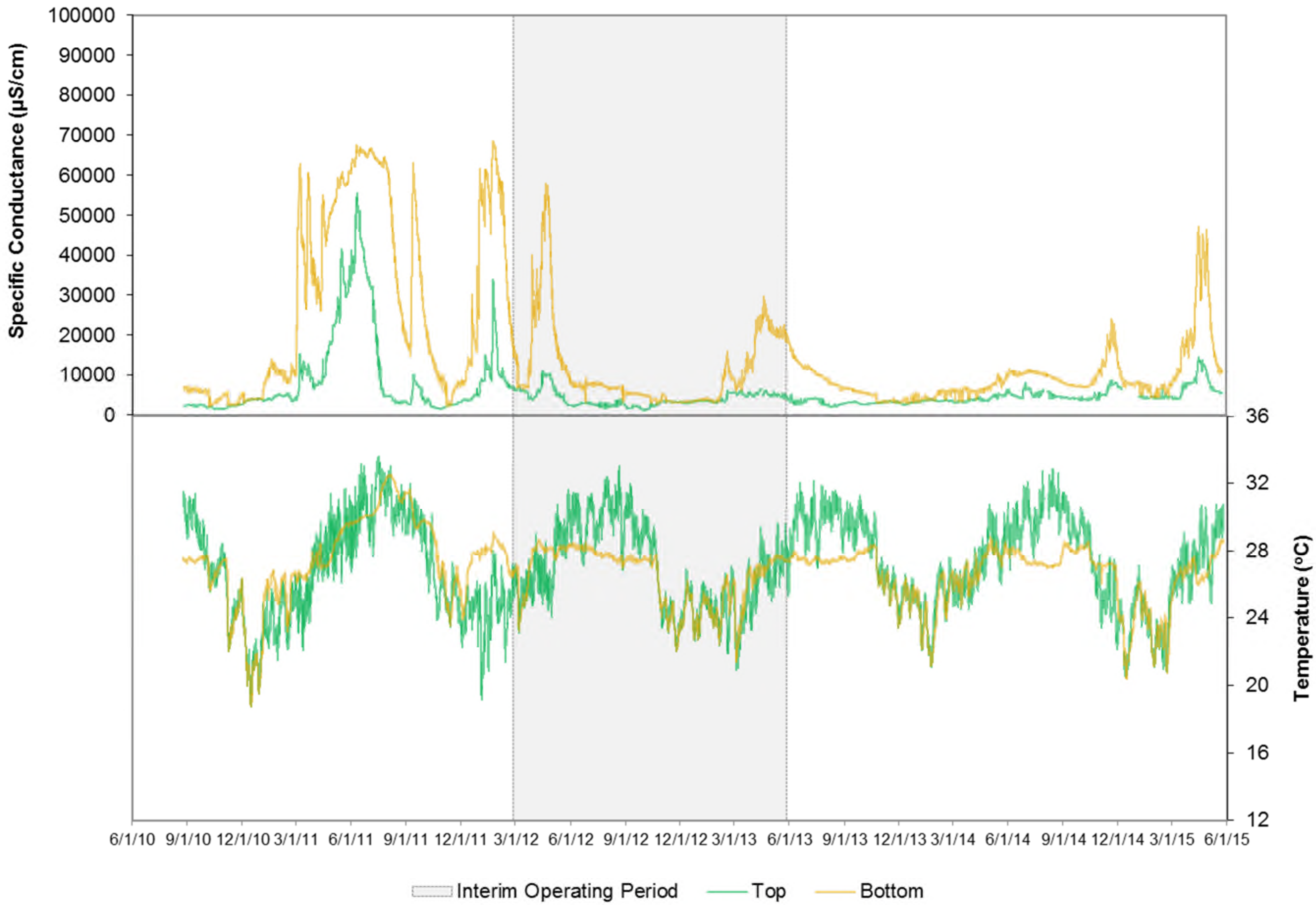


Figure 2.2-20. TPSWID-2 Specific Conductance and Temperature.

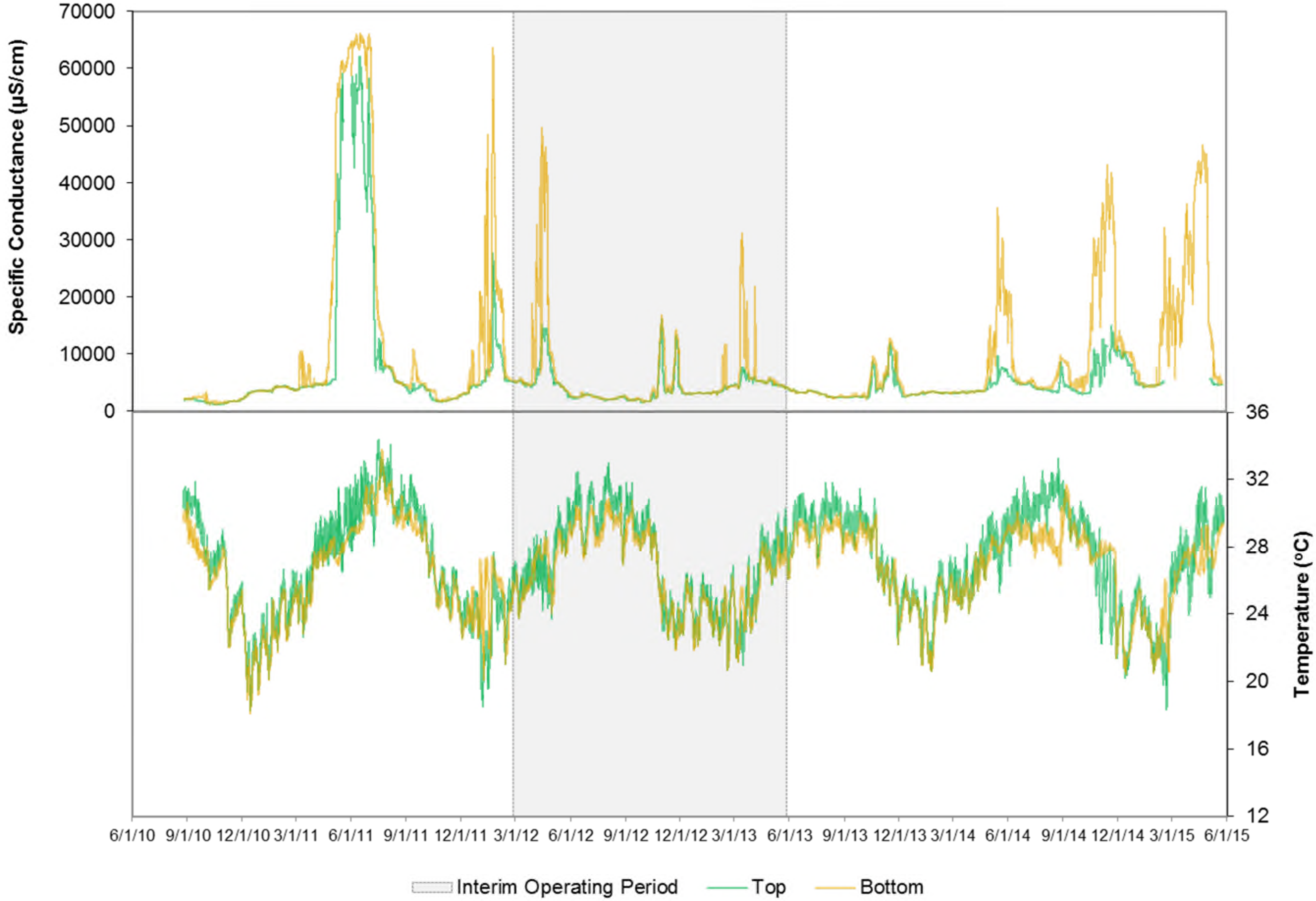
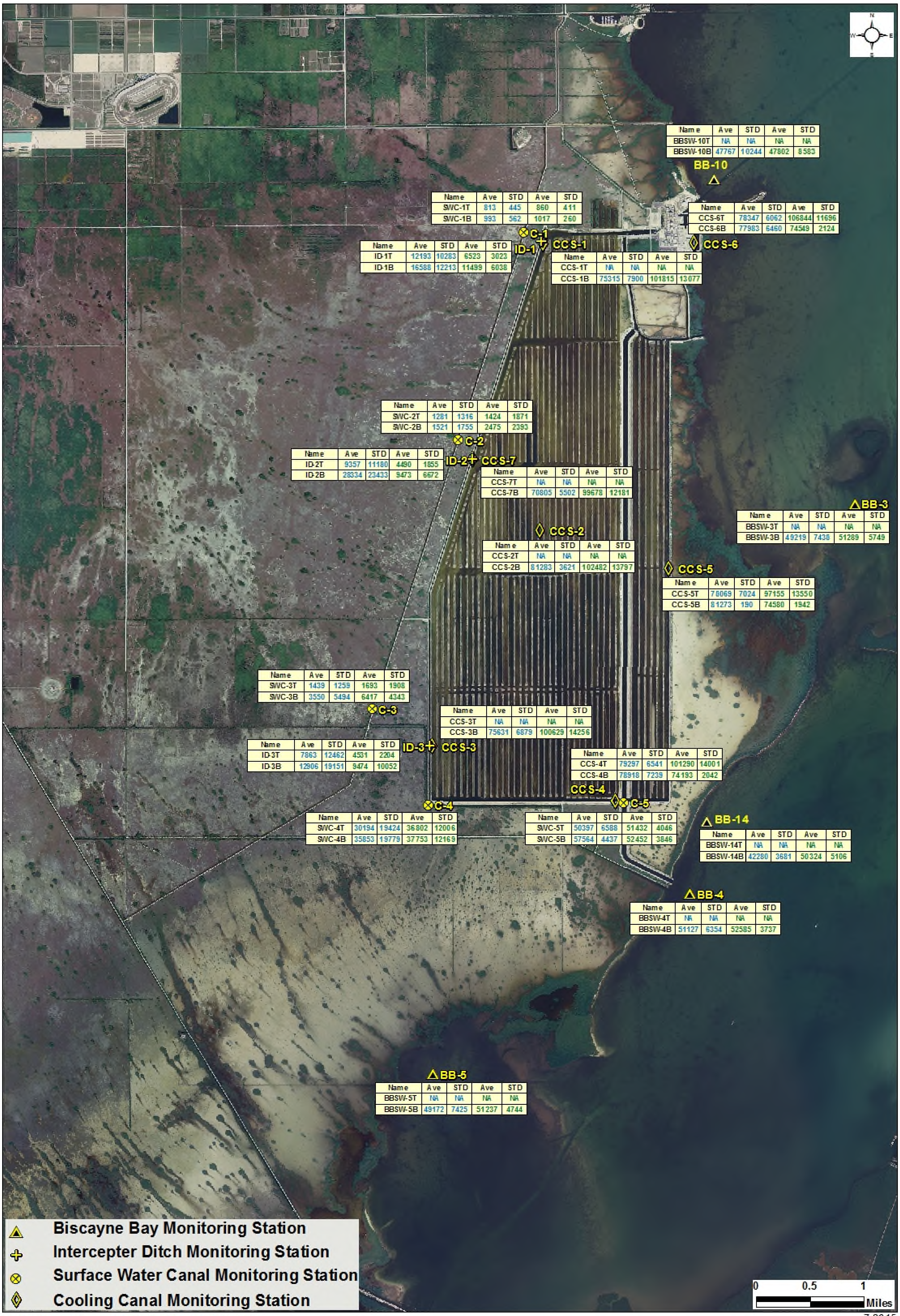


Figure 2.2-21. TPSWID-3 Specific Conductance and Temperature.



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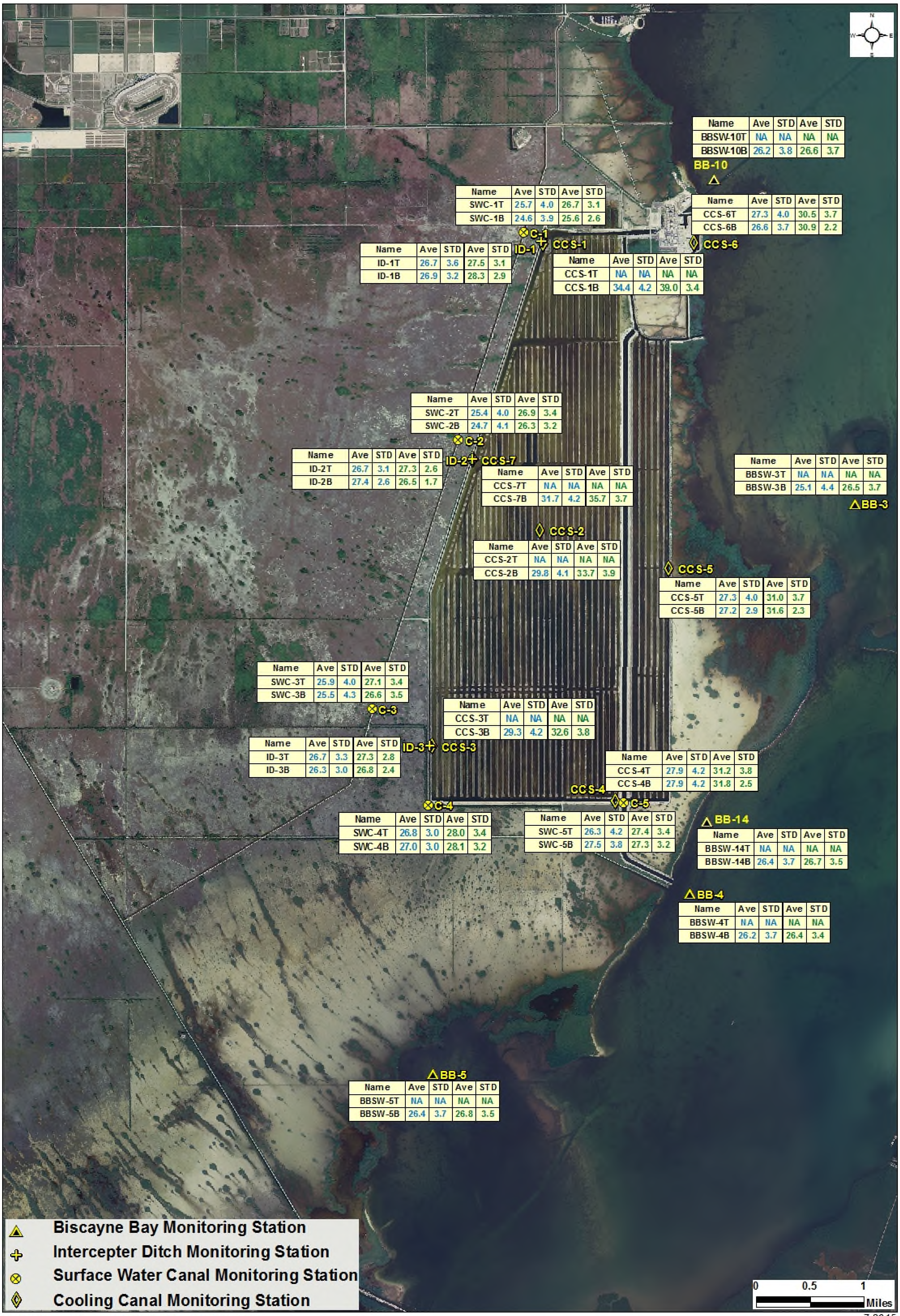
Note: 1) Ave: Average; STD: Standard deviation.
2) Pre-Uprate events values (blue) are from June 2010 to February 2012; Post-Uprate events values (green) are from June 2013 to May 2015.
3) Samples collected at 2 depths (T: Top; B: Bottom).

Average and Standard Deviation of Specific Conductance Values (µS/cm) for Surface Water Stations

Figure 2.2-22 Average and Standard Deviation of Specific Conductance Values (µS/cm) for Surface Water Stations Pre- and Post-Rate



Note: 1) Ave: Average; STD: Standard deviation.
2) Pre-Uprate events values (blue) are from June 2010 to February 2012; Post-Uprate events values (green) are from June 2013 to May 2015.
3) Samples collected at 2 depths (T: Top; B: Bottom).

Average and Standard Deviation of Temperature Values (°C) for Surface Water Stations

Figure 2.2-23. Average and Standard Deviation of Temperature (°C) for Surface Water Stations Pre- and Post-Uprate.

Note: 1) Ave: Average; STD: Standard deviation.
2) Pre-Uprate events values (blue) are from June 2010 to February 2012; Post-Uprate events values (green) are from June 2013 to May 2015.
3) Samples collected at 2 depths (T: Top; B: Bottom).

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Average and Standard Deviation of Salinity Values (PSS-78) for Surface Water Stations

Figure 2.2-24. Average and Standard Deviation of Salinity (PSS-78) for Surface Water Stations Pre- and Post-Uprate.

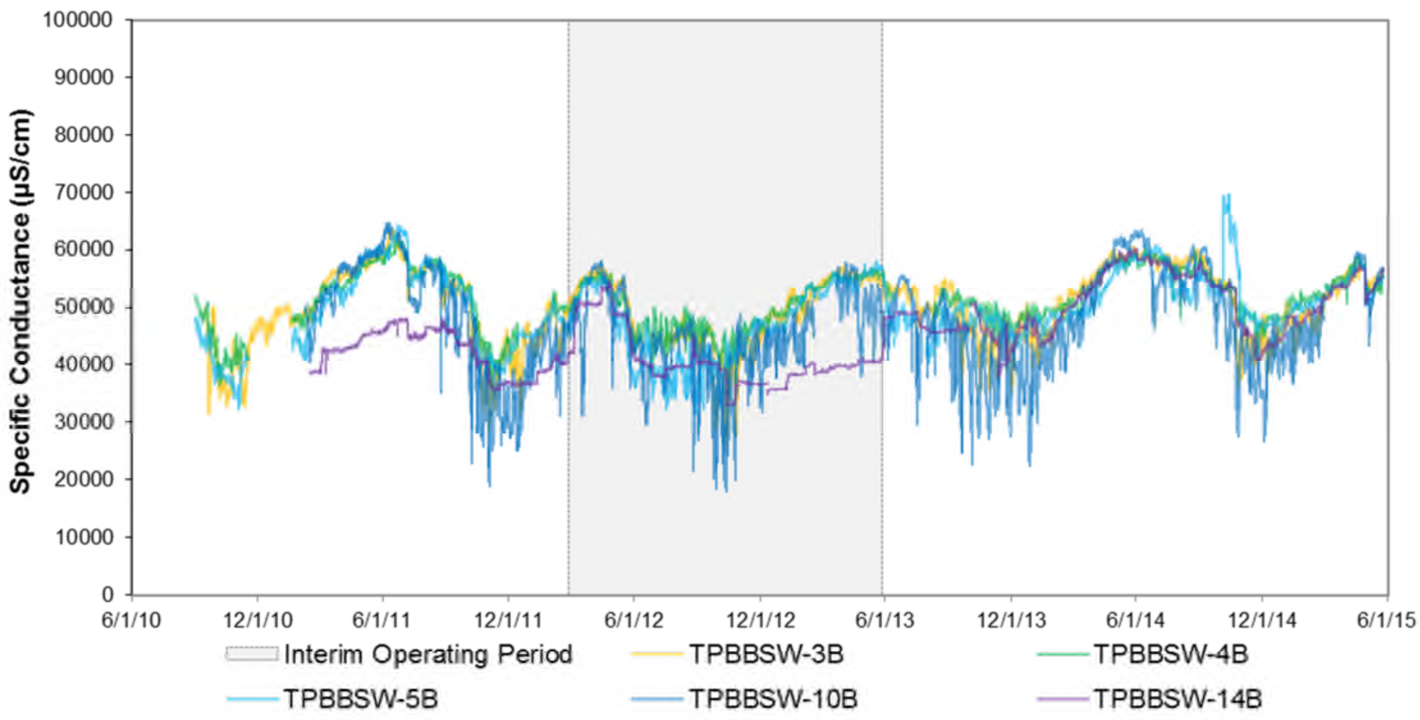

Figure 2.2-25. Comparison of Specific Conductance in Biscayne Bay Surface Water Stations.

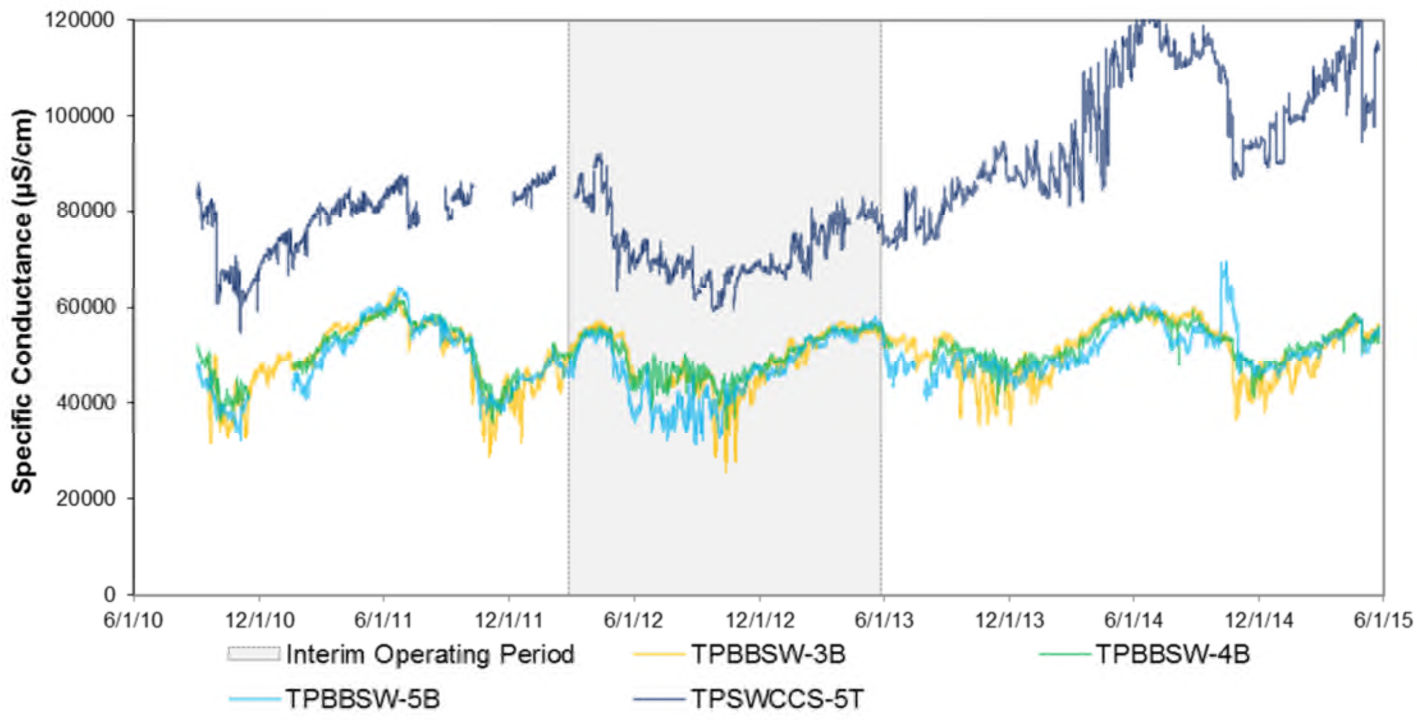

Figure 2.2-26. Comparison of Specific Conductance in CCS and Biscayne Bay Surface Water Stations.

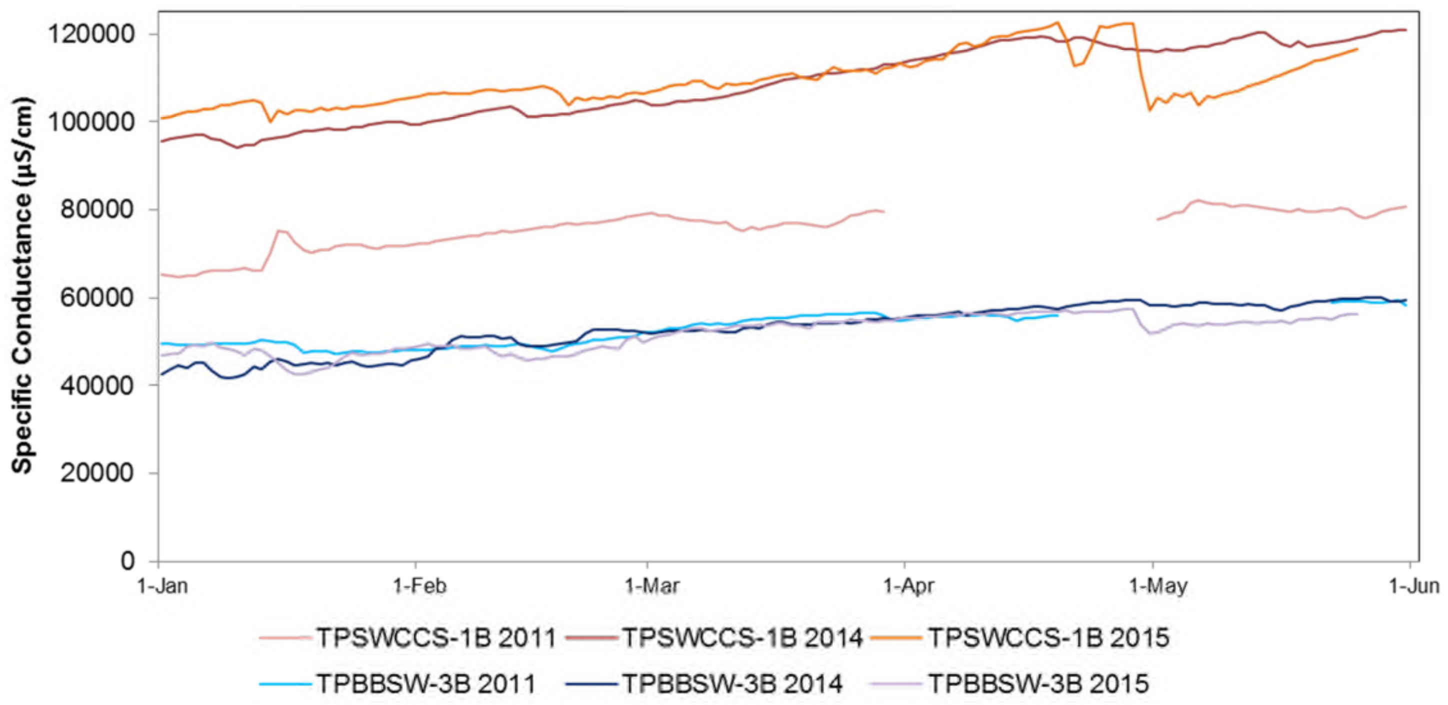

Figure 2.2-27. Comparison of CCS and Biscayne Bay Specific Conductance Pre- and Post-Uprate.

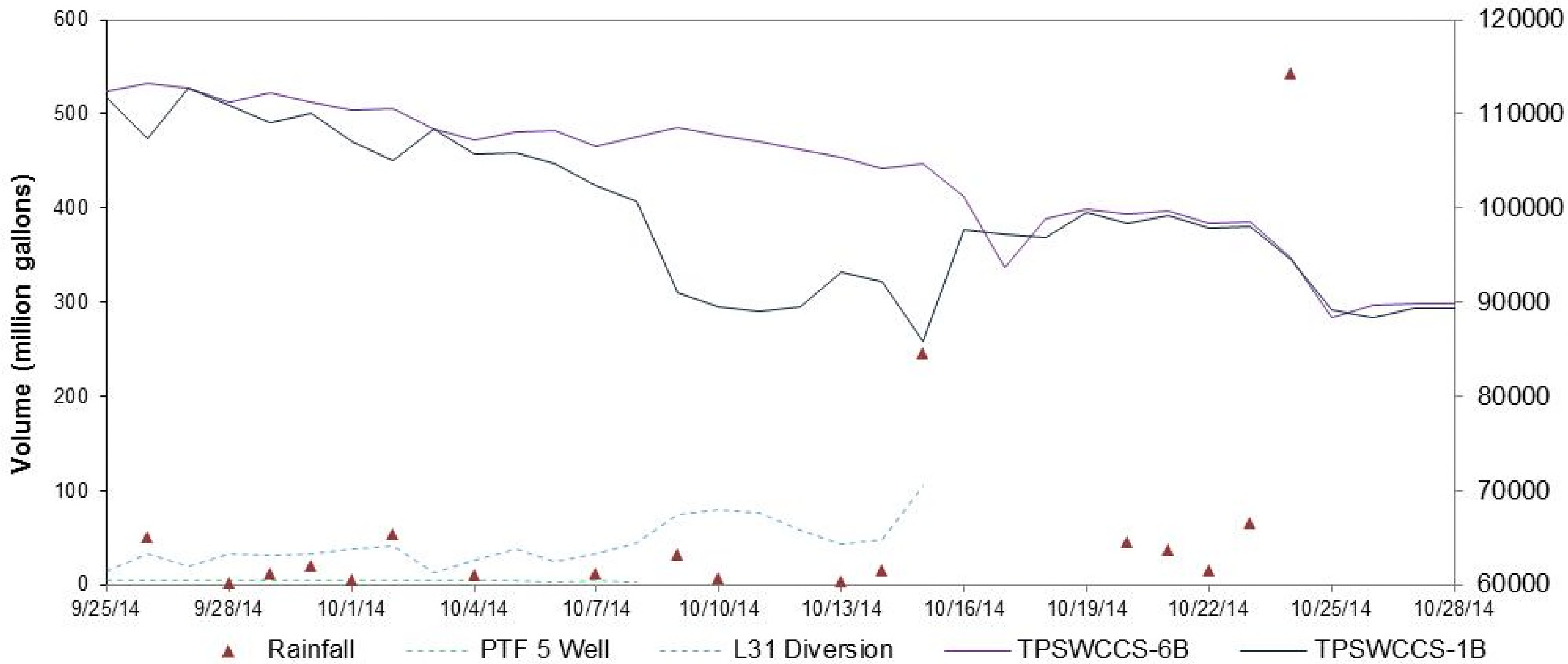

Figure 2.2-28. Effect of CCS Freshening Effort and Rainfall on CCS Specific Conductance Values (September 25-October 15, 2015).

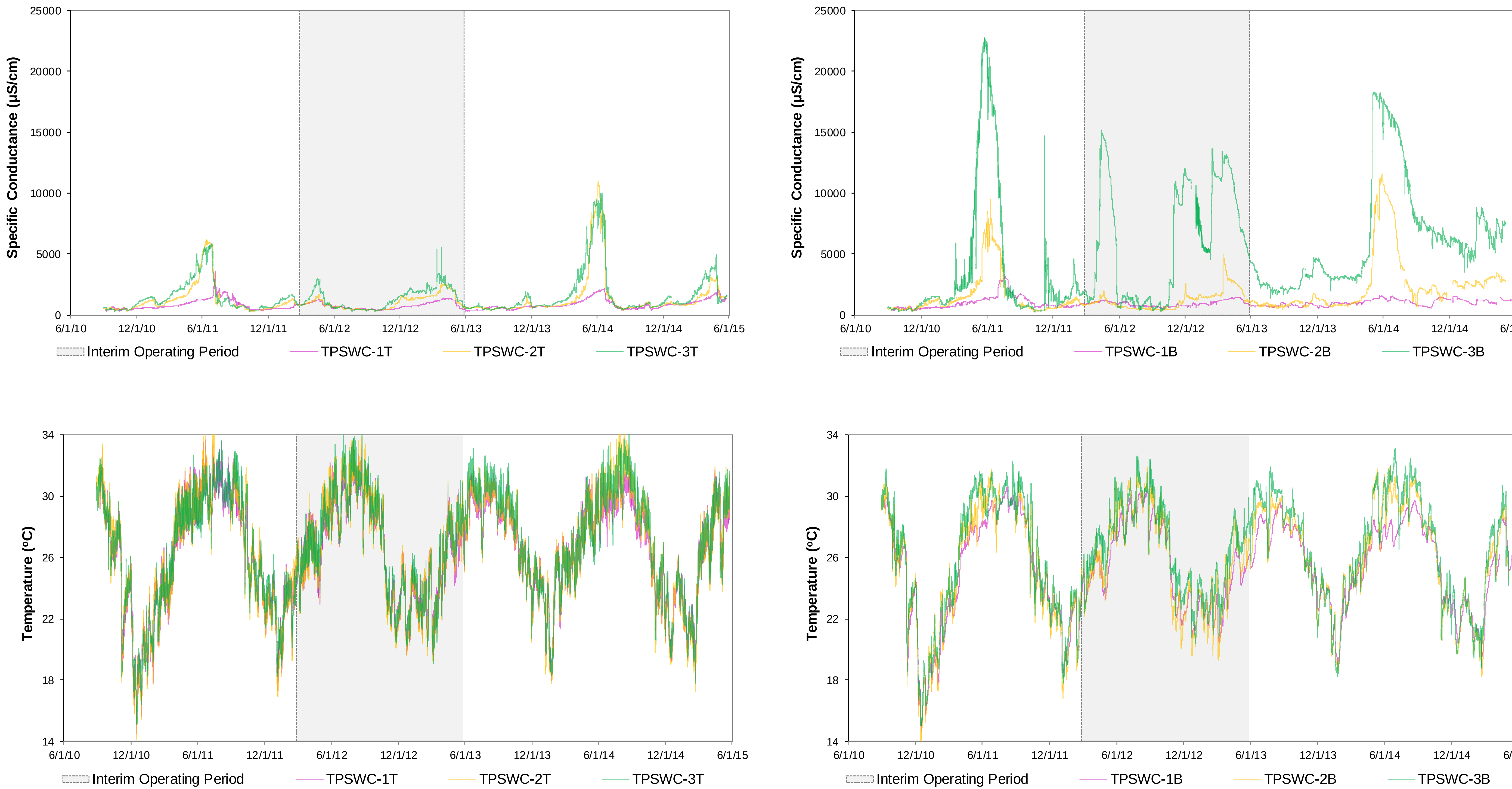

Figure 2.2-29. Comparison of Specific Conductance and Temperature in L-31E Canal for Top and Bottom Locations.

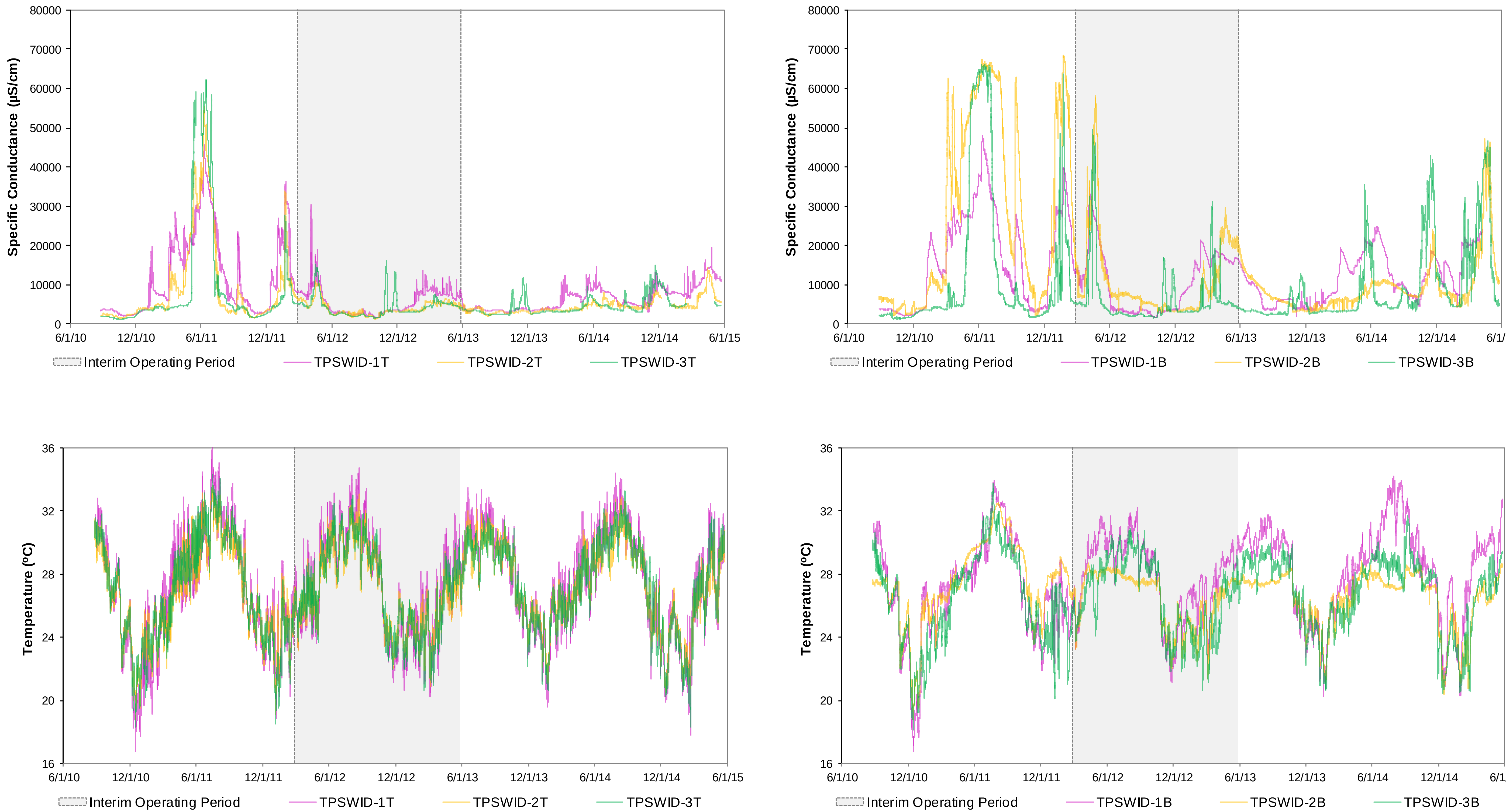

Figure 2.2-30. Comparison of Specific Conductance and Temperature in Interceptor Ditch Stations for Top and Bottom Locations.

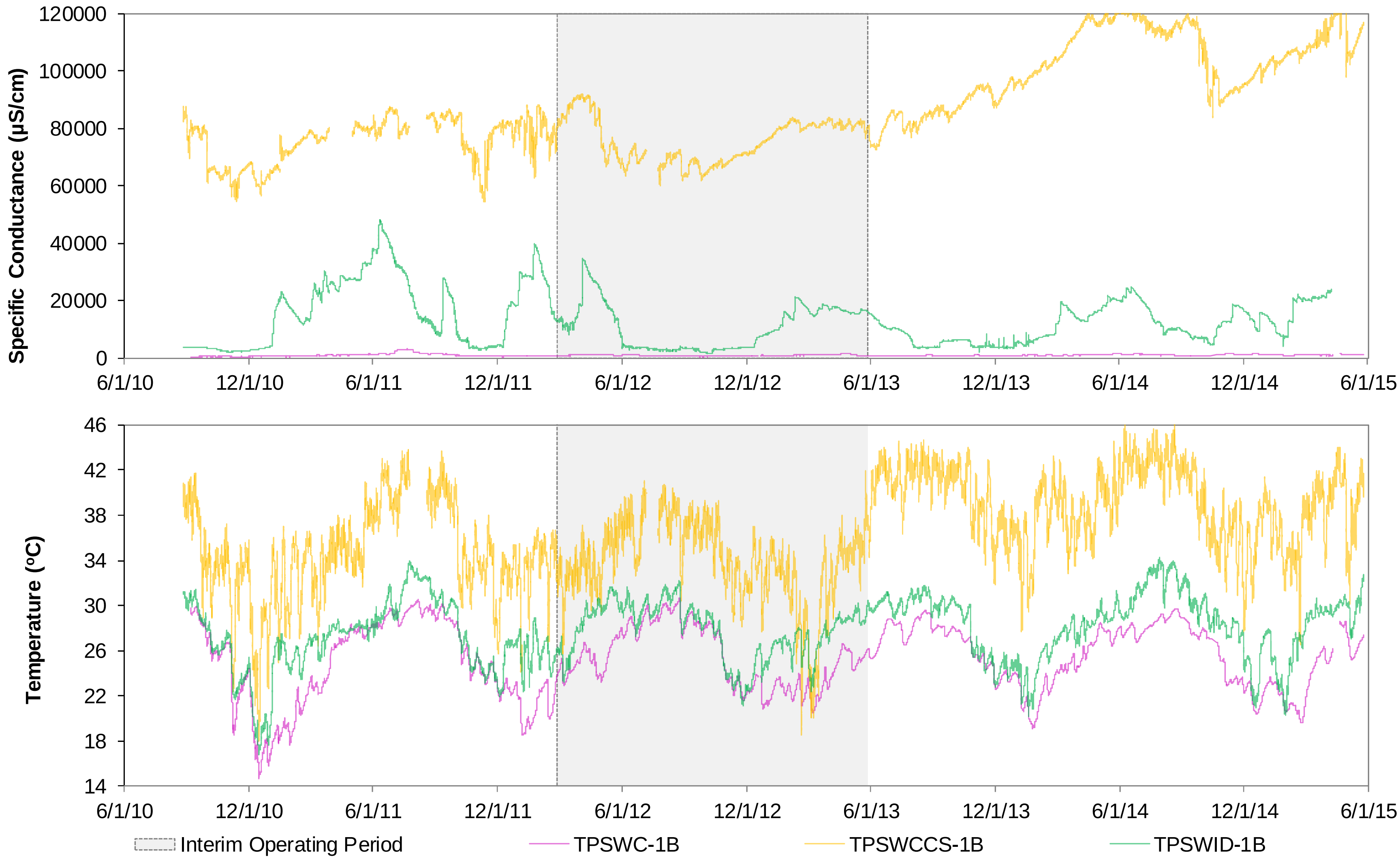

Figure 2.2-31. Comparison of Specific Conductance and Temperature at the Bottom of Interceptor Ditch Operation Transect A Stations.

Figure 2.2-32. Comparison of Specific Conductance and Temperature at the Bottom of Interceptor Ditch Operation Transect C Stations.

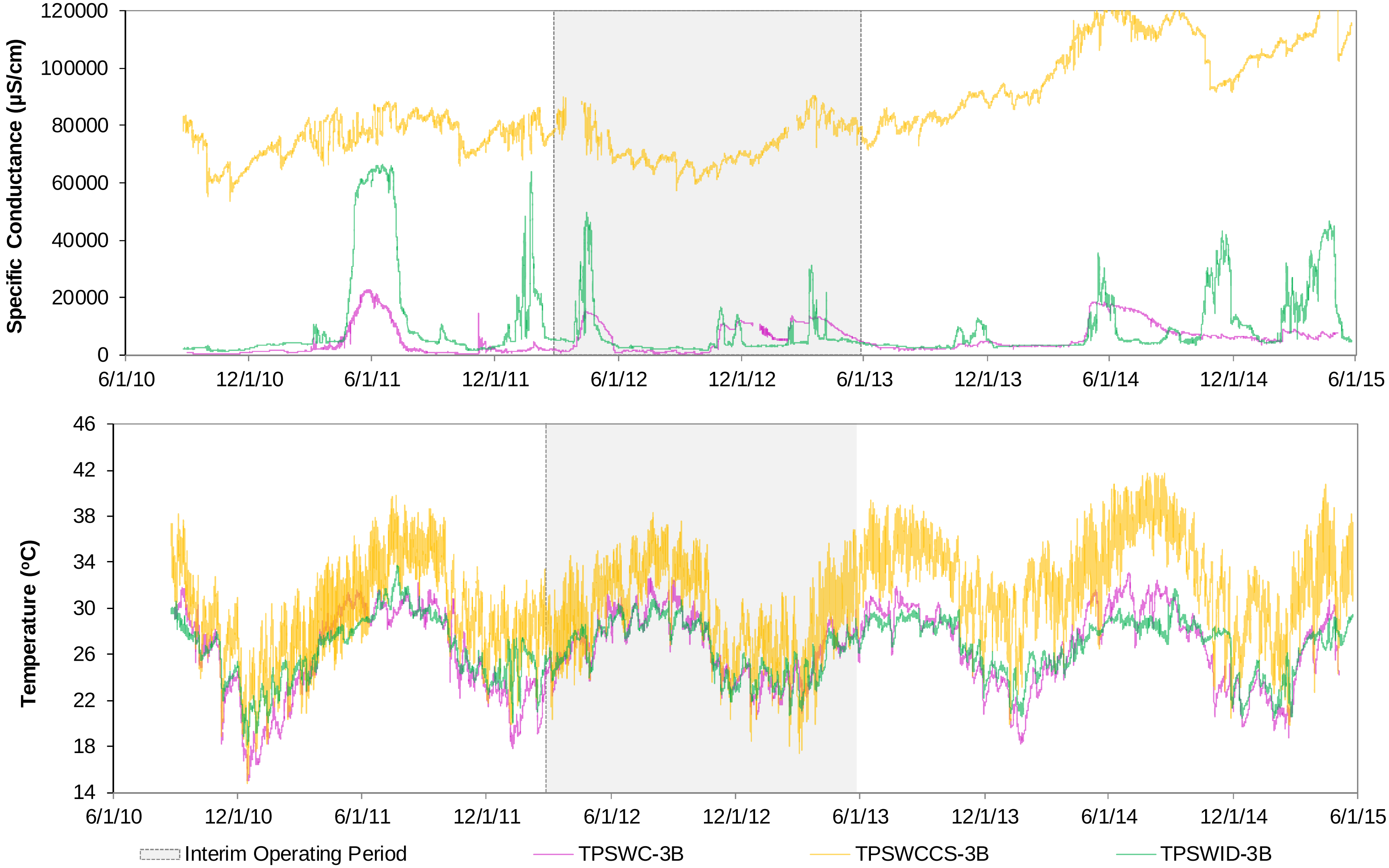

Figure 2.2.33 Comparison of Specific Conductance and Temperature at the Bottom of Interceptor Ditch Operation Transect E Stations.

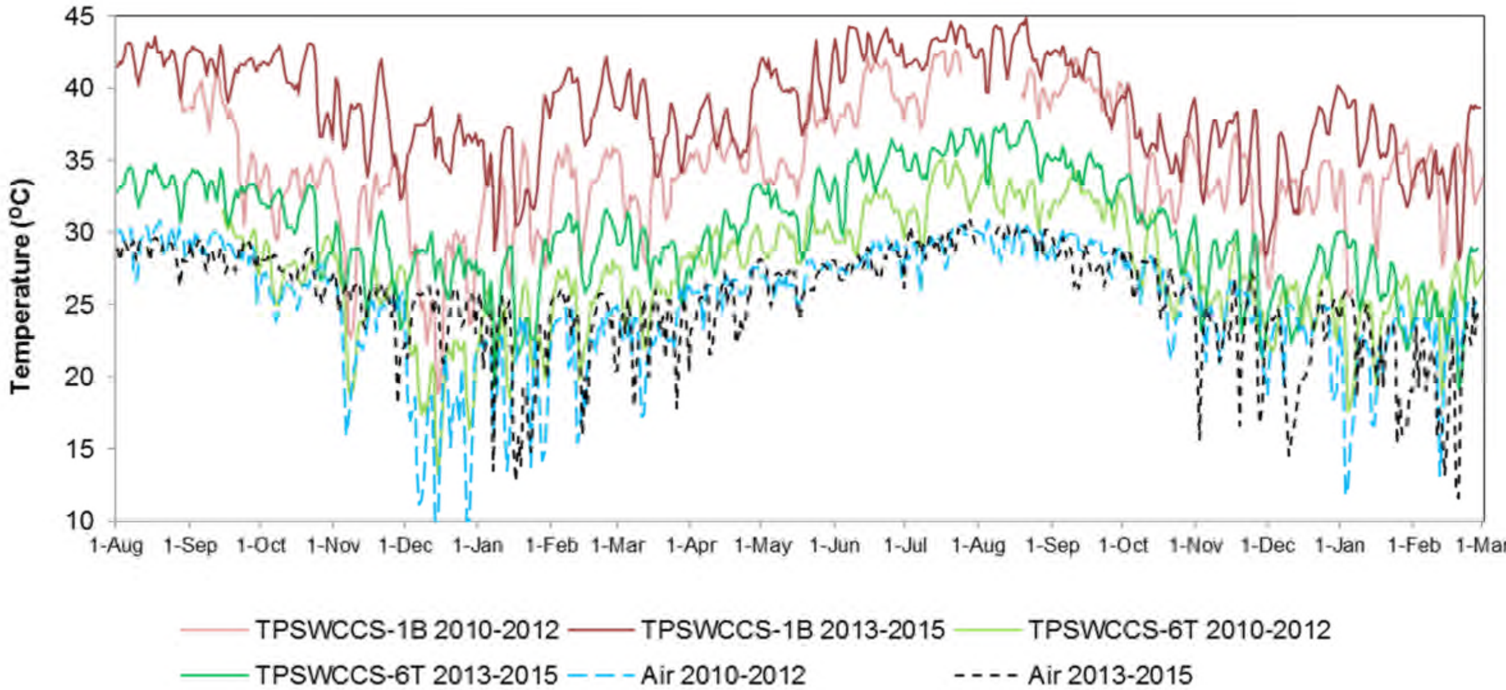

Figure 2.2-34. Comparison of Pre- and Post-Uprate CCS Surface Water Temperatures.

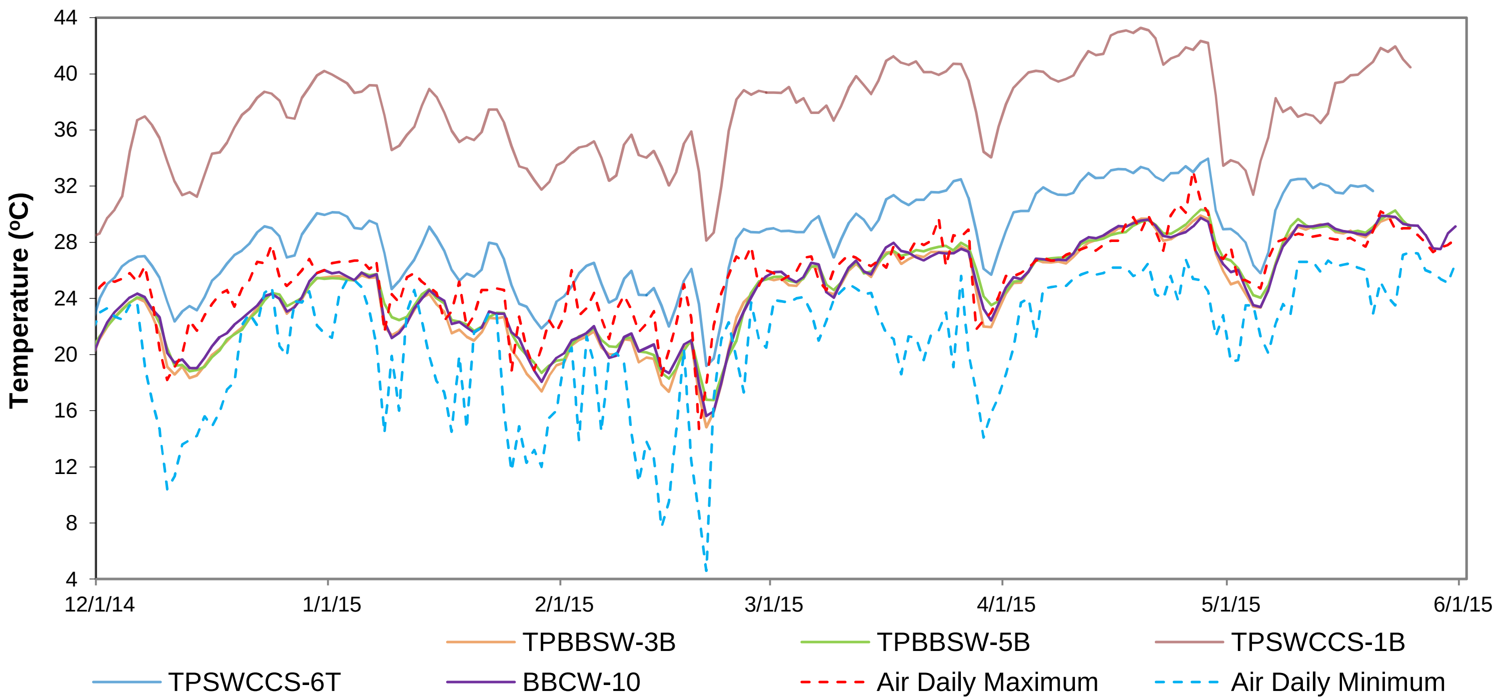

Figure 2.2-35. Biscayne Bay Surface Water Temperatures (24- Hour Averages) and Ambient Air Temperature (Maximum and Minimum Values) Time Series Plots.

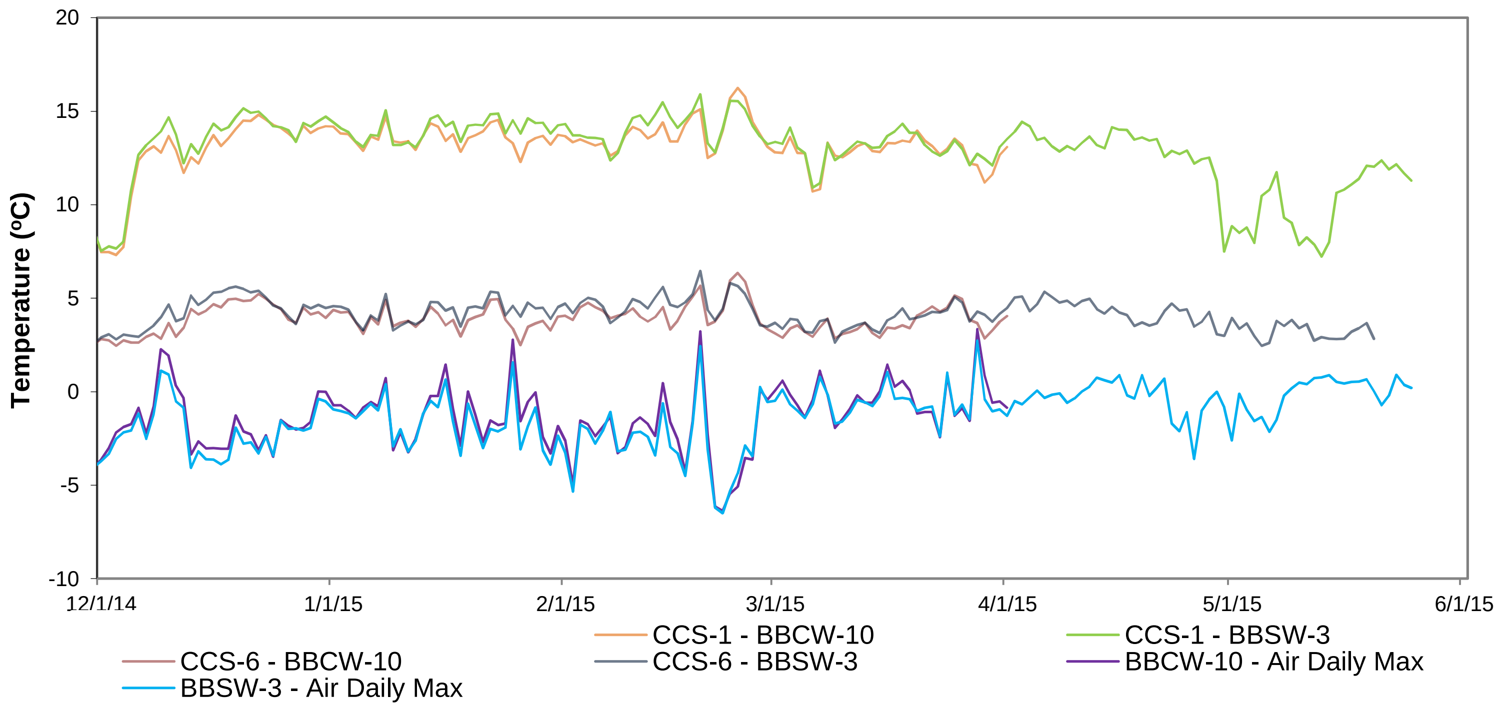

Figure 2.2-36. Differences among Ambient Air, CCS, and Biscayne Bay Water Temperatures.

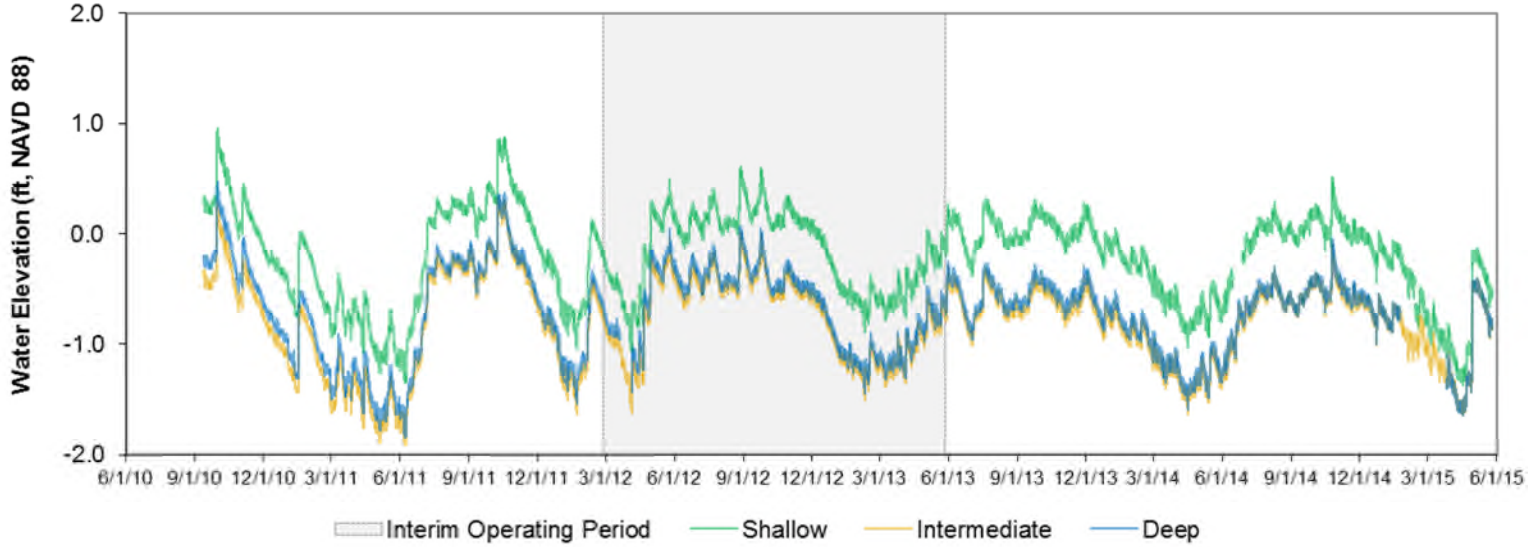

Figure 2.3-1. TPGW-1 Water Elevations.

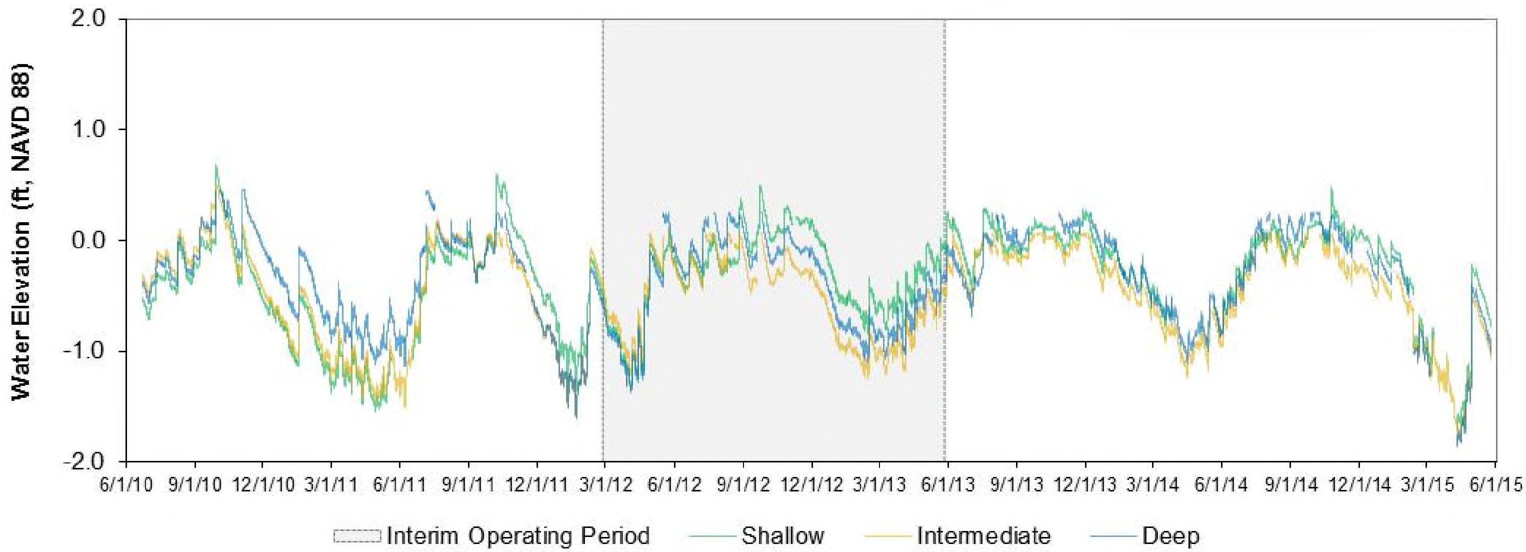

Figure 2.3-2. TPGW-2 Water Elevations.

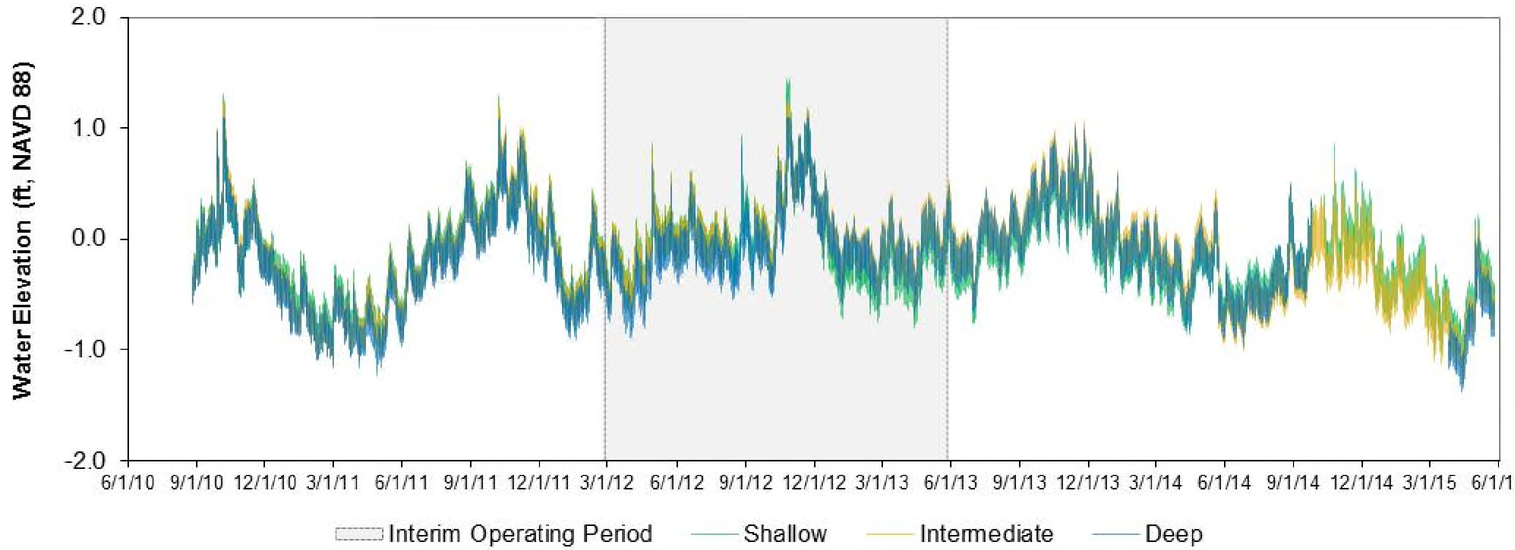

Figure 2.3-3. TPGW-3 Water Elevations.

Figure 2.3-4. TPGW-4 Water Elevations.

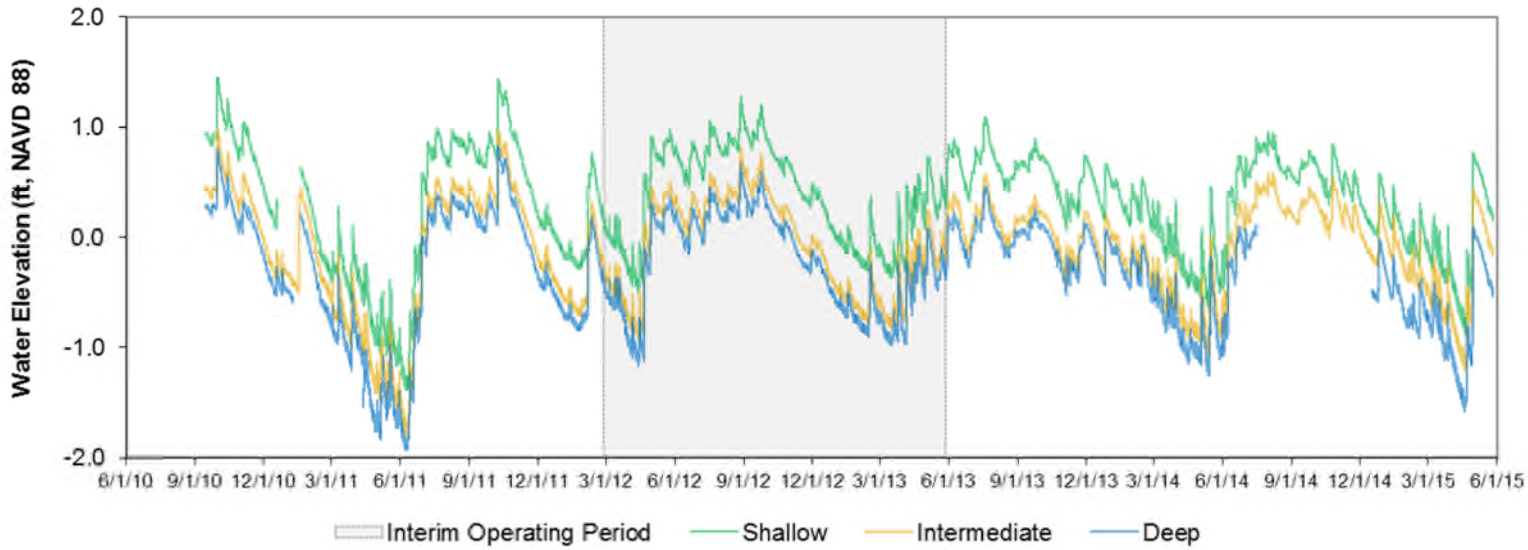

Figure 2.3-5. TPGW-5 Water Elevations.

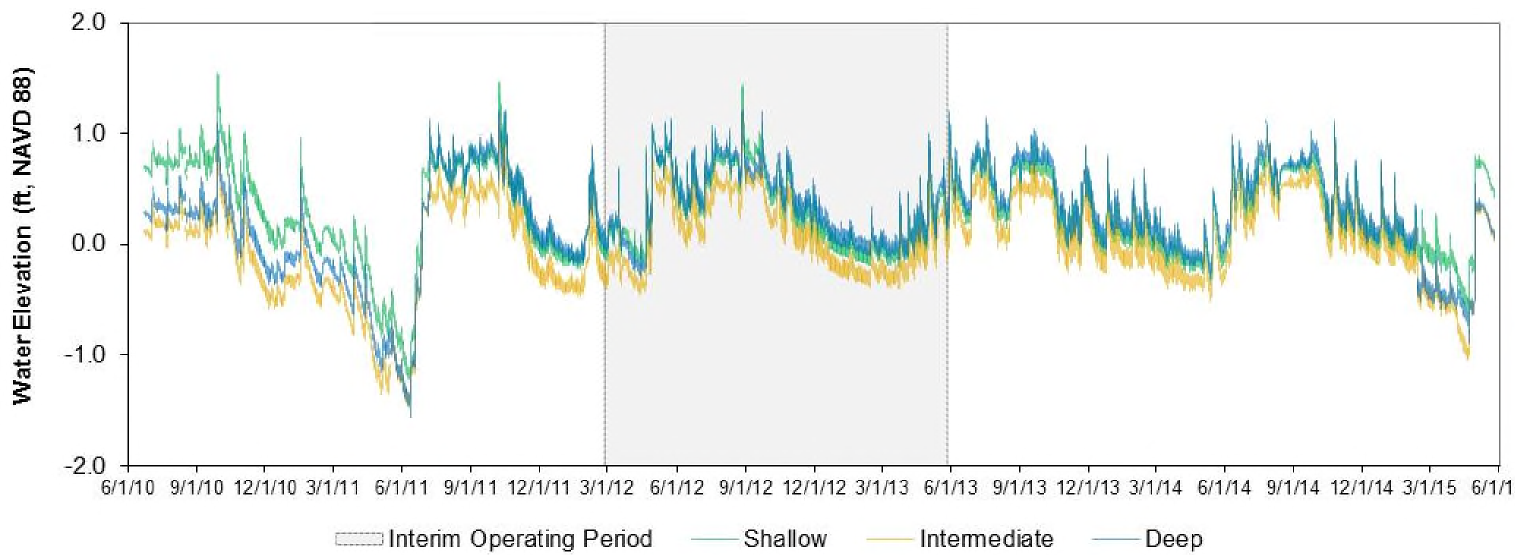

Figure 2.3-6. TPGW-6 Water Elevations.

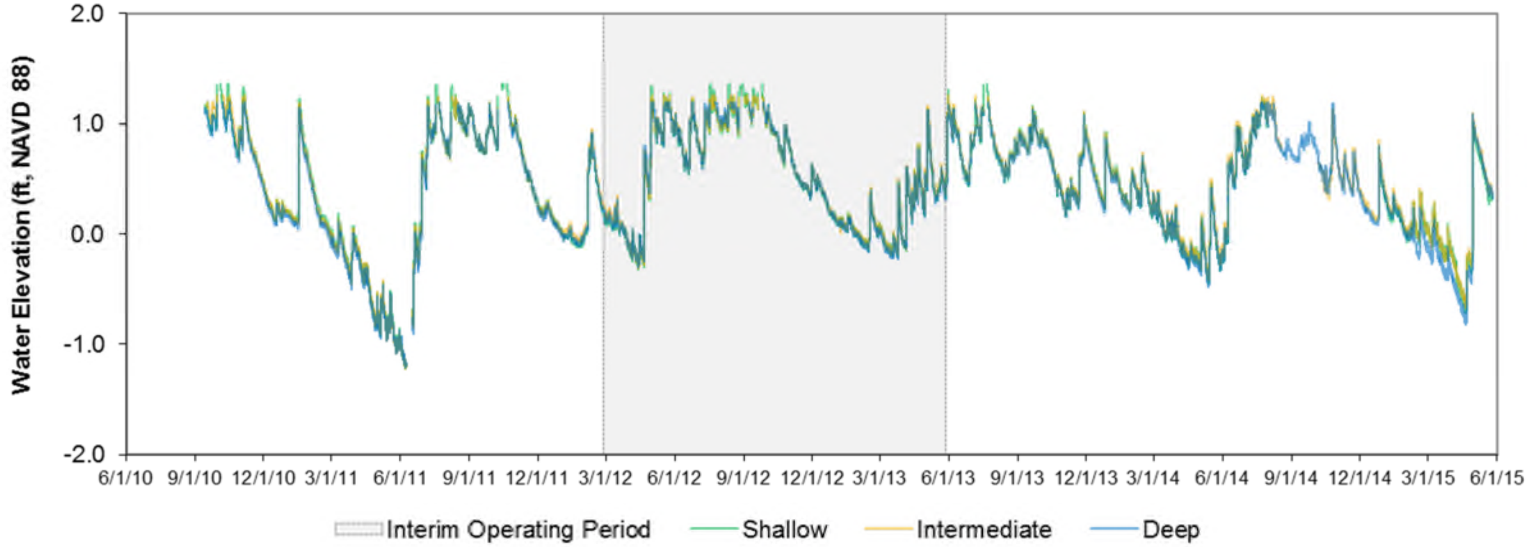

Figure 2.3-7. TPGW-7 Water Elevations.

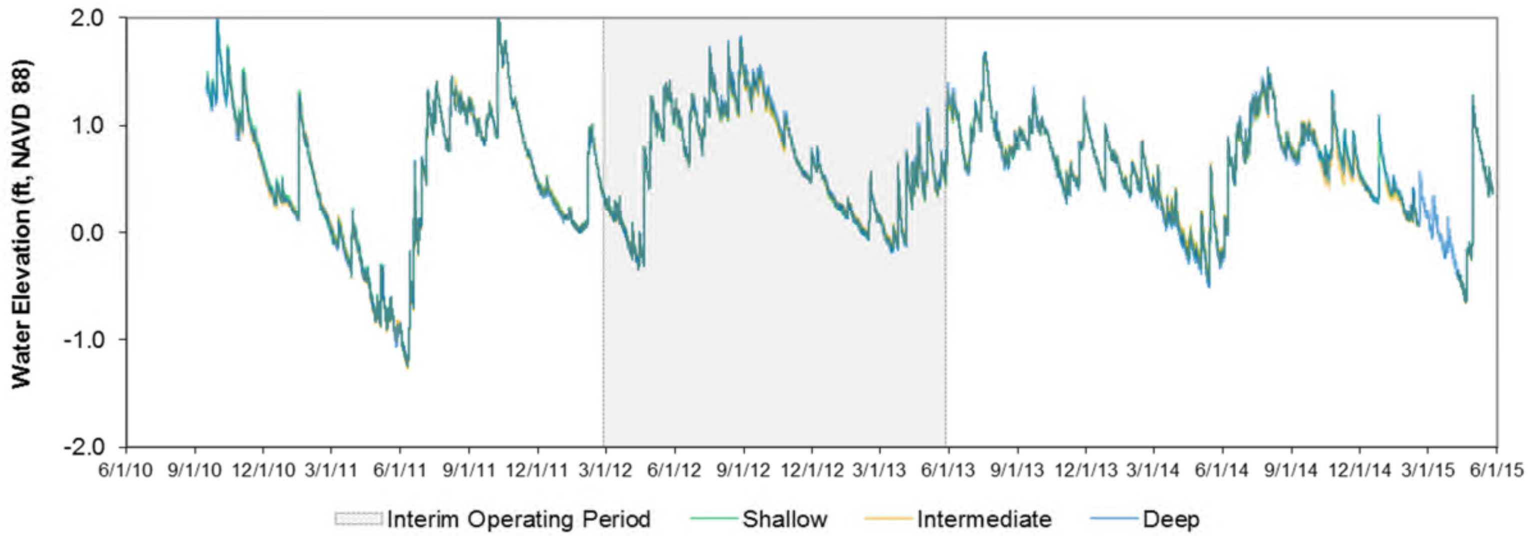

Figure 2.3-8. TPGW-8 Water Elevations.

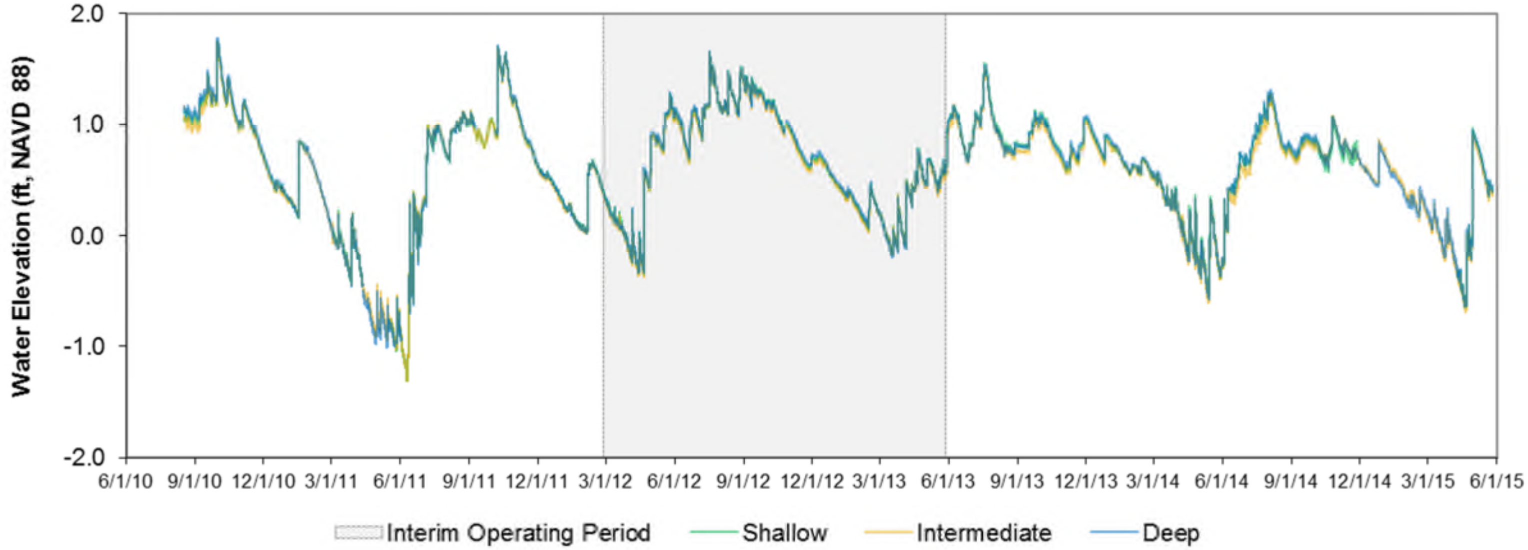

Figure 2.3-9. TPGW-9 Water Elevations.

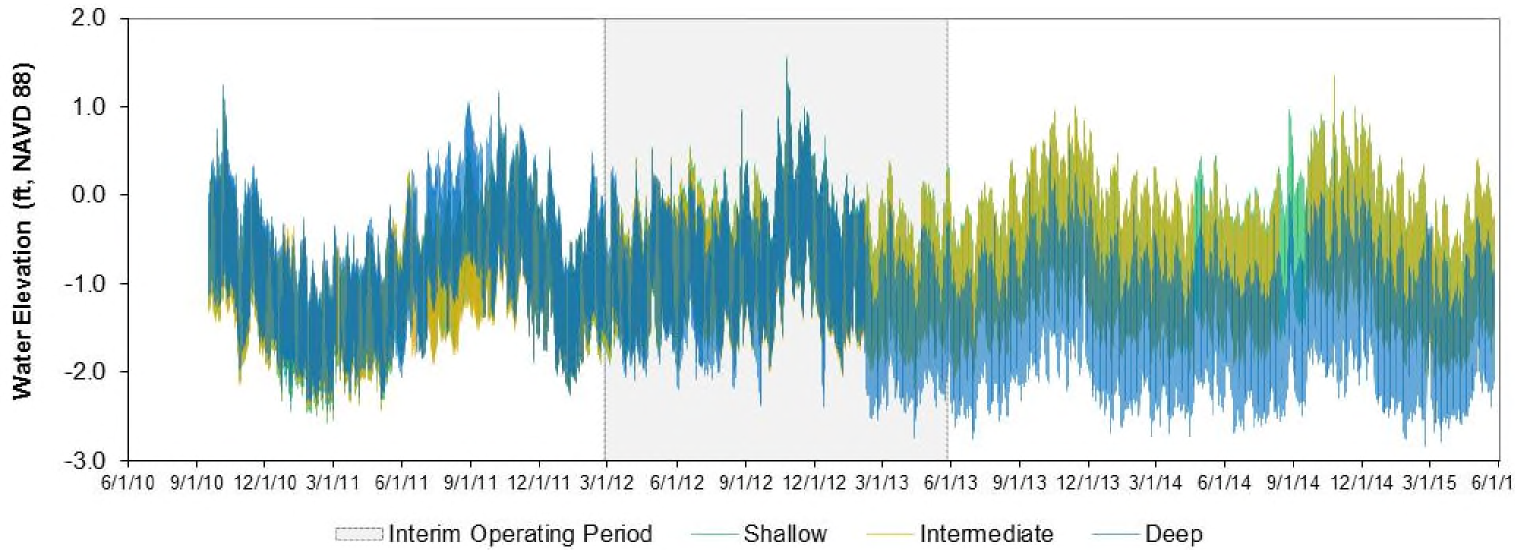

Figure 2.3-10. TPGW-10 Water Elevations.

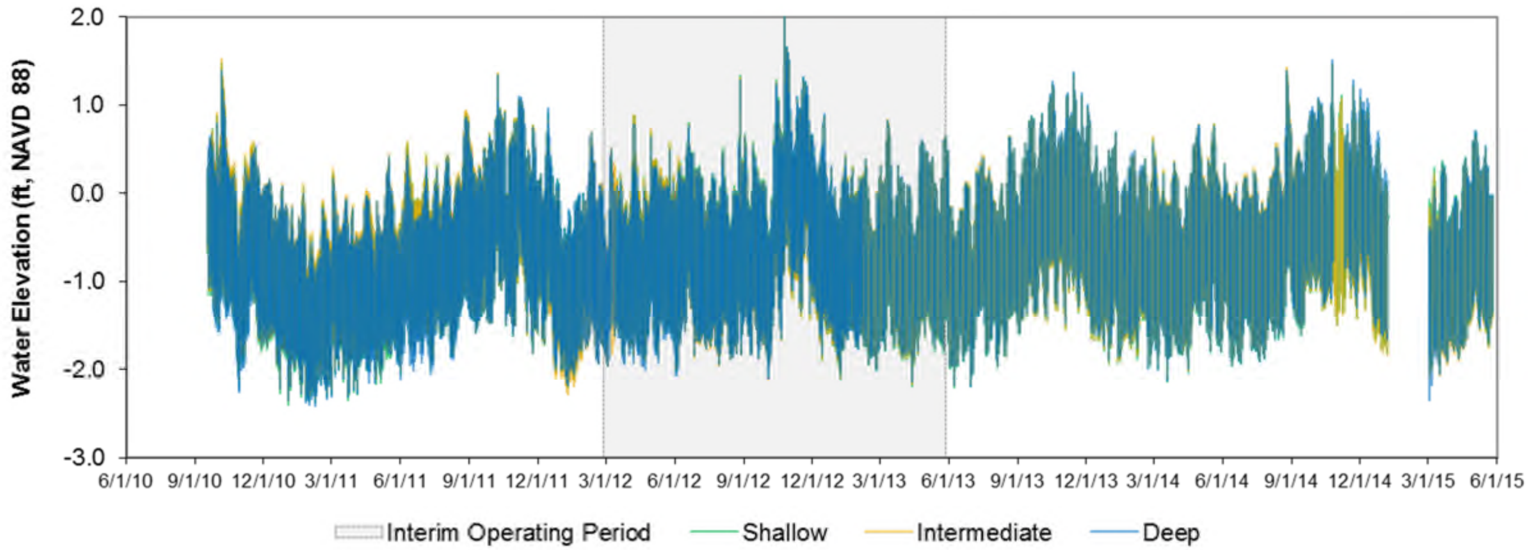

Figure 2.3-11. TPGW-11 Water Elevations.

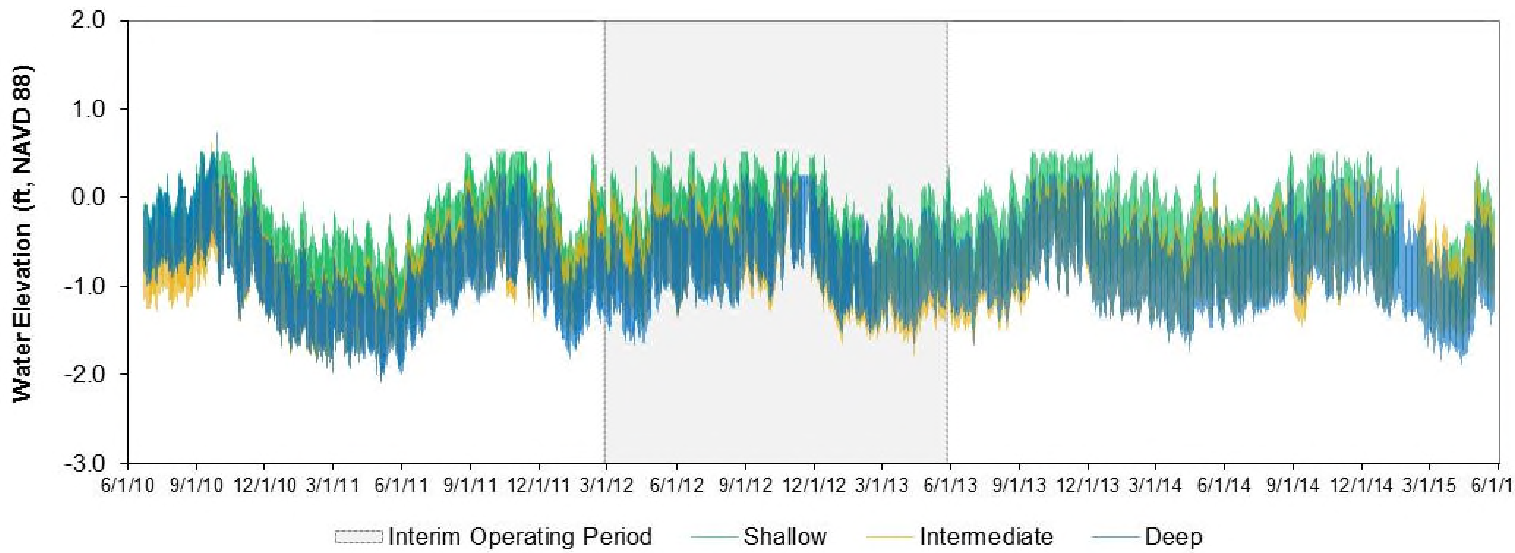

Figure 2.3-12. TPGW-12 Water Elevations.

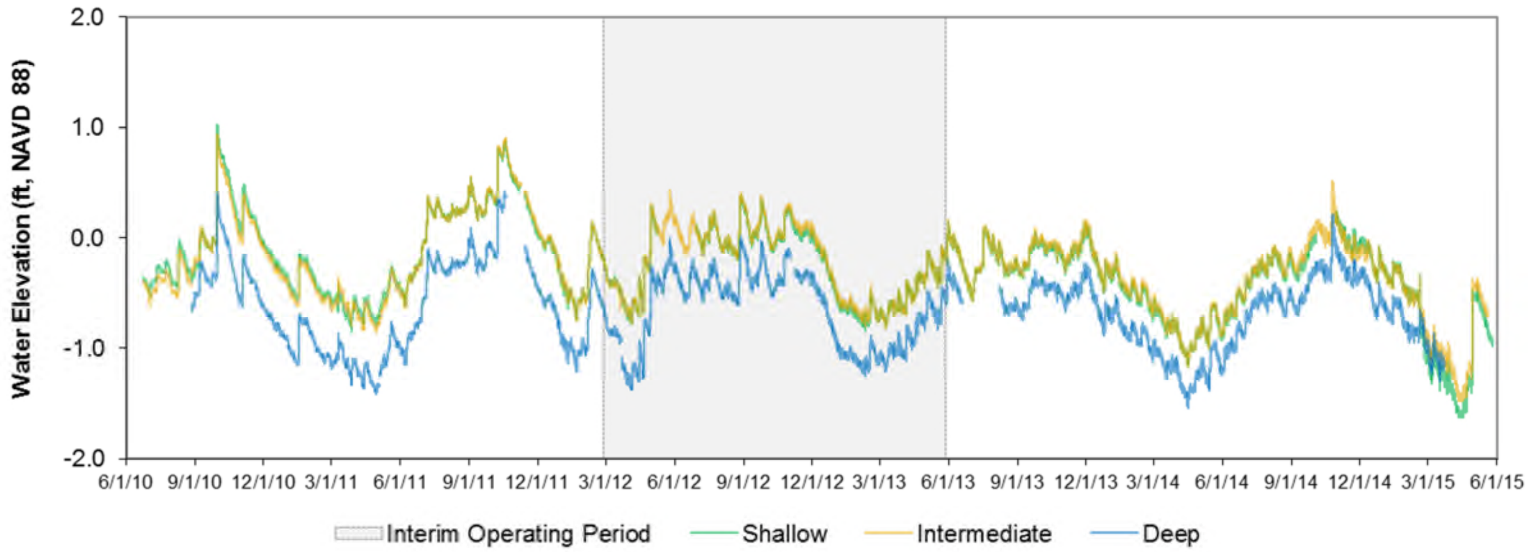

Figure 2.3-13. TPGW-13 Water Elevations.

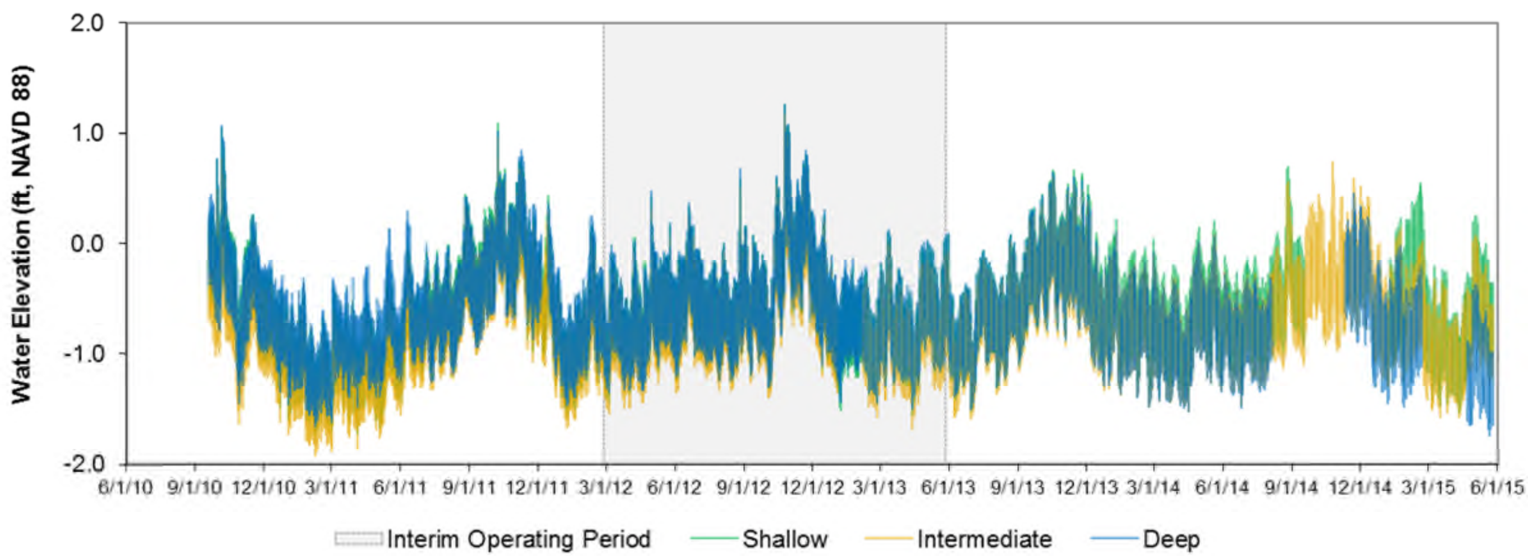

Figure 2.3-14. TPGW-14 Water Elevations.

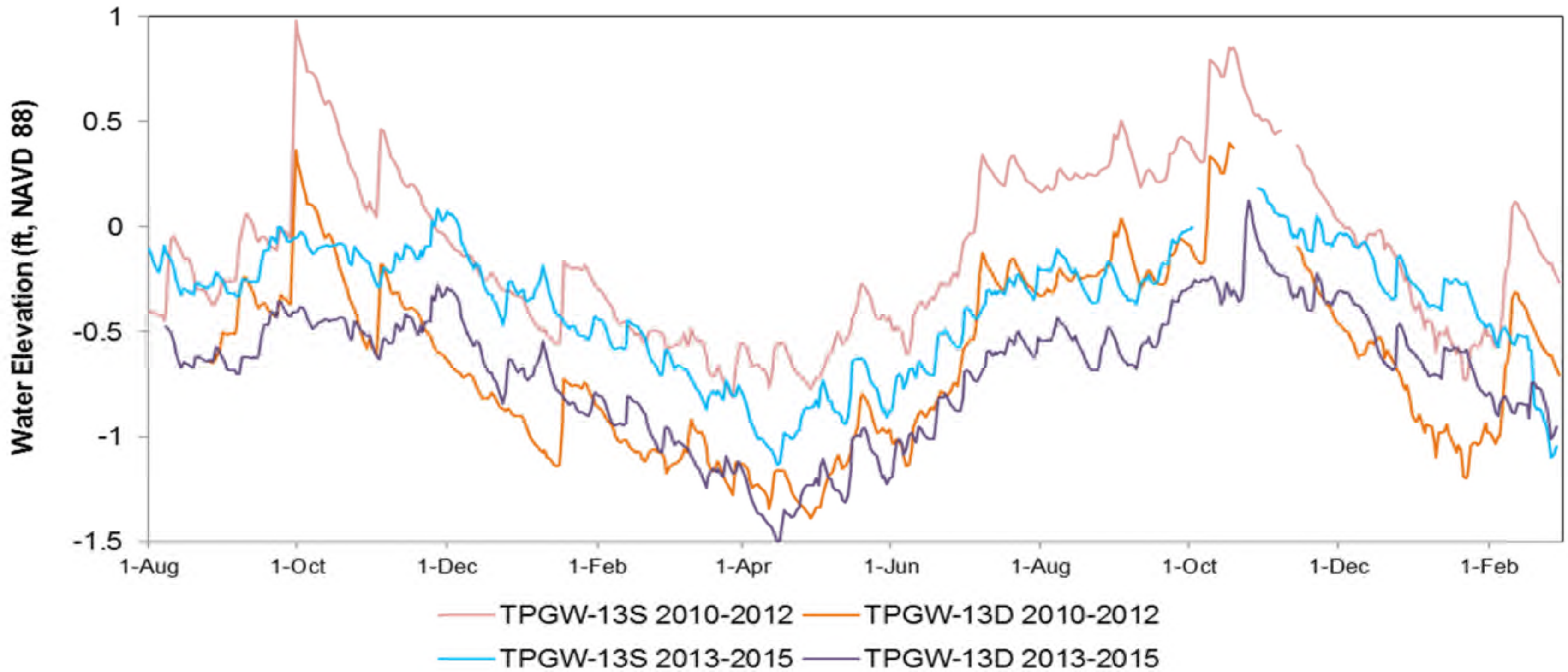

Figure 2.3-15. Comparison of Time Series Groundwater Water Elevations at TPGW-13 Between Pre- and Post-Uprate.

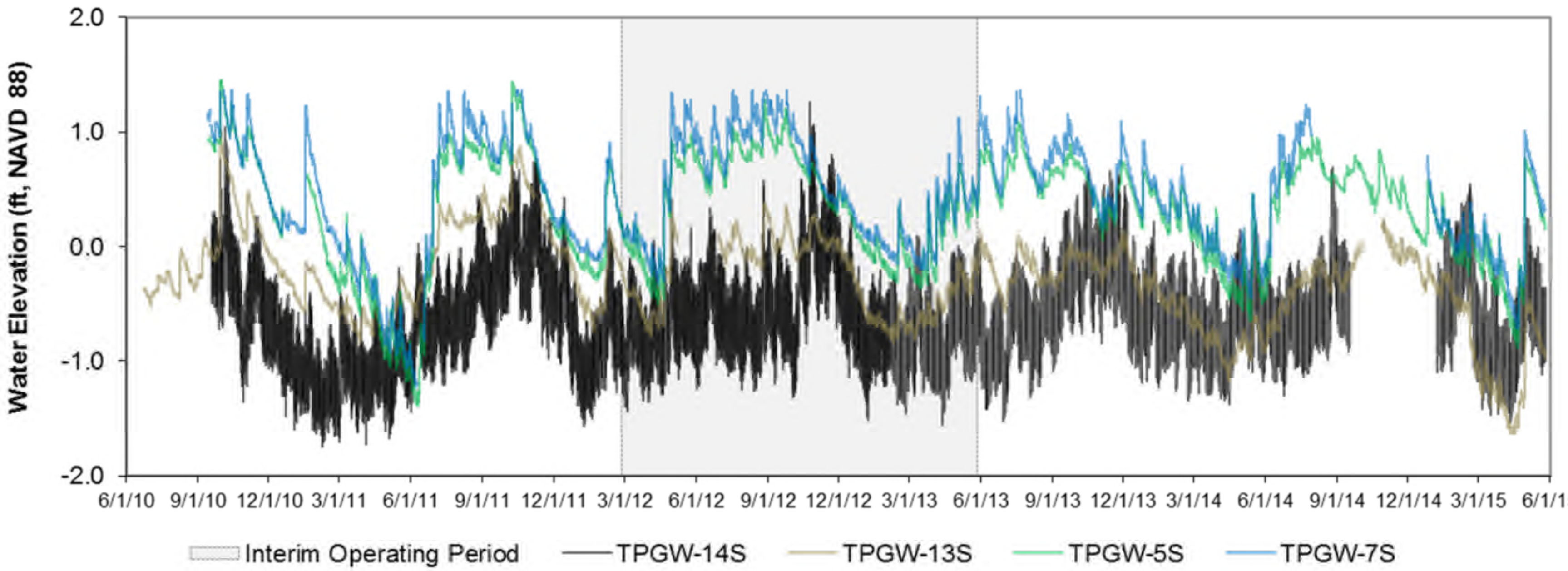

Figure 2.3-16. Comparison of Time Series Groundwater Water Elevations across the Landscape at TPGW-14, TPGW-13, TPGW-5 and TPGW-7.

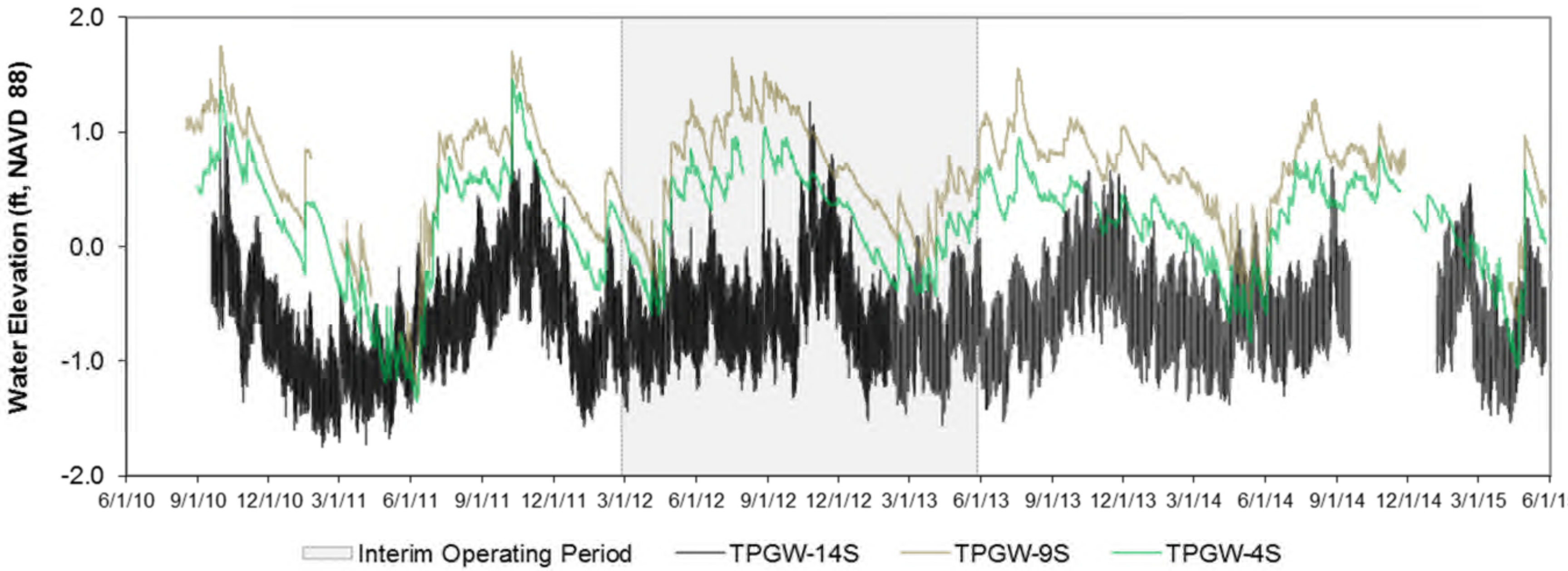

Figure 2.3-17. Comparison of Time Series Groundwater Water Elevations across the Landscape at TPGW-14, TPGW-9, and TPGW-4.

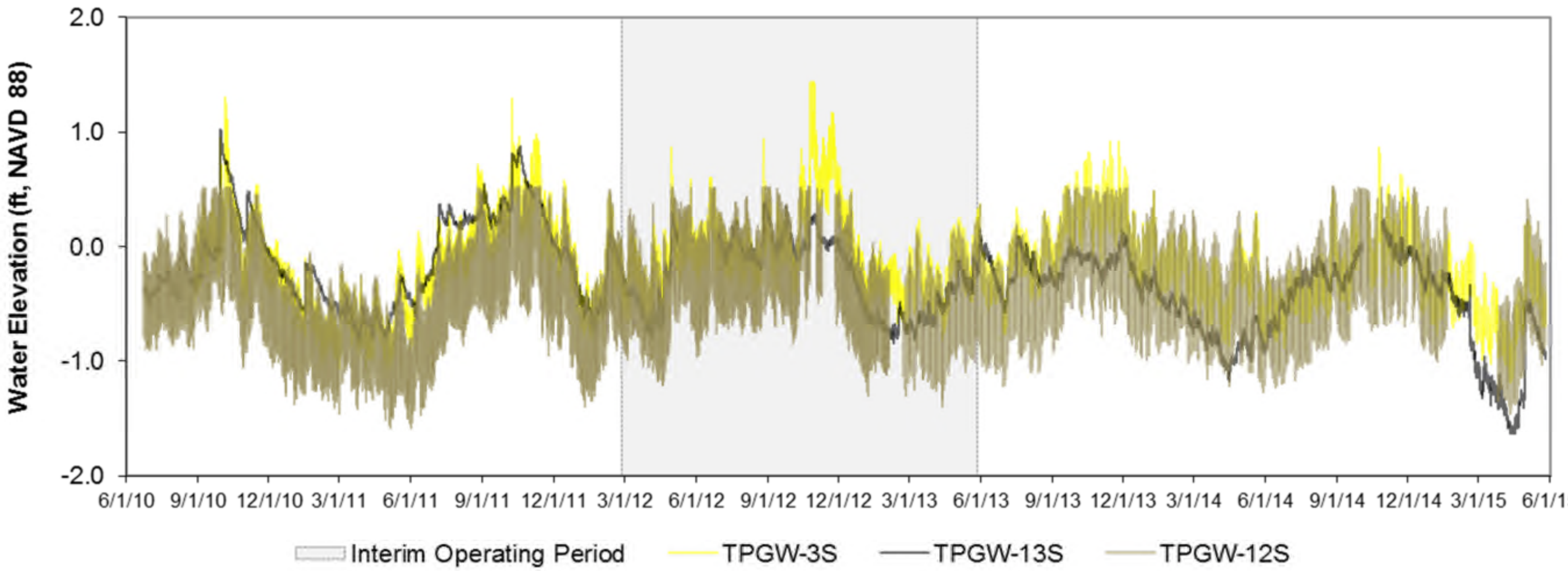

Figure 2.3-18. Comparison of Time Series Groundwater Water Elevations across the Landscape at TPGW-3, TPGW-13, and TPGW-12.

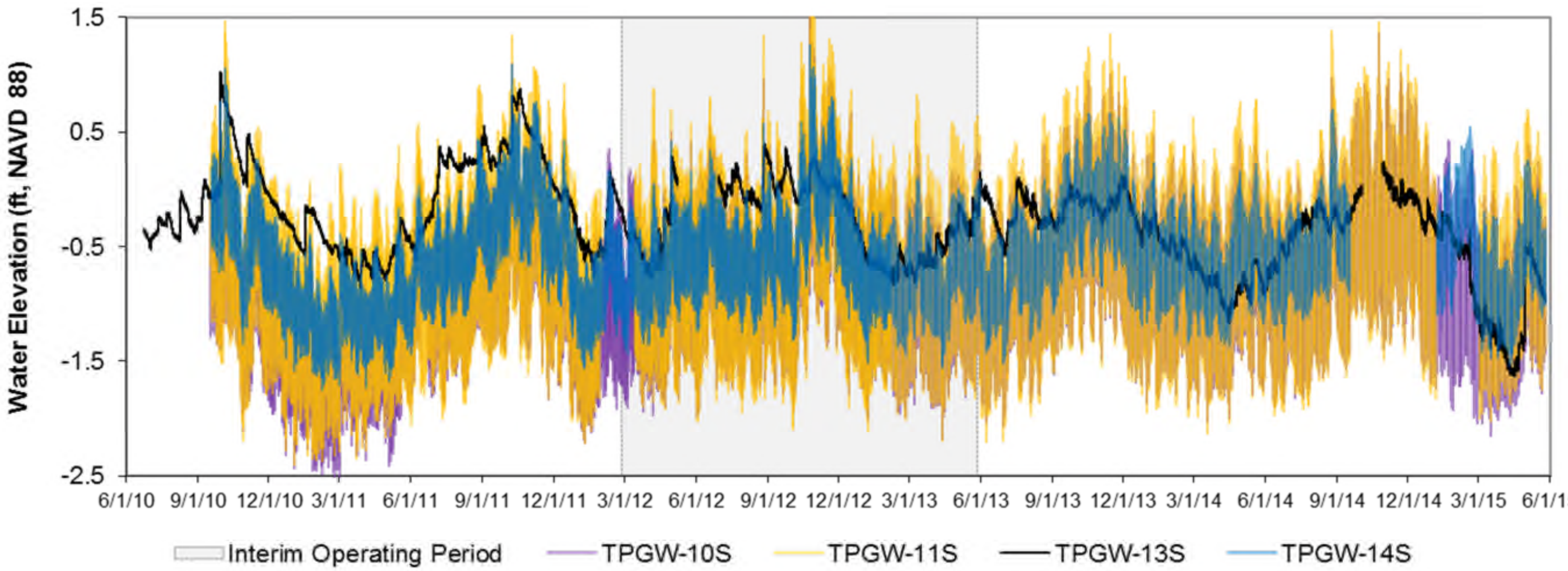

Figure 2.3-19. Comparison of Time Series Groundwater Water Elevations across the Landscape at TPGW-10, TPGW-11, TPGW-13, and TPGW-14.

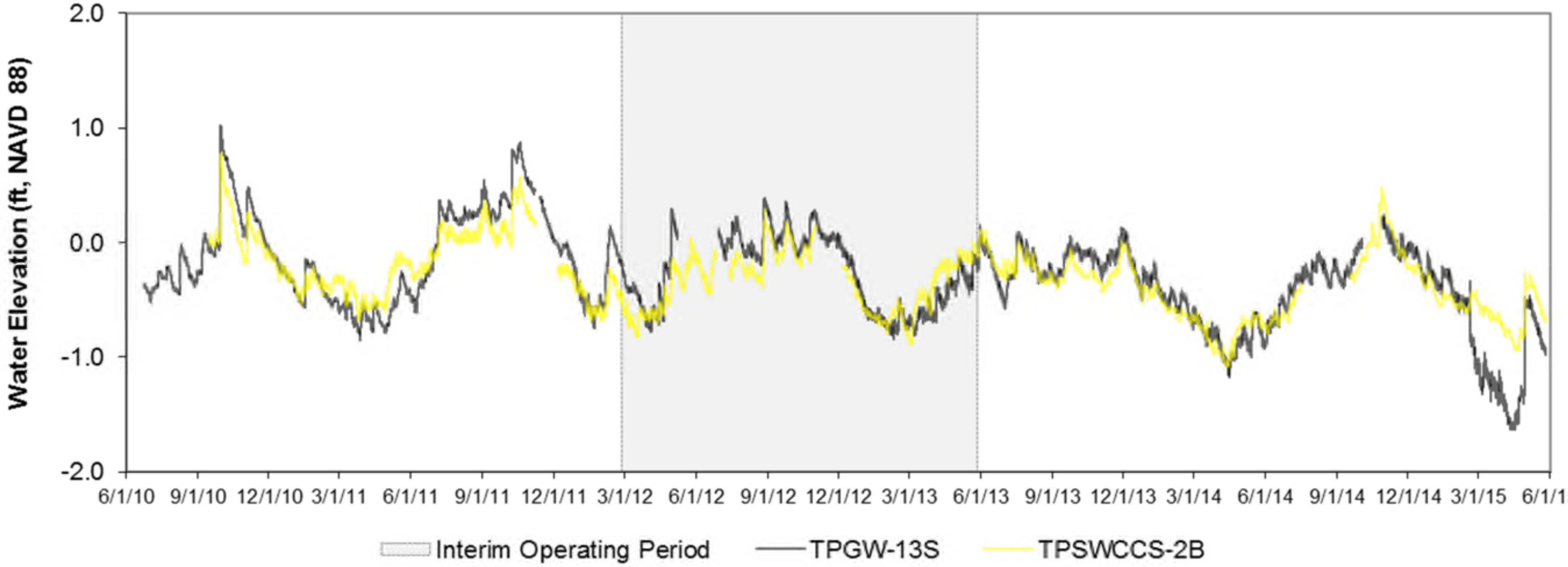

Figure 2.3-20. Comparison of Time Series Groundwater Water Elevations at TPGW-13 and TPSWCCS-2.

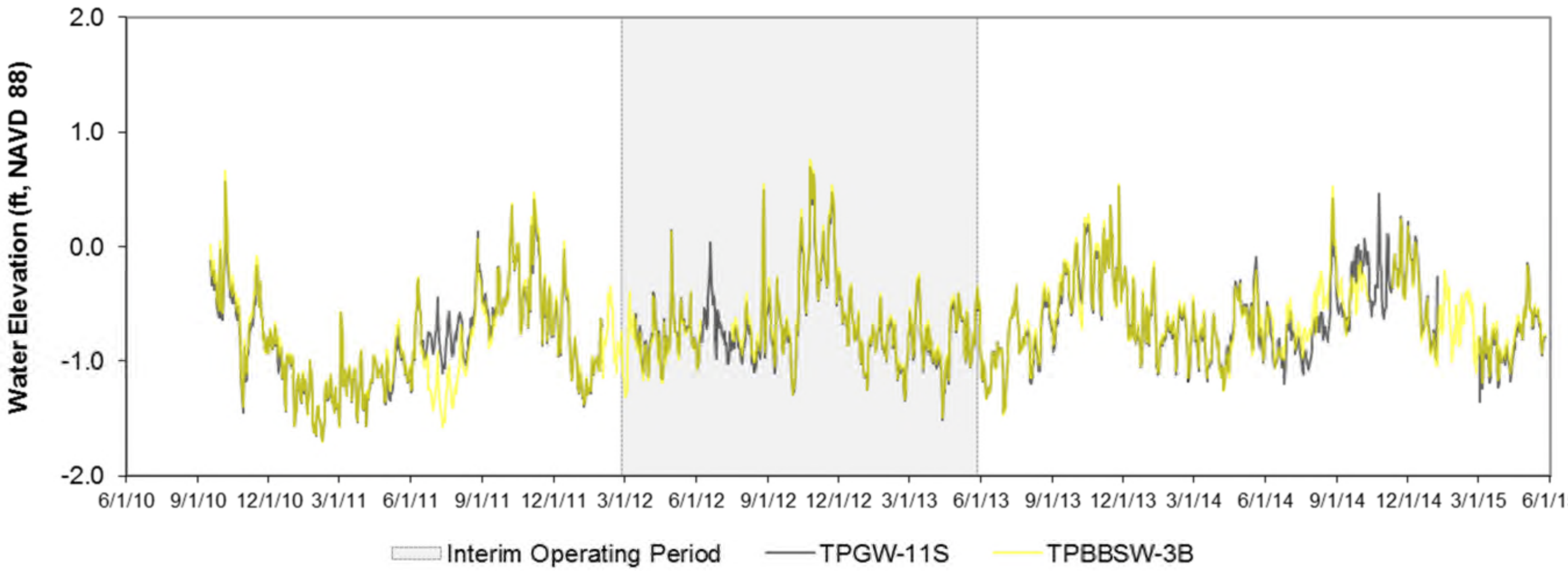

Figure 2.3-21. Comparison of Daily Average Time Series Groundwater Water Elevations in Biscayne Bay Well TPGW-11 and Biscayne Bay Surface Water Station TPBBSW-3.

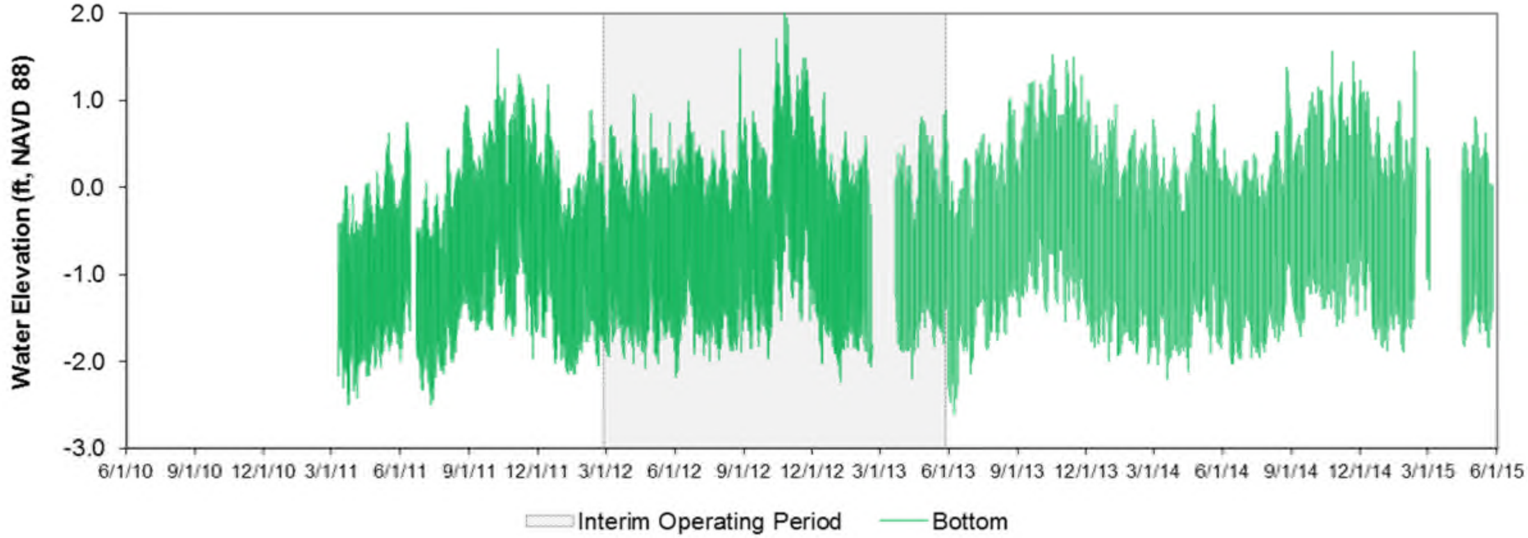

Figure 2.3-22. TPBBSW-10 Water Elevations.

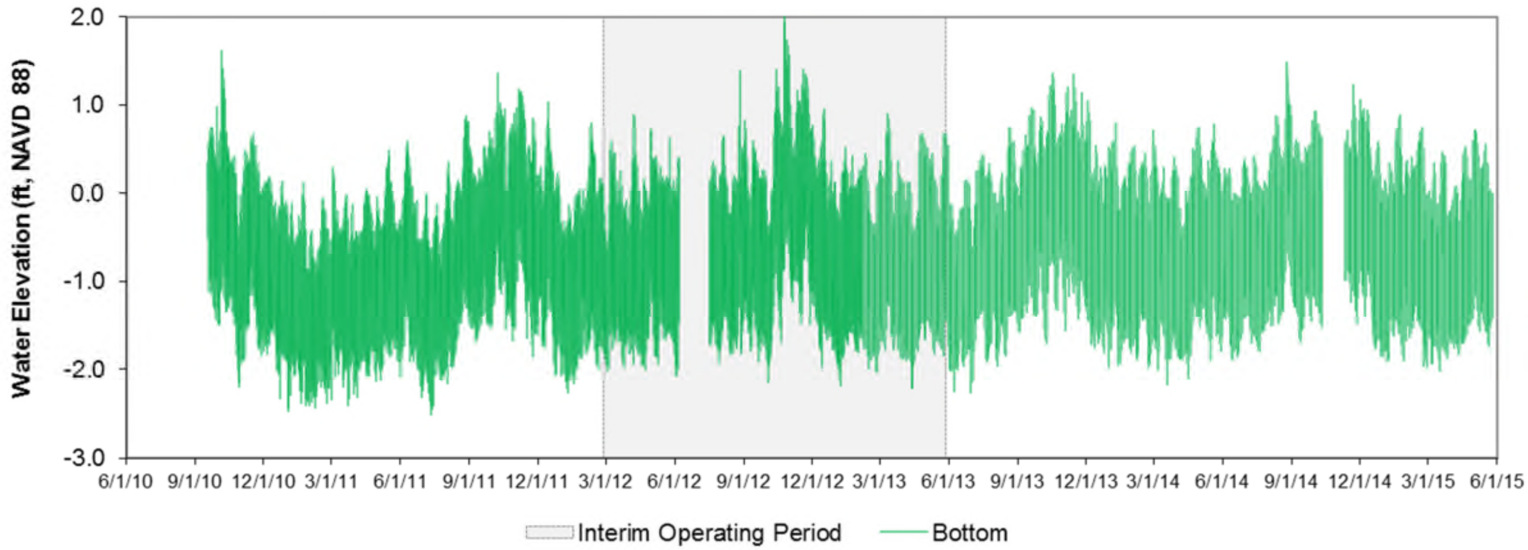

Figure 2.3-23. TPBBSW-3 Water Elevations.

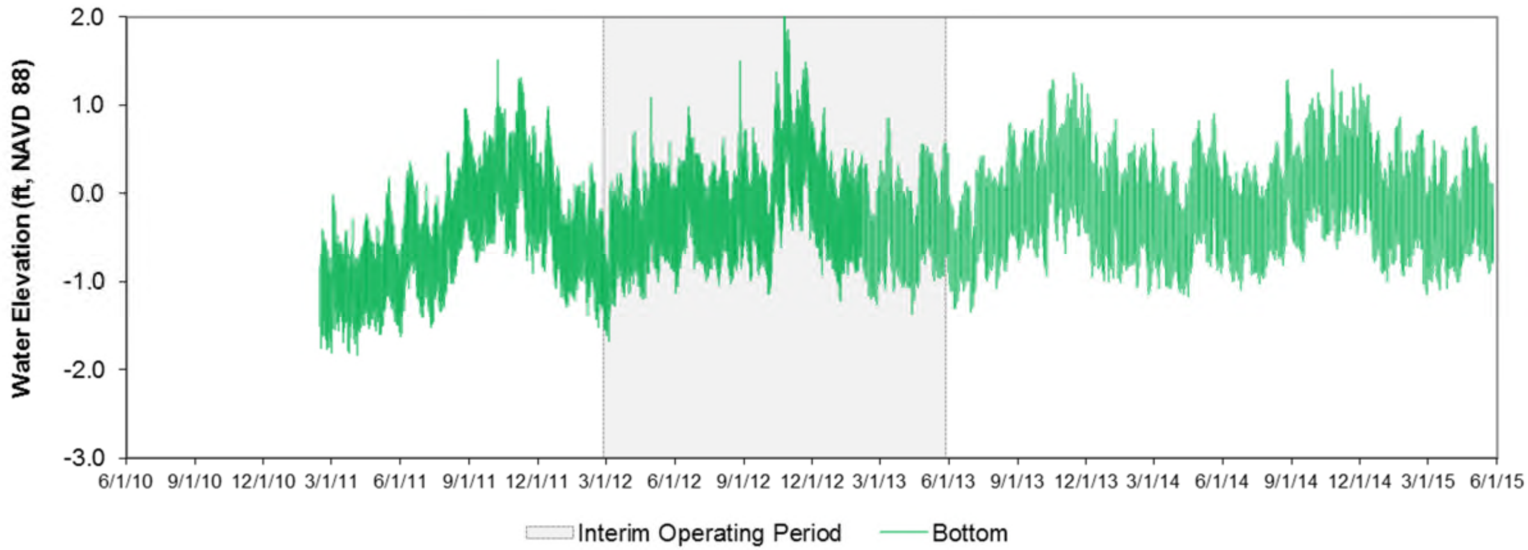

Figure 2.3-24. TPBBSW-14 Water Elevations.

Figure 2.3-25. TPSWC-1 Water Elevations.

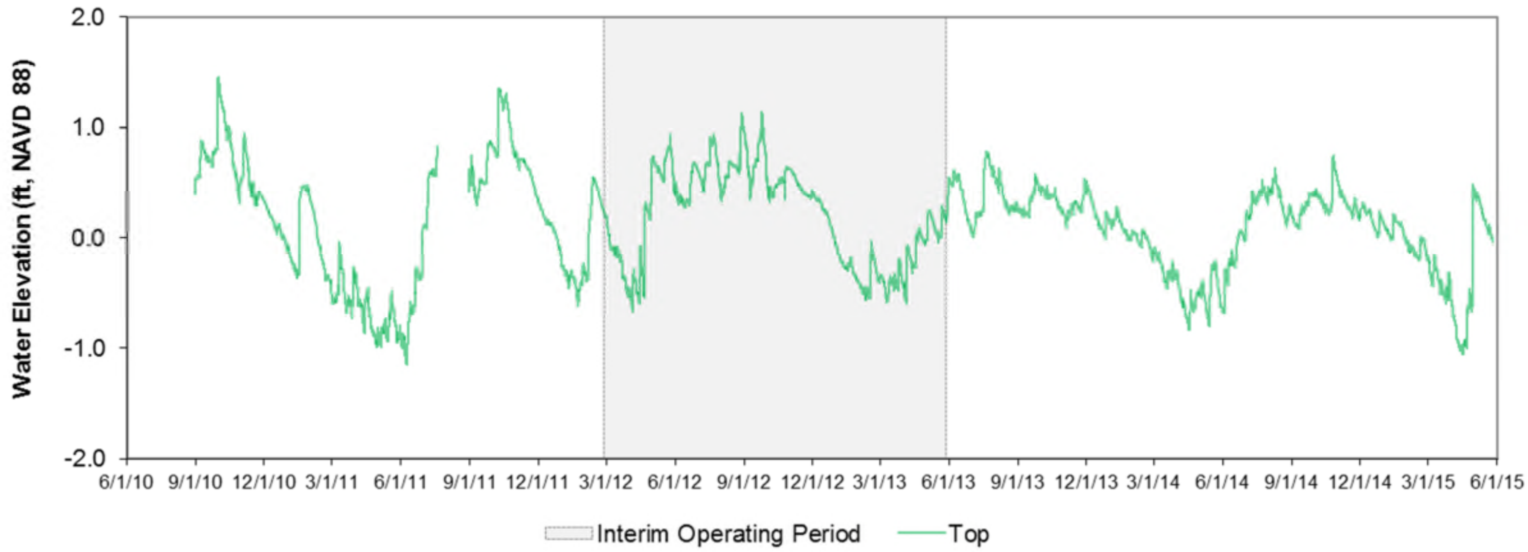

Figure 2.3-26. TPSWC-2 Water Elevations.

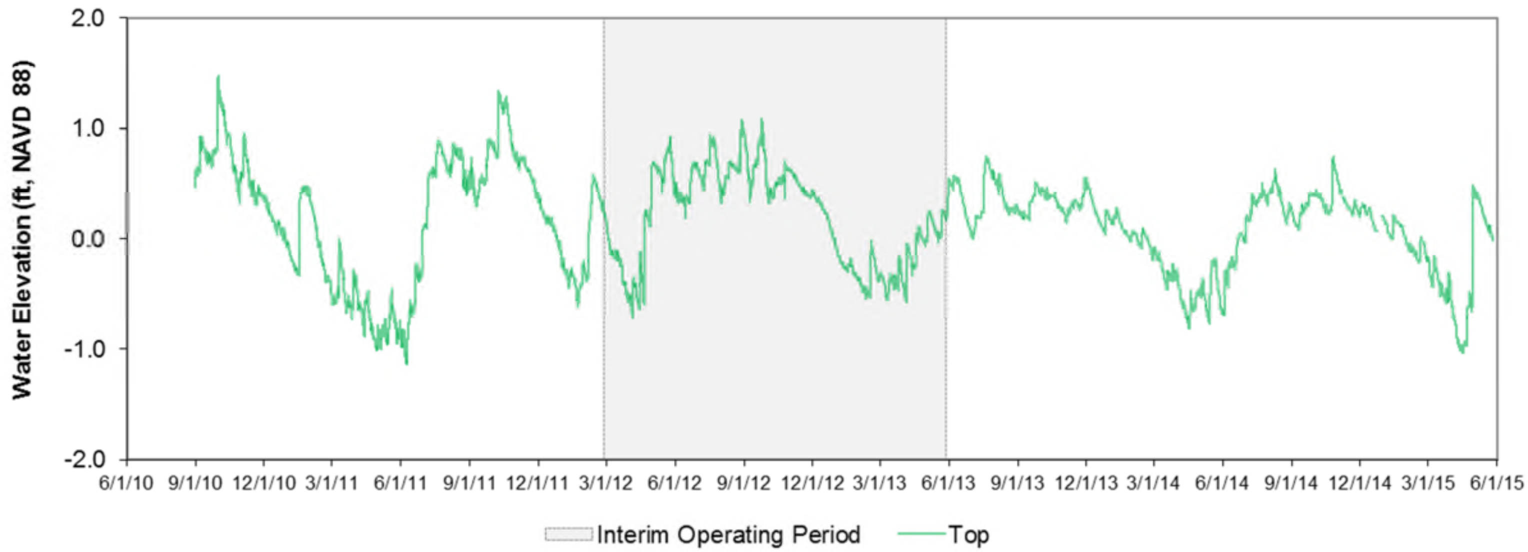

Figure 2.3-27. TPSWC-3 Water Elevations.

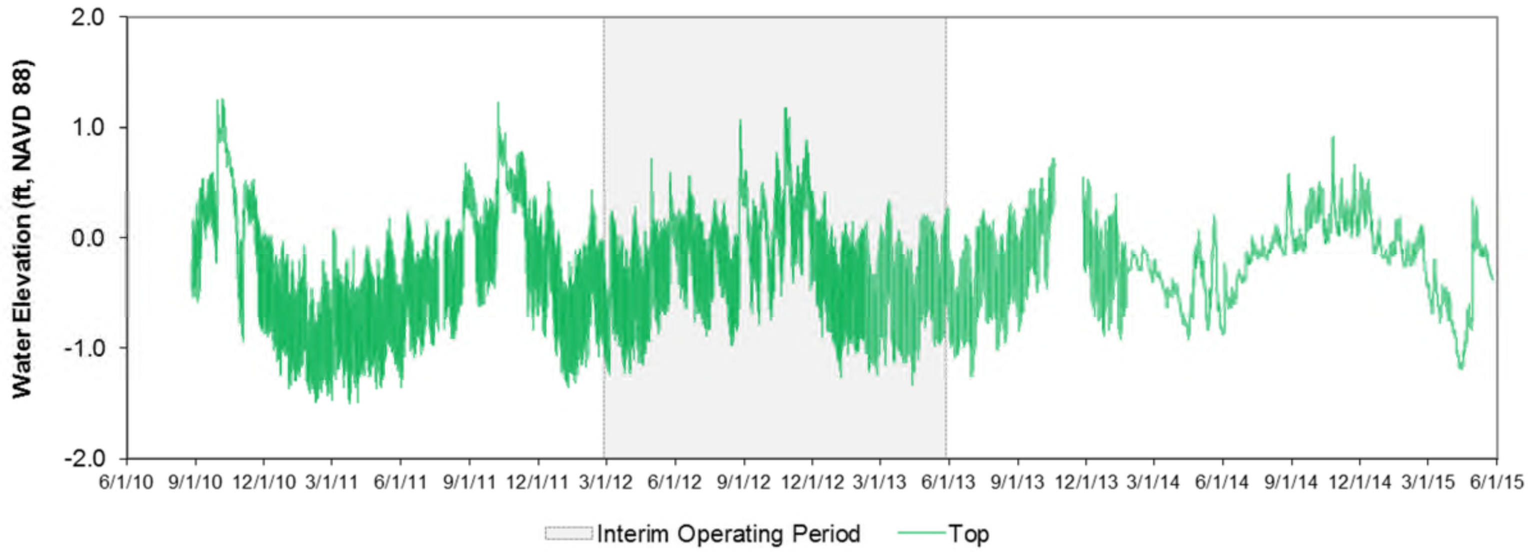

Figure 2.3-28. TPSWC-4 Water Elevations.

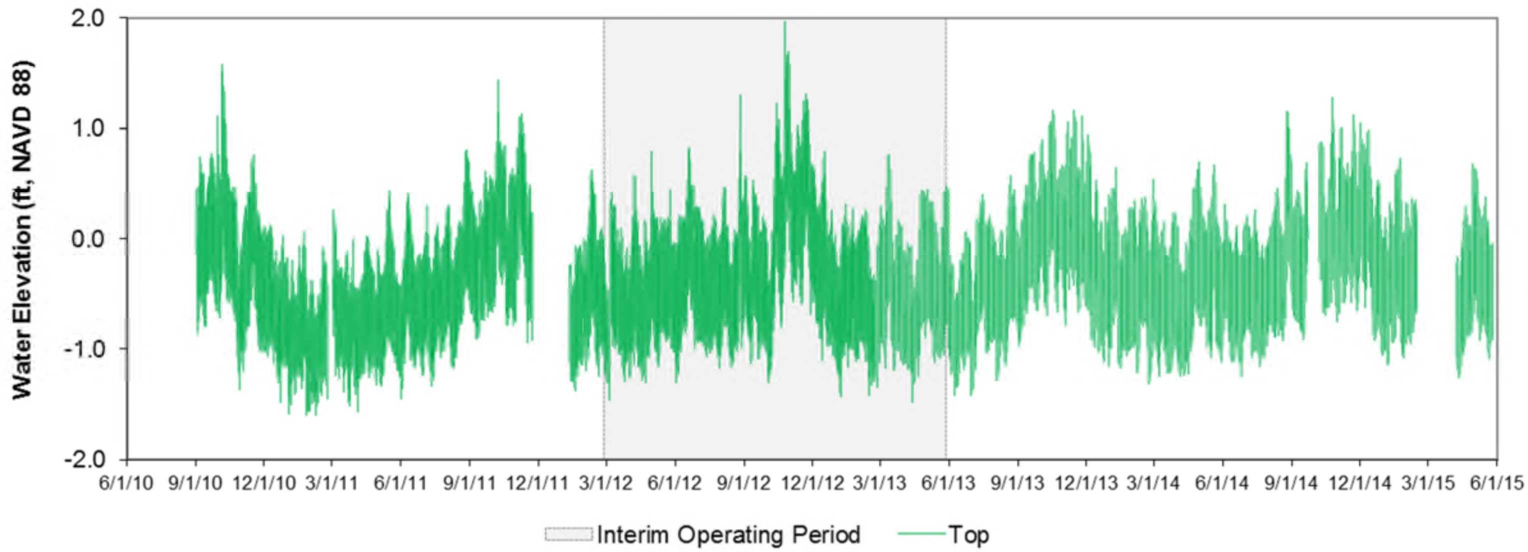

Figure 2.3-29. TPSWC-5 Water Elevations.

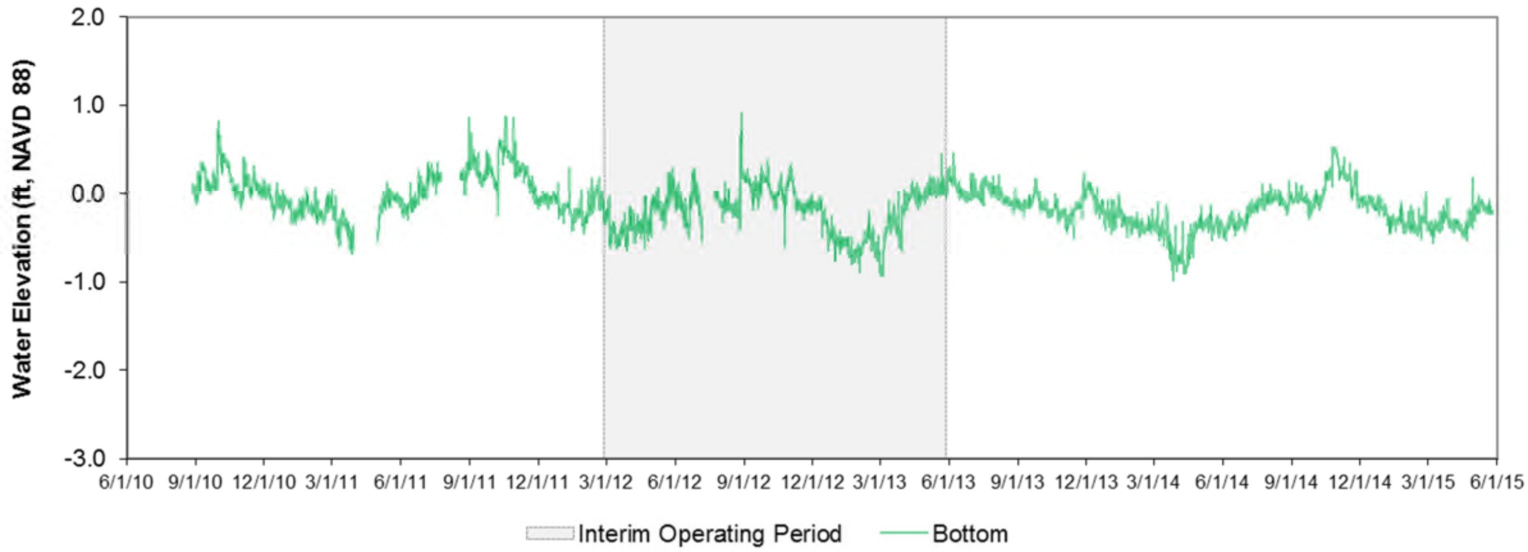

Figure 2.3-30. TPSWCCS-1 Water Elevations.

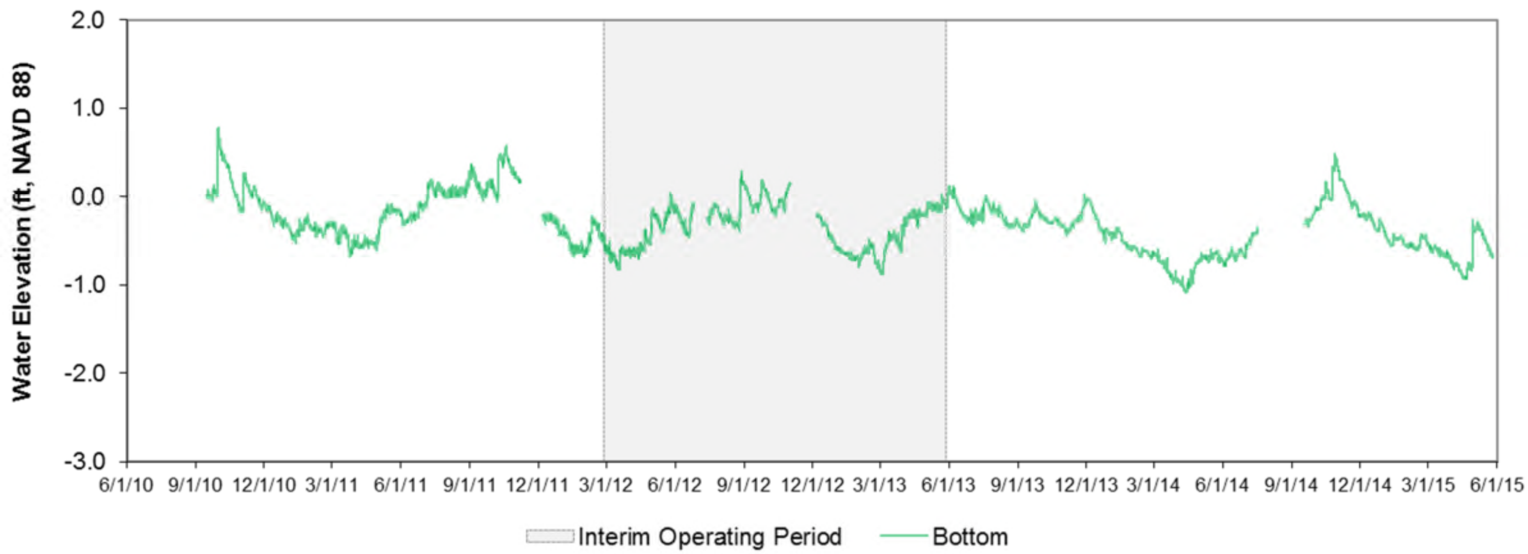

Figure 2.3-31. TPSWCCS-2 Water Elevations.

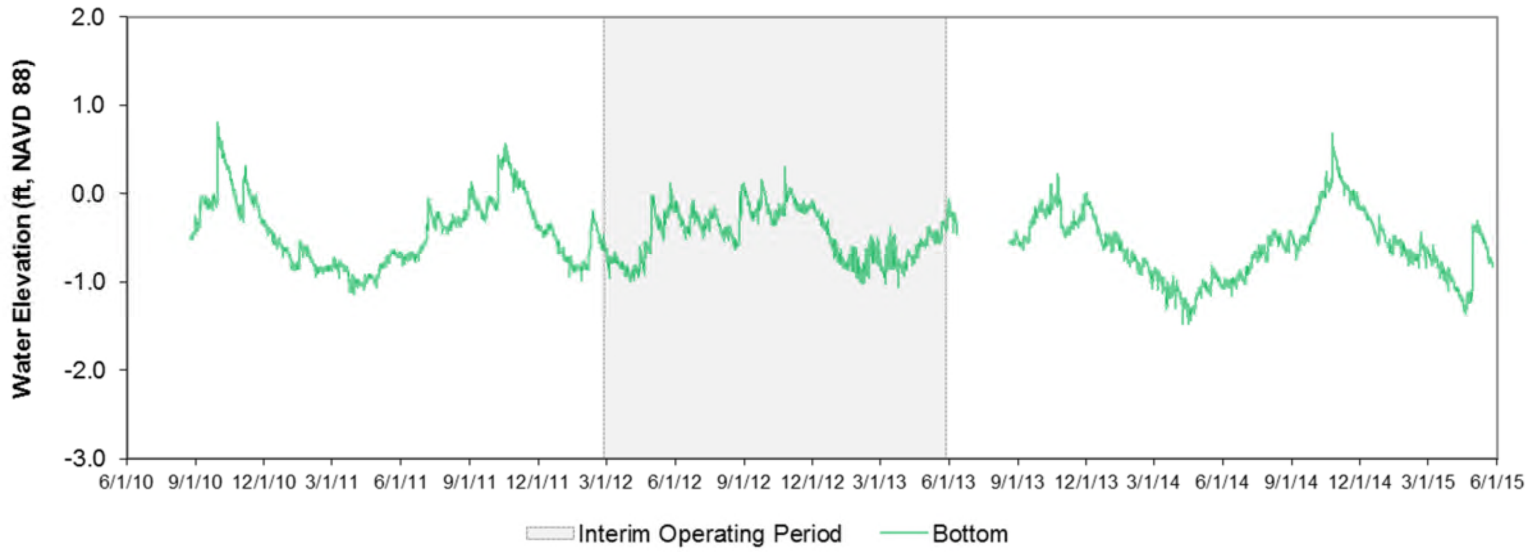

Figure 2.3-32. TPSWCCS-3 Water Elevations.

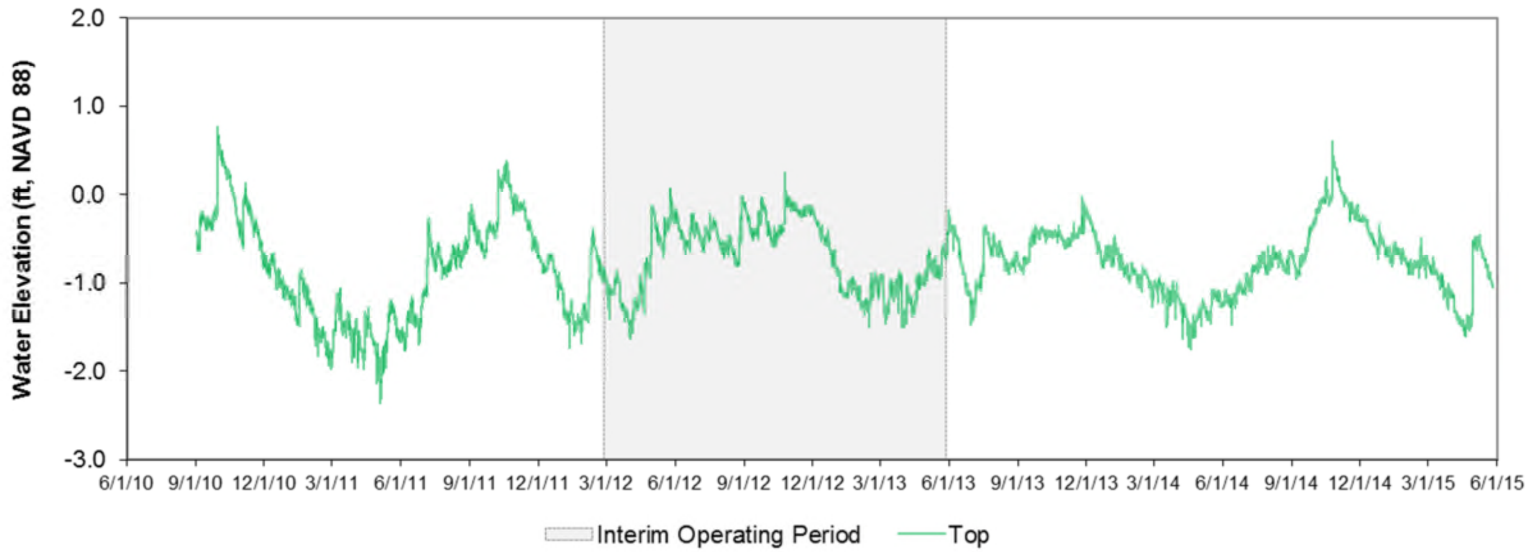

Figure 2.3-33. TPSWCCS-4 Water Elevations.

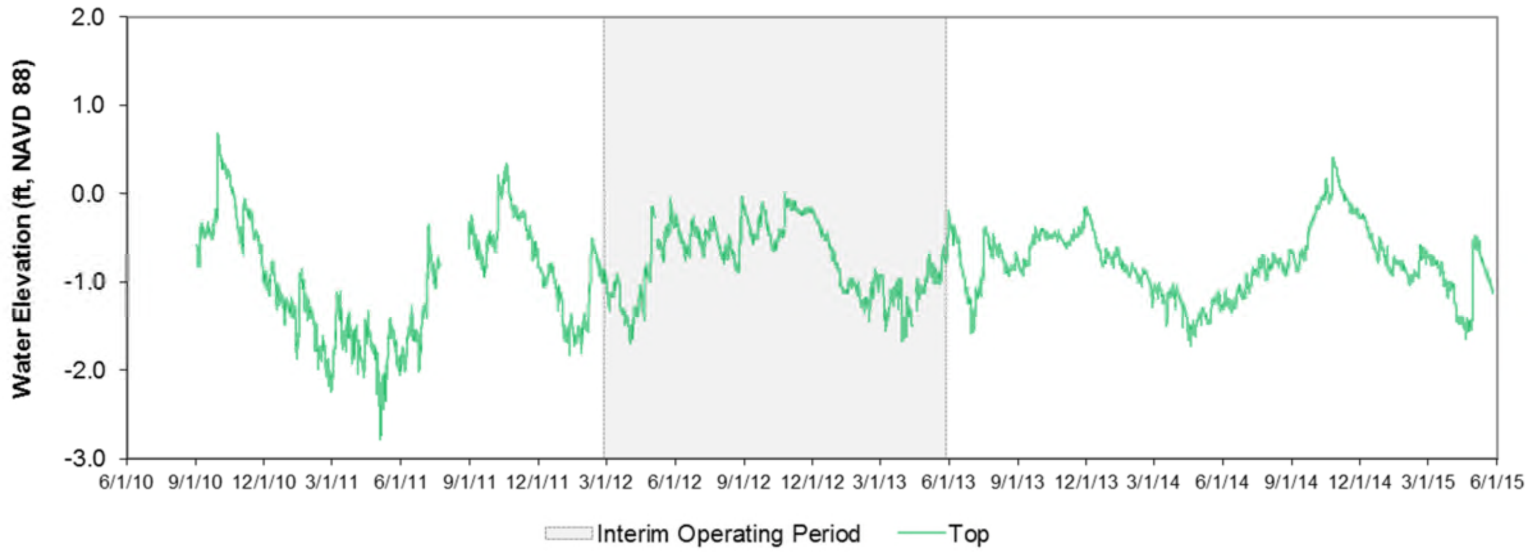

Figure 2.3-34. TPSWCCS-5 Water Elevations.

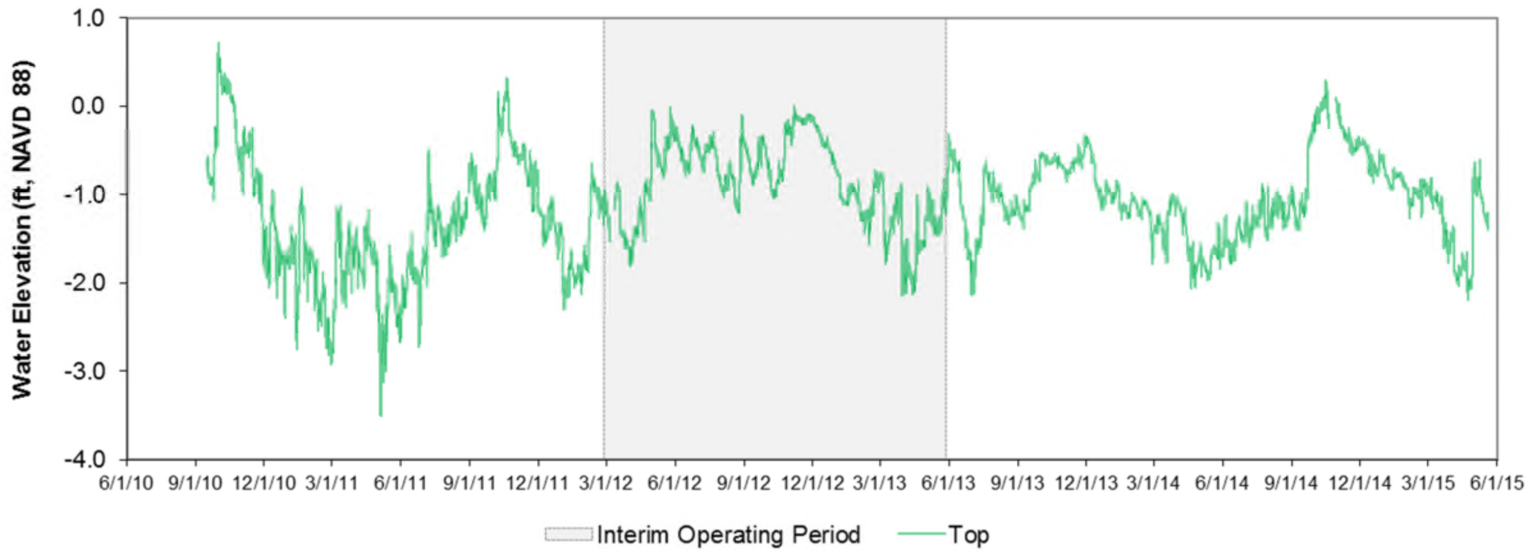

Figure 2.3-35. TPSWCCS-6 Water Elevations.

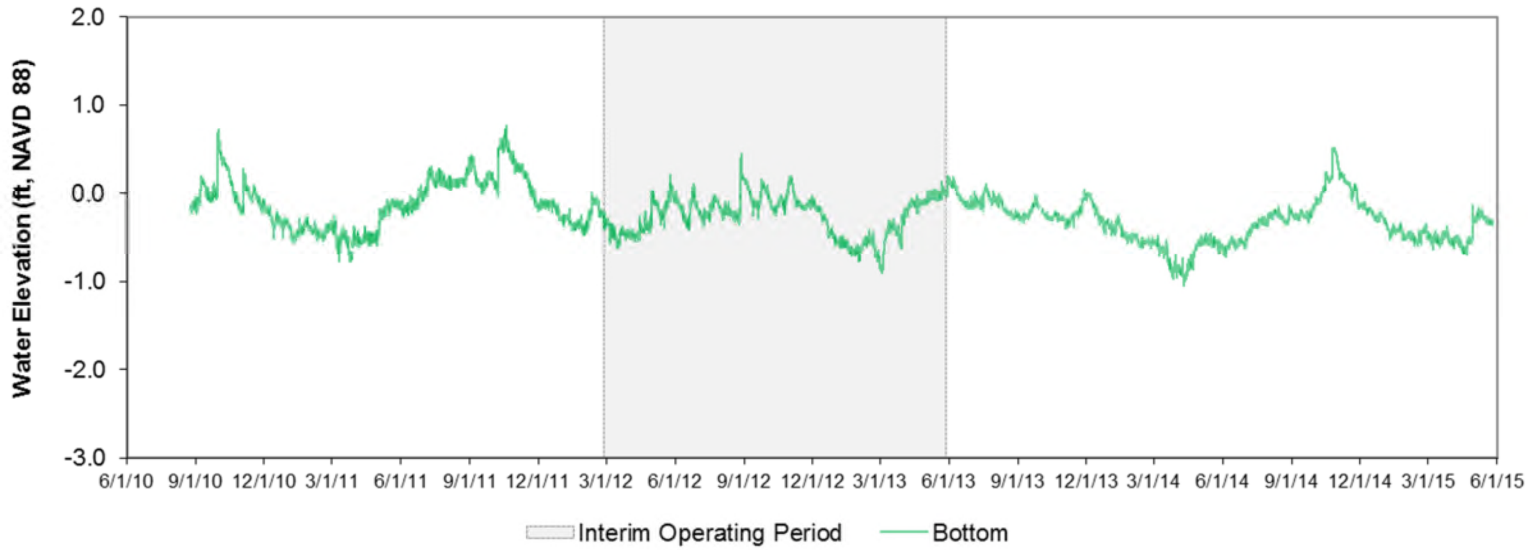

Figure 2.3-36. TPSWCCS-7 Water Elevations.

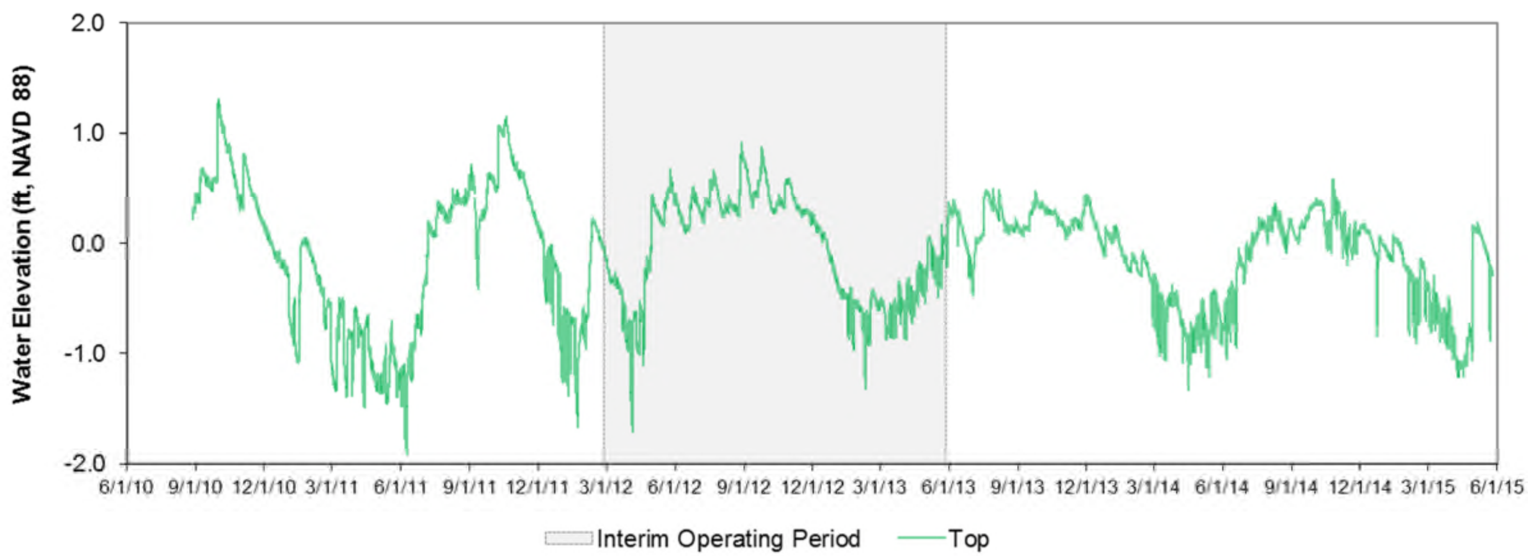

Figure 2.3-37. TPSWID-1 Water Elevations.

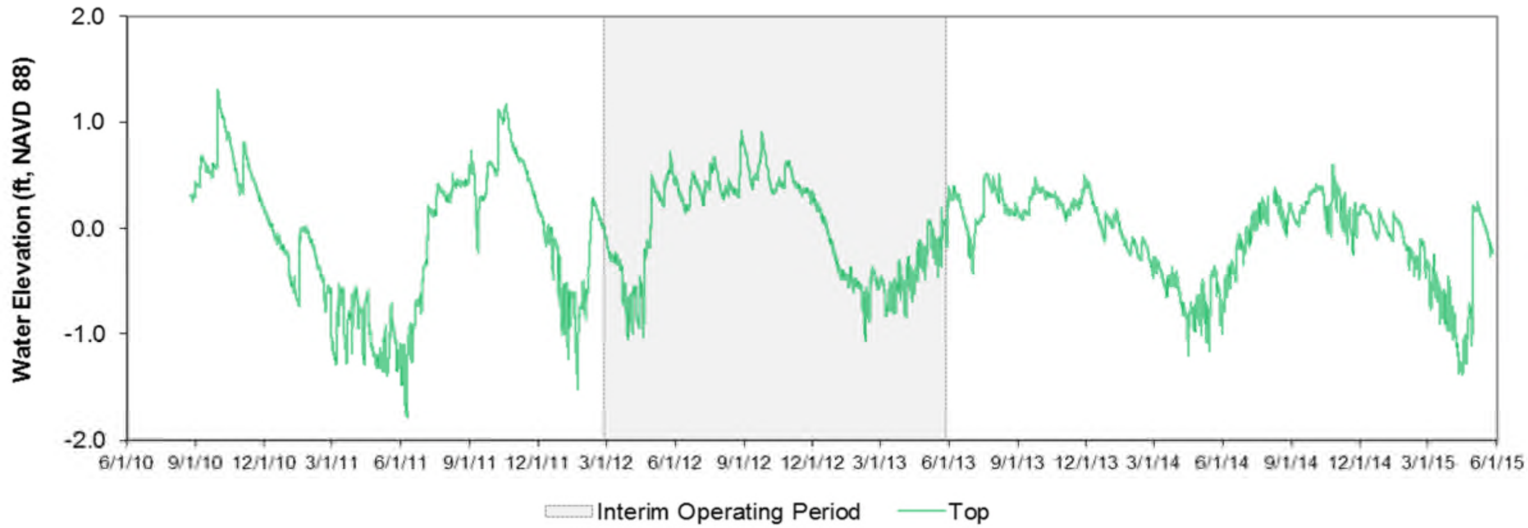

Figure 2.3-38. TPSWID-2 Water Elevations.

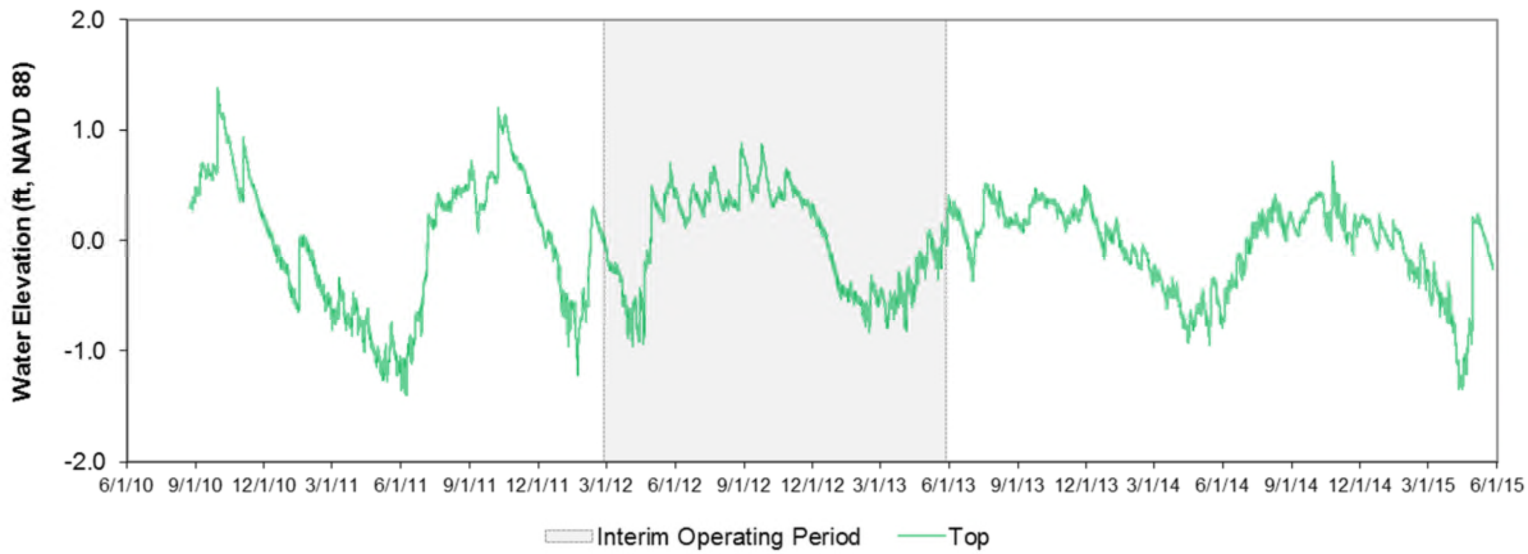

Figure 2.3-39. TPSWID-3 Water Elevations.

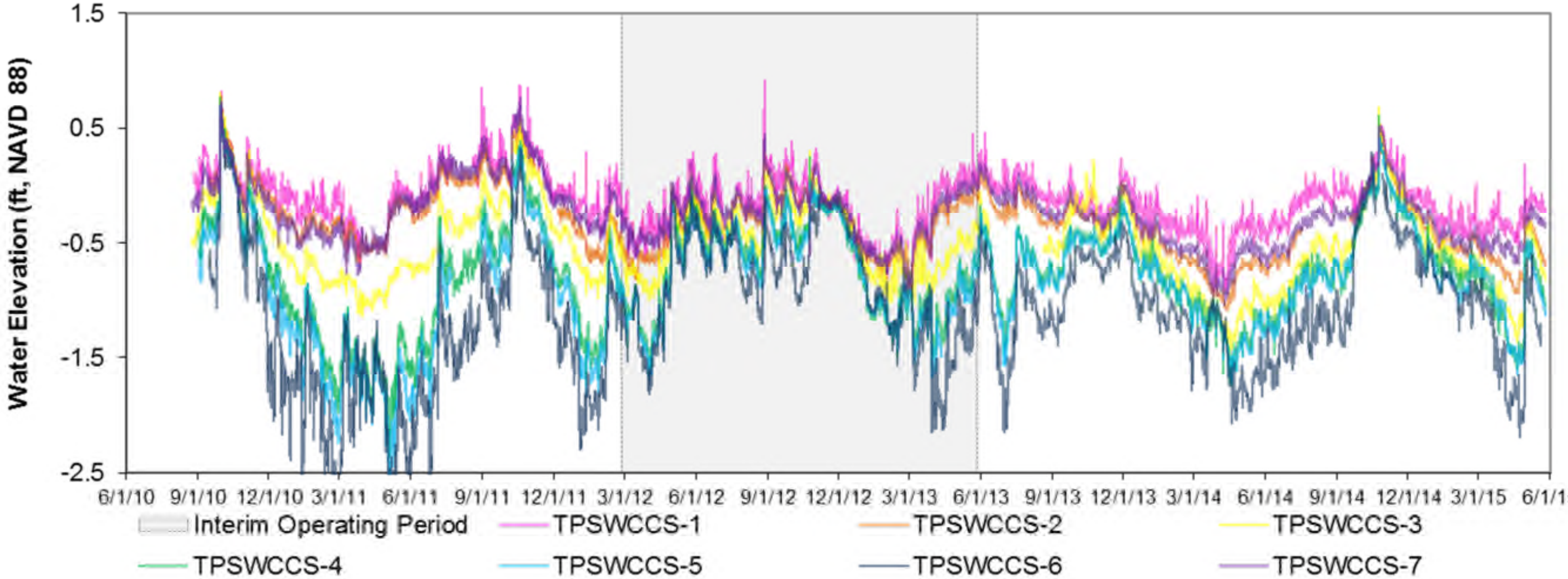

Figure 2.3-40. Comparison of Time Series Surface Water Elevations in CCS Surface Water Stations.

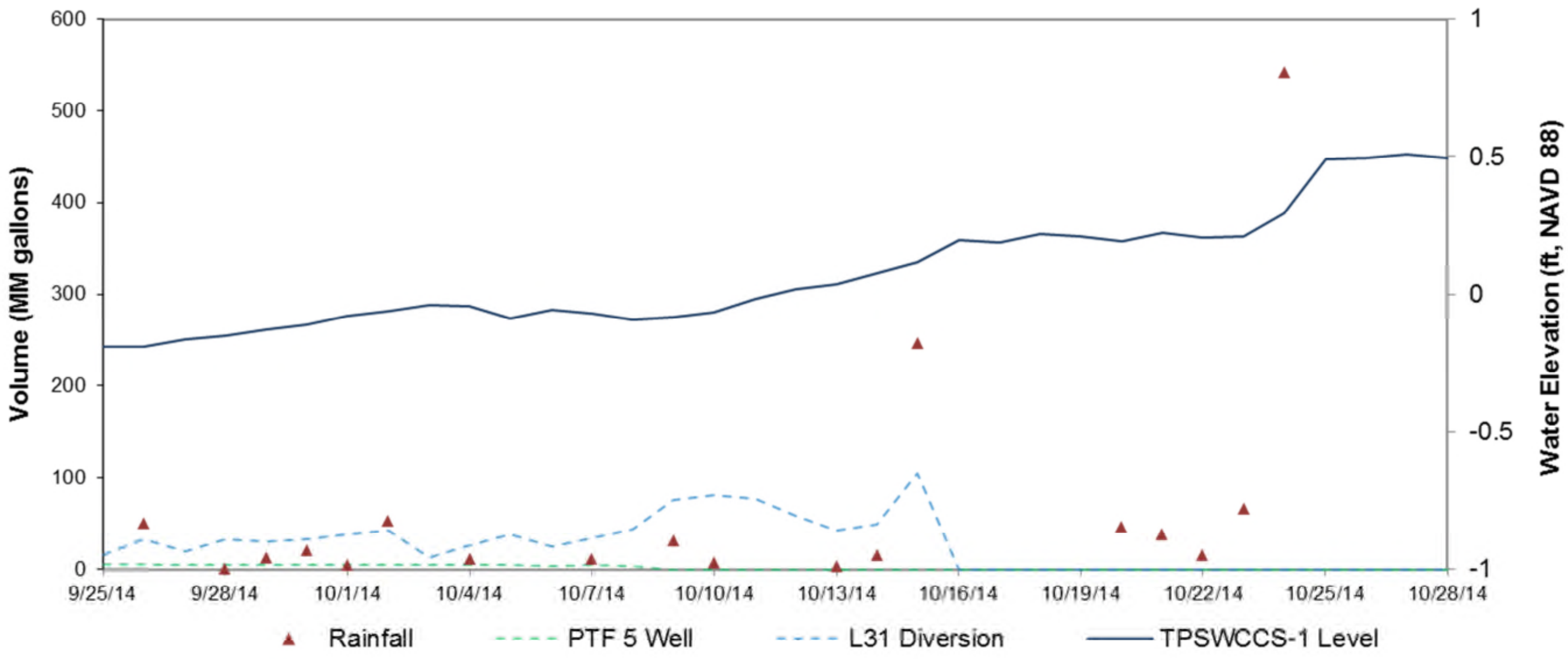

Figure 2.3-41. Effect of Pumping and Rainfall on CCS Water Levels During Temporary Freshening (September 25, 2014 – October 15, 2014).

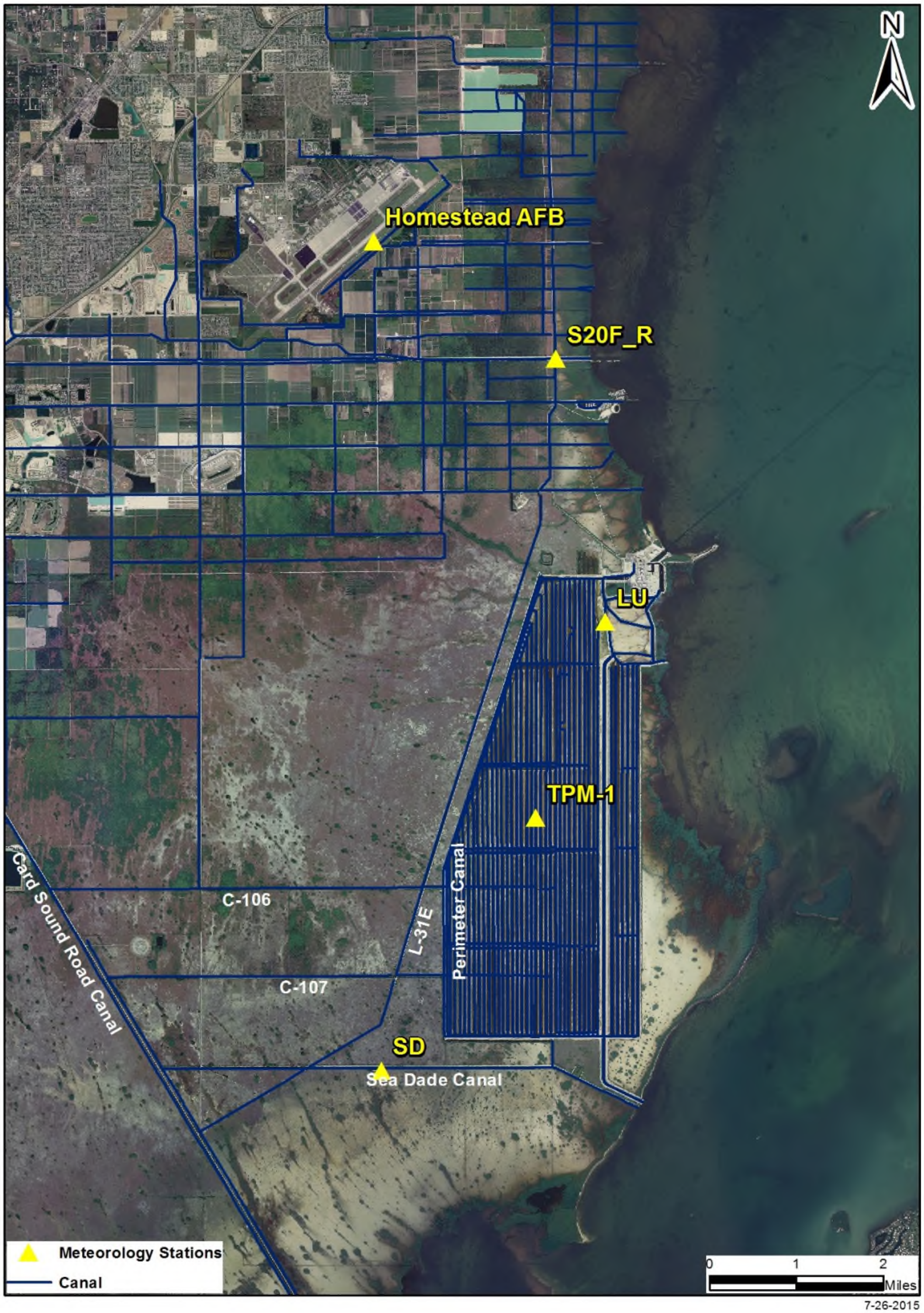

Figure 2.4-1. Locations of Rainfall Gauges in and around the CCS.

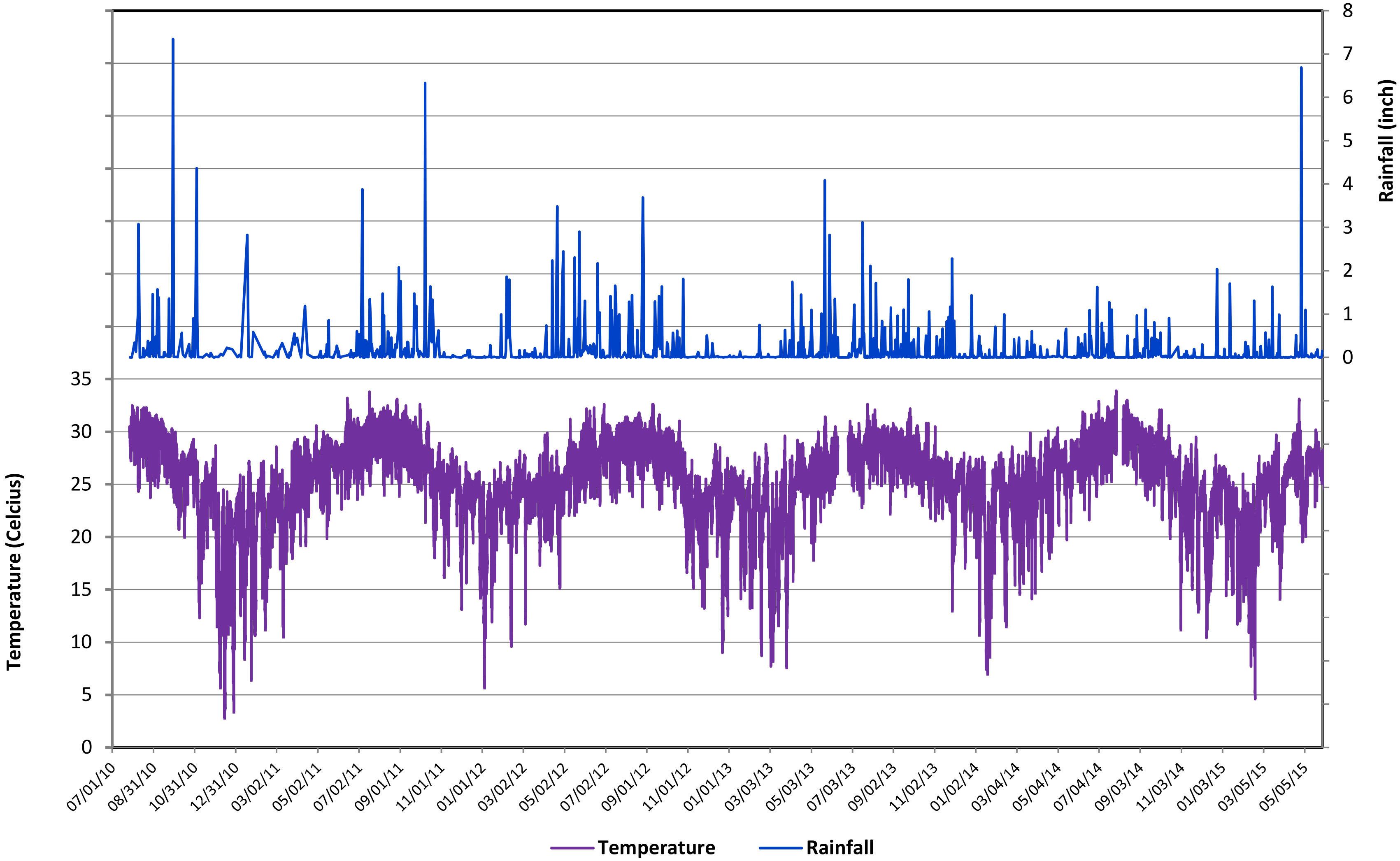

Figure 2.4-2. Rainfall and Temperature at TPM-1.

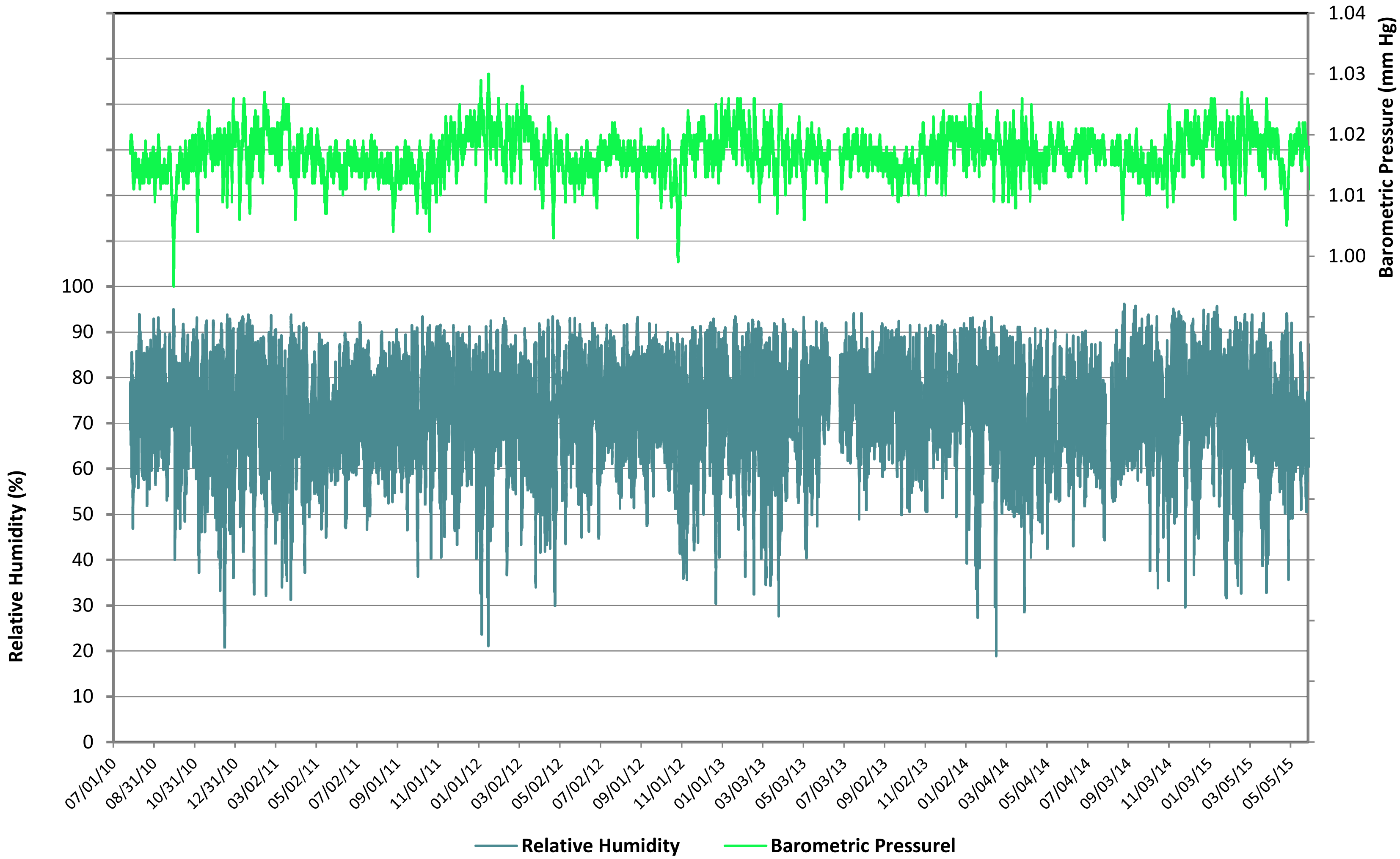

Figure 2.4-3. Relative Humidity and Barometric Pressure at TPM-1.

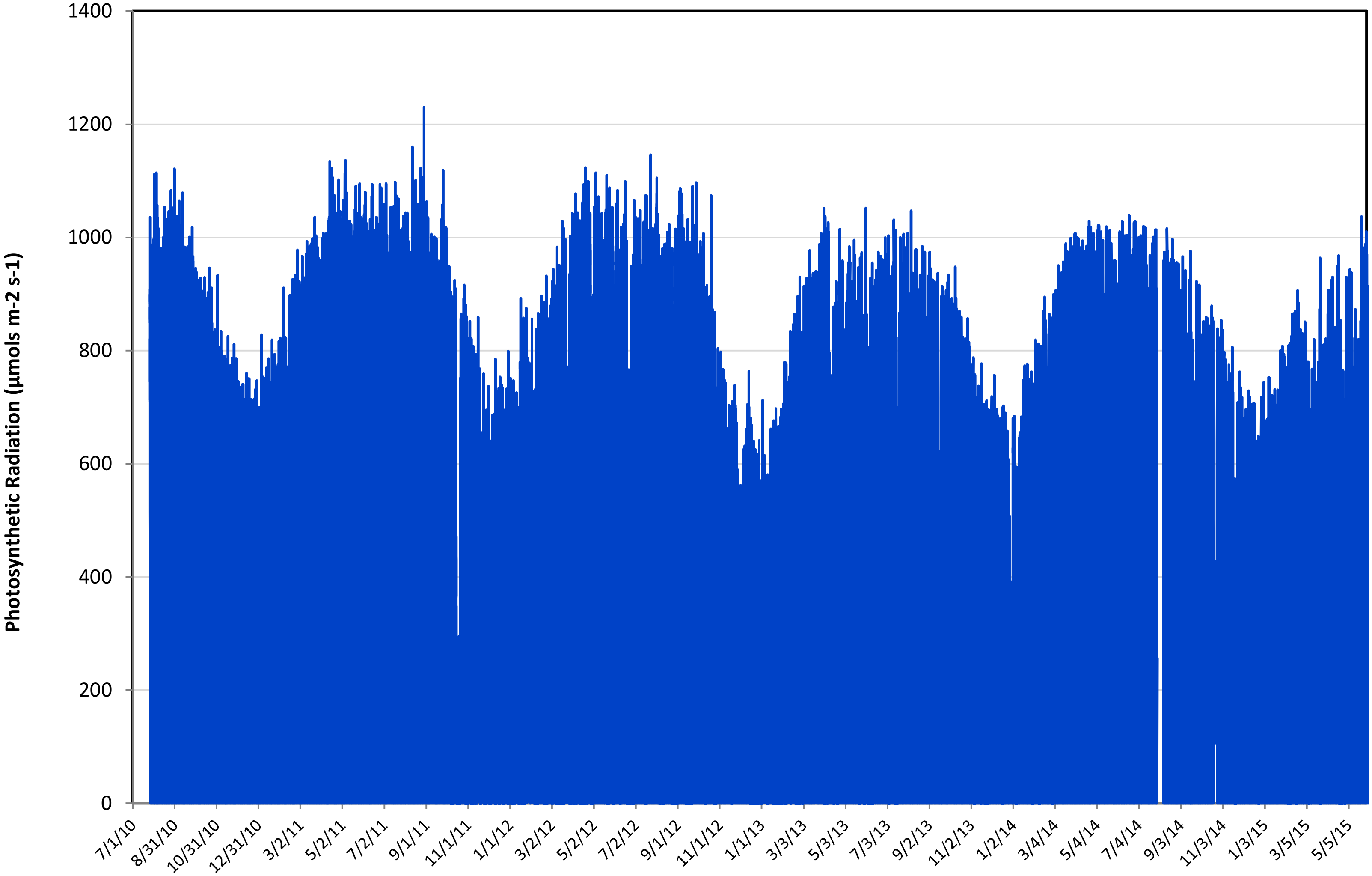

Figure 2.4-4. Photosynthetically Active Radiation (PAR) for TPM-1.

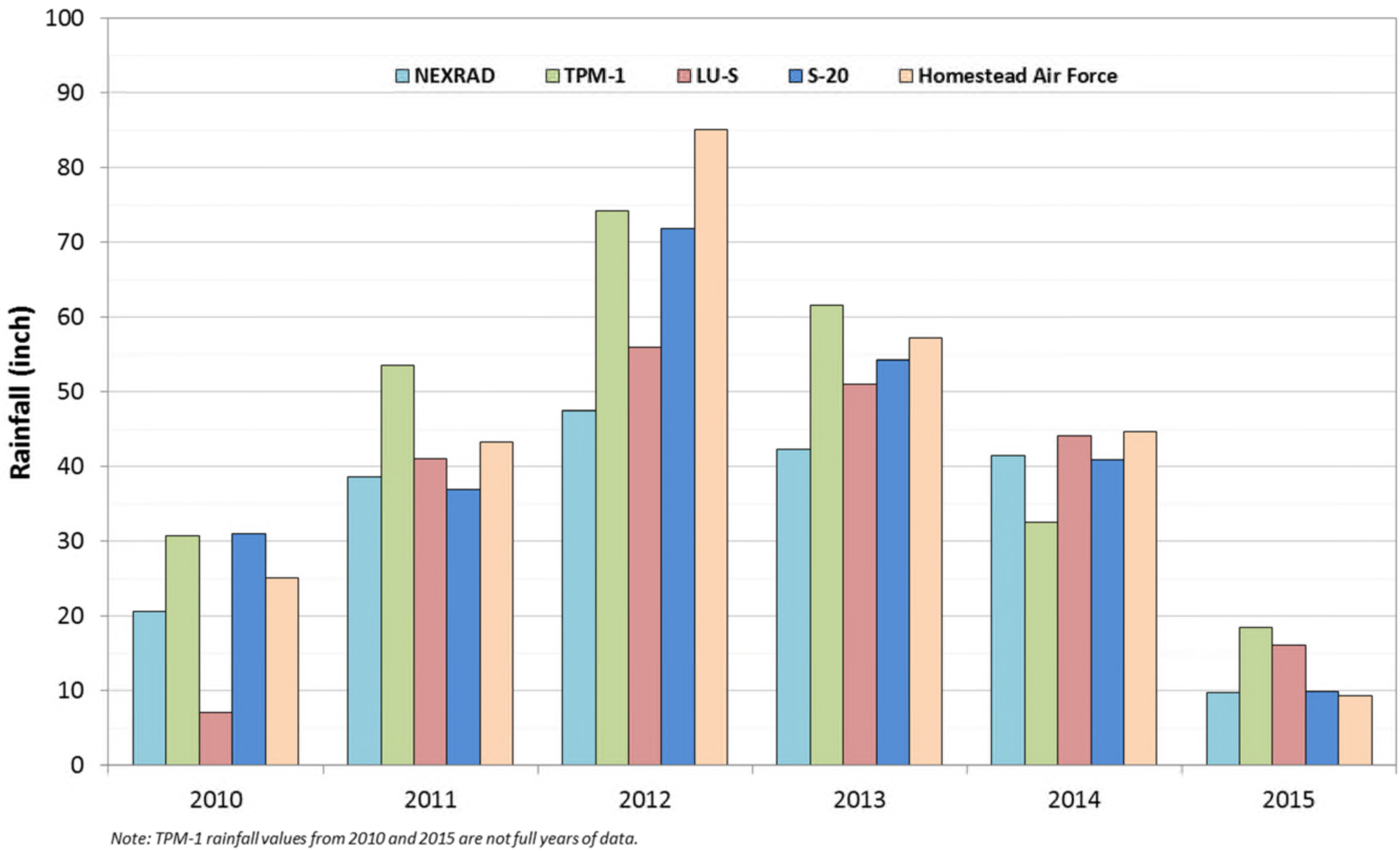

Figure 2.4-5. Annual Comparison of Rainfall Totals for Different Locations In and Around the CCS (June 2010 – May 2015).

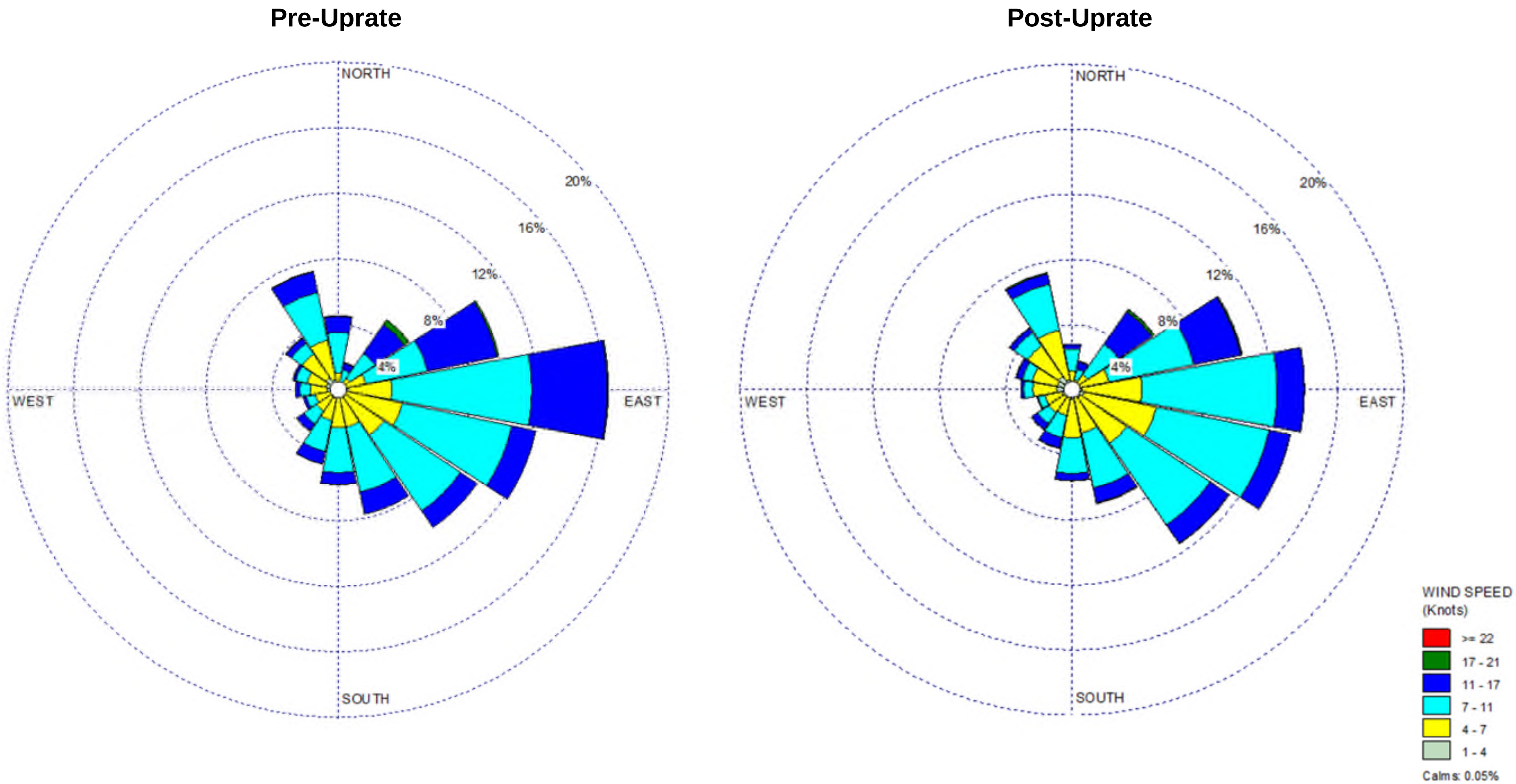

Figure 2.4-6. Wind Rose Plots Indicating Wind Speed and Direction for the Pre- (Left) and Post-Uprate (Right) Periods.

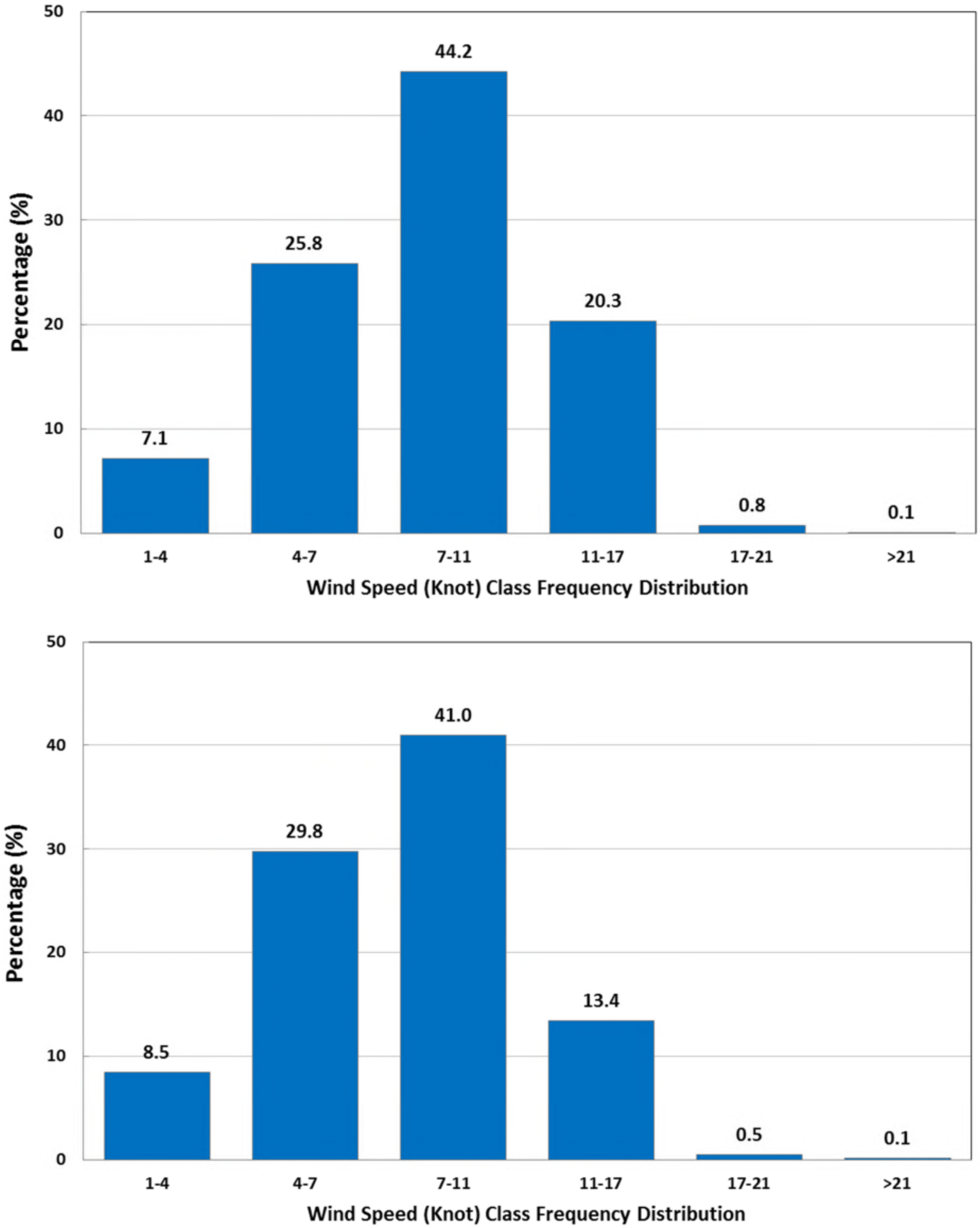

Figure 2.4-7. Wind Speed (Class) Frequency Distribution for the Pre- (Top) and Post-Uprate (Bottom) Periods.

3. QUARTERLY GROUNDWATER AND SURFACE WATER SAMPLING RESULTS

The Monitoring Plan (SFWMD 2009a) and QAPP (FPL 2013b) for this project outline the locations and analytes for the groundwater and surface water sampling and the analyses for quarterly and semi-annual events. With a few exceptions at the start of Uprate Monitoring, samples were collected quarterly at all locations from June 2010 through March 2015 and were analyzed for the parameters as required for the Uprate monitoring. Collection methods and laboratory procedures remain as outlined in the Comprehensive Pre-Uprate Report (FPL 2012a) and as detailed in the project QAPP (FPL 2011b, 2013b), with a few minor exceptions, as detailed below.

After review of the Comprehensive Pre-Uprate Report (FPL 2012a), the Agencies agreed to a reduction in sites and parameters (SFWMD 2013a). Tables 3.0-1 and 3.0-2 provide a summary of the Post-Uprate sampling locations and analyses. The reduction in sampling included eliminating stations TPBBSW-1 and -2, TPSWCCS-4B, -5B, -6B, and -6T, reducing the frequency of analysis of certain parameters, and eliminating sampling for metals and most tracer constituents. Samples continued to be collected and analyzed for sodium, chloride, and tritium every quarter, and ions and nutrients were measured twice a year during the semi-annual events for both groundwater and surface water (Tables 3.0-1 and 3.0-2). TDS in groundwater and silica in surface water continued to be collected in the Post-Uprate semi-annual events.

Much of the discussion during the certification of the Uprate project was related to the potential effects of hypersaline marine water from the CCS because of the temperature and salinity changes predicted from the Uprate. This continues to be of interest in the Post-Uprate, with a more specific focus on chloride, sodium, specific conductance, and tritium. It is important to note that under this Monitoring Plan, tritium is being measured only as a chemical tracer in order to determine the potential movement of CCS water. At the levels being measured, the tritium is not a public health concern. Tritium is also being routinely monitored in the CCS by the Florida Department of Health, Bureau of Radiation Control (FDOH-BRC).

Saltwater intrusion has been documented in south Miami-Dade County since the early 1900s and was noted as far as approximately 8 to 10 miles inland of the coast in the vicinity of Turkey Point by the 1950s (Klein 1957). The challenge in this southern part of the county is understanding the factors that affect the inland extent and orientation of the freshwater/saltwater interface and the current source of saltwater. A number of constituents were analyzed as part of the Pre-Uprate monitoring to better understand the geochemistry of the water from different sources and to determine whether the water from the CCS could be fingerprinted. Of all the analytes examined (barium, iron, dissolved inorganic carbon, strontium stable isotopes ($^{87}Sr/^{86}Sr$), carbon ($\delta^{13}C$), oxygen ($\delta^{18}O$), hydrogen (δD) stable isotopes and tritium), none were determined to be sufficient in tracing CCS saline water from the marine-based groundwater, with the exception of tritium, which is helpful but has some limitations. Tritium is present in the CCS at concentrations well below drinking water standards, but higher than the surrounding environment. However, at lower concentrations, the source and pathway of the tritium is masked since there are also atmospheric influences. Tritium concentrations also decay over time. Further discussion of the sampling results for the Post-Uprate period is provided below. Where appropriate and meaningful, Post-Uprate and Pre-Uprate results are compared.

3.1 GROUNDWATER QUALITY

3.1.1 Sample Collection and Analysis

Similar to the Pre-Uprate, quarterly events continued to be conducted in June and December of each year while semi-annual events occurred in March and September. Groundwater collection methods—peristaltic pump with dedicated sample collection tubing in each well (Figure 3.1-1)—were similar to the Pre-Uprate and followed the protocols outlined in the QAPP. Groundwater sampling logs from the June 2013 to March 2015 sampling events are provided in Appendix G of this report; sampling logs generated prior to June 2013 are available in previous Uprate monitoring reports (FPL 2012a, 2014a).

3.1.2 Results and Discussion

Tables 3.1-1 through 3.1-8 provide a summary of the groundwater analytical results from the June 2013 through March 2015 sampling events. Results for the sampling events from the historical monitoring wells L-3, L-5, G-21, G-28, and G-35 during the same time period are provided in Tables 3.1-9 through 3.1-16. DUS reports for all events are provided in Appendix H, and the detailed Level IV laboratory reports from TestAmerica are included in Appendix I. As chloride, sodium, specific conductance, and tritium are of particular interest, the discussion below addresses these parameters separately, followed by a discussion of other major cations, anions, and nutrients. Results were evaluated for temporal differences between the Pre- and Post-Uprate and spatial differences between sites and across depth.

While the results between Pre-Uprate and Post-Uprate can be compared, there are some differences due to differing time periods and laboratory precision that need to be considered when interpreting the results. The Post-Uprate period includes eight quarters of groundwater data collected over two wet seasons and two dry seasons. The Pre-Uprate period includes seven quarters of groundwater data with one less event in the dry season. As discussed in Section 2.1, the groundwater water quality is less influenced by daily and short-term seasonal meteorological conditions compared with surface water, which reduces some temporal variability. In addition, the laboratory reported analytical results to two significant digits in the Pre-Uprate period but changed to reporting three digits in the Post-Uprate period to aid in the analysis of the data (see Section 1.6 for more detail). However, this third digit is not considered significant and can be misconstrued as indicating a false level of accuracy. For example, a result of 11,400 mg/L in the Post-Uprate is actually 11,000 mg/L because the data are accurate only to two digits

3.1.2.1 Chloride, Sodium, Specific Conductance, and Tritium

Temporal Differences

The analytical concentrations at most wells remained relatively consistent for the entire sampling period during the Post-Uprate period compared with the Pre-Uprate period, with the exception of three terrestrial locations (TPGW-7D, TPGW-12S, and TPGW-G-21-58) and five Biscayne Bay locations (TPGW-10M, TPGW-10D, TPGW-11D, TPGW-14M, and TPGW-14D). Figures 3.1-2 to 3.1-5 show Post-Uprate trends for chloride, sodium, specific conductance, and tritium through March 2015. Pre-Uprate ranges and averages are also graphically shown for general comparisons.

Increases in chloride, sodium, and specific conductance were first noted in TPGW-7D starting in September 2013; chloride concentrations throughout the Pre-Uprate and Interim Operating period had been below 45 mg/L chloride, but these values increased steadily to 1,960 mg/L by March 2015. This increase was observed only at depth, not in the shallow or medium wells. The cause of the increase in chloride at TPGW-7D is still unknown; the tritium values remain below or close to 20 pCi/L levels and continue to be monitored. This change does not appear to be related to the Uprate, but may be a function of regional water withdrawals/management practices, the long-term operation of the CCS, lag effects of droughts, and sea level rise.

At TPGW-12S and TPGW-G-21-58, a similar but relatively smaller magnitude increase in chloride, sodium, and specific conductance was observed in these wells during the Post-Uprate period compared with the Pre-Uprate monitoring period. At TPGW-12S, although this increase was observed in analytical values, the tritium values were lower in the Post-Uprate period. Consequently, it is unlikely that the increase in salinity at this site is an increased contribution from the CCS. At TPGW-G-21-58, there was higher chloride, sodium, specific conductance and tritium in the Post-Uprate compared to the Pre-Uprate. Closer examination showed that this data had been increasing throughout the monitoring period and did not appear to be limited to just the Post-Uprate. Therefore, the observations at TPGW-7D, TPGW-12S, and TPGW-G-21-58 likely reflect the broader landscape-scale seasonal dynamics and regional water management processes that extend beyond the plant operations, but should continue to be monitored closely.

During the Post-Uprate and starting from the Interim Operating period, a temporary increase in chloride, sodium, specific conductance, and tritium values was observed at some depths in two offshore stations, TPGW-10 and TPGW-14. At TPGW-10M, chloride values were consistent for most of the Post-Uprate compared with the Pre-Uprate and Interim Operating periods; the only exception was in December 2013, when there was a 14% increase (25,600 mg/L) from the September 2013 values (22,400 mg/L). March 2014 and all subsequent values for the last year of the Post-Uprate period were, however, within range of the Pre-Uprate chloride concentrations at this site. The tritium values in this well showed an increase during the three quarters starting in the Interim Operating period (i.e., December 2012 to June 2013), but subsequently have returned to Pre-Uprate levels; however, the automated time-series specific conductance data for TPGW-10M shows no notable changes. Depending on the parameter at TPGW-14M and -14D, increases in chloride, sodium, specific conductance, and tritium were observed starting in December 2012 and lasted for one to three quarters; however, by March 2014, values had declined back to, or were below, Pre-Uprate levels.

The patterns of change observed at TPGW-10D were slightly different than at TPGW-10M. At this site, Post-Uprate values (range: 25,200 to 29,000 mg/L) were higher than the Pre-Uprate values (range: 21,000 to 23,000 mg/L). The values began to consistently increase in the Interim Operating period and reached a peak of 29,000 mg/L in June 2013. The values dropped by March 2015, but are still higher than those measured in the Pre-Uprate period. The automated time-series data discussed in Section 2 shows a clear and consistent increase in specific conductance in this well beginning in the Interim Operating period. A similar pattern to that observed in Post-Uprate chloride values at TPGW-10D was also observed at TPGW-11D, but to a lesser extent (Pre-Uprate: 20,000 to 24,000 mg/L; Post-Uprate: 23,400 to 25,700 mg/L). Tritium in both TPGW-10D and TPGW-11D seems to have leveled off somewhat in the last three of four quarters of monitoring.

While there is some variability in the results from one quarter to the next, the differences are generally limited and appear to reflect the variances in the aquifer and not increasing trends. As discussed above, the most notable exceptions are TPGW-7D, TPGW-10D, TPGW-11D, and TPGW-12S, which have shown an upward trend in concentrations that started during the Interim Operating period but do not appear to have been derived from the June 2013 to May 2015 Post-Uprate operations.

Spatial Differences

Well depth and/or location are factors in analytical results, which typically show higher levels of chlorides/saltwater at depth and the highest levels in wells at or close to the CCS and Biscayne Bay. Figures 3.1-6 through 3.1-9 show cross-sections of the aquifer, selected wells at the three depth intervals, and associated chloride concentrations from June 2013 through March 2015. Figures 3.1-10 through 3.1-12 show the same cross-sections with tritium concentrations from June 2013 through March 2015. For comparison, the ranges of Pre-Uprate values are shown. Except for a few wells, the analytical results of Post-Uprate samples for tritium and chloride are in the same range as Pre-Uprate samples for tritium and chloride as well as sodium.

The upper 10 to 20 ft of the aquifer is much fresher west of the ID, and this freshwater zone generally increases in depth towards Tallahassee Road. None of the Uprate monitoring wells were screened less than 20 ft below ground surface, but this pattern is observed from the quarterly profiling of the older historic wells (see Section 6), most of which are screened just below the ground surface with the only exception being TPGW-G-28, which is screened to 16.6 ft below the top of casing. Annual induction logging by the USGS (Appendix E) shows this fresher water lens. Monitoring wells TPGW-4S (-21.0 ft NAVD 88), TPGW-5S (-23.2 ft NAVD 88) and TPGW-6S (-20.7 ft NAVD 88) typically have chloride values less than 500 mg/L, while outer perimeter wells TPGW-7S (-20.4 ft NAVD 88), TPGW-7M (-20.4 ft NAVD 88), TPGW-8 all depths (down to -47.2 ft NAVD 88), and TPGW-9 all depths (down to -44.4 ft NAVD 88) have chloride values less than the drinking water standard of 250 mg/L.

Well clusters immediately to the west of the CCS (TPGW-1, TPGW-2, L-3, and L-5) had chloride levels in the intermediate and deep wells that were generally between 27,000 and 34,000 mg/L. Farther to the west, shallow wells located near the northern half of Tallahassee Road (TPGW-5S, TPGW-6S, and G-21-18) had chloride levels consistently less than 250 mg/L (only one value above 250 mg/L), while the intermediate and deep wells ranged from 4,600 to 12,000 mg/L. Historical wells G-28 and TPGW-4, which are located along the southern half of Tallahassee Road, were more saline in the shallow zone than wells to the north. The chloride concentration in those wells ranged from 420 to 3,300 mg/L. Since the earthen plug was put across the Card Sound Road Canal in the spring of 2014, it appears that the chloride concentrations at TPGW-G-28 have declined. This plug serves as a barrier to saltwater intrusion migrating inland during the dry season. The magnitude of sodium and chloride decrease was more prominent at 18 feet than at 58 feet, although both depths are trending lower.

The highest chloride concentrations were observed at TPGW-13. Chloride concentrations in the CCS wells (TPGW-13S, TPGW-13M, and TPGW-13D) ranged from 26,000 to 38,000 mg/L (average ± standard deviation = 34,476 ± 2,750 mg/L) during the Pre-Uprate period from June 2010 through December 2011; in the Post-Uprate, values ranged from 30,700 to 39,800 mg/L (average ± standard deviation = 34,004 ± 2,282 mg/L) (Table 3.1-17). Similarly, the trends in sodium and specific conductance mirrored the patterns observed for chloride. The lowest chloride concentrations were observed at TPGW-9 (10 to 30 mg/L) where the range across all depths did not deviate more than 20 mg/L over the entire five years across all three depths.

For most of the stations, chloride concentrations were generally lowest in the shallow well compared with the medium and deep wells. One exception to that pattern was observed in TPGW-13. Similar to the Pre-Uprate, the highest concentrations of chloride were consistently found in the shallow well during the Post-Uprate (Tables 3.1-1 to 3.1-8). Values in TPGW-13S were 3% to 11% higher than at either the medium (TPGW-13M) or deep (TPGW-13D) wells in the Pre-Uprate, and this pattern remained consistent (i.e., 4% to 12% higher at TPGW-13S relative to the other two depths) for the Post-Uprate. TPGW-13M and -13D values were either similar or varied only by a few percent between seasons, and there did not appear to be a significant difference among seasons in the groundwater chloride below the CCS. This general pattern was also observed in sodium and tritium data, although the specific conductance patterns indicated that TPGW-13M tended to have the lowest value among all three wells; this slight difference may be due to the higher analytical data resolution as compared to the field specific conductance readings.

For both the Pre-Uprate and Post-Uprate time periods, Biscayne Bay wells all had lower chloride concentrations than those in TPGW-13. Chloride, sodium, and specific conductance concentrations in the shallow wells (TPGW-10S, -11S, and -14S) overlapped with the ranges observed for Biscayne Bay surface water stations. Tritium levels of TPGW-10S and TPGW-11S were similar to surface water Biscayne Bay levels, with the exception of September 2013 (31 ± 6 pCi/L) at TPGW-10S and September 2014 (61 ± 7 pCi/L) at TPGW-11S. Tritium levels at

TPGW-14S were higher than those measured in other wells, although the chloride, sodium, and specific conductance were similar to Biscayne Bay marine waters. Tritium values at TPGW-14S during the Post-Uprate (99 to 174 pCi/L) were nonetheless lower than Pre-Uprate (159 to 247 pCi/L), although the chloride and sodium values remained constant.

In nearly all instances, high specific conductance groundwater values (more than 1,275 µS/cm) in the study area are attributable to marine water and high chlorides. The SFWMD and FPL have historically used specific conductance to calculate chloride. In the case of TPGW-8, which shows a high pH over the monitoring period (> 11), the specific conductance in the shallow zone ranged from 2,051 to 2,570 µS/cm, but the chloride values are much less than theoretically calculated if the water were from a marine-fresh mixture. The specific conductance at this location appears to be influenced by calcium (discussed below). However, the intermediate and deep zones at TPGW-8 do not exhibit such a pattern and have a pH around 7 and specific conductance values below 1,275 µS/cm.

3.1.2.2 Ions

Ionic (calcium, magnesium, potassium, sodium, boron, strontium, bromide, chloride, fluoride, and sulfate) concentrations at the TPGW sites appeared to correspond with specific conductance values in most of the wells. For most of the stations, there were no appreciable differences in the Pre- to Post-Uprate range in values, with the exception of the sites previously noted above. The patterns and trends of ions were similar to the trends observed for specific conductance, and the range of values observed remained consistent for most of the sites during this monitoring period.

Table 3.1-18 shows the range of values for all the ions for the entire Pre- and Post-Uprate monitoring period combined. Groundwater stations are grouped based on whether the groundwater would be characterized as predominantly marine or predominantly fresh, and the results from TPGW-13 are noted separately for comparison purposes (see Table 3.2-10 for the range of ions in surface water).

Although the overall ionic concentrations between the Pre-Uprate and the Post-Uprate periods are consistent, average cationic abundance in the groundwater differed between wells, depending on whether the water was predominantly marine or predominantly fresh (Table 3.1-17). The freshwater wells are predominantly influenced by the limestone bedrock, while the marine and hypersaline wells are influenced by Biscayne Bay. In the freshwater wells, the relative abundance of cations was Na> Ca > Mg> K > Sr > B, while in the marine and hypersaline wells, the order of abundance was Na> Mg > Ca > K > Sr > B. The anionic abundance (i.e., Cl > SO_4^{2-} > Br > F), however, did not differ among the water sources.

Several ions have been problematic during chromatogram analyses because of their low concentrations compared to the other peaks. For example, fluoride has been one of the most problematic ions in meeting project MDLs due to interference by the chloride peak. A second analyte of issue is sulfide—the majority of values for most locations have been reported as non-detect at the elevated detection limit. Starting in September 2013, the fluoride method was changed to SM 4500 F C (previously EPA Method 300). The sulfide method change to EPA

Method 376.2 (previously SM 4500 S) was delayed due to laboratory issues until September 2014. Since the method change, the MDLs for non-detected results have consistently been below QAPP requirements, resulting in more usable data. The analysis for some of the nutrient constituents (e.g., orthophosphate, nitrate-nitrite), however, has continued to yield some uncertainty due, in part, to interferences with the high saline water; thus, care should be taken in interpreting the results.

To assess the differences of major ionic constituents in the groundwater on a broad spatial and temporal scale for the entire Post-Uprate period, a tri-linear diagram was generated using the average ionic values from June 2013 to March 2015 (Figure 3.1-13). The data are consistent with the Pre-Uprate monitoring period and show that there is clear separation between the freshwater stations (TPGW-7, TPGW-8, TPGW-9) and the marine-influenced stations. The marine-influenced stations include all depths from TPGW-1, TPGW-2, TPGW-3, TPGW-10 through TPGW-14 (including TPGW-13 in the CCS), TPGW-4, TPGW-5, and TPGW-6 at medium and deep depths. The shallow stations at TPGW-4, TPGW-5, and TPGW-6, as well as the shallow depths at L-3 and L-5 plot out close to the freshwater well clusters but, depending on the thickness of the freshwater lens, can vary across the spectrum between the freshwater and marine-influenced clusters (Figure 3.1-13).

Consistent with the Pre-Uprate time period, the Post-Uprate ionic concentrations in the marine stations (TPGW-10, TPGW-11, and TPGW-14) were similar to the values observed by Reich et al. (2006) from a well in the middle of Biscayne Bay (Mid-Bay: well GW-MB), despite the increase in ionic concentrations observed at TPGW-10D and TPGW-11D. Calcium/magnesium (Ca/Mg) ratios are lowest in CCS waters and highest in groundwater-derived freshwater. The sodium/chloride (Na/Cl) ratios for freshwater are, however, higher than that of marine water. The well cluster in the CCS, TPGW-13, had higher ionic concentrations than those of the marine stations, but reflected a marine-driven source of water based on the ionic chemistry.

The only outlier in ionic ratios and concentrations was TPGW-8S. The Ca/Mg ratio at this well has been much higher than all the other wells in the Pre-Uprate and Interim Operating period (range: 220 to 11,000), indicating a significant imbalance in ionic ratios, driven by an excess of calcium in the water. These values, combined with consistently high pH and high alkalinity in this well indicates that it may be a result of grout contamination during well construction or some other up-gradient influence. A decline in Ca/Mg ratios at this site within the last year (i.e., September 2014 (36.7) and March 2015 (75.2) despite a high pH, indicates that this site is trending towards ionic ratios more like groundwater in other wells.

3.1.2.3 Nutrients

The same general patterns in nutrient concentrations were observed in the Post-Uprate period compared with the Pre-Uprate for the five stations monitored (TPGW-1, -2, -10, -13, -14). Although there were slight variations in concentrations over time, the range of nutrient concentrations observed and the broader overall landscape and vertical patterns remained the same, with a few notable exceptions as discussed below. Figures 3.1-14 and 3.1-15 show nutrient results for the September 2013, March 2014, September 2014, and March 2015 sampling events. Additionally, per Agency request, a one-time sampling of TPGW-4 to TPGW-9 was conducted to assess the nutrient concentrations at these six well clusters at all depths. A brief discussion of these results is provided below.

Temporally, there was no difference in the well nutrient concentrations for most of the stations, with the exception of TPGW-10D. Nutrient concentrations tracked the patterns observed for the ions and specific conductance (i.e., higher nutrient concentrations with increasing ionic values). Consequently, at TPGW-10D, an increase in ionic values and specific conductance was matched by an increase in nutrient concentrations.

Similar to the Pre-Uprate period, there were no clear vertical trends observed within a well cluster in the Post-Uprate. Well clusters TPGW-1, -2, and -10 did not clearly show any differences in nutrient concentrations with depth; although, for a few of the quarters, nitrogen species concentrations were higher in the shallow well at TPGW-13 and lower at TPGW-14S and -14M compared with TPGW-14D for some events. Nitrogen concentrations were generally lower in the shallow wells compared with the deeper wells; one exception was TPGW-13, where the highest values were observed at the shallow depth for three of the four events during the Post-Uprate period. Nutrient concentrations were generally lower at well clusters TPGW-4 through TPGW-9 (sampled one time) compared with the well clusters closer to the CCS.

However, there was an anomaly in un-ionized ammonia values at TPGW-8S where the concentrations were about 100 times greater than at the other stations because of the high pH values at this site. The high un-ionized ammonia concentrations may be a function of the pH level at this site and not a real reflection of the nutrient status in the surrounding groundwater at this area. As a result of the high pH observed at TPGW-8S contributing to elevated ammonia levels, there was also an increase of TKN values—ammonia is an organic species that constitutes part of the TKN and, consequently, the total nitrogen (TN) was also elevated. A review of the TKN data showed no increase from the Pre-Uprate to the Post-Uprate at TPGW-1, TPGW-2, or TPGW-14. There was, however, an increase in TKN at TPGW-10D, consistent with the increase in specific conductance, and an increase in TPGW-13S, similar to the ionic patterns observed.

The nitrate-nitrite (NOx) data from all sites were also not different between the Pre- and the Post-Uprate monitoring period. Most of the values were low and below instrument MDLs for the entire duration with a few exceptions where notable data were observed. One such occurrence was during the Pre-Uprate, when TPGW-1D and TPGW-2D showed very high levels of NOx (8.00 and 5.30 mg/L respectively) in March 2011, and these two inorganic nitrogen forms composed more than 69% of the TN. After 10 events of sampling, however, it appears that these NOx values may have originally been in error, as they have never been observed to approach those levels at that site since. In fact, most of the NOx observed has been below MDLs, ranging from 0.005 to 0.50 mg/L. The second event of notable NOx data was when the laboratory used an MDL of 0.5 mg/L during September 2014. Setting the MDL at 0.5 mg/L is significant, as this value is then used to determine the TN for each sample and, consequently, the TN is biased upwards by 0.5 mg/L due to the NOx values being non-detect and reported at that high level.

TN values in well clusters TPGW-1, TPGW-2, and TPGW-13 and the deep well at TPGW-14 ranged from 1.4 mg/L to 9.8 mg/L during the Pre-Uprate; this is much higher compared with the Post-Uprate, where values ranged from 1.24 to 5.0 mg/L. However, if the two Pre-Uprate outlier values were omitted from the interpretation of the data, the time-series TN show that there is no difference between the Pre-Uprate and Post-Uprate values at TPGW-1 and TPGW-2. The TN concentrations are consistently lower in well cluster TPGW-10 compared with the other four well clusters mentioned above; however, the concentrations were higher in this well cluster during the Post-Uprate. While the highest concentrations tended to be found in the deep or medium depth wells at TPGW-1, -2, -10, and 14, the shallow well at well cluster TPGW-13 almost always had the highest concentration which, coupled with other data (i.e., CCS surface water data and other groundwater data), indicates that the CCS is a source of nutrients to the groundwater.

Most of the nitrogen in the wells were in organic form—more than 90% of the nitrogen was TKN with the exception of the two values observed at TPGW-1D and -2D (discussed previously) for most of the events. The only exception was during the September 2014 event when the inorganic NOx was reported with a MDL of 0.5 mg/L; this resulted in an unusually large fraction of the TN becoming inorganic.

In order to accurately compare the phosphorus data from the Pre- and Post-Uprate monitoring periods, the data from June and December 2010 OP values were eliminated because the laboratory did not conduct a blank subtraction on the samples and, consequently, biased the readings. This resulted in the comparison of two Pre-Uprate events (March and September 2011) against four Post-Uprate bi-annual events (September 2013 to March 2015). The limited dataset showed that there was no notable difference in OP ranges between the Pre- and Post-Uprate for the majority of the sites (TPGW-1S, -1M, -1D, -2D, -10M, -13D, -14S and -14D) over time, but OP decreased at TPGW-2S and -13M, and increased at TPGW-2M, -10S and -10D, -13S and -14D Post-Uprate. These patterns are not consistent within depth or across sites, and there appeared to be variation among seasons, as well. The OP values are similar to data from the USGS (Reich et al. 2006) for two wells north of the study area (onshore G3613 and Mid-Bay: SRP: 0.012 to 0.032 mg/L), although a number of the TP values obtained are higher than the USGS sites G3613 and Mid-Bay (TP: 0.012 to 0.033 mg/L).

TP concentrations ranged from 0.004 to 0.082 mg/L in the Pre-Uprate and from 0.002 to 0.071 mg/L during the Post-Uprate. The higher TP concentrations during the Pre-Uprate are likely biased because, following laboratory audits in early 2012, the SOP for TP was modified to account for saline interference seen in some samples. The method and instrumentation employed can only partially separate TP from a saline baseline shift. The laboratory determined the automated integration performed was quantifying the elevated saline baseline rather that the TP peak. The method modification with the new integration technique occurred prior to the September 2012 semiannual event. The TP results for saline samples since the modification have been markedly lower, in general. Therefore, the TP results in all the saline samples prior to this modification should be considered biased high.

3.2 SURFACE WATER QUALITY

3.2.1 Sample Collection and Analysis

During the Post-Uprate period, surface water data were collected from 18 stations (27 surface water samples per event plus QA/QC samples). The sampling methods followed FDEP protocols and remained the same as described in the Comprehensive Pre-Uprate Report (FPL 2012a); samples are still being collected from 1 ft below the top (T) and 1 ft above the bottom (B) unless the water depths in the CCS, ID, or canals are less than 3 ft. In Biscayne Bay, regardless of water depth, all samples were collected 1 ft above the bottom. Surface water sampling logs from the June 2013 to March 2015 sampling events are provided in Appendix G of this report; sampling logs generated prior to June 2013 from previous events are available in previous Uprate monitoring reports (FPL 2011a, 2012a, 2014a).

While the results between Pre-Uprate and Post-Uprate can be compared, there are some differences due to differing time periods and laboratory precision, which need to be considered when interpreting the results. The Post-Uprate period includes eight quarters of surface water data collected over two wet seasons and two dry seasons; there are five quarters of Post-Uprate data for tritium. The Pre-Uprate period includes seven quarters of surface water data, with one less event in the dry season. As discussed in Section 2.2, the surface water quality is influenced by daily and seasonal meteorological conditions and regional water management actions. These conditions can change from year to year. As previously discussed in Section 1.6 and Section 3.1, the laboratory reported the analytical results to two significant digits in the Pre-Uprate period but increased the reporting to three digits in the Post-Uprate period; the data, however, are only accurate to two digits.

3.2.2 Results and Discussion

Tables 3.2-1 through 3.2-8 provide a summary of the surface water analytical results from June 2013 through March 2015. DUS reports for each event are provided in Appendix H, and detailed Level IV laboratory reports from TestAmerica are included in Appendix I. Additionally, surface water stations have been grouped based on their general characteristics and location; Tables 3.2-9 and 3.2-10 show the range (minimum and maximum), average, and standard deviation of these water bodies from the Pre-Uprate period and the Post-Uprate period.

3.2.2.1 Chloride, Sodium, Specific Conductance, and Tritium

Temporal Differences

Chloride, sodium, specific conductance, and tritium varied seasonally with rainfall for most of the sites around the CCS. Stations in and around the CCS also fluctuated seasonally for chloride, sodium, and specific conductance, but not always for tritium—this reflected an influence of plant operations in addition to seasonal factors. Although there are differences observed between the Pre-Uprate and Post-Uprate, these differences are smaller than the seasonal changes observed. Specific conductance is an indicator of the salt content in the water and generally tracks the chloride and sodium values. Figures 3.2-1, 3.2-2, 3.2-3, and 3.2-4 show Post-Uprate trends for chloride, sodium, specific conductance, and tritium for sampling events from June 2013 through March 2015. Pre-Uprate ranges and averages are also graphically shown for general comparison.

Per the FDEP, surface waters with chloride concentrations greater than 1,500 mg/L are defined as predominantly marine, while those with less than 1,500 mg/L are defined as predominantly fresh (F.A.C. 62-302.200). Based on this definition, most of the stations are in predominately marine waters; only TPSWC-1, -2, -3 and -6 would be considered predominantly freshwater stations, with the exception of June 2011 and June 2014 at the end of that year's dry season when chloride values were in excess of 1,500 mg/L at two of the three stations. The Class II/III criteria for specific conductance in freshwater (excluding consideration of background values) is less than 1,275 µS/cm. Values greater than 1,275 µS/cm in a coastal environment are often viewed as potentially having some marine influence.

The following discussion is focused mostly on chloride, sodium, and tritium results. Specific conductance is referred to on occasion; however, because it generally tracks the key ionic concentration patterns and specific conductance was discussed in detail in Section 2, further discussion of this parameter is not needed.

Chloride concentrations in the CCS ranged from 29,800 mg/L to 54,600 mg/L in the Post-Uprate and 27,000 mg/L to 39,000 mg/L during the Pre-Uprate. The average chloride concentration was more than 30% higher in the Post-Uprate period. The increase in chloride concentrations was observed starting in March 2013, but the highest values were not observed in the CCS until June 2014. Subsequent to June 2014, the chloride values declined to 40,000 mg/L at the end of the rainy season and with the freshening effort; however, values started to increase in 2015 and in March 2015 values were still above 50,000 mg/L for most of the stations. The sodium concentrations in the CCS ranged from 15,300 mg/L to 28,500 mg/L in the Post-Uprate and 15,000 mg/l to 22,000 mg/L during the Pre-Uprate, with an overall increase similar to chloride in the Post-Uprate period. A similar pattern of increase was observed for specific conductance, as well, but not for tritium, as the tritium values randomly fluctuate from less than 2,000 pCi/L to over 10,000 pCi/L, regardless of the Pre- or Post-Uprate period. Both the Pre- and Post-Uprate chloride and sodium data indicate that the driest time during the year appears to be early June of each year, when evaporation rates are high and the rainy season has not begun yet. However, the tritium values within the CCS appear to be decoupled from atmospheric conditions, as the tritium concentrations in the CCS are a function of plant activity.

The CCS is characterized as typically having hypersaline water, with specific conductance values from the quarterly sampling ranging between 68,344 µS/cm to 88,902 µS/cm during the Pre-Uprate and higher values (74,015 µS/cm to 124,486 µS/cm) in the Post-Uprate. During the same period, the surrounding Biscayne Bay stations had lower values than the CCS during both periods (Pre-Uprate: 30,586 µS/cm to 66,855 µS/cm; Post-Uprate: 42,086 µS/cm to 60,067 µS/cm). The highest value in Biscayne Bay was recorded in June 2011; hypersaline conditions do naturally occur in the Bay during dry conditions as noted at BNP automated station BISCA6 (>1 mile north of the CCS), which showed a specific conductance value of more than 66,000 µS/cm in June 2011, a period of marked drought (Biscayne National Park 2012). It appears that the Biscayne Bay stations are influenced primarily by seasonal patterns in rainfall and water availability.

The Biscayne Bay surface water chloride concentration ranged from 11,000 mg/L to 28,000 mg/L in the Pre-Uprate period and 15,400 mg/L to 22,500 mg/L in the Post-Uprate period. For comparison, the chloride concentration for seawater at 3.5 % salinity is 19,600 mg/L (Turekian 1968). Sodium concentrations ranged from 5,400 mg/L to 14,000 mg/L in the Pre-Uprate period and 8,610 mg/L to 12,800 mg/L in the Post-Uprate period. Average sodium levels in seawater are 11,050 mg/L at a salinity of 35 on the PSS-78 scale (Millero 1996), but can approach 14,000 mg/L in Biscayne Bay, depending on location and time of year (Reich et al. 2006). Average chloride and sodium values for the Pre-Uprate and Post-Uprate periods are provided in Table 3.2-10 and are typical of what is observed in the Bay; however, caution should be used in making direct interpretations regarding the difference between the two periods because the number of events and stations included are not the same. A more direct comparison of chloride and sodium concentrations between the two periods is with TPBBSW-3 over an equivalent period of time. The results indicate that average chloride and sodium concentrations for Pre- and Post-Uprate periods are essentially the same (less than several percent differences between time periods). Based on the ionic concentrations of surface water close to the plant being similar to what is observed in other parts of the Bay and the presence of very low tritium values in the Bay (typically less than 20 pCi/L), the CCS does not appear to have an influence on the Biscayne Bay surface waters at these locations, which are representative of the open Bay. The low tritium values in Biscayne Bay pore water as previously reported in the Initial Ecological Characterization Report (FPL 2012b) indicate there is not a groundwater pathway of CCS water into Biscayne Bay.

The ID samples (TPSWID-1, TPSWID-2, and TPSWID-3) of chloride ranged from 660 mg/L to 9210 mg/L, and the sodium samples ranged from 323 mg/L to 3,870 mg/L in the Post-Uprate period. As noted in Section 2.2, the salinity at these stations increases during periods of ID pumping. The maximum Post-Uprate values are well below those observed for June 2011 in the Pre-Uprate period, when concentrations of chloride and sodium reached 27,000 mg/L and 14,000 mg/L respectively. The highest tritium values (5677 pCi/L) recorded in the ID were also observed in June 2011. This was towards the end of a rather dry season and, based on the automated data, this reflects the most saline conditions recorded. Since manual sampling is conducted quarterly, the spikes in salinity/ionic concentrations associated with pumping may not always be captured in the quarterly analytical data. What is notable is the drop in all the values after pumping, indicating freshening of the ID, presumably via groundwater inflows and rainfall. Consequently, the ID waters are influenced by seasonal conditions as well as ID pumping during the dry season.

Chloride and sodium concentrations in the L-31E Canal (TPSWC-1, TPSWC-2, and TPSWC-3) typically varied with the season, ranging from 54 mg/L to 4,020 mg/L for chloride and 31 mg/L to 2,100 mg/L for sodium during the Post-Uprate period. The highest values typically occurred during the dry season, which is the same regardless of whether the data are from the Pre-Uprate, the Interim Operating, or the Post-Uprate period. Like the ID, the highest chloride and sodium values were measured in June 2011. The tritium values observed in the L-31E Canal are within the range of values previously observed in the evaporation pan near TPGW-2, which is close to the canal. The tritium values in L-31E (8 pCi/L to 161 pCi/L Post-Uprate and 8 pCi/L to 125 pCi/L Pre-Uprate) are, in general, higher during the dry season, but the values are within the ranges observed in the nearby evaporation pan at TPGW-2 (see Section 3.4). While it cannot be conclusively determined there is no influence of the CCS on the L-31E via a groundwater pathway, there is reasonable evidence that the tritium concentrations measured in L-31E are via atmospheric deposition. The increase in salt concentration may be due more to a thinning of the freshwater lens in the dry season and historically saltier water entering into the L-31E Canal.

At surface water station TPSWC-4, located on the S-20 Canal, the ionic concentrations fluctuated and are affected by freshwater releases from the upstream S-20 structure. For example, in the Post-Uprate period the chloride concentrations ranged from 5,240 mg/L to 22,400 mg/L. A wider range of values were observed in the Pre-Uprate (460 mg/L to 28,000 mg/L). One change that occurred between the Pre- and Post-Uprate periods was the construction of a fixed weir downstream of TPSWC-4, so the site is no longer as tidally influenced. It is unclear how that weir structure is influencing the water quality/salinity because the canal is still brackish to marine. TPSWC-4 intermittently continues to have tritium levels an order of magnitude or two higher compared with L-31E stations and Biscayne Bay during the Post-Uprate, similar to the Pre-Uprate period. As previously reported, the tritium data, coupled with temperature data, indicate a potential influence from the CCS (movement of groundwater through the narrow berm separating the two water bodies).

Surface water station TPSWC-5 exhibited chloride and sodium values similar to the Biscayne Bay stations in the Post-Uprate (less than 4% difference). The maximum chloride and sodium values recorded at TPSWC-5 in the Post-Uprate period were 22,900 mg/L and 12,500 mg/L, respectively. Pre-Uprate maximum values were higher, at 27,000 mg/L and 13,000 mg/L. Tritium values in the Post-Uprate period averaged 45 pCi/L, with a maximum value of 140 PCi/L in June 2013. In the Pre-Uprate period, the average tritium concentration was more than 400 pCi/L at TPSWC-5B and that average was partially skewed by several high values, including 946 pCi/L in December 2010. While it is suspected that there is a greater potential for vapor exchange at TPSWC-5 as well as at TPSWC-4, an assessment of other data indicates there may be some groundwater exchange from the CCS into these immediately adjacent canals. As discussed in the Comprehensive Pre-Uprate Report (FPL 2012a), data from this site (occasionally an order of magnitude or two higher tritium levels, higher temperatures, and specific conductance specifically at depth) indicate some intermittent groundwater influence from the CCS. These effects were, however, less evident in the Post-Uprate period.

Spatial Differences

Spatially, in addition to differences among the water bodies observed, there were also differences between depths in the L-31E and ID, but not the CCS, which is a fairly well-mixed water body; only bottom samples were collected in Biscayne Bay. In the L-31E, S-20, ID, and Card Sound Canal, bottom samples frequently had higher chloride, sodium, specific conductance, and/or tritium values compared with samples from the top.

Several other interesting trends were also observed at some of the stations across the landscape in the five years of monitoring. The manual monitoring station, TPSWC-6, located on the Card Sound Road Canal, had chloride levels consistently below 200 mg/L, classifying this canal as freshwater, with one exception in June 2011. In this June sampling event, the chloride level at TPSWC-6 (bottom sample) was 25,000 mg/L. This station is about 6 miles inland, but the USGS has previously indicated that they found hypersaline conditions past this station as far as Florida City several years ago during the last drought (Wacker 2010). Subsequent to an earthen plug being installed by Miami-Dade County, the chloride values have remained less than 300 mg/L.

The chloride data at the L-31E stations (TPSWC-1, TPSWC-2, TPSWC-3) show that this canal is predominantly freshwater (less than 1,500 mg/L) throughout the year, with a few notable exceptions in the Post-Uprate period—June 2014 at TPSWC-2 and TPSWC-3, and March 2015 at TPSWC-3. In June 2014, a maximum chloride value of 4,020 mg/L was recorded at TPSWC-3, but in March 2014, the chloride concentration was only 301 mg/L. The spatial trends for sodium are similar to chloride. Station TPSWC-1 also consistently shows smaller seasonal increases in chloride and sodium concentrations relative to TPSWC-2 and TPSWC-3. In June 2014, the values increased, most notably at TPSWC-2 and TPSWC-3. Due to the earthen plug installed by SFWMD, the segment of the canal where TPSWC-1 is located is blocked from portions of the canal where TPSWC-2 and TPSWC-3 are located during the dry season. This explains why the chloride values are lower in this northern reach of the L-31E Canal. Of interest, though, are the tritium values for TPSWC-1, which are higher 75% of the time (June 2010 to March 2015) in comparison to TPSWC-3, despite the fact that over 75% of the time TPSWC-1 has a lower concentration of salt constituents. Furthermore, at the end of the dry season during June 2011 and June 2014, the highest chloride concentrations and specific conductance values were recorded at TPSWC-3 and were close to an order of magnitude higher than those recorded at TPSWC-1. Despite this difference, the tritium values were slightly higher still at TPSWC-1 and were not commensurately higher than other sampling events. This results in a poor correlation with tritium and salt water constituents and indicates a marine source other than the CCS may be influencing the L-31E Canal in the dry season.

3.2.2.2 Ions and Silica

Surface water ions (calcium, magnesium, potassium, sodium, boron, strontium, bromide, chloride, fluoride, and sulfate), similar to specific conductance, vary seasonally and with rainfall. The marine-derived waters occur in the following cationic abundance: Na > Mg > Ca ≥ K > Sr > B, while the freshwater sources have the following concentrations: Na > Ca ≥Mg > K > Sr > B. There were no differences observed in the anionic abundances regardless of water source. Broadly, there are two distinct types of water—marine-derived waters that include the Biscayne Bay and CCS stations and fresher/groundwater-derived waters, which are waters found in the L-31E Canal and the ID. The high abundance of calcium in the freshwater is indicative of waters that have been in contact with the carbonate groundwater.

The tri-linear diagram of averaged Post-Uprate data further supported this water source identification, as there was distinct separation between the freshwater L-31E stations (TPSWC-1, -2, -3) and the marine-influenced stations (TPBBSW, TPSWCCS, TPSWC-4, and TPSWC-5). The TPSWID stations were intermediate to both types of water (Figure 3.2-5), although the data showed some variation depending on season.

Temporally, there were no broad landscape-scale differences in ionic ratios among the L-31E, Biscayne Bay, and ID stations between the Pre- and Post-Uprate monitoring periods. Differences observed for some parameters showed a trend of higher values in the Pre-Uprate period compared with the Post-Uprate period, a trend attributable to the drought conditions in June 2011. No drought conditions were observed during the Post-Uprate period. The tri-linear diagram from the Post-Uprate (Figure 3.2-5) is very similar to that of the Pre-Uprate (FPL 2012a), further reinforcing the idea of consistency between both time periods.

There were, however, a few sites located in different water bodies (i.e., S-20 and Card Sound Road Canals) where management practices resulted in a change in ionic values. TPSWC-4 and TPSWC-6 were part of the FPL Mitigation Bank and Miami-Dade County restoration efforts, respectively. A weir and downstream water control structures were placed on the S-20 Canal in early 2014, resulting in greater water retention and higher specific conductance water being recorded year-round. At TPSWC-6, an earthen plug was put into the Card Sound Road Canal in April 2013 that eliminated saltwater from the Bay moving up into this canal.

Although ionic concentrations varied to a greater degree than at the groundwater sites due to seasonal effects, the relative total concentrations of ions were consistent among the stations sampled. Ion concentrations at the Biscayne Bay surface water sites were similar in range to the values observed in Biscayne Bay by Reich et al. (2006). Ion concentrations in the CCS were significantly higher than those of Biscayne Bay, while the TPSWC and TPSWID ions were generally lower in concentration but varied seasonally with freshwater influence. Ionic concentrations were observed in the following order for the entire duration of monitoring: CCS > BB > ID > L-31E.

There were also differences among some sites between the top and bottom stations. These differences were generally in the L-31E (TPSWC-1, -2, -3), ID (TPSWID-1, -2, -3), S-20 (TPSWC-4), and Card Sound Canal (TPSWC-5), but not at the CCS sites due to the mixing/constant water flow. Where differences were observed, the bottom sites tended to have higher ionic concentrations than the sites at the top. This stratification tends to occur in deeper water bodies that do not have significant mixing and exchange.

Silica was measured only in the CCS and was higher in the Post-Uprate period compared with the Pre-Uprate period. Silica concentrations were fairly consistent among sites in sampling events because the CCS is well mixed. Silica ranged from 2.53 mg/L to 12.4 mg/L; (average: 7.07 mg/L), while the Pre-Uprate values were lower and ranged from 0.25 to 5.20 mg/L (average: 1.28 mg/L). In September 2013, silica concentrations averaged 2.65 mg/L, but increased in March 2014 to an average of 5.51 mg/L and remained at more than 10 mg/L for

September 2014 and March 2015. These observations are consistent with the increase in algae concentration in the CCS over the same time period.

Due to a method change in the fluoride and sulfide analyses, no Post-Uprate comparisons could be reasonably made.

3.2.2.3 Nutrients

Figures 3.2-6 and 3.2-7 show nutrient surface water results for TN and TP for both the Pre- and Post-Uprate periods. Nutrient values were lowest in Biscayne Bay, followed by the L-31E Canal, the ID, and CCS. This ranking order remained consistent for both the Pre- and Post-Uprate time periods.

Differences in specific nutrients over time in the different water bodies have been observed. In Biscayne Bay, there was an increase in ammonia and NOx in the Post-Uprate from the Pre-Uprate period. Ammonia values were highest in the CCS in September 2014, coincident with the algal bloom that occurred in the late fall; NOx values were also higher during this same quarter although this was an artifact of high MDLs at the laboratory. Similarly, in the CCS, there was a marked increase in ammonia and TKN and, consequently, the TN during the Post-Uprate. The laboratory is refining its process to ensure high MDLs will not bias future TN calculations.

Throughout the monitoring period, most of the nitrogen at all the stations was TKN (i.e., organic nitrogen). This was a landscape-scale observation regardless of location. A slight decrease in organic content was observed in September 2014, but this is an artifact of the high MDL in NOx analyses for this event. These organic to inorganic ratios are similar to observations by Reich et al. (2006) and the analytical data from the Florida International University Water Quality Monitoring Network (FIU-WQMN) (FIU 2012).

TP values did not show any appreciable difference between the Pre- and Post-Uprate, with the exception of the CCS and Biscayne Bay sites. At the CCS sites, TP increased during the Post-Uprate (average: 0.060 mg/L) compared with the Pre-Uprate (average: 0.028 mg/L). As noted in Section 3.1.2.3, TP results in saline samples prior to September 2012 should be considered biased high due to saline interference in some samples; this implies the Pre-Uprate average was lower than results indicate. Following laboratory audits in early 2012, the SOP for TP was modified. The September 2012 and March 2013 TP results showed a marked decrease from prior events, likely due to the SOP modification to address interference from salt in the saline and hypersaline samples. Subsequent to the modification, an increase was observed starting in September 2013 (average: 0.048 mg/L) and another increase was observed in September 2014 (average: 0.087 mg/L). The sources of these inputs have not been able to be defined. Since September 2014, however, TP values have declined, likely due to a combination of algae bloom cessation and hydrologic inputs.

For Biscayne Bay sites, the inverse pattern was observed: TP values were slightly lower in the Post-Uprate (average: 0.004 mg/L) compared with the Pre-Uprate (average: 0.03 mg/L). The highest Pre-Uprate values were recorded in September 2011, which followed a prolonged dry season. The wet season following drought conditions has been shown to increase TP concentrations in coastal wetlands of South Florida (Childers 2005). As noted above, however, TP results in saline samples prior to September 2012 should be considered biased high. The level of bias is not, however, likely to be large enough to account for the Pre- and Post-Uprate average differences noted above. Therefore, even with these biases, the TP results are still considered slightly lower in the Post-Uprate period in Biscayne Bay.

In reviewing TP concentrations in Biscayne Bay, Reich et al. (2006) reported that TP in the mid-Bay area ranged from 0.005 to 0.045 mg/L, while the FIU-WQMN reported an average value of <0.01 mg/L over a 13-year period (1993 to 2005) at Site 122, offshore and southwest of Turkey Point. In addition, the FIU-WQMN data showed a range of 0 to 0.008 mg/L for OP just offshore of Turkey Point, while Reich et al. (2006) observed a wider range, from about 0.020 to 0.041 mg/L north of Turkey Point in the middle of the Bay.

As previously determined, a new method was applied to OP in March 2011 since the majority of the previous results showed OP being higher than TP, which is not possible. Although the method has been implemented, there are still periodic issues with the OP values. Consequently, the data are still suspect and the process is still being improved by the laboratory.

3.3 RAINFALL SAMPLE RESULTS

Tritium is being used as a tracer to assess the extent of CCS water via a groundwater pathway and, as part of this monitoring, it is important to understand the potential contribution of tritium to the surrounding water bodies around the CCS via atmospheric deposition.

The rainfall collectors are designed to capture rain and prevent its evaporation. There is a layer of mineral oil (approximately 1 inch thick) that floats on top of the rainfall collectors and essentially reduces or eliminates vapor exchange. The collector does not monitor the input of vapor-phase tritium, but is rather a cumulative composite of precipitation over three-month periods.

3.3.1 Sample Collection and Analysis

Rainfall is collected quarterly at seven locations (Figure 1.1-3). During the Post-Uprate period samples were collected in June 2013, September 2013, December 2013, March 2014, June 2014, September 2014, December 2014, and March 2015, which is consistent with the quarterly sampling schedule. Over the years, collectors at several stations have been periodically stolen or vandalized, resulting in the inability to collect a sample. Table 3.3-1 provides a summary of the samples collected from each rainfall collector and the status of sample receipt.

3.3.2 Results and Discussion

Rainfall tritium concentrations for the eight quarters of the Post-Uprate period did not exceed any values observed in the Pre-Uprate or Interim Operating period. Consistent with previous years' trends, tritium concentrations were highest at TPRF-2, which is closest to the CCS, and lowest at TPRF-7 and -8, which are the farthest stations from the canals. Values at TPRF-2 ranged from 7.3 to 109.9 pCi/L, while values at TPRF-7 and -8 were generally below 20 pCi/L. Table 3.3-2 shows tritium results available for the Post-Uprate data as well as Pre-Uprate results. Over the entire monitoring period (2011-2015), tritium concentrations ranged from lower than "background" levels (20 pCi/L as defined by the Agencies) to 109.9 pCi/L (1-sigma of 8.0 pCi/L). Single higher values were observed at TPRF-2 during the Pre-Uprate (109.9 pCi/L in March 2012) and at TPRF-3 (68.5 pCi/L in March 2013), but elevated values have not been observed at these sites since those two events. This indicates that the tritium concentrations are influenced by some difference in predominant rainfall directionality around the CCS.

There were also seasonal patterns to the data—values at TPRF-2, -3, -4, and -8 tended to be highest in the March sampling event (rainfall from late December to early March) and June sampling event (rainfall from late March to early June) when it was the driest. This resulted in the highest average tritium values across all stations during that time period (36.2 pCi/L for March 2012). In the dry season, the tritium values from each site were highly divergent, while values from all sites would then converge during the wet season due to the increased and more regular rainfall. For example, in September 2013, tritium only ranged from 3.6 to 12.6 pCi/L (Table 3.3-2). Regardless of season, however, most values at sites farther from the CCS (i.e., TPRF-4, -5, -7, -8, and -12) were generally below 20 pCi/L, indicating limited influence most of the time. On a few occasions, however, the rainfall tritium values at TPRF-4, -5, -7,-8, and -12 were above 20 pCi/L, including a value of 37.3 pCi/L at TPRF-5. The results indicate there is an atmospheric pathway for tritium via rainfall that has the potential to influence tritium results for surface water and porewater.

It is important to note that under this monitoring plan, tritium is being measured only as a chemical tracer in order to determine potential movement of CCS water. At the levels being measured, tritium is not a public health concern.

3.4 EVAPORATION PANS

Following development of the Monitoring Plan, FPL identified that, in addition to rainfall, there is a likely an exchange of tritium between water vapor in the atmosphere and water in its liquid form in the environment. Consequently, evaporation pans were installed at different distances from the CCS to assess the input of vapor-phase tritium into the surrounding water bodies and the extent of vapor exchange between the atmosphere and the standing water. While the original intent of the evaporation pans was to assess the mechanism of vapor exchange, the pans are actually being used to assess the potential extent of atmospheric exchanges, whether it is from vapor exchange or rainfall. Since water in the evaporation pan is exposed to the same atmospheric conditions as the surrounding environment, the water reflects the amount of tritium that could be influencing a water body or shallow porewater via an atmospheric pathway. Tritium concentrations in water vapor in the atmosphere, the amount and timing of rainfall, and the tritium concentration in rain influences the values observed in the evaporation pan.

After monthly samples are collected from the evaporation pans, the water level is adjusted to a prescribed level by adding tap water, which has a low tritium concentration (effectively 0 to 30 pCi/L). The tritium concentration drops immediately once the source water is added since, in most instances, tritium source water concentrations are lower than concentrations in the evaporation pans. In the days that follow, the tritium concentration in the pan can increase due to exchange with the atmosphere and because the water level declines via evaporation.

In the absence of rain, the tritium concentration in the pan will eventually reach equilibrium with atmospheric water vapor. However, if a rain event occurs during the equilibration period, the tritium concentration in the pan can decline as a result of dilution by low tritium water. After the rain event, the tritium concentration in the pan will once again start moving towards the equilibrium concentration. Thus, the concentration of tritium in the pan is dynamic during the equilibration period and can change dramatically after rain events. This dynamic behavior is likely to be similar to surface water, such as low flow marsh water or canals near the CCS, as tritium vapor exchange and dilution by rainwater continuously affect the tritium concentration.

3.4.1 Sample Collection and Analysis

Evaporation pans were installed adjacent to well clusters TPGW-2, TPGW-3, TPGW-5, and TPGW-12 (TPEVP-2, TPEVP-3, TPEVP-5, and TPEVP-12); TPEVP-13 was set up at the same latitude as TPGW-13 on the raised berm just west of the main north-south Canal Road. Samples were collected monthly from all sites for tritium analysis. The source water used to fill the evaporation pans is analyzed for tritium since that concentration needs to be considered. For the Post-Uprate period, evaporation pan data are currently only available for June 2013 through September 2014. Table 3.4-1 provides a summary of the samples collected from each evaporation pan and the status of sample receipt. Evaporation pan data after September 2014 are still pending.

3.4.2 Results and Discussion

Analytical results from the initiation of sample collection in March 2011 through September 2014 are included in this report for completeness of comparison. Table 3.4-2 and Figure 3.4-1 show the tritium concentrations in the evaporation pans each month after approximately 30 to 45 days of being exposed to tritium vapor in the atmosphere, just before source water is added. The reporting record is almost complete, with the exception of the last eight months (October 2014 to May 2015) of data, due to the backlog of samples to be analyzed by the USGS.

Overall, tritium results in the evaporation pans appear to be driven by proximity to the CCS and by regional seasonal conditions. The concentrations range from non-detect to 1,610 pCi/L at TPEVP-13 and are highly dependent on distance from the CCS and the time of year (Figure 3.4-1). The values at the stations within (TPEVP-13) and in close proximity to (TPEVP-2) the CCS also appear to be influenced by the CCS tritium concentrations to some degree. A relationship of vapor exchange with distance from the CCS was consistent for the Pre-Uprate period, Interim Operating period, and the Post-Uprate period. While TPEVP-13 always had the highest tritium concentration, TPEVP-2, which is less than 1,000 ft away from the CCS, typically exhibited the second-highest concentrations. This evaporation pan is located close to the L-31E Canal. The maximum value at TPEVP-2 was 550 pCi/L. At station TPEVP-5, which is located more than

3 miles west of the CCS, the tritium values ranged from 0.0 pCi/L to 63.1 pCi/L. The patterns at TPEVP-3 and -12 are intermediate to TPEVP-2 and -5. The highest values were always observed at the driest times of the year (i.e., in February and March). Consequently, it appears that the values observed are primarily a function of seasonally influenced meteorological conditions, coupled with proximity to the CCS.

In comparison with the rainfall data alone, the evaporative data indicate that vapor phase exchanges of tritium may be more significant than rainfall effects; however, both rainfall and evaporative exchanges can result in tritium concentrations in excess of 20 pCi/L, particularly in the surface water, porewater, and very shallow groundwater. Atmospheric influences of tritium could exceed 200 pCi/L to 300 pCi/L within 1 mile of the CCS and be around 50 pCi/L at distances more than 3 miles from the CCS. These influences must be considered when assessing whether the tritium concentrations observed in a particular media are the result of a groundwater pathway or an atmospheric pathway.

It is important to note that under this monitoring plan, tritium is being measured only as a chemical tracer in order to determine potential movement of CCS water. At the levels being measured, tritium is not a public health concern.

TABLES

Table 3.0-1. Groundwater and Surface Water Sampling Locations and Events

Event	Locations	Source Category[1]
Quarterly	TPGW–1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14; L-3, -5; G-21, -28, -35	GW
	TPBBSW – 1, 2, 3, 4, 5 TPSWC – 1, 2, 3, 4, 5, 6 TPSWID – 1, 2, 3	SW
	TPSWCCS – 1, 2, 3, 4, 5, 6, 7	CCS
Semi-annual	TPGW–3, 4, 5, 6, 7, 8, 9, 11, 13, L-3, L-5, G-21, G-28, G-35	GW
	TPGW – 1, 2, 10, 13, 14	GW - quarterly analytes plus nutrients
	TPBBSW – 1, 2, 3, 4, 5 TPSWC – 1, 2, 3, 4, 5, 6 TPSWID – 1, 2, 3	SW - quarterly analytes plus nutrients
	TPSWCCS – 1, 2, 3, 4, 5, 6, 7	CCS - quarterly analytes plus nutrients

Notes:
[1] = Analytes from Table 3.0-2 plus field parameters (temperature, specific conductivity, DO, percent oxygen saturation, pH, ORP, and salinity) at all stations.

Key:
CCS = Cooling Canal System.
GW = Groundwater.
ORP = Oxidation reduction potential.
SW = Surface Water.
TPBBSW = Biscayne Bay Surface Water.
TPGW = Turkey Point Groundwater.
TPSWC = Turkey Point Surface Water Canal.
TPSWID = Turkey Point Surface Water Interceptor Ditch.
TPSWCCS = Turkey Point Surface Water Cooling Canal System.

Table 3.0-2. Analytes Measured in Groundwater, Surface Water, and the Cooling Canal System

Analyte	Monitoring Plan (Table 2-1) Label	GW	SW	CCS
Chloride (Cl^-)	Ions	Q	Q	Q
Sodium (Na^+)	Ions	Q	Q	Q
Other Anions (SO_4^{2-}, F^-, Br^-)	Ions	SA	SA	SA
Other Cations (Ca^{2+}, Mg^{2+}, K^+, Sr^{2+}, B^+)	Ions	SA	SA	SA
Alkalinity	Ions	SA	SA	SA
Ammonia + unionized	Nutrients	SA	SA	SA
Nitrate/Nitrite	Nutrients	SA	SA	SA
Total Kjeldahl Nitrogen	Nutrients	SA	SA	SA
Total Phosphorus	Nutrients	SA	SA	SA
Soluble Reactive Phosphorus	Nutrients	SA	SA	SA
Silica	Nutrients	-	-	SA
Sulfides	Ions	SA	SA	SA
TDS	Other	Q	-	-
Tritium	Tracer	Q	Q	Q

Key:
Q = Quarterly event.
SA = Semi-annual event.

Table 3.1-1. Summary of Groundwater Analytical Results from the June 2013 Sampling Event

Parameter	Units	TPGW-1S 6/4/2013		TPGW-1M 6/4/2013		TPGW-1D 6/4/2013		TPGW-2S 6/7/2013		TPGW-2M 6/7/2013		TPGW-2D 6/7/2013		TPGW-3S 6/11/2013		TPGW-3M 6/11/2013		TPGW-3D 6/11/2013		TPGW-4S 6/6/2013		TPGW-4M 6/6/2013		TPGW-4D 6/6/2013		TPGW-5S 6/6/2013		TPGW-5M 6/6/2013		TPGW-5D 6/6/2013	
Temperature	°C	25.75		25.76		25.88		26.22		26.78		26.74		26.08		26.19		25.97		25.4		25.37		25.23		24.11		24.13		24.11	
pH	SU	6.97		7.07		6.91		7.2		6.84		6.94		6.49		6.83		6.74		6.87		7.02		6.86		7.01		6.79		6.95	
Dissolved Oxygen	mg/L	0.21		0.36		0.43		0.23		0.28		0.56	J	0.88		0.36		1.09		0.6		0.64		0.74		0.39		0.73		1.19	
Specific Conductance	µS/cm	54661		72371		72253		69081		75789		77111		64740		69067		69917	J	1670		39169		43372		1134		32517		34844	
Turbidity	NTU	0.35		0.01	J	0.1		0.69		0.13		0.08		0.04		0.32		0.3		0.39		0.14		0.16		0.1		0.19		0.22	
Sodium	mg/L	10900		15200		15300		16800		18900		18600		13400		14500		14700		178		7540		8800		100		6340		6650	
Chloride	mg/L	20500		29800		29900		27700		30900		30000		27300		29300		33000	J	342		13800		16400		204		12100		12700	
Total Ammonia	mg/L as N																			0.783		0.585		0.497		0.19	J	0.562		0.558	
Ammonium ion (NH_4^+)	mg/L																			1.00		0.748		0.636		0.243		0.72		0.714	
Unionized NH_3	mg/L																			0.00411		0.00432		0.00252		0.00125		0.00224		0.00321	
Nitrate/Nitrite	mg/L as N																			0.0054	U	0.0054	U	0.0054	U	0.0054	U	0.0054	U	0.0054	U
TKN	mg/L																			1.28		1.13		0.903		0.519		0.829		0.843	
TN	mg/L																			1.29		1.14		0.908		0.524		0.834		0.848	
ortho-Phosphate	mg/L																			0.0612	J	0.035	J	0.0327	J	0.0381		0.0419	J	0.039	J
Total Phosphorus (P)	mg/L																			0.0022	UJ	0.0208	J	0.0272	J	0.00398	I	0.0196	J	0.0123	J
Total Dissolved Solids	mg/L	34300		50000		48300		43300		47400		49300		42500		45300		47500		850		21300		25900		613		20800		20800	
Salinity	*	36.17		49.78		49.68		47.6		52.47		53.53		43.8		47.17		47.84	J	0.84	J	24.93		27.92		0.56	J	20.37		21.92	
Tritium	pCi/L (1σ)	1189 (37)		2494 (77)		2340 (81)		2820 (94)		3190 (106)		3196 (107)		517 (19)		1799 (55)		1993 (61)		6.5 (6.1)		350 (14)		482 (19)		4.1 (6.4)	UJ	283 (12)		363 (14)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Text in blue is revised.
Sample 060613-DUP1 is a duplicate of TPGW-6M.
Sample 060513-DUP1 is a duplicate of TPGW-9D.
Sample 061213-DUP1 is a duplicate of TPGW-14S.

KEY:
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DUP = Duplicate.
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I = Value between the MDL and PQL.
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mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-1. Summary of Groundwater Analytical Results from the June 2013 Sampling Event (continued)

Parameter	Units	TPGW-6S 6/6/2013		TPGW-6M 6/6/2013		060613-DUP1 6/6/2013		TPGW-6D 6/6/2013		TPGW-7S 6/5/2013		TPGW-7M 6/5/2013		TPGW-7D 6/5/2013		TPGW-8S 6/5/2013		TPGW-8M 6/5/2013		TPGW-8D 6/5/2013		TPGW-9S 6/5/2013		TPGW-9M 6/5/2013		TPGW-9D 6/5/2013	
Temperature	°C	23.84		24.04				24.35		24.26		24.44		24.43		24.36		24.1		24.26		25.04		24.47		24.39	
pH	SU	6.94		7.02				6.83		6.99		6.96		7.04		11.66		6.99		6.88		6.75		6.71		6.89	
Dissolved Oxygen	mg/L	1.13		0.85				0.23		0.2		0.5		0.32		0.74		0.81		0.25		0.28		0.74		1.2	
Specific Conductance	µS/cm	1107		22767				23691		546		559		599		1178		642		677		605		625		642	
Turbidity	NTU	0.98		0.01	J			1.42		0.95		0.09		0.31		0.35		0.02		0.7		0.12		0.22		0.24	
Sodium	mg/L	88.7		4130		4090		4280		19		19.8		25.6		19.1		18		25.3		10.9		11.8		15.5	
Chloride	mg/L	178		7830		8050		8270		34.8		34.1		43.2		34.9		43.8		44.6		19.5		20		27.1	
Total Ammonia	mg/L as N	0.313		0.508		0.525		0.584		0.103		0.129		0.0867		0.179		0.139		0.141		0.353		0.305		0.368	
Ammonium ion (NH_4^+)	mg/L	0.401		0.65				0.748		0.132		0.165		0.111		0.03	U	0.178		0.181		0.452		0.391		0.471	
Unionized NH_3	mg/L	0.00173		0.00341				0.0026		0.000657		0.000777		0.000627		0.216		0.000876		0.000698		0.00137		0.00104		0.00188	
Nitrate/Nitrite	mg/L as N	0.0054	U	0.0054	U	0.0054	U	0.0054	U	0.01		0.00578	I	0.0141		0.00736	I	0.0054	U	0.0155		0.00871	I	0.0135		0.0239	
TKN	mg/L	0.849		0.523	J	0.767	J	0.712		0.973		1.24		3.43		11.8		0.326		0.471		0.81		0.678		0.793	
TN	mg/L	0.854		0.528				0.717		0.983		1.25		3.44		11.8		0.331		0.487		0.819		0.692		0.817	
ortho-Phosphate	mg/L	0.0544	J	0.0372	J	0.0365		0.0376	J	0.0014	U	0.00209	I	0.00229	I	0.0014	U	0.00149	I	0.00173	I	0.00665	I	0.00451	I	0.0014	U
Total Phosphorus (P)	mg/L	0.00332	IJ	0.013	J	0.0126		0.0131	J	0.00621	I	0.00658	I	0.00715	I	0.0044	U	0.0103	I	0.0112	I	0.0131	I	0.0383		0.0137	I
Total Dissolved Solids	mg/L	540		12800		13700		13900		264		296		304		280	J	332		352		300		332		332	
Salinity	*	0.55	J	13.74				14.35		0.26	J	0.27	J	0.29	J	0.58	J	0.31	J	0.33	J	0.29	J	0.3	J	0.31	J
Tritium	pCi/L (1σ)	14.9 (6.4)		3.1 (6.0)	UJ	8.2 (6.0)		7.6 (6.0)		6.1 (6.3)	UJ	8.0 (4.8)		-1.6 (6.3)	UJ	6.7 (4.8)		2.9 (4.7)	UJ	4.1 (4.7)	UJ	12.3 (4.6)		6.1 (4.7)		3.6 (4.7)	UJ

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Text in blue is revised.
Sample 060613-DUP1 is a duplicate of TPGW-6M.
Sample 060513-DUP1 is a duplicate of TPGW-9D.
Sample 061213-DUP1 is a duplicate of TPGW-14S.
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N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-1. Summary of Groundwater Analytical Results from the June 2013 Sampling Event (continued)

Parameter	Units	060513-DUP1 6/5/2013	TPGW-10S 6/13/2013	TPGW-10M 6/13/2013	TPGW-10D 6/13/2013	TPGW-11S 6/12/2013	TPGW-11M 6/12/2013	TPGW-11D 6/12/2013	TPGW-12S 6/4/2013	TPGW-12M 6/4/2013	TPGW-12D 6/4/2013	TPGW-13S 6/11/2013	TPGW-13M 6/11/2013	TPGW-13D 6/11/2013
Temperature	°C		26.58	26.61	26.29	25.94	26.08	26.27	26.21	26.33	26.19	29.57	29.19	29.44
pH	SU		7.53	7.48	6.69	6.79	6.58	6.74	6.51	6.81	7.14	6.73	6.84	6.86
Dissolved Oxygen	mg/L		0.3	0.25	0.34	0.08	0.05	0.2	0.67	0.44	0.16	0.33	0.24	0.66
Specific Conductance	µS/cm		52399	55198	65776	54830	56758	61576	45468	63156	65782	83609 J	79528	80552
Turbidity	NTU		0.27	0.23	0.29	0.4	0.44	0.41	0.4	0.3	0.38	0.11	0.12	0.26
Sodium	mg/L	15.3	10700	11600	13700	11400	11800	12900	8970	12800	13300	18100	17000	17100
Chloride	mg/L	25.2	23200	23800	29000	24300	23000	25700	16800	24700	25100	39800 J	37200	36600
Total Ammonia	mg/L as N	0.398												
Ammonium ion (NH_4^+)	mg/L													
Unionized NH_3	mg/L													
Nitrate/Nitrite	mg/L as N	0.0054 U												
TKN	mg/L	0.754												
TN	mg/L													
ortho-Phosphate	mg/L	0.0014 U												
Total Phosphorus (P)	mg/L	0.0022 U												
Total Dissolved Solids	mg/L	340	37000	37300	43500	36100	37200	41900	27100	41600	43300	58500	55600	55400
Salinity	*		34.47	36.55	44.6	36.29	37.74	41.38	29.41	42.58	44.61	58.69 J	55.38	56.21
Tritium	pCi/L (1σ)	-3.3 (6.2) UJ	-0.2 (7.4) UJ	88.4 (8.9)	1204 (40)	-1.3 (7.5) UJ	109.5 (9.4)	764.4 (30)	152 (7.7)	1503 (47)	1547 (48)	4582 (137)	3379 (101)	3554 (107)

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TN = Total nitrogen.
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Table 3.1-1. Summary of Groundwater Analytical Results from the June 2013 Sampling Event (continued)

Parameter	Units	TPGW-14S 6/12/2013		061213-DUP1 6/12/2013		TPGW-14M 6/12/2013		TPGW-14D 6/12/2013		060413-FB1 6/4/2013		060513-FB1 6/5/2013		060613-FB1 6/6/2013		060713-FB1 6/7/2013		061013-FB1 6/10/2013		061113-EB1 6/11/2013		061213-FB1 6/12/2013		061313-FB1 6/13/2013	
Temperature	°C	26.77				27.18		27.3																	
pH	SU	6.73				6.78		6.68																	
Dissolved Oxygen	mg/L	0.13				0.2		0.27																	
Specific Conductance	µS/cm	57630				63204		73522																	
Turbidity	NTU	0.04				0.4		0.06																	
Sodium	mg/L	11900		12500		13100		15900		0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U
Chloride	mg/L	24400		24600		27700		32900		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Total Ammonia	mg/L as N											0.026	U	0.0309	I										
Ammonium ion (NH_4^+)	mg/L																								
Unionized NH_3	mg/L																								
Nitrate/Nitrite	mg/L as N											0.0054	U	0.0054	U										
TKN	mg/L											0.236		0.15	U										
TN	mg/L																								
ortho-Phosphate	mg/L											0.0014	U	0.0014	U										
Total Phosphorus (P)	mg/L											0.0022	U	0.0022	U										
Total Dissolved Solids	mg/L	38900		38000		43200		51600				5	U	5	U			5	U	5	U	5	U		
Salinity	*	38.37				42.59		50.64																	
Tritium	pCi/L (1σ)	172 (11)		178 (11)		739 (30)		2592 (85)		-9.7 (4.7)	UJ	-4.2 (4.8)	UJ	-5.5 (5.9)	UJ	3.4 (5.2)	UJ	-7.8 (5.8)	UJ	0.9 (5.2)	UJ	-14.9 (7.2)	UJ	-6.6 (7.2)	UJ

NOTES:
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N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-2. Summary of Groundwater Analytical Results from the September 2013 Sampling Event

Parameter	Units	TPGW-1S 09/06/2013		TPGW-1M 09/06/2013		TPGW-1D 09/06/2013		TPGW-2S 09/11/2013		TPGW-2M 09/11/2013		091113-DUP 09/11/2013		TPGW-2D 09/11/2013		TPGW-3S 09/11/2013		TPGW-3M 09/11/2013		TPGW-3D 09/11/2013		TPGW-4S 09/03/2013	
Temperature	°C	26.68		26.74		27.10		26.08		26.48				26.77		26.70		26.61		26.79		25.60	
pH	SU	6.99		6.94		6.99		7.12		6.89				6.74		6.63		6.90		6.77		6.65	
Dissolved Oxygen	mg/L	0.33		0.40		1.07		0.10		0.09				0.95	J	0.20		0.19		1.93	J	0.47	
Specific Conductance	µS/cm	34093		72181		70477		66453		75066				77475		63967		67890		70817		1815	
Turbidity	NTU	0.45		0.29		0.24		0.79		0.11				0.09		0.07		0.11		0.28		0.30	
Silica, dissolved	mg/L																						
Calcium	mg/L	411		644		653		1080	J	669	J	667		673		653		624		639		139	
Magnesium	mg/L	726		1610	J-	1650	J-	1210	J	1680	J	1690		1730		1460		1550		1590		18.6	
Potassium	mg/L	241		592	J+	614	J+	527	J	614	J	613		628		509		558		569		4.04	
Sodium	mg/L	6290		14700		14300		13900	J	15900	J	15800		16200		13300		14300		14300		189	
Boron	mg/L	2.29		5.83		5.81		5.24		6.33		6.35		6.46		5.05		5.7		5.83		0.0667	
Strontium	mg/L	6.09		10.8		11.1		13.2		13.5		13.6		13.4		10.8		11.8		11.9		1.3	
Bromide	mg/L	45.2	J	92.5		101	J	94.8	J	107	J	108		111	J	91.8		96.5		98.3		1.30	
Chloride	mg/L	13500	J	28800		31300	J	28100	J	31800	J	32000		33500	J	27100		28800		29400		400	
Fluoride	mg/L	0.198	J	0.233	J-	0.251	J-	0.173	J	0.231	J	0.234	J	0.221	J	0.0240	U	0.182	J	0.183	J	0.0900	I
Sulfate	mg/L	1570	J	3660		3880	J	3340	J	3900	J	3910		4050	J	3400		3550		3650		9.40	
Total Ammonia	mg/L as N	0.948		1.60		1.55		1.57		1.93		1.86		1.85									
Ammonium ion (NH_4^+)	mg/L	1.21		2.05		1.98		2.00		2.47				2.37									
Unionized NH_3	mg/L	0.00716		0.0108		0.0121		0.0153		0.0114				0.00793									
Nitrate/Nitrite	mg/L as N	0.0270	U	0.0280	I	0.0270	U	0.0270	U	0.0299		0.0227		0.0270	U								
TKN	mg/L	1.73	J	2.65	J	2.75	J	2.62		2.64		2.61		3.16									
TN	mg/L	1.76	J	2.68	J	2.78	J	2.65		2.67		2.63		3.19									
ortho-Phosphate	mg/L	0.0222		0.00340	I	0.0447	J	0.0104		0.0358	J	0.0356		0.0343	J								
Total Phosphorus (P)	mg/L	0.0282		0.0346		0.0346	J	0.0131		0.0204	J	0.0218		0.0169	J								
Alkalinity	mg/L	291	J	183		183	J	103	J	194	J	194		193	J	406		234		224		332	
Bicarbonate Alkalinity	mg/L as HCO_3	291	J	183		183	J	103	J	194	J	194		193	J	406		234		224		332	
Sulfide	mg/L	1.46		1.00	U	1.38		1.24		1.01		1.09		1.01		11.0		1.17		1.63		1.00	U
Total Dissolved Solids	mg/L	20900		49800		49000		43200		53600		51400		51800		41100		44700		45200		900	
Salinity	*	21.35		49.6		48.24		45.13		51.9				53.82		43.2		46.23		48.51		0.9	J
Tritium	pCi/L (1σ)	533.1 (20.5)		2691.7 (87.9)		2743.4 (88.6)		3229.5 (102.0		3023.3 (92.7)		2321.5 (78.4)		3173.8 (99.5)		437.1 (16.6)		1762.1 (55.4)		1915.6 (61.4)		11.3 (6.9)	J

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 090413-DUP1 is a duplicate of TPGW-8M.
Sample 091113-DUP1 is a duplicate of TPGW-2M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 3.1-2. Summary of Groundwater Analytical Results from the September 2013 Sampling Event (continued)

Parameter	Units	TPGW-4M 09/03/2013		TPGW-4D 09/03/2013		TPGW-5S 09/03/2013		TPGW-5M 09/03/2013		TPGW-5D 09/03/2013		TPGW-6S 09/03/2013		TPGW-6M 09/03/2013		TPGW-6D 09/03/2013		TPGW-7S 09/04/2013		TPGW-7M 09/04/2013		TPGW-7D 09/04/2013		TPGW-8S 09/04/2013	
Temperature	°C	25.22		25.32		25.17		24.92		25.04		24.44		24.35		24.71		24.61		24.49		24.56		24.84	
pH	SU	6.94		6.75		7.16		6.64		6.99		6.75		6.87		6.69		6.95		6.96		6.90		10.77	J
Dissolved Oxygen	mg/L	1.26	J	0.84		0.75	J	1.20		0.93	J	0.46		0.33	J	0.30		0.28		0.20		1.05		1.48	
Specific Conductance	µS/cm	39421		43517		1028		33043		35014		1182		22893		23830		539		553		738		1139	J
Turbidity	NTU	0.53		0.39		0.47		0.40		0.34		0.10		0.53		0.10		1.99		0.00	J	0.44		0.23	
Silica, dissolved	mg/L																								
Calcium	mg/L	591	J-	584	J-	109		609	J-	580	J-	119		497	J-	507	J-	79.0		82.6		95.1		102	
Magnesium	mg/L	784		890		7.08		646		664		11.5		403		419		3.87		3.91		4.41		0.564	
Potassium	mg/L	200		269		5.74		150		173		4.69		102		106		7.49		7.19		5.27		9.55	
Sodium	mg/L	7080	J-	8130		80.6		5910	J-	6170	J-	99.5		3790	J-	3970	J-	18.4		19.7		38.4		18.3	
Boron	mg/L	1.42		2.11		0.0497	I	1.02		1.25		0.0605		0.789		0.813		0.0446	I	0.0489	I	0.0602		0.043	I
Strontium	mg/L	7.44		7.84		1.08		7.08		7.21		1.2		7.75		7.88		0.785		0.818		0.934		0.576	
Bromide	mg/L	46.6		55.1		0.584		37.9		44.1		0.727		26.5		27.7		0.147		0.152		0.348		0.211	
Chloride	mg/L	15500		17600		170		13100		13700		208		8120		8980		35.0		36.4		90.8		34.0	
Fluoride	mg/L	0.125		0.131		0.112		0.119		0.128		0.120		0.133		0.133		0.118		0.114		0.112		0.0813	I
Sulfate	mg/L	1690		1990		16.9		1340		1480		8.87		825		872		22.1		23.7		25.7		46.7	
Total Ammonia	mg/L as N																								
Ammonium ion (NH_4^+)	mg/L																								
Unionized NH_3	mg/L																								
Nitrate/Nitrite	mg/L as N																								
TKN	mg/L																								
TN	mg/L																								
ortho-Phosphate	mg/L																								
Total Phosphorus (P)	mg/L																								
Alkalinity	mg/L	212		203		244		228		222		282		210		217		199		203		201		182	
Bicarbonate Alkalinity	mg/L as HCO_3	212		203		244		228		222		282		210		217		199		203		201		1.00	U
Sulfide	mg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.30		1.00	U	1.77		1.38		1.06		1.22		1.00	U
Total Dissolved Solids	mg/L	24000		27300		507		19900		20500		607		13900		14000		276		284		408		307	J
Salinity	*	25.1		28.0		0.51	J	20.7		22.0		0.59	J	13.82		14.43		0.26	J	0.27	J	0.36	J	0.56	J
Tritium	pCi/L (1σ)	313.1 (14.2)		487.4 (18.3)		-6.0 (6.7)	UJ	301.4 (13.8)		385.3 (16.6)		-5.8 (6.7)	UJ	1.7 (6.9)	UJ	5.7 (6.8)	UJ	-6.9 (6.8)	UJ	9.6 (7.1)		-5.2 (6.2)	UJ	8.6 (6.9)	

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 090413-DUP1 is a duplicate of TPGW-8M.
Sample 091113-DUP1 is a duplicate of TPGW-2M.

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 3.1-2. Summary of Groundwater Analytical Results from the September 2013 Sampling Event (continued)

Parameter	Units	TPGW-8M 09/04/2013		090413-DUP 09/04/2013		TPGW-8D 09/04/2013		TPGW-9S 09/04/2013		TPGW-9M 09/04/2013		TPGW-9D 09/04/2013		TPGW-10S 09/12/2013		TPGW-10M 09/12/2013		TPGW-10D 09/12/2013		TPGW-11S 09/12/2013		TPGW-11M 09/12/2013		TPGW-11D 09/12/2013		TPGW-12S 09/06/2013	
Temperature	°C	25.01				25.25		26.10		25.78		25.65		27.48		27.46		27.23		27.19		27.24		26.71		27.05	
pH	SU	6.78				6.78		6.66		6.68		6.65		7.31		7.32		6.97		6.96		6.60		6.82		6.57	
Dissolved Oxygen	mg/L	0.56				0.18		0.50		0.45		0.39		0.25		0.12		0.62	J	0.46		0.75	J	0.61		0.11	
Specific Conductance	µS/cm	642				681		594		639		644		51928		54309		66489		54061		58157		59926		43559	
Turbidity	NTU	0.10				0.96		2.31		0.54		0.09		0.17		0.08		0.14		0.16		0.00	J	0.26		0.54	
Silica, dissolved	mg/L																										
Calcium	mg/L	102		102		101		114		117		111		506		506		649		545		596		622		501	
Magnesium	mg/L	3.74		3.69		5.93		2.51		3.15		3.61		1400	J-	1390	J-	1740	J-	1360	J-	1390	J-	1470	J-	968	
Potassium	mg/L	9.94		9.71		8.92		4.20		6.64		3.87		486		503		626		500		498		526		330	
Sodium	mg/L	17.3		17.0		26.6		8.05		12.3		15.2		12000	J-	11900	J-	15200	J-	11900	J-	12500	J-	13200	J-	8310	
Boron	mg/L	0.065		0.064		0.0786		0.0346	I	0.0492	I	0.0528		5.12		5.27		6.32		5.5		5.44		5.38		3.36	
Strontium	mg/L	1.03		1.01		1.05		0.811		0.968		1.14		8.83		9.43		11.8		9.33		9.84		10.7		6.89	
Bromide	mg/L	0.215		0.216		0.251		0.151		0.248		0.369		71.6		75.4		91.7		75.5		78.1		84.7		55.7	
Chloride	mg/L	32.6		32.9		45.6		15.8		22.5		28.0		21100		22400		26900		22300		23300		25400		17600	
Fluoride	mg/L	0.0947	I	0.0939	I	0.103		0.0885	I	0.0870	I	0.0908	I	0.748	J-	0.585	J-	0.250	J-	0.780	J-	0.531	J-	0.600	J-	0.395	
Sulfate	mg/L	58.7		58.5		53.9		3.09		18.1		29.7		2760		2880		3400		2890		2920		3140		2170	
Total Ammonia	mg/L as N													0.413		0.298		0.796									
Ammonium ion (NH_4^+)	mg/L													0.524		0.378		1.02									
Unionized NH_3	mg/L													0.00684		0.00504		0.00597									
Nitrate/Nitrite	mg/L as N													0.128		0.00540	U	0.00998	I								
TKN	mg/L													0.741	J	0.762	J	1.17	J								
TN	mg/L													0.87	J	0.77	J	1.18	J								
ortho-Phosphate	mg/L													0.0222	J	0.0206	J	0.0400	J								
Total Phosphorus (P)	mg/L													0.00907	I J	0.00601	I J	0.0135	J								
Alkalinity	mg/L	226		223		227		286		284		266		130		117		157		288		333		280		562	
Bicarbonate Alkalinity	mg/L as HCO_3	226		223		227		286		284		266		130		117		157		288		333		280		562	
Sulfide	mg/L	1.00	U	1.00	U	1.00	U	1.26		1.00	U	1.00	U	5.06		1.51		3.75		13.3		10.3		12.9		17.2	
Total Dissolved Solids	mg/L	356		344		368		308		332		348		38100		41300		46900		37500		40400		43200		27300	
Salinity	*	0.31	J			0.33	J	0.29	J	0.31	J	0.31	J	34.07		35.86		45.13		35.68		38.75		40.11		28.01	
Tritium	pCi/L (1σ)	-9.0 (6.9)	UJ	2.9 (7.5)	UJ	8.2 (6.7)		23.8 (6.9)		7.1 (6.8)		8.7 (6.6)		31.7 (6.8)		26.5 (6.7)		1248.4 (42.2)		11.0 (6.6)		142.8 (9.4)		707.5 (26.9)		114.4 (8.3)	

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Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 090413-DUP1 is a duplicate of TPGW-8M.
Sample 091113-DUP1 is a duplicate of TPGW-2M.
KEY:
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TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
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Table 3.1-2. Summary of Groundwater Analytical Results from the September 2013 Sampling Event (continued)

		TPGW-12M		TPGW-12D		TPGW-13S		TPGW-13M		TPGW-13D		TPGW-14S		TPGW-14M		TPGW-14D		090313-FB1		090413-FB1		090613-EB1		091113-FB1		091213-FB1	
Parameter	Units	09/06/2013		09/06/2013		09/06/2013		09/06/2013		09/06/2013		09/12/2013		09/12/2013		09/12/2013		09/03/2013		09/04/2013		09/06/2013		09/11/2013		09/12/2013	
Temperature	°C	27.38		27.43		29.53		29.27		29.58		27.36		27.37		27.40											
pH	SU	6.81		7.20		6.77		6.85		6.84		6.92		6.83		6.70											
Dissolved Oxygen	mg/L	0.13		0.26		0.02		0.32		0.13		0.19		0.03		1.10	J										
Specific Conductance	µS/cm	65648		64449		83887		78994		80613		57102		61790		75201											
Turbidity	NTU	0.41		1.19		1.07		0.05		0.03		0.06		0.50		0.21											
Silica, dissolved	mg/L																					0.0500	U				
Calcium	mg/L	616		605		758	J	693		722		547		662		671		0.100	U	0.100	U	0.100	U	0.100	U	0.100	U
Magnesium	mg/L	1480	J-	1430	J-	2010	J-	1720	J-	1850	J-	1370	J-	1590	J-	1790	J-	0.0200	U	0.0200	U	0.0267	I	0.0200	U	0.0200	U
Potassium	mg/L	526	J+	523	J+	753	J+	702	J+	683	J+	484		601		652		0.190	U	0.190	U	0.190	U	0.190	U	0.190	U
Sodium	mg/L	12600		13000		17700	J	16500		16500		12100	J-	14500	J-	15500	J-	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
Boron	mg/L	4.95		4.98		7.55		6.89		6.98		5.09		6.15		6.57		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Strontium	mg/L	9.89		9.85		13.9		14.2		13.4		9.34		11.9		13.1		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Bromide	mg/L	85.0		89.9		122	J	113	J	116	J	79.0		84.7		108	J	0.0130	U	0.0130	U	0.0130	U	0.0130	U	0.0130	U
Chloride	mg/L	28300		27800		37300	J	34700	J	36400	J	23500		25100		32900	J	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
Fluoride	mg/L	0.243	J-	0.239	J-	0.354	J-	0.193	J-	0.212	J-	0.484	J-	0.409	J-	0.377	V J-	0.0240	U	0.0240	U	0.0240	U	0.179		0.0240	U
Sulfate	mg/L	3550		3500		4820	J	4120	J	4580	J	2980		3160		3900	J	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
Total Ammonia	mg/L as N					2.59		1.45	J+	1.73		0.479		0.972		2.08						0.0314	I			0.0262	I
Ammonium ion (NH_4^+)	mg/L					3.31		1.85	J+	2.21		0.612		1.24		2.67											
Unionized NH_3	mg/L					0.0144		0.00950	J+	0.0113		0.00323		0.00534		0.00850											
Nitrate/Nitrite	mg/L as N					0.0402	I	0.0892		0.0482	I	0.00645	I	0.00967	I	0.00917	I					0.0270	U			0.00540	U
TKN	mg/L					4.27		3.04	J+	3.00		1.31	J	1.53	J	3.00	J					0.294				0.311	
TN	mg/L					4.31		3.13	J+	3.05		1.32	J	1.54	J	3.01	J										
ortho-Phosphate	mg/L					0.0500	J	0.00163	I	0.0122		0.0505	J	0.077	J	0.0612	J					0.00140	U			0.00140	U
Total Phosphorus (P)	mg/L					0.0382	J	0.0378		0.0294		0.0332	J	0.0545	J	0.024	J					0.00220	U			0.00220	U
Alkalinity	mg/L	210		193		187	J	190	J	183	J	254		278		219	J	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Bicarbonate Alkalinity	mg/L as HCO_3	210		193		187	J	190	J	183	J	254		278		219	J	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Sulfide	mg/L	1.89		1.00	U	9.45		1.00	U	1.00	U	9.71		10.2		6.14		1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Total Dissolved Solids	mg/L	45600		45000		59900		54000		56000		41500		43100		52000		5.00	U	5.00	U	5.00	U	5.00	U		
Salinity	*	44.47		43.54		58.93		54.95		56.25		37.85		41.5		51.98											
Tritium	pCi/L (1σ)	1761.2 (57.9)		1540.6 (52.5)		4222.6 (139.4)		3093.9 (103.3)		3348.6 (112.1)		170.5 (10.0)		616.7 (23.7)		2826.2 (94.0)		11.8 (5.7)		-6.3 (6.9)	UJ	1.6 (5.7)	UJ	2.9 (5.3)	UJ	0.6 (5.6)	UJ

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 090413-DUP1 is a duplicate of TPGW-8M.
Sample 091113-DUP1 is a duplicate of TPGW-2M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 3.1-3. Summary of Groundwater Analytical Results from the December 2013 Sampling Event

Parameter	Units	TPGW-1S 12/04/2013	TPGW-1M 12/04/2013	TPGW-1D 12/04/2013	TPGW-2S 12/05/2013	TPGW-2M 12/05/2013	TPGW-2D 12/05/2013	TPGW-3S 12/02/2013	TPGW-3M 12/02/2013	TPGW-3D 12/02/2013	TPGW-4S 12/03/2013	TPGW-4M 12/03/2013	TPGW-4D 12/03/2013
Temperature	°C	26.27	26.32	26.39	25.88	26.22	26.52	25.78	25.73	25.83	25.56	25.39	25.13
pH	SU	6.92	6.99	6.93	7.01	6.86	6.83	6.55	6.81	6.79	6.80	6.80	6.88
Dissolved Oxygen	mg/L	0.17	0.23	0.15	0.21	0.20	0.25	0.45	0.13	0.35	0.24	0.27	0.22
Specific Conductance	µS/cm	40990	71492	71410	68018	74691	75916	63968	67946	69433	2057	38730	43259
Turbidity	NTU	0.18	0.08	0.02	0.35	0.01 J	0.14	0.06	0.00 J	0.15	0.01 J	0.79	0.01 J
Sodium	mg/L	7980	15300	15100	14400	15900	16300	13400	13900	14800	228	7330	8400
Chloride	mg/L	13500	29400	29400	27300	30500	30300	25200	27400	28600	460	15100	16300
Total Dissolved Solids	mg/L	26000	48700	47700	46600	53400	54800	43300	46300	47700	1020	22900	26900
Salinity	*	26.2	49.1	49.0	46.4	51.6	52.6	43.2	46.3	47.5	1.1 J	24.6	27.8
Tritium	pCi/L (1σ)	641.8 (23.8)	2580.3 (83.9)	2359.1 (76.4)	2682.0 (89.6)	3542.1 (118.7)	3455.7 (112.4)	399.5 (14.8)	1709.7 (54.6)	1849.8 (58.7)	12.3 (4.4) J	294.2 (11.0)	459.0 (16.0)

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 120413-DUP1 is a duplicate of 120413-TPGW-13S.
Sample120213-DUP1 is a duplicate of 120213-TPGW-6M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-3. Summary of Groundwater Analytical Results from the December 2013 Sampling Event (continued)

Parameter	Units	TPGW-5S 12/04/2013		TPGW-5M 12/04/2013		TPGW-5D 12/04/2013		TPGW-6S 12/04/2013		TPGW-6M 12/04/2013		TPGW-6D 12/04/2013		120413-DUP 12/04/2013		TPGW-7S 12/03/2013		TPGW-7M 12/03/2013		TPGW-7D 12/03/2013		TPGW-8S 12/03/2013		TPGW-8M 12/03/2013		TPGW-8D 12/03/2013	
Temperature	°C	24.17		24.15		24.00		23.94		24.10		24.16				24.25		24.09		24.21		24.52		25.24		24.17	
pH	SU	7.08		6.79		6.81		7.04		6.85		6.85				7.19		7.14		6.90		11.41		6.93		7.06	
Dissolved Oxygen	mg/L	0.57		0.47		0.37		0.35		0.37		1.54				0.27		0.24		0.27		0.34		0.29		0.29	
Specific Conductance	µS/cm	1120		32585		34738		1185		22688		23614				535		558		1056		1412	J	632		669	
Turbidity	NTU	0.04		0.01	J	0.00	J	0.24		0.03		0.22				0.01	J	0.06		0.25		0.82		0.09		0.44	
Sodium	mg/L	98.5		6040		6430		103		3950		4050		4220		18.8		20.2		59.4		18.2		16.7		25.1	
Chloride	mg/L	202		11900		12500		223		7980		8350		8930		34.0		35.0		180		32.4		30.8		42.2	
Total Dissolved Solids	mg/L	613		19900		19900		600		13800		13500		13800		236		268		620		300	J	308		376	
Salinity	*	0.6	J	20.4		21.9		0.6	J	13.7		14.3				0.3	J	0.3	J	0.5	J	0.7	J	0.3	J	0.3	J
Tritium	pCi/L (1σ)	16.8 (4.4)	J	245.7 (10.1)		284.1 (10.8)		-7.3 (6.0)	UJ	4.5 (6.2)	UJ	2.8 (6.0)	UJ	3.0 (6.0)	UJ	6.1 (4.3)	J	7.5 (4.3)	J	-3.2 (6.1)	UJ	3.9 (4.3)	UJ	9.7 (4.3)	J	15.3 (4.4)	J

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 120413-DUP1 is a duplicate of 120413-TPGW-13S.
Sample120213-DUP1 is a duplicate of 120213-TPGW-6M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-3. Summary of Groundwater Analytical Results from the December 2013 Sampling Event (continued)

Parameter	Units	TPGW-9S 12/03/2013		TPGW-9M 12/03/2013		TPGW-9D 12/03/2013		TPGW-10S 12/11/2013		TPGW-10M 12/11/2013		TPGW-10D 12/11/2013		TPGW-11S 12/11/2013		TPGW-11M 12/11/2013		TPGW-11D 12/11/2013		TPGW-12S 12/05/2013		TPGW-12M 12/05/2013		TPGW-12D 12/05/2013		TPGW-13S 12/02/2013	
Temperature	°C	25.16		24.16		24.37		26.59		26.52		26.09		26.07		25.88		25.76		25.96		26.04		26.23		28.75	
pH	SU	6.80		6.92		6.83		7.15		7.16		6.99		6.82		6.62		6.73		6.54		6.77		7.10		6.84	
Dissolved Oxygen	mg/L	0.57		0.24		0.61		0.39		0.25		0.35		0.30		0.55		0.69		0.75		0.15		0.31		0.19	
Specific Conductance	µS/cm	595		621		638		52766		55326	J	65884		55215		57021		61193		43162		61327		64659		82973	
Turbidity	NTU	0.67		0.21		0.12		0.08		0.00	J	0.00	J	0.00	J	0.35		0.17		0.21		0.20		0.49		0.01	J
Sodium	mg/L	8.77		12.7		15.5		10900		11500		14300		11500		12000		12800		8180		12900		13700		17200	
Chloride	mg/L	16.4		22.4		27.1		20900		25600	J	26600		23000		23000		23400		16400		24100		26200		35100	
Total Dissolved Solids	mg/L	292		324		312		34500		35300		43500		35100		38500		41400		27100		40000		43100		58900	
Salinity	*	0.3	J	0.3	J	0.3	J	34.7		36.7	J	44.7		36.6		37.9		41.1		27.8		41.2		43.7		58.2	
Tritium	pCi/L (1σ)	5.6 (4.3)	J	9.4 (4.4)	J	8.4 (4.8)	J	1.2 (5.8)	UJ	15.9 (6.4)	J	1372.6 (47.0)		10.6 (5.9)	J	126.3 (9.1)		824.1 (30.7)		124.1 (9.4)		1488.3 (52.2)		1680.3 (58.1)		4468.8 (138.9)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 120413-DUP1 is a duplicate of 120413-TPGW-13S.
Sample120213-DUP1 is a duplicate of 120213-TPGW-6M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-3. Summary of Groundwater Analytical Results from the December 2013 Sampling Event (continued)

Parameter	Units	120213-DUP 12/02/2013		TPGW-13M 12/02/2013		TPGW-13D 12/02/2013		TPGW-14S 12/11/2013		TPGW-14M 12/11/2013		TPGW-14D 12/11/2013		120213-EB1 12/02/2013		120313-FB1 12/03/2013		120413-FB1 12/04/2013		120513-FB1 12/05/2013		120613-FB1 12/06/2013		121113-FB1 12/11/2013	
Temperature	°C			28.80		29.01		26.36		26.44		26.18													
pH	SU			6.85		6.92		6.79		6.70		6.73													
Dissolved Oxygen	mg/L			0.10		1.10		0.36		0.34		0.39													
Specific Conductance	µS/cm			78333		80246		57523		62249		74211													
Turbidity	NTU			0.01	J	0.06		0.00	J	0.16		0.87													
Sodium	mg/L	17400		16500		16800		12000		12800		15900		0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
Chloride	mg/L	41800		33000		33200		22500		25500		27900		0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.313	I
Total Dissolved Solids	mg/L	58800		54700		55900		37100		39300		50200		5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	64.0	
Salinity	*			54.4		56.0		38.3		41.9		51.2													
Tritium	pCi/L (1σ)	4004.3 (123.4)		3071.7 (95.1)		3397.0 (105.3)		173.9 (10.7)		640.1 (25.0)		2909.1 (97.2)		8.5 (5.0)		-0.9 (4.8)	UJ	9.9 (4.2)		-7.9 (6.5)	UJ	6.0 (6.4)	UJ	-11.9 (6.0)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 120413-DUP1 is a duplicate of 120413-TPGW-13S.
Sample120213-DUP1 is a duplicate of 120213-TPGW-6M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-4. Summary of Groundwater Analytical Results from the March 2014 Sampling Event

Parameter	Units	TPGW-1S 03/11/2014		TPGW-1M 03/11/2014		TPGW-1D 03/11/2014		TPGW-2S 03/04/2014		TPGW-2M 03/04/2014		030414-DUP 03/04/2014		TPGW-2D 03/04/2014		TPGW-3S 03/04/2014		TPGW-3M 03/04/2014		TPGW-3D 03/04/2014		TPGW-4S 03/10/2014		TPGW-4M 03/10/2014	
Temperature	°C	26.07		25.89		26.35		25.73		25.65				25.99		26.08		25.71		26.18		25.32		25.05	
pH	SU	7.02		7.07		6.87		7.06		6.91				6.66		6.57		6.90		6.81		6.87		6.89	
Dissolved Oxygen	mg/L	0.33		0.28		0.63		0.14		0.19				0.19		0.16		0.12		0.28		0.44		0.30	
Specific Conductance	µS/cm	41613		70203		71364		68244	J	74618				76333		63180		67828		69489		2485		38121	
Turbidity	NTU	0.27		0.34		0.23		0.11		0.10				0.09		0.06		0.07		0.02		0.15		0.02	
Calcium	mg/L	454		634		637		691		692		675		700		675		632	J	646		166		579	
Magnesium	mg/L	909		1660		1630		1510		1760		1690		1810		1480		1540	J	1560		28.1		835	
Potassium	mg/L	300		602		600		554		621		611		653		516		556	J	574		5.19		201	
Sodium	mg/L	8190		15300	J	15400	J+	14200		15900		15800		16200		13200		14300	J	15200	J	291		7530	
Boron	mg/L	3.03		6.06		5.99		5.96		6.51		6.48		6.85		5.02		5.78		5.90		0.08		1.52	
Strontium	mg/L	7.83		12.00		12.10		13.10		14.30		14.00		14.40		11.10		12.00		12.30		1.55		7.91	
Bromide	mg/L	52.1		97.4		98.6		92.5	J	104.0		102.0		106.0		84.3		92.2	J	95.3		2.2		49.7	
Chloride	mg/L	14700		27300		27500		27600	J	30700		30700		31000		25400		27500	J	26500		609		14000	
Fluoride	mg/L	0.223		0.259	J	0.281	J-	0.224	J	0.269	J	0.270		0.243	J	0.206	J	0.194	J	0.201	J-	0.099	I	0.128	
Sulfate	mg/L	2000		3960		3800		3830	J	4130		4380		4370		3950		4380	J	3700		27		1780	
Total Ammonia	mg/L as N	1.290		1.240	J	1.620	J-	1.490		1.940		1.920		1.240											
Ammonium ion (NH_4^+)	mg/L	1.65		1.58	J	2.07	J-	1.90		2.48				1.59											
Unionized NH_3	mg/L	0.01000		0.01060	J	0.00908	J-	0.01240		0.01140				0.00419											
Nitrate/Nitrite	mg/L as N	0.0270	U	0.0270	U	0.0270	U	0.0337	I	0.0336	I	0.0316	I	0.0318	I										
TKN	mg/L	1.83		2.23		2.20		2.06		2.88		2.75		2.78											
TN	mg/L	1.86		2.26		2.23		2.09		2.91		2.78		2.81											
ortho-Phosphate	mg/L	0.0101	J	0.0101	J	0.0460		0.0177	J	0.0425	J	0.0417		0.0449											
Total Phosphorus (P)	mg/L	0.0039	IJ	0.0022	UJ	0.0570		0.0022	UJ	0.0290	J	0.0313		0.0439											
Alkalinity	mg/L	269		182		180		185	J	202		203		197		484		241	J	223		322		211	
Bicarbonate Alkalinity	mg/L as HCO_3	269		182		180		185	J	202		203		197		484		241	J	223		322		211	
Sulfide	mg/L	1.00	U	1.00	U	1.00	U	1.00	U Q	1.00	U Q	1.00	U Q	1.00	U	22.00	Q	1.00	U Q	1.00	U Q	1.00	U	1.00	U
Total Dissolved Solids	mg/L	25300		48800		48700		47800		53100		52700		55200		42000		47000		47700		1390		23100	
Salinity	*	26.63		48.06		48.96		46.53	J	51.56				52.93		42.61		46.22		47.5		1.27	J	24.19	
Tritium	pCi/L (1σ)	701.0 (24.1)		2811.7 (91.4)		2702.2 (88.3)		2443.9 (78.6)		3226.6 (103.1)		2951.6 (95.2)		3225.0 (105.5)		281.1 (95.2)		1700.5 (56.2)		1888.7 (62.4)		0.8 (6.2)	UJ	337.0 (14.8)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 030414-DUP1 is a duplicate of TPGW-2M.
Sample 031114-DUP1 is a duplicate of TPGW-7M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-4. Summary of Groundwater Analytical Results from the March 2014 Sampling Event (continued)

Parameter	Units	TPGW-4D 03/10/2014		TPGW-5S 03/11/2014		TPGW-5M 03/11/2014		TPGW-5D 03/11/2014		TPGW-6S 03/05/2014		TPGW-6M 03/05/2014		TPGW-6D 03/05/2014		TPGW-7S 03/11/2014		TPGW-7M 03/11/2014		031114-DUP 03/11/2014		TPGW-7D 03/11/2014		TPGW-8S 03/10/2014		TPGW-8M 03/10/2014	
Temperature	°C	25.20		23.87		24.04		23.80		23.84		23.93		23.92		23.50		23.40				23.48		24.06		23.80	
pH	SU	6.81		7.24		6.61		6.80		7.10		6.81		6.90		7.22		7.20				6.64		11.86		7.10	
Dissolved Oxygen	mg/L	0.66		0.53		0.79		0.48		0.35		0.73		0.21		0.37		0.37				0.97		0.43		0.45	
Specific Conductance	µS/cm	42719		1012		32620		34101		1211		22635		23241		527		534				3029		1978	J	629	
Turbidity	NTU	0.00	J	0.38		0.21		0.22		0.01	J	0.00	J	0.06		0.42		0.36				0.12		0.41		0.04	
Calcium	mg/L	558		109		578		566		124		478		494		86		85		85		261		175	J	112	
Magnesium	mg/L	944		7.2		632		687		12.1		412		439		4.27		4.04		4.04		11.5		0.02	UJ	4.18	
Potassium	mg/L	258		5.8		142		176		4.65		101		107		7.7		7.57		7.44		8.38		10.2	J	11.4	
Sodium	mg/L	8700		86		6060		6570		104		3910		4160		20		20		20		278		18	J	17	
Boron	mg/L	2.11		0.07		0.99		1.35		0.06		0.80		0.85		0.05		0.05		0.05		0.06		0.05		0.07	
Strontium	mg/L	8.12		1.07		7.37		7.80		1.23		7.97		8.23		0.84		0.83		0.82		2.64		0.62		1.13	
Bromide	mg/L	53.5		0.6		40.2		43.9		0.8		27.0		27.7		0.2		0.2		0.2		2.9		0.2	J	0.2	
Chloride	mg/L	15600		165		11300		12400		212		7740		8070		34		35		35		825		35	J	31	
Fluoride	mg/L	0.135		0.119		0.125		0.142		0.121		0.127		0.140		0.133		0.121		0.121		0.091	I	0.090	IJ	0.095	I
Sulfate	mg/L	2100		19		1320		1490		9		835		871		22		25		25		19		50	J	66	
Total Ammonia	mg/L as N																										
Ammonium ion (NH_4^+)	mg/L																										
Unionized NH_3	mg/L																										
Nitrate/Nitrite	mg/L as N																										
TKN	mg/L																										
TN	mg/L																										
ortho-Phosphate	mg/L																										
Total Phosphorus (P)	mg/L																										
Alkalinity	mg/L	203		237		232		217		289		202	J	217	J	201		200		200		174		257	J	220	
Bicarbonate Alkalinity	mg/L as HCO_3	203		237		232		217		289		202	J	217	J	210		200		200		174		1	UJ	220	
Sulfide	mg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Total Dissolved Solids	mg/L	26900		553		19300		20900		693		14700		15700		272		272		252		2200		410	J	340	
Salinity	*	27.45		0.49	J	20.38		21.39		0.6	J	13.65		14.05		0.25	J	0.26	J			1.58	J	1.01	J	0.3	J
Tritium	pCi/L (1σ)	521.8 (20.5)		-1.6 (6.1)	UJ	276.4 (12.8)		356.3 (16.8)		20.5 (5.9)		21.3 (6.0)		24.1 (6.1)		-7.9 (7.2)	UJ	2.5 (7.2)	UJ	11 (5.4)		-9.2 (6.0)	UJ	10.8 (4.0)		11.0 (4.5)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 030414-DUP1 is a duplicate of TPGW-2M.
Sample 031114-DUP1 is a duplicate of TPGW-7M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-4. Summary of Groundwater Analytical Results from the March 2014 Sampling Event (continued)

Parameter	Units	TPGW-8D 03/10/2014		TPGW-9S 03/10/2014		TPGW-9M 03/10/2014		TPGW-9D 03/10/2014		TPGW-10S 03/12/2014		TPGW-10M 03/12/2014		TPGW-10D 03/12/2014		TPGW-11S 03/12/2014		TPGW-11M 03/12/2014		TPGW-11D 03/12/2014		TPGW-12S 03/05/2014		TPGW-12M 03/05/2014		TPGW-12D 03/05/2014	
Temperature	°C	24.17		24.42		23.84		23.74		26.19		26.36		26.16		25.58		25.56		25.58		26.39		26.02		25.97	
pH	SU	6.87		6.72		6.76		6.95		7.32		7.33		7.00		6.98		6.67		6.81		6.48		6.64		7.09	
Dissolved Oxygen	mg/L	0.73		0.53		1.11		0.46		0.31		0.21		0.35		0.42		0.30		0.11		0.62		0.72		0.13	
Specific Conductance	µS/cm	655		594		596		625		52152		54497		66201		54319		56935		61402		44292		61622		64257	
Turbidity	NTU	0.14		0.15		2.01		0.10		0.30		0.40		0.37		0.49		0.23		0.22		0.17		0.01	J	0.01	J
Calcium	mg/L	103		117		128		112		434		448		564		500		549		591	J	481	J	565		596	
Magnesium	mg/L	5.65		2.7		3.03		3.47		1190		1200		1500		1210		1290		1370	J	979	J	1370		1480	
Potassium	mg/L	9.11		5.47		5.81		3.8		436		447		553		457		470		511	J	328	J	475		516	
Sodium	mg/L	24		12		13		15		11000		11300		13900		11500		12000		13400	J	8560	J	12600		13400	
Boron	mg/L	0.07		0.05		0.06		0.05		4.67		4.83		5.73		5.10		5.06		5.23		3.50		4.91		5.23	
Strontium	mg/L	1.04		0.97		1.07		1.13		8.08		8.49		10.60		8.66		9.52		10.40		7.33		10.00		10.60	
Bromide	mg/L	0.3		0.2		0.2		0.4		68.3		73.6		91.0		72.3		75.7		83.4	J	54.2	J	80.5		120.0	
Chloride	mg/L	43		20		22		27		19300		21100		25800		20500		21900		32800	J	16800	J	23200		25900	
Fluoride	mg/L	0.093	I	0.099	I	0.093	I	0.085	I	0.783		0.595		0.263	J	0.809		0.567		0.654	J	0.414	J	0.259	J-	0.250	J
Sulfate	mg/L	57		7		11		30		2740		2780		3570		2870		3160		3310	J	2180	J	3210		3600	
Total Ammonia	mg/L as N									0.382		0.391		0.811	J												
Ammonium ion (NH_4^+)	mg/L									0.49		0.50		1.04	J												
Unionized NH_3	mg/L									0.00592		0.00627		0.00604	J												
Nitrate/Nitrite	mg/L as N									0.0270	U	0.0270	U	0.0270	U												
TKN	mg/L									0.76		0.64		1.11													
TN	mg/L									0.79		0.67		1.14													
ortho-Phosphate	mg/L									0.0461	J	0.0202	J	0.0452	J												
Total Phosphorus (P)	mg/L									0.0022	UJ	0.0022	UJ	0.0039	IJ												
Alkalinity	mg/L	226		278		273		262		129		116		158		289		341		275	J	556	J	267	J	197	J
Bicarbonate Alkalinity	mg/L as HCO_3	226		278		273		262		129		116		158		289		341		275	J	556	J	267	J	197	J
Sulfide	mg/L	1.00	U	1.28		1.00	U	1.00	U	4.32		1.00	U Q	3.84		11.20		6.72	Q	4.97	Q	19.40		4.09	Q	1.00	U Q
Total Dissolved Solids	mg/L	344		280		280		304		32900		36800		45000		35500		37400		42900		28900		44100		45300	
Salinity	*	0.32	J	0.29	J	0.29	J	0.3	J	34.29		36.03		44.94		35.92		37.88		41.26		28.55		41.44		43.44	
Tritium	pCi/L (1σ)	6.8 (3.8)		13.6 (4.1)		7.2 (3.9)		8.7 (3.9)		17.6 (6.2)	J	22.7 (5.7)	J	1378.6 (47.4)		6.9 (5.6)	J	155.0 (8.7)		808.4 (27.5)		125.3 (8.5)		1324.6 (43.9)		1506.2 (49.6)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 030414-DUP1 is a duplicate of TPGW-2M.
Sample 031114-DUP1 is a duplicate of TPGW-7M.

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-4. Summary of Groundwater Analytical Results from the March 2014 Sampling Event (continued)

Parameter	Units	TPGW-13S 03/05/2014		TPGW-13M 03/05/2014		TPGW-13D 03/05/2014		TPGW-14S 03/12/2014		TPGW-14M 03/12/2014		TPGW-14D 03/12/2014		030414-FB1 03/04/2014		030514-FB1 03/05/2014		031014-FB1 03/10/2014		031114-FB1 03/11/2014		031214-FB1 03/12/2014	
Temperature	°C	29.47		29.50		29.43		25.82		25.56		26.08											
pH	SU	6.76		6.76		7.03		6.96		6.83		6.71											
Dissolved Oxygen	mg/L	0.30		0.45		0.13		0.30		0.25		0.42											
Specific Conductance	µS/cm	82533		78500		79151		56577		60817		73672											
Turbidity	NTU	0.01	J	0.02		0.19		0.23		0.25		0.34											
Calcium	mg/L	714		696		686		526		567		649		0.100	U	0.100	U	0.100	U	0.100	U	0	U
Magnesium	mg/L	2000		1850		1870		1310		1340		1660		0.0200	U	0.0200	U	0.0200	U	0.0200	U	0	U
Potassium	mg/L	710		651		658		474		509		632		0.190	U	0.190	U	0.190	U	0.190	U	0	U
Sodium	mg/L	17800		16600		17200		12200		13100		16000		0.310	U	0.310	U	0.310	U	0.310	U	0	U
Boron	mg/L	7.45		6.75		7.13		5.03		5.37		6.69		0.01		0.01		0.01		0.01		0	U
Strontium	mg/L	14.30		14.20		14.10		9.37		10.10		12.90		0.00		0.00		0.00		0.00		0	U
Bromide	mg/L	115.0		108.0		109.0		76.0		83.1		103.0		0.0130	U	0.0130	U	0.0130	U	0.0130	U	0.0	U
Chloride	mg/L	32900		31500		31400		20900		24100		29200		0.476	I	0.250	U	0.250	U	0.250	U	0	U
Fluoride	mg/L	0.339		0.196		0.210		0.514		0.431	J	0.397	J	0.0240	U	0.0240	U	0.0240	U	0.0240	U	0.024	U
Sulfate	mg/L	4680		4320		4220		3170		3340		4060		0.250	U	0.250	U	0.304	I	0.250	U	0	U
Total Ammonia	mg/L as N	2.540		1.820		1.100		0.647		1.160	J	1.050	J	0.0260	U	0.0260	U	0.0260	U	0.0260	U	0.0260	U
Ammonium ion (NH_4^+)	mg/L	3.25		2.33		1.40		0.83		1.49	J	1.35	J										
Unionized NH_3	mg/L	0.01370		0.00986		0.01100		0.00430		0.00562	J	0.00400	J										
Nitrate/Nitrite	mg/L as N	0.0335	I	0.0270	U	0.0391	I	0.0270	U	0.0270	U	0.0270	U	0.02700	U	0.02700	U	0.02700	U	0.02700	U	0.02700	U
TKN	mg/L	2.74		2.27		2.65		0.99		1.51		3.09		0.300	U	0.300	U	0.300	U	0.300	U	0.30	U
TN	mg/L	2.77		2.30		2.69		1.02		1.54		3.12		0.33		0.33		0.33		0.33		0.33	
ortho-Phosphate	mg/L	0.0533	J	0.0043	I J	0.0127	J	0.0434	J	0.0665	J	0.0563	J	0.00324	I	0.00413	I	0.00399	I	0.00179	I	0.00293	I
Total Phosphorus (P)	mg/L	0.0052	IJ	0.0075	I	0.0022	UJ	0.0022	UJ	0.0025	IJ	0.0044	IJ	0.00220	U	0.00220	U	0.00220	U	0.00220	U	0.00220	U
Alkalinity	mg/L	116	J	178	J	188	J	236		284		225		1.00	U	27.60		1.00	U	1.00	U	1	U
Bicarbonate Alkalinity	mg/L as HCO_3	116	J	178	J	188	J	236		284		255		1.00	U	27.60		1.00	U	1.00	U	1	U
Sulfide	mg/L	5.71		1.00	U Q	1.00	U Q	4.74	Q	7.59	Q	4.26	Q	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Total Dissolved Solids	mg/L	60300		55700		59100		36800		41400		51400		5	U	5	U	5	U	5	U	5	U
Salinity	*	57.81		54.54		55.07		37.6		40.81		50.8											
Tritium	pCi/L (1σ)	2133.0 (72.8)		3121.1 (98.4)		3419.8 (108.8)		142.3 (8.7)		528.1 (19.1)		2481.5 (75.5)				10.1 (5.8)		1.1 (3.8)	U	-15.3 (7.0)	U	8.3 (5.5)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 030414-DUP1 is a duplicate of TPGW-2M.
Sample 031114-DUP1 is a duplicate of TPGW-7M.

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-5. Summary of Groundwater Analytical Results from the June 2014 Sampling Event

Parameter	Units	TPGW-1S 06/04/2014	TPGW-1M 06/04/2014	TPGW-1D 06/04/2014	TPGW-2S 06/11/2014	TPGW-2M 06/11/2014	TPGW-2D 06/11/2014	TPGW-3S 06/11/2014	TPGW-3M 06/11/2014	TPGW-3D 06/11/2014	TPGW-4S 06/10/2014	TPGW-4M 06/10/2014	061014-DUP1 06/10/2014	TPGW-4D 06/10/2014
Temperature	°C	26.17	26.23	26.40	26.83	27.41	27.66	26.56	26.46	26.67	25.72	25.53		25.55
pH	SU	6.95	7.02	7.01	7.33	7.00	6.90	6.60	6.94	6.86	6.87	6.94		6.89
Dissolved Oxygen	mg/L	0.19	0.39	0.15	0.15	0.12	0.16	0.12	0.11	0.13	0.26	0.17		0.23
Specific Conductance	µS/cm	53015	70781	71493	67169	75796	75727	62458	68014	68894	4624	39035		42713
Turbidity	NTU	0.15	0.22	0.00 J	0.07	0.21	0.20	0.00 J	0.00 J	0.10	0.29	0.94		0.47
Sodium	mg/L	10600	14700	15200	14700	16600	16600	12900	14600	15000	575	6470	7180	8300
Chloride	mg/L	19800	27300	28200	25200	29100	29700	22900	25500	26000	1310	14200	14000	15800
Total Dissolved Solids	mg/L	35400	49300	49700	52600	51700	52400	42400	46300	47600	2800	24000	24200	27600
Salinity	*	34.9	48.5	49.1	45.7	52.5	52.4	42.04	46.3	47.0	2.5	24.8		27.4
Tritium	pCi/L	1328 (44.3)	2367 (78.7)	2269 (75.9)	2441 (79.3)	3413 (109)	3081 (97.9)	218 (9.5)	1690 (55)	1922 (62.4)	12.6 (4.4)	321 (11.5)	269 (10.1)	451 (14.4)

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 061014-DUP1 is a duplicate of 061014 TPGW-4M.
Sample 060914-DUP1 is a duplicate of 060914 TPGW-9D.
Sample 060414-DUP is a duplicate of 060414 TPGW-13M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-5. Summary of Groundwater Analytical Results from the June 2014 Sampling Event (continued)

Parameter	Units	TPGW-5S 06/10/2014		TPGW-5M 06/10/2014		TPGW-5D 06/10/2014		TPGW-6S 06/10/2014		TPGW-6M 06/10/2014		TPGW-6D 06/10/2014		TPGW-7S 06/09/2014		TPGW-7M 06/09/2014		TPGW-7D 06/09/2014		TPGW-8S 06/09/2014		TPGW-8M 06/09/2014		TPGW-8D 06/09/2014		TPGW-9S 06/09/2014		TPGW-9M 06/09/2014	
Temperature	°C	24.56		24.51		24.34		24.67		24.76		25.05		25.29		25.35		25.24		25.21		24.58		24.75		25.69		25.48	
pH	SU	7.33		6.92		6.83		7.10		6.99		6.86		7.24		7.27		6.88		11.91		7.11		7.19		6.95		6.97	
Dissolved Oxygen	mg/L	0.24		0.21		0.24		0.13		0.15		0.26		0.15		0.15		0.19		0.21		0.18		0.06		0.25		0.35	
Specific Conductance	µS/cm	1001		32724		34788		1258		22677		23704		537		568		4149		1591	J	637		665		607		600	
Turbidity	NTU	0.12		0.33		0.08		0.13		0.37		1.53		0.63		1.41		0.01	J	0.66		1.10		0.72		2.70		0.29	
Sodium	mg/L	76.7		4220		6090		108		4060		4320		18.7		20.2		469		18.5		16.9		24.3		12.4		12.6	
Chloride	mg/L	156		11000		12000		228		7590		8130		33.3		36.7		1300		32.7		31.2		41.0		21.2		21.0	
Total Dissolved Solids	mg/L	527		19300		21900		673		13800		14300		256		280		3040		310	J	304		296		288		276	
Salinity	*	0.5	J	20.5		21.9		0.6	J	13.6		14.3		0.3	J	0.3	J	2.2		0.8	J	0.3	J	0.3	J	0.3	J	0.3	J
Tritium	pCi/L	9.1 (4.6)		247 (9.6)		342 (12.5)		6.8 (3.7)		7.8 (4.7)		9.3 (4.8)		7.8 (4.6)		14.4 (4.1)		4.8 (4.0)		8.4 (3.9)		7.4 (3.9)		16.7 (4.2)		4.9 (3.8)		7.4 (3.9)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 061014-DUP1 is a duplicate of 061014 TPGW-4M.
Sample 060914-DUP1 is a duplicate of 060914 TPGW-9D.
Sample 060414-DUP is a duplicate of 060414 TPGW-13M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-5. Summary of Groundwater Analytical Results from the June 2014 Sampling Event (continued)

Parameter	Units	TPGW-9D 06/09/2014	060914-DUP1 06/09/2014	TPGW-10S 06/12/2014	TPGW-10M 06/12/2014	TPGW-10D 06/12/2014	TPGW-11S 06/12/2014	TPGW-11M 06/12/2014	TPGW-11D 06/12/2014	TPGW-12S 06/04/2014	TPGW-12M 06/04/2014	TPGW-12D 06/04/2014	TPGW-13S 06/04/2014	TPGW-13M 6/4/2014	060414-DUP 06/04/2014
Temperature	°C	24.83		27.78	27.24	27.05	26.79	26.45	26.55	26.70	26.81	26.72	29.97	29.73	
pH	SU	6.99		7.39	7.41	7.04	6.93	6.83	6.79	6.54	6.61	7.06	6.83	6.85	
Dissolved Oxygen	mg/L	0.18		0.32	0.31	0.19	0.20	0.27	0.29	0.30	0.06	0.09	0.11	0.16	
Specific Conductance	µS/cm	640		52808	55170	66806	55290	57373	62625	45260	56207	64861	83310	78127	
Turbidity	NTU	1.04		0.22	0.03	0.20	0.14	0.16	0.13	0.33	0.16	5.35	0.09	0.01	
Sodium	mg/L	15.7	15.4	10900	11500	14400	11400	11800	13200	8600	11300	13400	17500	16400	16400
Chloride	mg/L	26.3	26.1	19800	21100	25200	20700	21500	23800	16800	21300	25200	32700	31300	30900
Total Dissolved Solids	mg/L	300	340	33600	38300	45000	35600	38000	41700	29400	36900	43000	58800	55600	55200
Salinity	*	0.3 J		34.74	36.51	45.38	36.61	38.18	42.17	29.3	37.3	43.9	58.4	54.2	
Tritium	pCi/L	4.1 (3.8)	0.7 (3.8) U	4.4 (5.2) U	8.6 (5.2)	1355 (43)	8.0 (5.4)	157 (8.7)	801 (26.5)	110 (8.4)	681 (25.2)	1415 (48.4)	4172 (137)	2900 (95.4)	3066 (100)

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 061014-DUP1 is a duplicate of 061014 TPGW-4M.
Sample 060914-DUP1 is a duplicate of 060914 TPGW-9D.
Sample 060414-DUP is a duplicate of 060414 TPGW-13M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-5. Summary of Groundwater Analytical Results from the June 2014 Sampling Event (continued)

Parameter	Units	TPGW-14S 06/12/2014		TPGW-14M 06/12/2014		TPGW-14D 06/12/2014		060414-FB1 06/04/2014		060514-FB1 06/05/2014		060614-FB1 06/06/2014		060914-FB1 06/09/2014		061014-FB1 06/10/2014		061114-FB1 06/11/2014		061214-FB1 06/12/2014	
Temperature	°C	26.67		26.46		26.69															
pH	SU	6.92		6.80		6.88															
Dissolved Oxygen	mg/L	0.49		0.26		0.30															
Specific Conductance	µS/cm	57181		61296		73603															
Turbidity	NTU	0.14		0.26		0.33															
Sodium	mg/L	11900		13000		17100		0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
Chloride	mg/L	20800		22600		27300		0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	3.41	
Total Dissolved Solids	mg/L	38800		41900		52100		5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Salinity	*	38.03		41.15		50.73															
Tritium	pCi/L	132 (8.1)		482 (17.4)		2457 (78.6)		9.1 (6.1)		-3.5 (5.3)	U	8.3 (6.4)		1.5 (3.7)	U	1.1 (4.3)	U	1.8 (4.8)	U	-2.8 (3.6)	U

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 061014-DUP1 is a duplicate of 061014 TPGW-4M.
Sample 060914-DUP1 is a duplicate of 060914 TPGW-9D.
Sample 060414-DUP is a duplicate of 060414 TPGW-13M.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-6. Summary of Groundwater Analytical Results from the September 2014 Sampling Event

Parameter	Units	TPGW-1S		090914-DUP		TPGW-1M		TPGW-1D		TPGW-2S		TPGW-2M		TPGW-2D		TPGW-3S		TPGW-3M		TPGW-3D		TPGW-4S		TPGW-4M		TPGW-4D	
		09/09/2014		09/09/2014		09/09/2014		09/09/2014		09/10/2014		09/10/2014		09/10/2014		09/10/2014		09/10/2014		09/10/2014		09/09/2014		09/09/2014		09/09/2014	
Temperature	°C	26.95				26.70		26.58		26.33		26.95		26.96		26.64		26.61		26.88		26.60		26.54		27.20	
pH	SU	6.99				7.07		6.89		7.12		6.87		6.80		6.50		6.86		6.89		6.88		6.89		6.80	
Dissolved Oxygen	mg/L	0.16				0.10		0.07		0.07		0.11		0.11		0.20		0.07		0.08		0.15		0.09		0.09	
Specific Conductance	µS/cm	40311				70703		71440		65036		74336		75644		61593		67519		68637		2033		38945		43027	
Turbidity	NTU	0.00	J			0.01	J	0.33		0.00	J	0.01	J	0.01	J	0.00	J	0.00	J	0.00	J	0.10		0.18		0.08	
Silica, dissolved	mg/L																										
Calcium	mg/L	404		407		566		580		716		638		659		622		596		615		143		534	J	509	J
Magnesium	mg/L	764		766		1430		1460		1290	J	1560	J	1610	J-	1290		1410	J	1450	J	21.4		766	J	834	J
Potassium	mg/L	303		300		655		675		595	J	717	J	751	J+	569		644	J	660	J	4.8	J+	220	J	282	J
Sodium	mg/L	6840		6770		13400		13400		13000		15500		15800		12200		13700		13900		225		6620	J	7540	J
Boron	mg/L	2.57		2.52		5.65		5.82		5.13		6.24		6.52		4.77		5.56		5.61		0.08		1.42		1.99	
Strontium	mg/L	6.74		6.66		10.50		10.80		12.10		13.70		13.80		10.00		11.60		11.80		1.34		7.22		7.39	
Bromide	mg/L	50.5		51.0		95.2	J	94.8	J	88.0		103.0		103.0	J	83.5		92.2		94.3		1.6		49.8	J	52.0	J
Chloride	mg/L	13800		14500		28100	J	28400	J	25400		29800		36900	Q J	23400		25900		26300		422		13800	J	15300	J
Fluoride	mg/L	0.200		0.200		0.260	J	0.280	J	0.180		0.240		0.230	J-	0.180		0.170		0.170		0.024	U	0.110	J	0.130	J
Sulfate	mg/L	1820		1810		3650	J	3650	J	3350		3840		4680	Q J	3130		3410		3500		15		1660	J	1920	J
Total Ammonia	mg/L as N	1.260		1.400		1.900		2.040		2.050		2.460		2.380													
Ammonium ion (NH_4^+)	mg/L	1.61				2.42		2.61		2.61		3.15		3.05													
Unionized NH_3	mg/L	0.00970				0.01730		0.01220		0.02030		0.01440		0.01190													
Nitrate/Nitrite	mg/L as N	0.5000	U	0.5000	U	0.5000	U	0.5000	U	0.5000	U	0.5000	U J	0.5000	U J-												
TKN	mg/L	1.27		1.40		2.04		2.16		1.82		2.26		2.48													
TN	mg/L	1.77				2.54		2.66		2.32		2.76	J	2.98	J												
ortho-Phosphate	mg/L	0.0264		0.0277		0.0159	J	0.0458	J+	0.0101	J	0.0335	J	0.0398	J+												
Total Phosphorus (P)	mg/L	0.0362		0.0374		0.0368		0.0439		0.0190		0.0362		0.0497													
Alkalinity	mg/L	282		284		194	J	191	J	155		208		204	J	528		261		252		333		228	J	221	J
Bicarbonate Alkalinity	mg/L as HCO_3	345		346		237	J	232	J	189		254		248	J	645		319		308		407		279	J	269	J
Sulfide	mg/L	0.05	I	0.02	I	0.01	I	0.16		0.10	U	0.10	U	0.10	U J	22.00		0.04	I	0.10	U	0.17		0.10	U	0.10	U
Total Dissolved Solids	mg/L	25000		24600		49700		50400		44000		51600		52200		40800		44500		45900		1100		25200		27200	
Salinity	*	25.7				48.44		49.02		44.03		51.3		52.34		41.38		45.95		46.81		1.03	J	24.75		27.64	
Tritium	pCi/L (1σ)	606.8 (20.1)		605.7 (20.0)		2090.7 (61.0)		2368.6 (68.4)		2255.6 (74.3)		2834.0 (93.7)		3273.9 (108.0)		208.6 (9.8)		1557.0 (52.2)		1778.1 (60.2)		16.1 (4.9)	J	305.3 (11.9)		444.6 (15.9)	

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 090814-Dup is a duplicate of TPGW-9M.
Sample 090914-Dup is a duplicate of TPGW-1S.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 3.1-6. Summary of Groundwater Analytical Results from the September 2014 Sampling Event (continued)

Parameter	Units	TPGW-5S 09/09/2014		TPGW-5M 09/09/2014		TPGW-5D 09/09/2014		TPGW-6S 09/08/2014		TPGW-6M 09/08/2014		TPGW-6D 09/08/2014		TPGW-7S 09/08/2014		TPGW-7M 09/08/2014		TPGW-7D 09/08/2014		TPGW-8S 09/08/2014		TPGW-8M 09/08/2014		TPGW-8D 09/08/2014	
Temperature	°C	24.79		25.38		25.64		24.78		26.60		25.44		25.61		25.68		26.00		25.65		25.35		25.50	
pH	SU	7.16		6.85		6.78		6.99		6.80		6.87		7.20		7.21		6.78		10.78		7.02		7.03	
Dissolved Oxygen	mg/L	0.15		0.18		0.09		0.15		0.22		0.08		0.08		0.09		0.11		0.10		0.12		0.13	
Specific Conductance	µS/cm	942		32232		34807		1254		22722		23590		539		546		4610		498		643		662	
Turbidity	NTU	0.52		0.00	J	0.00	J	0.16		0.13		0.30		0.32		0.06		0.28		11.30		0.00	J	0.00	J
Silica, dissolved	mg/L																								
Calcium	mg/L	105		536	J	515	J	122		452	Q	459	Q J	81		81		337		72	J	100		99	
Magnesium	mg/L	6.89		591	J	638	J	12.1		412	Q	424	Q J	4.09		3.87		16.2		1.96	J	3.9		5.49	
Potassium	mg/L	5.63		149	J	178	J	4.88		97.5	Q	99.7	Q J	8.48		7.19		8.99		9.1	J	10.4		9.09	
Sodium	mg/L	71		5360	J	5540	J	106		3630	Q	3680	Q J	20		19		518		16	J	16		23	
Boron	mg/L	0.05		0.91		1.20		0.06		0.799	Q	0.808	Q	0.05		0.05		0.06		0.07		0.07		0.07	
Strontium	mg/L	1.02		6.60		6.80		1.24		8.05	Q	8.13	Q	0.82		0.81		3.60		0.68		1.04		1.03	
Bromide	mg/L	0.5		39.4	J	43.5	J	0.8		26.0		27.3	J	0.1		0.2		5.0		0.2	J	0.2		0.2	
Chloride	mg/L	142		11700	J	13800	J	223		7510		7940	J	35		35		1450		32	J	31		40	
Fluoride	mg/L	0.100		0.110	J	0.130	J	0.110		0.120		0.140	J	0.120		0.110		0.024	U	0.024	U J	0.100		0.024	U
Sulfate	mg/L	14		1200	J	1390	J	7		777		820	J	22		23		19		61	J	63		57	
Total Ammonia	mg/L as N																								
Ammonium ion (NH_4^+)	mg/L																								
Unionized NH_3	mg/L																								
Nitrate/Nitrite	mg/L as N																								
TKN	mg/L																								
TN	mg/L																								
ortho-Phosphate	mg/L																								
Total Phosphorus (P)	mg/L																								
Alkalinity	mg/L	247		243	J	236	J	289		217		224	J	203		204		174		57	J	222		229	
Bicarbonate Alkalinity	mg/L as HCO_3	301		296	J	288	J	353		265		273	J	248		249		213		1	U J	271		279	
Sulfide	mg/L	0.04	I	0.10	U	0.10	U	0.09	I	0.10	U	0.10	U	0.10	U	0.10	U	0.06	I	0.01	I	0.03	I	0.07	I
Total Dissolved Solids	mg/L	487		20700		22400		640		14100		15100		252		252		3280		210		336		356	
Salinity	*	0.46	J	20.09		21.86		0.62	J	13.67		14.26		0.26	J	0.26	J	2.46		0.24	J	0.31	J	0.32	J
Tritium	pCi/L (1σ)	8.0 (4.7)	J	252.3 (10.7)		310.6 (12.3)		10.5 (4.9)		8.3 (4.7)		19.2 (5.1)		8.4 (6.3)		14.9 (6.8)		0.5 (7.1)	UJ	-2.5 (6.8)	UJ	-2.6 (6.6)	UJ	-0.9 (6.7)	UJ

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 090814-Dup is a duplicate of TPGW-9M.
Sample 090914-Dup is a duplicate of TPGW-1S.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 3.1-6. Summary of Groundwater Analytical Results from the September 2014 Sampling Event (continued)

Parameter	Units	TPGW-9S 09/08/2014		TPGW-9M 09/08/2014		090814-DUP 09/08/2014		TPGW-9D 09/08/2014		TPGW-10S 09/11/2014		TPGW-10M 09/11/2014		TPGW-10D 09/11/2014		TPGW-11S 09/11/2014		TPGW-11M 09/11/2014		TPGW-11D 09/11/2014		TPGW-12S 09/05/2014		TPGW-12M 09/05/2014		TPGW-12D 09/05/2014	
Temperature	°C	26.32		25.40				25.22		27.93		27.70		27.42		27.43		27.66		27.32		27.84		28.34		28.28	
pH	SU	6.88		6.84				6.92		7.18		7.22		7.06		6.84		6.75		6.71		6.62		6.74		7.12	
Dissolved Oxygen	mg/L	0.20		0.16				0.22		0.20		0.17		0.18		0.19		0.21		0.31		0.04		0.12		0.05	
Specific Conductance	µS/cm	604		637				631		53220		55680		67011		55625		57583		63106		45351		61206		65009	
Turbidity	NTU	0.00	J	0.23				0.01	J	0.01		0.00	J	0.00	J	0.06		0.09		0.01	J	0.17		0.00	J	0.00	J
Silica, dissolved	mg/L																										
Calcium	mg/L	114		114		111		107		393		411		531		479		500		559	J	460		547	J	574	J
Magnesium	mg/L	2.33		3.02		2.93		3.38		1060	J	1100	J	1370	J	1180	J	1150	J-	1310	J	909		1270	J	1370	J
Potassium	mg/L	3.28		5.78		5.59		3.79		484	J	503	J	646	J	528	J	532	J+	595	J	400		573	J	624	J
Sodium	mg/L	8		12		12		14		10400		11100		13800		11100		11700		12900	J	8830		12400	J	13300	J
Boron	mg/L	0.03	I	0.06		0.05	I	0.05		4.35		4.54		5.76		4.95		4.82		5.00		3.66		5.00		5.21	
Strontium	mg/L	0.83		0.94		0.92		1.10		7.34		7.93		10.10		8.34		8.91		10.00		7.44		10.10		10.60	
Bromide	mg/L	0.1		0.2		0.2		0.3		68.0	J	72.0		91.7		71.9		75.1		84.0	J	54.6		79.1	J	86.5	J
Chloride	mg/L	15		21		21		26		20300	J	21900		26400		21400		21500		25300	J	16900		24400	J	26300	J
Fluoride	mg/L	0.024	U	0.024	U	0.024	U	0.024	U	0.760	J-	0.570		0.240		0.780		0.570	J-	0.620	J	0.450		0.250	J	0.230	J
Sulfate	mg/L	2		13		14		27		2710	J	2870		3530		2830		2880		3260	J	2070		3150	J	3370	J
Total Ammonia	mg/L as N									0.922	J	0.771	J	1.410													
Ammonium ion (NH_4^+)	mg/L									1.17	J	0.98	J	1.80													
Unionized NH_3	mg/L									0.01170	J	0.01060	J	0.01320													
Nitrate/Nitrite	mg/L as N									0.5000	U	0.5000	U	0.5000	U												
TKN	mg/L									0.60	J	0.45	J	1.44													
TN	mg/L									1.10	J	0.95	J	1.94													
ortho-Phosphate	mg/L									0.0169		0.0158		0.0387													
Total Phosphorus (P)	mg/L									0.0192		0.0183		0.0387													
Alkalinity	mg/L	305		290		293		273		134	J	116		173		314		350		284	J	567		276	J	200	J
Bicarbonate Alkalinity	mg/L as HCO_3	372		353		357		333		163	J	142		211		383		428		347	J	692		337	J	244	J
Sulfide	mg/L	0.49		0.15		0.18		0.05	I	4.00		0.52		3.30		12.00		8.60		4.40		16.00		2.80		0.34	
Total Dissolved Solids	mg/L	288		336		312		336		34600		36100		44700		36000		38400		41700		29600		42000		43800	
Salinity	*	0.29	J	0.31	J			0.31	J	35.03		36.87		45.53		36.84		38.31		42.51		29.28		41.04		43.96	
Tritium	pCi/L (1σ)	18.2 (5.9)		34.4 (6.3)		8.5 (5.1)		7.8 (5.7)		11.8 (5.6)		12.3 (5.9)		1582.6 (51.6)		60.9 (68)		182.2 (9.7)		851.1 (29.0)		112.2 (7.9)		1332.4 (44.8)		1495.0 (48.8)	

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 090814-Dup is a duplicate of TPGW-9M.
Sample 090914-Dup is a duplicate of TPGW-1S.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 3.1-6. Summary of Groundwater Analytical Results from the September 2014 Sampling Event (continued)

Parameter	Units	TPGW-13S		TPGW-13M		TPGW-13D		TPGW-14S		TPGW-14M		TPGW-14D		090214-EB		090514-FB1		090814-FB1		090914-FB		091014-FB1		091114-FB1	
		09/05/2014		09/05/2014		09/05/2014		09/11/2014		09/11/2014		09/11/2014		09/02/2014		09/05/2014		09/08/2014		09/09/2014		09/10/2014		09/11/2014	
Temperature	°C	30.34		30.00		30.20		28.02		27.77		27.99													
pH	SU	6.76		6.94		6.80		6.87		6.70		6.88													
Dissolved Oxygen	mg/L	0.12		0.08		0.09		0.18		0.20		0.14													
Specific Conductance	µS/cm	82466		78442		79773		57222		61555		73070													
Turbidity	NTU	0.00	J	0.00	J	0.00		0.00	J	0.00	J	0.00	J												
Silica, dissolved	mg/L													0.05	U	0.05	U	0.05	U	0.05	U	0.050	U	0.050	U
Calcium	mg/L	668	J	662	J	671	J	478		608		540		0.100	U	0.100	U	0.181		0.100	U	0.100	U	0.100	U
Magnesium	mg/L	1730	J-	1670	J	1700	J	1190	J	1540	J	1270	J	0.0200	U	0.0200	U	0.0200	U	0.0200	U	0.020	U	0.020	U
Potassium	mg/L	833	J+	788	J	812	J	520	J	712	J	580	J	0.190	U	0.190	U	0.190	U	0.190	U	0.190	U	0.190	U
Sodium	mg/L	17700	J+	16900	J	17100	J	11200		15300		12400	J	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
Boron	mg/L	7.59		6.94		7.35		4.59		6.36		5.07		0.01	U	0.01	U	0.01	U	0.01	U	0.010	U	0.010	U
Strontium	mg/L	14.20		14.30		14.50		8.45		12.00		9.60		0.00	U	0.00	U	0.00	U	0.00	U	0.001	U	0.001	U
Bromide	mg/L	117.0	J	108.0	J	110.0	J	74.2		82.4		102.0	J	0.0130	U	0.0130	U	0.0130	U	0.0130	U	0.013	U	0.013	U
Chloride	mg/L	34500	J	33100	J	33400	J	21300		24500		29100	J	0.250	U	0.575		0.250	U	0.250	U	0.250	U	0.250	U
Fluoride	mg/L	0.350	J-	0.190	J	0.220	J	0.490		0.410		0.360	J	0.0240	U	0.0240	U	0.0240	U	0.0240	U	0.024	U	0.024	U
Sulfate	mg/L	4500	J	4190	J	4280	J	2980		3250		3980	J	0.250	U	1.960		0.250	U	0.250	U	0.250	U	0.250	U
Total Ammonia	mg/L as N	1.720	J+	2.590		2.420		1.150	J	1.550	J	2.420		0.0677		0.2230		0.0647		0.0704		0.0554		0.0524	
Ammonium ion (NH_4^+)	mg/L	2.20	J	3.31		3.10		1.47	J	1.99	J	3.09													
Unionized NH_3	mg/L	0.00986	J	0.02190		0.01510		0.00724	J	0.00649	J	0.01560													
Nitrate/Nitrite	mg/L as N	0.1000	U J-	0.5000	U J	0.5000	U J	0.5000	U	0.5000	U	0.5000	U	0.10000	U	0.50000	U	0.50000	U	0.50000	U	0.50000	U	0.50000	U
TKN	mg/L	3.40		2.32		2.96		0.82	J	1.22	J	2.86		0.150	U	0.150	U	0.150	U	0.150	U	0.15	U	0.15	U
TN	mg/L	3.50	J	2.82	J	3.46	J	1.32	J	1.72	J	3.36													
ortho-Phosphate	mg/L	0.0439		0.0014	U	0.0028	I	0.0398		0.0548		0.0527		0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00210	U
Total Phosphorus (P)	mg/L	0.0495		0.0494		0.0602		0.0400		0.0527		0.0500		0.00220	U	0.00220	U	0.00220	U	0.00220	U	0.00220	U	0.00300	U
Alkalinity	mg/L	232	J	203	J	211	J	244		290		232	J	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Bicarbonate Alkalinity	mg/L as HCO_3	283	J	248	J	257	J	298		354		283	J	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Sulfide	mg/L	8.80		0.10	U	0.24		3.70		5.90		3.50		0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
Total Dissolved Solids	mg/L	61800		56900		58600		37000		42200		49200		5	U	5	U	5	U	5	U	5	U	5	U
Salinity	*	57.72		54.47		55.54		38.02		41.31		50.26													
Tritium	pCi/L (1σ)	3568.3 (114.2)		3102.6 (98.3)		3747.0 (118.2)		135.0 (8.6)		457.1 (17.7)		2262.1 (72.3)		6.5 (3.6)		7.8 (5.9)		-7.5 (6.7)	UJ	14.0 (5.1)		2.3 (5.0)	UJ	2.1 (5.5)	UJ

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 090814-Dup is a duplicate of TPGW-9M.
Sample 090914-Dup is a duplicate of TPGW-1S.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 3.1-7. Summary of Groundwater Analytical Results from the December 2014 Sampling Event

Parameter	Units	TPGW-1S 12/02/2014	TPGW-1M 12/02/2014	TPGW-1D 12/02/2014	TPGW-2S 12/03/2014	TPGW-2M 12/03/2014	TPGW-2D 12/03/2014	TPGW-3S 12/03/2014	TPGW-3M 12/03/2014	TPGW-3D 12/03/2014	TPGW-4S 12/01/2014	TPGW-4M 12/01/2014	TPGW-4D 12/01/2014
Temperature	°C	25.85	26.04	26.38	26.21	26.27	26.46	26.36	25.99	26.08	25.72	25.42	25.37
pH	SU	7.01	7.05	7.01	7.04	6.92	6.90	6.76	6.91	6.93	6.94	6.88	6.99
Dissolved Oxygen	mg/L	0.06	0.07	0.08	0.06	0.08	0.23	0.04	0.07	0.08	0.09	0.06	0.10
Specific Conductance	µS/cm	46636	69999	70339	71495	74712	74777	60450	66401	67896	2001	38467	41962
Turbidity	NTU	0.17	0.28	0.01 J	0.17	0.38	0.12	0.24	0.30	0.27	0.20	0.26	0.24
Sodium	mg/L	8640	15300	14200	15600	16200	16200	12800	14100	14800	233	7320	7920
Chloride	mg/L	17400	27700	28300	29300	30400	30200	22900	26400	27100	443	14300	15700
Total Dissolved Solids	mg/L	30600	49300	50900	52300	54800	52900	42400	47900	48500	900	23800	29100
Salinity	*	30.26	47.90	48.16	49.08	51.62	51.67	40.51	45.10	46.26	1.02 J	24.43	26.91
Tritium	pCi/L	808.1 (29.9)	2276.6 (75.7)	2307.1 (77.3)	2912.3 (100.4)	3487.6 (119.6)	3130.5 (108.8)	213.9 (11.0)	1308.0 (44.8)	1640.1 (55.5)	13.1 (5.1)	295.9 (12.1)	434.2 (16.3)

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 120214-DUP1 is a duplicate of 120214 TPGW-5D.
Sample 120114-DUP1 is a duplicate of 120114 TPGW-9S.
Sample 120914-DUP is a duplicate of 120914 TPGW-12D.
Text in blue is revised
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-7. Summary of Groundwater Analytical Results from the December 2014 Sampling Event (continued)

Parameter	Units	TPGW-5S 12/02/2014		TPGW-5M 12/02/2014		TPGW-5D 12/02/2014		120214-DUP 12/02/2014		TPGW-6S 12/02/2014		TPGW-6M 12/02/2014		TPGW-6D 12/02/2014		TPGW-7S 12/02/2014		TPGW-7M 12/02/2014		TPGW-7D 12/02/2014		TPGW-8S 12/01/2014		TPGW-8M 12/01/2014		TPGW-8D 12/01/2014	
Temperature	°C	24.60		24.51		24.64				24.27		24.16		24.29		24.35		24.19		24.01		25.27		24.72		24.46	
pH	SU	7.20		6.88		6.92				7.08		6.94		6.93		7.28		7.26		6.97		11.59		7.10		7.11	
Dissolved Oxygen	mg/L	0.17		0.07		0.19				0.10		0.06		0.10		0.08		0.08		0.13		0.13		0.06		0.15	
Specific Conductance	µS/cm	849		31808		34344				1259		22338		23342		521	J	504		5176		1249	J	628		650	
Turbidity	NTU	0.50		0.07		0.10				0.40		0.24		0.67		0.20		0.23		1.66		0.38		0.31		0.31	
Sodium	mg/L	57.0		5530		6130		6220		113		3700		3810		19.9		20.3		622		17.8		17.0		24.3	
Chloride	mg/L	113		11500		12500		12500		232		7850		8310		34.4		35.5		1600		33.6		31.5		42.0	
Total Dissolved Solids	mg/L	360		20000		22300		21700		607		14600		14300		192	J	244		3900		280	J	332		376	
Salinity	*	0.42	J	19.84		21.56				0.63	J	13.45		14.11		0.25	J	0.26	J	2.78		0.62	J	0.30	J	0.32	J
Tritium	pCi/L	18.2 (6.1)	J	222.3 (11.3)		248.5 (12.2)	J	326.5 (13.8)	J	7.0 (5.7)	J	17.4 (6.3)	J	24.0 (6.4)	J	-0.6 (4.6)	UJ	11.0 (4.9)	J	6.0 (5.7)	J	4.5 (4.9)	UJ	2.8 (4.9)		2.4 (4.6)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 120214-DUP1 is a duplicate of 120214 TPGW-5D.
Sample 120114-DUP1 is a duplicate of 120114 TPGW-9S.
Sample 120914-DUP is a duplicate of 120914 TPGW-12D.
Text in blue is revised
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-7. Summary of Groundwater Analytical Results from the December 2014 Sampling Event (continued)

Parameter	Units	TPGW-9S 12/01/2014		120114-DUP 12/01/2014		TPGW-9M 12/01/2014		TPGW-9D 12/01/2014		TPGW-10S 12/10/2014		TPGW-10M 12/10/2014		TPGW-10D 12/10/2014		TPGW-11S 12/10/2014		TPGW-11M 12/10/2014		TPGW-11D 12/10/2014		TPGW-12S 12/09/2014		TPGW-12M 12/09/2014		TPGW-12D 12/09/2014		120914-DUP 12/09/2014	
Temperature	°C	25.41				24.60		24.71		23.40		23.69		24.30		23.16		23.39		23.15		25.81		25.73		25.33			
pH	SU	6.89				7.00		7.08		7.28		7.29		7.02		6.94		6.74		6.80		6.56		6.67		7.08			
Dissolved Oxygen	mg/L	0.09				0.08		0.14		0.22		0.13		0.34		0.14		0.24		0.19		0.06		0.08		0.14			
Specific Conductance	µS/cm	593				618		629		52502		55379		67126		54842		57114		62801		44255		57705		64371			
Turbidity	NTU	0.30				1.41		0.39		0.28		0.42		0.14		0.31		0.88		0.22		0.85		1.51		0.33			
Sodium	mg/L	8.08		8.15		13.7		15.7		11100		11700		14700		11700		12100		13600		8880		11900		13500		13400	
Chloride	mg/L	14.9		15.0		24.5		26.3		20000		21500		27000		21400		22200		24800		16400		22500		25500		25700	
Total Dissolved Solids	mg/L	296		288		296		312		32200	Q	35100	Q	43000	Q	35800	Q	37900	Q	41900	Q	28700		37500		45200		44100	
Salinity	*	0.29	J			0.30	J	0.30	J	34.61		36.75		45.70		36.36		38.06		42.38		28.54		38.45		43.55			
Tritium	pCi/L	8.0 (4.9)		4.0 (4.9)	UJ	10.4 (4.9)		2.6 (4.8)	UJ	13.0 (3.2)		35.2 (3.7)		1556.3 (51.6)		13.5 (3.2)		186.0 (7.9)		903.7 (29.9)		106.7 (8.8)		861.7 (31.3)		1392.4 (38.5)		1421.4 (49.3)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 120214-DUP1 is a duplicate of 120214 TPGW-5D.
Sample 120114-DUP1 is a duplicate of 120114 TPGW-9S.
Sample 120914-DUP is a duplicate of 120914 TPGW-12D.
Text in blue is revised
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-7. Summary of Groundwater Analytical Results from the December 2014 Sampling Event (continued)

Parameter	Units	TPGW-13S 12/09/2014		TPGW-13M 12/09/2014		TPGW-13D 12/09/2014		TPGW-14S 12/10/2014		TPGW-14M 12/10/2014		TPGW-14D 12/10/2014		120114-EB 12/01/2014		120214-FB 12/02/2014		120314-FB 12/03/2014		120414-FB 12/04/2014		120514-FB1 12/05/2014		120814-FB 12/08/2014		120914-FB 12/09/2014		121014-FB 12/10/2014	
Temperature	°C	29.76		29.18		29.36		23.61		23.20		23.63																	
pH	SU	6.69		6.87		6.85		6.96		6.79		6.83																	
Dissolved Oxygen	mg/L	0.12		0.09		0.11		0.17		0.19		0.31																	
Specific Conductance	µS/cm	84153		78037		79478		56511		60872		72855																	
Turbidity	NTU	0.36		0.34		0.48		0.34		0.31		0.50																	
Sodium	mg/L	18100		16700		17000		12200		13200		16100		0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
Chloride	mg/L	35100		32300		33200		22200		23600		28900		0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.257	I	0.200	U
Total Dissolved Solids	mg/L	60900		56100		57200		37500	Q	42100	Q	52300	Q	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U		
Salinity	*	59.13		54.20		55.34		37.60		40.90		50.21																	
Tritium	pCi/L	4544.4 (151.8)		2968.9 (100.5)		3323.4 (110.8)		98.7 (5.1)		461.4 (15.7)		2290.8 (71.0)		-2.4 (4.8)	UJ	10.1 (5.9)		2.4 (5.5)	UJ	-1.2 (5.4)	UJ	11.7 (5.9)		-3.5 (7.0)	UJ	6.8 (6.3)		1.9 (2.9)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 120214-DUP1 is a duplicate of 120214 TPGW-5D.
Sample 120114-DUP1 is a duplicate of 120114 TPGW-9S.
Sample 120914-DUP is a duplicate of 120914 TPGW-12D.
Text in blue is revised
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-8. Summary of Groundwater Analytical Results from the March 2015 Sampling Event

Parameter	Units	TPGW-1S		TPGW-1M		TPGW-1D		TPGW-2S		TPGW-2M		030315-Dup		TPGW-2D		TPGW-3S		TPGW-3M		TPGW-3D		TPGW-4S		TPGW-4M		TPGW-4D	
		03/05/2015		03/05/2015		03/05/2015		03/03/2015		03/03/2015		03/03/2015		03/03/2015		03/03/2015		03/03/2015		03/03/2015		03/02/2015		03/02/2015		03/02/2015	
Temperature	°C	26.36		26.53		26.54		26.31		26.66				27.00		26.00		26.11		26.09		25.53		25.44		25.12	
pH	SU	6.96		7.02		6.95		7.11		6.92				6.91		6.64		6.90		6.90		6.89		6.91		6.95	
Dissolved Oxygen	mg/L	0.09		0.16		0.11		0.06		0.15				0.10		0.48		0.11		0.24		0.21		0.20		0.14	
Specific Conductance	µS/cm	52625		71488	J	72112	J	68816	J	75536	J			75975		60490	J	66945	J	68199	J	3360	J	39265	J	42350	
Turbidity	NTU	2.59		8.50		0.16		0.32		0.03				0.16		0.63		0.16		0.16		0.37		0.66		0.53	
Silica, dissolved	mg/L																										
Calcium	mg/L	527		619		632		674		654		664		664		627	J	610	J	625	J	177	J	55	J	574	
Magnesium	mg/L	1270		1750		1780		1590		1690		1730		1740		1340	J	1500	J	1540	J	39.8	J	81.8	J	936	
Potassium	mg/L	358		546		560		563		620		629		635		472	J	540	J	558	J	6.31	J	19.6	J	258	
Sodium	mg/L	9600		13300		13700		12400		13400		13500		13800		11000	J	12200	J	12900	J	411	J	723	J	8720	
Boron	mg/L	3.84	I	5.76		5.93		5.94		6.62		6.68		6.57		4.85		5.49		5.68		0.1	U	0.14		2.07	
Strontium	mg/L	9.24		11.60		12.00		13.00		14.00		14.20		14.00		10.10		12.00		12.10		1.79		0.74		8.32	
Bromide	mg/L	67.8		99.2	J	97.3	J	93.5	J	105.0	J	102.0	J	103.0		79.0	J	91.5	J	93.0	J	3.1	J	56.1	J	52.2	
Chloride	mg/L	19000		28100	J	28700	J	27400	J	29900	J	30400	J	30600		23800	J	26800	J	27500	J	929	J	14400	J	15700	
Fluoride	mg/L	0.210		0.260	J	0.270	J	0.230	J	0.310	J	0.270	J	0.260		0.210	J	0.170	J	0.210	J	0.100	J	0.130	J	0.150	
Sulfate	mg/L	2620		3630	J	3720	J	3420	J	3820	J	3770	J	3850		3000	J	3320	J	3440	J	47	J	1620	J	1820	
Total Ammonia	mg/L as N	1.130	J	1.500	J	1.690	J	1.950		2.320		2.780		2.480													
Ammonium ion (NH_4^+)	mg/L	1.44	J	1.92	J	2.16	J	2.49		2.97				3.18													
Unionized NH_3	mg/L	0.009	J	0.011	J	0.013	J	0.015		0.014				0.016													
Nitrate/Nitrite	mg/L as N	0.0250	U	0.0250	U	0.0250	U	0.0336	I	0.0381	I	0.0283	I	0.0371	I												
TKN	mg/L	1.83		2.30		1.21	J	2.46		3.12		3.28		2.76													
TN	mg/L	1.86		2.33		1.24	J	2.49		3.16		3.31	J	2.80	J												
ortho-Phosphate	mg/L	0.0193		0.0314		0.0487		0.0184		0.0464		0.0464		0.0439													
Total Phosphorus (P)	mg/L	0.0342		0.0587		0.0463		0.0293		0.0461		0.0454		0.0556													
Alkalinity	mg/L	254		185	J	183	J	167	J	213	J	212	J	205		528	J	257	J	231	J	323		216	J	212	
Bicarbonate Alkalinity	mg/L as HCO_3	310		226	J	224	J	204	J	260	J	259	J	250		645	J	314	J	282	J	394		263	J	258	
Sulfide	mg/L	0.23		0.25		0.44		0.10	I	0.85		0.96		0.25		8.52		0.15		0.08	I	0.12		0.04	U	0.04	I
Total Dissolved Solids	mg/L	33500		43600		49300		46400		49800		50600		51600		38800		46500		48900		1840		25800		28200	
Salinity	*	34.64		49.06	J	49.55	J	46.96	J	52.26	J			52.61		40.55	J	45.51	J	46.49	J	1.76	J	25	J	27.19	
Tritium	pCi/L (1σ)	1018.2 (33.7)		2234.6 (71.0)		2275.7 (71.6)		2307.2 (89.4)		2678.6 (91.9)		3105.0 (106.0)		2853.1 (90.3)		189.2 (7.6)		1378.8 (46.7)		1603.9 (53.4)		20.5 (5.9)	J	311.6 (13.7)		426.8 (16.9)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 030315-Dup is a duplicate of TPGW-2M.
Sample 030515-Dup is a duplicate of TPGW-9D.
Sample 030915-Dup is a duplicate of TPGW-12M.
Text in blue is revised

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-8. Summary of Groundwater Analytical Results from the March 2015 Sampling Event (continued)

		TPGW-5S		TPGW-5M		TPGW-5D		TPGW-6S		TPGW-6M		TPGW-6D		TPGW-7S		TPGW-7M		TPGW-7D		TPGW-8S		TPGW-8M		TPGW-8D	
Parameter	Units	03/05/2015		03/05/2015		03/05/2015		03/02/2015		03/02/2015		03/02/2015		03/02/2015		03/02/2015		03/02/2015		03/02/2015		03/02/2015		03/02/2015	
Temperature	°C	24.13		24.68		24.51		23.86		24.12		24.03		24.17		24.28		23.99		24.18		24.15		24.24	
pH	SU	7.26		6.83		6.85		7.07		6.92		6.89		7.24		7.29		6.86		11.41		7.07		7.08	
Dissolved Oxygen	mg/L	0.25		0.24		0.34		0.17		0.20		0.15		0.05		0.03		0.12		0.27		0.24		0.25	
Specific Conductance	µS/cm	961		32899	J	35041	J	1232		22633		23682		534		537		6166		880	J	646		668	
Turbidity	NTU	0.50		0.19		0.19		0.47		0.30		0.37		1.09		0.33		0.43		0.46		0.21		0.22	
Silica, dissolved	mg/L																								
Calcium	mg/L	105		561	J	561	J	132		528		558		84		85		427		90		111		102	
Magnesium	mg/L	6.47		621	J	693	J	12.7		461		499		4.27		4.24		25		1.2		4.24		5.85	
Potassium	mg/L	5.26		135	J	173	J	4.82		109		117		8.12		7.61		8.47		10.8		12		9.4	
Sodium	mg/L	67		3930	J	4400	J	108		3930		4230		20		21		766		18		17		24	
Boron	mg/L	0.05	I	0.95		1.31		0.06		0.85		0.92		0.05	I	0.05	I	0.06		0.06		0.08		0.07	
Strontium	mg/L	1.02		7.20		7.87		1.28		8.97		9.37		0.82		0.82		4.54		0.65		1.12		1.05	
Bromide	mg/L	0.6		41.3	J	44.5	J	0.8		33.6		35.9		0.1		0.2		6.7		0.2		0.2		0.2	
Chloride	mg/L	149		11600	J	12700	J	219		7950		8390		35		36		1960		33		31		43	
Fluoride	mg/L	0.120		0.120	J	0.140	J	0.120		0.130		0.150		0.130		0.130		0.024	U	0.024	U	0.100		0.100	
Sulfate	mg/L	15		1220	J	1400	J	6		765		816		21		22		19		52		65		56	
Total Ammonia	mg/L as N																								
Ammonium ion (NH_4^+)	mg/L																								
Unionized NH_3	mg/L																								
Nitrate/Nitrite	mg/L as N																								
TKN	mg/L																								
TN	mg/L																								
ortho-Phosphate	mg/L																								
Total Phosphorus (P)	mg/L																								
Alkalinity	mg/L	239		233	J	221	J	295		212		224		203		202		172		146		225		227	
Bicarbonate Alkalinity	mg/L as HCO_3	292		284	J	270	J	360		259		274		248		246		209		1	U	274		277	
Sulfide	mg/L	0.72	I	0.07	I	0.05	I	0.12		0.04	U	0.04	I	0.09	I	0.04	U	0.14		0.05	I	0.07	I	0.18	
Total Dissolved Solids	mg/L	520	Q	19800	Q	21100	Q	676		14100		15000		284		272		3740		276	J	350		366	
Salinity	*	0.47	J	20.57	J	22.05	J	0.61	J	13.65		14.34		0.26	J	0.26	J	3.35		0.43	J	0.31	J	0.32	J
Tritium	pCi/L (1σ)	-1.8 (5.2)	UJ	234.9 (11.0)		349.2 (14.5)		15.5 (5.5)	J	23.3 (5.7)	J	10.4 (5.3)	J	13.5 (5.5)	J	12.9 (5.5)	J	22.6 (5.7)	J	8.6 (5.5)	J	16.2 (5.9)	J	9.8 (5.5)	J

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 030315-Dup is a duplicate of TPGW-2M.
Sample 030515-Dup is a duplicate of TPGW-9D.
Sample 030915-Dup is a duplicate of TPGW-12M.
Text in blue is revised

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-8. Summary of Groundwater Analytical Results from the March 2015 Sampling Event (continued)

Parameter	Units	TPGW-9S 03/05/2015		TPGW-9M 03/05/2015		TPGW-9D 03/05/2015		030515-Dup 03/05/2015		TPGW-10S 03/04/2015		TPGW-10M 03/04/2015		TPGW-10D 03/04/2015		TPGW-11S 03/04/2015		TPGW-11M 03/04/2015		TPGW-11D 03/04/2015		TPGW-12S 03/09/2015		TPGW-12M 03/09/2015		030915-Dup 03/09/2015	
Temperature	°C	24.69		24.30		24.11				25.82		25.72		25.62		25.31		25.30		25.37		26.74		26.81			
pH	SU	6.87		6.91		6.91				7.27		7.25		7.00		6.93		6.73		6.79		6.61		6.64			
Dissolved Oxygen	mg/L	0.23		0.23		0.52				0.20		0.13		0.18		0.21		0.33		0.17		0.26		0.08			
Specific Conductance	µS/cm	604		603		622				53820		56077	J	69409	J	55149	J	57580	J	64255	J	45042		58029	J		
Turbidity	NTU	0.23		0.23		0.13				0.22		0.29		0.12		0.29		0.27		0.09		0.12		0.27			
Silica, dissolved	mg/L																										
Calcium	mg/L	110		105		107		110		424		450		586		488	J	534	J	596	J	503		595	J	582	
Magnesium	mg/L	2.45		2.81		3.25		3.39		1300		1360		1790		1360	J	1420	J	1610	J	1010		1450	J	1330	
Potassium	mg/L	4.89		5.16		3.67		3.94		400		421		554		427	J	430	J	493	J	356		471	J	475	
Sodium	mg/L	12		12		15		15		9740	J	10200	J	13300	J	10400	J	10900	J	12300	J	8580	J	11200	J	11400	
Boron	mg/L	0.04	I	0.05	I	0.05	I	0.06		4.58	I	4.79	I	5.99		5.06		4.95	I	5.34		3.54		5.19		4.65	
Strontium	mg/L	0.83		0.90		1.12		1.14		7.98		8.66		11.10		8.53		9.23		10.70		7.83		10.10		10.10	
Bromide	mg/L	0.2		0.2		0.3		0.3		73.4		72.7	J	93.8	J	72.1	J	75.5	J	85.9	J	56.9		77.4	J	78.1	
Chloride	mg/L	22		23		27		27		17100		21200	J	27200	J	21000	J	22600	J	24900	J	16700		23100	J	22600	
Fluoride	mg/L	0.032	U	0.032	U	0.032	U	0.032	U	0.820		0.600	J	0.250	J	0.850	J	0.610	J	0.710	J	0.480	J	0.270	J	0.280	
Sulfate	mg/L	5		8		27		27		2710		2800	J	3530	J	2800	J	2880	J	3220	J	2010		2850	J	2890	
Total Ammonia	mg/L as N									0.594	J	0.423	J	1.170	J												
Ammonium ion (NH_4^+)	mg/L									0.75	J	0.53	J	1.50	J												
Unionized NH_3	mg/L									0.009	J	0.006	J	0.009	J												
Nitrate/Nitrite	mg/L as N									0.0269	I	0.0289	I	0.0302	I												
TKN	mg/L									0.90		0.63		1.80													
TN	mg/L									0.92	J	0.66	J	1.83													
ortho-Phosphate	mg/L									0.0232		0.0194		0.0406													
Total Phosphorus (P)	mg/L									0.0322		0.0367		0.0447													
Alkalinity	mg/L	274		276		254		261		133		126	J	169	J	273	J	333	J	265	J	528		333	J	332	
Bicarbonate Alkalinity	mg/L as HCO_3	335		336		310		319		162		154	J	207	J	333	J	406	J	324	J	644		406	J	406	
Sulfide	mg/L	0.62		0.30		0.09	I	0.10	I	4.70	Q	1.54	Q	5.90	Q	8.83	Q	7.72	Q	5.46	Q	5.10		8.31	J	5.23	J
Total Dissolved Solids	mg/L	324	Q	322	Q	344	Q			32400		34700		44700		34100		35600		40600		26700		38600		41600	
Salinity	*	0.29	J	0.29	J	0.3	J			35.54		37.23	J	47.45	J	36.54	J	38.37	J	43.46	J	29.09		38.67	J		
Tritium	pCi/L (1σ)	5.8 (5.3)		-0.2 (4.9)	UJ	-4.5 (4.8)	UJ	4.3 (5.5)	UJ	12.5 (5.2)	J	33.8 (5.8)	J	1598.0 (56.4)		6.9 (5.2)	J	180.7 (9.9)		876.9 (32.5)		90.8 (5.9)		955.5 (32.5)		959.4 (32.6)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 030315-Dup is a duplicate of TPGW-2M.
Sample 030515-Dup is a duplicate of TPGW-9D.
Sample 030915-Dup is a duplicate of TPGW-12M.
Text in blue is revised
KEY:
°C = Degrees Celsius.
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DUP = Duplicate.
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HCO_3 = Bicarbonate
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N = Nitrogen
NH_3 = Ammonia.
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NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-8. Summary of Groundwater Analytical Results from the March 2015 Sampling Event (continued)

Parameter	Units	TPGW-12D		TPGW-13S		TPGW-13M		TPGW-13D		TPGW-14S		TPGW-14M		TPGW-14D	
		03/09/2015		03/09/2015		03/09/2015		03/09/2015		03/04/2015		03/04/2015		03/04/2015	
Temperature	°C	26.78		29.99		29.44		29.45		25.74		25.86		25.87	
pH	SU	7.08		6.71		6.87		6.82		6.99		6.78		6.79	
Dissolved Oxygen	mg/L	0.10		0.19		0.09		0.12		0.18		0.31		0.31	
Specific Conductance	µS/cm	64578	J	84447	J	78024	J	79894	J	57239		61261		73310	J
Turbidity	NTU	0.37		5.62		1.88		0.11		0.23		0.18		0.22	
Silica, dissolved	mg/L														
Calcium	mg/L	612	J	788		717		733		501		557		640	
Magnesium	mg/L	1520	J	2200		2080		2180		1430		1520		1880	
Potassium	mg/L	537	J	750		655		696		449		472		596	
Sodium	mg/L	12600	J	17000		14700		14700		10800		11700	J-	13800	
Boron	mg/L	5.10		8.50		7.58		8.56		5.44		5.22		7.42	
Strontium	mg/L	11.00		15.70		14.70		15.00		9.04		9.95		12.50	
Bromide	mg/L	130.0	J-	118.0	J	108.0	J	110.0	J	75.9		81.4		102	J
Chloride	mg/L	26000	J	35900	J	32700	J	32100	J	20800		23200		29500	J
Fluoride	mg/L	0.260	J-	0.460	J	0.190	J	0.220	J	0.560		0.450		0.41	J
Sulfate	mg/L	3240	J	4410	J	4060	J	4120	J	2900		3080		3860	J
Total Ammonia	mg/L as N			3.060		1.560		1.880		0.770	J	1.090	J+	1.99	
Ammonium ion (NH_4^+)	mg/L			3.92		2.00		2.41		0.98	J	1.39	J	2.55	
Unionized NH_3	mg/L			0.015		0.012		0.011		0.006	J	0.005	J	0.009	
Nitrate/Nitrite	mg/L as N			0.0280	I J	0.0276	I J	0.0966	J	0.0250	U	0.0308	I J	0.03	I J
TKN	mg/L			4.98		3.00		3.74		0.93		1.50		3.00	
TN	mg/L			5.01	J	3.03	J	3.84	J	0.96	J	1.53	J	3.03	J
ortho-Phosphate	mg/L			0.0624	Q	0.0064	I J	0.0705	J+	0.0479		0.0641		0.0588	
Total Phosphorus (P)	mg/L			0.0636		0.0598		0.0635		0.0710		0.0682		0.0612	
Alkalinity	mg/L	196	J	295	J	203	J	215	J	232		289		233	J
Bicarbonate Alkalinity	mg/L as HCO_3	239	J	360	J	248	J	263	J	283		352		285	J
Sulfide	mg/L	1.35		39.10		0.45	I J	5.80		3.83	Q	6.01	Q	7.11	Q
Total Dissolved Solids	mg/L	45400		58900		53000		56100		36500		39200		49700	
Salinity	*	43.66	J	59.36	J	54.16	J	55.67	J	38.1		41.14		50.52	J
Tritium	pCi/L (1σ)	1532.7 (50.2)		4738.0 (162.8)		3044.4 (106.4)		3816.1 (133.4)		110.1 (7.8)		361.3 (15.4)		2297.2 (80.1)	

Parameter	Units	030215-EB		030315-FB		030415-FB		030515-FB1		030515-FB2		030915-FB1		030915-FB2	
		03/02/2015		03/03/2015		03/04/2015		03/05/2015		03/05/2015		03/09/2015		03/09/2015	
Temperature	°C														
pH	SU														
Dissolved Oxygen	mg/L														
Specific Conductance	µS/cm														
Turbidity	NTU														
Silica, dissolved	mg/L	0.05	U	0.05	U	0.05	U	0.050	U			0.0521	I		
Calcium	mg/L	0.100	U	0.100	U	0.100	U	0.100	U			0.1	U		
Magnesium	mg/L	0.0200	U	0.0200	U	0.0200	U	0.020	U			0.02	U		
Potassium	mg/L	0.190	U	0.190	U	0.190	U	0.190	U			0.19	U		
Sodium	mg/L	0.310	U	0.310	U	0.310	U	0.310	U			0.31	U		
Boron	mg/L	0.01	U	0.01	U	0.01	U	0.010	U			0.01	U		
Strontium	mg/L	0.001	U	0.001	U	0.001	U	0.001	U			0.001	U		
Bromide	mg/L	0.0130	U	0.0130	U	0.0250	U	0.025	U			0.025	U		
Chloride	mg/L	0.200	U	0.200	U	0.200	U	0.200	U			0.200	U		
Fluoride	mg/L	0.0240	U	0.0320	U	0.0320	U	0.032	U			0.032	U		
Sulfate	mg/L	0.400	U	0.400	U	0.400	U	0.400	U			0.4	U		
Total Ammonia	mg/L as N	0.1400	I	0.1570	I	0.1950	I	0.2400		0.1600	I	0.1	U	0.1	U
Ammonium ion (NH_4^+)	mg/L														
Unionized NH_3	mg/L														
Nitrate/Nitrite	mg/L as N	0.005	UQ	0.005	U	0.00551	I	0.00500	U			0.0105			
TKN	mg/L	0.228	I	0.200	U	0.200	U	0.20	U			0.1	U		
TN	mg/L														
ortho-Phosphate	mg/L	0.0021	U	0.0021	U	0.0021	U	0.00210	U			0.0021	U		
Total Phosphorus (P)	mg/L	0.0030	U	0.0030	U	0.0030	U	0.00300	U			0.003	U		
Alkalinity	mg/L	1.00	U	1.00	U	1.00	U	1.00	U			1	U		
Bicarbonate Alkalinity	mg/L as HCO_3	1.00	U	1.00	U	1.00	U	1.00	U			1	U		
Sulfide	mg/L	0.04	U	0.04	U	0.05	I Q	0.04	U			0.0564	I		
Total Dissolved Solids	mg/L	5	U	5	U	5	U	5	U			5	U		
Salinity	*														
Tritium	pCi/L (1σ)	6.0 (5.3)		4.6 (2.6)		5.0 (2.6)		-3.6 (5.0)	UJ			-0.1 (3.6)	UJ		

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 030315-Dup is a duplicate of TPGW-2M.
Sample 030515-Dup is a duplicate of TPGW-9D.
Sample 030915-Dup is a duplicate of TPGW-12M.
Text in blue is revised

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-9. Summary of Groundwater Analytical Results from the June 2013 Historical Well Sampling Event

Parameter	Units	TPGW-L3-18 6/7/2013		TPGW-L3-58 6/7/2013		TPGW-L5-18 6/7/2013		TPGW-L5-58 6/7/2013		TPGW-G21-18 6/10/2013		061013-DUP1 6/10/2013		TPGW-G21-58 6/10/2013		TPGW-G28-18 6/10/2013		TPGW-G28-58 6/10/2013		TPGW-G35-18 6/10/2013		TPGW-G35-58 6/10/2013		060713-FB1 6/7/2013		061013-FB1 6/10/2013	
Temperature	°C	26.39		27.97		27.13		27.75		25.02				25.16		25.57		25.19		24.59		24.87					
pH	SU	7.14		6.86		7.2		6.84		6.9				6.64		7.94		6.79		6.94		7.16					
Dissolved Oxygen	mg/L	0.4		0.23		1.23		0.29		0.56				0.36		0.28		0.31		0.35		0.32					
Specific Conductance	µS/cm	1179		79416		547		74968		518				17408		7850		39487		634		14447					
Turbidity	NTU	3.01		0.14		1.66		0.15		0.71				0.32		59.73		27.6		0.94		0.3					
Sodium	mg/L	123		19500		41.2		18400		23.2		22.9		2820		1190		7460		26.8		2450		0.31	U	0.31	U
Chloride	mg/L	240		32700		78.4		30900		51.7		48		6250		2670		16000		48.4	J+	5070		0.25	U	0.25	U
Total Dissolved Solids	mg/L	627		50600		296		48500		268		264		12000		4460		24300		348		8300				5	U
Salinity	*	0.58	J	55.34		0.26	J	51.78		0.25	J			10.24		4.34		25.15		0.31	J	8.37					
Tritium	pCi/L (1σ)	60.9 (6.8)		4241 (125)		65.9 (7.1)		3420 (113)		10.3 (6.9)		11.1 (6.7)		50.4 (7.4)		18.7 (7.0)		397 (16.3)		18.6 (6.7)		15.1 (6.8)		3.4 (5.2)	UJ	-7.8 (5.8)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
Sample 061013-DUP1 is a duplicate of 061013-TPGW-G21-18
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-10. Summary of Groundwater Analytical Results from the September 2013 Historical Well Sampling Event

Parameter	Units	TPGW-L3-18 09/10/2013		TPGW-L3-58 09/10/2013		TPGW-L5-18 09/10/2013		TPGW-L5-58 09/10/2013		TPGW-G21-18 09/09/2013		090913-DUP 09/09/2013		TPGW-G21-58 09/09/2013		TPGW-G28-18 09/09/2013		TPGW-G28-58 09/09/2013		TPGW-G35-18 09/09/2013		TPGW-G35-58 09/09/2013		090913-FB1 09/09/2013		091013-FB1 09/10/2013	
Temperature	°C	27.92		28.67		29.60		28.86		26.19				25.81		25.93		25.75		24.88		24.77					
pH	SU	7.37		6.89		7.26		6.87		7.28				6.71		8.25		6.84		7.23		7.17					
Dissolved Oxygen	mg/L	0.15		0.22		0.14		0.20		0.20	J			0.04	J	0.19	J	0.03	J	0.21	J	0.31	J				
Specific Conductance	µS/cm	704		79173		1727		75809		532				17131		5034		39083		592		17918					
Turbidity	NTU	2.53		0.06		0.72		0.07		1.42				0.53		19.45		10.00		0.27		0.22					
Calcium	mg/L	67.4		677		83.9		735		87.5		87.0		635		259		593		90.7		313		0.100	U	0.100	U
Magnesium	mg/L	7.69		1790		22.8		1810		3.82		3.80		221		70.0		807		5.59		342		0.0200	U	0.0200	U
Potassium	mg/L	2.49		671		9.30		671		4.54		4.43		25.7		14.5		198		9.42		102		0.190	U	0.190	U
Sodium	mg/L	66.3		16900		225		17100		23.9		23.5		2690		988		7140		21.3		3000		0.310	U	0.310	U
Boron	mg/L	0.0457	I	7.09		0.105		6.87		0.064		0.048	I	0.155	I	0.195	I	1.43		0.0655		1.53		0.01	U	0.01	U
Strontium	mg/L	0.644		13		0.88		15.2		0.771		0.769		6.52		2.35		7.17		0.858		4.59		0.001	U	0.001	U
Bromide	mg/L	0.379		117		1.57		108		0.224		0.214		21.6		7.57		45.4		0.315		21.7		0.0130	U	0.0130	U
Chloride	mg/L	134		34800		443		33300		46.6		45.1		6440		2210		15300		37.6		6490		0.250	U	0.250	U
Fluoride	mg/L	0.0923	I	0.299		0.0923	I	0.193		0.118		0.114		0.0870	I	0.0783	I	0.131		0.126		0.159		0.0240	U	0.0240	U
Sulfate	mg/L	2.11		4350		32.2		4080		10.5	J	8.48	J	216		173		1730		59.9		867		0.250	U	0.250	U
Total Ammonia	mg/L as N																							0.0260	U	0.0261	I
Nitrate/Nitrite	mg/L as N																							0.00760	I	0.00540	U
TKN	mg/L																							0.366		0.255	
ortho-Phosphate	mg/L																							0.00140	U	0.00140	U
Total Phosphorus (P)	mg/L																							0.00220	U	0.00220	U
Alkalinity	mg/L	153		185		181		189		204		201		201		118		212		176		167		1.00	U	1.00	U
Bicarbonate Alkalinity	mg/L as HCO_3	153		185		181		189		204		201		201		118		212		176		167		1.00	U	1.00	U
Sulfide	mg/L	1.12		1.67		1.12		1.00	U	1.15		1.00	U	1.00	U	1.28		1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Total Dissolved Solids	mg/L	412		56600		890		52000		292		288		10900		4120		24100		324		10300					
Salinity	*	0.34	J	55.12		0.87	J	52.41		0.26	J			10.08		3.43		24.83		0.29	J	10.58					
Tritium	pCi/L (1σ)	36.2 (5.9)		3857.5 (118.9)		53.5 (5.3)		3137.8 (105.0)		5.4 (4.0)		7.6 (3.9)		40.9 (4.9)		6.5 (6.0)		407.9 (16.4)		6.4 (5.9)		2.9 (6.0)	UJ	0.0 (5.7)	UJ	-3.3 (3.7)	UJ

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
Sample 090913-DUP1 is a duplicate of G21-18.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-11. Summary of Groundwater Analytical Results from the December 2013 Historical Well Sampling Event

Parameter	Units	TPGW-L3-18 12/05/2013		TPGW-L3-58 12/05/2013		TPGW-L5-18 12/05/2013		TPGW-L5-58 12/05/2013		TPGW-G21-18 12/06/2013		TPGW-G21-58 12/06/2013		TPGW-G28-18 12/06/2013		TPGW-G28-58 12/06/2013		TPGW-G35-18 12/06/2013		120613-DUP 12/06/2013		TPGW-G35-58 12/06/2013		120513-FB1 12/05/2013		120613-FB1 12/06/2013	
Temperature	°C	27.16		27.58		27.28		27.85		25.22		24.86		25.04		24.99		24.67				24.54					
pH	SU	6.92		6.80		7.18		6.80		6.94		6.64		7.93		6.86		7.10				7.12					
Dissolved Oxygen	mg/L	0.44		0.31		0.29		0.32		0.64		0.42		0.37		0.83		0.36				0.32					
Specific Conductance	µS/cm	2298		78688		980		74021		579		17273		5610		38640		645				18389					
Turbidity	NTU	1.34		0.01	J	0.99		0.01	J	1.31		0.40		105.40		47.70		1.75				0.01					
Sodium	mg/L	292		16900		93.2		15900		24.8		2880		941		7070		30.6		30.5		3150		0.310	U	0.310	U
Chloride	mg/L	556		33000		189		30200		45.6		5540		1910		14900		56.4		60.4		6230		0.250	U	0.250	U
Total Dissolved Solids	mg/L	940		57100		480		52700		308		9700		3140		24200		336		320		9600		5.00	U	5.00	U
Salinity	*	1.2	J	54.8		0.5	J	51.0		0.2	J	10.2		3.0		24.6		0.3	J			10.9					
Tritium	pCi/L (1σ)	67.7 (8.1)	J	4072.4 (133.8)		43.8 (7.5)	J	3329.1 (110.9)		7.9 (6.4)	J	29.5 (7.0)	J	17.0 (6.7)	J	382.7 (16.2)		5.3 (6.2)	UJ	13.4 (6.5)	J	-1.9 (6.2)	UJ	-7.9 (6.5)	UJ	6.0 (6.4)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
Sample 120613-DUP1 is a duplicate of 120613-TPGW-G35-18.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-12. Summary of Groundwater Analytical Results from the March 2014 Historical Well Sampling Event

Parameter	Units	TPGW-L3-18 03/07/2014		TPGW-L3-58 03/07/2014		TPGW-L5-18 03/07/2014		TPGW-L5-58 03/07/2014		TPGW-G21-18 03/06/2014		TPGW-G21-58 03/06/2014		TPGW-G28-18 03/06/2014		TPGW-G28-58 03/06/2014		TPGW-G35-18 03/06/2014		030614-DUP 03/06/2014		TPGW-G35-58 03/06/2014		030614-FB1 03/06/2014		030714-FB1 03/07/2014	
Temperature	°C	26.19		26.86		24.50		25.54		24.61		24.37		25.26		24.90		25.21				24.62					
pH	SU	7.24		6.95		7.36		6.87		7.40		6.70		9.46		6.92		7.56				7.10					
Dissolved Oxygen	mg/L	0.47		0.56		0.61		0.43		0.88		0.40		4.58		0.45		0.77				0.35					
Specific Conductance	µS/cm	837		77142		799		72566		538		16305		1673		38299		755				18096					
Turbidity	NTU	0.81		0.12		0.75		0.07		0.51		0.09		0.85		81.31		1.10				0.25					
Calcium	mg/L	79		671		81		669		81		581		98		587		69		68		307		0.100	U	0.100	U
Magnesium	mg/L	11		1790		10		1660		4		180		22		802		8		8		340		0.0200	U	0.0200	U
Potassium	mg/L	4		667		3		594		5		29		8		208		13		12		114		0.190	U	0.190	U
Sodium	mg/L	76		17100		68		16200	J	24		2700		350		7540		66		65		3350		0.310	U	0.310	U
Boron	mg/L	0.06		6.99		0.06		6.06		0.04	I	0.15		0.14		1.53		0.09		0.08		1.66		0.01	U	0.01	U
Strontium	mg/L	0.77		13.50		0.79		15.10		0.83		7.27		1.10		8.15		0.96		0.95		5.21		0.00	U	0.00	U
Bromide	mg/L	0.3		109.0		0.4		103.0		0.2		20.5		2.4		49.5		0.6		0.6		20.9		0.0130	U	0.0130	U
Chloride	mg/L	141		31700		122		28800		43		5810		676		13800		116		117		6020		0.250	U	0.364	I
Fluoride	mg/L	0.092	I	0.317	J	0.080	I	0.180	J-	0.121		0.091	I	0.045	I	0.142		0.138		0.142		0.162		0.0240	U	0.0240	U
Sulfate	mg/L	20.6		4550		10.3	J	3970		14.7		209		104		1760		76		77		925		0.338	I	1.110	
Total Ammonia	mg/L as N																							0.0260	U	0.0260	U
Nitrate/Nitrite	mg/L as N																							0.03780	I	0.05550	
TKN	mg/L																							0.300	U	0.300	U
TN	mg/L																							0.3378		0.3555	
ortho-Phosphate	mg/L																							0.00190	I	0.00140	U
Total Phosphorus (P)	mg/L																							0.00220	U	0.00220	U
Alkalinity	mg/L	187		183		210		192		196		203		76		217		115		118		170		1.00	U	1.00	U
Bicarbonate Alkalinity	mg/L as HCO_3	187		183		210		192		196		203		76		217		115		118		170		1.00	U	1.00	U
Sulfide	mg/L	1.00	U Q	1.00	U Q	1.84		1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Total Dissolved Solids	mg/L	440		55300		368		50800		276		10400		960		23700		368		348		10100		5	U	5	U
Salinity	*	0.41	J	53.55		0.39	J	49.93		0.26	J	9.56		0.84	J	24.33		0.37	J			10.69					
Tritium	pCi/L (1σ)	44.7 (4.3)		3790.0 (118.0)		32.8 (4.8)		2974.7 (91.9)		66.1 (4.9)		36.1 (4.0)		2.8 (3.4)		405.5 (14.5)		17.2 (3.6)		15.6 (3.6)		1.7 (3.3)		-0.1 (3.2)		-3.8 (4.0)	U

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
Sample 030614-DUP1 is a duplicate of G35-18.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
FB = Field Blank.
HCO_3 = Bicarbonate
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-13. Summary of Groundwater Analytical Results from the June 2014 Historical Well Sampling Event

Parameter	Units	TPGW-L3-18 06/06/2014		TPGW-L3-58 06/06/2014		TPGW-L5-18 06/06/2014		TPGW-L5-58 06/06/2014		TPGW-G21-18 06/05/2014		TPGW-G21-58 06/05/2014		TPGW-G28-18 06/05/2014		TPGW-G28-58 06/05/2014		TPGW-G35-18 06/05/2014		TPGW-G35-58 06/05/2014		060514-FB1 06/05/2014		060614-FB1 06/06/2014	
Temperature	°C	28.23		28.67		28.38		28.10		25.23		25.61		26.30		26.61		24.74		24.68					
pH	SU	7.25		6.97		7.18		6.93		7.15		6.74		8.17		6.92		7.48		7.15					
Dissolved Oxygen	mg/L	0.24		0.29		0.29		0.31		0.20		0.33		0.67		0.29		0.25		0.29					
Specific Conductance	µS/cm	1406		79378		5387		74945		607		17445		2123		39496		693		19034					
Turbidity	NTU	1.92		0.00	J	0.05		0.03		1.65		1.15		3.75		27.31		0.51		0.34					
Sodium	mg/L	130		15800		708		13200		25.3		2410		344		5390		47.4		3040		0.310	U	0.310	U
Chloride	mg/L	265		31300		1560		29600		46.9		5840		743		13900		86.4		6050		0.250	U	0.250	U
Total Dissolved Solids	mg/L	680		55300		1700		49900		280		11000		1170		23300		310		10100		5.00	U	5.00	U
Salinity	*	0.7	J	55.3		2.9		51.7		0.3	J	10.3		1.0		25.1		0.3	J	11.3					
Tritium	pCi/L	81.8 (5.8)		3610 (115.5)		52.8 (5.0)		2918 (93.8)		4.6 (5.9)	U	31.7 (6.5)		10.4 (6.1)		383.3 (15.7)		4.1 (5.8)	U	-3.8 (5.8)	U	-3.5 (5.3)	U	8.3 (6.4)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-14. Summary of Groundwater Analytical Results from the September 2014 Historical Well Sampling Event

Parameter	Units	TPGW-L3-18		TPGW-L3-58		TPGW-L5-18		TPGW-L5-58		TPGW-G21-18		TPGW-G21-58		TPGW-G28-18		TPGW-G28-58		090314-DUP		TPGW-G35-18		TPGW-G35-58		090214-EB		090314-FB	
		09/02/2014		09/02/2014		09/02/2014		09/02/2014		09/03/2014		09/03/2014		09/03/2014		09/03/2014		09/03/2014		09/03/2014		09/03/2014		09/02/2014		09/03/2014	
Temperature	°C	30.79		29.13		30.04		29.29		25.75		25.61		26.15		25.73				25.13		24.87					
pH	SU	7.44		6.95		7.33		6.86		7.25		6.73		9.38		6.94				7.30		7.17					
Dissolved Oxygen	mg/L	0.29		0.23		0.19		0.39		0.18		0.23		0.18		0.15				0.16		0.41					
Specific Conductance	µS/cm	668		78275		2379		74309		514		16694		1936		39266				610		17735					
Turbidity	NTU	0.25		0.00		0.32		0.00	J	0.70		0.00	J	5.55		16.28				0.11		0.00	J				
Calcium	mg/L	56		653	J	98		667	J	79		578	J	105		532	J	546		85		280	J	0.100	U	0.577	
Magnesium	mg/L	7		1630	J	31		1540	J	4		170	J	24		747	J	755		6		255	J	0.0200	U	0.0200	U
Potassium	mg/L	2		815	J	14		740	J	4		37	J	11		223	J	227		11		134	J	0.190	U	0.190	U
Sodium	mg/L	61		16400	J	305		15700	J	23		2490	J	359		6170	J	6250		22		2760	J	0.310	U	0.310	U
Boron	mg/L	0.06		7.39		0.15		6.47		0.04	I	0.16		0.14		1.50		1.52		0.07		1.64		0.01	U	0.01	U
Strontium	mg/L	0.55		13.10		1.08		15.00		0.76		6.81		1.08		7.03		7.37		0.92		4.75		0.00	U	0.00	U
Bromide	mg/L	0.4		110.0	J	2.0		104.0	J	0.2		20.7	J	1.9		46.8	J	48.2		0.3		19.7	J	0.0130	U	0.0130	U
Chloride	mg/L	122		32500	J	572		30400	J	44		6170	J	549		13700	J	13700		43		6060	J	0.250	U	0.250	U
Fluoride	mg/L	0.100		0.330	J	0.110		0.190	J	0.170		0.024	U J	0.024	U	0.140	J	0.140		0.130		0.170	J	0.0240	U	0.0240	U
Sulfate	mg/L	1.6		4220	J	53.2		3930	J	3.9		203	J	99		1760	J	1770		61		852	J	0.250	U	0.389	I
Total Ammonia	mg/L as N																							0.0677		0.0629	
Nitrate/Nitrite	mg/L as N																							0.10000	U	0.10000	U
TKN	mg/L																							0.150	U	0.150	U
ortho-Phosphate	mg/L																							0.00140	U	0.00140	U
Total Phosphorus (P)	mg/L																							0.00220	U	0.00220	U
Alkalinity	mg/L	133		194	J	209		202	J	202		211	J	124		230	J	231		176		177	J	1.00	U	1.00	U
Bicarbonate Alkalinity	mg/L as HCO_3	162		237	J	255		247	J	247		257	J	152		281	J	282		215		215	J	1.00	U	1.00	U
Sulfide	mg/L	0.55		0.10	U	0.19		0.10		0.48		0.10	U	0.10	U	0.10	U	0.10	U	0.22		0.10	U	0.10	U	0.10	U
Total Dissolved Solids	mg/L	368		55100		1320		51100		268		10100		1300		23100		24000		328		9600		5	U	5	U
Salinity	*	0.32	J	54.37		1.21	J	51.18		0.25	J	9.79		0.98	J	24.99				0.29	J	10.46					
Tritium	pCi/L (1σ)	68.2 (6.6)		3604.3 (108.0)		64.7 (5.0)	J	3062.8 (99.1)		22.7 (4.0)		45.0 (4.5)		8.0 (3.8)		393.0 (14.6)		385.3 (14.6)		6.4 (3.7)		0.6 (3.5)	UJ	6.5 (3.6)		-1.2 (3.4)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
Sample 090314-DUP1 is a duplicate of G28-58.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-15. Summary of Groundwater Analytical Results from the December 2014 Historical Well Sampling Event

Parameter	Units	TPGW-L3-18		TPGW-L3-58		TPGW-L5-18		TPGW-L5-58		TPGW-G21-18		TPGW-G21-58		TPGW-G28-18		TPGW-G28-58		TPGW-G35-18		TPGW-G35-58		120414-FB		120514-FB1	
		12/04/2014		12/04/2014		12/04/2014		12/04/2014		12/05/2014		12/05/2014		12/05/2014		12/05/2014		12/05/2014		12/05/2014		12/04/2014		12/05/2014	
Temperature	°C	26.73		27.55		25.56		26.41		25.69		24.47		27.01		24.95		25.48		24.90					
pH	SU	6.97		6.92		7.28		6.94		7.16		6.73		8.83		6.89		7.21		7.19					
Dissolved Oxygen	mg/L	0.20		0.26		0.29		0.66		0.38		0.24		0.58		0.21		0.37		0.23					
Specific Conductance	µS/cm	3130		77802		2381		73527		552		17161		1858		38790		602		18338					
Turbidity	NTU	0.30		0.18		0.27		0.28		0.31		0.31		0.74		19.45		0.26		0.13					
Sodium	mg/L	353		17000		317		16400		23.6		2920		280		7840		23.3		3340		0.310	U	0.310	U
Chloride	mg/L	692		31500		617		29700		41.1		5980		487		14100		40.9		6150		0.200	U	0.200	U
Total Dissolved Solids	mg/L	1350		57800		1070		53200		268		11000		1120		25100		292		10700		5.00	U	5.00	U
Salinity	*	1.63	J	54.06		1.22	J	50.68		0.27	J	10.10		0.94	J	24.67		0.29	J	10.84					
Tritium	pCi/L (1σ)	73.0 (7.1)		3386.9 (109.5)		102.1 (7.4)		2952.5 (101.7)		13.6 (7.6)	J	27.8 (7.9)	J	0.2 (7.3)	UJ	433.7 (19.7)		20.7 (5.9)	J	-4.3 (7.1)	UJ	-1.2 (5.4)	UJ	11.7 (5.9)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Text in blue is revised.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1-16. Summary of Groundwater Analytical Results from the March 2015 Historical Well Sampling Event

Parameter	Units	TPGW-L3-18		TPGW-L3-58		TPGW-L5-18		TPGW-L5-58		TPGW-G21-18		TPGW-G21-58		TPGW-G28-18		TPGW-G28-58		TPGW-G35-18		TPGW-G35-58		031015-FB1		031015-FB2		031115-FB1		031115-FB2	
		03/11/2015		03/11/2015		03/11/2015		03/11/2015		03/10/2015		03/10/2015		03/10/2015		03/10/2015		03/10/2015		03/10/2015		03/10/2015		03/10/2015		03/11/2015		03/11/2015	
Temperature	°C	26.31		27.80		24.45		25.95		24.86		24.91		25.39		25.05		24.81		24.70									
pH	SU	7.16		6.84		7.23		6.81		7.10		6.56		7.50		6.78		7.36		7.04									
Dissolved Oxygen	mg/L	0.27		0.26		0.42		0.27		0.26		0.36		1.12		0.25		0.26		0.20									
Specific Conductance	µS/cm	1100		77575		1016		72686	J	574		16916	J	1878		38626		699		18353	J								
Turbidity	NTU	4.80		0.41		0.51		0.03		0.85		0.14		4.98		9.91		0.60		0.02									
Calcium	mg/L	90.5		706		78.4		771	J	87.7		641	J	129		592		74.2		312	J	0.100	U			0.1	U		
Magnesium	mg/L	14.7		2110		14.2		1970	J	4.25		226	J	41.1		850		6.98		362	J	0.0200	U			0.02	U		
Potassium	mg/L	4.57		654		4.55		596	J	5.74		28.3	J	9.71	I	217		12.4		113	J	0.190	U			0.19	U		
Sodium	mg/L	106		15800		97.0		14300	J	25.7		2590	J	406		7970		49.6		2840	J-	0.310	U			0.31	U		
Boron	mg/L	0.069		7.720		0.075		8.550		0.049	I	0.206	I	0.196	I	1.580		0.085		1.630		0.01	U			0.01	U		
Strontium	mg/L	0.83		13.60		0.76		16.30		0.88		7.53		1.40		8.36		0.98		5.26		0.001	U			0.001	U		
Bromide	mg/L	0.524		115		0.494		104	J	0.200		20.6	J	2.35		50.6		0.491		22.0	J	0.0250	U			0.025	U		
Chloride	mg/L	211		29800		190		30500	J	48.9		6200	J	785		14500		96.0		6410	J	0.200	U			0.2	U		
Fluoride	mg/L	0.0320	UJ	0.320	J	0.0320	UJ	0.210	J-	0.130		0.100	J	0.0320	UJ	0.150	J	0.140	J	0.170	J	0.0320	U			0.032	U		
Sulfate	mg/L	35.1		4250		10.2		3750	J	17.0		199	J	107		1660		68.6		814	J	0.400	U			0.4	U		
Total Ammonia	mg/L as N																					0.123	I	0.100	U	0.251		0.1	U
Nitrate/Nitrite	mg/L as N																					0.00573	I			0.0152			
TKN	mg/L																					0.200	U			0.1	U		
ortho-Phosphate	mg/L																					0.00210	U			0.0021	U		
Total Phosphorus (P)	mg/L																					0.00300	U			0.003	U		
Alkalinity	mg/L	187		190		195		200	J	209		205	J	201		222		136		174	J	1.00	U			1	U		
Bicarbonate Alkalinity	mg/L as HCO_3	227		231		238		244	J	255		250	J	245		271		166		213	J	1.00	U			1	U		
Sulfide	mg/L	0.246		0.160		3.92		0.0599	I	0.0399	I J	0.469	I J	0.115	J	0.360	U	0.0469	I J	0.0575	I J	0.243				0.036	U		
Total Dissolved Solids	mg/L	626		57700		554		51700		314		10000		1100		24000		374		10100		5.00	U			5	U		
Salinity	*	0.54	J	53.78		0.50	J	50.02	J	0.28	J	9.93	J	0.95	J	24.55		0.34	J	10.86	J								
Tritium	pCi/L (1σ)	62.0 (6.2)		3249.1 (105.6)		80.4 (7.9)		2707.2 (88.1)		12.2 (3.9)		38.9 (6.9)		8.3 (3.7)		393.4 (15.0)		15.4 (3.9)		1.6 (3.6)	UJ	0.5 (3.8)	UJ			0.8 (6.1)	UJ		

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Text in blue is revised.

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
HCO_3 = Bicarbonate.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TPGW = Turkey Point Groundwater.
U = Analyzed for but not detected at the reported value.

Table 3.1.17. Average (± Standard Deviation) of Pre-Uprate and Post-Uprate Ion Concentrations in Groundwater

Parameter	Units	Marine[1]		Fresh/Brackish[2]		TPGW-13	
		Pre-Uprate	Post-Uprate	Pre-Uprate	Post-Uprate	Pre-Uprate	Post-Uprate
Temperature	°C	25.89 ± 1.66	26.12 ± 1.17	24.82 ± 1.14	25.12 ± 1.13	29.73 ± 0.44	29.5 ± 0.40
pH	SU	7.02 ± 0.22	6.89 ± 0.18	7.57 ± 1.15	7.31 ± 1.03	7.01 ± 0.15	6.84 ± 0.08
Dissolved Oxygen	mg/L	0.25 ± 0.20	0.30 ± 0.27	0.26 ± 0.22	0.38 ± 0.42	0.26 ± 0.30	0.22 ± 0.24
Spec Cond	µS/cm	57598 ± 16452	57446 ± 15637	4831 ± 9304	4760 ± 9325	84059 ± 2514	80623 ± 2186
Turbidity	NTU	0.8 ± 1.0	0.29 ± 0.70	2.64 ± 4.88	3.31 ± 12.5	0.51 ± 0.45	0.46 ± 1.18
Salinity	*	38.7 ± 12.2	38.6 ± 11.5	2.85 ± 5.86	2.81 ± 5.86	59.06 ± 2.07	56.3 ± 1.77
Calcium	mg/L	597 ± 89	581 ± 92	165 ± 134	172 ± 157	746 ± 32.0	709 ± 37.9
Magnesium	mg/L	1438 ± 495	1288 ± 408	67 ± 181	75 ± 186	2233 ± 115	1905 ± 187
Potassium	mg/L	446 ± 193	468 ± 180	23 ± 56	24 ± 50	710 ± 53.0	724 ± 62.4
Sodium	mg/L	11660 ± 3920	11760 ± 3776	642.26 ± 1593	738.0 ± 1694	17857 ± 1195	16908 ± 839
Boron	mg/L	4.38 ± 1.94	4.62 ± 1.95	0.19 ± 0.4	0.22 ± 0.45	7.5 ± 0.6	7.44 ± 0.59
Strontium	mg/L	10.2 ± 2.36	10.2 ± 2.33	1.76 ± 1.79	1.93 ± 2.10	14.4 ± 0.60	14.4 ± 0.57
Bromide	mg/L	76.6 ± 29.7	78.0 ± 24.5	4.31 ± 11.1	5.23 ± 11.7	109 ± 16.9	113 ± 4.71
Chloride	mg/L	22247 ± 7492	22724 ± 7015	1358 ± 3279	1546 ± 3488	34476 ± 2750	34004 ± 2282
Fluoride	mg/L	0.46 ± 0.57	0.32 ± 0.20	0.13 ± 0.11	0.09 ± 0.04	0.80 ± 1.04	0.26 ± 0.09
Sulfate	mg/L	2735 ± 1005	2932 ± 1006	157 ± 374	168 ± 405	4257 ± 396	4358 ± 242
Alkalinity	mg/L	210 ± 73.1	240 ± 91.8	225 ± 83.3	216 ± 55.4	165 ± 36.1	200 ± 41.2
Bicarbonate Alkalinity	mg/L ($CaCO_3$)	209 ± 74.4	267 ± 108	200 ± 72.8	232 ± 82.4	165 ± 36.1	225 ± 64.0
Sulfide	mg/L	3.22 ± 4.03	3.45 ± 4.74	1.11 ± 0.73	0.67 ± 0.60	7.14 ± 9.13	6.14 ± 10.9
Total Dissolved Solids	mg/L	38208 ± 12850	38490 ± 11783	2554 ± 5507	2795 ± 5714	60857 ± 5842	57238 ± 2281

Notes:

[1] Marine sites consist of TPGW-1S, -1M, 1D, -2S, -2M, -2D, -3S, -3M, -3D, -4M, -4D, -5M, -5D, -6M, -6D, -10S, -10M, -10D, -11S, -11M, -11D, -12S, -12M, -12D, -14S, -14M, -14D, L3-58, and L5-58.

[2] Fresh/Brackish sites consist of TPGW-4S, -5S, -6S, -7S, -7M, -7D, -8S, -8M, -8D, -9S, -9M, -9D, L3-18, L5-18, G21-18, G21-58, G28-18, G28-58, G35-18, and G35-58.
Please see Appendix J for a list of values that were removed from this analysis and the rationale for removal.

Key:

°C = Degrees Celsius.
Max = Maximum.
Min = Minimum.
SU = Standard Units
mg/L = Milligram(s) per liter.
µS/cm = MicroSiemens per centimeter.
NTU = Nephelometric turbidity unit(s).
* = Unitless
$CaCO_3$ = Bicarbonate.

Table 3.1-18. Range of Ion Concentrations in Groundwater for the Pre- and Post-Uprate Periods

Parameter	Units	Marine[1]				Fresh/Brackish[2]				TPGW-13			
		Min	Max	Average	Standard Deviation	Min	Max	Average	Standard Deviation	Min	Max	Average	Standard Deviation
Temperature	°C	18.32	29.40	26.01	1.42	22.05	30.79	24.98	1.14	28.75	30.47	29.62	0.43
pH	SU	6.45	8.15	6.95	0.21	6.56	12.10	7.43	1.09	6.52	7.25	6.92	0.15
Dissolved Oxygen	mg/L	0.03	1.93	0.28	0.24	0.03	4.58	0.33	0.36	0.02	1.10	0.24	0.26
Specific Conductance	µS/cm	21758	84800	57511	15972	429	41949	4790	9299	78024	90261	82096	2875
Turbidity	NTU	0.00	8.50	0.52	0.90	0.00	105.40	3.01	9.81	0.00	5.62	0.48	0.90
Salinity	*	13.07	59.82	38.61	11.79	0.20	26.93	2.83	5.85	54.16	64.20	57.46	2.35
Calcium	mg/L	393	1080	591	90	48.0	641	168	143	662	790	733	38
Magnesium	mg/L	403	2200	1382	469	0.02	910	70	183	1670	2500	2114	215
Potassium	mg/L	92	1400	454	188	2.32	440	24	53	600	833	715	56
Sodium	mg/L	3630	21000	11715	3838	6.00	8300	695	1647	14700	20000	17351	1116
Boron	mg/L	0.58	8.55	4.47	1.94	0.03	1.66	0.20	0.42	6.60	8.70	7.48	0.59
Strontium	mg/L	6.09	16.30	10.24	2.35	0.53	8.36	1.82	1.91	13.40	16.00	14.41	0.58
Bromide	mg/L	23.00	180.00	77.12	27.76	0.03	62.00	4.67	11.29	49	130	110	14
Chloride	mg/L	7100	36900	22508	7230	10	16000	1461	3391	26000	39800	34224	2493
Fluoride	mg/L	0.01	3.30	0.40	0.47	0.02	0.65	0.12	0.09	0.02	3.60	0.60	0.86
Sulfate	mg/L	680	4680	2809	1009	1	1800	161	386	3700	5000	4294	347
Alkalinity	mg/L	48	567	221	82	30	580	222	74	54	295	178	41
Bicarbonate Alkalinity	mg/L ($CaCO_3$)	1.90	692.00	230.77	92.84	1.00	407.00	212.08	77.87	54.00	360.00	187.12	55.40
Sulfide	mg/L	0.01	22.0	3.31	4.30	0.01	8.30	0.95	0.72	0.10	39.1	6.78	9.66
Total Dissolved Solids	mg/L	12000	64000	38362	12264	160	26000	2686	5613	53000	75000	58927	4644

Notes:

[1] Marine sites consist of TPGW-1S, -1M, 1D, -2S, -2M, -2D, -3S, -3M, -3D, -4M, -4D, -5M, -5D, -6M, -6D, -10S, -10M, -10D, -11S, -11M, -11D, -12S, -12M, -12D, -14S, -14M, -14D, L3-58, L5-58.

[2] Fresh/Brackish sites consist of TPGW-4S, -5S, -6S, -7S, -7M, -7D, -8S, -8M, -8D, -9S, -9M, -9D, L3-18, L5-18, G21-18, G21-58, G28-18, G28-58, G35-18, G35-58.

Please see Appendix J for a list of values that were removed from this analysis and the rationale for removal.

Key:

°C = Degrees Celsius.
$CaCO_3$ = Bicarbonate.
Max = Maximum.
mg/L = Milligram(s) per liter.
* = Unitless
Min = Minimum.
µS/cm = MicroSiemens per centimeter.
NTU = Nephelometric turbidity unit(s).
SU = Salinity Units

Table 3.2-1. Summary of Surface Water Analytical Results from the June 2013 Sampling Event

		TPBBSW-3B		TPBBSW-4B		TPBBSW-5B		061313-Dup1		TPSWC-1T		TPSWC-1B		TPSWC-2T		TPSWC-2B		TPSWC-3T		TPSWC-3B		TPSWC-4T	
Parameter	Units	6/13/2013		6/13/2013		6/13/2013		6/13/2013		6/7/2013		6/7/2013		6/7/2013		6/7/2013		6/7/2013		6/7/2013		6/11/2013	
Temperature	°C	28.52		29.14		29.47				29.49		26.7		28.6		28.08		28.35		28.46		27.11	
pH	SU	7.85		7.68		7.79				7.77		7.14		7.68		7.56		7.6		7.59		6.9	
Dissolved Oxygen	mg/L	4.21		5.32		5.22				6.71		1.12		5.42		5.04		6		7.1		2.1	
Specific Conductance	µS/cm	53783		52173		46171				402	J	442	J	582		570		556		555		42969	
Turbidity	NTU	1.94		1.24		0.79				0.65		1.34		0.69		1.11		0.59		0.51		1.58	
Sodium	mg/L	10800		10600		8610		8900		30.9		32.6		54.8		55.4		50.4		51.4		8460	
Chloride	mg/L	20900		21300		17000		17900		53.9		55.2		106		106		95.6		95.4		16300	
Total Ammonia	mg/L as N																						
Nitrate/Nitrite	mg/L as N																						
TKN	mg/L																						
ortho-Phosphate	mg/L																						
Total Phosphorus (P)	mg/L																						
Total Dissolved Solids	mg/L																						
Salinity	*	35.4		34.2		29.8				0.2	J	0.2	J	0.3	J	0.3	J	0.3	J	0.3	J	27.6	
Tritium	pCi/L (1σ)	0.5 (7.3)	UJ	27.3 (7.8)		-7.5 (7.4)	UJ	-4.7 (7.2)	UJ	42.4 (6.7)		34.3 (7.0)		72.5 (6.7)		64.3 (7.1)		62.7 (7.0)		67.0 (6.4)		1447 (46)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text and blue is revised.
* PSS-78 salinity is unitless.
061113-DUP1 is a field duplicate of sample 061113-TPSWC-4B.
061313-DUP1 is a field duplicate of sample 061313-TPBBSW-5B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-1. Summary of Surface Water Analytical Results from the June 2013 Sampling Event (continued)

Parameter	Units	TPSWC-4B		061113-DUP1		TPSWC-5T		TPSWC-5B		TPSWC-6T		TPSWC-6B		TPSWID-1T		TPSWID-1B		TPSWID-2T		TPSWID-2B		TPSWID-3T	
		6/11/2013		6/11/2013		6/11/2013		6/11/2013		6/5/2013		6/5/2013		6/3/2013		6/3/2013		6/3/2013		6/3/2013		6/3/2013	
Temperature	°C	27.16				29.83		27.19		25.23		25.18		30.14		29.14		29.35		28.13		28.72	
pH	SU	6.92				7.83		7.49		7.23		7.25		8.06		7.85		7.85		7.01		7.64	
Dissolved Oxygen	mg/L	0.19				6.67		2.43		2.62		2.17		5.79		5.17		6.25		0.43		4.74	
Specific Conductance	µS/cm	48000				50933	J	55524		808		818		4088		6510		3293		13700		3644	
Turbidity	NTU	8.23				0.73		6.73		0.51		0.41		0.74		0.9		0.41		20.55		0.51	
Sodium	mg/L	9560		9570		11500		10300		50		51.2		588		997		467		2300		497	
Chloride	mg/L	19500		18700		22900	J	21500		83.2		89.5		1210		1920		885		4300		969	
Total Ammonia	mg/L as N																						
Nitrate/Nitrite	mg/L as N																						
TKN	mg/L																						
ortho-Phosphate	mg/L																						
Total Phosphorus (P)	mg/L																						
Total Dissolved Solids	mg/L																						
Salinity	*	31.3				33.3	J	36.8		0.4	J	0.4	J	2.2		3.5		1.7	J	7.9		1.9	J
Tritium	pCi/L (1σ)	1636 (51)		1596 (53)		135 (9.0)		140 (8.1)		7.2 (6.4)		9.0 (6.3)		182 (8.8)		208 (9.4)		126 (7.3)		322 (13)		93.7 (6.3)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text and blue is revised.
* PSS-78 salinity is unitless.
061113-DUP1 is a field duplicate of sample 061113-TPSWC-4B.
061313-DUP1 is a field duplicate of sample 061313-TPBBSW-5B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-1. Summary of Surface Water Analytical Results from the June 2013 Sampling Event (continued)

Parameter	Units	TPSWID-3B		TPSWCCS-1B		TPSWCCS-2B		TPSWCCS-3B		TPSWCCS-4T		TPSWCCS-5T		TPSWCCS-7B		060313-FB1		060513-FB1		060713-FB1		061113-EB1		061313-FB1	
		6/3/2013		6/3/2013		6/11/2013		6/3/2013		6/3/2013		6/3/2013		6/3/2013		6/3/2013		6/5/2013		6/7/2013		6/11/2013		6/13/2013	
Temperature	°C	27.59		40.33		36.51		33.55		31.51		32.47		37.76											
pH	SU	7.72		8.87		8.56		8.69		8.69		8.67		8.84											
Dissolved Oxygen	mg/L	5.02		4.28		8.45		4.86		5.55		5.14		6.38											
Specific Conductance	µS/cm	4006		75276		75280		74015		74816		74451		75876											
Turbidity	NTU	0.39		32.12		28.15		39.69		39.85		31.7		32.17											
Sodium	mg/L	571		15400		15700		15300		15500		15300		15300		0.31	U	0.31	U	0.31	U	0.31	U	0.31	U
Chloride	mg/L	1120		31000		33400		30200		32100		29800		30600		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Total Ammonia	mg/L as N																	0.026	U						
Nitrate/Nitrite	mg/L as N																	0.0054	U						
TKN	mg/L																	0.236							
ortho-Phosphate	mg/L																	0.0014	U						
Total Phosphorus (P)	mg/L																	0.0022	U						
Total Dissolved Solids	mg/L																	5	U			5	U		
Salinity	*	2.1		51.4		51.6		50.8		51.5		51.2		51.4											
Tritium	pCi/L (1σ)	110 (6.8)		4431 (156)		4036 (130)		4290 (149)		4397 (151)		4544 (159)		4411 (154)		6.5 (5.0)		-4.2 (4.8)	UJ	3.4 (5.2)	UJ	0.9 (5.2)	UJ	-6.6 (7.2)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text and blue is revised.
* PSS-78 salinity is unitless.
061113-DUP1 is a field duplicate of sample 061113-TPSWC-4B.
061313-DUP1 is a field duplicate of sample 061313-TPBBSW-5B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-2. Summary of Surface Water Analytical Results from the September 2013 Sampling Event

Parameter	Units	TPBBSW-3B 09/12/2013		TPBBSW-4B 09/12/2013		TPBBSW-5B 09/12/2013		TPSWC-1T 09/10/2013		TPSWC-1B 09/10/2013		091013-DUP 09/10/2013		TPSWC-2T 09/10/2013		TPSWC-2B 09/10/2013		TPSWC-3T 09/10/2013		TPSWC-3B 09/10/2013		TPSWC-4T 09/11/2013	
Temperature	°C	29.10		28.42		28.29		28.71		28.54				28.83		29.00		29.93		29.56		29.06	
pH	SU	8.13		8.04		7.88		7.48		7.32				7.73		7.54		7.78		7.68		7.48	
Dissolved Oxygen	mg/L	5.30		5.29		4.41		3.47		1.65				4.77		2.74		5.02		4.24		2.86	
Specific Conductance	µS/cm	49303	J	52612	J	50460	J	576		593				578		588		608		614		23204	J
Turbidity	NTU	0.92		0.77		1.10		0.54		1.17				1.19		0.84		0.63		0.52		2.40	
Silica, dissolved	mg/L																						
Calcium	mg/L	410		408		396		54.3		53.6		53.9		50.2		51.7		52.5		52.2		251	
Magnesium	mg/L	1110	J-	1110	J-	1070	J-	6.93		6.76		6.80		6.43		6.62		6.26		6.09		420	
Potassium	mg/L	413		436		427		2.39		2.34		2.34		2.59		2.81		2.73		2.62		169	
Sodium	mg/L	9610		10100		9710		50.5		52.0		52.4		53.5		54.0		56.2		55.7		4000	
Boron	mg/L	4.32		4.82		4.49		0.0428	I	0.0425	I	0.043	I	0.037	I	0.0395	I	0.0376	I	0.0362	I	1.74	
Strontium	mg/L	7.01		7.24		7.14		0.518		0.512		0.514		0.536		0.567		0.555		0.544		3.92	
Bromide	mg/L	68.3	J	70.8	J	70.1	J	0.178		0.207		0.208		0.207		0.227		0.265		0.279		28.2	J
Chloride	mg/L	19900	J	21200	J	20600	J	113		119		120		117		118		122		116		9050	J
Fluoride	mg/L	0.856	J	0.889	J	0.893	J	0.0636	I	0.0664	I	0.0741	I	0.0773	I	0.0786	I	0.0760	I	0.0744	I	0.345	J
Sulfate	mg/L	2580	J	2730	J	2620	J	1.16		1.03		1.11		1.42		0.713		4.71		3.11		1040	J
Total Ammonia	mg/L as N	0.0426	I J	0.0415	I J	0.0408	I J	0.174	J	0.233	J	0.230		0.154	J	0.166	J	0.131	J	0.132	J	0.240	
Ammonium ion (NH_4^+)	mg/L	0.0497	J	0.0494	J	0.049752		0.219	J	0.295	J			0.190		0.208		0.161		0.164		0.302	
Unionized NH_3	mg/L	0.00480	J	0.00370	J	0.002705		0.00460	J	0.00424	J			0.00718		0.00512		0.00733		0.00578		0.00650	
Nitrate/Nitrite	mg/L as N	0.00849	I	0.00540	U	0.00540	U	0.0200	J+	0.0206	J+	0.0112	J	0.00827	I J+	0.0109	J+	0.0125	J+	0.0315	J+	0.0267	J+
TKN	mg/L	1.28	J	0.935	J	0.990	J	1.21	J	2.92		1.29		1.33	J	1.29	J	1.16	J	1.15	J	1.02	
TN	mg/L	1.29	J	0.94	J	1.00	J	1.23	J	2.94	J			1.34	J	1.30	J	1.17	J	1.18	J	1.05	J
ortho-Phosphate	mg/L	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U
Total Phosphorus (P)	mg/L	0.00220	U	0.00220	U	0.00440	U	0.00315	I J-	0.00831	I J-	0.00451	I	0.00289	I J-	0.00220	U J-	0.00220	U J-	0.00220	U J-	0.00220	U J-
Alkalinity	mg/L	135	J	124	J	129	J	118		118		118		109		114		118		119		240	J
Bicarbonate Alkalinity	mg/L as HCO_3	135	J	124	J	129	J	118		118		118		109		114		118		119		240	J
Sulfide	mg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Total Dissolved Solids	mg/L																						
Salinity	*	32.1	J	34.6	J	33.0	J	0.3	J	0.3	J			0.3	J	0.3	J	0.3	J	0.3	J	14.0	J
Tritium	pCi/L (1σ)	8.7 (6.5)		12.3 (6.4)		23.6 (6.9)		25.5 (4.3)		28.3 (4.7)		31.4 (4.6)		36.7 (4.8)		33.0 (4.6)		31.1 (5.5)		24.8 (4.5)		190.7 (9.7)	

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 091013-DUP is a duplicate of TPSWC-1B.
Sample 091113-DUP2 is a duplicate of TPSWC-5B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
HCO_3 = Bicarbonate.
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-2. Summary of Surface Water Analytical Results from the September 2013 Sampling Event (continued)

Parameter	Units	TPSWC-4B 09/11/2013		TPSWC-5T 09/11/2013		TPSWC-5B 09/11/2013		091113-DUP2 09/11/2013		TPSWC-6T 09/09/2013		TPSWC-6B 09/09/2013		TPSWID-1T 09/05/2013		TPSWID-1B 09/05/2013		TPSWID-2T 09/05/2013		TPSWID-2B 09/05/2013		TPSWID-3T 09/05/2013		TPSWID-3B 09/05/2013	
Temperature	°C	29.92		30.60		30.71				25.82		25.83		31.89		30.53		32.30		29.00		31.59		30.01	
pH	SU	7.63		7.94		7.76				7.48		7.38		7.44		7.35		7.44		6.71		7.51		7.03	
Dissolved Oxygen	mg/L	3.23		5.14		4.04				1.49	J	0.94	J	5.52		4.58		5.77		0.42		5.86		1.36	
Specific Conductance	µS/cm	47521	J	52069	J	53157	J			750		758		3570		3565		3067		5929		2523		2520	
Turbidity	NTU	9.43		0.56		1.01				0.25		0.77		0.60		1.65		0.60		16.17		0.38		0.33	
Silica, dissolved	mg/L																								
Calcium	mg/L	394		415		443		460		88.5		86.3		109		107		121		195		100		120	
Magnesium	mg/L	954		1120		1190		1130		8.26		8.75		63.1		57.3		49.0		94.8		33.0		38.6	
Potassium	mg/L	386		430		437		452		9.40		9.47		20.3		20.8		16.3		29.5		14.5		13.8	
Sodium	mg/L	9100		10200		10300		10400		48.3		54.3		485		491		406		835		331		323	
Boron	mg/L	3.96		4.52		4.51		4.51		0.0722		0.073		0.238		0.243		0.164		0.268		0.133		0.129	
Strontium	mg/L	6.55		7.1		7.42		7.42		0.943		0.939		1.2		1.21		1.23		2.15		1.21		1.18	
Bromide	mg/L	65.3	J	70.6	J	72.5	J	72.6		0.475		0.513		3.13		3.17		2.71		6.09		2.18		2.17	
Chloride	mg/L	18000	J	20900	J	21500	J	21600		82.6		102		1000		1000		837		1760		676		660	
Fluoride	mg/L	0.757	J	0.835	J	0.807	J	0.807		0.121		0.113		0.129		0.133		0.121		0.143		0.108		0.119	
Sulfate	mg/L	2310	J	2670	J	2750	J	2750		53.0		48.5		93.3		93.0		73.8		156		56.9		56.2	
Total Ammonia	mg/L as N	0.0780		0.0361	I	0.0260	U	0.0260	U	0.0879		0.0793		0.0931		0.113		0.139		0.435		0.146		0.277	
Ammonium ion (NH_4^+)	mg/L	0.0970		0.0433		0.0300	U			0.111		0.101		0.117		0.143		0.174		0.557		0.182		0.353	
Unionized NH_3	mg/L	0.00313		0.00299		0	U			0.00191		0.00137		0.00278		0.00252		0.00427		0.00203		0.00500		0.00288	
Nitrate/Nitrite	mg/L as N	0.0102	J+	0.0176	J+	0.00600	I J+	0.00753	I	0.0291	J+	0.0289	J+	0.0270	U	0.0270	U	0.0270	U	0.0270	U	0.0421	I	0.0297	I
TKN	mg/L	0.849		0.549		0.743	J	2.39	J	0.591	J	0.512	J	0.819		0.890		0.908		1.19		0.767		0.871	
TN	mg/L	0.86	J	0.57	J	0.75	J			0.62	J	0.54	J	0.85		0.92		0.94		1.22		0.81		0.90	
ortho-Phosphate	mg/L	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U	0.00140	U
Total Phosphorus (P)	mg/L	0.00220	U J-	0.00220	U J-	0.00220	U J-	0.00220	U	0.00220	U J-	0.00220	U J-	0.00361	I	0.00334	I	0.00258	I	0.0101		0.00220	U	0.00277	I
Alkalinity	mg/L	151	J	130	J	143	J	142		192		194		247		251		214		312		206		223	
Bicarbonate Alkalinity	mg/L as HCO_3	151	J	130	J	143	J	142		192		194		247		251		214		312		206		223	
Sulfide	mg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.25		1.07		1.00	U	2.08		1.00	U	1.15	
Total Dissolved Solids	mg/L																								
Salinity	*	30.8	J	34.1	J	34.9	J			0.4	J	0.4	J	1.9	J	1.9	J	1.6	J	3.2		1.3	J	1.3	J
Tritium	pCi/L (1σ)	57.1 (6.4)		28.3 (5.7)		67.0 (6.7)		83.0 (7.0)		17.4 (6.0)		5.8 (5.9)	UJ	108.8 (5.7)		111.9 (5.8)		90.7 (5.1)		78.0 (4.9)		63.6 (4.4)		64.8 (4.5)	

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 091013-DUP is a duplicate of TPSWC-1B.
Sample 091113-DUP2 is a duplicate of TPSWC-5B.

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
HCO_3 = Bicarbonate.
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-2. Summary of Surface Water Analytical Results from the September 2013 Sampling Event (continued)

Parameter	Units	TPSWCCS-1B		TPSWCCS-2B		TPSWCCS-3B		TPSWCCS-4T		TPSWCCS-5T		TPSWCCS-7B		090513-FB1		090613-EB1		090913-FB1		091013-FB1		091113-FB1		091213-FB1	
		09/05/2013		09/06/2013		09/05/2013		09/05/2013		09/05/2013		09/05/2013		09/05/2013		09/06/2013		09/09/2013		09/10/2013		09/11/2013		09/12/2013	
Temperature	°C	39.56		34.86		34.35		33.58		33.09		36.97													
pH	SU	8.53		8.76		8.49		8.68		8.64		8.55													
Dissolved Oxygen	mg/L	4.68		4.92		6.07		6.72		5.77		5.45													
Specific Conductance	µS/cm	88287	J	88270	J	84330	J	88135	J	87241	J	88914	J												
Turbidity	NTU	81.66		78.94		76.18		76.24		79.45		83.28													
Silica, dissolved	mg/L	2.62	J-	2.66		2.76	J-	2.69	J-	2.61	J-	2.53	J-	0.0500	U	0.0500	U								
Calcium	mg/L	783	J	791	J	778		823		830	J	830	J	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U
Magnesium	mg/L	1920	J-	1930	J-	1920		2050		2090	J	2050	J	0.0200	U	0.0267	I	0.0200	U	0.0200	U	0.0200	U	0.0200	U
Potassium	mg/L	860	J+	855	J+	769		826		802	J	817	J	0.190	U	0.190	U	0.190	U	0.190	U	0.190	U	0.190	U
Sodium	mg/L	18600	J	18600	J	17200		18200		18200	J	18600	J	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
Boron	mg/L	9.11		9.22		8.32		8.73		8.43		8.90		0.0	U	0.01	U	0.010	U	0.01	U	0.01	U	0.01	U
Strontium	mg/L	16.5		16.4		15.4		16.4		15.8		16.2		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Bromide	mg/L	132	J	133	J	127	J	139	J	136	J	138	J	0.0130	U	0.0130	U	0.0130	U	0.0130	U	0.0130	U	0.0130	U
Chloride	mg/L	37200	J	40100	J	37700	J	40200	J	38600	J	39000	J	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
Fluoride	mg/L	0.739	J-	0.729	J	0.720	J-	0.732	J-	0.739	J	0.742	J-	0.0240	U	0.0240	U	0.0240	U	0.0240	U	0.179		0.0240	U
Sulfate	mg/L	5220	J	5090	J	4990	J	5330	J	5300	J	5360	J	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
Total Ammonia	mg/L as N	0.0907	J+	0.109	J	0.0952		0.0956		0.0781		0.0878		0.0260	U	0.0314	I	0.0260	U	0.0261	I			0.0262	I
Ammonium ion (NH_4^+)	mg/L	0.0770	J+	0.0853	J	0.0918		0.0824		0.0700		0.0776												0.0319	
Unionized NH_3	mg/L	0.0374	J+	0.0518	J	0.0289		0.0382		0.0287		0.0334												0.00164	
Nitrate/Nitrite	mg/L as N	0.0270	U	0.0270	U	0.0270	U	0.0270	U	0.0400	I	0.0270	U	0.0270	U	0.0270	U	0.00760	I	0.00540	U			0.00540	U
TKN	mg/L	14.9		17.7		14.6		14.6		14.8		14.6		0.150	U	0.294		0.366		0.255				0.311	
TN	mg/L	14.93		17.73		14.63		14.63		14.84		14.63				0.32									
ortho-Phosphate	mg/L	0.00652	I	0.0162		0.00140	U	0.00748	I	0.00811	I	0.00782	I	0.00140	U	0.00140	U	0.00140	U	0.00140	U			0.00140	U
Total Phosphorus (P)	mg/L	0.0524		0.0460		0.0285		0.0429		0.0625		0.0535		0.00220	U	0.00220	U	0.00220	U	0.00220	U			0.00220	U
Alkalinity	mg/L	124	J	128	J	132	J	127	J	127	J	126	J	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Bicarbonate Alkalinity	mg/L as HCO_3	76.5	J	39.0	J	70.8	J	28.4	J	27.4	J	55.3	J	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Sulfide	mg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.38		1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Total Dissolved Solids	mg/L															5.00	U					5.00	U		
Salinity	*	61.9	J	62.2	J	59.0	J	62.2	J	61.5	J	62.7	J												
Tritium	pCi/L (1σ)	1783.1 (60.9)		1801.6 (59.7)		1486.0 (47.6)		1646.8 (56.1)		1655.1 (56.0)		1644.0 (54.4)		2.4 (6.6)	UJ	1.6 (5.7)	UJ	0.0 (5.7)	UJ	-3.3 (3.7)	UJ	2.9 (5.3)	UJ	0.6 (5.6)	UJ

NOTES:
Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
Sample 091013-DUP is a duplicate of TPSWC-1B.
Sample 091113-DUP2 is a duplicate of TPSWC-5B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
HCO_3 = Bicarbonate.
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-3. Summary of Surface Water Analytical Results from the December 2013 Sampling Event

Parameter	Units	TPBBSW-3B 12/11/2013		TPBBSW-4B 12/11/2013		TPBBSW-5B 12/11/2013		TPSWC-1T 12/5/2013		120513-DUP 12/5/2013		TPSWC-1B 12/5/2013		TPSWC-2T 12/5/2013		TPSWC-2B 12/5/2013		TPSWC-3T 12/5/2013		TPSWC-3B 12/5/2013		TPSWC-4T 12/10/2013	
Temperature	°C	26.18		25.27		25.6		23.87				23.05		25.43		23.79		24.97		23.4		25.76	
pH	SU	7.99		7.94		7.71		7.39				7.18		7.65		7.32		7.91		7.52		7.19	
Dissolved Oxygen	mg/L	6.79		8.89		5.3		6.09				1.27		7.42		3.4		7.44		2.5		1.72	
Specific Conductance	µS/cm	47355		47251		45990		648				778		619		639		636		1378		22129	
Turbidity	NTU	1.15		0.54		0.55		0.85				1.24		0.38		0.64		0.68		3.36		1.08	
Sodium	mg/L	9680		9550		9190		58.4		58.3		69.2		58.7		59.8		60.2		180		3800	
Chloride	mg/L	18200		18000		17300		115		115		139		119		120		122		364		7290	
Total Dissolved Solids	mg/L																						
Salinity	*	30.78		30.72		29.8		0.31	J			0.38	J	0.3	J	0.31	J	0.31	J	0.69	J	13.3	
Tritium	pCi/L (1σ)	8.9 (5.7)	J	3.1 (5.7)	UJ	5.1 (5.8)	UJ	30.4 (6.6)	J	44.4 (6.8)	J	17.4 (6.4)	J	25.4 (6.6)	J	19.1 (6.4)	J	8.6 (6.1)	J	15.2 (6.4)	J	87.5 (7.3)	

NOTES:

Laboratory results are reported with 3 digits although only the first 2 are significant figures.

Text in blue is revised.

* PSS-78 salinity is unitless.

120513-DUP is a field duplicate of sample 120513-TPSWC-1T

121013-DUP is a field duplicate of sample 121013-TPSWCCS-5T

KEY:

°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-3. Summary of Surface Water Analytical Results from the December 2013 Sampling Event (continued)

Parameter	Units	TPSWC-4B		TPSWC-5T		TPSWC-5B		TPSWC-6T		TPSWC-6B		TPSWID-1T		TPSWID-1B		TPSWID-2T		TPSWID-2B		TPSWID-3T		TPSWID-3B	
		12/10/2013		12/10/2013		12/10/2013		12/6/2013		12/6/2013		12/10/2013		12/10/2013		12/10/2013		12/10/2013		12/2/2013		12/2/2013	
Temperature	°C	27.24		25.62		25.62		23.48		23.4		25.69		25.75		25.89		25.95		24.42		23.56	
pH	SU	6.89		7.86		7.75		7.21		7.27		7.78		7.78		7.55		7.18		7.63		7.68	
Dissolved Oxygen	mg/L	0.28		7.08		4.52		2.67		2.05		6.2		5.94		5.24		1.07		6.28		6.06	
Specific Conductance	µS/cm	28910		45693		47271		771		779		3289		3292		2718		3214		3947		5713	
Turbidity	NTU	7.36		0.51		0.41		0.29		0.23		0.4		0.27		0.22		1.24		6.34		0.18	
Sodium	mg/L	5260		9110		9260		54.6		57		464		465		370		444		571		888	
Chloride	mg/L	10400		18000		18200		97.8		101		859		833		736		865		1120		1740	
Total Dissolved Solids	mg/L																						
Salinity	*	17.78		29.58		30.74		0.38	J	0.38	J	1.72	J	1.72	J	1.4	J	1.67	J	2.09		3.09	
Tritium	pCi/L (1σ)	179.1 (9.6)		13.5 (5.7)	J	47.2 (6.4)	J	12.6 (6.9)	J	6.0 (6.3)	UJ	88.9 (8.3)		113.3 (8.8)		66.7 (7.7)	J	68.5 (7.6)	J	48.8 (5.7)	J	50.2 (5.6)	J

NOTES:

Laboratory results are reported with 3 digits although only the first 2 are significant figures.

Text in blue is revised.

* PSS-78 salinity is unitless.

120513-DUP is a field duplicate of sample 120513-TPSWC-1T

121013-DUP is a field duplicate of sample 121013-TPSWCCS-5T

KEY:

°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-3. Summary of Surface Water Analytical Results from the December 2013 Sampling Event (continued)

Parameter	Units	TPSWCCS-1B 12/10/2013		TPSWCCS-2B 12/2/2013		TPSWCCS-3B 12/10/2013		TPSWCCS-4T 12/10/2013		TPSWCCS-5T 12/10/2013		121013-DUP 12/10/2013		TPSWCCS-7B 12/10/2013		120213-EB1 12/02/2013		120513-FB1 12/05/2013		120613-FB1 12/06/2013		121013-FB1 12/10/2013		121113-FB1 12/11/2013	
Temperature	°C	34.67		28.1		30.98		29.15		28.67				34.84											
pH	SU	8.13		8.2		8.18		8.22		8.17				8.22											
Dissolved Oxygen	mg/L	5.51		5.3		6.15		6.12		4.93				7.66											
Specific Conductance	µS/cm	92911		87950		90569		92534		92242				93266	J										
Turbidity	NTU	61.99		56.87		74.52		63.08		53.53				48.69											
Sodium	mg/L	19200		19200		18400		19300		19600		19300		19600		0.310	U	0.310	U	0.310	U	0.31	U	0.310	U
Chloride	mg/L	41600		37000		38800		39800		38100		39700		45900	J	0.250	U	0.250	U	0.250	U	0.297	I	0.313	I
Total Dissolved Solids	mg/L															5.00	U	5.00	U	5.00	U	5	U	64.0	
Salinity	*	66.14		62.32		64.38		66.14		65.91				66.77	J										
Tritium	pCi/L (1σ)	3636.6 (111.1)		1486.9 (46.9)		3444.6 (106.8)		3110.7 (96.0)		3356.0 (104.5)		3420.8 (106.0)		3839.4 (119.3)		8.5 (5.0)		-7.9 (6.5)	UJ	6.0 (6.4)	UJ	11.4 (6.6)		-11.9 (6.0)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
120513-DUP is a field duplicate of sample 120513-TPSWC-1T
121013-DUP is a field duplicate of sample 121013-TPSWCCS-5T
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-4. Summary of Surface Water Analytical Results from the March 2014 Sampling Event

Parameter	Units	TPBBSW-3B 03/12/2014		TPBBSW-4B 03/12/2014		031214-DUP 03/12/2014		TPBBSW-5B 03/12/2014		TPSWC-1T 03/07/2014		TPSWC-1B 03/07/2014		TPSWC-2T 03/07/2014		TPSWC-2B 03/07/2014		TPSWC-3T 03/07/2014		TPSWC-3B 03/07/2014	
Temperature	°C	25.15		24.80				25.00		26.27		25.10		25.63		25.49		25.04		25.03	
pH	SU	8.35		8.21				8.19		8.03		7.63		8.34		8.14		8.23		8.18	
Dissolved Oxygen	mg/L	6.95		7.03				6.00		7.54		4.70		7.77		6.95		7.94		7.70	
Specific Conductance	µS/cm	51939		51356				48399		771		785		913		911		1279		1296	
Turbidity	NTU	0.65		0.51				0.75		1.86		3.77		1.33		2.24		2.26		2.31	
Silica, dissolved	mg/L																				
Calcium	mg/L	426		418		413		386		66.5		68.6		72.1		74		85.5		85.8	
Magnesium	mg/L	1150		1130		1110		1030		10.7		10.8		10.2		10.6		15		15.2	
Potassium	mg/L	435		428		425		385		3.6		3.74		3.93		4.04		5.11		5.07	
Sodium	mg/L	10900		10700		10900		10100		74.9		76.9		98		97.9		146		150	
Boron	mg/L	4.75		4.76		4.69		4.21		0.0508		0.0528		0.0472	I	0.0486	I	0.0682		0.0582	
Strontium	mg/L	7.73		7.63		7.49		6.95		0.617		0.627		0.763		0.778		0.888		0.885	
Bromide	mg/L	69.4		68.3		68.3		63		0.294		0.308		0.452		0.457		0.763		0.798	
Chloride	mg/L	19400		20200		19000		17500		139		141		185		183		290		301	
Fluoride	mg/L	0.867		0.871		0.889		0.85	J-	0.0722	I	0.0713	I	0.0774	I	0.0777	I	0.0857	I	0.085	I
Sulfate	mg/L	2850		2770		2770		2550		8.03	J	8.91	J	13.1		13		24.3		19.6	
Total Ammonia	mg/L as N	0.163	J	0.111	J	0.0691	J	0.026	U	0.303		0.439		0.34		0.186		0.227		0.231	J
Ammonium ion (NH_4^+)	mg/L	0.186	J	0.131	J			0.05	U	0.365		0.551		0.387		0.221		0.266		0.273	J
Unionized NH_3	mg/L	0.0226	J	0.0112	J			0.000017	U	0.023		0.0127		0.0475		0.017		0.0244		0.0223	J
Nitrate/Nitrite	mg/L as N	0.039	I	0.0478	I	0.027	U	0.027	U	0.0646	J	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U
TKN	mg/L	0.554		0.544		0.536		0.533		0.701		0.871		0.702		0.815		0.686		0.757	
TN	mg/L	0.593		0.592		0.563		0.560		0.766	J	0.898		0.729		0.842		0.713		0.784	
ortho-Phosphate	mg/L	0.0117	J	0.0014	U	0.0014	U	0.0014	U	0.0019	I	0.0014	U	0.00241	I	0.00159	I	0.0014	U	0.00187	I
Total Phosphorus (P)	mg/L	0.0022	UJ	0.0022	U	0.0022	U	0.0113	I	0.0122		0.0103		0.0184	I	0.00443	I	0.00566	I	0.00565	I
Alkalinity	mg/L	134		138		139		150		167		171		159		153		182		178	
Bicarbonate Alkalinity	mg/L as HCO_3	134		138		139		150		167		171		159		153		178		178	
Sulfide	mg/L	1	U Q	1	U Q	1	U Q	1	U Q	1	U	1	U	1	U	1	U	1	U	1	U
Salinity	*	34.2		33.7				31.6		0.4	J	0.4	J	0.5	J	0.5	J	0.6	J	0.6	J
Tritium	pCi/L (1σ)	17.5 (5.6)		18.0 (5.6)		4.9 (5.6)		3.2 (5.6)		52.3 (4.9)		53.4 (5.0)		53.5 (4.9)		46.6 (4.8)		39.0 (4.2)		33.3 (4.4)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
Sample 031214-DUP is a duplicate of BBSW-4B.
Sample 030714-DUP2 is a duplicate of TPSWC-3B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-4. Summary of Surface Water Analytical Results from the March 2014 Sampling Event (continued)

		030714-DUP		TPSWC-4T		TPSWC-4B		TPSWC-5T		TPSWC-5B		TPSWC-6T		TPSWC-6B		TPSWID-1T		TPSWID-1B		TPSWID-2T		TPSWID-2B		TPSWID-3T		TPSWID-3B	
Parameter	Units	03/07/2014		03/04/2014		03/04/2014		03/04/2014		03/04/2014		03/10/2014		03/10/2014		03/03/2014		03/03/2014		03/03/2014		03/03/2014		03/03/2014		03/03/2014	
Temperature	°C			25.62		26.03		26.36		25.33		23.52		23.39		28.48		28.00		27.46		25.84		27.37		25.65	
pH	SU			7.62		7.63		7.85		7.96		7.32		7.27		7.60		6.90		7.28		7.22		7.46		7.35	
Dissolved Oxygen	mg/L			3.38		3.24		3.32		3.77		2.25		2.24		5.73		0.39		4.72		3.11		7.83		3.83	
Specific Conductance	µS/cm			16204		19942		51652		51703		716		721		4851		10656		3226		3967		3304		3291	
Turbidity	NTU			0.56		6.99		0.28		1.03		0.27		0.37		0.75		39.79		0.53		1.09		0.51		0.44	
Silica, dissolved	mg/L																										
Calcium	mg/L	86.9		224		244		429		425		77.6		78.9		147		186		139		151		141		138	
Magnesium	mg/L	15.3		300		374		1200		1200		8.55		8.73		82.5		186		48.2		61.2		47.8		46.2	
Potassium	mg/L	5.15		110		141		420		415		11		11.2		30.7		77		18.1		22.1		18.2		17.6	
Sodium	mg/L	151		2860		3580		10400		10500		50.1		51.5		710		1760		430		547		441		430	
Boron	mg/L	0.0568		1.16		1.49		4.59		4.57		0.0785		0.0813		0.353		0.812		0.181		0.225		0.183		0.167	
Strontium	mg/L	0.896		3.19		3.64		7.6		7.5		0.973		0.983		1.71		2.52		1.52		1.71		1.49		1.44	
Bromide	mg/L	0.799		18.4		23.3		67.1		67.2		0.488		0.491		4.23		10.9		2.81		3.52		2.9		2.89	
Chloride	mg/L	302		5240		6560		19500		19300		89.1		92.5		1330		3270		827		1060		853		858	
Fluoride	mg/L	0.0777	I	0.333		0.403		0.932		0.956		0.121		0.12		0.154		0.203		0.12		0.128		0.116		0.109	
Sulfate	mg/L	19.6		681		881		2780		2770		66.3		67.4		145		389		84.4		108		79.7		78.2	
Total Ammonia	mg/L as N	0.404	J	0.386		0.596		0.303		0.382		0.178		0.285		0.207		0.713		0.497		0.0272	I	0.18		0.275	
Ammonium ion (NH_4^+)	mg/L			0.484		0.747		0.373		0.466		0.226		0.363		0.259		0.912		0.631		0.05	U	0.227		0.349	
Unionized NH_3	mg/L			0.0113		0.0184		0.0156		0.0234		0.00229		0.00324		0.00706		0.0048		0.00768		0.000328		0.00416		0.0044	
Nitrate/Nitrite	mg/L as N	0.027	U	0.103		0.0996		0.0289	I	0.027	U	0.029	I	0.037	I	0.0816	J	0.0433	IJ	0.0835	J	0.132	J	0.202	J	0.168	J
TKN	mg/L	0.672		1.05		0.952		0.385	I	0.396	I	0.321	I	0.3	U	0.874	J	1.72	J	0.738	J	0.768	J	0.697	J	0.668	J
TN	mg/L	0.699		1.15		1.05		0.414		0.423		0.350		0.337		0.956	J	1.76	J	0.822	J	0.900	J	0.899	J	0.836	J
ortho-Phosphate	mg/L	0.00258	I	0.0014	U	0.0014	U	0.0014	U	0.0014	U	0.00178	IJ	0.00211	IJ	0.0169	IJ	0.0166	IJ	0.014	UJ	0.014	UJ	0.014	UJ	0.014	UJ
Total Phosphorus (P)	mg/L	0.00695	I	0.00283	I	0.003	I	0.00368	I	0.00594	I	0.0022	U	0.0022	U	0.00689	IJ	0.0324		0.00229	IJ	0.00245	IJ	0.00229	IJ	0.00285	IJ
Alkalinity	mg/L	175		248		251		153		147		161		158		344		448		280		298		264		271	
Bicarbonate Alkalinity	mg/L as HCO_3	175		248		251		153		147		161		158		344		448		280		298		264		271	
Sulfide	mg/L	1	U	1	U	1	U	1	U Q	1	U Q	1	U	1	U	1	U	4.5		1	U	1	U	1	U	1	U
Salinity	*			9.5		11.9		33.9		34.0		0.4	J	0.4	J	2.6		6.0		1.7	J	2.1		1.7	J	1.7	J
Tritium	pCi/L (1σ)	23.6 (4.2)		139.1 (7.3)		116.6 (8.2)		61.4 (6.8)		31.0 (6.4)		1.8 (6.1)	UJ	-2.1 (5.9)	UJ	158.9 (9.9)		167.8 (8.1)		86.4 (5.8)		87.8 (5.9)		62.8 (5.1)		70.3 (5.3)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
Sample 031214-DUP is a duplicate of BBSW-4B.
Sample 030714-DUP2 is a duplicate of TPSWC-3B.

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-4. Summary of Surface Water Analytical Results from the March 2014 Sampling Event (continued)

		TPSWCCS-1B		TPSWCCS-2B		TPSWCCS-3B		TPSWCCS-4T		TPSWCCS-5T		TPSWCCS-7B		030314-EB1		030414-FB1		030714-FB1		031014-FB1		031214-FB1	
Parameter	Units	03/03/2014		03/05/2014		03/03/2014		03/03/2014		03/03/2014		03/03/2014		03/03/2014		03/04/2014		03/07/2014		03/10/2014		03/12/2014	
Temperature	°C	37.43		34.53		32.26		29.23		29.22		36.76											
pH	SU	8.42		8.79		8.39		8.45		8.38		8.56											
Dissolved Oxygen	mg/L	8.30		6.85		8.79		7.54		8.75		12.30											
Specific Conductance	µS/cm	109243		107890	J	101963		107858	J	107648	J	101912											
Turbidity	NTU	106.30		93.91		102.50		90.78		103.30		261.10											
Silica, dissolved	mg/L	5.64	J	5.47	J	5.33	J-	5.67	J	5.49	J	5.44	J	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Calcium	mg/L	1050		1020	J	990		1050	J	1050	J	1010		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Magnesium	mg/L	2650		2440	J	2440		2640	J	2620	J	2510		0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Potassium	mg/L	1000		1010	J	952		993	J	994	J	933		0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Sodium	mg/L	24500		24100	J	23200		23600	J	23500	J	22400		0.31	U	0.31	U	0.31	U	0.31	U	0.31	U
Boron	mg/L	11.7		12		10.6		11.5		11.5		11.1		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Strontium	mg/L	21.2		21.2		20		21.2		20.9		20.3		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Bromide	mg/L	175		177	J	148		168	J	166	J	171		0.013	U	0.013	U	0.013	U	0.013	U	0.013	U
Chloride	mg/L	46000		48900	J	41600		47800	J	48500	J	42300		0.25	U	0.476	I	0.364	I	0.25	U	0.25	U
Fluoride	mg/L	0.845	J	0.906	J	0.814	J	0.838	J	0.841	J	0.821	J	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
Sulfate	mg/L	7740		7130	J	6470		7290	J	7270	J	7300		0.766		0.25	U	1.11		0.304	I	0.250	U
Total Ammonia	mg/L as N	0.152	J	0.234	J	0.114	J	0.132	J	0.0842	J	0.103	J	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U
Ammonium ion (NH_4^+)	mg/L	0.145	J	0.18	J	0.119	J	0.14	J	0.0915	J	0.0907	J										
Unionized NH_3	mg/L	0.0476	J	0.114	J	0.0259	J	0.0284	J	0.0158	J	0.0394	J										
Nitrate/Nitrite	mg/L as N	0.0389	IJ	0.0445	IJ	0.027	UJ	0.0499	IJ	0.0416	IJ	0.0385	IJ	0.0331	I	0.027	U	0.0555		0.027	U	0.027	U
TKN	mg/L	10.6	J	0.3	U	9.74	J	10.7	J	10.5	J	13.3	J	6.55		0.3	U	0.3	U	0.3	U	0.3	U
TN	mg/L	10.6	J	0.340	J	9.77	J	10.7	J	10.5	J	13.3	J										
ortho-Phosphate	mg/L	0.014	U	0.0014	U	0.014	U?	0.014	U	0.014	U	0.014	U	0.00325	I	0.00324	I	0.0014	U	0.00399	I	0.00293	I
Total Phosphorus (P)	mg/L	0.0583		0.00752	I	0.0894		0.0282		0.0585		0.0425		0.0022	U	0.0022	U	0.0022	U	0.0022	U	0.0022	U
Alkalinity	mg/L	151		146	J	158		150	J	147	J	169		1.41		1	U	1	U	1	U	1	U
Bicarbonate Alkalinity	mg/L as HCO_3	54.3		19.3	J	98.4		94.9	J	102	J	77		1.41		1	U	1	U	1	U	1	U
Sulfide	mg/L	1	U Q	1	U Q	1	U Q	1	U Q	1	U Q	1	U Q	1	U	1	U	1	U	1	U	1	U
Salinity	*	80.1		79.1	J	74.0		79.4	J	79.3	J	73.7											
Tritium	pCi/L (1σ)	13073 (432)		15487 (482)		12886 (410)		13997 (443)		13488 (432)		11232 (355)		-2.5 (6.4)	UJ			-3.8 (4.0)	UJ	1.1 (3.8)	UJ	8.3 (5.5)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
Sample 031214-DUP is a duplicate of BBSW-4B.
Sample 030714-DUP2 is a duplicate of TPSWC-3B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
Q = Holding time exceeded.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-5. Summary of Surface Water Analytical Results from the June 2014 Sampling Event

Parameter	Units	TPBBSW-3B 06/12/2014	TPBBSW-4B 06/12/2014	TPBBSW-5B 06/12/2014	TPSWC-1T 06/06/2014	TPSWC-1B 06/06/2014	TPSWC-2T 06/06/2014	TPSWC-2B 06/06/2014	TPSWC-3T 06/06/2014	060614-DUP1 06/06/2014	TPSWC-3B 06/06/2014	TPSWC-4T 06/11/2014
Temperature	°C	28.10	28.94	28.58	30.53	28.65	30.12	29.22	28.06		29.31	30.34
pH	SU	8.26	8.13	7.93	7.93	7.96	8.06	7.93	7.95		7.31	7.56
Dissolved Oxygen	mg/L	4.99	5.49	4.87	6.99	6.26	6.60	6.41	6.15		0.14	4.19
Specific Conductance	µS/cm	59831	58410	60067	2018	1904	10650	11018	8283		12823	55750
Turbidity	NTU	0.93	0.48	1.34	2.35	6.96	1.65	3.78	0.96		5.74	1.68
Sodium	mg/L	12600	12300	12800	242	226	1660	1680	1290	1260	2100	11600
Chloride	mg/L	22400	21800	22500	446	421	3180	3270	2490	2500	4020	20700
Total Dissolved Solids	mg/L											
Salinity	*	40.0	38.89	40.2	1.02 J	0.96 J	5.98	6.21	4.58		7.32	36.84
Tritium	pCi/L (1σ)	6.2 (5.2)	6.4 (5.2)	9.0 (5.5)	105 (7.9)	117 (8.2)	102 (8.1)	107 (8.2)	78.1 (7.4)	68.3 (7.2)	66.9 (7.1)	43.4 (4.5)

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Text in blue is revised.
060614-DUP1 is a field duplicate of sample 060614-TPSWC-3T
060314-DUP is a field duplicate of sample 060314-TPSWCCS-7B
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-5. Summary of Surface Water Analytical Results from the June 2014 Sampling Event (continued)

Parameter	Units	TPSWC-4B 06/11/2014	TPSWC-5T 06/11/2014	TPSWC-5B 06/11/2014	TPSWC-6T 06/09/2014	TPSWC-6B 06/09/2014	TPSWID-1T 06/03/2014	TPSWID-1B 06/03/2014	TPSWID-2T 06/03/2014	TPSWID-2B 06/03/2014	TPSWID-3T 06/03/2014	TPSWID-3B 06/03/2014
Temperature	°C	31.22	30.28	29.83	26.52	26.44	27.98	29.00	28.26	28.30	28.06	28.43
pH	SU	7.60	7.95	7.99	7.31	7.30	7.51	6.85	7.55	6.92	7.77	6.95
Dissolved Oxygen	mg/L	3.40	4.21	4.42	0.28	0.18	6.31	0.16	5.44	0.39	7.69	0.51
Specific Conductance	µS/cm	57771	59357	58550	1532	1558	10275	18156	6363	9000	6023	24518
Turbidity	NTU	12.42	0.78	2.96	0.76	1.19	1.29	66.13	0.60	8.15	0.64	0.98
Sodium	mg/L	11900	12500	12500	160	162	1660	3020	913	1360	890	3870
Chloride	mg/L	22400	22600	22900	285	292	3050	5770	1790	2660	1710	8180
Total Dissolved Solids	mg/L											
Salinity	*	38.32	39.55	38.96	0.77 J	0.78 J	5.77	10.67	3.45	5	3.25	14.83
Tritium	pCi/L (1σ)	37.1 (4.4)	3.4 (3.7) U	12.4 (3.8)	8.5 (4.5)	11.4 (4.5)	367 (16.8)	401 (16.8)	200 (10.9)	190 (10.5)	148 (9.3)	189 (10.6)

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Text in blue is revised.
060614-DUP1 is a field duplicate of sample 060614-TPSWC-3T
060314-DUP is a field duplicate of sample 060314-TPSWCCS-7B
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-5. Summary of Surface Water Analytical Results from the June 2014 Sampling Event (continued)

		TPSWCCS-1B		TPSWCCS-2B		TPSWCCS-3B		TPSWCCS-4T		TPSWCCS-5T		TPSWCCS-7B		060314-DUP		060314-EB		060414-FB1		060614-FB1		060914-FB1		061114-FB1		061214-FB1	
Parameter	Units	06/03/2014		06/04/2014		06/03/2014		06/03/2014		06/03/2014		06/03/2014		06/03/2014		06/03/2014		06/04/2014		06/06/2014		06/09/2014		06/11/2014		06/12/2014	
Temperature	°C	37.70		33.68		32.92		29.05		29.60		34.58															
pH	SU	7.71		7.75		7.68		7.77		7.80		7.75															
Dissolved Oxygen	mg/L	0.98		2.07		1.01		1.60		2.61		1.93															
Specific Conductance	µS/cm	122810		123693		119769		123937		121777		124486															
Turbidity	NTU	156.1		150.9		148.1		142.4		152.6		158.3															
Sodium	mg/L	28100		28500		27600		27800		28300		28500		28700		0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
Chloride	mg/L	53400		54300		54200		54600		54100		54600		54300		0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	3.41	
Total Dissolved Solids	mg/L															5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Salinity	*	92.34		93.53		89.94		94.1		92.01		94.14															
Tritium	pCi/L (1σ)	9908 (321)		9829 (300)		8897 (284)		9575 (306)		9973 (321)		9853 (312)		9590 (306)		10.9 (6.0)		9.1 (6.1)		8.3 (6.4)		1.5 (3.7)	U	1.8 (4.8)	U	-2.8 (3.6)	U

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Text in blue is revised.
060614-DUP1 is a field duplicate of sample 060614-TPSWC-3T
060314-DUP is a field duplicate of sample 060314-TPSWCCS-7B
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-6. Summary of Surface Water Analytical Results from the September 2014 Sampling Event

		TPBBSW-3B		TPBBSW-4B		TPBBSW-5B		TPSWC-1T		TPSWC-1B		TPSWC-2T		TPSWC-2B		TPSWC-3T		TPSWC-3B		TPSWC-4T		091014-Dup	
Parameter	Units	09/11/2014		09/11/2014		09/11/2014		09/02/2014		09/02/2014		09/05/2014		09/05/2014		09/05/2014		09/05/2014		09/10/2014		09/10/2014	
Temperature	°C	29.45		28.86		28.86		30.83		30.13		32.17		30.96		32.79		31.34		30.25			
pH	SU	8.13		8.06		7.74		7.55		7.23		7.91		7.48		7.80		7.41		7.67			
Dissolved Oxygen	mg/L	4.02		4.91		2.34		3.97		0.17		6.35		2.89		5.44		0.49		3.96			
Specific Conductance	µS/cm	56080		55486	J	56215		471	J	604	J	598		601		680		1604		24228			
Turbidity	NTU	0.55		0.23		0.47		0.77		8.1		0.66		0.89		0.13		1.3		4.05			
Silica, dissolved	mg/L																						
Calcium	mg/L	436		421		455		82.4	J	48.8	J	52.4		55.7		54.2		64.4		266		271	
Magnesium	mg/L	1180	J-	1140	J	1200	J	8.4	J	6.5	J	7.41		7.71		7.55		20.7		494		497	
Potassium	mg/L	536	J+	528	J	554	J	3.48	J	2.83	J	2.73		2.8		3.15		8.24		222		227	
Sodium	mg/L	11400		11100		11400		47	J	31.9	J	51.4		50.8		63		183		4450		4490	
Boron	mg/L	4.96		4.91		5.21		0.0769		0.068		0.0655		0.0647		0.0604		0.112		1.84		1.9	
Strontium	mg/L	8.1		7.79		8.34		0.603		0.414		0.54		0.54		0.578		0.701		4.47		4.58	
Bromide	mg/L	73.5		73.2	J	73.8		0.193		0.243		0.265		0.271		0.332		1.17		29.9		29.6	
Chloride	mg/L	21200		21400	J	21800		59.2		82.6		101		96.9		123		372		8430		8310	
Fluoride	mg/L	0.98	J-	0.89	J	0.89		0.024	U	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U	0.45		0.44	
Sulfate	mg/L	2890		2760	J	2970		6.24		11.4		5.14	J	6.81	J	4.53	J	36.5		1060		1050	
Total Ammonia	mg/L as N	0.0652	J	0.915	J	0.496	J	0.827		0.817		0.829	J	0.812	J	1.12	J	0.713	J	0.975		1.2	
Ammonium ion (NH_4^+)	mg/L	0.0759	J	1.08	J	0.613	J	1.03		1.04		0.991	J	1.02	J	1.36	J	0.896	J	1.21			
Unionized NH_3	mg/L	0.0075	J	0.0875	J	0.0237	J	0.0295		0.0135		0.071	J	0.025	J	0.0787	J	0.0192	J	0.0437			
Nitrate/Nitrite	mg/L as N	0.5	U	0.5	U	0.5	U	0.1	U	0.1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TKN	mg/L	0.3	U	0.3	U J	0.504		1.07		1.41		1.15		1.13		1.24		1.15		1.37		1.27	
TN	mg/L	0.800		0.800	J	1.004		1.170		1.510		1.650		1.630		1.740		1.650		1.870		1.770	
ortho-Phosphate	mg/L	0.105	U J	0.105	U J	0.105	U J	0.0014	U	0.00415	I	0.07	U J	0.07	U J	0.07	U J	0.07	U J	0.07	U J	0.07	U
Total Phosphorus (P)	mg/L	0.003	U J	0.003	U J	0.003	U J	0.0129		0.0484		0.00803	I J	0.00872	I J	0.00745	I J	0.0103	J	0.00547	I J	0.00269	I
Alkalinity	mg/L	131		127	J	151		130		146		124		134		128		139		189		190	
Bicarbonate Alkalinity	mg/L as HCO_3	159		154	J	184		159		178		151		163		157		169		231		232	
Sulfide	mg/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Total Dissolved Solids	mg/L																						
Salinity	*	37.1		36.7	J	37.2		0.2	J	0.3	J	0.3	J	0.3	J	0.3	J	0.8	J	14.6			
Tritium	pCi/L	11.4 (5.7)		7.1 (5.6)		12.7 (5.6)		84.0 (7.1)		55.9 (6.3)	J	161.3 (9.3)		128.4 (8.5)		119.2 (7.1)		85.9 (7.6)		145.8 (8.1)		128.3 (7.6)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
** Outlier. Value is suspect based on comparisons with historic data from this station and substantially deviates from concurrent values for neighboring CCS monitoring stations.
Sample 091014-DUP is a duplicate of TPSWC-4T.
Sample 090414-DUP1 is a duplicate of TPSWID-3B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-6. Summary of Surface Water Analytical Results from the September 2014 Sampling Event (continued)

Parameter	Units	TPSWC-4B 09/10/2014		TPSWC-5T 09/10/2014		TPSWC-5B 09/10/2014		TPSWC-6T 09/03/2014		TPSWC-6B 09/03/2014		TPSWID-1T 09/04/2014		TPSWID-1B 09/04/2014		TPSWID-2T 09/04/2014		TPSWID-2B 09/04/2014		TPSWID-3T 09/04/2014		TPSWID-3B 09/04/2014		090414-Dup 09/04/2014	
Temperature	°C	31.73		28.42		30.00		26.00		26.16		32.48		31.43		32.08		29.94		31.32		31.53			
pH	SU	7.61		8.03		7.97		7.42		7.38		7.90		7.74		7.68		7.04		7.76		7.40			
Dissolved Oxygen	mg/L	2.63		5.91		4.31		0.93		0.95		9.14		6.60		6.69		1.80		6.79		3.00			
Specific Conductance	µS/cm	43816		53420		57253		821		849		5584		5648		4226		6157		4403		8307			
Turbidity	NTU	2.94		0.45		0.26		0.14		0.06		1.07		0.52		0.86		1.51		0.61		1.09			
Silica, dissolved	mg/L																								
Calcium	mg/L	377		400		454		86.2		83.4		141		144		131		178		121		151		154	
Magnesium	mg/L	888	J	1100	J-	1520	J	9.98		10.4		82.4		85.5		57.9		79.2		59.2		121		123	
Potassium	mg/L	411	J	516	J+	583	J	11.4		10.9		38		39.1		27.3		37.8		27.9		60.3		61.5	
Sodium	mg/L	8270		11100		11800		59.3		64		770		787		575		844		541		1140		1170	
Boron	mg/L	3.73		4.85		5.39		0.0855		0.0846		0.358		0.375		0.23		0.292		0.221		0.476		0.486	
Strontium	mg/L	6.85		7.86		8.86		0.984		0.956		1.75		1.78		1.59		2.15		1.41		1.95		1.98	
Bromide	mg/L	56.2		69		75.7		0.511		0.56		5.26		5.17		3.8		5.77		3.99		8.39		8.3	
Chloride	mg/L	15900		20200		21900		112		128		1540		1550		1130		1810		1270		2400		2390	
Fluoride	mg/L	0.69		0.87		0.87		0.11		0.11		0.14		0.15		0.12		0.13		0.14		0.17		0.16	
Sulfate	mg/L	2130		2720		2940		52.4		58.8		166		168		116		160		119		291		325	
Total Ammonia	mg/L as N	1.12	J	0.0995	J	0.94	J	0.646	J	0.465	J	0.534	J	0.472	J	0.898	J	1.16	J	0.794		0.587	J	0.707	
Ammonium ion (NH_4^+)	mg/L	1.39	J	0.119	J	1.12	J	0.817	J	0.589	J	0.638	J	0.579	J	1.11	J	1.48	J	0.972		0.738	J		
Unionized NH_3	mg/L	0.0484	J	0.00868	J	0.0798	J	0.0124	J	0.00824	J	0.0456	J	0.0268	J	0.0464	J	0.0123	J	0.0465		0.0157	J		
Nitrate/Nitrite	mg/L as N	0.5	U J	0.5	U J-	0.5	U J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.5	U	0.1	U	0.1	U	0.1	U
TKN	mg/L	0.768	J	0.336	I	0.414	J	0.3	U J	0.3	U J	0.656		0.702		0.644	J	0.902	J	0.904		0.66		0.616	
TN	mg/L	1.268	J	0.836	J	0.914	J	0.400	J	0.400	J	0.756		0.802		0.744	J	1.402	J	1.004		0.760		0.716	
ortho-Phosphate	mg/L	0.07	U J	0.07	U J	0.07	U J	0.0014	U	0.0014	U	0.07	U J	0.07	U J	0.07	U J	0.07	U J	0.07	U J	0.07	U J	0.07	U
Total Phosphorus (P)	mg/L	0.00395	I J	0.0022	U J	0.0022	U J	0.00466	I	0.0022	U	0.0034	I J	0.0028	I J	0.0022	U J	0.00398	I J	0.00619	I J	0.00281	I J	0.00277	I
Alkalinity	mg/L	181		130		141		192		197		282		292		246		292		229		226		236	
Bicarbonate Alkalinity	mg/L as HCO_3	221		159		172		234		241		344		356		300		357		279		276		287	
Sulfide	mg/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Total Dissolved Solids	mg/L																								
Salinity	*	28.1		35.2		38.0		0.4	J	0.4	J	3.0		3.0		2.2		3.3		2.3		4.6			
Tritium	pCi/L	64.6 (6.1)		22.5 (5.3)		20.2 (5.3)		23.0 (4.1)		11.7 (3.7)		261.9 (10.6)		276.0 (11.4)		196.7 (9.3)	J	90.2 (6.4)	J	149.8 (7.9)	J	127.6 (7.5)	J	128.7 (7.4)	J

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
** Outlier. Value is suspect based on comparisons with historic data from this station and substantially deviates from concurrent values for neighboring CCS monitoring stations.
Sample 091014-DUP is a duplicate of TPSWC-4T.
Sample 090414-DUP1 is a duplicate of TPSWID-3B.
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HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
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mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-6. Summary of Surface Water Analytical Results from the September 2014 Sampling Event (continued)

Parameter	Units	TPSWCCS-1B 09/04/2014		TPSWCCS-2B 09/05/2014		TPSWCCS-3B 09/04/2014		TPSWCCS-4T 09/04/2014		TPSWCCS-5T 09/04/2014		TPSWCCS-7B 09/04/2014		090214-EB 09/02/2014		090314-FB 09/03/2014		090414-FB1 09/04/2014		090514-FB1 09/05/2014		091014-FB1 09/10/2014		091114-FB1 09/11/2014	
Temperature	°C	38.90		37.55		35.61		34.34		34.49		38.27													
pH	SU	7.65		7.70		7.67		7.72		7.72		7.69													
Dissolved Oxygen	mg/L	0.12		1.27		0.27		0.61		0.21		0.96													
Specific Conductance	µS/cm	118575	J	120417	J	117724		120344	J	119703	J	119981	J												
Turbidity	NTU	59.53		60.18		54.82		56.48		57.78		61.78													
Silica, dissolved	mg/L	10.5	J-	10	J	9.26	J	9.91	J	9.62	J	10.8	J	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Calcium	mg/L	1120	J	1170	J	1100		1110	J	1130	J	1120	J	0.1	U	0.577		0.1	U	0.1	U	0.1	U	0.1	U
Magnesium	mg/L	2560	J-	2630	J	2520	J	2560	J	2580	J	2590	J	0.02	U	0.02	U	0.0201	I	0.02	U	0.02	U	0.02	U
Potassium	mg/L	1360	J+	1380	J	1370	J	1420	J	1410	J	1360	J	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Sodium	mg/L	26200		26700	J	26900		26600	J	26000	J	26900	J	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U
Boron	mg/L	13.2		14.3		13.4		13.8		13.6		13.5		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	10	U
Strontium	mg/L	23.9		24.9		24		24.8		24.5		23.8		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	1	U
Bromide	mg/L	179	J	185	J	183		188	J	182	J	187	J	0.013	U	0.013	U	0.013	U	0.013	U	0.013	U	0.013	U
Chloride	mg/L	52700	J	53700	J	53700		53900	J	51700	J	52500	J	0.25	U	0.25	U	0.25	U	0.575		0.25	U	0.25	U
Fluoride	mg/L	0.89	J-	0.86	J	0.86	J	0.84	J	0.84	J	0.87	J	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
Sulfate	mg/L	7420	J	7190	J	7310		7480	J	6920	J	7180	J	0.25	U	0.389	I	0.25	U	1.96		0.25	U	0.25	U
Total Ammonia	mg/L as N	0.882		0.452	J	1.03		0.946		0.904		0.722		0.0677		0.0629		0.0653		0.223		0.0554		0.0524	
Ammonium ion (NH_4^+)	mg/L	1.06		0.545	J	1.26		1.15		1.1		0.869													
Unionized NH_3	mg/L	0.0654		0.0344	J	0.0651		0.0616		0.0594		0.0561													
Nitrate/Nitrite	mg/L as N	0.1	U J-	0.5	U	0.1	U J	0.1	U J	0.1	U J	0.1	U J	0.1	U	0.1	U	0.5	U	0.5	U	0.5	U	0.5	U
TKN	mg/L	13.4		2.82		12.4		3.98		3.38		12.8		0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
TN	mg/L	13.500	J	3.320		12.500	J	4.080	J	3.480	J	12.900	J	0.250		0.250		0.650		0.650		0.650		0.650	
ortho-Phosphate	mg/L	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.0014	U	0.0014	U	0.07	U	0.0014	U	0.0014	U	0.0021	U
Total Phosphorus (P)	mg/L	0.0847		0.106		0.0863		0.0843		0.0852		0.0761		0.0022	U	0.0022	U	0.0022	U	0.0022	U	0.0022	U	0.003	U
Alkalinity	mg/L	220	J	227	J	222		224	J	214	J	219	J	1	U	1	U	1	U	1	U	1	U	1	U
Bicarbonate Alkalinity	mg/L as HCO_3	268	J	277	J	271		273	J	261	J	267	J	1	U	1	U	1	U	1	U	1	U	1	U
Sulfide	mg/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Total Dissolved Solids	mg/L													5	U			5	U	5	U	5	U	5	U
Salinity	*	88.3	J	90.2	J	87.9		90.4	J	89.7	J	89.7	J												
Tritium	pCi/L	16537.6 (515.2)		16280.5 (501.1)		14599.7 (447.8)		15350.8 (475.0)		15542.7 (452.4)		**29659.2 (915.3)		6.5 (3.6)		-1.2 (3.4)	UJ	21.4 (5.4)		7.8 (5.9)		2.3 (5.0)	UJ	2.1 (5.5)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in Blue is revised.
* PSS-78 salinity is unitless.
** Outlier. Value is suspect based on comparisons with historic data from this station and substantially deviates from concurrent values for neighboring CCS monitoring stations.
Sample 091014-DUP is a duplicate of TPSWC-4T.
Sample 090414-DUP1 is a duplicate of TPSWID-3B.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-7. Summary of Surface Water Analytical Results from the December 2014 Sampling Event

Parameter	Units	TPBBSW-3B 12/10/2014		TPBBSW-4B 12/10/2014		TPBBSW-5B 12/10/2014		TPSWC-1T 12/04/2014		TPSWC-1B 12/04/2014		TPSWC-2T 12/04/2014		TPSWC-2B 12/04/2014		TPSWC-3T 12/04/2014		TPSWC-3B 12/04/2014		TPSWC-4T 12/03/2014		TPSWC-4B 12/03/2014	
Temperature	°C	17.63		19.53		18.82		24.42		23.28		24.23		23.35		23.12		23.31		24.32		24.08	
pH	SU	8.16		8.06		7.80		7.72		7.42		8.15		7.96		7.86		7.53		7.87		7.81	
Dissolved Oxygen	mg/L	8.99		6.51		6.46		8.30		2.80		10.05		7.63		6.46		3.82		5.21		4.53	
Specific Conductance	µS/cm	42086		49440		48606		783		811		779		826		1119		1928		32623		45675	
Turbidity	NTU	0.87		0.57		0.75		0.72		1.15		0.58		0.96		0.66		1.12		1.00		3.74	
Sodium	mg/L	8680		10200		10100		74.6		76.8		76.4		86.4		132		260		6490		9530	
Chloride	mg/L	15400		18200		15600		127		153		150		167		249		488		11900		16700	
Total Dissolved Solids	mg/L																						
Salinity	*	27.08		32.40		31.79		0.38	J	0.40	J	0.38	J	0.40	J	0.55	J	0.98	J	20.38		29.61	
Tritium	pCi/L (1σ)	9.4 (3.1)		10.5 (3.1)		13.8 (3.1)		71.9 (7.0)		69.2 (7.4)		101.3 (7.7)		105.9 (7.9)		95.5 (7.5)		84.4 (7.5)		103.6 (7.7)		50.0 (6.1)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.

Text in blue is revised.
* PSS-78 salinity is unitless.
120314-DUP1 is a duplicate of 120314-TPSWC-5T
120814-DUP1 is a duplicate of 120814-TPSWID-3T
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-7. Summary of Surface Water Analytical Results from the December 2014 Sampling Event (continued)

Parameter	Units	TPSWC-5T 12/03/2014		120314-DUP 12/03/2014		TPSWC-5B 12/03/2014		TPSWC-6T 12/05/2014		TPSWC-6B 12/05/2014		TPSWID-1T 12/08/2014		TPSWID-1B 12/08/2014		TPSWID-2T 12/08/2014		TPSWID-2B 12/08/2014		TPSWID-3T 12/08/2014		120814-DUP 12/08/2014		TPSWID-3B 12/08/2014	
Temperature	°C	23.07				22.92		24.97		24.56		24.41		24.44		24.87		24.31		24.98				24.68	
pH	SU	8.04				7.96		7.35		7.31		7.74		7.06		7.55		7.55		7.55				7.38	
Dissolved Oxygen	mg/L	5.91				4.98		2.46		1.71		6.67		0.60		7.13		3.82		6.45				3.25	
Specific Conductance	µS/cm	46030				48818		875		995		9663		11976		6554		8127		9230				11942	
Turbidity	NTU	0.74				1.32		0.43		0.47		1.05		2.88		0.67		1.04		1.55				0.85	
Sodium	mg/L	9560		9660		10200		72.9		94.7		1680		1990		1040		1320		1560		1560		2050	
Chloride	mg/L	17500		17200		17700		136		168		2970		3620		1930		2430		2860		2880		3790	
Total Dissolved Solids	mg/L																								
Salinity	*	29.88				31.91		0.43	J	0.49	J	5.43		6.84		3.58		4.51		5.16				6.82	
Tritium	pCi/L (1σ)	35.4 (6.1)		17.9 (5.7)		64.0 (6.7)		2.9 (7.4)	UJ	2.2 (7.5)	UJ	284.1 (14.7)		308.0 (14.4)		165.0 (10.2)		206.3 (11.4)		172.8 (10.4)		168.4 (10.2)		161.7 (10.1)	

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
120314-DUP1 is a duplicate of 120314-TPSWC-5T
120814-DUP1 is a duplicate of 120814-TPSWID-3T
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-7. Summary of Surface Water Analytical Results from the December 2014 Sampling Event (continued)

Parameter	Units	TPSWCCS-1B 12/08/2014		TPSWCCS-2B 12/09/2014		TPSWCCS-3B 12/08/2014		TPSWCCS-4T 12/08/2014		TPSWCCS-5T 12/08/2014		TPSWCCS-7B 12/08/2014		120114-EB 12/01/2014		120314-FB 12/03/2014		120414-FB 12/04/2014		120514-FB1 12/05/2014		120814-FB 12/08/2014		120914-FB 12/09/2014		121014-FB 12/10/2014	
Temperature	°C	34.71		27.15		26.50		25.50		25.84		32.08															
pH	SU	7.85		7.89		7.92		7.93		7.90		7.88															
Dissolved Oxygen	mg/L	4.29		4.14		4.59		4.53		4.63		4.52															
Specific Conductance	µS/cm	97737		98460		96888		97805		97711		97358															
Turbidity	NTU	20.19		20.74		15.30		12.33		17.44		15.80															
Sodium	mg/L	21800		22800		21900		21900		22300		22100		0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
Chloride	mg/L	42400		39000		40900		43200		40000		42300		0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.257	I	0.200	U
Total Dissolved Solids	mg/L													5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U		
Salinity	*	70.25		71.27		69.94		70.76		70.65		70.09															
Tritium	pCi/L (1σ)	7745.9 (268.6)		6234.6 (192.2)		7915.6 (278.5)		8127.4 (282.1)		8323.7 (287.9)		7622.1 (267.5)		-2.4 (4.8)	UJ	2.4 (5.5)	UJ	-1.2 (5.4)	UJ	11.7 (5.9)		-3.5 (7.0)	UJ	6.8 (6.3)		1.9 (2.9)	UJ

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
Text in blue is revised.
* PSS-78 salinity is unitless.
120314-DUP1 is a duplicate of 120314-TPSWC-5T
120814-DUP1 is a duplicate of 120814-TPSWID-3T
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
U = Analyzed for but not detected at the reported value.

Table 3.2-8. Summary of Surface Water Analytical Results from the March 2015 Sampling Event

Parameter	Units	TPBBSW-3B		030415-Dup		TPBBSW-4B		TPBBSW-5B		TPSWC-1T		TPSWC-1B		TPSWC-2T		031115-Dup		TPSWC-2B		TPSWC-3T		TPSWC-3B		TPSWC-4T	
		03/04/2015		03/04/2015		03/04/2015		03/04/2015		03/11/2015		03/11/2015		03/11/2015		03/11/2015		03/11/2015		03/11/2015		03/11/2015		03/03/2015	
Temperature	°C	25.18				24.90		24.69		28.41		26.48		27.31				26.60		25.52		25.75		25.54	
pH	SU	8.24				8.09		7.99		7.99		7.42		8.35				8.35		8.18		7.62		7.75	
Dissolved Oxygen	mg/L	6.67				6.18		6.60		7.30		2.94		9.43				8.86		7.61		4.64		5.74	
Specific Conductance	µS/cm	52557				53121		53022	J	1129		1175		1475				1825		2074		7269		46010	
Turbidity	NTU	0.66				1.37		2.11		2.77		6.94		0.99				0.83		1.6		3.33		1.08	
Silica, dissolved	mg/L																								
Calcium	mg/L	420		421		427		422		83.3		85		70.7		72.5		77.8		86.6		125		398	
Magnesium	mg/L	1320		1320		1340		1310		16.5		16.9		19.8		20.4		26		29.2		112		1010	
Potassium	mg/L	407		410		420		413		5.4		5.45		6.91		7.01		8.65		9.78		38.7		361	
Sodium	mg/L	10100		10100		10100		9960		116	J	118	J	156	J	170	J	212	J	247	J-	1040	J	9180	
Boron	mg/L	4.61	I	4.61	I	4.69	I	4.67	I	0.0701		0.0704		0.0744		0.0692		0.0867		0.0924		0.402		3.84	
Strontium	mg/L	7.68		7.75		7.85		7.75		0.797		0.81		0.805		0.825		0.894		0.994		1.62		6.92	
Bromide	mg/L	70.9		70.4		73.4		72.5	J	0.562		0.625		0.951		0.949		1.28		1.55		6.45		59.5	
Chloride	mg/L	19700		19900		19700		20300	J	241		250		380		377		479		551		2060	L	17700	
Fluoride	mg/L	0.93		0.91		0.93		0.93	J	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U	0.16		0.86	
Sulfate	mg/L	2600		2590		2030		2650	J	11.7		12.7		25.3		25.2		35.9		44.2		229		2220	
Total Ammonia	mg/L as N	0.225	J	0.178	I J	0.155	I J	0.264	J	0.367	J	0.446	J	0.163	I J	0.193	I J	0.328	J	0.364	J	0.114	I J	0.392	J
Ammonium ion (NH_4^+)	mg/L	0.267	J			0.187	J	0.323	J	0.442	J	0.565	J	0.181	J			0.367	J	0.431	J	0.143	J	0.487	J
Unionized NH_3	mg/L	0.023	J			0.013	J	0.017	J	0.030	J	0.008	J	0.029	J			0.055	J	0.037	J	0.003	J	0.017	J
Nitrate/Nitrite	mg/L as N	0.025	U	0.025	U	0.025	U	0.025	U	0.0361	I J	0.0376	I J	0.0303	I J	0.0304	I J	0.0321	I J	0.0311	I J	0.0388	I J	0.0685	
TKN	mg/L	0.418		0.38	I	0.424		0.257		0.822		0.99		0.938	J	0.894		0.986		0.918		0.974		0.65	
TN	mg/L	0.443		0.405	J	0.449		0.282		0.858	J	1.028	J	0.968	J	0.924	J	1.018	J	0.949	J	1.013	J	0.719	J
ortho-Phosphate	mg/L	0.0021	U	0.0021	U	0.0021	U	0.0021	U	0.0021	U J	0.0021	U J	0.0021	U J	0.0021	U J	0.0021	U J	0.0021	U J-	0.0021	U J	0.0021	U
Total Phosphorus (P)	mg/L	0.003	U	0.003	U	0.003	U	0.003	U	0.0153	J	0.0262	J	0.0111	J	0.0111	J	0.0101	J	0.0117	J+	0.049	J	0.00628	I
Alkalinity	mg/L	141		142		142		147	J	194		205		146		146		150		163		179		184	
Bicarbonate Alkalinity	mg/L as HCO_3	153		162		173		179	J	237		250		176		178		175		199		218		224	
Sulfide	mg/L	0.36	U Q	0.36	U Q	0.387	I Q J	0.575	I Q	0.0446	I	0.036	U	0.036	U	0.036	U	0.036	U	0.036	U	0.036	U	0.036	U
Total Dissolved Solids	mg/L																								
Salinity	*	34.6				35.0		35.0	J	0.6	J	0.6	J	0.7	J			0.9	J	1.1	J	4.0		29.8	
Tritium	pCi/L (1σ)																								

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 030415-DUP is a duplicate of TPBBSW-3B.
Sample 031115-DUP is a duplicate of TPSWC-2T.

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
Q = Holding time exceeded.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-8. Summary of Surface Water Analytical Results from the March 2015 Sampling Event (continued)

Parameter	Units	TPSWC-4B		TPSWC-5T		TPSWC-5B		TPSWC-6T		TPSWC-6B		TPSWID-1T		TPSWID-1B		TPSWID-2T		TPSWID-2B		TPSWID-3T		TPSWID-3B		TPSWCCS-1B		TPSWCCS-2B	
		03/03/2015		03/03/2015		03/03/2015		03/10/2015		03/10/2015		03/06/2015		03/06/2015		03/06/2015		03/06/2015		03/06/2015		03/06/2015		03/06/2015		03/09/2015	
Temperature	°C	26.59		25.40		25.27		26.04		25.34		29.30		29.50		28.28		27.23		27.67		26.76		34.07		30.26	
pH	SU	7.81		8.04		8.04		7.28		7.25		7.15	J	5.39	J	6.92	J	6.72	J	7.14	J	6.77	J	7.82	J	7.83	
Dissolved Oxygen	mg/L	5.29		5.54		5.81		1.65		2.00		6.61		1.24		4.01		1.02		5.92		2.09		3.48		2.58	
Specific Conductance	µS/cm	48292		52697	J	51860	J	743		740		8401		18458		4219		8425		5746		25982		113081	J	110404	J
Turbidity	NTU	2.14		0.43		0.82		0.32		0.80		0.76		24.10		0.70		5.80		0.77		0.87		126.00		127.60	
Silica, dissolved	mg/L																							8.84	J-	12.4	
Calcium	mg/L	408		414		427		82.2		83.4		171		238		145		216		163		307		1130		1150	
Magnesium	mg/L	1060		1150		1190		8.84		9.09		159		368		63.3		146		95.5		533		3200		3140	
Potassium	mg/L	377		414		429		11.6		11.8		51.6		123		21.6		45.3		30.9		175		1030		1030	
Sodium	mg/L	9570		9870		9680		49.5		51.7		1250		2530		552		1240		847		3480		22800	J-	20900	
Boron	mg/L	4.05		4.57		4.72		0.0826		0.0834		0.0535		1.29		0.23	I	0.459	I	0.318	I	1.7		12.1		11.9	
Strontium	mg/L	7.11		7.56		7.86		1.06		1.07		2.26		3.58		1.63		2.76		1.87		4.73		23.9		23.2	
Bromide	mg/L	62.9		71.2	J	70.2	J	0.487		0.496		8.42		0.258		3.93		8.55		5.67		30.5		171	J	252	J
Chloride	mg/L	18300		20600	J	19900	J	93.2		95.1		2550		6180		1190		2610		1710		9210		50200	J	50000	J
Fluoride	mg/L	0.91		1.02	J	1	J	0.12		0.12		0.16		0.24		0.13		0.15		0.13		0.24		1.00	J-	1.00	J
Sulfate	mg/L	2380		2580	J	2610	J	62.5		62.2		269		605		109		258		149		1030		6970	J	6220	J
Total Ammonia	mg/L as N	0.29	J	0.183	I J	0.349	J	0.234	J	0.131	I J	0.333	J	1.36		0.621	J	0.572	J	0.408	J	0.263	J	1.84	J	1.09	
Ammonium ion (NH_4^+)	mg/L	0.359	J	0.223	J	0.425	J	0.297	J	0.167	J	0.423	J	1.747		0.794	J	0.733	J	0.520	J	0.337	J	2.258	J	1.337	
Unionized NH_3	mg/L	0.014	J	0.012	J	0.024	J	0.003	J	0.001	J	0.005	J	0.001		0.004	J	0.002	J	0.004	J	0.001	J	0.108	J	0.064	
Nitrate/Nitrite	mg/L as N	0.0511		0.0511		0.0491	I	0.0544	J	0.147		0.0688		0.0369	I	0.0564		0.025	U	0.171		0.0668		0.025	U	0.025	U
TKN	mg/L	0.726		0.454		0.612		0.248		0.396	I	1.13		1.98		0.934		0.888		0.814		0.798		4.44		3.12	
TN	mg/L	0.777	J	0.505	J	0.661	J	0.302	J	0.543		1.199		2.017	J	0.990	J	0.913		0.985		0.865		4.465	J	3.145	
ortho-Phosphate	mg/L	0.0021	U	0.0021	U	0.0021	U	0.0021	U	0.0021	U J-	0.00637	IJ	0.01	I	0.0042	UJ	0.0042	U	0.0042	U	0.0042	U	0.0106	I	0.0105	U Q J-
Total Phosphorus (P)	mg/L	0.00585	I	0.00338	I	0.003	U	0.003	U	0.003	U	0.00349	IJ	0.0111		0.00322	IJ	0.00782	I	0.00472	I	0.0108		0.0559		0.0619	
Alkalinity	mg/L	183		146	J	147	J	169		170		295		419		269		305		261		265		208	J	210	J
Bicarbonate Alkalinity	mg/L as HCO_3	223		178	J	179	J	207		207		359		511		329		372		318		323		254	J	256	J
Sulfide	mg/L	0.036	U	0.036	U	0.036	U	0.036	U	0.036	U	0.0717	I J	0.54	I	0.337	J	4.64		0.0517	I J	0.0611	I J	0.36	U	0.36	U
Total Dissolved Solids	mg/L																										
Salinity	*	31.5		34.7	J	34.1	J	0.4	J	0.4	J	4.6		10.9		2.2		4.7		3.1		15.8		83.8	J	81.6	J
Tritium	pCi/L (1σ)																										

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 030415-DUP is a duplicate of TPBBSW-3B.
Sample 031115-DUP is a duplicate of TPSWC-2T.
KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
Q = Holding time exceeded.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-8. Summary of Surface Water Analytical Results from the March 2015 Sampling Event (continued)

Parameter	Units	TPSWCCS-3B		TPSWCCS-4T		TPSWCCS-5T		TPSWCCS-7B		030215-EB		030315-FB		030415-FB		030615-FB1		030615-FB2		030915-FB1		030915-FB2		031015-FB1		031015-FB2		031115-FB1		031115-FB2	
		03/06/2015		03/09/2015		03/09/2015		03/06/2015		03/02/2015		03/03/2015		03/04/2015		03/06/2015		03/06/2015		03/09/2015		03/09/2015		03/10/2015		03/10/2015		03/11/2015		03/11/2015	
Temperature	°C	32.98		28.03		27.80		33.22																							
pH	SU	7.84	J	7.83		7.86		7.86	J																						
Dissolved Oxygen	mg/L	4.62		3.13		3.47		3.44																							
Specific Conductance	µS/cm	112924	J	114270	J	112000	J	114070	J																						
Turbidity	NTU	127.70		126.00		144.30		127.50																							
Silica, dissolved	mg/L	9	J	12		12.3		9.01	J	0.05	U	0.05	U	0.05	U	0.05	U			0.0521	I			0.05	U			0.05	U		
Calcium	mg/L	1090		1160		1170		1100		0.100	U	0.1	U	0.1	U	0.1	U			0.1	U			0.1	U			0.1	U		
Magnesium	mg/L	3070		3040		3130		3090		0.0200	U	0.02	U	0.02	U	0.02	U			0.02	U			0.02	U			0.02	U		
Potassium	mg/L	993		1040		1050		1000		0.190	U	0.19	U	0.19	U	0.19	U			0.19	U			0.19	U			0.19	U		
Sodium	mg/L	21100	J	22000		21900		21200	J	0.310	U	0.31	U	0.31	U	0.31	U			0.31	U			0.31	U			0.31	U		
Boron	mg/L	12.3		12		12.2		13		0.01	U	0.01	U	0.01	U	0.01	U			0.01	U			0.01	U			0.01	U		
Strontium	mg/L	23.2		23.5		23.6		23.6		0.001	U	0.001	U	0.001	U	0.001	U			0.001	U			0.001	U			0.001	U		
Bromide	mg/L	189	J	172	J	249	J	175	J	0.0130	U	0.013	U	0.025	U	0.025	U			0.025	U			0.025	U			0.025	U		
Chloride	mg/L	50700	J	51300	J	45200	J	50800	J	0.200	U	0.2	U	0.2	U	0.2	U			0.2	U			0.2	U			0.2	U		
Fluoride	mg/L	1.00	J	0.98	J	1.00	J	1.00	J	0.0240	U	0.032	U	0.032	U	0.032	U			0.032	U			0.032	U			0.032	U		
Sulfate	mg/L	6940	J	7020	J	6990	J	7110	J	0.400	U	0.4	U	0.4	U	0.4	U			0.4	U			0.4	U			0.4	U		
Total Ammonia	mg/L as N	1.23	I J	1.91		0.355		4.42	J	0.1400	I	0.157	I	0.195	I	0.116	I	0.1	U	0.1	U	0.1	U	0.123	I	0.1	U	0.251		0.1	
Ammonium ion (NH_4^+)	mg/L	1.509	J	2.357		0.434		5.360	J																						
Unionized NH_3	mg/L	0.072	J	0.098		0.023		0.323	J																						
Nitrate/Nitrite	mg/L as N	0.0299	I	0.0445	I J	0.053	J	0.025	U	0.005	UQ	0.005	U	0.00551	I	0.005	U			0.0105				0.00573	I			0.0152			
TKN	mg/L	4.68		3.96		4.26		4.34		0.228	I	0.2	U	0.2	U	0.1	U			0.1	U			0.2	U			0.1	U		
TN	mg/L	4.710	J	4.005	J	4.313	J	4.365	J																						
ortho-Phosphate	mg/L	0.0042	U	0.0105	U	0.0105	U	0.0042	U	0.0021	U	0.0021	U	0.0021	U	0.0021	U			0.0021	U			0.0021	U			0.0021	U		
Total Phosphorus (P)	mg/L	0.0561		0.0626		0.0613		0.0574		0.0030	U	0.003	U	0.003	U	0.003	U			0.003	U			0.003	U			0.003	U		
Alkalinity	mg/L	208	J	210	J	207	J	209	J	1.00	U	1.00	U	1.00	U	1.00	U			1.00	U			1.00	U			1.00	U		
Bicarbonate Alkalinity	mg/L as HCO_3	254	J	257	J	253	J	255	J	1.00	U	1.00	U	1.00	U	1.00	U			1.00	U			1.00	U			1.00	U		
Sulfide	mg/L	0.0564	I J	0.0611	I J	0.611	I	0.375	I J	0.04	U	0.036	U	0.0481	I Q	0.0469	I			0.0564	I			0.243				0.036	U		
Total Dissolved Solids	mg/L									5.00	U	5.00	U	5.00	U	5.00	U			5.00	U			5.00	U			5.00	U		
Salinity	*	83.7	J	82.6	J	83.2	J	84.7	J																						
Tritium	pCi/L (1σ)																														

NOTES:
Laboratory results are reported with 3 digits although only the first 2 are significant figures.
* PSS-78 salinity is unitless.
Sample 030415-DUP is a duplicate of TPBBSW-3B.
Sample 031115-DUP is a duplicate of TPSWC-2T.

KEY:
°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
DUP = Duplicate.
EB = Equipment Blank.
FB = Field Blank.
HCO_3 = Bicarbonate.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
Q = Holding time exceeded.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
SU = Standard Unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 3.2-9. Range of Post-Uprate Ion Concentrations in Surface Water

Parameter	Units	Biscayne Bay Min	Biscayne Bay Max	Biscayne Bay Average	Biscayne Bay Standard Deviation	Interceptor Ditch Min	Interceptor Ditch Max	Interceptor Ditch Average	Interceptor Ditch Standard Deviation	L-31E Min	L-31E Max	L-31E Average	L-31E Standard Deviation	Cooling Canals Min	Cooling Canals Max	Cooling Canals Average	Cooling Canals Standard Deviation
Temperature	°C	17.02	31.51	26.29	4.32	23.48	36.14	28.18	2.76	22.76	33.00	27.63	2.91	19.43	40.33	32.30	4.87
pH	SU	7.68	8.57	8.12	0.22	5.39	8.52	7.45	0.44	7.14	8.83	7.83	0.35	7.65	8.94	8.22	0.35
Dissolved Oxygen	mg/L	2.34	8.99	6.01	1.42	0.04	9.14	3.83	2.57	0.14	10.05	5.45	2.46	0.12	12.30	4.87	2.24
Specific Conductance	µS/cm	37725	64512	51399	5641	2076	66251	10401	13095	402	16610	1750	2874	68344	124486	91789	15985
Turbidity	NTU	0.23	8.62	1.48	1.43	0.18	66.13	4.42	10.03	0.13	26.27	3.22	4.82	3.18	261.10	47.60	52.49
Salinity	*	23.96	43.43	33.74	4.12	1.05	44.82	6.19	8.70	0.19	9.68	0.93	1.64	46.64	94.14	65.99	13.46
Calcium	mg/L	330	500	426	44	87	610	191	116	44	230	73	32	570	1170	850	167
Magnesium	mg/L	870	1700	1265	196	28	1700	237	374	6	320	22	45	1800	3200	2357	346
Potassium	mg/L	280	590	431	73	12	560	81	121	2	100	8	14	560	1420	832	219
Sodium	mg/L	7200	14000	10498	1410	290	14000	1777	2651	27	2600	230	461	15000	28500	19926	3774
Boron	mg/L	3.1	5.4	4.6	0.6	0.1	5.3	0.8	1.2	0.0	1.1	0.1	0.2	6.2	14.3	9.0	2.3
Strontium	mg/L	5.4	9.5	7.6	0.9	1.0	11.0	2.6	2.2	0.4	3.0	0.8	0.4	12.0	24.9	16.7	4.1
Bromide	mg/L	44.0	95.0	69.5	12.4	0.3	85.0	12.2	17.8	0.0	19.0	1.1	2.7	52.0	270.0	135.9	41.2
Chloride	mg/L	14000	26000	19567	2692	110	27000	3398	5091	39	5300	451	905	27000	54600	39507	7828
Fluoride	mg/L	0.1	1.0	0.7	0.3	0.0	3.2	0.3	0.4	0.0	0.9	0.1	0.2	0.0	6.5	1.0	1.2
Sulfate	mg/L	2000	3700	2648	380	30	2900	404	601	1	640	34	90	1900	7740	5088	1415
Alkalinity	mg/L	58	170	128	23	120	448	252	63	82	205	145	32	73	227	156	35
Bicarbonate Alkalinity as $CaCO_3$	mg/L ($CaCO_3$)	57	184	132	29	120	511	263	74	1	970	161	109	19	277	146	67
Sulfides	mg/L	0.1	1.0	0.9	0.3	0.1	13.0	1.6	2.3	0.0	1.0	0.8	0.4	0.1	1.4	0.9	0.3
Ammonia	mg/L	0.026	0.915	0.147	0.192	0.027	1.900	0.433	0.373	0.081	1.120	0.287	0.237	0.067	4.420	0.437	0.738
Ammonium	mg/L	0.034	1.080	0.164	0.233	0.050	2.400	0.547	0.474	0.050	1.360	0.350	0.295	0.050	5.360	0.507	0.910
Unionized ammonia	mg/L	0.000	0.088	0.015	0.019	0.000	0.047	0.013	0.014	0.000	0.079	0.017	0.017	0.000	0.323	0.042	0.049
Nitrate+Nitrite	mg/L	0.005	0.048	0.023	0.012	0.005	0.202	0.050	0.050	0.005	0.550	0.057	0.105	0.005	1.000	0.054	0.150
Total Kjedahl Nitrogen	mg/L	0.110	1.280	0.489	0.268	0.644	2.400	0.991	0.369	0.470	2.920	1.051	0.370	0.300	17.700	6.242	4.980
Total Nitrogen	mg/L	0.250	1.288	0.535	0.268	0.737	2.400	1.094	0.378	0.470	2.941	1.086	0.387	0.340	17.727	6.008	4.954
Orthophosphate	mg/L	0.001	0.012	0.003	0.003	0.001	0.041	0.010	0.012	0.001	0.005	0.002	0.001	0.001	0.087	0.020	0.028
Total Phosphorus	mg/L	0.002	0.049	0.011	0.013	0.002	0.040	0.007	0.008	0.002	0.049	0.011	0.011	0.004	0.106	0.050	0.025

Notes:

[1] Biscayne Bay sites include BBSW-3B, -4B, and -5B.

[2] Interceptor Ditch sites include TPSWID-1T, -1B, -2T, -2B, -3T, and -3B.

[3] L-31E sites include TPSWC-1T, -1B, -2T, -2B, -3T, and -3B.

[4] CCS sites include TPSWCCS-1B, -2B, -3B, -4T, -5T, and -7B.

Please see Appendix J for a list of values that were removed from this analysis and the rationale for removal.

Key:

°C = Degrees Celsius.
$CaCO_3$ = Bicarbonate.
Max = Maximum.
mg/L = Milligram(s) per liter.
Min = Minimum.
µS/cm = MilliSiemens per centimeter.
NTU = Nephelometric turbidity unit(s)
SU = Standard units.

Table 3.2-10. Average (± Standard Deviation) of Pre-Uprate and Post-Uprate Ion Concentrations in Surface Water

Parameter	Units	Biscayne Bay[1]		Interceptor Ditch[2]		L31-E[3]		CCS[4]	
		Pre-Uprate	Post-Uprate	Pre-Uprate	Post-Uprate	Pre-Uprate	Post-Uprate	Pre-Uprate	Post-Uprate
Temperature	°C	26.40 ± 5.27	26.19 ± 3.41	28.15 ± 2.86	28.20 ± 2.69	28.08 ± 3.10	27.23 ± 2.70	31.35 ± 5.70	28.20 ± 2.69
pH	SU	8.24 ± 0.20	8.01 ± 0.19	7.56 ± 0.41	7.35 ± 0.45	7.93 ± 0.36	7.74 ± 0.32	8.31 ± 0.27	8.15 ± 0.40
Dissolved Oxygen	mg/L	6.32 ± 1.34	5.78 ± 1.47	3.10 ± 2.54	4.39 ± 2.47	5.61 ± 2.41	5.33 ± 2.51	5.31 ± 1.49	4.53 ± 2.63
Specific Conductance	µS/cm	51012 ± 6790	51738 ± 4531	14066 ± 17711	7193 ± 5343	1612 ± 2857	1870 ± 2913	80577 ± 5193	101600 ± 15801
Turbidity	NTU	2.15 ± 1.84	0.89 ± 0.46	4.24 ± 7.91	4.57 ± 11.66	4.85 ± 6.45	1.8 ± 1.82	8.29 ± 3.53	82.0 ± 51.16
Salinity	*	33.45 ± 4.96	34.00 ± 3.31	8.67 ± 11.84	4.02 ± 3.27	0.85 ± 1.65	1.0 ± 1.66	56.90 ± 4.62	73.9 ± 13.63
Calcium	mg/L	430 ± 54	419 ± 18	211 ± 138	157 ± 47	76 ± 38	69 ± 18	751 ± 80	1023 ± 137
Magnesium	mg/L	1317 ± 220	1174 ± 101	310 ± 447	111 ± 114	25 ± 54	16 ± 21	2243 ± 243	2557 ± 409
Potassium	mg/L	421 ± 80	449 ± 57	104 ± 144	41 ± 38	9 ± 17	6 ± 7	706 ± 80	1052 ± 212
Sodium	mg/L	10576 ± 1723	10429 ± 1101	2577 ± 3638	1078 ± 833	208 ± 455	249 ± 469	17714 ± 1686	21860 ± 4036
Boron	mg/L	4.50 ± 0.69	4.70 ± 0.27	1.01 ± 1.40	0.38 ± 0.38	0.10 ± 0.18	0.1 ± 0.07	7.61 ± 0.85	11.5 ± 1.85
Strontium	mg/L	7.61 ± 1.13	7.60 ± 0.43	2.96 ± 2.60	1.92 ± 0.83	0.83 ± 0.50	0.7 ± 0.25	14.12 ± 1.19	21.2 ± 3.30
Bromide	mg/L	68.90 ± 15.43	70.60 ± 3.12	15.90 ± 21.12	5.68 ± 5.83	1.31 ± 3.28	0.8 ± 1.27	114.88 ± 30.30	171.8 ± 31.55
Chloride	mg/L	19476 ± 3326	19646 ± 2058	4790 ± 6969	2179 ± 1858	409 ± 916	487 ± 904	34048 ± 2888	44283 ± 7671
Fluoride	mg/L	0.54 ± 0.27	0.90 ± 0.04	0.31 ± 0.48	0.15 ± 0.04	0.18 ± 0.24	0.06 ± 0.03	1.06 ± 1.54	0.86 ± 0.10
Sulfate	mg/L	2638 ± 447	2667 ± 240	520 ± 714	202 ± 216	41 ± 108	22 ± 46	4205 ± 725	6635 ± 893
Alkalinity	mg/L	122 ± 27	137 ± 9	235 ± 60	281 ± 58	144 ± 35	148 ± 28	143 ± 23	178 ± 40
Bicarbonate Alkalinity as $CaCO_3$	mg/L ($CaCO_3$)	121 ± 28	151 ± 20	235 ± 60	312 ± 71	159 ± 134	164 ± 37	136 ± 25	162 ± 104
Sulfide	mg/L	1.00 ± 0.00	0.64 ± 0.40	2.03 ± 2.72	0.97 ± 1.23	1.00 ± 0.00	0.5 ± 0.48	1.00 ± 0.00	0.6 ± 0.45
Ammonia	mg/L	0.076 ± 0.032	0.1897 ± 0.2341	0.47 ± 0.45	0.41 ± 0.32	0.18 ± 0.07	0.3 ± 0.28	0.18 ± 0.12	0.6 ± 0.90
Ammonium	mg/L	0.081 ± 0.034	0.2141 ± 0.2853	0.59 ± 0.58	0.52 ± 0.41	0.23 ± 0.09	0.4 ± 0.35	0.20 ± 0.16	0.7 ± 1.11
Unionized ammonia	mg/L	0.015 ± 0.013	0.0144 ± 0.0220	0.02 ± 0.01	0.01 ± 0.01	0.01 ± 0.01	0.0 ± 0.02	0.03 ± 0.01	0.1 ± 0.06
Nitrate+Nitrite	mg/L	0.021 ± 0.011	0.0236 ± 0.0126	0.03 ± 0.04	0.06 ± 0.05	0.08 ± 0.15	0.0 ± 0.05	0.08 ± 0.23	0.0 ± 0.01
Total Kjedahl Nitrogen	mg/L	0.330 ± 0.148	0.5837 ± 0.2819	1.13 ± 0.45	0.91 ± 0.29	0.98 ± 0.29	1.1 ± 0.41	2.02 ± 0.31	8.8 ± 4.74
Total Nitrogen	mg/L	0.367 ± 0.129	0.6612 ± 0.2794	1.20 ± 0.45	1.01 ± 0.30	1.06 ± 0.31	1.1 ± 0.44	2.06 ± 0.48	9.0 ± 4.72
Orthophosphate	mg/L	0.003 ± 0.002	0.0026 ± 0.0029	0.02 ± 0.02	0.01 ± 0.01	0.00 ± 0.00	0.0 ± 0.00	0.02 ± 0.04	0.0 ± 0.03
Total Phosphorus	mg/L	0.025 ± 0.013	0.0034 ± 0.0022	0.01 ± 0.01	0.01 ± 0.01	0.01 ± 0.01	0.0 ± 0.01	0.03 ± 0.02	0.1 ± 0.02

Notes:

[1] Biscayne Bay sites include BBSW-3B, -4B, and -5B.

[2] Interceptor Ditch sites include TPSWID-1T, -1B, -2T, -2B, -3T, and -3B.

[3] L-31E sites include TPSWC-1T, -1B, -2T, -2B, -3T, and -3B.

[4] CCS sites include TPSWCCS-1B, -2B, -3B, -4T, -5T, and -7B.

Please see Appendix J for a list of values that were removed from this analysis and the rationale for removal.

Key:

°C = Degrees Celsius.

$CaCO_3$ = Bicarbonate.

Max = Maximum.

mg/L = Milligram(s) per liter.

Table 3.3-1. Summary of Rainfall Sample Collected and Data Received

Month	TPRF-2	TPRF-3	TPRF-4	TPRF-5	TPRF-7	TPRF-8	TPRF-12
Jul-11	✓	✓	✓	NA	✓*	✓	✓
Sep-11	✓	✓	✓	✓	✓	✓	✓
Dec-11	✓	✓	✓	✓	✓	✓	✓
Mar-12	✓	✓	✓	✓	NA	✓	✓
Jun-12	✓	✓	✓	✓	NA	✓	✓
Sep-12	✓	✓	✓	✓	✓	✓	✓
Dec-12	✓	✓	✓	✓	✓	✓	✓
Mar-13	✓	✓	NA	✓	✓	✓	✓
Jun-13	✓	✓	NA	✓	✓	✓	✓
Sep-13	✓	✓	NA	✓	✓	✓	✓
Dec-13	✓	✓	✓	✓	✓	✓	✓
Mar-14	✓	✓	✓	✓	✓	✓	✓
Jun-14	✓	✓	✓	✓	✓	✓	✓
Sep-14	✓	✓	✓	✓	✓	✓	✓
Dec-14	✓	✓	✓	✓	✓	✓	✓
Mar-15	✓	✓	✓	✓	✓	✓	✓

Notes:

* Data collected on 8/18/2011.

Not Available - TPRF-5 was stolen in in July 2011. TPRF-7 was stolen in March and replaced in June 2012.

Not Available - TPRF-4 was stolen in in March 2013. TPRF-7 was stolen in March and replaced in June 2013.

Key:

✓ = Data available.

NA = Not available.

Table 3.3-2. Rainfall Tritium Data

Rainfall Station	Sample Date	Concentration (pCi/L)		
		Value	1-Sigma	MDL
RF-2	7/29/2011	34.1	5.4	4.6
RF-3	7/29/2011	23.5	5.5	5.0
RF-4	7/29/2011	11.3	5.2	5.0
RF-8	7/29/2011	4.4	4.8	4.8
RF-12	7/29/2011	29.2	5.8	5.1
RF-BLANK	7/29/2011	6.3	5.0	4.9
RF-7	8/18/2011	24.7	5.6	5.1
RF-2	9/29/2011	7.3	7.8	7.6
RF-3	9/29/2011	25.3	8.2	7.4
RF-4	9/29/2011	6.5	7.6	7.5
RF-5	9/29/2011	17.3	7.9	7.4
RF-7	9/29/2011	12.6	7.8	7.5
RF-8	9/29/2011	19.0	8.0	7.6
RF-12	9/29/2011	24.2	8.2	7.4
RF-BLANK	9/29/2011	3.0	7.5	7.4
RF-2	12/21/2011	42.2	8.6	7.2
RF-3	12/21/2011	9.8	7.7	7.4
RF-4	12/21/2011	8.1	7.5	7.3
RF-5	12/21/2011	37.3	8.6	7.4
RF-7	12/21/2011	11.5	7.6	7.3
RF-8	12/21/2011	10.9	7.7	7.4
RF-12	12/21/2011	18.1	7.6	7.0
RF-BLANK	12/21/2011	8.0	7.0	6.8
RF-2	3/22/2012	109.9	8	3
RF-3	3/22/2012	17.1	3.5	3
RF-4	3/22/2012	25.8	3.7	2.9
RF-5	3/22/2012	27.7	4.8	3.7
RF-7	NA	Gauge stolen		
RF-8	3/22/2012	9.6	4.1	3.8
RF-12	3/22/2012	27.1	4.9	3.8
RF-2	6/14/2012	82.6	7.4	5.9
RF-3	6/14/2012	10.4	6.1	5.9
RF-4	6/13/2012	7.8	6.0	5.9
RF-5	6/6/2012	18.3	6.2	5.9
RF-7	NA	Gauge stolen		

Table 3.3-2. Rainfall Tritium Data

Rainfall Station	Sample Date	Concentration (pCi/L)		
		Value	1-Sigma	MDL
RF-8	6/4/2012	14.7	6.2	6.0
RF-12	6/7/2012	-3.0	5.9	5.9
RF-2	9/6/2012	25.5	4.3	4.0
RF-3	9/6/2012	11.1	4.3	4.2
RF-4	9/7/2012	9.6	4.2	4.1
RF-5	9/18/2012	15.3	4.4	4.2
RF-7	9/7/2012	12.0	4.2	4.0
RF-8	9/4/2012	11.1	4.3	4.1
RF-12	9/11/2012	14.4	4.3	4.2
RF-2	12/11/2012	34.2	5.8	5.3
RF-3	12/11/2012	14.2	5.5	5.3
RF-4	12/4/2012	18.7	7.1	6.8
RF-5	12/10/2012	18.3	5.6	5.3
RF-7	12/4/2012	12.5	5.5	5.3
RF-8	12/3/2012	8.5	5.5	5.4
RF-12	12/6/2012	10.5	5.4	5.3
RF-2	3/7/2013	38.2	7.1	6.5
RF-3	3/7/2013	68.5	7.4	6.3
RF-4	NA	Gauge stolen		
RF-5	3/8/2013	4.5	5.8	5.8
RF-7	3/8/2013	4.9	5.7	5.7
RF-8	3/2/2013	24.9	6.0	5.7
RF-12	3/2/2013	5.3	5.7	5.6
RF-2	6/7/2013	28.7	6.2	5.9
RF-3	6/11/2013	-4.0	6.0	6.1
RF-4	NA	Gauge stolen		
RF-5	6/6/2013	14.4	6.0	5.8
RF-7	6/5/2013	-7.8	6.0	6.1
RF-8	6/5/2013	-3.4	6.1	6.1
RF-12	6/18/2013	6.5	5.6	5.5
RF-2	9/11/2013	12.6	5.0	4.8
RF-3	9/11/2013	9.8	5.0	4.9
RF-4	NA	Gauge stolen		
RF-5	9/3/2013	6.0	4.9	4.8

Table 3.3-2. Rainfall Tritium Data

Rainfall Station	Sample Date	Concentration (pCi/L)		
		Value	1-Sigma	MDL
RF-7	9/4/2013	8.9	5.2	5.1
RF-8	9/4/2013	8.3	4.6	4.5
RF-12	9/6/2013	3.6	5.1	5.0
RF-2	12/5/2013	19.7	4.0	3.6
RF-3	12/2/2013	2.6	3.6	3.6
RF-4	12/3/2013	2.9	3.6	3.5
RF-5	12/4/2013	0.8	3.4	3.4
RF-7	12/3/2013	-3.7	4.7	4.8
RF-8	12/3/2013	-5.2	4.6	4.7
RF-12	12/4/2013	-3.2	4.6	4.7
RF-2	3/4/2014	18.5	7.2	6.9
RF-3	3/4/2014	11.6	7.1	6.9
RF-4	3/10/2014	14.2	7.1	6.9
RF-5	3/11/2014	7.3	6.1	5.9
RF-7	3/11/2014	6.8	5.8	5.7
RF-8	3/10/2014	7.4	6.0	5.8
RF-12	3/5/2014	15.7	6.0	5.7
RF-2	6/11/2014	43.6	6.0	5.3
RF-3	6/11/2014	-0.6	5.2	5.2
RF-4	6/10/2014	6.3	5.4	5.3
RF-5	6/10/2014	8.6	5.2	5.1
RF-7	6/9/2014	3.0	5.3	5.2
RF-8	6/9/2014	8.0	5.5	5.4
RF-12	6/4/2014	11.1	5.2	5.1
RF-2	9/10/2014	32.6	4.8	4.1
RF-3	9/10/2014	15.3	4.5	4.2
RF-4	9/9/2014	12.2	4.3	4.1
RF-5	9/9/2014	21.6	4.6	4.2
RF-7	9/8/2014	12.2	3.8	3.6
RF-8	9/8/2014	7.8	4.2	4.0
RF-12	9/5/2014	25.5	4.7	4.1
RF-2	12/3/2014	89.5	6.3	4.0
RF-3	12/3/2014	33.8	4.6	3.9
RF-4	12/1/2014	20.7	4.3	3.8

Table 3.3-2. Rainfall Tritium Data

Rainfall Station	Sample Date	Concentration (pCi/L)		
		Value	1-Sigma	MDL
RF-5	12/2/2014	12.7	4.2	3.9
RF-7	12/2/2014	9.2	4.2	4.0
RF-8	12/1/2014	8.7	4.1	3.9
RF-12	12/9/2014	20.5	4.3	3.9
RF-2	3/3/2015	16.0	3.0	2.7
RF-3	3/3/2015	10.0	2.8	2.6
RF-4	3/2/2015	8.4	2.9	2.7
RF-5	3/5/2015	3.2	2.7	2.6
RF-7	3/2/2015	7.4	2.7	2.6
RF-8	3/2/2015	6.3	2.9	2.7
RF-12	3/9/2015	17.2	3.1	2.7

Key:

pCi/L = picoCuries per liter.

MDL = Minimum detection limit.

RF = Rainfall.

Table 3.4-1. Summary of Evaporation Pan Collected and Data Received

Month	TPEVP-2	TPEVP-3	TPEVP-5	TPEVP-12	TPEVP-13A[1]	TPEVP-Source	TPEVP-Pumped-Source[2]
Mar-11	✓	✓	✓	✓	NA	✓	NA
Apr-11	✓	✓	✓	✓	NA	✓	✓
May-11	✓	✓	✓	✓	✓	✓	✓
Jun-11	✓	✓	✓	✓	✓	✓	✓
Aug-11[3]	✓	✓	✓*	✓	✓	NA	NA
Sep-11	✓	✓	✓	✓	✓	✓	NA
Oct-11	✓	✓	✓	✓	✓	✓	NA
Nov-11[4]	✓	✓	✓	✓	✓	NA	NA
Dec-11	✓	✓	✓	✓	✓	✓	✓
Jan-12	✓	✓	✓	✓	✓	✓	✓
Feb-12	✓	✓	✓	✓	✓	✓	✓
Mar-12	✓	✓	✓	✓	✓	✓	✓
Apr-12	✓	✓	✓	✓	✓	✓	✓
May-12	✓	✓	✓	✓	✓	✓	NA
Jun-12	✓	✓	✓	✓	✓	✓	NA
Jul-12	✓	✓	✓	✓	✓	✓	NA
Aug-12	✓	✓	✓	✓	✓	✓	NA
Sep-12	✓	✓	✓	✓	✓	✓	NA
Oct-12	✓	✓	✓	✓	✓	✓	NA
Nov-12	✓	✓	✓	✓	✓	✓	✓
Dec-12	✓	✓	✓	✓	✓	✓	✓
Jan-13	✓	✓	✓	✓	✓	✓	✓
Feb-13	✓	✓	✓	✓	✓	✓	✓
Mar-13	✓	✓	✓	✓	✓	✓	✓
Apr-13	✓	✓	✓	✓	✓	✓	✓
May-13	✓	NA	✓	✓	✓	✓	✓
Jun-13	✓	✓	✓	✓	✓	✓	NA
Jul-13	✓	✓	✓	✓	✓	✓	✓
Aug-13	✓	✓	✓	✓	✓	✓	✓
Sep-13	✓	✓	✓	✓	✓	✓	✓
Oct-13	✓	✓	✓	✓	✓	✓	✓
Nov-13	✓	✓	✓	✓	✓	✓	✓
Dec-13	✓	✓	✓	✓	✓	✓	✓
Jan-14	✓	✓	✓	✓	✓	✓	✓
Feb-14	✓	✓	✓	✓	✓	✓	✓
Mar-14	✓	✓	✓	✓	✓	✓	✓
Apr-14	✓	✓	✓	✓	✓	✓	✓
May-14	✓	✓	✓	✓	✓	✓	✓
Jun-14	✓	✓	✓	✓	✓	✓	✓
Jul-14	✓	✓	✓	✓	✓	✓	✓
Aug-14	✓	✓	✓	✓	✓	✓	✓
Sep-14	✓	✓	✓	✓	✓	✓	✓
Oct-14	P	P	P	P	P	P	P
Nov-14	P	P	P	P	P	P	P
Dec-14	P	P	P	P	P	P	P
Jan-15	P	P	P	P	P	P	P
Feb-15[5]	P	NA	P	NA	P	P	P
Mar-15	P	P	P	P	P	P	P
Apr-15	P	P	P	P	P	P	P
May-15	P	P	P	P	P	P	P
Jun-15	P	P	P	P	P	P	P

Notes:

[1] TPEVP-13A was not set up until April 2011; the first samples were collected in May 2011.
[2] TPEVP-Pumped-Source is only collected when water transported in the water bladders is used to fill pans at TPEVP-5 on a different day. After April 2012, a faster refilling method was used and all site re-filling was completed within a day.
[3] Pans were full in August and not refilled; therefore, there was no Source Water. TPEVP-5 was visited 7/29/11 instead of 8/2/11 (for all other sites).
[4] Pans were full in November and not refilled; therefore, there was no Source Water for that month.
[5] Pans were dry so no samples were taken.
P - Samples collected but results not available.
NA - Sample not collected, data not available.

Key:
✓ = Data available.
NA = Not available.
P = Pending.

Table 3.4-2. Evaporation Pan Tritium Results (pCi/L ± 1 sigma)

Date	TPEVP-2	TPEVP-3	TPEVP-5	TPEVP-12	TPEVP-13	Source
3/1/2011	153.0 ± 13.0	43.4 ± 7.7	11.0 ± 6.4	22.1 ± 6.9	NA ± NA	5.0 ± 6.3
4/19/2011	249.0 ± 19.0	45.1 ± 6.5	49.6 ± 7.0	55.0 ± 6.9	NA ± NA	18.5 ± 5.4
5/24/2011	283.4 ± 19.6	36.0 ± 7.2	39.2 ± 7.2	30.0 ± 6.9	490.3 ± 31.5	18.1 ± 7.5
6/24/2011	26.3 ± 6.8	17.9 ± 6.7	39.0 ± 7.2	22.6 ± 6.6	274.7 ± 19.0	21.2 ± 6.7
8/2/2011	75.3 ± 7.0	57.2 ± 6.3	19.6 ± 4.8	10.9 ± 4.5	181.0 ± 13.0	NA ± NA
9/28/2011	38.3 ± 8.3	12.8 ± 6.6	18.9 ± 7.6	14.4 ± 6.8	114.4 ± 11.3	7.3 ± 7.2
10/27/2011	63.4 ± 9.4	43.0 ± 8.3	11.3 ± 7.3	18.5 ± 7.6	115.4 ± 11.7	13.0 ± 7.5
11/30/2011	180.5 ± 13.3	47.9 ± 6.5	11.3 ± 5.0	10.1 ± 4.3	374.1 ± 24.3	NA ± NA
12/20/2011	361.0 ± 24.0	83.9 ± 8.5	28.6 ± 7.5	0.0 ± 7.0	647.0 ± 42.0	3.1 ± 6.9
1/24/2012	313.0 ± 22.0	109.0 ± 11.0	51.4 ± 8.6	17.2 ± 7.4	776.0 ± 44.0	17.8 ± 8.2
2/20/2012	322.0 ± 23.0	71.9 ± 9.6	39.0 ± 8.0	56.6 ± 9.0	1050.0 ± 64.0	16.7 ± 8.0
3/20/2012	550.0 ± 40.0	59.0 ± 9.4	63.1 ± 8.7	30.9 ± 7.1	974.0 ± 66.0	17.8 ± 6.9
4/24/2012	209.0 ± 7.5	52.0 ± 8.5	42.6 ± 3.2	16.0 ± 2.9	590.0 ± 18.6	8.6 ± 3.0
5/21/2012	113.0 ± 5.2	44.4 ± 3.4	24.5 ± 3.1	17.4 ± 3.2	284.0 ± 9.6	7.5 ± 2.9
6/19/2012	117.9 ± 6.1	28.1 ± 3.5	24.8 ± 4.4	18.7 ± 4.3	349.0 ± 12.3	4.3 ± 6.3
7/23/2012	52.2 ± 4.9	28.7 ± 4.5	16.5 ± 4.3	6.0 ± 4.0	118.1 ± 6.0	1.9 ± 4.3
8/20/2012	40.3 ± 4.7	13.2 ± 4.5	10.7 ± 3.9	10.1 ± 3.9	115.5 ± 6.2	5.4 ± 4.1
9/20/2012	134.0 ± 6.9	29.6 ± 4.0	17.9 ± 4.4	13.0 ± 4.5	417.0 ± 15.0	7.5 ± 4.2
10/22/2012	125.2 ± 8.2	59.1 ± 4.6	13.5 ± 4.7	12.7 ± 4.8	309.5 ± 12.4	1.1 ± 4.6
11/20/2012	111.9 ± 5.6	76.0 ± 6.7	12.3 ± 4.2	7.8 ± 4.2	337.2 ± 11.8	10.4 ± 4.1
12/18/2012	183.9 ± 9.4	67.5 ± 5.3	19.8 ± 5.6	23.1 ± 5.6	446.3 ± 16.8	7.8 ± 5.3
1/18/2013	225.9 ± 9.2	27.1 ± 6.4	40.2 ± 4.6	13.8 ± 4.0	577.7 ± 19.7	2.0 ± 4.1
2/20/2013	173.6 ± 7.8	119.1 ± 4.4	37.2 ± 5.1	39.0 ± 6.8	532.9 ± 20.1	19.8 ± 6.7
3/18/2013	184.8 ± 10.2	76.1 ± 6.7	40.5 ± 7.2	78.5 ± 7.7	700.5 ± 25.7	30.0 ± 6.8
4/19/2013	249.1 ± 13.1	31.4 ± 7.6	33.2 ± 5.7	31.4 ± 5.7	569.4 ± 19.2	7.8 ± 5.4
5/20/2013	193.9 ± 9.1	NA ± 7.9	29.7 ± 5.8	12.5 ± 5.4	531.3 ± 18.1	1.7 ± 5.4
6/20/2013	135.6 ± 8.5	14.4 ± 6.1	33.0 ± 6.2	19.8 ± 6.1	320.4 ± 13.6	-5.8 ± 5.8
7/23/2013	90.3 ± 8.2	14.9 ± 6.8	19.1 ± 6.9	15.8 ± 6.9	175.9 ± 10.5	7.3 ± 6.6
8/28/2013	57.2 ± 5.8	27.4 ± 5.2	13.5 ± 4.9	-1.1 ± 4.8	125.9 ± 7.5	6.9 ± 5.0
9/23/2013	44.9 ± 4.4	15.4 ± 4.8	3.0 ± 4.6	15.0 ± 4.8	99.3 ± 6.8	2.2 ± 4.6
10/24/2013	40.2 ± 5.2	11.3 ± 4.7	6.3 ± 4.4	11.6 ± 4.8	78.9 ± 6.1	9.9 ± 4.5
11/26/2013	46.9 ± 4.4	5.8 ± 3.6	11.2 ± 3.7	3.5 ± 3.6	63.7 ± 4.6	8.1 ± 3.7
12/19/2013	90.2 ± 6.9	33.1 ± 5.4	1.1 ± 4.8	0.4 ± 4.7	236.4 ± 11.5	-10.1 ± 4.5
1/21/2014	105.9 ± 7.3	23.9 ± 5.2	0.0 ± 4.5	2.2 ± 4.7	244.4 ± 9.8	2.9 ± 4.8
2/20/2014	195.4 ± 8.5	59.9 ± 4.5	25.6 ± 3.9	19.6 ± 3.7	413.4 ± 13.4	6.4 ± 3.5
3/27/2014	308.0 ± 13.7	80.6 ± 7.5	49.4 ± 6.8	111.3 ± 8.3	1610.1 ± 53.8	13.3 ± 6.0
4/17/2014	467.3 ± 18.3	49.4 ± 6.7	48.6 ± 5.4	39.0 ± 5.1	1180.8 ± 38.3	5.3 ± 4.7
5/16/2014	305.5 ± 12.2	17.8 ± 4.8	48.3 ± 5.5	56.5 ± 5.6	681.2 ± 23.8	7.4 ± 4.7
6/19/2014	280.0 ± 11.9	17.9 ± 5.4	38.6 ± 5.6	244.8 ± 11.0	415.5 ± 16.3	4.3 ± 5.5
7/28/2014	92.7 ± 6.7	32.0 ± 6.2	44.1 ± 6.7	35.6 ± 6.3	623.0 ± 23.3	1.6 ± 5.7
8/20/2014	119.1 ± 5.9	40.3 ± 3.5	37.2 ± 3.5	52.6 ± 4.0	804.1 ± 27.8	10.3 ± 2.9
9/16/2014	317.0 ± 12.2	28.0 ± 3.9	46.5 ± 4.2	37.6 ± 4.2	909.5 ± 31.0	4.7 ± 3.6
Min	26.3	5.8	0.0	-1.1	63.7	-10.1
Max	550.0	119.1	63.1	244.8	1610.1	30.0
Average	**176.8**	**42.7**	**27.9**	**29.8**	**471.4**	**8.2**
Std Error	*18.7*	*4.2*	*2.5*	*6.3*	*53.8*	*1.2*

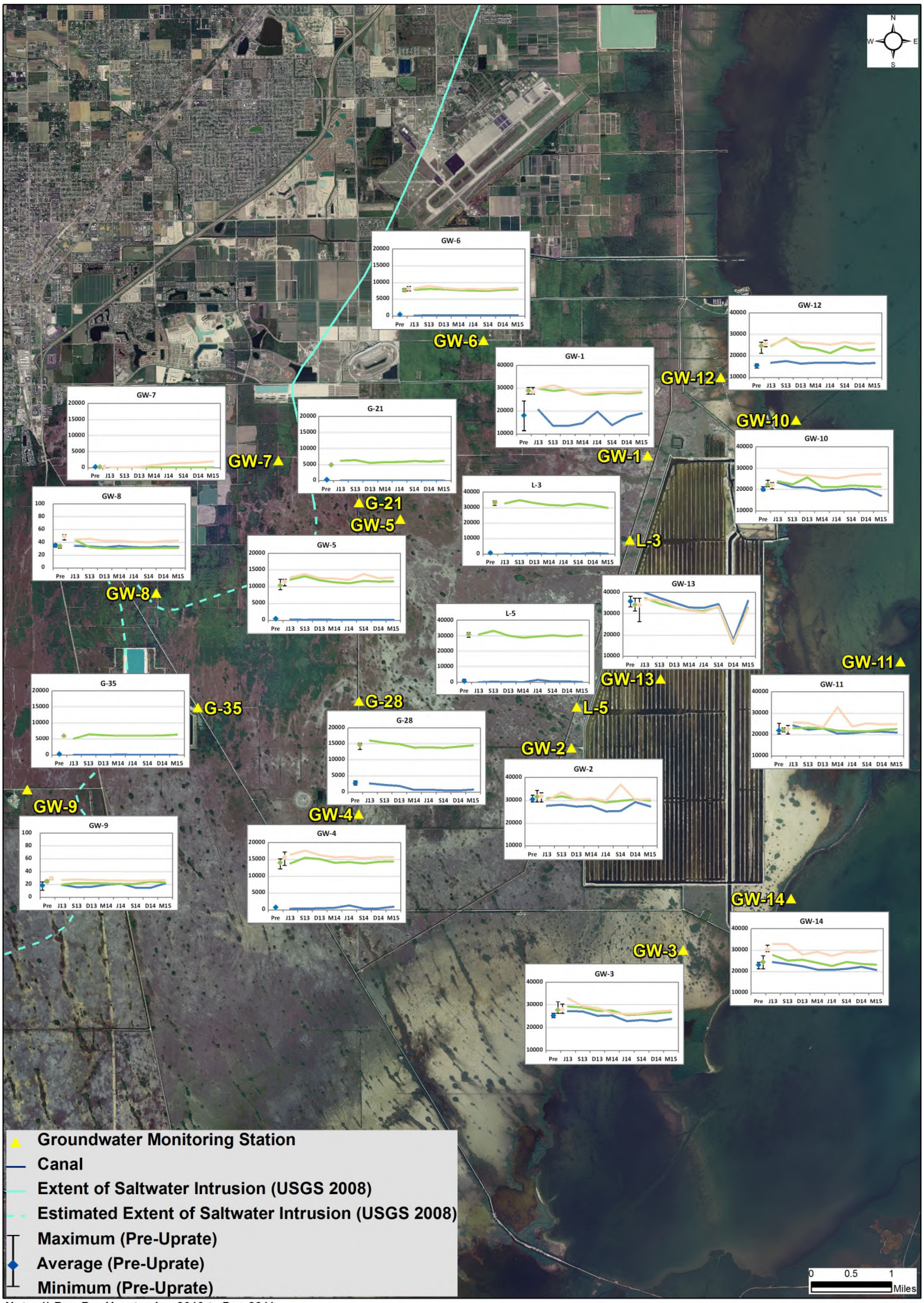
Note:

* Source value for the month is the tritium value from the previous month i.e. Feb Tritium values were a function of the atmospheric processes and tritium Source from Jan.

NA = for Source water, this applies when pans were full and not refilled that event. For 5/20/13, the evaporation pan dried up and no sample was available.

FIGURES

Figure 3.1-1. Typical Groundwater Field Sampling Setup.



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) J13: Jun 2013; S13: Sep 2013; D13: Dec 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015.
3) Samples for wells L-3, L-5, G-21, G-28, and G-35 were taken at depths of 18 and 58 ft.
4) Secondary Standard per Florida Drinking Water = 250 mg/L.

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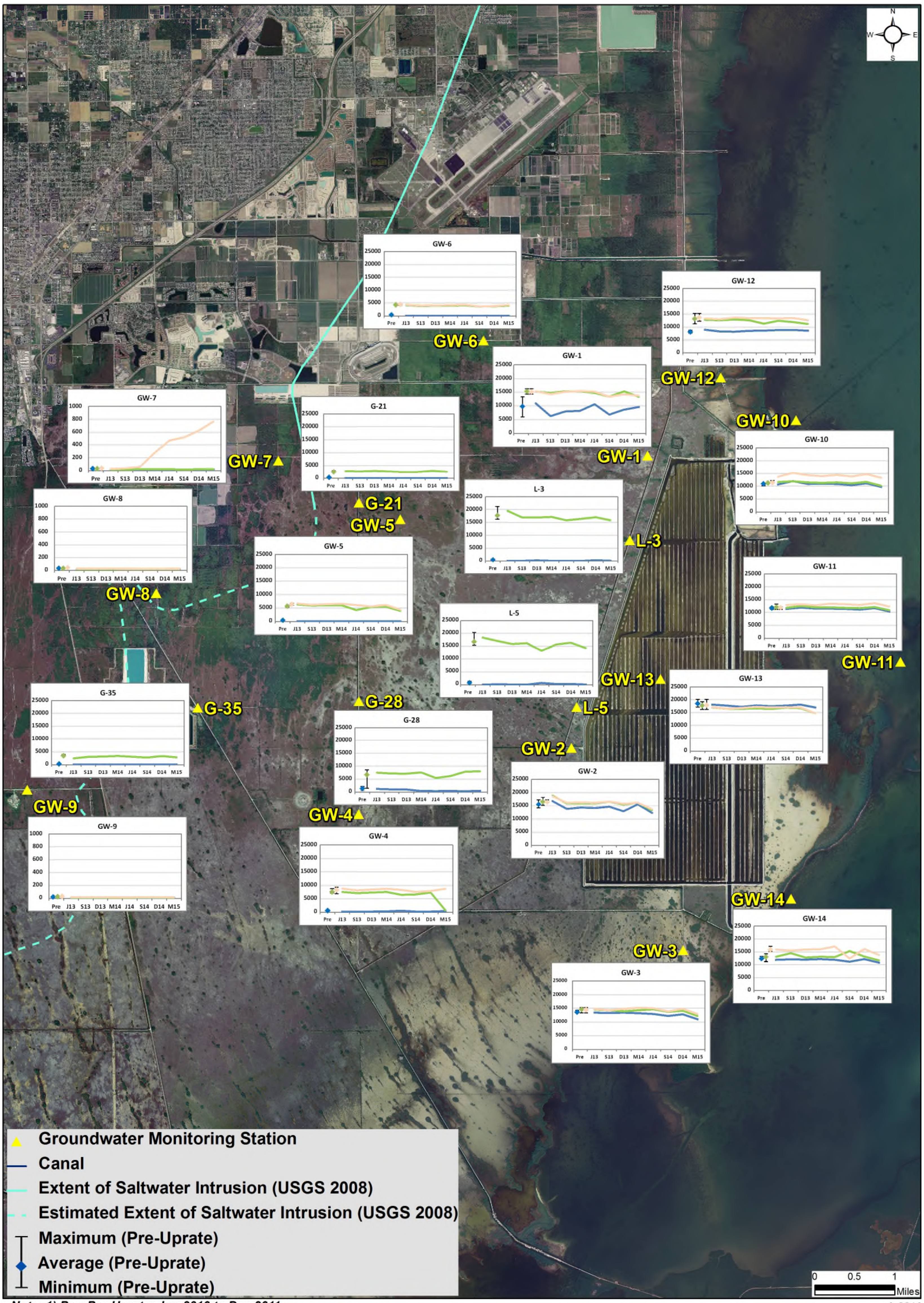
Quarterly Groundwater Chloride samples (mg/L) collected at 3 depths: shallow (blue); intermediate (green); and deep (orange). Pre-Uprate data shows average and range, while Post-Uprate values are for events from Jun 2013 to Mar 2015.

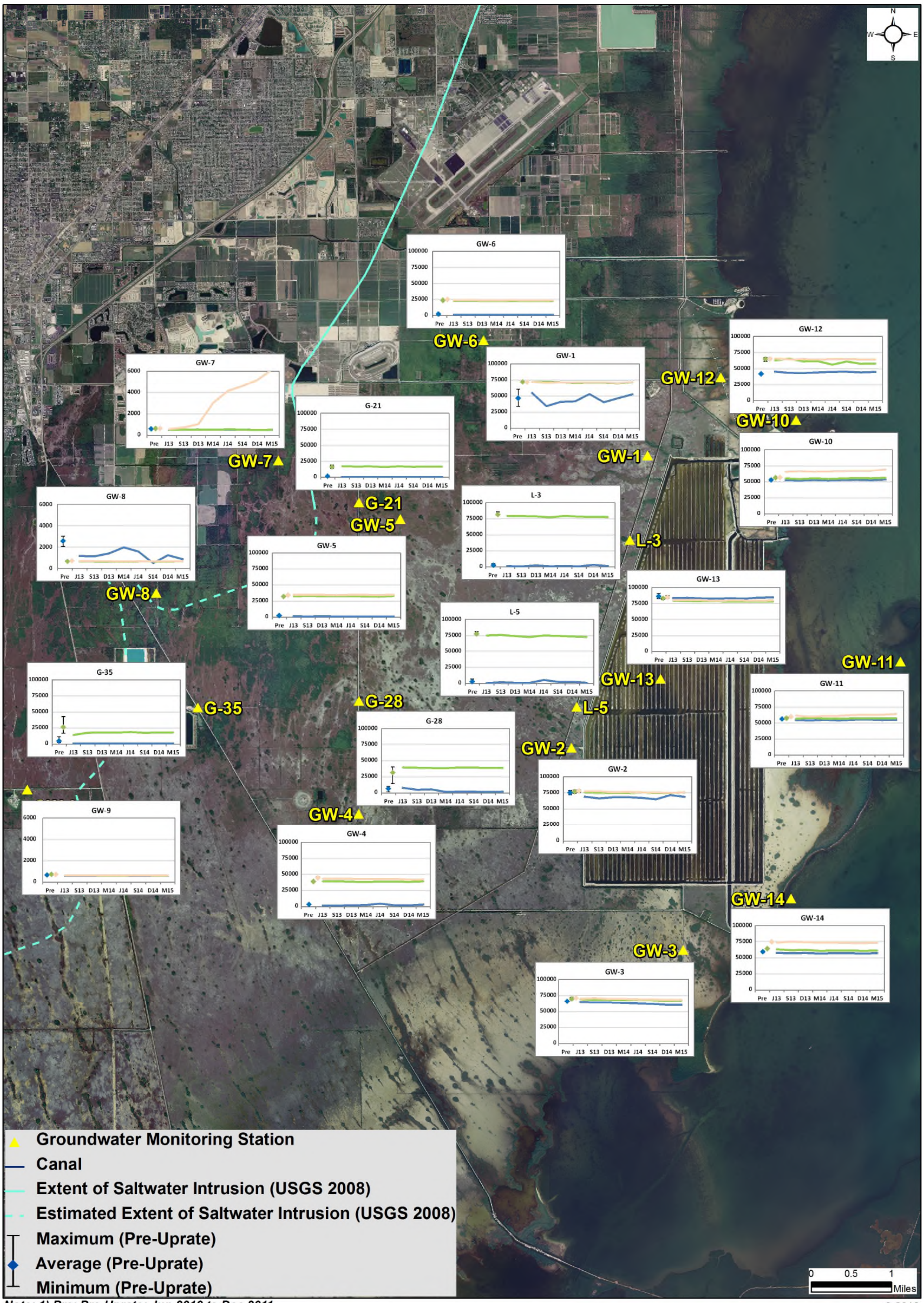
Figure 3.1-2. Range (Pre-Uprate) and Results (Post-Uprate) of Quarterly Groundwater Samples for Chloride (mg/L).



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) J13: Jun 2013; S13: Sep 2013; D13: Dec 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015.
3) Samples for wells L-3, L-5, G-21, G-28, and G-35 were taken at depths of 18 and 58 ft.
4) Secondary Standard per Florida Drinking Water = 160 mg/L.

Quarterly Groundwater Sodium samples (mg/L) collected at 3 depths: shallow (blue); intermediate (green); and deep (orange). Pre-Uprate data shows average and range, while Post-Uprate values are for events from Jun 2013 to Mar 2015.

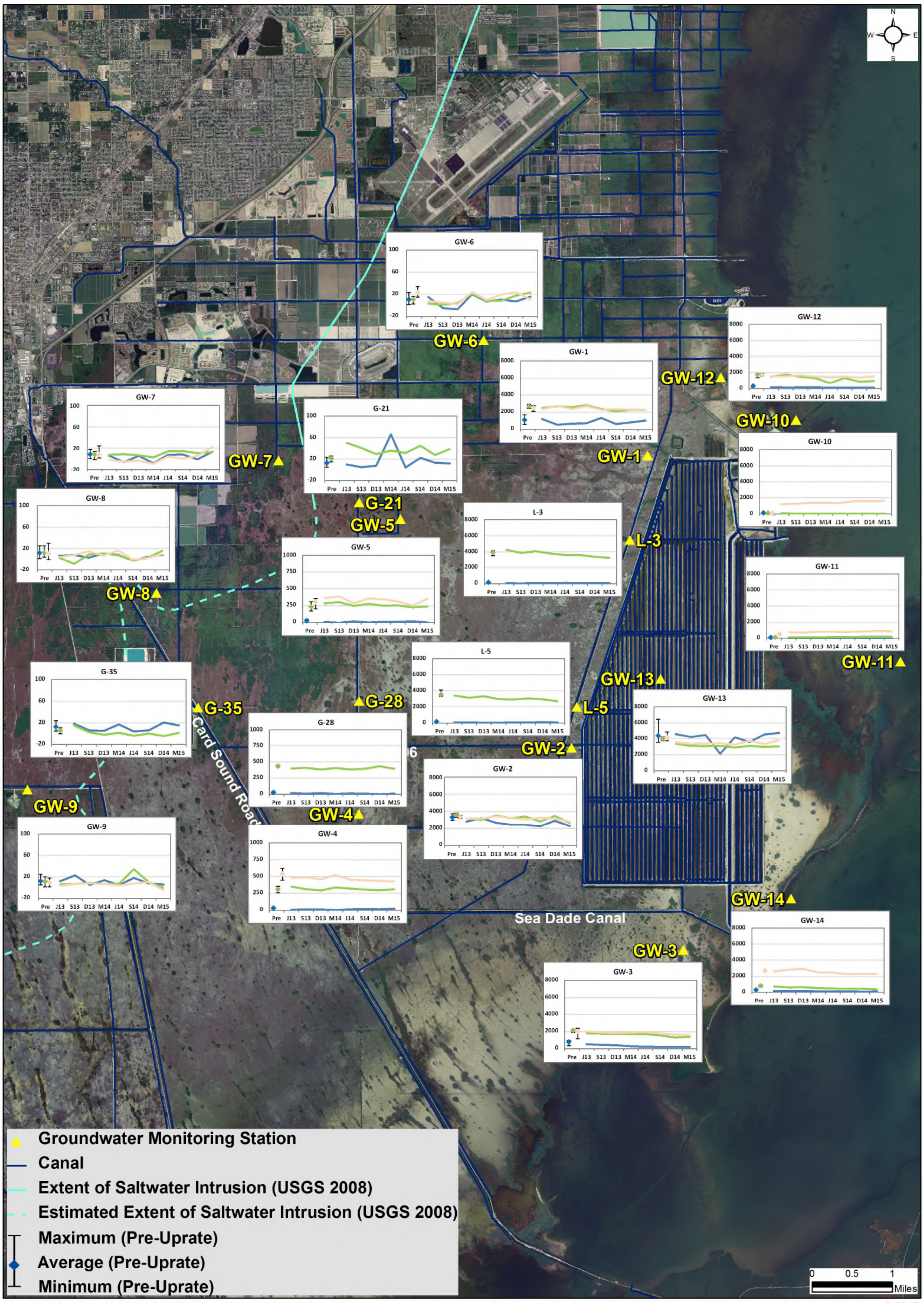
Figure 3.1-3. Range (Pre-Uprate) and Results (Post-Uprate) of Quarterly Groundwater Samples for Sodium (mg/L).



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) J13: Jun 2013; S13: Sep 2013; D13: Dec 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14:Dec 2014; M15: Mar 2015.
3) Samples for wells L-3, L-5, G-21, G-28, and G-35 were taken at depths of 18 and 58 ft.

Quarterly Groundwater Specific Conductance samples (µS/cm) collected at 3 depths: shallow (blue); intermediate (green); and deep (orange).
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Jun 2013 to Mar 2015.

Figure 3.1-4. Range (Pre-Uprate) and Results (Post-Uprate) of Quarterly Groundwater Samples for Specific Conductance (µS/cm).



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) J13: Jun 2013; S13: Sep 2013; D13: Dec 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015;
3) Samples for wells L-3, L-5, G-21, G-28, and G-35 were taken at depths of 18 and 58 ft.

Quarterly Groundwater Tritium values (pCi/L) collected at 3 depths: shallow (blue); intermediate (green); and deep (orange). Pre-Uprate data shows average and range, while Post-Uprate values are for events from June 2013 to March 2015.

Figure 3.1-5. Range (Pre-Uprate) and Results (Post-Uprate) of Quarterly Groundwater Values for Tritium (pCi/L).

Figure 3.1-6. Locations of Aquifer Cross Sections for Groundwater Chloride and Tritium Concentrations.

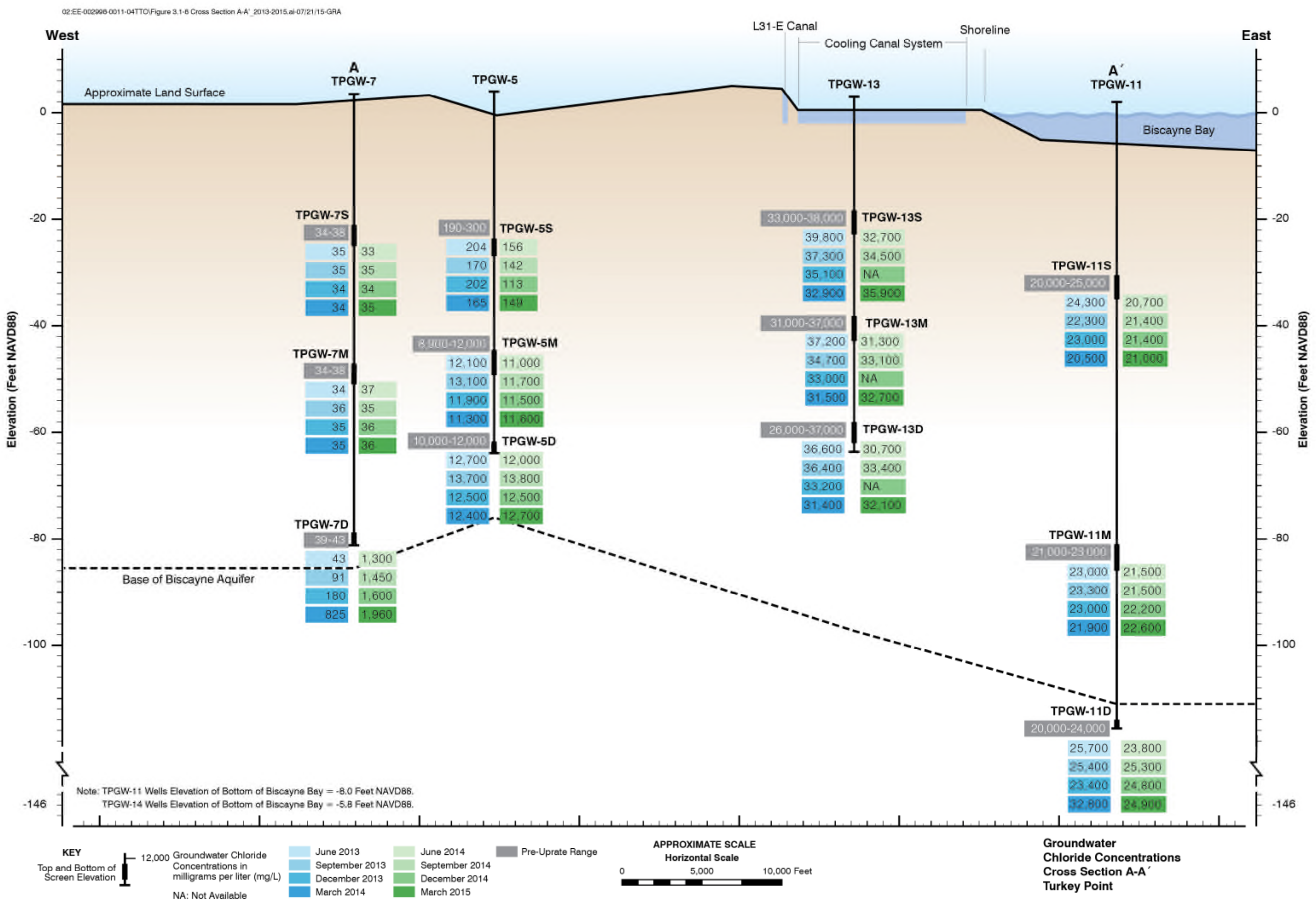


Figure 3.1-7. Cross Section A-A' Showing Quarterly Groundwater Chloride Concentrations from June 2013 through March 2015 and Pre-Uprate Ranges.

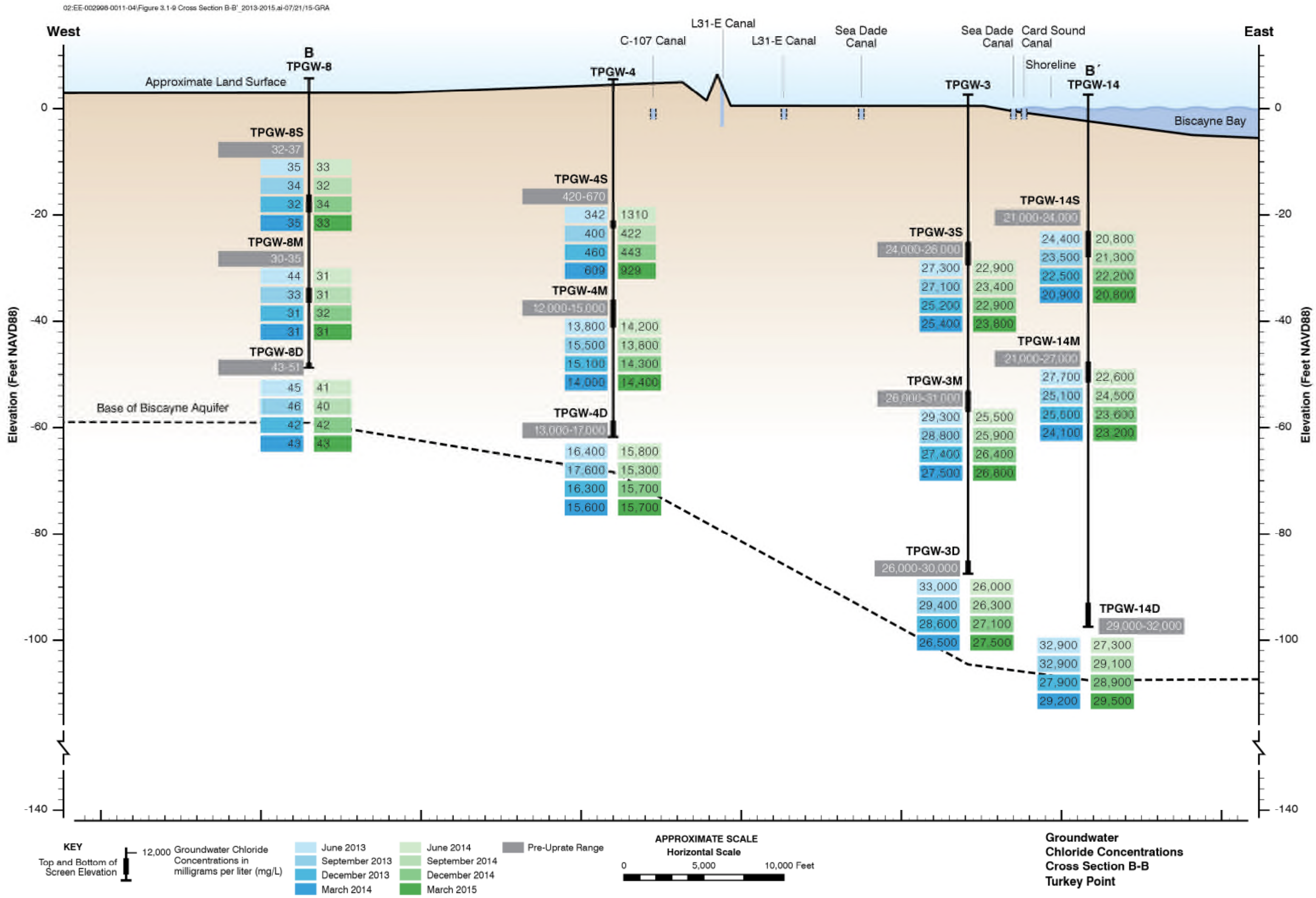


Figure 3.1-8. Cross Section B-B' Showing Quarterly Groundwater Chloride Concentrations from June 2013 through March 2015 and Pre-Uprate Ranges.

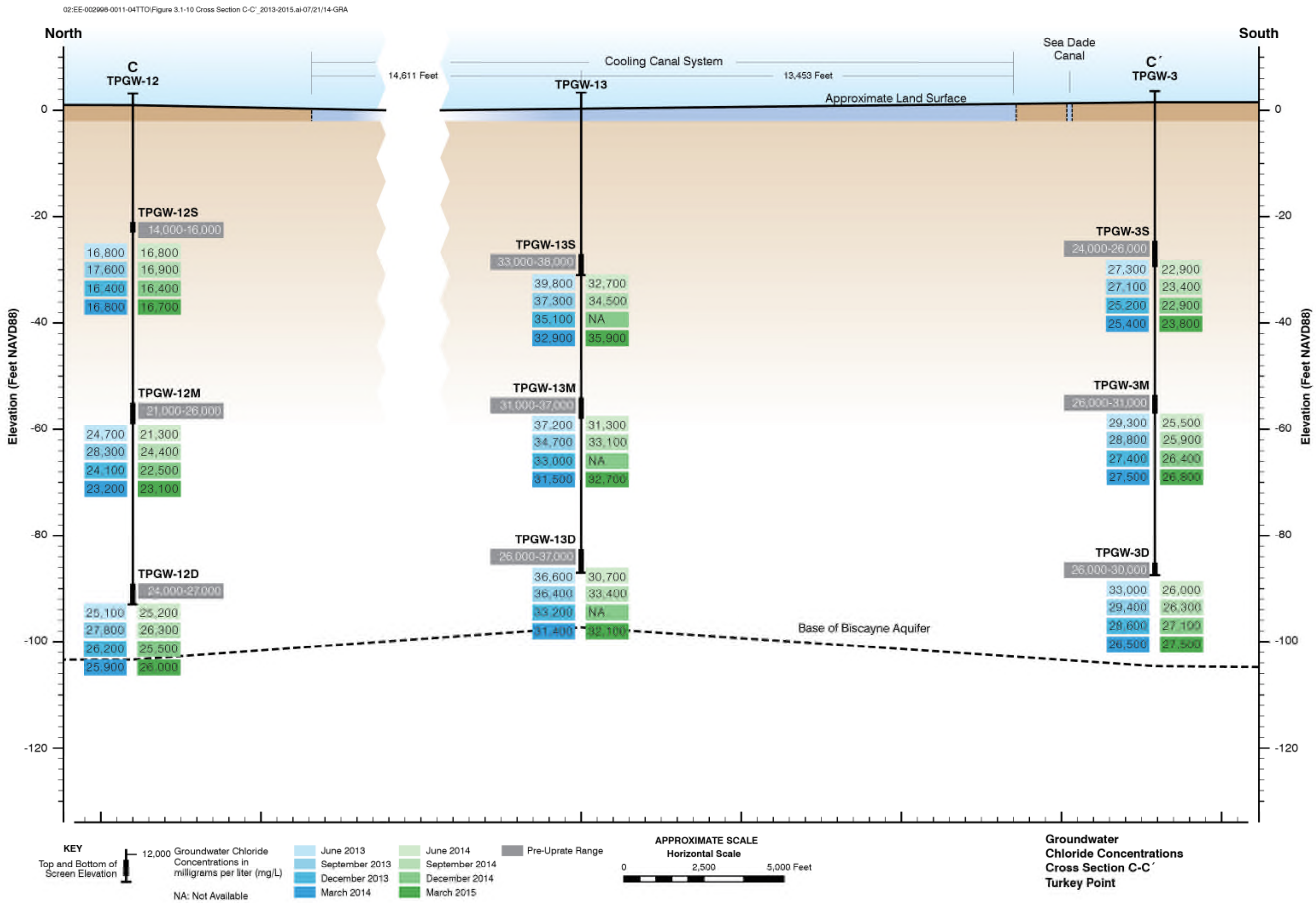


Figure 3.1-9. Cross Section C-C' Showing Quarterly Groundwater Chloride Concentrations from June 2013 through March 2015 and Pre-Uprate Ranges.

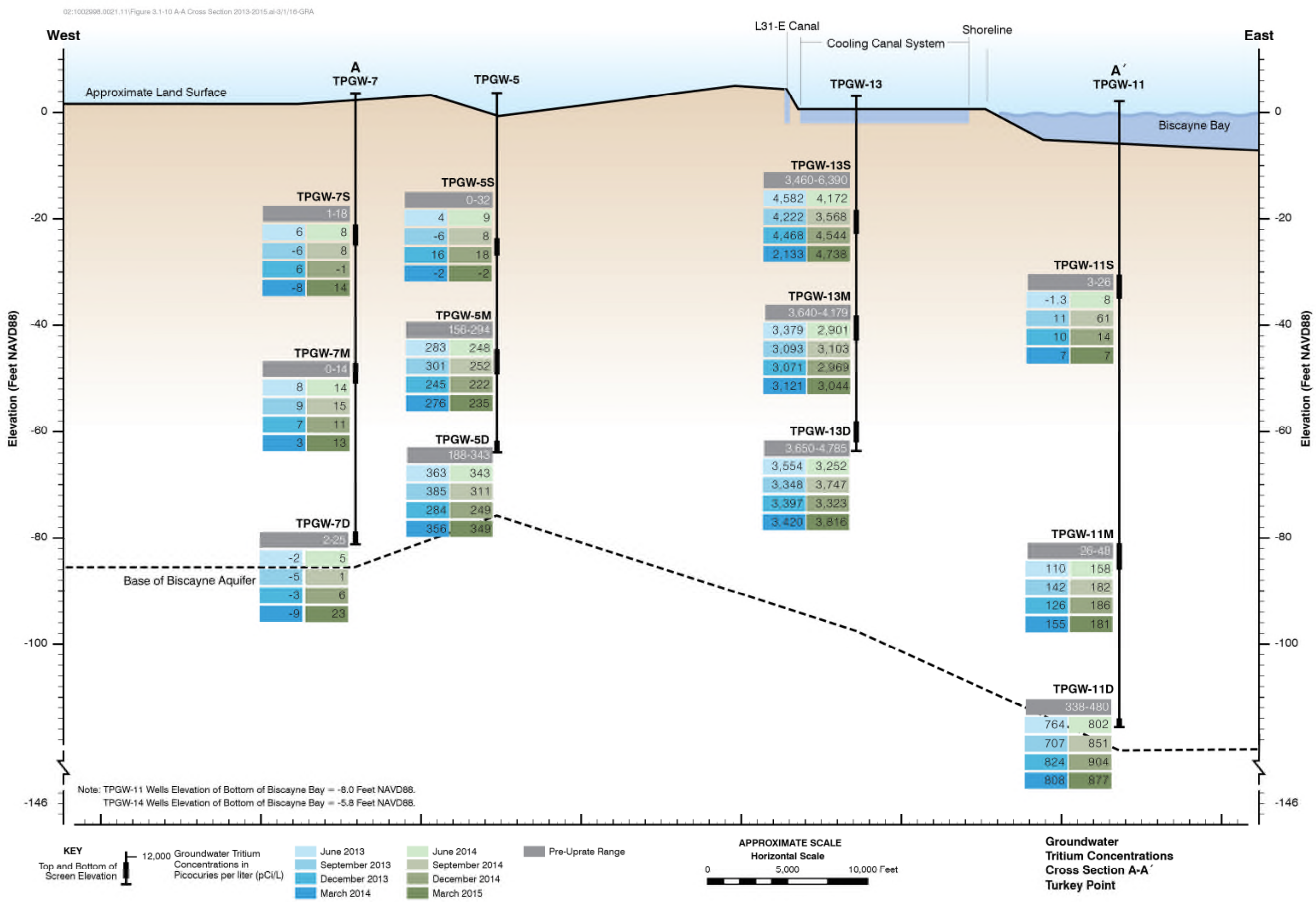
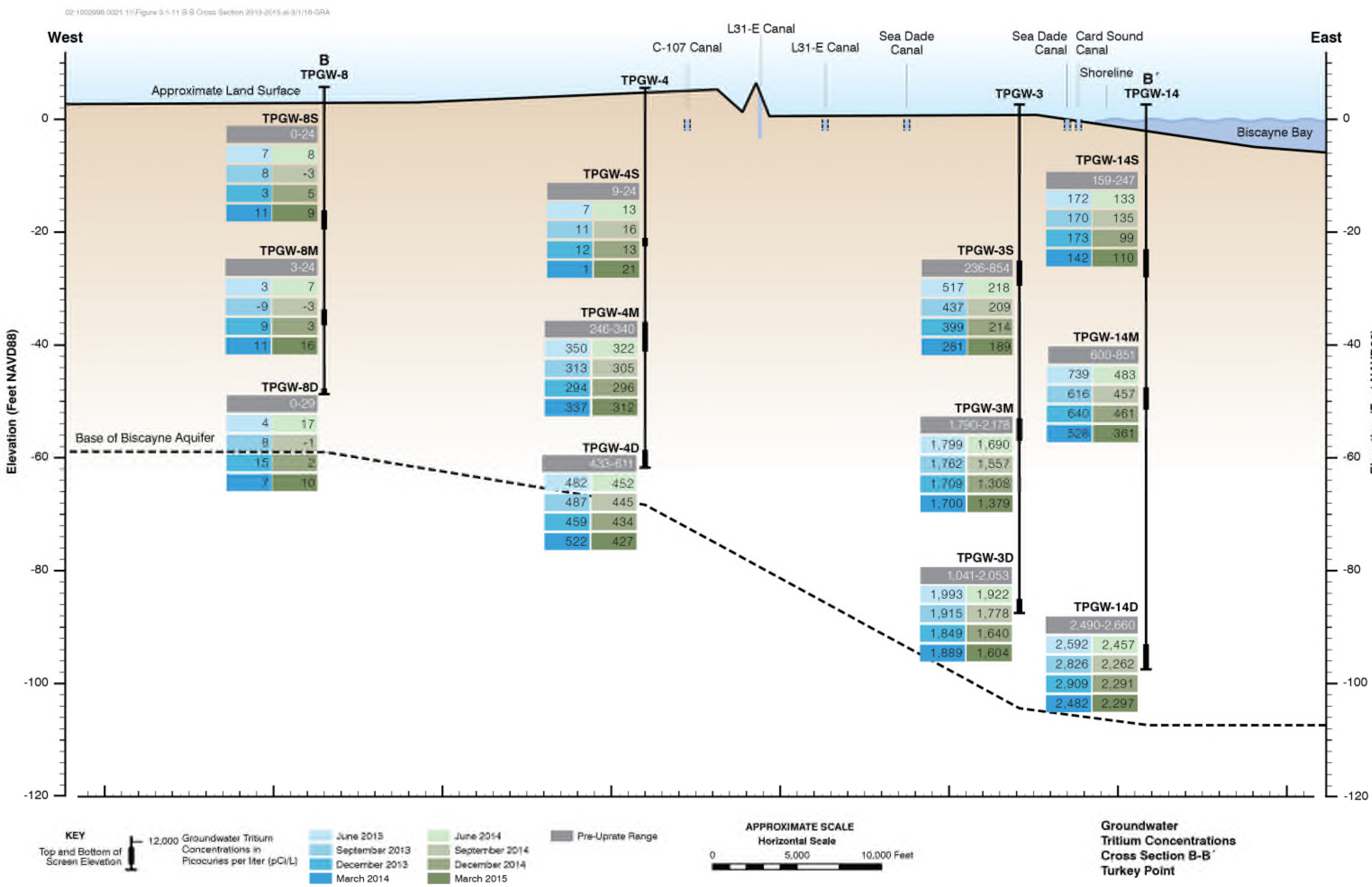


Figure 3.1-10. Cross Section A-A' Showing Quarterly Groundwater Tritium Concentrations from June 2013 through March 2015 and Pre-Uprate Ranges.



Well	Pre-Uprate Range	Jun 2013	Sep 2013	Dec 2013	Mar 2014	Jun 2014	Sep 2014	Dec 2014	Mar 2015
TPGW-8S	0-24	7	8	3	11	8	-3	5	9
TPGW-8M	3-24	3	-9	9	11	7	-3	3	16
TPGW-8D	0-29	4	8	15	7	17	-1	2	10
TPGW-4S	9-24	7	11	12	1	13	16	13	21
TPGW-4M	246-340	350	313	294	337	322	305	296	312
TPGW-4D	433-611	482	487	459	522	452	445	434	427
TPGW-3S	236-854	517	437	399	281	218	209	214	189
TPGW-3M	1,790-2,178	1,799	1,762	1,709	1,700	1,690	1,557	1,308	1,379
TPGW-3D	1,041-2,053	1,993	1,915	1,849	1,889	1,922	1,778	1,640	1,604
TPGW-14S	159-247	172	170	173	142	133	135	99	110
TPGW-14M	600-851	739	616	640	526	483	457	461	361
TPGW-14D	2,490-2,660	2,592	2,826	2,909	2,482	2,457	2,262	2,291	2,297

Figure 3.1-11. Cross Section B-B' Showing Quarterly Groundwater Tritium Concentrations from June 2013 through March 2015 and Pre-Uprate Ranges.

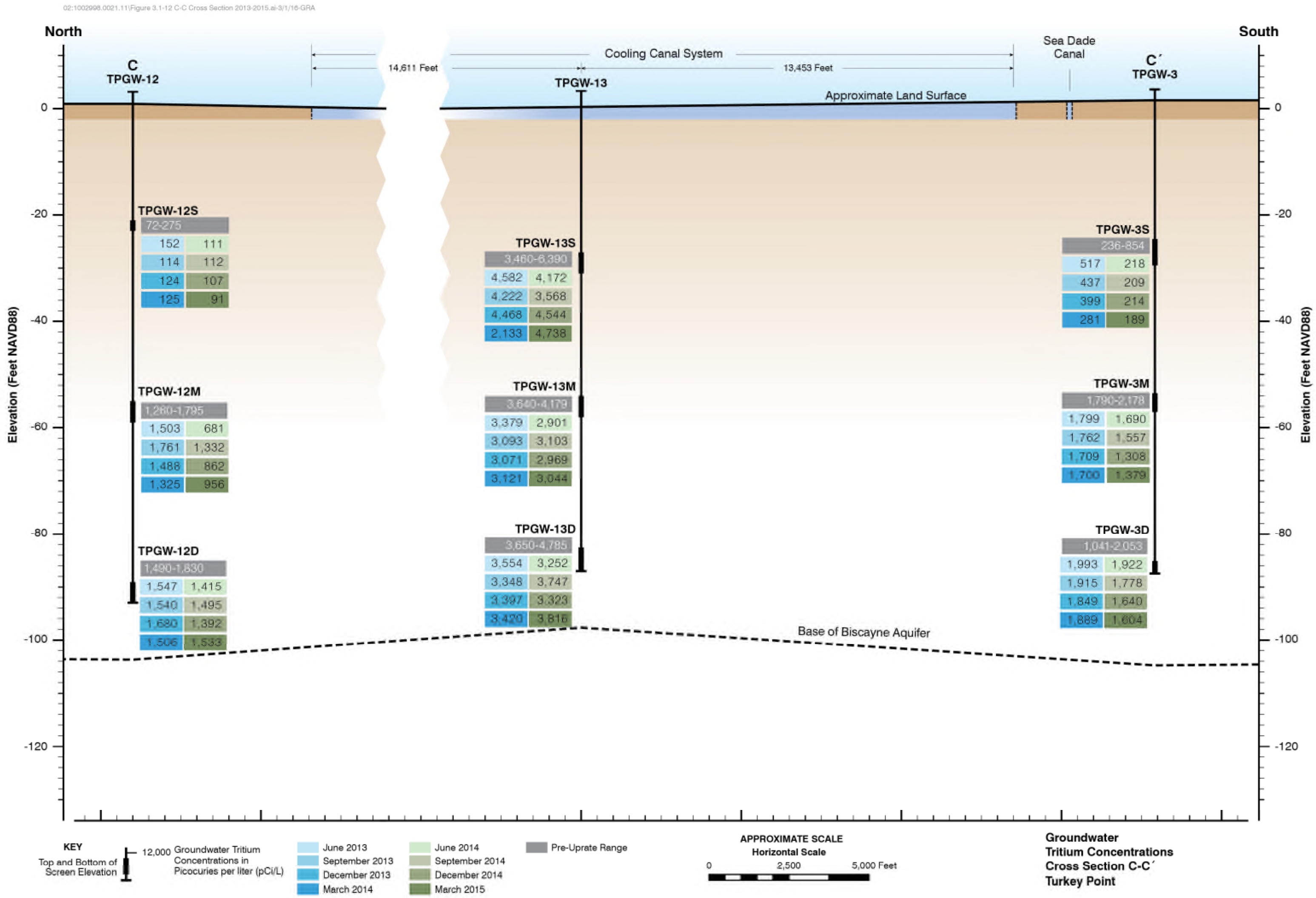
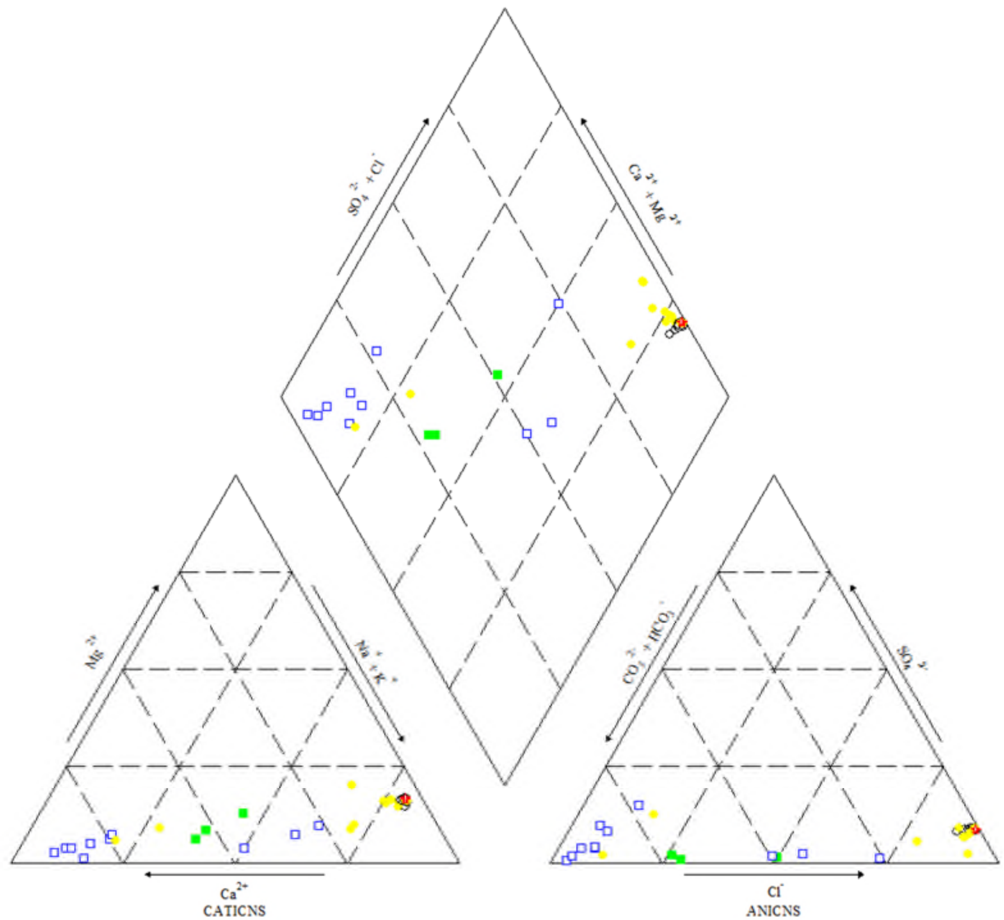


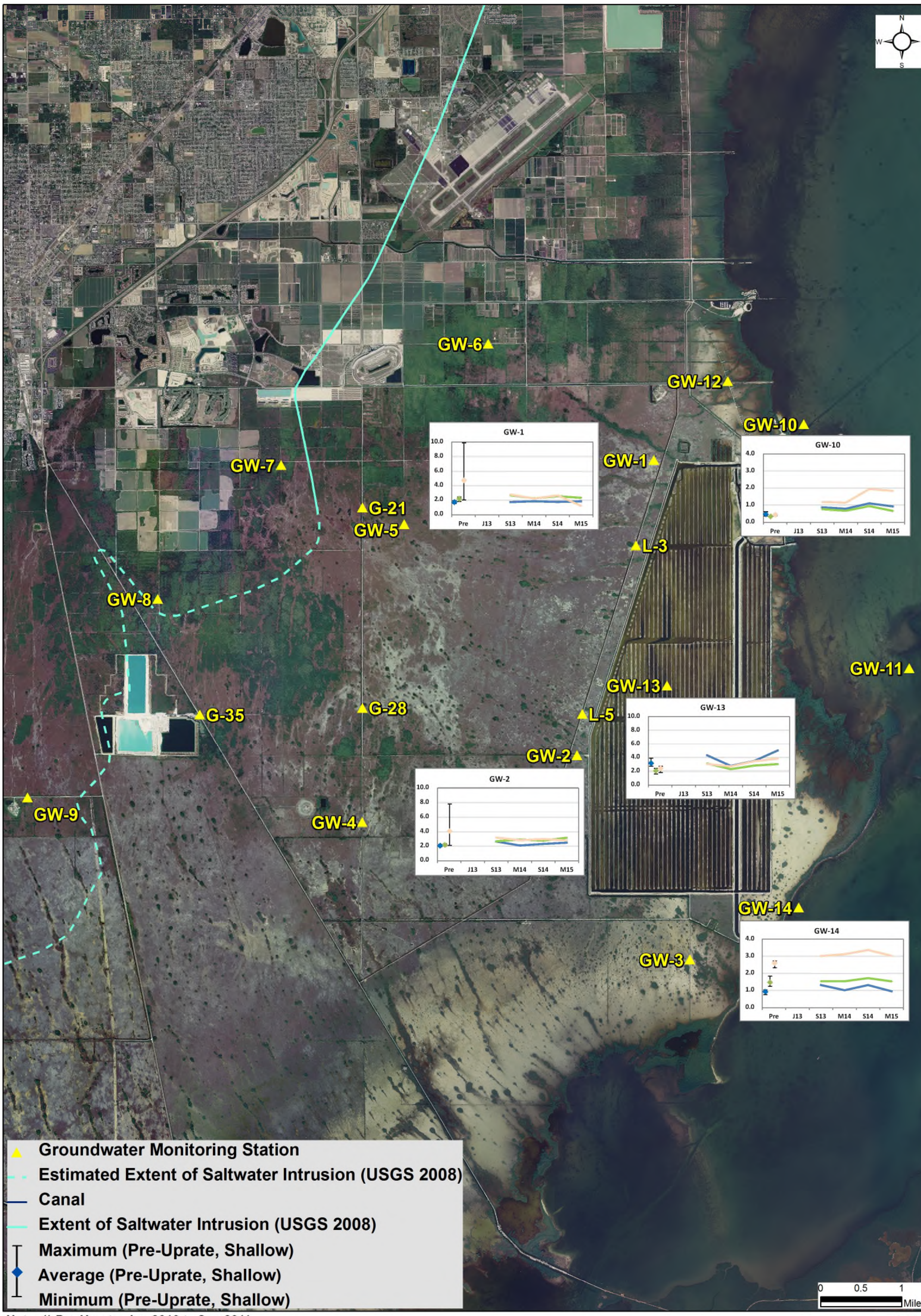
Figure 3.1-12. Cross Section C-C' Showing Quarterly Groundwater Tritium Concentrations from June 2013 through March 2015 and Pre-Uprate Ranges.



Legend:

TPGW-1, -2, -3, -12, -14 = ○; TPGW-4, -5, -6 = ■; TPGW-7, -8, -9 = □; TPGW-10, -11 = △; TPGW-13 = ☆; TPGW-L3, -L5, -G21, -G28, -G35 = ●

Figure 3.1-13. Post-Uprate Tri-Linear Diagram of Average Groundwater Ionic Concentrations.

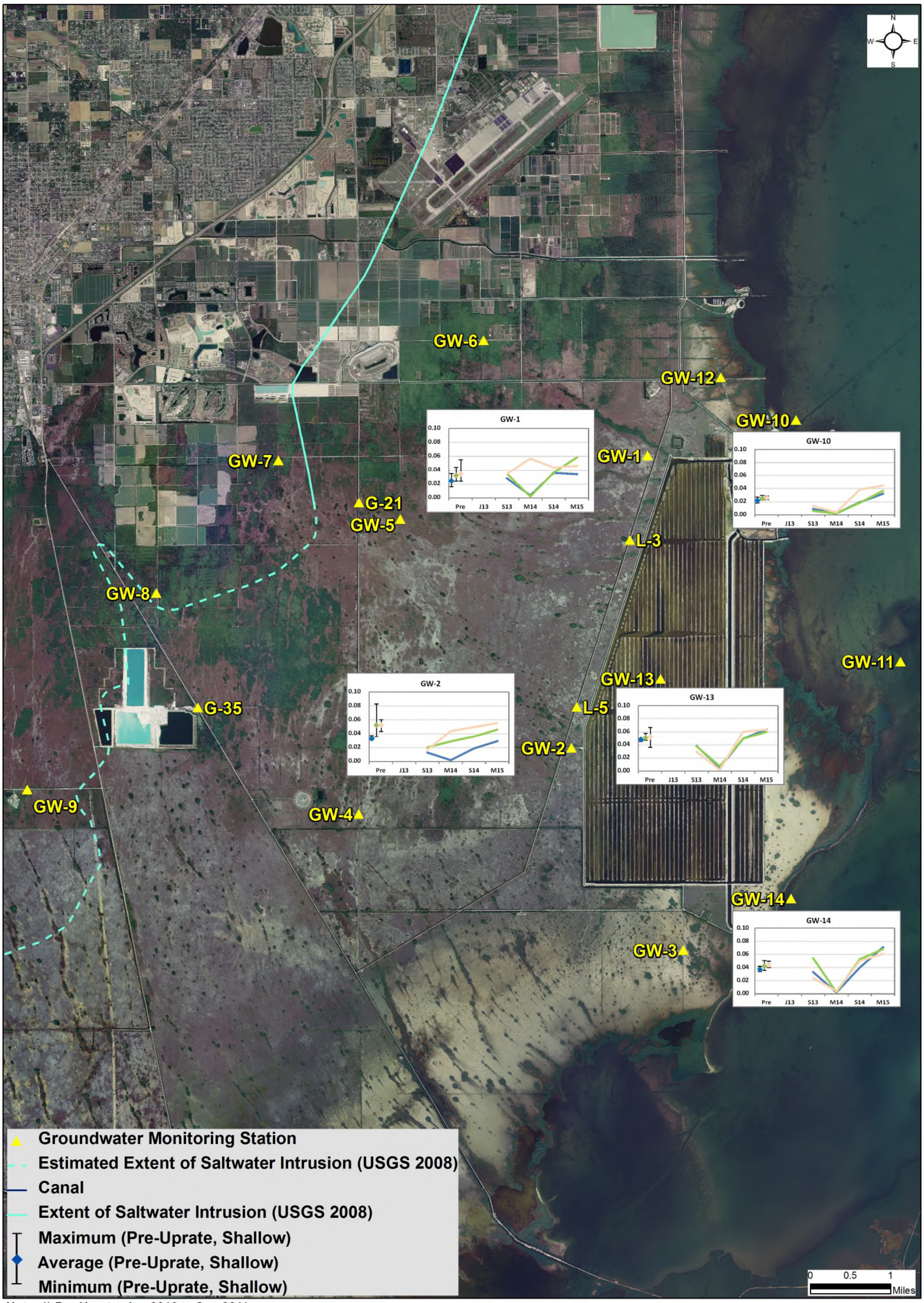


Note: 1) Pre-Uprate: Jun 2010 to Sep 2011.
2) J13: Jun 2013; S13: Sep 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015.

3-2016

Semi-Annual Total Nitrogen values (mg/L) for Groundwater Samples Taken at 3 depths: shallow (blue); intermediate (green); and deep (orange). Pre-Uprate data shows average and range, while Post-Uprate values are for events from Jun 2013 to Mar 2015.

Figure 3.1-14. Range (Pre-Uprate) and Results (Post-Uprate) of Semi-Annual Groundwater Total Nitrogen Values from the Shallow (S) and Deep (D) Wells.

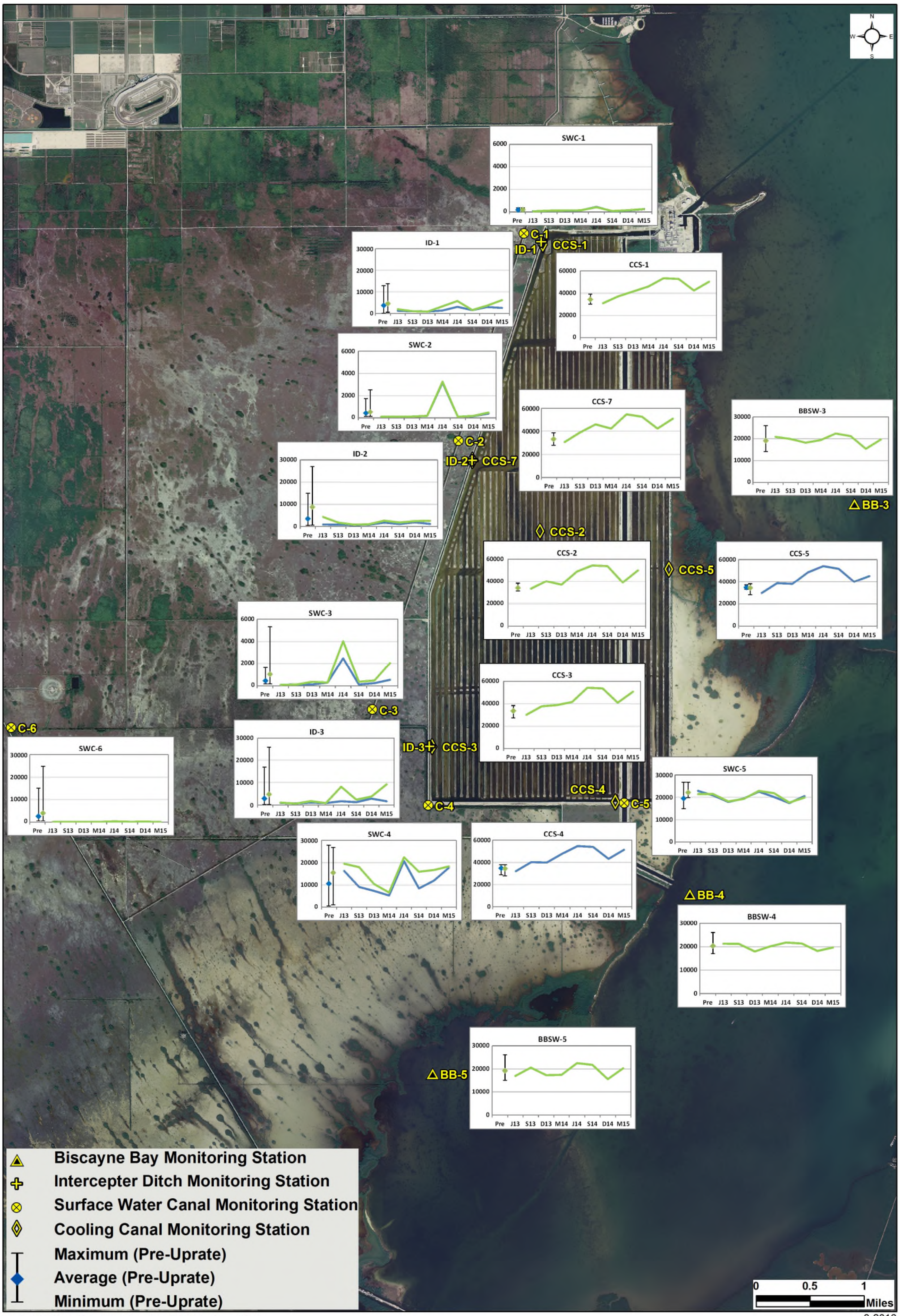


Note: 1) Pre-Uprate: Jun 2010 to Sep 2011.
2) J13: Jun 2013; S13: Sep 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015.

3-2016

**Semi-Annual Total Phosphorus values (mg/L) for Groundwater Samples Taken at 3 depths:
shallow (blue); intermediate (green); and deep (orange).
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Jun 2013 to Mar 2015..**

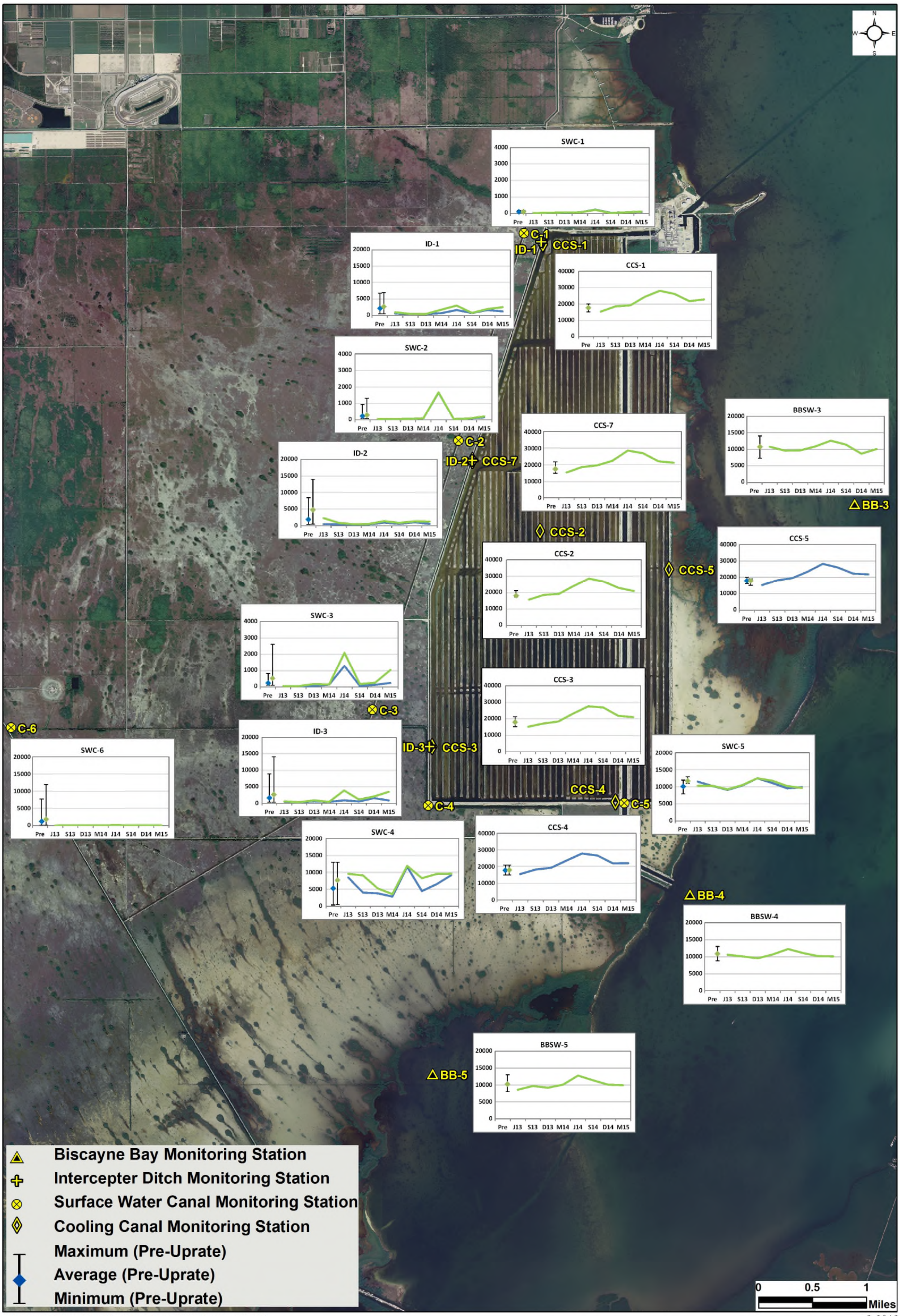
Figure 3.1-15. Range (Pre-Uprate) and Results (Post-Uprate) of Semi-Annual Groundwater Total Phosphorus Values from the Shallow (S) and Deep (D) Wells.



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) J13: Jun 2013; S13: Sep 2013; D13: Dec 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015.

Quarterly Surface Water Chloride samples (mg/L) collected at 1 foot from the top (blue) and/or 1 foot from the bottom (green).
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Jun 2013 to Mar 2015.

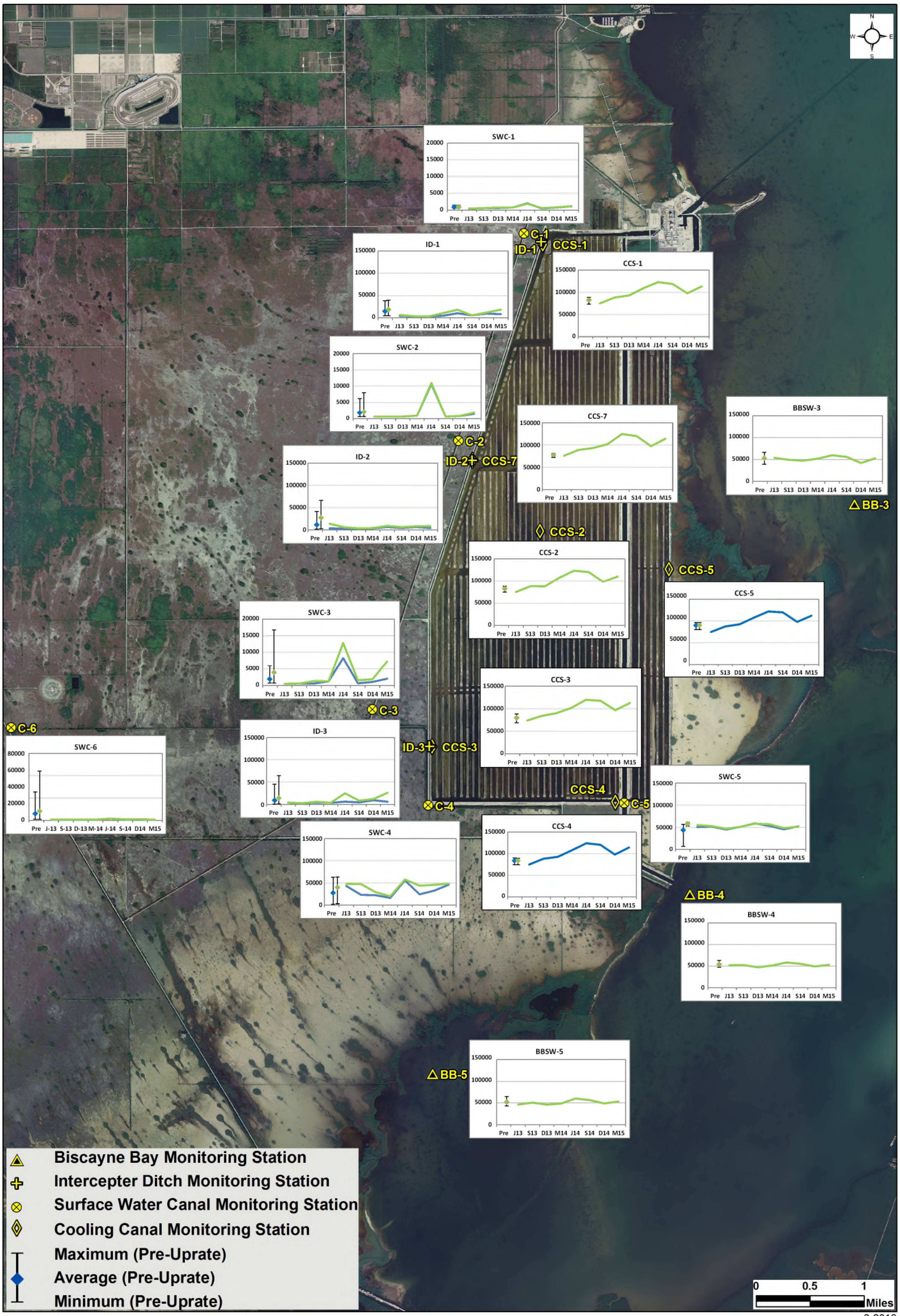
Figure 3.2-1. Range (Pre-Uprate) and Results (Post-Uprate) of Quarterly Surface Water Samples for Chloride (mg/L).



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) J13: Jun 2013; S13: Sep 2013; D13: Dec 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015.

Quarterly Surface Water Sodium samples (mg/L) collected at 1 foot from the top (blue) and/or 1 foot from the bottom (green).
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Jun 2013 to Mar 2015.

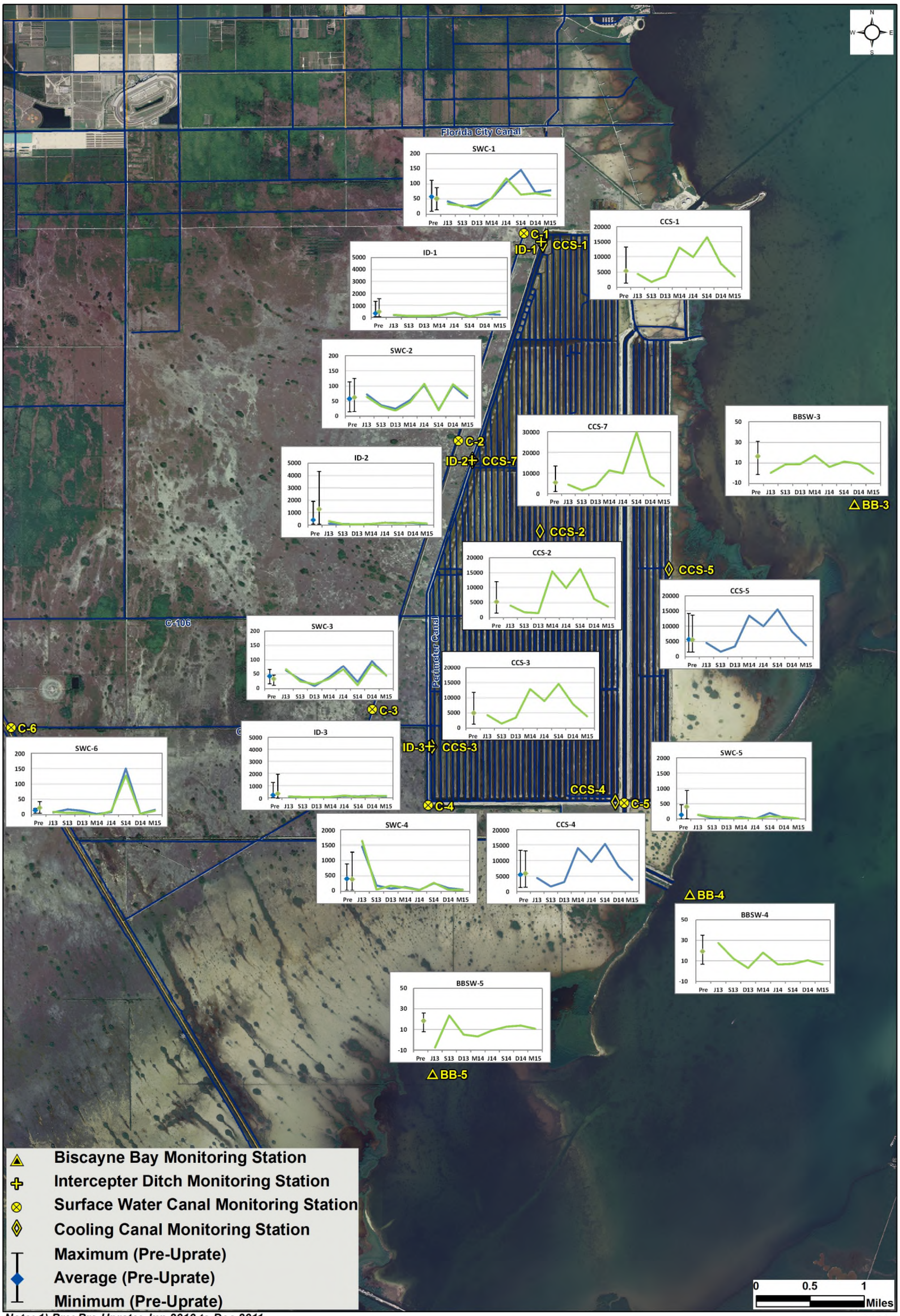
Figure 3.2-2. Range (Pre-Uprate) and Results (Post-Uprate) of Quarterly Surface Water Samples for Sodium (mg/L).



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) J13: Jun 2013; S13: Sep 2013; D13: Dec 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015.

Quarterly Surface Water Specific Conductance samples (µS/cm) collected at 1 foot from the top (blue) and/or 1 foot from the bottom (green).
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Jun 2013 to Mar 2015.

Figure 3.2-3. Range (Pre-Uprate) and Results (Post-Uprate) of Quarterly Surface Water Samples for Specific Conductance (µS/cm).

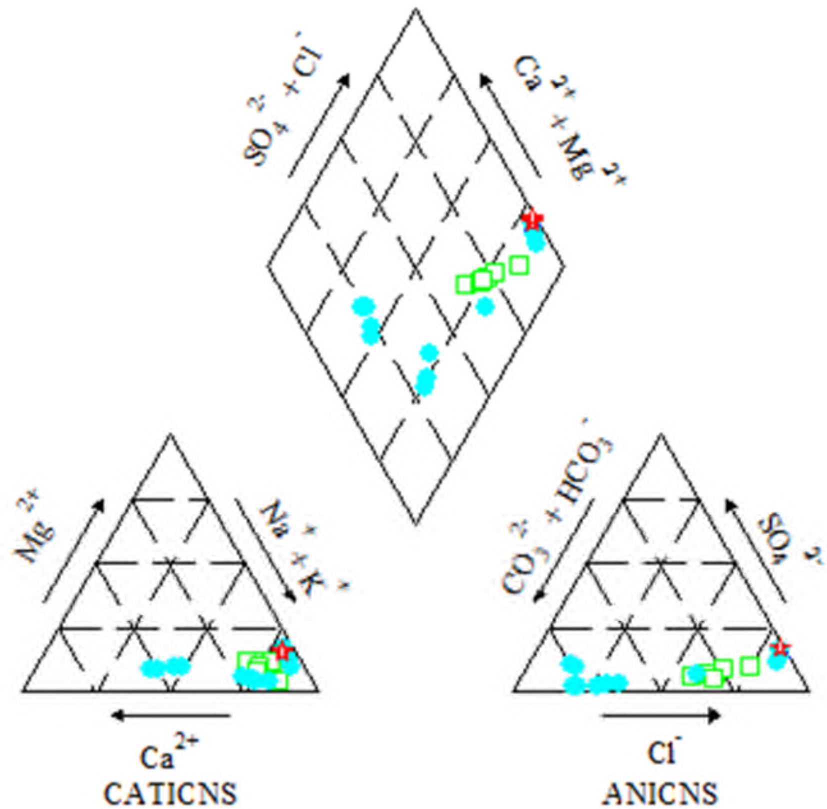


Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) J13: Jun 2013; S13: Sep 2013; D13: Dec 2013; M14: Mar 2014; J14: Jun 2014; S14: Sep 2014; D14: Dec 2014; M15: Mar 2015.

3-2016

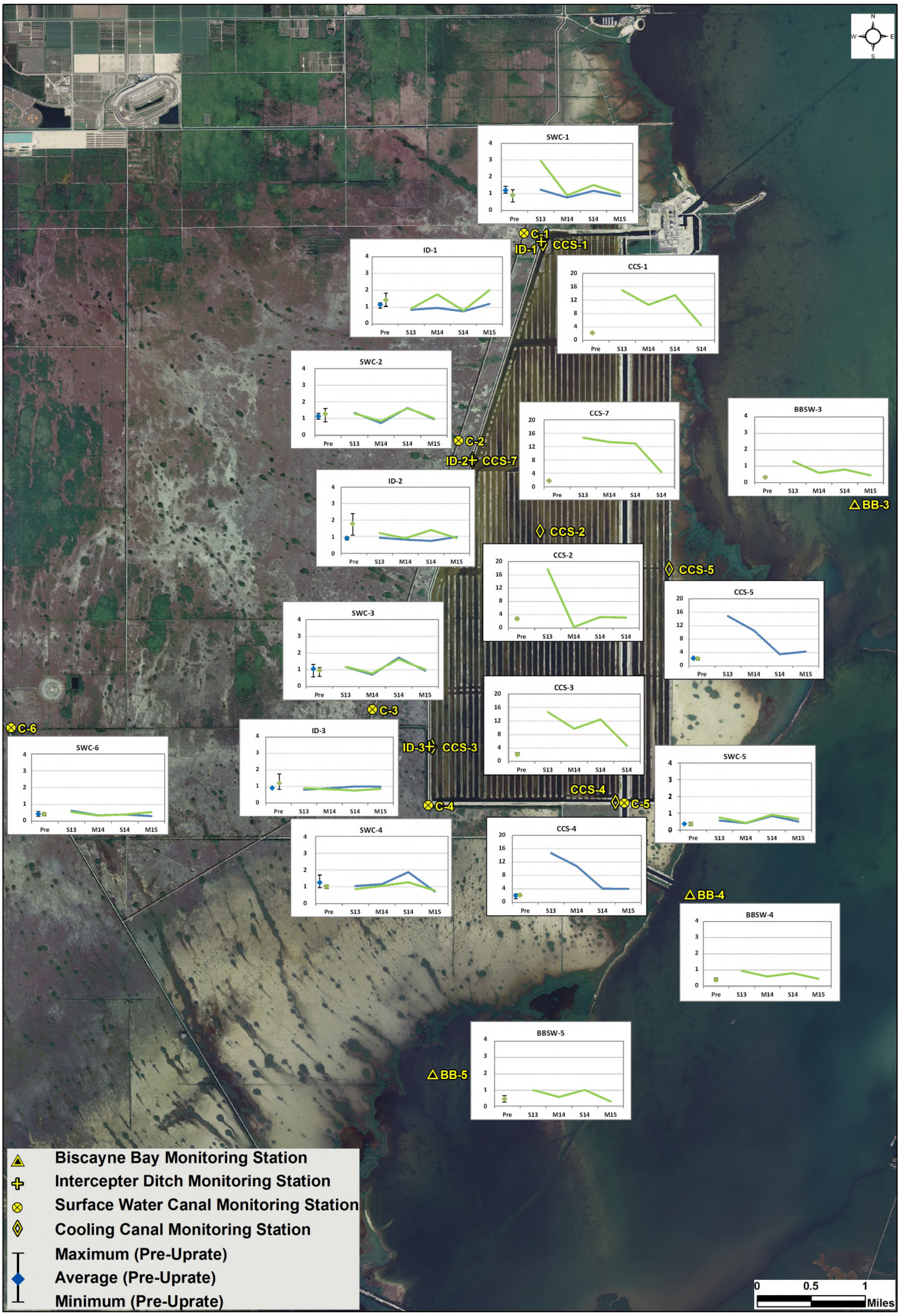
Quarterly Surface Water Tritium values (pCi/L) collected at 1 foot from the top (blue) and/or 1 foot from the bottom (green).
Pre-Uprate data shows average and range, while Post-Uprate values are for events from June 2013 to March 2015.

Figure 3.2-4. Range (Pre-Uprate) and Results (Post-Uprate) of Quarterly Surface Water Values for Tritium (pCi/L).



Legend: TPBBSW = △, TPSWC = ●, TPSWID = □, TPSWCCS = ☆

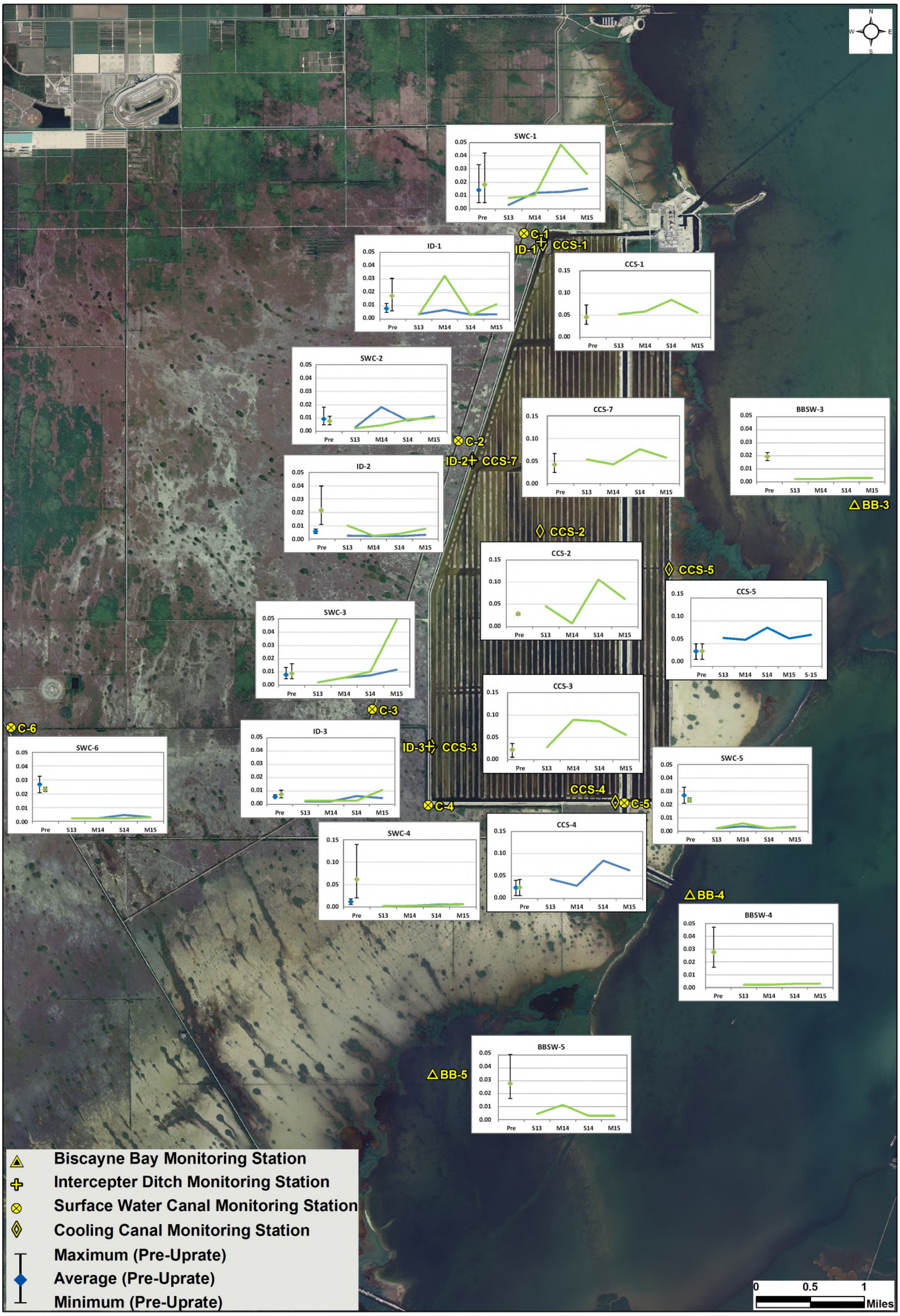
Figure 3.2-5. Post-Uprate Tri-Linear Diagram of Average Surface Water Ionic Concentrations.



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) S13: Sep 2013; M14: Mar 2014; S14: Sep 2014; M15: Mar 2015.

Semi-Annual Surface Water Total Nitrogen samples (mg/L) collected at 1 foot from the top (blue) and/or 1 foot from the bottom (green).
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Sep 2013 to Mar 2015.

Figure 3.2-6. Range (Pre-Uprate) and Results (Post-Uprate) of Semi-Annual Surface Water Samples for Total Nitrogen.



Note: 1) Pre: Pre-Uprate: Jun 2010 to Dec 2011.
2) S13: Sep 2013; M14: Mar 2014; S14: Sep 2014; M15: Mar 2015.

3-2016

Semi-Annual Surface Water Total Phosphorus samples (mg/L) collected at 1 foot from the top (blue) and/or 1 foot from the bottom (green).
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Sep 2013 to Mar 2015.

Figure 3.2-7. Range (Pre-Uprate) and Results (Post-Uprate) of Semi-Annual Surface Water Samples for Total Phosphorus.

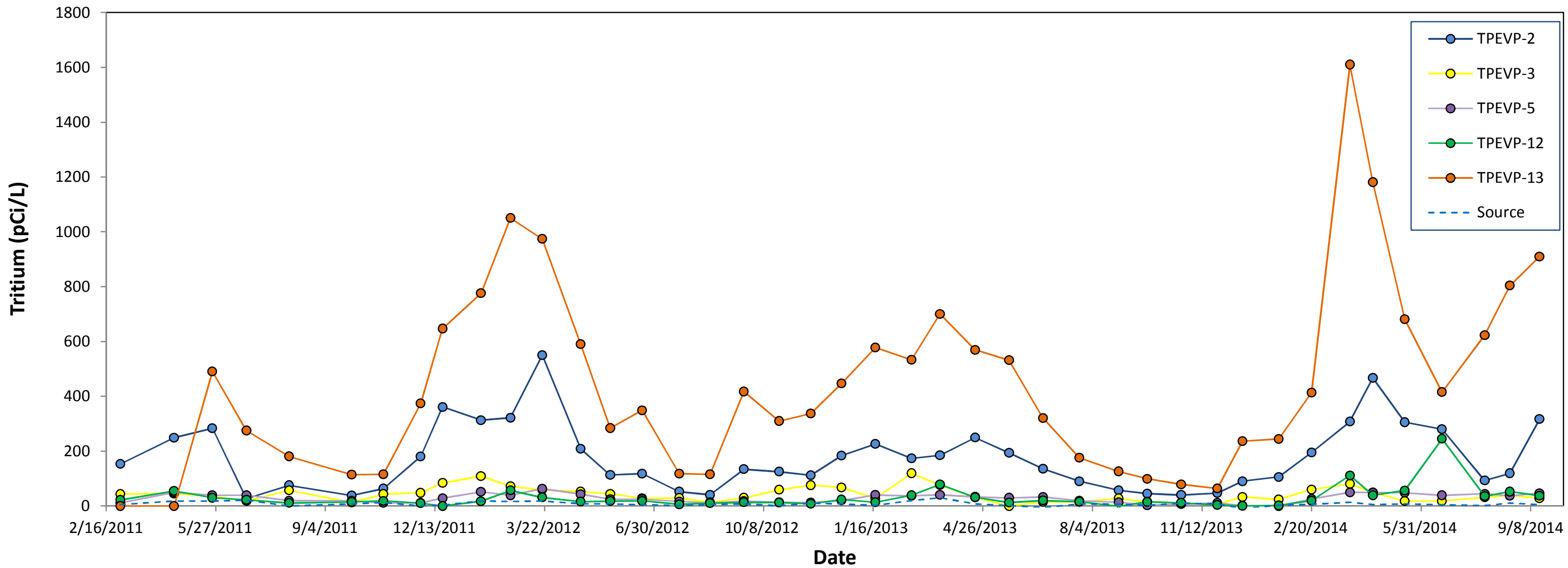


Figure 3.4-1. Evaporation Pan Tritium Data from March 2011 to September 2014.

4. ECOLOGICAL MONITORING

The purpose of ecological monitoring around the CCS was to identify existing baseline conditions and evaluate potential impacts, if any, as a result of the Uprate. Ecological monitoring was conducted starting in 2010 to: 1) establish the Pre-Uprate status of ecological conditions and biotic components, and 2) determine the extent to which, if any, CCS operations may have affected the surrounding ecological conditions and components during the Post-Uprate period. Biotic components of primary interest were marsh and mangrove wetlands adjacent to the CCS, and SAV in Biscayne Bay by the Plant.

This section focuses on data from the Post-Uprate sampling period, which includes eight terrestrial ecological monitoring events (August 2013, November 2013, February 2014, May 2014, August 2014, November 2014, February 2015, and May 2015 [see Table 4.1-1]) and four sampling events in Biscayne Bay (September 2013, April 2014, September 2014, and May 2015). An overview of the Pre-Uprate ecological conditions are also provided here, as a comparison with the Post-Uprate data.

4.1 Marsh, Mangroves, and Tree Islands

Plot establishment and monitoring setup is provided in detail in the Comprehensive Pre-Uprate Report (FPL 2012a). Per the Monitoring Plan (SFWMD 2009a), 12 transects were established to capture ecological characteristics and changes over time across the landscape surrounding the Turkey Point Power Plant (Figure 1.3-1). A total of 16 marsh, 4 tree island, and 12 mangrove 20-meter by 20-meter (20x20) plots were established along six marsh and six mangrove transects. Nested within each 20x20 plot are four 1-meter by 1-meter (1x1) subplots and four 5-meter by-5 meter (5x5) subplots. The 5x5 subplots were set up to capture changes in the woody species, and the 1x1 subplots were designed to measure changes within the herbaceous community. Of the 32 marsh, tree island, and mangrove 20x20 plots, six were established within reference transects (four in the marsh and two within the mangroves).

A reduction in ecological monitoring was implemented for the Post-Uprate period (see Section 1, Table 1.1-1). As part of the reduction, the mangrove site measurements were limited to once a year. Marsh vegetation measurements were still conducted on a quarterly basis, while tree islands were sampled semi-annually. Ionic analyses were limited to chloride and sodium, and stable isotopic analyses were eliminated from all sites; nutrients and tritium continue to be sampled at all sites.

4.1.1 Methods and Materials

4.1.1.1 Vegetation Sampling

For herbaceous subplots, all individuals of the dominant and co-dominant herbaceous emergent plants were counted. Plots to the west of the CCS and the reference plots primarily consisted of sawgrass (*Cladium jamaicense*); in some plots during certain events, spikerush (*Eleocharis cellulosa*) was co-dominant with sawgrass (Table 4.1-2). In plots to the south, saltgrass (*Distichlis spicata*) was the dominant herbaceous vegetation in the 1x1 subplots within the mangrove plots.

In the 1x1 plots, either 30% of the plants or 15 individuals (whichever value was greater) of the dominant species were tagged. Tagged plants were measured for the parameters needed to calculate biomass estimates. Parameters required for the biomass equations varied with species, but measurements included length, diameter at base, diameter at tip, and number of live leaves. Biomass estimates were subsequently used to calculate plot productivity and turnover in grams per square meter (g/m^2).

For the woody species, three trees were tagged in each 5x5 subplot and up to six branches per tree were tagged. Only dominant species were individually measured. Tree species selection was based on the dominance of each species, and individuals of a species were chosen based on which general tree sizes represented the highest percentages of biomass in the subplot. For example, if 60% of the coverage of red mangrove (*Rhizophora mangle)* in a subplot was made up of small trees and 40% of the subplot was made up of large trees, two small trees and one large tree were tagged. Canopy width and length (and depth for white mangrove [*Laguncularia racemosa*] only), height, main stem diameter, and number of branches were recorded for each tagged tree to obtain tree biomass based on published allometric equations (Coronado-Molina et al. 2004).

Additional information about biomass and productivity calculations for dominant woody and herbaceous species is provided in both the Comprehensive Pre-Uprate Report (FPL 2012a) and Appendix K.

4.1.1.2 Porewater Sampling

Field specific conductance and temperature were recorded at 0, 30, and 60 centimeter (cm) depths, and additional samples were collected at 30 cm for nutrient analyses per the Monitoring Plan (SFWMD 2009a) and were modified per the Post-Uprate reductions (SFWMD 2013b and c). Samples were collected from the northeast 1x1 and 5x5 subplots at all sites. The method for collecting porewater is detailed in Appendix A of the QAPP (FPL 2013b) and the Comprehensive Pre-Uprate Report (FPL 2012a). Less porewater was required for each sample in the Post-Uprate because the number of analytes was reduced.

At each subplot, a peristaltic pump was connected to a PushPoint Sampler (PushPoint Sampler PPX36, M.H.E. Products, East Tawas, Michigan) using polyethylene and silicon tubing. Low volume samples (approximately 50 milliliters [mL]) were collected at 0 and 60 cm within both the 1x1 and 5x5 subplots for specific conductance and temperature readings. These readings were collected using a conductance/temperature sensor connected to a hand-held console (AT100 probe and Rugged Reader console, In-Situ Inc., Fort Collins, Colorado). New tubing and a PushPoint Sampler cleaned using FDEP FC1000 procedures were used to collect samples at 30 cm. Once the PushPoint Sampler was inserted to 30cm depth, water was pumped for several seconds prior to collection to clear excess sediment from the tubing, and a small volume was collected for conductance and temperature readings. For the nutrient analysis, a 200- to 450-mL porewater sample was collected in a pre-cleaned, 1-liter sample bottle from both the 1x1 and the 5x5 subplots at a 30-cm depth interval, for a total composite sample volume of 400 to 900 mL. When sampling nutrients, a pH reading was made using a pH meter (Extech© PH220, FLIR Systems, Waltham, Massachusetts) and was recorded on the field datasheets. The pH value is used to calculate ammonia and is therefore recorded only during nutrient sampling events. The composite sample was distributed into the sample bottles using the same tubing and pump used for sample collection at 30 cm. Once the sample was distributed, the pH of chemically preserved samples was tested. If needed, preservative was added to the sample and the number of drops added was recorded on the field datasheet. The water level was marked on each sample bottle to help the laboratory determine if the bottles had been sealed properly during transport. The sample bottles were then placed in sealed plastic bags if preserved in ice and were stored per their preservation requirements for laboratory analysis.

4.1.1.3 Statistical Analysis

Differences among sites were examined statistically using NCSS 9.0 (NCSS LLC, Kaysville, Utah). Data were examined to determine if there were differences between Pre-Uprate and Post-Uprate data using repeated measures analyses-of-variance (ANOVAs).

4.1.2 Results and Discussion

4.1.2.1 Community Description

The key vegetation communities in each of the general habitats are shown in Table 4.1-2 and a complete list of species is provided in Appendix L. Transects F2, F3, F4, and F6 were freshwater marsh transects, each with 3 marsh plots and 1 tree island plot. The marsh plots were dominated by sawgrass, although scrub woody species were periodically encountered. Vegetation monitoring at the tree island plots was discontinued after May 2011 due to concerns over poison ivy. Although the F1 transect was designated as freshwater habitat, mangroves were present in both plots along this transect. F5 was primarily a mangrove plot, dominated by needlegrass rush (*Juncus roemerianus*), saltgrass, red mangrove, and white mangrove. Transect F5 is located in an area south of the Plant that was impounded during the Pre-Uprate and Interim periods, but was recently hydrologically restored. F1 is located in an impounded area north of the Plant. Dense periphyton mats were observed among the vegetation in the F2, F3, F4, and F6 plots but were not present in either F1 or F5 because of the higher salinity environments in these two transects, which was due to impoundment. All trees in the M transects were scrub mangroves, dominated mostly by the red mangrove (Table 4.1-2).

The Shannon-Wiener Index (SWI) of Diversity and species evenness were calculated from the plant communities in the 1x1 and 5x5 subplots located in the northeast corner of each plot. Eleven total species of woody and herbaceous plants were documented in the northeast corners of the plots during the November 2013 sampling event, and nine were present during the November 2014 event (Table 4.1-3). In the freshwater F-plots (F2, F3, F4, and F6), sawgrass and spikerush were the two species encountered most often. In the mangrove plots, red mangrove was the most prevalent species (Table 4.1-3). Diversity ranged from one to four species within a plot and from one to six species when comparing transects (Table 4.1-3).

The SWI is a measure of the probability that a randomly sampled individual will be of a particular species. For instance, an SWI value of 0 indicates that only one species is present with no uncertainty as to what species a randomly sampled individual will be. Values can range from 0 to 4.5 but, in the transects measured, SWI was low and all transects had SWI values less than 1.2 (Table 4.1-4). In the marsh plots, diversity was lowest in the F4 plots (SWI = 0), as all plots along the transect were dominated by a single species, sawgrass. Overall, the relatively low SWI values indicate low species diversity and low abundance of non-dominant species (i.e., most plots are dominated by sawgrass, with spikerush sparsely present). Diversity was highest in the freshwater marsh at transect F3 during both the November 2013 and 2014 sampling events (SWI = 0.742 and 0.681, respectively). Diversity was also low in the mangrove plots, which were dominated by red mangrove with white and black mangrove sparsely present. M5-1 was the most diverse mangrove plot, with four species (Table 4.1-3). The community with the highest diversity was the marsh-mangrove mix, which had three (F1) and six (F5) species along those transects. F5 was the most diverse transect as it was composed of a mix of woody and non-woody species within the different plots. Although the SWI values have fluctuated each year, the overall trends have remained consistent throughout the entire monitoring period (Table 4.1-4).

Species evenness is a measure of how evenly distributed (numerically) each species is at a site. A species evenness of 1 means an equal number of individuals of each species is present. The low evenness values of the mangrove plots indicate one highly dominant species (red mangrove) with other species sparsely intermixed. Higher evenness values for some of the marsh plots show that at plots such as F1-1, F3-1, and F3-3, most species present are well-represented (Table 4.1-4). Species evenness cannot be calculated when only one species is present in a plot, which is the case for most of the plots (F6-2 excluded) along the F6 and M6 reference transects. The mangrove plots had the lowest species evenness, while the marsh sites had the highest (Table 4.1-4). These trends have remained consistent throughout the entire monitoring period.

4.1.2.2 Freshwater Marsh Sampling

As sawgrass was the primary herbaceous species measured in the marsh plots, to focus on landscape trends, discussion of the herbaceous vegetation is limited to sawgrass. Sawgrass cover was consistently ≤25%, and average vegetation height for each sampling event never exceeded 1.1 meters (m) (Tables 4.1-5 and 4.1-6, respectively). These vegetation patterns are consistent with the “sparse sawgrass” community commonly observed in Florida (Olmsted and Armentano 1997).

Sawgrass percent cover values have remained consistent during the entire monitoring period. The percent cover values are reported as percentage categories per the QAPP (FPL 2013b) (see Table 4.1-5). During the Post-Uprate period, values remained the same with the exception of small variations at F2-3, F3-3, F6-1, and F6-3 (Table 4.1-5). Changes in percentage categories observed between the Pre-Uprate and the Post-Uprate events are present, but are due to incremental and/or seasonal changes in percent cover and not rapid decline/growth.

Sawgrass height varied significantly by site, with F4-1 and F1-2 being the tallest plots and F3-1 being the shortest (Table 4.1-6). Many sites have been consistently trending downward with the exception of F4-1, F4-2, F1-2, F6-1, F6-2, and F6-3, which show a more irregular pattern that is possibly linked to wet/dry seasonal variations. The reason for the downward trend is unclear as other parameters that are related to height (porewater nutrients, live biomass, and total biomass) do not reflect the same trend. Notably, although the field crews take as much care and precaution as possible not to damage the vegetation, anthropogenic factors related to repeated sampling of the same plants over time could cause the decrease. However, despite this trend of decreasing height across the landscape, there have been no differences in the rank order of vegetation heights between the Pre- and the Post-Uprate periods. Plants in F3, F2, and F6 (reference transect) have always had shorter sawgrass relative to F1 and F4 in the Pre-Uprate and the Post-Uprate periods. These differences may be explained by inherent hydrologic and biogeochemical interactions within each plot and are not related to the Uprate or CCS operations.

Both live and total sawgrass biomass were calculated using the equations presented in Table 4.1-7. These equations were derived from semi-annual plant harvests conducted in accordance with this project. Both live and total biomass follow the same general patterns across the landscape, with F4-1 and F1-2 having the highest values and F3-1 the lowest (Tables 4.1-8 and 4.1-9). This overall trend has remained consistent during the Pre-Uprate and the Post-Uprate monitoring. A statistical test was performed to determine whether Pre-Uprate live sawgrass biomass is significantly different from Post-Uprate live sawgrass biomass. The analysis showed there is no significant difference in sawgrass live biomass between the two time periods ($F_{1,195}=0.38$; $P=0.547$).

The Model Lands Marsh adjacent to the Turkey Point plant has similar hydrology and community composition as the C-111 Basin and Taylor Slough (Childers et al. 2006). Although the Model Lands is smaller in size than either the C-111 or Taylor Slough, these landscapes are similarly characterized by sawgrass marshes, tree islands, and hydrology driven by rain, canal overflow, and surface water runoff (Childers et al. 2006). Historic live biomass data at study sites in the C-111 Basin and Taylor Slough (located west of the study area) generally range from 100 to 300 g/m^2 annually (Childers et al. 2006). Live biomass during the Pre-Uprate and the Post-Uprate periods was less than 110 g/m^2 at 9 of the 14 sawgrass plots, including all three plots along reference transect F6 (Table 4.1-9). None of the sawgrass plots exceeded 300 g/m^2 (Table 4.1-8), with the exception of F4-1 in November 2013.

Since ecological sampling initially began in November 2010, sawgrass annual net primary productivity (ANPP) is calculated from November to November of each year. In both the Pre- and Post-Uprate periods, productivity at plots F1-1, F1-2, F2-1, and F4-1 was consistently high compared with the other marsh sites, while productivity at F3-1 was consistently low (Table 4.1-10). The remaining plots exhibit a more variable pattern that can likely be attributed to meteorological conditions. Annual mean productivity from the C-111 Basin typically ranges from about 200 to 500 g/m^2, while mean productivity at Taylor Slough in Everglades National Park was typically less than 300 g/m^2 (Childers et al. 2006). The values from this study are consistent with the values observed at Taylor Slough.

Sclerophylly is a measure of leaf hardness or toughness that reflects climate and nutrient conditions. Low sclerophylly values represent more ideal growing conditions compared to high sclerophylly values. Post-Uprate sclerophylly is highly variable from season to season, showing no consistent trends within or between sites (Table 4.1-11). However, sawgrass sclerophylly was significantly higher during the Post-Uprate monitoring period compared with the Pre-Uprate ($F_{1,97}$=134.9; P<0.0001). The meteorological conditions during the Post-Uprate monitoring were noticeably drier relative to the previous year, i.e., 40.15 inches from June 2013 to May 2014 and 41.18 inches from June 2014 to May 2015, versus 70.38 inches from June 2012 to May 2013 at the S-20 rainfall station (see Section 2, Table 2.4-8). The increase in sclerophylly is most likely due to the drier meteorological conditions that were present during the Post-Uprate time period.

The leaf nutrient trends in November 2013 and May 2014 are consistent with data from the Pre-Uprate period. A summary of sawgrass leaf nutrients and stable isotopes is presented in Tables 4.1-12 through 4.1-18. C3 photosynthetic plants (e.g., sawgrass) can have carbon isotope values between -34 parts per mille (‰) and -22‰ (Smith and Epstein 1971), where -22‰ is representative of plants from desert conditions and -34‰ is indicative of tropical rainforest vegetation (Kohn 2010). Chang et al. (2009) found that carbon isotopes from sawgrass in the Loxahatchee National Wildlife Refuge (LNWR) ranged from -30.1‰ to -24.5‰. Carbon isotopes from sawgrass collected during the Post-Uprate period ranged from -27.8 (F4-2 May 2014) to -25.9 (F6-2 November 2014), within range of the plant community in the LNWR and the Pre-Uprate data (Table 4.1-15). The nitrogen isotopes ($\delta^{15}N$) found in sawgrass from the LNWR ranged from -5.3‰ to 7.7‰, while sawgrass adjacent to Turkey Point had an average range of -5.75‰ (F4-2 May 2014) to 2.84‰ (F1-2 May 2015) during the Post-Uprate period (Table 4.1-16). The molar ratio of carbon to nitrogen (C:N) never fell below 47:1, which is representative of mature plants with high lignin content (Table 4.1-17). Terrestrial environments are considered nitrogen-limited when the nitrogen to phosphorus (N:P) ratio is below 14 and phosphorous-limited when the N:P ratio is above 16. All N:P ratios were well above 16, indicating a P-limited system (Table 4.1-18).

The specific conductance and temperature of porewater collected from a 30 cm depth within the sediment are presented in Tables 4.1-19 and 4.1-20. Statistical comparisons were performed to determine whether or not porewater specific conductance and temperature at a 30-cm depth changed significantly between Pre- and Post-Uprate monitoring. Because F5-1 and F5-2 are not representative of a freshwater marsh (their water chemistry and vegetation communities are more consistent with a brackish marsh) they were omitted from this analysis. Additionally, the tree island plots were not included in this analysis because they are not considered marsh habitat. The analysis showed that there was no significant difference between Pre- and Post-Uprate porewater specific conductance ($F_{1,164}$=1.46; P=0.25) or porewater temperature ($F_{1,164}$=0.06;

P=0.80). CCS water is characterized by high specific conductance and temperature. The absence of higher specific conductance and temperature in the Post-Uprate porewater data suggests that the surrounding marsh is not influenced by the Uprate or CCS operations.

Post-Uprate monitoring consists of sampling quarterly for sodium, chloride, and tritium; and bi-annually for nutrients (May and November). Porewater analytical data for August 2013 to May 2015 are presented in Tables 4.1-21 through 4.1-28. In some quarters, data are not available for sites (e.g., F3-4, F4-4) which were often too dry at 30 cm and did not yield enough porewater for analysis.

In the Post-Uprate, marsh transects west of the CCS (F2, F3, F4) generally had higher sodium and chloride values with distance from the L-31 Canal (Figures 4.1-1 and 4.1-2). The reference transect, F6, showed a similar trend across the landscape as well, with the farthest site from any canal, F6-3, having the highest values. The impounded north transect (plots F1-1 and F1-2) had lower sodium and chloride levels than the impounded plots to the south (F5-1 and F5-2). Although considered marsh sites, the southern impounded plots were more similar to the mangrove sodium and chloride values than the other marsh plots.

During the Post-Uprate period, the hydrology of plots F5-1, F5-2, and M5-1 was drastically modified. The roads that historically impounded these areas were removed as part of an effort to restore their natural hydrology. While the removal of the roads has helped restore these areas to a more natural state, the change in hydrology is so significant that it will be no longer be feasible to attribute any changes in vegetative community or porewater chemistry between the Pre- and Post-Uprate to CCS influence.

A repeated measures ANOVA was performed to evaluate Pre-Uprate and Post-Uprate differences in porewater analytes. For all marsh analyses, the four impounded plots (F1-1, F1-2, F5-1, and F5-2) and the four tree island plots (F2-4, F3-4, F4-4, and F6-4) were omitted because the vegetative communities and the water chemistry found at these sites are different from marsh habitat. Sodium and chloride values were generally lowest during the wet season and highest in the dry season. The lowest annual values were observed during the wet season, i.e., either in August or November. There was no significant difference between Pre-Uprate and Post-Uprate values for either sodium ($F_{1,162}$=1.74; *P*=0.21) or chloride ($F_{1,162}$=1.10; *P*=0.32) in the marsh.

In the Post-Uprate, marsh porewater nutrients (TN and TP) showed no consistent trends with distance from the CCS (Figures 4.1-3 and 4.1-4), demonstrating a wide range of natural variability across the landscape. Porewater TKN, ammonia, and TP were analyzed to evaluate Pre-Uprate and Post-Uprate differences. There was no difference in Pre-Uprate and Post-Uprate TKN ($F_{1,80}$=2.91; *P*=0.016) or ammonia ($F_{1,80}$=4.33; *P*=0.0.061) in the marsh sites, but Post-Uprate TP was significantly higher than Pre-Uprate TP ($F_{1,80}$=10.99; *P*=0.007).

Porewater tritium data are available through the February 2015 sampling event, but the May 2015 data were still pending at the time of this report. Data showed no difference between Pre-Uprate and Post-Uprate tritium concentrations in the marsh sites ($F_{1,150}$) = 0.17; *P*=0.692). As in the Pre-Uprate period, Post-Uprate tritium concentrations in marsh sites generally decreased as distance from the CCS increased (Figure 4.1-5). A similar trend was observed in evaporation pans around the CCS (see section 3.4). Higher concentrations closer to the CCS indicate that atmospheric deposition is the main source of tritium in the marsh as in evaporation pans.

The porewater nutrient concentrations in the tree island plots are typically higher than the surrounding marsh. Ion concentrations vary seasonally with higher values observed in the dry season months (February and May) than the wet season (August and November).Water availability in the tree islands has been highly infrequent throughout the monitoring period. When water is available at these sites, it is often so fresh (specific conductance < 725 μS/cm) that it does not meet the sampling requirements established in the QAPP (FPL, 2013b), and no sample is collected. Due to the limited data available from these sites, temporal trends in porewater chemistry cannot be analyzed.

The structure and composition of the sawgrass marsh communities within the study area have remained stable throughout the entire monitoring effort. Many of the fluctuations observed are due to seasonal and meteorological conditions. Overall, the vegetation characteristics summarized above (i.e., live biomass, productivity, leaf nutrient concentration), porewater chemistry, and community composition are representative of the hydrologically modified marshes found throughout southern Florida.

4.1.2.3 Mangrove Sampling

Post-Uprate vegetation sampling at the M sites occurred during the November 2013 and November 2014 sampling, while porewater was sampled in November 2013, May 2014, and November 2014. Values from the same timeframes during the Pre-Uprate monitoring period are provided for comparison along with the Pre-Uprate value ranges. As red mangrove is the primary woody species measured in the mangrove plots, to focus on landscape trends, discussion of the woody vegetation is limited to red mangrove.

Percent cover has remained consistent during the Post-Uprate period for all sites (Table 4.1-29). The cover also has not changed between the Pre- and the Post-Uprate time periods, with the exception of M3-1. The change in percentage categories observed between Pre-Uprate and Post-Uprate events at M3-1 is difficult to interpret due to the wide range of values included in each percentage category. Because of this, it is worth noting that the changes in percent cover classes that have occurred during the monitoring period are due to incremental and/or seasonal changes in percent cover, not rapid decline/growth.

Lugo and Snedaker (1974) classified a scrub mangrove forest as having trees that are less than 1.5 m (150 cm) tall. All of the trees measured within the study area are consistent with this classification. At the F sites, red mangrove height remained consistent throughout the Post-Uprate sampling period (within 9 cm), indicating that very little vertical growth/die-off has occurred during the Post-Uprate events (Table 4.1-30). A statistical test was performed to compare Pre-Uprate and Post-Uprate red mangrove height at the M sites. The Post-Uprate height dataset consists of two events at the M sites (November 2013 and November 2014), so the analysis included Pre-Uprate data from October 2010 and November 2011 to help balance the dataset while still representing similar seasons. The analysis showed that the trees are significantly taller Post-Uprate, suggesting that the dwarf mangrove populations within the study area are slowly growing and that no considerable die-off has occurred ($F_{1,47}$=27.05; P=0.0003). Slow growth is expected in dwarf mangrove ecosystems because of the difficult growing conditions naturally found in these areas (McKee et al. 2002).

Red mangrove biomass was calculated using the allometric equation presented in Coronado-Molina et al. (2004). Seasonal fluctuations in red mangrove biomass are present, and while Post-Uprate biomass values for plots M3-2, M4-2, and M5-2 are below the Pre-Uprate ranges for these sites, there are no consistent increasing or decreasing trends over time (Table 4.1-31). A statistical test was conducted to compare Pre-Uprate and Post-Uprate red mangrove biomass at the M sites. Because the Post-Uprate biomass dataset consists of two events at the M sites (November 2013 and November 2014), the analysis included Pre-Uprate data from October 2010 and November 2011 to help balance the dataset while still representing similar seasons. The analysis showed that there is no significant difference between Pre- and Post-Uprate red mangrove biomass ($F_{1,47}$=2.42; P=0.15). This suggests that there has been no considerable change in the red mangrove community between the Pre- and Post-Uprate periods.

Sclerophylly sampling was performed during the November 2013 and November 2014 sampling events (Table 4.1-32). A statistical test was performed to compare Pre-Uprate and Post-Uprate red mangrove sclerophylly at the M sites. The Post-Uprate sclerophylly dataset consists of two events at the M-sites (November 2013 and November 2014), so the analysis included Pre-Uprate data from October 2010 and November 2011 to help balance the dataset while still representing similar seasons. The Post-Uprate red mangrove sclerophylly values were significantly higher than the Pre-Uprate data, indicative of the mangrove leaves being thicker and more succulent ($F_{1,45}$=24.71; P=0.0004). This is most likely a result of the drier meteorological conditions during this time period.

Mangrove ANPP was measured during the Pre-Uprate period based on quarterly field measurements of 6 individual branches on 3 representative trees in each 5x5 subplot. ANPP was calculated by tracking the number of leaves lost and gained on each individually measured branch every 3 months (see Appendix K for more details). However, as part of the Post-Uprate reductions, sampling of the 5x5 woody subplots was decreased to one a year, making it impossible to track leaf loss/gain over time using the methodology established in the QAPP (FPL, 2013b). Consequently, mangrove ANPP cannot be calculated for the Post-Uprate period, and the individual branch data collected in November 2013 and 2014 are unusable within the scope of this project.

Mangrove leaf nutrients, stable isotopes, and molar ratios for the November 2013 Post-Uprate event are presented in Tables 4.1-33 through 4.1-39. Carbon isotope data were within the normal range that C3 plants are known to have (-34‰ to -22‰ from Smith and Epstein 1971), reaching as high as -24.7‰ (M3-2 November 2014) and as low as -28.0‰ (F2-2 November 2013). In the Carbon isotope total average over all Post-Uprate seasons was -25.9‰, which is representative of data from scrub red mangroves in Belize (-25.3‰ from Smallwood et al. 2003 and -26.4‰ from McKee et al. 2002). Red mangrove $\delta^{15}N$ ranged from -11.3‰ to 3.6‰ and averaged -3.6‰ (Table 4.1-37). McKee et al. (2002) found average $\delta^{15}N$ values of -5.38‰ in similar scrub mangrove habitats. Low nitrogen isotope values are a consequence of the slow growth patterns and the resulting low nitrogen demand associated with scrub mangrove forests (McKee et al. 2002). The Post-Uprate leaf nutrient and isotope values are consistent with the Pre-Uprate data and are within the ideal ranges established in the literature for similar dwarf mangrove plant communities (Smallwood et al. 2003; McKee et al. 2002). The N:P molar ratios of the leaves were well above 16, indicating that all mangrove sites are P-limited (Table 4.1-39).

A statistical test was performed to determine whether or not porewater specific conductance and temperature at a 30-cm depth changed significantly between Pre- and Post-Uprate monitoring. The Post-Uprate porewater dataset consists of four events at the M sites (November 2013, May 2014, November 2014, and May 2015), so the analysis included Pre-Uprate data from October 2010 and May and November 2011 to help balance the dataset while still representing similar seasons. The analysis showed that neither porewater specific conductance ($F_{1,81}$=4.75; P=0.052) nor temperature ($F_{1,81}$=1.56; P=0.24) were significantly different between the Pre- and Post-Uprate time periods. CCS water is characterized by both high specific conductance and temperature. The absence of higher specific conductance and temperature in the Post-Uprate data suggests that the mangrove habitat surrounding Turkey Point is not influenced by the Uprate or by CCS operations.

The Post-Uprate porewater dataset for sodium and chloride consists of four events at the M sites (November 2013, May 2014, November 2014, and May 2015), so the analysis included Pre-Uprate data from October 2010 and May and November 2011 to help balance the dataset while still representing similar seasons. Overall, there was no difference in sodium ($F_{1,80}$=1.26; P=0.286) or chloride values ($F_{1,79}$=1.55; P=0.238) between the Pre- and Post-Uprate periods. The highest values were observed in May and August 2011 after a dry spring earlier that year.

The Post-Uprate porewater dataset for TP, TKN, and ammonia consists of four events at the M sites (November 2013, May 2014, November 2014, and May 2015), so the analysis included Pre-Uprate data from October 2010 and May and November 2011 to help balance the dataset while still representing similar seasons. A comparison of the Post-Uprate and the Pre-Uprate events showed that there was no difference between Pre-Uprate and Post-Uprate TKN ($F_{1,80}$=0.10; P=0.753), TP ($F_{1,80}$=3.34; P=0.100), or ammonia ($F_{1,80}$=0.57; P=0.110).

The Post-Uprate porewater dataset for tritium consists of three events at the M sites (November 2013, May 2014, November 2014; May 2015 data were still pending at the time of this report); therefore, the analysis included Pre-Uprate data from October 2010 and May and November 2011 to help balance the dataset while still representing similar seasons. The available data were analyzed to evaluate Pre-Uprate and Post-Uprate differences. Based on the available data, there was no difference between Pre-Uprate and Post-Uprate tritium concentrations in the mangrove sites ($F_{1,68}$) = 0.51; P=0.492).

The structure and composition of the scrub mangrove communities within the study area have remained stable throughout the entire monitoring effort. The system is driven by concurrent stressors, including nutrient deficiency, high salinities, and saturated soil. The vegetation characteristics of the study area are consistent with scrub mangrove forests found along the coastal fringe of south Florida and the Florida Keys (Lugo and Snedaker 1974).

4.2 Biscayne Bay

Pre-Uprate ecological monitoring was conducted semi-annually between September 2010 and September 2011 (two fall events and one spring event), and semi-annual Post-Uprate monitoring was conducted between September 2013 and May 2015 (two fall and two spring events). The sampling setup was based on the approved Monitoring Plan (FPL 2010) and followed the QAPP (FPL 2011b, 2013b). Four study areas were selected for ecological sampling, three adjacent to the CCS within Biscayne Bay and Card Sound (BB1 to BB3) and one reference site in Barnes Sound (BB4; Figure 1.3-1).

Pre-Uprate monitoring was conducted along five shore-parallel transects within each study area to document changes in SAV cover and faunal composition with increasing distance from the CCS. Insofar as no ecologically significant differences were detected among transects during Pre-Uprate monitoring, three of the five SAV transects in each area were eliminated from Post-Uprate monitoring; the two transects closest to shore in each area were retained (Figure 4.2-1). Additionally, the usefulness of Pre-Uprate faunal data in assessing uprate effects was reviewed and upon concurrence from the agencies, that component was eliminated from Post-Uprate monitoring.

In this section, the results of Post-Uprate monitoring conducted during September 2013 and 2014 (two fall events) and May 2014 and 2015 (two spring events) are presented and compared with results from Pre-Uprate monitoring. Because data are only available from a single spring Pre-Uprate event, the data for the two fall Pre-Uprate events were averaged to produce a single value for comparative purposes.

4.2.1 Methods and Materials

Within each study area, two 2-kilometer (km)-long, shore-parallel transects were used to monitor ecological conditions (Figure 1.3-1). These transects, designated "*a*" and "*b*," were located 250 m and 500 m from shore, respectively. Each transect was divided into eight 250m-long segments. A 1 m^2 point randomly selected along each 250 m segment during the initial Pre-Uprate event was selected as the permanent sampling location for all future sampling events (Table 4.2-1). These points were numbered 1 through 8. Thus, a sampling point designated as BB1-*b*-4 represents Area BB1, Transect *b*, and Sampling Point 4. This design produced a total of 16 sampling points per study area and 64 points for all areas combined. Post-Uprate data collection methods followed the QAPP (FPL 2013b) and were consistent with methods used for Pre-Uprate monitoring, as reported in the Comprehensive Pre-Uprate Report (FPL 2012a).

4.2.1.1 Physical Parameters and Surface Water Quality Data

General environmental data were collected at each sampling point. This included tidal cycle, air temperature, wind speed and direction, and sky conditions. The tidal cycle (high, low, ebb, or flood tide) was recorded based on published tide tables. A NIST-certified thermometer was used to determine air temperature. Wind speed was estimated, and wind direction was determined by use of a compass. Sky conditions were noted as clear (0% to 25% cloud cover), partly cloudy (25% to 50% cloud cover), mostly cloudy (50% to 75% cloud cover), or overcast (more than 75% cloud cover). Notes were made of any precipitation during the sampling event.

Light attenuation was measured at a single, fixed sampling point (Sampling Point 4) along each transect. A LI-COR LI-1400 data logger was connected to a LI-COR LI-193 spherical sensor and a LI-COR LI-190 quantum sensor to measure light (micromoles per square meter per second [µmols/m^2/sec]) at depth and at the surface, simultaneously. The LI-193 sensor was mounted in a weighted, black frame, while the LI-190 sensor was placed in an unshaded area on the boat. In water depths less than 1.5 m, three measurements were taken: 0.3 m below the surface, mid-depth, and 0.3 m above the bottom. In water depths greater than 1.5 m, five measurements were taken at equidistant depths starting at 0.3 m below the surface and finishing at 0.3 m above the bottom. Records of light measurements were made as the sensor was lowered to each depth, and again as the sensor was raised, for a total of six to ten readings per sampling point. Sampling depth and time of sampling were recorded for each paired surface and underwater reading. For this report, only surface, mid-depth, and bottom values are presented.

A Hach Quanta water quality meter was used to measure water quality at each sampling point. Monitored variables included temperature (°C), specific conductance (milliSiemens per centimeter [mS/cm], converted to µS/cm for reporting purposes), salinity (ppt), dissolved oxygen (DO) (milligrams per liter [mg/L]), pH, oxidation reduction potential (ORP) (millivolts [mV]), and turbidity (NTU). Salinity was calculated (not measured directly) by the water quality meter using conductance and a temperature correction normalized to 15°C (PSS-78 scale). Water column measurements were taken approximately 30 cm below the surface and 30 cm above the bottom.

4.2.1.2 Porewater Water Quality

At each station, porewater was collected at 30cm using the methods described in the Comprehensive Pre-Uprate Report (FPL 2012a). If sediment depth was less than 30cm, the bottom was probed within a 2m to 5m radius of the sampling point until the target depth could be reached. Porewater was extracted with a Pushpoint Sampler and measured with a Hach Quanta water quality meter, while temperature was measured in situ with a thermocouple datalogger (TCTemp1000, ThermoWorks Inc., Lindon, UT).

After completing SAV/water quality sampling at all eight points on a transect, specific conductance data for porewater were reviewed, and the location with the highest conductance value was selected as the porewater sampling point. At each of these sampling points, the porewater sampler was inserted to a depth of 30cm, and the tubing attached to the sipper was connected to a peristaltic pump on the boat. For each sample, 500 to 750 mL of porewater was extracted from two sampling locations (<0.5m apart). After collection, the two porewater samples were combined and homogenized and subsequently distributed into pre-labeled analyte containers for laboratory analyses in accordance with the QAPP (FPL 2013b). Samples were analyzed for the following variables: sodium, chloride, nitrate-nitrite as N, OP, unionized ammonia, ammonia, ammonium, TKN, TP, and tritium.

4.2.1.3 Submerged Aquatic Vegetation Surveys and Ecological Observations

SAV surveys were conducted at all 16 sampling points within each study area (eight/transect). Four quarter-meter quadrats were thrown from the boat roughly equidistant within a 3m radius around the marked sampling point. The SAV within each of the four quadrats was examined and percent cover score was recorded on underwater datasheets. Each of 26 pre-established categories of SAV (Table 4.2-2) used by the SFWMD, Florida Fish and Wildlife Fisheries Habitat Assessment Program, and the RER were scored using the Braun-Blanquet Cover Abundance (BBCA) Index methodology previously described in the Comprehensive Pre-Uprate Report (FPL 2012a). The BBCA method assigns a code to each species or taxonomic group based on its contribution to bottom coverage, as follows:

0	=	bare
0.1	=	<5% cover with a solitary individual/shoot
0.5	=	<5% cover with few individuals/shoots
1	=	<5% cover with numerous individuals/shoots
2	=	≥5% cover and ≤25% cover
3	=	>25% cover and ≤50% cover
4	=	>50% cover and ≤75% cover
5	=	>75% cover

The macrophyte scores for the four quadrats were averaged to produce a mean score for each sampling point, and then all eight points were averaged to produce a mean transect score. To ensure consistency in assessments among FPL and the Agencies, BBCA scoring was done only by divers who had previously attended annual Interagency Calibration Exercises hosted by the SFWMD in Key Largo (May 17, 2013 and May 22, 2014).

In addition to quantifying SAV coverage, sediment depth was considered an important variable in determining the relative abundance of seagrasses. Within each scored quadrat, a rod was inserted into the substrate near each of the four corners and in the middle. Depth to refusal (i.e., underlying hardbottom) for the five points were averaged and recorded.

A qualitative characterization of benthic conditions surrounding each sampling point was made by a diver at the beginning of each SAV survey. This characterization, made out to the range of visibility, generally encompassed an area within a 5 m to 10 m radius of the sampling point. Observations were recorded under three main categories:

- Overall conditions – radius and visibility (in feet) of the area that was assessed and the overall biotic coverage (Open, Fairly Open, Moderately Open, Mostly Covered, and Uniform);

- Qualitative assessment of seagrass, drift algae, and *Batophora* coverage in the surveyed area (Sparse, Sparse to Moderate, Moderate to Dense); and

- Generalization of the amount of calcareous algae, sponges, corals, and gorgonians found in the area (None, Few, Many).

The substrate in the immediate vicinity of each sampling point was also qualitatively characterized by noting the presence/absence of the following sediment types: sandy, shell hash, silty, and rubble. If a handful of substrate was picked up, released, and settled relatively quickly with little drift, it was classified as sandy. If a plume was evident and it settled more slowly, it was classified as silty. Pockets of shell fragments mixed in with the sand were classified as shell hash, while rocks or hardbottom either exposed or just beneath a veneer of sediment were classified as rubble.

4.2.1.4 Seagrass Leaf Nutrient Analysis

Seagrass leaf collections were made at the same two points along each transect (1 and 4 on transect *a* and 2 and 5 on transect *b*) used for collecting soil cores during Pre-Uprate monitoring. At each point, divers collected blades of turtle grass (*Thalassia testudinum*), the dominant seagrass species, by clipping the blades at the substrate. Samples were placed in labeled plastic bags, maintained on ice, and transported to the laboratory for analysis. In the lab, senescent material was removed from the sample and the green blades scraped of epiphytes. Each sample was then oven-dried at 105ºC for a minimum of 24 hours. The dried leaves were ground to a powder, homogenized, and an 8 to10 g sub-sample placed in a labeled plastic bag for subsequent nutrient analysis.

4.2.2 Results and Discussion

4.2.2.1 Water Depth and Bottom Conditions

Water Depth

Sampling was conducted over all tidal cycles, and the data presented herein are actual depths at the time of sampling, unadjusted for tides. Mean water depth for all study areas and transects combined during the fall Post-Uprate events ranged from 2.2 (2013) to 2.4 m (2014) and averaged 2.2 m during both (2014 and 2015) spring sampling events (Table 4.2-3). Area BB1 had the shallowest mean depth (1.7 m for both fall events and 1.5 to 1.6 m for the two spring events), while Area BB3 had the greatest (2.8 to 3.0 m in the fall and 2.8 to 2.9 m in the spring). During the most recent year of sampling (fall 2014 and spring 2015), 31% of all sampling points, all study areas combined, were in water depths of 1 to 2 m, 58% were in depths of 2.1 to 3 m, and 11% were in depths greater than 3 m.

Sediments

Sediment type varied considerably within and among the four study areas (Table 4.2-4). Between 70% and 78% of the points sampled during each Post-Uprate event were classified as sandy-shell hash. Seven to 18 sampling points (11% to 28%) per event had a silty component, with the highest number recorded during the fall 2013 event. The majority of silty sampling points were located in Area BB4. Similarly, 8 to 13 Post-Uprate sampling points during each

Post-Uprate event had rubble present, again mostly in Area BB4. These findings are consistent with Pre-Uprate (FPL 2012a) observations (Table 4.2-4) and demonstrate that sediment conditions in Area BB4, the reference area within Barnes Sound, are somewhat different from the other areas.

4.2.2.2 Surface Water Quality

Temperature, turbidity, DO, salinity, and other water quality variables in Biscayne Bay are highly dynamic and reflect prevailing conditions at the time of sampling, including time of day (air temperature), tidal stage, currents, cloud cover, wind, waves, rainfall, and recent extent of freshwater runoff. All of these factors, both independently and collectively, create considerable natural spatial and temporal variability within the system. Consequently, care must be taken in drawing any definitive conclusions from the water quality data presented below, particularly considering that measurements are only taken twice per year over the course of a few days.

Light Attenuation

There was considerable variability in light attenuation data among areas, transects, and seasons (Table 4.2-5), which is not surprising, given the variation in those factors (winds, waves, currents, rainfall, etc.) that collectively contribute to water clarity. The only obvious trend detected both within and between Pre- and Post-Uprate study periods was the consistent increase in attenuation with increasing water depth, which is normal.

Temperature

Mean surface and bottom water temperatures along each transect for all Pre- and Post-Uprate monitoring periods combined were within the range of 26.0°C to 30.2°C (79°F to 86°F) during times of sampling (Table 4.2-6). There was relatively little difference between mean fall and spring values, although temperatures were slightly warmer (< 2.0°C) during the fall. Mean fall Post-Uprate surface temperatures within all four study sites were 0.2°C to 0.3°C warmer than their comparable Pre-Uprate values, while mean spring Post-Uprate values were about 0.8° to 1.0°C warmer. The only exception to the latter was in Area BB4, where spring Post-Uprate temperatures were about 0.7°C cooler than the comparable Pre-Uprate mean.

As would be expected in a shallow, well-mixed water body, there was very little difference between mean surface and bottom water temperatures along any transect. Consequently, there was also very little difference among seasons, transects, and sampling periods.

Specific Conductance and Salinity

Over the entire course of Pre- and Post-Uprate monitoring, mean surface specific conductance and its derivative, salinity, ranged from 41,456 µS/cm (26.8 [in PSS-78 scale]) in Area BB1 in fall 2013 to 59,194 µS/cm (39.6 PSU), also in Area BB1 in spring 2014 (Tables 4.2-7 and 4.2-8). During both the Pre- and Post-Uprate monitoring, salinity was generally lower during fall sampling (wet season) than during spring sampling (dry season). These findings are consistent with seasonal and regional rainfall and hydrologic influences. The only exception to this pattern was found during fall 2014 when relatively high salinity values were recorded, suggestive of a preceding period of relatively low rainfall. There were no apparent trends in salinity between transects within any area, either Pre- or Post-Uprate. Similarly there were only minor differences in mean surface and bottom salinity within any study area, suggestive of a well-mixed water column. The only exception occurred during fall Pre-Uprate monitoring, when mean salinity in Areas BB3 and BB4 was 1.8 PSU higher on the bottom than at the surface. This finding is suggestive of a recent rainfall event, with greater freshwater runoff in the southern portion of the study area. Runoff may create temporary stratification of the water column, with heavier, more saline water trapped on the bottom.

During spring Post-Uprate monitoring, hypersaline (> 35.0 PSU) water was present at all sites except Area BB4. However, similar conditions were documented during spring Pre-Uprate monitoring, even in Area BB4 (Table 4.2-8). Mean spring Pre-Uprate salinity values fell within the range of comparable Post-Uprate values at all sites except Area BB4, which was more saline during Pre-Uprate spring sampling.

Salinities in Areas BB1 and BB4 were lower than the other two study areas during fall Pre-Uprate monitoring and fall 2013 Post-Uprate monitoring. This pattern prevailed during spring monitoring both Pre- and Post-Uprate in Area BB4, whereas during dry periods (including fall 2014), surface salinity in Area BB1 was similar to values in Areas BB2 and BB3. The persistence of lower salinities within Area BB4 may be attributable to its location in Barnes Sound at the southern end of the study area, where different hydrologic and hydrodynamic conditions may prevail (e.g., higher levels of freshwater terrestrial runoff, less mixing, lower turnover rates, etc.).

Dissolved Oxygen, pH, Turbidity, and Oxidation-Reduction Potential

Over the entire course of Post-Uprate monitoring, mean surface DO values were relatively stable, ranging between 4.7 mg/L (BB4 in fall 2014) and 6.0 mg/L (BB1 in spring 2015 and BB4 spring 2014 [Table 4.2-9]). During Pre-Uprate monitoring, DO ranged from 5.0 mg/L (BB1 in spring) to 6.3 mg/L (BB2 in spring). There were no consistent trends between transects within any area and only minor differences between seasons. Mean surface DO values were 0.10 (BB1) to 0.60 mg/L (BB2) lower during fall Post-Uprate monitoring than during the comparable Pre-Uprate period. During the spring, Post-Uprate values were 0.60 to 0.85 mg/L higher than comparable Pre-Uprate values in Areas BB4 and BB1, respectively, but 0.05 to 0.50 mg/L lower in Areas BB3 and BB2, respectively. Differences among study areas and Pre- and Post-Uprate monitoring periods are relatively minor and likely reflect natural variability within the system. Likewise, there were very small differences between surface and bottom DO values within any of the study areas either Pre- or Post-Uprate, suggestive of a well-mixed and oxygenated water column.

As with DO, pH within the study area was relatively stable, with mean values during Post-Uprate monitoring ranging only from 7.7 (BB1 in fall 2014) to 8.3 (BB1 in spring 2014 [Table 4.2-10]). Both higher (8.6 at BB2 in spring) and lower (7.6 at BB1 in fall) values were recorded during Pre-Uprate monitoring. Relatively minor differences and no apparent trends were detected when looking at differences in pH between transects, depths, seasons, or Pre- and Post-Uprate monitoring periods.

Water clarity has been high, as reflected by the very low turbidity values throughout the period of study (Table 4.2-11). Mean values for all study sites were less than 0.4 NTU during Post-Uprate monitoring, and for the most part, turbidity was undetectable (0.0 NTU). Higher values, although still relatively low, were found during fall Pre-Uprate monitoring, with the highest mean values occurring at the surface in Area BB4 (4.7 NTU) and at the bottom in Area BB4 (6.0 NTU). These data are reflective of persistent clear water, both spatially and temporally. Waves and currents may periodically suspend bottom sediments, and thus it is not surprising that the highest values were found in BB4, where siltier conditions are present. However, these elevated levels appear to be very ephemeral.

Unlike the other water quality parameters, ORP values tended to be highly variable, both spatially and temporally, with mean values during Post-Uprate monitoring ranging from 27.6 mV (BB1 in spring 2014) to 346.8 mV (BB2 in spring 2015; Table 4.2-12). There were no consistent seasonal patterns, as relatively low values, comparable to those obtained during Pre-Uprate monitoring, were recorded in fall 2013 and spring 2014, whereas fall 2014 and spring 2015 values were often many times higher than those obtained during Pre-Uprate monitoring. Likewise differences among stations were inconsistent. Although ORP was highly variable both spatially and temporally, it appears that it was fairly uniform within the water column at any particular location, as surface and bottom values within each area varied only slightly.

4.2.2.3 Porewater Quality

As for water column temperatures, porewater temperatures were relatively consistent among areas, transects, and seasons, with fall Post-Uprate temperatures being only slightly warmer than comparable spring values (Table 4.2-13). Post-Uprate porewater temperatures ranged from 27.2°C (81.0°F) at BB2 and BB3 in spring 2014 to 30.9°C (87.6°F) at BB4 in fall 2013, with the greatest difference between fall and spring Post-Uprate means (2.3°C [4.1°F]) occurring in Area BB4. Mean Pre-Uprate porewater temperatures fell within the same approximate range as Post-Uprate values (27.1°C at BB2 in spring to 29.2°C at BB1 in fall), and showed the same seasonal trend. Post-Uprate porewater temperatures were slightly warmer than corresponding seasonal Pre-Uprate means, with the greatest difference (1.5°C) found in Area BB4, the reference site.

Sediments have an insulating effect, and thus changes in porewater temperatures tend to lag behind changes in overlying water column temperatures. For example, as water column temperatures decline, porewater temperatures tend to remain slightly warmer. During Pre-Uprate monitoring, mean porewater temperatures ranged from 0.6°C warmer than the overlying water column (BB3 in spring) to 0.5°C cooler (BB4 in spring; Table 4.2-14). During Post-Uprate monitoring, mean porewater temperatures ranged from 1.5°C warmer (BB4 in fall 2013) to 0.8°C cooler (BB1 in spring 2015). The greatest differences between porewater and overlying water column temperatures were found in Area BB4 during both fall Post-Uprate events.

During the fall Post-Uprate monitoring, porewater specific conductance ranged from 47,081 µS/cm (BB4 in 2013) to 55,363 µS/cm (BB3 in 2014 [Table 4.2-15]). Fall Pre-Uprate values fell within that same range, with Areas BB2 and BB3 having slightly higher mean porewater conductance than Areas BB1 and BB4, the same relationship found during fall 2013 Post-Uprate monitoring (differences among study sites were largely absent in fall 2014). Porewater specific conductance during spring Post-Uprate monitoring was typically higher than comparable fall values, ranging from 49,794 µS/cm (BB4 in 2014) to 56,900 µS/cm (BB2 in 2014). Spring Pre-Uprate values fell within the same approximate range. As for water column specific conductance, mean porewater conductance tended to be lower in Area BB4 than the other study areas, particularly during the spring, a pattern also seen during Pre-Uprate monitoring.

Similar to porewater temperature, porewater specific conductance is largely a reflection of the conductance in the overlying water column. During the fall Pre-Uprate monitoring, differences between porewater and bottom water column conductance were similar among areas, with porewater conductance ranging from 2,447 µS/cm (BB4) to 4,097 µS/cm (BB1) higher than conductance in the overlying water column (Table 4.2-15). That difference persisted during fall 2013 Post-Uprate monitoring in both Areas BB1 and BB4; however, differences were largely absent at the other two sites. During spring Pre-Uprate monitoring, porewater specific conductance was 1,781 µS/cm (BB1) to 7,037 µS/cm (BB4) lower than conductance in the overlying water column, whereas during the spring 2014 Post-Uprate monitoring the opposite pattern was present (porewater conductance slightly higher than conductance in the water column). However, there were no consistent trends within or among study areas or seasons, demonstrating the considerable natural variability in porewater specific conductance and its relationship to the overlying water column, likely resulting from the insular effects of sediments.

Sodium concentrations in porewater ranged from an average of 8,890 mg/L (BB4 in fall 2013) to 10,600 mg/L (BB3 in fall 2013) during fall Post-Uprate monitoring (Table 4.2-16). These values were very similar to those obtained during fall Pre-Uprate monitoring. During Pre-Uprate monitoring, spring values were slightly higher than corresponding fall values at all sites, ranging from 10,400 to 12,500 mg/L. This same pattern was present during the spring 2015 sampling event. However, during the first spring Post-Uprate monitoring event in 2014, values were many times higher than either comparable Pre-Uprate values or fall Post-Uprate values, ranging from 50,400 mg/L (BB4) to 59,200 (BB1). Differences in porewater sodium among areas and transects were relatively small during any sampling period.

Chloride concentrations in porewater ranged from an average of 18,800 mg/L (BB4 in spring 2014) to 23,350 mg/L (BB1 in spring 2014) during Post-Uprate monitoring (Table 4.2-16). These data were within the range of values reported during Pre-Uprate monitoring (17,500 at BB4 in the fall to 24,000 mg/L at BB1 in the spring). Fall Post-Uprate values in all study areas were slightly higher than comparable Pre-Uprate values, while spring Post-Uprate values were very similar or slightly lower than corresponding Pre-Uprate values. Area BB4 tended to have lower porewater chloride values than the other three study areas, both before and after the uprate.

Very low concentrations of nitrate and nitrite were present in porewater during Post-Uprate monitoring (Table 4.2-16). In most instances, these nutrients were either undetectable or the values fell between the MDL and the practical quantification limit (PQL). The only quantifiable values obtained during Post-Uprate monitoring occurred at transect *a* in Area BB1 during spring 2014 (0.0840 mg/L) and at transect *b* in Area BB2 during fall 2013 (0.7860 mg/L). The latter value is likely an anomaly, as it was far outside the range of any other reported result. The data provide no basis for assessing temporal or spatial variation in nitrogen levels.

Ammonia concentrations were also very low throughout the period of study (Table 4.2-16). During fall Pre-Uprate monitoring, values ranged from 0.001 mg/L (BB1 and BB3) to 0.004 mg/L (BB4) and from 0.002 mg/L (BB4 in 2013) to 0.013 mg/L (BB2 in 2013) during fall Post-Uprate sampling. With the exception of Area BB1 in fall 2014 and Area BB2 in fall 2013, Post-Uprate ammonia values were very similar to comparable values obtained during Pre-Uprate sampling. Furthermore, the slightly elevated mean for Area BB2 in fall 2013 resulted from a single high result (0.024 mg/L) on transect *a*. Although mean spring Post-Uprate ammonia values remained low, they often exceeded comparable Pre-Uprate means. However, differences among study areas during each monitoring event were typically minor, and annual within-area differences demonstrate the considerable natural temporal variability present within the system.

Mean TKN concentrations ranged from 0.45 mg/L (BB3) to 0.91 mg/L (BB4) during fall Pre-Uprate monitoring and from 0.43 mg/L (BB3 in 2013) to 0.96 mg/L (BB2 in 2014) during fall Post-Uprate monitoring (Table 4.2-16). Similar levels of TKN were found during spring Pre-Uprate monitoring (0.29 mg/L at BB3 to 1.05 mg/L at BB1) and during spring 2014 Post-Uprate monitoring (0.55 mg/L at BB2 to 1.00 mg/L at BB4). However, considerably higher levels were found in Study Areas BB1 (4.62 mg/L) and BB4 (1.68 mg/L) during the most recent spring sampling event (2015). It is uncertain if these higher values are anomalous or reflect occasional natural local spikes in porewater TKN levels. Mean fall Post-Uprate TKN values were generally higher than comparable Pre-Uprate means in all areas except Area BB4, where they were slightly lower. However, the spring 2014 Post-Uprate mean for Area BB4, was lower than the Pre-Uprate mean. These data are suggestive of relatively high temporal and spatial variability in TKN concentrations within the project area.

Total phosphorous and OP levels in porewater were relatively low before the uprate and were largely undetectable following the uprate (Table 4.2-16). Tritium values were not available for either the fall or spring Post-Uprate monitoring events at the time this report was prepared.

4.2.2.4 Submerged Aquatic Vegetation

Study Area Characterization

Study Area BB1 can generally be described as embayment-like and is somewhat more sheltered from the effects of wind than the other study areas because portions are located west of the Arsenicker Islands and south of the Turkey Point peninsula (Figure 4.2-1). It is also the shallowest of the study areas (Table 4.2-3). Transects within this area had sparse to moderate macrophyte coverage throughout both Pre- and the Post-Uprate monitoring periods. Turtle grass was present in more than 95% of quadrats during both Pre- and Post-Uprate sampling periods, and there were only marginal differences between seasons during either period (Table 4.2-17). Coverage in Area BB1 was widespread on both the inner and outer transects, during Pre-Uprate monitoring. Following the uprate, coverage of turtle grass was slightly lower along the inshore transect, but by spring 2015, it was present in 100% of quadrats on both transects.

Shoal grass, *Halodule wrightii*, was also present in BB1 but much less widespread than turtle grass, and coverage never exceeded 5% within any quadrat. This species was present in 10% of the fall and 13% of the spring Pre-Uprate quadrats, compared with an average of 27% and 34%, respectively, of the fall and spring Post-Uprate quadrats (Table 4.2-17). Unlike turtle grass, shoal grass in Area BB1 was much more spatially variable during Pre-Uprate monitoring, occurring in only 3% of all inshore quadrats compared with 22% of quadrats on the offshore transect. During the first fall event (2013) following the uprate, coverage on the inshore transect increased considerably, and it was about 50% as abundant as grasses on the offshore transect. Thereafter, inshore coverage continued to increase, and differences between transects diminished; in spring 2015, 44% of all quadrats on both transects contained shoal grass.

The nearshore transects in BB2 had many open areas, with drift algae, gorgonians, sponges, and sparse seagrass. Turtle grass was present in half of all the quadrats during Pre-Uprate monitoring, but only about one-third of the quadrats during Post-Uprate sampling (Table 4.2-17). Turtle grass coverage in BB2 was much more temporally and seasonally variable than in the other study areas. During the spring Pre-Uprate sampling event, it was much more abundant on the offshore transect, and that same pattern persisted during spring Post-Uprate monitoring. However, during the fall it tended to be more abundant on the nearshore transect, both before and after the uprate.

Shoal grass in BB2 was present in 23% of the fall Pre-Uprate quadrats and between 28% and 33% of the comparable Post-Uprate quadrats, depending on year (Table 4.2-17). Similarly, it was present in 31% of the spring Pre-Uprate quadrats and 33% to 36% of the comparable Post-Uprate quadrats. This species tended to be much more abundant along the nearshore transects, both before and after the uprate, although coverage never exceeded 5%. The only exception to that pattern occurred during the spring Pre-Uprate monitoring period, when it was more abundant offshore.

Area BB3 is the deepest of the four study areas (mean depth 2.9 m [Table 4.2-3]). Turtle grass occurred in 77% of the Pre-Uprate quadrats and 72% to 80% of the Post-Uprate quadrats (Table 4.2-17). It tended to be slightly more abundant on nearshore transects during both spring and fall Pre-Uprate monitoring, but the only appreciable difference between transects during Post-Uprate monitoring occurred in spring 2015, when it was much more abundant nearshore (81% on transect *a* vs. 66% on transect *b*). Shoal grass was present in both nearshore and offshore transects during the fall and spring Pre-Uprate sampling events (7% and 16%, respectively), and abundance was similar between the inshore and offshore transect. Following the uprate, this species was essentially absent from the nearshore transect during both fall and spring sampling events. Offshore coverage (transect *b*) was relatively high during fall 2013 (16%), and but much less abundant during other periods; it did not occur in any quadrats during the spring 2015 event.

Both BB4 transects were composed of silty substrates, with rubble and small corals scattered throughout. Turtle grass was present in about 91% of the quadrats during both fall and spring

Pre-Uprate monitoring events and from 83% to 92% of the Post-Uprate events (Table 4.2-17). It was consistently more abundant nearshore, both before and after the uprate. Shoal grass was scarce throughout BB4, during both Pre and Post-Uprate sampling events (2% to 3% Pre- and 0% to 6% Post-Uprate).

Although seagrasses were widely observed, they occurred primarily in sparse or sparse to moderate assemblages around the sampling points used for this study. During Post-Uprate monitoring, BB2 and BB4 generally had the highest percentage of observations of sparse seagrass (68.8% to 93.8%), and conversely, the lowest percentages of sparse to moderate coverage (6.3% to 31.3%); no points were scored as moderate to dense (Table 4.2-18). Moderate to dense seagrass occurred in more than 10% of all quadrats scored during all four Post-Uprate monitoring events in BB1, whereas occurrence of moderate to dense grasses (6.3 % of all sampling points) occurred during a single event (fall 2014) in BB3.

Seagrass coverage within the study areas is primarily *Thalassia* coverage, which is the dominant species in tropical and sub-tropical coastal waters. Robblee and Browder (2007) found *Thalassia* generally to be the most abundant seagrass present at their monitoring locations in both Biscayne Bay and Florida Bay (frequency of occurrence ranged from 80% to 98%). High cover and low-standing crop of seagrass is typical of Biscayne Bay and has been attributed to the shallow depth of sediments. As the *Thalassia* rhizosphere typically extends 25 to 40 cm into the substrate (Enriquez et al. 2001; Robblee and Browder 2007), this grass cannot effectively colonize and grow in areas where only a thin veneer of substrate exists over the hardbottom. In the previous report (FPL 2014a, Table 4.2-17), a positive correlation was found between seagrass BBCA scores and sediment depth across all areas, suggesting that seagrass coverage within the study area is largely based on the availability of suitable substrate for colonization and growth.

Calcareous algae was ubiquitous throughout the project area, with all areas scored as having either a few or many present (Table 4.2-18). In BB3 and BB4, from 81.3% to 100% of all points scored during Post-Uprate monitoring fell within the “many” category. On average, Area BB1 had similar percentages of points categorized during Post-Uprate events as having few or many calcareous algae present, with the highest relative abundance occurring during fall events.

Drift algae was present during all Post-Uprate monitoring events, although coverage within the majority of sampling points was scored as sparse (Table 4.2-18). *Batophora* was widespread in all areas and ranged in coverage from sparse to moderate/dense. Area BB3 was the only area without any Post-Uprate sampling points scored as having moderate to dense *Batophora* coverage.

Sponges were also prevalent in all of the areas during Post-Uprate monitoring, with most points having either a few or many present (Table 4.2-18). Gorgonians (soft corals) occurred less frequently in BB2 and BB3 and were completely absent within all sampling points in BB1 and BB4. Stony corals were found in all areas, but less frequently in BB1 than the other three areas. Converse to the relationship between seagrasses and sediments, the relative abundance of both stony and soft corals within the study area relates largely to the amount of exposed hardbottom present. Those areas with relatively large amounts of unconsolidated sediments, such as Area BB1, have fewer corals than areas where exposed hardbottom is more expansive.

Macrophyte Coverage

BBCA scores for SAV (total macrophytes, total seagrass, and total algae) are semi-quantitative, as each score represents a range of values (1 = <5% coverage, 2 = 5% to 25% coverage, 3 = 25% to 50%, 4 = 50% to 75%, and 5 = >75%), and the numerical ranges vary among scores (5%, 20%, and 25%, respectively). This can skew results when scores are averaged. Nevertheless, the means do provide a reasonable gauge for assessing relative coverage.

Mean total macrophyte (seagrass, drift algae, and attached macroalgae) BBCA scores ranged from 1.5 (BB1 in spring 2015) to 3.1 (BB3 in fall 2014) during Post-Uprate monitoring and from 1.9 (BB1 and BB4 in fall) to 2.8 (BB3 in spring) during Pre-Uprate monitoring (Table 4.2-19a). Although there was considerable variation among study areas during some sampling events, these relationships were not consistent among sampling events. For example, BB3 had the highest mean total macrophyte BBCA score (3.1 and 2.9, respectively) and BB1 the lowest (1.7 and 1.5, respectively) during fall 2014 and spring 2015 sampling, but during the spring of 2014, BB3 had a much lower mean score (1.6) than BB1 (2.5). Similarly, there were no consistent trends between transects or seasons. During spring Pre-Uprate sampling, mean scores for all four study areas fell within the range of comparable Post-Uprate values. During the fall, the Pre-Uprate mean score at BB1 was similarly within the range of Post-Uprate scores, but the Pre-Uprate scores at the other three sites were either marginally or well below the comparable Post-Uprate means.

Some of the variation in total macrophyte BBCA values can be attributed to the very patchy nature of many of the SAV species within the project area and the randomness of quadrat placement around sampling points. Variation in scores is also driven by changes in drift algae (Table 4.2-18). Drift macroalgae cover can be highly variable over small temporal scales, as the algae are easily moved around by prevailing winds, tides, and currents. Thus, total macrophyte coverage often reflects local hydrologic conditions immediately prior to and during each sampling event.

A better assessment of SAV conditions is a comparison of the attached seagrass and macroalgae community. Mean total macroalgae (all species exclusive of drift algae) BBCA scores ranged from 1.2 (BB3 in spring 2014) to 3.1 (BB3 in fall 2014) during Post-Uprate monitoring and from 1.3 (BB3 and BB4 in fall) to 2.1 (BB3 in spring) during Pre-Uprate monitoring (Table 4.2-19b). BB1 tended to have the least coverage of attached macroalgae, and BB3 the most, although similar to total macrophyte scores, relationships among study areas were not consistent across sampling events. During fall Pre-Uprate sampling, mean BBCA macroalgae scores for all four study areas were below, and in some cases well below, comparable Post-Uprate values. During spring sampling, Pre-Uprate scores were either within the range or below comparable Post-Uprate means.

Mean total seagrass BBCA scores ranged from 0.5 (BB2 in spring 2014) to 2.8 (BB3 in fall 2014) during Post-Uprate monitoring and from 0.5 (BB2 in spring) to 1.4 (BB1 in spring) during Pre-Uprate monitoring (Table 4.2-19c). There were no consistent trends among areas or seasons. For example, at BB3 seagrass coverage averaged a score of 1.3 during the first fall Post-Uprate event (2013) and 2.8 the next (2014). Likewise, BB4 had a mean BBCA score of 0.9 during the first spring Post-Uprate event (2014) and a score of 2.1 the next (2015). Pre-Uprate scores for total seagrass in all four study sites were at the lower end or below the comparable Post-Uprate ranges during both spring and fall sampling periods.

The fall sampling events occur at the end of the seagrass growing season. Soon thereafter, the grasses enter a period of senescence when leaves are shed and above-ground coverage declines. Thus, seagrass coverage at a particular location would be expected to be greater in the fall than in the early spring, which is at the end of this quiescent period. Again, however, BBCA scores encompass a broad range of coverages, and an increase in coverage might not always be reflected by a higher score. For example, a doubling of coverage from 10% to 20% would not change the BBCA score, which is 2 (5% to 25%). Thus, although mean Post-Uprate seagrass BBCA scores tended to be slightly higher in the fall than in the spring, that was not always the case.

4.2.2.5 Seagrass Leaf Nutrients

Nutrients within the water column can be highly variable, both spatially and temporally, making it difficult to accurately characterize prevailing conditions. However, over time, nutrients present in the water column become sequestered in sediment porewater where they are used by seagrasses for growth. Thus, nutrient concentrations in leaf tissue provide a much more reliable gauge of prevailing nutrient loads and limiting elements within the environment.

Mean total nitrogen (TN) values during Post-Uprate monitoring ranged from 19,200 milligrams per kilogram (mg/kg) in BB2 (2014) to 23,300 mg/kg in BB1 (2013; Table 4.2-20). In general, Post-Uprate values were slightly lower than comparable Pre-Uprate values in all study areas, including Area BB4, the reference site. Differences among study areas were relatively small within both fall Post-Uprate sampling periods, whereas during Pre-Uprate monitoring, turtle grass collected from Area BB3 had a much higher mean TN concentration (28,474 mg/kg) than the other three areas.

Mean total phosphorus (TP) values during Post-Uprate monitoring ranged from 552 mg/kg in BB1 (2013) to 698 mg/kg in BB4 (2013 [Table 4.2-20]). Mean Post-Uprate values were higher than comparable Pre-Uprate values in all study areas, particularly at the southern end of the project area; the largest increase in mean leaf TP values (285 mg/kg) between Pre- and Post-Uprate monitoring was found in Area BB4, the reference site. Likewise, seagrasses in Area BB4 had higher Post-Uprate mean TP values than any other study area; during Pre-Uprate sampling, Area BB4 had lower TP values than the other three areas.

Mean total carbon (C) values ranged from 350,750 mg/kg (BB2 and BB4 in 2014) to 415,500 mg/kg (BB1 in 2013; Table 4.2-20) during Post-Uprate monitoring and from 386,112 mg/kg

(BB1) to 520,571 mg/kg (BB3) during Pre-Uprate monitoring. Leaf carbon values were similar among study areas during each fall Post-Uprate monitoring event but varied appreciably between years. Values were much more spatially variable during Pre-Uprate monitoring; Area BB3, in particular, had much higher leaf carbon than the other three study areas. With the exception of Area BB3, Pre-Uprate means were within or close to the range of comparable Post-Uprate means.

In a long-term study of seagrass nutrients, Fourqurean and Zieman (2002) found that nitrogen accounted for between 0.88% and 3.96% (mean = 1.82%) of the dry weight of *Thalassia* leaves collected over a broad geographic area of the Florida Keys. Mean values obtained for each study area during the current Turkey Point monitoring program ranged from 1.92% (BB2 in 2014) to 2.85% (BB3 during Pre-Uprate) and averaged 2.17% (Table 4.2-20). Similarly, the Florida Keys data indicated a range of 0.048% to 0.243% for leaf phosphorus (mean = 0.113%) and a 29.4% to 43.3% range (mean = 36.9%) for leaf carbon. In the current study, those ranges were 0.041% to 0.070% (mean = 0.056%) and 35.1% to 52.1% (mean = 39.7%), respectively. Thus, leaf nutrient values reported in this report are all within the range of values reported for turtle grass in similar areas of South Florida.

Analysis of nutrient ratios provide an indication of which elements limit seagrass growth. N:P ratios above 30 are indicative of a phosphorus limited environment, whereas much lower ratios are indicative of nitrogen-limited conditions. Mean N:P ratios ranged from 42.2 (BB2) to 54.1 (BB3) during Pre-Uprate monitoring, and those values declined in all study areas during Post-Uprate sampling; the largest decline occurred in Area BB4, the reference site. Within each sampling period, there was a general north to south decrease in N:P ratios within each Post-Uprate sampling period, with the lowest values occurring in Area BB4. However even within Area BB4, the N:P ratio was very close to 30. These data indicate that phosphorus is the limiting nutrient for seagrass growth throughout the project area, although it is less limiting within the southern portion. Within the Florida Keys, Fourqurean and Zieman (2002) found N:P ratios ranging from 15.4 to 107.1, with a mean of 34.8. Although there is considerable temporal and spatial variability in levels of leaf nutrients with the project area, the patterns observed among study areas provide no indication of any CCS influence on the seagrass community but, rather, reflect regional landscape hydrology and anthropogenic management influences.

Overall, the patterns observed throughout the study area are reflective of regional landscape hydrology and variable meteorological conditions, and are not indicative of CCS influence.

TABLES

Table 4.1-1. Data and Samples Collected from August 2013 through May 2015

Measurements	August 2013	November 2013	February 2014	May 2014	August 2014	November 2014	February 2015	May 2015
Measure herbaceous plants in 1x1m subplots	X	X	X	X	X	X	X	X
Measure woody plants in 5x5m subplots		X				X		
Collect herbaceous leaf samples for mass and nutrient analysis		X		X		X		X
Collect woody leaf samples for mass and nutrient analysis		X				X		
Estimate herbaceous plant cover in 1x1m subplots	X	X	X	X	X	X	X	X
Estimate woody plant cover in 5x5m subplots		X				X		
Collect porewater samples for nutrient analysis		X		X		X		X
Collect porewater samples for tracer suite analysis	X	X	X	X	X	X	X	X

Key:
m = meter(s).

Table 4.1-2. Plot Location, Community Description, Dominant Vegetation in Subplots in 2013 -2015

Location		North East Plot (decimal degrees)		Community	Herbaceous Dominant Species	Woody Dominant Species	Set Up (meters)	
Transect	Plot	Latitude	Longitude				1 x 1m	5 x 5m
F1	1	25.43503	-80.34692	Marsh/Mangrove	*Cladium jamaicense*	*Rhizophora mangle*	Y	Y
F1	2	25.44027	-80.34042	Freshwater marsh	*C. jamaicense*	*R. mangle*	Y	Y
F2	1	25.4331	-80.35403	Freshwater marsh	*C. jamaicense*	None	Y	N
F2	2	25.43286	-80.35864	Freshwater marsh	*C. jamaicense*	*R. mangle*	Y	Y
F2	3	25.43328	-80.36346	Freshwater marsh	*C. jamaicense*	None	Y	N
F3	1	25.4084	-80.36248	Freshwater marsh	*C. jamaicense*	None	Y	N
F3	2	25.40815	-80.36722	Freshwater marsh	*C. jamaicense*	None	Y	N
F3	3	25.40806	-80.37231	Freshwater marsh	*C. jamaicense*	None	Y	N
F4	1	25.38657	-80.37074	Freshwater marsh	*C. jamaicense*	None	Y	N
F4	2	25.38669	-80.37492	Freshwater marsh	*C. jamaicense*	None	Y	N
F4	3	25.38655	-80.37908	Freshwater marsh	*C. jamaicense*	None	Y	N
F5	1	25.3557	-80.36692	Scrub mangrove	*Distichlis spicata*	*Laguncularia racemosa*	Y	Y
						R. mangle		

Table 4.1-2. Plot Location, Community Description, Dominant Vegetation in Subplots in 2013-2015

Location		North East Plot (decimal degrees)					Set Up (meters)	
Transect	Plot	Latitude	Longitude	Community	Herbaceous Dominant Species	Woody Dominant Species	1 x 1m	5 x 5m
F5	2	25.35304	-80.356	Scrub mangrove	*D. spicata* *Juncus roemerianus*	*R. mangle*	Y	Y
F6	1	25.35469	-80.43848	Freshwater marsh	*C. jamaicense*	None	Y	N
F6	2	25.34966	-80.43619	Freshwater marsh	*C. jamaicense*	None	Y	N
F6	3	25.34413	-80.43097	Freshwater marsh	*C. jamaicense*	*C. erectus*	Y	N
M1	1	25.44296	-80.33598	Scrub mangrove	None	*R. mangle*	N	Y
M1	2	25.44716	-80.33269	Scrub mangrove	None	*R. mangle*	N	Y
M2	1	25.40535	-80.3307	Scrub mangrove	None	*R. mangle*	N	Y
M2	2	25.40521	-80.3299	Scrub mangrove	None	*R. mangle*	N	Y
M3	1	25.38628	-80.33083	Scrub mangrove	None	*R. mangle*	N	Y
M3	2	25.3845	-80.32794	Scrub mangrove	None	*R. mangle*	N	Y
M4	1	25.3563	-80.33138	Scrub mangrove	None	*R. mangle*	N	Y
M4	2	25.35468	-80.32911	Scrub mangrove	None	*R. mangle*	N	Y
M5	1	25.35186	-80.35543	Scrub mangrove	*D. spicata*	*R. mangle* *Avicennia germinans*	Y	Y
M5	2	25.34507	-80.33381	Scrub mangrove	None	*R. mangle*	Y	Y
M6	1	25.29448	-80.39633	Scrub mangrove	None	*R. mangle*	N	Y
M6	2	25.29305	-80.39538	Scrub mangrove	None	*R. mangle*	N	Y

Note:
NE = Location is at northeast corner of plot.
Key:
m = Meter(s).

Table 4.1-3. Species and Individuals Counted in Subplots for Shannon-Wiener Index of Diversity Calculations in November 2013 and November 2014

Community Type *	Plot	November 2013		November 2014	
		Species Present	# of Individuals	Species Present	# of Individuals
Marsh	F2-1	*C. jamaicense*	77	*C. jamaicense*	85
		E. cellulosa	17	*E. cellulosa*	5
	F2-2	*C. jamaicense*	38	*C. jamaicense*	38
		E. cellulosa	38	*E. cellulosa*	14
		R. mangle	2	*R. mangle*	2
	F2-3	*C. jamaicense*	66	*C. jamaicense*	56
		E. cellulosa	4	*E. cellulosa*	10
	F3-1	*C. jamaicense*	34	*C. jamaicense*	32
		E. cellulosa	35	*E. cellulosa*	23
	F3-2	*C. jamaicense*	37	*C. jamaicense*	38
		Aster spp.	1	*Aster* spp.	NA
		M. scandens	1	*M. scandens*	NA
	F3-3	*C. jamaicense*	33	*C. jamaicense*	37
		E. cellulosa	84	*E. cellulosa*	55
	F4-1	*C. jamaicense*	155	*C. jamaicense*	120
	F4-2	*C. jamaicense*	44	*C. jamaicense*	43
	F4-3	*C. jamaicense*	41	*C. jamaicense*	27
	F6-1	*C. jamaicense*	37	*C. jamaicense*	58
	F6-2	*C. jamaicense*	38	*C. jamaicense*	43
		E. cellulosa	NA	*E. cellulosa*	101
	F6-3	*C. jamaicense*	53	*C. jamaicense*	75
Brackish Marsh-Mangrove	F1-1	*C. jamaicense*	56	*C. jamaicense*	45
		R. mangle	32	*R. mangle*	32
	F1-2	*C. jamaicense*	62	*C. jamaicense*	78
		R. mangle	11	*R. mangle*	10
		C. erectus	1	*C. erectus*	1
	F5-1	*R. mangle*	45	*R. mangle*	154
		D. spicata	NA	*D. spicata*	2
		L. racemosa	58	*L. racemosa*	65
		C. erectus	5	*C. erectus*	2
	F5-2	*D. spicata*	28	*D. spicata*	29
		J. romerianus	8	*J. romerianus*	17
		B. frutescens	5	*B. frutescens*	8
		R. mangle	169	*R. mangle*	239

Table 4.1-3. Species and Individuals Counted in Subplots for Shannon-Wiener Index of Diversity Calculations in November 2013 and November 2014

Community Type *	Plot	November 2013		November 2014	
		Species Present	# of Individuals	Species Present	# of Individuals
Mangrove	M1-1	*R. mangle*	269	*R. mangle*	643
	M1-2	*R. mangle*	116	*R. mangle*	165
	M1-2	*L. racemosa*	4	*L. racemosa*	3
	M2-1	*R. mangle*	14	*R. mangle*	20
	M2-2	*R. mangle*	464	*R. mangle*	576
		A. germinans	NA	*A. germinans*	1
	M3-1	*R. mangle*	74	*R. mangle*	68
	M3-2	*R. mangle*	47	*R. mangle*	45
	M4-1	*R. mangle*	73	*R. mangle*	53
		A. germinans	1	*A. germinans*	1
	M4-2	*R. mangle*	64	*R. mangle*	67
		A. germinans	1	*A. germinans*	1
	M5-1	*D. spicata*	24	*D. spicata*	34
		R. mangle	189	*R. mangle*	323
		A. germinans	15	*A. germinans*	11
		L. racemosa	4	*L. racemosa*	3
	M5-2	*R. mangle*	38	*R. mangle*	46
	M6-1	*R. mangle*	24	*R. mangle*	22
	M6-2	*R. mangle*	31	*R. mangle*	37

Note:
* Calculations are done once per year in November. In the marsh plots, all plants were counted in the northeast 1x1 (1 m^2) subplot; similarly the northeast 5x5 (25 m^2) was counted for the mangrove plots.

Table 4.1-4. Pre-Uprate and Post-Uprate Shannon-Wiener Index Calculated Values for Plots and Transects

Location		Pre-Uprate								Post-Uprate							
		August 2011				August 2012				November 2013				November 2014			
		Shannon Wiener Index		Species Evenness		Shannon Wiener Index		Species Evenness		Shannon Wiener Index		Species Evenness		Shannon Wiener Index		Species Evenness	
Transect	Plot	Plot	Transect	Plot	Transect	Plot	Transect	Plot	Transect	Plot	Transect	Plot	Transect	Plot	Transect	Plot	Transect
F1	1	0.603	0.532	0.870	0.484	0.530	0.541	0.764	0.492	0.288	0.580	0.946	0.837	0.679	0.584	0.979	0.843
	2	0.442		0.403		0.510		0.464		0.206		0.446		0.446		0.406	
F2	1	0.128	0.670	0.185	0.609	0.113	0.192	0.162	0.175	0.473	0.601	0.682	0.547	0.215	0.454	0.310	0.413
	2	0.195		0.281		0.506		0.461		0.701		0.723		0.719		0.655	
	3	0.215		0.310		0		N/A		0.219		0.316		0.425		0.614	
F3	1	0.670	0.762	0.966	0.694	0.130	0.243	0.187	0.221	0.693	0.742	1.000	0.535	0.680	0.681	0.981	0.982
	2	0.271		0.391		0.239		0.345		0.026		0.024		0		N/A	
	3	0.518		0.747		0.325		0.469		0.595		0.858		0.674		0.972	
F4	1	0	0	N/A	N/A	0	0	N/A	N/A	0	0	N/A	N/A	0	0	N/A	N/A
	2	0		N/A		0		N/A		0		N/A		0		N/A	
	3	0		N/A		0		N/A		0		N/A		0		N/A	
F5	1	0.512	1.151	0.739	0.715	0.766	1.169	0.697	0.653	0.476	1.014	0.765	0.566	0.700	0.836	0.505	0.467
	2	0.837		0.604		0.943		0.680		0.482		0.474		0.659		0.475	
F6	1	0	0.458	N/A	0.661	0	0.460	N/A	0.664	0	0	N/A	N/A	0	0.656	N/A	0.946
	2	0.682		0.984		0.687		0.991		0		N/A		0.610		0.880	
	3	0		N/A		0		N/A		0		N/A		0		N/A	
M1	1	0	0.011	N/A	0.002	0	0.076	N/A	0.109	0	0.057	N/A	0.083	0	0.024	N/A	0.035
	2	0.040		0.057		0.255		0.369		0.113		0.211		0.090		0.129	
M2	1	0	0.115	N/A	0.020	0	0.116	N/A	0.168	0	0	N/A	N/A	0	0.012	N/A	0.018
	2	0.120		0.174		0.122		0.176		0		N/A		0.013		0.018	
M3	1	0	0	N/A	N/A	0	0	N/A	N/A	0	0	N/A	N/A	0	0	N/A	N/A
	2	0		N/A		0		N/A		0		N/A		0		N/A	
M4	1	0	0.060	N/A	0.013	0.063	0.070	0.091	0.101	0.058	0.075	0.103	0.109	0.092	0.084	0.133	0.121
	2	0.074		0.563		0.079		0.115		0.064		0.115		0.077		0.111	
M5	1	0.314	0.290	0.453	0.049	0.577	0.530	0.416	0.383	0.482	0.584	0.468	0.421	0.483	0.444	0.348	0.320
	2	0		N/A		0		N/A		0		N/A		0		N/A	
M6	1	0	0	N/A	N/A	0	0	N/A	N/A	0	0	N/A	N/A	0	0	N/A	N/A
	2	0		N/A		0		N/A		0		N/A		0		N/A	

Key:
N/A = Not applicable. Species evenness cannot be calculated when only one species is present.

Table 4.1-5. Average Sawgrass Coverage per Plot and Transect for Post-Uprate Period with Pre-Uprate Average

		Percent Cover (%)																	
		Pre-Uprate Average		August 2013		November 2013		February 2014		May 2014		August 2014		November 2014		February 2015		May 2015	
Transect	Plot	Plot	Transect	Plot	Transect Average	Plot	Transect Average	Plot	Transect Average	Plot	Transect Average	Plot	Transect Average	Plot	Transect Average	Plot	Transect Average	Plot	Transect Average
	1	2-5%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%	
F1	2	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%
	1	6-25%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%	
	2	6-25%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%	
F2	3	6-25%	6-25%	2-5%	6-25%	6-25%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	6-25%	6-25%
	1	2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%	
	2	2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%	
F3	3	6-25%	2-5%	2-5%	2-5%	2-5%	2-5%	2-5%	2-5%	6-25%	2-5%	2-5%	2-5%	2-5%	2-5%	2-5%	2-5%	2-5%	2-5%
	1	6-25%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%		6-25%	
	2	2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%	
F4	3	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%	2-5%	6-25%
	1	2-5%		2-5%		2-5%		2-5%		6-25%		2-5%		2-5%		2-5%		6-25%	
	2	2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%		2-5%	
F6	3	6-25%	2-5%	2-5%	2-5%	6-25%	2-5%	6-25%	2-5%	2-5%	2-5%	2-5%	2-5%	2-5%	2-5%	6-25%	2-5%	6-25%	2-5%

Key:
% = Percent.

Table 4.1-6. Average Sawgrass Height per Plot and Transect for Post-Uprate Period with Pre-Uprate Range

		Average Height ± Standard Error (cm)																	
		Pre-Uprate Range		August 2013				November 2013				February 2014				May 2014			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	84.9 - 100.0	93.8 - 107.8	83.5	2.9	87.2	1.8	81.4	2.5	88.4	1.8	80.9	2.1	86.5	1.7	80.6	2.0	86.8	1.5
	2	100.0 - 114.5		89.7	2.2			97.0	2.2			93.3	2.6			94.3	2.0		
F2	1	80.6 - 96.3	75.5 - 90.3	76.7	1.1	74.3	0.8	76.9	1.0	73.4	0.9	74.5	1.4	71.1	1.2	70.8	1.2	67.5	1.0
	2	73.5 - 89.6		75.0	1.7			74.9	2.3			73.5	3.1			69.4	2.3		
	3	67.6 - 80.4		69.8	1.5			66.7	1.5			63.7	1.6			60.7	1.4		
F3	1	58.2 - 64.9	67.7 - 78.3	65.5	1.4	72.4	1.2	63.6	1.4	70.2	1.1	58.2	1.8	63.5	1.2	53.1	1.6	58.7	1.2
	2	61.7 - 73.0		67.8	1.4			66.4	1.7			60.4	2.0			53.2	1.8		
	3	79.8 - 101.6		81.5	2.1			80.4	2.1			71.8	2.2			69.7	2.0		
F4	1	103.1 - 123.9	80.9 - 96.3	97.9	2.2	82.4	1.4	99.8	2.0	84.9	1.5	96.2	2.1	81.4	1.5	93.9	1.9	76.6	1.6
	2	62.1 - 79.9		67.1	1.2			66.5	1.6			63.5	1.7			57.9	1.9		
	3	73.9 - 89.1		75.1	1.3			74.6	1.8			70.9	1.7			61.9	1.8		
F6	1	76.3 - 99.3	70.5 - 89.9	82.4	1.7	74.7	1.0	88.4	1.7	81.0	1.0	85.2	2.1	78.5	1.2	78.8	2.6	72.4	1.2
	2	66.6 - 87.0		74.1	1.2			80.6	1.5			79.7	2.3			71.8	2.0		
	3	67.3 - 81.5		67.0	1.4			74.2	1.3			70.9	1.7			66.7	1.4		

Key:
SE = Standard error
cm= Centimeters

Table 4.1-6. Average Sawgrass Height per Plot and Transect for Post-Uprate Period with Pre-Uprate Range

		Average Height ± Standard Error (cm)																	
		Pre-Uprate Range		August 2014				November 2014				February 2015				May 2015			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	84.9 - 100.0	93.8 - 107.8	81.6	2.0	87.3	1.6	87.3	1.9	93.0	1.6	80.6	2.6	91.3	2.0	77.6	2.1	87.6	1.9
	2	100.0 - 114.5		94.2	2.4			99.3	2.4			103.1	2.2			98.1	2.7		
F2	1	80.6 - 96.3	75.5 - 90.3	72.0	1.2	68.0	0.8	71.6	1.4	68.8	0.9	67.1	1.8	67.1	1.1	68.8	1.4	67.7	1.0
	2	73.5 - 89.6		64.7	1.7			67.4	1.8			67.5	2.5			69.1	1.9		
	3	67.6 - 80.4		64.5	1.3			65.7	1.4			66.7	1.7			64.6	1.7		
F3	1	58.2 - 64.9	67.7 - 78.3	56.4	1.5	63.5	1.3	60.2	1.5	65.9	1.2	57.0	1.7	61.3	1.2	57.7	1.4	59.5	1.1
	2	61.7 - 73.0		59.1	1.6			60.3	1.8			59.5	1.7			54.1	1.7		
	3	79.8 - 101.6		73.2	2.5			76.2	2.3			66.9	2.4			66.4	2.2		
F4	1	103.1 - 123.9	80.9 - 96.3	95.6	2.0	79.3	1.5	100.2	2.0	82.3	1.5	94.9	2.3	78.4	1.6	90.7	2.1	74.3	1.5
	2	62.1 - 79.9		63.9	1.6			67.3	1.4			65.1	1.7			61.3	1.6		
	3	73.9 - 89.1		63.5	1.4			67.3	1.7			64.1	1.8			59.6	1.7		
F6	1	76.3 - 99.3	70.5 - 89.9	84.0	1.6	76.1	1.0	83.6	2.0	77.7	1.0	82.1	2.1	76.3	1.1	80.3	1.9	73.6	1.0
	2	66.6 - 87.0		75.2	1.6			75.0	1.4			71.8	1.9			70.9	1.5		
	3	67.3 - 81.5		69.2	1.6			74.2	1.4			74.5	1.2			69.1	1.7		

Key:
SE = Standard error
cm= Centimeters

Table 4.1-7. Live and Total Sawgrass Biomass Equations for Post-Uprate Events

Season	Model	R^2	p-Value	N
Total Biomass Equations				
November 2013	Total Biomass = -1.22987 + 2.55800 $(Cdb2)^2$ + 0.03882 $(NoLL)^2$ + 0.0002949 $(LLL)^2$	0.8286	<0.0001	168
May 2014	Total Biomass = -0.46210 + 2.63119 $(cdb1)^2$ + 0.0003069 $(LLL)^2$	0.8722	<0.0001	168
November 2014	Total Biomass = -0.72370 + 2.76793 $(cdb1)^2$+ 0.0002746 $(LLL)^2$	0.8919	<0.0001	168
May 2015	Total Biomass = -0.77219 + 0.0002245 $(LLL)^2$ + 0.01133 $(NoLL)^2$ + 4.03109 $(Cdb2)^2$	0.8262	<0.0001	168
Live Biomass Equations				
November 2013	Live Biomass = -1.53848 + 1.18027 (Cdb1) + 0.71527 $(Cdb2)^2$ + 0.04703 $(NoLL)^2$ + 0.0002064 $(LLL)^2$	0.8785	<0.01	168
May 2014	Live Biomass = -2.45943 + 2.31954 (Cdb2) + 0.37373 (NoLL) + 0.0001897 $(LLL)^2$	0.8158	<0.01	168
November 2014	Live Biomass = -1.54544+ 1.04701 $(Cdb1)^2$+ 0.33790 (NoLL) + 0.0002246 $(LLL)^2$	0.8227	<0.01	168
May 2015	Live Biomass = -1.55056 + 0.31339 (NoLL) + 0.0001671 $(LLL)^2$ + 1.850 $(Cdb2)^2$	0.7591	<0.01	168

Key:
Cdb1 = Culm diameter at base 1.
Cdb2 = Culm diameter at base 2.
LLL = Longest live leaf.
NoLL = Number of live leaves.
N = Sample size.

Table 4.1-8. Average Sawgrass Live Biomass per Plot and Transect for Post-Uprate Events with Pre-Uprate Range

Transect	Plot	Live Biomass (g/m^2)																	
		Pre-Uprate Range		August 2013				November 2013				February 2014				May 2014			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	66.7 - 145.2	104.8 - 167.7	117.7	26.7	151.3	18.9	135.8	37.5	141.7	20.1	128.1	34.0	145.4	18.9	150.1	20.5	176.5	17.7
	2	142.9 - 190.2		184.9	14.2			147.6	21.5			162.7	17.5			202.9	24.0		
F2	1	112.7 - 208.8	69.1 - 122.2	130.4	15.8	75.8	12.9	151.3	20.4	90.7	15.1	126.6	15.8	80.6	11.2	135.1	17.0	88.9	11.7
	2	42.3 - 74.3		46.6	8.4			54.9	9.5			56.5	6.8			56.9	4.4		
	3	52.4 - 83.5		50.3	4.0			65.9	11.5			58.6	5.6			74.6	8.2		
F3	1	29.2 - 43.3	53.1 - 79.4	38.0	5.9	58.4	6.9	39.5	4.9	61.4	6.1	44.5	2.8	51.9	4.5	42.2	4.8	60.4	7.3
	2	43.4 - 60.3		50.9	8.4			61.1	5.2			42.8	6.4			45.6	4.4		
	3	78.5 - 141.9		86.2	1.7			83.5	6.0			68.5	6.0			93.3	2.8		
F4	1	184.9 - 275.5	94.7 - 147.8	264.4	71.6	125.6	36.9	320.9	85.6	146.0	45.6	234.0	30.1	115.0	27.0	268.4	26.4	127.5	31.3
	2	41.3 - 70.8		47.7	5.8			50.7	10.2			54.2	6.4			61.2	9.3		
	3	57.9 - 97.7		64.7	11.3			66.4	9.2			56.7	2.5			52.9	4.3		
F6	1	48.7 - 98	50.8 - 92.1	49.4	10.6	52.5	4.5	63.6	14.8	60.7	7.0	75.4	24.5	65.0	9.7	94.1	25.4	72.4	11.1
	2	36.0 - 84.8		54.9	8.8			54.6	10.4			48.4	7.6			50.2	13.3		
	3	62.6 - 100.8		53.2	5.7			64.0	13.9			71.3	15.4			72.9	14.7		

Key:
SE = Standard error
g/m^2 = Grams per square meter

Table 4.1-8. Average Sawgrass Live Biomass per Plot and Transect for Post-Uprate Events with Pre-Uprate Range

Transect	Plot	Live Biomass (g/m²)																	
		Pre-Uprate Range		August 2014				November 2014				February 2015				May 2015			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	66.7 - 145.2	104.8 - 167.7	135.3	27.6	172.4	21.2	162.7	22.7	170.5	17.9	177.1	28.0	199.9	24.1	136.2	24.6	172.0	25.8
	2	142.9 - 190.2		209.4	20.6			178.3	30.7			222.7	39.6			207.8	40.4		
F2	1	112.7 - 208.8	69.1 - 122.2	119.7	10.6	72.3	11.2	117.0	9.3	73.1	10.4	106.5	5.7	79.8	7.5	95.4	8.5	70.4	7.0
	2	42.3 - 74.3		39.4	2.7			47.8	6.6			57.1	9.8			48.3	3.9		
	3	52.4 - 83.5		57.8	8.8			54.5	8.9			75.9	8.5			67.4	9.0		
F3	1	29.2 - 43.3	53.1 - 79.4	29.1	2.2	50.1	7.0	44.5	3.2	63.5	6.3	36.7	2.7	53.5	5.6	32.3	4.8	50.1	7.8
	2	43.4 - 60.3		38.3	3.5			57.2	2.8			49.7	7.4			38.9	4.2		
	3	78.5 - 141.9		77.6	5.5			88.8	8.8			74.2	5.9			79.1	14.0		
F4	1	184.9 - 275.5	94.7 - 147.8	281.4	42.4	126.8	35.6	294.6	45.5	140.9	36.0	225.1	44.9	112.7	28.0	196.9	24.9	96.9	22.8
	2	41.3 - 70.8		61.3	10.9			74.5	16.5			65.9	13.4			47.1	4.2		
	3	57.9 - 97.7		37.8	1.6			53.5	6.0			47.1	8.3			46.6	9.9		
F6	1	48.7 - 98	50.8 - 92.1	63.1	18.4	61.9	6.9	93.4	36.7	80.1	14.6	91.8	35.5	71.6	14.1	97.7	41.5	68.0	16.0
	2	36.0 - 84.8		56.5	7.0			55.6	5.6			47.7	9.1			34.0	3.8		
	3	62.6 - 100.8		66.2	11.1			95.2	22.9			75.5	22.7			72.3	20.3		

Key:
SE = Standard error
g/m^2 = Grams per square meter

Table 4.1-9. Average Sawgrass Total Biomass per Plot and Transect for Post-Uprate Events with Pre-Uprate Range

Transect	Plot	Biomass (g/m^2) Pre-Uprate Range		August 2013				November 2013				February 2014				May 2014			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	87.6 - 262.8		164.1	35.2			189.3	54.8			201.0	55.8			231.7	36.3		
	2	174.8 - 396.7	131.2 - 314.1	254.6	15.7	209.3	24.7	206.8	29.4	198.0	29.0	259.0	27.3	230.0	30.8	326.7	37.2	279.2	30.0
F2	1	203 - 306.9		169.9	23.5			197.3	29.5			213.3	22.2			224.2	31.5		
	2	65.6 - 166.6		61.8	12.5			73.2	11.3			86.4	10.4			93.4	8.9		
	3	80.8 - 157.9	116.5 - 199.7	67.4	7.2	99.7	17.1	87.4	13.5	119.3	19.7	87.5	7.4	129.1	19.6	106.9	6.8	141.5	20.4
F3	1	32.7 - 104.1		49.3	8.5			51.2	6.3			67.7	5.1			59.3	4.5		
	2	50 - 138.2		65.7	9.7			80.5	9.4			69.3	12.5			68.9	13.2		
	3	142.4 - 285.2	75.0 - 169.0	118.9	4.4	78.0	9.8	116.0	9.6	82.5	9.2	125.1	13.4	87.4	9.9	146.1	6.2	91.4	12.6
F4	1	287.6 - 661.8		363.1	100.0			448.3	116.9			392.3	48.7			428.9	33.3		
	2	59.3 - 161.7		60.9	6.1			68.4	14.5			83.3	8.3			92.9	15.0		
	3	81.5 - 206	142.8 - 325.9	87.7	15.6	170.6	51.3	87.9	13.6	201.5	63.6	97.6	4.3	191.0	45.5	99.0	5.3	206.9	48.6
F6	1	84.4 - 219.2		67.3	13.9			87.7	19.6			140.9	44.3			155.8	39.1		
	2	51.9 - 205.8		74.5	13.9			70.5	13.8			95.2	15.2			92.3	22.6		
	3	60.5 - 258	65.6 - 228.4	73.7	7.1	71.8	6.4	87.3	18.8	81.8	9.5	115.3	23.1	117.1	16.7	131.1	26.0	126.4	17.6

Key:
SE = Standard error
g/m^2 = Grams per square meter

Table 4.1-9. Average Sawgrass Total Biomass per Plot and Transect for Post-Uprate Events with Pre-Uprate Range

		Biomass (g/m^2)																	
		Pre-Uprate Range		August 2014				November 2014				February 2015				May 2015			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	87.6 - 262.8		194.4	38.4			240.0	40.4			277.9	45.4			230.5	46.8		
	2	174.8 - 396.7	131.2 - 314.1	305.5	38.2	250.0	32.7	248.4	43.2	244.2	27.4	360.4	55.1	319.1	36.5	327.5	59.1	279.0	39.4
F2	1	203 - 306.9		155.0	11.1			165.9	14.3			170.1	11.2			143.8	15.5		
	2	65.6 - 166.6		59.2	4.6			66.9	8.9			87.3	14.1			77.9	4.8		
	3	80.8 - 157.9	116.5 - 199.7	72.5	7.0	95.6	13.5	81.8	13.7	104.9	14.7	127.0	17.2	128.1	12.7	116.3	22.5	112.7	11.7
F3	1	32.7 - 104.1		38.7	7.0			55.5	5.8			60.5	7.4			49.2	4.4		
	2	50 - 138.2		44.0	3.1			71.0	4.9			81.0	14.7			49.2	4.5		
	3	142.4 - 285.2	75.0 - 169.0	106.0	12.4	65.1	10.8	146.7	15.6	91.1	13.1	115.9	13.3	85.8	9.4	112.2	19.8	70.2	10.9
F4	1	287.6 - 661.8		407.5	54.0			451.2	62.6			363.1	74.6			307.4	43.0		
	2	59.3 - 161.7		71.1	9.8			89.2	18.6			104.1	17.3			80.0	8.7		
	3	81.5 - 206	142.8 - 325.9	56.6	4.6	178.4	51.6	75.9	9.4	205.4	56.1	75.1	11.3	180.8	45.5	83.8	22.1	157.1	35.3
F6	1	84.4 - 219.2		89.9	25.1			124.9	49.1			155.6	60.3			161.1	66.9		
	2	51.9 - 205.8		68.2	13.3			76.7	6.1			79.5	10.9			52.1	4.2		
	3	60.5 - 258	65.6 - 228.4	100.2	21.2	86.1	11.4	117.2	27.2	105.3	18.8	130.8	37.7	122.0	23.7	118.0	34.3	110.4	26.4

Key:

SE = Standard error

g/m^2 = grams per square meter

Table 4.1-10. Annual Net Primary Productivity for the Pre- and Post-Uprate Periods.

Transect	Plot	ANPP ($g/m^2/yr$)		
		November 2010 to November 2011	November 2011 to November 2012	November 2013 to November 2014
F1	1	148.4	235.0	253.8
	2	282.4	220.2	280.9
F2	1	153.3	199.2	157.2
	2	108.5	125.8	68.5
	3	98.3	113.8	92.6
F3	1	63.3	64.5	69.2
	2	79.8	102.5	82.9
	3	110.0	158.3	153.9
F4	1	278.1	392.2	440.1
	2	74.5	81.5	129.7
	3	107.9	68.2	67.8
F6	1	134.2	82.9	190.1
	2	104.8	72.7	97.9
	3	134.2	121.3	161.8

Key:
ANPP = Annual net primary productivity
$g/m^2/yr$ = Grams per square meter per year

Table 4.1-11. Sawgrass Leaf Sclerophylly per Plot and Transect for Post-Uprate Period with Pre-Uprate Range

		Sclerophylly (g/m²)																			
		Pre-Uprate Range		November 2013				May 2014				November 2014				May 2015					
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE		
	1	101.2 - 166.8		170.3	6.7			196.1	13.4			241.5	16.6			188.0	9.9				
F1	2	132.0 - 147.0	126.1 - 155.5	156.4	12.1	163.3	6.9	216.6	12.0	206.4	9	189.9	14.3	215.7	12.0	194.7	14.7	191.4	8.7		
	1	123.2 - 230.9		175.6	4.2			261.2	13.3			222.3	12.4			211.0	12.7				
	2	133.2 - 235.1		202.3	10.6			236.6	8.7			276.9	24.1			248.7	11.5				
F2	3	125.9 - 215.3	137.6 - 179.7	197.7	20.3	191.9	7.8	209.2	11.4	235.7	7.3	200.8	19.1	233.3	12.0	210.5	6.4	223.4	6.6		
	1	128.6 - 174.8		222.6	11.5			130.0	9.9			269.4	16.6			186.7	13.6				
	2	134.0 - 179.8		200.2	6.8			183.0	11.3			247.4	11.8			199.2	18.5				
F3	3	121.7 - 199.1	130 - 178	233.3	16.5	218.7	7.3	219.0	14.1	177.3	9.1	269.9	15.7	262.2	8.5	196.8	15.4	194.2	9.0		
	1	142.4 - 171.0		149.6	9.2			228.2	16.2			187.4	6.8			204.4	21.4				
	2	148.0 - 183.2		138.5	5.8			205.0	13.6			180.4	10.6			183.1	12.2				
F4	3	153.0 - 186.7	146.1 - 163.9	149.3	7.1	145.8	4.3	248.3	8.6	227.2	8	200.2	9.7	189.4	5.3	269.5	16.8	219.0	11.5		
	1	118.7 - 170.0		210.8	9.3			205.8	8.5			281.0	17.3			214.1	9.5				
	2	129.2 - 160.7		206.6	6.7			189.5	15.8			225.3	10.0			187.8	12.1				
F6	3	118.9 - 163.5	125.1 - 142.1	206.8	10.6	208.1	5.1	199.0	11.3	198.1	6.9	312.9	23.8	273.1	11.8	198.4	17.3	200.1	7.7		

Key:
SE = Standard error
g/m^2 = Grams per square meter

Table 4.1-12. Average Leaf Carbon for Sawgrass per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

		C. jamaicense Total Carbon (mg/kg)																	
		Pre-Uprate Range		November 2013				May 2014				November 2014				May 2015			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
	1	441033 - 499000		478000	1000			449000	3342			466447	3134			452050	5255		
F1	2	460875 - 502750	452371 - 501143	478500	2533	478250	1264	458500	4839	453750	3261	470130	2546	468288	1995	457078	2014	454564	2773
	1	458275 - 507000		468000	3629			460500	3594			469354	3012			463197	1332		
	2	456450 - 498840		465750	5023			464750	2839			476717	2124			457788	1748		
F2	3	460375 - 503750	458367 - 503000	472750	1797	468833	2135	457500	5605	460917	2360	470404	1611	472159	1559	461169	708	460718	968
	1	453150 - 513174		464250	4404			458750	2496			469915	3733			457475	2716		
	2	436000 - 505443		470750	3591			460750	2175			477972	1586			461426	990		
F3	3	452000 - 501134	449917 - 507079	466000	3342	467000	2153	455250	1377	458250	1280	462421	11977	470103	4266	459918	2418	459606	1238
	1	438725 - 489974		472500	4873			463000	4223			475233	3420			459194	1731		
	2	456250 - 486780		479500	5560			473250	1887			491097	20071			458656	791		
F4	3	451000 - 485454	449909 - 487403	482500	3403	478167	2760	477750	4131	471333	2638	475424	2631	480585	6583	460174	2555	459341	979
	1	470025 - 512279		475250	3568			463750	3794			476003	2943			458759	2214		
	2	467325 - 508211		478500	5795			468000	4416			476182	890			460887	1798		
F6	3	436250 - 511270	457867 - 510524	462500	2872	472083	3049	467000	3391	466250	2104	473207	831	475131	1045	460191	2912	459945	1258

Key:

SE = Standard error

mg/kg = milligrams per kilogram

Table 4.1-13. Average Leaf Total Nitrogen for Sawgrass per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

Transect	Plot	*C. jamaicense* Total Nitrogen (mg/kg)																	
		Pre-Uprate Range		November 2013				May 2014				November 2014				May 2015			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
	1	5233 - 9701		7250	250			8500	645			8024	107			8295	834		
F1	2	4425 - 10750	4771 - 10286	5750	250	6500	327	8750	629	8625	420	9143	291	8584	256	8734	394	8514	435
	1	6725 - 11000		6250	479			8500	289			8832	490			8274	464		
	2	8750 - 10500		6000	0			8250	250			8100	618			9358	464		
F2	3	6050 - 11750	7175 - 11083	6500	289	6250	179	8000	408	8250	179	9084	626	8672	329	8690	138	8774	243
	1	6625 - 9250		6000	0			7500	500			7721	730			6997	258		
	2	5975 - 8476		6000	408			7250	629			8461	653			8656	503		
F3	3	6325 - 9185	6308 - 8423	5750	250	5917	149	8000	408	7583	288	8732	351	8305	339	7926	633	7860	328
	1	7725 - 8250		5750	479			8500	645			9243	614			8424	252		
	2	5800 - 8987		5750	479			7500	289			9435	619			8333	369		
F4	3	8000 - 9139	6763 - 8746	5750	250	5750	218	7750	629	7917	313	9094	324	9257	284	7882	412	8213	197
	1	6000 - 10500		6000	408			7750	479			9273	547			7540	496		
	2	5225 - 12000		5750	250			8750	250			8903	218			8182	546		
F6	3	4625 - 10250	5283 - 10917	7750	479	6500	337	8000	577	8167	271	8493	174	8890	208	7576	184	7766	246

Key:

SE = Standard error

mg/kg = milligrams per kilogram

Table 4.1-14. Average Leaf Total Phosphorous for Sawgrass per Plot and Transect During the Post-Uprate Period with Pre-Uprate Range

Transect	Plot	*C. jamaicense* Total Phosphorous (mg/kg)																	
		Pre-Uprate Range		November 2013				May 2014				November 2014				May 2015			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	213 - 247	194 - 241	144	12	136	8	296	37	304	22	181	10	211	15	269	19	263	9
	2	180 - 248		127	9			313	30			241	20			257	3		
F2	1	175 - 228	143 - 230	163	14	164	7	232	6	239	7	201	25	207	12	253	15	251	9
	2	160 - 203		164	11			237	17			184	9			260	16		
	3	93 - 260		167	15			249	13			237	19			241	16		
F3	1	148 - 195	147 - 225	120	6	134	7	190	6	199	9	327	141	252	46	231	6	240	7
	2	163 - 220		120	7			175	13			196	23			253	21		
	3	123 - 273		164	9			234	10			233	14			237	6		
F4	1	225 - 300	181 - 234	117	30	147	12	319	8	272	11	276	23	247	11	310	15	275	9
	2	93 - 218		156	13			244	8			216	7			265	7		
	3	208 - 240		169	5			252	11			250	13			251	6		
F6	1	190 - 240	193 - 220	159	26	159	11	219	20	202	9	267	16	250	9	246	17	272	11
	2	215 - 225		155	9			196	15			251	19			302	18		
	3	130 - 200		162	26			192	15			233	5			267	10		

Key:

SE = Standard error

mg/kg = milligrams per kilogram

Table 4.1-15. Average Leaf Carbon Isotopes for Sawgrass per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

Transect	Plot	*C. jamaicense* Carbon Isotopes (‰)																	
		Pre-Uprate Range		November 2013				May 2014				November 2014				May 2015			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
	1	-28.3 to -25.5		-27.3	0.5			-27.3	0.2			-27.2	0.3			-27.5	0.3		
F1	2	-27.3 to -24.3	-27.2 to -25.6	-27.3	0.4	-27.3	0.3	-26.8	0.3	-27.0	0.2	-26.7	0.3	-27.0	0.2	-27.2	0.5	-27.4	0.3
	1	-26.5 to -25.4		-26.1	0.1			-27.0	0.1			-26.9	0.1			-26.3	0.1		
	2	-27.0 to -25.2		-26.3	0.2			-26.9	0.1			-26.9	0.3			-26.5	0.2		
F2	3	-26.8 to -25.6	-26.7 to -25.4	-26.7	0.3	-26.4	0.1	-27.1	0.2	-27.0	0.1	-26.4	0.1	-26.7	0.1	-26.8	0.3	-26.5	0.1
	1	-26.5 to -25.2		-26.5	0.2			-26.7	0.1			-26.6	0.2			-26.5	0.3		
	2	-26.0 to -25.1		-26.2	0.3			-26.6	0.1			-26.9	0.3			-26.5	0.2		
F3	3	-26.2 to -25.1	-26.1 to -25.1	-26.1	0.3	-26.3	0.2	-26.3	0.2	-26.5	0.1	-26.2	0.3	-26.6	0.2	-26.4	0.2	-26.5	0.1
	1	-26.9 to -24.9		-27.1	0.2			-27.5	0.5			-26.6	0.2			-26.6	0.2		
	2	-26.7 to -25.2		-26.3	0.1			-27.8	0.4			-26.5	0.1			-27.0	0.5		
F4	3	-26.3 to -25.4	-26.5 to -25.0	-26.5	0.2	-26.6	0.1	-26.9	0.3	-27.4	0.2	-26.6	0.1	-26.5	0.1	-26.6	0.1	-26.7	0.2
	1	-26.7 to -24.8		-26.3	0.3			-27.6	0.2			-26.0	0.2			-26.8	0.2		
	2	-26.3 to -24.9		-26.1	0.3			-27.0	0.1			-25.9	0.2			-26.5	0.2		
F6	3	-26.7 to -25.4	-26.5 to -25.0	-26.5	0.2	-26.3	0.2	-27.6	0.1	-27.4	0.1	-26.2	0.2	-26.1	0.1	-26.5	0.2	-26.6	0.1

Key:

SE = Standard error

‰ = parts per mille

Table 4.1-16. Average Leaf Nitrogen Isotopes for Sawgrass per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

		C. jamaicense Nitrogen Isotopes (‰)																		
		Pre-Uprate Range		November 2013				May 2014				November 2014				May 2015			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	-3.38 to 2.44	-3.62 to 1.31	-0.83	0.62	-1.30	0.40	-0.80	0.29	-0.93	0.28	-0.50	0.51	-0.37	0.32	2.75	0.61	2.80	0.34
	2	-3.79 to 0.53		-1.78	0.46			-1.05	0.53			-0.23	0.46			2.84	0.39		
F2	1	-3.20 to -0.45	-3.65 to -0.48	-2.50	0.74	-1.83	0.32	-2.70	0.38	-2.34	0.26	-2.03	0.50	-1.63	0.24	0.66	0.44	0.74	0.19
	2	-4.63 to -0.98		-1.88	0.50			-2.90	0.31			-1.85	0.31			0.78	0.30		
	3	-3.13 to 0.00		-1.13	0.17			-1.43	0.31			-1.01	0.25			0.77	0.34		
F3	1	-4.93 to -2.20	-4.55 to -1.39	-3.45	0.32	-3.11	0.29	-5.15	0.93	-3.79	0.49	-3.60	0.89	-3.39	0.41	0.30	0.40	-0.46	0.34
	2	-4.45 to -0.73		-2.78	0.60			-3.23	0.48			-3.37	0.50			-0.95	0.50		
	3	-4.28 to -0.79		-3.10	0.64			-3.00	0.77			-3.20	0.87			-0.74	0.77		
F4	1	-5.01 to -0.18	-5.45 to -1.32	-2.60	0.42	-3.34	0.26	-1.60	0.64	-3.77	0.56	-2.30	0.76	-3.45	0.42	2.74	0.88	0.12	0.66
	2	-5.88 to -2.40		-3.90	0.43			-5.75	0.35			-4.51	0.44			-1.75	0.34		
	3	-3.07 to -1.40		-3.53	0.31			-3.95	0.22			-3.54	0.59			-0.63	0.49		
F6	1	-4.18 to -0.93	-4.32 to -0.98	-3.73	0.17	-3.41	0.33	-4.23	0.54	-3.84	0.32	-3.86	0.37	-2.93	0.37	-1.43	0.34	-1.02	0.29
	2	-3.72 to -1.15		-3.70	0.64			-3.63	0.76			-3.19	0.61			-0.63	0.75		
	3	-5.05 to -0.85		-2.80	0.77			-3.68	0.43			-1.73	0.45			-1.01	0.37		

Key:

SE = Standard error

‰ = parts per mille

Table 4.1-17. Sawgrass Leaf C:N Molar Ratio per Plot and Transect in the Post-Uprate Period

Transect	Plot	*C. jamaicense* C:N Molar Ratio					
		November 2013		May 2014		November 2014	
		Plot	Transect	Plot	Transect	Plot	Transect
F1	1	77:1	86:1	62:1	61:1	68:1	64:1
	2	97:1		61:1		60:1	
F2	1	87:1	88:1	63:1	65:1	62:1	64:1
	2	91:1		66:1		69:1	
	3	85:1		67:1		60:1	
F3	1	90:1	92:1	71:1	71:1	71:1	66:1
	2	92:1		74:1		66:1	
	3	95:1		66:1		62:1	
F4	1	96:1	97:1	64:1	69:1	60:1	61:1
	2	97:1		74:1		61:1	
	3	98:1		72:1		61:1	
F6	1	92:1	85:1	70:1	67:1	60:1	62:1
	2	97:1		62:1		62:1	
	3	70:1		68:1		65:1	

Key:
C = Carbon
N = Nitrogen.

Table 4.1-18. Sawgrass Leaf N:P Molar Ratio per Plot and Transect in the Post-Uprate Period

		C. jamaicense N:P Ratio					
		November 2013		May 2014		November 2014	
Transect	Plot	Plot	Transect	Plot	Transect	Plot	Transect
F1	1	111:1	106:1	64:1	63:1	98:1	90:1
	2	100:1		62:1		84:1	
F2	1	85:1	84:1	81:1	76:1	97:1	93:1
	2	81:1		77:1		98:1	
	3	86:1		71:1		85:1	
F3	1	111:1	98:1	88:1	84:1	52:1	73:1
	2	111:1		92:1		96:1	
	3	78:1		76:1		83:1	
F4	1	109:1	87:1	59:1	65:1	74:1	83:1
	2	82:1		68:1		97:1	
	3	75:1		68:1		80:1	
F6	1	83:1	91:1	78:1	89:1	77:1	79:1
	2	82:1		99:1		79:1	
	3	106:1		92:1		81:1	

Key:
N = Nitrogen
P = Phosphorous

Table 4.1-19. Average Specific Conductance (µS/cm) of Porewater at Each Site for Each Post-Uprate Quarter with Pre-Uprate Range

		Porewater Specific Conductance at 30 cm Depth (µS/cm)																	
		Pre-Uprate Range		August 2013				November 2013				February 2014				May 2014			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
	1	2260.8 - 5230.9		1543.9	258.4			1382.3	5.7			1458.5	145.1			1508.2	137.1		
F1	2	1320.4 - 2173.0	1790.6 - 3666.8	1175.1	407.8	1359.5	224.0	1537.9	21.5	1460.1	45.8	1268.1	76.4	1363.3	86.6	1733.7	116.9	1621.0	98.2
	1	908.0 - 2127.7		1074.2	240.0			1145.1	122.8			971.3	164.0			1163.2	80.3		
	2	1231.0 - 2362.2		1273.3	63.8			1432.3	37.8			1260.1	115.9			1481.8	60.1		
	3	2048.0 - 2722.6		2236.0	138.7			2316.6	16.5			1826.9	116.9			2414.3	46.9		
F2	4	670.0 - 1180.8	1227.4 - 2622.9	N/A	N/A	1527.8	238.5	749.9	49.8	1411.0	219.4	N/A	N/A	1352.8	169.9	887.4	53.0	1486.7	218.7
	1	1380.2 - 2105.1		1341.8	58.2			1298.8	23.7			1191.0	7.0			1290.3	63.9		
	2	1559.1 - 2089.2		1529.2	42.3			1498.0	72.1			1314.1	26.3			1502.9	22.5		
	3	2359.9 - 3214.6		2201.0	74.8			2140.5	217.9			2082.3	121.2			1984.0	30.6		
F3	4	380.6 - 782.4	1436.9 - 2047.8	N/A	N/A	1690.7	167.1	702.5	64.8	1409.9	199.3	N/A	N/A	1529.1	179.3	N/A	N/A	1592.4	131.2
	1	758.0 - 965.6		697.5	28.8			858.4	6.0			873.2	68.8			1030.7	2.9		
	2	568.0 - 825.8		512.4	45.2			728.3	47.6			799.6	16.3			787.0	34.9		
	3	827.3 - 1012.2		789.6	30.9			943.2	82.1			1011.6	91.2			1053.6	72.6		
F4	4	1108.9 - 1719.9	883.3 - 1243.1	N/A	N/A	666.5	53.9	1103.5	59.3	947.4	54.7	N/A	N/A	894.8	49.3	1013.8	0.00	965.2	49.5
	1	19168.9 - 31996.6		34647.6	301.1			44370.5	25.7			34810.5	22.5			38982.4	443.6		
F5	2	19903.9 - 65050.8	19413.9 - 48523.7	54925.4	2860.2	44786.5	5970.3	50433.2	180.3	47401.8	1751.7	48482.0	606.6	41646.2	3954.4	67745.0	1709.5	53363.7	8334.3
	1	888.5 - 1125.2		1005.7	15.4			1060.5	28.8			1034.0	48.8			1039.2	42.2		
	2	1070.3 - 1206.8		1187.0	18.0			1230.0	11.7			1200.0	7.7			1213.7	1.4		
	3	2523.5 - 3293.6		3199.7	372.3			2936.5	445.0			2578.5	160.3			3621.2	126.9		
F6	4	645.5 - 1218.6	1282.1 - 1784.7	N/A	N/A	1797.5	455.0	1120.4	242.4	1586.8	310.6	N/A	N/A	1604.1	312.6	N/A	N/A	1958.0	528.0
	1	40788.2 - 64315.3		N/A	N/A			42284.0	670.6			N/A	N/A			47442.4	3794.9		
M1	2	46019.7 - 63884.7	43403.9 - 64100.0	N/A	N/A	N/A	N/A	46491.1	562.6	44387.6	1266.0	N/A	N/A	N/A	N/A	54083.4	5423.1	50762.9	3313.2
	1	43276.9 - 62516.0		N/A	N/A			49759.1	761.2			N/A	N/A			54776.0	49.5		
M2	2	49553.4 - 64093.4	46998.0 - 63304.7	N/A	N/A	N/A	N/A	49810.8	970.6	49784.9	503.8	N/A	N/A	N/A	N/A	54022.1	125.3	54399.0	224.5
	1	45589.1 - 67367.6		N/A	N/A			44296.6	2824.3			N/A	N/A			54147.0	1529.0		
M3	2	43649.9 - 64913.6	44903.7 - 66140.6	N/A	N/A	N/A	N/A	48499.3	337.0	46397.9	1679.4	N/A	N/A	N/A	N/A	55514.8	2911.4	54830.9	1399.4
	1	41543.2 - 79855.8		N/A	N/A			51665.7	1095.6			N/A	N/A			67294.6	4403.4		
M4	2	46134.3 - 85880.5	44093.6 - 82868.1	N/A	N/A	N/A	N/A	48034.9	1637.2	49850.3	1321.1	N/A	N/A	N/A	N/A	62224.8	625.0	64759.7	2332.1
	1	44949.4 - 81750.9		N/A	N/A			47225.9	536.0			N/A	N/A			63430.5	1078.3		
M5	2	41321.5 - 58485.8	46473.0 - 70118.4	N/A	N/A	N/A	N/A	49061.6	1048.3	48143.7	715.5	N/A	N/A	N/A	N/A	56922.2	1272.7	60176.4	1998.4
	1	41186.5 - 51057.4		N/A	N/A			42390.8	323.2			N/A	N/A			47797.3	1007.2		
M6	2	44630.5 - 48738.8	42908.5 - 49898.1	N/A	N/A	N/A	N/A	44969.5	375.0	43680.2	771.4	N/A	N/A	N/A	N/A	45635.3	398.1	46716.3	764.8

Key:
µS = Microsiemens.
cm = Centimeters.
N/A = Not applicable.

Table 4.1-19. Average Specific Conductance (µS/cm) of Porewater at Each Site for Each Post-Uprate Quarter with Pre-Uprate Range

		Porewater Specific Conductance at 30 cm Depth (µS/cm)																	
		Pre-Uprate Range		August 2014				November 2014				February 2015				May 2015			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
	1	2260.8 - 5230.9		1707.3	31.8			1614.0	72.0			1549.7	253.0			1651.3	87.1		
F1	2	1320.4 - 2173.0	1790.6 - 3666.8	1541.3	184.2	1624.3	90.1	1751.5	21.5	1682.8	50.2	2054.1	89.7	1801.9	182.3	2343.5	47.0	1997.4	203.9
	1	908.0 - 2127.7		1213.2	54.3			1095.0	35.0			1334.2	47.0			1313.9	98.8		
	2	1231.0 - 2362.2		1414.9	138.0			1511.5	87.5			1628.5	105.9			1867.3	10.1		
	3	2048.0 - 2722.6		2478.4	84.4			2206.5	256.5			2183.4	19.6			2687.0	70.0		
F2	4	670.0 - 1180.8	1227.4 - 2622.9	N/A	N/A	1702.2	252.1	1028.0	61.0	1460.3	185.0	N/A	N/A	1715.4	160.4	1486.4	70.9	1838.6	201.8
	1	1380.2 - 2105.1		1583.5	56.2			1345.5	45.5			1325.8	24.2			1441.0	43.2		
	2	1559.1 - 2089.2		1739.6	74.2			1649.0	0.0			1528.6	57.1			1564.5	50.6		
	3	2359.9 - 3214.6		2361.9	72.5			2420.0	27.0			2085.9	158.0			2357.3	28.3		
F3	4	380.6 - 782.4	1436.9 - 2047.8	N/A	N/A	1895.0	153.4	911.5	198.5	1581.5	211.7	N/A	N/A	1646.7	150.3	1284.8	254.6	1661.9	164.1
	1	758.0 - 965.6		982.5	35.0			876.5	0.5			1032.0	1.6			1201.9	0.6		
	2	568.0 - 825.8		774.9	197.8			875.5	88.5			920.2	15.7			993.5	9.1		
	3	827.3 - 1012.2		977.3	84.3			1143.5	150.5			1141.2	132.4			1166.6	6.1		
F4	4	1108.9 - 1719.9	883.3 - 1243.1	N/A	N/A	911.5	70.9	1444.3	130.5	1156.8	100.6	N/A	N/A	1031.1	53.0	1717.8	120.7	1359.5	109.6
	1	19168.9 - 31996.6		6659.7	3588.1			10367.5	1096.5			25101.3	324.0			35971.2	503.3		
F5	2	19903.9 - 65050.8	19413.9 - 48523.7	50984.5	7378.7	28822.1	13226.6	37802.0	3256.0	24084.8	8042.9	40245.0	338.0	32673.1	4375.8	58597.0	70.2	47284.1	6534.8
	1	888.5 - 1125.2		996.2	77.0			1076.5	0.5			1010.2	40.0			1027.8	5.8		
	2	1070.3 - 1206.8		1189.5	78.0			1205.0	70.0			1264.9	1.9			1266.8	1.2		
	3	2523.5 - 3293.6		3566.0	476.8			3624.5	395.5			3098.9	299.9			3408.2	360.6		
F6	4	645.5 - 1218.6	1282.1 - 1784.7	N/A	N/A	1917.2	537.6	1252.0	156.0	1789.5	409.3	N/A	N/A	1791.3	423.4	932.7	49.3	1658.9	390.6
	1	40788.2 - 64315.3		N/A	N/A			50315.0	24.0			N/A	N/A			50587.5	351.2		
M1	2	46019.7 - 63884.7	43403.9 - 64100.0	N/A	N/A	N/A	N/A	52282.0	459.0	51298.5	598.0	N/A	N/A	N/A	N/A	52081.2	1324.4	51334.4	706.3
	1	43276.9 - 62516.0		N/A	N/A			55697.0	191.0			N/A	N/A			55039.6	934.4		
M2	2	49553.4 - 64093.4	46998.0 - 63304.7	N/A	N/A	N/A	N/A	57373.0	2301.0	56535.0	1059.5	N/A	N/A	N/A	N/A	58440.7	809.5	56740.1	1103.9
	1	45589.1 - 67367.6		N/A	N/A			53692.0	5981.0			N/A	N/A			56126.7	1197.8		
M3	2	43649.9 - 64913.6	44903.7 - 66140.6	N/A	N/A	N/A	N/A	58572.5	17.5	56132.3	2819.1	N/A	N/A	N/A	N/A	56201.7	708.7	56164.2	568.6
	1	41543.2 - 79855.8		N/A	N/A			59041.5	3718.5			N/A	N/A			64433.2	1074.6		
M4	2	46134.3 - 85880.5	44093.6 - 82868.1	N/A	N/A	N/A	N/A	65533.0	802.0	62287.3	2433.8	N/A	N/A	N/A	N/A	68768.2	737.9	66600.7	1359.9
	1	44949.4 - 81750.9		N/A	N/A			55870.0	837.0			N/A	N/A			64549.2	1903.2		
M5	2	41321.5 - 58485.8	46473.0 - 70118.4	N/A	N/A	N/A	N/A	54233.5	519.5	55051.8	620.4	N/A	N/A	N/A	N/A	54744.5	609.1	59646.9	2945.6
	1	41186.5 - 51057.4		N/A	N/A			45339.0	674.0			N/A	N/A			46487.4	668.3		
M6	2	44630.5 - 48738.8	42908.5 - 49898.1	N/A	N/A	N/A	N/A	46657.0	927.0	45998.0	603.1	N/A	N/A	N/A	N/A	47579.1	319.9	47033.3	436.8

Key:
µS = Microsiemens.
cm = Centimeters.
N/A = Not applicable.

Table 4.1-20. Average Temperature (°C) of Porewater at Each Site for Each Post-Uprate Quarter with Pre-Uprate Range

		Porewater Temperature at 30 cm Depth (°C)																	
		Pre-Uprate Range		August 2013				November 2013				February 2014				May 2014			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
	1	23.2 - 30.6		30.0	0.1			26.3	0.1			25.9	0.1			28.1	0.2		
F1	2	20.0 - 31.7	21.8 - 31.1	29.1	0.2	29.5	0.3	26.4	0.1	26.3	0.1	24.6	0.1	25.2	0.4	26.5	0.0	27.3	0.5
	1	22.6 - 29.6		28.8	0.0			26.3	0.5			22.3	0.2			28.5	0.4		
	2	22.3 - 28.6		28.5	0.1			24.0	0.1			21.6	0.1			27.3	0.3		
	3	22.8 - 29.0		28.7	0.0			24.2	0.2			22.9	0.3			26.7	0.2		
F2	4	22.3 - 30.0	22.9 - 29.3	N/A	N/A	28.6	0.1	25.7	0.1	25.1	0.4	N/A	N/A	22.3	0.2	28.0	0.4	27.6	0.3
	1	22.8 - 28.8		30.0	0.0			26.0	0.1			25.0	0.2			27.6	0.2		
	2	23.0 - 30.1		29.9	0.1			26.7	0.2			25.1	0.2			27.9	0.2		
	3	22.7 - 32.6		29.7	0.2			26.4	0.3			24.8	0.3			26.3	0.3		
F3	4	23.1 - 28.7	23.0 - 29.7	N/A	N/A	29.9	0.1	25.4	0.1	26.2	0.2	N/A	N/A	25.0	0.1	N/A	N/A	27.3	0.3
	1	21.4 - 29.2		30.0	0.5			26.2	0.2			24.6	0.1			26.8	0.4		
	2	21.4 - 31.4		30.3	0.1			27.4	0.1			25.5	0.6			26.5	0.3		
	3	24.7 - 32.1		30.1	0.1			26.6	0.1			25.5	0.2			26.7	0.4		
F4	4	23.6 - 27.9	22.8 - 30.2	N/A	N/A	30.1	0.2	25.8	0.2	26.3	0.2	N/A	N/A	25.2	0.3	28.3	0.0	26.9	0.3
	1	25.1 - 34.5		30.0	0.2			28.5	0.1			25.0	0.1			28.7	0.2		
F5	2	24.8 - 34.1	24.9 - 33.7	30.9	0.4	30.5	0.3	28.0	0.4	28.3	0.2	26.5	0.2	25.8	0.5	28.1	0.0	28.4	0.2
	1	23.5 - 28.7		28.7	0.1			24.5	0.2			23.3	0.1			26.4	0.5		
	2	23.9 - 29.4		29.7	0.1			24.6	0.2			24.8	0.0			26.8	0.2		
	3	21.6 - 30.1		29.5	0.1			24.6	0.1			24.6	0.3			26.1	0.4		
F6	4	21.4 - 27.1	22.9 - 28.5	N/A	N/A	29.3	0.2	23.2	0.2	24.2	0.2	N/A	N/A	24.2	0.3	N/A	N/A	26.4	0.2
	1	22.1 - 31.9		N/A	N/A			25.1	0.3			N/A	N/A			28.6	0.1		
M1	2	23.4 - 31.1	22.7 - 31.5	N/A	N/A	N/A	N/A	26.5	0.0	25.8	0.4	N/A	N/A	N/A	N/A	27.9	0.0	28.2	0.2
	1	22.8 - 32.6		N/A	N/A			26.8	0.3			N/A	N/A			28.4	0.1		
M2	2	23.2 - 32.1	23.0 - 32.3	N/A	N/A	N/A	N/A	27.2	0.0	27.0	0.2	N/A	N/A	N/A	N/A	28.6	0.4	28.5	0.2
	1	22.1 - 31.3		N/A	N/A			27.0	0.2			N/A	N/A			29.7	0.3		
M3	2	20.9 - 31.0	21.5 - 31.1	N/A	N/A	N/A	N/A	26.9	0.2	27.0	0.1	N/A	N/A	N/A	N/A	29.3	0.6	29.5	0.3
	1	23.0 - 33.5		N/A	N/A			27.5	0.3			N/A	N/A			29.1	0.0		
M4	2	20.5 - 32.7	23.3 - 33.1	N/A	N/A	N/A	N/A	27.4	0.5	27.4	0.2	N/A	N/A	N/A	N/A	29.2	0.5	29.1	0.2
	1	24.2 - 32.8		N/A	N/A			27.1	0.2			N/A	N/A			30.1	0.4		
M5	2	18.4 - 31.0	22.8 - 31.9	N/A	N/A	N/A	N/A	26.5	0.2	26.8	0.2	N/A	N/A	N/A	N/A	27.8	0.1	29.0	0.7
	1	24.3 - 31.5		N/A	N/A			27.5	0.0			N/A	N/A			27.7	0.1		
M6	2	24.5 - 32.5	24.4 - 32.0	N/A	N/A	N/A	N/A	27.9	0.2	27.7	0.2	N/A	N/A	N/A	N/A	27.2	0.2	27.5	0.2

Key:
°C = Degrees Celsius.
cm = Centimeters.
N/A = Not applicable.

Table 4.1-20. Average Temperature (°C) of Porewater at Each Site for Each Post-Uprate Quarter with Pre-Uprate Range

Transect	Plot	Porewater Temperature at 30 cm Depth (°C)																	
		Pre-Uprate Range		August 2014				November 2014				February 2015				May 2015			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
	1	23.2 - 30.6		30.7	0.3			24.9	0.1			24.9	0.2			29.3	0.4		
F1	2	20.0 - 31.7	21.8 - 31.1	30.6	0.2	30.6	0.2	24.7	0.1	24.8	0.1	23.2	0.2	24.1	0.5	29.3	0.1	29.3	0.2
	1	22.6 - 29.6		30.8	0.3			25.0	0.7			23.2	0.8			27.9	0.0		
	2	22.3 - 28.6		31.5	0.2			24.0	0.2			21.0	0.0			28.3	0.3		
	3	22.8 - 29.0		29.8	0.0			24.0	0.3			20.7	0.0			27.5	0.1		
F2	4	22.3 - 30.0	22.9 - 29.3	N/A	N/A	30.7	0.3	24.6	0.2	24.4	0.2	N/A	N/A	21.6	0.5	25.3	0.2	27.2	0.4
	1	22.8 - 28.8		30.2	0.1			22.6	0.4			22.5	0.1			27.0	0.9		
	2	23.0 - 30.1		30.7	0.0			23.2	0.4			22.5	0.1			26.8	0.6		
	3	22.7 - 32.6		30.3	0.1			22.9	0.0			22.7	0.1			26.3	0.5		
F3	4	23.1 - 28.7	23.0 - 29.7	N/A	N/A	30.4	0.1	24.3	0.0	23.3	0.3	N/A	N/A	22.5	0.1	24.7	0.0	26.2	0.4
	1	21.4 - 29.2		30.2	0.2			24.2	0.1			22.1	0.0			28.5	0.5		
	2	21.4 - 31.4		30.6	0.0			25.3	0.1			22.7	0.1			29.7	0.7		
	3	24.7 - 32.1		31.2	0.2			25.2	0.0			22.4	0.3			28.8	0.6		
F4	4	23.6 - 27.9	22.8 - 30.2	N/A	N/A	30.7	0.2	24.0	0.1	24.5	0.2	N/A	N/A	22.4	0.1	26.0	0.3	27.8	0.5
	1	25.1 - 34.5		29.7	0.1			26.1	0.0			21.7	0.1			29.0	0.1		
F5	2	24.8 - 34.1	24.9 - 33.7	32.1	0.1	30.9	0.7	27.5	0.1	26.8	0.4	22.4	0.1	22.1	0.2	30.3	0.1	29.6	0.4
	1	23.5 - 28.7		29.8	0.0			25.5	0.2			19.4	0.2			25.5	0.1		
	2	23.9 - 29.4		29.8	0.0			24.8	0.0			22.0	0.3			26.6	0.2		
	3	21.6 - 30.1		30.1	0.0			25.0	0.1			22.3	0.2			27.2	0.7		
F6	4	21.4 - 27.1	22.9 - 28.5	N/A	N/A	29.9	0.1	24.2	0.6	24.9	0.2	N/A	N/A	21.3	0.6	24.4	0.1	25.9	0.4
	1	22.1 - 31.9		N/A	N/A			25.7	0.1			N/A	N/A			30.5	0.5		
M1	2	23.4 - 31.1	22.7 - 31.5	N/A	N/A	N/A	N/A	25.0	0.0	25.4	0.2	N/A	N/A	N/A	N/A	29.7	0.9	30.1	0.5
	1	22.8 - 32.6		N/A	N/A			25.9	0.1			N/A	N/A			28.0	0.0		
M2	2	23.2 - 32.1	23.0 - 32.3	N/A	N/A	N/A	N/A	26.6	0.4	26.2	0.3	N/A	N/A	N/A	N/A	27.8	0.1	27.9	0.1
	1	22.1 - 31.3		N/A	N/A			25.1	0.7			N/A	N/A			29.1	0.1		
M3	2	20.9 - 31.0	21.5 - 31.1	N/A	N/A	N/A	N/A	25.8	0.1	25.5	0.3	N/A	N/A	N/A	N/A	28.7	0.0	28.9	0.1
	1	23.0 - 33.5		N/A	N/A			25.1	0.3			N/A	N/A			29.8	0.4		
M4	2	20.5 - 32.7	23.3 - 33.1	N/A	N/A	N/A	N/A	25.5	0.0	25.3	0.2	N/A	N/A	N/A	N/A	29.8	0.1	29.8	0.2
	1	24.2 - 32.8		N/A	N/A			26.2	0.1			N/A	N/A			28.1	0.1		
M5	2	18.4 - 31.0	22.8 - 31.9	N/A	N/A	N/A	N/A	24.4	0.0	25.3	0.5	N/A	N/A	N/A	N/A	29.6	0.6	28.9	0.5
	1	24.3 - 31.5		N/A	N/A			26.4	0.0			N/A	N/A			28.0	0.2		
M6	2	24.5 - 32.5	24.4 - 32.0	N/A	N/A	N/A	N/A	26.5	0.0	26.4	0.0	N/A	N/A	N/A	N/A	28.2	0.1	28.1	0.1

Key:
°C = Degrees Celsius.
cm = Centimeters.
N/A = Not applicable.

Table 4.1-21. Marsh and Mangrove Analytical Porewater August 2013

Parameter	Units	PW-F1-1		PW-F1-2		PW-F2-1		PW-F2-2		PW-F2-3		PW-F3-1		PW-F3-2		PW-F3-3		PW-F4-1	
		8/7/2013		8/7/2013		8/9/2013		8/9/2013		8/9/2013		8/13/2013		8/13/2013		8/13/2013		8/13/2013	
Temperature	°C	29.98		29.06		28.77		28.48		28.69		30.02		29.94		29.66		30.04	
Specific Conductance	µS/cm	1543.93		1175.11		1074.17		1273.25		2235.98		1341.78		1529.19		2201.01		697.5	
Sodium	mg/L	132		73		88		87.2		103		125		139		268		38.5	
Chloride	mg/L	184		107		146		195		433		227		281		496		71.9	
Salinity	*	0.9	J	0.6	J	0.4	J	0.7	J	1.2	J	0.7	J	0.8	J	1.1	J	0.3	J
Tritium	pCi/L (1σ)	93.7 (8.7)	J	22.7 (7.0)	J	49.6 (7.9)		36.9 (7.2)		29.1 (7.0)		86.1 (6.4)		40.8 (8.2)		51.2 (8.2)		30.5 (7.6)	

Parameter	Units	PW-F4-3		PW-F5-1		PW-F5-2		PW-F6-1		PW-F6-2		PW-F6-3		PW-EB1		PW-FB1	
		8/13/2013		8/8/2013		8/8/2013		8/12/2013		8/12/2013		8/12/2013		8/7/2013		8/13/2013	
Temperature	°C	30.05		30.02		30.91		28.72		29.72		28.01					
Specific Conductance	µS/cm	789.57		34647.64	J	54925.39		1005.72		1186.95		3199.73					
Sodium	mg/L	52.2		6690		10500		223		77		386		2.39		0.31	U
Chloride	mg/L	92.7		24900	J	20200		119		152		804		0.253	I	0.25	U
Salinity	*	0.4	J	22.4	J	37.1		0.5	J	0.6	J	1.7	J				
Tritium	pCi/L (1σ)	16.6 (7.5)		93.8 (8.5)		66.8 (8.0)		7.2 (6.7)		5.1 (7.4)	UJ	2.9 (7.2)	UJ	9.8 (6.9)		3.2 (4.8)	UJ

NOTES:

Laboratory results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Text in blue revised

KEY:

°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
U = Analyzed for but not detected at the reported value.

Table 4.1-22. Marsh and Mangrove Analytical Porewater November 2013

Parameter	Units	PW-F1-1 11/05/2013		PW-F1-2 11/19/2013		PW-F2-1 11/08/2013		PW-F2-2 11/14/2013		PW-F2-3 11/14/2013		PW-F2-4 11/12/2013		PW-F3-1 11/12/2013		PW-F3-2 11/12/2013		PW-F3-3 11/12/2013	
Temperature	°C	26.29		26.36		26.33		26.33		24.24		25.75		26.05		26.75		26.43	
pH	SU	6.56		6.65		6.69		6.69		6.62		6.04		6.69		6.76		6.69	
Specific Conductance	µS/cm	1382.26		1537.93		1145.06		1432.31		2316.59		749.91		1298.82		1497.47		2140.47	
Sodium	mg/L	127		121		73.3		102		219		60		109		120		230	
Chloride	mg/L	164		204		134		205		453		112		214		253		479	
Total Ammonia	mg/L as N	0.629	J	1.4		1.96		2.13		1.76		0.772		2.45		2.72		1.98	
Ammonium ion (NH_4^+)	mg/L	0.807	J	1.81		2.51		2.73		2.26		0.992		3.14		3.48		2.54	
Unionized NH_3	mg/L	0.00172	J	0.00478		0.00726		0.00789		0.00479		0.000616		0.0089		0.0122		0.00739	
Nitrate/Nitrite	mg/L as N	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U
TKN	mg/L	2.18	J	2.77		2.7		3.28		3.15		2.26		4.02		4.16		3.3	
TN	mg/L	2.207	J	2.797		2.727		3.307		3.177		2.287		4.047		4.187		3.327	
ortho-Phosphate	mg/L	0.0014	U	0.00246	I	0.0028	U J-	0.0014	U J-	0.00215	I J-	0.00234	I V	0.00141	I V	0.0014	U	0.0014	U
Total Phosphorus (P)	mg/L	0.0023	I	0.0022	U	0.0316		0.0177		0.0136		0.0022	U	0.00999	I	0.00623	I	0.00227	I
Salinity	*	0.70	J	0.78	J	0.58	J	0.75	J	1.21	J	0.37	J	0.66	J	0.76	J	1.11	J
Tritium	pCi/L (±1σ)	54.3 (5.4)		20.0 (6.1)		42.6 (5.0)		29.8 (7.3)		16.5 (5.9)		18.6 (4.6)		48.3 (7.5)		51.2 (5.1)		42.8 (5.0)	

NOTES:

Laboratory results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Text in blue are revised

KEY:

°C = Degrees Celsius.	mg/L = Milligram(s) per liter.	SU = Standard unit(s).
µS/cm = MicroSiemen(s) per centimeter.	N = Nitrogen.	TKN = Total Kjeldahl nitrogen.
σ = sigma (Standard Deviation).	NH_3 = Ammonia.	TN = Total nitrogen.
EB = Equipment Blank.	NH_4^+ = Ammonum ion.	U = Analyzed for but not detected at the reported value.
FB = Field Blank.	pCi/L = PicoCuries per liter.	V = Detected in method blank.
I = Value between the MDL and PQL.	PSS-78 = Practical Salinity Scale of 1978.	
J = Estimated (+/- indicate bias).	PW = Porewater.	

Table 4.1-22. Marsh and Mangrove Analytical Porewater November 2013

Parameter	Units	PW-F3-4 11/12/2013		PW-F4-1 11/11/2013		PW-F4-2 11/11/2013		PW-F4-3 11/11/2013		PW-F4-4 11/11/2013		PW-F5-1 11/18/2013		PW-F5-2 11/18/2013		PW-F6-1 11/13/2013		PW-F6-2 11/13/2013	
Temperature	°C	25.42		26.24		27.36		26.58		25.48		28.96		28.00		24.47		24.64	
pH	SU	5.81		6.61		6.9		6.68		6.31		6.72		6.86		6.75		6.67	
Specific Conductance	µS/cm	702.46		858.43		728.3		943.17		1103.53		44370.52		50433.17		1060.5		1229.96	
Sodium	mg/L	71.6		40.1		42.1		52.2		77.9		8550		9130		49.5		76	
Chloride	mg/L	132		77.9		85.2		102		145		16600		18800		112		171	
Total Ammonia	mg/L as N	0.421		0.857		1.92		1.72		1.03		0.904		0.996		2.53		2.01	
Ammonium ion (NH_4^+)	mg/L	0.541		1.1		2.46		2.2		1.32		1.16		1.27		3.24		2.58	
Unionized NH_3	mg/L	0.000193		0.00263		0.0124		0.00634		0.0015		0.0043		0.00612		0.00944		0.00632	
Nitrate/Nitrite	mg/L as N	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U	0.027	U
TKN	mg/L	2.09		2.76		2.82		2.78		2.9		2.59		1.57		3.64		2.95	
TN	mg/L	2.117		2.787		2.847		2.807		2.927		2.617		1.597		3.667		2.977	
ortho-Phosphate	mg/L	0.00255	I V	0.00265	I V J	0.00194	I V	0.0014	U	0.00328	I V	0.0014	U	0.0014	U	0.00233	I J-	0.0014	U J-
Total Phosphorus (P)	mg/L	0.0022	U	0.0022	U J	0.0022	U	0.00504	I	0.00545	I	0.0022	U	0.0022	U	0.0022	U	0.0022	U
Salinity	*	0.35	J	0.43	J	0.36	J	0.48	J	0.55	J	29.16		33.69		0.54	J	0.62	J
Tritium	pCi/L (±1σ)	28.0 (4.3)		29.6 (4.6)		25.0 (4.6)		24.6 (4.6)		28.0 (4.7)		43.4 (6.3)		17.2 (6.6)		7.2 (6.5)		2.2 (5.5)	UJ

NOTES:

Laboratory results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Text in blue are revised

KEY:

°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 4.1-22. Marsh and Mangrove Analytical Porewater November 2013

Parameter	Units	PW-F6-3 11/13/2013		PW-F6-4 11/13/2013		PW-M1-1 11/05/2013		PW-M1-2 11/06/2013		PW-M2-1 11/19/2013		PW-M2-2 11/20/2013		PW-M3-1 11/19/2013		PW-M3-2 11/20/2013		PW-M4-1 11/19/2013	
Temperature	°C	24.63		23.21		25.14		26.48		26.78		27.17		27.02		26.91		27.50	
pH	SU	6.57		6.4		6.53		6.61		6.83		6.55		7.04		6.91		6.88	
Specific Conductance	µS/cm	2936.48		1120.44		42284		46491.11		49759.09		49810.77		44296.57		48499.3		48034.91	
Sodium	mg/L	313		44		7950		9170	J	9660		9330		8670		8960	J	10100	
Chloride	mg/L	639		78.9		16300		18200		18800		19000		17200		17900		19500	
Total Ammonia	mg/L as N	1.61		0.822		0.411	J	0.287	J	1.02		0.406	J	0.529		0.756	J	0.834	
Ammonium ion (NH_4^+)	mg/L	2.07		1.06		0.527	J	0.368	J	1.31		0.521	J	0.675		0.967	J	1.07	
Unionized NH_3	mg/L	0.00402		0.00125		0.00097	J	0.000894	J	0.00538		0.000542	J	0.00459		0.00483	J	0.00518	
Nitrate/Nitrite	mg/L as N	0.027	U	0.0443	I	0.027	U	0.027	U J	0.027	U	0.0428	I	0.027	U	0.027	U J	0.027	U
TKN	mg/L	2.71		3.02		0.719	J	0.89	J	1.45		0.916	J	1.2		1.59	J	1.65	
TN	mg/L	2.737		3.0643		0.746	J	0.917	J	1.477		0.9588	J	1.227		1.617	J	1.677	
ortho-Phosphate	mg/L	0.0014	U J-	0.00478	I J-	0.00656	I J	0.0206	J	0.00625	I J	0.0242	J	0.00214	I	0.00245	I	0.0014	U
Total Phosphorus (P)	mg/L	0.0022	U	0.0022	U J	0.0022	U J	0.0022	U J	0.0022	U J	0.0022	U J	0.0022	U	0.0022	U J	0.0022	U
Salinity	*	1.55	J	0.56	J	27.59		30.70		33.13		33.18		29.10		32.19		34.57	
Tritium	pCi/L (±1σ)	8.4 (5.7)		9.7 (5.6)		14.2 (4.7)		8.1 (4.4)		17.1 (6.2)		10.0 (3.7)		8.6 (5.8)		9.5 (3.6)		5.6 (7.0)	UJ

NOTES:

Laboratory results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Text in blue are revised

KEY:

°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation).
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 4.1-22. Marsh and Mangrove Analytical Porewater November 2013

Parameter	Units	PW-M4-2 11/06/2013		PW-M5-1 11/18/2013		PW-M5-2 11/06/2013		PW-M6-1 11/07/2013		PW-M6-2 11/07/2013		PW-EB1 11/05/2013		PW-FB1 11/20/2013	
Temperature	°C	27.38		27.09		26.50		27.46		27.89					
pH	SU	6.59		6.85		6.84		6.49		6.46					
Specific Conductance	µS/cm	48034.91		47225.85		49061.62		42390.85		44969.55					
Sodium	mg/L	9490	J	8720		9530		7800	J	8300	J	1.28		0.31	U
Chloride	mg/L	18800		18000		19600		16300		16800		0.25	U	0.25	U
Total Ammonia	mg/L as N	1.1	J	0.495		0.894		2.22	J	2.41	J	0.236		0.273	
Ammonium ion (NH_4^+)	mg/L	1.41	J	0.633		1.14		2.85	J	3.09	J				
Unionized NH_3	mg/L	0.00349	J	0.00279		0.00473		0.00562	J	0.00587	J				
Nitrate/Nitrite	mg/L as N	0.027	U J	0.027	U	0.027	U	0.027	U J	0.027	U J	0.027	U	0.027	U
TKN	mg/L	2.37	J	1.37		1.38		2.83	J-	3.02	J	0.498		0.285	
TN	mg/L	2.397	J	1.397		1.407		2.857	J	3.047	J				
ortho-Phosphate	mg/L	0.00625	I J	0.0014	U	0.0193	J	0.0319	J	0.0344	J	0.00284	I	0.0014	U
Total Phosphorus (P)	mg/L	0.0022	U J	0.0022	U	0.0022	U J	0.00556	I J	0.0022	U J	0.0022	U	0.0022	U
Salinity	*	31.86		31.25		32.60		27.70		29.59					
Tritium	pCi/L (±1σ)	13.1 (4.4)		22.0 (6.4)		45.1 (4.8)		9.3 (4.3)		12.4 (4.5)		-3.4 (4.4)	UJ	0.5 (3.5)	UJ

NOTES:

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Text in blue are revised

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σ = sigma (Standard Deviation).
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.
V = Detected in method blank.

Table 4.1-23. Marsh and Mangrove Analytical Porewater February 2014

Parameter	Units	PW-F1-1		PW-F1-2		PW-F2-1		PW-F2-2		PW-F2-3		PW-F3-1		PW-F3-2		PW-F3-3		PW-F4-1	
		02/04/2014		02/04/2014		02/13/2014		02/13/2014		02/13/2014		02/06/2014		02/06/2014		02/06/2014		02/05/2014	
Temperature	°C	25.9		24.6		22.3		21.6		22.9		25.0		25.1		24.8		24.6	
Specific Conductance	µS/cm	1458		1268		971		1259		1826		1190		1314		2082		873	
Sodium	mg/L	162		125		77.9		95.7		189		110		124		245		55.5	
Chloride	mg/L	157		193		126		178		330		196		230		455		119	
Salinity	*	0.74	J	0.64	J	0.49	J	0.64	J	0.94	J	0.6	J	0.67	J	1.01	J	0.44	J
Tritium	pCi/L (1σ)	53.9 (4.4)		23.7 (3.8)		48.0 (7.5)		31.9 (7.4)		17.0 (7.2)		69.9 (4.7)		31.9 (7.0)		34.3 (6.8)		33.6 (4.0)	

Parameter	Units	PW-F4-2		PW-F4-3		PW-F5-1		PW-F5-2		PW-F6-1		PW-F6-2		PW-F6-3		PW-EB1		PW-FB-1	
		02/05/2014		02/05/2014		02/11/2014		02/11/2014		02/12/2014		02/12/2014		02/12/2014		02/05/2014		02/13/2014	
Temperature	°C	25.6		25.5		25.0		26.5		23.3		24.8		24.6					
Specific Conductance	µS/cm	799		1011		34810		48481		1033		1200		2578					
Sodium	mg/L	56.4		59.2		6910		10400		53.9		81.5		312		0.310	U	0.310	U
Chloride	mg/L	110		126		12900		18700		116		167		560		0.250	U	0.250	U
Salinity	*	0.4	J	0.51	J	22.2		32.2		0.52	J	0.61	J	1.4	J				
Tritium	pCi/L (1σ)	35.6 (4.1)		24.7 (3.9)		46.8 (7.6)		35.1 (7.3)		1.4 (6.8)	UJ	-1.5 (6.5)	UJ	3.7 (6.6)	UJ	3.2 (3.3)	UJ	-9.0 (8.3)	UJ

NOTES:

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µS/cm = MicroSiemen(s) per centimeter.
pCi/L = PicoCuries per liter.
σ = sigma (Standard Deviation).
PSS-78 = Practical Salinity Scale of 1978.
EB = Equipment Blank.
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J = Estimated (+/- indicate bias).

Table 4.1-24. Marsh and Mangrove Analytical Porewater May 2014

Parameter	Units	PW-F1-1		PW-F1-2		PW-F2-1		PW-F2-2		PW-F2-3		PW-F2-4		PW-F3-1		PW-F3-2	
		05/05/2014		05/05/2014		05/08/2014		05/08/2014		05/08/2014		05/02/2014		05/02/2014		05/02/2014	
Temperature	°C	28.08		26.49		28.52		27.33		26.74		27.98		27.62		27.94	
pH	SU	6.99		6.86		7.36		7.17		6.91		6.17		6.86		6.77	
Specific Conductance	µS/cm	1508		1734		1163		1482		2414		887		1290		1503	
Sodium	mg/L	138		176		82.3		127		256		66.4	J	110		123	
Chloride	mg/L	174		316		150		246		498		138		213		273	
Total Ammonia	mg/L as N	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U	0.341	J	0.026	U	0.026	U
Ammonium ion (NH_4^+)	mg/L	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.438	J	0.05	U	0.05	U
Unionized NH_3	mg/L	0.000017	U	0.000017	U	0.000017	U	0.000017	U	0.000017	U	0.000429	J	0.000017	U	0.000017	U
Nitrate/Nitrite	mg/L as N	0.0654		0.638		0.027	U	0.276		0.0294	I	0.0297	IJ	0.0349	I	0.027	U
TKN	mg/L	1.08		2.45		3.05		2.91		4.44		2.14	J	4.23		5.12	
TN	mg/L	1.1454		3.088		3.077		3.186		4.4694		2.1697	J	4.2649		5.147	
ortho-Phosphate	mg/L	0.00171	I	0.0047	I	0.0014	I	0.0014	U	0.00159	I	0.0014	U	0.0014	U	0.0014	U
Total Phosphorus (P)	mg/L	0.00292	I	0.00492	I	0.0022	U	0.00351	I	0.0116		0.013	J	0.0217		0.0022	U
Salinity	*	0.8	J	0.9	J	0.6	J	0.8	J	1.3	J	0.4	J	0.7	J	0.8	J
Tritium	pCi/L (1σ)	99.2 (8.4)		40.7 (7.0)		58.2 (6.2)		30.6 (5.6)		29.9 (5.0)		32.9 (5.9)		74.1 (7.3)		37.6 (6.8)	

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N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonium ion.
pCi/L = PicoCuries per liter.
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TN = Total nitrogen.
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Table 4.1-24. Marsh and Mangrove Analytical Porewater May 2014

Parameter	Units	PW-F3-3		PW-F4-1		PW-F4-2		PW-F4-3		PW-F4-4		PW-F5-1		PW-F5-2		PW-F6-1	
		05/02/2014		05/06/2014		05/06/2014		05/06/2014		05/02/2014		05/13/2014		05/13/2014		05/07/2014	
Temperature	°C	26.31		26.80		26.55		26.72		28.34		28.69		28.05		26.39	
pH	SU	6.70		6.68		6.78		6.62		6.53		6.59		6.88		6.71	
Specific Conductance	µS/cm	1984		1031		787		1054		1014		38982		67745		1039	
Sodium	mg/L	215		60.7		48.3		65.3		68.4		7210	J	13600		54.6	
Chloride	mg/L	434		132		94		123		125		14200		26400		111	
Total Ammonia	mg/L as N	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U	0.515	J	0.152		0.026	U
Ammonium ion (NH_4^+)	mg/L	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.66	J	0.194		0.05	U
Unionized NH_3	mg/L	0.000017	U	0.000017	U	0.000017	U	0.000017	U	0.000017	U	0.00179	J	0.000981		0.000017	U
Nitrate/Nitrite	mg/L as N	0.0541		0.0288	I	0.027	U	0.027	U	0.0285	I	0.027	UJ	0.027	U	0.027	U
TKN	mg/L	3.17		4.65	J	6.02		6.13		3.49		2.96	J	2.64	J	5.46	
TN	mg/L	3.2241		4.6788	J	6.047		6.157		3.5185		2.987	J	2.667	J	5.487	
ortho-Phosphate	mg/L	0.0014	U	0.0014	U	0.0014	U	0.0014	U	0.00199	I	0.0014	U	0.0014	U	0.0014	U
Total Phosphorus (P)	mg/L	0.00246	I	0.0147		0.0022	U	0.0022	U	0.00716	I	0.011	UJ	0.015	I	0.0022	U
Salinity	*	1.0	J	0.5	J	0.4	J	0.5	J	0.5	J	25.2		47.1		0.5	J
Tritium	pCi/L (1σ)	25.0 (6.8)		38.7 (6.8)		18.9 (6.5)		25.5 (6.6)		30.3 (6.2)		39.4 (5.0)	J	22.9 (5.7)	J	-0.4 (6.3)	UJ

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J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
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TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-24. Marsh and Mangrove Analytical Porewater May 2014

Parameter	Units	PW-F6-2		PW-F6-3		PW-M1-1		PW-M1-2		PW-M2-1		PW-M2-2		PW-M3-1		PW-M3-2	
		05/07/2014		05/07/2014		05/05/2014		05/12/2014		05/01/2014		05/01/2014		05/01/2014		05/01/2014	
Temperature	°C	26.82		26.08		28.61		27.88		28.41		28.59		29.71		29.27	
pH	SU	6.58		6.67		6.65		6.71		7.13		6.51		6.83		6.79	
Specific Conductance	µS/cm	1214		3621		47442		54083		54776		54022		54147		55515	
Sodium	mg/L	80.6		442		9090		10300	J	9210		10800	J	7480		10700	J
Chloride	mg/L	167.000		870.000		16800		20000		20600		20500		20400		21100	
Total Ammonia	mg/L as N	1.07		0.026	U	0.0764		0.0611	J	0.026	U	0.026	UJ	0.283		0.283	J
Ammonium ion (NH_4^+)	mg/L	1.37		0.05	U	0.0979		0.0783	J	0.05	U	0.05	UJ	0.362		0.362	J
Unionized NH_3	mg/L	0.00319		0.000017	U	0.000302		0.000264	J	0.000017	U	0.000017	UJ	0.00183		0.00162	J
Nitrate/Nitrite	mg/L as N	0.027	U	0.027	U	0.027	U	0.027	UJ	0.027	U	0.0354	IJ	0.027	U	0.038	IJ
TKN	mg/L	3.87		2.16		0.685		1.34	J	1.78	J	1.62	J	1.5	J	3.14	J
TN	mg/L	3.897		2.187		0.712		1.367	J	1.807	J	1.6554	J	1.527	J	3.178	J
ortho-Phosphate	mg/L	0.0014	U	0.0014	U	0.0014	U	0.00203	I	0.0014	UJ	0.0014	UJ	0.0014	UJ-	0.0014	UJ
Total Phosphorus (P)	mg/L	0.0022	U	0.0414		0.0022	U	0.011	UJ	0.0022	U	0.0128	J	0.0023	IJ	0.00478	IJ
Salinity	*	0.6	J	1.9	J	31.5		36.5		37.0		36.4		36.5		37.5	
Tritium	pCi/L (1σ)	5.2 (6.2)	UJ	11.0 (5.7)		24.4 (6.5)		16.8 (5.5)		44.8 (6.6)		33.1 (6.4)		78.9 (7.4)		56.5 (6.9)	

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mg/L = Milligram(s) per liter.
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NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-24. Marsh and Mangrove Analytical Porewater May 2014

Parameter	Units	PW-M4-1 05/01/2014		PW-M4-2 05/12/2014		PW-M5-1 05/01/2014		PW-M5-2 05/12/2014		PW-M6-1 05/12/2014		PW-M6-2 05/12/2014		PW-EB1 05/01/2014		PW-FB-1 05/13/2014	
Temperature	°C	29.08		29.19		30.09		27.84		27.72		27.25					
pH	SU	6.78		6.70		6.81		6.99		6.80		6.82					
Specific Conductance	µS/cm	67295		62225		63431		56922		47797		45635					
Sodium	mg/L	12600		12600	J	12400		11400	J	9200	J	8830	J	0.31	U	0.31	U
Chloride	mg/L	27000		24200		24600		21900		17900		16300		1.25		0.25	U
Total Ammonia	mg/L as N	0.309		0.814	J	0.144		0.394	J	1.19	J	1.64	J	0.026	U	0.026	U
Ammonium ion (NH_4^+)	mg/L	0.395		1.04	J	0.184		0.503	J	1.52	J	2.1	J				
Unionized NH_3	mg/L	0.0017		0.00376	J	0.00091		0.00322	J	0.00625	J	0.00873	J				
Nitrate/Nitrite	mg/L as N	0.0303	I	0.027	UJ	0.0589		0.0477	IJ	0.0311	IJ	0.0316	IJ	0.027	U	0.027	U
TKN	mg/L	5.04		2.52	J	2.41	J	2.24	J	3.21	J	3.17	J	0.462		0.444	
TN	mg/L	5.0703		2.547	J	2.4689	J	2.2877	J	3.2411	J	3.2016	J	0.489		0.471	
ortho-Phosphate	mg/L	0.0014	U	0.00489	I	0.0014	UJ	0.0028	I	0.0115		0.0409		0.0014	U	0.00303	I
Total Phosphorus (P)	mg/L	0.0022	U	0.011	UJ	0.00432	IJ	0.0197	IJ	0.011	UJ	0.011	UJ	0.00231	I	0.011	U
Salinity	*	46.7		42.7		43.7		38.6		31.7		30.1					
Tritium	pCi/L (1σ)	99.9 (8.0)		59.6 (6.3)		57.5 (7.3)		23.8 (5.5)		11.9 (5.2)		23.6 (5.2)		-1.8 (5.7)	UJ	6.8 (4.5)	

NOTES:

Laboratory results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Text in blue is revised

KEY:

°C = Degrees Celsius.
J = Estimated (+/- indicate bias).
PSS-78 = Practical Salinity Scale of 1978.
µS/cm = MicroSiemen(s) per centimeter.
mg/L = Milligram(s) per liter.
PW = Porewater.
σ = sigma (Standard Deviation).
N = Nitrogen.
SU = Standard unit(s).
EB = Equipment Blank.
NH_3 = Ammonia.
TKN = Total Kjeldahl nitrogen.
FB = Field Blank.
NH_4^+ = Ammonum ion.
TN = Total nitrogen.
I = Value between the MDL and PQL.
pCi/L = PicoCuries per liter.
U = Analyzed for but not detected at the reported value.

Table 4.1-25. Marsh and Mangrove Analytical Porewater August 2014

Parameter	Units	PW-F1-1 08/12/2014		PW-F1-2 08/12/2014		PW-F2-1 08/13/2014		PW-F2-2 08/13/2014		PW-F2-3 08/14/2014		PW-F3-1 08/06/2014		PW-F3-2 08/06/2014		PW-F3-3 08/06/2014		PW-F4-1 08/06/2014	
Temperature	°C	30.67		30.57		30.77		31.48		29.78		30.16		30.73		30.28		30.23	
Specific Conductance	µS/cm	1707.35		1541.31		1213.18		1414.95		2478.42		1583.49		1739.56		2361.92		982.47	
Sodium	mg/L	142		115		80.0		107.0		241		132		141		242		67.0	
Chloride	mg/L	184		203		150		217		525		287		311		527		130	
Salinity	*	0.88	J	0.79	J	0.61	J	0.72	J	1.3	J	0.81	J	0.89	J	1.23	J	0.48	J
Tritium	pCi/L (1σ)	109 (5.7)		41.4 (3.8)		56.6 (4.2)		42.5 (3.4)		26.8 (3.1)		76.1 (4.8)		51.9 (5.0)		50.7 (5.1)		46.3 (4.9)	

Parameter	Units	PW-F4-2 08/06/2014		PW-F4-3 08/06/2014		PW-F5-1 08/08/2014		PW-F5-2 08/08/2014		PW-F6-1 08/07/2014		PW-F6-2 08/07/2014		PW-F6-3 08/07/2014		PW-EB1 08/06/2014		PW-FB-1 08/13/2014	
Temperature	°C	30.59		31.22		29.68		32.14		29.81		29.78		30.11					
Specific Conductance	µS/cm	774.89		977.29		6659.71		50984.46		996.23		1189.48		3565.97					
Sodium	mg/L	54.3		62.8		904		8770		54.5		78.8		368		1.570		0.310	U
Chloride	mg/L	111		133		1650	J	17300		123		176		814		0.250	U	0.250	U
Salinity	*	0.38	J	0.49	J	3.75	J	34.2		0.5	J	0.59	J	1.87	J				
Tritium	pCi/L (1σ)	39.1 (4.9)		51.7 (5.1)		33.9 (3.5)		41.5 (3.7)		-1.2 (2.9)	UJ	2.7 (2.9)	UJ	8.6 (2.9)		0.3 (4.2)	UJ	-1.9 (2.8)	UJ

NOTES:

Laboratory results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Text in blue are revised

KEY:

°C = Degrees Celsius.
mg/L = Milligram(s) per liter.
µS/cm = MicroSiemen(s) per centimeter.
pCi/L = PicoCuries per liter.
σ = sigma (Standard Deviation)
PSS-78 = Practical Salinity Scale of 1978.
EB = Equipment Blank.
PW = Porewater.
FB = Field Blank.
U = Analyzed for but not detected at the reported value.
J = Estimated (+/- indicate bias).

Table 4.1-26. Marsh and Mangrove Analytical Porewater November 2014

Parameter	Units	PW-F1-1		PW-F1-2		PW-F2-1		PW-F2-2		PW-F2-3		PW-F2-4		PW-F3-1		PW-F3-2		PW-F3-3	
		11/04/2014		11/13/2014		11/05/2014		11/05/2014		11/05/2014		11/18/2014		11/19/2014		11/19/2014		11/19/2014	
Temperature	°C	24.85		24.75		25.00		24.00		24.00		24.59		22.61		23.20		22.90	
pH	SU	6.77		6.74		6.92		6.82		6.73		6.21		6.78		6.78		6.54	
Specific Conductance	µS/cm	1614.0		1751.5		1095.0		1511.5		2206.5		1028.0		1345.5		1649.0		2420.0	
Sodium	mg/L	127		159		73.4		103		175		82.2		116		127		239	
Chloride	mg/L	168		318		132		240		431		179		242		298		527	
Total Ammonia	mg/L as N	0.446	J	0.610		1.08		1.02		1.79		0.504		1.75		1.42		1.35	
Ammonium ion (NH_4^+)	mg/L	0.572	J	0.782		1.38		1.31		2.29		0.647		2.24		1.82		1.73	
Unionized NH_3	mg/L	0.00179	J	0.00227		0.00618		0.00432		0.00617		0.000548		0.00613		0.00519		0.00278	
Nitrate/Nitrite	mg/L as N	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
TKN	mg/L	2.92		2.18		2.04		2.22		2.72		2.20		2.76		3.58		2.40	
TN	mg/L	3.420		2.680		2.540		2.720		3.220		2.700		3.260		4.080		2.900	
ortho-Phosphate	mg/L	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U
Total Phosphorus (P)	mg/L	0.00300	U	0.0479	I	0.120		0.0873		0.0470		0.0248	I	0.0427	I	0.0666		0.0212	I
Salinity	*	0.81	J	0.89	J	0.54	J	0.76	J	1.13	J	0.51	J	0.68	J	0.83	J	1.25	J
Tritium	pCi/L (1σ)	136 (6.4)		47.9 (6.5)		71.1 (4.6)		48.1 (4.1)		39.9 (3.8)		33.6 (3.3)		107 (5.4)		56.1 (4.1)		49.2 (4.0)	

NOTES:

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Text in blue are revised

KEY:

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σ = sigma (Standard Deviation)
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-26. Marsh and Mangrove Analytical Porewater November 2014

Parameter	Units	PW-F3-4 11/18/2014		PW-F4-1 11/18/2014		PW-F4-2 11/18/2014		PW-F4-3 11/18/2014		PW-F4-4 11/18/2014		PW-F5-1 11/14/2014		PW-F5-2 11/14/2014		PW-F6-1 11/17/2014		PW-F6-2 11/17/2014	
Temperature	°C	24.31		24.18		25.33		25.16		24.03		26.14		27.52		25.50		24.84	
pH	SU	5.95		6.59		6.84		6.57		5.99		6.72		6.89		6.71		6.62	
Specific Conductance	µS/cm	911.5		876.5		875.5		1143.5		1444.3		10367.5		37802.0		1076.5		1205.0	
Sodium	mg/L	88.6		47.1		57.2		65.2		110		1590		7410		50.1		71.7	
Chloride	mg/L	188		103		119		144		240		3290		13100		121		182	
Total Ammonia	mg/L as N	0.146		0.411		1.14		0.847		0.641		0.417		0.383		1.69		0.787	
Ammonium ion (NH_4^+)	mg/L	0.188		0.527		1.46		1.09		0.824		0.534		0.490		2.17		1.01	
Unionized NH_3	mg/L	0		0.00104		0.00556		0.00219		0.000404		0.00163		0.00244		0.00619		0.00224	
Nitrate/Nitrite	mg/L as N	0.500	U	0.625	I	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
TKN	mg/L	2.46		1.97		4.36		5.70		3.94		1.66		1.19		2.32		1.48	
TN	mg/L	2.960		2.595		4.860		6.200		4.440		2.160		1.690		2.820		1.980	
ortho-Phosphate	mg/L	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00325	I	0.00210	U	0.00210	U	0.00210	U	0.00210	U
Total Phosphorus (P)	mg/L	0.0237	I	0.0214	I	0.0574		0.0667		0.0714		0.0183	I	0.0217	I	0.0373	I	0.0171	I
Salinity	*	0.45	J	0.43	J	0.43	J	0.51	J	0.76	J	5.85		23.94		0.53	J	0.60	J
Tritium	pCi/L (1σ)	41.7 (3.6)		81.7 (4.6)		62.2 (4.0)		38.0 (3.5)		37.6 (3.3)		48.4 (6.3)		61.2 (6.6)		15.3 (5.7)		10.9 (5.5)	

NOTES:

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Text in blue are revised

KEY:

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J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-26. Marsh and Mangrove Analytical Porewater November 2014

Parameter	Units	PW-F6-3 11/17/2014		PW-F6-4 11/17/2014		PW-M1-1 11/13/2014		PW-M1-2 11/11/2014		PW-M2-1 11/06/2014		PW-M2-2 11/06/2014		PW-M3-1 11/10/2014		PW-M3-2 11/10/2014	
Temperature	°C	25.03		24.23		25.72		25.01		25.89		26.58		25.20		25.80	
pH	SU	6.68		6.52		6.48		6.55		6.96		6.54		7.03		6.81	
Specific Conductance	µS/cm	3624.5		1252.0		50315.0		52282.0		55697.0		57373.0		53692.0		58572.5	
Sodium	mg/L	367		53.9		9880		9410		11000		11100		10200		11200	
Chloride	mg/L	819		115		19400		20400		20200		20600		21000		22800	
Total Ammonia	mg/L as N	0.571		0.318		0.199		0.140		0.718		0.161		0.490		0.333	
Ammonium ion (NH_4^+)	mg/L	0.732		0.408		0.255		0.180		0.918		0.207		0.626		0.426	
Unionized NH_3	mg/L	0.00189		0.000688		0.000436		0.000343		0.00479		0.000430		0.00366		0.00157	
Nitrate/Nitrite	mg/L as N	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
TKN	mg/L	1.55		2.46		0.730		0.476		1.86		0.706		2.50		0.814	
TN	mg/L	2.050		2.960		1.230		0.976		2.360		1.206		3.000		1.314	
ortho-Phosphate	mg/L	0.00210	U	0.00210	U	0.00210	U	0.0225		0.00210	U	0.00210	U	0.00210	U	0.00210	U
Total Phosphorus (P)	mg/L	0.0623		0.0495	I	0.0352	I	0.0197	I	0.0700		0.0189	I	0.0318	I	0.0218	I
Salinity	*	1.91	J	0.63	J	32.96		34.4		36.94		38.19		35.51		39.51	
Tritium	pCi/L (1σ)	23.4 (5.7)		23.9 (5.8)		26.3 (6.0)		22.9 (5.8)		37.4 (3.7)		27.1 (3.5)		84.7 (4.5)		57.5 (3.8)	

NOTES:

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mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-26. Marsh and Mangrove Analytical Porewater November 2014

Parameter	Units	PW-M4-1 11/04/2014		PW-M4-2 11/11/2014		PW-M5-1 11/14/2014		PW-M5-2 11/11/2014		PW-M6-1 11/12/2014		PW-M6-2 11/12/2014		PW-EB1 11/04/2014		PW-FB1 11/19/2014	
Temperature	°C	25.09		25.51		26.23		24.37		26.41		26.47					
pH	SU	6.77		6.69		6.55		6.91		6.50		6.60					
Specific Conductance	µS/cm	59041.5		65533.0		55870.0		54233.5		45339.0		46657.0					
Sodium	mg/L	11400		12600		10300		10200		8580		9630		0.310	U	0.310	U
Chloride	mg/L	22700		26300		21800		20300		16900		18300		0.250	U	0.200	U
Total Ammonia	mg/L as N	0.624	J	2.58		0.212		0.622		2.31		1.95		0.168		0.0649	
Ammonium ion (NH_4^+)	mg/L	0.800	J	3.31		0.272		0.796		2.96		2.50					
Unionized NH_3	mg/L	0.00255	J	0.00903		0.000566		0.00333		0.00556		0.00593					
Nitrate/Nitrite	mg/L as N	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
TKN	mg/L	1.45		2.66		0.688		1.11		2.72		2.48		0.300	U	0.300	U
TN	mg/L	1.950		3.160		1.188		1.610		3.220		2.980					
ortho-Phosphate	mg/L	0.00210	U	0.0193		0.00210	U	0.00538	I	0.0548		0.0492		0.00210	U	0.00210	U
Total Phosphorus (P)	mg/L	0.00300	U	0.0171	I	0.0150	U	0.0245	I	0.0150	U	0.0150	U	0.00300	U	0.0150	U
Salinity	*	39.50		44.45		37.13		35.9		28.62		30.27					
Tritium	pCi/L (1σ)	53.6 (4.2)		36.8 (5.9)		53.4 (6.5)		26.7 (5.8)		12.5 (5.4)		11.0 (5.4)		4.4 (3.0)		3.5 (2.8)	

NOTES:

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Text in blue are revised

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σ = sigma (Standard Deviation)
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I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
NTU = Nephelometric Turbidity Units(s).
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-27. Marsh and Mangrove Analytical Porewater February 2015

Parameter	Units	PW-F1-1 02/04/2015		PW-F1-2 02/04/2015		PW-F2-1 02/05/2015		PW-F2-2 02/05/2015		PW-F2-3 02/05/2015		PW-F3-1 02/09/2015		PW-F3-2 02/09/2015		PW-F3-3 02/09/2015		PW-F4-1 02/09/2015	
Temperature	°C	24.95		23.22		23.23		21.01		20.70		22.46		22.47		22.69		22.05	
Specific Conductance	µS/cm	1549.68		2054.15		1334.21		1628.54		2183.40		1325.76		1528.57		2085.88		1031.97	
Sodium	mg/L	115		201		97.9		142		220		121		140		239		61.7	
Chloride	mg/L	166		391		198		291		457		248		291		504		146	
Salinity	*	0.79	J	1.11	J	0.65	J	0.83	J	1.16	J	0.67	J	0.78	J	1.08	J	0.52	J
Tritium	pCi/L (1σ)	127 (8.9)		42.9 (6.9)		56.8 (7.2)		43.3 (7.1)		29.4 (6.6)		109 (8.6)		66.9 (7.6)		48.3 (6.9)		101 (8.3)	

Parameter	Units	PW-F4-2 02/09/2015		PW-F4-3 02/09/2015		PW-F5-1 02/06/2015		PW-F5-2 02/06/2015		PW-F6-1 02/03/2015		PW-F6-2 02/03/2015		PW-F6-3 02/03/2015		PW-EB1 02/03/2015		PW-FB1 02/09/2015	
Temperature	°C	22.70		22.40		21.69		22.44		19.44		21.97		22.34					
Specific Conductance	µS/cm	920.23		1141.25		25101.25		40245.01		1010.21		1264.87		3098.87					
Sodium	mg/L	62.9		74.1		4210		7860		55.9		81.5		352		1.52		0.310	U
Chloride	mg/L	134		156		8770		15500		127		179		756		0.200	U	0.200	U
Salinity	*	0.46	J	0.57	J	15.46		26.05		0.51	J	0.64	J	1.64	J				
Tritium	pCi/L (1σ)	70.8 (7.4)		48.5 (7.1)		91.2 (8.0)		77.8 (7.6)		12.7 (2.9)	J	16.9 (3.0)	J	16.6 (3.0)	J	11.5 (2.8)		-11.0 (6.0)	UJ

NOTES:

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Text in blue is revised

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J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
U = Analyzed for but not detected at the reported value.

Table 4.1-28. Marsh and Mangrove Analytical Porewater May 2015

Parameter	Units	PW-F1-1		PW-F1-2		PW-F2-1		PW-F2-2		PW-F2-3		PW-F2-4		PW-F3-1		PW-F3-2		PW-F3-3	
		05/13/2015		05/13/2015		05/18/2015		05/18/2015		05/18/2015		05/06/2015		05/06/2015		05/06/2015		05/06/2015	
Temperature	°C	29.28		29.34		27.88		28.28		27.53		25.28		26.97		26.82		26.28	
pH	SU	6.67		6.66		6.71		6.67		6.68		6.28		7.09		6.99		6.97	
Specific Conductance	µS/cm	1651.26		2343.45		1313.85		1867.27		2687.02		1486.36		1441.00		1564.55		2357.32	
Sodium	mg/L	130		266		88.5		160		298		140		134		149		255	
Chloride	mg/L	185		419		198		317		561		319		270		311		523	
Total Ammonia	mg/L as N	0.217	J-	0.325	J	0.261	J	0.358	J	0.533	J	0.350		0.576		0.923		0.289	
Ammonium ion (NH_4^+)	mg/L	0.278	J	0.416	J	0.334	J	0.459	J	0.683	J	0.450		0.735		1.179		0.369	
Unionized NH_3	mg/L	0.00103	J	0.00154	J	0.00111	J	0.00158	J	0.00219	J	0.00050		0.00572		0.00730		0.00220	
Nitrate/Nitrite	mg/L as N	0.0500	U	0.0500	U	0.00500	U	0.00500	U	0.00500	U	0.0599		0.0525		0.203		0.0500	U
TKN	mg/L	2.10		3.24		9.60		8.38		3.22		2.24		3.14		3.02		2.52	
TN	mg/L	2.15		3.29		9.61		8.39		3.23		2.30		3.19		3.22		2.57	
ortho-Phosphate	mg/L	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U
Total Phosphorus (P)	mg/L	0.0323	I	0.0616		0.121		0.0831		0.0405	I	0.00300	U	0.0326	I	0.00600	U	0.0323	I
Salinity	*	0.85	J	1.22	J	0.65	J	0.96	J	1.42	J	0.74	J	0.73	J	0.80	J	1.23	J
Tritium	pCi/L (1σ)																		

NOTES:

Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Tritium data pending due to USGS backlog.

Text in blue are revised

KEY:

°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation)
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-28. Marsh and Mangrove Analytical Porewater May 2015

Parameter	Units	PW-F3-4		PW-F4-1		PW-F4-2		PW-F4-3		PW-F4-4		PW-F5-1		PW-F5-2		PW-F6-1		PW-F6-2	
		05/06/2015		05/14/2015		05/14/2015		05/14/2015		05/14/2015		05/21/2015		05/21/2015		05/07/2015		05/07/2015	
Temperature	°C	24.67		28.48		29.66		28.82		25.97		28.99		30.26		25.50		26.65	
pH	SU	5.95		6.41		6.74		6.69		6.30		6.51		6.80		6.62		6.86	
Specific Conductance	µS/cm	1284.75		1201.91		993.47		1166.60		1717.84		35971.15		58596.96		1027.79		1266.77	
Sodium	mg/L	143		68.1		69.0		77.1		138		6500	J	12000	J	43.7		81.7	
Chloride	mg/L	321		142		150		157		324		12600		22700		113		176	
Total Ammonia	mg/L as N	0.100	U	0.204	J	0.508	J	0.662	J	0.493	J	0.555	J	0.292	J	1.41		1.13	
Ammonium ion (NH_4^+)	mg/L	0.129	U	0.262	J	0.651	J	0.848	J	0.633	J	0.712	J	0.374	J	1.809		1.446	
Unionized NH_3	mg/L	0.00007	U	0.00045	J	0.00248	J	0.00302	J	0.00073	J	0.00160	J	0.00179	J	0.00401		0.00686	
Nitrate/Nitrite	mg/L as N	0.0500	U	0.00500	U	0.00500	U	0.00500	U	0.00500	U	0.0500	UJ	0.0500	UJ	0.0500	U	0.0500	U
TKN	mg/L	2.40		1.97		4.68		3.26		7.70		1.69	J	0.774	J	8.46		1.66	
TN	mg/L	2.45		1.98		4.69		3.27		7.71		1.74	J	0.82	J	8.51		1.71	
ortho-Phosphate	mg/L	0.00210	U	0.00210	U	0.00253	I	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U
Total Phosphorus (P)	mg/L	0.0706		0.0150	U	0.0718		0.0491	I	0.137		0.0151	I J	0.0197	I J	0.0692		0.0150	U
Salinity	*	0.65	J	0.60	J	0.50	J	0.59	J	0.88	J	23.09		39.92		0.52	J	0.64	J
Tritium	pCi/L (1σ)																		

NOTES:

Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Tritium data pending due to USGS backlog.

Text in blue are revised

KEY:

°C = Degrees Celsius.
µS/cm = MicroSiemen(s) per centimeter.
σ = sigma (Standard Deviation)
EB = Equipment Blank.
FB = Field Blank.
I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-28. Marsh and Mangrove Analytical Porewater May 2015

Parameter	Units	PW-F6-3		PW-F6-4		PW-M1-1		PW-M1-2		PW-M2-1		PW-M2-2		PW-M3-1		PW-M3-2		PW-M4-1	
		05/07/2015		05/07/2015		05/18/2015		05/20/2015		05/12/2015		05/12/2015		05/12/2015		05/12/2015		05/12/2015	
Temperature	°C	27.22		24.38		30.46		29.65		27.99		27.78		29.06		28.69		29.79	
pH	SU	6.80		6.25		6.85		6.56		7.03		6.48		6.94		7.07		7.05	
Specific Conductance	µS/cm	3408.22		932.69		50587.55		52081.18		55039.56		58440.67		56126.70		56201.70		64433.23	
Sodium	mg/L	362		46.5		10100		10500	J	11700		11000	J	10900		10700	J	12800	
Chloride	mg/L	788		104		19600		20700		20700		22100		19600		21000		25200	
Total Ammonia	mg/L as N	0.363		0.188	I	0.100	U	0.105	J	0.512	J+	0.353	J	0.566		0.618	J	0.644	
Ammonium ion (NH_4^+)	mg/L	0.465		0.241		0.128	U	0.135	J	0.654	J	0.453	J	0.724		0.788	J	0.820	
Unionized NH_3	mg/L	0.00181		0.00025		0.00077	U	0.00039	J	0.00433	J	0.00095	J	0.00408		0.00704	J	0.00782	
Nitrate/Nitrite	mg/L as N	0.0500	U	0.0500	U	0.0250	U	0.0250	UJ	0.119		0.0500	UJ	0.0500	U	0.0500	UJ	0.0500	U
TKN	mg/L	2.98		3.98		2.56		0.606	J	2.06		1.15	J	1.25		0.656	J	0.650	
TN	mg/L	3.03		4.03		2.59		0.63	J	2.18		1.20	J	1.30		0.71	J	0.70	
ortho-Phosphate	mg/L	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U	0.00210	U
Total Phosphorus (P)	mg/L	0.0347	I	0.0670		0.0441	I	0.0321	I	0.0394	I	0.0206	I J	0.0195	I	0.0150	U J	0.0158	I
Salinity	*	1.81	J	0.47	J	33.81		34.92		37.14		39.75		38.00		38.04		44.47	
Tritium	pCi/L (1σ)																		

NOTES:

Laboratory anion and cation results are reported with 3 digits although only the first 2 are significant figures.

* PSS-78 salinity is untiless

Tritium data pending due to USGS backlog.

Text in blue are revised

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I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

Table 4.1-28. Marsh and Mangrove Analytical Porewater May 2015

Parameter	Units	PW-M4-2		PW-M5-1		PW-M5-2		PW-M6-1		PW-M6-2		PW-EB1		PW-EB1		PW-FB1	
		05/20/2015		05/21/2015		05/20/2015		05/19/2015		05/19/2015		05/06/2015		05/21/2015		05/21/2015	
Temperature	°C	29.82		28.15		29.59		27.96		28.17							
pH	SU	6.66		6.65		6.77		6.73		6.76							
Specific Conductance	µS/cm	68768.24		64549.25		54744.48		46487.45		47579.07							
Sodium	mg/L	14600	J	13400	J	11200	J	9080	J	9360	J	0.310	U			0.310	U
Chloride	mg/L	28500		25200		21600		17600		18000		1.17				0.200	U
Total Ammonia	mg/L as N	1.53	J	0.185	I J	0.850	J	1.87	J	2.34	J			0.100	U	0.100	U
Ammonium ion (NH_4^+)	mg/L	1.960	J	0.237	J	1.088	J	2.396	J	2.996	J						
Unionized NH_3	mg/L	0.00747	J	0.00079	J	0.00522	J	0.00797	J	0.01253	J						
Nitrate/Nitrite	mg/L as N	0.129	J	0.143	J	0.0250	UJ	0.0250	UJ	0.0250	UJ	0.00500	U			0.00500	U
TKN	mg/L	1.53	J	2.60	J	0.692	J	2.90	J	2.60	J	0.200	U			0.100	U
TN	mg/L	1.66	J	2.74	J	0.72	J	2.93	J	2.63	J						
ortho-Phosphate	mg/L	0.00210	U	0.00210	U	0.00210	U	0.00818	I	0.0113		0.00210	U			0.00210	U
Total Phosphorus (P)	mg/L	0.0300	U J	0.0319	I J	0.0300	UJ	0.0238	I J	0.0530	J	0.0120	U			0.0150	U
Salinity	*	47.91		44.52		36.95		30.71		31.53							
Tritium	pCi/L (1σ)																

NOTES:

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* PSS-78 salinity is untiless

Tritium data pending due to USGS backlog.

Text in blue are revised

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EB = Equipment Blank.
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I = Value between the MDL and PQL.
J = Estimated (+/- indicate bias).
mg/L = Milligram(s) per liter.
N = Nitrogen.
NH_3 = Ammonia.
NH_4^+ = Ammonum ion.
pCi/L = PicoCuries per liter.
PSS-78 = Practical Salinity Scale of 1978.
PW = Porewater.
SU = Standard unit(s).
TKN = Total Kjeldahl nitrogen.
TN = Total nitrogen.
U = Analyzed for but not detected at the reported value.

4.1-29. Percent Cover of Red Mangroves per Plot and Transect for Post-Uprate Period with Pre-Uprate Average

Transect	Plot	Percent (%) Cover							
		Pre-Uprate Average		August 2013		November 2013		November 2014	
		Plot	Transect	Plot	Transect	Plot	Transect	Plot	Transect
F1	1	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%
	2	2-5%		2-5%		2-5%		2-5%	
F2	1	0-1%	0-1%	0-1%	0-1%	0-1%	0-1%	0-1%	0-1%
	2	0-1%		0-1%		0-1%		0-1%	
	3	0-1%		0-1%		0-1%		0-1%	
F5	1	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%	6-25%
	2	6-25%		6-25%		6-25%		6-25%	
M1	1	26-50%	26-50%	N/A	N/A	26-50%	26-50%	26-50%	26-50%
	2	26-50%		N/A		26-50%		26-50%	
M2	1	6-25%	6-25%	N/A	N/A	6-25%	6-25%	6-25%	6-25%
	2	26-50%		N/A		26-50%		26-50%	
M3	1	26-50%	6-25%	N/A	N/A	6-25%	6-25%	6-25%	6-25%
	2	6-25%		N/A		6-25%		6-25%	
M4	1	6-25%	6-25%	N/A	N/A	6-25%	6-25%	6-25%	6-25%
	2	6-25%		N/A		6-25%		6-25%	
M5	1	6-25%	6-25%	N/A	N/A	6-25%	6-25%	6-25%	6-25%
	2	6-25%		N/A		6-25%		6-25%	
M6	1	6-25%	6-25%	N/A	N/A	6-25%	6-25%	6-25%	6-25%
	2	6-25%		N/A		6-25%		6-25%	

Key:
% = Percent.

Table 4.1-30. Average Red Mangrove Height per Plot and Transect for Post-Uprate Period with Pre-Uprate Range

Transect	Plot	Height ± Standard Error (cm)													
		Pre-Uprate Range		August 2013				November 2013				November 2014			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	112.3 - 114.6	83.7 - 114.6	112.3	6.2	101.5	4.4	113.8	6.3	104.0	4.3	112.8	6.4	102.7	4.4
	2	83.7 - 90.0		88.4	2.8			92.4	3.2			90.7	3.4		
F2	2	41.8 - 43.5	41.8 - 43.5	48.7	3.5	-	-	49.5	3.1	-	-	52.3	4.9	-	-
F5	1	77.1 - 83.2	57.8 - 83.2	85.8	19.2	68.0	7.4	83.8	19.7	72.7	7.1	92.2	19.8	72.9	7.5
	2	57.8 - 59.5		60.6	6.4			69.0	7.2			64.8	6.0		
M1	1	71.3 - 72.7	71.3 - 86.4	N/A	N/A	N/A	N/A	74.5	1.9	81.6	2.5	75.6	2.3	82.8	2.6
	2	84.6 - 86.4		N/A	N/A			88.7	3.6			90.0	3.7		
M2	1	87.3 - 88.8	67.0 - 88.8	N/A	N/A	N/A	N/A	90.3	4.1	80.1	3.1	91.7	4.1	81.5	3.1
	2	67.0 - 70.2		N/A	N/A			69.9	2.1			71.3	1.9		
M3	1	80.8 - 84.8	80.8 - 97.8	N/A	N/A	N/A	N/A	82.2	4.0	90.6	4.1	84.3	4.1	92.2	4.2
	2	96.4 - 97.8		N/A	N/A			99.1	6.5			100.1	6.8		
M4	1	78.6 - 83.0	78.6 - 83.7	N/A	N/A	N/A	N/A	86.4	4.7	86.2	3.6	87.0	4.7	88.0	3.8
	2	82.3 - 83.7		N/A	N/A			86.0	5.8			89.0	6.2		
M5	1	57.5 - 59.6	57.5 - 111.5	N/A	N/A	N/A	N/A	61.5	3.2	87.9	6.2	63.0	3.2	88.4	6.1
	2	110.3 - 111.5		N/A	N/A			112.0	5.3			111.6	5.5		
M6	1	100.0 - 103.7	88.5 - 103.7	N/A	N/A	N/A	N/A	105.4	5.6	101.8	4.2	103.1	7.2	99.5	5.0
	2	88.5 - 94.3		N/A	N/A			98.3	6.4			95.8	7.1		

Key:
cm = Centimeters.
N/A = Not applicable.
SE = Standard Error.

Table 4.1-31. Average Red Mangrove Biomass per Plot and Transect for Post-Uprate Events with Pre-Uprate Range

Transect	Plot	Biomass ± Standard Error (g/m^2)									
		Pre-Uprate Range		November 2013				November 2014			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	210.0 - 221.0	121.7 - 128.5	262.8	65.6	155.4	51.1	255.9	69.5	155.7	50.3
	2	25.0 - 36.8		48.1	14.2			55.6	16.6		
F2	1	0.0 - 0.0	0.8 - 3.3	0.0	0.0	4.6	2.4	0.0	0.0	2.5	1.7
	2	2.3 - 10.0		13.7	4.8			7.5	4.4		
	3	0.0 - 0.0		0.0	0.0			0.0	0.0		
F5	1	93.8 - 118.8	179.3 - 211.3	127.1	44.0	187.3	34.4	142.8	54.8	197.9	37.5
	2	253.2 - 303.9		247.6	34.2			253.0	39.2		
M1	1	660.5 - 849.7	649.1 - 766.9	702.3	58.0	663.2	32.2	746.2	23.8	682.4	28.3
	2	620.4 - 684.1		624.0	21.0			618.7	21.4		
M2	1	119.0 - 134.0	347.7 - 393.6	247.6	164.4	416.4	104.0	263.5	186.5	481.0	125.1
	2	572.5 - 654.8		585.1	66.5			698.6	81.7		
M3	1	360.1 - 399.2	282 - 322.4	393.4	43.1	292.6	45.0	397.2	38.2	294.5	44.8
	2	201.8 - 252.8		191.9	28.9			191.8	29.8		
M4	1	201.5 - 226.2	273.5 - 307	208.8	22.8	267.4	28.5	204.8	24.0	266.1	29.9
	2	342.2 - 387.9		326.1	31.2			327.5	33.0		
M5	1	256.5 - 319.9	288.6 - 366.3	271.0	39.1	271.7	23.5	280.4	39.5	276.0	22.9
	2	320.7 - 412.6		272.5	32.5			271.7	29.5		
M6	1	145.3 - 168.4	154.8 - 207.3	145.8	19.4	161.1	14.7	146.1	20.5	154.2	14.1
	2	156.7 - 246.3		176.4	21.8			162.3	21.6		

Key:
g/m^2 = Grams per square meter.
N/A = Not applicable.
SE = Standard Error.
Note: Values in blue are revised from previous report.

Table 4.1-32. Red Mangrove Sclerophylly per Plot and Transect for Post-Uprate Period with Pre-Uprate Range

Transect	Plot	Sclerophylly (g/m^2)									
		Pre-Uprate Range		November 2013				November 2014			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	234.1 - 249.5	229.0 - 251.7	269.8	3.9	255.5	5.0	252.9	5.5	244.5	3.7
	2	223.9 - 253.9		241.2	7.1			236.0	3.8		
F2	2	228.8 - 291.0	228.8 - 291.0	250.9	6.9	250.9	6.9	229.4	5.4	229.4	5.4
F5	1	163.0 - 240.8	180.6 - 242.1	227.3	3.2	242.6	8.3	231.1	7.5	234.6	5.2
	2	206.9 - 265.5		257.9	15.3			238.0	7.5		
M1	1	216.8 - 259.6	217.5 - 257	253.1	9.9	261.3	10.1	272.3	13.7	259.3	7.8
	2	218.2 - 254.4		269.6	17.8			246.3	6.1		
M2	1	246.7 - 275.4	245.5 - 267.3	281.1	9.8	273.3	6.3	246.8	6.1	254.9	5.7
	2	244.3 - 259.1		265.5	7.5			262.9	9.3		
M3	1	233.5 - 298.9	235.7 - 275.7	255.8	6.2	252.2	4.7	241.9	8.2	241.8	6.4
	2	223.1 - 252.4		248.6	7.3			241.7	10.1		
M4	1	220.6 - 244.3	219.1 - 243.1	232.2	6.4	234.1	4.4	224.2	14.9	224.8	9.0
	2	214.6 - 242.0		236.0	6.2			225.4	10.9		
M5	1	222.3 - 267.9	219.3 - 260.7	249.1	4.5	258.1	4.5	263.8	9.5	259.4	5.9
	2	216.2 - 260.9		267.1	7.1			255.0	7.2		
M6	1	232.9 - 265.6	239.4 - 276.0	269.6	8.4	269.3	5.2	248.4	6.5	248.8	5.9
	2	245.8 - 286.3		268.9	6.6			249.1	10.1		

Key:
g/m^2 = Grams per square meter.
SE = Standard error.

Table 4.1-33. Average Leaf Carbon for Red Mangrove per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

Transect	Plot	*R. mangle* Total Carbon (mg/kg)									
		Pre-Uprate Ranges		November 2013				November 2014			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	462675 - 490082	474613 - 490000	441750	854	445125	2349	463401	3216	462305	1746
	2	476030 - 490500		448500	4173			461210	1755		
F2	2	437350 - 488041	448467 - 488041	440000	4041	440000	4041	442125	7689	442125	7689
F5	1	456250 - 494134	460750 - 496441	463000	3873	454500	4351	465282	2785	455848	4300
	2	465250 - 498172		446000	5017			446415	4383		
M1	1	454750 - 492975	456125 - 496888	433750	2250	435875	3603	436081	3548	442228	3792
	2	457500 - 500800		438000	7246			448374	5416		
M2	1	459250 - 471325	431738 - 468300	430750	10028	429375	4847	456700	9094	449519	5047
	2	392150 - 468684		428000	2799			442339	1336		
M3	1	459059 - 476925	436025 - 464579	444000	4601	446000	3207	544949	101720	486373	52080
	2	395125 - 470100		448000	4916			427798	4802		
M4	1	460750 - 586650	456250 - 511975	457500	7053	455625	6050	546349	97957	501364	48597
	2	437300 - 474908		453750	10896			456379	8739		
M5	1	434450 - 477311	442575 - 479169	438250	3473	441000	3606	436899	21409	440610	10649
	2	450700 - 481027		443750	6600			444321	7852		
M6	1	441500 - 471298	442875 - 470251	430000	5292	433375	4464	443764	4745	433266	5321
	2	444250 - 469203		436750	7576			422769	6011		

Key:
mg/kg = Milligrams per kilogram.
SE = Standard Error.

Table 4.1-34. Average Leaf Total Nitrogen for Red Mangrove per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

		R. mangle Total Nitrogen (mg/kg)											
		Pre-Uprate Ranges		November 2013				November 2014					
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE		
F1	1	12355 - 15975	12402 - 16450	10750	250	10750	164	10680	694	11207	433		
	2	12450 - 16925		10750	250			11734	454				
F2	2	10371- 14500	10371 - 15400	10333	882	10333	882	12091	1351	12091	1351		
F5	1	13250 - 19300	12750 - 16433	13750	250	13250	250	12585	622	12467	335		
	2	12250 - 15000		12750	250			12349	358				
M1	1	12721 - 15500	12939 - 15863	10250	479	10750	313	10615	743	11107	398		
	2	13000 - 16275		11250	250			11599	161				
M2	1	10250 - 14175	10500 - 13725	9500	500	10250	412	11540	554	10662	424		
	2	10750 - 13275		11000	408			9785	142				
M3	1	11500 - 13925	11875 - 13350	11750	250	11250	313	11235	547	10688	341		
	2	12250 - 12775		10750	479			10141	210				
M4	1	12250 - 20525	12625 - 17738	13000	577	13000	327	12432	488	13387	587		
	2	13000 - 14950		13000	408			14343	872				
M5	1	12000 - 18450	11815 - 16863	11750	479	11250	313	10882	892	10583	468		
	2	11454 - 15275		10750	250			10284	407				
M6	1	10278 - 11750	10393 - 11750	10500	500	10250	313	10926	309	10791	166		
	2	10507 - 11750		10000	408			10655	143				

Key:
mg/kg = Milligrams per kilogram.
SE = Standard Error.

Table 4.1-35. Average Leaf Total Phosphorus for Red Mangrove per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

		R. mangle Total Phosphorous (mg/kg)											
		Pre-uprate Ranges		November 2013				November 2014			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	305.3 - 500.0	365.2 - 535.0	444.0	21.1	454.0	22.3	534.5	26.8	577.9	22.8
	2	425.0 - 570.0		464.0	42.4			621.3	21.1		
F2	2	305.5 - 560.0	360.0 - 560.0	526.7	67.3	526.7	67.3	740.0	170.0	740.0	170.0
F5	1	315.7 - 565.0	360.2 - 498.8	606.3	13.9	556.3	24.1	492.0	26.9	516.6	19.3
	2	382.5 - 432.5		506.3	29.0			541.3	24.7		
M1	1	380.0 - 485.0	417.5 - 486.3	474.5	25.5	514.1	22.9	533.5	85.8	550.9	40.6
	2	455.0 - 487.5		553.8	27.5			568.3	12.1		
M2	1	412.5 - 502.5	407.5 - 483.8	550.5	20.5	567.6	23.3	605.0	26.9	574.6	18.8
	2	402.5 - 465.0		584.8	43.9			544.3	17.8		
M3	1	233.1 - 497.5	344.0 - 517.5	639.8	19.5	633.0	17.5	567.8	23.3	577.6	16.3
	2	455.0 - 537.5		626.3	31.8			587.5	25.0		
M4	1	365.3 - 557.5	371.4 - 537.5	707.0	60.3	673.4	32.8	667.5	22.6	673.9	46.3
	2	377.5 - 517.5		639.8	25.1			680.3	97.3		
M5	1	345.0 - 480.0	401.4 - 433.8	546.3	30.9	497.6	24.3	592.3	27.9	565.3	20.7
	2	322.9 - 522.5		449.0	15.2			538.3	27.1		
M6	1	430.0 - 525.0	416.3 - 493.8	480.5	19.6	468.9	17.5	590.5	15.0	586.3	9.5
	2	402.5 - 462.5		457.3	30.8			582.0	13.6		

Key:
mg/kg = Milligrams per kilogram.
SE = Standard Error.

Table 4.1-36. Average Leaf Carbon Isotopes for Red Mangrove per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

Transect	Plot	*R. mangle* Carbon Isotopes (‰)									
		Pre-Uprate Ranges		November 2013				November 2014			
		Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	-27.6 to -25.8	-27.2 to -25.7	-27.2	0.2	-27.2	0.2	-27.7	0.1	-27.6	0.1
	2	-27.1 to -25.7		-27.3	0.3			-27.5	0.2		
F2	2	-28.4 to -26.1	-28.4 to -26.1	-28.0	0.3	-28.0	0.3	-27.5	0.4	-27.5	0.4
F5	1	-27.7 to -25.9	-26.9 to -25.8	-27.3	0.3	-26.5	0.3	-27.4	0.1	-26.7	0.3
	2	-26.4 to -25.7		-25.7	0.2			-26.0	0.1		
M1	1	-26.1 to -24.4	-26.0 to -24.3	-25.9	0.1	-25.8	0.2	-26.1	0.4	-26.1	0.2
	2	-26.0 to -24.2		-25.8	0.4			-26.1	0.2		
M2	1	-25.7 to -22.6	-25.6 to -23.4	-25.2	0.2	-25.3	0.2	-24.9	0.3	-25.3	0.2
	2	-25.6 to -24.3		-25.4	0.3			-25.6	0.2		
M3	1	-25.7 to -24.1	-25.5 to -24.1	-24.8	0.4	-24.8	0.2	-25.2	0.0	-25.0	0.1
	2	-25.3 to -23.9		-24.8	0.2			-24.7	0.3		
M4	1	-25.7 to -23.4	-25.9 to -24.3	-25.1	0.3	-25.1	0.1	-25.1	0.3	-25.3	0.2
	2	-26.0 to -24.9		-25.1	0.1			-25.6	0.3		
M5	1	-25.3 to -22.8	-25.4 to -22.9	-25.4	0.1	-25.6	0.1	-25.5	0.1	-25.6	0.1
	2	-25.9 to -22.9		-25.8	0.2			-25.6	0.0		
M6	1	-25.9 to -24.7	-25.8 to -24.9	-25.4	0.3	-25.5	0.2	-25.7	0.1	-25.4	0.2
	2	-25.6 to -25.1		-25.5	0.2			-25.1	0.2		

Key:
‰ = Parts per mille.
SE =Standard Error.

Table 4.1-37. Average Leaf Nitrogen Isotopes for Red Mangrove per Plot and Transect during the Post-Uprate Period with Pre-Uprate Range

		R. mangle Nitrogen Isotopes (‰)									
		Pre-Uprate Ranges		November 2013				November 2014			
Transect	Plot	Plot	Transect	Plot	SE	Transect	SE	Plot	SE	Transect	SE
F1	1	-2.4 to -0.3	-4.5 to -3.2	-0.1	0.5	-2.0	0.9	-0.9	0.1	-2.7	0.7
	2	-6.5 to -6.0		-3.9	0.8			-4.4	0.5		
F2	2	-1.7 to -0.7	-1.9 to -0.7	-0.2	0.5	-0.2	0.5	-1.2	0.8	-1.2	0.8
F5	1	-2.7 to -0.8	-2.0 to -1.4	-0.6	0.7	-1.8	0.7	-0.2	0.6	-2.3	0.9
	2	-2.1 to -1.6		-3.1	0.7			-4.4	0.6		
M1	1	-1.3 to -0.6	0.4 to 0.8	1.2	0.6	2.2	0.5	0.4	1.1	1.9	0.7
	2	1.4 to 2.5		3.2	0.2			3.3	0.2		
M2	1	-11.2 to -9.3	-6.8 to -6.0	-10.0	1.3	-5.7	1.8	-11.3	0.9	-6.6	2.0
	2	-2.6 to -1.2		-1.5	1.0			-1.9	1.8		
M3	1	-9.0 to -4.1	-7.3 to -5.7	-5.6	1.4	-6.9	1.1	-5.4	1.1	-7.5	1.0
	2	-8.5 to -5.6		-8.3	1.5			-9.6	0.8		
M4	1	-6.0 to -5.1	-5.8 to -4.6	-5.2	0.4	-5.9	0.4	-5.3	0.4	-4.5	0.6
	2	-6.4 to -4.0		-6.5	0.6			-3.7	1.1		
M5	1	1.3 to 2.6	-3.0 to -1.1	2.1	1.0	-2.0	1.7	3.6	0.4	-1.2	2.0
	2	-7.4 to -4.8		-6.0	1.1			-5.9	1.6		
M6	1	-6.1 to -4.1	-6.6 to -5.6	-6.4	0.9	-7.4	0.5	-7.0	1.3	-8.3	0.8
	2	-7.2 to -7.1		-8.4	0.1			-9.6	0.3		

Key:
‰ = Parts per mille.
SE =Standard Error.

Table 4.1-38. Red Mangrove Leaf C:N Molar Ratio per Plot and Transect in the Post-Uprate Period

Transect	Plot	R. mangle C:N Molar Ratio			
		November 2013		November 2014	
		Plot	Transect	Plot	Transect
F1	1	48:1	48:1	51:1	48:1
	2	49:1		46:1	
F2	2	50:1	-	43:1	-
F5	1	39:1	40:1	43:1	43:1
	2	41:1		42:1	
M1	1	49:1	47:1	48:1	46:1
	2	45:1		45:1	
M2	1	53:1	49:1	46:1	49:1
	2	45:1		53:1	
M3	1	44:1	46:1	57:1	53:1
	2	49:1		49:1	
M4	1	41:1	41:1	51:1	44:1
	2	41:1		37:1	
M5	1	44:1	46:1	47:1	49:1
	2	48:1		50:1	
M6	1	48:1	49:1	47:1	47:1
	2	51:1		46:1	

Key:
C = Carbon.
N = Nitrogen.

Table 4.1-39. Red Mangrove Leaf N:P Molar Ratio per Plot and Transect in the Post-Uprate Period

Transect	Plot	R. mangle N:P Ratio			
		November 2013		November 2014	
		Plot	Transect	Plot	Transect
F1	1	54:1	52:1	44:1	43:1
	2	51:1		42:1	
F2	2	43:1	-	36:1	-
F5	1	50:1	53:1	57:1	53:1
	2	56:1		51:1	
M1	1	48:1	46:1	44:1	45:1
	2	45:1		45:1	
M2	1	38:1	40:1	42:1	41:1
	2	42:1		40:1	
M3	1	41:1	39:1	44:1	41:1
	2	38:1		38:1	
M4	1	41:1	43:1	41:1	44:1
	2	45:1		47:1	
M5	1	48:1	50:1	41:1	41:1
	2	53:1		42:1	
M6	1	48:1	48:1	41:1	41:1
	2	48:1		41:1	

Key:
N = Nitrogen.
P = Phosphorous.

Table 4.2-1 Latitude and Longitude of Biscayne Bay, Card Sound, and Barnes Sound Ecological Sampling Points

Point	Latitude	Longitude	Point	Latitude	Longitude
BB1-a-1	25.42632	80.32344	BB3-a-1	25.35211	80.32451
BB1-a-2	25.42355	80.32348	BB3-a-2	25.35034	80.32586
BB1-a-3	25.42296	80.32346	BB3-a-3	25.34834	80.32731
BB1-a-4	25.41888	80.32347	BB3-a-4	25.34671	80.32854
BB1-a-5	25.41664	80.32343	BB3-a-5	25.34400	80.33055
BB1-a-6	25.41644	80.32344	BB3-a-6	25.34172	80.33224
BB1-a-7	25.41217	80.32345	BB3-a-7	25.34089	80.33284
BB1-a-8	25.41074	80.32344	BB3-a-8	25.33927	80.33405
BB1-b-1	25.42769	80.32095	BB3-b-1	25.35051	80.32288
BB1-b-2	25.42335	80.32097	BB3-b-2	25.34832	80.32450
BB1-b-3	25.42116	80.32096	BB3-b-3	25.34663	80.32575
BB1-b-4	25.42049	80.32096	BB3-b-4	25.34426	80.32749
BB1-b-5	25.41750	80.32094	BB3-b-5	25.34346	80.32808
BB1-b-6	25.41514	80.32094	BB3-b-6	25.34202	80.32914
BB1-b-7	25.41306	80.32094	BB3-b-7	25.33996	80.33068
BB1-b-8	25.41130	80.32095	BB3-b-8	25.33817	80.33199
BB2-a-1	25.37277	80.30706	BB4-a-1	25.28361	80.38995
BB2-a-2	25.37171	80.30782	BB4-a-2	25.28203	80.39109
BB2-a-3	25.37021	80.30888	BB4-a-3	25.28096	80.39186
BB2-a-4	25.36822	80.31030	BB4-a-4	25.27843	80.39368
BB2-a-5	25.36692	80.31122	BB4-a-5	25.27762	80.39426
BB2-a-6	25.36490	80.31265	BB4-a-6	25.27576	80.39561
BB2-a-7	25.36334	80.31375	BB4-a-7	25.27357	80.39718
BB2-a-8	25.36009	80.31604	BB4-a-8	25.27135	80.39879
BB2-b-1	25.37296	80.30388	BB4-b-1	25.28255	80.38793
BB2-b-2	25.37088	80.30538	BB4-b-2	25.28035	80.38951
BB2-b-3	25.36808	80.30740	BB4-b-3	25.27996	80.38978
BB2-b-4	25.36702	80.30816	BB4-b-4	25.27821	80.39103
BB2-b-5	25.36481	80.30966	BB4-b-5	25.27587	80.39272
BB2-b-6	25.36344	80.31065	BB4-b-6	25.27476	80.39350
BB2-b-7	25.36159	80.31196	BB4-b-7	25.27293	80.39482
BB2-b-8	25.35886	80.31391	BB4-b-8	25.27068	80.39641

Table 4.2-2 Categories of Submerged Aquatic Vegetation Scored Using Braun-Blanquet Cover Abundance Index Method at Each Sampling Point

Totals	Algae	Seagrasses	Calcareous Algae	Fleshy Green Algae	Corals/ Sponges[1]
Total Macrophytes	Total Macroalgae	*Thalassia testudinum*	*Penicillus*	*Batophora/ Dasycladus*	Corals
Total Drift Red	Total Calcareous	*Halodule wrightii*	*Rhipocephalus*	*Anadyomene*	Gorgonians/Soft Corals
Total Macrophytes Minus Drift Red	Total Green Other (Fleshy)	*Syringodium filiforme*	*Halimeda*		Sponges
Total Seagrass	Total Red Other	*Ruppia martima*	*Udotea*		
	Total Brown	*Halophila engelmannii*	*Acetabularia*		
		Halophila johnsonii			
		Halophila decipiens			

Notes:
[1] Presence/absence only

Table 4.2-3 Mean Water Depth (m) + One Standard Error (SE) by Transect, Season, and Study Area for All Pre-and Post-Uprate Monitoring Events. Minimum and Maximum Values Also Presented for the 2014/2015 Sampling Period.

Area	Transect	Pre-Uprate		Fall 2013		Fall 2014		Spring 2014		Spring 2015		Fall 2014 and Spring 2015 Combined	
		Fall Mean	Spring Mean	Mean	± SE	Mean	± SE	Mean	± SE	Mean	± SE	Min	Max
BB1	a	1.6	1.4	1.7	± 0.04	1.6	± 0.03	1.5	± 0.04	1.4	± 0.06	1.1	1.7
	b	1.5	1.3	1.6	± 0.04	1.8	± 0.05	1.5	± 0.02	1.7	± 0.06	1.5	2.0
	Total	**1.8**	**1.6**	**1.7**	**± 0.03**	**1.7**	**± 0.03**	**1.5**	**± 0.02**	**1.6**	**± 0.05**	**1.1**	**2.0**
BB2	a	2.4	2.2	2.2	± 0.09	2.3	± 0.09	2.2	± 0.07	2.2	± 0.09	1.9	2.8
	b	2.3	2.0	2.6	± 0.10	2.7	± 0.11	2.4	± 0.10	2.6	± 0.13	2.1	3.1
	Total	**2.5**	**2.3**	**2.4**	**± 0.08**	**2.5**	**± 0.09**	**2.3**	**± 0.06**	**2.4**	**± 0.09**	**1.9**	**3.1**
BB3	a	2.8	2.7	2.7	± 0.07	2.9	± 0.05	2.8	± 0.05	2.9	± 0.05	2.7	3.2
	b	2.7	2.7	3.0	± 0.06	3.1	± 0.03	2.8	± 0.05	3.0	± 0.04	2.8	3.3
	Total	**2.9**	**2.8**	**2.8**	**± 0.06**	**3.0**	**± 0.04**	**2.8**	**± 0.03**	**2.9**	**± 0.03**	**2.7**	**3.3**
BB4	a	2.1	1.9	2.0	± 0.03	2.3	± 0.02	2.1	± 0.03	2.1	± 0.04	2.0	2.4
	b	2.0	1.9	2.1	± 0.02	2.4	± 0.01	2.1	± 0.02	2.1	± 0.03	2.0	2.4
	Total	**2.1**	**2.0**	**2.1**	**± 0.02**	**2.3**	**± 0.02**	**2.1**	**± 0.02**	**2.1**	**± 0.02**	**2.0**	**2.4**
All Areas		**2.2**	**2.1**	**2.2**	**± 0.06**	**2.4**	**± 0.07**	**2.2**	**± 0.06**	**2.2**	**± 0.07**	**1.1**	**3.3**

Key:
m = meter(s)
SE = Standard Error

Table 4.2-4 Number of Points Within Each Study Area (n=16) Containing Each of Eight Substrate Types For All Fall and Spring Pre-and Post-Uprate Monitoring Events.

Sample Period	Area	Sandy and Rubble	Sandy and Shell Hash	Sandy, Shell Hash, Rubble	Sandy, Silty, Shell Hash, Rubble	Silty	Silty and Sandy	Silty, Sandy, and Shell Hash	Silty, Sandy, Rubble
Pre-Uprate Fall[1]	BB1		9	1			1	5	
	BB2		16						
	BB3		16					1	
	BB4		6		4	1		1	
	Total		**46**	**6**	**4**	**1**	**1**	**6**	
Fall 2013	BB1		7	1			2	6	
	BB2		16						
	BB3		15					1	
	BB4		7		7	1		1	
	Total		**45**	**1**	**7**	**1**	**2**	**8**	
Fall 2014	BB1		11	1	1			3	
	BB2		16						
	BB3		16						
	BB4		4	9		1			2
	Total		**47**	**10**	**1**	**1**		**3**	**2**

Table 4.2-4 Number of Points Within Each Study Area (n=16) Containing Each of Eight Substrate Types For All Fall and Spring Pre-and Post-Uprate Monitoring Events.

Sample Period	Area	Sandy and Rubble	Sandy and Shell Hash	Sandy, Shell Hash, Rubble	Sandy, Silty, Shell Hash, Rubble	Silty	Silty and Sandy	Silty, Sandy, and Shell Hash	Silty, Sandy, Rubble
Pre-Uprate Spring	BB1		13	1				2	
	BB2		15				1		
	BB3		14					2	
	BB4		6	5	4		1		
	Total		**48**	**6**	**4**		**2**	**4**	
Spring 2014	BB1		13	1				2	
	BB2		15				1		
	BB3		14					2	
	BB4		6	5	4		1		
	Total		**48**	**6**	**4**		**2**	**4**	
Spring 2015	BB1		13					3	
	BB2		16						
	BB3		15	1					
	BB4	1	6	4	2		1	1	1
	Total	**1**	**50**	**5**	**2**		**1**	**4**	**1**

[1] Number of occurrences for the 2 fall pre-uprate events averaged to nearest whole number

Table 4.2-5 Light Readings (μmols/m2/sec) Taken Simultaneously in Air and Water at Each of Three Depths at One Point Along Each Transect During All Fall and Spring Pre- and Post-Uprate Monitoring Events.

Area	Tran-sect	Sub-Surface									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall % ATN[1]	Spring % ATN	Depth (m)	% ATN	Depth (m)	% ATN	Depth (m)	% ATN	Depth (m)	% ATN
BB1	**a**	21%	21%	0.3	19%	0.3	13%	0.3	14%	0.3	15%
	b	14%	28%	0.3	17%	0.3	14%	0.3	21%	0.3	7%
	Area	**19%**	**24%**	**0.3**	**18%**	**0.3**	**13%**	**0.3**	**18%**	**0.3**	**11%**
BB2	**a**	29%	17%	0.3	25%	0.3	21%	0.3	18%	0.3	3%
	b	7%	16%	0.3	21%	0.3	13%	0.3	16%	0.3	5%
	Area	**19%**	**17%**	**0.3**	**23%**	**0.3**	**17%**	**0.3**	**17%**	**0.3**	**4%**
BB3	**a**	15%	23%	0.3	49%	0.3	23%	0.3	14%	0.3	10%
	b	21%	30%	0.3	40%	0.3	24%	0.3	22%	0.3	5%
	Area	**18%**	**26%**	**0.3**	**44%**	**0.3**	**23%**	**0.3**	**18%**	**0.3**	**7%**
BB4	**a**	11%	20%	0.3	26%	0.3	19%	0.3	16%	0.3	6%
	b	14%	11%	0.3	37%	0.3	12%	0.3	13%	0.3	7%
	Area	**12%**	**16%**	**0.3**	**32%**	**0.3**	**15%**	**0.3**	**14%**	**0.3**	**6%**

Table 4.2-5 Light Readings (µmols/m2/sec) Taken Simultaneously in Air and Water at Each of Three Depths at One Point Along Each Transect During All Fall and Spring Pre- and Post-Uprate Monitoring Events.

Area	Tran-sect	Mid-Depth										
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall % ATN[1]	Spring % ATN	Depth (m)	% ATN	Depth (m)	% ATN	Depth (m)	% ATN	Depth (m)	% ATN
BB1	a	36%	30%	0.9	43%	0.7	28%	0.7	31%	0.8	23%
	b	40%	39%	0.9	36%	0.9	29%	0.6	30%	0.9	26%
	Area	**37%**	**34%**	**0.9**	**39%**	**0.8**	**28%**	**0.7**	**31%**	**0.9**	**25%**
BB2	a	48%	23%	1	51%	1.0	37%	1	32%	1.0	25%
	b	7%	40%	1.2	57%	1.2	41%	1.2	32%	1.2	34%
	Area	**29%**	**38%**	**1.1**	**55%**	**1.1**	**39%**	**1.1**	**32%**	**1.1**	**29%**
BB3	a	54%	51%	1.3	55%	1.3	46%	1.3	32%	1.3	41%
	b	46%	42%	1.5	66%	1.5	49%	1.5	35%	1.5	27%
	Area	**49%**	**46%**	**1.4**	**60%**	**1.4**	**48%**	**1.4**	**34%**	**1.4**	**34%**
BB4	a	48%	35%	0.9	52%	0.9	35%	0.9	48%	0.9	38%
	b	53%	35%	1	50%	1.0	46%	1	29%	1.0	35%
	Area	**50%**	**35%**	**0.9**	**51%**	**0.9**	**41%**	**0.9**	**34%**	**0.9**	**37%**

Table 4.2-5 Light Readings (µmols/m2/sec) Taken Simultaneously in Air and Water at Each of Three Depths at One Point Along Each Transect During All Fall and Spring Pre- and Post-Uprate Monitoring Events.

Area	Tran-sect	Off-Bottom									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall % ATN[1]	Spring % ATN	Depth (m)	% ATN	Depth (m)	% ATN	Depth (m)	% ATN	Depth (m)	% ATN
BB1	**a**	41%	34%	1.5	54%	1.0	51%	1	37%	1.4	44%
	b	49%	51%	1.4	43%	1.4	49%	1.5	37%	1.4	44%
	Area	**44%**	**42%**	**1.5**	**48%**	**1.2**	**50%**	**1.3**	**37%**	**1.4**	**44%**
BB2	**a**	57%	40%	1.7	69%	1.7	52%	1.7	35%	1.7	52%
	b	18%	55%	2	72%	2.0	55%	2	44%	2.0	56%
	Area	**39%**	**52%**	**1.9**	**71%**	**1.9**	**53%**	**1.9**	**39%**	**1.9**	**54%**
BB3	**a**	72%	67%	2.2	67%	2.2	62%	2.2	48%	2.2	59%
	b	68%	73%	2.7	90%	2.7	67%	2.7	49%	2.7	62%
	Area	**70%**	**68%**	**2.5**	**81%**	**2.5**	**65%**	**2.5**	**49%**	**2.5**	**60%**
BB4	**a**	67%	51%	1.5	57%	1.5	55%	1.5	55%	1.5	55%
	b	62%	50%	1.7	60%	1.7	75%	1.7	59%	1.7	52%
	Area	**65%**	**50%**	**1.6**	**58%**	**1.6**	**65%**	**1.6**	**56%**	**1.6**	**53%**

Notes:
[1]Percent Attenuation (% ATN) is the percentage of attenuation from the air reading.
[2]Attenuation (ATN) is the difference between the air and water readings.

Key:
µmols/m2/sec = Micromoles per Second per Square Meter
m = Meter(s)
ATN = Attenuation.

Table 4.2-6 Mean and Standard Error (SE) for Surface and Bottom Water Column Temperatures (°C) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Surface										
		Pre-Uprate		Fall 2013		Fall 2014		Spring 2014		Spring 2015		
		Fall Mean	Spring Mean	Mean	± SE	Mean	± SE	Mean	± SE	Mean	± SE	
BB1	**a**	29.4	26.6	29.6	± 0.1	27.9	± 0.0	26.0	± 0.0	28.8	± 0.2	
	b	28.1	27.3	30.2	± 0.2	28.3	± 0.2	27.0	± 0.1	29.0	± 0.1	
	Area	**28.8**	**26.9**	**29.9**	**± 0.1**	**28.1**	**± 0.1**	**26.5**	**± 0.1**	**28.9**	**± 0.1**	
BB2	**a**	27.9	27.2	29.2	± 0.1	28.0	± 0.0	26.7	± 0.1	28.0	± 0.0	
	b	28.1	26.5	29.6	± 0.2	28.3	± 0.1	27.5	± 0.1	28.1	± 0.1	
	Area	**28.5**	**26.8**	**29.4**	**± 0.1**	**28.2**	**± 0.1**	**27.1**	**± 0.1**	**28.1**	**± 0.0**	
BB3	**a**	28.5	26.6	29.1	± 0.0	28.1	± 0.0	26.8	± 0.1	28.3	± 0.1	
	b	28.5	26.8	29.4	± 0.0	28.5	± 0.1	27.3	± 0.1	28.8	± 0.1	
	Area	**28.5**	**26.7**	**29.2**	**± 0.1**	**28.3**	**± 0.1**	**27.0**	**± 0.1**	**28.6**	**± 0.1**	
BB4	**a**	28.1	28.6	29.1	± 0.1	27.6	± 0.0	27.1	± 0.0	27.8	± 0.1	
	b	28.5	28.8	29.7	± 0.1	28.3	± 0.1	28.0	± 0.1	28.9	± 0.1	
	Area	**28.3**	**28.7**	**29.4**	**± 0.1**	**27.9**	**± 0.1**	**27.5**	**± 0.1**	**28.4**	**± 0.2**	

Table 4.2-6 Mean and Standard Error (SE) for Surface and Bottom Water Column Temperatures (°C) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Bottom									
		Pre-Uprate		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall Mean	Spring Mean	Mean	± SE	Mean	± SE	Mean	± SE	Mean	± SE
BB1	a	29.4	26.6	29.6	± 0.2	28.0	± 0.0	26.0	± 0.0	28.8	± 0.2
	b	28.1	27.3	30.2	± 0.1	28.3	± 0.2	27.0	± 0.1	29.0	± 0.1
	Area	**28.7**	**26.9**	**29.9**	**± 0.1**	**28.2**	**± 0.1**	**26.5**	**± 0.1**	**28.9**	**± 0.1**
BB2	a	27.9	27.2	29.2	± 0.1	28.0	± 0.0	26.7	± 0.1	28.0	± 0.0
	b	28.2	26.5	29.6	± 0.1	28.3	± 0.1	27.5	± 0.1	28.1	± 0.1
	Area	**28.1**	**26.6**	**29.4**	**± 0.1**	**28.2**	**± 0.1**	**27.1**	**± 0.1**	**28.1**	**± 0.0**
BB3	a	28.7	26.6	29.1	± 0.0	28.1	± 0.0	26.8	± 0.1	28.3	± 0.1
	b	28.6	26.6	29.4	± 0.0	28.5	± 0.1	27.4	± 0.2	28.8	± 0.1
	Area	**28.6**	**26.6**	**29.2**	**± 0.1**	**28.3**	**± 0.1**	**27.1**	**± 0.1**	**28.6**	**± 0.1**
BB4	a	28.2	28.6	29.1	± 0.1	27.7	± 0.1	27.1	± 0.0	27.9	± 0.0
	b	28.5	28.8	29.7	± 0.1	28.2	± 0.0	28.0	± 0.1	29.0	± 0.1
	Area	**28.4**	**28.7**	**29.4**	**± 0.1**	**27.9**	**± 0.1**	**27.5**	**± 0.1**	**28.4**	**± 0.1**

Key:
SE = Standard Error
°C = Degrees Celcius

Table 4.2-7 Mean and Standard Error (SE) for Surface and Bottom Water Column Specific Conductance (µS/cm) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Surface					
		Pre-Uprate Mean		Fall 2013	Fall 2014	Spring 2014	Spring 2015
		Fall	Spring	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
BB1	**a**	45,181	57,081	39,988 ± 373	53,800 ± 327	59,613 ± 190	55,250 ± 171
	b	43,250	58,325	42,925 ± 111	54,488 ± 416	58,775 ± 190	55,813 ± 35
	Area	**44,216**	**57,703**	**41,456 ± 423**	**54,144 ± 270**	**59,194 ± 170**	**55,531 ± 111**
BB2	**a**	47,131	57,088	51,863 ± 311	54,213 ± 30	57,638 ± 30	55,075 ± 45
	b	47,906	58,263	51,625 ± 518	53,813 ± 30	57,600 ± 50	54,738 ± 18
	Area	**47,519**	**57,675**	**51,744 ± 293**	**54,013 ± 55**	**57,619 ± 30**	**54,906 ± 50**
BB3	**a**	44,513	58,313	52,400 ± 204	54,163 ± 32	58,013 ± 180	54,988 ± 40
	b	45,600	57,700	52,800 ± 105	54,188 ± 23	58,413 ± 170	54,513 ± 30
	Area	**45,056**	**58,006**	**52,600 ± 123**	**54,175 ± 19**	**58,213 ± 130**	**54,750 ± 66**
BB4	**a**	42,188	56,206	43,413 ± 348	52,388 ± 221	53,175 ± 100	51,463 ± 203
	b	44,656	56,538	44,238 ± 273	53,050 ± 93	52,900 ± 60	52,438 ± 174
	Area	**43,422**	**56,372**	**43,825 ± 239**	**52,719 ± 144**	**53,038 ± 60**	**51,950 ± 181**

Table 4.2-7 Mean and Standard Error (SE) for Surface and Bottom Water Column Specific Conductance (µS/cm) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Bottom										
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015		
		Fall	Spring	Mean ± SE		Mean ± SE		Mean ± SE		Mean ± SE		
BB1	**a**	45,206	57,113	40,313	± 358	53,788	± 331	59,538	± 180	55,238	± 168	
	b	43,281	58,338	44,238	± 243	54,513	± 385	58,700	± 210	55,788	± 40	
	Area	**44,244**	**57,725**	**42,275**	**± 548**	**54,150**	**± 263**	**59,119**	**± 170**	**55,513**	**± 109**	
BB2	**a**	47,413	57,075	52,138	± 184	54,175	± 31	57,575	± 30	55,063	± 56	
	b	48,206	58,263	52,663	± 134	53,788	± 23	57,525	± 40	54,713	± 30	
	Area	**47,809**	**57,669**	**52,400**	**± 129**	**53,981**	**± 53**	**57,550**	**± 30**	**54,888**	**± 55**	
BB3	**a**	47,719	58,313	52,438	± 189	54,113	± 30	57,975	± 200	54,950	± 46	
	b	48,413	57,838	52,900	± 63	54,188	± 13	58,400	± 170	54,500	± 27	
	Area	**48,066**	**58,075**	**52,669**	**± 113**	**54,150**	**± 18**	**58,188**	**± 140**	**54,725**	**± 64**	
BB4	**a**	45,869	56,225	43,775	± 524	52,550	± 221	53,088	± 80	51,775	± 203	
	b	46,144	56,550	44,300	± 296	53,663	± 60	52,863	± 60	52,388	± 167	
	Area	**46,006**	**56,388**	**44,038**	**± 299**	**53,106**	**± 164**	**52,975**	**± 60**	**52,081**	**± 143**	

Key:
µS/cm = Micro-Siemens per Centimenter(s).
SE = Standard Error.

Table 4.2-8 Mean and Standard Error (SE) for Surface and Bottom Column Water Salinity (PSU) by Transect, Season, and Study Area for all Pre- and Post-Uprate Monitoring Events.

Area	Transect	Surface									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall	Spring	Mean	± SE	Mean	± SE	Mean	± SE	Mean	± SE
BB1	**a**	29.4	38.0	25.7	± 0.26	35.7	± 0.2	39.9	± 0.14	36.8	± 0.1
	b	28.1	39.1	27.8	± 0.09	36.2	± 0.3	39.3	± 0.14	36.6	± 0.6
	Area	**28.7**	**38.6**	**26.8**	**± 0.31**	**36.0**	**± 0.2**	**39.6**	**± 0.12**	**36.7**	**± 0.3**
BB2	**a**	30.8	38.1	34.3	± 0.22	36.0	± 0.0	38.5	± 0.02	36.7	± 0.0
	b	31.4	39.0	34.2	± 0.36	35.7	± 0.0	38.5	± 0.03	36.4	± 0.0
	Area	**31.1**	**38.5**	**34.3**	**± 0.21**	**35.9**	**± 0.0**	**38.5**	**± 0.02**	**36.5**	**± 0.0**
BB3	**a**	29.3	39.0	34.7	± 0.16	36.0	± 0.0	38.8	± 0.14	36.6	± 0.0
	b	30.2	38.4	35.0	± 0.08	36.0	± 0.0	39.1	± 0.14	36.3	± 0.0
	Area	**29.8**	**38.7**	**34.9**	**± 0.10**	**36.0**	**± 0.0**	**39.0**	**± 0.10**	**36.4**	**± 0.0**
BB4	**a**	27.4	37.5	28.1	± 0.24	34.6	± 0.2	35.2	± 0.07	33.9	± 0.2
	b	28.9	37.8	28.7	± 0.19	35.2	± 0.1	35.0	± 0.04	34.7	± 0.1
	Area	**28.2**	**37.7**	**28.4**	**± 0.17**	**34.9**	**± 0.1**	**35.1**	**± 0.04**	**34.3**	**± 0.1**

Table 4.2-8 Mean and Standard Error (SE) for Surface and Bottom Column Water Salinity (PSU) by Transect, Season, and Study Area for all Pre- and Post-Uprate Monitoring Events.

Area	Transect	Bottom									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall	Spring	Mean	± SE	Mean	± SE	Mean	± SE	Mean	± SE
BB1	a	29.4	38.1	25.9	± 0.24	35.7	± 0.2	39.9	± 0.15	36.8	± 0.1
	b	28.1	39.1	28.7	± 0.16	36.2	± 0.3	39.3	± 0.15	37.2	± 0.0
	Area	**28.8**	**38.6**	**27.3**	**± 0.39**	**36.0**	**± 0.2**	**39.6**	**± 0.13**	**37.0**	**± 0.1**
BB2	a	31.0	38.1	34.5	± 0.13	36.0	± 0.0	38.5	± 0.02	36.6	± 0.0
	b	31.5	39.0	34.9	± 0.09	35.7	± 0.0	38.5	± 0.04	36.4	± 0.0
	Area	**31.3**	**38.6**	**34.7**	**± 0.09**	**35.9**	**± 0.0**	**38.5**	**± 0.02**	**36.5**	**± 0.0**
BB3	a	31.6	39.0	34.7	± 0.14	36.0	± 0.0	38.8	± 0.15	36.6	± 0.0
	b	31.7	38.7	35.1	± 0.05	36.0	± 0.0	39.1	± 0.13	36.3	± 0.0
	Area	**31.6**	**38.8**	**34.9**	**± 0.09**	**36.0**	**± 0.0**	**38.9**	**± 0.11**	**36.4**	**± 0.0**
BB4	a	29.8	37.6	28.3	± 0.37	34.8	± 0.1	35.1	± 0.06	34.2	± 0.1
	b	30.1	37.8	28.8	± 0.22	35.9	± 0.3	35.0	± 0.04	34.7	± 0.1
	Area	**30.0**	**37.7**	**28.6**	**± 0.22**	**35.3**	**± 0.2**	**35.1**	**± 0.04**	**34.5**	**± 0.1**

Key:
PSU = Practical Salinity Unit(s).
SE = Standard Error.

Table 4.2-9 Mean and Standard Error (SE) for Surface and Bottom Water Column DO (mg/L) by Transect, Season, and Study Area for all Pre- and Post-Uprate Events.

Area	Transect	Surface						
		Pre-Uprate Mean		Fall 2013	Fall 2014	Spring 2014	Spring 2015
		Fall	Spring	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
BB1	**a**	5.8	4.8	6.1 ± 0.26	5.3 ± 0.1	5.3 ± 0.14	6.0 ± 0.2
	b	5.5	5.2	5.0 ± 0.87	5.6 ± 0.1	6.2 ± 0.14	6.0 ± 0.1
	Area	**5.6**	**5.0**	**5.6 ± 0.31**	**5.4 ± 0.1**	**5.7 ± 0.12**	**6.0 ± 0.1**
BB2	**a**	6.2	6.6	5.4 ± 0.22	5.6 ± 0.1	5.7 ± 0.02	5.4 ± 0.1
	b	6.0	6.0	4.9 ± 0.36	6.0 ± 0.0	6.1 ± 0.03	5.7 ± 0.1
	Area	**6.1**	**6.3**	**5.2 ± 0.21**	**5.8 ± 0.1**	**5.9 ± 0.02**	**5.5 ± 0.1**
BB3	**a**	5.7	5.8	5.3 ± 0.16	5.3 ± 0.0	5.7 ± 0.14	5.7 ± 0.0
	b	6.4	6.0	5.6 ± 0.08	5.7 ± 0.1	6.0 ± 0.14	6.0 ± 0.0
	Area	**6.0**	**5.9**	**5.5 ± 0.10**	**5.5 ± 0.1**	**5.9 ± 0.10**	**5.8 ± 0.0**
BB4	**a**	5.3	5.2	5.1 ± 0.24	4.9 ± 0.1	5.6 ± 0.07	5.5 ± 0.0
	b	5.6	5.5	5.7 ± 0.19	4.5 ± 0.1	6.3 ± 0.04	6.2 ± 0.1
	Area	**5.5**	**5.3**	**5.4 ± 0.17**	**4.7 ± 0.1**	**6.0 ± 0.04**	**5.8 ± 0.1**

Table 4.2-9 Mean and Standard Error (SE) for Surface and Bottom Water Column DO (mg/L) by Transect, Season, and Study Area for all Pre- and Post-Uprate Events.

Area	Transect	Bottom										
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall	Spring	Mean ± SE		Mean ± SE		Mean ± SE		Mean ± SE	
BB1	**a**	5.6	4.8	6.2	± 0.24	5.2	± 0.1	5.3	± 0.15	6.0	± 0.2
	b	5.3	5.0	5.3	± 0.16	5.5	± 0.1	6.1	± 0.15	6.0	± 0.1
	Area	**5.5**	**4.9**	**5.8**	**± 0.39**	**5.4**	**± 0.1**	**5.7**	**± 0.13**	**6.0**	**± 0.1**
BB2	**a**	6.0	6.6	5.3	± 0.13	5.5	± 0.0	5.7	± 0.13	5.4	± 0.1
	b	5.9	6.0	5.3	± 0.09	6.1	± 0.1	6.1	± 0.04	5.6	± 0.0
	Area	**6.0**	**6.3**	**5.3**	**± 0.09**	**5.8**	**± 0.1**	**5.9**	**± 0.02**	**5.5**	**± 0.1**
BB3	**a**	5.1	6.0	5.2	± 0.14	5.3	± 0.1	5.7	± 0.15	5.7	± 0.0
	b	5.4	6.0	5.6	± 0.05	5.8	± 0.0	6.1	± 0.13	6.0	± 0.0
	Area	**5.3**	**6.0**	**5.4**	**± 0.09**	**5.5**	**± 0.1**	**5.9**	**± 0.11**	**5.8**	**± 0.0**
BB4	**a**	4.8	5.2	5.0	± 0.37	4.4	± 0.2	5.6	± 0.06	5.2	± 0.2
	b	5.4	5.4	5.7	± 0.22	4.8	± 0.1	6.3	± 0.04	6.2	± 0.1
	Area	**5.1**	**5.3**	**5.3**	**± 0.22**	**4.6**	**± 0.1**	**6.0**	**± 0.04**	**5.7**	**± 0.2**

Key:

mg/L = Milligram per liter

SE = Standard Error.

Table 4.2-10 Mean and Standard Error (SE) for Surface and Bottom Water Column pH by Transect, Season, and Study Area for All Pre- and Post-Uprate Events.

Area	Transect	Surface					
		Pre-Uprate Mean		Fall 2013	Fall 2014	Spring 2014	Spring 2015
		Fall	Spring	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
BB1	a	8.0	8.6	8.0 ± 0.02	7.5 ± 0.0	8.2 ± 0.02	8.1 ± 0.0
	b	7.3	8.5	8.1 ± 0.02	7.8 ± 0.0	8.3 ± 0.02	8.2 ± 0.0
	Area	**7.6**	**8.5**	**8.0 ± 0.01**	**7.7 ± 0.0**	**8.3 ± 0.02**	**8.1 ± 0.0**
BB2	a	7.7	8.5	8.1 ± 0.03	7.8 ± 0.0	8.2 ± 0.01	8.0 ± 0.0
	b	7.9	8.6	8.0 ± 0.02	7.9 ± 0.0	8.2 ± 0.01	8.0 ± 0.0
	Area	**7.8**	**8.6**	**8.1 ± 0.02**	**7.8 ± 0.0**	**8.2 ± 0.01**	**8.0 ± 0.0**
BB3	a	7.7	8.3	8.1 ± 0.01	7.7 ± 0.0	8.2 ± 0.02	8.0 ± 0.0
	b	7.9	8.3	8.1 ± 0.01	7.8 ± 0.0	8.3 ± 0.01	8.0 ± 0.0
	Area	**7.8**	**8.3**	**8.1 ± 0.01**	**7.8 ± 0.0**	**8.2 ± 0.01**	**8.0 ± 0.0**
BB4	a	7.8	8.1	7.9 ± 0.02	7.9 ± 0.0	8.2 ± 0.01	7.8 ± 0.0
	b	7.9	8.0	8.0 ± 0.02	7.9 ± 0.0	8.2 ± 0.01	7.9 ± 0.0
	Area	**7.9**	**8.0**	**7.9 ± 0.02**	**7.9 ± 0.0**	**8.2 ± 0.01**	**7.9 ± 0.0**

Table 4.2-10 Mean and Standard Error (SE) for Surface and Bottom Water Column pH by Transect, Season, and Study Area for All Pre- and Post-Uprate Events.

Area	Transect	Bottom					
		Pre-Uprate Mean		Fall 2013	Fall 2014	Spring 2014	Spring 2015
		Fall	Spring	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
BB1	a	8.0	8.6	8.0 ± 0.02	7.6 ± 0.0	8.2 ± 0.02	8.1 ± 0.0
	b	7.4	8.6	8.1 ± 0.03	7.9 ± 0.0	8.3 ± 0.01	8.2 ± 0.0
	Area	**7.7**	**8.6**	**8.1 ± 0.02**	**7.7 ± 0.0**	**8.3 ± 0.02**	**8.2 ± 0.0**
BB2	a	7.8	8.5	8.1 ± 0.03	7.9 ± 0.0	8.2 ± 0.01	8.0 ± 0.0
	b	8.0	8.6	8.0 ± 0.01	7.9 ± 0.0	8.3 ± 0.00	8.0 ± 0.0
	Area	**7.9**	**8.6**	**8.1 ± 0.01**	**7.9 ± 0.0**	**8.2 ± 0.01**	**8.0 ± 0.0**
BB3	a	7.8	8.3	8.1 ± 0.01	7.8 ± 0.0	8.3 ± 0.02	8.0 ± 0.0
	b	7.9	8.3	8.1 ± 0.01	7.9 ± 0.0	8.3 ± 0.01	8.0 ± 0.0
	Area	**7.9**	**8.3**	**8.1 ± 0.01**	**7.8 ± 0.0**	**8.3 ± 0.01**	**8.0 ± 0.0**
BB4	a	7.9	8.1	7.9 ± 0.02	7.9 ± 0.0	8.2 ± 0.00	7.9 ± 0.0
	b	7.9	8.0	8.0 ± 0.02	7.9 ± 0.0	8.2 ± 0.01	7.9 ± 0.0
	Area	**7.9**	**8.1**	**7.9 ± 0.01**	**7.9 ± 0.0**	**8.2 ± 0.01**	**7.9 ± 0.0**

Key: SE = Standard Error.

Table 4.2-11 Mean and Standard Error (SE) for Surface and Bottom Water Column Turbidity (NTU) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Surface						
		Pre-Uprate Mean		Fall 2013	Fall 2014	Spring 2014	Spring 2015
		Fall	Spring	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
BB1	a	4.5	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.1 ± 0.08
	b	3.1	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	Area	**3.8**	**0.0**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.04**
BB2	a	0.8	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	b	0.0	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	Area	**0.4**	**0.0**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.00**
BB3	a	0.2	0.0	0.0 ± 0.00	0.0 ± 0.00	0.9 ± 0.64	0.0 ± 0.64
	b	0.0	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	Area	**0.1**	**0.0**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.4 ± 0.50**	**0.0 ± 0.00**
BB4	a	6.8	1.1	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.3 ± 0.29
	b	2.7	0.1	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	Area	**4.7**	**0.6**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.1 ± 0.14**

Table 4.2-11 Mean and Standard Error (SE) for Surface and Bottom Water Column Turbidity (NTU) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Bottom					
		Pre-Uprate Mean		Fall 2013	Fall 2014	Spring 2014	Spring 2015
		Fall	Spring	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
BB1	a	3.7	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.1 ± 0.14
	b	3.3	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	Area	**3.5**	**0.0**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.1 ± 0.07**
BB2	a	0.0	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	b	0.0	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	Area	**0.0**	**0.0**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.00**
BB3	a	0.1	0.0	0.0 ± 0.00	0.0 ± 0.00	1.4 ± 0.64	0.0 ± 0.00
	b	0.0	0.0	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	Area	**0.0**	**0.0**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.7 ± 0.36**	**0.0 ± 0.00**
BB4	a	9.2	1.5	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.4 ± 0.36
	b	2.7	0.5	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00	0.0 ± 0.00
	Area	**6.0**	**1.0**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.0 ± 0.00**	**0.2 ± 0.18**

Key:
NTU = Nephelometric Turbidity Unit(s).
SE = Standard Error.

Table 4.2-12 Mean and Standard Error (SE) for Surface and Bottom Water Column ORP (mV) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Surface										
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015		
		Fall	Spring	Mean ± SE		Mean ± SE		Mean ± SE		Mean ± SE		
BB1	a	167.6	14.4	113.8	± 15.57	376.9	± 4.5	25.5	± 23.83	311.1	± 12.9	
	b	163.4	26.3	49.1	± 7.17	266.3	± 26.9	29.8	± 7.81	357.9	± 3.2	
	Area	**165.5**	**20.3**	**81.4**	**± 11.75**	**321.6**	**± 19.4**	**27.6**	**± 12.12**	**334.5**	**± 8.8**	
BB2	a	137.8	95.8	78.6	± 8.68	223.6	± 23.8	52.1	± 13.86	347.5	± 6.0	
	b	117.1	64.8	71.1	± 11.43	251.4	± 12.5	20.8	± 9.05	346.0	± 4.8	
	Area	**127.4**	**80.3**	**74.9**	**± 7.00**	**237.5**	**± 13.5**	**36.4**	**± 8.96**	**346.8**	**± 3.7**	
BB3	a	109.8	25.1	89.6	± 6.47	339.8	± 18.7	54.9	± 11.78	351.5	± 3.6	
	b	59.8	35.5	75.8	± 6.59	249.3	± 17.2	44.1	± 16.77	338.9	± 4.8	
	Area	**84.8**	**30.3**	**82.7**	**± 4.81**	**294.5**	**± 16.9**	**49.5**	**± 10.00**	**345.2**	**± 3.3**	
BB4	a	76.1	78.1	98.0	± 8.40	299.6	± 24.2	85.5	± 16.18	342.0	± 17.6	
	b	93.3	86.5	74.4	± 6.32	232.9	± 22.3	65.5	± 10.63	349.9	± 1.6	
	Area	**84.7**	**82.3**	**86.2**	**± 5.92**	**266.3**	**± 18.1**	**75.5**	**± 9.70**	**345.9**	**± 8.6**	

Table 4.2-12 Mean and Standard Error (SE) for Surface and Bottom Water Column ORP (mV) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Bottom									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall	Spring	Mean ± SE		Mean ± SE		Mean ± SE		Mean ± SE	
BB1	a	160.7	12.1	107.8	± 13.48	368.0	± 4.3	21.6	± 22.52	298.8	± 11.0
	b	164.6	29.0	40.3	± 5.89	261.1	±24.9	23.8	± 7.20	343.9	± 3.7
	Area	**162.6**	**20.6**	**74.0**	**± 11.24**	**314.6**	**± 18.4**	**22.7**	**± 11.42**	**321.3**	**± 8.1**
BB2	a	134.6	96.1	72.5	± 9.58	222.4	± 23.9	41.8	± 15.25	339.9	± 4.6
	b	112.3	62.0	65.0	± 11.59	242.4	± 11.0	13.1	± 7.01	334.4	±3.5
	Area	**123.4**	**79.1**	**68.8**	**± 7.33**	**232.4**	**± 13.0**	**27.4**	**± 8.91**	**337.1**	**±2.9**
BB3	a	108.1	26.4	71.8	± 8.81	327.8	± 19.6	46.5	± 13.12	337.9	± 3.1
	b	61.7	34.5	61.6	± 7.51	245.9	± 15.0	33.8	± 16.76	327.9	± 4.9
	Area	**84.9**	**30.4**	**66.7**	**± 5.74**	**286.8**	**± 15.9**	**40.1**	**± 10.41**	**332.9**	**± 3.1**
BB4	a	72.8	72.8	90.1	± 8.83	290.5	± 24.5	79.4	± 17.04	314.8	± 17.8
	b	90.9	82.3	72.1	± 5.29	237.5	± 20.0	59.4	± 10.34	339.1	± 2.9
	Area	**81.8**	**77.5**	**81.1**	**± 5.49**	**264.0**	**± 16.7**	**69.4**	**± 9.97**	**326.9**	**± 9.3**

Key:
mV = Millivolt(s)
SE = Standard Error.

Table 4.2-13 Mean Porewater Temperatures (°C) + One Standard Error (SE) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall	Spring	Mean	± SE	Mean	± SE	Mean	± SE	Mean	± SE
BB1	**a**	29.3	27.3	29.2	± 0.16	29.0	± 0.03	27.4	± 0.03	28.1	± 0.07
	b	29.1	27.0	29.2	± 0.05	28.5	± 0.07	27.2	± 0.03	28.1	± 0.03
	Area	**29.2**	**27.2**	**29.2**	**± 0.08**	**28.8**	**± 0.07**	**27.3**	**± 0.03**	**28.1**	**± 0.04**
BB2	**a**	28.3	27.3	29.2	± 0.02	28.5	± 0.05	27.3	± 0.03	28.0	± 0.05
	b	28.2	26.8	29.3	± 0.08	28.6	± 0.05	27.2	± 0.02	27.9	± 0.03
	Area	**28.2**	**27.1**	**29.2**	**± 0.04**	**28.5**	**± 0.03**	**27.2**	**± 0.02**	**27.9**	**± 0.03**
BB3	**a**	28.6	27.3	29.2	± 0.03	28.9	± 0.05	27.3	± 0.03	27.8	± 0.02
	b	28.5	27.1	29.2	± 0.02	28.9	± 0.04	27.2	± 0.02	27.8	± 0.04
	Area	**28.5**	**27.2**	**29.2**	**± 0.02**	**28.9**	**± 0.03**	**27.2**	**± 0.02**	**27.8**	**± 0.02**
BB4	**a**	28.5	28.2	30.8	± 0.61	29.2	± 0.03	27.6	± 0.03	27.8	± 0.04
	b	28.5	28.2	32.3	± 0.53	29.1	± 0.03	27.4	± 0.11	27.9	± 0.05
	Area	**28.5**	**28.2**	**30.9**	**± 0.33**	**29.1**	**± 0.02**	**27.5**	**± 0.06**	**27.9**	**± 0.03**

Key:

°C = Degrees Celcius.

SE = Standard Error.

Table 4.2-14 Comparisons of Mean Porewater and Bottom Water Column Temperatures (°C) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Pre-uprate Fall Mean		Difference[1]	Pre-Uprate Spring Mean		Difference
		Porewater	Bottom		Porewater	Bottom	
BB1	**a**	29.3	29.4	0.2	27.3	26.6	-0.7
	b	29.1	28.1	-1.0	27.0	27.3	0.3
	Area	**29.2**	**28.7**	**-0.4**	**27.2**	**26.9**	**-0.2**
BB2	**a**	28.3	27.9	-0.4	27.3	27.2	-0.1
	b	28.2	28.2	0.0	26.8	26.5	-0.3
	Area	**28.2**	**28.1**	**-0.2**	**27.1**	**26.9**	**-0.2**
BB3	**a**	28.6	28.7	0.1	27.3	26.6	-0.7
	b	28.5	28.6	0.1	27.1	26.6	-0.5
	Area	**28.5**	**28.6**	**0.1**	**27.2**	**26.6**	**-0.6**
BB4	**a**	28.5	28.2	-0.3	28.2	28.6	0.4
	b	28.5	28.5	0.0	28.2	28.8	0.6
	Area	**28.5**	**28.4**	**-0.2**	**28.2**	**28.7**	**0.5**

Table 4.2-14 Comparisons of Mean Porewater and Bottom Water Column Temperatures (°C) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Fall 2013		Difference[1]	Spring 2014		Difference
		Mean			Mean		
		Porewater	Bottom		Porewater	Bottom	
BB1	**a**	29.2	29.6	0.4	27.4	26.0	-1.4
	b	29.2	30.2	1.0	27.2	27.0	-0.2
	Area	**29.2**	**29.9**	**0.7**	**27.3**	**26.5**	**-0.8**
BB2	**a**	29.2	29.2	0.0	27.3	26.7	-0.6
	b	29.3	29.6	0.3	27.2	27.5	0.3
	Area	**29.2**	**29.4**	**0.2**	**27.2**	**27.1**	**-0.1**
BB3	**a**	29.2	29.1	-0.1	27.3	26.8	-0.5
	b	29.2	29.4	0.2	27.2	27.4	0.2
	Area	**29.2**	**29.2**	**0.0**	**27.2**	**27.1**	**-0.1**
BB4	**a**	30.8	29.1	-1.7	27.6	27.1	-0.5
	b	32.3	29.7	-2.6	27.4	28.0	0.6
	Area	**30.9**	**29.4**	**-1.5**	**27.5**	**27.5**	**0.0**

Table 4.2-14 Comparisons of Mean Porewater and Bottom Water Column Temperatures (°C) by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Fall 2014		Difference	Spring 2015		Difference
		Mean			Mean		
		Porewater	Bottom		Porewater	Bottom	
BB1	**a**	29.0	28.0	-1.1	28.1	28.8	0.7
	b	28.5	28.3	-0.2	28.1	29.0	0.9
	Area	**28.8**	**28.2**	**-0.6**	**28.1**	**28.9**	**0.8**
BB2	**a**	28.5	28.0	-0.5	28.0	28.0	0.0
	b	28.6	28.3	-0.2	27.9	28.1	0.2
	Area	**28.5**	**28.2**	**-0.4**	**27.9**	**28.1**	**0.1**
BB3	**a**	28.9	28.1	-0.7	27.8	28.3	0.4
	b	28.9	28.5	-0.3	27.8	28.8	1.0
	Area	**28.9**	**28.3**	**-0.5**	**27.8**	**28.6**	**0.7**
BB4	**a**	29.2	27.7	-1.5	27.8	27.9	0.1
	b	29.1	28.2	-1.0	27.9	29.0	1.0
	Area	**29.1**	**27.9**	**-1.2**	**27.9**	**28.4**	**0.5**

Notes:

[1] Positive values indicate the porewater temperature is lower than the ambient water temperature.

Key:

°C = Degrees Celcius.

Table 4.2-15 Comparison of Mean Porewater and Bottom Water Column Specific Conductance (µS/cm) by Transect, Season, and Study Area for all Pre- and Post-Uprate Monitoring Events.

Area	Transect	Pre-Uprate Fall Mean Specific Conductance (µS/cm)		Difference[1]	Fall 2013 Mean Specific Conductance (µS/cm)		Difference	Fall 2014 Mean Specific Conductance (µS/cm)		Difference
		Porewater	Bottom		Porewater	Bottom		Porewater	Bottom	
BB1	**a**	48,337	45,206	-3,131	46,963	40,313	-6,650	55,588	53,787	-1,801
	b	48,344	43,281	-5,063	47,425	44,238	-3,187	55,075	54,513	-562
	Area	**48,340**	**44,244**	**-4,096**	**47,194**	**42,275**	**-4,919**	**55,331**	**54,150**	**-1,181**
BB2	**a**	51,306	47,413	-3,893	52,275	52,138	-137	55,075	54,175	-900
	b	52,050	48,206	-3,844	52,550	52,663	113	54,600	53,787	-813
	Area	**51,678**	**47,809**	**-3,869**	**52,413**	**52,400**	**-13**	**54,838**	**53,981**	**-857**
BB3	**a**	50,525	47,719	-2,806	52,113	52,438	325	55,525	54,112	-1,413
	b	52,837	48,413	-4,424	52,513	52,900	387	55,200	54,188	-1,012
	Area	**51,681**	**48,066**	**-3,615**	**52,313**	**52,669**	**356**	**55,363**	**54,150**	**-1,213**
BB4	**a**	48,281	45,869	-2,412	46,463	43,775	-2,688	52,625	52,550	-75
	b	48,625	46,144	-2,481	47,700	44,300	-3,400	53,637	53,662	25
	Area	**48,453**	**46,006**	**-2,447**	**47,081**	**44,038**	**-3,043**	**53,131**	**53,106**	**-25**

Table 4.2-15 Comparison of Mean Porewater and Bottom Water Column Specific Conductance (µS/cm) by Transect, Season, and Study Area for all Pre- and Post-Uprate Monitoring Events.

Area	Transect	Pre-Uprate Spring Mean Specific Conductance (µS/cm)		Difference[1]	Spring 2014 Mean Specific Conductance (µS/cm)		Difference[1]	Spring 2015 Mean Specific Conductance (µS/cm)		Difference[1]
		Porewater	Bottom		Porewater	Bottom		Porewater	Bottom	
BB1	a	56,450	57,113	663	56,163	59,538	3,375	54,487	55,238	751
	b	55,437	58,338	2,901	56,263	58,700	2437	54,650	55,788	1,138
	Area	**55,944**	**57,725**	**1,781**	**56,213**	**59,119**	**2,906**	**54,569**	**55,513**	**944**
BB2	a	55,238	57,075	1,837	57,825	57,575	-250	54,875	55,062	187
	b	56,050	58,263	2,213	55,975	57,525	1550	54,575	54,712	137
	Area	**55,644**	**57,669**	**2,025**	**56,900**	**57,550**	**650**	**54,725**	**54,887**	**162**
BB3	a	55,063	58,313	3,250	56,688	57,975	1,287	54,875	54,950	75
	b	55,075	57,838	2,763	56,363	58,400	2,037	54,463	54,500	37
	Area	**55,069**	**58,075**	**3,006**	**56,525**	**58,188**	**1,663**	**54,669**	**54,725**	**56**
BB4	a	48,238	56,225	7,987	49,550	53,088	3538	52,913	51,775	-1,138
	b	50,463	56,550	6,087	50,038	52,863	2825	53,287	52,388	-899
	Area	**49,350**	**56,388**	**7,038**	**49,794**	**52,975**	**3181**	**53,100**	**52,081**	**-1,019**

Notes:
[1] Positive values indicate the porewater specific conductance is lower than the bottom water column specific conductance.

Key:
µS/cm = Micro-Siemens per Centimenter.

Table 4.2-16 Porewater Nutrient Concentrations by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Sodium (mg/L)									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall Value	Spring Value	Value	Qual	Value	Qual	Value	Qual	Value	Qual
BB1	a	9,150	13,000	8,970		9,570		59,100		11,400	
	b	9,350	12,000	9,760		9,760		59,300		11,300	
	Area Mean	**9,250**	**12,500**	**9,365**		**9,665**		**59,200**		**11,350**	
BB2	a	10,450	12,000	10,300		9,050		57,800		11,100	
	b	10,500	11,000	10,600		9,870		58,000		11,000	
	Area Mean	**10,475**	**11,500**	**10,450**		**9,460**		**57,900**		**11,050**	
BB3	a	10,500	10,000	10,600		9,730		57,700		11,100	
	b	10,450	11,000	10,600		9,500		56,400		11,200	
	Area Mean	**10,475**	**10,500**	**10,600**		**9,615**		**57,050**		**11,150**	
BB4	a	9,300	9,800	8,870		9,170		50,200		10,500	
	b	9,100	11,000	8,910		9,120		50,600		10,700	
	Area Mean	**9,200**	**10,400**	**8,890**		**9,145**		**50,400**		**10,600**	

Table 4.2-16 Porewater Nutrient Concentrations by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Chloride (mg/L)									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall Value	Spring Value	Value	Qual	Value	Qual	Value	Qual	Value	Qual
BB1	a	18,000	24,000	19,500		21,500		23,300		21,300	
	b	18,500	24,000	20,400		21,100		23,400		20,900	
	Area Mean	**18,250**	**24,000**	**19,950**		**21,300**		**23,350**		**21,100**	
BB2	a	19,000	23,000	22,100		21,200		22,000		20,200	
	b	19,000	22,000	22,400		21,100		22,500		20,600	
	Area Mean	**19,000**	**22,500**	**22,250**		**21,150**		**22,250**		**20,400**	
BB3	a	20,000	22,000	22,200		21,100		22,500		20,700	
	b	18,500	21,000	21,600		20,900		21,600		21,100	
	Area Mean	**19,250**	**21,500**	**21,900**		**21,000**		**22,050**		**20,900**	
BB4	a	18,000	20,000	19,000		20,300		19,100		19,600	
	b	17,000	21,000	19,000		20,400		18,500		20,000	
	Area Mean	**17,500**	**20,500**	**19,000**		**20,350**		**18,800**		**19,800**	

Table 4.2-16 Porewater Nutrient Concentrations by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Nitrate+Nitrite (mg/L)									
		Pre-Uprate Mean		Fall 2013		Fall 2014[1]		Spring 2014		Spring 2015	
		Fall Value	Spring Value	Value	Qual	Value	Qual	Value	Qual	Value	Qual
BB1	a	0.0225	0.1100	0.0079	I J	0.5000	U	0.0840		0.0500	U
	b	0.0289	0.2100	0.0090	I J	0.5000	U	0.0270	U	0.0500	U
	Area Mean	**0.0257**	**0.1600**	**0.0085**		**0.5000**		**0.0555**		**0.0500**	
BB2	a	0.0049	0.0260	0.0054	U	0.5000	U	0.0490	I	0.0250	U
	b	0.0051	0.0250	0.7860		0.5000	U	0.0270	U	0.0250	U
	Area Mean	**0.0050**	**0.0255**	**0.3957**		**0.5000**		**0.0380**		**0.0250**	
BB3	a	0.0065	0.0360	0.0054	U	0.5000	U	0.0340	I	0.0250	U
	b	0.0070	0.0240	0.0054	U	0.5000	U	0.0270	U	0.0250	U
	Area Mean	**0.0067**	**0.0300**	**0.0054**		**0.5000**		**0.0305**		**0.0250**	
BB4	a	0.0184	0.1300	0.0054	U	0.5000	U	0.0270	U	0.0250	U
	b	0.0124	0.1200	0.0067	I J	0.5000	U	0.0270	U	0.0250	U
	Area Mean	**0.0154**	**0.1250**	**0.0060**		**0.5000**		**0.0270**		**0.0250**	

Table 4.2-16 Porewater Nutrient Concentrations by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Unionized Ammonia (mg/L)									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall Value	Spring Value	Value	Qual	Value	Qual	Value	Qual	Value	Qual
BB1	a	0.001	0.003	0.002	J	0.011		0.009		0.016	
	b	0.002	0.000	0.008	J	0.005		0.022		0.006	
	Area Mean	**0.001**	**0.002**	**0.005**		**0.008**		**0.016**		**0.011**	
BB2	a	0.004	0.006	0.024	J	0.003		0.016		0.002	U
	b	0.001	0.010	0.003	J	0.001		0.008		0.003	J
	Area Mean	**0.002**	**0.008**	**0.013**		**0.002**		**0.012**		**0.002**	
BB3	a	0.001	0.000	0.001	J	0.006		0.017		0.003	
	b	0.002	0.002	0.005	J	0.001		0.015		0.003	U
	Area Mean	**0.001**	**0.001**	**0.003**		**0.003**		**0.016**		**0.003**	
BB4	a	0.004	0.003	0.002	J	0.002		0.013		0.008	
	b	0.004	0.009	0.002	J	0.006		0.019		0.010	
	Area Mean	**0.004**	**0.006**	**0.002**		**0.004**		**0.016**		**0.009**	

Table 4.2-16 Porewater Nutrient Concentrations by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Total Kjedahl Nitrogen (mg/L)									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall Value	Spring Value	Value	Qual	Value	Qual	Value	Qual	Value	Qual
BB1	a	0.600	0.900	0.675	J	0.867		0.717		0.432	
	b	0.595	1.200	0.779	J	0.470		0.987		8.800	
	Area Mean	**0.5975**	**1.0500**	**0.7270**		**0.6685**		**0.8520**		4.6160	
BB2	a	0.660	0.810	0.967	J	1.150		0.791		0.410	
	b	0.475	0.460	0.598	J	0.774		0.300	U	0.234	I J
	Area Mean	**0.5675**	**0.6350**	**0.7825**		**0.9620**		**0.5455**		**0.3220**	
BB3	a	0.500	0.230	0.499	J	0.651		0.896		0.200	U
	b	0.390	0.350	0.371	I J	0.628		0.590		0.200	U
	Area Mean	**0.4450**	**0.2900**	**0.4350**		**0.6395**		**0.7430**		**0.2000**	
BB4	a	1.125	0.460	0.633	J	0.803		1.020		2.760	
	b	0.685	1.000	0.602	J	0.898		0.974		0.602	
	Area Mean	**0.9050**	**0.7300**	**0.6175**		**0.8505**		**0.9970**		**1.6810**	

Table 4.2-16 Porewater Nutrient Concentrations by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Total Phosphorus (mg/L)									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall Value	Spring Value	Value	Qual	Value	Qual	Value	Qual	Value	Qual
BB1	a	0.0120	0.0230	0.0022	U J	0.0040	I	0.0022	U	0.0150	U
	b	0.0135	0.0210	0.0022	U J	0.0030	U	0.0022	U	0.0941	
	Area Mean	**0.0128**	**0.0220**	**0.0022**		**0.0035**		**0.0022**		**0.0546**	
BB2	a	0.0155	0.0200	0.0022	U	0.0030	U	0.0022	U	0.0150	U
	b	0.0160	0.0200	0.0022	U J	0.0030	U	0.0022	U	0.0150	U
	Area Mean	**0.0158**	**0.0200**	**0.0022**		**0.0030**		**0.0022**		**0.0150**	
BB3	a	0.0180	0.0190	0.0022	U J	0.0030	U	0.0022	U	0.0150	U
	b	0.0135	0.0200	0.0022	U J	0.0030	U	0.0022	U	0.0247	I
	Area Mean	**0.0158**	**0.0195**	**0.0022**		**0.0030**		**0.0022**		**0.0199**	
BB4	a	0.0280	0.0260	0.0022	U J	0.0036	I	0.0022	U	0.0952	
	b	0.0195	0.0230	0.0022	U	0.0030	U	0.0022	U	0.0309	I
	Area Mean	**0.0238**	**0.0245**	**0.0022**		**0.0033**		**0.0022**		**0.0631**	

Table 4.2-16 Porewater Nutrient Concentrations by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	ortho-Phosphate (mg/L)									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Fall Value	Spring Value	Value	Qual	Value	Qual	Value	Qual	Value	Qual
BB1	a	0.0382	0.0400	0.0181	J	0.0021	U	0.0014	U	0.0021	U
	b	0.0387	0.0024	0.0089	I J	0.0021	U	0.0014	U	0.0021	U
	Area Mean	**0.0385**	**0.0212**	**0.0135**		**0.0021**		**0.0014**		**0.0021**	
BB2	a	0.0071	0.0044	0.0016	I	0.0021	U	0.0014	U	0.0026	I
	b	0.0241	0.0036	0.0288	J	0.0037	I	0.0014	U	0.0038	I
	Area Mean	**0.0156**	**0.0040**	**0.0152**		**0.0029**		**0.0014**		**0.0032**	
BB3	a	0.0657	0.0038	0.0262	J	0.0021	U	0.0014	U	0.0021	U
	b	0.0510	0.0029	0.0171	J	0.0036	I	0.0014	U	0.0063	I
	Area Mean	**0.0584**	**0.0034**	**0.0217**		**0.0029**		**0.0014**		**0.0042**	
BB4	a	0.0162	0.0015	0.0052	I J	0.0021	U	0.0014	U	0.0021	U
	b	0.0162	0.0051	0.0023	I	0.0023	I	0.0014	U	0.0021	U
	Area Mean	**0.0162**	**0.0033**	**0.0038**		**0.0022**		**0.0014**		**0.0021**	

Table 4.2-16 Porewater Nutrient Concentrations by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Tritium (pCi/L)									
		Pre-Uprate Mean		Fall 2013		Fall 2014		Spring 2014		Spring 2015[2]	
		Fall Value	Spring Value	Value	Qual	Value	Qual	Value	Qual	Value	Qual
BB1	a	9.3	11.9	25.1	J	15.8		18.9			
	b	9.5	16.3	25.8	J	6.3		16.6			
	Area Mean	**9.4**	**14.10**	**25.5**		**11.0**		**17.8**			
BB2	a	13.7	13.0	19.3	J	8.5		4.7	UJ		
	b	9.0	5.8	17.4	J	8.9		18.3			
	Area Mean	**11.3**	**9.40**	**18.4**		**8.7**		**11.5**			
BB3	a	20.0	9.6	21.5	J	9.9		21.6			
	b	23.2	15.2	22.5	J	6.1		25.6			
	Area Mean	**21.6**	**12.40**	**22.0**		**8.0**		**23.6**			
BB4	a	8.1	13.7	3.8	J	8.2		19.5			
	b	9.6	19.5	5.0	J	8.4		0.8	UJ		
	Area Mean	**8.8**	**16.60**	**4.4**		**8.3**		**10.2**			

Notes:
[1] Fall 2014 laboratory MDL was elevated.
[2] Values for tritium not yet reported for the Spring 2015 sampling event.

Key:
I = Value between the MDL and PQL
J = Estimated (+/- indicate bias)
Q = Holding time exceeded.
Qual = Qualifier
U = Analyzed for but not detected at the reported value.

Table 4.2-17 Percentage of Quadrats Along Each Transect (n=32) Containing *Halodule wrightii* (HW) and/or *Thalassia testudinum* (TT) by Study Area (n=64) and Season for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Pre-Uprate Fall Mean[1]		Pre-Uprate Spring		Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		HW	TT	HW	TT	HW	TT	HW	TT	HW	TT	HW	TT
BB1	**a**	9%	97%	3%	97%	16%	100%	28%	100%	22%	100%	44%	100%
	b	11%	97%	22%	100%	38%	94%	28%	91%	28%	94%	44%	100%
	Total	**10%**	**97%**	**13%**	**98%**	**27%**	**97%**	**28%**	**95%**	**25%**	**97%**	**44%**	**100%**
BB2	**a**	34%	55%	25%	28%	50%	34%	44%	41%	47%	9%	50%	25%
	b	11%	44%	38%	72%	16%	38%	13%	31%	19%	41%	22%	44%
	Total	**23%**	**49%**	**31%**	**50%**	**33%**	**36%**	**28%**	**36%**	**33%**	**25%**	**36%**	**34%**
BB3	**a**	6%	84%	16%	81%	0%	72%	3%	81%	0%	72%	0%	81%
	b	8%	70%	16%	72%	16%	75%	0%	78%	9%	72%	0%	66%
	Total	**7%**	**77%**	**16%**	**77%**	**8%**	**73%**	**2%**	**80%**	**5%**	**72%**	**0%**	**73%**
BB4	**a**	3%	98%	3%	97%	6%	100%	0%	100%	6%	100%	0%	94%
	b	2%	84%	3%	84%	0%	84%	0%	81%	3%	78%	3%	72%
	Total	**2%**	**91%**	**3%**	**91%**	**3%**	**92%**	**0%**	**91%**	**5%**	**89%**	**2%**	**83%**
Total All Areas		**11%**	**79%**	**16%**	**79%**	**18%**	**75%**	**14%**	**75%**	**17%**	**71%**	**20%**	**73%**

[1] Fall 2010 and Fall 2011 quadrats combined and averaged for percentage

Key: HW = *Halodule wrightii* TT = *Thalassia testudinum*

Table 4.2-18 Percentage (%) of Sampling Points Within Each Study Area (n=16) Having Specific Bottom Conditions During Each of Four Post-Uprate Monitoring Events.

Category	Coverage / Presence	BB1				BB2			
		Fall 2013	Spring 2014	Fall 2014	Spring 2015	Fall 2013	Spring 2014	Fall 2014	Spring 2015
Overall	Open	0.0	0.0	0.0	0.0	0.0	18.8	18.8	31.3
	Fairly Open	25.0	68.8	50.0	75.0	50.0	68.8	62.5	37.5
	Moderately Open	37.5	12.5	37.5	6.3	18.8	12.5	6.3	25.0
	Mostly Covered	37.5	18.8	12.5	12.5	25.0	0.0	12.5	0.0
	Uniform	0.0	0.0	0.0	6.3	6.3	0.0	0.0	0.0
Seagrass	Sparse	25.0	62.5	62.5	37.5	87.5	87.5	93.8	81.3
	Sparse to Moderate	62.5	25.0	25.0	43.8	12.5	12.5	6.3	18.8
	Moderate to Dense	12.5	12.5	12.5	18.8	0.0	0.0	0.0	0.0
Drift Algae	Sparse	93.8	62.5	100.0	43.8	43.8	68.8	100.0	43.8
	Sparse to Moderate	6.3	37.5	0.0	50.0	43.8	25.0	0.0	37.5
	Moderate to Dense	0.0	0.0	0.0	6.3	12.5	6.3	0.0	18.8
Batophora	Sparse	31.3	31.3	6.3	25.0	25.0	62.5	43.8	56.3
	Sparse to Moderate	25.0	56.3	81.3	68.8	37.5	25.0	37.5	25.0
	Moderate to Dense	43.8	12.5	12.5	6.3	37.5	12.5	18.8	18.8
Calcareous Algae	None	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Few	31.3	62.5	43.8	56.3	12.5	12.5	25.0	12.5
	Many	68.8	37.5	56.3	43.8	87.5	87.5	75.0	87.5
Sponges	None	0.0	6.3	0.0	0.0	6.3	0.0	0.0	0.0
	Few	87.5	87.5	87.5	62.5	25.0	18.8	18.8	12.5
	Many	12.5	6.3	12.5	37.5	68.8	81.3	81.3	87.5
Corals	None	43.8	37.5	56.3	68.8	6.3	18.8	12.5	12.5
	Few	56.3	62.5	43.8	18.8	31.3	12.5	25.0	50.0
	Many	0.0	0.0	0.0	0.0	62.5	68.8	62.5	37.5
Gorgonians	None	100.0	100.0	100.0	100.0	25.0	18.8	25.0	18.8
	Few	0.0	0.0	0.0	0.0	12.5	0.0	6.3	12.5
	Many	0.0	0.0	0.0	0.0	62.5	81.3	68.8	68.8

Table 4.2-18 Percentage (%) of Sampling Points Within Each Study Area (n=16) Having Specific Bottom Conditions During Each of Four Post-Uprate Monitoring Events.

Category	Coverage / Presence	BB3				BB4			
		Fall 2013	Spring 2014	Fall 2014	Spring 2015	Fall 2013	Spring 2014	Fall 2014	Spring 2015
Overall	Open	0.0	12.5	0.0	0.0	0.0	0.0	0.0	6.3
	Fairly Open	50.0	62.5	43.8	68.8	31.3	37.5	43.8	81.3
	Moderately Open	37.5	25.0	50.0	6.3	50.0	37.5	56.3	0.0
	Mostly Covered	12.5	0.0	6.3	0.0	18.8	25.0	0.0	12.5
	Uniform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seagrass	Sparse	75.0	81.3	68.8	62.5	93.8	68.8	87.5	87.5
	Sparse to Moderate	25.0	18.8	25.0	37.5	6.3	31.3	12.5	12.5
	Moderate to Dense	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0
Drift Algae	Sparse	25.0	93.8	100.0	43.8	18.8	43.8	100.0	25.0
	Sparse to Moderate	43.8	6.3	0.0	25.0	68.8	37.5	0.0	50.0
	Moderate to Dense	31.3	0.0	0.0	31.3	12.5	18.8	0.0	25.0
Batophora	Sparse	31.3	93.8	68.8	68.8	56.3	18.8	12.5	37.5
	Sparse to Moderate	68.8	6.3	31.3	31.3	43.8	68.8	56.3	62.5
	Moderate to Dense	0.0	0.0	0.0	0.0	0.0	12.5	31.3	0.0
Calcareous Algae	None	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Few	0.0	18.8	6.3	0.0	0.0	0.0	0.0	0.0
	Many	100.0	81.3	93.8	100.0	100.0	100.0	100.0	100.0
Sponges	None	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0
	Few	56.3	25.0	0.0	18.8	25.0	68.8	12.5	25.0
	Many	43.8	75.0	100.0	81.3	75.0	25.0	87.5	75.0
Corals	None	6.3	18.8	0.0	6.3	6.3	6.3	6.3	6.3
	Few	56.3	31.3	31.3	43.8	25.0	62.5	37.5	43.8
	Many	37.5	50.0	68.8	50.0	68.8	31.3	56.3	50.0
Gorgonians	None	25.0	31.3	37.5	25.0	100.0	100.0	100.0	100.0
	Few	37.5	18.8	12.5	18.8	0.0	0.0	0.0	0.0
	Many	37.5	50.0	50.0	56.3	0.0	0.0	0.0	0.0

Table 4.2-19a Mean Braun-Blaunquet Coverage Abundance[1] (BBCA) Scores ± One Standard Error (SE) for Total Macrophytes, Total Seagrass, and Total Macroalgae, by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Total Macrophytes					
		Pre-Uprate Fall	Pre-Uprate Spring	Fall 2013	Fall 2014	Spring 2014	Spring 2015
		Mean	Mean	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
BB1	a	2.1	2.3	2.1 ± 0.1	1.6 ± 0.1	3.0 ± 0.2	1.4 ± 0.1
	b	1.8	2.7	2.3 ± 0.1	1.8 ± 0.1	2.1 ± 0.1	1.7 ± 0.1
	Area	**1.9**	**2.5**	**2.2 ± 0.1**	**1.7 ± 0.1**	**2.5 ± 0.1**	**1.5 ± 0.1**
BB2	a	2.3	2.3	3.2 ± 0.3	2.3 ± 0.1	1.7 ± 0.2	2.2 ± 0.1
	b	2.3	2.3	2.6 ± 0.2	2.7 ± 0.1	1.8 ± 0.2	2.6 ± 0.1
	Area	**2.3**	**2.3**	**2.9 ± 0.2**	**2.5 ± 0.1**	**1.7 ± 0.1**	**2.4 ± 0.1**
BB3	a	2.4	2.8	3.0 ± 0.2	3.0 ± 0.1	1.4 ± 0.1	2.8 ± 0.1
	b	1.8	2.8	2.3 ± 0.2	3.1 ± 0.0	1.8 ± 0.1	3.0 ± 0.0
	Area	**2.1**	**2.8**	**2.6 ± 0.1**	**3.1 ± 0.0**	**1.6 ± 0.1**	**2.9 ± 0.0**
BB4	a	1.8	2.0	2.7 ± 0.1	2.3 ± 0.0	2.5 ± 0.1	2.1 ± 0.0
	b	1.9	2.4	2.4 ± 0.2	2.4 ± 0.0	2.8 ± 0.2	2.1 ± 0.0
	Area	**1.9**	**2.2**	**2.6 ± 0.1**	**2.3 ± 0.0**	**2.7 ± 0.1**	**2.1 ± 0.0**

Table 4.2-19b Mean Braun-Blaunquet Coverage Abundance[1] (BBCA) Scores ± One Standard Error (SE) for Total Macrophytes, Total Seagrass, and Total Macroalgae, by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Transect	Total Macroalgae									
		Pre-Uprate Fall	Pre-Uprate Spring	Fall 2013		Fall 2014		Spring 2014		Spring 2015	
		Mean	Mean	Mean	± SE	Mean	± SE	Mean	± SE	Mean	± SE
BB1	**a**	1.4	1.6	1.5	± 0.1	1.6	± 0.1	2.1	± 0.1	1.4	± 0.1
	b	1.6	1.9	2.1	± 0.1	1.8	± 0.1	1.7	± 0.1	1.7	± 0.1
	Area	**1.5**	**1.8**	**1.8**	**± 0.1**	**1.7**	**± 0.1**	**1.9**	**± 0.1**	**1.5**	**± 0.1**
BB2	**a**	1.6	1.7	2.9	± 0.3	2.3	± 0.1	1.3	± 0.1	2.2	± 0.1
	b	1.7	1.8	1.8	± 0.1	2.7	± 0.1	1.5	± 0.2	2.6	± 0.1
	Area	**1.6**	**1.7**	**2.4**	**± 0.2**	**2.5**	**± 0.1**	**1.4**	**± 0.1**	**2.4**	**± 0.1**
BB3	**a**	1.3	1.9	1.4	± 0.1	3.0	± 0.1	1.1	± 0.1	2.8	± 0.1
	b	1.3	2.4	1.7	± 0.1	3.1	± 0.0	1.3	± 0.1	3.0	± 0.0
	Area	**1.3**	**2.1**	**1.6**	**± 0.1**	**3.1**	**± 0.0**	**1.2**	**± 0.0**	**2.9**	**± 0.0**
BB4	**a**	1.3	1.8	2.3	± 0.2	2.3	± 0.0	2.1	± 0.2	2.1	± 0.0
	b	1.4	1.8	1.8	± 0.1	2.4	± 0.0	2.5	± 0.2	2.1	± 0.0
	Area	**1.3**	**1.8**	**2.0**	**± 0.1**	**2.3**	**± 0.0**	**2.3**	**± 0.1**	**2.1**	**± 0.0**

Table 4.2-19c Mean Braun-Blaunquet Coverage Abundance[1] (BBCA) Scores and Depth to Hardbottom ± One Standard Error (SE) for Total Macrophytes, Total Seagrass, and Total Macroalgae, by Transect, Season, and Study Area for All Pre- and Post-Uprate Monitoring Events.

Area	Tran-sect	Total Seagrass						Depth to Hardbottom (cm)*	
		Pre-Uprate Fall	Pre-Uprate Spring	Fall 2013	Fall 2014	Spring 2014	Spring 2015	Fall 2014	Spring 2015
		Mean	Mean	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
BB1	**a**	1.5	1.3	1.5 ± 0.2	1.6 ± 0.0	1.8 ± 0.2	1.4 ± 0.1	16.8 ± 4.3	17.0 ± 8.9
	b	1.1	1.6	1.1 ± 0.1	1.8 ± 0.1	1.1 ± 0.1	1.7 ± 0.1	9.1 ± 1.3	12.4 ± 5.5
	Area	**1.3**	**1.4**	**1.3 ± 0.1**	**1.7 ± 0.0**	**1.4 ± 0.1**	**1.5 ± 0.1**	**12.9 ± 2.4**	**14.8 ± 5.1**
BB2	**a**	0.9	0.4	1.2 ± 0.1	1.7 ± 0.4	0.5 ± 0.1	1.4 ± 0.4	6.6 ± 2.0	5.1 ± 2.3
	b	0.7	0.7	1.5 ± 0.1	1.4 ± 0.5	0.4 ± 0.1	2.0 ± 0.5	8.7 ± 4.2	9.3 ± 5.9
	Area	**0.8**	**0.5**	**1.4 ± 0.1**	**1.5 ± 0.3**	**0.5 ± 0.1**	**1.7 ± 0.3**	**7.6 ± 2.3**	**7.2 ± 3.1**
BB3	**a**	1.4	1.3	1.5 ± 0.1	3.0 ± 0.0	1.1 ± 0.1	2.9 ± 0.1	13.5 ± 4.0	14.3 ± 7.6
	b	0.7	0.8	1.2 ± 0.1	2.7 ± 0.4	0.9 ± 0.1	2.6 ± 0.4	7.3 ± 0.9	5.8 ± 1.1
	Area	**1.1**	**1.0**	**1.3 ± 0.1**	**2.8 ± 0.2**	**1.0 ± 0.1**	**2.7 ± 0.2**	**10.4 ± 2.1**	**10.1 ± 3.9**
BB4	**a**	1.0	1.1	1.3 ± 0.1	2.3 ± 0.0	1 ± 0.0	2.1 ± 0.0	8.3 ± 1.8	11.1 ± 3.1
	b	0.9	1.0	1.0 ± 0.1	2.4 ± 0.0	0.8 ± 0.1	2.1 ± 0.0	7.9 ± 1.7	4.9 ± 1.0
	Area	**0.9**	**1.0**	**1.1 ± 0.1**	**2.3 ± 0.0**	**0.9 ± 0.1**	**2.1 ± 0.0**	**8.1 ± 1.2**	**8.0 ± 1.8**

Notes:
*Depth to hardbottom not measured in pre-uprate events.
[1]BBCA scores: 1 (includes 0.1 and 0.5) - less than 5% coverage; 2 - 5% to 25% coverage; 3 - 25% to 50% coverage; 4 - 50% to 75% coverage; 5 - 75% to 100% coverage.

Key:
BBCA = Braun-Blaunquet Coverage Abundance
cm = Centimeter(s)
m = Meter(s)
SE = Standard Error

Table 4.2-20 Analytical Results for Seagrass Leaf Nutrient Samples Collected within Each Study Area During Fall Post-Uprate Monitoring Compared to the Fall Pre-Uprate Mean.

Method		353.2 & 351.2					365.4				
Parameter		Pre-Uprate Fall Mean	Total Nitrogen Fall 2013		Total Nitrogen Fall 2014		*Pre-Uprate Fall Mean	Total Phosphorus Fall 2013		Total Phosphorus Fall 2014	
Area	Transect	wt%	wt%	Qual-ifier	wt%	Qual-ifier	mg/Kg	mg/Kg	Qual-ifier	mg/Kg	Qual-ifier
BB1	a	2.33	2.35		2.10		625.00	548.50		573.00	
	b	2.33	2.30		2.15		395.00	555.00		544.50	
	Total	**2.33**	**2.33**		**2.13**		**510.00**	**551.75**		**558.75**	
BB2	a	2.18	2.00		1.91		495.00	581.50		560.00	
	b	2.26	2.05		1.93		560.00	607.50		579.00	
	Total	**2.22**	**2.03**		**1.92**		**527.50**	**594.50**		**569.50**	
BB3	a	2.80	2.00		2.04		495.00	628.50		606.50	
	b	2.90	2.05		1.98		560.00	628.00		554.50	
	Total	**2.85**	**2.03**		**2.01**		**422.50**	**628.25**		**580.50**	
BB4	a	2.12	2.00		1.96		400.00	689.50		657.00	
	b	2.21	2.10		1.95		425.00	706.00		663.00	
	Total	**2.17**	**2.05**		**1.96**		**412.50**	**697.75**		**660.00**	

Table 4.2-20 Analytical Results for Seagrass Leaf Nutrient Samples Collected within Each Study Area During Fall Post-Uprate Monitoring Compared to the Fall Pre-Uprate Mean.

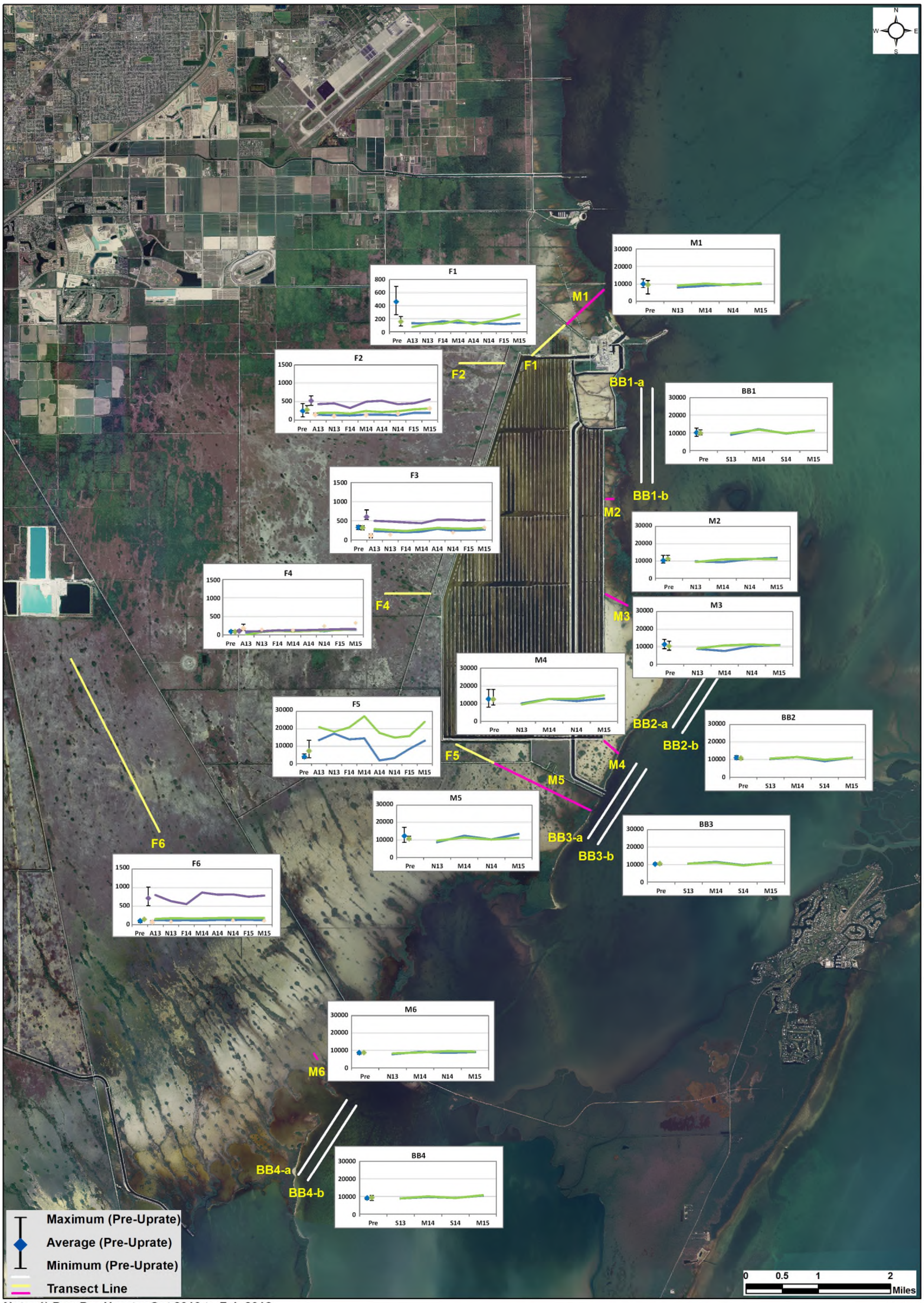
Method		U of M					U of M				
Parameter		Pre-Uprate Fall Mean	d13C Fall 2013		d13C Fall 2014		Pre-Uprate Fall Mean	d15N Fall 2013		d15N Fall 2014	
Area	Transect	‰	‰	Qual-ifier	‰	Qual-ifier	‰	‰	Qual-ifier	‰	Qual-ifier
BB1	**a**	-11.73	-9.70		-9.80		5.78	6.45		5.30	
	b	-10.53	-9.60		-9.20		4.59	4.55		4.00	
	Total	**-11.13**	**-9.65**		**-9.50**		**5.19**	**5.50**		**4.65**	
BB2	**a**	-8.71	-9.00		-9.10		1.92	2.95		3.38	
	b	-10.14	-9.85		-9.95		2.98	3.25		3.40	
	Total	**-9.42**	**-9.43**		**-9.53**		**2.45**	**3.10**		**3.39**	
BB3	**a**	-10.79	-10.55		-10.65		3.87	3.70		3.85	
	b	-10.61	-10.50		-10.60		4.32	3.65		3.70	
	Total	**-10.70**	**-10.53**		**-10.63**		**4.09**	**3.68**		**3.78**	
BB4	**a**	-11.60	-10.75		-10.55		5.35	4.85		4.15	
	b	-11.40	-10.70		-10.40		4.75	4.10		4.13	
	Total	**-11.50**	**-10.73**		**-10.48**		**5.05**	**4.48**		**4.14**	

Table 4.2-20 Analytical Results for Seagrass Leaf Nutrient Samples Collected within Each Study Area During Fall Post-Uprate Monitoring Compared to the Fall Pre-Uprate Mean.

Method		U of M				
Parameter		Pre-Uprate Fall Mean	Total Carbon Fall 2013		Total Carbon Fall 2014	
Area	Transect	wt%	wt%	Qualifier	wt%	Qualifier
BB1	a	39.50	41.25		35.20	
	b	38.59	41.85		35.70	
	Total	**39.04**	**41.55**		**35.45**	
BB2	a	38.55	41.65		35.50	
	b	38.67	40.60		34.65	
	Total	**38.61**	**41.13**		**35.08**	
BB3	a	52.07	41.25		35.60	
	b	52.04	41.35		35.15	
	Total	**52.06**	**41.30**		**35.38**	
BB4	a	40.72	40.70		34.90	
	b	40.85	40.55		35.25	
	Total	**40.79**	**40.63**		**35.08**	

Notes:
Methods 353.2 and 351.2 refer to the corresponding EPA methods
*Phosphorus was not included in testing for Fall 2010, only Fall 2011 Pre-Uprate Event
Key:
‰ = Parts per Thousand
wt% = Weight percent
mg/Kg = Milligrams per kilogram
U of M - University of Miami
d13C = Carbon Isotopes
d15N = Nitrogen Isotopes

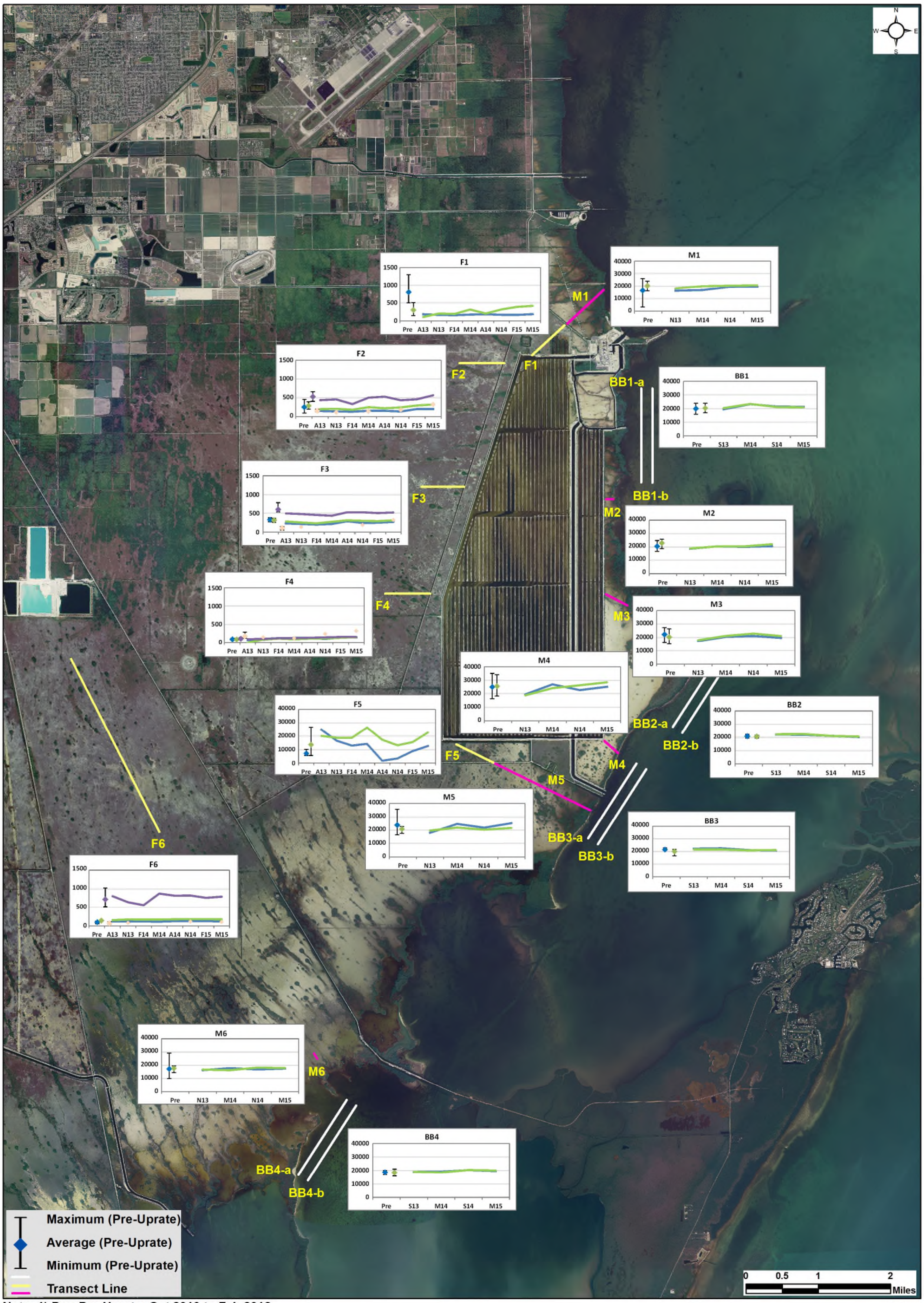
FIGURES



Note: 1) Pre: Pre-Uprate: Oct 2010 to Feb 2012.
2) A13: Aug 2013; S13: Sep 2013; N13: Nov 2013; F14: Feb 2014; M14: May 2014; A14: Aug 2014; S14: Sep 2014; N14: Nov 2014; F15: Feb 2015; M15: May 2015.
3) Plot "1" or transect "a" values are shown in blue; plot "2" or transect "b" shown in green; plot "3" shown in purple; and plot "4" shown in orange.

Porewater Sodium samples (mg/L) collected at 30 cm depth.
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Aug 2013 to May 2015.

Figure 4.1-1. Post-Uprate Porewater Sodium (mg/L) Results with Pre-Uprate Ranges.

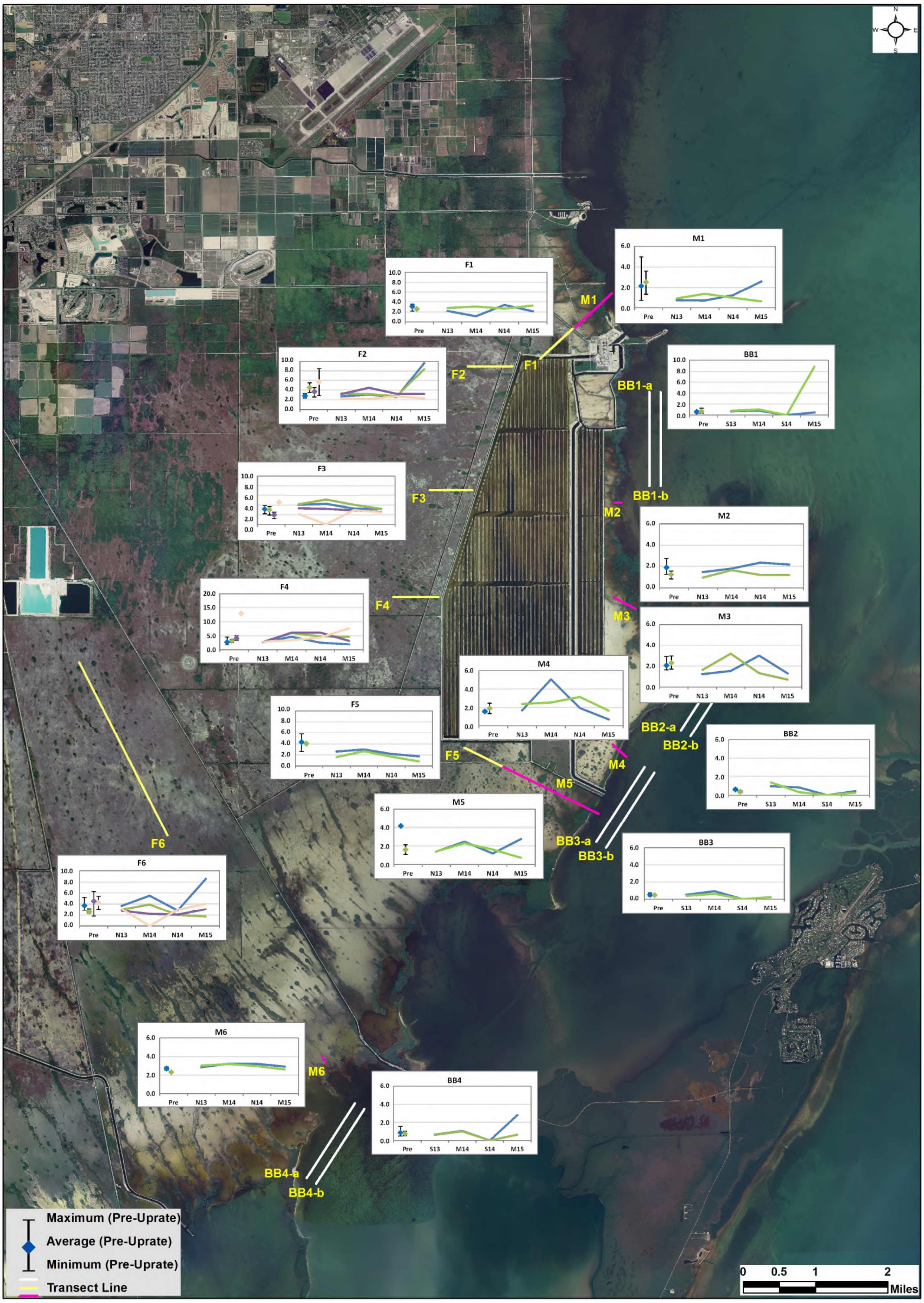


Note: 1) Pre: Pre-Uprate: Oct 2010 to Feb 2012.
2) A13: Aug 2013; S13: Sep 2013; N13: Nov 2013; F14: Feb 2014; M14: May 2014; A14: Aug 2014; S14: Sep 2014; N14: Nov 2014; F15: Feb 2015; M15: May 2015.
3) Plot "1" or transect "a" values are shown in blue; plot "2" or transect "b" shown in green; plot "3" shown in purple; and plot "4" shown in orange.

2-2016

Porewater Chloride samples (mg/L) collected at 30 cm depth.
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Aug 2013 to May 2015.

Figure 4.1-2. Post-Uprate Porewater Chloride (mg/L) Results with Pre-Uprate Ranges.

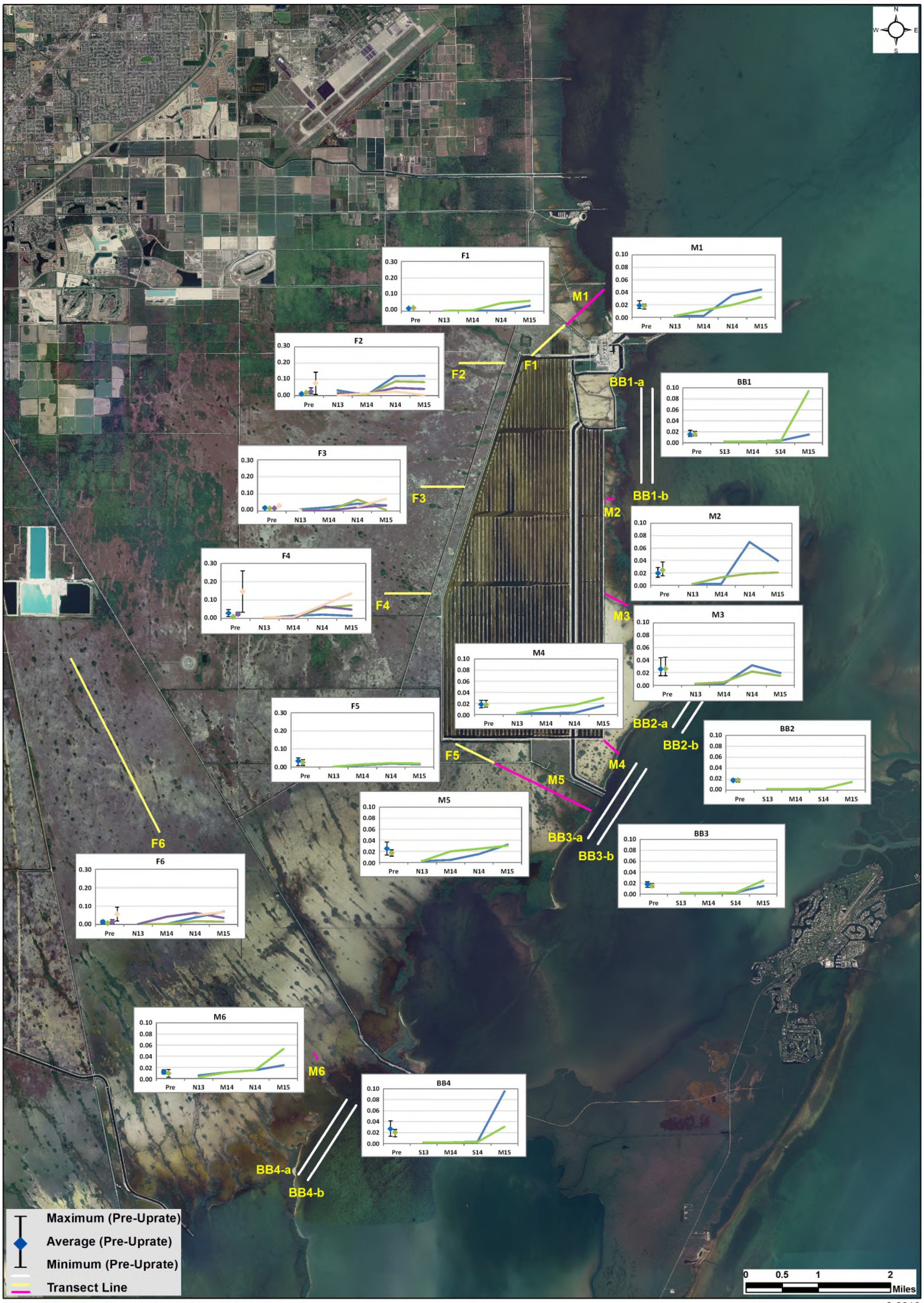


2-2016

Note: 1) Pre: Pre-Uprate: Oct 2010 to Feb 2012.
2) S13: Sep 2013; N13: Nov 2013; M14: May 2014; S14: Sep 2014; N14: Nov 2014; M15: May 2015.
3) Plot "1" or transect "a" values are shown in blue; plot "2" or transect "b" shown in green; plot "3" shown in purple; and plot "4" shown in orange.

Porewater Total Nitrogen samples (mg/L) collected at 30 cm depth.
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Aug 2013 to May 2015.

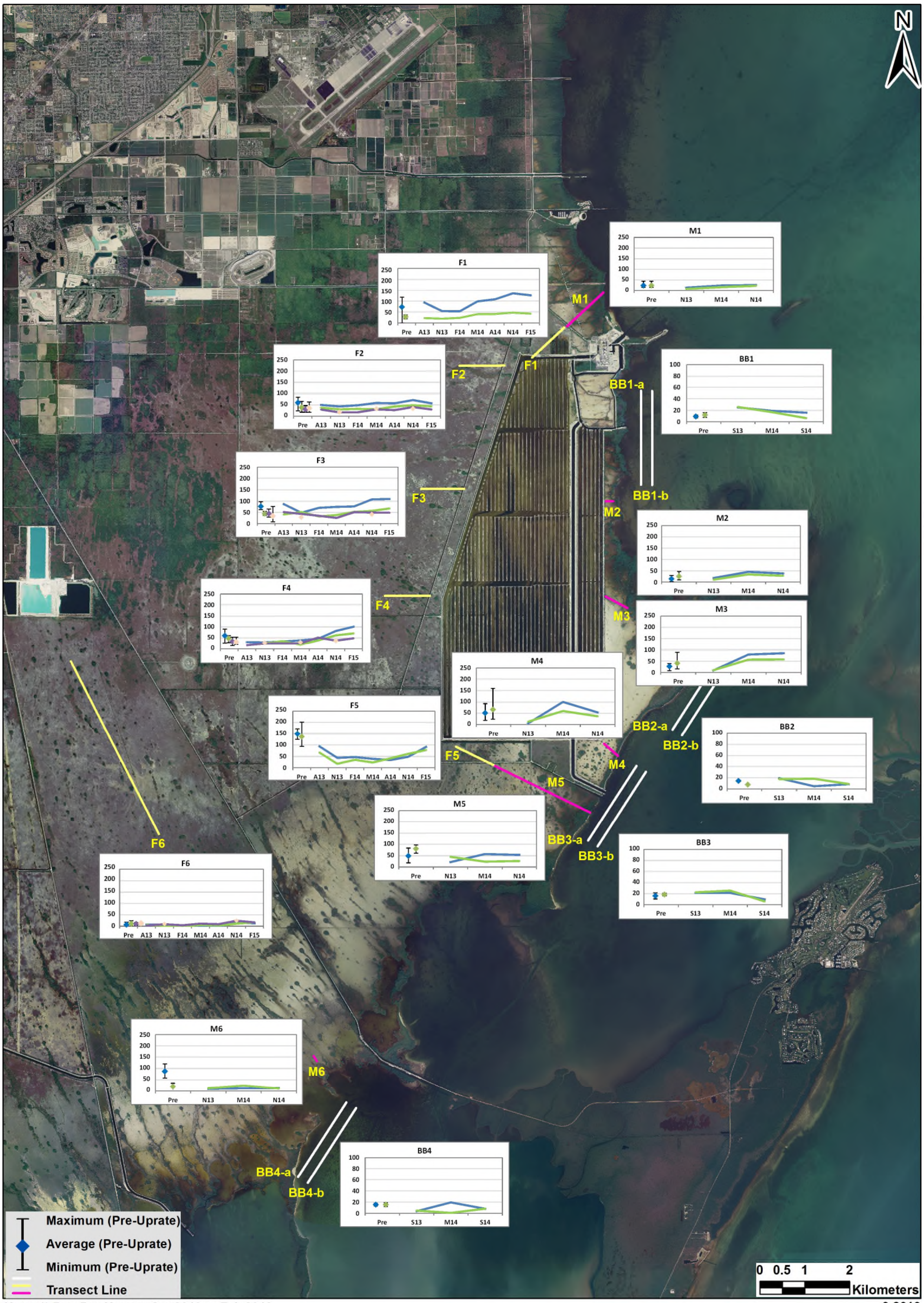
Figure 4.1-3. Post-Uprate Semi-Annual Porewater Total Nitrogen (mg/L) Results with Pre-Uprate Ranges.



Note: 1) Pre: Pre-Uprate: Oct 2010 to Feb 2012.
2) S13: Sep 2013; N13: Nov 2013; M14: May 2014; S14: Sep 2014; N14: Nov 2014; M15: May 2015.
3) Plot "1" or transect "a" values are shown in blue; plot "2" or transect "b" shown in green; plot "3" shown in purple; and plot "4" shown in orange.

Porewater Total Phosphorus samples (mg/L) collected at 30 cm depth.
Pre-Uprate data shows average and range, while Post-Uprate values are for events from Aug 2013 to May 2015.

Figure 4.1-4. Post-Uprate Semi-Annual Porewater Total Phosphorus (mg/L) Results with Pre-Uprate Ranges.



3-2016

Note: 1) Pre: Pre-Uprate: Oct 2010 to Feb 2012.
2) A13: Aug 2013; S13: Sep 2013; N13: Nov 2013; F14: Feb 2014; M14: May 2014; A14: Aug 2014; S14: Sep 2014; N14: Nov 2014; F15: Feb 2015.
3) Plot "1" or transect "a" values are shown in blue; plot "2" or transect "b" are shown in green; plot "3" are shown in purple; and plot "4" are shown in orange.
4) Data for May 2015 are pending.

Quarterly ecological Tritium samples (pCi/L) collected at 30 cm depth.
Ranges of data in periods of Pre-Uprate and quaterly values in the Post-Uprate period from Aug 2013 to Feb 2015.

Figure 4.1-5. Post-Uprate Porewater Tritium (pCi/L) Results with Pre-Uprate Ranges.

Figure 4.2-1. Post-Uprate Ecological Transect Locations.

5. HYDROGEOLOGIC ASSESSMENT

Information regarding the geologic and hydrogeologic conditions of the area, data previously collected to assess groundwater responses to environmental conditions in the area, and operational effects of the CCS on groundwater water levels have been reviewed. Data have also been collected and evaluated as part of the monitoring effort to assess the extent of the CCS hypersaline groundwater plume and interaction between the CCS surface water and groundwater. Discussion is provided below.

5.1 Biscayne Aquifer and Groundwater Responses

Southeastern Miami-Dade County, which includes Turkey Point, is underlain by two aquifer systems: the shallow unconfined Biscayne Aquifer/Surficial Aquifer System (BAS) and the deep Floridan Aquifer System (FAS). The focus of the Turkey Point Uprate monitoring effort is on the BAS because of its importance to the area to the west of the CCS as a drinking water supply and its shallow, unconfined depth. All the Turkey Point monitoring wells are screened in the BAS in high-flow zones (JLA 2010). There are zones of high permeability in the BAS typically associated with interconnected, touching vug porosity, bedding plane flow zones, cavernous flow zones, and/or touching dissolutioned fossil molds (Cunningham et al. 2004). Typically, within the Miami Limestone and Fort Thompson Formation, these high permeability zones occur at the base of depositional cycles that are characterized by touching-vug floatstone and rudstone, pelloidal packstone and grainstone, framestone, and vuggy wackestone and packstone (Cunningham et al. 2004, 2006). The BAS can exhibit very high hydraulic conductivities (in excess of 10,000 ft/day in some formations [Fish and Stewart 1991]) that can facilitate groundwater migration, but is countered by low hydraulic natural gradients across the region. Further details on the BAS and geologic conditions can be found in the Comprehensive Pre-Uprate Report (2012a) and in Hydrology of the Surficial Aquifer System, Dade County Florida (Fish and Stewart 1991).

Information was presented in the Comprehensive Pre-Uprate Report (FPL 2012a) that assessed groundwater responses to environmental conditions in the area and operational effects of the CCS. A number of these findings remain valid Post-Uprate and include the following:

- The exchange between the CCS, surface water, and groundwater are controlled by a number of variables, including groundwater and surface water stages and water densities.
- Water level data indicate that tidal fluctuations in Biscayne Bay surface water (of several feet) are reflected by fluctuations of a much smaller magnitude (hundredths of a foot) in groundwater beneath and in the CCS. This observation suggests that the aquifer beneath the CCS and Biscayne Bay do not behave as a single water body and that there is not a free exchange of water between them. Rather, there is some resistance to flow, implying

a more limited hydraulic connection than might otherwise be inferred if water levels fluctuated in a similar fashion.

- The groundwater levels in all land-based wells respond almost instantaneously to large rain events, and all three well depths follow identical (or nearly identical) patterns, which suggests close connections between the shallow, intermediate, and deep zones.

- The differences in water levels between shallow, intermediate, and deep wells are influenced by density differences and the depth of the well. Wells that are uniformly fresh across all three depth intervals have water levels that plot on top of each other. Other wells have water levels at different depth intervals that are separated, due, in part (or wholly), to density differences.

- The determination of groundwater flow is complicated by the variable groundwater densities, non-homogenous characteristics of the aquifer, and influences of nearby surface water bodies.

- Normal operations of the CCS (based on a review of outage and non-outage periods) do not appear to have a measurable effect on groundwater levels. If there is an effect, it is masked by meteorological conditions.

- Pumping the ID can immediately lower water levels up to almost 1 foot in the ID. This has an observable influence (around ±0.1 ft) almost instantaneously on groundwater at all zones in the immediate vicinity (TPGW-1 and TPGW-2) and surface water in the L-31E Canal. The effect on other wells farther away has not been observed.

- Movement of CCS water into the groundwater and groundwater flow into the CCS is governed by the water elevations and densities.

5.2 Extent of CCS Water and Rate of Migration

As discussed in the February 2011 Semi-Annual Report (FPL 2011a), the presence of saltwater in the aquifer west of Turkey Point pre-dates the CCS and was documented well inland in the 1950s (Klein 1957). This saltwater zone can move both seasonally and from year to year (Peters and Reynolds 2008); however, the results of FPL's five years of monitoring show generally limited change in chloride concentrations west of the CCS, except for some reduction in thickness of the fresher water surficial zone during the 2011 drought/dry season. Marine water existed in much of the groundwater in the area prior to the CCS being constructed and CCS water has since intermixed with historic salt water. Because the Agencies are interested in determining the extent of groundwater affected by the hypersaline water from the CCS, water chemistry in the CCS, Biscayne Bay, and the groundwater were assessed during the Pre-Uprate phase of monitoring to determine if the CCS water could be finger-printed. Parameters such as cations, ions, or most isotopes did not distinguish CCS water from Biscayne Bay water below concentrations found in Biscayne Bay. The Agencies recommended that FPL use tritium as a tracer for CCS water since it was unique to the CCS at the concentrations present. As a result, the distribution of tritium can provide some insight into the possible movement and extent of CCS waters.

It is important to note that, under this Monitoring Plan, tritium is being measured only as a chemical tracer in order to determine the potential movement of CCS water. At the levels being measured, the tritium is not a public health concern. Tritium is also being routinely monitored in the CCS by the FDOH-BRC.

As discussed in Sections 2 and 3 and previously reported in the Post-Uprate Report (FPL 2014a), the most notable changes in the extent of saline water in the groundwater is the increase in specific conductance at TPGW-10D and, to a lesser extent, at TPGW-11D, which began before the Post-Uprate period. There has been a corresponding increase in tritium at a concentration high enough to indicate an influence from the CCS. In the Interim Operating period, water levels on the intake side of the plant at TPSWCCS-6 were higher than normal for an extended period. It is possible that the increase in specific conductance and tritium at TPGW-10D and TPGW-11D could be attributable, in part, to the higher water levels at TPSWCCS-6.

Another notable increase in specific conductance was at TPGW-7D, where levels began to rise in July 2013 from less than 600 µS/cm to more than 6,500 µS/cm by May 2015 (see Section 2, Figure 2.1-8). This rise, however, has not been accompanied by an increase in tritium. The tritium values have remained low (close to or below 20 pCi/L), which suggests this is most likely marine water that potentially pre-dates the CCS.

While a few water quality changes have occurred in the groundwater during the Post-Uprate period, most of the groundwater chemistry has been similar over the five-year period. This indicates that groundwater movement may be more gradual, at least on the scale of the monitoring network. More abrupt changes, which are rarely observed, may be associated with a well in or close to a fresh/salt water interface, either vertically or horizontally. This was observed in the Pre-Uprate period at TPGW-L-3 during 2011, when the shallow depth shifted from typically fresh to brackish and then back to predominantly fresh during the wet season.

Figures 5.2-1, 5.2-2, and 5.2-3 show transect locations and cross-sectional isopleths of pre-CCS (April 1, 1971, through February 1, 1972) and recent (March 2015) specific conductance data. Isopleths show the approximate change in specific conductance concentrations from the early 1970s (pre-CCS operation) to the recent period. Other than accounting for the recent increases, primarily in TPGW-10D and TPGW-7D, these figures are similar to those provided in the Comprehensive Pre-Uprate Report (FPL 2012a). All isopleths represent estimations of historical and current water quality conditions and were developed based on interpolation methods and best professional judgment. While chloride concentrations provide more direct evidence of saltwater/marine water intrusion, specific conductance can also be used as a surrogate, with the understanding that its value can be affected by salts found in fresh water. In nearly all the wells sampled for this current monitoring effort, a high specific conductance value (more than 1,275 µS/cm) appears to indicate marine influences. Only one well (TPGW-8S) had specific conductance readings for an extended period that were influenced by another ion (calcium) and may not reflect marine influences.

Figures 5.2-2 and 5.2-3 also show the approximate historical limit of what would now be defined by the FDEP as Class G-III Ground Water (i.e., TDS greater than 10,000 mg/L, per Chapter 62-520.430, F.A.C.). While historical TDS values are not available for all stations, there is a relationship between specific conductance and TDS; based on the current analytical data, the TDS value is, on average, 60% of the specific conductance value. This relationship was used to calculate historical TDS values and to estimate the approximate limits of G-III groundwater prior to CCS construction. This historic limit was developed during and included in the Comprehensive Pre-Uprate Report (FPL 2012a).

Plan view maps showing the approximate current limits of specific conductance in each zone (shallow, intermediate, and deep) are provided in Figure 5.2-4 and are compared with Pre-Uprate period data. The changes between the periods are limited.

Figures 5.2-5 and 5.2-6 show cross-sections similar to the above specific conductance cross-sections, except that average Post-Uprate tritium values are shown. The figures include both the average tritium value for each well and corresponding average Post-Uprate chloride value. The figures show groundwater tritium concentrations in excess of 3,000 pCi/L near the CCS. These concentrations diminish with distance from the CCS. Values are in the hundreds of picoCuries, miles west of the CCS, at depth. The extent of tritium in the groundwater is less to the east of the CCS. Note that much of the water in the vicinity of the CCS historically could be classified as non-potable, based on pre-CCS TDS concentrations in the groundwater. Figure 5.2-7 shows plan view maps of average tritium concentrations for the shallow, intermediate, and deep zones, respectively for the Pre- and Post-Uprate periods. All isopleths represent estimated locations of tritium contours and were developed based on interpolation methods and best professional judgment. There is little change on any of the tritium maps between the Pre-Uprate and Post-Uprate, other than what has been previously discussed regarding TPGW-10D.

In the Comprehensive Pre-Uprate Report (FPL 2012a), the average horizontal rate of migration of CCS waters to the west was estimated to between 525 ft per year (northern part) and 660 ft per year (southern part). To the east of the CCS, the rate of migration was estimated to be 290 ft per year. The actual movement of the saline groundwater in any given year can be abated by high rainfall conditions or exacerbated by drought conditions.

Vertical hydraulic conductivities are typically an order of magnitude or two lower than horizontal hydraulic conductivities (Argonne National Laboratories) in anisotropic formations. Efforts conducted by Bechtel as part of the Turkey Point Unit 6 & 7 project (Andersen 2011) estimated vertical hydraulic conductivities that were an order of magnitude less than the horizontal hydraulic conductivities. While the exact rate of vertical migration is not known at Turkey Point, information from well cluster TPGW-13 can provide some insights. A review of the tritium data at TPGW-13S, 13M, and 13D reveal average concentrations for the entire period of monitoring to be 4,353 pCi/L, 3,468 pCi/L, and 3,722 pCi/L, respectively. Although the surface water tritium levels vary substantially, the groundwater levels are somewhat buffered from large swings in concentrations. By considering the half-life of tritium (12.3 years) and the depths of these wells, a range of values for the rate of vertical migration can be estimated. Since TPGW-

13M and TPGW-13D are 27 and 55 ft deeper than TPGW-13S, a rate of migration of 12 to 32 ft per year in the deeper portions of the aquifer is calculated. In addition, it has been observed that, despite the high specific conductance values measured in the CCS in the Post-Uprate period (particularly since late 2013), the effect has yet to be clearly seen in TPGW-13S. Since TPGW-13S is screened about 27 ft below the shallow canals and 8 to 10 ft below the Grand Canal, it is estimated that the rate of vertical migration in this upper layer of the formation is less than 6 ft per year (8 ft/1.5 years). While these calculations are not intended to be precise, they provide some indication of the general rate of vertical movement of the hypersaline water below the CCS.

One of the biggest surface water changes in the Post-Uprate period is the increase in specific conductance/salinity in the CCS. The increase in salinity is being driven, to a large degree, by an increase in temperature in the CCS, which causes more water to evaporate from the CCS. The increase in CCS surface water temperatures during the Post-Uprate period cannot be explained by the Uprate. As the salinity increases, the density of the water increases, which creates more pressure/driving head and a potential increase in migration of saline groundwater. Some of the density increases are mitigated by warmer waters, but there is an overall rise in density of the CCS waters. During the Pre-Uprate monitoring period, the average density at TPSWCCS-1 was approximately 1.03 grams per cubic centimeters (g/cm^3). In May 2015, the density at this same station was around 1.06 g/cm^3. For much of the CCS, which is less than 4 ft deep, this equates to an increase of less than 0.12 ft in head (3% increase). For deeper portions of the CCS that are 15 to 20 ft deep, this the increase in head equates to 0.45 to 0.60 ft (3% increase). Although the change is small, this increase in head can affect the exchange of groundwater in and out of the CCS. Further discussion is provided in the following section i.e. Section 5.3.

While there has been an increase in driving head, and specific conductance values have increased in the CCS, the effects have yet to be readily seen in the Post-Uprate period. As mentioned above, the specific conductance in the shallowest well at TPGW-13 has yet to respond to the increased values in the overlying CCS surface water. The few notable changes in specific conductance in several of the other wells do not appear related to the Post-Uprate operation of Units 3 and 4, given the time of the occurrence. The previously reported occasional seepage effects of the CCS at TPSWC-5 (Grand Canal immediately adjacent to and south of the CCS) observed during the Pre-Uprate period were not as evident, based on temperature and specific conductance data in the Post-Uprate period.

5.3 Water and Salt Balance Model

Tetra Tech, Inc. has developed a model of the water and salt balance for the CCS. The purpose of this model is to quantify the volume of water and mass of salt entering and exiting the CCS over a period of time. This Excel-based model, the underlying conceptualization of the relationship between the CCS and the surrounding environmental systems, key calculations, and results were most recently detailed in the Comprehensive Pre-Uprate Monitoring Report (FPL 2012a). That version of the model simulated water and salt flow to and from the CCS for the period between September 2010 and June 2012. Currently, the modeled period extends through

May 2015 and encompasses the Post-Uprate period. This period of time includes the increases in both CCS salinity and temperature (that were observed to begin in fall 2013), the drop in salinity due to the addition of L-31E water in the fall of 2014, and the subsequent rebound in salinity in the CCS.

The conceptual model and associated calculations are predominantly unchanged since last presented in the 2012 Comprehensive Pre-Uprate Monitoring Report. As such, only a brief summary of the model is provided below. In addition, model results and corresponding conclusions regarding the operation of the CCS, based on the current calibrated water and salt balance model, are provided herein. The Excel spreadsheet that comprises the model is provided in a separate data file.

5.3.1 Model Summary

As Figure 5.3-1 depicts, the water balance of the control volume (i.e., the CCS) is comprised of seepage (lateral through the sides and vertical through the bottom), blowdown (additional water pumped from other units to the CCS), precipitation (including runoff from earth berms between canals), and evaporation. Other than evaporation and precipitation, these are the same mechanisms by which salt flows into and out of the CCS. The means by which water and/or salt is transferred (e.g., seepage, evaporation) is calculated using various equations provided in the 2012 Comprehensive Pre-Uprate Monitoring Report. Calculations were performed for a 57-month period from September 2010 through May 2015. Average flows of water and salt into and out of the control volume were calculated for each day of this period using hydrologic, water quality, and meteorological data measured within, beneath, and adjacent to the CCS. The average daily flows were summed to estimate the amount of water and salt that enters or exits the control volume during each month and the entire 57-month period. These calculations demonstrate and validate the conceptual model of the CCS and, in so doing, illustrate the hydrologic mechanisms by which the CCS functions.

Calculated water flows are reported in 10^6 gallons per day (mgd). The mass flux into or out of the control volume is calculated by multiplying the volumetric flow by the salinity of the body of water from which the water is flowing. Salinity from the same groundwater and surface water monitoring stations used in the 2012 Comprehensive Pre Uprate Report (FPL 2012a) were used in the calculations and reported in the practical salinity scale (PSS-78), which is equivalent to grams per liter (g/L). Calculated mass fluxes are reported in thousands of pounds per day (lb x 1,000/day).

Over time, the gain/loss of water and salt mass within the control volume results in a change in the control volume's water and salt mass storage. Increased water storage, for instance, occurs when more water enters the control volume than exits. Storage, then, can be estimated by summing all of the components of the water (and salt) balance. When the net flow is positive (into the control volume) during a specified period of time, the storage of control volume increases. Conversely, a net negative (out of the control volume) flow implies a decrease in storage during a specified time period.

Another manner in which a change in storage can be estimated relies on direct measurements of water elevations and salinities within the control volume. A change in water elevation within the control volume can be calculated as a difference between water elevations at the beginning and end of a specified time period. The product of this change in water elevations and the surface area of the control volume provides an estimate of the change in the volume of water contained in the control volume during that period of time. Estimates of daily storage changes derived from this method are used to further calibrate the water and salt balance model to ensure an accurate simulation of temporal trends in CCS water elevation and salinity.

5.3.2 Model Calibration

The individual components of the water and salt balance were simulated daily and summed for each month from September 2010 through May 2015, as well as for the collective 57-month period. The individual components of flow are summed in order to calculate a simulated change in volume for each month and for the 57-month period. These simulated changes in storage were compared with observed changes in CCS water and salt storage for each month and the entire calibration period. Errors between the simulated and observed monthly storage changes were minimized by adjusting key variables associated with the flow balance model; this process is called calibration. The calibration process ensures that the model can accurately reflect the average changes in CCS storage over the 57-month time frame while also effectively capturing day-to-day changes in CCS water and mass storage. Calibration of the water and salt balance model was achieved by adjusting hydraulic conductivities of the aquifer materials adjacent to and beneath the CCS that factor into the calculation of seepage to/from groundwater and Biscayne Bay. Additional adjustable parameters include the coefficients in the wind function (FPL 2012a), the amount of runoff that enters the control volume as a percentage of precipitation, the amount of Unit 5 cooling tower water that is lost to evaporation before entering the CCS, and the salinity of the Unit 5 blowdown as a percentage of seawater. The calibrated model parameter values are provided in Table 5.3-1.

The horizontal hydraulic conductivities laterally adjacent to the control volume were calibrated to range between 500 ft/day and 900 ft/day. The calibrated vertical conductivities beneath the control volume ranged from 0.1 ft/day to 4 ft/day. The horizontal hydraulic conductivities of the side faces of the CCS are relatively high due the assumed incising of highly permeable material that underlies the muck and Miami limestone by deeper canals. For the same reason, the northern discharge canals and return canals were calibrated to relatively high vertical hydraulic conductivities (4 ft/day and 3.8 ft/day, respectively). Lower vertical hydraulic conductivities were calibrated for the middle and southern portions of the discharge canals, as well as the southern portion of the return canals (0.1 ft/day).

A notable deviation from the conceptual CCS water and salt flow balance is the recognition of reduced flow in the plant discharge canals. In early 2014, FPL noted that water flow was quite low in some plant discharge canals. In some cases, it was observed that CCS water did not flow in parts of individual canals. The lack of flow in certain individual canals limits the intended function of the CCS as a radiator, such that water preferentially flows through other canals at a faster rate than normal. The greater rate of flow of CCS water in some canals inhibits the process of evaporation and the cooling effect that evaporation provides to the CCS. This phenomenon was simulated by reducing the CCS discharge canals' surface area between January 2014 and May 2015 by between 16% and 20%. Though coarse, this approximation accounts for both a physical reduction in surface area as well as the related limits on the evaporative process.

5.3.3 Model Results and Discussion

Results of the simulated 57-month water and salt balance model are provided in Tables 5.3-2 and 5.3-3, respectively. Monthly balance results follow in Tables 5.3-4 and 5.3-5. The modeled net flow of water, as calculated by the summing the components of the water balance for the 57-month calibration period, is denoted as the "Modeled Change in CCS Storage" and was calculated to be an average outflow of 0.22 mgd over the 57-month calibration period (Table 5.3-2). The observed change in storage, which is the difference in the volume of water in the CCS between the final and first days of the calibration period, divided by the number of days in the period, was observed to be 0.54 mgd. Though the model underestimated a net outflow of water from the CCS over the whole time period, the residual error between the simulated and observed flow is very small (0.32 mgd). This error is small (0.3%) relative to the monthly net observed flows, which range from a net outflow of 46.6 mgd (October 2010) and a net inflow of 52.1 mgd (September 2010).

The model simulated a net influx of salt over the 57-month period at rate of 597 (lb x 1,000)/day. The corresponding observed rate of salt inflow was calculated by multiplying the average observed salinity in the CCS on the final and first day of the calibration period by the corresponding CCS volumes on those days. The difference between these two products, divided by the number of days in the calibration period, shows that the net inflow of salt is about 405 (lb x 1,000)/day. The error associated with the mass flux is an overestimation by approximately 192 (lb x 1,000)/day. As in the case of water balance simulation, the magnitude of this overestimation is small (0.9%) relative to the range in monthly average flows; the monthly net mass fluxes range from an outflow of 13,790 (lb x 1,000)/day (October 2010) to an inflow of 8,659 (lb x 1,000)/day (June 2011). This error marks an improvement over an earlier version of the model (discussed in the 2014 Annual Post-Uprate Monitoring Report [FPL 2014a]).

Figures 5.3-2 and 5.3-3 illustrate the model's ability to match the magnitude and direction of net monthly flows of water and salt, respectively. Figure 5.3-2 compares observed and modeled net monthly flows of water into and out of the CCS. There is a seasonal trend in observed flows to/from the CCS, where inflows are generally associated with the wet season and outflows are generally associated with the dry season. The model is able to replicate this trend reasonably well. However, there are isolated periods of time where the model does not accurately simulate the magnitude or direction of the net flow (e.g., March to July 2011, October 2013, January 2015). Figure 5.3-3 compares observed and modeled net monthly flows of salt into and out of the CCS. Like the modeled water flows, estimated salt mass fluxes generally match observed fluxes well, although there are individual months where the estimated mass flux is less accurate.

Implicit in the model's ability to simulate monthly net water and salt mass flows is the accurate simulation of daily flows to and from the CCS. Because the model is able to characterize the daily flows of water and salt, the model is able to estimate the daily changes in CCS water and salt storage. As previously mentioned, these changes in storage are associated with daily changes in CCS water levels and salinity. Figure 5.3-4 shows the model-calculated water level in the CCS, which varies over the period of record. These modeled water levels range between approximately -1.63 ft NAVD 88 and 0.81 ft NAVD 88 and reflect an average water level throughout the entire CCS. The observed CCS water levels over time are also shown in this figure; the observed values reflect the mean of daily-averaged water elevations across the seven sensors in the CCS. The daily-averaged observed water levels vary across a range similar to that of the simulated water levels (-1.71 ft NAVD 88 to 0.63 ft NAVD 88). Simulated water elevations are calculated by dividing the simulated daily change in CCS storage by the average daily CCS surface area and adding the resulting value (which reflects a change in water level) to the previous day's simulated water elevation. It is evident from this figure that the model effectively captures the general trend in CCS water elevations over the 57-month period and accurately simulates average CCS water elevations throughout much of the calibration period. Nevertheless, there were periods of time where the model either generally under-simulated observed water levels (late 2011 and 2013) or, conversely, over-simulated water levels (mid-2014 through May 2015).

Though the model over-simulated water levels toward the end of the model simulation, this error is relatively small. Moreover, the temporal fluctuations in water levels are reasonably well-matched. This is particularly relevant since this period of time includes fall 2014, when 914 million gallons of L-31E Canal water were pumped into the CCS over a 21-day duration. During this addition, the simulated increase in water levels (approximately 0.5 ft) closely matched the observed water level increase in the CCS (approximately 0.4 ft). The model also accounted for water pumped into the CCS from the Floridan Aquifer (PTF5 well #3) and Biscayne Aquifer (PW-1) and the associated changes in stage since July 2013 and January 2015, respectively.

Similar to the calculation of CCS water levels, changes in salt mass storage within the CCS can be used to calculate average CCS salinity changes over time. The simulated daily net flow of salt is divided by the simulated volume of water in the CCS, which results in a change in salinity. This change in salinity is added to the simulated salinity calculated for the previous day to produce a simulated salinity for the current day. Like the simulated CCS water level, the model salinity reflects a representative daily salinity throughout the CCS. Figure 5.3-5 compares the simulated salinities to those observed in the CCS over the period of record. Observed salinities are the mean of daily averaged salinities measured in the CCS monitoring stations. The model under-simulated salinity between May 2012 and December 2013 and over-simulated between June 2014 and May 2015. However, these under- and over-simulations were generally small. Moreover, the simulated temporal trends in salinity throughout much of the 57-month timeframe matched the temporal trends in the average observed CCS salinity.

As in the case of the simulation of water levels in the CCS, it is important to note that the model simulated salinity and daily changes during the November 2013 through September 2014 timeframe, when salinity increased from about 60 g/L to approximately 90 g/L. Moreover, the modeled drop in salinity (11 g/L) due to the addition of L-31E Canal water from September to October 2014 closely matched the observed drop in salinity (13 g/L). In addition, the subsequent increase in salinity (October 2014 through April 2015) was replicated by the model, as was the subsequent significant drop in salinity attributable to a late-April rainfall event. The fact that the model matches these notable fluctuations in CCS salinity reinforces the conceptual model, which suggests that changes in CCS salinity are predicated solely on changes in the flow of water into and out of the CCS. Again, changes attributable to the addition of Floridan Aquifer water from PTF5 #3 and Biscayne Aquifer water from PW-1 are accounted for by the model with reasonable accuracy.

Given that the simulated timeframe is nearly evenly partitioned into the Pre-Uprate, Interim, and Post-Uprate periods, it is appropriate to discuss the water and salt balance model results in terms of these operational periods. Inspection of Figure 5.3-2 does not reveal a marked difference in water changes in water storage (inflows and outflows) among the three operating periods. Perhaps the only distinguishing characteristic is a significant decrease in storage (outflow) that occurs at the inception of the Post-Uprate period in June 2013. This outflow is attributable to increase in seepage to groundwater and in evaporative losses. Figure 5.3-3, however, suggests that mass accrues at a greater rate during the Post-Uprate period than in the other two operating periods. This is consistent with the increase in CCS salinity during this timeframe.

Tables 5.3-6 and 5.3-7 summarize the simulated water and salt flow balances for the Pre-Uprate, Interim, and Post-Uprate periods. Though the net water and salt balances are on the same order of magnitude for each of the three operating periods, the magnitude of the inflows and outflows are fairly different. For instance, the magnitude of water inflows and outflows are greater during the Pre-Uprate and Post-Uprate periods than in the Interim period. Likewise, the exchanges of salt are generally greater in the Pre-Uprate and Post-Uprate periods than in the Interim period. The modeled water balances match the corresponding observed balances reasonably well in each of the operating periods. Though the match between modeled and observed salt mass balances appears to be slightly degraded when compared to the water balance match, in fact the associated salt mass balance error is relatively low in the context of the range of the individual mass balance components (e.g. maximum inflow minus maximum outflow). Additionally, relative to the variability in observed monthly net salt mass flows, the error between the simulated and observed mass balance for these three periods is fairly low

The accurate simulation of changing CCS inflows, outflows, water elevations, and salinities is complex due to the different components of the balance model and their varying impacts upon CCS water and salt storage. For instance, vertical flows into and out of the control volume are generally larger than horizontal flows and have a greater impact on CCS water elevation. The salinity of inflowing water, however, can vary depending upon the source of the water. For example, horizontal flow from the west (L-31E Canal) is non-saline and has a pronounced mitigating impact upon CCS salinities; vertical flow from groundwater beneath portions of the plant discharge canals is saline to hyper-saline and generally increases the salinity of the CCS. The correct balance of both water and salt mass flow is difficult to estimate in the model. In addition, the simulated timeframe encompasses Pre-Uprate, Interim, and Post-Uprate periods, during which CCS water salinity and temperatures fluctuate significantly. The model addresses associated impacts on the CCS by explicitly simulating the effects of water/air temperature gradients on evaporation. Whereas numerous sources and sinks of water, varying salinities, and changes in water temperature do increase model complexity, the need to accurately simulate these different components of CCS operation constrains the number of possible solutions.

Though the model is able to simulate the complex dynamics associated with the CCS over a 57-month timeframe with reasonable accuracy, there are periods of time where the simulated flows of water and salt do not accurately reflect observed conditions. Consequently, the simulated water level and salinities in the CCS deviate from those that have been observed at various times in the simulation period. However, the overall performance of the model reinforces its utility as a tool for understanding how the CCS has and will operate under varying meteorological, hydrological, and operational conditions. This is best demonstrated by the fact that the same conceptual model employed to characterize changes in CCS storage of water and salt during the Pre-Uprate period is used to explain changes in water and salt storage during the Post-Uprate period, a period of time during which water levels have generally decreased, salinities have dramatically increased, water temperatures have risen, and algal blooms have developed within the CCS. Nevertheless, the exchanges of flows between the CCS and surrounding environment during Post-Uprate period are governed by the same hydrologic principles as during the Pre-Uprate period.

This robustness and accuracy in the model underpins FPL’s understanding of processes that control the CCS and the manner in which the CCS interacts with the adjacent aquifer and water bodies. This accuracy in simulating the historical changes within the CCS bolsters confidence in the model’s utility as a tool to evaluate the sensitivity of CCS operations to certain factors, such as changes in operation, drought conditions, storm events, added water, and other potential environmental stresses. Additionally, the model accuracy validates the fact that the most appropriate data are being collected to effectively capture CCS operations, identify interactions between the CCS and the surrounding environment, and support FPL’s comprehension of historical and future operations of the CCS. This model continues to be refined and improved with further information on the CCS.

TABLES

Table 5.3-1. Calibration Parameters.

Parameter Name	Calibrated Value	Units
Vertical Hydraulic Conductivity (Zone A)	4.0	ft/day
Vertical Hydraulic Conductivity (Zone B)	0.1	ft/day
Vertical Hydraulic Conductivity (Zone C)	0.1	ft/day
Vertical Hydraulic Conductivity (Zone D)	3.0	ft/day
West Face Hydraulic Conductivity	825	ft/day
East Face Hydraulic Conductivity	900	ft/day
North Face Hydraulic Conductivity	500	ft/day
South Face Hydraulic Conductivity	675	ft/day
Evaporation Modifier (Factor Multiplier)	0.71	
Runoff Modifier (as % of Precipitation)	32%	
Blowdown Evaporation Factor	40%	
Blowdown Concentration (as % of Seawater)	0.25	

Table 5.3-2. Calculated Fluid Flows from Water Budget Components.

September 2010 to May 2015			
Water Budget Component		**Flow (MGD)**	**Volume (gal x 10^6)**
Into CCS	W. Seepage	0.77	1329.68
	E. Seepage	13.59	23557.82
	N. Seepage	0.01	16.37
	S. Seepage	3.30	5730.53
	Bottom Seepage	8.87	15378.74
	Precipitation and Runoff	19.52	33846.97
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.49	851.01
	Unit 5 Blowdown	1.96	3393.11
	ID Pumping	3.58	6206.00
	Added Water (e.g. L-31E)	1.93	3352.82
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**54.02**	**93663.04**
Out of CCS	W. Seepage	-0.06	-4.67
	E. Seepage	-1.77	-5941.48
	N. Seepage	-0.01	-10.45
	S. Seepage	0.00	-44.05
	Bottom Seepage	-11.09	-19504.75
	Precipitation and Runoff	0.00	0.00
	Evaporation	-31.49	-68542.75
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-44.43**	**-94047.87**
Modeled Change in CCS Storage:		**-0.22**	**-384.83**
	Observed Change	**-0.54**	**-938.00**

Key:
CCS = Cooling Canal System.
gal = Gallon.
ID = Interceptor Ditch.
MGD = Million gallons per day.

Table 5.3-3. Calculated Mass Flows from Salt Budget Components.

September 2010 to May 2015			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	6.12	10617.41
	E. Seepage	3874.04	6717584.84
	N. Seepage	1.90	3288.71
	S. Seepage	664.37	1152011.09
	Bottom Seepage	2471.89	4286258.31
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	142.89	247772.59
	ID Pumped Water	360.30	624756.49
	Added Water (e.g. L-31E)	219.43	380491.12
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**7740.93**	**13422780.57**
Out of CCS	W. Seepage	-46.15	-80019.11
	E. Seepage	-1467.02	-2543816.50
	N. Seepage	-3.32	-5753.07
	S. Seepage	-11.44	-19830.75
	Bottom Seepage	-5615.47	-9737218.65
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-7143.39**	**-12386638.08**
Modeled Change in CCS Storage:		**597.54**	**1036142.49**
	Observed Change	**404.70**	**701742.27**

Key:
CCS = Cooling Canal System.
ID = Interceptor Ditch.
lb = Pound(s).

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

September 2010			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.63	18.92
	E. Seepage	11.48	344.30
	N. Seepage	0.02	0.45
	S. Seepage	3.43	102.78
	Bottom Seepage	8.21	246.36
	Precipitation and Runoff	77.48	2324.42
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.64
	Unit 5 Blowdown	1.96	58.73
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**103.49**	**3104.60**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-5.01	-150.18
	N. Seepage	0.00	-0.08
	S. Seepage	0.00	0.00
	Bottom Seepage	-6.05	-181.43
	Precipitation and Runoff	0.00	0.00
	Evaporation	-39.24	-1177.31
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-50.30**	**-1509.00**
Modeled Change in CCS Storage:		**53.19**	**1595.60**
Observed Change		**52.14**	**1564.08**

Key:
CCS = Cooling Canal System.
gal = Gallon.
ID = Interceptor Ditch.
MGD = Million gallons per day.

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

October 2010			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.22	6.82
	E. Seepage	0.72	22.35
	N. Seepage	0.00	0.15
	S. Seepage	2.75	85.32
	Bottom Seepage	5.48	169.95
	Precipitation and Runoff	13.40	415.34
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.93
	Blowdown	1.49	46.21
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**24.36**	**755.07**
Out of CCS	W. Seepage	-0.01	-0.28
	E. Seepage	-21.35	-661.91
	N. Seepage	-0.01	-0.19
	S. Seepage	-0.05	-1.53
	Bottom Seepage	-19.27	-597.45
	Precipitation and Runoff	0.00	0.00
	Evaporation	-30.81	-955.14
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-71.50**	**-2216.51**
Modeled Change in CCS Storage:		**-47.14**	**-1461.45**
Observed Change		**-46.60**	**-1444.52**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

November 2010			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.26	7.92
	E. Seepage	4.72	141.59
	N. Seepage	0.00	0.14
	S. Seepage	2.39	71.78
	Bottom Seepage	1.43	42.94
	Precipitation and Runoff	26.53	795.80
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.64
	Blowdown	1.00	29.97
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**36.63**	**1098.78**
Out of CCS	W. Seepage	-0.06	-1.73
	E. Seepage	-6.82	-204.53
	N. Seepage	0.00	-0.11
	S. Seepage	-0.03	-0.89
	Bottom Seepage	-13.30	-398.86
	Precipitation and Runoff	0.00	0.00
	Evaporation	-30.18	-905.40
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-50.38**	**-1511.52**
Modeled Change in CCS Storage:		**-13.76**	**-412.74**
Observed Change		**-5.02**	**-150.50**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

December 2010			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.74	22.85
	E. Seepage	16.54	512.73
	N. Seepage	0.00	0.00
	S. Seepage	2.17	67.16
	Bottom Seepage	1.58	48.88
	Precipitation and Runoff	3.74	115.80
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.93
	Blowdown	1.44	44.66
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**26.48**	**821.00**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.44	-13.72
	N. Seepage	-0.01	-0.41
	S. Seepage	-0.01	-0.18
	Bottom Seepage	-15.96	-494.83
	Precipitation and Runoff	0.00	0.00
	Evaporation	-28.78	-892.12
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-45.20**	**-1401.25**
Modeled Change in CCS Storage:		**-18.72**	**-580.25**
Observed Change		**-12.72**	**-394.29**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

January 2011			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.53	47.29
	E. Seepage	9.42	291.89
	N. Seepage	0.00	0.00
	S. Seepage	1.87	57.82
	Bottom Seepage	2.08	64.43
	Precipitation and Runoff	19.13	593.17
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.93
	Blowdown	1.64	50.81
	ID Pumping	4.91	152.24
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**40.86**	**1266.58**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-3.70	-114.58
	N. Seepage	-0.01	-0.45
	S. Seepage	0.00	0.00
	Bottom Seepage	-18.51	-573.86
	Precipitation and Runoff	0.00	0.00
	Evaporation	-27.80	-861.81
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-50.02**	**-1550.70**
Modeled Change in CCS Storage:		**-9.17**	**-284.12**
Observed Change		**-2.54**	**-78.88**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

February 2011			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.09	30.53
	E. Seepage	23.22	650.20
	N. Seepage	0.00	0.00
	S. Seepage	3.78	105.80
	Bottom Seepage	7.17	200.74
	Precipitation and Runoff	0.69	19.22
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.06
	Blowdown	1.39	38.92
	ID Pumping	2.25	63.03
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**39.87**	**1116.49**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.35	-9.70
	N. Seepage	-0.02	-0.56
	S. Seepage	0.00	0.00
	Bottom Seepage	-20.78	-581.75
	Precipitation and Runoff	0.00	0.00
	Evaporation	-33.42	-935.67
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-54.56**	**-1527.68**
Modeled Change in CCS Storage:		**-14.69**	**-411.19**
Observed Change		**-14.26**	**-399.40**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

March 2011			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.22	37.97
	E. Seepage	18.92	586.39
	N. Seepage	0.00	0.08
	S. Seepage	4.14	128.24
	Bottom Seepage	7.82	242.27
	Precipitation and Runoff	7.02	217.53
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.93
	Blowdown	1.33	41.10
	ID Pumping	9.37	290.40
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**50.09**	**1552.91**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.28	-8.56
	N. Seepage	0.00	-0.14
	S. Seepage	0.00	0.00
	Bottom Seepage	-18.45	-571.91
	Precipitation and Runoff	0.00	0.00
	Evaporation	-34.86	-1080.73
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-53.59**	**-1661.34**
Modeled Change in CCS Storage:		**-3.50**	**-108.43**
Observed Change		**3.19**	**99.02**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

April 2011			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.97	29.01
	E. Seepage	26.45	793.57
	N. Seepage	0.00	0.10
	S. Seepage	5.07	152.07
	Bottom Seepage	12.05	361.43
	Precipitation and Runoff	10.21	306.21
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.64
	Blowdown	2.26	67.89
	ID Pumping	7.46	223.80
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**64.76**	**1942.71**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	0.00	-0.08
	S. Seepage	0.00	0.00
	Bottom Seepage	-19.71	-591.19
	Precipitation and Runoff	0.00	0.00
	Evaporation	-36.05	-1081.54
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-55.76**	**-1672.82**
Modeled Change in CCS Storage:		**9.00**	**269.90**
Observed Change		**-7.85**	**-235.45**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

May 2011			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.25	38.65
	E. Seepage	42.98	1332.39
	N. Seepage	0.00	0.00
	S. Seepage	5.91	183.26
	Bottom Seepage	20.72	642.30
	Precipitation and Runoff	6.82	211.30
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.93
	Blowdown	2.32	71.85
	ID Pumping	14.81	459.13
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**95.09**	**2947.82**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	-0.04	-1.19
	S. Seepage	0.00	0.00
	Bottom Seepage	-52.85	-1638.30
	Precipitation and Runoff	0.00	0.00
	Evaporation	-42.55	-1319.03
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-95.44**	**-2958.52**
Modeled Change in CCS Storage:		**-0.35**	**-10.70**
Observed Change		**11.51**	**356.77**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

June 2011			
	Water Budget Component	**Flow (MGD)**	**Volume (gal x 10^6)**
Into CCS	W. Seepage	1.38	41.40
	E. Seepage	34.62	1038.51
	N. Seepage	0.00	0.00
	S. Seepage	5.76	172.73
	Bottom Seepage	21.40	642.01
	Precipitation and Runoff	7.90	237.08
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.53	15.99
	Blowdown	2.04	61.20
	ID Pumping	16.13	483.83
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**89.76**	**2692.75**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.01	-0.24
	N. Seepage	-0.03	-1.02
	S. Seepage	0.00	0.00
	Bottom Seepage	-44.27	-1327.96
	Precipitation and Runoff	0.00	0.00
	Evaporation	-45.18	-1355.26
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-89.48**	**-2684.48**
Modeled Change in CCS Storage:		**0.28**	**8.27**
Observed Change		**10.30**	**309.07**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

July 2011			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.70	52.59
	E. Seepage	4.33	134.19
	N. Seepage	0.00	0.00
	S. Seepage	1.79	55.58
	Bottom Seepage	4.26	132.21
	Precipitation and Runoff	44.51	1379.89
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.54	16.59
	Blowdown	2.26	70.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**59.39**	**1841.05**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-10.96	-339.74
	N. Seepage	-0.01	-0.43
	S. Seepage	-0.12	-3.86
	Bottom Seepage	-14.71	-455.93
	Precipitation and Runoff	0.00	0.00
	Evaporation	-46.46	-1440.12
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-72.26**	**-2240.09**
Modeled Change in CCS Storage:		**-12.87**	**-399.04**
Observed Change		**9.24**	**286.59**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

August 2011			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.01	31.42
	E. Seepage	12.59	390.34
	N. Seepage	0.00	0.13
	S. Seepage	3.46	107.17
	Bottom Seepage	4.96	153.82
	Precipitation and Runoff	37.20	1153.08
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.53	16.36
	Blowdown	2.08	64.50
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**61.83**	**1916.83**
Out of CCS	W. Seepage	0.00	-0.05
	E. Seepage	-2.36	-73.13
	N. Seepage	0.00	-0.03
	S. Seepage	0.00	0.00
	Bottom Seepage	-4.17	-129.14
	Precipitation and Runoff	0.00	0.00
	Evaporation	-44.38	-1375.79
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-50.91**	**-1578.14**
Modeled Change in CCS Storage:		**10.93**	**338.68**
Observed Change		**20.17**	**625.23**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

September 2011			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.72	21.49
	E. Seepage	9.09	272.63
	N. Seepage	0.00	0.02
	S. Seepage	2.83	85.04
	Bottom Seepage	2.74	82.09
	Precipitation and Runoff	36.97	1109.02
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.55	16.55
	Blowdown	1.96	58.73
	ID Pumping	5.74	172.08
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**60.59**	**1817.64**
Out of CCS	W. Seepage	-0.02	-0.61
	E. Seepage	-1.84	-55.24
	N. Seepage	-0.01	-0.21
	S. Seepage	0.00	0.00
	Bottom Seepage	-8.50	-254.92
	Precipitation and Runoff	0.00	0.00
	Evaporation	-44.71	-1341.33
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-55.08**	**-1652.30**
Modeled Change in CCS Storage:		**5.51**	**165.34**
Observed Change		**-5.14**	**-154.17**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

October 2011			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.65	20.10
	E. Seepage	5.60	173.66
	N. Seepage	0.00	0.11
	S. Seepage	3.35	103.76
	Bottom Seepage	5.71	176.94
	Precipitation and Runoff	52.19	1617.81
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.52	16.21
	Blowdown	1.49	46.21
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**69.51**	**2154.81**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-8.89	-275.64
	N. Seepage	-0.01	-0.24
	S. Seepage	0.00	0.00
	Bottom Seepage	-10.32	-319.94
	Precipitation and Runoff	0.00	0.00
	Evaporation	-32.80	-1016.88
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-52.02**	**-1612.71**
Modeled Change in CCS Storage:		**17.49**	**542.10**
Observed Change		**8.79**	**272.51**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

November 2011			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.41	12.17
	E. Seepage	13.09	392.76
	N. Seepage	0.01	0.22
	S. Seepage	3.05	91.39
	Bottom Seepage	5.29	158.61
	Precipitation and Runoff	1.22	36.63
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.47	14.14
	Blowdown	1.00	29.97
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**24.53**	**735.89**
Out of CCS	W. Seepage	0.00	-0.01
	E. Seepage	-0.97	-29.08
	N. Seepage	0.00	-0.07
	S. Seepage	0.00	0.00
	Bottom Seepage	-3.87	-116.07
	Precipitation and Runoff	0.00	0.00
	Evaporation	-34.49	-1034.58
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-39.33**	**-443.93**
Modeled Change in CCS Storage:		**-14.80**	**291.96**
Observed Change		**-25.56**	**-766.91**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

December 2011			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.89	27.63
	E. Seepage	19.03	589.82
	N. Seepage	0.01	0.16
	S. Seepage	3.40	105.51
	Bottom Seepage	5.84	180.97
	Precipitation and Runoff	1.75	54.20
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.61	18.76
	Blowdown	1.44	44.66
	ID Pumping	9.14	283.37
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**42.10**	**1305.07**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.20	-6.09
	N. Seepage	0.00	-0.13
	S. Seepage	0.00	0.00
	Bottom Seepage	-13.18	-408.58
	Precipitation and Runoff	0.00	0.00
	Evaporation	-30.95	-959.30
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-44.33**	**-1374.09**
Modeled Change in CCS Storage:		**-2.23**	**-69.03**
Observed Change		**-11.66**	**-361.51**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

January 2012			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.44	44.63
	E. Seepage	22.89	709.62
	N. Seepage	0.00	0.02
	S. Seepage	3.76	116.71
	Bottom Seepage	8.86	274.53
	Precipitation and Runoff	2.78	86.27
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.59	18.37
	Blowdown	1.77	55.00
	ID Pumping	15.39	476.96
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**57.49**	**1782.10**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.03	-0.88
	N. Seepage	-0.02	-0.54
	S. Seepage	0.00	0.00
	Bottom Seepage	-29.29	-908.09
	Precipitation and Runoff	0.00	0.00
	Evaporation	-32.66	-1012.42
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-62.00**	**-1921.92**
Modeled Change in CCS Storage:		**-4.51**	**-139.82**
Observed Change		**-9.98**	**-309.33**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

February 2012			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.08	31.33
	E. Seepage	10.96	317.73
	N. Seepage	0.01	0.23
	S. Seepage	2.75	79.68
	Bottom Seepage	5.10	147.91
	Precipitation and Runoff	34.97	1014.27
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.52	15.17
	Blowdown	1.56	45.36
	ID Pumping	1.50	43.56
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**58.46**	**1695.22**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1.48	-43.02
	N. Seepage	0.00	-0.03
	S. Seepage	0.00	0.00
	Bottom Seepage	-8.57	-248.40
	Precipitation and Runoff	0.00	0.00
	Evaporation	-31.99	-927.63
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-42.04**	**-1219.08**
Modeled Change in CCS Storage:		**16.42**	**476.15**
Observed Change		**12.36**	**358.44**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

March 2012			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.79	24.47
	E. Seepage	16.36	507.04
	N. Seepage	0.02	0.67
	S. Seepage	3.86	119.81
	Bottom Seepage	10.20	316.28
	Precipitation and Runoff	2.38	73.78
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.35	10.99
	Blowdown	1.97	61.12
	ID Pumping	4.10	126.99
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**40.04**	**1241.16**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.48	-14.94
	N. Seepage	0.00	-0.01
	S. Seepage	0.00	0.00
	Bottom Seepage	-7.38	-228.72
	Precipitation and Runoff	0.00	0.00
	Evaporation	-33.30	-1032.35
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-41.16**	**-1276.03**
Modeled Change in CCS Storage:		**-1.12**	**-34.87**
Observed Change		**-11.24**	**-348.30**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

April 2012			
	Water Budget Component	**Flow (MGD)**	**Volume (gal x 10^6)**
Into CCS	W. Seepage	1.26	37.86
	E. Seepage	16.15	484.45
	N. Seepage	0.01	0.25
	S. Seepage	3.78	113.46
	Bottom Seepage	11.02	330.61
	Precipitation and Runoff	50.10	1502.87
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.39	11.73
	Blowdown	1.96	58.81
	ID Pumping	9.76	292.86
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**94.43**	**2832.90**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.25	-7.57
	N. Seepage	0.00	-0.05
	S. Seepage	0.00	0.00
	Bottom Seepage	-13.01	-390.18
	Precipitation and Runoff	0.00	0.00
	Evaporation	-35.26	-1057.88
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-48.52**	**-1455.68**
Modeled Change in CCS Storage:		**45.91**	**1377.21**
Observed Change		**33.69**	**1010.73**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

May 2012			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.06	33.01
	E. Seepage	0.50	15.35
	N. Seepage	0.02	0.74
	S. Seepage	1.26	39.07
	Bottom Seepage	11.57	358.62
	Precipitation and Runoff	40.57	1257.52
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.41	12.61
	Blowdown	1.94	60.08
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**57.32**	**1777.00**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-13.27	-411.50
	N. Seepage	0.00	-0.02
	S. Seepage	0.00	-0.06
	Bottom Seepage	-9.28	-287.64
	Precipitation and Runoff	0.00	0.00
	Evaporation	-33.70	-1044.78
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-56.26**	**-1744.00**
Modeled Change in CCS Storage:		**1.06**	**33.00**
Observed Change		**-2.89**	**-89.62**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

June 2012			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.57	17.18
	E. Seepage	3.39	101.59
	N. Seepage	0.02	0.50
	S. Seepage	2.23	66.92
	Bottom Seepage	8.87	265.96
	Precipitation and Runoff	30.36	910.93
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.29	8.66
	Blowdown	2.07	61.95
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**47.79**	**1433.70**
Out of CCS	W. Seepage	0.00	-0.06
	E. Seepage	-9.13	-273.94
	N. Seepage	0.00	-0.02
	S. Seepage	0.00	0.00
	Bottom Seepage	-7.01	-210.24
	Precipitation and Runoff	0.00	0.00
	Evaporation	-34.00	-1019.97
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	-50.14	-1504.23
Modeled Change in CCS Storage:		**-2.35**	**-70.53**
Observed Change		**-3.50**	**-105.04**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

July 2012			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.92	28.53
	E. Seepage	0.02	0.56
	N. Seepage	0.02	0.72
	S. Seepage	1.41	43.82
	Bottom Seepage	14.13	438.04
	Precipitation and Runoff	29.22	905.74
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.34	10.51
	Blowdown	2.13	66.14
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**48.20**	**1494.06**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-11.08	-343.33
	N. Seepage	0.00	0.00
	S. Seepage	-0.06	-1.97
	Bottom Seepage	-9.56	-296.50
	Precipitation and Runoff	0.00	0.00
	Evaporation	-40.50	-1255.63
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-61.21**	**-1897.42**
Modeled Change in CCS Storage:		**-13.01**	**-403.36**
Observed Change		**-7.97**	**-247.19**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

August 2012			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.94	29.28
	E. Seepage	5.79	179.38
	N. Seepage	0.02	0.64
	S. Seepage	2.52	77.97
	Bottom Seepage	12.31	381.65
	Precipitation and Runoff	39.51	1224.70
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.27	8.51
	Blowdown	2.20	68.22
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**63.56**	**1970.35**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-6.13	-190.09
	N. Seepage	0.00	0.00
	S. Seepage	-0.03	-0.91
	Bottom Seepage	-6.38	-197.72
	Precipitation and Runoff	0.00	0.00
	Evaporation	-39.72	-1231.38
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-52.26**	**-1620.10**
Modeled Change in CCS Storage:		**11.30**	**350.25**
Observed Change		**21.72**	**673.22**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

September 2012			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.64	19.16
	E. Seepage	2.51	75.25
	N. Seepage	0.01	0.37
	S. Seepage	2.29	68.62
	Bottom Seepage	7.77	233.02
	Precipitation and Runoff	29.60	887.85
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.73	22.00
	Blowdown	1.93	57.86
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**45.47**	**1364.14**
Out of CCS	W. Seepage	-0.01	-0.17
	E. Seepage	-10.00	-300.02
	N. Seepage	0.00	0.00
	S. Seepage	-0.03	-1.04
	Bottom Seepage	-10.96	-328.68
	Precipitation and Runoff	0.00	0.00
	Evaporation	-39.33	-1180.03
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-60.33**	**-1809.94**
Modeled Change in CCS Storage:		**-14.86**	**-445.80**
Observed Change		**-5.35**	**-160.61**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

October 2012			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.27	8.34
	E. Seepage	19.18	594.67
	N. Seepage	0.02	0.62
	S. Seepage	3.54	109.70
	Bottom Seepage	14.06	435.85
	Precipitation and Runoff	14.07	436.27
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.89	27.69
	Blowdown	1.89	58.47
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**53.92**	**1671.61**
Out of CCS	W. Seepage	-0.02	-0.48
	E. Seepage	-4.46	-138.26
	N. Seepage	0.00	-0.06
	S. Seepage	-0.02	-0.54
	Bottom Seepage	-5.43	-168.36
	Precipitation and Runoff	0.00	0.00
	Evaporation	-39.07	-1211.07
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-48.99**	**-1518.76**
Modeled Change in CCS Storage:		**4.93**	**152.85**
Observed Change		**7.58**	**235.01**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

November 2012			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.37	11.23
	E. Seepage	7.77	233.12
	N. Seepage	0.03	0.88
	S. Seepage	2.97	89.15
	Bottom Seepage	13.66	409.80
	Precipitation and Runoff	1.70	51.08
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.79	23.74
	Blowdown	1.31	39.39
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**28.61**	**858.38**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2.49	-74.57
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-2.45	-73.61
	Precipitation and Runoff	0.00	0.00
	Evaporation	-28.57	-856.97
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-33.50**	**-1005.15**
Modeled Change in CCS Storage:		**-4.89**	**-146.77**
Observed Change		**-3.88**	**-116.28**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

December 2012			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.73	22.60
	E. Seepage	0.43	13.27
	N. Seepage	0.02	0.57
	S. Seepage	1.38	42.89
	Bottom Seepage	7.59	235.25
	Precipitation and Runoff	1.84	56.99
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.50	15.62
	Blowdown	1.49	46.34
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**13.98**	**433.51**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-8.03	-248.97
	N. Seepage	0.00	0.00
	S. Seepage	0.00	-0.02
	Bottom Seepage	-5.51	-170.70
	Precipitation and Runoff	0.00	0.00
	Evaporation	-23.23	-720.01
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-36.76**	**-1139.70**
Modeled Change in CCS Storage:		**-22.78**	**-706.18**
Observed Change		**-28.66**	**-888.55**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

January 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.83	25.62
	E. Seepage	7.15	221.66
	N. Seepage	0.02	0.57
	S. Seepage	3.21	99.43
	Bottom Seepage	8.15	252.64
	Precipitation and Runoff	1.04	32.31
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.52	16.25
	Blowdown	1.74	53.89
	ID Pumping	2.40	74.25
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**25.05**	**776.62**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2.40	-74.34
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-1.69	-52.47
	Precipitation and Runoff	0.00	0.00
	Evaporation	-24.23	-750.99
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-28.32**	**-877.80**
Modeled Change in CCS Storage:		**-3.26**	**-101.18**
Observed Change		**-10.70**	**-331.69**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

February 2013			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.93	26.13
	E. Seepage	9.75	273.11
	N. Seepage	0.01	0.37
	S. Seepage	3.44	96.40
	Bottom Seepage	7.50	209.97
	Precipitation and Runoff	5.37	150.43
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.34	9.50
	Blowdown	1.63	45.65
	ID Pumping	8.45	236.52
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**37.43**	**1048.09**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2.76	-77.32
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-6.60	-184.72
	Precipitation and Runoff	0.00	0.00
	Evaporation	-23.28	-651.88
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-32.64**	**-913.92**
Modeled Change in CCS Storage:		**4.79**	**134.17**
Observed Change		**1.10**	**30.86**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

March 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.77	23.74
	E. Seepage	20.14	624.25
	N. Seepage	0.01	0.18
	S. Seepage	4.28	132.63
	Bottom Seepage	12.61	390.87
	Precipitation and Runoff	5.13	158.93
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.52	16.05
	Blowdown	1.92	59.67
	ID Pumping	7.41	229.77
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**52.78**	**1636.09**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	0.00	-0.13
	S. Seepage	0.00	0.00
	Bottom Seepage	-11.51	-356.90
	Precipitation and Runoff	0.00	0.00
	Evaporation	-27.64	-856.78
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-39.16**	**-1213.81**
Modeled Change in CCS Storage:		**13.62**	**422.28**
Observed Change		**3.84**	**119.01**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

April 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.95	28.47
	E. Seepage	23.12	693.51
	N. Seepage	0.00	0.00
	S. Seepage	3.52	105.47
	Bottom Seepage	7.55	226.58
	Precipitation and Runoff	22.71	681.31
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.71	21.24
	Blowdown	1.91	57.39
	ID Pumping	9.24	277.20
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**69.71**	**2091.16**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.15	-4.51
	N. Seepage	-0.02	-0.66
	S. Seepage	0.00	0.00
	Bottom Seepage	-26.60	-798.04
	Precipitation and Runoff	0.00	0.00
	Evaporation	-38.01	-1140.28
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-64.78**	**-1943.49**
Modeled Change in CCS Storage:		**4.92**	**147.67**
Observed Change		**12.76**	**382.66**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

May 2013			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.88	27.34
	E. Seepage	12.95	401.59
	N. Seepage	0.00	0.00
	S. Seepage	2.52	78.11
	Bottom Seepage	2.83	87.61
	Precipitation and Runoff	48.92	1516.41
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.93	28.68
	Blowdown	2.15	66.71
	ID Pumping	6.15	190.71
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**77.33**	**2397.16**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1.71	-53.14
	N. Seepage	-0.01	-0.41
	S. Seepage	-0.03	-0.93
	Bottom Seepage	-17.48	-541.96
	Precipitation and Runoff	0.00	0.00
	Evaporation	-42.96	-1331.72
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-62.20**	**-1928.16**
Modeled Change in CCS Storage:		**15.13**	**469.00**
Observed Change		**22.68**	**703.18**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

June 2013			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.93	27.98
	E. Seepage	6.33	189.89
	N. Seepage	0.00	0.00
	S. Seepage	1.42	42.74
	Bottom Seepage	1.58	47.48
	Precipitation and Runoff	18.28	548.29
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.56	16.94
	Blowdown	1.99	59.59
	ID Pumping	0.68	20.52
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**31.78**	**953.44**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-14.22	-426.63
	N. Seepage	-0.02	-0.66
	S. Seepage	-0.85	-25.47
	Bottom Seepage	-21.98	-659.37
	Precipitation and Runoff	0.00	0.00
	Evaporation	-51.32	-1539.52
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-88.39**	**-2651.64**
Modeled Change in CCS Storage:		**-56.61**	**-1698.20**
Observed Change		**-31.07**	**-931.98**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

July 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.80	24.80
	E. Seepage	13.88	430.23
	N. Seepage	0.00	0.02
	S. Seepage	2.75	85.21
	Bottom Seepage	5.10	158.03
	Precipitation and Runoff	47.74	1479.85
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.55	16.95
	Blowdown	2.05	63.45
	ID Pumping	0.70	21.78
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**73.56**	**2280.32**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2.71	-83.88
	N. Seepage	-0.01	-0.33
	S. Seepage	0.00	0.00
	Bottom Seepage	-9.67	-299.78
	Precipitation and Runoff	0.00	0.00
	Evaporation	-51.21	-1587.62
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-63.60**	**-1971.62**
Modeled Change in CCS Storage:		**9.96**	**308.70**
Observed Change		**19.61**	**607.86**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

August 2013			
	Water Budget Component	**Flow (MGD)**	**Volume (gal x 10^6)**
Into CCS	W. Seepage	0.68	21.23
	E. Seepage	19.87	615.97
	N. Seepage	0.01	0.16
	S. Seepage	3.37	104.42
	Bottom Seepage	6.45	200.05
	Precipitation and Runoff	32.21	998.49
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.70	21.73
	Blowdown	2.57	79.64
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**65.86**	**2041.70**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2.72	-84.23
	N. Seepage	-0.01	-0.29
	S. Seepage	-0.03	-1.05
	Bottom Seepage	-6.99	-216.74
	Precipitation and Runoff	0.00	0.00
	Evaporation	-72.85	-2258.31
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-82.60**	**-2560.62**
Modeled Change in CCS Storage:		**-16.74**	**-518.92**
Observed Change		**-6.11**	**-189.45**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

September 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.23	6.93
	E. Seepage	14.72	441.57
	N. Seepage	0.01	0.43
	S. Seepage	2.50	74.93
	Bottom Seepage	11.17	335.20
	Precipitation and Runoff	20.70	620.94
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.36	10.89
	Blowdown	1.45	43.60
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**51.15**	**1534.50**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.25	-7.45
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-0.44	-13.34
	Precipitation and Runoff	0.00	0.00
	Evaporation	-34.36	-1030.80
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-35.05**	**-1051.58**
Modeled Change in CCS Storage:		**16.10**	**482.91**
Observed Change		**10.23**	**307.04**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

October 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.28	8.69
	E. Seepage	18.85	584.33
	N. Seepage	0.03	1.02
	S. Seepage	3.97	122.97
	Bottom Seepage	24.88	771.30
	Precipitation and Runoff	7.33	227.12
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.55	16.96
	Blowdown	2.25	69.88
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**58.14**	**1802.26**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.63	-19.39
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-0.17	-5.12
	Precipitation and Runoff	0.00	0.00
	Evaporation	-53.09	-1645.78
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-53.88**	**-1670.29**
Modeled Change in CCS Storage:		**4.26**	**131.97**
Observed Change		**-5.40**	**-167.52**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

November 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.26	7.75
	E. Seepage	15.80	473.94
	N. Seepage	0.03	0.82
	S. Seepage	3.45	103.65
	Bottom Seepage	19.90	597.10
	Precipitation and Runoff	32.18	965.32
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.49	14.56
	Blowdown	1.79	53.85
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**73.90**	**2216.99**
Out of CCS	W. Seepage	0.00	-0.03
	E. Seepage	-0.87	-26.12
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-0.96	-28.75
	Precipitation and Runoff	0.00	0.00
	Evaporation	-43.14	-1294.07
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-44.97**	**-1348.97**
Modeled Change in CCS Storage:		**28.93**	**868.01**
Observed Change		**13.98**	**419.29**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

December 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.33	10.11
	E. Seepage	5.00	155.06
	N. Seepage	0.01	0.21
	S. Seepage	2.10	65.18
	Bottom Seepage	3.84	118.90
	Precipitation and Runoff	4.42	137.06
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.50	15.50
	Blowdown	1.79	55.54
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**17.99**	**557.56**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-3.65	-113.07
	N. Seepage	0.00	-0.03
	S. Seepage	0.00	0.00
	Bottom Seepage	-4.99	-154.79
	Precipitation and Runoff	0.00	0.00
	Evaporation	-40.83	-1265.84
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-49.48**	**-1533.74**
Modeled Change in CCS Storage:		**-31.49**	**-976.18**
Observed Change		**-21.47**	**-665.45**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

January 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.57	17.81
	E. Seepage	10.12	313.58
	N. Seepage	0.02	0.48
	S. Seepage	3.20	99.10
	Bottom Seepage	7.97	247.10
	Precipitation and Runoff	8.44	261.68
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.47	14.68
	Blowdown	1.67	51.80
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**32.46**	**1006.24**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1.25	-38.73
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-1.80	-55.73
	Precipitation and Runoff	0.00	0.00
	Evaporation	-31.70	-982.74
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-34.75**	**-1077.21**
Modeled Change in CCS Storage:		**-2.29**	**-70.98**
Observed Change		**-6.40**	**-198.28**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

January 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.57	17.81
	E. Seepage	10.12	313.58
	N. Seepage	0.02	0.48
	S. Seepage	3.20	99.10
	Bottom Seepage	7.97	247.10
	Precipitation and Runoff	8.44	261.68
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.47	14.68
	Blowdown	1.67	51.80
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**32.46**	**1006.24**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1.25	-38.73
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-1.80	-55.73
	Precipitation and Runoff	0.00	0.00
	Evaporation	-31.70	-982.74
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-34.75**	**-1077.21**
Modeled Change in CCS Storage:		**-2.29**	**-70.98**
Observed Change		**-6.40**	**-198.28**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

February 2014			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.69	19.25
	E. Seepage	13.84	387.43
	N. Seepage	0.02	0.57
	S. Seepage	4.71	131.95
	Bottom Seepage	11.54	323.12
	Precipitation and Runoff	10.25	287.10
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.48	13.58
	Blowdown	1.63	45.52
	ID Pumping	1.35	37.89
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**44.51**	**1246.42**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.37	-10.25
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-0.75	-21.08
	Precipitation and Runoff	0.00	0.00
	Evaporation	-43.10	-1206.67
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-44.21**	**-1238.00**
Modeled Change in CCS Storage:		**0.30**	**8.42**
Observed Change		**-7.95**	**-222.68**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

March 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.68	21.15
	E. Seepage	14.42	447.03
	N. Seepage	0.02	0.71
	S. Seepage	4.31	133.62
	Bottom Seepage	11.74	363.92
	Precipitation and Runoff	6.77	209.72
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.39	12.07
	Blowdown	2.02	62.50
	ID Pumping	1.93	59.76
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**42.27**	**1310.49**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.01	-0.33
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-1.01	-31.30
	Precipitation and Runoff	0.00	0.00
	Evaporation	-41.51	-1286.80
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-42.53**	**-1318.44**
Modeled Change in CCS Storage:		**-0.26**	**-7.96**
Observed Change		**-7.86**	**-243.70**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

April 2014			
	Water Budget Component	Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.66	19.67
	E. Seepage	25.03	750.93
	N. Seepage	0.02	0.67
	S. Seepage	5.29	158.60
	Bottom Seepage	17.23	516.79
	Precipitation and Runoff	2.36	70.84
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.33	10.01
	Blowdown	2.42	72.71
	ID Pumping	3.19	95.76
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**56.53**	**1695.97**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-3.73	-111.95
	Precipitation and Runoff	0.00	0.00
	Evaporation	-42.72	-1281.73
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-46.46**	**-1393.68**
Modeled Change in CCS Storage:		**10.08**	**302.29**
Observed Change		**1.08**	**32.37**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

May 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.68	20.99
	E. Seepage	33.43	1036.20
	N. Seepage	0.00	0.14
	S. Seepage	4.99	154.57
	Bottom Seepage	21.15	655.73
	Precipitation and Runoff	6.93	214.70
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.46	14.40
	Blowdown	2.21	68.43
	ID Pumping	7.00	217.08
	Added Water (e.g. L-31E)	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**76.85**	**2382.24**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	0.00	-0.13
	S. Seepage	0.00	0.00
	Bottom Seepage	-9.78	-303.28
	Precipitation and Runoff	0.00	0.00
	Evaporation	-56.21	-1742.62
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-66.00**	**-2046.03**
Modeled Change in CCS Storage:		**10.85**	**336.20**
Observed Change		**0.67**	**20.77**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

June 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.80	24.00
	E. Seepage	20.49	614.66
	N. Seepage	0.00	0.05
	S. Seepage	4.21	126.29
	Bottom Seepage	10.99	329.66
	Precipitation and Runoff	26.04	781.25
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.62	18.70
	Blowdown	2.53	76.02
	ID Pumping	2.77	83.16
	Added Water (e.g. L-31E)	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**68.46**	**2053.78**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	0.00	-0.12
	S. Seepage	0.00	0.00
	Bottom Seepage	-2.07	-62.12
	Precipitation and Runoff	0.00	0.00
	Evaporation	-54.47	-1634.13
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-56.55**	**-1696.36**
Modeled Change in CCS Storage:		**11.91**	**357.42**
Observed Change		**7.55**	**226.42**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

July 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	1.01	31.16
	E. Seepage	11.05	342.53
	N. Seepage	0.00	0.01
	S. Seepage	4.44	137.63
	Bottom Seepage	6.53	202.50
	Precipitation and Runoff	31.02	961.54
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.62	19.32
	Blowdown	2.78	86.09
	ID Pumping	0.00	0.00
	Added Water (e.g. L-31E)	3.97	122.96
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**61.41**	**1903.75**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.40	-12.41
	N. Seepage	-0.01	-0.32
	S. Seepage	0.00	0.00
	Bottom Seepage	-2.34	-72.66
	Precipitation and Runoff	0.00	0.00
	Evaporation	-54.12	-1677.77
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-56.88**	**-1763.17**
Modeled Change in CCS Storage:		**4.53**	**140.58**
Observed Change		**12.49**	**387.09**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

August 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.71	21.95
	E. Seepage	23.67	733.89
	N. Seepage	0.00	0.15
	S. Seepage	4.97	154.14
	Bottom Seepage	12.62	391.37
	Precipitation and Runoff	15.64	484.97
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.61	18.99
	Blowdown	2.85	88.45
	ID Pumping	0.00	0.00
	Added Water (e.g. L-31E)	4.09	126.76
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**65.18**	**2020.68**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	0.00	-0.11
	S. Seepage	0.00	0.00
	Bottom Seepage	-0.08	-2.62
	Precipitation and Runoff	0.00	0.00
	Evaporation	-58.35	-1808.79
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-58.44**	**-1811.52**
Modeled Change in CCS Storage:		**6.75**	**209.16**
Observed Change		**4.13**	**128.17**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

September 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.32	9.58
	E. Seepage	13.56	406.91
	N. Seepage	0.01	0.30
	S. Seepage	4.53	135.80
	Bottom Seepage	12.04	361.16
	Precipitation and Runoff	19.02	570.46
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.53	15.82
	Blowdown	2.66	79.83
	ID Pumping	0.00	0.00
	Added Water (e.g. L-31E)	9.45	283.54
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**62.11**	**1863.40**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.45	-13.42
	N. Seepage	0.00	-0.03
	S. Seepage	0.00	0.00
	Bottom Seepage	-0.28	-8.49
	Precipitation and Runoff	0.00	0.00
	Evaporation	-48.30	-1448.86
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-49.03**	**-1470.80**
Modeled Change in CCS Storage:		**13.09**	**392.60**
Observed Change		**13.46**	**403.84**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

October 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.40	12.29
	E. Seepage	0.42	13.13
	N. Seepage	0.01	0.24
	S. Seepage	1.54	47.83
	Bottom Seepage	4.00	124.06
	Precipitation and Runoff	32.55	1009.10
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.46	14.16
	Blowdown	2.40	74.39
	ID Pumping	13.66	423.54
	Added Water (e.g. L-31E)	25.28	783.62
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**80.72**	**2502.37**
Out of CCS	W. Seepage	-0.04	-1.27
	E. Seepage	-16.02	-496.54
	N. Seepage	-0.01	-0.29
	S. Seepage	-0.14	-4.36
	Bottom Seepage	-16.88	-523.17
	Precipitation and Runoff	0.00	0.00
	Evaporation	-38.09	-1180.80
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-71.17**	**-2206.42**
Modeled Change in CCS Storage:		**9.55**	**295.95**
Observed Change		**24.22**	**750.70**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

November 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.71	21.39
	E. Seepage	4.63	138.85
	N. Seepage	0.01	0.15
	S. Seepage	2.19	65.78
	Bottom Seepage	1.95	58.61
	Precipitation and Runoff	2.44	73.23
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.55	16.60
	Blowdown	1.89	56.81
	ID Pumping	9.89	296.55
	Added Water (e.g. L-31E)	5.22	156.58
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**29.49**	**884.56**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-5.95	-178.35
	N. Seepage	0.00	-0.09
	S. Seepage	-0.04	-1.26
	Bottom Seepage	-11.24	-337.13
	Precipitation and Runoff	0.00	0.00
	Evaporation	-36.40	-1091.88
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-53.62**	**-1608.71**
Modeled Change in CCS Storage:		**-24.14**	**-724.16**
Observed Change		**-25.31**	**-759.36**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

December 2014			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.39	12.19
	E. Seepage	7.13	220.99
	N. Seepage	0.01	0.44
	S. Seepage	3.66	113.41
	Bottom Seepage	6.27	194.27
	Precipitation and Runoff	12.37	383.60
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.48	14.84
	Blowdown	1.93	59.85
	ID Pumping	0.66	20.43
	Added Water (e.g. L-31E)	3.26	100.98
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**36.16**	**1120.99**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2.57	-79.74
	N. Seepage	0.00	-0.01
	S. Seepage	0.00	0.00
	Bottom Seepage	-2.91	-90.34
	Precipitation and Runoff	0.00	0.00
	Evaporation	-32.64	-1011.85
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-38.13**	**-1181.93**
Modeled Change in CCS Storage:		**-1.97**	**-60.95**
Observed Change		**-9.52**	**-295.24**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

January 2015			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.40	12.08
	E. Seepage	8.10	243.11
	N. Seepage	0.01	0.34
	S. Seepage	3.72	111.70
	Bottom Seepage	7.62	228.57
	Precipitation and Runoff	11.00	329.92
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.55	16.56
	Blowdown	2.15	64.51
	ID Pumping	0.00	0.00
	Added Water (e.g. L-31E)	11.26	337.90
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**44.82**	**1344.69**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1.43	-42.89
	N. Seepage	0.00	-0.01
	S. Seepage	0.00	0.00
	Bottom Seepage	-1.58	-47.32
	Precipitation and Runoff	0.00	0.00
	Evaporation	-38.11	-1143.28
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-41.12**	**-1233.50**
Modeled Change in CCS Storage:		**3.71**	**111.20**
Observed Change		**-9.62**	**-298.36**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

February 2015			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.62	19.25
	E. Seepage	12.33	382.08
	N. Seepage	0.01	0.38
	S. Seepage	3.70	114.85
	Bottom Seepage	4.12	127.67
	Precipitation and Runoff	5.68	176.18
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.51	15.68
	Blowdown	1.89	58.71
	ID Pumping	5.20	161.19
	Added Water (e.g. L-31E)	13.46	417.31
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**47.53**	**1473.30**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1.34	-41.44
	N. Seepage	0.00	-0.01
	S. Seepage	0.00	0.00
	Bottom Seepage	-9.72	-301.46
	Precipitation and Runoff	0.00	0.00
	Evaporation	-34.02	-1054.70
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-45.08**	**-1397.61**
Modeled Change in CCS Storage:		**2.44**	**75.69**
Observed Change		**2.44**	**68.30**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

March 2015			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.73	21.88
	E. Seepage	8.63	258.83
	N. Seepage	0.00	0.09
	S. Seepage	2.81	84.35
	Bottom Seepage	0.51	15.27
	Precipitation and Runoff	10.46	313.88
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.61	18.27
	Blowdown	2.36	70.75
	ID Pumping	9.45	283.44
	Added Water (e.g. L-31E)	15.40	462.02
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**50.96**	**1528.79**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2.13	-63.78
	N. Seepage	-0.01	-0.19
	S. Seepage	0.00	0.00
	Bottom Seepage	-28.51	-855.32
	Precipitation and Runoff	0.00	0.00
	Evaporation	-47.34	-1420.23
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-77.98**	**-2339.52**
Modeled Change in CCS Storage:		**-27.02**	**-810.74**
Observed Change		**-12.11**	**-375.50**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

April 2015			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.89	27.54
	E. Seepage	26.72	828.47
	N. Seepage	0.00	0.00
	S. Seepage	2.88	89.24
	Bottom Seepage	10.17	315.32
	Precipitation and Runoff	34.63	1073.50
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.53	16.42
	Blowdown	2.39	74.24
	ID Pumping	12.06	374.01
	Added Water (e.g. L-31E)	13.99	433.76
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**104.27**	**3232.50**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.06	-1.84
	N. Seepage	-0.01	-0.46
	S. Seepage	0.00	0.00
	Bottom Seepage	-29.22	-905.96
	Precipitation and Runoff	0.00	0.00
	Evaporation	-49.98	-1549.30
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-79.28**	**-2457.57**
Modeled Change in CCS Storage:		**25.00**	**774.93**
Observed Change		**22.43**	**672.93**

Table 5.3-4. Calculated Fluid Flows from Water Budget Components.

May 2015			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.81	24.34
	E. Seepage	14.49	434.74
	N. Seepage	0.00	0.15
	S. Seepage	3.91	117.29
	Bottom Seepage	5.15	154.41
	Precipitation and Runoff	4.47	134.06
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.56	16.87
	Blowdown	2.98	89.47
	ID Pumping	1.14	34.20
	Added Water (e.g. L-31E)	4.25	127.38
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**37.76**	**1132.93**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-0.08	-2.26
	N. Seepage	0.00	-0.06
	S. Seepage	0.00	0.00
	Bottom Seepage	-10.40	-311.85
	Precipitation and Runoff	0.00	0.00
	Evaporation	-46.15	-1384.62
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-56.63**	**-1698.79**
Modeled Change in CCS Storage:		**-18.86**	**-565.87**
Observed Change		**-23.99**	**-743.60**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

September 2010			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.32	39.74
	E. Seepage	2367.81	71034.23
	N. Seepage	3.26	97.90
	S. Seepage	141.52	4245.59
	Bottom Seepage	1757.29	52718.75
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	142.95	4288.51
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**4414.16**	**132424.73**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2107.47	-63224.09
	N. Seepage	-1.00	-30.03
	S. Seepage	0.00	0.00
	Bottom Seepage	-3148.36	-94450.90
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-5256.83**	**-157705.02**
Modeled Change in CCS Storage:		**-842.68**	**-157705.02**
Observed Change		**1464.29**	**43928.58**

Key:
CCS = Cooling Canal System.
ID = Interceptor Ditch.
lb = Pound.

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

October 2010			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	0.42	13.07
	E. Seepage	145.46	4509.21
	N. Seepage	1.03	32.01
	S. Seepage	9.79	303.49
	Bottom Seepage	1578.86	48944.78
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	108.85	3374.49
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**1844.42**	**57177.05**
Out of CCS	W. Seepage	-90.08	-2792.56
	E. Seepage	-8248.71	-255710.08
	N. Seepage	-2.35	-72.84
	S. Seepage	-19.82	-614.51
	Bottom Seepage	-7351.71	-227902.88
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-15712.67**	**-487092.89**
Modeled Change in CCS Storage:		**-13868.25**	**-429915.84**
Observed Change		**-13790.42**	**-427502.87**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

November 2010			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	0.62	18.65
	E. Seepage	1112.86	33385.66
	N. Seepage	1.02	30.47
	S. Seepage	86.35	2590.47
	Bottom Seepage	448.66	13459.68
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	72.95	2188.41
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**1722.44**	**51673.35**
Out of CCS	W. Seepage	-561.32	-16839.75
	E. Seepage	-2562.68	-76880.51
	N. Seepage	-1.36	-40.70
	S. Seepage	-11.76	-352.92
	Bottom Seepage	-4970.49	-149114.70
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-8107.62**	**-243228.57**
Modeled Change in CCS Storage:		**-6385.17**	**-191555.23**
Observed Change		**-2876.16**	**-86284.89**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

December 2010			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.64	81.97
	E. Seepage	4285.67	132855.83
	N. Seepage	0.00	0.00
	S. Seepage	408.74	12670.94
	Bottom Seepage	453.49	14058.10
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	105.19	3260.84
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**5255.73**	**162927.68**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-162.55	-5039.00
	N. Seepage	-4.76	-147.53
	S. Seepage	-2.38	-73.76
	Bottom Seepage	-5813.63	-180222.52
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-5983.32**	**-185482.82**
Modeled Change in CCS Storage:		**-727.59**	**-22555.14**
Observed Change		**-1555.92**	**-48233.42**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

January 2011			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	5.82	180.56
	E. Seepage	2552.32	79121.95
	N. Seepage	0.02	0.72
	S. Seepage	351.22	10887.84
	Bottom Seepage	583.72	18095.32
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	119.67	3709.91
	ID Pumped Water	185.05	5736.69
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**3797.84**	**117732.99**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1442.13	-44705.99
	N. Seepage	-5.83	-180.58
	S. Seepage	0.00	0.00
	Bottom Seepage	-7389.58	-229076.98
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-8837.53**	**-273963.56**
Modeled Change in CCS Storage:		**-5039.70**	**-156230.57**
Observed Change		**-910.35**	**-28220.95**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

February 2011			
	Mass Budget Component	**lb/day (x1000)**	**Mass (lb x 1000)**
Into CCS	W. Seepage	3.72	104.03
	E. Seepage	6193.40	173415.07
	N. Seepage	0.00	0.00
	S. Seepage	633.20	17729.66
	Bottom Seepage	2001.44	56040.28
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	101.50	2842.14
	ID Pumped Water	73.70	2063.56
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**9006.95**	**252194.73**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-152.30	-4264.37
	N. Seepage	-9.05	-253.36
	S. Seepage	0.00	0.00
	Bottom Seepage	-9382.55	-262711.31
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-9543.89**	**-267229.04**
Modeled Change in CCS Storage:		**-536.94**	**-15034.31**
Observed Change		**1264.60**	**35408.76**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

March 2011			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	6.30	195.21
	E. Seepage	5635.93	174713.82
	N. Seepage	0.54	16.89
	S. Seepage	843.27	26141.22
	Bottom Seepage	2189.25	67866.90
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	96.82	3001.46
	ID Pumped Water	774.24	24001.46
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**9546.35**	**295936.97**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-133.36	-4134.31
	N. Seepage	-2.15	-66.72
	S. Seepage	0.00	0.00
	Bottom Seepage	-8496.44	-263389.76
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-8631.96**	**-267590.80**
Modeled Change in CCS Storage:		**914.39**	**28346.17**
Observed Change		**2504.94**	**77653.08**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

April 2011			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	6.92	207.58
	E. Seepage	8457.74	253732.07
	N. Seepage	0.69	20.75
	S. Seepage	1325.65	39769.41
	Bottom Seepage	3391.45	101743.46
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	165.25	4957.53
	ID Pumped Water	751.05	22531.49
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**14098.74**	**422962.29**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	-1.16	-34.89
	S. Seepage	0.00	0.00
	Bottom Seepage	-8372.65	-251179.64
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-8373.82**	**-251214.54**
Modeled Change in CCS Storage:		**5724.93**	**171747.75**
Observed Change		**-4057.29**	**-121718.78**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

May 2011			
	Mass Budget Component	**lb/day (x1000)**	**Mass (lb x 1000)**
Into CCS	W. Seepage	22.76	705.69
	E. Seepage	14314.76	443757.52
	N. Seepage	0.00	0.00
	S. Seepage	1950.48	60464.95
	Bottom Seepage	5815.91	180293.08
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	169.25	5246.87
	ID Pumped Water	3405.55	105571.94
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**25678.71**	**796040.04**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	-18.40	-570.36
	S. Seepage	0.00	0.00
	Bottom Seepage	-25285.18	-783840.65
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-25303.58**	**-784411.01**
Modeled Change in CCS Storage:		**375.13**	**11629.03**
Observed Change		**6228.37**	**193079.32**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

June 2011			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	34.43	1032.86
	E. Seepage	12237.99	367139.73
	N. Seepage	0.00	0.00
	S. Seepage	2011.79	60353.71
	Bottom Seepage	6058.29	181748.84
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	148.97	4469.00
	ID Pumped Water	4597.36	137920.85
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**25088.83**	**752665.00**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-4.13	-123.93
	N. Seepage	-16.95	-508.47
	S. Seepage	0.00	0.00
	Bottom Seepage	-21821.28	-654638.29
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-21842.36**	**-655270.68**
Modeled Change in CCS Storage:		**3246.48**	**97394.32**
Observed Change		**8658.55**	**259756.64**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

July 2011			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	19.96	618.77
	E. Seepage	1467.54	45493.62
	N. Seepage	0.00	0.00
	S. Seepage	542.84	16828.19
	Bottom Seepage	1464.15	45388.73
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	164.90	5111.87
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**3659.39**	**113441.18**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-5149.44	-159632.70
	N. Seepage	-6.85	-212.23
	S. Seepage	-59.11	-1832.49
	Bottom Seepage	-8619.80	-267213.76
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-13835.20**	**-428891.19**
Modeled Change in CCS Storage:		**-10175.81**	**-315450.01**
Observed Change		**3237.34**	**100357.40**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

August 2011			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	6.44	199.73
	E. Seepage	4818.73	149380.50
	N. Seepage	0.98	30.43
	S. Seepage	500.29	15508.86
	Bottom Seepage	2143.75	66456.30
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	151.94	4710.17
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**7622.13**	**236285.99**
Out of CCS	W. Seepage	-57.15	-1771.69
	E. Seepage	-57.86	-1793.76
	N. Seepage	-0.60	-18.59
	S. Seepage	0.00	0.00
	Bottom Seepage	-1809.39	-56091.02
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1925.00**	**-59675.06**
Modeled Change in CCS Storage:		**5697.13**	**176610.93**
Observed Change		**4028.64**	**124887.94**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

September 2011			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.46	73.74
	E. Seepage	2518.16	75544.84
	N. Seepage	0.12	3.49
	S. Seepage	365.74	10972.20
	Bottom Seepage	867.21	26016.23
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	142.95	4288.51
	ID Pumped Water	406.90	12207.06
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**4303.54**	**129106.06**
Out of CCS	W. Seepage	-681.83	-20454.85
	E. Seepage	-725.18	-21755.44
	N. Seepage	-3.46	-103.68
	S. Seepage	0.00	0.00
	Bottom Seepage	-4157.26	-124717.89
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-5567.73**	**-167031.86**
Modeled Change in CCS Storage:		**-1264.19**	**-37925.80**
Observed Change		**-3663.57**	**-109906.97**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

October 2011			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.29	39.99
	E. Seepage	2800.88	86827.20
	N. Seepage	0.39	12.19
	S. Seepage	219.37	6800.38
	Bottom Seepage	4150.65	128670.25
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	108.85	3374.49
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**7281.44**	**225724.50**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-990.71	-30712.12
	N. Seepage	-3.96	-122.70
	S. Seepage	0.00	0.00
	Bottom Seepage	-38.92	-1206.45
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1033.59**	**-32041.28**
Modeled Change in CCS Storage:		**6247.85**	**193683.22**
Observed Change		**-3871.33**	**-120011.08**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

November 2011			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.32	39.50
	E. Seepage	2309.02	69270.64
	N. Seepage	1.24	37.31
	S. Seepage	415.72	12471.49
	Bottom Seepage	1942.59	58277.79
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	72.95	2188.41
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**4742.84**	**142285.15**
Out of CCS	W. Seepage	-2.60	-77.88
	E. Seepage	-395.12	-11853.47
	N. Seepage	-1.38	-41.50
	S. Seepage	0.00	0.00
	Bottom Seepage	-1464.94	-43948.27
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1864.04**	**-55921.12**
Modeled Change in CCS Storage:		**2878.80**	**86364.02**
Observed Change		**-3673.05**	**-110191.36**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

December 2011			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.55	79.07
	E. Seepage	3595.66	111465.45
	N. Seepage	1.01	31.46
	S. Seepage	701.00	21730.94
	Bottom Seepage	1765.94	54744.18
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	105.19	3260.84
	ID Pumped Water	431.13	13365.08
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**6602.48**	**204677.00**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-99.37	-3080.36
	N. Seepage	-2.01	-62.16
	S. Seepage	0.00	0.00
	Bottom Seepage	-6333.22	-196329.83
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-6434.59**	**-199472.35**
Modeled Change in CCS Storage:		**167.89**	**5204.65**
Observed Change		**-3828.22**	**-118674.85**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

January 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	5.92	183.39
	E. Seepage	5523.45	171226.89
	N. Seepage	0.16	4.83
	S. Seepage	824.99	25574.55
	Bottom Seepage	2720.16	84324.88
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	129.55	4016.08
	ID Pumped Water	2219.37	68800.40
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**11423.58**	**354131.01**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-14.38	-445.70
	N. Seepage	-8.30	-257.31
	S. Seepage	0.00	0.00
	Bottom Seepage	-13952.78	-432536.10
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-13975.46**	**-433239.11**
Modeled Change in CCS Storage:		**-2551.87**	**-79108.10**
Observed Change		**-2625.35**	**-81385.79**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

February 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	4.80	139.07
	E. Seepage	2717.89	78818.90
	N. Seepage	1.78	51.48
	S. Seepage	627.76	18204.99
	Bottom Seepage	3039.98	88159.42
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	114.21	3312.10
	ID Pumped Water	189.46	5494.29
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**6695.87**	**194180.25**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-713.59	-20694.17
	N. Seepage	-0.50	-14.61
	S. Seepage	0.00	0.00
	Bottom Seepage	-4974.71	-144266.56
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-5688.80**	**-164975.34**
Modeled Change in CCS Storage:		**1007.07**	**29204.91**
Observed Change		**3362.46**	**97511.42**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

March 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	3.50	108.45
	E. Seepage	4722.94	146411.22
	N. Seepage	4.94	153.03
	S. Seepage	899.57	27886.53
	Bottom Seepage	3412.96	105801.72
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	143.97	4463.00
	ID Pumped Water	187.62	5816.11
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**9375.49**	**290640.06**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-243.93	-7561.81
	N. Seepage	-0.21	-6.62
	S. Seepage	0.00	0.00
	Bottom Seepage	-3587.83	-111222.82
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-3831.98**	**-118791.24**
Modeled Change in CCS Storage:		**5543.51**	**171848.81**
Observed Change		**-500.48**	**-15514.87**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

April 2012			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	12.67	380.17
	E. Seepage	5083.99	152519.68
	N. Seepage	1.97	59.07
	S. Seepage	1027.09	30812.75
	Bottom Seepage	3222.55	96676.59
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	143.15	4294.46
	ID Pumped Water	1035.51	31065.19
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**10526.93**	**315807.89**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-121.57	-3647.20
	N. Seepage	-0.98	-29.32
	S. Seepage	0.00	0.00
	Bottom Seepage	-7106.70	-213201.07
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-7229.25**	**-216877.58**
Modeled Change in CCS Storage:		**3297.68**	**98930.31**
Observed Change		**4132.59**	**123977.58**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

May 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	7.32	226.98
	E. Seepage	150.38	4661.72
	N. Seepage	5.55	172.14
	S. Seepage	162.56	5039.38
	Bottom Seepage	2945.99	91325.68
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	141.53	4387.54
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**3413.34**	**105813.44**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-5714.04	-177135.24
	N. Seepage	-0.30	-9.32
	S. Seepage	-0.83	-25.76
	Bottom Seepage	-3916.75	-121419.13
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-9631.92**	**-298589.45**
Modeled Change in CCS Storage:		**-6218.58**	**-192776.01**
Observed Change		**-4664.11**	**-144587.53**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

June 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.77	53.22
	E. Seepage	743.75	22312.43
	N. Seepage	3.89	116.62
	S. Seepage	314.62	9438.70
	Bottom Seepage	2478.26	74347.84
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	150.80	4524.00
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**3693.09**	**110792.82**
Out of CCS	W. Seepage	-32.19	-965.63
	E. Seepage	-3706.73	-111201.98
	N. Seepage	-0.27	-7.97
	S. Seepage	0.00	0.00
	Bottom Seepage	-2818.78	-84563.47
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-6557.97**	**-196739.05**
Modeled Change in CCS Storage:		**-2864.87**	**-85946.23**
Observed Change		**-2740.38**	**-82211.41**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

July 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.29	71.09
	E. Seepage	4.53	140.39
	N. Seepage	5.42	167.89
	S. Seepage	90.89	2817.55
	Bottom Seepage	3358.12	104101.82
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	155.80	4829.81
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**3617.05**	**112128.55**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-4476.42	-138769.10
	N. Seepage	0.00	0.00
	S. Seepage	-25.83	-800.83
	Bottom Seepage	-3810.46	-118124.27
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-8312.72**	**-257694.20**
Modeled Change in CCS Storage:		**-4695.67**	**-145565.65**
Observed Change		**-2497.19**	**-77412.85**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

August 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.22	68.82
	E. Seepage	1315.71	40787.10
	N. Seepage	4.79	148.53
	S. Seepage	164.61	5102.99
	Bottom Seepage	2923.81	90638.04
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	160.70	4981.80
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**4571.85**	**141727.27**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-2322.51	-71997.77
	N. Seepage	0.00	0.00
	S. Seepage	-11.91	-369.31
	Bottom Seepage	-2437.96	-75576.61
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-4772.38**	**-147943.69**
Modeled Change in CCS Storage:		**-200.53**	**-6216.42**
Observed Change		**1642.83**	**50927.78**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

September 2012			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.28	38.29
	E. Seepage	561.40	16841.87
	N. Seepage	2.87	85.98
	S. Seepage	36.55	1096.39
	Bottom Seepage	1640.38	49211.44
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	140.84	4225.23
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**2383.31**	**71499.20**
Out of CCS	W. Seepage	-67.28	-2018.37
	E. Seepage	-3779.14	-113374.23
	N. Seepage	-0.02	-0.64
	S. Seepage	-13.36	-400.94
	Bottom Seepage	-4064.05	-121921.62
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-7923.86**	**-237715.80**
Modeled Change in CCS Storage:		**-5540.55**	**-166216.60**
Observed Change		**-2600.46**	**-78013.94**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

October 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	0.75	23.18
	E. Seepage	3404.60	105542.53
	N. Seepage	3.25	100.85
	S. Seepage	612.24	18979.43
	Bottom Seepage	3429.20	106305.29
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	137.73	4269.50
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**7587.77**	**235220.78**
Out of CCS	W. Seepage	-163.09	-5055.73
	E. Seepage	-1660.10	-51462.95
	N. Seepage	-1.16	-35.89
	S. Seepage	-6.52	-202.27
	Bottom Seepage	-1982.01	-61442.38
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-3812.88**	**-118199.24**
Modeled Change in CCS Storage:		**3774.89**	**117021.55**
Observed Change		**6379.02**	**197749.67**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

November 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.70	80.98
	E. Seepage	1784.00	53520.07
	N. Seepage	4.16	124.84
	S. Seepage	684.72	20541.49
	Bottom Seepage	3275.44	98263.10
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	95.89	2876.57
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**5846.90**	**175407.05**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-980.36	-29410.67
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-958.69	-28760.77
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1939.05**	**-58171.43**
Modeled Change in CCS Storage:		**3907.85**	**117235.62**
Observed Change		**2368.82**	**71064.75**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

December 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	6.22	192.82
	E. Seepage	108.87	3375.04
	N. Seepage	4.21	130.51
	S. Seepage	276.39	8568.06
	Bottom Seepage	1940.48	60154.80
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	109.16	3383.97
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**2445.33**	**75805.20**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-3354.85	-104000.43
	N. Seepage	0.00	0.00
	S. Seepage	-0.23	-7.11
	Bottom Seepage	-2072.95	-64261.37
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-5428.03**	**-168268.92**
Modeled Change in CCS Storage:		**-2982.70**	**-92463.72**
Observed Change		**-7753.08**	**-240345.33**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

January 2013			
	Mass Budget Component	**lb/day (x1000)**	**Mass (lb x 1000)**
Into CCS	W. Seepage	6.20	192.05
	E. Seepage	1924.13	59647.96
	N. Seepage	4.36	135.08
	S. Seepage	687.26	21305.13
	Bottom Seepage	2256.99	69966.81
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	126.94	3935.07
	ID Pumped Water	60.40	1872.54
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**5066.28**	**157054.65**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1075.17	-33330.31
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-722.42	-22395.07
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1797.59**	**-55725.38**
Modeled Change in CCS Storage:		**3268.69**	**101329.27**
Observed Change		**525.54**	**16291.69**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

February 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	8.45	236.61
	E. Seepage	2663.89	74589.03
	N. Seepage	3.16	88.59
	S. Seepage	894.66	25050.34
	Bottom Seepage	2063.41	57775.55
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	119.06	3333.75
	ID Pumped Water	324.14	9075.87
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**6076.78**	**170149.75**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1306.60	-36584.73
	N. Seepage	-0.08	-2.20
	S. Seepage	0.00	0.00
	Bottom Seepage	-3429.98	-96039.49
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-4736.66**	**-132626.43**
Modeled Change in CCS Storage:		**1340.12**	**37523.32**
Observed Change		**1710.98**	**47907.57**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

March 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	9.49	294.09
	E. Seepage	6181.90	191639.04
	N. Seepage	1.42	44.00
	S. Seepage	1225.74	37997.99
	Bottom Seepage	2066.77	64069.78
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	140.55	4356.98
	ID Pumped Water	347.21	10763.51
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**9973.08**	**309165.38**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	-2.06	-63.94
	S. Seepage	0.00	0.00
	Bottom Seepage	-4851.44	-150394.72
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-4853.51**	**-150458.66**
Modeled Change in CCS Storage:		**5119.57**	**158706.72**
Observed Change		**4065.17**	**126020.42**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

April 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	11.54	346.20
	E. Seepage	6804.14	204124.17
	N. Seepage	0.00	0.00
	S. Seepage	838.93	25168.01
	Bottom Seepage	2205.58	66167.30
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	139.68	4190.40
	ID Pumped Water	478.94	14368.08
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**10478.81**	**314364.17**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-72.08	-2162.45
	N. Seepage	-10.84	-325.20
	S. Seepage	0.00	0.00
	Bottom Seepage	-13020.92	-390627.55
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-13103.84**	**-393115.19**
Modeled Change in CCS Storage:		**-2625.03**	**-78751.02**
Observed Change		**4774.59**	**143237.63**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

May 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	5.61	174.03
	E. Seepage	3676.69	113977.27
	N. Seepage	0.00	0.00
	S. Seepage	618.85	19184.31
	Bottom Seepage	827.40	25649.44
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	157.13	4871.04
	ID Pumped Water	287.40	8909.54
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**5573.08**	**172765.63**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-746.77	-23149.74
	N. Seepage	-6.57	-203.76
	S. Seepage	-12.70	-393.70
	Bottom Seepage	-8403.65	-260513.06
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-9169.69**	**-284260.25**
Modeled Change in CCS Storage:		**-3596.60**	**-111494.63**
Observed Change		**1237.57**	**38364.62**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

June 2013			
	Mass Budget Component	**lb/day (x1000)**	**Mass (lb x 1000)**
Into CCS	W. Seepage	3.59	107.83
	E. Seepage	1935.70	58071.12
	N. Seepage	0.00	0.00
	S. Seepage	260.17	7805.20
	Bottom Seepage	466.22	13986.52
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	145.05	4351.64
	ID Pumped Water	18.96	568.88
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**2829.71**	**84891.18**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-6156.68	-184700.28
	N. Seepage	-10.10	-303.10
	S. Seepage	-367.26	-11017.89
	Bottom Seepage	-9970.74	-299122.23
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-16504.78**	**-495143.50**
Modeled Change in CCS Storage:		**-13675.08**	**-410252.31**
Observed Change		**-4607.17**	**-138215.25**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

July 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.60	80.51
	E. Seepage	3940.49	122155.33
	N. Seepage	0.00	0.00
	S. Seepage	520.65	16140.17
	Bottom Seepage	1521.54	47167.79
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	149.46	4633.21
	ID Pumped Water	20.32	629.86
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**6155.06**	**190806.87**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1223.74	-37935.92
	N. Seepage	-6.19	-191.85
	S. Seepage	0.00	0.00
	Bottom Seepage	-4747.42	-147169.99
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-5977.35**	**-185297.76**
Modeled Change in CCS Storage:		**177.71**	**5509.11**
Observed Change		**4833.38**	**149834.84**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

August 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.65	51.06
	E. Seepage	3909.73	121201.56
	N. Seepage	0.40	12.37
	S. Seepage	436.28	13524.78
	Bottom Seepage	1229.28	38107.54
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	136.24	4223.30
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**5713.57**	**177120.59**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1196.82	-37101.49
	N. Seepage	-6.00	-186.11
	S. Seepage	-16.17	-501.24
	Bottom Seepage	-3601.96	-111660.71
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-4820.95**	**-149449.56**
Modeled Change in CCS Storage:		**892.61**	**27671.04**
Observed Change		**3101.52**	**96147.08**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

September 2013			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.25	37.54
	E. Seepage	4990.46	149713.86
	N. Seepage	3.92	117.62
	S. Seepage	743.84	22315.07
	Bottom Seepage	3869.36	116080.74
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	159.20	4775.91
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**10969.13**	**329073.89**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-134.55	-4036.48
	N. Seepage	-0.19	-5.75
	S. Seepage	0.00	0.00
	Bottom Seepage	-263.07	-7892.07
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-397.81**	**-11934.30**
Modeled Change in CCS Storage:		**9370.21**	**281106.43**
Observed Change		**5122.20**	**153666.00**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

October 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	0.96	29.76
	E. Seepage	3904.36	121035.14
	N. Seepage	7.80	241.71
	S. Seepage	761.95	23620.31
	Bottom Seepage	6513.91	201931.11
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	164.60	5102.72
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**11353.57**	**351960.75**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-316.00	-9795.90
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-86.56	-2683.26
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-402.55**	**-12479.17**
Modeled Change in CCS Storage:		**10951.02**	**339481.59**
Observed Change		**5172.10**	**160335.08**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

November 2013			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.34	40.07
	E. Seepage	3405.86	102175.90
	N. Seepage	6.40	192.02
	S. Seepage	808.83	24265.00
	Bottom Seepage	3906.18	117185.38
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	131.07	3932.08
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**8259.68**	**247790.45**
Out of CCS	W. Seepage	-21.40	-641.98
	E. Seepage	-470.60	-14117.90
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-769.53	-23085.79
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1261.52**	**-37845.66**
Modeled Change in CCS Storage:		**6998.16**	**209944.79**
Observed Change		**3117.41**	**93522.19**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

December 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.50	46.37
	E. Seepage	1005.24	31162.38
	N. Seepage	1.41	43.82
	S. Seepage	320.93	9948.86
	Bottom Seepage	1003.58	31111.07
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	130.83	4055.70
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**2463.49**	**76368.21**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1924.84	-59669.92
	N. Seepage	-0.72	-22.30
	S. Seepage	0.00	0.00
	Bottom Seepage	-2688.32	-83337.81
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-4613.87**	**-143030.02**
Modeled Change in CCS Storage:		**-2150.38**	**-143030.02**
Observed Change		**-6529.12**	**-202402.80**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

January 2014			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.36	73.19
	E. Seepage	2226.86	69032.53
	N. Seepage	3.76	116.46
	S. Seepage	462.15	14326.61
	Bottom Seepage	2102.48	65176.86
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	122.02	3782.67
	ID Pumped Water	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**4919.62**	**152508.32**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-660.45	-20473.93
	N. Seepage	-0.11	-3.52
	S. Seepage	0.00	0.00
	Bottom Seepage	-953.71	-29565.14
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1614.28**	**-50042.59**
Modeled Change in CCS Storage:		**3305.35**	**102465.73**
Observed Change		**-445.87**	**-13822.03**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

February 2014			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.99	83.81
	E. Seepage	3608.33	101033.25
	N. Seepage	4.91	137.49
	S. Seepage	412.57	11551.82
	Bottom Seepage	3078.46	86196.88
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	118.73	3324.34
	ID Pumped Water	31.99	895.74
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**7257.98**	**203223.33**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-195.05	-5461.33
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-419.64	-11749.95
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-614.69**	**-17211.28**
Modeled Change in CCS Storage:		**6643.29**	**186012.05**
Observed Change		**625.60**	**17516.93**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

March 2014			
	Mass Budget Component	**lb/day (x1000)**	**Mass (lb x 1000)**
Into CCS	W. Seepage	3.36	104.31
	E. Seepage	4067.78	126101.17
	N. Seepage	5.56	172.22
	S. Seepage	381.87	11837.92
	Bottom Seepage	3172.67	98352.74
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	147.23	4563.98
	ID Pumped Water	58.78	1822.19
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**7837.24**	**242954.52**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-6.43	-199.21
	N. Seepage	-0.08	-2.45
	S. Seepage	0.00	0.00
	Bottom Seepage	-686.46	-21280.39
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-692.97**	**-21482.06**
Modeled Change in CCS Storage:		**7144.27**	**221472.46**
Observed Change		**3657.01**	**113367.46**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

April 2014			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	5.61	168.39
	E. Seepage	8221.78	246653.26
	N. Seepage	5.79	173.62
	S. Seepage	910.11	27303.36
	Bottom Seepage	4988.04	149641.17
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	176.97	5309.23
	ID Pumped Water	100.96	3028.93
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**14409.26**	**432277.95**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	0.00	0.00
	S. Seepage	0.00	0.00
	Bottom Seepage	-2828.19	-84845.68
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-2828.19**	**-84845.68**
Modeled Change in CCS Storage:		**11581.08**	**347432.27**
Observed Change		**5846.87**	**175406.11**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

May 2014			
	Mass Budget Component	**lb/day (x1000)**	**Mass (lb x 1000)**
Into CCS	W. Seepage	19.51	604.92
	E. Seepage	11455.78	355129.18
	N. Seepage	0.97	30.19
	S. Seepage	1663.96	51582.86
	Bottom Seepage	6357.27	197075.45
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	161.19	4996.88
	ID Pumped Water	376.82	11681.42
	Added Water (e.g. L-31E)	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**20035.51**	**621100.89**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	-3.53	-109.40
	S. Seepage	0.00	0.00
	Bottom Seepage	-7474.33	-231704.37
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-7477.86**	**-231813.77**
Modeled Change in CCS Storage:		**12557.65**	**-231813.77**
Observed Change		**1599.21**	**49575.59**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

June 2014			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	23.70	710.97
	E. Seepage	6914.35	207430.40
	N. Seepage	0.41	12.17
	S. Seepage	1226.07	36781.98
	Bottom Seepage	3144.95	94348.42
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	185.05	5551.44
	ID Pumped Water	146.27	4388.23
	Added Water (e.g. L-31E)	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**11640.79**	**349223.61**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	-3.08	-92.33
	S. Seepage	0.00	0.00
	Bottom Seepage	-1625.15	-48754.54
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1628.23**	**-48846.87**
Modeled Change in CCS Storage:		**10012.56**	**300376.73**
Observed Change		**8607.32**	**258219.46**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

July 2014			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	14.93	462.74
	E. Seepage	3538.20	109684.24
	N. Seepage	0.10	3.20
	S. Seepage	715.30	22174.33
	Bottom Seepage	1643.69	50954.52
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	202.80	6286.80
	ID Pumped Water	0.00	0.00
	Added Water (e.g. L-31E)	72.82	2257.51
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**6187.85**	**191823.34**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-293.89	-9110.44
	N. Seepage	-7.68	-237.97
	S. Seepage	0.00	0.00
	Bottom Seepage	-1708.02	-52948.49
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-2009.58**	**-62296.90**
Modeled Change in CCS Storage:		**4178.27**	**129526.44**
Observed Change		**5113.71**	**158525.04**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

August 2014			
	Mass Budget Component	lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	5.46	169.33
	E. Seepage	7697.88	238634.27
	N. Seepage	0.36	11.21
	S. Seepage	780.04	24181.32
	Bottom Seepage	3275.25	101532.74
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	208.36	6459.04
	ID Pumped Water	0.00	0.00
	Added Water (e.g. L-31E)	75.08	2327.35
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**12042.43**	**373315.27**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	0.00	0.00
	N. Seepage	-3.14	-97.39
	S. Seepage	0.00	0.00
	Bottom Seepage	-61.22	-1897.75
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-64.36**	**-1995.14**
Modeled Change in CCS Storage:		**11978.07**	**371320.13**
Observed Change		**7731.72**	**239683.45**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

September 2014			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.92	57.51
	E. Seepage	4382.24	131467.29
	N. Seepage	1.15	34.56
	S. Seepage	1016.29	30488.73
	Bottom Seepage	2953.06	88591.95
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	194.31	5829.15
	ID Pumped Water	0.00	0.00
	Added Water (e.g. L-31E)	86.86	2605.80
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**8635.83**	**259074.99**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-324.60	-9738.11
	N. Seepage	-0.95	-28.50
	S. Seepage	0.00	0.00
	Bottom Seepage	-211.28	-6338.26
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-536.83**	**-16104.87**
Modeled Change in CCS Storage:		**8099.00**	**242970.11**
Observed Change		**1833.21**	**54996.24**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

October 2014			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.83	87.86
	E. Seepage	103.09	3195.74
	N. Seepage	0.50	15.42
	S. Seepage	332.18	10297.71
	Bottom Seepage	893.37	27694.54
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	175.24	5432.40
	ID Pumped Water	592.23	18359.04
	Added Water (e.g. L-31E)	90.13	2793.93
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**2189.57**	**67876.64**
Out of CCS	W. Seepage	-948.41	-29400.67
	E. Seepage	-9654.91	-299302.19
	N. Seepage	-7.75	-240.29
	S. Seepage	-81.25	-2518.86
	Bottom Seepage	-9834.43	-304867.45
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-20526.76**	**-636329.47**
Modeled Change in CCS Storage:		**-18337.19**	**-568452.83**
Observed Change		**-12726.02**	**-394506.69**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

November 2014			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	4.38	135.93
	E. Seepage	914.73	28356.77
	N. Seepage	1.21	37.58
	S. Seepage	473.29	14672.03
	Bottom Seepage	517.41	16039.64
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	133.82	4148.48
	ID Pumped Water	694.15	21518.73
	Added Water (e.g. L-31E)	92.73	2874.76
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**2831.74**	**87783.92**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-3191.19	-98926.85
	N. Seepage	-1.57	-48.81
	S. Seepage	-23.20	-719.15
	Bottom Seepage	-6108.72	-189370.45
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-9324.69**	**-289065.26**
Modeled Change in CCS Storage:		**-6492.95**	**-201281**
Observed Change		**-9424.38**	**-282731.28**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

December 2014			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.98	92.26
	E. Seepage	1559.53	48345.42
	N. Seepage	0.00	0.00
	S. Seepage	881.57	27328.52
	Bottom Seepage	1696.12	52579.83
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	140.97	4370.16
	ID Pumped Water	26.26	814.17
	Added Water (e.g. L-31E)	59.81	1853.98
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**4367.24**	**135384.33**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1487.27	-46105.22
	N. Seepage	-1.54	-47.88
	S. Seepage	0.00	0.00
	Bottom Seepage	-1719.22	-53295.82
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-3208.03**	**-99448.92**
Modeled Change in CCS Storage:		**1159.21**	**35935.42**
Observed Change		**611.65**	**18961.30**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

January 2015			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.78	86.16
	E. Seepage	1889.33	58569.13
	N. Seepage	0.00	0.00
	S. Seepage	773.79	23987.45
	Bottom Seepage	2010.64	62329.98
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	151.96	4710.77
	ID Pumped Water	0.00	0.00
	Added Water (e.g. L-31E)	1906.00	59086.05
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**6734.50**	**208769.55**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-826.80	-25630.88
	N. Seepage	-1.31	-40.72
	S. Seepage	0.00	0.00
	Bottom Seepage	-917.38	-28438.86
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1745.50**	**-54110.46**
Modeled Change in CCS Storage:		**4989.00**	**154659.08**
Observed Change		**-870.42**	**-26983.15**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

February 2015			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	4.84	150.08
	E. Seepage	3093.63	95902.56
	N. Seepage	0.00	0.00
	S. Seepage	955.91	29633.23
	Bottom Seepage	1270.26	39378.13
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	138.29	4286.90
	ID Pumped Water	236.74	7339.05
	Added Water (e.g. L-31E)	2784.16	86308.84
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**8483.83**	**262998.80**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-896.00	-27775.96
	N. Seepage	-1.48	-46.03
	S. Seepage	0.00	0.00
	Bottom Seepage	-6247.18	-193662.57
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-7144.66**	**-221484.56**
Modeled Change in CCS Storage:		**1339.17**	**41514.24**
Observed Change		**4227.51**	**118370.20**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

March 2015			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	6.84	211.99
	E. Seepage	2514.31	77943.47
	N. Seepage	0.00	0.00
	S. Seepage	736.80	22840.77
	Bottom Seepage	150.96	4679.72
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	166.66	5166.45
	ID Pumped Water	679.17	21054.32
	Added Water (e.g. L-31E)	3082.46	95556.22
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**7337.19**	**227452.93**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-1398.29	-43347.03
	N. Seepage	-7.42	-230.11
	S. Seepage	0.00	0.00
	Bottom Seepage	-19423.49	-602128.07
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-20829.20**	**-645705.21**
Modeled Change in CCS Storage:		**-13492.01**	**-418252.28**
Observed Change		**-2936.23**	**-91023.19**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

April 2015			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	10.69	331.39
	E. Seepage	8653.51	268258.95
	N. Seepage	0.03	0.84
	S. Seepage	822.92	25510.60
	Bottom Seepage	3021.01	93651.27
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	174.87	5420.98
	ID Pumped Water	1658.22	51404.67
	Added Water (e.g. L-31E)	2860.71	88682.03
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**17201.96**	**533260.73**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-36.09	-1118.73
	N. Seepage	-11.26	-349.19
	S. Seepage	0.00	0.00
	Bottom Seepage	-22298.06	-691239.80
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-22345.41**	**-692707.72**
Modeled Change in CCS Storage:		**-5143.45**	**-159446.99**
Observed Change		**7414.73**	**222441.78**

Table 5.3-5. Calculated Mass Flows from Salt Budget Components.

May 2015			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	8.19	253.84
	E. Seepage	4340.30	134549.32
	N. Seepage	1.26	39.14
	S. Seepage	892.08	27654.53
	Bottom Seepage	1451.68	45002.18
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	210.76	6533.60
	ID Pumped Water	54.44	1687.60
	Added Water (e.g. L-31E)	1165.96	36144.64
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**8124.67**	**251864.86**
Out of CCS	W. Seepage	0.00	0.00
	E. Seepage	-46.13	-1430.13
	N. Seepage	-1.49	-46.24
	S. Seepage	0.00	0.00
	Bottom Seepage	-7318.65	-226878.25
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-7366.28**	**-228354.61**
Modeled Change in CCS Storage:		**758.39**	**23510.24**
Observed Change		**-3963.43**	**-122866.42**

Table 5.3-6. Calculated Fluid Flows from Water Budget Components for (Pre-Uprate).

September 2010 to February 2012			
Water Budget Component		**Flow (MGD)**	**Volume (gal x 10^6)**
Into CCS	W. Seepage	0.30	522.73
	E. Seepage	5.01	8694.66
	N. Seepage	0.00	1.78
	S. Seepage	1.08	1871.80
	Bottom Seepage	2.29	3968.39
	Precipitation and Runoff	6.74	11687.03
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.13	226.76
	Unit 5 Blowdown	0.53	925.77
	ID Pumping	1.53	2648.39
	Added Water (e.g. L-31E)	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**17.62**	**30547.30**
Out of CCS	W. Seepage	0.00	-2.67
	E. Seepage	-1.15	-1986.23
	N. Seepage	0.00	-5.93
	S. Seepage	0.00	-6.46
	Bottom Seepage	-5.65	-9798.61
	Precipitation and Runoff	0.00	0.00
	Evaporation	-11.34	-19672.07
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-18.15**	**-31471.97**
Modeled Change in CCS Storage:		**-0.53**	**-924.67**
	Observed Change	**-1.13**	**-616.65**

Table 5.3-6. Calculated Fluid Flows from Water Budget Components (Interim).

March 2012 to May 2013			
Water Budget Component		Flow (MGD)	Volume (gal x 10^6)
Into CCS	W. Seepage	0.21	362.95
	E. Seepage	2.55	4418.81
	N. Seepage	0.00	7.07
	S. Seepage	0.74	1283.45
	Bottom Seepage	2.64	4572.75
	Precipitation and Runoff	5.68	9847.12
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.14	243.76
	Unit 5 Blowdown	0.50	861.70
	ID Pumping	0.82	1428.30
	Added Water (e.g. L-31E)	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**13.28**	**23025.91**
Out of CCS	W. Seepage	0.00	-0.70
	E. Seepage	-1.28	-2212.48
	N. Seepage	0.00	-1.38
	S. Seepage	0.00	-5.45
	Bottom Seepage	-2.47	-4286.45
	Precipitation and Runoff	0.00	0.00
	Evaporation	-8.85	-15341.70
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-12.60**	**-21848.17**
Modeled Change in CCS Storage:		**0.68**	**1177.74**
	Observed Change	**2.36**	**1077.38**

Table 5.3-6. Calculated Fluid Flows from Water Budget Components (Post-Uprate).

June 2013 to May 2015			
Water Budget Component		**Flow (MGD)**	**Volume (gal x 10^6)**
Into CCS	W. Seepage	0.26	444.00
	E. Seepage	6.02	10444.35
	N. Seepage	0.00	7.52
	S. Seepage	1.49	2575.27
	Bottom Seepage	3.94	6837.60
	Precipitation and Runoff	7.10	12312.81
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.22	380.50
	Unit 5 Blowdown	0.93	1605.64
	ID Pumping	1.23	2129.31
	Added Water (e.g. L-31E)	1.93	3352.82
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**23.12**	**40089.83**
Out of CCS	W. Seepage	0.00	-1.30
	E. Seepage	-1.01	-1742.78
	N. Seepage	0.00	-3.14
	S. Seepage	-0.02	-32.13
	Bottom Seepage	-3.13	-5419.68
	Precipitation and Runoff	0.00	0.00
	Evaporation	-19.34	-33528.70
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-23.49**	**-40727.72**
Modeled Change in CCS Storage:		**-0.37**	**-637.89**
	Observed Change	**-1.76**	**-1286.06**

Table 5.3-7. Calculated Mass Flows from Salt Budget Components (Pre-Uprate).

September 2010 to February 2012			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	2.28	3952.60
	E. Seepage	1454.26	2521693.12
	N. Seepage	0.21	369.94
	S. Seepage	209.49	363248.88
	Bottom Seepage	742.22	1287006.96
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	38.99	67601.64
	ID Pumped Water	229.35	397692.82
	Added Water (e.g. L-31E)	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**2676.80**	**4641565.97**
Out of CCS	W. Seepage	-24.18	-41936.73
	E. Seepage	-406.03	-704049.99
	N. Seepage	-1.58	-2738.28
	S. Seepage	-1.66	-2873.69
	Bottom Seepage	-2516.05	-4362837.54
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-2949.50**	**-5114436.23**
Modeled Change in CCS Storage:		**-272.70**	**-472870.26**
	Observed Change	**-502.50**	**-274869.07**

Table 5.3-7. Calculated Mass Flows from Salt Budget Components (Interim).

March 2012 to May 2013			
Mass Budget Component		lb/day (x1000)	Mass (lb x 1000)
Into CCS	W. Seepage	1.43	2486.99
	E. Seepage	686.33	1190089.51
	N. Seepage	0.88	1527.13
	S. Seepage	149.36	258989.04
	Bottom Seepage	669.24	1160455.22
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	36.29	62923.11
	ID Pumped Water	47.22	81870.84
	Added Water (e.g. L-31E)	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**1590.74**	**2758341.84**
Out of CCS	W. Seepage	-4.64	-8039.73
	E. Seepage	-521.22	-903788.60
	N. Seepage	-0.39	-684.84
	S. Seepage	-1.27	-2199.92
	Bottom Seepage	-1107.53	-1920463.42
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-1635.05**	**-2835176.51**
Modeled Change in CCS Storage:		**-44.31**	**-76834.67**
Observed Change		**372.47**	**170219.73**

Table 5.3-7. Calculated Mass Flows from Salt Budget Components (Post-Uprate).

June 2013 to May 2015			
Mass Budget Component		**lb/day (x1000)**	**Mass (lb x 1000)**
Into CCS	W. Seepage	2.41	4177.83
	E. Seepage	1733.45	3005802.21
	N. Seepage	0.80	1391.65
	S. Seepage	305.52	529773.17
	Bottom Seepage	1060.44	1838796.14
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	67.62	117247.84
	ID Pumped Water	83.73	145192.82
	Added Water (e.g. L-31E)	219.43	380491.12
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total In:	**3473.40**	**6022872.76**
Out of CCS	W. Seepage	-17.33	-30042.65
	E. Seepage	-539.78	-935977.91
	N. Seepage	-1.34	-2329.95
	S. Seepage	-8.51	-14757.14
	Bottom Seepage	-1991.88	-3453917.68
	Precipitation and Runoff	0.00	0.00
	Evaporation	0.00	0.00
	Unit 3, 4 Added Water	0.00	0.00
	Unit 5 Blowdown	0.00	0.00
	ID Pumping	0.00	0.00
	Plant Outflow	Equal to Intake	
	Plant Intake	Equal to Outflow	
	Total Out:	**-2558.84**	**-4437025.34**
Modeled Change in CCS Storage:		**914.56**	**1585847.43**
	Observed Change	**233.18**	**170219.73**

FIGURES

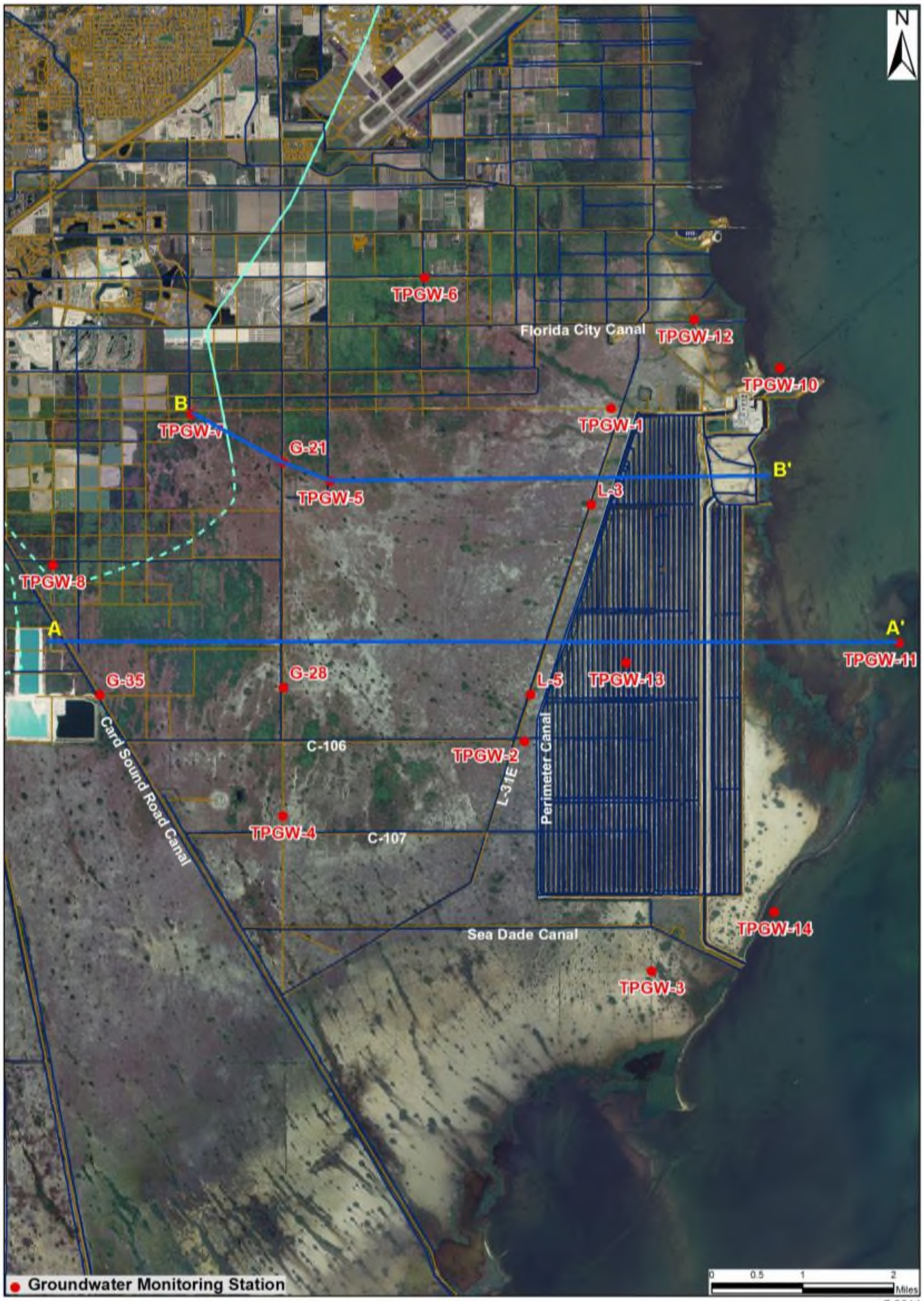


Figure 5.2-1. Locations of Specific Conductance and Tritium Cross Sections.

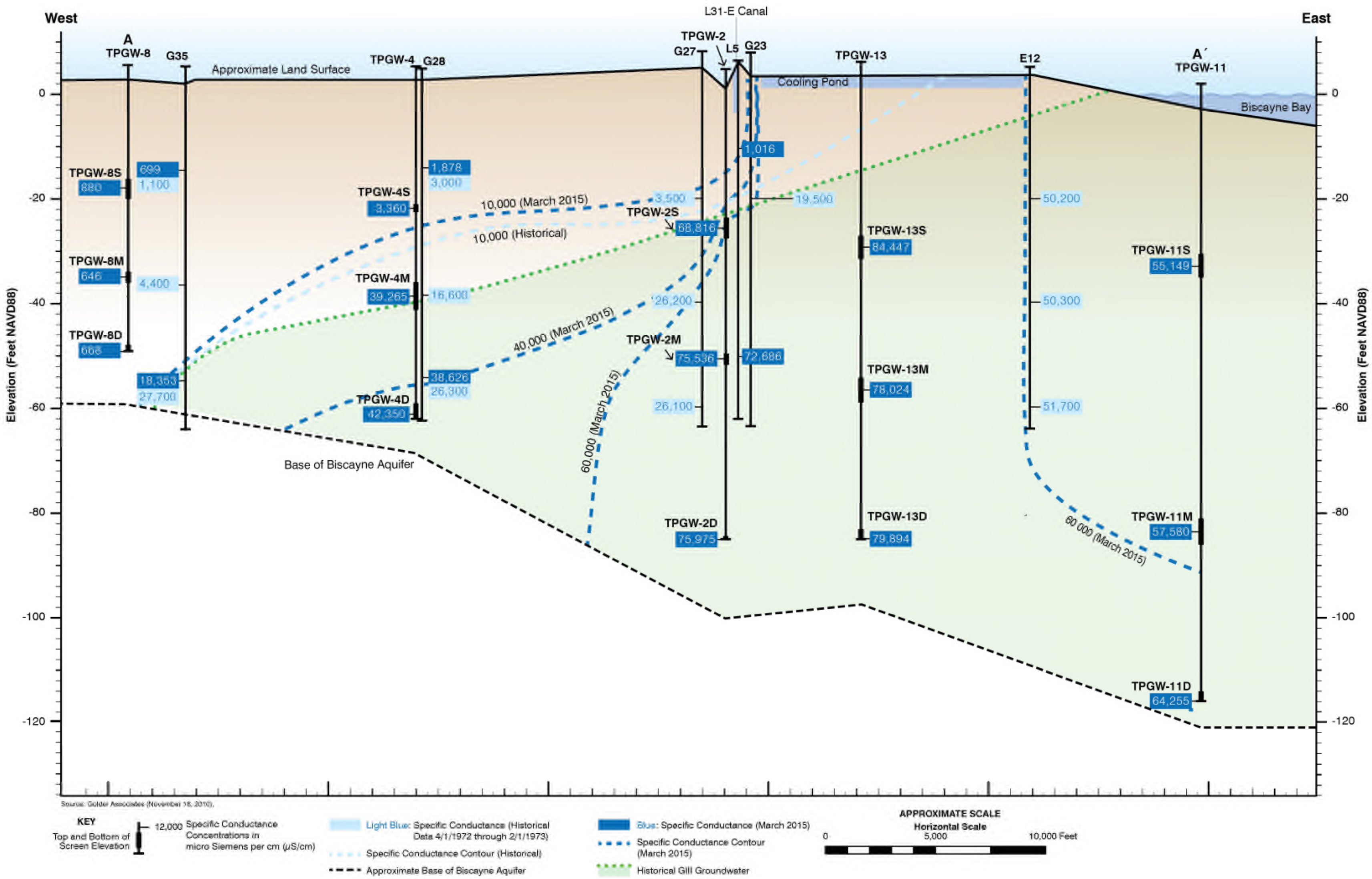


Figure 5.2-2. Specific Conductance Cross Section A-A', Historic and Current Concentration Isopleths.

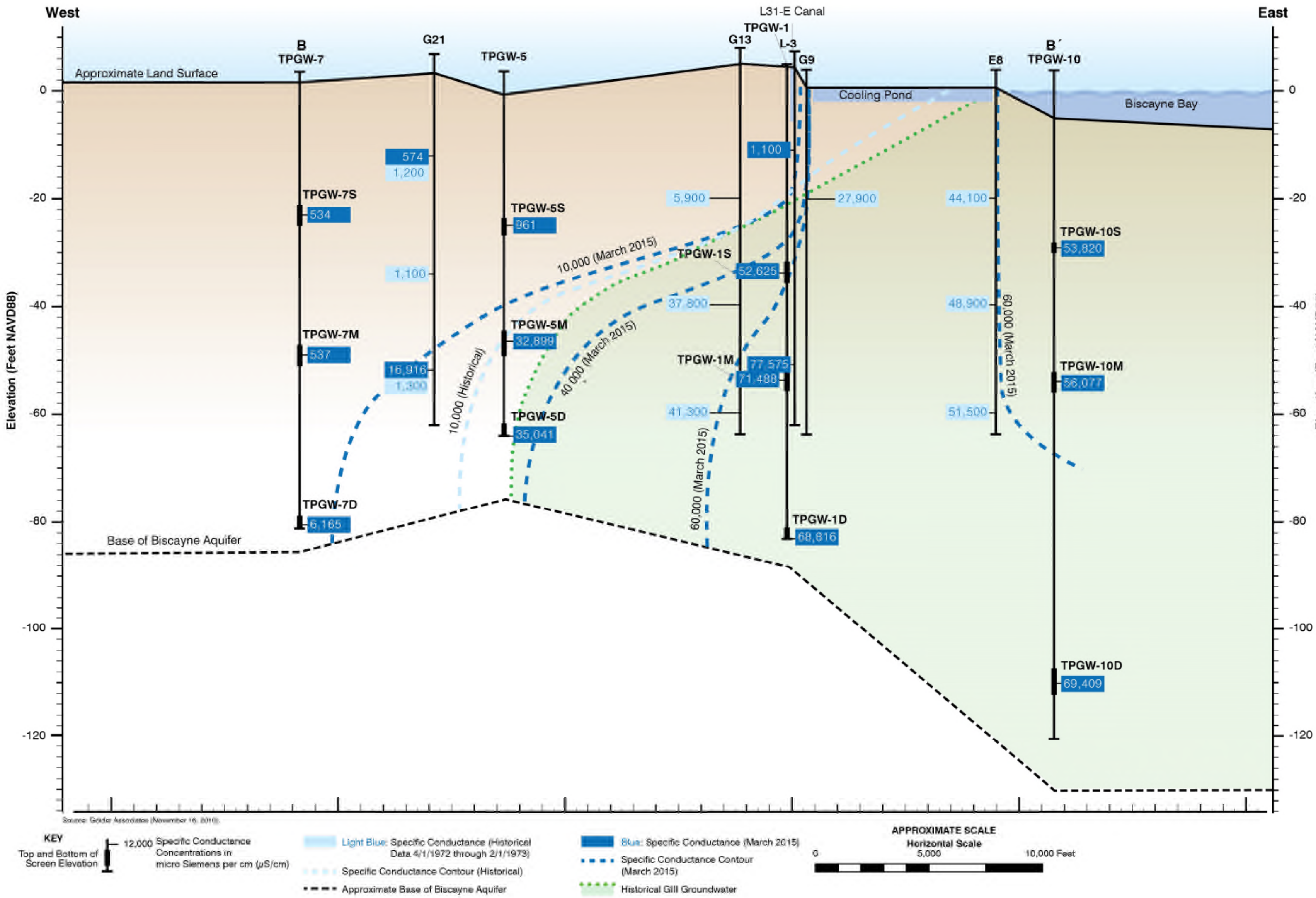


Figure 5.2-3. Specific Conductance Cross Section B-B', Historic and Current Concentration Isopleths.

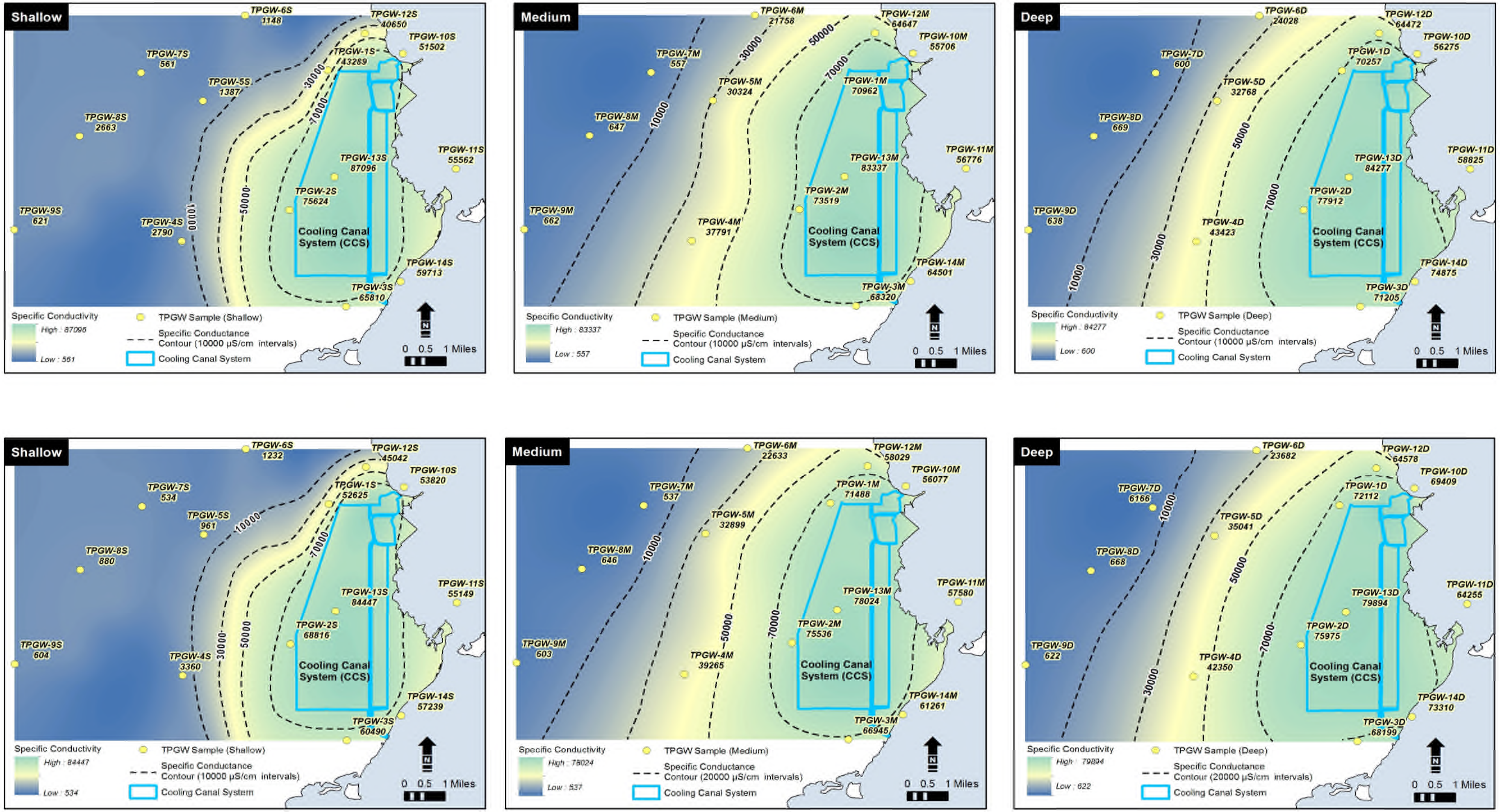


Figure 5.2-4. Shallow Well Pre-Uprate (Top) and Post-Uprate (Bottom) Average Specific Conductance Isopleths.

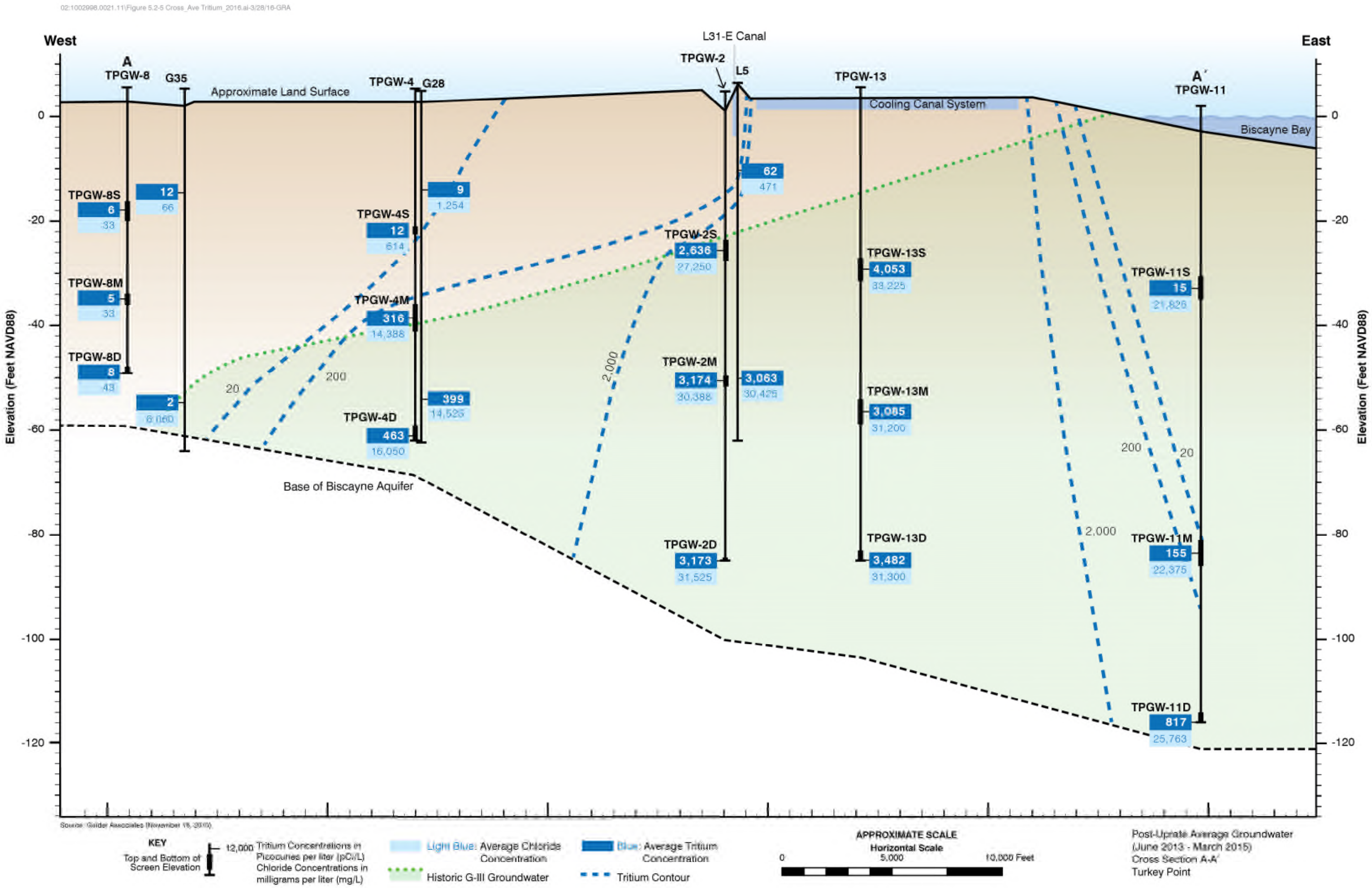


Figure 5.2-5. Post-Uprate Tritium Isopleth/Cross Section A-A’ with Chloride Concentrations and Historic G-III Boundary.

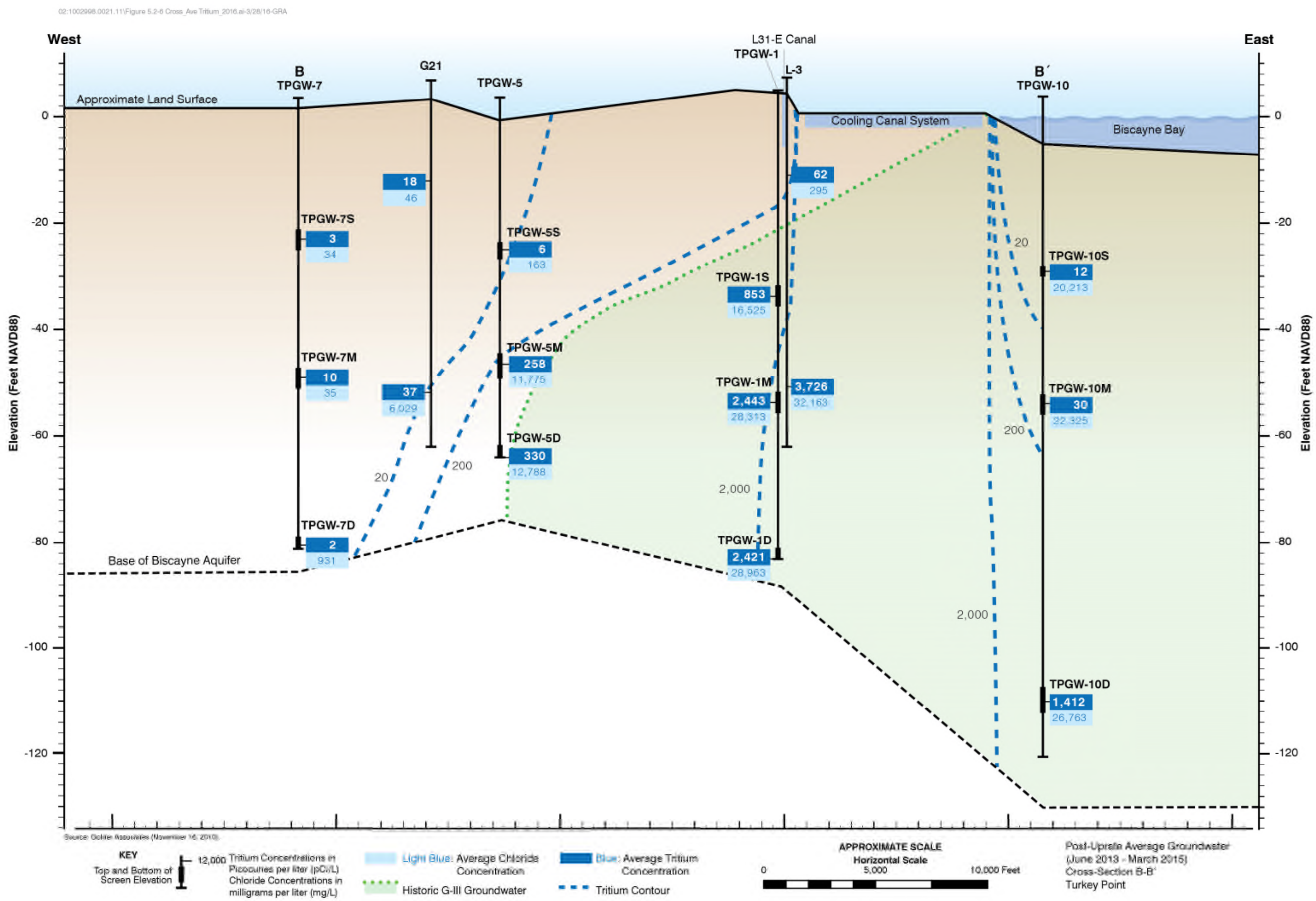


Figure 5.2-6. Post-Uprate Tritium Isopleth/Cross Section B-B' with Chloride Concentrations and Historic G-III Boundary.

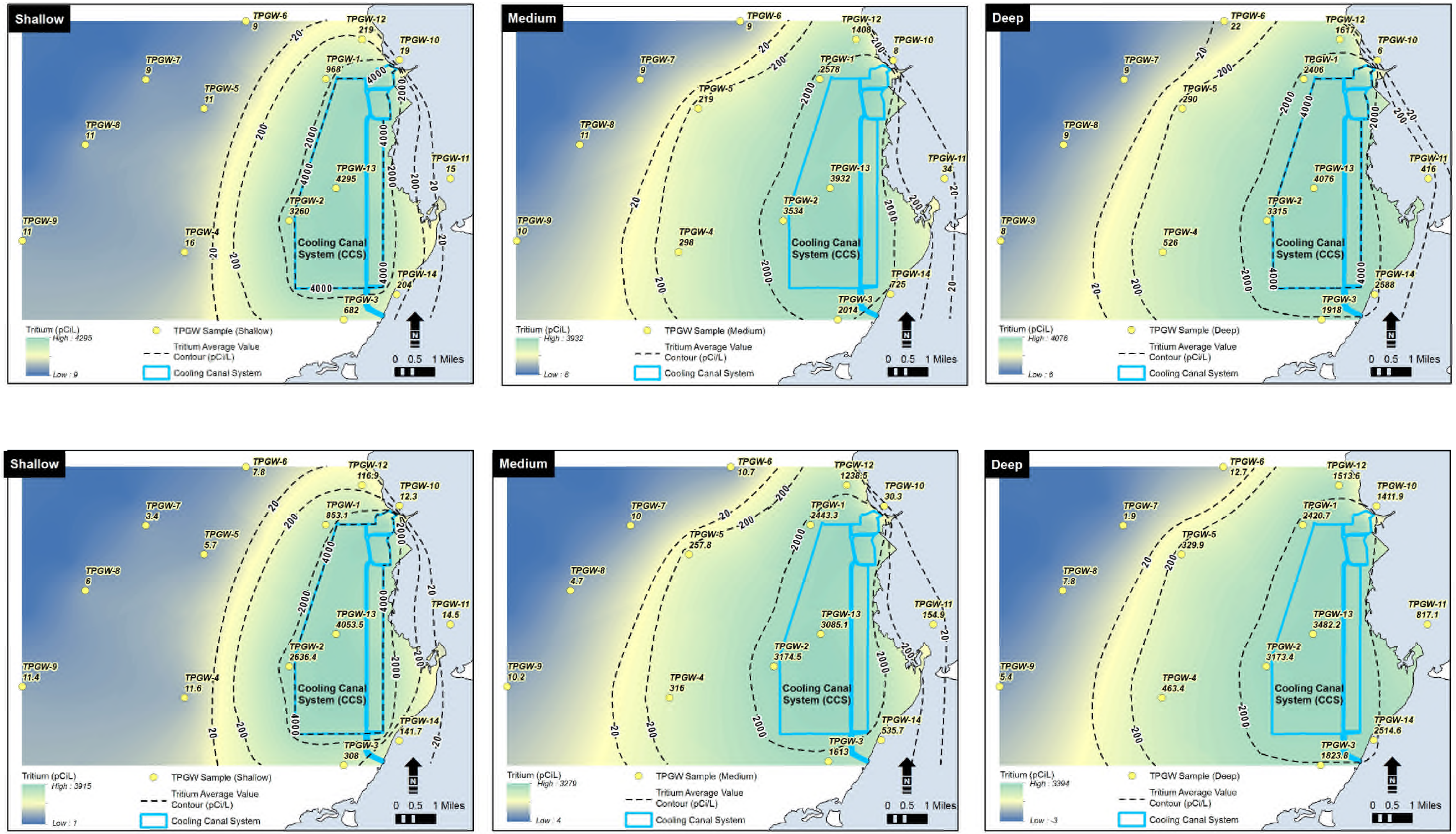
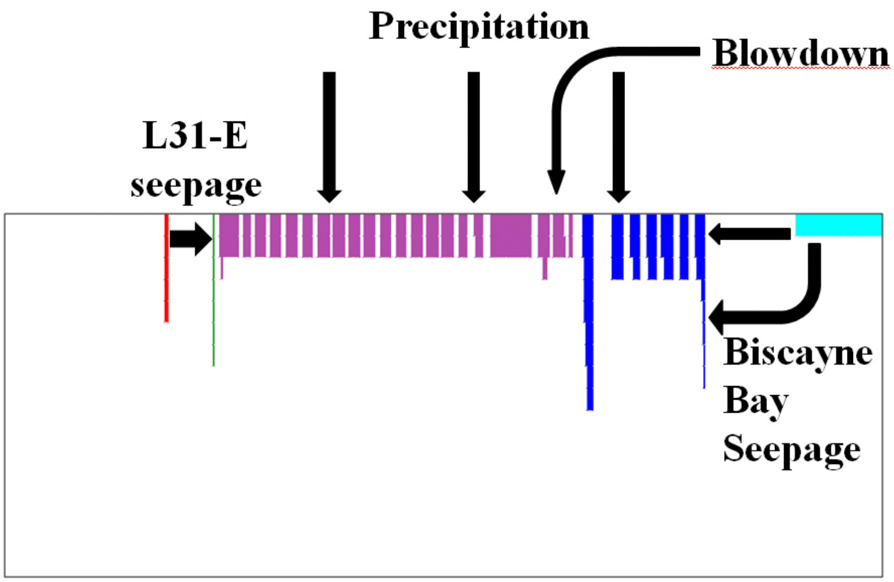
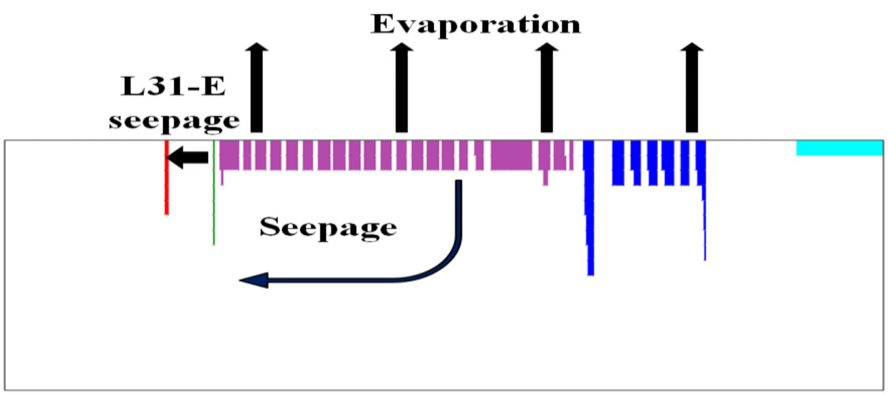


Figure 5.2-7. Pre-Uprate (Top) and Post-Uprate (Bottom) Average Tritium Isopleths for Shallow, Medium, and Deep Wells.



(A)



(B)

Figure 5.3-1. Flow (A) into and (B) out of the CCS, Shown in Cross-Section.

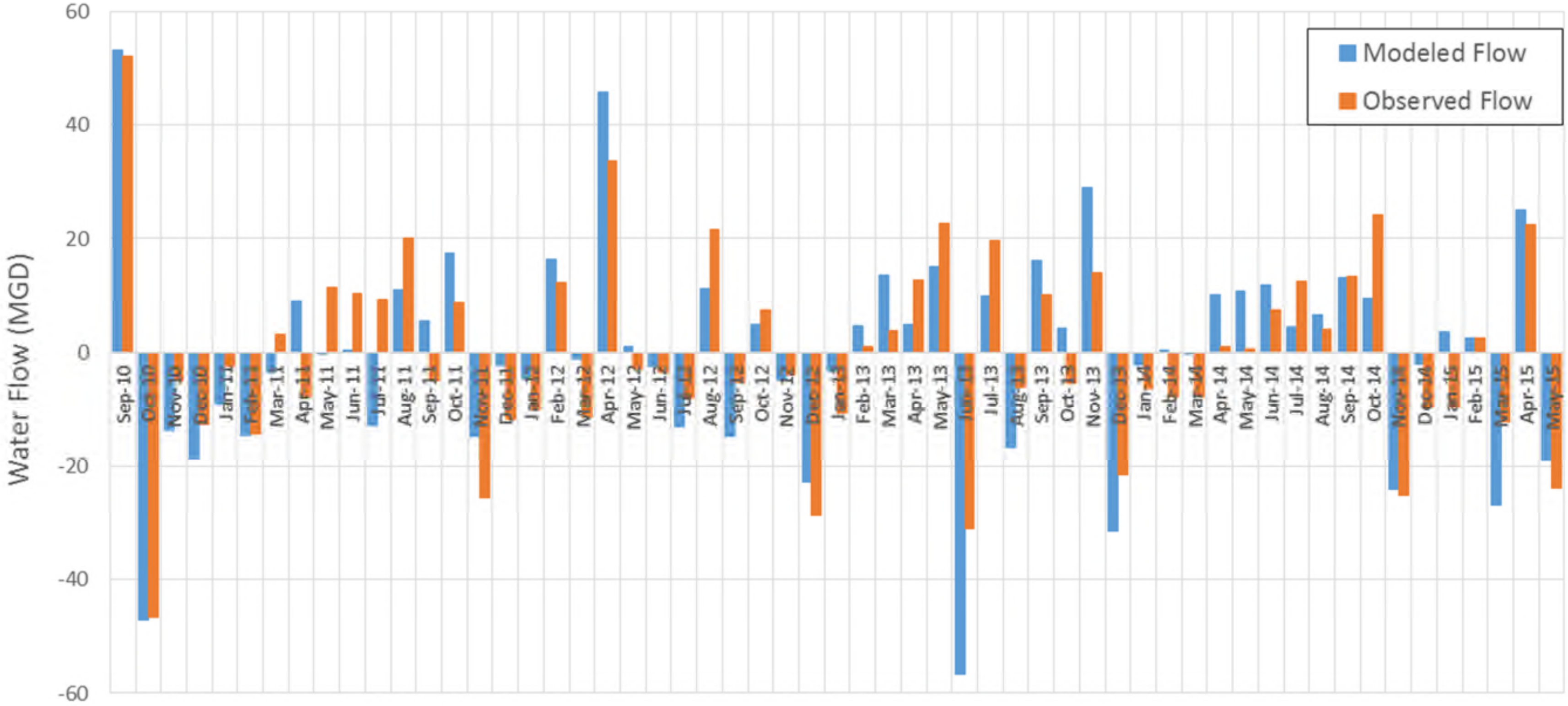


Figure 5.3-2. Modeled versus Measured Net Monthly Flows of Water for the CCS over the 57-Month Period.

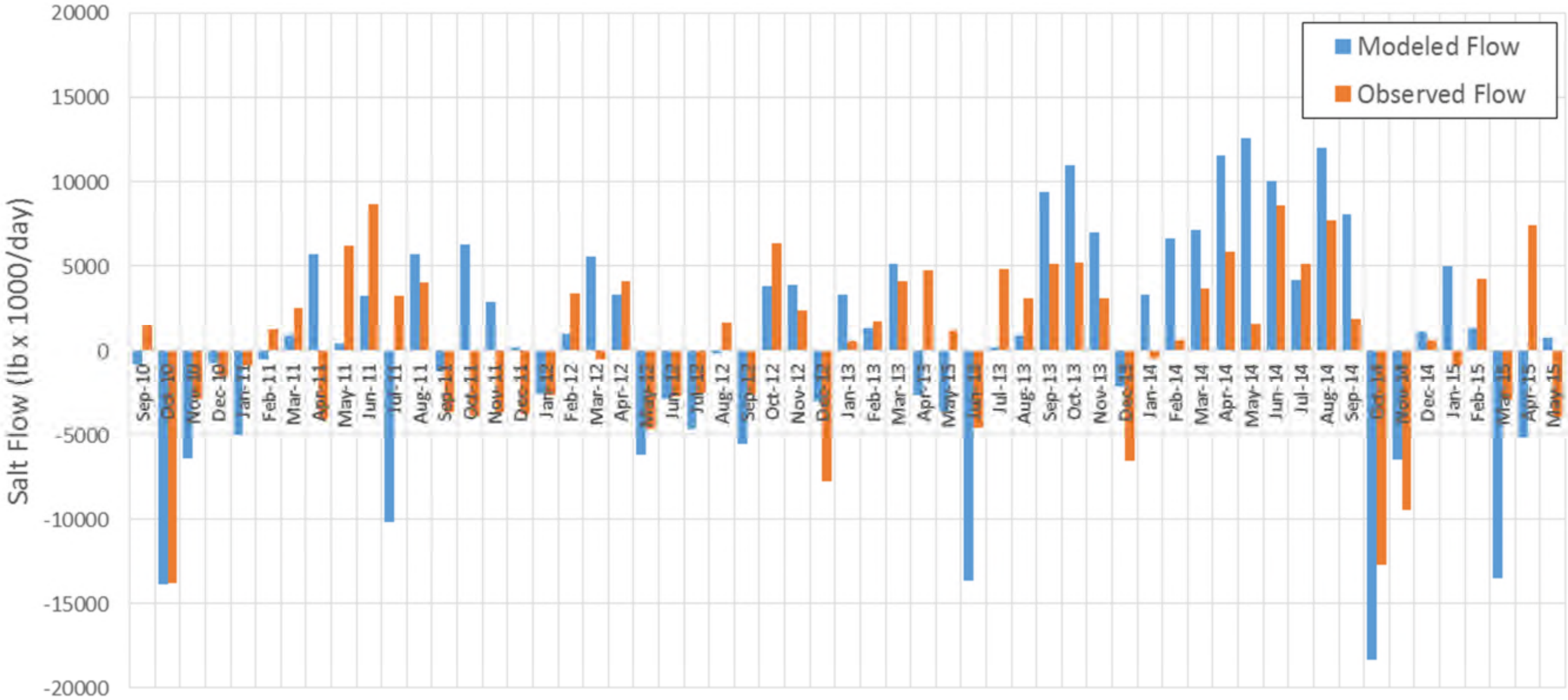


Figure 5.3-3. Modeled versus Measured Net Monthly Flows of Salt Mass for the CCS over the 57-Month Period .

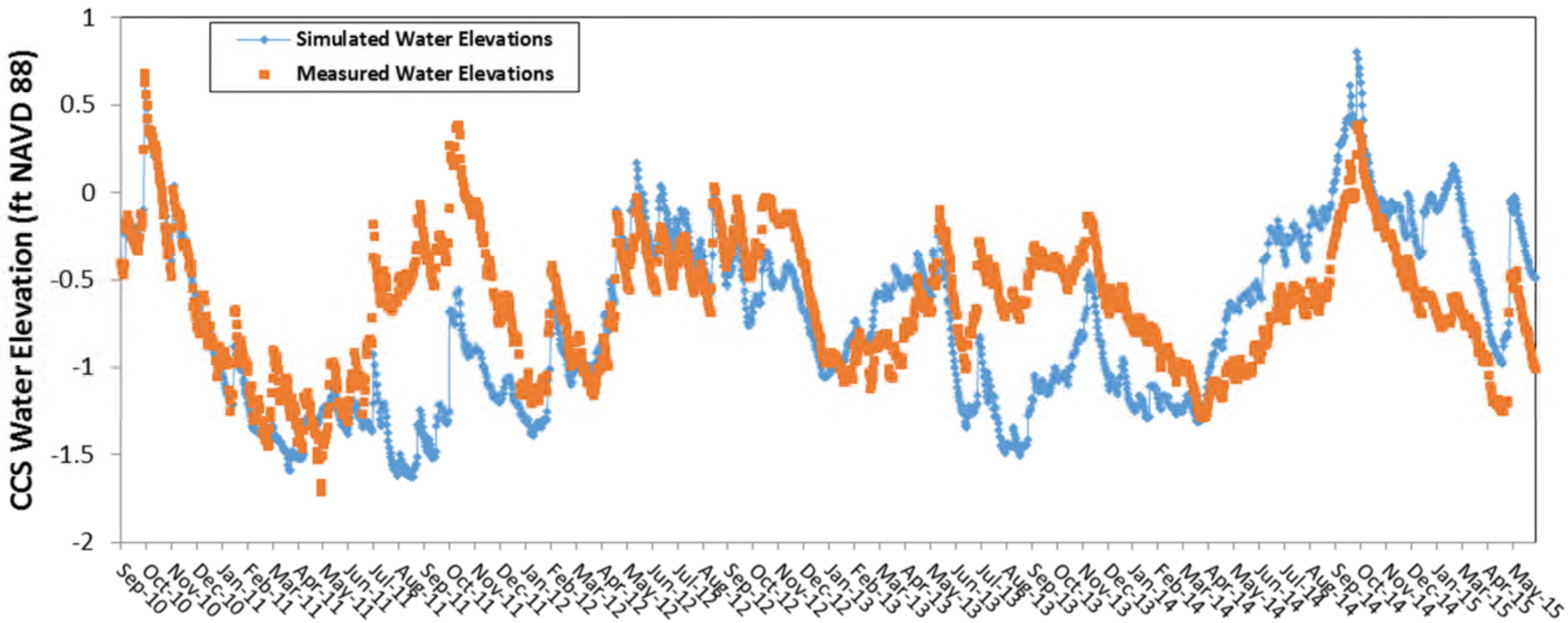


Figure 5.3-4. Modeled versus Measured Water Elevations (NAVD 88) in the CCS over the 57-Month Period; Used to Validate the Conceptual Model and Calibrate the Water Balance Model to Temporal Trends in Water Elevation.

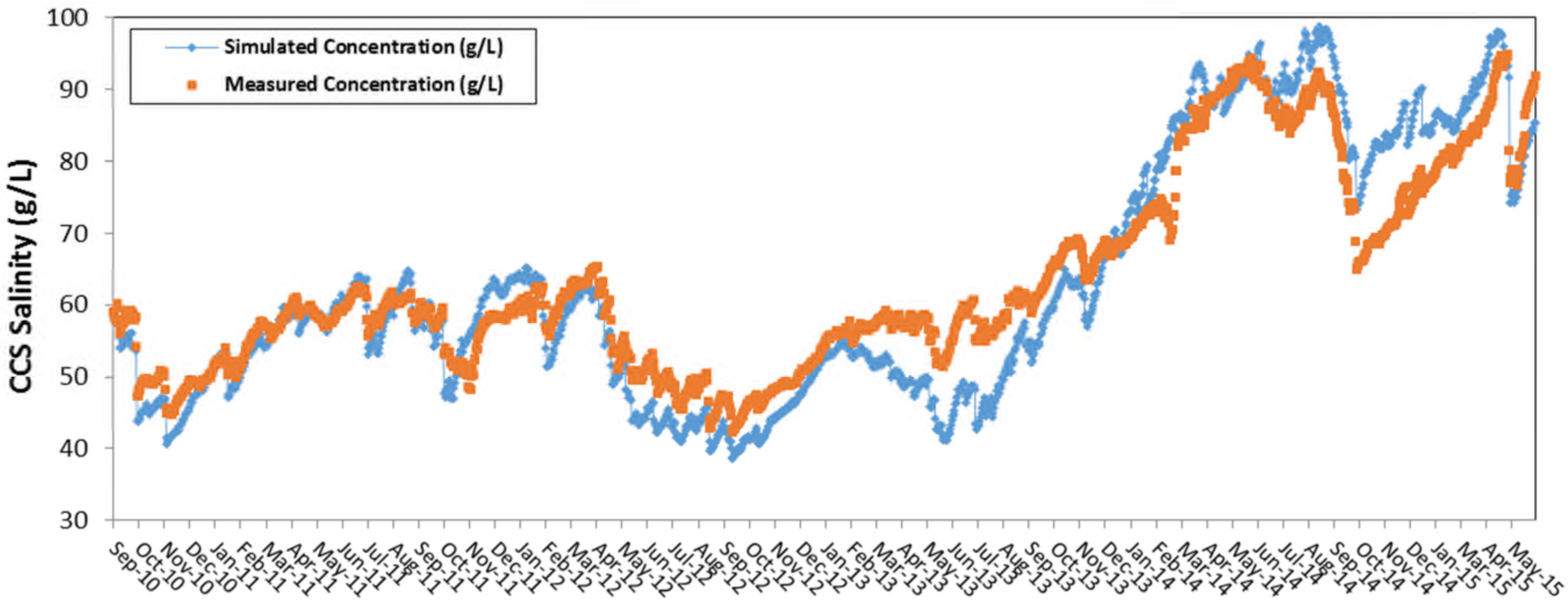


Figure 5.3-5. Modeled versus Measured Salinity in the CCS over the 57-Month Period; Used to Validate the Conceptual Model and Calibrate the Water Balance Model to Temporal Trends in Salinity.

6. INTERCEPTOR DITCH OPERATION

6.1 INTRODUCTION

The purpose of the ID, according to Section II (A)(1) of the Fifth Supplemental Agreement between SFWMD and FPL, dated October 16, 2009, is "to restrict movement of saline water from the cooling water system westward of Levee 31E adjacent to the cooling canal system to those amounts which would occur without the existence of the cooling canal system." When water levels in the CCS get to high and/or natural freshwater seaward gradients are non-existent, the water level in the ID is lowered by pumping water from the ID. This lowering of the ID water levels facilitates a seaward gradient between the L-31E Canal and the CCS or, depending upon CCS water levels, intercepts saline groundwater moving westward from the CCS. This effort restricts inland movement of cooling canal water in the upper zones of the aquifer.

FPL is required to follow certain operational procedures, with the most current procedures formally adopted in 2012. Prior operating criteria and procedures for the ID system were included in the 1983 Agreement between FPL and SFWMD. Monitoring data are required to be collected, including groundwater levels, conductivities, and temperatures in wells L-3, L-5, G-21, G-28, and G-35. In addition, surface water levels are required to be monitored in the L-31E, ID, and the western-most CCS canal (C-32) at five transects (A through E). FPL has prepared annual reports on the ID operation and groundwater conditions, referred to as the Annual Report Groundwater Monitoring Program, in compliance with the above-mentioned Agreements. Since August 2012, this annual reporting is incorporated as a section in the Turkey Point Plant Uprate annual reports.

The information presented in this section pertains to the operation of the ID from June 1, 2014, through May 31, 2015, and includes the same type of information as presented in previous ID operation reports (i.e., Golder Associates, Inc. 2011; FPL 2012a, 2014a). For consistency, the focus of this section is the historical L and G wells and the operation of the ID. Figure 6.1-1 shows the well locations and five surface water transects (A through E). Information on wells installed as part of the Uprate Project can be found in Sections 2 and 3 of this report. Where appropriate, references to the data in these sections will be made.

6.2 OPERATIONAL OR STRUCTURAL CHANGES

As discussed in the Comprehensive Pre-Uprate Report (FPL 2012a), FPL initiated a more conservative, revised, operational procedure for the ID in December 2011 that considered freshwater head equivalents for the surface water transects. This resulted in changes to the operational criteria that trigger pumping the ID. The criteria were refined further, and the operational criteria/triggers that have been used since December 2012 are as follows:

- If the L-31E water elevation minus the C-32 water elevation is equal to or greater than 0.25 ft, then no pumping of the ID is necessary because a seaward gradient exists.

- If the L-31E water elevation minus the C-32 water elevation is less than 0.25 ft, a natural seaward gradient may still exist if the L-31E water elevation minus the ID water elevation is equal to or greater than 0.30 ft and the density of the water in the ID is less than or equal to 1.012 g/cm^3. If the density in the ID is higher than 1.012 g/cm^3, a higher elevation difference between the L-31E Canal and the ID is necessary and can be calculated by converting the surface water levels to freshwater head equivalents.

- If a natural seaward gradient does not exist, an artificial gradient is created by pumping the ID until the ID is maintained at an elevation of at least 0.30 to 0.70 ft lower than the L-31E Canal, depending on the density of the ID water.

The operation of the ID pumps is based on water level readings at each of the five surface water transects. Traditionally, FPL has taken manual water level readings at least once every week during the dry season and at least twice a month during the wet season (Appendix M). When the Turkey Point Monitoring Plan (SFWMD 2009a) was approved by the Agencies, automated stations were installed at Transects A, C, and E. As discussed in Section 2, these stations currently report data at 1-hour intervals and typically transmit by telemetry to a database every day. FPL is still manually recording water levels at each transect during the dry season at least once every week and at least twice per month during the wet season to evaluate hydraulic gradients. FPL also uses the automated data to determine if they need to visit the sites more frequently and operate the ID pumps (Appendix M).

One of the potential challenges in operating the ID in this reporting period was the ability to maintain the desired gradients when extended periods of pumping are required. Since the CCS has been getting saltier and the water has become denser in the Post-Uprate period through May 2015, the trigger for pumping has become more frequent. When the ID pumps are operated, the salinity in the ID also increases. As the salinity/density of the ID rises, the desired elevation differences between the L-31E Canal and ID must be increased in order to maintain a density-corrected gradient. At some point, it becomes difficult to meet the water elevation differentials due to the increasing density. Thus, any efforts to freshen the CCS can help reduce the long-term frequency of ID pumping.

6.3 Meteorological Conditions

Meteorological data noted in Section 2.4 of this report include daily data collected from TPM-1. Daily rainfall data have also been traditionally recorded by SFWMD at structure S-20F, located along the L-31E Canal, approximately 2.5 miles north of the CCS. Figure 6.3-1 shows the monthly rainfall at S-20F and TPM-1 for the ID reporting period of June 2014 to May 2015, and compares the data to historical averages (1968 to 2014) at S-20F. As discussed in Section 2.4, the rainfall monitoring station at TPM-1 had been under-reporting hourly values that were used to calculated monthly totals. Instead of using the hourly data, the daily totals, which appear to be properly reported, have been used to calculate the monthly totals.

Rainfall for June 2014 to May 2015 was below the historic annual average from July 1968 to May 2014 at station S-20F. The rain gauge at station S-20F recorded 41.2 inches of precipitation from June 2014 to May 2015, while 42.3 inches of rain were recorded at TPM-1. The annual 1968 to 2014 average at S-20F is 46.4 inches.

As shown on Figure 6.3-1, the rainfall distribution for the period from June 2014 through May 2015 was predominantly concentrated in the months of June through October, which are the traditionally wet season months. However, heavy rain does occasionally occur in the dry season (November to May), as evidenced by the highest monthly total approaching 8 inches in April 2015 at TPM-1. During an average year, approximately 74% of the precipitation occurs during the wet season, with the remainder occurring during the dry season. In the 2014/2015 reporting period, less than 65% of the rainfall fell in the wet season; however, the wet April of 2015 lowered that percentage.

6.4 WATER QUALITY AND WATER LEVEL RESULTS AND DISCUSSION

6.4.1 Groundwater Levels

Groundwater levels are manually measured and samples and are collected quarterly from historical wells L-3, L-5, G-21, G-28, and G-35. During the Post-Uprate reporting period, water levels were measured in June 2014, September 2014, December 2014, and March 2015. Figure 6.4-1 shows the groundwater levels measured during this time period and the maximum and minimum levels recorded during the historical period. The start dates for the historical period for each well are as follows:

- L-3: April 1974;
- L-5: January 1976;
- G-21: April 1972;
- G-28: April 1972; and
- G-35: April 1972.

The historical period for wells L-3, L-5, G-21, and G-28 was extended to include data through May 2015 for this report. Because data were not recorded for well G-35 between 1983 and 2010, the historical maximums and minimum for G-35 are not as comparable to the other wells.

The groundwater elevations during this reporting period at L-3 and L-5 were all lower than the groundwater elevations in wells G-21, G-28 and G-35, which are farther west. The lowest water levels in all wells were recorded in June 2014 at the end of the dry season, and the highest water levels were typically recorded in September or December. However, G-35 exhibited its highest water level in March 2015. All water levels were within the historic maximum and minimum ranges.

6.4.2 Vertical Groundwater Temperature Profiles

Groundwater temperatures are measured on a quarterly basis at 1-ft intervals throughout the water column in L-3, L-5, G-21, G-28, and G-35. For this monitoring period, temperatures were recorded in June 2014, September 2014, December 2014, and March 2015. Figures 6.4-2 through 6.4-6 show the temperature profile with depth and are compared with the historical envelope for each well, where available. As reported by Golder Associates, Inc. (2011), the historical envelope represents both the highest and lowest temperatures recorded during the period from July 1981 through June 1991.

All wells were within the historical envelopes (where established) for temperature, except for a couple of depth intervals in one or more quarters. In September 2014, the water temperatures in the upper 5 to 15 feet of the water column of wells L-3, L-5, G-21 and G-28 were 1°C to 2°C higher than the historical maximum. Water temperatures were also skirting the historic maximum values in December 2014 at L-3 and in June 2014 at L-5 for water elevations starting at -18 to -24 ft NAVD 88 and extending to -12 or -20 ft NAVD 88. There is no historical envelope for G-35, but the temperature profile for G-35 is similar to G-28, other than that the water temperature in G-35 within the top 8 feet was nearly 1°C cooler in September 2014.

6.4.3 Vertical Groundwater Chloride Profiles

Groundwater specific conductance is measured at 1-ft intervals across the entire water column in all five wells. The specific conductance data are then converted to chloride values according to the procedures outlined in the 1983 Agreement and which continue to be followed. For this monitoring period, specific conductance values were measured in June 2014, September 2014, December 2014, and March 2015, and corresponding chloride values were calculated. Similar to the temperature profiles, chloride profiles have been developed and compared with historical envelopes when available (Figures 6.4-7 through 6.4-11). The historical envelope represents both the highest and lowest chloride levels recorded during the period from July 1981 through June 1991.

For the current reporting period, and similar to previous reporting periods, in most cases the chloride values at depth exceeded the historical envelope. The depth at which the calculated chloride values at L-3 began to exceed the historical envelope in June 2014 was -32 ft NAVD 88 as well as September 2014 at -46 ft NAVD 88 and March 2015 at a depth of -52 ft NAVD 88. At L-5, the calculated chloride values began to skirt or slightly exceed the maximum historical values at a depth of approximately -25 ft NAVD 88 for all quarters. In the G-series wells, the depths where the historical maximum were exceeded were deeper (-42 ft to -43 ft NAVD 88 at G-21, and -31 ft to -32 NAVD 88 for G-28). The highest values were found at L-3 (31.4 parts per thousand [ppt]) and L-5 (29.5 ppt) at or near the bottom sample depth of approximately -50 ft NAVD 88. The lowest concentrations were at G-35, where the levels are minimal, to about elevation -41 ft NAVD 88, below which they increased to values between 5 and 7 ppt. Golder Associates, Inc. (2011) reported that the historical chloride levels at those depths in the 1970s reached up about 10 ppt.

What is clear from the vertical profiles is the quick change in chloride values with depth, indicating a fairly sharp transition in water quality. This transitional boundary moves up and down, depending on seasonal variations. The profiles also show the presence of a shallow, predominantly freshwater (per FDEP, F.A.C. 62-302.200) lens in L-3, L-5, G-21, G-28, and G-35.

6.4.4 Interceptor Ditch Operation and Transect Surface Water Levels

Surface water levels have been traditionally measured in L-31E, the ID, and C-32 (CCS) as required by the ID operation procedure. The water levels are measured in these canals at pumping Lines A, B, C, D, and E, as shown on Figure 6.1-1. Water levels recorded during the past 12-month monitoring period are presented on Figures 6.4-12 through 6.4-16. The data for these figures are based on the manual readings by FPL staff at all five transect locations.

With a few exceptions, water levels in the L-31E Canal were higher than in the C-32 at all transects. The most notable exception was in March and/or April 2015, when the CCS was higher for up to one to three weeks in transects A, B, and C. Also, on October 15, 2014, the water level in L-31E dropped below the ID and CCS in transects A and B in response to a high rate of temporary pumping from the L-31E Canal. Table 6.4-1 shows the range in head differences in L-31E and C-32 at each transect and the range in head differences in L-31E and the ID. Transect E occasionally has ID water levels higher than L-31E water levels.

Although none of the information presented in the above figures is corrected for density, Figures 6.4-17 through 6.4-19 illustrate differences in water levels between L-31E and the CCS (C-32) and differences between L-31E and the ID for transects A, C, and E, respectively, considering density differences (freshwater head equivalents). Basically, the figures show the difference in elevation between the L-31E Canal in relation to the CCS and ID, as well as the difference in water level between the ID and CCS. For these graphs, the undesired scenario is when both the black line and the orange line are less than zero (both the CCS and ID are higher than L-31E) AND the black line is lower than the orange line (CCS is also higher than ID). This rarely happens; however, when it does occur, it is for a very short duration.

Operation of the ID pumps is shown on Figure 6.4-20, along with the measured rainfall. Table 6.4-2 shows how many hours each pump operated every month, along with the volume of water pumped. Data in Table 6.4-3 identifies when pumping was required by the water levels and when such pumping actually occurred.

6.4.5 Pressure Gradient Density Correction

In previous reports on the ID, Golder Associates, Inc. (2011) and FPL (2012a) analyzed the data to assess groundwater flow based on pressure gradients between L-3 and G-21, and between L-5 and G-28. The analysis addressed the Agencies' concerns that water level readings taken in wells and surface water bodies do not necessarily represent the actual pressure gradients within the groundwater or surface water due to differences in density and temperature between locations. Because surface water levels are being measured as proxies for groundwater levels in order to estimate groundwater movement, and groundwater levels are being estimated as proxies for pressure gradients, their analyses dealt with groundwater pressure gradients only.

This type of analysis lends itself favorably to the L and G series wells, since they are screened across their entire (or nearly entire) depth, and temperature and specific conductance data are available at 1-ft intervals. This is important, since the temperature and specific conductance do not vary linearly with depth. The temperature and specific conductance data can be used to calculate a density at each measurement point.

Using specific conductance and temperature data collected from the September 2014 sampling event, the water densities by depth for wells L-3 and G-21 have been calculated and are plotted on Figure 6.4-21. Based on the densities shown on Figure 6.4-21, the pressure over depth (pressure gradient) for wells L-3 and G-21 for the September 2014 sampling event has been calculated and is shown on Figure 6.4-22. The data shown on Figure 6.4-22 indicate that the pressure gradient at well G-21 is slightly higher than that at well L-3 from the surface down to about -45 ft NAVD 88, below which the gradients overlap or L-3 is just slightly higher than at G-21. Because the pressure gradients are close in value, it is easier to see the difference when plotted, as shown on Figure 6.4-23, which illustrates the pressure excess or deficit between the G and the corresponding L series wells. Similar analyses were performed for wells G-21 and L-3 during the March 2015 sampling event (Figure 6.4-24). These same analyses were also conducted for well G-28 versus well L-5 during the September 2014 sampling episode (Figure 6.4-25) and for well G-28 versus well L-5 during the March 2015 sampling episode (Figure 6.4-26).

In all of the cases examined (G-21 and L-3 in September 2013, G-21 and L-3 in March 2014, G-28 and L-5 in September 2013, and G-28 and L-5 in March 2014), the groundwater gradient is seaward in the upper levels of the aquifer, down to approximately -40 ft to -45 ft NAVD 88 for well G-21 versus well L-3, and down to about -44 ft to -48 ft NAVD 88 for well G-28 versus well L-5.

The operation of the ID still maintains an overall seaward gradient from the L-31E Canal and/or the L-series wells in the upper levels of the aquifer. There have been a few short durations where a landward gradient existed based on automated water level readings and considering density effects, but the frequency and duration was very limited.

TABLES

Table 6.4-1. Range in Surface Water Head Differences.

Date	Line A		Line B		Line C		Line D		Line E	
	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID
6/2/14	0.04	0.25	0.16	0.28	0.02	-0.02	0.25	-0.02	0.39	0.00
6/3/14	0.15	0.36	0.15	0.20	0.40	0.40	0.58	0.18	0.62	0.13
6/4/14	0.24	0.18	0.34	0.20	0.43	0.16	0.62	0.12	0.67	0.07
6/5/14	0.12	0.21	0.20	0.24	0.3	0.14	0.57	0.13	0.63	0.13
6/6/14	0.04	0.58	0.14	0.62	0.26	0.27	0.56	0.16	0.59	0.10
6/9/14	0.12	0.17	0.23	0.20	0.37	0.15	0.69	0.16	0.80	0.12
6/10/14	0.17	0.22	0.27	0.25	0.35	0.15	0.67	0.18	0.78	0.14
6/11/14	0.08	0.63	0.20	0.64	0.33	0.23	0.62	0.18	0.73	0.22
6/16/14	0.21	0.21	0.31	0.23	0.36	0.13	0.60	0.12	0.65	0.06
6/17/14	0.17	0.17	0.28	0.21	0.37	0.14	0.62	0.12	0.69	0.07
6/18/14	0.14	0.68	0.26	0.70	0.40	0.28	0.62	0.12	0.69	0.07
6/20/14	0.42	0.06	0.43	0.11	0.54	0.08	0.82	0.08	0.86	0.06
7/1/14	0.68	0.34	0.73	0.37	0.95	0.21	0.71	0.19	0.95	0.18
7/16/14	0.54	0.48	0.67	0.33	0.96	0.22	0.96	0.20	1.00	0.18
8/11/14	0.71	0.31	0.80	0.33	0.78	0.25	0.97	0.24	0.97	0.20
8/18/14	0.51	0.26	0.59	0.27	0.60	0.17	0.62	0.16	0.64	0.10
9/2/14	0.42	0.19	0.44	0.17	0.43	0.04	0.67	0.06	0.65	-0.02
9/9/14	0.26	0.15	0.34	0.16	0.40	0.06	0.62	0.16	0.62	-0.04
9/10/14	0.31	0.17	0.41	0.19	0.41	0.06	0.62	0.16	0.64	-0.04
9/17/14	0.39	0.15	0.46	0.16	0.57	0.05	0.70	0.04	0.69	-0.02
10/2/14	0.53	0.84	0.66	0.98	0.46	0.80	0.53	-0.01	0.50	-0.06
10/13/14	0.17	-0.05	0.16	0.08	0.16	-0.06	0.24	-0.07	0.17	-0.11
10/15/14	-0.27	-0.27	-0.26	-0.22	0.12	0.08	0.14	0.11	0.12	0.03
10/16/14	0.12	0.15	0.11	0.18	0.06	0.10	0.11	0.12	0.12	0.12
10/17/14	0.12	0.16	0.16	0.20	0.06	0.11	0.09	0.1	0.06	0.07
10/18/14	0.10	0.40	0.13	0.39	0.06	0.34	0.08	0.33	0.08	0.10

Table 6.4-1. Range in Surface Water Head Differences.

Date	Line A		Line B		Line C		Line D		Line E	
	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID
10/20/14	0.07	0.06	0.09	0.04	0.1	-0.01	0.13	-0.04	0.07	-0.09
10/21/14	0.09	0.38	0.11	0.38	0.06	0.25	0.13	0.24	0.09	0.14
10/22/14	0.16	0.42	0.14	0.42	0.08	0.31	0.1	0.31	0.06	0.2
10/23/14	0.15	0.25	0.13	0.25	0.09	0.12	0.13	0.2	0.06	0.14
10/27/14	0.22	0.24	0.21	0.27	0.18	0.19	0.18	0.18	0.13	0.12
10/28/14	0.25	0.37	0.2	0.41	0.16	0.36	0.16	0.33	0.12	0.25
10/29/14	0.16	0.23	0.2	0.28	0.14	0.18	0.16	0.28	0.08	0.21
10/30/14	0.16	0.44	0.18	0.48	0.11	0.38	0.14	0.36	0.07	0.3
10/31/14	0.17	0.22	0.18	0.22	0.16	0.16	0.2	0.34	0.2	0.3
11/3/14	0.32	0.13	0.33	0.16	0.25	0.04	0.26	0.01	0.16	-0.04
11/4/14	0.25	0.18	0.26	0.19	0.17	0.06	0.18	0.21	0.12	0.14
11/5/14	0.2	0.31	0.23	0.33	0.19	0.36	0.23	0.36	0.16	0.22
11/6/14	0.17	0.26	0.2	0.28	0.19	0.25	0.24	0.25	0.19	0.19
11/7/14	0.17	0.2	0.21	0.2	0.17	0.15	0.22	0.29	0.18	0.26
11/10/14	0.26	0.16	0.27	0.18	0.17	0.06	0.22	0.04	0.18	0
11/11/14	0.23	0.25	0.26	0.26	0.17	0.17	0.23	0.27	0.17	0.18
11/12/14	0.16	0.32	0.19	0.37	0.14	0.28	0.2	0.36	0.15	0.24
11/13/14	0.17	0.28	0.2	0.32	0.15	0.22	0.23	0.27	0.14	0.18
11/17/14	0.1	0.1	0.14	0.14	0.15	0.06	0.26	0.04	0.25	0
11/18/14	0.15	0.32	0.18	0.34	0.17	0.25	0.27	0.2	0.26	0.14
11/19/14	0.25	0.32	0.26	0.33	0.22	0.26	0.27	0.21	0.25	0.13
11/20/14	0.22	0.35	0.25	0.36	0.21	0.26	0.21	0.14	0.2	0.1
11/21/14	0.25	0.28	0.28	0.29	0.27	0.45	0.27	0.45	0.28	0.3
11/24/14	0.17	0.18	0.22	0.21	0.23	0.13	0.38	0.1	0.37	0.07
11/26/14	0.14	0.44	0.23	0.47	0.15	0.36	0.34	0.39	0.35	0.41
12/2/14	0.29	0.11	0.31	0.11	0.36	0.1	0.45	0.07	0.42	0.02

Table 6.4-1. Range in Surface Water Head Differences.

Date	Line A		Line B		Line C		Line D		Line E	
	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID
12/9/14	0.35	0.08	0.40	0.11	0.37	0.03	0.41	0.38	0.38	0.00
12/18/14	0.27	0.11	0.30	0.14	0.29	0.11	0.47	0.08	0.42	0.06
12/19/14	0.28	0.12	0.29	0.13	0.28	0.12	0.47	0.08	0.44	0.06
12/22/14	0.22	0.12	0.27	0.14	0.27	0.09	0.50	0.09	0.40	-0.06
12/23/14	0.20	0.8	0.28	0.83	0.29	0.11	0.48	0.12	0.40	0.02
12/30/14	0.39	0.16	0.41	0.21	0.42	0.07	0.56	0.07	0.57	0.08
1/8/15	0.43	0.10	0.52	0.12	0.52	0.04	0.55	0.02	0.54	0.00
1/13/15	0.25	0.13	0.54	0.16	0.51	0.06	0.68	0.03	0.61	-0.01
1/21/15	0.41	0.06	0.46	0.08	0.50	0.03	0.62	0.04	0.60	0.00
1/28/15	0.43	0.16	0.47	0.15	0.50	0.12	0.57	0.14	0.53	0.04
2/2/15	0.22	0.14	0.42	0.28	0.35	0.10	0.66	0.15	0.62	0.04
2/4/15	0.17	0.63	0.25	0.64	0.37	0.22	0.46	0.21	0.50	0.13
2/6/15	0.32	0.18	0.36	0.18	0.33	0.13	0.55	0.14	0.50	0.04
2/9/15	0.22	0.16	0.29	0.19	0.28	0.14	0.54	0.12	0.55	0.06
2/11/15	0.25	0.67	0.28	0.66	0.27	0.21	0.52	0.20	0.49	0.14
2/13/15	0.23	0.13	0.28	0.14	0.28	0.12	0.51	0.11	0.49	0.09
2/16/15	0.2	0.11	0.30	0.14	0.29	0.13	0.48	0.10	0.48	0.02
2/18/15	0.31	0.46	0.36	0.46	0.35	0.17	0.52	0.16	0.45	0.09
2/24/15	0.17	0.18	0.31	0.22	0.28	0.16	0.55	0.15	0.60	0.10
2/26/15	0.06	0.59	0.12	0.60	0.28	0.34	0.53	0.33	0.57	0.27
3/2/15	0.20	0.15	0.24	0.15	0.23	0.09	0.38	0.08	0.42	0.06
3/4/15	0.03	0.47	0.08	0.45	0.13	0.38	0.30	0.22	0.27	0.15
3/6/15	0.03	0.12	0.07	0.18	0.16	0.09	0.35	0.14	0.35	0.08
3/9/15	0.23	0.12	0.32	0.17	0.26	0.07	0.51	0.06	0.50	0.01
3/10/15	0.15	0.54	0.26	0.60	0.22	0.28	0.43	0.14	0.46	0.06
3/11/15	0.13	0.43	0.21	0.45	0.19	0.41	0.45	0.19	0.46	0.13

Table 6.4-1. Range in Surface Water Head Differences.

Date	Line A		Line B		Line C		Line D		Line E	
	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID
3/12/15	0.15	0.17	0.23	0.22	0.20	0.13	0.40	0.12	0.41	0.07
3/13/15	0.08	0.39	0.16	0.40	0.14	0.34	0.31	0.19	0.36	0.13
3/16/15	0.06	0.57	0.14	0.18	0.09	0.10	0.32	0.09	0.34	0.03
3/18/15	0.03	0.26	0.12	0.28	0.14	0.24	0.35	0.11	0.32	0.06
3/20/15	-0.02	0.41	0.06	0.40	0.10	0.35	0.26	0.11	0.28	0.04
3/23/15	-0.11	0.22	-0.02	0.30	-0.08	0.20	0.32	0.06	0.31	-0.01
3/25/15	-0.16	0.43	-0.06	0.42	-0.05	0.38	0.36	0.15	0.35	0.07
3/26/15	-0.19	0.19	-0.10	0.18	-0.05	0.14	0.36	0.12	0.39	0.07
3/30/15	-0.03	0.21	0.04	0.21	0.05	0.15	0.51	0.17	0.52	0.09
4/1/15	-0.13	0.48	-0.05	0.45	-0.17	0.36	0.31	0.20	0.32	0.12
4/2/15	-0.13	0.24	-0.02	0.26	-0.1	0.12	0.30	0.10	0.34	0.04
4/3/15	-0.12	0.49	-0.05	0.49	-0.14	0.34	0.25	0.19	0.25	0.10
4/6/15	-0.23	0.28	-0.10	0.28	-0.24	0.04	0.19	0.05	0.28	-0.02
4/8/15	-0.34	0.46	-0.21	0.47	-0.38	0.25	0.09	0.25	0.18	0.14
4/9/15	-0.36	0.42	-0.26	0.44	-0.43	0.21	0.05	0.26	0.07	0.18
4/10/15	-0.39	0.50	-0.23	0.53	-0.44	0.26	0.01	0.19	0.15	0.12
4/13/15	-0.37	0.39	-0.23	0.40	-0.47	0.33	0.05	0.33	0.16	0.24
4/15/15	-0.32	0.34	-0.23	0.36	-0.44	0.34	0.04	0.31	0.14	0.22
4/16/15	-0.30	0.46	-0.23	0.44	-0.47	0.16	0.00	0.08	0.12	0.07
4/20/15	-0.31	0.32	-0.17	0.32	-0.42	0.09	0.19	0.08	0.30	0.01
4/23/15	-0.22	0.35	-0.12	0.38	-0.13	0.41	0.36	0.30	0.46	0.28
4/27/15	-0.16	0.26	-0.08	0.28	-0.08	0.16	0.45	0.15	0.50	0.09
4/29/15	0.43	0.51	0.43	0.41	0.58	0.48	0.88	0.28	1.01	0.25
5/5/15	0.58	0.28	0.62	0.28	0.58	0.20	0.75	0.18	0.81	0.10
5/11/15	0.43	0.41	0.46	0.28	0.42	0.42	0.69	0.44	0.66	0.08
5/19/15	0.36	0.22	0.36	0.14	0.34	0.14	0.74	0.14	0.70	0.10

Table 6.4-1. Range in Surface Water Head Differences.

Date	Line A		Line B		Line C		Line D		Line E	
	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID	L31-C32	L31-ID
5/21/15	0.22	-0.08	0.30	0.24	0.38	0.20	0.82	0.22	0.80	0.15
5/22/15	0.27	0.96	0.33	0.97	0.41	0.24	0.77	0.23	0.79	0.16
5/26/15	0.20	0.26	0.27	0.29	0.30	0.22	0.75	0.25	0.66	0.14
5/27/15	0.16	0.71	0.24	0.72	0.28	0.34	0.66	0.26	0.72	0.18
5/29/15	0.10	0.23	0.17	0.27	0.18	0.22	0.64	0.15	0.67	0.12

Table 6.4-2. Hours and Volumes of ID Pump Operation per Month.

ID	2014							2015				
Pumped Hours	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**
N1	71	0	0	0	0	8	23	0	251	23	139	35
N2	0	0	0	0	18	49	0	0	0	163	72	0
S1	24	0	0	0	189	118	0	0	0	120	147	3
S2	0	0	0	0	264	26	0	0	0	0	80	0
Pumped Volume (MG)												
N1	67	0	0	0	0	3	21	0	191	29	130	34
N2	0	0	0	0	17	46	0	0	0	134	68	0
S1	23	0	0	0	180	112	0	0	0	127	105	3
S2	0	0	0	0	250	25	0	0	0	0	77	0

Table 6.4-3. Pumping Summary.

Date	Pump 1	Pump 2	Pump 3	Pump 4	Performed Pumping
6/2/2014			Yes		x
6/3/2014			Yes		x
6/4/2014	Yes				x
6/5/2014	Yes				x
6/6/2014	Yes				x
6/9/2014	Yes				x
6/10/2014	Yes				x
6/11/2014	Yes				x
6/13/2015	Yes				x
6/16/2014	Yes				x
6/17/2014	Yes				x
6/18/2014	Yes				x
10/13/2014				Yes	x
10/14/2014				Yes	x
10/15/2014				Yes	x
10/16/2014			Yes	Yes	x
10/17/2014		Yes	Yes		x
10/18/2014		Yes	Yes		x
10/20/2014			Yes	Yes	x
10/21/2014			Yes	Yes	x
10/22/2014			Yes	Yes	x
10/23/2014			Yes	Yes	x
10/24/2014				Yes	x
10/25/2014				Yes	x
10/26/2014				Yes	x
10/27/2014			Yes	Yes	x
10/28/2014			Yes	Yes	x
10/29/2014			Yes	Yes	x
10/30/2014			Yes	Yes	x
10/31/2014				Yes	x
11/3/2014				Yes	x
11/4/2014			Yes		x
11/5/2014			Yes		x
11/6/2014			Yes		x
11/7/2014	Yes		Yes	Yes	x
11/10/2014				Yes	x
11/11/2014			Yes		x

Table 6.4-3. Pumping Summary.

Date	Pump 1	Pump 2	Pump 3	Pump 4	Performed Pumping
11/12/2014			Yes		x
11/13/2014	Yes				x
11/17/2014		Yes			x
11/18/2014		Yes			x
11/20/2014				Yes	x
11/21/2014				Yes	x
11/24/2014			Yes		x
11/25/2014			Yes		x
11/26/2014			Yes		x
12/22/2014	Yes				x
12/23/2014	Yes				x
2/2/2015	Yes				x
2/3/2015	Yes				x
2/4/2015	Yes				x
2/6/2015	Yes				x
2/7/2015	Yes				x
2/8/2015	Yes				x
2/9/2015	Yes				x
2/13/2015	Yes				x
2/16/2015	Yes				x
2/17/2015	Yes				x
2/18/2015	Yes				x
2/24/2015	Yes				x
2/25/2015	Yes				x
2/26/2015	Yes				x
3/2/2015		Yes			x
3/3/2015		Yes			x
3/4/2015		Yes			x
3/6/2015		Yes			x
3/9/2015	Yes				x
3/10/2015	Yes	Yes			x
3/11/2015		Yes			x
3/12/2015		Yes			x
3/13/2015		Yes			x
3/16/2015		Yes			x
3/17/2015		Yes			x
3/18/2015		Yes	Yes		x

Table 6.4-3. Pumping Summary.

Date	Pump 1	Pump 2	Pump 3	Pump 4	Performed Pumping
3/19/2015			Yes		x
3/20/2015			Yes		x
3/23/2015			Yes		x
3/24/2015			Yes		x
3/25/2015			Yes		x
3/26/2015			Yes		x
3/302015			Yes		x
3/31/2015			Yes		x
4/1/2015			Yes		x
4/2/2015			Yes		x
4/3/2015			Yes		x
4/6/2015				Yes	x
4/7/2015				Yes	x
4/8/2015				Yes	x
4/9/2015			Yes	Yes	x
4/10/2015	Yes		Yes	Yes	x
4/11/2015	Yes				x
4/12/2015	Yes				x
4/13/2015	Yes				x
4/14/2015	Yes				x
4/15/2015	Yes				x
4/16/2015	Yes				x
4/20/2015		Yes			x
4/21/2015		Yes			x
4/22/2015		Yes			x
4/23/2015		Yes			x
4/27/2015			Yes		x
4/28/2015			Yes		x
4/29/2015			Yes		x
5/21/2015	Yes				x
5/22/2015	Yes				x
5/26/2015	Yes				x
5/27/2015	Yes				x
5/29/2015			Yes		x

FIGURES

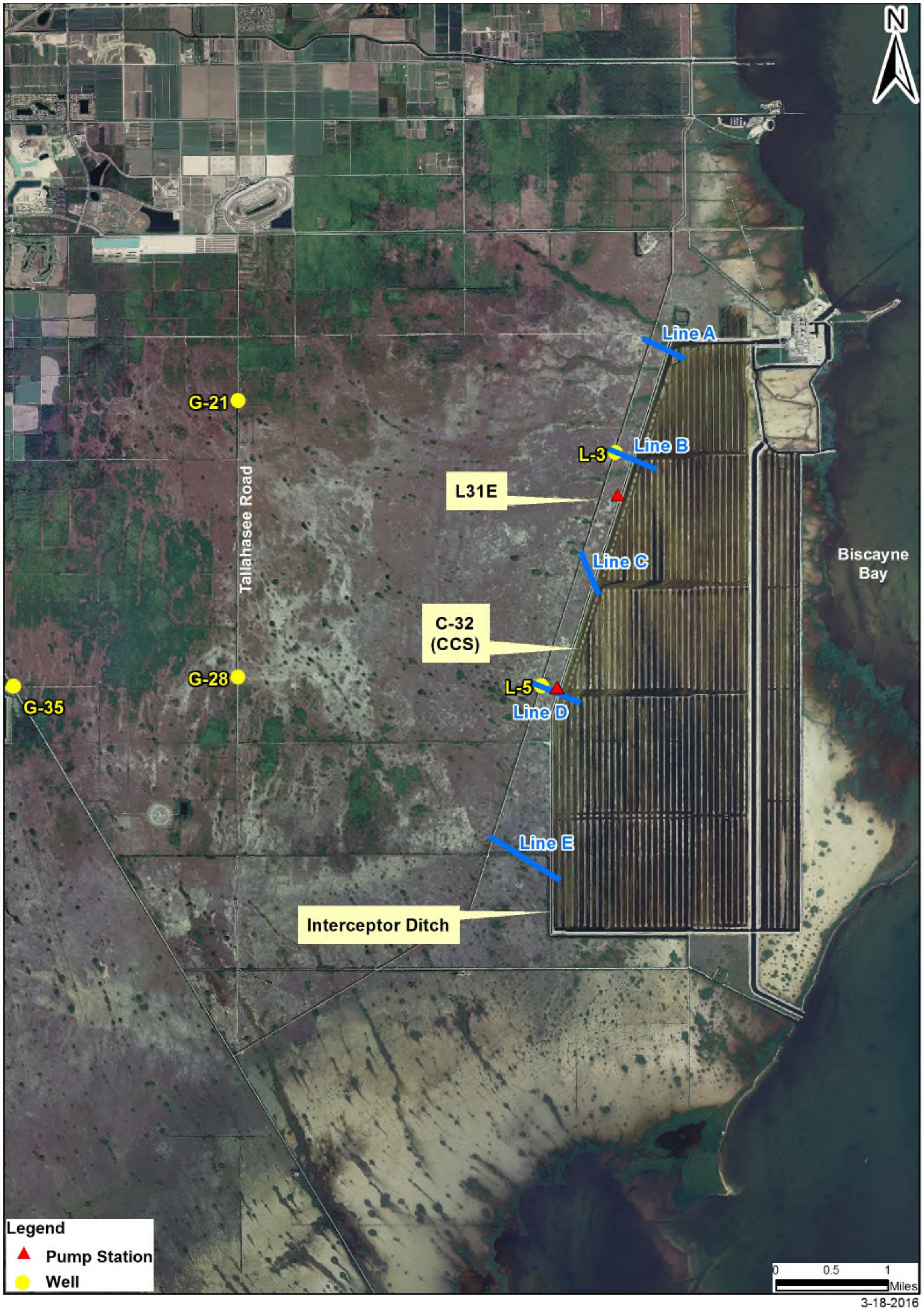


Figure 6.1-1. Historic ID Monitoring Wells and Transects.

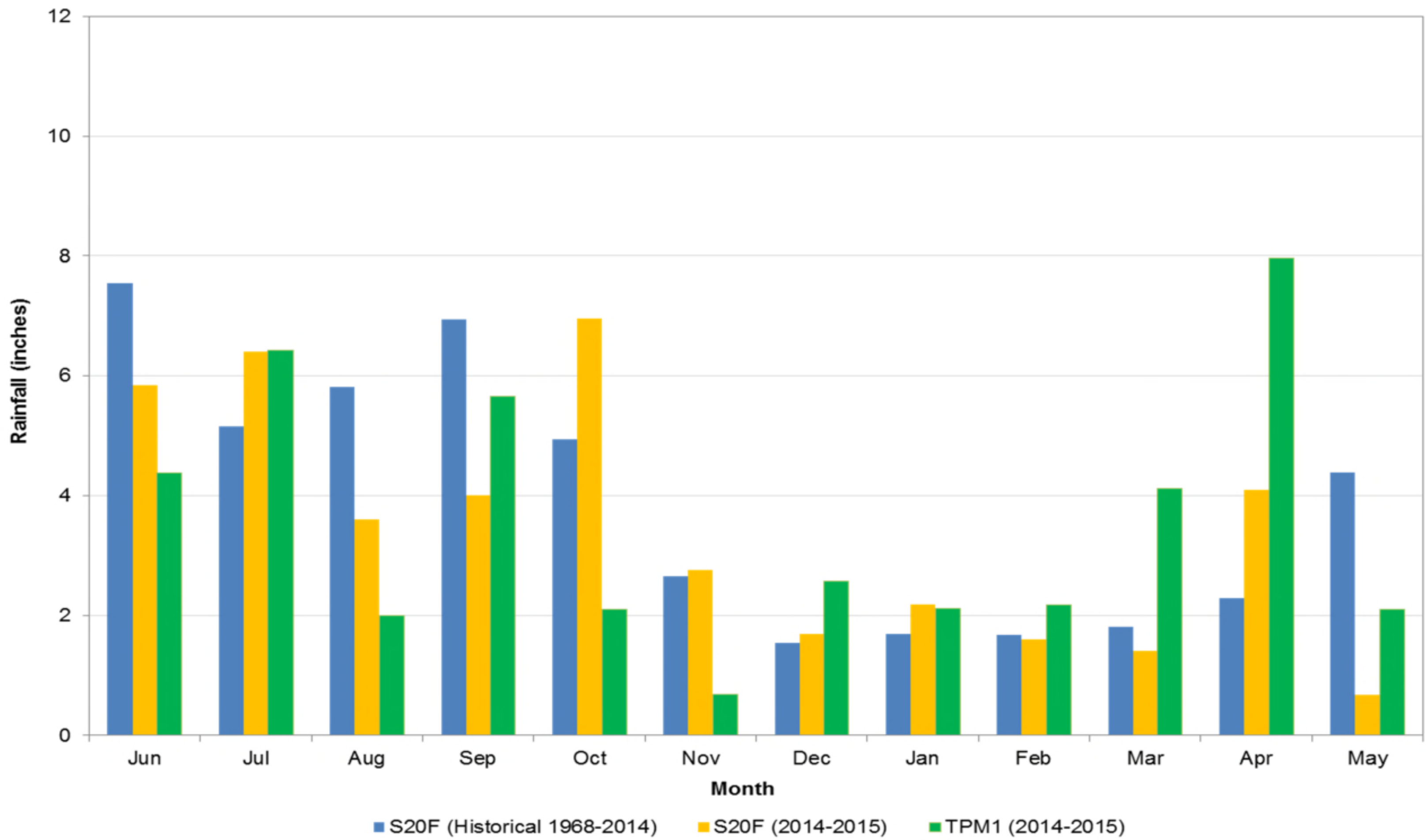


Figure 6.3-1. Comparison of ID Monitoring Period (June 2014 - May 2015) to Average Monthly Historic Rainfall.

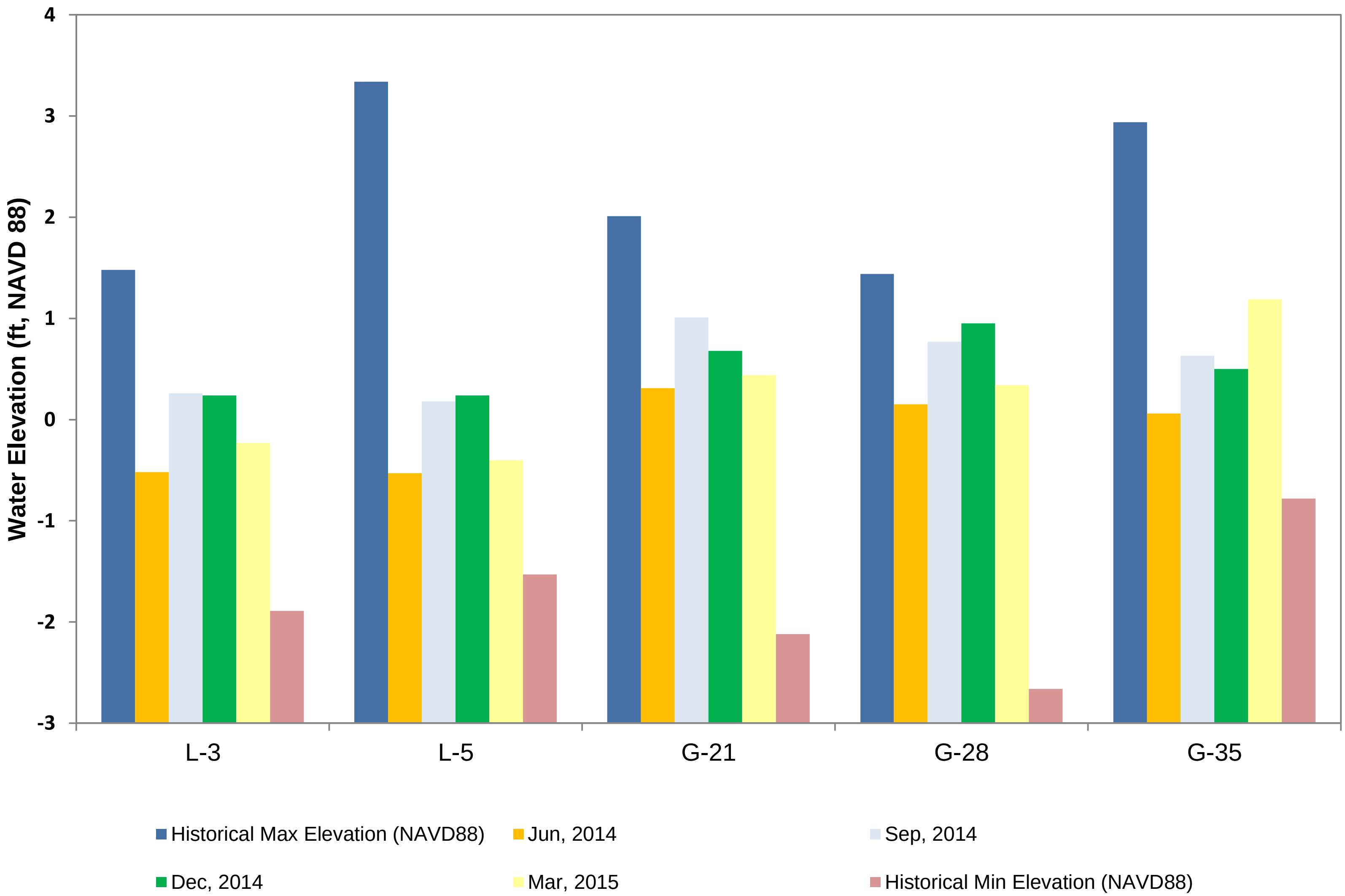


Figure 6.4-1. Historical Min and Max, and Quarterly L-3, L-5, G-21, G-28, and G-35 Groundwater Levels.

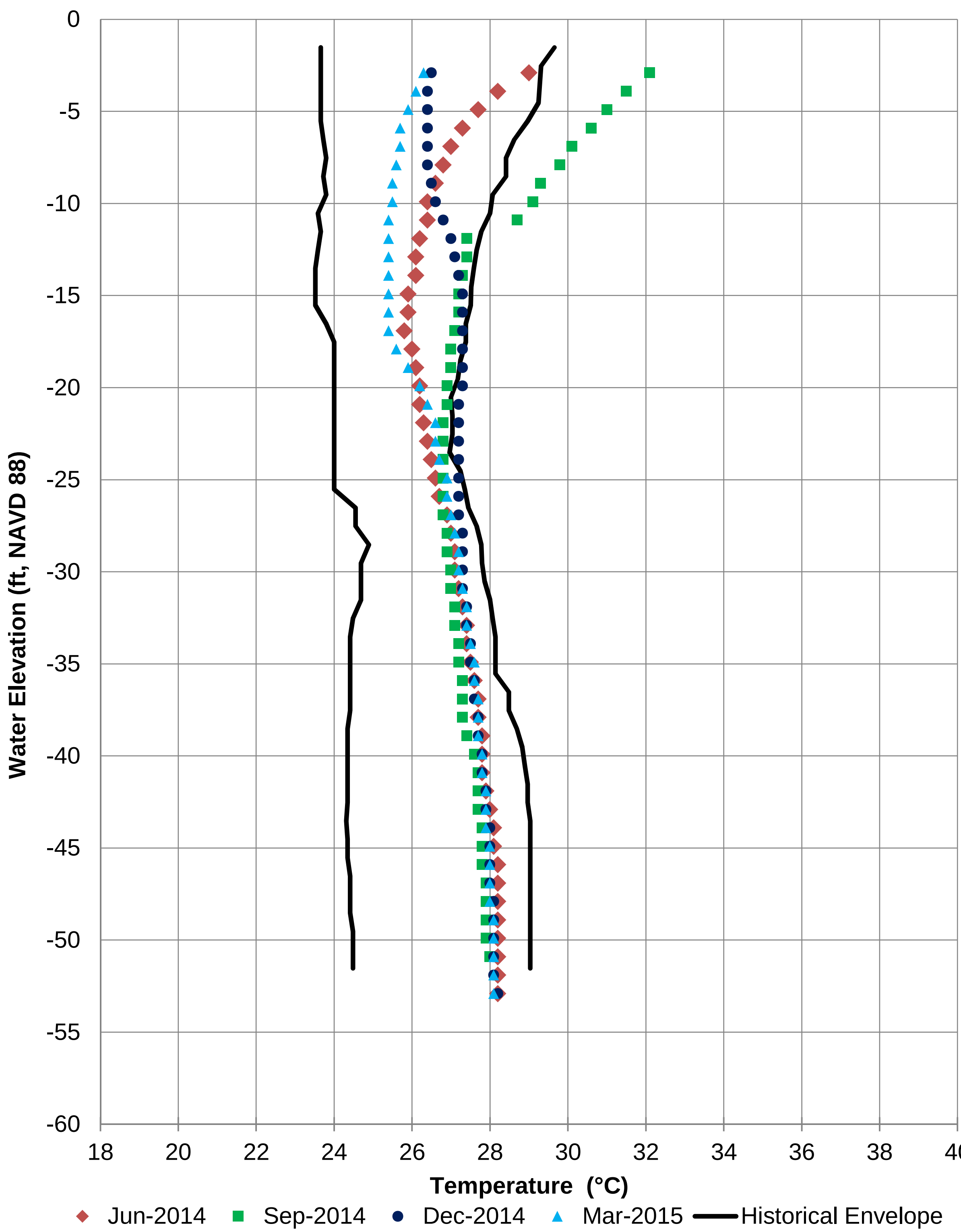


Figure 6.4-2. L-3 Vertical Temperature Profile June 2014 through March 2015.

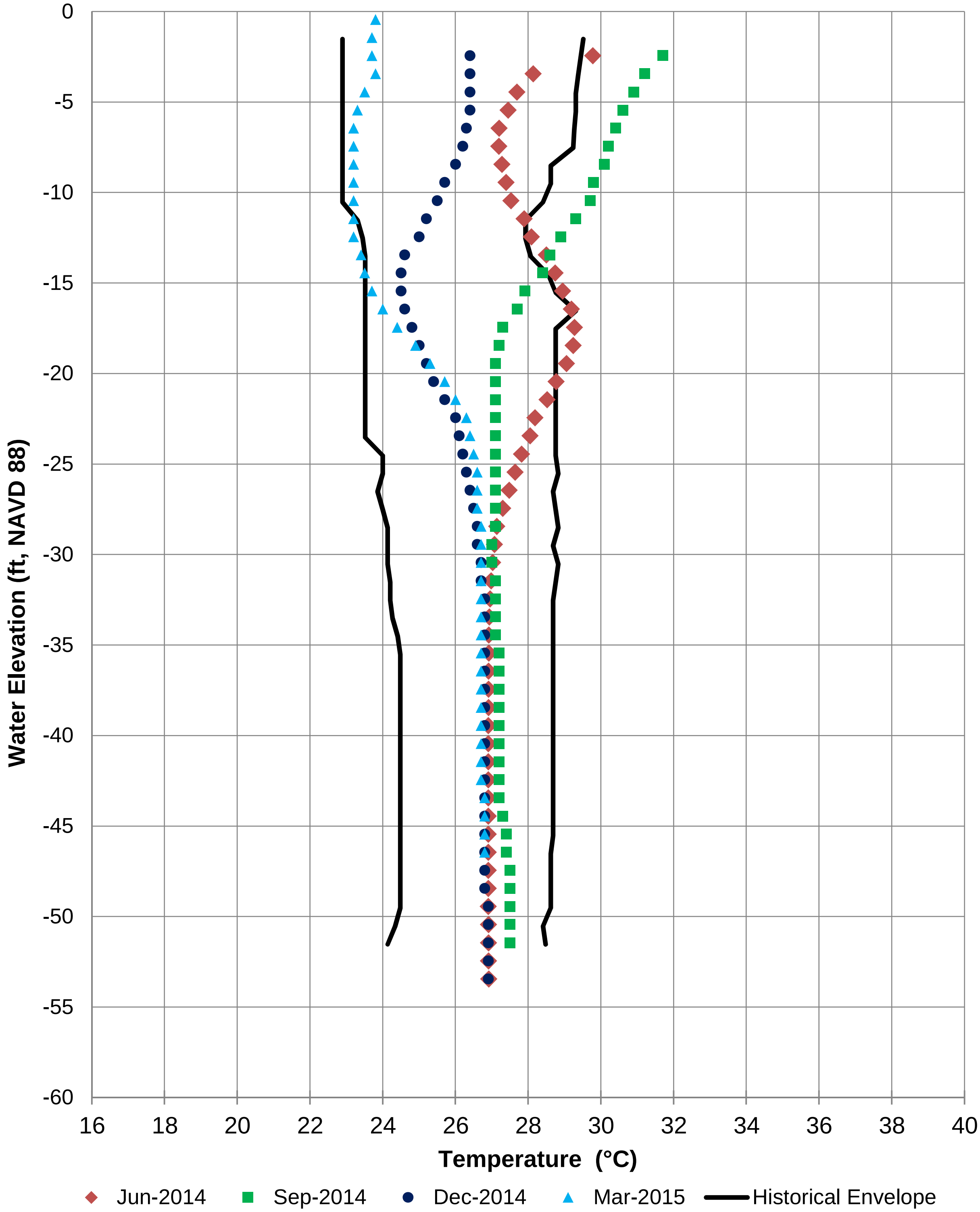


Figure 6.4-3. L-5 Vertical Temperature Profile June 2014 through March 2015.

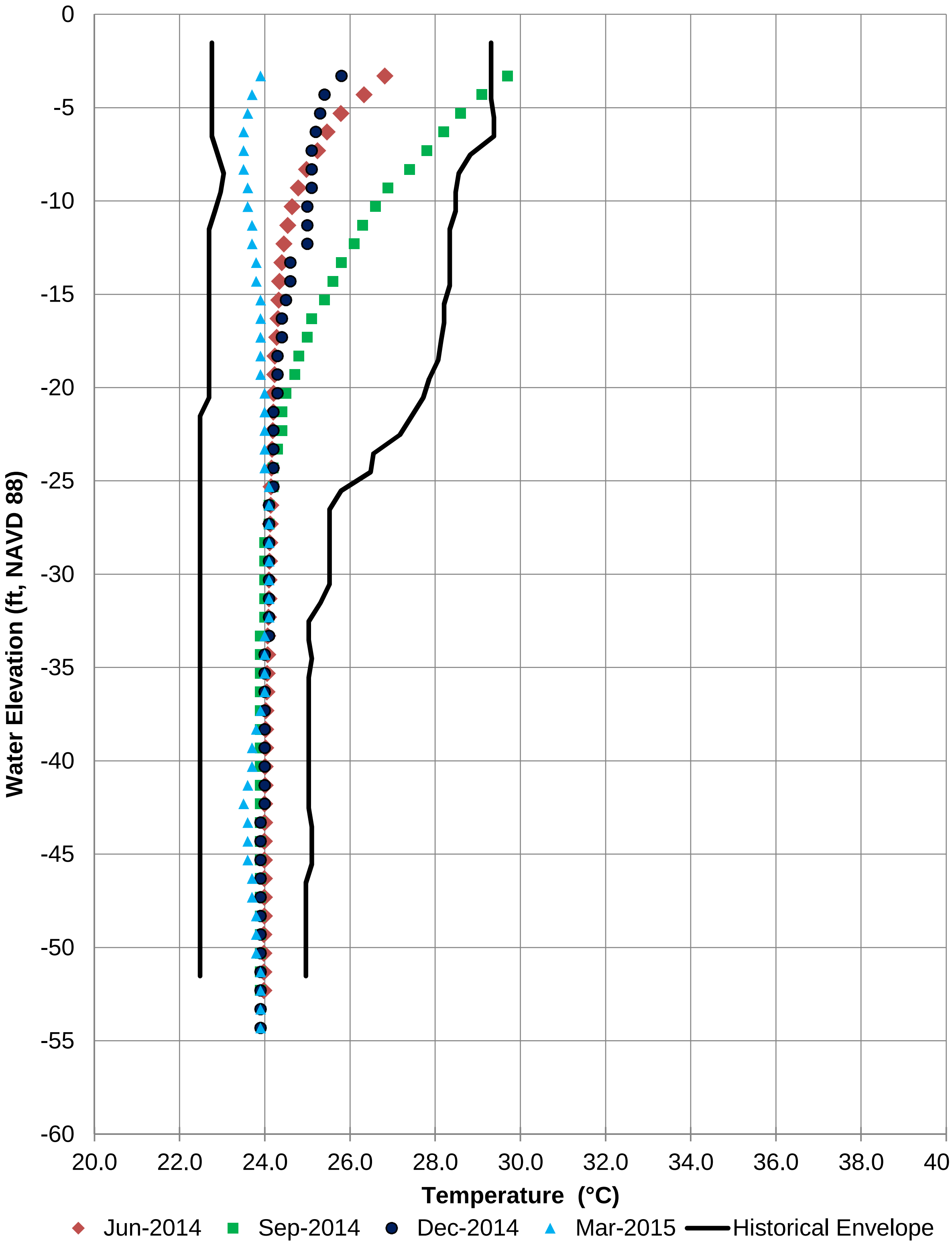


Figure 6.4-4. G-21 Vertical Temperature Profile June 2014 through March 2015.

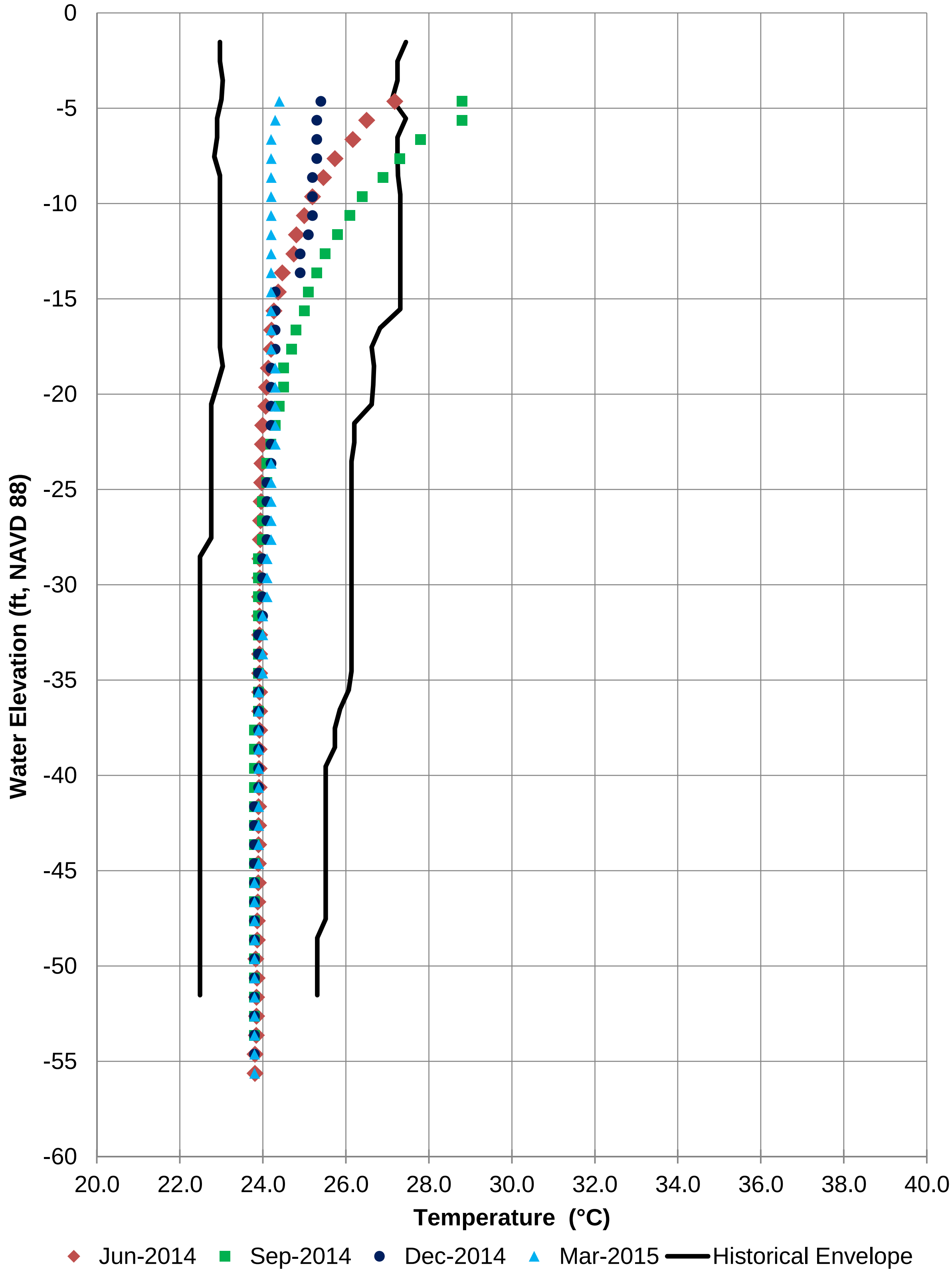


Figure 6.4-5. G-28 Vertical Temperature Profile June 2014 through March 2015.

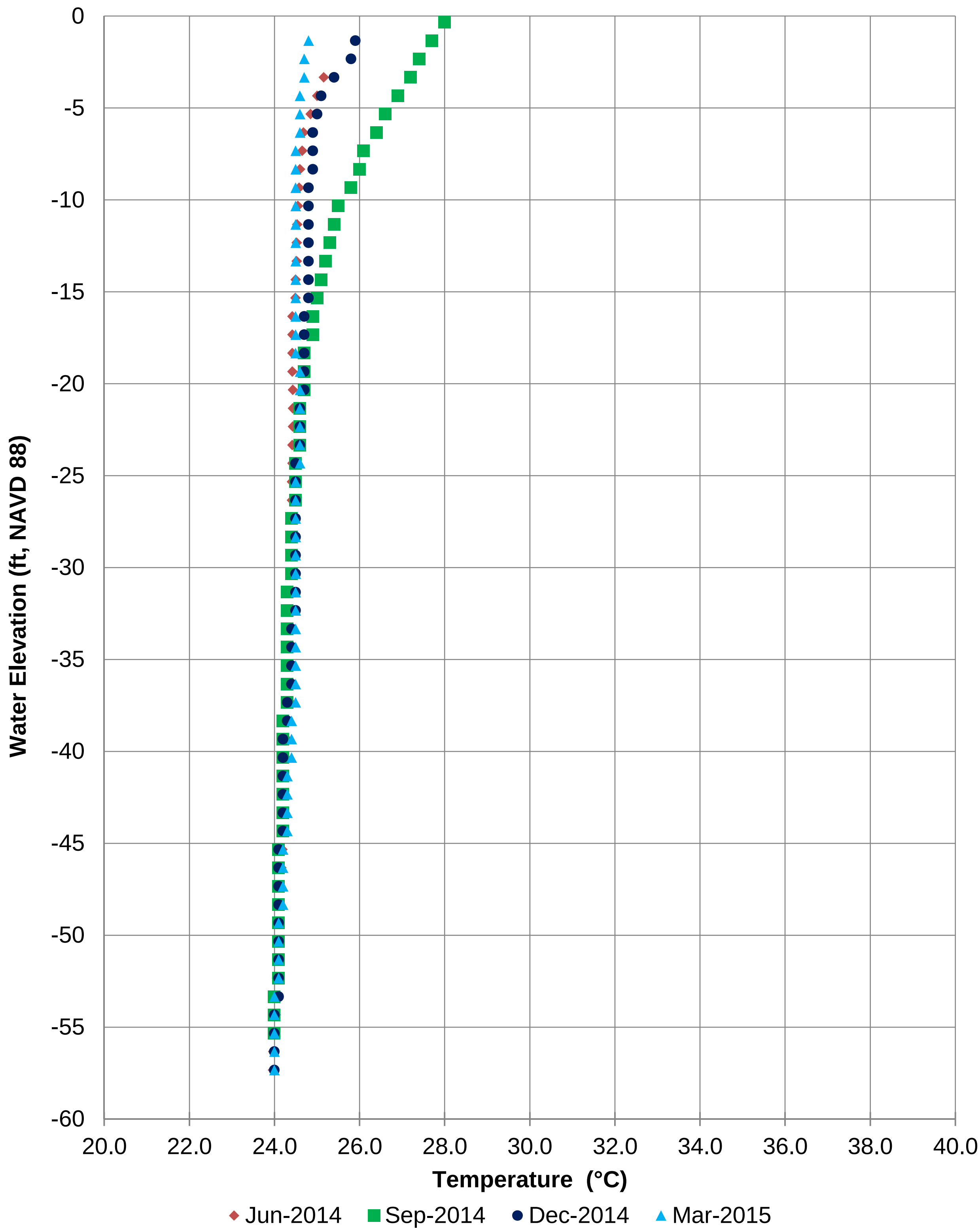


Figure 6.4-6. G-35 Vertical Temperature Profile June 2014 through March 2015.

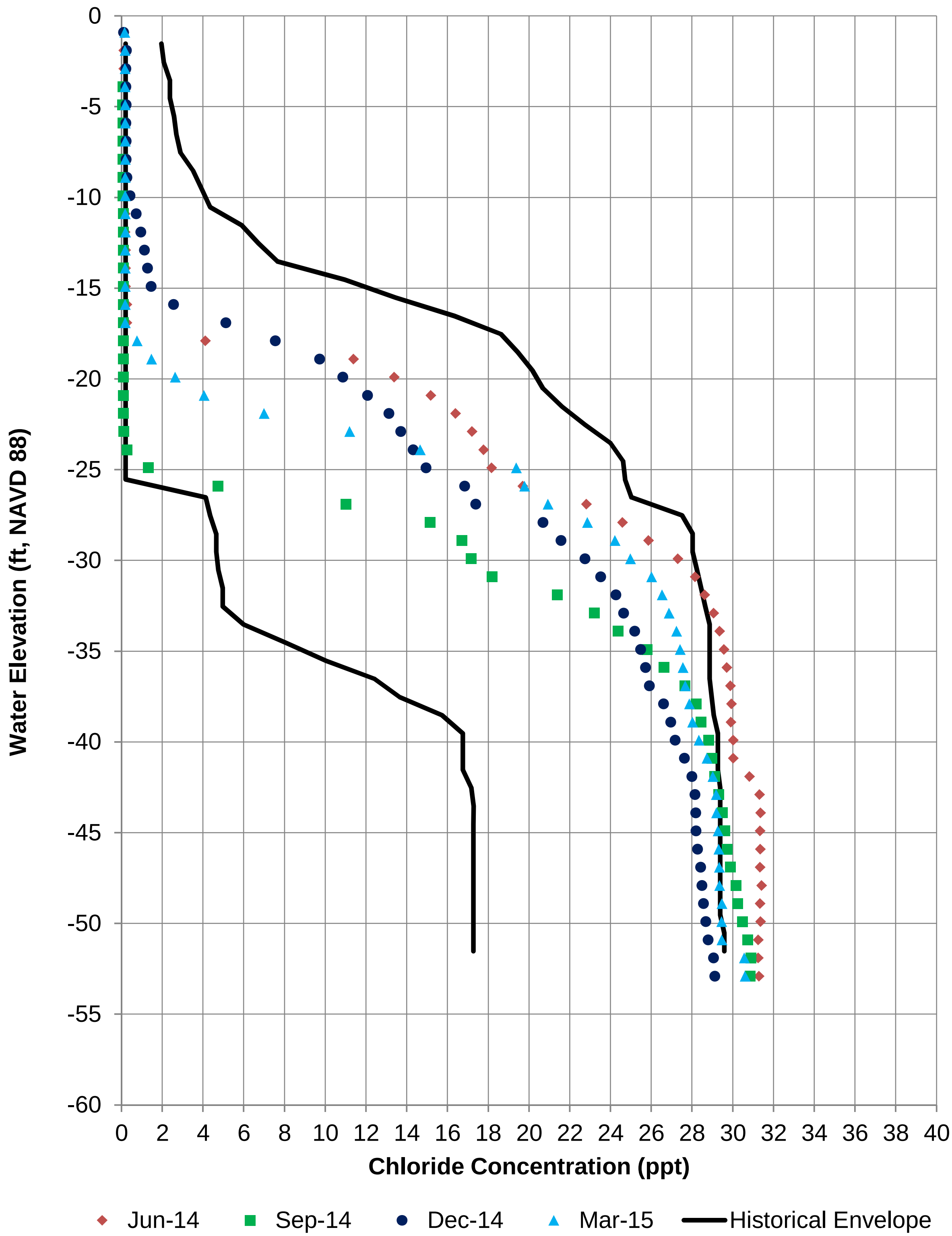


Figure 6.4-7. L-3 Vertical Chloride Profile June 2014 through March 2015.

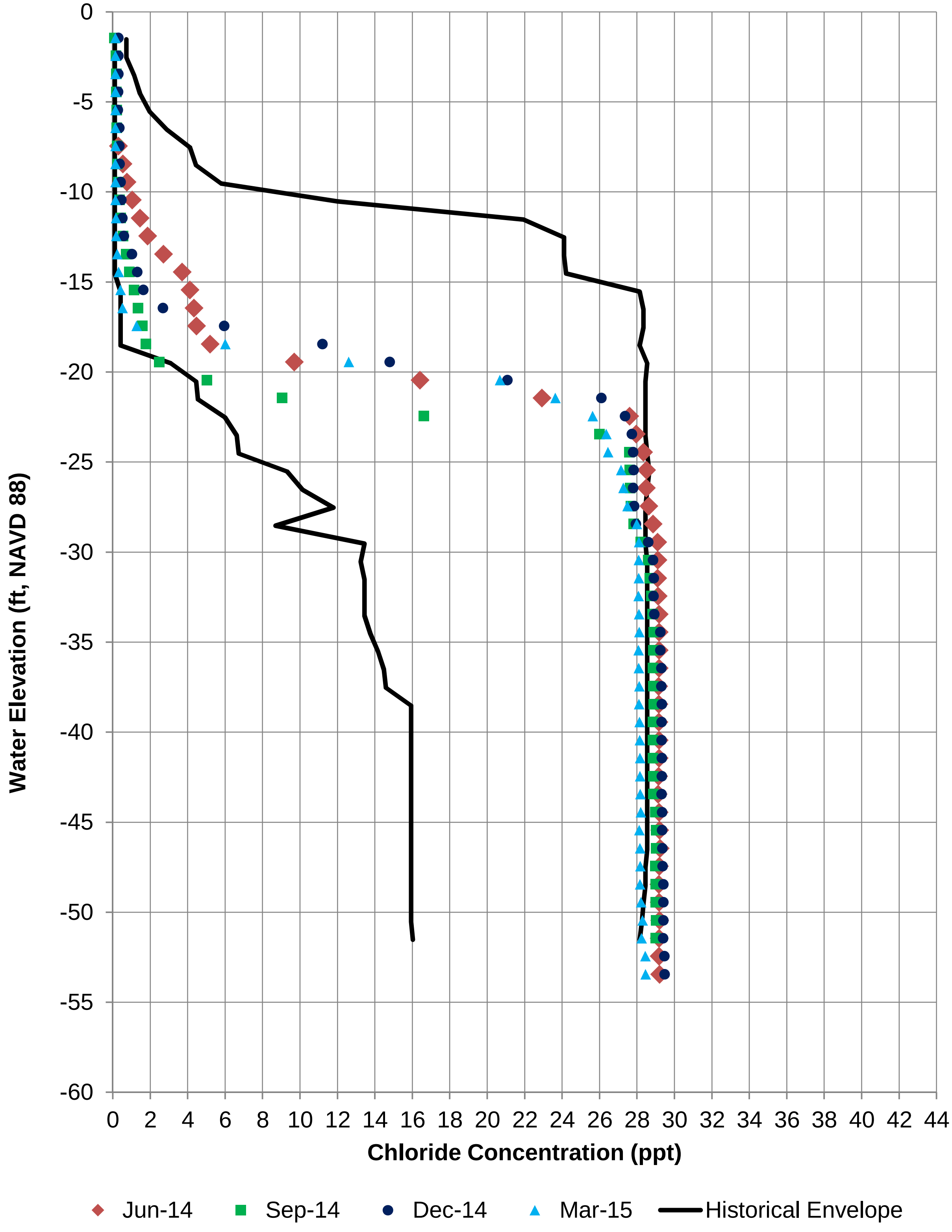


Figure 6.4-8. L-5 Vertical Chloride Profile June 2014 through March 2015.

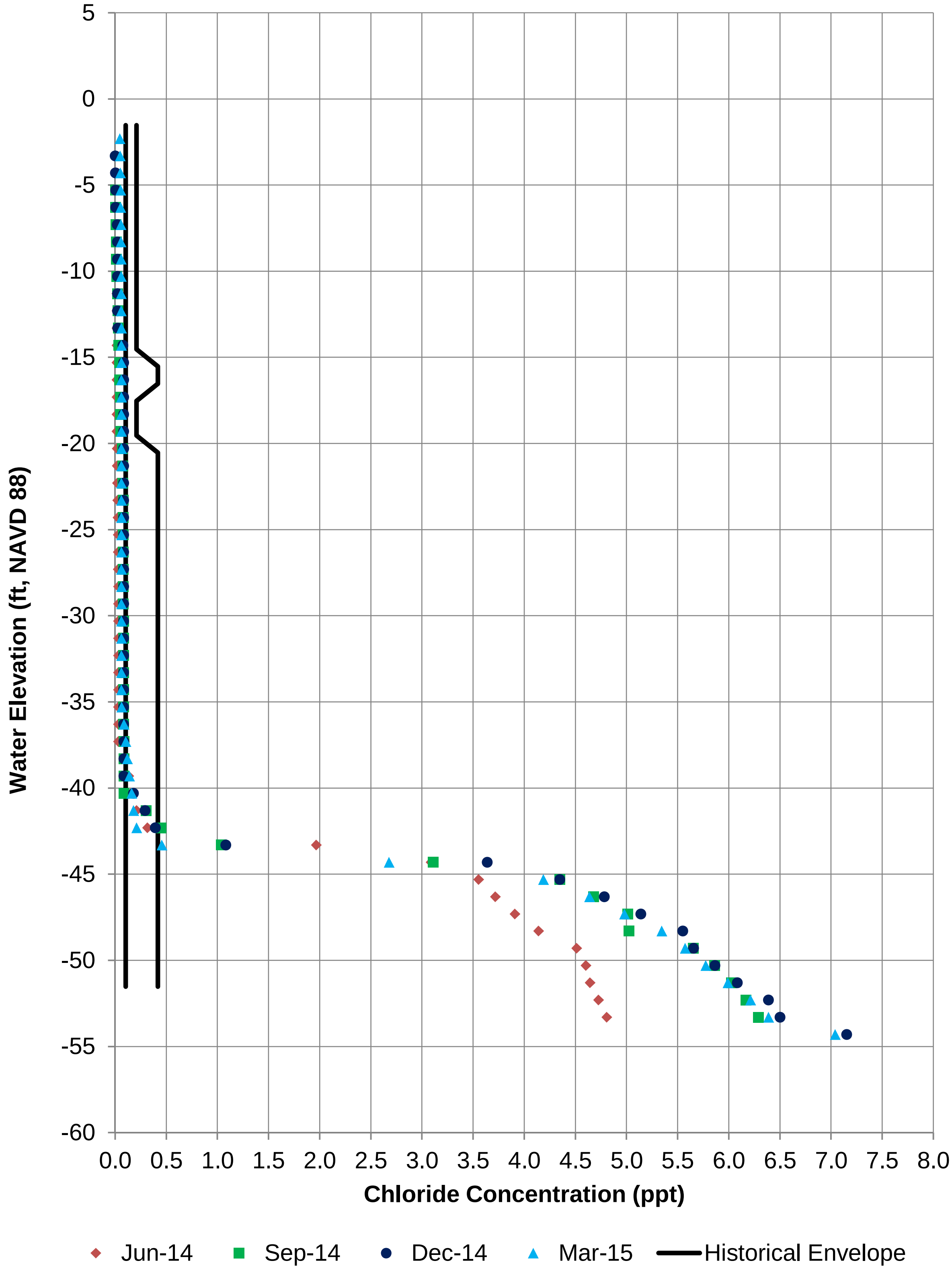


Figure 6.4-9. G-21 Vertical Chloride Profile June 2014 through March 2015.

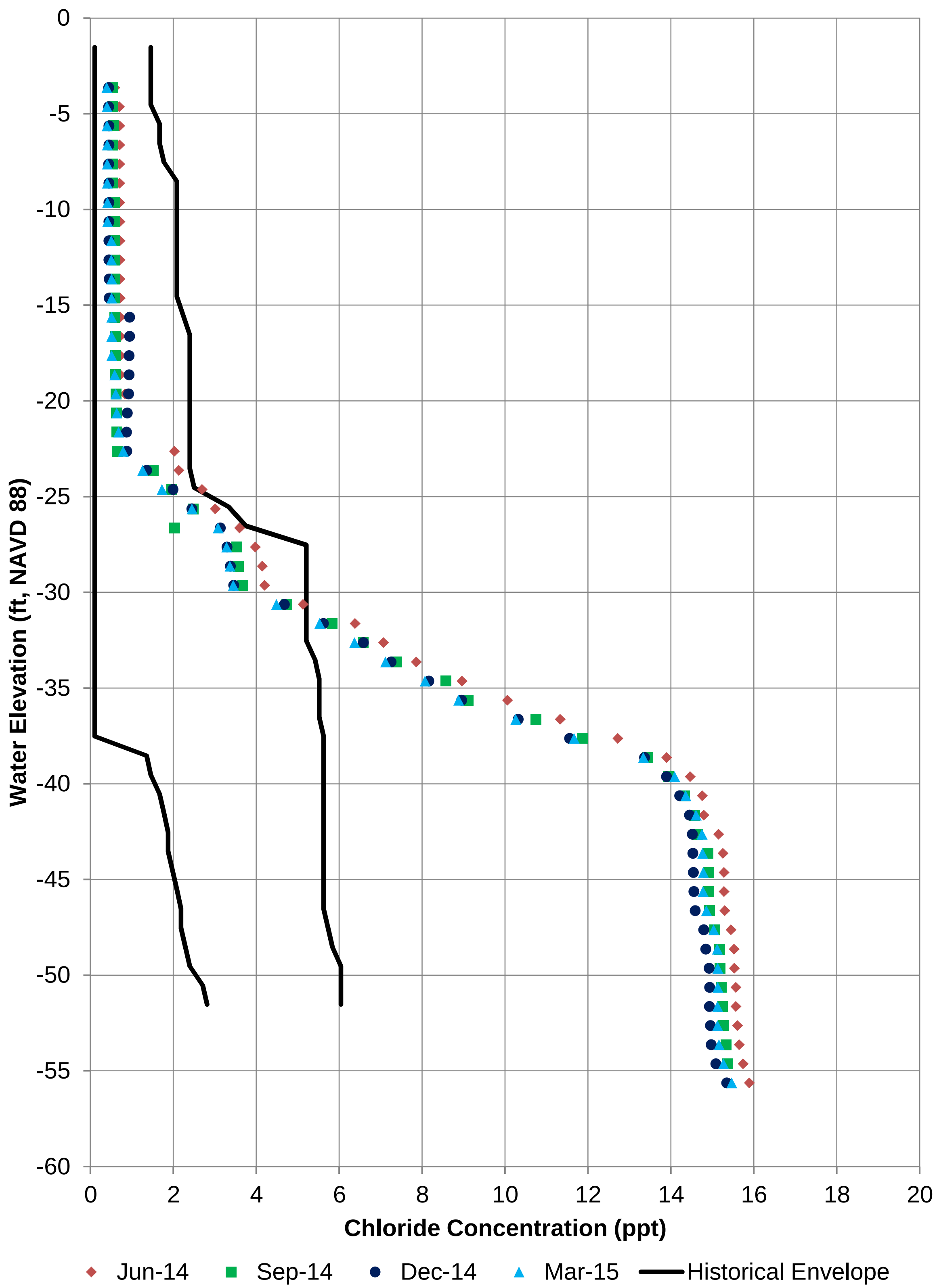


Figure 6.4-10. G-28 Vertical Chloride Profile June 2014 through March 2015.

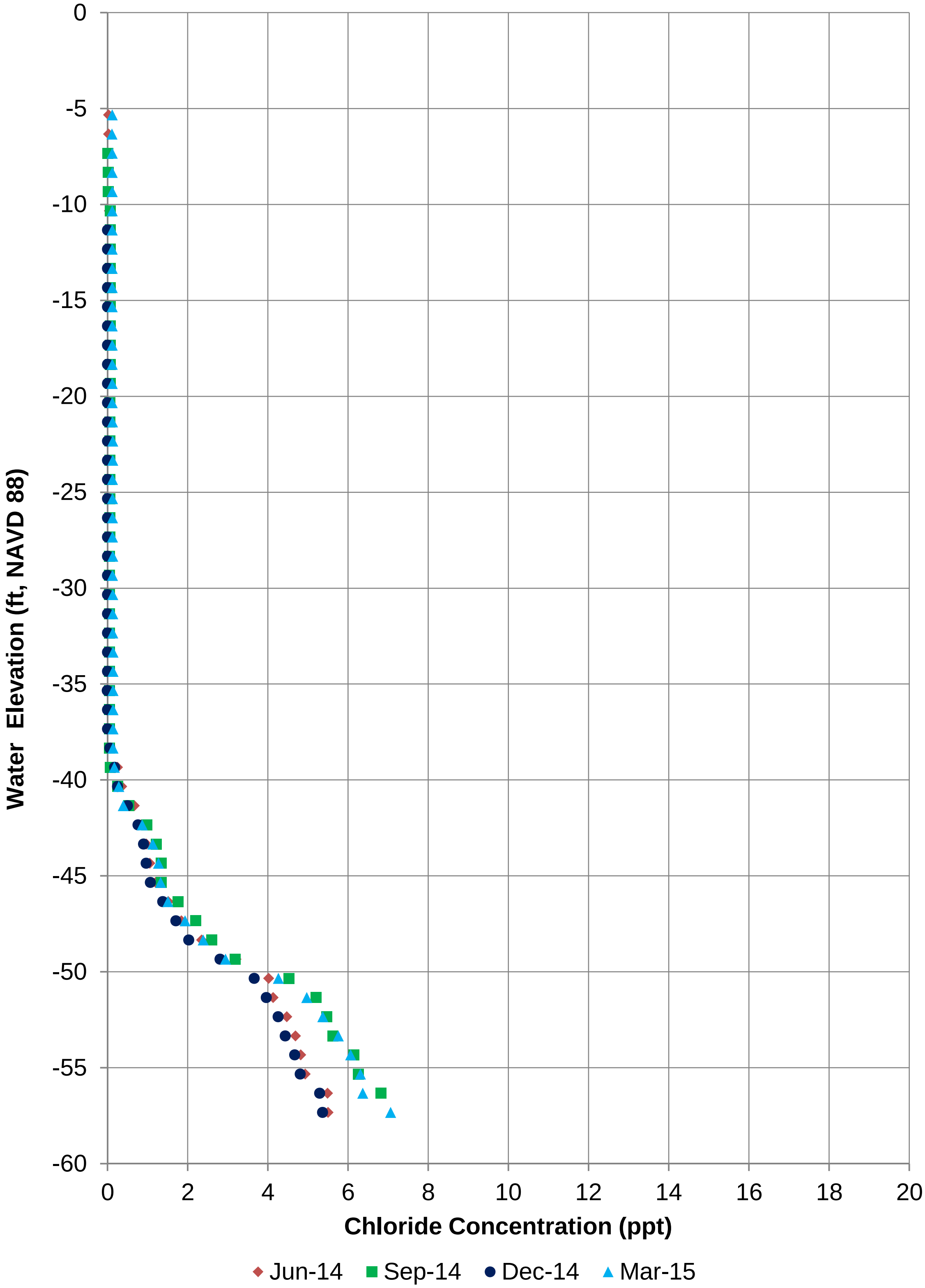


Figure 6.4-11. G-35 Vertical Chloride Profile June 2014 through March 2015.

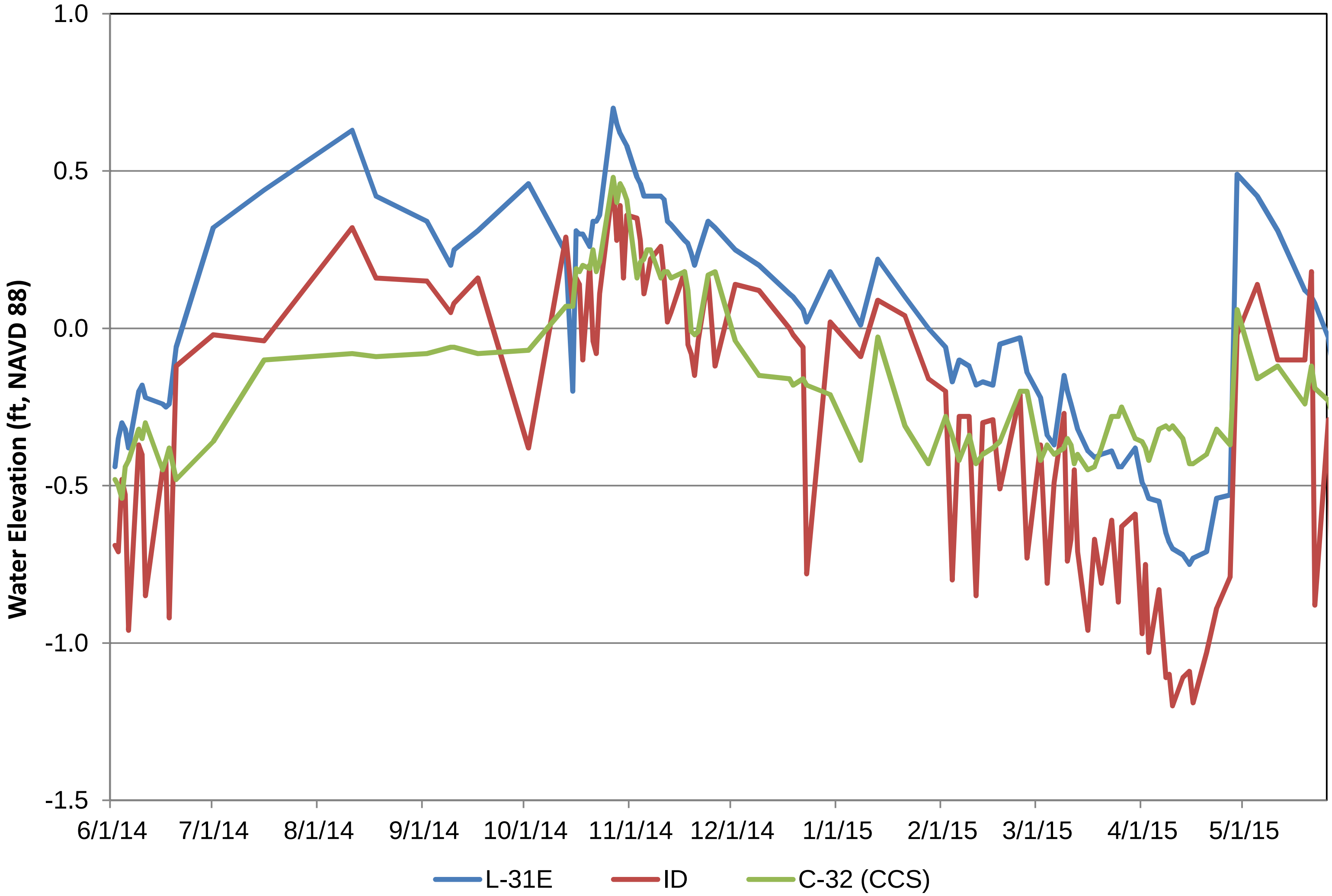


Figure 6.4-12. Transect A Water Levels (June 2014 through May 2015).

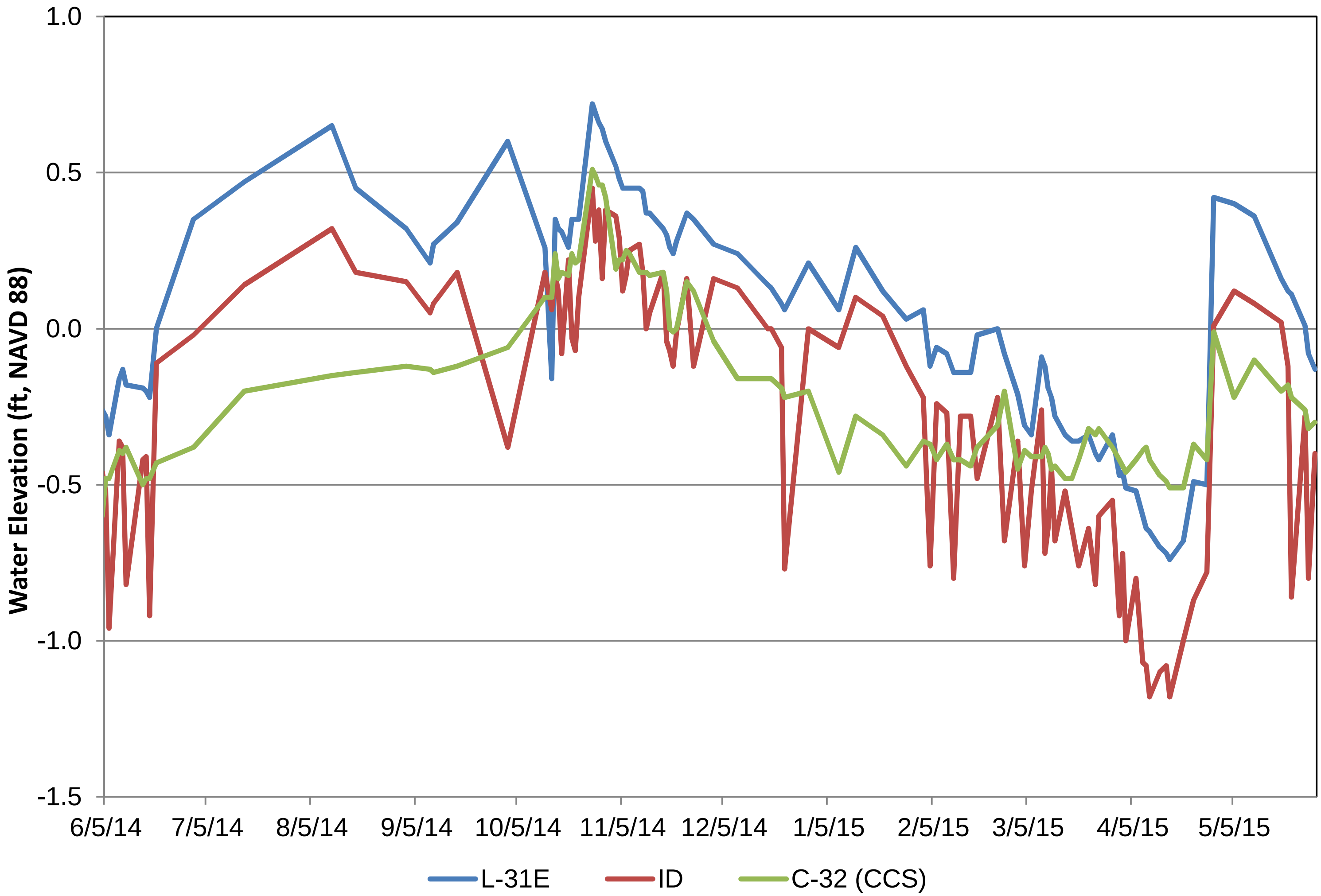


Figure 6.4-13. Transect B Water Levels (June 2014 through May 2015).

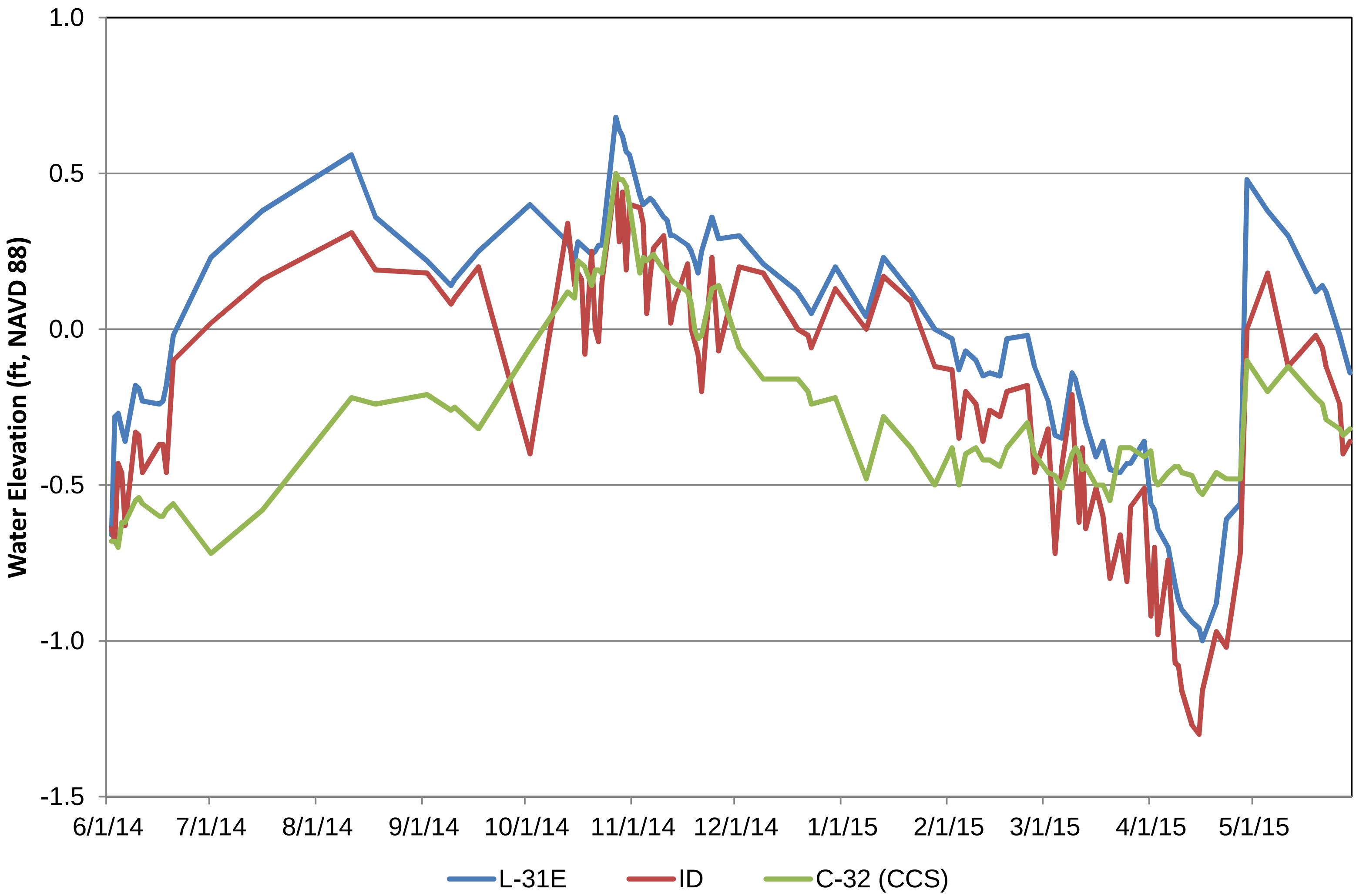


Figure 6.4-14. Transect C Water Levels (June 2014 through May 2015).

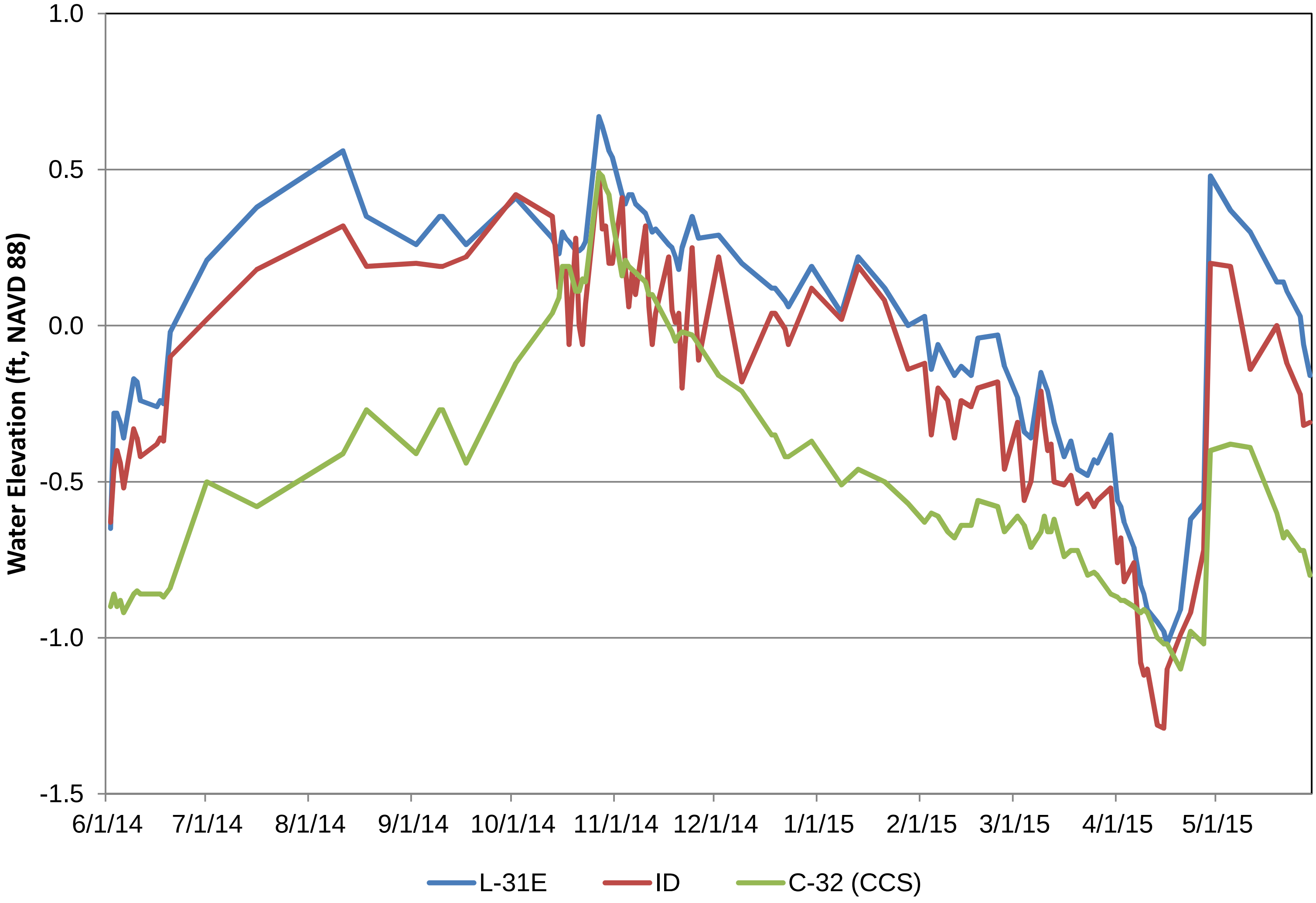


Figure 6.4-15. Transect D Water Levels (June 2014 through May 2015).

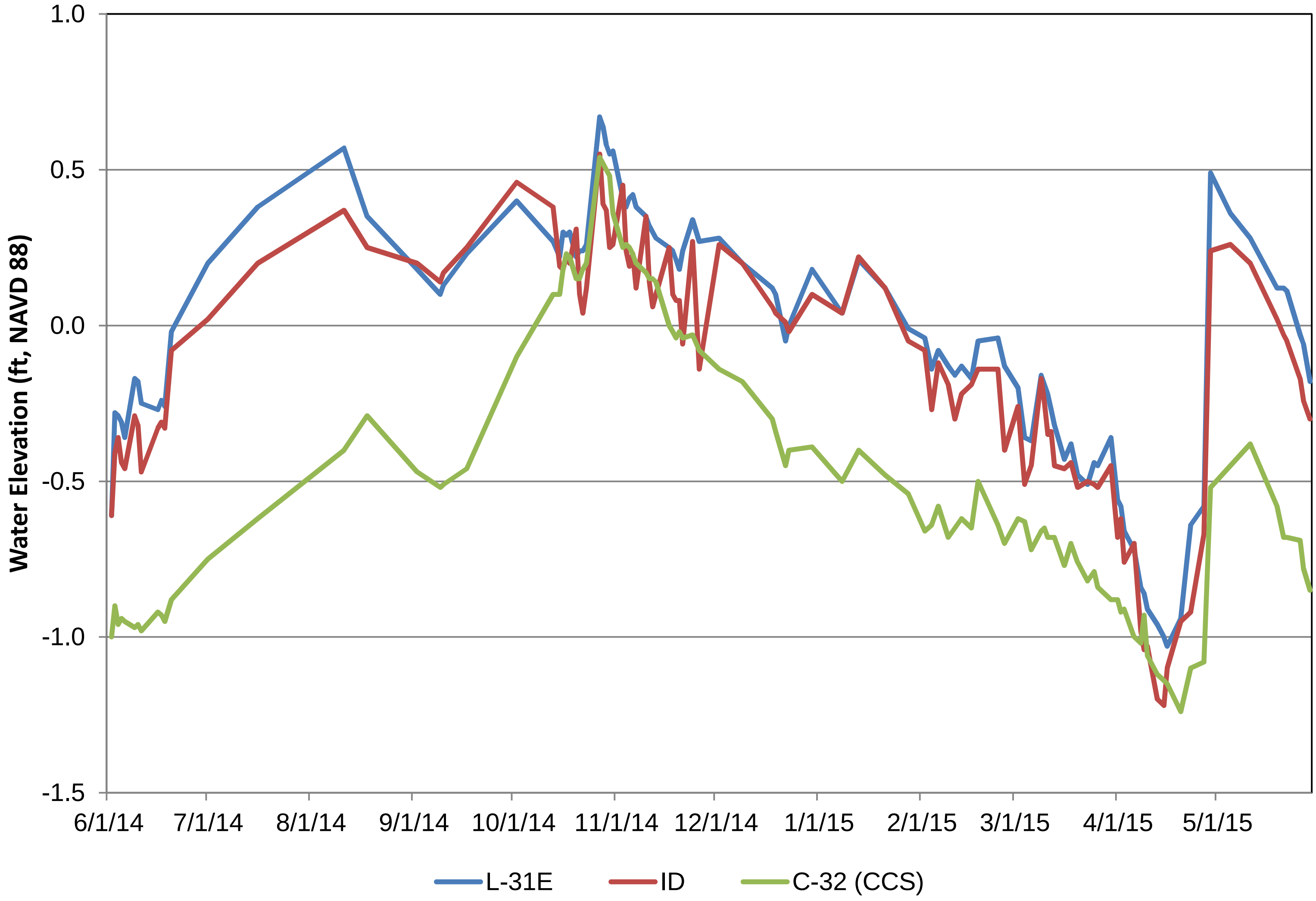


Figure 6.4-16. Transect E Water Levels (June 2014 through May 2015).

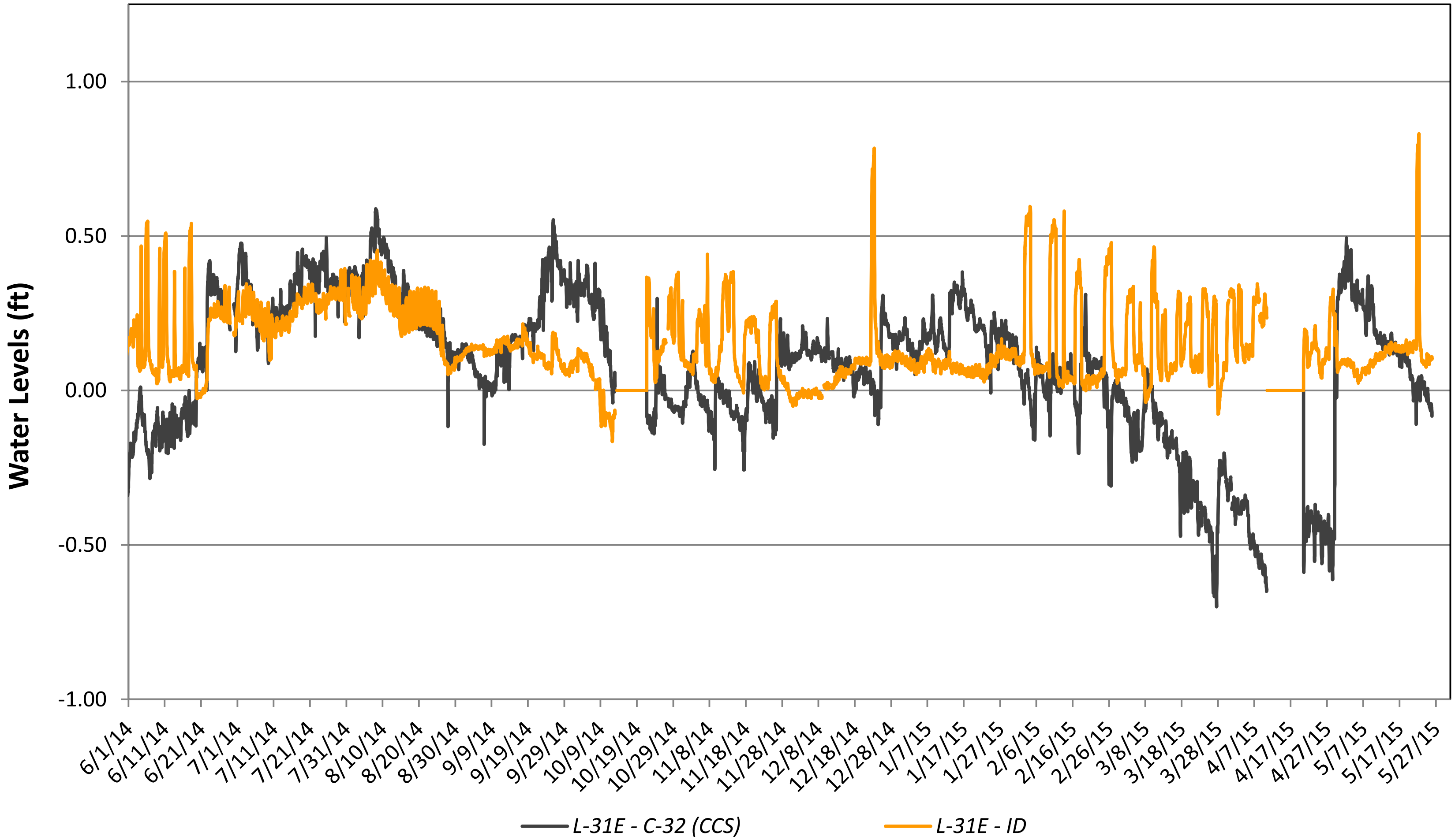


Figure 6.4-17. Differences in Freshwater Head Equivalent/Density Corrected Water Levels between L-31E and C-32 (CCS), and L-31E and ID (based on actual water depths and bottom densities) – Transect A.

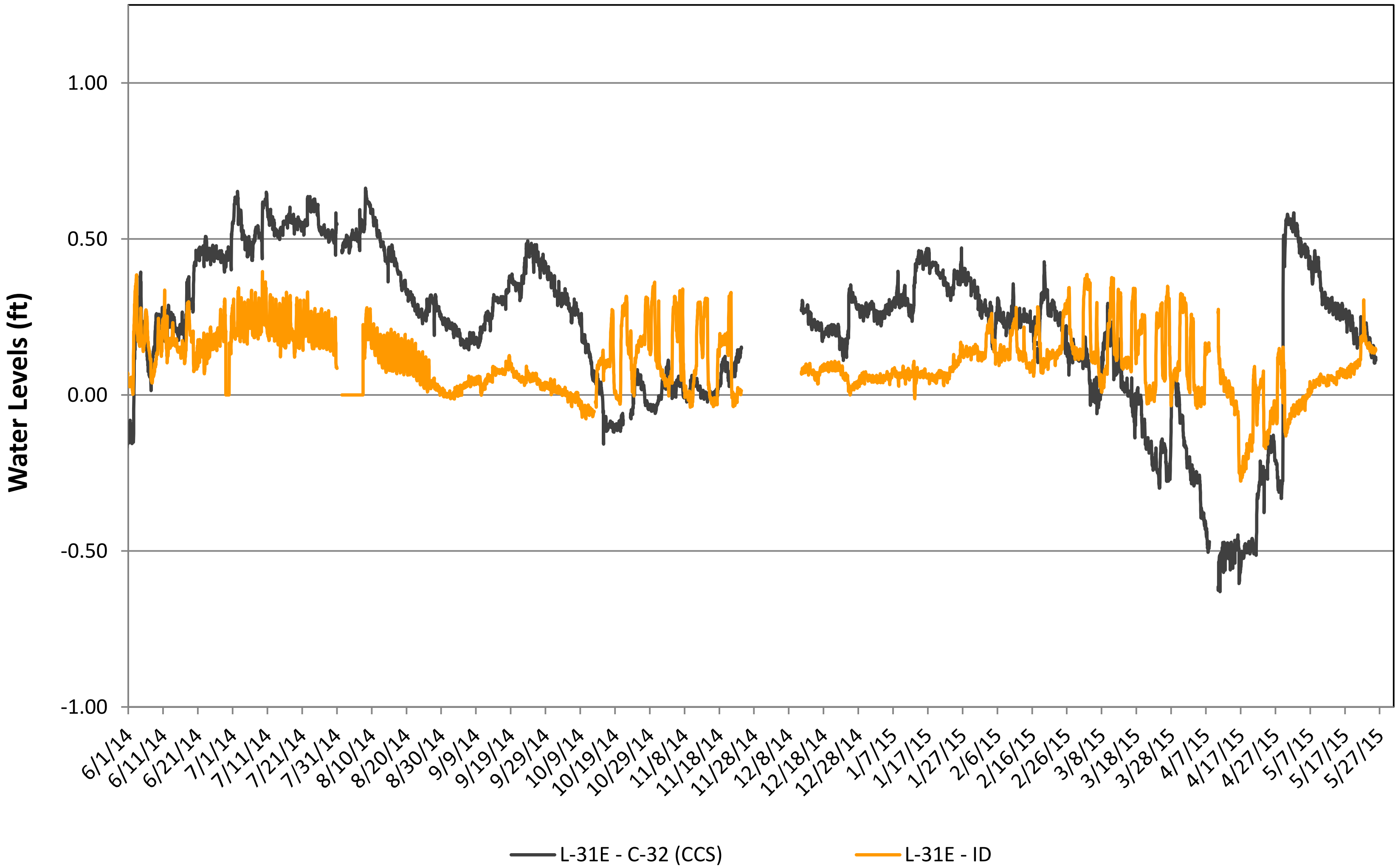


Figure 6.4-18. Differences in Freshwater Head Equivalent/Density Corrected Water Levels between L-31E and C-32, and L-31E and ID (based on actual water depths and bottom densities) – Transect C.

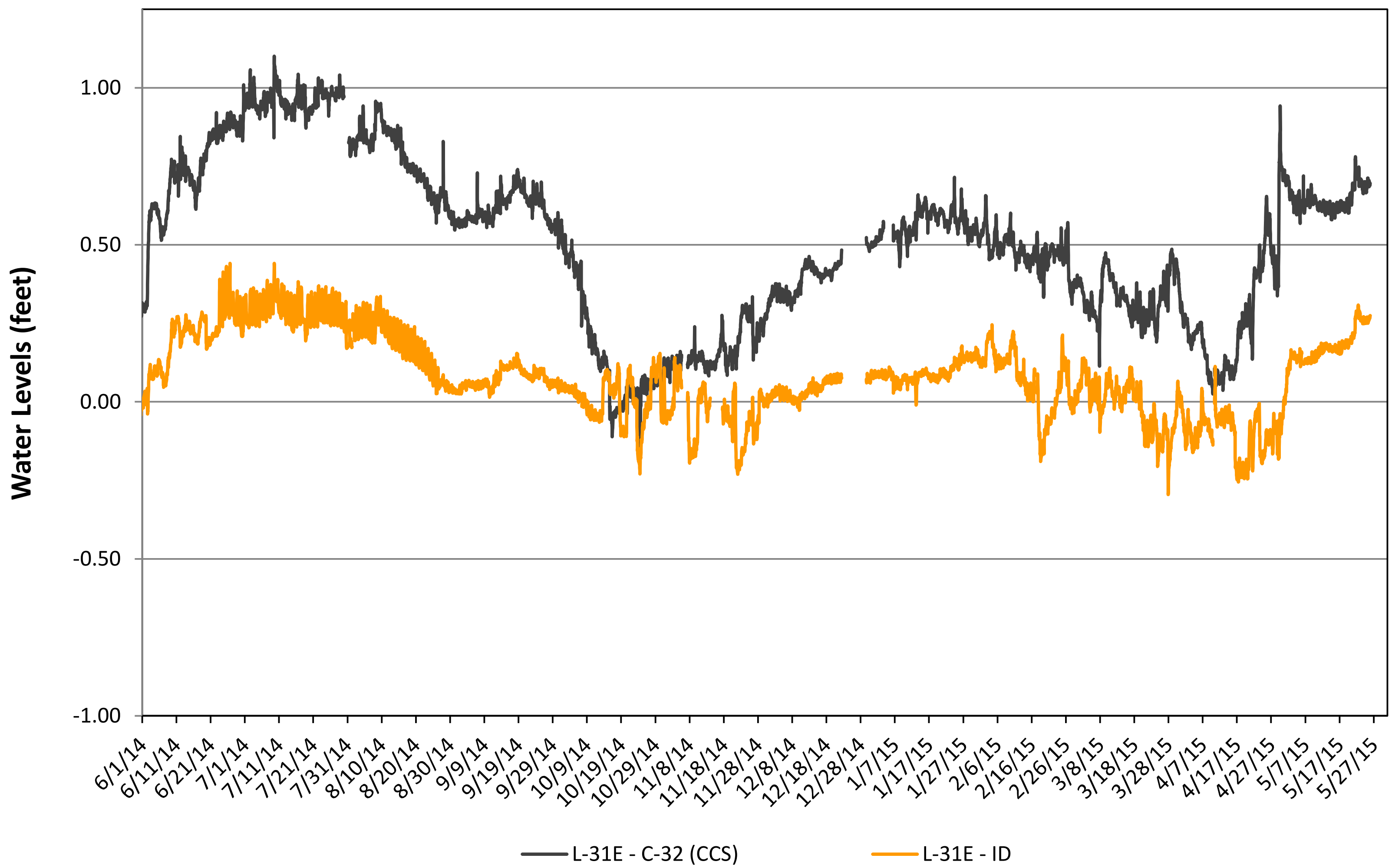


Figure 6.4-19. Differences in Freshwater Head Equivalent/Density Corrected Water Levels between L-31E and C-32 (CCS), and L-31E and ID (based on actual water depths and bottom densities) – Transect E.

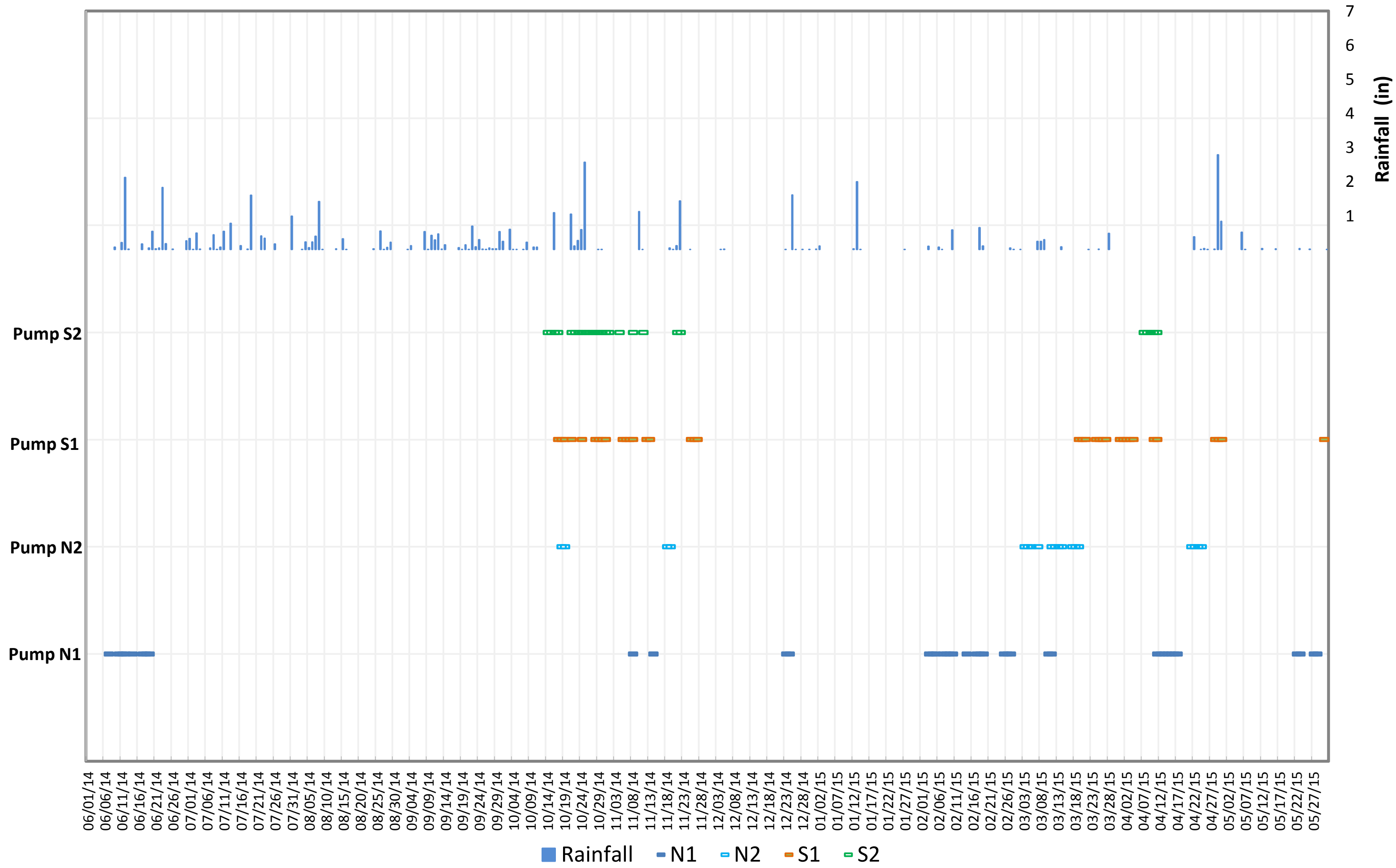


Figure 6.4-20. Interceptor Ditch Pump Operation and Rainfall.

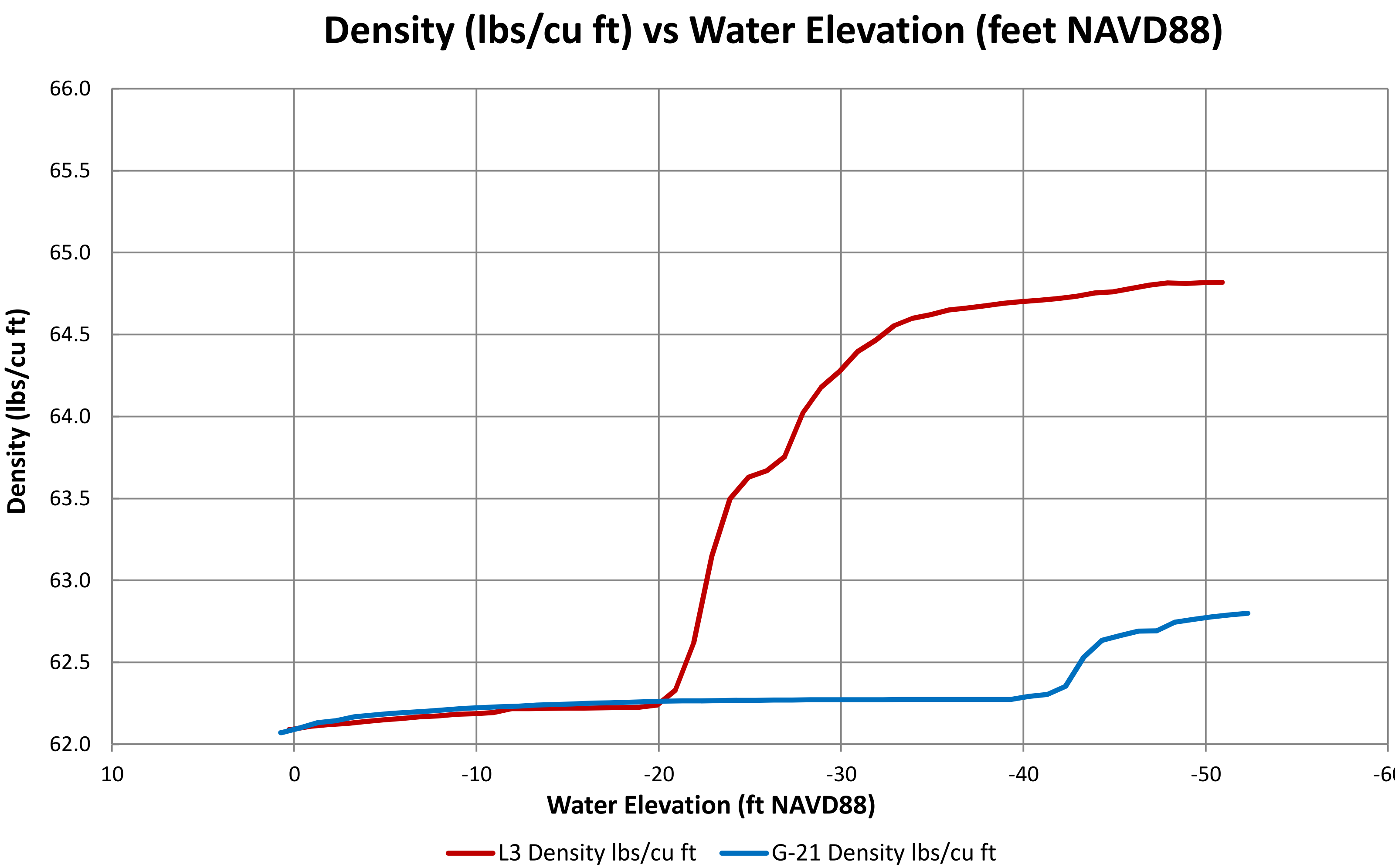


Figure 6.4-21. Density vs. Elevation Wells L-3 and G-21 during September 2014 Sampling Event.

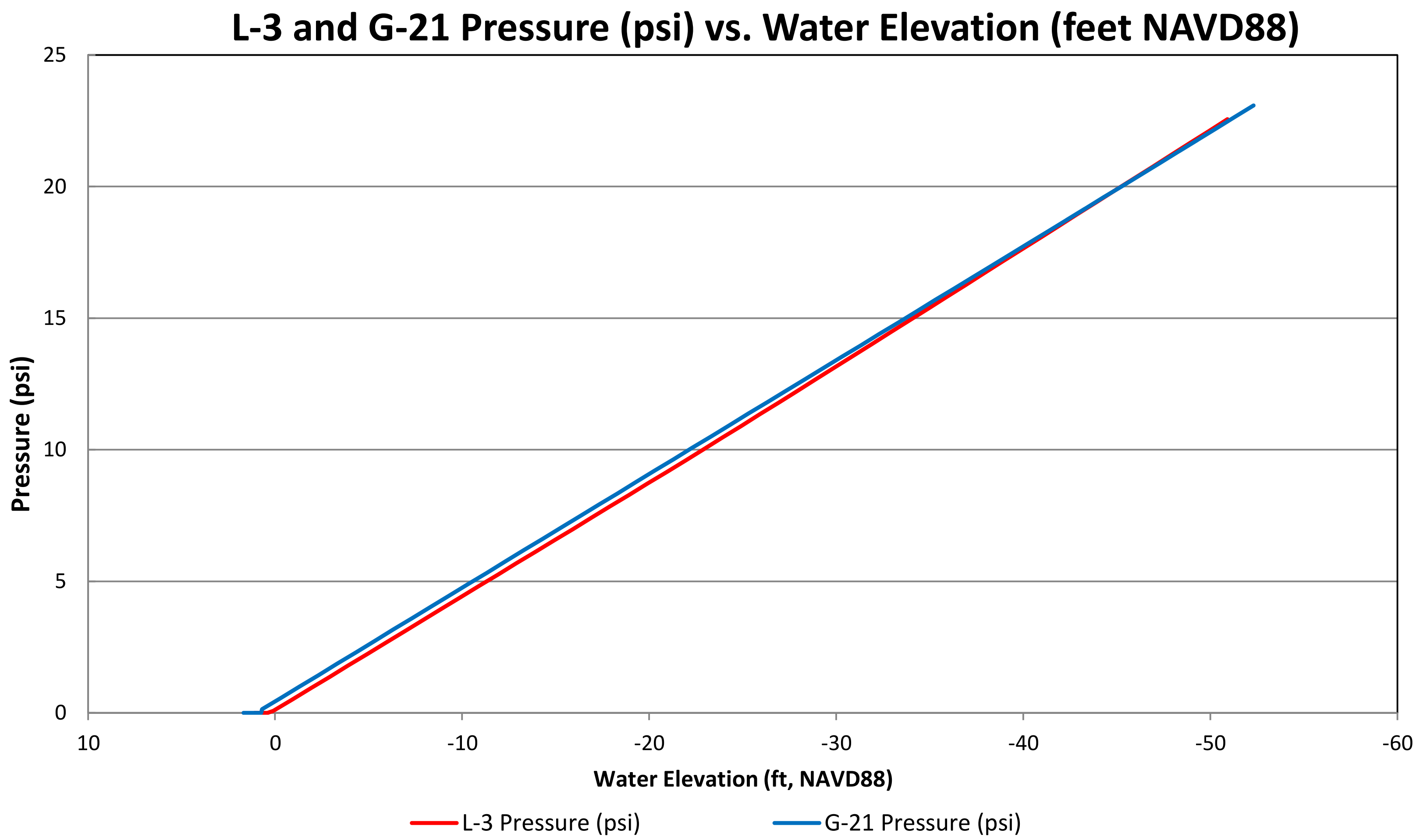


Figure 6.4-22. Pressure vs. Elevation Wells L-3 and G-21 during September 2014 Sampling Event.

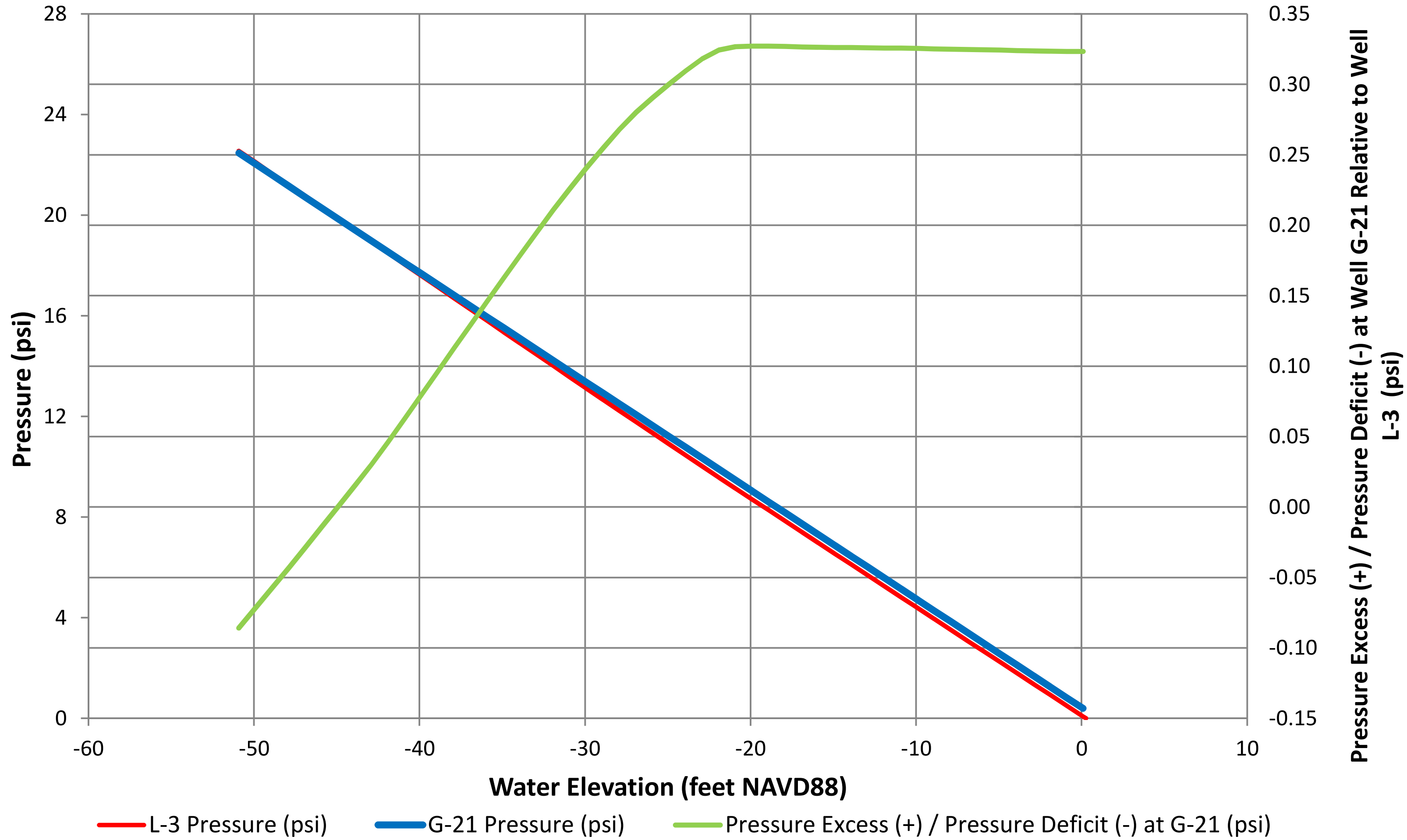


Figure 6.4-23. Pressure Gradient Difference between Well L-3 and Well G-21 during September 2014 Sampling Event.

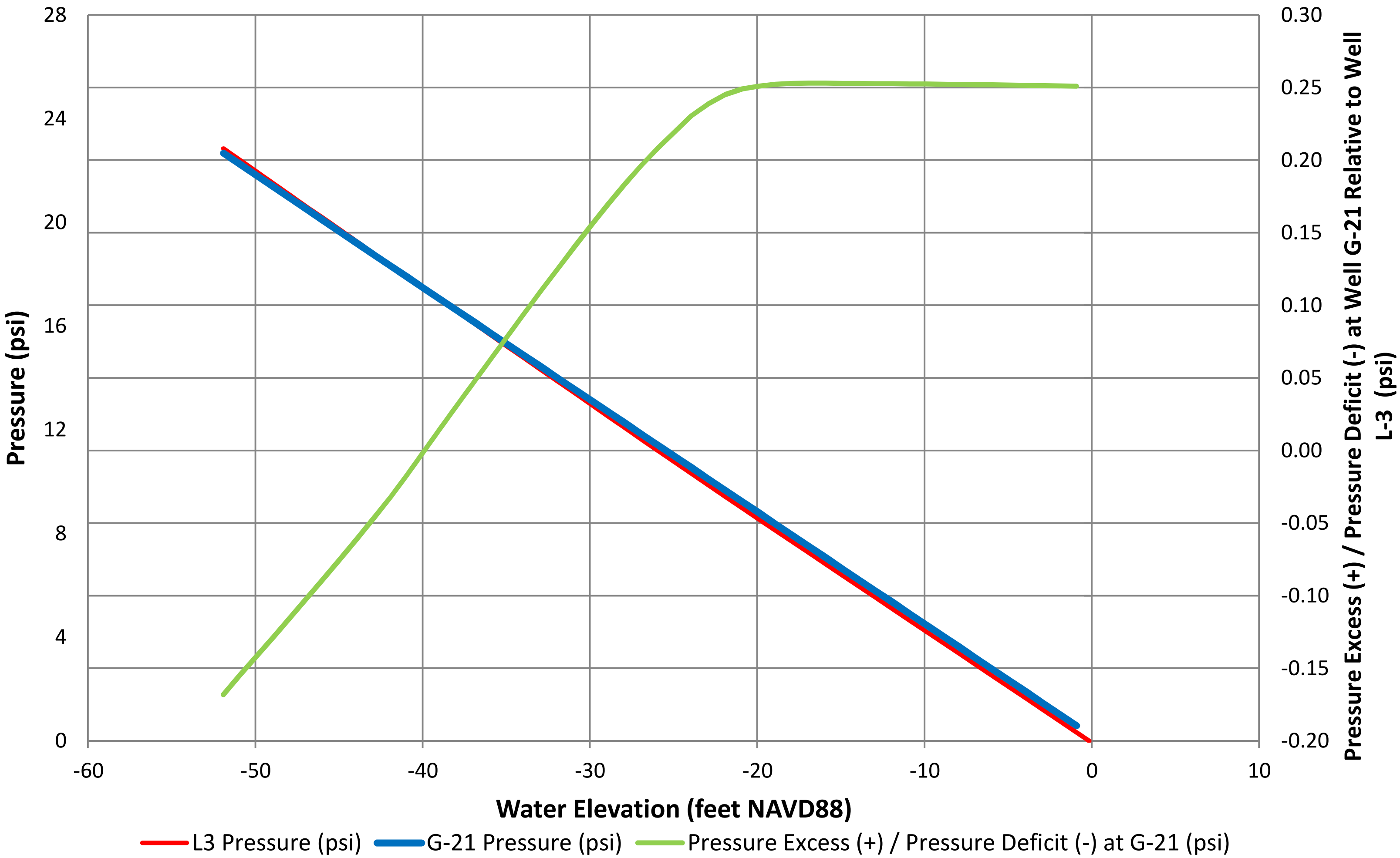


Figure 6.4-24. Pressure Gradient Difference between Well L-3 and Well G-21 during March 2015 Sampling Event.

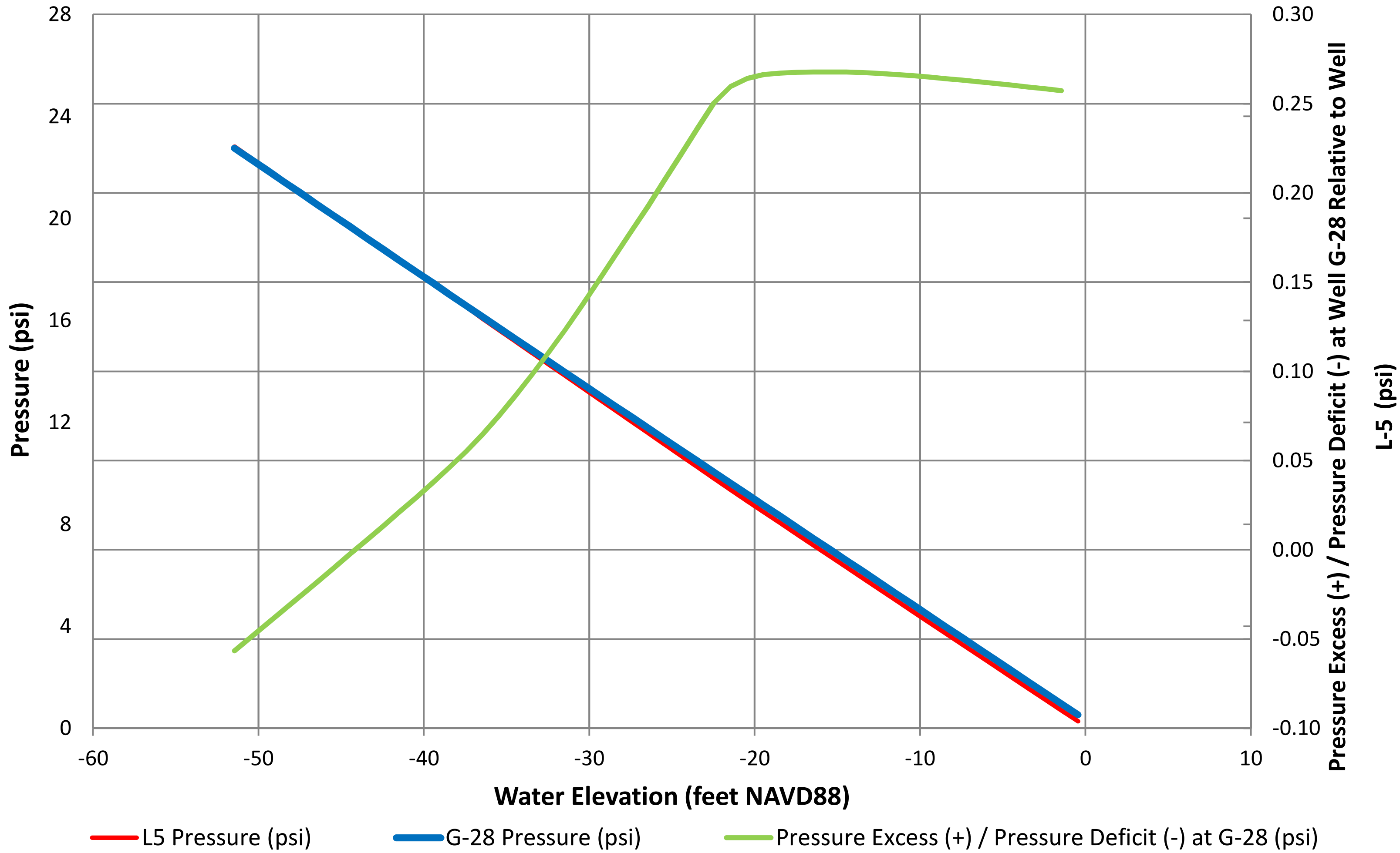


Figure 6.4-25. Pressure Gradient Difference between Well L-5 and Well G-28 during September 2014 Sampling Event.

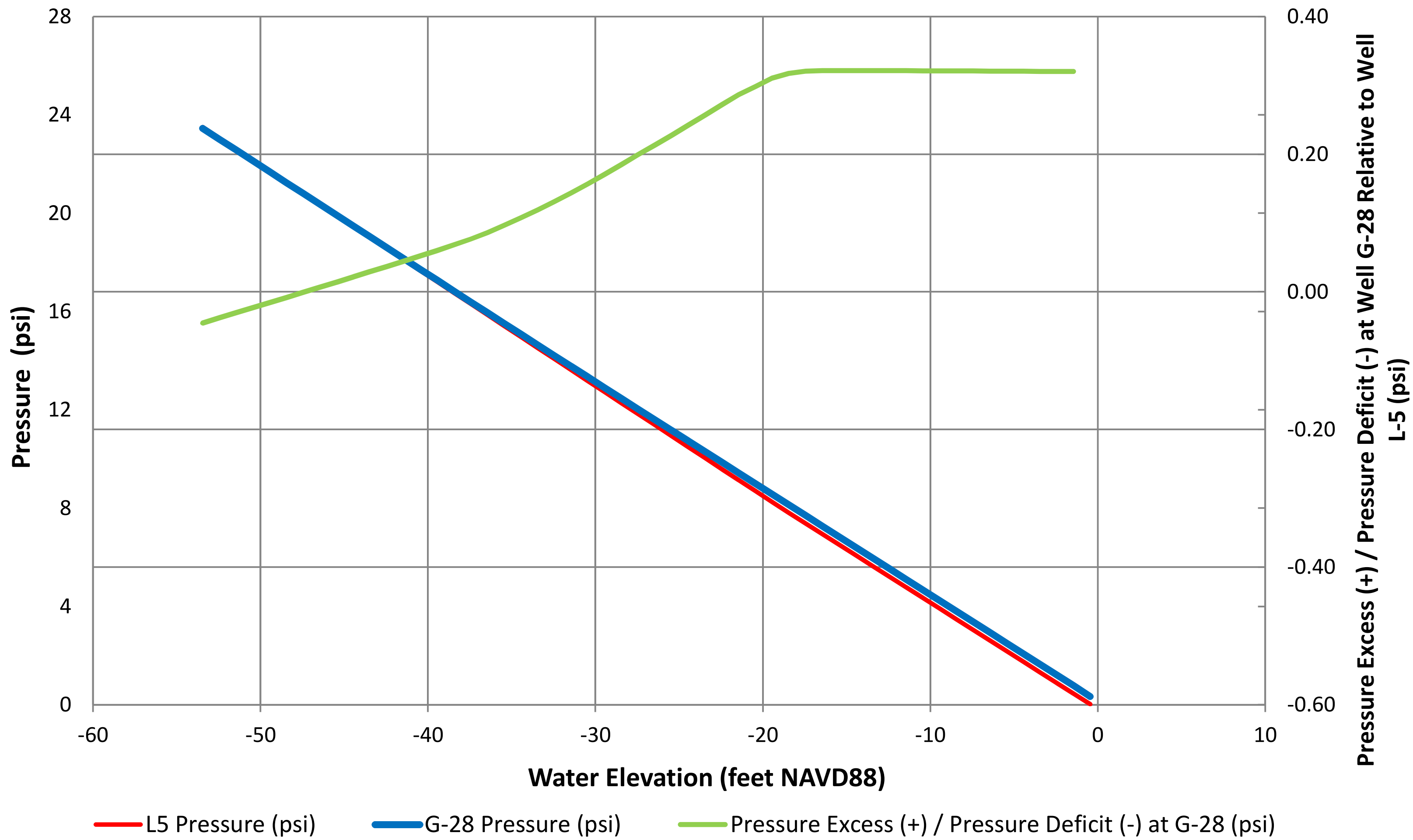


Figure 6.4-26. Pressure Gradient Difference between Well L-5 and Well G-28 during March 2015 Sampling Event.

7 SUMMARY AND INTERPRETATIONS

In accordance with the Turkey Point Monitoring Plan (SFWMD 2009a) and the Fifth Supplemental Agreement (SFWMD 2009b), FPL is required to assess the groundwater, surface water, ecological, and meteorological conditions in and surrounding the Turkey Point Plant CCS. Saltwater intrusion has been documented in south Miami-Dade County since the early 1900s and was noted as far as approximately 8 to 10 miles inland of the coast in the vicinity of Turkey Point by the 1950s (Klein 1957). The challenge in this southern part of the county is determining the factors that affect the inland extent and orientation of the freshwater/saltwater interface and the current source of saltwater. The purpose of this effort is to assess Pre-Uprate conditions prior to the uprating of Turkey Point Nuclear Units 3 and 4 and to assess effects following the uprating (Post-Uprate).

Monitoring was initiated in June 2010 and has continued through May 2015 and beyond. FPL notified the FDEP of the commencement of the Uprate of Nuclear Units 3 and 4 on September 24, 2010. Uprate modifications were performed on both units, with only unit being uprated at a time. The final modifications for Unit 3 took place from February 26, 2012, to September 5, 2012, and the unit reached full uprate power on October 31, 2012. The final modifications for Unit 4 took place during November 5, 2012, to April 17, 2013, and the unit reached full uprated power on May 8, 2013. Both units were operating together within their uprated capacities starting May 27, 2013. Data collected prior to February 26, 2012 are part of the Pre-Uprate period, while data collected between February 26, 2012 and May 27, 2013 are part of the Interim Operating period. Data collected after May 27, 2013, are referred to as part of the Post-Uprate period.

This comprehensive report incorporates findings from the Post-Uprate monitoring period from June 2013 to May 2015 and, where applicable, compares the Post-Uprate with the Pre-Uprate monitoring period. This section provides a summary and interpretation of the results. The results in this report are based on:

- Automated water quality and water level data (over 4,500,000 data points) and analytical results for a wide array of parameters from 47 groundwater wells and 18 surface water stations (plus one additional non-automated surface water station) located throughout the area;

- Field data and analytical data, including plant community characteristics, leaf characteristics, nutrient content in leaves, and pore water quality from marsh, mangroves, and trees islands over a broad area around the CCS;

- Field and analytical data for SAV, coral and sponge community composition and cover, nutrient content in seagrass leaves and sediment, light attenuation, and porewater quality in Biscayne Bay;

- Automated meteorological data including rainfall, wind speed and direction, temperature, and other parameters;

- Geophysical data from annual induction logging in 14 deep wells; and

- Applicable data collected by others.

Many of the current findings are similar to the findings reported in last year's Post-Uprate Annual Report (FPL 2014a).

7.1 Groundwater

Major Findings

- Most of the observations made in the Pre-Uprate period regarding groundwater quality (i.e., specific conductance, temperature, cations, anions, tritium, nutrients) and levels, the influence of meteorological conditions, operation of the CCS, and operation of the ID (FPL 2012a) are the same for the Post-Uprate period. The higher water densities in the CCS will impact groundwater flow and gradients, but seasonal changes and rainfall have a greater impact on groundwater levels.

- Despite the increases in temperature and specific conductance in the CCS surface water in the Post-Uprate period, data collected from May 2013 to May 2015 at TPGW-13 do not indicate a corresponding increase in groundwater temperature or specific conductance, suggesting that there is not a high or rapid degree of exchange between the CCS surface water and the groundwater below.

- The Post-Uprate results still indicate hypersaline groundwater below the CCS and immediately adjacent, to the west of the CCS. Farther west of the CCS, out approximately 3 miles, saline water in decreasing ionic concentrations at depth is evident. The outermost wells to the west, TPGW-8 and TPGW-9, are fresh at all depths.

- Chloride, sodium, and tritium concentrations from the Post-Uprate period are within the ranges observed in the Pre-Uprate period for the majority of stations, with only a few exceptions:

    - These stations include two monitoring stations in Biscayne Bay, TPGW-10D and, to a lesser extent, TPGW-11D. These trends began during the Interim Operating period. Increases in chloride, sodium, and tritium concentrations in these Biscayne Bay wells are suspected to be attributed to the temporary reductions in the historic Pre-Uprate eastward gradients beneath the Bay that occurred during the Interim Operating period, when plant outages reduced pumping rates. Tritium in TPGW-10D and TPGW-11D seems to have leveled off somewhat in the last three of four quarters of monitoring.

  - Chloride, sodium, and specific conductance at TPGW-7D were higher during the Post-Uprate period compared with the Pre-Uprate period. This well was fresh at all depths during the Pre-Uprate period, but is now slightly brackish at the deep interval. However, the most recent tritium data collected through March 2015 indicate CCS water is not present at that location. This change does not appear to be related to the Uprate, but may be a function of regional water withdrawals/management practices, the long-term operation of the CCS, lag effects of droughts, and sea level rise.

  - Smaller increases were also observed at TPGW-12S and TPGW-G-21-58, although it is likely that these changes are influenced by broader landscape-scale seasonal dynamics and regional water management processes that extend beyond plant operations.

  - Minor temporary increases were also observed in TPGW-10M, TPGW-14M, and TPGW-14D early in the Post-Uprate period; however, the values have since dropped back to, or below, Pre-Uprate levels.

7.2 Surface Water

Major Findings

- With the exception of the CCS, the majority of conclusions regarding water quality and stage from this Post-Uprate report are similar to the Pre-Uprate reporting period (FPL 2012a).

- For most surface water stations around the CCS, there was no readily apparent impact of the CCS via the groundwater pathway during Pre- or Post-Uprate. The only exceptions are described below:

  - At two locations in the surface water canal stations immediately adjacent to the south end of the CCS (TPSWC-4 located in the S-20 and TPSWC-5 in the Card Sound Canal), there appeared to be some CCS water intermittently present during the Pre-Uprate and Post-Uprate monitoring period. However, water quality and tritium data collected during the Pre- and Post-Uprate monitoring period at TPBBSW-4, located at the mouth of the Card Sound Canal in Biscayne Bay, did not show evidence of CCS water. This indicates influence immediately adjacent to the CCS, but minimal, if any, influence in Biscayne Bay.

- There were increases in specific conductance in the L-31E Canal during the Post-Uprate dry season similar to observations during the Pre-Uprate period; however, there continues to be no commensurate increases with tritium. The increases in specific conductance in L-31E cannot be readily linked to a CCS groundwater pathway.

- While there have been changes, as noted below, that have occurred in surface water during the Post-Uprate period (specifically the CCS), it does not appear that the Uprate is the cause, or the primary cause, of these changes.

  - Specific conductance in the CCS began to rise to levels above Pre-Uprate values in the fall of 2013 (and reached more than 120,000 µS/cm [salinity of 95 (in PSS-78 scale)] in May 2014). The value began to decline in September 2014 as a result of temporary CCS freshening efforts from the L-31E Canal (September/October 2014) and wet season rainfall. However, with the subsequent dry season and no other freshwater inputs, the specific conductance again exceeded 120,000 µS/cm by April 2015.

  - Beginning in 2013 and continuing through 2015, the CCS experienced an algae bloom of halotolerant unicellular blue green algae (cyanobacteria), which increased the turbidity and solar radiation retention of the canal water and decreased the thermal transfer efficiency of the CCS. The resulting increase in average water temperature increased the rate of evaporation, which increased ionic concentration in the canal system. The unicellular algae (cell size on the order of 10 microns) also became a component of the canal sediments and effectively blocked the historic hydraulic connection between groundwater beneath the CCS and canal water within the CCS. This reduction, in connection to the groundwater system, resulted in elevated salinity, algae concentrations, and reduced thermal efficiency of the system.

  - Fresher surface water or groundwater sources, coupled with rainfall, are helpful in diluting the hypersaline water in the CCS. As a result of the temporary CCS freshening effort and the rainfall from September 25, 2014, through October 15, 2014, the average specific conductance values dropped by 22% within the CCS. On October 24, 2014, a rainfall of about 4 inches reduced the CCS specific conductance values by approximately 10% in just a few days.

  - The water temperature also increased in the CCS during the Post-Uprate period and, on average, was approximately 3°C to 5°C warmer than during the Pre-Uprate period. This increase in CCS surface water temperatures during the Post-Uprate period cannot be readily explained by the Uprate because the total heat rejection rate to the CCS from Turkey Point Units 1, 2, 3, and 4, operating at full capacity prior to the Uprate, would have been higher than the Post-Uprate heat rejection rate to the CCS for Units 1, 3, and 4, operating at full capacity. Unit 2 was dedicated to operate in a synchronous condenser mode (i.e., not producing steam heat) in the beginning of 2011, thereby requiring no heat rejection from the CCS.

  - Nutrients (TKN) have increased in the CCS since June 2013 and appear to have contributed to algal blooms in the CCS. The algal species in the CCS is known to be a nitrogen-fixer, which may be contributing to the TKN observed. FPL is undertaking a series of actions in a separate effort to evaluate the causes of the algal blooms and mitigate those causes and effects.

- Some of the potential groundwater seepage effects reported in the Comprehensive Pre-Uprate Report (FPL 2012a) at TPSWC-4 and TPSWC-5 were not as evident in the Post-Uprate period. However, the CCS does appear to be have some intermittent effects on these two adjacent locations (i.e., higher water temperatures relative to other non-CCS stations and, occasionally, high tritium concentrations or specific conductance at depth).

- The increase in salinity and temperature in the CCS did not appear to a have corresponding influence in Biscayne Bay or the L-31E Canal.

7.3 Water Budget

Major Findings

- The model simulates a net water loss of 0.53 mgd from the CCS during the Pre-Uprate period (based on available data from September 2010 to March 2012) and a net salt loss of 273 (lb x 1,000)/day within the CCS over the same period. This resulted in decreased water levels and salt concentration within the CCS.

- The model simulates a net water loss of 0.37 mgd from the CCS during the Post-Uprate period (June 2013 to May 2015) and a net salt gain of 915 (lb x 1,000)/day within the CCS over the same period. This has resulted in decreased water levels and increased salinity within the CCS.

- Compared to the overall average for the Post-Uprate period, the modeled net water loss was an order of magnitude higher and salt gain was approximately 2.5 times higher in the first year of Post Uprate.

- The model simulates the changes that have occurred in the CCS reasonably well, with the higher temperature and increased evaporation rate being large factors in the increase in specific conductance in the Post-Uprate period.

- An increase in evaporative losses (approximately 60%) during the Post-Uprate period has contributed to the decline in water levels and increase in salt content (and salinity) in the CCS.

- Reductions in CCS water levels and higher saline groundwater inflows during the Post-Uprate period have also increased the salt content/salinity in the CCS.

7.4 Interceptor Ditch

Major Findings

- FPL is operating and maintaining the ID pumps in a manner to maintain a net seaward gradient between the L-31E Canal and the westernmost CCS canal (C-32). The operations of the ID have been effective in maintaining predominantly fresh groundwater in the upper portion of the aquifer west of the CCS. A shallow, fresh water lens still exists west of the CCS and is supported by the induction logging conducted for this project and the continuous specific conductance profiling done in several historical wells for the ID monitoring.

- The volume pumped from June 1, 2014, to May 31, 2015, was 1.64 billion gallons.

7.5 Ecological

Major Findings

- Ecological monitoring in Biscayne Bay and the marsh and mangrove areas surrounding Turkey Point still show no evidence of impacts from the CCS. Changes appear to be more seasonally and meteorologically driven.

- Findings were similar to those previously summarized in the Comprehensive Pre-Uprate Report (FPL 2012a).

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