Environmental Functional Area

Water Resources and Environmental Planning Group

LLNL-AR-411431-23-3

LLNL Experimental Test Site, Site 300 Compliance Monitoring Report for Waste Discharge Requirements (WDR) Order No. R5-2008-0148

Second Semester/Annual Report 2022

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Certification

I certify that the work presented in this report was performed under my supervision. To the best of my knowledge, the data contained herein are true and accurate, and the work was performed in accordance with professional standards.

Michael J. Taffet

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List of Abbreviations and Acronyms

3CMP	Compliance Monitoring Program Site 300 ground water samples
3EMG	Water Resources and Environmental Planning (WREP) Group Site 300 ground water samples
3GIV	Ground water samples collected at Site 300 for site investigations
3VES	Sampling method requiring three casing volumes purged using an electric submersible pump
BCLABS-BAK	BC Laboratories, Inc. in Bakersfield, CA
BOD	Biochemical oxygen demand
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMP	Compliance Monitoring Program (conducted under CERCLA)
CMR	Compliance Monitoring Report (prepared under CERCLA)
CoC	Chain-of-custody form
CVRWQCB	Central Valley Regional Water Quality Control Board
CV-SALTS	Central Valley Salinity Alternatives for Long Term Stability
DO	Dissolved oxygen
DSWP	Sewage percolation pond influent sampling location
DTW	Depth to (ground) water
EC	Electrical conductivity, or specific conductance (SC)
EFA	Environmental Functional Area
ESWP	Sampling location within sewage evaporation pond
HE	High explosives
GF	Grundfos pump
ft	Feet
gal	Gallons
gpm	Gallons per minute (measurement of discharge or flow rate)
GWE	Ground water elevation (above mean sea level)
HSU	Hydrostratigraphic unit
ID	Identification number
ISWP	Sewage evaporation pond influent sampling location
LAMP	Local Agency Management Program

List of Abbreviations and Acronyms cont.

LLNL	Lawrence Livermore National Laboratory
MCL	Maximum Contaminant Level (for drinking water)
mL	Milliliters
MPN	Most probable number
MRP	Monitoring and Reporting Program
mV	Millivolts (measure of oxidation-reduction potential)
NA	Not applicable
ND	None detected, or not detected
NLSS	Nitrate Loading and Soil Suitability Study
NO_3	Nitrate
NR	Analysis not required by permit at this sampling location
NTC	Notice to Comply
pH	Measure of the acidity or alkalinity of a solution
OG	Off-gassing measured by scale of 1-5, 5 being highest amount of off-gassing
OU	Operable Unit under CERCLA
OWTS	Onsite Wastewater Treatment System
Q	Discharge or flow rate, or number of well volumes purged (according to context)
QA	Quality Assurance
Qal	Quaternary Age alluvial deposits
QC	Quality control
Qt	Quaternary Age terrace deposits
RWD	Reports of Waste Discharge
RHWM	Radioactive and Hazardous Waste Management
SC	Specific conductance, or electrical conductivity (same as EC)
SCP	Salt Control Program
SHO	Short analytical holding time (such as samples for coliform bacteria analyses)
SJC	San Joaquin County
SJCEHD	San Joaquin County Environmental Health Department
WDR	Waste Discharge Requirements (Permit)

Executive Summary

Under authority of the State of California and as required by the Porter-Cologne Water Quality Control Act, the Central Valley Regional Water Quality Control Board (CVRWQCB) issued Order No. R5-2008-0148 for the Experimental Test Site (Site 300), to Lawrence Livermore National Laboratory (LLNL). Monitoring and Reporting Program (MRP) Number R5-2008-0148 was adopted in September 2008 and revised effective December 1, 2009. The revised MRP terms and conditions have been implemented in this report. Under the terms of this MRP, LLNL submits semi-annual and annual monitoring reports detailing its Site 300 discharges of domestic and wastewater effluent to the sewage evaporation pond and percolation pond in the Site 300 General Services Area, cooling tower blowdown to percolation pits and septic systems, mechanical equipment discharges to percolation pits located throughout Site 300, and low-threat discharges to ground.

This report contains all the elements required by Waste Discharge Requirement (WDR) Order R5-2008-0148 for the second semester of 2022 and updates the status of equipment and facilities since the adoption of R5-2008-0148. Proper operating conditions were met for all permitted monitoring networks. Compliance certification accompanies this report, as required by the permit.

1. Introduction

Site 300, operated by Lawrence Livermore National Security, LLC, is located in the Altamont Hills approximately 10.5 kilometers (6.5 miles) southwest of downtown Tracy, California. Required monitoring for specific Lawrence Livermore National Laboratory (LLNL) Site 300 water monitoring networks is defined in the Monitoring and Reporting Program (MRP) Order Number R5-2008-0148, which was adopted in September 2008 and revised effective December 1, 2009. The revised MRP has been implemented in this report. Applicable reporting requirements can be found in the Standard Provisions and Reporting Requirements specified in the Waste Discharge Requirements (WDR) Order R5-2008-0148 (CVRWQCB, 2008) permit and in the MRP R5-2008-0148.

This report provides a summary of water quality in designated monitoring network samples collected during the second semester of 2022 under the revised MRP R5-2008-0148 (CVRWQCB, 2008). The report details the monitoring results of the four compliance networks and low-threat discharges and presents analytical data, field summary sheets, and inspection logs associated with discharges at the networks.

Compliance monitoring networks discussed in the report include:

- Sewage evaporation and percolation ponds wastewater and ground water monitoring (**Sections 2.1 through 2.5**)
- Cooling tower blowdown discharge monitoring and percolation pit inspections (**Sections 3.1 through 3.4**)
- Mechanical equipment effluent discharge monitoring and percolation pit inspections (**Sections 4.1 through 4.4**)
- Septic systems and construction updates (**Sections 5.1 through 5.3**)
- Low-threat discharges (**Sections 6.1 through 6.2**)

BC Laboratories, Inc. and Alpha Analytical Laboratories, Inc. provided off-site analytical support for the monitoring networks.

This report summarizes the activities associated with these monitoring networks including: tabular summaries or data plots for all data for at least the last five years; a ground water elevation contour map with well locations; identification of any data gaps or deficiencies; and a discussion of any changes to the monitoring program.

Figure 1 shows the locations of the wastewater systems permitted under WDR R5-2008-0148, including mechanical equipment percolation pits and the sewage evaporation and percolation ponds (sewage ponds) located in the General Services Area. None of the permitted mechanical equipment or cooling tower percolation pits overflowed during this monitoring period. However, standing water was observed in the Building 801 cooling tower percolation pit from October 2021 to December 2022. Water Shop staff began monitoring the standing water daily in March 2022 and are planning to renew the material in the percolation pit to increase percolation. In January 2022, there was standing water in the mechanical equipment percolation pit at Building 806 due

to recent rainfall. In February 2022, there was standing water in the cooling tower percolation pit at Building 851 due to a malfunctioning solenoid valve. Additionally, there were no detected chemical impacts to ground water beneath and adjacent to the sewage ponds. Discharges from cooling towers and mechanical equipment were consistent with historical information provided in the previous Reports of Waste Discharge (RWD).

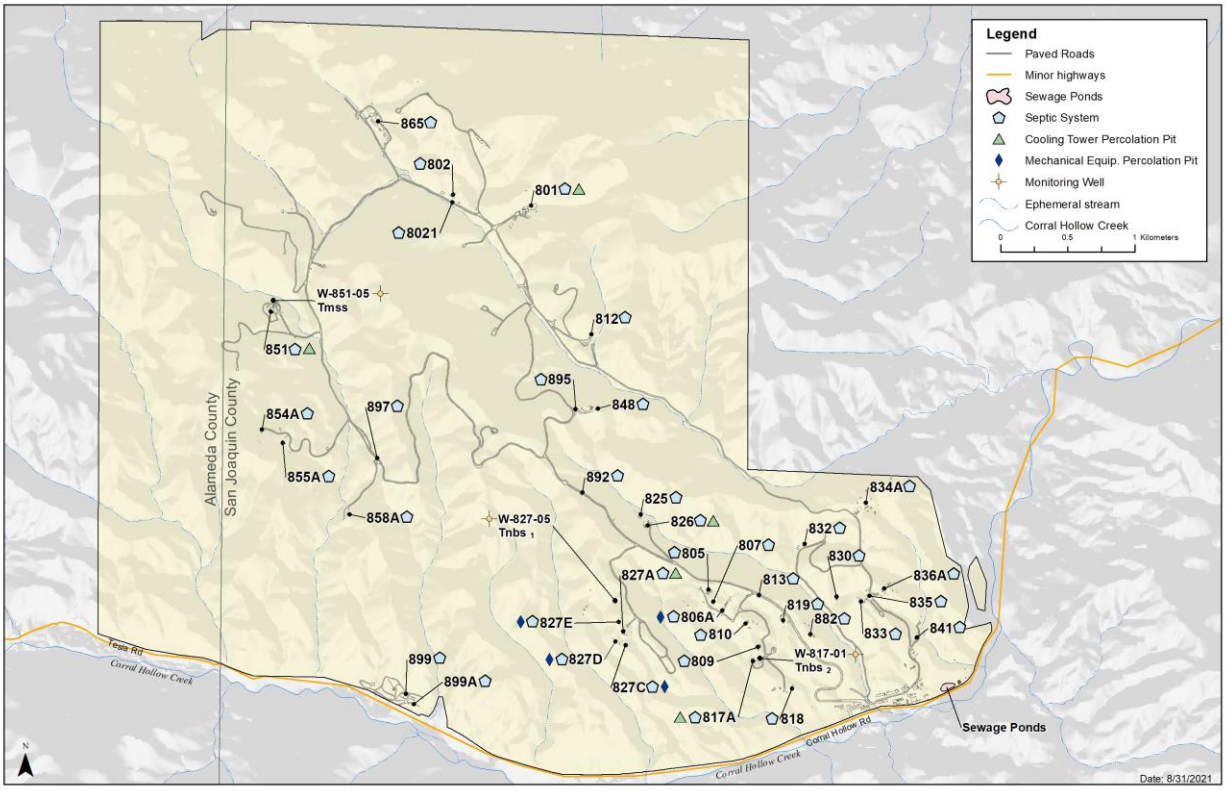

Figure 1. Locations of Site 300 facilities with septic systems and percolation pits.

2. Sewage Evaporation and Percolation Ponds

2.1. Effluent and Pond Compliance Monitoring Program

MRP R5-2008-0148 requires semi-annual and annual sampling and chemical analysis of wastewater flowing into the sewage evaporation pond (sewage pond). Grab samples are collected from a location west of the sewage pond (see sampling location ISWP in **Appendix A, Figure A-1** showing the Site 300 sewage evaporation and percolation ponds and ground water and wastewater compliance monitoring locations). Location ISWP is a port providing access to a section of pipe through which all liquid waste streams flow prior to entering the sewage pond. The samples are analyzed for specific conductance (SC), pH, and biochemical oxygen demand (BOD).

MRP R5-2008-0148 also requires sampling and analysis of wastewater within the sewage pond and wastewater discharging into the sewage percolation pond. Semi-annual wastewater samples are collected by grab sampling from a dock at the eastern end of the sewage pond (sampling location ESWP) and analyzed for SC, pH, metals, dissolved oxygen (DO), BOD, and total and fecal coliform. Any discharge from the sewage pond to the sewage percolation pond (sampling location DSWP) is grab-sampled and analyzed for the same constituents. Permit WDR R5-2008-0148 requires LLNL to operate the sewage pond with adequate freeboard to minimize the frequency of discharges to the sewage percolation pond.

Leak detection and compliance monitoring at the sewage evaporation and percolation ponds are accomplished by monitoring the shallow ground water beneath and adjacent to the ponds. Ground water monitoring includes semi-annual sampling during the first and second semesters when ground water elevations are at their highest and lowest, respectively. These samples are analyzed for SC, pH, total and fecal coliform, chloride, nitrate, sulfate, total dissolved solids, sodium, and metals. Ground water elevations are routinely recorded and potentiometric surface contour maps are created (**Appendix A, Figure A-2**). A map showing the locations of the monitoring wells and ponds (**Appendix A, Figure A-1**) and tables of monitoring well specifications and ground water elevations for the second semester of 2022 for each well are provided in **Appendix A, Tables A-1 and A-2**.

In addition to normal operation of the sewage evaporation pond, there are also discharges to it associated with the beneficial use of discharged water. These discharges occur prior to potable water delivery to Site 300 from the San Francisco Public Utilities Commission (SFPUC) Hetch Hetchy water system. During these operations, Hetch Hetchy water is flushed periodically to maintain sanitary conditions in the potable water line. When a discharge to the sewage evaporation pond is scheduled, the chlorinated water in the Hetch Hetchy line is analyzed for chlorine. When the water reaches a chlorine residual value at or below 1.0 mg/L, the water is ready to flush. When flushing, a 4-inch hose is used from the discharge of the Hetch Hetchy line at the LLNL valve box to the sewage pond. Before the water is flushed, the residual chlorine concentration generally decreases to between 0.2 and 1.0 mg/L. The pH is checked and logged at the source. pH measurements are recorded from the SFPUC Water Quality Division transmission system weekly process sheet.

During the second semester of 2022, there were no Hetch Hetchy water line flushes. Table 1 below provides the discharge date, volume of water discharged, chlorine residual concentration, and pH of the discharged water, if any.

Table 1. Summary of water system pipeline flushing and pressure testing discharges at Site 300 during 2022.

Discharge Period	Volume Discharged (gallons)	Chlorine Residual (mg/L)	pH (units)	Comment
First Semester	-	-	-	No Flushes
Second Semester	-	-	-	No Flushes

As noted on the inspection field sheets, ground water samples were not collected during the first semester of 2022 from well W-25N-22 due to an inoperable pump. The pump was replaced in June 2022 and well W-25N-22 was sampled during the third quarter of 2022. Additionally, samples were only collected at well W-7PS in February 2022 because it was dry during the remainder of the year.

A new influent sewage pond flow meter was installed at the southwest corner of the pond in 2022. The flow meter is now connected to the SCADA communication system.

2.2. Sewage Pond Wastewater Sampling and Analysis

The DO, SC, and pH meters are calibrated within 12 hours before sampling the sewage pond and taking field measurements. The DO, SC, pH, and temperature measurements are recorded on the field tracking forms (field logs) when the grab samples from ISWP, ESWP, and DSWP are collected. For each analytical laboratory to which samples are submitted, chain-of-custody (CoC) forms are filled out and signed by the sampler. The CoC numbers are also written on the field logs. Appropriate EPA-approved analytical methods (U.S. Environmental Protection Agency, 2005) or Standard Methods (Clesceri et al., 1998) are used.

The samples required under MRP R5-2008-0148 for locations ISWP and ESWP were collected on April 14, 2022 and October 12, 2022. These samples, and all samples with results presented in this report, were collected, analyzed, and the data entered into the LLNL Environmental Functional Area (EFA) database according to a complete set of protocols documented in the LLNL EFA Environmental Monitoring Plan (Brunckhorst, 2019).

2.3. Sewage Pond Wastewater Monitoring Results

Analytical results for second semester 2022 samples are summarized here as required under MRP R5-2008-0148. Monitoring data are tabulated in **Appendix A**. Coliform, anion, BOD, DO, and SC data summaries are presented in **Table A-3**. A metals data summary for the ESWP location is presented in **Table A-4. Table A-5** provides a duplicate (QA) sampling data summary for the sewage pond's wastewater monitoring network. All results and observations were in compliance with the permit's discharge specifications, as shown in **Appendix D**. There was adequate freeboard in the sewage pond to prevent any over-topping or erosion of the pond embankment. Field tracking forms documenting operational conditions at Site 300 are provided in **Appendix A**, which also

contains the field logs, including field measurements and CoCs. The original laboratory reports are stored at LLNL and are available upon request.

- As listed in **Table A-3**, samples from the two monitoring points, 3-ESWP-OW and 3-ISWP-OW, yielded pH values of 9.6 and 8.5 respectively on October 12. The SC of the effluent sample 3-ESWP-OW (7,000 µmhos/cm) was significantly higher than the SC of the influent sample 3-ISWP-OW (960 µmhos/cm). The high effluent SC values are consistent with past years and may be attributed to evaporation. There is no reporting limit for SC. The BOD values measured in the effluent (85 mg/L) and influent (74 mg/L) were higher than the first semester 2022 result of 42 mg/L measured in the effluent and 31 mg/L in the influent. The fecal and total coliform reporting limit is 2 most probable number (MPN)/100mL. The effluent concentration of total coliform (9,200 MPN/100mL) was significantly lower than the first semester 2022 effluent concentration (70,000 MPN/100mL). LLNL will continue to monitor total coliform trends in the effluent.
- **Table A-4** contains second semester 2022 data for metals in the sewage pond effluent at monitoring location 3-ESWP-OW. Only ten metals had concentrations above their reporting limits: aluminum, arsenic, barium, boron, calcium, copper, iron, magnesium, and potassium, and selenium. The concentrations of many of these metals were higher than the concentrations measured during the first semester of 2022. LLNL will continue to monitor effluent metal trends.
- **Table A-5** lists the second semester 2022 QA data for the effluent monitoring location 3-ESWP-OW. pH, SC, BOD, DO, and sodium were consistent with past measurements. The duplicate sodium sample taken on October 12th was consistent with the routine sample.

2.4. Ground Water Sampling and Analysis

Semi-annual sampling of ground water from monitoring wells at the sewage evaporation and percolation ponds was performed during the second semester of 2022. The ground water samples were collected and analyzed and results were entered into the EFA database according to established protocols (Goodrich and Lorega, 2016). The monitoring wells were purged and sampled during the August - November time period using prescribed methods assigned to each monitoring well. Information regarding the conditions during sampling, as well as field measurements taken at the time of sampling, is contained in the ground water sampling data sheets in **Appendix A**. The samples were transferred to an offsite analytical laboratory for analysis of the physical and chemical parameters and constituents listed in **Section 2.1**. Following the initial sampling events, a pre-calculated dose of chlorine was added to each well and the well was briefly pumped to circulate the chlorine throughout the water column. On the following day, wells were tested for residual chlorine and samples were collected for analysis of total and fecal coliform bacteria at an offsite analytical laboratory.

2.5. Ground Water Monitoring Results

Ground water data are presented in **Appendix A**. Sodium and anion data are tabulated in **Table A-6**. Fecal and total coliform data are listed in **Table A-7**. **Table A-8** provides a summary of physical chemical data and **Table A-9** lists metals data. QA data summaries for the monitoring well network are presented in **Table A-10**. **Appendix A, Figure A-2** is the second semester 2022

ground water elevation contour map for the shallowest water-bearing zone (Qt-$Tnsc_1$ and Qal-$Tnbs_1$ hydrostratigraphic units [HSUs]) in the sewage evaporation and percolation ponds area. Nitrate concentrations in sewer pond ground water network monitoring wells are depicted in **Appendix A, Figure A-3**.

- The sewage pond ground water monitoring results in **Table A-6** indicate that the concentrations of anions were consistent with past measurements. All nitrate concentrations were below the 45 mg/L Maximum Contaminant Level (MCL) for nitrate in drinking water.
- As shown in **Table A-7**, fecal coliform was not detected above the reporting limit of 1.8 MPN/100mL in any of the second semester ground water samples. However, samples from wells W-7ES (1.8 MPN/100mL on November 8) and W-35A-04 (1600 MPN/100mL on August 31 and 2.0 MPN/100mL on November 10) contained total coliform concentrations greater than or equal to 1.8 MPN/100mL. All other samples collected from the sewage pond wells had total coliform concentrations below the 1.8 MPN/100mL reporting limit.
- As shown in **Table A-8**, phosphorus concentrations in all second semester ground water samples were below the reporting limit of 1 mg/L. The individual well physical chemistry data ranges for the other constituents were similar to those reported in first semester of 2022.
- In **Table A-9**, aluminum, cadmium, hexavalent chromium, iron, lead, manganese, mercury, molybdenum, silver, vanadium, and zinc, were not detected above their reporting limits in second semester samples. Chromium (1.2 µg/L) measured at well W-7ES exceeded the reporting limit of 1 µg/L. LLNL will continue to monitor chromium and hexavalent chromium trends. The other metals concentrations were generally consistent with first semester 2022 data.
- As shown in **Table A-10**, the results for duplicate sample collected from wells W-7ES, W-26R-04, W-26R-05 and W-7DS between August 23 and November 29 were either identical or very similar to the routine sample results.

2.6 Sewage Evaporation Pond and Percolation Pit Monthly Inspections

Observations of freeboard, color, odor, and levee condition at the sewage pond and percolation pond are recorded at least monthly. **Appendix A** contains second semester 2022 data sets and other material including: field tracking forms, sewage and percolation pond inspection and monitoring reports, ground water sampling data forms, and ground water monitoring field observation forms for the sewage pond.

The July through December inspection and monitoring reports indicate that there was no standing water in the percolation pond. During the second semester, the sewage pond water was either green or brown-green in color with no dead algae, weeds, or mosquitoes observed. The freeboard depth ranged from 14.5-inches to 19.5-inches, well above the 12-inch minimum freeboard depth, a LLNL operating best management practice.

3. Cooling Tower Network

3.1. Cooling Tower Compliance Monitoring Program

Monitoring requirements for cooling tower blowdown water are specified in MRP R5-2008-0148. LLNL implemented the cooling tower blowdown monitoring program in the fourth quarter of 2008. Applicable reporting requirements are found in the Standard Provisions and Reporting Requirements of WDR R5-2008-0148 and the MRP.

Cooling towers located at Site 300 discharge either into percolation pits or into septic systems. Currently, there are five operating cooling towers. The cooling tower locations are identified on **Appendix B, Figure B-1**. The cooling towers located at Buildings 801, 817, 826, 827A, and 851 discharge to percolation pits and were operational this period. In October 2017, the cooling tower discharge lines at Building 827A were replumbed and are now separate. Previously, they merged and were sampled at a single port.

MRP R5-2008-0148 requires semi-annual sampling of the cooling tower blowdown. Grab samples are collected from the water circulating in each cooling tower, either at a valve or a drainpipe. The grab samples are collected directly into the containers specified by the laboratory. Samples are analyzed for metals, pH, sodium, SC, sulfate, total alkalinity, total dissolved solids, total hardness, and total phosphorus.

3.2. Cooling Tower Blowdown Effluent Sampling and Analysis

Second semester 2022 routine cooling tower blowdown samples were collected on October 11, 2022. Less than 12 hours before cooling tower blowdown sampling, the SC and pH meters are calibrated. SC and pH data measured in the field are written on field tracking forms. CoC forms are filled out appropriately and signed by the sampler for each analytical laboratory to which the samples are transferred; CoC numbers are also written on the field logs. Analytical methods used are appropriate EPA-approved Methods (U.S. Environmental Protection Agency, 2005) or Standard Methods (Clesceri et al., 1998).

3.3. Cooling Tower Blowdown Monitoring Results

All cooling tower sample results are listed in **Appendix B** along with the QA/QC results, field tracking forms, inspection checklists, and CoCs. **Table B-1** lists sodium and anions data. **Table B-2** lists metals results, and **Table B-3** provides required physical characteristics data. QA/QC data from duplicate sampling are provided in **Table B-4**.

The following section includes highlights and a summary of comparisons of second semester 2022 analytical results for each constituent in cooling tower blowdown samples to Designated Level Methodology-derived concentrations calculated using the water quality goals (where they exist) shown in Attachment 16 of the permit (WDR Order No. R5-2008-0148) and maximum historical values observed at the time of the permit. For reference, **Appendix D** of this document contains Attachment 16 of the WDR permit.

- **Table B-1** lists results for sodium and anions (chloride, nitrate, sulfate, fluoride, and bromide). The maximum sodium concentration in all cooling tower wastewater samples collected at Buildings 801, 817A, 826, 827A and 851 was 7,400 mg/L, which is

approximately twice as high as the 3,400 mg/L maximum sodium concentration detected in first semester of 2022.

- The second semester 2022 metals concentrations in cooling tower wastewater are displayed in **Table B-2** and summarized below.
    - Cadmium, lead, magnesium, manganese, silver, and vanadium concentrations were not above reporting limits in any current cooling tower blowdown samples.
    - Copper concentrations in samples collected during the second semester of 2022 ranged from 17 µg/L to 150 µg/L, well below the maximum historical effluent concentration in Appendix D (2,400 µg/L).
    - The selenium concentrations at both cooling towers were lower in the first and second semester of 2022 than last year. The selenium concentration measured in October 2022 at 3-827ACT01-TW was <10 µg/L and the concentration measured at 3-827ACT02-TW was 12 µg/L.
    - The second semester arsenic concentrations were generally consistent with the arsenic concentrations measured in first semester 2022 with the exception of the arsenic concentration measured at B826 on October 11. The second semester boron, chromium, hexavalent chromium, molybdenum, and potassium concentrations at Building 851 were significantly lower than first semester 2022 concentrations due to a repair made to the cooling tower blowdown valve.
    - Compared to the high zinc concentration (3,300 µg/L) in the second semester 2020 sample from the 827A cooling tower, 3-827ACT02-TW, the zinc concentration was down to <100 µg/L in October 2022. This is very low when compared with concentrations measured in previous years.

The concentrations for all the metals in the second semester 2022 cooling tower effluent samples are well below concentrations calculated using the Designated Level Methodology in **Appendix D** (WDR Order Attachment 16) for impact to ground water. LLNL will continue to evaluate metals concentrations in future samples of cooling tower effluent.

- **Table B-3** lists the physical characteristics (SC, total alkalinity, TDS, total hardness, and phosphorus) of the cooling tower blowdown discharges. The cooling tower effluent from Buildings 801 and 827A (both sampling locations) were consistent with data from previous years. At Buildings 801, 817A, 826, 827A, and 851, total phosphorus concentrations were generally consistent with first semester 2022. At Buildings 817A, 826, and 827A, SC, total alkalinity and TDS concentrations significantly increased from first semester 2022. LLNL will continue to monitor SC, total alkalinity, and TDS trends at these three locations.
- As shown in **Table B-4**, QA samples were collected from the cooling tower at Building 851B on October 11. The routine and duplicate sample results for the various constituents collected both days were either identical or similar.

3.4. Cooling Tower Percolation Pit Monthly Inspections

LLNL implements monthly visual inspections of the cooling tower percolation pits located at Buildings 801, 817A, 826, 827A, and 851 (**Figure B-1**), which collect effluent from the cooling towers as specified in MRP R5-2008-0148. If standing water is present, the MRP requires the inspection frequency to be increased to weekly until standing water is no longer visible. Visual inspections are conducted to verify the percolation pits are working properly and do not have the potential to overflow. Copies of the inspection forms are provided in **Appendix B**.

From October 2021 through December 2022, standing water was observed at the Building 801 cooling tower percolation pit. Water Shop staff reviewed the design drawings and determined that one of the drains is an old gate valve which is prone to leaking. This gate valve was replaced but the problem persisted. The percolation pit is currently being scheduled for a rejuvenation. Starting in March 2022, staff began monitoring the standing water level daily. The height of standing water measured during the semester is relatively constant at approximately 3 feet.

4. Mechanical Equipment Effluent Monitoring

4.1. Mechanical Equipment Discharge Monitoring Program

Monitoring requirements for mechanical equipment discharge of effluent to percolation pits are specified in the MRP R5-2008-0148. LLNL monitors the mechanical equipment systems located at Buildings 806A, 827A, 827C, 827D, and 827E. In **Appendix C, Figure C-1** provides the locations of those systems. Since mid-2016, Building 827D has been undergoing construction and the existing boiler ovens have been replaced with electric ovens. With ongoing construction and electric ovens that do not employ boilers, there have been no discharges to the percolation pit at Building 827D. Two vacuum pumps and a DI water system periodically discharge to the Building 827D percolation pit. The vacuum pumps remove moisture from the air prior to it entering the mixer. Monthly inspections are performed. However, no sampling and analysis of water was performed due to the limited discharge activity.

4.2. Mechanical Equipment Effluent Sampling and Analysis

The results for the mechanical equipment room effluent monitoring are reported in data tables in **Appendix C**. Monitoring is performed using automated composite sampling from the Christy box during operations. During this monitoring period, samples were collected from October 17-18. For the sampling and analysis of mechanical equipment effluent, CoC forms for each analytical laboratory are filled out appropriately and signed by the sampler. CoC numbers are also written on the field logs, provided in **Appendix C**. Appropriate EPA-approved analytical methods (U.S. Environmental Protection Agency, 2005) or Standard Methods (Clesceri et al., 1998) are used.

4.3. Mechanical Equipment Effluent Monitoring Results

There are mechanical equipment percolation pits located at Buildings 806A, 827A, 827C, 827D, and 827E (**Figure C-1**). Sample analytical results for the monitoring network for these pits are presented in tables in **Appendix C. Table C-1** lists sodium and anion data, **Table C-2** lists metals results and **Table C-3** provides required physical characteristics data. Data from duplicate sampling is provided in the data tables. For constituents possessing Designated Level Methodology-derived concentrations as shown in **Appendix D,** concentrations in 2022 effluent samples are protective of underlying ground water.

- **Table C-1** lists the nitrate concentrations in all the mechanical equipment discharges; Buildings 806A, 827A, and 827E yielded nitrate concentrations below the reporting limit. The second semester 2022 chloride concentrations were less than 100 mg/L in all the mechanical equipment discharges except at Building 827A and Building 827C where chloride concentrations ranged from 140 – 1400 mg/L. Additionally, the sodium concentration was significantly higher at Building 827A (2600 mg/L). The high chloride and sodium concentrations at Building 827A may be attributed to the discharges from the water softener, vacuum pump, or boilers. Sulfate and fluoride concentrations were also higher at Building 827A. Site 300 used only Well 20 water for a total of 3 months during the second semester of 2022. Well 20 water contains significantly higher dissolved solids and salt concentrations than Hetch Hetchy water. LLNL will continue to assess monitoring data trends and investigate potential causes of elevated anions at Building 827A.

- Metals data are tabulated in **Table C-2**. Several metals (cadmium, lead, and silver) were not detected above their reporting limits At Building 827A, most metal concentrations increased from their first semester 2022 levels. The calcium (19,000 µg/L) concentration was significantly lower at Building 827A compared to the April 2022 result (43,000 µg/L). Additionally, most metals at Building 827E were consistent compared to first semester 2022 data. Facility managers were unable to identify a possible cause of elevated metal concentrations at Building 827E. LLNL will continue to assess monitoring trends and investigate potential causes of elevated metals at Building 827E.
- The second semester physical chemistry data from the mechanical equipment discharge effluent monitoring in **Table C-3** were similar to last semester's concentrations.
    - The concentrations of all physical chemistry analytes at Building 827A were higher compared to the other mechanical equipment discharges from different buildings. An investigation into the building's discharge is ongoing to better determine the source of the high analyte concentrations.
    - The concentrations of all physical chemistry analytes at Building 827E were lower than first semester 2022 concentrations with the exception of Total Hardness which was approximately the same. Due to historically high results at B827E, LLNL will continue to monitor physical chemistry trends here.
    - For quality assurance, both routine and duplicate samples were collected from the mechanical equipment discharge from Building 806A and 827C. The concentrations in the routine sample from Building 827C were nearly identical to the concentrations in the duplicate sample.

4.4. Mechanical Equipment Percolation Pit Monthly Inspections

MRP R5-2008-0148 requires monthly inspections of the five mechanical equipment percolation pits located at Buildings 806A, 827A, 827C, 827D, and 827E. **Appendix C** contains the mechanical equipment percolation pit inspection checklists. If standing water is visible during an inspection, the inspection frequency for that percolation pit is increased to weekly until no standing water is visible.

During the second semester, there was standing water observed at the mechanical equipment percolation pit at Building 806A. There was no standing water observed during the July – December reporting period.

5. Septic Systems

5.1. Septic System Monitoring Program

Ground water monitoring requirements for septic system at four areas at Site 300 were specified in MRP R5-2008-0148 (CVRWQCB, 2008). Based on the MRP, a total of 33 facilities at Site 300 (**Figure 2**) have septic systems with varying capacities and designs.

In the Revised Monitoring and Reporting Plan (CVRWQCB, 2009), the monitoring requirements for the four septic systems specified in CVRWQCB, 2008 were removed and the MRP was to be revised to include ground water monitoring for septic systems that are determined to threaten beneficial uses of ground water.

5.2. Septic System Permitting

With the San Joaquin County Environmental Health Department (SJCEHD) obtaining their Local Agency Management Program (LAMP) approval in April 2017 (CVRWQCB, 2017), the jurisdiction for managing onsite wastewater treatment systems (OWTS) came under their purview for systems that received only domestic wastewater from residential or commercial buildings with an average daily flow of less than 10,000 gallons per day. Otherwise, the CVRWQCB regulates larger wastewater treatment systems.

In order to obtain a septic system permit for Site 300 from the SJCEHD, a number of requirements must be satisfied from various regulatory departments:

1. San Joaquin County (SJC) Building Department
   - Send the building inspector the finalized site drawings of the proposed building for review
2. SJC Planning Department
   - No land use permitting is required for Site 300 if a SJC building permit is not issued
3. SJCEHD
   - Perform a percolation test according to instructions from the department website
   - Complete a soil suitability study (SSS)
   - Complete a nitrate loading study (NLS)

6. Low-Threat Discharges to Ground

6.1. Low-Threat Discharges

At Site 300, a variety of activities may result in low volume and low-threat discharges. Consistent with the Storm Water Pollution Prevention Program, the discharger has implemented Best Management Practices (BMPs) to prevent these discharges from reaching surface water drainage courses before percolating into the subsurface. As shown in **Appendix E**, Attachment 4 in the WDR-R5-2008-0148 Order lists the low threat discharges, which are primarily composed of potable water, low conductivity water, condensate, and uncontaminated contained rainwater.

The Buildings 832, 834, and 836 Facilities Upgrade Project to expand environmental testing capabilities and add office space began construction in February 2021. The buildings will have new air-handling units installed that require new soak pits. The air-handling unit at Building 832A was removed and a new heat pump air handling unit and soak pit for the condensate drain were installed in March 2022. A new split unit heat pump condensate drain was installed at Building 832C that routes into the Building 832A soak pit. Lastly, Building 836B has a new outdoor heat pump air-handling unit installed in which the condensate drain is plumbed to a new soak pit. The soak pit has the same design as previous soak pits, a standard N16 Christy box. Construction at Building 836B is planned to be completed in April of 2023.

7. Regulatory Activities

On Monday, October 24, 2022, Mr. Durin Linderholm (Engineering Geologist) from the CVRWQCB came onsite for an inspection. The CVRWQCB WDR Order R5-2005-0148 fall inspection included environmental visits to the Buildings 801, 806, 817, 827, and 851 percolation pits and the sewage evaporation and percolation ponds. After the inspection, Mr. Linderholm requested continued monitoring of the standing water in the Building 801 percolation pit. No violations were observed and no additional follow-up was required at the time.

In 2021, LLNL Site 300 opted into the Central Valley Salinity Alternatives for Long Term Stability (CV-SALTS) alternative compliance program. The annual payment was sent to CV-SALTS via U.S. certified mail on July 25, 2022.

References

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Clesceri, L.S., Greenberg, A.E., and Eaton, A.D., Ed. (1998), *Standard Methods for the Examination of Water and Wastewater*, 20th ed.

CVRWQCB (1991), *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, Central Valley Regional Water Quality Control Board, March 1, 1991.

CVRWQCB (1996), *Order No. 96-248, Waste Discharge Requirements for University of California Lawrence Livermore National Laboratory Experimental Test Site (Site 300) and US Department of Energy Evaporation and Percolation Ponds and Class II Surface Impoundments, San Joaquin and Alameda Counties*, September 20, 1996.

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Goodrich, R., and G. Lorega (2016), *LLNL Livermore Site and Site 300 Environmental Restoration Project Standard Operating Procedures (SOPs)*, Lawrence Livermore National Laboratory, Livermore, Calif. (LLNL-MA-109115 Rev. 15).

U.S. Environmental Protection Agency (2005), *Title 40 Code of Federal Regulations, Part 136*.

Appendix A

Sewage Evaporation and Percolation Pond Network

- Sewer Pond Figures
- Sewer Pond Tables (well specifications)
- Field Tracking Forms/Chain of Custody Forms
- Sewer Pond Inspection Reports
- Ground Water Sampling Data Forms
- Sewer Pond Wastewater Annual Plots
- Sewer Pond Ground Water Annual Plots

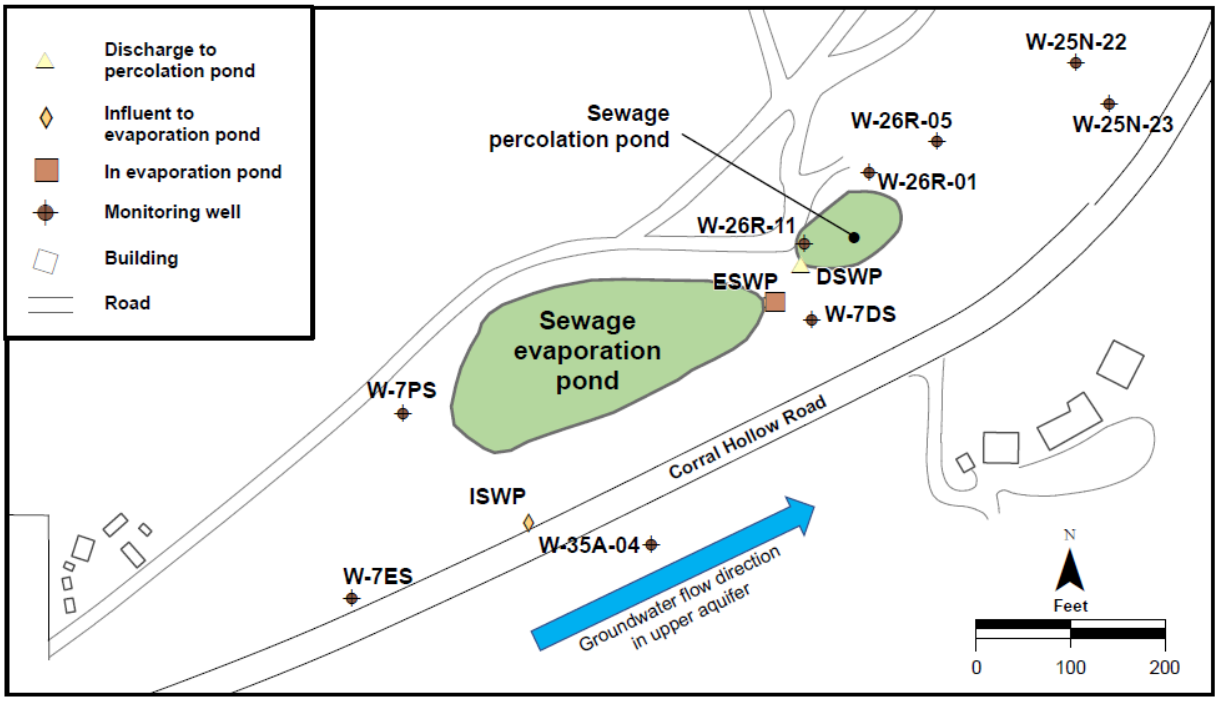

Figure A-1. Sewer pond wastewater and groundwater monitoring network.

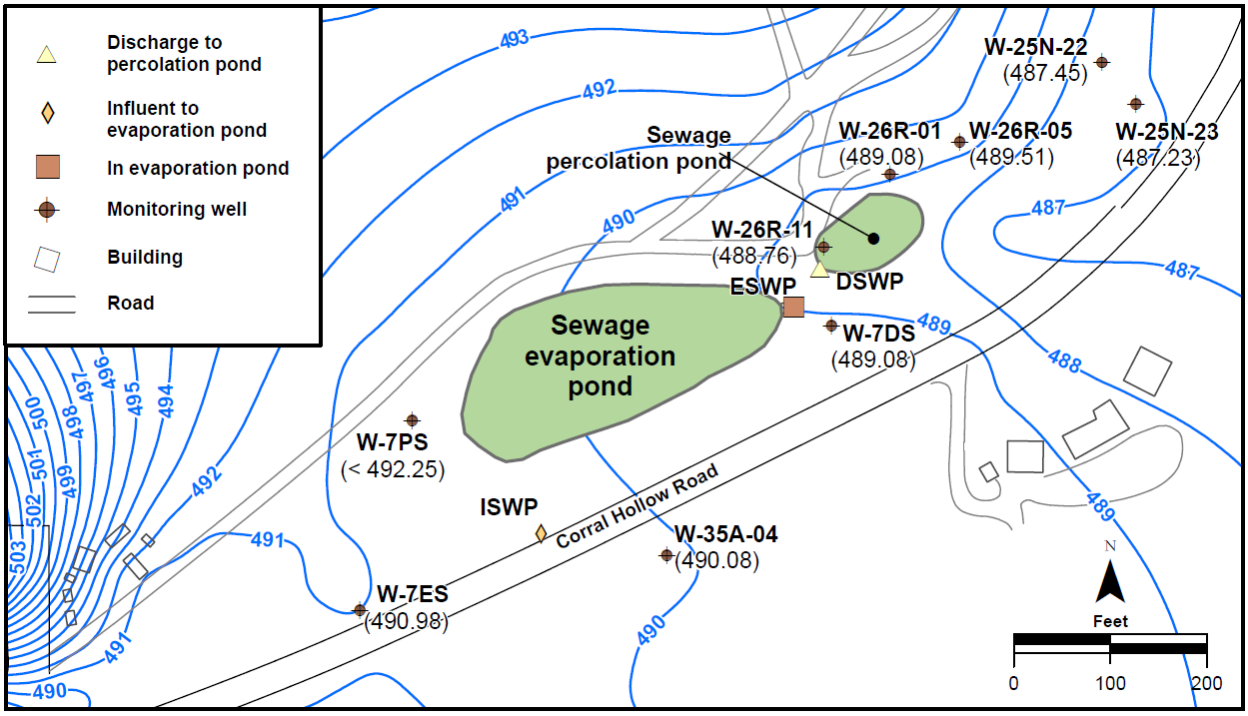

Figure A-2. Site 300 sewer pond wastewater and effluent monitoring network with groundwater elevation (ft-above mean sea level).

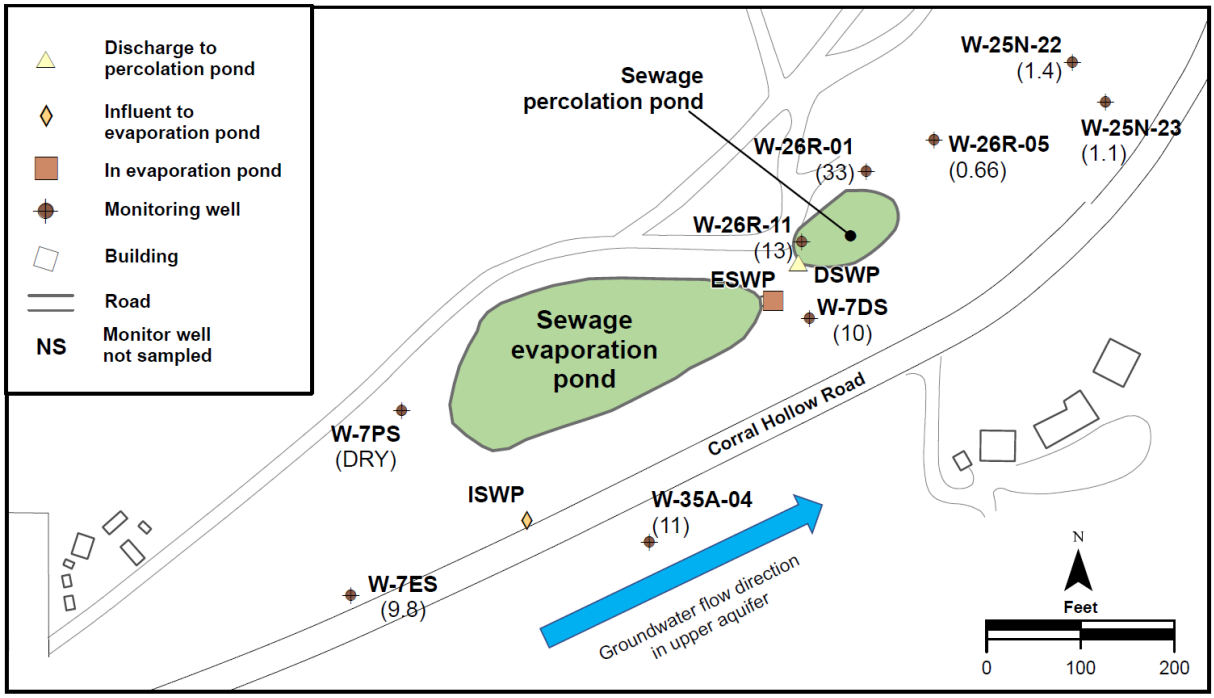

Figure A-3. Site 300 sewer pond wastewater and effluent monitoring network with nitrate (NO_3) concentration (in mg/L).

Notes:
NS = Not Sampled
Well W-25N-22 pump was inoperable during the first semester of 2022 but was returned to service in second semester of 2022.

Table A-1. Summary of Site 300 sewer pond well specifications.

Well	HSU	Easting	Northing	Ground surface elevation	Measuring point elevation	Screen top elevation	Screen bottom elevation	Bentonite top elevation	Filter pack top elevation	Well bottom elevation
W-7ES	Qal-Tnbs$_1$	1,711,719	414,586	506.41	509.71	491.41	481.41	496.41	495.41	479.61
W-7PS	Qal-Tnbs$_1$	1,711,773	414,782	506.10	508.78	489.60	486.60	494.10	492.10	486.60
W-35A-04	Qal-Tnbs$_1$	1,712,036	414,642	504.07	503.98	485.07	475.07	494.87	486.27	475.07
W-26R-01	Qal-Tnbs$_1$	1,712,267	415,036	506.74	509.71	486.94	481.94	494.24	490.74	476.94
W-26R-11	Qal-Tnbs$_1$	1,712,198	414,961	504.93	507.21	489.13	479.13	493.13	491.13	477.93
W-26R-05	Qal-Tnbs$_1$	1,712,339	415,070	511.31	513.11	491.11	486.11	500.81	498.81	485.81
W-25N-20*	Qal-Tnbs$_1$	1,712,371	414,923	502.11	504.94	490.11	475.11	494.61	492.61	474.11
W-7DS	Qal-Tnbs$_1$	1,712,206	414,880	503.30	506.60	487.80	477.80	491.80	489.80	476.30
W-25N-22	Qal-Tnbs$_1$	1,712,486	415,152	510.25	513.06	492.25	482.25	497.25	495.25	481.75
W-25N-23	Qal-Tnbs$_1$	1,712,521	415,109	507.58	510.39	488.58	473.58	495.08	493.08	472.28

Notes:

All measurements are made in feet; elevations are in feet above mean sea level.

HSU = Hydrostratigraphic unit.

Qal-Tnbs$_1$ = Miocene Neroly Formation Lower Blue Sandstone.

*Well W-25N-20 Abandoned

Table A-2. Site 300 sewer pond groundwater monitoring network 2022 groundwater elevation summary.

Well	Date sampled	Pre-sampling	Ground water depth (ft.)	Ground water elevation (ft. above MSL)
W-7ES	27-Jan		17	492.7
W-7ES	22-Feb	PS	16.9	492.8
W-7ES	23-Feb	PS	16.9	492.8
W-7ES	16-May	PS	18.9	490.8
W-7ES	17-May	PS	18.9	490.8
W-7ES	19-May		18.9	490.9
W-7ES	27-Jul		17.5	492.2
W-7ES	30-Aug	PS	17.7	492
W-7ES	31-Aug	PS	17.7	492
W-7ES	19-Oct		18.7	491
W-7ES	7-Nov	PS	18.7	491
W-7ES	8-Nov	PS	18.7	491
W-7PS	27-Jan		16.5	492.2
W-7PS	22-Feb	PS	16.7	492.1
W-7PS	23-Feb	PS	16.7	492.1
W-7PS	19-May		>16.5 [DRY]	<492.2 [DRY]
W-7PS	27-Jul		>16.5 [DRY]	<492.2 [DRY]
W-7PS	19-Oct		>16.5 [DRY]	<492.2 [DRY]
W-35A-04	26-Jan		12	492.1
W-35A-04	28-Feb	PS	12	492
W-35A-04	1-Mar	PS	12.1	492
W-35A-04	16-May	PS	14.1	490
W-35A-04	17-May	PS	14.1	490
W-35A-04	19-May		14.4	489.7
W-35A-04	27-Jul		12.6	491.4
W-35A-04	30-Aug	PS	13	491.1
W-35A-04	31-Aug	PS	13	491.1
W-35A-04	19-Oct		14	490.1
W-35A-04	9-Nov	PS	14	490.1
W-35A-04	10-Nov	PS	14	490.1
W-35A-04	19-Dec	PS	12.5	NA
W-25N-23	27-Jan		20.9	489.2
W-25N-23	14-Feb	PS	20.9	489.2
W-25N-23	15-Feb	PS	20.9	489.1
W-25N-23	1-Mar	PS	20.9	489.2
W-25N-23	19-May		23.1	487
W-25N-23	27-Jul		21.9	488.2
W-25N-23	24-Aug	PS	23.4	486.7
W-25N-23	25-Aug	PS	23.4	486.7
W-25N-23	19-Oct		22.9	487.2
W-25N-22	27-Jan		23.8	488.9

Table A-2. Site 300 sewer pond groundwater monitoring network 2022 groundwater elevation summary.

Well	Date sampled	Pre-sampling	Ground water depth (ft.)	Ground water elevation (ft. above MSL)
W-25N-22	19-May		25.5	487.2
W-25N-22	27-Jul		24.7	488.1
W-25N-22	14-Sep	PS	25.1	487.7
W-25N-22	15-Sep	PS	25.1	487.7
W-25N-22	28-Sep	PS	25.1	487.7
W-25N-22	29-Sep	PS	25.1	487.7
W-25N-22	19-Oct		25.3	487.4
W-26R-01	27-Jan		18.8	490.9
W-26R-01	7-Feb	PS	18.8	490.9
W-26R-01	8-Feb	PS	18.9	490.8
W-26R-01	19-May		20.9	488.9
W-26R-01	27-Jul		19.5	490.2
W-26R-01	23-Aug	PS	21	488.7
W-26R-01	24-Aug	PS	21	488.7
W-26R-01	19-Oct		20.6	489.1
W-26R-01	2-Nov	PS	20.9	488.8
W-26R-01	3-Nov	PS	20.9	488.8
W-26R-05	27-Jan		22.2	490.9
W-26R-05	14-Feb	PS	22.2	490.9
W-26R-05	17-Feb	PS	22.4	490.7
W-26R-05	18-May	PS	23.9	489.2
W-26R-05	19-May		25.8	487.4
W-26R-05	27-Jul		23.1	490
W-26R-05	23-Aug	PS	25.9	487.2
W-26R-05	1-Sep	PS	25.9	487.2
W-26R-05	19-Oct		23.6	489.5
W-26R-05	7-Nov	PS	23.6	489.5
W-26R-05	14-Nov	PS	23.6	489.5
W-26R-11	27-Jan		17.3	490.6
W-26R-11	1-Mar	PS	17.3	490.6
W-26R-11	2-Mar	PS	17.3	490.6
W-26R-11	19-May		19.2	488.8
W-26R-11	27-Jul		17.7	490.2
W-26R-11	23-Aug	PS	19.2	488.7
W-26R-11	24-Aug	PS	19.2	488.7
W-26R-11	19-Oct		14	493.9
W-26R-11	2-Nov	PS	19.2	488.8
W-26R-11	3-Nov	PS	19.2	488.8
W-7DS	27-Jan		15.2	491.1
W-7DS	22-Feb	PS	15.3	491
W-7DS	23-Feb	PS	15.3	491

Table A-2. Site 300 sewer pond groundwater monitoring network 2022 groundwater elevation summary.

Well	Date sampled	Pre-sampling	Ground water depth (ft.)	Ground water elevation (ft. above MSL)
W-7DS	19-May		17.4	488.9
W-7DS	27-Jul		16	490.3
W-7DS	24-Aug	PS	18	488.3
W-7DS	25-Aug	PS	18	488.3
W-7DS	19-Oct		17.2	489.1
W-7DS	2-Nov		17.4 [DRY]	488.9 [DRY]
W-7DS	28-Nov	PS	17.1	489.2
W-7DS	29-Nov	PS	17.1	489.2

Note:
Well W-25N-22 pump was inoperable during the first semester of 2022 but was returned to service in second semester of 2022.

Table A-3. Site 300 sewer pond wastewater monitoring network 2022 coliform, anion, and physical characteristic data summary.

Discharge Location	Date	pH	Specific Conductance (µmhos/cm)	Biochemical Oxygen Demand (mg/L)	Dissolved Oxygen (mg/L)	Fecal Coliform (MPN/100mL)	Total Coliform (MPN/100mL)	Sodium (mg/L)
3-ESWP-OW	Apr 14	9.6	7000	42	23	5400	70000	1700
3-ESWP-OW	Oct 12	9.6	7000	85	9.6	2300	9200	1700
3-ISWP-OW	Apr 14	7.8	400	31	-	-	-	-
3-ISWP-OW	Oct 12	8.5	960	74	-	-	-	-

Note:
– Analysis not required.

Table A-4. Site 300 sewer pond wastewater monitoring network 2022 metals data summary.

Analyte (µg/L)	Date	3-ESWP-OW
Aluminum	Apr 14	310
	Oct 12	430
Arsenic	Apr 14	<10
	Oct 12	15
Barium	Apr 14	<120
	Oct 12	200
Boron	Apr 14	6300
	Oct 12	6500
Cadmium	Apr 14	<250
	Oct 12	<250
Calcium	Apr 14	11000
	Oct 12	13000
Chromium	Apr 14	<5
	Oct 12	<5
Hexavalent Chromium	Apr 14	<1
	Oct 12	<1
Copper	Apr 14	13
	Oct 12	13
Iron	Apr 14	<500
	Oct 12	1000
Lead	Apr 14	<25
	Oct 12	<25
Magnesium	Apr 14	2900
	Oct 12	3200
Manganese	Apr 14	<150
	Oct 12	<150
Mercury	Apr 14	<0.2
	Oct 12	<0.2
Molybdenum	Apr 14	<120
	Oct 12	<120
Nickel	Apr 14	<10
	Oct 12	<10
Potassium	Apr 14	71000
	Oct 12	82000
Selenium	Apr 14	<10
	Oct 12	13
Silver	Apr 14	<50
	Oct 12	<50
Vanadium	Apr 14	<100
	Oct 12	<100
Zinc	Apr 14	<100
	Oct 12	<100

Table A-5. Site 300 sewer pond wastewater monitoring network 2022 QA data.

Discharge Location	Date	Type	pH	Specific Conductance (µmhos/cm)	Biochemical Oxygen Demand (mg/L)	Dissolved Oxygen (mg/L)	Fecal Coliform (MPN/100mL)	Total Coliform (MPN/100mL)	Sodium (mg/L)
3-ESWP-OW	Apr 14	Routine	9.6	7,000	42	23	5,400	70,000	1,700
	Apr 14	Duplicate	-	-	-	-	5,400	22,000	-
3-ESWP-OW	Oct 12	Routine	9.6	7000	85	9.6	2300	9200	1700
	Oct 12	Duplicate	-	-	-	-	-	-	1700

Note:
– Analysis not required.

Table A-6. Site 300 sewer pond groundwater monitoring network 2022 anions data summary.

Well	Date	Sodium (mg/L)	Chloride (mg/L)	Nitrate (as NO_3) (mg/L)	Sulfate (mg/L)	Fluoride (mg/L)
W-7ES	Feb 22	130	120	12	240	0.32
W-7ES	May 16	-	-	11	-	-
W-7ES	Aug 30	150	160	9.8	320	0.31
W-7ES	Nov 7	-	-	9.4	-	-
W-7PS	Feb 22	150	120	16	170	0.37
W-35A-04	Feb 28	150	150	12	300	0.39
W-35A-04	May 16	-	-	12	-	-
W-35A-04	Aug 30	160	160	11	320	0.35
W-35A-04	Nov 9	-	-	11	-	-
W-25N-23	Feb 14	140	110	2.5	370	0.34
W-25N-23	Aug 24	140	95	1.1	360	0.28
W-25N-22	Sep 14	140	96	1.4	400	0.31
W-26R-01	Feb 7	180	150	28	240	0.30
W-26R-01	May 9	-	-	37	-	-
W-26R-01	Aug 23	210	150	33	240	0.29
W-26R-01	Nov 2	-	-	30	-	-
W-26R-05	Feb 14	150	100	2.8	230	0.30
W-26R-05	May 9	-	-	0.84	-	-
W-26R-05	Aug 23	160	93	0.66	220	0.31
W-26R-05	Nov 7	-	-	<0.5	-	-
W-26R-11	Mar 1	140	110	13	180	0.34
W-26R-11	May 10	-	-	13	-	-
W-26R-11	Aug 23	170	140	13	240	0.34
W-26R-11	Nov 2	-	-	11	-	-
W-7DS	Feb 22	130	120	13	240	0.34
W-7DS	May 10	-	-	11	-	-
W-7DS	Aug 24	150	150	10	300	0.28
W-7DS	Nov 28	-	-	8.1	-	-

Notes:
– Analysis not required.
Well W-25N-22 pump was inoperable during the first semester of 2022 but was returned to service in second semester of 2022.
Well W-7PS was dry in May 2022 and second semester 2022.

Table A-7. Site 300 sewer pond groundwater monitoring network 2022 coliform data summary.

Well	Date	Fecal Coliform (MPN/100mL)	Total Coliform (MPN/100mL)
W-7ES	Feb 23	<1.8	17
W-7ES	May 17	<1.8	2.0
W-7ES	Aug 31	<1.8	<1.8
W-7ES	Nov 8	<1.8	1.8
W-7PS	Feb 23	<1.8	<1.8
W-35A-04	Mar 1	<1.8	<1.8
W-35A-04	May 17	<1.8	<1.8
W-35A-04	Aug 31	<1.8	1600
W-35A-04	Nov 10	<1.8	2.0
W-25N-23	Mar 1	<1.8	<1.8
W-25N-23	Aug 25	<1.8	<1.8
W-25N-22	Sep 29	<1.8	<1.8
W-26R-01	Feb 8	<1.8	1.8
W-26R-01	May 10	<1.8	<1.8
W-26R-01	Aug 24	<1.8	<1.8
W-26R-01	Nov 3	<1.8	<1.8
W-26R-05	Feb 17	<1.8	6.8
W-26R-05	May 18	<1.8	<1.8
W-26R-05	Sep 1	<1.8	<1.8
W-26R-05	Nov 14	<1.8	<1.8
W-26R-11	Mar 2	<1.8	<1.8
W-26R-11	May 11	<1.8	<1.8
W-26R-11	Aug 24	<1.8	<1.8
W-26R-11	Nov 3	<1.8	<1.8
W-7DS	Feb 23	<1.8	<1.8
W-7DS	May 11	<1.8	<1.8
W-7DS	Aug 25	<1.8	<1.8
W-7DS	Nov 29	<1.8	<1.8

Notes:
Well W-25N-22 pump was inoperable during the first semester of 2022.
Well W-7PS was dry in May 2022 and second semester 2022.

ESH-EFA-WQ-22-21952–MF/AT:as

Table A-8. Site 300 sewer pond groundwater monitoring network 2022 physical chemistry data.

Well	Date	pH	Specific Conductance (µmhos/cm)	Total Alkalinity (as $CaCO_3$) (mg/L)	Total dissolved solids (TDS) (mg/L)	Total Hardness (as $CaCO_3$) (mg/L)	Total Phosphorus (as PO_4) (mg/L)
W-7ES	Feb 22	8.0	1300	240	860	340	<1
W-7ES	May 16	8.1	1530	-	-	-	-
W-7ES	Aug 30	8.1	1510	250	1000	410	<1
W-7ES	Nov 7	8.2	1510	-	-	-	-
W-7PS	Feb 22	8.1	1210	250	790	250	<1
W-35A-04	Feb 28	7.9	1460	250	1000	400	<1
W-35A-04	May 16	8.1	1550	-	-	-	-
W-35A-04	Aug 30	8.1	1520	240	990	420	<1
W-35A-04	Nov 9	8.2	1550	-	-	-	-
W-25N-23	Feb 14	7.6	1380	210	970	360	<1
W-25N-23	Aug 24	8.0	1360	210	940	380	<1
W-25N-22	Sep 14	7.8	1360	190	940	400	<1
W-26R-01	Feb 7	7.9	1390	240	880	240	<1
W-26R-01	May 9	8.2	1400	-	-	-	-
W-26R-01	Aug 23	8.0	1420	230	940	270	<1
W-26R-01	Nov 2	8.3	1400	-	-	-	-
W-26R-05	Feb 14	7.9	1160	220	760	230	<1
W-26R-05	May 9	8.2	1080	-	-	-	-
W-26R-05	Aug 23	7.9	1130	220	740	230	<1
W-26R-05	Nov 7	8.2	1060	-	-	-	-
W-26R-11	Mar 1	7.6	1140	240	760	240	<1
W-26R-11	May 10	7.8	1250	-	-	-	-
W-26R-11	Aug 23	8.0	1390	250	900	320	<1
W-26R-11	Nov 2	8.2	1370	-	-	-	-
W-7DS	Feb 22	8.1	1290	240	860	330	<1
W-7DS	May 10	7.8	1390	-	-	-	-
W-7DS	Aug 24	7.9	1500	250	940	410	<1
W-7DS	Nov 28	8.0	1520	-	-	-	-

Notes:
– Analysis not required.
Well W-25N-22 pump was inoperable during the first semester of 2022 but was returned to service in second semester of 2022.
Well W-7PS was dry in May 2022 and second semester 2022.

ESH-EFA-WQ-22-21952–MF/AT:as

Table A–9. Site 300 sewer pond groundwater monitoring network 2022 metals data summary.

Analyte (µg/L)	Month	W-7ES	W-7PS	W-35A-04	W-25N-23	W-25N-22	W-26R-01	W-26R-05	W-26R-11	W-7DS
Aluminum	Feb	<50	<50	<50	<50	-	<50	<50	-	<50
	Mar	-	-	-	-	-	-	-	<50	-
	Aug	<50	-	<50	<50	-	<50	<50	<50	<50
	Sep	-	-	-	-	<50	-	-	-	-
Arsenic	Feb	<2	4.0	4.0	<2	-	8.5	7.6	-	2.6
	Mar	-	-	-	-	-	-	-	4.6	-
	Aug	3.7	-	4.6	4.0	-	9.5	6.0	4.8	3.7
	Sep	-	-	-	-	8.7	-	-	-	-
	Nov	-	-	3.5	-	-	-	-	-	-
Barium	Feb	41	44	40	25	-	32	29	-	41
	Mar	-	-	-	-	-	-	-	35	-
	Aug	49	-	43	26	-	32	27	50	48
	Sep	-	-	-	-	24	-	-	-	-
	Nov	-	-	48	-	-	-	-	-	-
Boron	Feb	2100	1700	2400	1100	-	1500	980	-	2000
	Mar	-	-	-	-	-	-	-	1600	-
	Aug	2500	-	2600	1000	-	1500	930	2100	2300
	Sep	-	-	-	-	860	-	-	-	-
Cadmium	Feb	<50	<50	<50	<50	-	<50	<50	-	<50
	Mar	-	-	-	-	-	-	-	<50	-
	Aug	<50	-	<50	<50	-	<50	<50	<50	<50
	Sep	-	-	-	-	<50	-	-	-	-
	Nov	-	-	<0.5	-	-	-	-	-	-
Calcium	Feb	80000	59000	92000	88000	-	60000	60000	-	77000
	Mar	-	-	-	-	-	-	-	58000	-
	Aug	93000	-	98000	95000	-	68000	59000	76000	96000
	Sep	-	-	-	-	96000	-	-	-	-
Chromium	Feb	<1	1.2	4.5	<1	-	1.5	<1	-	<1
	Mar	-	-	-	-	-	-	-	1.8	-
	Aug	1.2	-	<1	<1	-	<1	<1	<1	<1
	Sep	-	-	-	-	<1	-	-	-	-
	Nov	-	-	<1	-	-	-	-	-	-
Hexavalent Chromium	Feb	<1	2.1	<1	<1	-	<1	<1	-	<1

Table A–9. Site 300 sewer pond groundwater monitoring network 2022 metals data summary continued.

Analyte (µg/L)	Month	W-7ES	W-7PS	W-35A-04	W-25N-23	W-25N-22	W-26R-01	W-26R-05	W-26R-11	W-7DS
	Mar	-	-	-	-	-	-	-	<1	-
	Aug	<1	-	<1	<1	-	<1	<1	<1	<1
	Sep	-	-	-	-	<1	-	-	-	-
Copper	Feb	1.3	1.5	1.9	1.8	-	4.9	1.7	-	1.4
	Mar	-	-	-	-	-	-	-	1.6	-
	Aug	<1	-	<1	<1	-	2.1	<1	<1	<1
	Sep	-	-	-	-	1.3	-	-	-	-
	Nov	-	-	<10	-	-	-	-	-	-
Iron	Feb	<100	<100	<100	<100	-	<100	<100	-	<100
	Mar	-	-	-	-	-	-	-	<100	-
	Aug	<100	-	<100	<100	-	<100	<100	<100	<100
	Sep	-	-	-	-	<100	-	-	-	-
Lead	Feb	<5	<5	<5	<5	-	<5	<5	-	<5
	Mar	-	-	-	-	-	-	-	<5	-
	Aug	<5	-	<5	<5	-	<5	<5	<5	<5
	Sep	-	-	-	-	<5	-	-	-	-
	Nov	-	-	<2	-	-	-	-	-	-
Magnesium	Feb	35000	24000	40000	34000	-	21000	20000	-	34000
	Mar	-	-	-	-	-	-	-	23000	-
	Aug	43000	-	43000	36000	-	24000	21000	32000	41000
	Sep	-	-	-	-	38000	-	-	-	-
Manganese	Feb	<30	<30	<30	<30	-	<30	<30	-	<30
	Mar	-	-	-	-	-	-	-	<30	-
	Aug	<30	-	<30	<30	-	<30	<30	<30	<30
	Sep	-	-	-	-	<30	-	-	-	-
Mercury	Feb	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	<0.2
	Mar	-	-	-	-	-	-	-	<0.2	-
	Aug	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2
	Sep	-	-	-	-	<0.2	-	-	-	-
	Nov	-	-	<0.2	-	-	-	-	-	-
Molybdenum	Feb	<25	<25	<25	<25	-	<25	<25	-	<25
	Mar	-	-	-	-	-	-	-	<25	-
	Aug	<25	-	<25	<25	-	<25	<25	<25	<25

Table A–9. Site 300 sewer pond groundwater monitoring network 2022 metals data summary continued.

Analyte (µg/L)	Month	W-7ES	W-7PS	W-35A-04	W-25N-23	W-25N-22	W-26R-01	W-26R-05	W-26R-11	W-7DS
	Sep	-	-	-	-	<25	-	-	-	-
	Nov	-	-	<25	-	-	-	-	-	-
Nickel	Feb	<2	9.3	30	13	-	4.0	<2	-	<2
	Mar	-	-	-	-	-	-	-	4.3	-
	Aug	2.4	-	7.1	26	-	<2	<2	2.5	2.2
	Sep	-	-	-	-	17	-	-	-	-
	Nov	-	-	20	-	-	-	-	-	-
Potassium	Feb	4000	4600	4800	9400	-	9800	9200	-	4600
	Mar	-	-	-	-	-	-	-	4900	-
	Aug	4700	-	5100	9700	-	11000	9600	6000	5100
	Sep	-	-	-	-	11000	-	-	-	-
	Nov	-	-	5700	-	-	-	-	-	-
Selenium	Feb	8.7	19	<10	4.5	-	9.7	3.8	-	9.9
	Mar	-	-	-	-	-	-	-	13	-
	Aug	10	-	8.3	3.2	-	11	2.6	14	9.7
	Sep	-	-	-	-	2.2	-	-	-	-
	Nov	-	-	8.6	-	-	-	-	-	-
Silver	Feb	<10	<10	<10	<10	-	<10	<10	-	<10
	Mar	-	-	-	-	-	-	-	<10	-
	Aug	<10	-	<10	<10	-	<10	<10	<10	<10
	Sep	-	-	-	-	<10	-	-	-	-
	Nov	-	-	<0.5	-	-	-	-	-	-
Vanadium	Feb	<20	<20	<20	<20	-	<20	<20	-	<20
	Mar	-	-	-	-	-	-	-	<20	-
	Aug	<20	-	<20	<20	-	<20	<20	<20	<20
	Sep	-	-	-	-	<20	-	-	-	-
	Nov	-	-	<25	-	-	-	-	-	-
Zinc	Feb	<20	23	<20	<20	-	<20	<20	-	<20
	Mar	-	-	-	-	-	-	-	<20	-
	Aug	<20	-	<20	<20	-	<20	<20	<20	<20
	Sep	-	-	-	-	<20	-	-	-	-

Table A–9. Site 300 sewer pond groundwater monitoring network 2022 metals data summary continued.

Analyte (µg/L)	Month	W-7ES	W-7PS	W-35A-04	W-25N-23	W-25N-22	W-26R-01	W-26R-05	W-26R-11	W-7DS
	Nov	-	-	<20	-	-	-	-	-	-

Notes:
– Analysis not required.
Well W-25N-22 pump was inoperable during the first semester of 2022 but was returned to service in second semester of 2022.
Well W-7PS was dry in May 2022 and second semester 2022.

Table A-10. Site 300 sewer pond groundwater monitoring network second semester 2022 QA data.

Constituent	Units	W-7ES				W-35A-04				W-26R-05				W-7DS			
		Aug 30	Aug 30	Aug 31	Aug 31	Nov 9	Nov 9	Nov 10	Nov 10	Aug 23	Aug 23	Sep 1	Sep 1	Nov 28	Nov 28	Nov 29	Nov 29
		R	D	R	D	R	D	R	D	R	D	R	D	R	D	R	D
pH	Units	8.1	8.1	-	-	8.2	8.1	-	-	7.9	7.9	-	-	8.0	8.0	-	-
Specific Conductance	µmhos/cm	1510	1500	-	-	1550	1570	-	-	1130	1150	-	-	1520	1480	-	-
Fecal Coliform	MPN/100mL	-	-	<1.8	<1.8	-	-	<1.8	<1.8	-	-	<1.8	<1.8	-	-	<1.8	<1.8
Total Coliform	MPN/100mL	-	-	<1.8	<1.8	-	-	2.0	4.0	-	-	<1.8	<1.8	-	-	<1.8	<1.8
Nitrate (as NO3)	mg/L	9.8	9.8	-	-	11	11	-	-	0.66	0.66	-	-	8.1	7.9	-	-

FIELD TRACKING FORM

INFLUENT TO SITE 300 SEWAGE POND

Lab	Alpha Lab
CoC #	41537
Ship It #	294226

DATE: 10/12/22 **TIME:** 0840

Special Instructions: **Semi-Annual Sampling in 2nd and 4th Quarters (April & Oct)**
Samples should be taken after 1 p.m. during higher flow.
Print collection time on sample bottles.
BOD Hold Time 48hr. Conductivity/pH Hold Time 24hr.

pH meter calibrated	10/12/22
Conductivity meter calibrated	10/12/22
DO meter calibrated	10/12/22

Location	Field Measurements				Comments	Initials	Samples for Lab Analysis
	pH	COND	DO (PPM)	Temp (°C)			
3-ISWP-01-OW (Influent to Sewage Pond)	8.65	6655	4.35	25.6		TG	**Analytical Codes:** **E120.1A & E150.1A** *(Conductivity/pH)* *(2 X 250-mL poly)*
3-WSWP-01-OW *duplicate of* 3-ISWP-01-OW							**SM5210B-A** (BOD) *(1 X 1 Liter poly)*

2Q2022 Duplicate **See ESWP Field Tracking Form**
4Q2022 Duplicate **See ESWP Field Tracking Form**
☑ Copy to Analysts, Ashley Thomas

Reference Document:
EMP-QAS-FTF

Revised 09/14/2022

Chain of Custody

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Lawrence Livermore National Laboratory
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Work Authorized By: EFA/TSD
TRR Approver: DELLA BURRUSS
Project Info:

Access/COC #: 91537
Document Control #: 91537
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PCI Task #: ES&H Bills and Taxes
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DMT Additional Copies:

Analytical Lab: ALPHAANAL
TAT: 20d
Analytical Lab Log #:
Project/Network: WDRPOND
ShipIt Release #: 294226
Add'l Email:

Additional Instructions:

Sample ID	Sampled Date/Time	Matrix	Cont. Type	Cont. Count	Study Area	Req. Analysis	Analysis Detail	Lab Instructions
3-ESWP-01-OW	10/12/2022 10:10	SW	P	1	WDR	E120.1A	ALL	CONDUCTIVITY
3-ESWP-01-OW	10/12/2022 10:10	SW	P	1	WDR	E150.1A	ALL	BAL - PH
3-ESWP-01-OW	10/12/2022 10:10	SW	G	1	WDR	E360.1	ALL	BAL - DISSOLVED OXYGEN
3-ESWP-01-OW	10/12/2022 10:10	SW	PO	1	WDR	SM5210B-A	ALL	BOD
3-ESWP-01-OW	10/12/2022 10:10	SW	P	1	WDR	SM9221HDIL	ALL	BAL-TCFC LLNL Hi DI
3-ISWP-01-OW	10/12/2022 09:40	SW	P	1	WDR	E120.1A	ALL	CONDUCTIVITY
3-ISWP-01-OW	10/12/2022 09:40	SW	P	1	WDR	E150.1A	ALL	BAL - PH
3-ISWP-01-OW	10/12/2022 09:40	SW	PO	1	WDR	SM5210B-A	ALL	BOD

Relinquished Signature	Company	Date	Time	Received Signature	Company	Date	Time
1	LLNL/EFA/TSD	10/12/22	12:00	2	ALPHA	10/12/22	1201
2 ALPHA	ALPHA	10/12/22		3 JE		10-12	1912
3				4 JF		10-13	2300
4				5			

Revision Printed: 12/15/2021/13/18/04

Signature Order - 1: Sampler, 2: Courier, 3: Lab, 4: Analyst, 5: DMT

LD 11/14/22

FIELD TRACKING FORM

EAST END OF SITE 300 SEWAGE POND

Lab	Alpha	BC
CoC #	91537	91538
Ship It #	294226	294227

DATE: 10/12/22 TIME: 1010

Special Instructions: Semi-Annual Sampling in 2nd and 4th Quarters (April & Oct)
Samples should be taken after 1 p.m.
Print collection time on sample bottles.
DO/conductivity/pH hold time 24 hr.

pH meter calibrated 10/12/22
Conductivity meter calibrated 10/12/22
DO meter calibrated 10/12/22

Location	Field Measurements					Comments	Initials	Samples for Lab Analysis
	pH	COND	Depth	DO (PPM)	Temp (°C)			Analytical Codes:
3-ESWP-01-OW (East end of Sewage Pond)	9.91	6.34mS	1 ft.	2.28	18.8		TG	**Alpha LAB** **E360.1** *DO (1x300mL PET Poly with glass stopper)* **E120.1A & E150.1A** *Conductivity/pH (2x250-mL poly)* **SM9221HDIL** *Total, Fecal Coliform - High Dilution (1x125mL sterilized poly) 6hr hold* **SM5210B-A** *BOD (1x1 Liter poly)* **BC Labs** **S3METALS** *(1X500mL Poly)* **24hr hold for Cr6**
3-WSWP-01-OW *duplicate of* 3-ESWP-01-OW	9.91	6.34mS	1 ft.	2.28	18.8		TG	

2Q2022 Duplicate **SM9221HDIL**
4Q2022 Duplicate **S3METALS**

☑ Copy to Analysts, Ashley Thomas

Reference Document:
EMP-QAS-FTF

Revised 09/14/2022

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DMT Additional Copies:

Analytical Lab : BCLABS-BAR
TAT: 20d
Analytical Lab Log #: 222439
Project/Network: WDRPOND
ShipIt Release #: 294227
Add'l Email:

Additional Instructions:

Work Authorized By: EFA/TSD
TRR Approver: DELLA BURRUSS
Project Info:

Sample ID	Sampled Date/Time	Matrix	Cont. Type	Cont. Count	Study Area	Req. Analysis	Analysis Detail	Lab Instructions
-1 3-ESWP-01-OW	10/12/2022 10:10	SW	P	1	WDR	S3METALS	ALL	
3-ESWP-01-OW	10/12/2022 10:10	SW	P	0	WDR	S3METALS	TOTAL	
-2 3-WSWP-01-OW	10/12/2022 10:10	SW	P	1	WDR	S3METALS	ALL	
3-WSWP-01-OW	10/12/2022 10:10	SW	P	0	WDR	S3METALS	TOTAL	

	Relinquished Signature	Company	Date	Time		Received Signature	Company	Date	Time
1		LLNL/EFA/TSD	10/12/22	11:40	2		PACE	10-12-22	1630
2		PACE	10-12-22	1830	3		PACE	10-12-22	18:30
3		PACE	10-12-22	22:00	4				
4					5				

SPACE 10 11/4/22

LLNL Site 300 Sewer/Waste water Evaporation Pond July 2022

Treatment POND 1 2xper week											Observations										
Day	OP-Ini	Fbd. Inch	Pond East				Pond West				Color			Air Temp	Wind	Odor Yes/No	Mosquitoes Yes/No	Solids Yes/No	Scum Yes/No	Dead Algae Yes/No	Weeds Yes/No
			Time	D.O. mg/L	pH	Temp	Time	D.O. mg/L	pH	Temp	Green	Brown Green	Brown								
1-Jul	JW	19"	14:00	20.94	10.14	81.6	14:10	12.94	9.94	75.4	X			84	9 NW	N	N	N	N	N	N
5-Jul	JW	18.5"	13:50	20.34	10.2	77.4	14:00	21.54	10.21	76	X			80	3 NW	N	N	N	N	N	N
7-Jul	JW	18"	8:15	6.29	10.19	67.7	8:20	6.85	10.22	68.7	X			71	9 NW	N	N	N	N	N	N
12-Jul	JW	18"	13:00	22.56	10.21	83.4	13:15	14.61	10.21	87.8		X		91	15 NW	N	N	N	N	N	N
14-Jul	JW	18"	9:15	3.27	10.22	72.4	9:25	9.45	10.24	73.9		X		77	8 E	N	N	N	N	N	N
19-Jul	JW	19.5"	13:50	16.86	10.2	86.2	14:00	13.32	10.01	80.4		X		96	16 NW	N	N	N	N	N	N
21-Jul	JW	19.5"	14:15	16.35	10.19	82.7	14:30	15.14	10.08	79.4		X		98	10 NW	N	N	N	N	N	N
26-Jul	JW	19.5"	9:55	3.22	10.23	72.7	10:05	8.45	10.24	74.3		X		72	2 NW	N	N	N	N	N	N
28-Jul	JW	19"	11:00	5.59	10.23	72.2	11:15	10.57	10.25	74.6		X		83	7 NE	N	N	N	N	N	N

		Flow	Aerators			
Day	Op Ini.	Meter Total	1 On/Off	2 On/Off	3 On/Off	4 On/Off
1-Jul	JW	1,612,600		X		X
5-Jul	JW	1,658,900	X		X	
7-Jul	JW	1,695,000		X		X
12-Jul	JW	1,750,400	X		X	
14-Jul	JW	1,773,600	X		X	
19-Jul	JW	1,808,500		X		X
21-Jul	JW	1,844,200		X		X
26-Jul	JW	1,903,700		X		X
28-Jul	JW	1,954,100		X		X
		Total Gollons = 341,500				

Overflow Basin		
Water Level	Overall Condition Poor/Fair	Notes
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	

LLNL Site 300 Sewer/Waste water Evaporation Pond December 2022

Treatment POND 1 2xper week											Observations									
Day	OP-Ini	Fbd. Inch	Pond East				Pond West				Color			Air Temp	Wind	Odor Yes/No	Mosquitoes Yes/No	Solids Yes/No	Scum Yes/No	Dead Algae Yes/No	Weeds Yes/No
			Time	D.O. mg/L	pH	Temp	Time	D.O. mg/L	pH	Temp	Green	Brown Green	Brown								
1-Dec	JW	18.5"	9:00	7.38	9.58	47.3	9:10	8.16	9.63	47.4		X		50	10 NE	NO	NO	NO	YES	NO	NO
6-Dec	JW	17.5"	13:10	14.03	9.7	50.8	13:20	8.55	9.61	50.3		X		49	3 NW	NO	NO	NO	YES	NO	NO
9-Dec	JW	17.5"	8:00	9.8	9.56	47.5	8:10	8.33	9.55	47.1		X		41	1 NE	NO	NO	NO	YES	NO	NO
13-Dec	JW	16"	9:48	13.75	9.54	46.6	10:12	9.83	9.55	46.5		X		47	2 NE	NO	NO	NO	YES	NO	NO
16-Dec	JW	16"	8:55	11.48	9.38	43.4	9:05	9.9	9.41	42.5		X		36	0	NO	NO	NO	NO	NO	NO
20-Dec	JW	16"	11:10	13.77	9.57	44.2	11:20	12.11	9.51	44.2		X		49	2NE	NO	NO	NO	YES	NO	NO
22-Dec	JW	16"	11:30	11.14	9.54	44.4	11:40	9.68	9.5	44.3		X		40	0	NO	NO	NO	YES	NO	NO
27-Dec	JW	15"	13:38	12.4	9.68	49.7	13:45	10.57	9.56	49.9		X		56	7 NE	NO	NO	NO	NO	NO	NO
30-Dec	JW	14.5"	12:40	12.31	9.71	52.8	12:50	10.51	9.56	49.9		X		59	1 NE	NO	NO	NO	YES	NO	NO

		Flow	Aerators			
Day	Op Ini.	Meter Total	1 On/Off	2 On/Off	3 On/Off	4 On/Off
1-Dec	JW	2979800	ON		ON	ON
6-Dec	JW	2995600	ON		ON	ON
9-Dec	JW	3004200	ON		ON	ON
13-Dec	JW	3013300	ON		ON	ON
20-Dec	JW	3030300	ON		ON	ON
22-Dec	JW	3035500	ON		ON	ON
27-Dec	JW	3045300	ON		ON	ON
30-Dec	JW	3053200	ON		ON	ON
		Total gallons = 73,400				

Overflow Basin		
Water Level	Overall Condition Poor/Fair	Notes
0"	POOR	
0"	POOR	
0"	POOR	
0"	POOR	
0"	POOR	
0"	POOR	
0"	POOR	
0"	POOR	

LLNL Site 300 Sewer/Waste water Evaporation Pond November 2022

Treatment POND 1 2xper week											Observations									
Day	OP-Ini	Fbd. Inch	Pond East				Pond West				Color			Air Temp	Wind	Odor Yes/No	Mosquitoes Yes/No	Solids Yes/No	Scum Yes/No	Dead Algae Yes/No	Weeds Yes/No
			Time	D.O. mg/L	pH	Temp	Time	D.O. mg/L	pH	Temp	Green	Brown Green	Brown								
3-Nov	KK	18.5"	21:55	6.03	9.16	56.2	22:00	6.5	9.3	56.8		X		50	NW	N	N	Y	Y	N	N
8-Nov	KK	18"	15:30	12.53	9.78	57.6	15:36	12.38	9.71	57.7		X		54	NW	N	N	N	Y	N	N
10-Nov	KK	18"	15:34	11.82	9.71	58.6	15:27	10.68	9.77	57.8		X		59	NW	N	N	N	Y	N	N
15-Nov	JW	18"	8:00	9.13	9.76	48.7	8:10	7.99	9.77	48.6		X		38	2 NW	N	N	N	Y	N	N
17-Nov	JW	18.5"	13:45	18:28	9.95	51.5	13:55	11.94	9.87	52.1		X		59	3 NE	N	N	N	Y	N	N
22-Nov	JW	18.5"	13:15	14.23	9.93	49.3	13:20	13.43	9.85	51.8		X		62	10 NE	N	N	N	Y	N	N
29-Nov	JW	18.5"	13:10	13.32	9.86	51.1	13:25	9.9	9.74	50.4		X		55	6 NE	N	N	N	Y	N	N

		Flow	Aerators			
Day	Op Ini.	Meter Total	1 On/Off	2 On/Off	3 On/Off	4 On/Off
3-Nov	KK	2791700	ON	ON	ON	ON
8-Nov	KK	2929200	ON	OFF	ON	ON
10-Nov	KK	2935900	ON	OFF	ON	ON
15-Nov	JW	2944700	ON	OFF	ON	ON
17-Nov	JW	2952800	ON	OFF	ON	ON
22-Nov	JW	2964200	ON	OFF	ON	ON
28-Nov	JW	2975500	ON	OFF	ON	ON

Overflow Basin		
Water Level	Overall Condition Poor/Fair	Notes
0"		
0"		
0"		
0"		
0"		
0"		
0"		

LLNL Site 300 Sewer/Waste water Evaporation Pond October 2022

Treatment POND 1 2xper week											Observations									
Day	OP-Ini	Fbd. Inch	Pond East				Pond West				Color			Air Temp	Wind	Odor Yes/No	Mosquitoes Yes/No	Solids Yes/No	Scum Yes/No	Dead Algae Yes/No	Weeds Yes/No
			Time	D.O. mg/L	pH	Temp	Time	D.O. mg/L	pH	Temp	Green	Brown Green	Brown								
4-Oct	JW	16.5"	10:10	8.48	10.33	67.4	10:20	11.96	10.2	70.2		X		78	2 NW	N	N	N	Y	N	N
6-Oct	JW	17"	14:00	9.16	10.13	72.6	14:05	9.37	9.94	72.5		X		86	8 NE	N	N	N	N	N	N
11-Oct	JW	17"	8:30	6.74	10.26	66.2	8:40	6.2	10.09	66.4		X		58	2 NE	N	N	N	Y	N	N
13-Oct	JW	17"	13:55	9.27	9.96	69.2	14:05	13.39	9.96	72		X		79	6 E	N	N	N	Y	N	N
19-Oct	JW	17.5"	10:18	9.96	10.13	63.2	10:25	9.68	9.94	63.9		X		60	2 NE	N	N	N	N	N	N
21-Oct	JW	18"	10:20	10.63	9.82	65	10:40	10.63	9.82	65		X		68	2 NE	N	N	N	Y	N	N
25-Oct	KK	18"	22:23	8.31	10.08	67.3	22:30	11.61	10.13	67.4		X		68	NW	N	N	N	Y	N	N
27-Oct	KK	18.5"	18:29	5.13	9.47	57.3	18:35	6.7	9.7	56.8		X		50	NW	N	N	N	Y	N	N

		Flow	Aerators			
Day	Op Ini.	Meter Total	1 On/Off	2 On/Off	3 On/Off	4 On/Off
4-Oct	JW	2772400	X	X	X	X
6-Oct	JW	2787000	X	X	X	X
11-Oct	JW	2827200	X	X	X	X
13-Oct	JW	2843400	X	X	X	X
19-Oct	JW	2876800	X	X	X	X
21-Oct	JW	2884100	X	X	X	X
		Total gallons = 111,700				

Overflow Basin		
Water Level	Overall Condition Poor/Fair	Notes
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	

LLNL Site 300 Sewer/Waste water Evaporation Pond September 2022

Treatment POND 1 2xper week											Observations									
Day	OP-Ini	Fbd. Inch	Pond East				Pond West				Color			Air Temp	Wind	Odor Yes/No	Mosquitoes Yes/No	Solids Yes/No	Scum Yes/No	Dead Algae Yes/No	Weeds Yes/No
			Time	D.O. mg/L	pH	Temp	Time	D.O. mg/L	pH	Temp	Green	Brown Green	Brown								
1-Sep	JW	18.5"	10:10	4.26	10.1	72.3	10:20	14.75	10.22	79.2		X		82	5 NW	N	N	N	N	N	N
6-Sep	JW	19"	10:03	3.41	10.05	76	10:10	9.81	10.02	80.1		X		100	1 NE	N	N	N	N	N	N
9-Sep	JW	19"	7:45	3.39	10.05	84	8:00	3.44	10.01	74.3		X		84	1 NE	N	N	N	Y	N	N
13-Sep	JW	18"	11:00	8.47	10.05	68.4	11:10	7.94	10	68.6		X		70	15 NW	N	N	N	N	N	N
19-Sep	JW	18"	14:05	9.95	10.01	73	14:10	10.33	9.98	73.7		X		70	5 NE	N	N	N	Y	N	N
22-Sep	JW	17.5"	13:15	8.57	9.95	79.1	13:25	10.07	9.93	73		X		77	5 NW	N	N	N	Y	N	N
27-Sep	KK	17.5"	19:10	8.79	9.86	71.1	19:18	10.56	9.81	78.3		X		74	5 NW	N	N	N	Y	N	N
29-Sep	KK	16"	21:39	9.03	9.93	70.6	21:46	10.87	9.89	71.6		X		71	8 NW	N	N	N	Y	N	N

		Flow	Aerators			
Day	Op Ini.	Meter Total	1 On/Off	2 On/Off	3 On/Off	4 On/Off
1-Sep	JW	2,401,600	X		X	
6-Sep	JW	2,457,200	X		X	
9-Sep	JW	2,498,800		X		X
13-Sep	JW	2,593,100	X	X	X	X
19-Sep	JW	2,630,700	X	X	X	X
22-Sep	JW	2,644,800	X	X	X	X
29-Sep	KK	2,721,100	X	X	X	X
		Total gallons= 319,500				

Overflow Basin		
Water Level	Overall Condition Poor/Fair	Notes
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	

LLNL Site 300 Sewer/Waste water Evaporation Pond August 2022

Treatment POND 1 2xper week											Observations									
Day	OP-Ini	Fbd. Inch	Pond East				Pond West				Color			Air Temp	Wind	Odor Yes/No	Mosquitoes Yes/No	Solids Yes/No	Scum Yes/No	Dead Algae Yes/No	Weeds Yes/No
			Time	D.O. mg/L	pH	Temp	Time	D.O. mg/L	pH	Temp	Green	Brown Green	Brown								
2-Aug	JW	18"	13:15	4.29	9.85	75.7	13:25	17.67	10.37	88.4		X		97	4 NE	N	N	N	N	N	N
4-Aug	JW	18"	11:00	3.34	10.04	75.2	11:15	14.63	10.26	80.4	X			93	0 NW	N	N	N	N	N	N
9-Aug	JW	19"	8:10	5.25	10.24	67.2	8:20	5.09	10.24	67.3	X			68	5 NW	N	N	N	N	N	N
11-Aug	JW	19.5"	14:15	16.01	10.3	84	14:30	10.15	10.03	74.5	X			88	13 NW	N	N	N	N	N	N
16-Aug	JW	19"	8:10	6.33	10.23	70.9	8:20	5.66	10.31	71.9	X			65	1 NW	N	N	N	N	N	N
18-Aug	JW	18.5	10:45	7.65	10.11	72.8	10:55	8.35	10.04	74.7	X			90	1 NW	N	N	N	N	N	N
23-Aug	JW	19"	13:30	9.37	10.09	78.9	13:45	9.37	10.09	78.9	X			94	13 NE	N	N	N	N	N	N
26-Aug	JW	19"	14:10	9.85	10.2	77.5	14:20	13.92	10.3	86		X		88	9 NE	N	N	N	N	N	N
30-Aug	JW	19.5"	14:10	9.67	10.09	77.1	14:20	14.56	10.28	84.4	X			90	2 E	N	N	N	N	N	N

		Flow	Aerators			
Day	Op Ini.	Meter Total	1 On/Off	2 On/Off	3 On/Off	4 On/Off
2-Aug	JW	2,046,700		X		X
4-Aug	JW	2,070,400	X		X	
9-Aug	JW	2,104,000	X		X	
11-Aug	JW	2,117,500	X		X	
16-Aug	JW	2,196,500		X		X
18-Aug	JW	2,230,500		X		X
23-Aug	JW	2,295,400	X		X	
26-Aug	JW	2,321,400	X		X	
30-Aug	JW	2,359,600		X		X
		Total Gallons = 312,900				

Overflow Basin		
Water Level	Overall Condition Poor/Fair	Notes
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	
0"	Poor	

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 01-SEP-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-26R-05 AREA INFO: S300/GSA/EGSA

DATE: 01-Sep-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44087 92

PURGE METHOD/SAMPLE METHOD: PB / 90BA CONTAMINANT PRESENT: TCE-3.3/NO3-53

SCREENED INTERVAL (ft-bmp): 22.05 - 27.05 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 25.50 / 26.68 on 10-FEB-91 CASING VOL (Gal/Time): 0.91

DEPTH TO WATER(ft-bmp): 25.90 on 23-AUG-22 25.90 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 1.10 1.78 CASING DIAMETER/TCASING HT(in): 4.5 / 1.50

TIME PUMP ON: — INITIAL FLOW RATE (Q=GPM): —

TIME PUMP OFF: — MEASURED BY:FLOW METER (GRAD CYL.) BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1311		.70	90%	8.42	21.2	1146	125	1	27.00

METER SERIAL # 02497105 CALIBRATED

pH : YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: 0.82

EXCESS H2O DEST:S300-DRUM

QC SAMPLE ID:W-26R-42Y QC LAB(S): BCLABS-BAK, ALPHAANAL QC SAMPLE TIME: ~~1330~~ 1345

SAMPLE ID (VERIFY): W-26R-05 / 90BA TIME COLLECTED: 1315

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
~~BB~~	~~W-26R-05~~	~~S3ANIONS~~	1	~~250 ml~~ P	
~~BB~~	~~W-26R-42Y~~	~~S3ANIONS~~	1	~~250 ml~~ P	
~~BB~~	W-26R-05	~~S3~~METALS	1	~~500ml~~ P	
~~BB~~	~~W-26R-42Y~~	~~S3METALS~~	1	~~500ml~~ P	
~~BB~~	W-26R-05	~~S3METALS:FILTER~~	0	0	
~~BB~~	~~W-26R-42Y~~	S3METALS:FILTER	0	~~0~~	
~~BB~~	~~W-26R-05~~	S3WETCHEM	2	~~500ml~~ P	
~~BB~~	~~W-26R-42Y~~	~~S3WETCHEM~~	2	~~500ml~~ P	
AA	W-26R-05	SM9221	1	250 ml P	
AA	W-26R-42Y	SM9221	1	250 ml P	

RECEIVED
SEP 16 2022
ERD-DATA MGMT

Evacuated all cl from well

NOTE:
Purge rate/time: N/A since est_sus_flow = 0
Purge Volume: 10 gal.

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 14-SEP-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-25N-22 AREA INFO: S300/GSA/EGSA

DATE: 14-Sep-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44099

PURGE METHOD/SAMPLE METHOD: Grundfos / 3VES CONTAMINANT PRESENT: TCE-1.2

SCREENED INTERVAL (ft-bmp): 20.80 - 30.80 PUMP INTAKE DEPTH: 31.06

CASING DEPTH(installed/sounded)(ft-bmp): 28.50 / 32.46 on 01-JUN-22 CASING VOL (Gal/Time): 5.21 6.08 x3=18.24 Gal

DEPTH TO WATER(ft-bmp): 24.70 on 27-JUL-22 25.09 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 6.30 7.37 CASING DIAMETER/TCASING HT(in): 4.5 / 2.50

TIME PUMP ON: 1229 INITIAL FLOW RATE (Q=GPM): 1.0G

TIME PUMP OFF: MEASURED BY (FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1235		6.08	1	6.17	21.1	1047	51	1	26.32
1241		12.16	2	6.12	21.2	1011	44	1	28.47
1247		18.24	3	6.10	21.2	1000	49	1	30.39
1249				6.11	21.2	1022	50		
1251				6.14	21.2	1024	47		

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: N1

PURGE VOL: 15.62

EXCESS H2O DEST: S300-DRUM

QC SAMPLE ID: — QC LAB(S): — QC SAMPLE TIME: ~~125~~

SAMPLE ID (VERIFY): W-25N-22 / 3VES TIME COLLECTED: 1254

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	W-25N-22	S3ANIONS	1	250 ml P	
BB	W-25N-22	S3METALS	1	500ml P	
BB	W-25N-22	S3METALS:FILTER	0	O	
BB	W-25N-22	S3WETCHEM	2	500ml P	
~~AA~~	~~W-25N-22~~	~~SM9221~~	~~1~~	~~250 ml~~ P	

Added 02 of CL to well

RECEIVED
SEP 16 2022
ERD-DATA MGMT

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 13-SEP-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: SPRING6 AREA INFO: S300/EWFA/812

DATE: 13-Sep-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44098

PURGE METHOD/SAMPLE METHOD: / GROT CONTAMINANT PRESENT: NO3-43

SCREENED INTERVAL (ft-bmp): 0.00 - 0.00 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 0.00 / 0.30 on CASING VOL (Gal/Time): 0.00

DEPTH TO WATER(ft-bmp): 0.00 on 19-FEB-09 Surface VOLUME FACTOR: 0.000

WATER IN CASING (ft): 0.00 CASING DIAMETER/TCASING HT(in): 0 / 0.00

TIME PUMP ON: — INITIAL FLOW RATE (Q=GPM): —

TIME PUMP OFF: — MEASURED BY:FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1022		—	—	8.74	20.7	791.8	109	1	—

METER SERIAL # CALIBRATED

pH : YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3GIV 3EMG

SAMPLE PRESERVATION/AMT of REAGENT:

PURGE VOL: 0.00

EXCESS H2O DEST:None

QC SAMPLE ID:812FB W-812-67Y QC LAB(S):LLNLICPMS, BCLABS-BAK, GELQC SAMPLE TIME: 1155

SAMPLE ID (VERIFY): Spring 6 / GROT TIME COLLECTED: 1046

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	SPRING6	AS:FILTER	0	O	
GE	W-812-67Y	AS:FILTER	0	O	
GE	812FB	AS:FILTER	0	O	
GE	W-812-67Y	AS:UISO	2	1L P	
GE	812FB	AS:UISO	2	1L P	
GE	SPRING6	AS:UISO	2	1L P	
BB	812FB	E300.0:NO3	1	250 ml P	
BB	W-812-67Y	E300.0:NO3	1	250 ml P	
BB	SPRING6	E300.0:NO3	1	250 ml P	
BB	W-812-67Y	E300.0:PERC	1	250 ml P	
BB	812FB	E300.0:PERC	1	250 ml P	
BB	SPRING6	E300.0:PERC	1	250 ml P	
IC	SPRING6	MSOS:UISO	1	250 ml P	PLEASE FIELD FILTER THIS SAMPI
IC	W-812-67Y	MSOS:UISO	1	250 ml P	PLEASE FIELD FILTER THIS SAMPI
IC	812FB	MSOS:UISO	1	250 ml P	PLEASE FIELD FILTER THIS SAMPI
BB	W-812-67Y	T26METALS	1	250 ml P	
BB	SPRING6	T26METALS	1	250 ml P	
BB	812FB	T26METALS	1	250 ml P	
BB	812FB	T26METALS:FILTER	0	O	
BB	SPRING6	T26METALS:FILTER	0	O	
BB	W-812-67Y	T26METALS:FILTER	0	O	

NOTE:

Purge rate/time: N/A since est_sus_flow = 0 Surface H2O

Purge Volume: gal.

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: **23-AUG-2022** Month: Norm Qtr: **3** Norm Year: **2022**

WELL ID: **W-26R-05** AREA INFO: **S300/GSA/EGSA**

DATE: **23-Aug-2022** LOG BOOK (DOCUMENT CONTROL) #: **AA44087**

PURGE METHOD/SAMPLE METHOD: **PB / 90BA** CONTAMINANT PRESENT: **TCE-3.3/NO3-53**

SCREENED INTERVAL (ft-bmp): **22.05 - 27.05** INTAKE DEPTH: **0.00**

CASING DEPTH(installed/sounded)(ft-bmp): **25.50 / 26.68 on 10-FEB-91** CASING VOL (Gal/Time): **1.03**

DEPTH TO WATER(ft-bmp): **25.75 on 19-MAY-22** 25.90 VOLUME FACTOR: **0.826** .70

WATER IN CASING (ft): **1.25** .78 CASING DIAMETER/TCASING HT(in): **4.5 / 1.50**

TIME PUMP ON: — INITIAL FLOW RATE (Q=GPM): —

TIME PUMP OFF: — MEASURED BY:FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0915		.70	90%	8.05	21.2	1386	150	1	26.72

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: **silva90**

PROJECT: **3MRP**

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: **0.93**

EXCESS H2O DEST:**S300-DRUM**

QC SAMPLE ID:**W-26R-42Y** QC LAB(S): **ALPHAANAL, BCLABS-BAK** QC SAMPLE TIME: 1400

SAMPLE ID (VERIFY): W-26R-05/ 90BA TIME COLLECTED: 0920

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	W-26R-05	S3ANIONS	1	250 ml P	
BB	W-26R-42Y	S3ANIONS	1	250 ml P	
BB	W-26R-05	S3METALS	1	500ml P	
BB	W-26R-42Y	S3METALS	1	500ml P	
BB	W-26R-05	S3METALS:FILTER	0	O	
BB	W-26R-42Y	S3METALS:FILTER	0	O	
BB	W-26R-05	S3WETCHEM	2	500ml P	
BB	W-26R-42Y	S3WETCHEM	2	500ml P	
~~AA~~	~~W-26R-05~~	~~SM9221~~	1	~~250 ml P~~	
~~AA~~	~~W-26R-42Y~~	SM9221	1	~~250 ml~~ P	

RECEIVED
AUG 25 2022
ERD-DATA MGMT

Added 0.2 of Cl to well

NOTE:
Purge rate/time: N/A since est_sus_flow = 0
Purge Volume: 10 gal.

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 31-AUG-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-7ES AREA INFO: S300/GSA/CGSA

DATE: 31-Aug-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44090

PURGE METHOD/SAMPLE METHOD: GF / 3VES CONTAMINANT PRESENT: NO3-11

SCREENED INTERVAL (ft-bmp): 18.30 - 28.30 PUMP INTAKE DEPTH: 26.30

CASING DEPTH(installed/sounded)(ft-bmp): 26.80 / 30.10 on 21-JAN-87 CASING VOL (Gal/Time): 10.18 10.2 x 3 =

DEPTH TO WATER(ft-bmp): 17.48 on 27-JUL-22 17.67 VOLUME FACTOR: 0.826 30.6 Gal

WATER IN CASING (ft): 12.32 12.43 CASING DIAMETER/TCASING HT(in): 4.5 / 3.00

TIME PUMP ON: 1150 INITIAL FLOW RATE (Q=GPM): 3.0 a2

TIME PUMP OFF: 1210 MEASURED BY: FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1153		10.2	1	8.29	22.1	1402	312	1	18.25
1156		20.4	2	8.25	22.1	1388	277	1	19.44
1201		30.6	3	8.09	22.2	1393	251	1	20.89
1203				8.19	22.1	1385	220		
1205				8.20	22.1	1391	194		

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: 30.54

EXCESS H2O DEST: S300-DRUM

QC SAMPLE ID: W-75Y EGSAFB QC LAB(S): ALPHAANAL, BCLABS-BAK QC SAMPLE TIME: 1357

SAMPLE ID (VERIFY): W-7ES / 3VES TIME COLLECTED: 1210

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
~~BB~~	~~EGSAFB~~	~~S3ANIONS~~	1	~~250 ml~~ P	
~~BB~~	~~W-75Y~~	~~S3ANIONS~~	1	~~250 ml~~ P	
~~BB~~	~~W-7ES~~	~~S3ANIONS~~	1	~~250 ml~~ P	
~~BB~~	W-75Y	~~S3METALS~~	1	~~500ml~~ P	
~~BB~~	EGSAFB	~~S3METALS~~	1	~~500ml~~ P	
~~BB~~	~~W-7ES~~	~~S3METALS~~	1	~~500ml~~ P	
BB	W-7ES	S3~~METALS~~:FILTER	0	~~0~~	
~~BB~~	~~EGSAFB~~	S3METALS:FILTER	0	~~0~~	
~~BB~~	~~W-75Y~~	S3METALS:FILTER	0	~~0~~	
~~BB~~	~~W-75Y~~	~~S3WETCHEM~~	2	~~500ml~~ P	
~~BB~~	EGSAFB	S3WETCHEM	2	~~500ml~~ P	
~~BB~~	~~W-7ES~~	~~S3WETCHEM~~	2	~~500ml~~ P	
AA	W-75Y	SM9221	1	250 ml P	
AA	EGSAFB	SM9221	1	250 ml P	
AA	W-7ES	SM9221	1	250 ml P	

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ERD-DATA MGMT

Evacuated all GL from well

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 30-AUG-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-7ES AREA INFO: S300/GSA/CGSA

DATE: 30-Aug-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44090

PURGE METHOD/SAMPLE METHOD: GP / 3VES CONTAMINANT PRESENT: NO3-11

SCREENED INTERVAL (ft-bmp): 18.30 - 28.30 PUMP INTAKE DEPTH: 26.30

CASING DEPTH(installed/sounded)(ft-bmp): 26.80 / 30.10 on 21-JAN-87 CASING VOL (Gal/Time): 10.18 10.2 x 3 = 30.6 Gal

DEPTH TO WATER(ft-bmp): 17.48 on 27-JUL-22 17.67 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 12.32 12.43 CASING DIAMETER/TCASING HT(in): 4.5 / 3.00

TIME PUMP ON: 0850 INITIAL FLOW RATE (Q=GPM): 3.0

TIME PUMP OFF: 0915 MEASURED BY:FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0853		10.2	1	8.33	22.1	1387	87	1	16.72
0857		20.4	2	8.27	22.1	1390	93	1	~~19.40~~ 19.40
0900		30.6	3	8.24	22.1	1374	97	1	20.73
0902				8.27	22.1	1370	100		
0904				8.25	22.2	1371	95		

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: 30.54

EXCESS H2O DEST:S300-DRUM

QC SAMPLE ID:W-75Y EGSAFB QC LAB(S): ALPHAANAL, BCLABS-BAK QC SAMPLE TIME: 1345

SAMPLE ID (VERIFY): W-7ES / 3VES TIME COLLECTED: 0911

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	EGSAFB	S3ANIONS	1	250 ml P	
BB	W-75Y	S3ANIONS	1	250 ml P	
BB	W-7ES	S3ANIONS	1	250 ml P	
BB	W-75Y	S3METALS	1	500ml P	
BB	W-7ES	S3METALS	1	500ml P	
BB	EGSAFB	S3METALS	1	500ml P	
BB	W-75Y	S3METALS:FILTER	0	O	
BB	W-7ES	S3METALS:FILTER	0	O	
BB	EGSAFB	S3METALS:FILTER	0	O	
BB	W-75Y	S3WETCHEM	2	500ml P	
BB	EGSAFB	S3WETCHEM	2	500ml P	
BB	W-7ES	S3WETCHEM	2	500ml P	
~~AA~~	~~W-7ES~~	~~SM9221~~	1	~~250 ml~~ P	
AA	~~W-75Y~~	SM9221	1	~~250 ml~~ P	
~~AA~~	EGSAFB	~~SM9221~~	1	250 ml P	

RECEIVED
SEP 16 2022
ERD-DATA MGMT

Added 0.2 of CL to well

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 25-AUG-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-7DS AREA INFO: S300/GSA/EGSA

DATE: 25-Aug-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44088 9

PURGE METHOD/SAMPLE METHOD: Grundfos / 3VES CONTAMINANT PRESENT: ND

SCREENED INTERVAL (ft-bmp): 18.80 - 28.80 PUMP INTAKE DEPTH: 24.99

CASING DEPTH(installed/sounded)(ft-bmp): 27.00 / 30.51 on 22-SEP-20 CASING VOL (Gal/Time): 11.57 / 0.4x3cv =

DEPTH TO WATER(ft-bmp): 16.00 on 27-JUL-22 17.00 VOLUME FACTOR: 0.826 31.2 Gal

WATER IN CASING (ft): 14.00 12.51 CASING DIAMETER/TCASING HT(in): 4.5 / 3.00

TIME PUMP ON: 1251 INITIAL FLOW RATE (Q=GPM): 3.0

TIME PUMP OFF: 1314 MEASURED BY: FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1255		10.4	1	7.79	23.1	1453	512	1	18.86
1259		20.8	2	7.77	23.2	1480	409	1	19.32
1303		31.2	3	7.80	23.2	1430	337	1	20.87
1307				7.82	23.2	1455	318		
1309				7.83	23.2	1450	261		
1311					23.1	1447	220		

METER SERIAL # CALIBRATED

pH : 615705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: 34.70

EXCESS H2O DEST: S300-DRUM

QC SAMPLE ID: — QC LAB(S): — QC SAMPLE TIME: —

SAMPLE ID (VERIFY): W-7DS / 3VES TIME COLLECTED: 1314

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
~~BB~~	~~W-7DS~~	S3~~ANIONS~~	1	~~250 ml~~ P	
~~BB~~	~~W-7DS~~	~~S3METALS~~	1	~~500ml~~ P	
~~BB~~	~~W-7DS~~	S3~~METALS-FILTER~~	0	~~0~~	
~~BB~~	~~W-7DS~~	S3~~WETCHEM~~	2	~~500ml~~ P	
AA	W-7DS	SM9221	1	250 ml P	

Evacuated all CL from well

RECEIVED
SEP 16 2022
ERD-DATA MGMT

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: **24-AUG-2022** Month: Norm Qtr: **3** Norm Year: **2022**

WELL ID: **W-7DS** AREA INFO: **S300/GSA/EGSA**

DATE: **24-Aug-2022** LOG BOOK (DOCUMENT CONTROL) #: **AA44088**

PURGE METHOD/SAMPLE METHOD: **Grundfos / 3VES** CONTAMINANT PRESENT: **ND**

SCREENED INTERVAL (ft-bmp): **18.80 - 28.80** PUMP INTAKE DEPTH: **24.99**

CASING DEPTH(installed/sounded)(ft-bmp): **27.00 / 30.51 on 22-SEP-20** CASING VOL (Gal/Time): **10.39** 10.4x3=

DEPTH TO WATER(ft-bmp): **17.42 on 19-MAY-22** 18.00 VOLUME FACTOR: **0.826** 31.2 Gal

WATER IN CASING (ft): **12.58** 12.51 CASING DIAMETER/TCASING HT(in): **4.5 / 3.00**

TIME PUMP ON: 0950 INITIAL FLOW RATE (Q=GPM): 3.0Q

TIME PUMP OFF: 1008 MEASURED BY: (FLOW METER) GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0954		10.4	1	7.82	23.7	1453	46	1	19.21
0957		20.8	2	7.90	23.4	1450	41	1	19.44
1001		31.2	3	7.93	23.4	1436	40	1	19.97
1003				7.96	23.4	1422	37		
1005				8.01	23.5	1431	43		

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: **silva90**

PROJECT: **3MRP**

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: **31.18**

EXCESS H2O DEST: **S300-DRUM**

QC SAMPLE ID: — QC LAB(S): — QC SAMPLE TIME: —

SAMPLE ID (VERIFY): W-7DS | 3VES TIME COLLECTED: 1008

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	W-7DS	S3ANIONS	1	250 ml P	
BB	W-7DS	S3METALS	1	500ml P	
BB	W-7DS	S3METALS:FILTER	0	O	
BB	W-7DS	S3WETCHEM	2	500ml P	
~~AA~~	~~W-7DS~~	~~SM9221~~	1	~~250 ml P~~	

Added or of CL

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ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 31-AUG-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-35A-04 AREA INFO: S300/GSA/CGSA

DATE: 31-Aug-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44090

PURGE METHOD/SAMPLE METHOD: Grundfos / 3VES CONTAMINANT PRESENT: ND

SCREENED INTERVAL (ft-bmp): 19.30 - 29.30 PUMP INTAKE DEPTH: 25.81

CASING DEPTH(installed/sounded)(ft-bmp): 29.00 / 28.71 on 28-APR-21 CASING VOL (Gal/Time): 13.52 13.5*3=40.5

DEPTH TO WATER(ft-bmp): 12.64 on 27-JUL-22 13.02 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 16.36 15.69 CASING DIAMETER/TCASING HT(in): 4.5 / 0.00

TIME PUMP ON: 1229 INITIAL FLOW RATE (Q=GPM): 3.00

TIME PUMP OFF: MEASURED BY: FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
~~1234~~		13.5	1	6.13	23.7	1477	418	1	13.90
~~1236~~		27	2	6.20	23.7	1481	355	1	14.28
~~1243~~		40.5	3	6.17	23.8	1489	301	1	14.93
1245				6.19	23.8	1475	279		
1247				6.24	23.8	1493	251		

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: 40.55

EXCESS H2O DEST: None

QC SAMPLE ID: - QC LAB(S): - QC SAMPLE TIME: -

SAMPLE ID (VERIFY): W-35A-04 | 3VES TIME COLLECTED: 1251

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
~~BB~~	~~W-35A-04~~	S3ANIONS	1	~~250~~ 250 ml P	
~~BB~~	~~W-35A-04~~	S3METALS	1	~~500ml~~ 500ml P	
~~BB~~	~~W-35A-04~~	S3METALS:FILTER	0	~~0~~	
~~BB~~	~~W-35A-04~~	S3WETCHEM	2	~~500ml~~ 500ml P	
AA	W-35A-04	SM9221	1	250 ml P	

Evacuated all CL from well

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ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 30-AUG-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-35A-04 AREA INFO: S300/GSA/CGSA

DATE: 30-Aug-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44090

PURGE METHOD/SAMPLE METHOD: Grundfos / 3VES CONTAMINANT PRESENT: ND

SCREENED INTERVAL (ft-bmp): 19.30 - 29.30 PUMP INTAKE DEPTH: 25.81

CASING DEPTH(installed/sounded)(ft-bmp): 29.00 / 28.71 on 28-APR-21 CASING VOL (Gal/Time): 13.52 13.513J=

DEPTH TO WATER(ft-bmp): 12.64 on 27-JUL-22 13.02 VOLUME FACTOR: 0.826 40.5 Gal

WATER IN CASING (ft): 16.36 15.69 CASING DIAMETER/TCASING HT(in): 4.5 / 0.00

TIME PUMP ON: 1044 INITIAL FLOW RATE (Q=GPM): 3.0 Q

TIME PUMP OFF: MEASURED BY: FLOW METER / GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1049		13.5	1	7.97	23.7	1500	131	1	13.87
1053		27	2	8.21	23.8	1479	137	1	14.21
1058		40.5	3	8.39	23.8	1518	143	1	14.79
1100				8.46	23.8	1510	140		
1102				8.44	24.0	1524	152		

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: 40.55

EXCESS H2O DEST: None

QC SAMPLE ID: — QC LAB(S): — QC SAMPLE TIME: —

SAMPLE ID (VERIFY): W-35A-04 / 3VES TIME COLLECTED: 1106

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	W-35A-04	S3ANIONS	1	250 ml P	
BB	W-35A-04	S3METALS	1	500ml P	
BB	W-35A-04	S3METALS:FILTER	0	O	
BB	W-35A-04	S3WETCHEM	2	500ml P	
~~AA~~	~~W-35A-04~~	~~SM9221~~	~~1~~	~~250 ml P~~	

Added 02 as CL to well

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ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: **24-AUG-2022** Month: Norm Qtr: **3** Norm Year: **2022**

WELL ID: **W-26R-11** AREA INFO: **S300/GSA/EGSA**

DATE: **24-Aug-2022** LOG BOOK (DOCUMENT CONTROL) #: **AA44087-8**

PURGE METHOD/SAMPLE METHOD: **Grundfos / 3VES** CONTAMINANT PRESENT: **TCE-1.6/NO3-14**

SCREENED INTERVAL (ft-bmp): **19.10 - 29.10** PUMP INTAKE DEPTH: **23.70**

CASING DEPTH(installed/sounded)(ft-bmp): **27.00 / 30.76 on 15-SEP-20** CASING VOL (Gal/Time): **8.96** 9.6X3=V

DEPTH TO WATER(ft-bmp): **19.15 on 19-MAY-22** 19.23 VOLUME FACTOR: **0.826** 28.8 Gal

WATER IN CASING (ft): **10.85** 11.53 CASING DIAMETER/TCASING HT(in): **4.5 / 3.00**

TIME PUMP ON: 1133 INITIAL FLOW RATE (Q=GPM): 1.0 Q

TIME PUMP OFF: 1220 MEASURED BY: (FLOW METER) / GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1143		9.6	1	7.73	22.0	1356	432	1	21.40
1153		19.2	2	7.74	22.0	1344	287	1	22.63
1203		28.8	3	7.70	22.1	1330	155	1	23.59
1205				7.75	22.0	1299	140		
1207				7.72	22.1	1318	133		

METER SERIAL # CALIBRATED

pH : 6759705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: **silva90**

PROJECT: **3MRP**

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: **26.89**

EXCESS H2O DEST: **S300-DRUM**

QC SAMPLE ID: QC LAB(S): QC SAMPLE TIME:

SAMPLE ID (VERIFY): W-26R-11 | 3VES TIME COLLECTED: 1220

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
~~BB~~	~~W-26R-11~~	S3ANIONS	1	~~250~~ ml P	
BB	W-~~26R-11~~	S3METALS	1	500ml P	
BB	W-~~26R-11~~	S3METALS:FILTER	0	~~0~~	
~~BB~~	W-~~26R-11~~	S3WETCHEM	2	~~500ml~~ P	
AA	W-26R-11	SM9221	1	250 ml P	

Evacuated all CL from well

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ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: **23-AUG-2022** Month: Norm Qtr: **3** Norm Year: **2022**

WELL ID: **W-26R-11** AREA INFO: **S300/GSA/EGSA**

DATE: **23-Aug-2022** LOG BOOK (DOCUMENT CONTROL) #: **AA44087**

PURGE METHOD/SAMPLE METHOD: **Grundfos / 3VES** CONTAMINANT PRESENT: **TCE-1.6/NO3-14**

SCREENED INTERVAL (ft-bmp): **19.10 - 29.10** PUMP INTAKE DEPTH: **23.70**

CASING DEPTH(installed/sounded)(ft-bmp): **27.00 / 30.76 on 15-SEP-20** CASING VOL (Gal/Time): **8.96** 9.6x3 =

DEPTH TO WATER(ft-bmp): **19.15 on 19-MAY-22** 19.23 VOLUME FACTOR: **0.826** 28.8 Gal

WATER IN CASING (ft): **10.85** 11.53 CASING DIAMETER/TCASING HT(in): **4.5 / 3.00**

TIME PUMP ON: 1040 INITIAL FLOW RATE (Q=GPM): 1.0 a

TIME PUMP OFF: 1120 MEASURED BY: FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1050		9.6	1	7.66	22.1	1340	81	1	21,36
1100		19.2	2	7.69	22.1	1337	80	1	22,47
1110		24.8	3	7.72	22.0	1348	83	1	23.40
1112				7.70	22.1	1344	79		
1114				7.75	22.1	1351	86		

METER SERIAL # CALIBRATED

pH : G255705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: **silva90**

PROJECT: **3MRP**

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: **26.89**

EXCESS H2O DEST: **S300-DRUM**

QC SAMPLE ID: — QC LAB(S): — QC SAMPLE TIME: —

SAMPLE ID (VERIFY): W-26R-11 3VES TIME COLLECTED: 1120

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	W-26R-11	S3ANIONS	1	250 ml P	
BB	W-26R-11	S3METALS	1	500ml P	
BB	W-26R-11	S3METALS:FILTER	0	O	
BB	W-26R-11	S3WETCHEM	2	500ml P	
~~AA~~	~~W-26R-11~~	SM9221	1	~~250 ml P~~	

Added on at CL

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AUG 25 2022
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ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: **23-AUG-2022** Month: Norm Qtr: **3** Norm Year: **2022**

WELL ID: **W-26R-05** AREA INFO: **S300/GSA/EGSA**

DATE: **23-Aug-2022** LOG BOOK (DOCUMENT CONTROL) #: **AA44087**

PURGE METHOD/SAMPLE METHOD: **PB / 90BA** CONTAMINANT PRESENT: **TCE-3.3/NO3-53**

SCREENED INTERVAL (ft-bmp): **22.05 - 27.05** INTAKE DEPTH: **0.00**

CASING DEPTH(installed/sounded)(ft-bmp): **25.50 / 26.68 on 10-FEB-91** CASING VOL (Gal/Time): **1.03**

DEPTH TO WATER(ft-bmp): **25.75 on 19-MAY-22** 25.90 VOLUME FACTOR: **0.826** .70

WATER IN CASING (ft): **1.25** .78 CASING DIAMETER/TCASING HT(in): **4.5 / 1.50**

TIME PUMP ON: — INITIAL FLOW RATE (Q=GPM): —

TIME PUMP OFF: — MEASURED BY:FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0915		.70	90%	8.05	21.2	1386	150	1	26.72

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: **silva90**

PROJECT: **3MRP**

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: **0.93**

EXCESS H2O DEST:**S300-DRUM**

QC SAMPLE ID:**W-26R-42Y** QC LAB(S): **ALPHAANAL, BCLABS-BAK** QC SAMPLE TIME: 1400

SAMPLE ID (VERIFY): W-26R-05/ 90BA TIME COLLECTED: 0920

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	W-26R-05	S3ANIONS	1	250 ml P	
BB	W-26R-42Y	S3ANIONS	1	250 ml P	
BB	W-26R-05	S3METALS	1	500ml P	
BB	W-26R-42Y	S3METALS	1	500ml P	
BB	W-26R-05	S3METALS:FILTER	0	O	
BB	W-26R-42Y	S3METALS:FILTER	0	O	
BB	W-26R-05	S3WETCHEM	2	500ml P	
BB	W-26R-42Y	S3WETCHEM	2	500ml P	
~~AA~~	~~W-26R-05~~	~~SM9221~~	1	~~250 ml P~~	
~~AA~~	~~W-26R-42Y~~	SM9221	1	~~250 ml~~ P	

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Added 0.2 of Cl to well

NOTE:
Purge rate/time: N/A since est_sus_flow = 0
Purge Volume: 10 gal.

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: **24-AUG-2022** Month: Norm Qtr: **3** Norm Year: **2022**

WELL ID: **W-26R-01** AREA INFO: **S300/GSA/EGSA**

DATE: **24-Aug-2022** LOG BOOK (DOCUMENT CONTROL) #: **AA44087~~8~~**

PURGE METHOD/SAMPLE METHOD: **GF / 3VES** CONTAMINANT PRESENT: ***TCE-15/NO3-40**

SCREENED INTERVAL (ft-bmp): **22.72 - 27.72** PUMP INTAKE DEPTH: **29.00**

CASING DEPTH(installed/sounded)(ft-bmp): **29.80 / 30.00 on 16-NOV-88** CASING VOL (Gal/Time): **9.60** 7.513cu

DEPTH TO WATER(ft-bmp): **20.85 on 19-MAY-22** 21.00 VOLUME FACTOR: **0.826** 27.5gal

WATER IN CASING (ft): **11.62** 9.00 CASING DIAMETER/TCASING HT(in): **4.5 / 2.67**

TIME PUMP ON: 1251 INITIAL FLOW RATE (Q=GPM): 1.0 a

TIME PUMP OFF: MEASURED BY: (FLOW METER) GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1247		7.5	1	8.44	23.0	1440	312	1	22.40
1255		15	2	8.50	23.1	1433	289	1	23.85
1308		22.5	3	8.49	23.1	1429	251	1	25.00
1310				8.46	23.1	1437	177		
1312				8.49	23.1	1430	154		

METER SERIAL # CALIBRATED

pH : 6259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: **silva90**

PROJECT: **3MRP**

SAMPLE PRESERVATION/AMT of REAGENT: N/A

PURGE VOL: **28.80**

EXCESS H2O DEST: **TF-834**

QC SAMPLE ID: **CGSAFB** QC LAB(S): **BCLABS-BAK, ALPHAANAL** QC SAMPLE TIME: 1316

SAMPLE ID (VERIFY): W-26R-01 / 3VES TIME COLLECTED: 1316

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
~~BB~~	~~CGSAFB~~	~~S3ANIONS~~	~~1~~	~~250 ml P~~	
~~BB~~	~~W-26R-01~~	~~S3ANIONS~~	~~1~~	~~250 ml P~~	
~~BB~~	~~W-26R-01~~	~~S3METALS~~	~~1~~	~~500ml P~~	
~~BB~~	~~CGSAFB~~	S3METALS	~~1~~	500ml P	
~~BB~~	~~W-26R-01~~	~~S3METALS:FILTER~~	~~0~~	~~0~~	
~~BB~~	~~CGSAFB~~	~~S3METALS:FILTER~~	~~0~~	~~0~~	
~~BB~~	~~W-26R-01~~	~~S3WETCHEM~~	~~2~~	~~500ml P~~	
~~BB~~	~~CGSAFB~~	~~S3WETCHEM~~	~~2~~	~~500ml P~~	
AA	W-26R-01	SM9221	1	250 ml P	
AA	CGSAFB	SM9221	1	250 ml P	

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ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 23-AUG-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-26R-01 AREA INFO: S300/GSA/EGSA

DATE: 23-Aug-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44087

PURGE METHOD/SAMPLE METHOD: GP / 3VES CONTAMINANT PRESENT: *TCE-15/NO3-40

SCREENED INTERVAL (ft-bmp): 22.72 - 27.72 PUMP INTAKE DEPTH: 29.00

CASING DEPTH(installed/sounded)(ft-bmp): 29.80 / 30.00 on 16-NOV-88 CASING VOL (Gal/Time): 9.60

DEPTH TO WATER(ft-bmp): 20.85 on 19-MAY-22 20.99 VOLUME FACTOR: 0.826 7.5 x 3 = 22.5 Gal

WATER IN CASING (ft): 11.62 9.01 CASING DIAMETER/TCASING HT(in): 4.5 / 2.67

TIME PUMP ON: 0950 INITIAL FLOW RATE (Q=GPM): 1.0 Q

TIME PUMP OFF: 1022 MEASURED BY: FLOW METER / GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0956		7.5	1	6.39	23.1	1420	71	1	22.33
1006		15	2	6.41	23.1	1418	77	1	23.80
1014		22.5	3	6.44	23.0	1425	74	1	24.55
1016				6.42	23.0	1420	79		
1018				6.51	23.1	1431	85	1	

METER SERIAL # CALIBRATED

pH : G7H705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: 28.80

EXCESS H2O DEST: TF-834

QC SAMPLE ID: CGSAFB QC LAB(S): BCLABS-BAK, ALPHAANAL QC SAMPLE TIME: 1022

SAMPLE ID (VERIFY): W-26R-01 / 3VES TIME COLLECTED: 1022

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	CGSAFB	S3ANIONS	1	250 ml P	
BB	W-26R-01	S3ANIONS	1	250 ml P	
BB	W-26R-01	S3METALS	1	500ml P	
BB	CGSAFB	S3METALS	1	500ml P	
BB	W-26R-01	S3METALS:FILTER	0	O	
BB	CGSAFB	S3METALS:FILTER	0	O	
BB	W-26R-01	S3WETCHEM	2	500ml P	
BB	CGSAFB	S3WETCHEM	2	500ml P	
~~AA~~	~~W-26R-01~~	~~SM9221~~	1	~~250 ml P~~	
~~AA~~	~~CGSAFB~~	~~SM9221~~	1	~~250 ml P~~	

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Added Cl to Well

ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 25-AUG-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-25N-23 AREA INFO: S300/GSA/EGSA

DATE: 25-Aug-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44088-9

PURGE METHOD/SAMPLE METHOD: Grundfos / 3VES CONTAMINANT PRESENT: *TCE-6.0

SCREENED INTERVAL (ft-bmp): 21.80 - 36.80 PUMP INTAKE DEPTH: 36.14

CASING DEPTH(installed/sounded)(ft-bmp): 35.30 / 37.17 on 25-APR-18 CASING VOL (Gal/Time): 13.18 11.4 @ 50

DEPTH TO WATER(ft-bmp): 21.85 on 27-JUL-22 23.39 VOLUME FACTOR: 0.826 = 34.2 Gal

WATER IN CASING (ft): 15.95 13.78 CASING DIAMETER/TCASING HT(in): 4.5 / 2.50

TIME PUMP ON: 1150 INITIAL FLOW RATE (Q=GPM): 1.0 Q

TIME PUMP OFF: 1233 MEASURED BY: (FLOW METER) GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1202		11.4	1	8.20	23.1	1360	322	1	25.36
1214		22.8	2	8.22	23.2	1355	308	1	27.00
1226		34.2	3	8.24	23.2	1371	279	1	28.91
1228				8.21	23.2	1369	255		
1230				8.24	23.1	1358	202		

METER SERIAL # CALIBRATED

pH : 6154705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NN

PURGE VOL: 39.53

EXCESS H2O DEST: S300-DRUM

QC SAMPLE ID: — QC LAB(S): QC SAMPLE TIME:

SAMPLE ID (VERIFY): W-25N-23 3VES TIME COLLECTED: 1233

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
~~BB~~	~~W-25N-23~~	~~S3ANIONS~~	1	250 ml P	
~~BB~~	W-25N-23	S3METALS	1	500ml P	
BB	~~W-25N-23~~	~~S3METALS:FILTER~~	0	O	
~~BB~~	W-25N-23	S3WETCHEM	2	500ml P	
AA	W-25N-23	SM9221	1	250 ml P	

Evacuated all CL from well

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ERD SOP 2.1 Revision 9 All Ground Water Sampling Data

Target Sample Date: 24-AUG-2022 Month: Norm Qtr: 3 Norm Year: 2022

WELL ID: W-25N-23 AREA INFO: S300/GSA/EGSA

DATE: 24-Aug-2022 LOG BOOK (DOCUMENT CONTROL) #: AA44088

PURGE METHOD/SAMPLE METHOD: Grundfos / 3VES CONTAMINANT PRESENT: *TCE-6.0

SCREENED INTERVAL (ft-bmp): 21.80 - 36.80 PUMP INTAKE DEPTH: 36.14

CASING DEPTH(installed/sounded)(ft-bmp): 35.30 / 37.17 on 25-APR-18 CASING VOL (Gal/Time): 12.15

DEPTH TO WATER(ft-bmp): 23.10 on 19-MAY-22 23.39 VOLUME FACTOR: 0.826 11.46x3=

WATER IN CASING (ft): 14.70 13.78 CASING DIAMETER/TCASING HT(in): 4.5 / 2.50 34.2x1

TIME PUMP ON: 0840 INITIAL FLOW RATE (Q=GPM): 1.0 Q

TIME PUMP OFF: MEASURED BY: (FLOW METER) / GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0852		11.4	1	8.19	24.5	1372	-80	1	23.12
0903		22.8	2	8.10	24.5	1380	-77	1	26.82
0915		34.2	3	8.23	24.6	1358	-84	1	28.44
0917				8.27	24.6	1363	-74		
0919				8.25	24.7	1360	-70		

METER SERIAL # CALIBRATED

pH : G259705 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3MRP

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL: 36.44

EXCESS H2O DEST: S300-DRUM

QC SAMPLE ID: — QC LAB(S): — QC SAMPLE TIME: —

SAMPLE ID (VERIFY): W-25N-23/3045 TIME COLLECTED: 0922

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	W-25N-23	S3ANIONS	1	250 ml P	
BB	W-25N-23	S3METALS	1	500ml P	
BB	W-25N-23	S3METALS:FILTER	0	O	
BB	W-25N-23	S3WETCHEM	2	500ml P	
~~AA~~	~~W-25N-23~~	~~SM9221~~	~~1~~	~~250 ml P~~	

Added on cell

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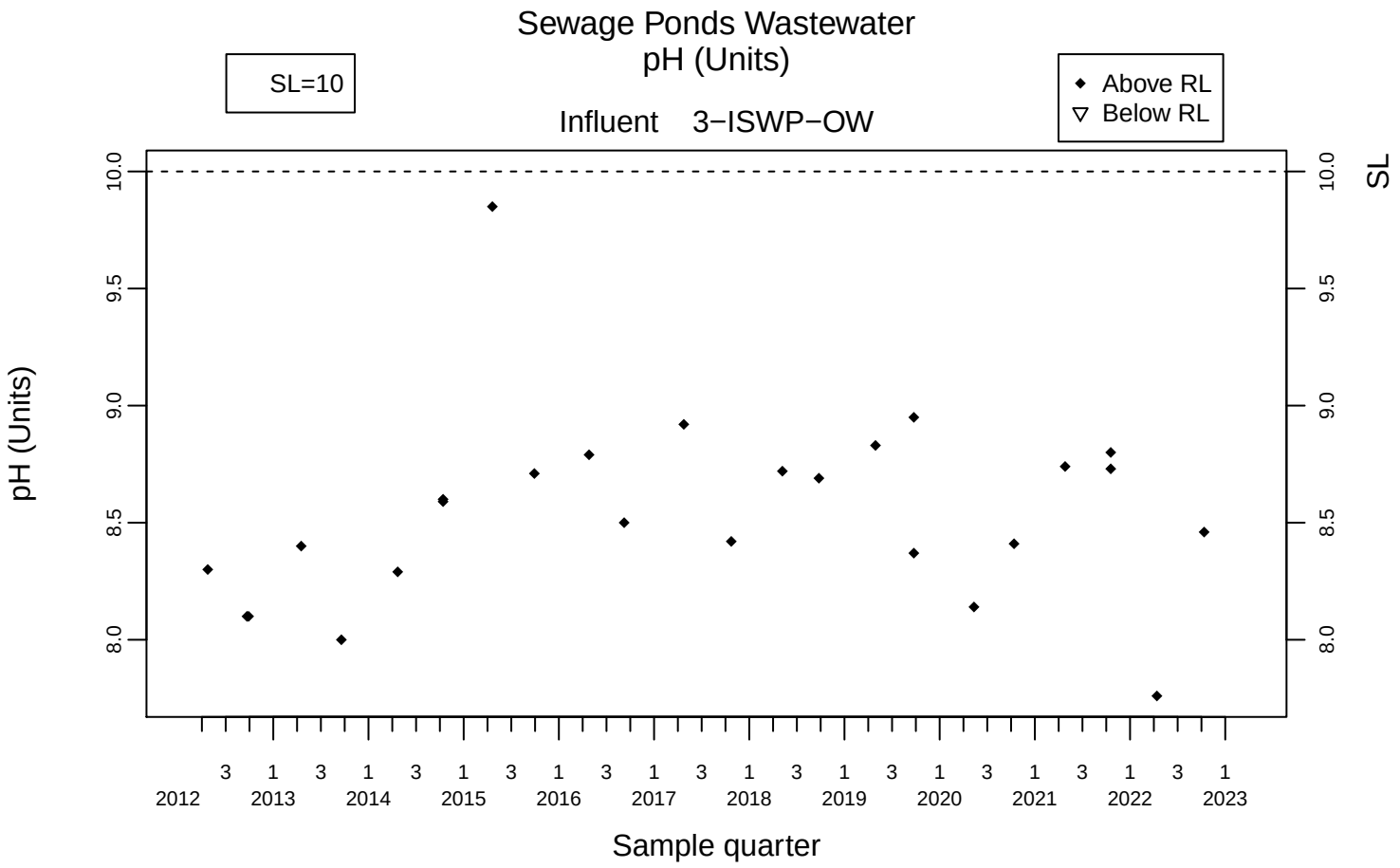
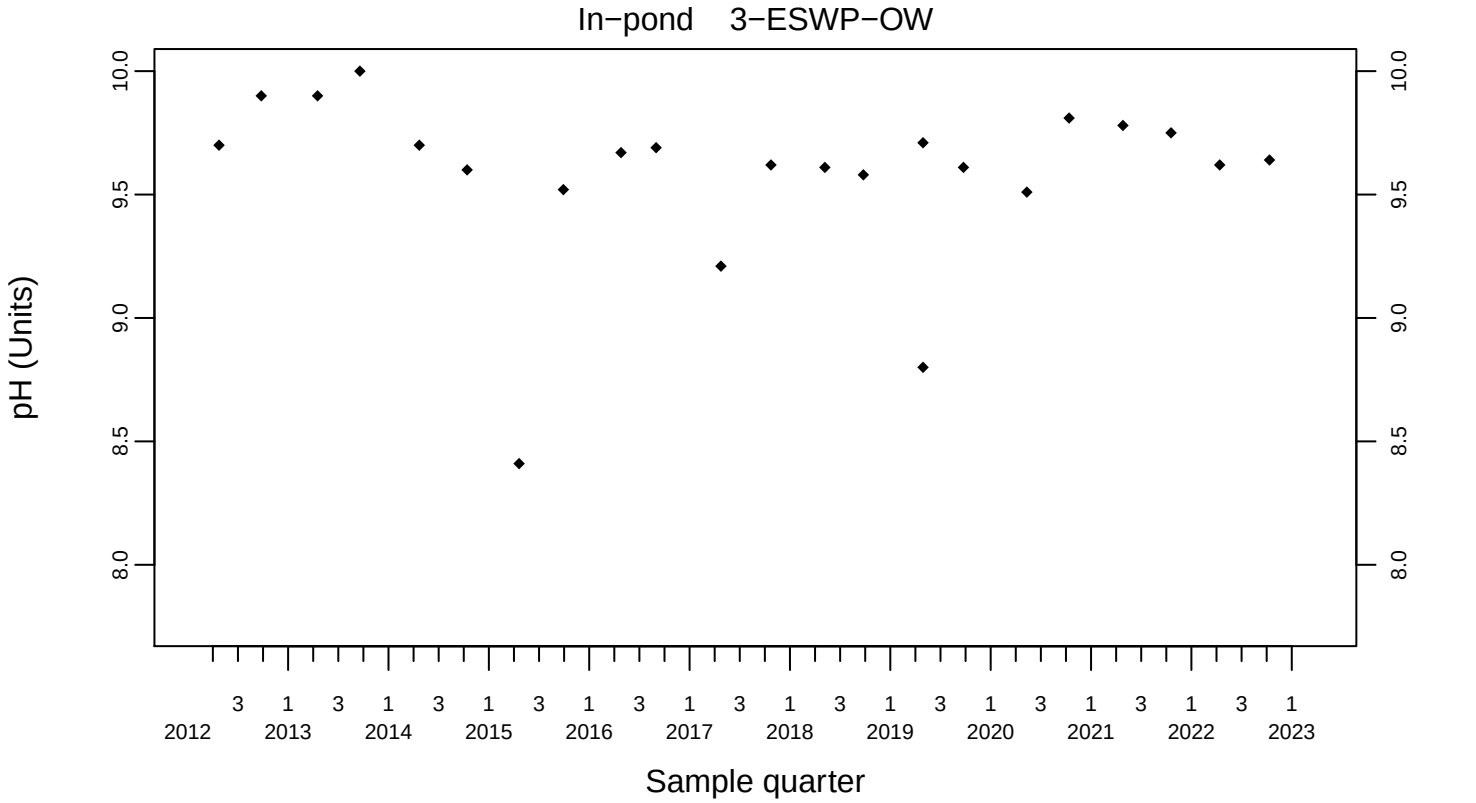
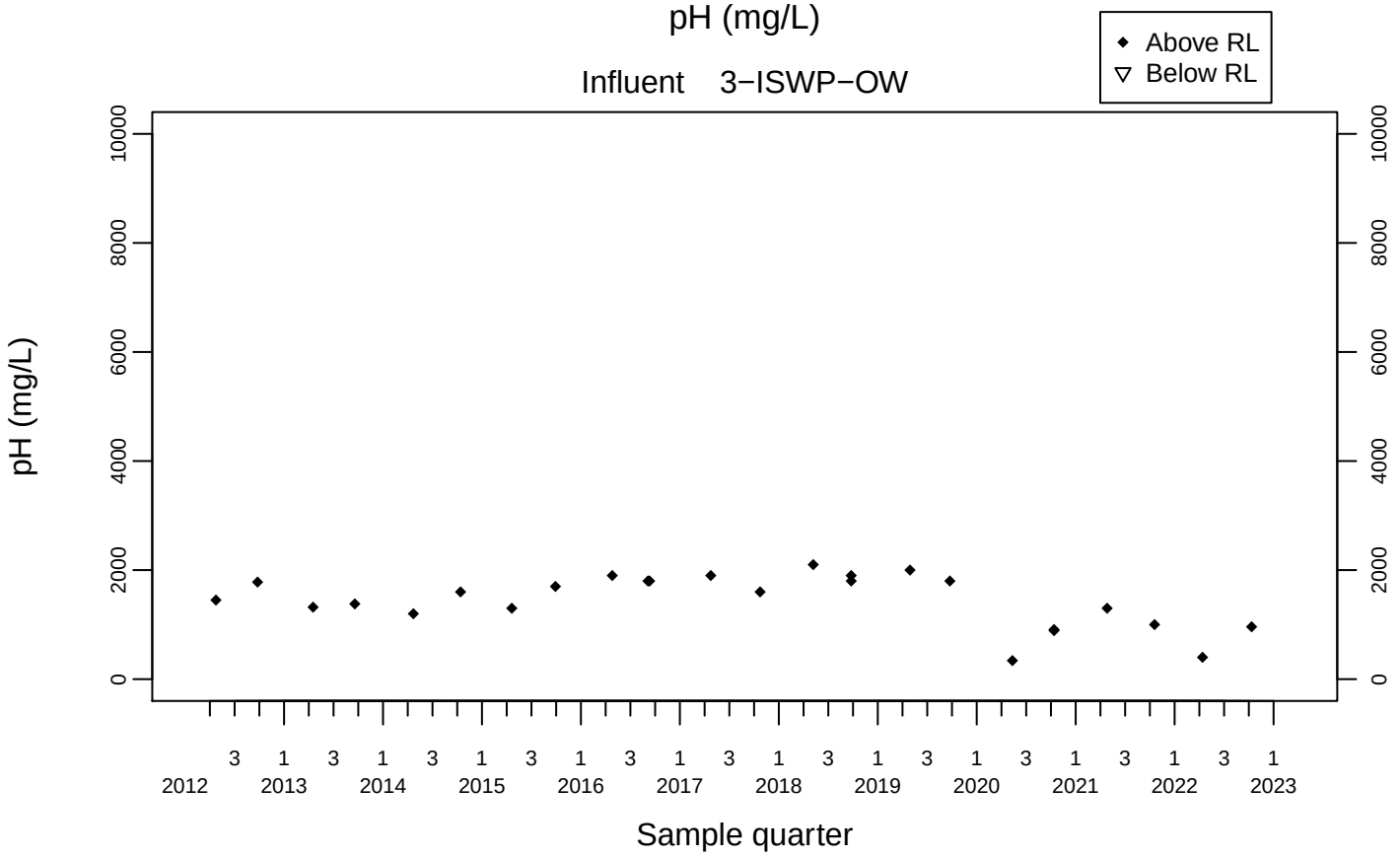
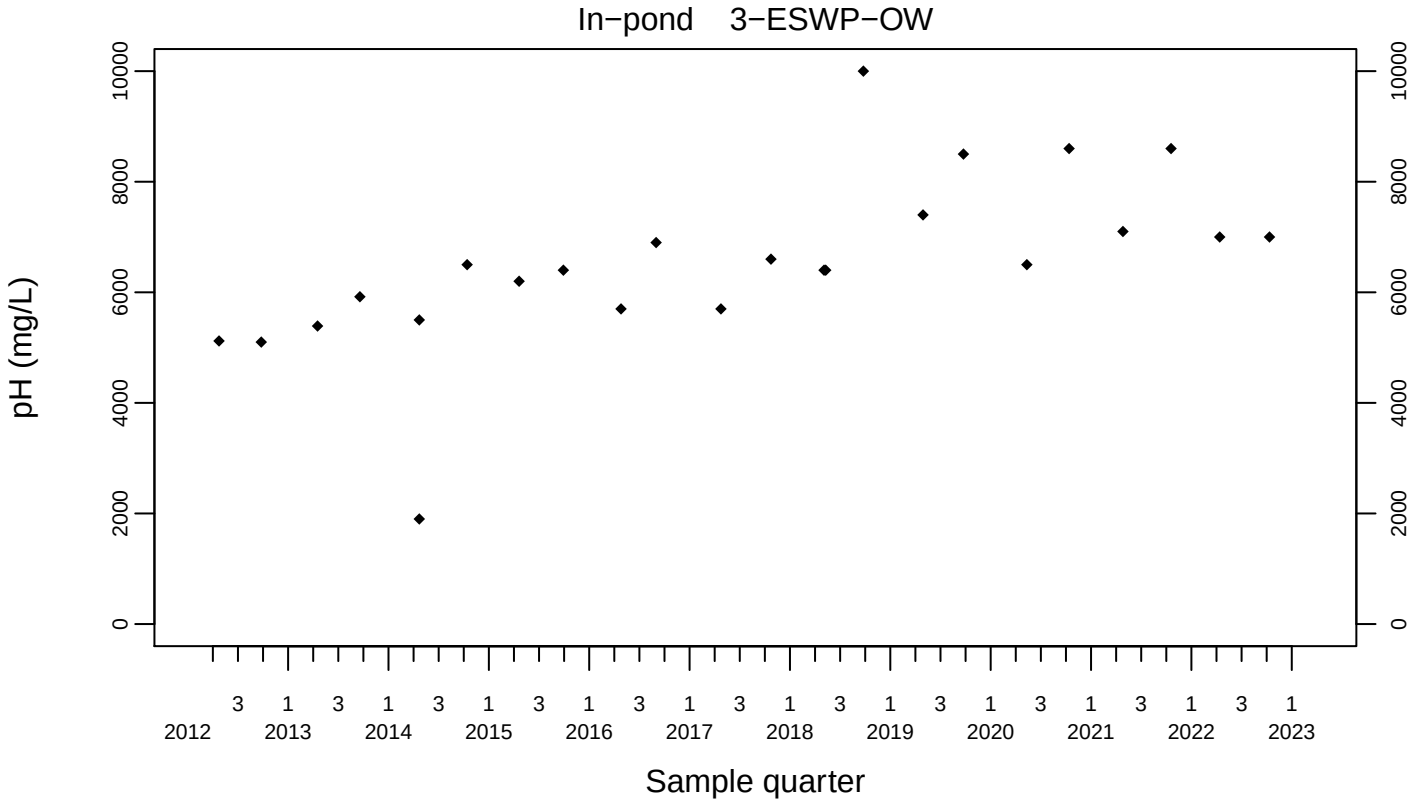
ERD-DATA MGMT


Sewage Ponds Wastewater
pH (Units)
SL=10
Above RL
Below RL
Influent 3−ISWP−OW
pH (Units)
SL
10.0
9.5
9.0
8.5
8.0
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

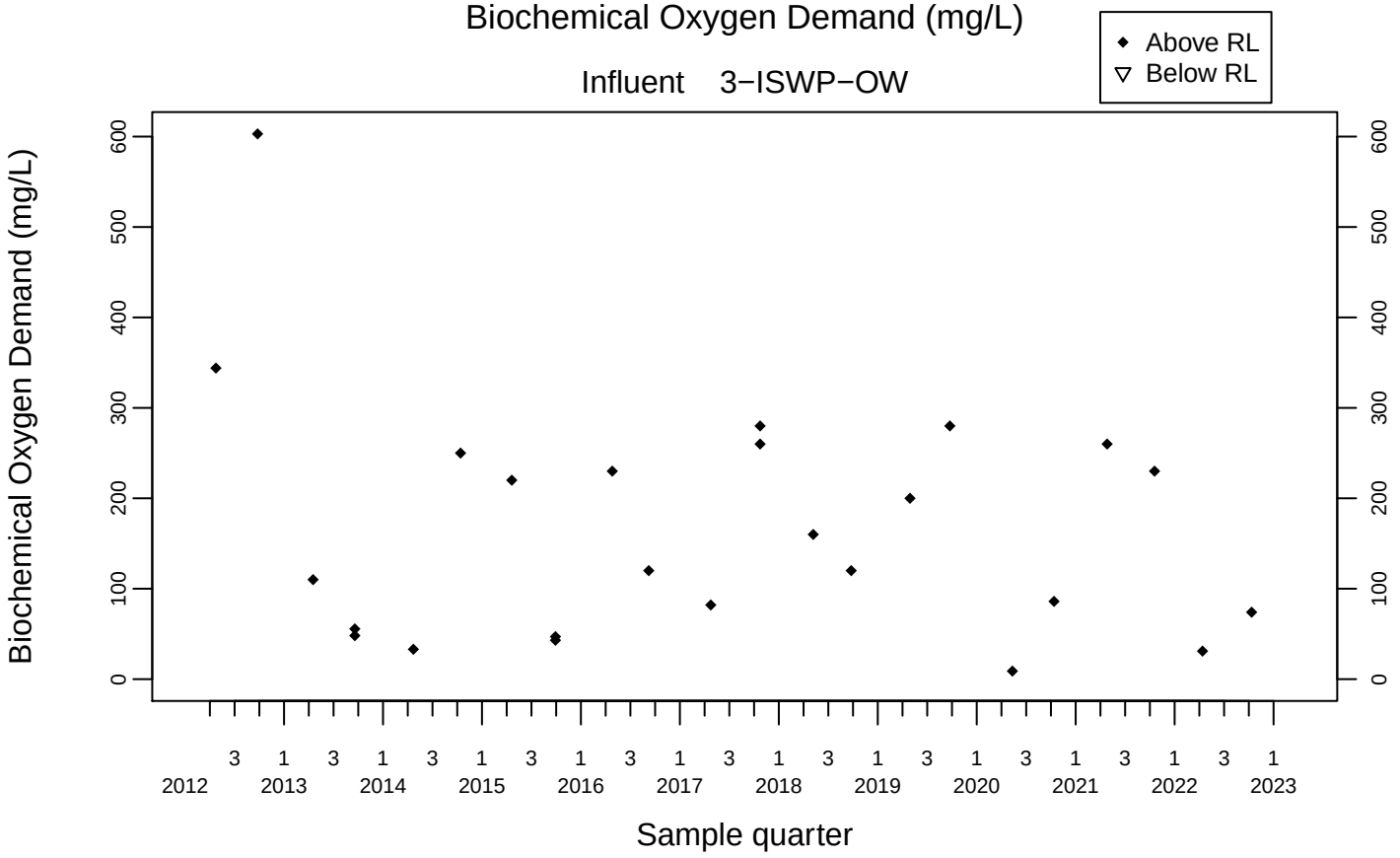

In−pond 3−ESWP−OW
pH (Units)
10.0
9.5
9.0
8.5
8.0
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

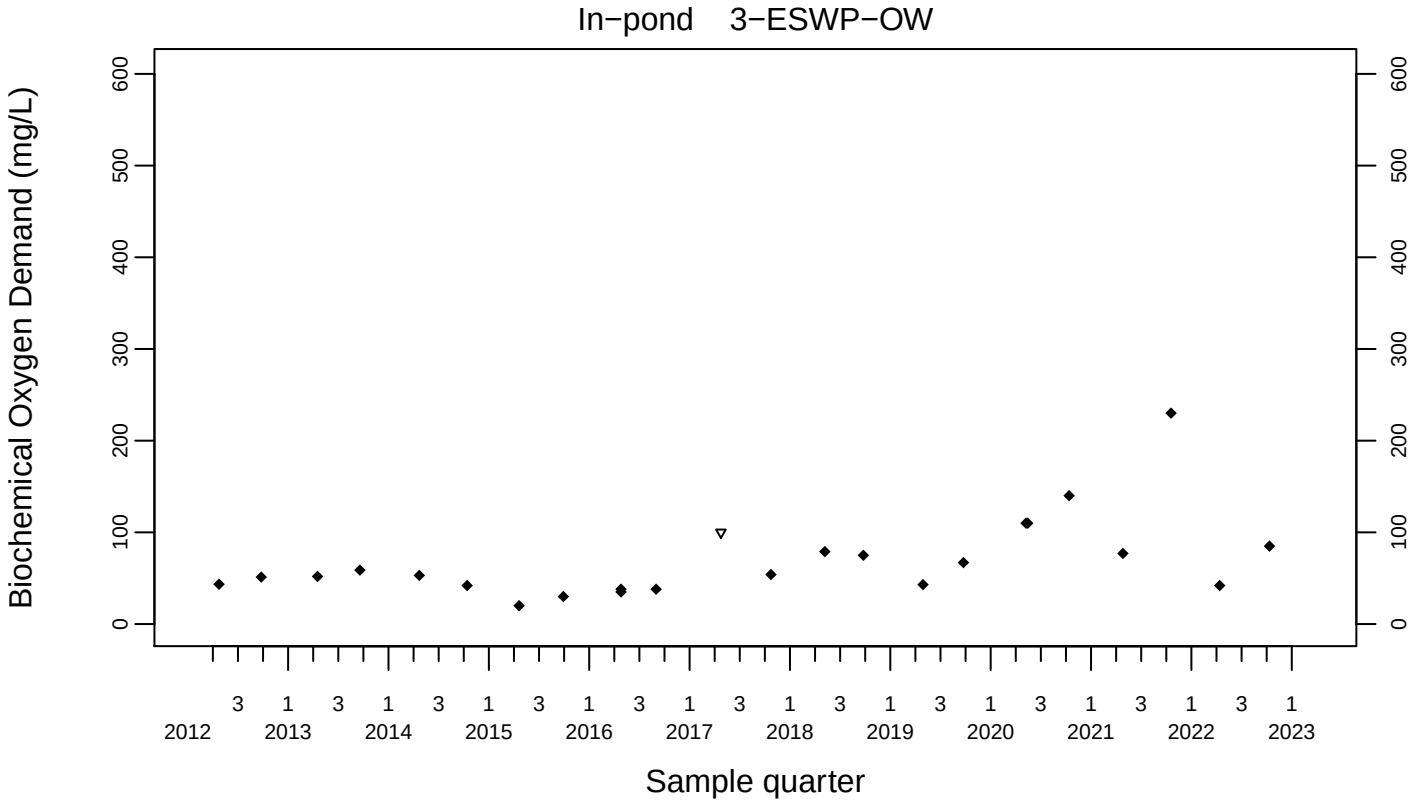
Sewage Ponds Wastewater
pH (mg/L)

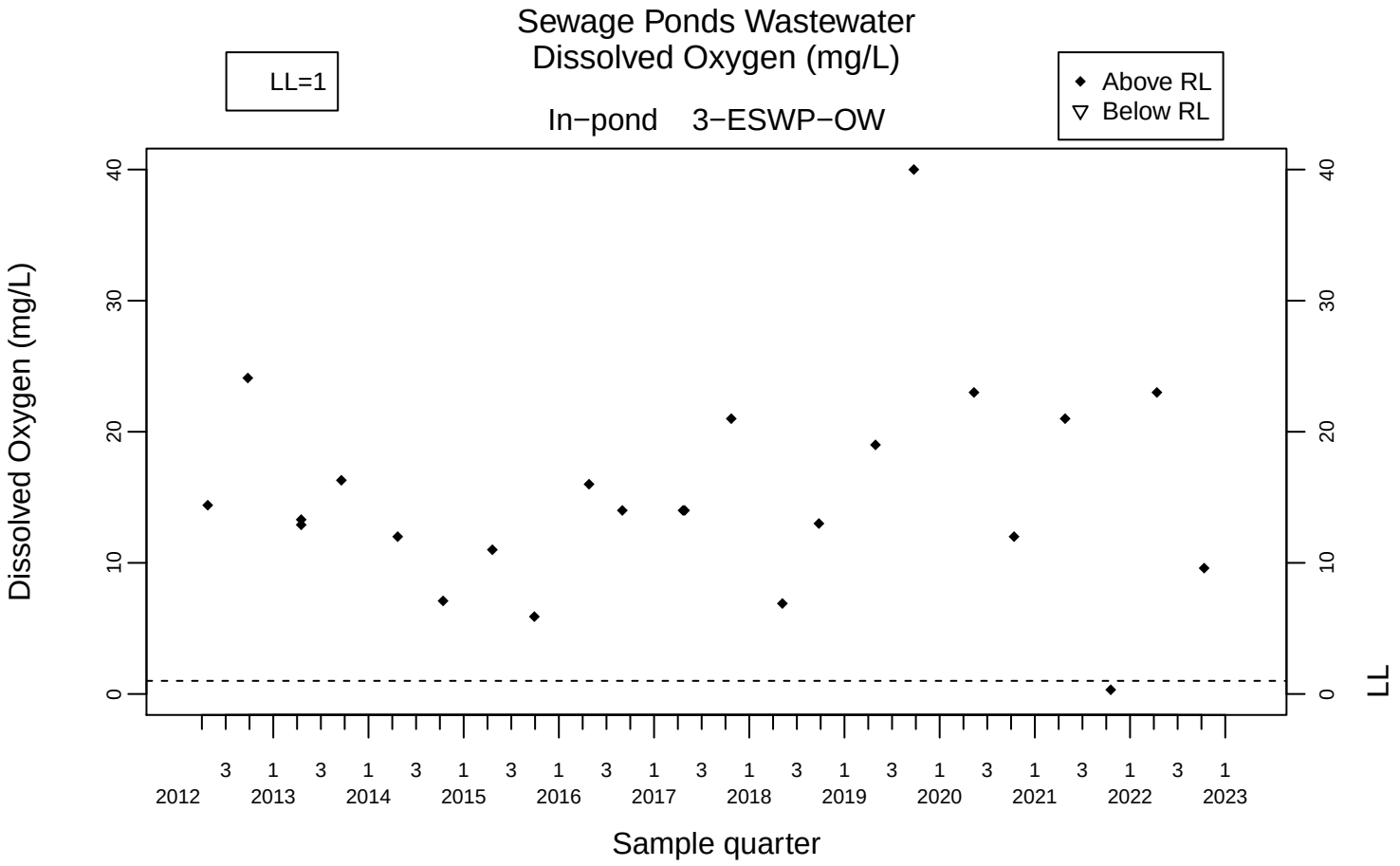




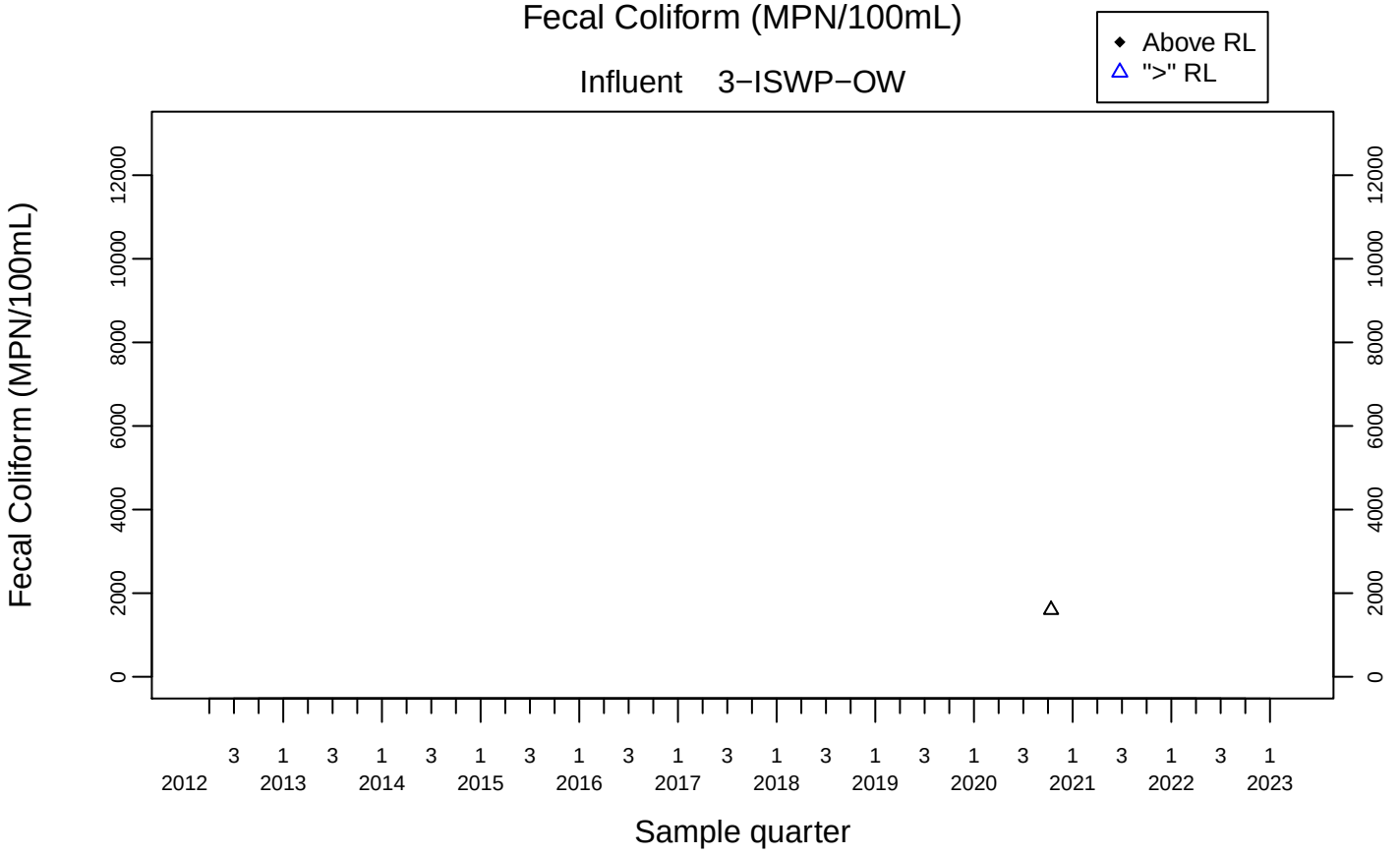
Sewage Ponds Wastewater
Biochemical Oxygen Demand (mg/L)

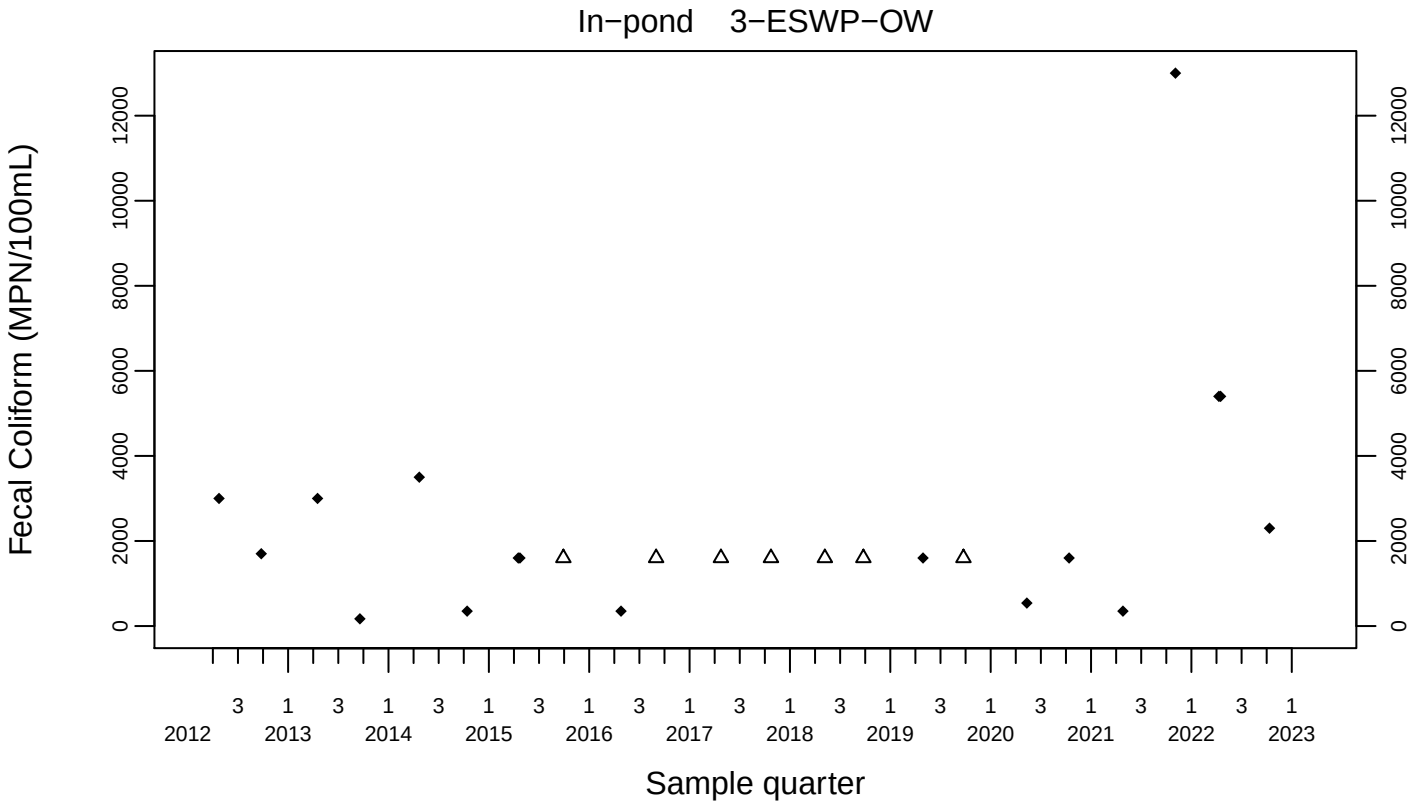




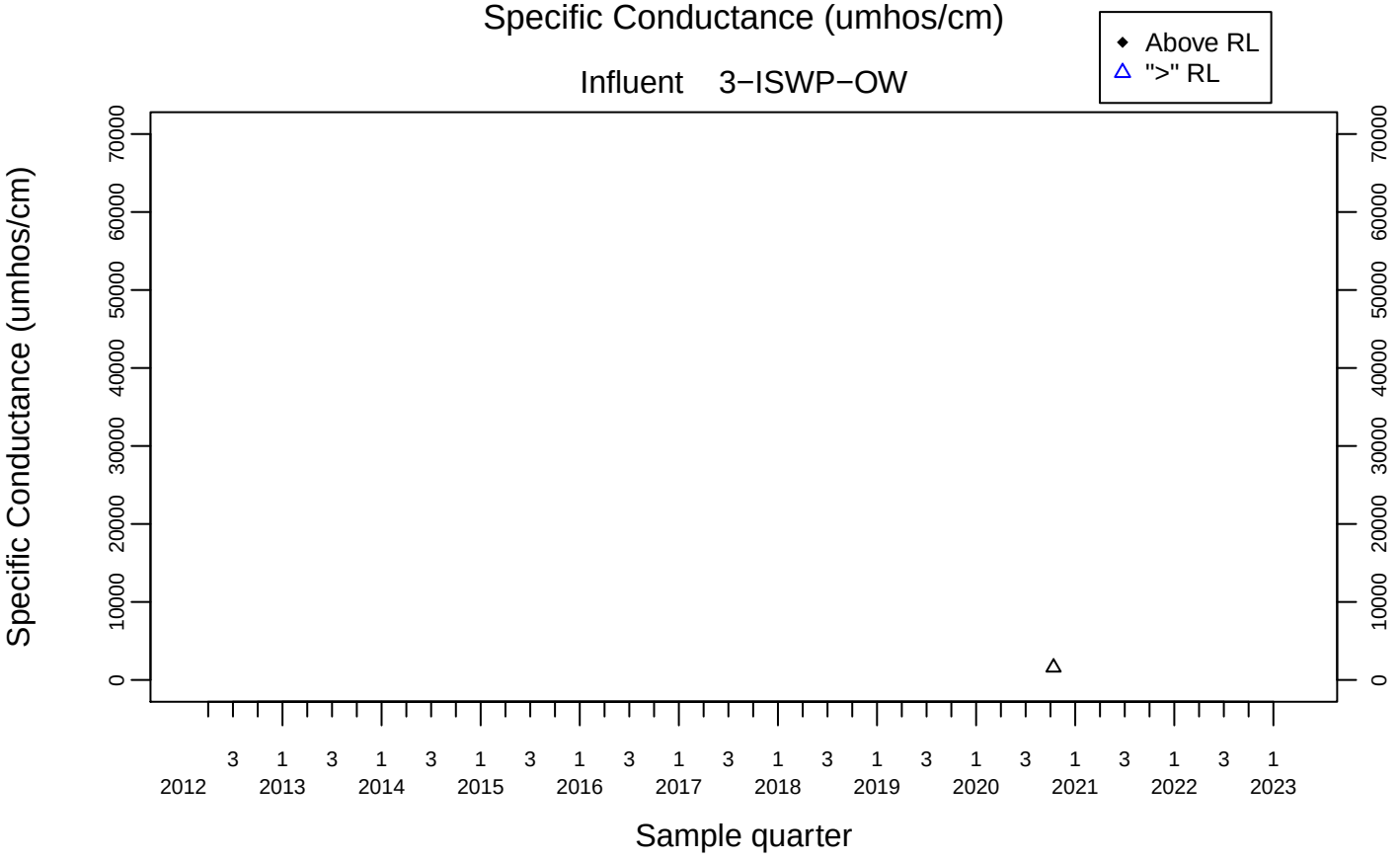

Sewage Ponds Wastewater
Dissolved Oxygen (mg/L)
In−pond 3−ESWP−OW
LL=1
Above RL
Below RL
Dissolved Oxygen (mg/L)
LL
Sample quarter
0
10
20
30
40
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

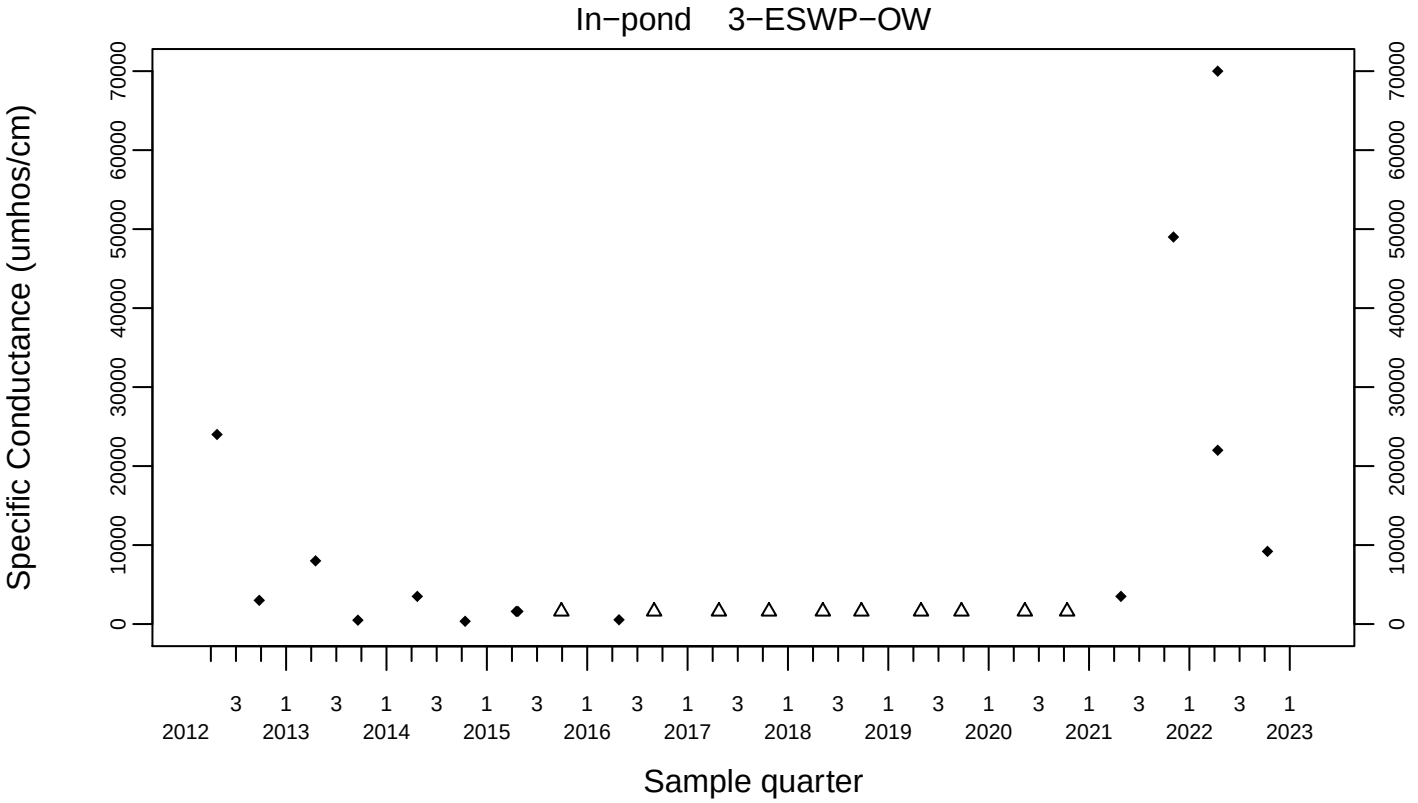
Sewage Ponds Wastewater
Fecal Coliform (MPN/100mL)

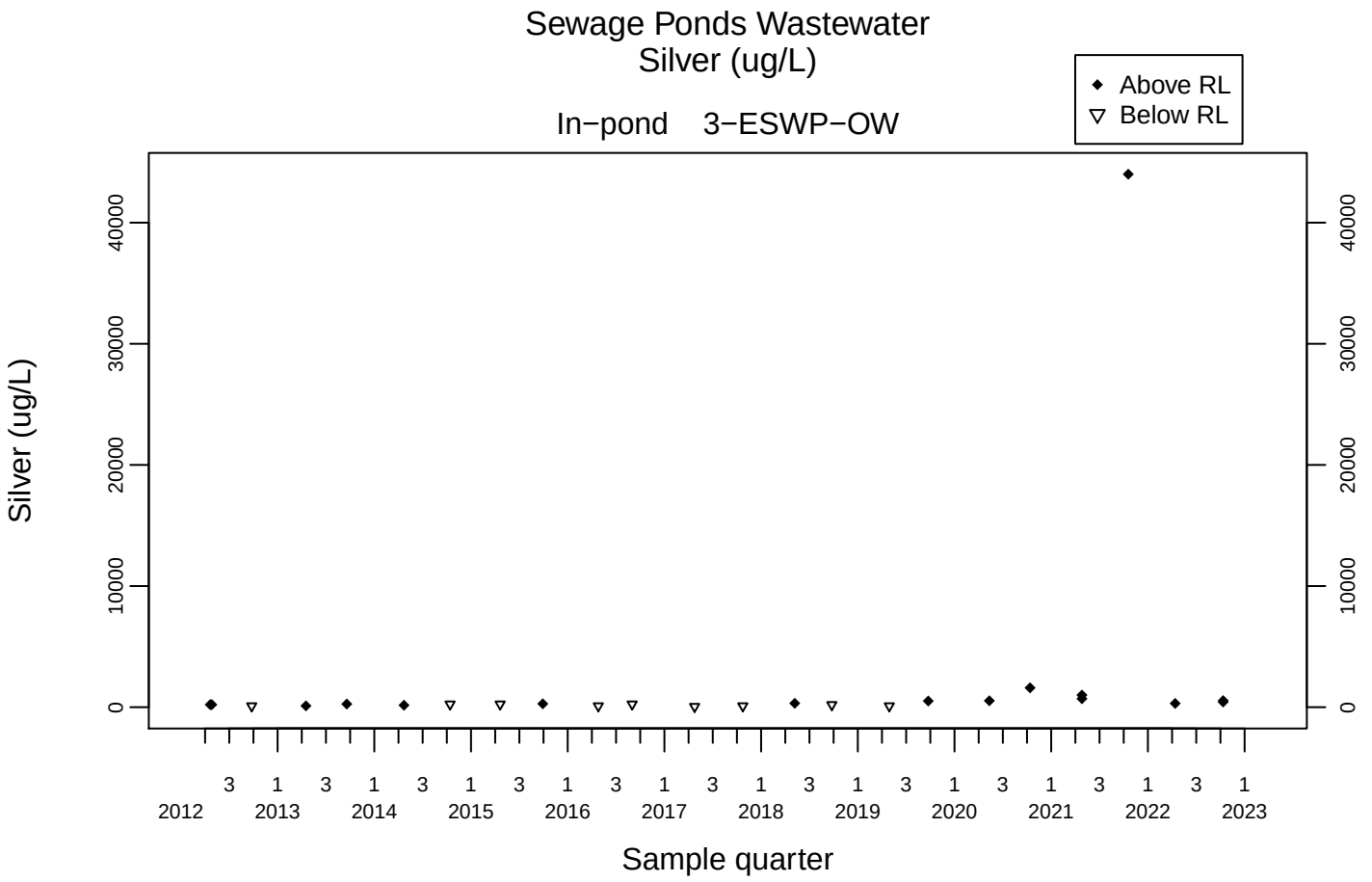


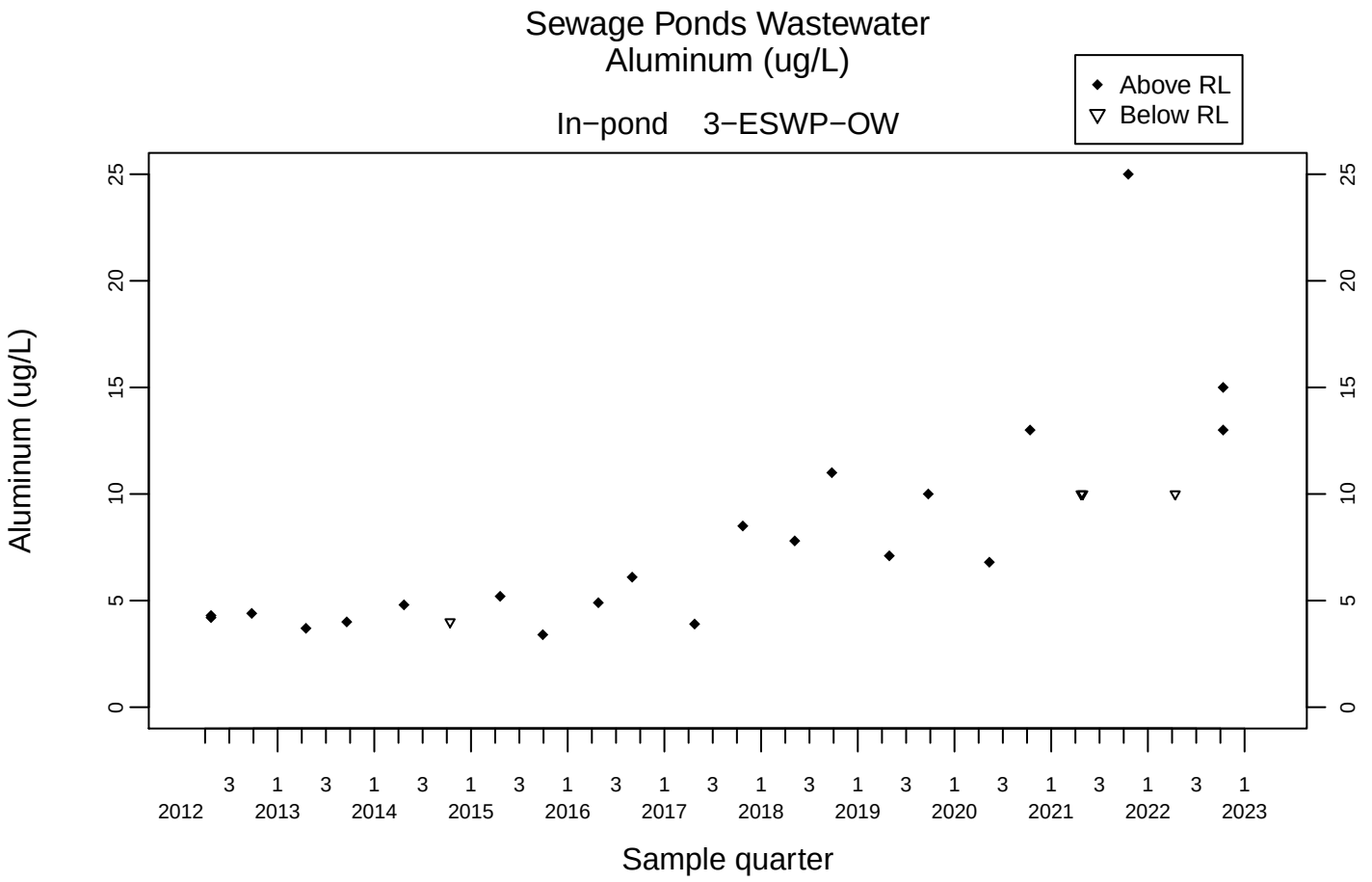


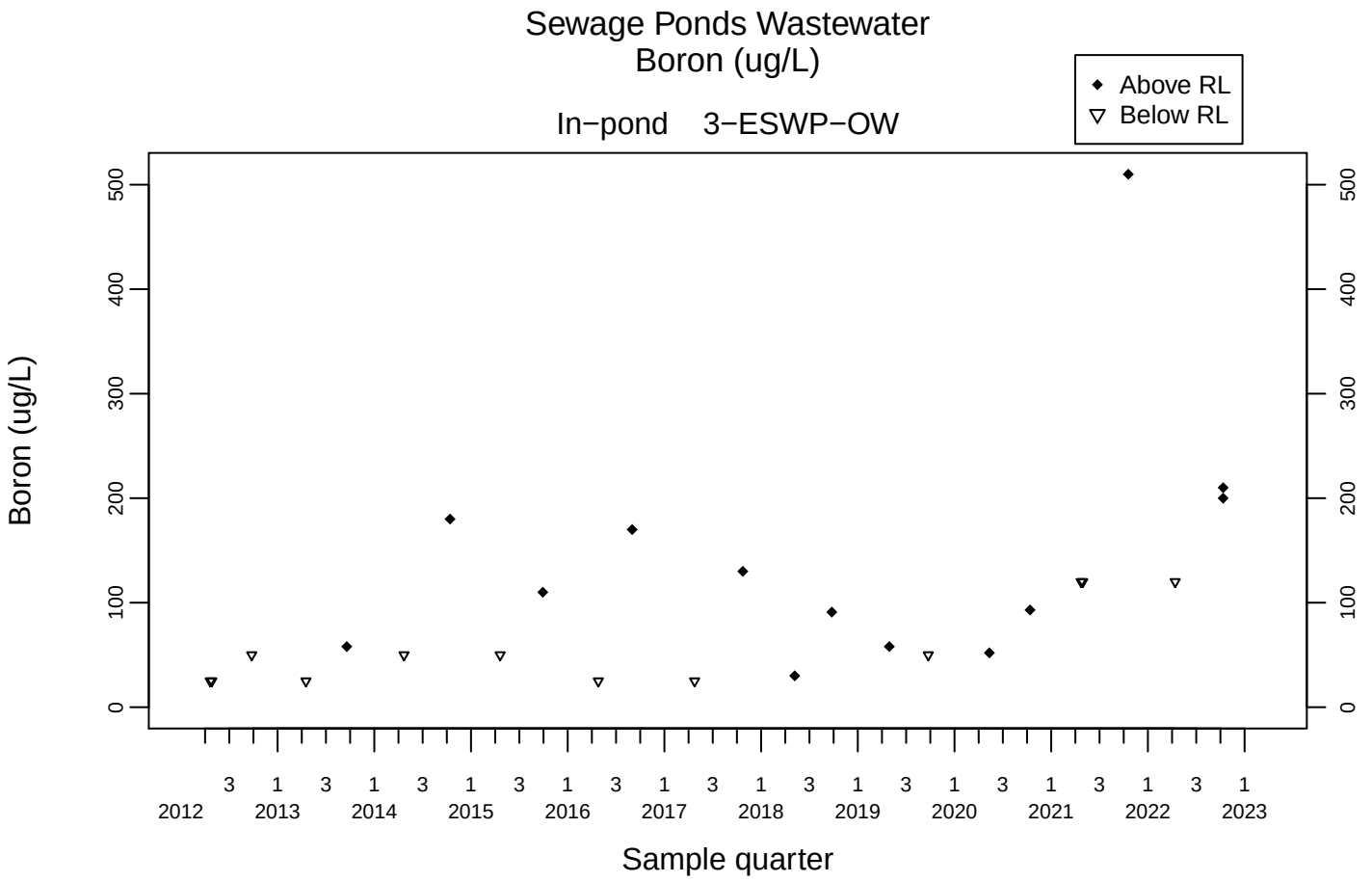
Sewage Ponds Wastewater
Specific Conductance (umhos/cm)

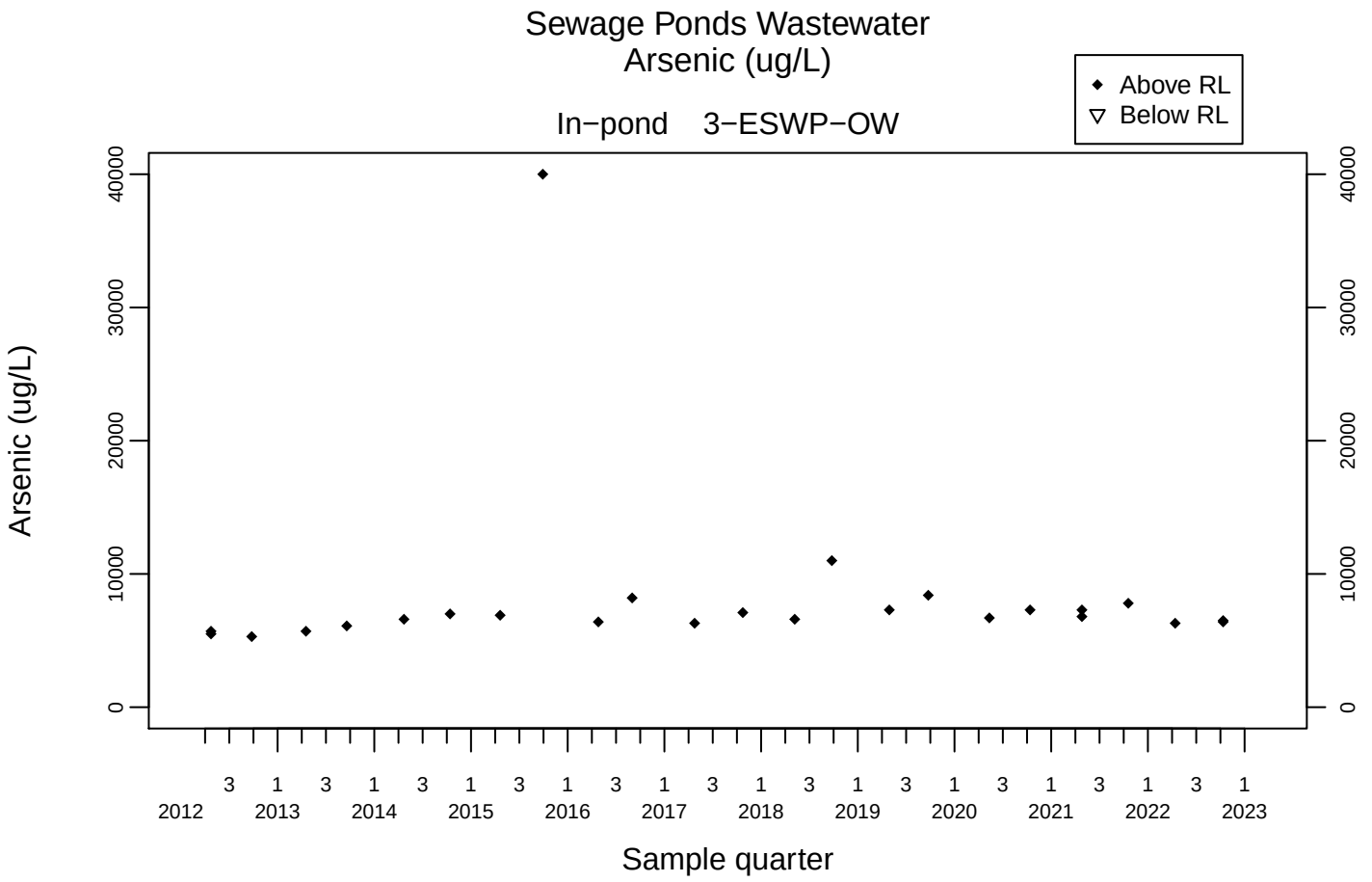


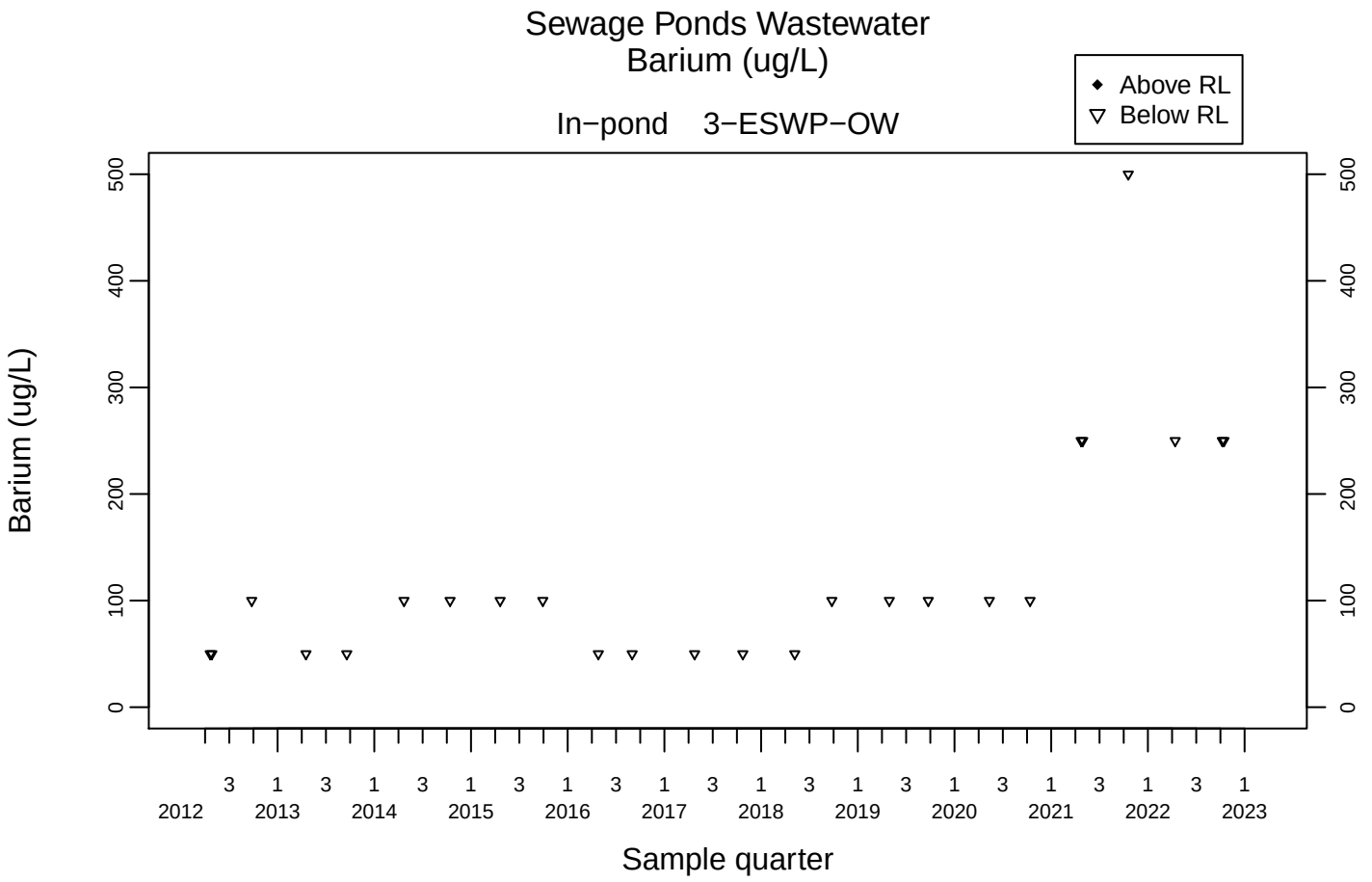


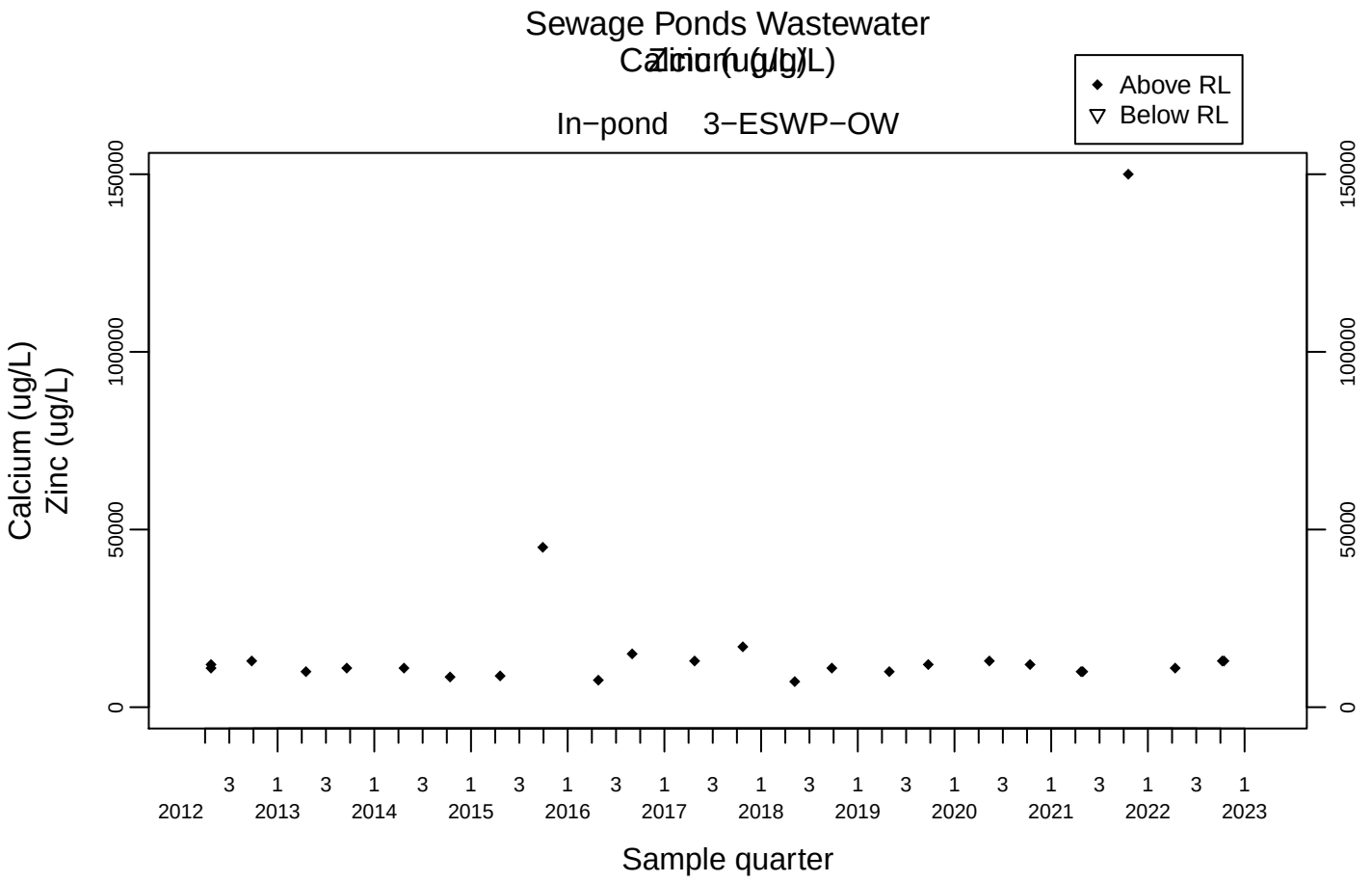

Sewage Ponds Wastewater
Silver (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Silver (ug/L)
0
10000
20000
30000
40000
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

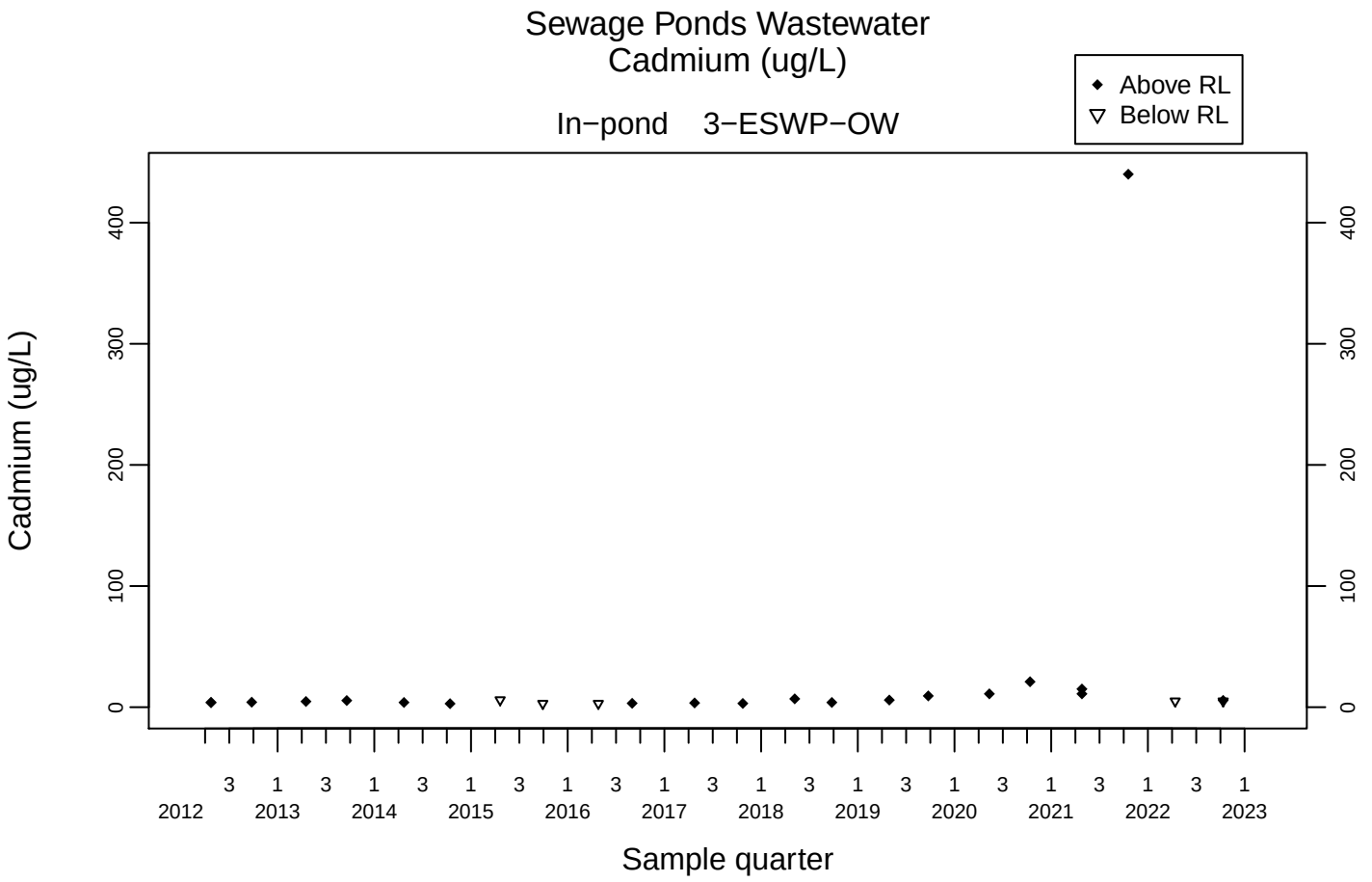

Sewage Ponds Wastewater
Aluminum (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Aluminum (ug/L)
0
5
10
15
20
25
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

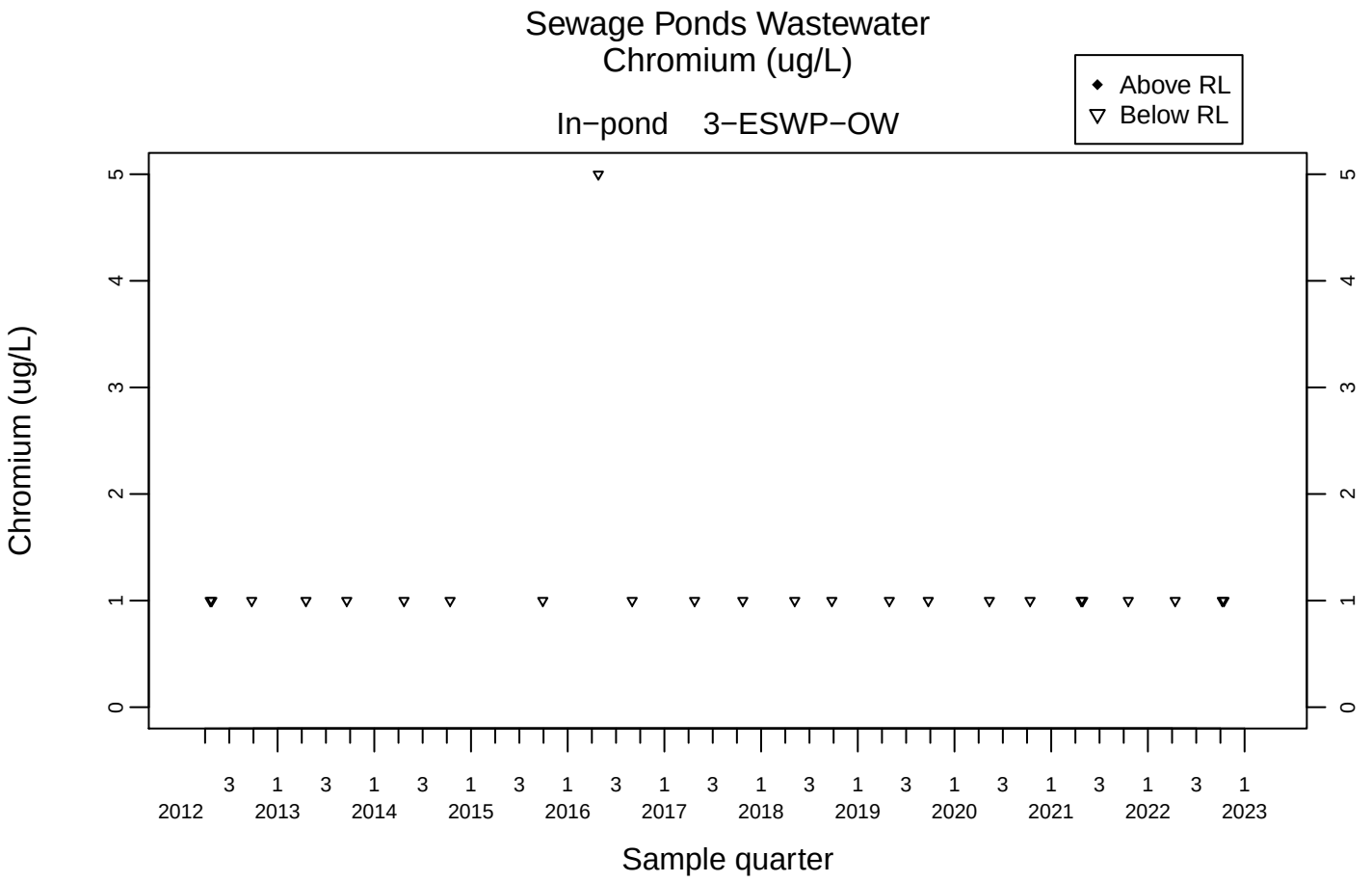

Sewage Ponds Wastewater
Boron (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Boron (ug/L)
0
100
200
300
400
500
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

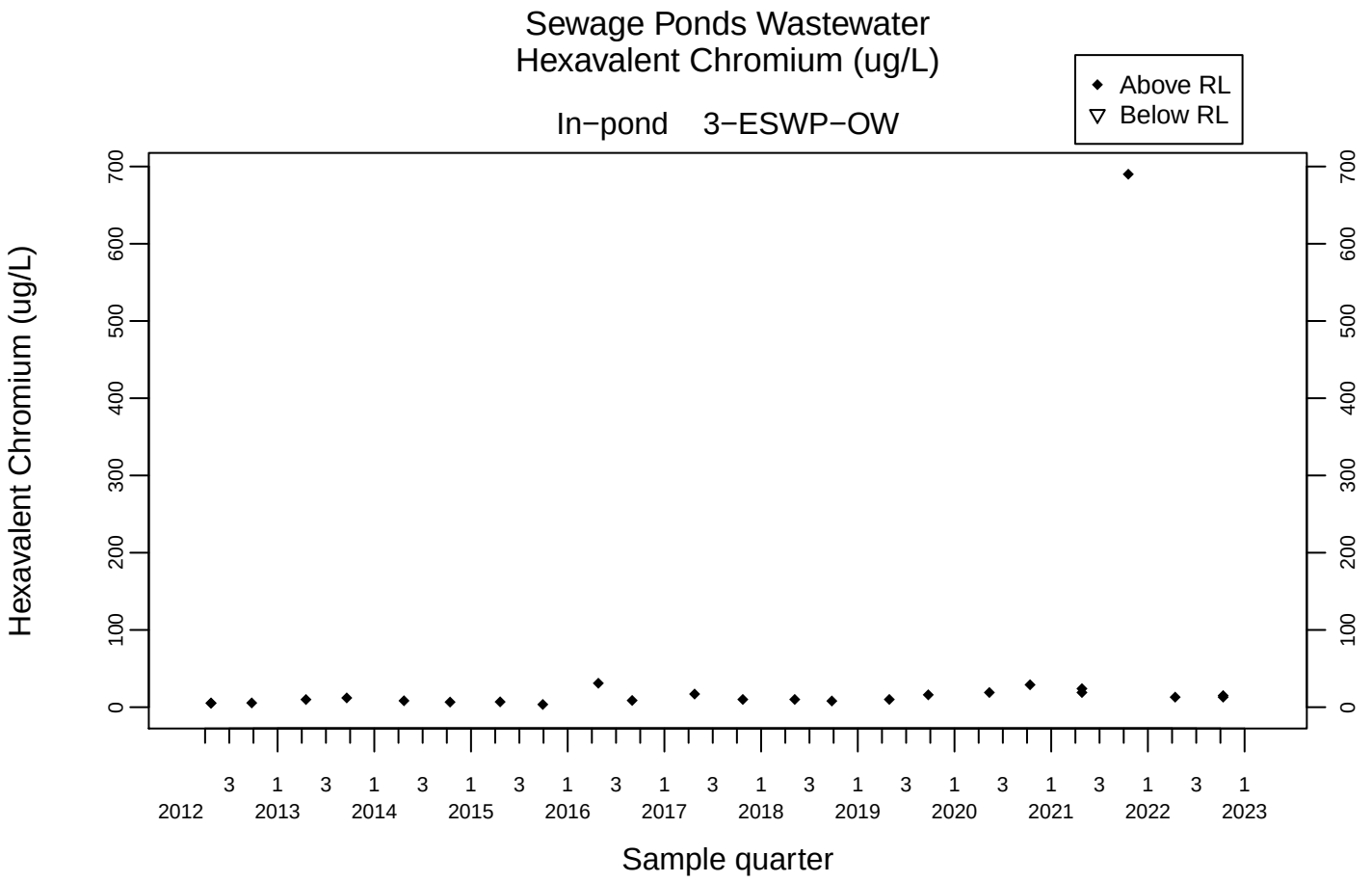

Sewage Ponds Wastewater
Arsenic (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Arsenic (ug/L)
0
10000
20000
30000
40000
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

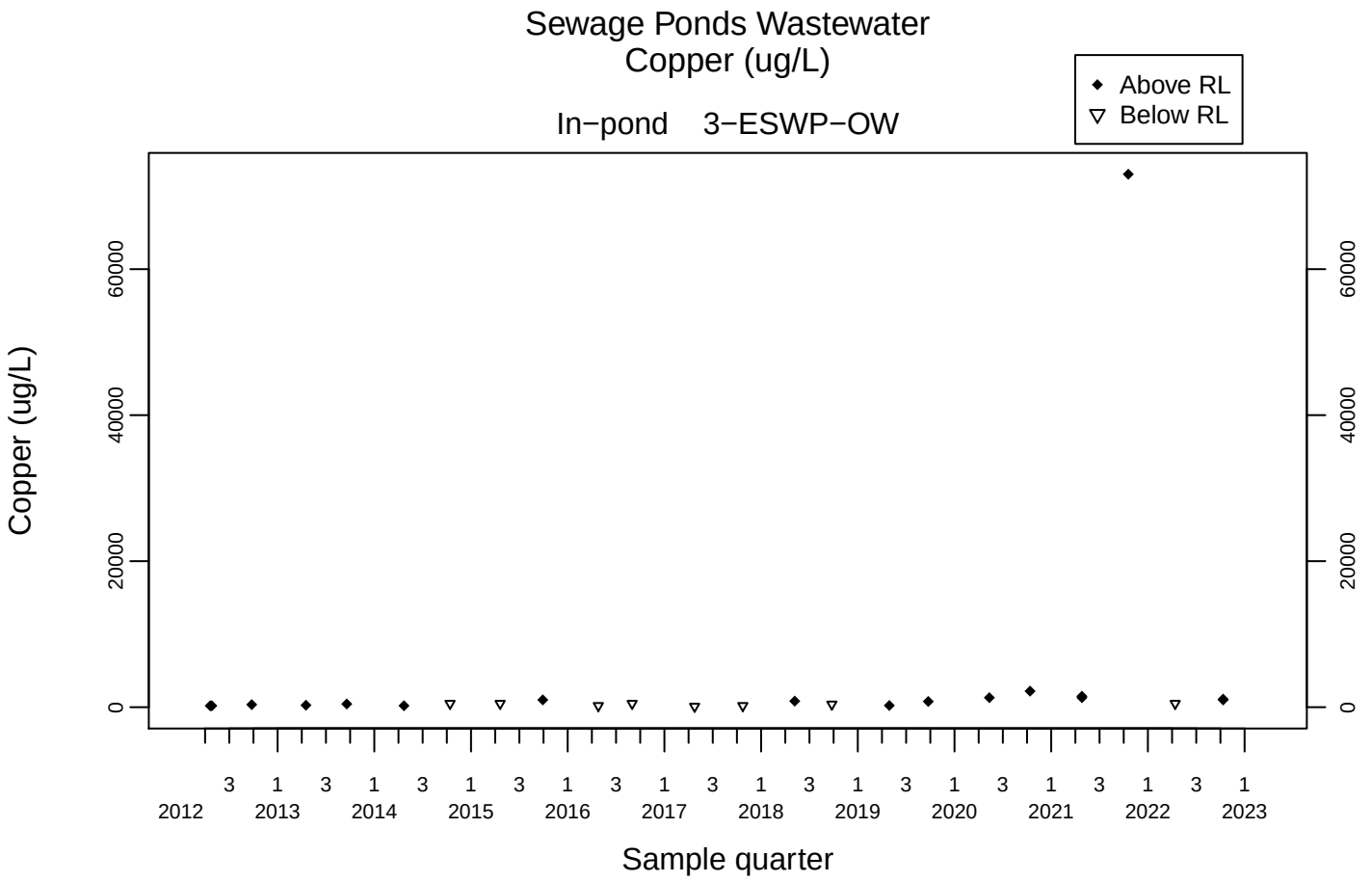

Sewage Ponds Wastewater
Barium (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Barium (ug/L)
0
100
200
300
400
500
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

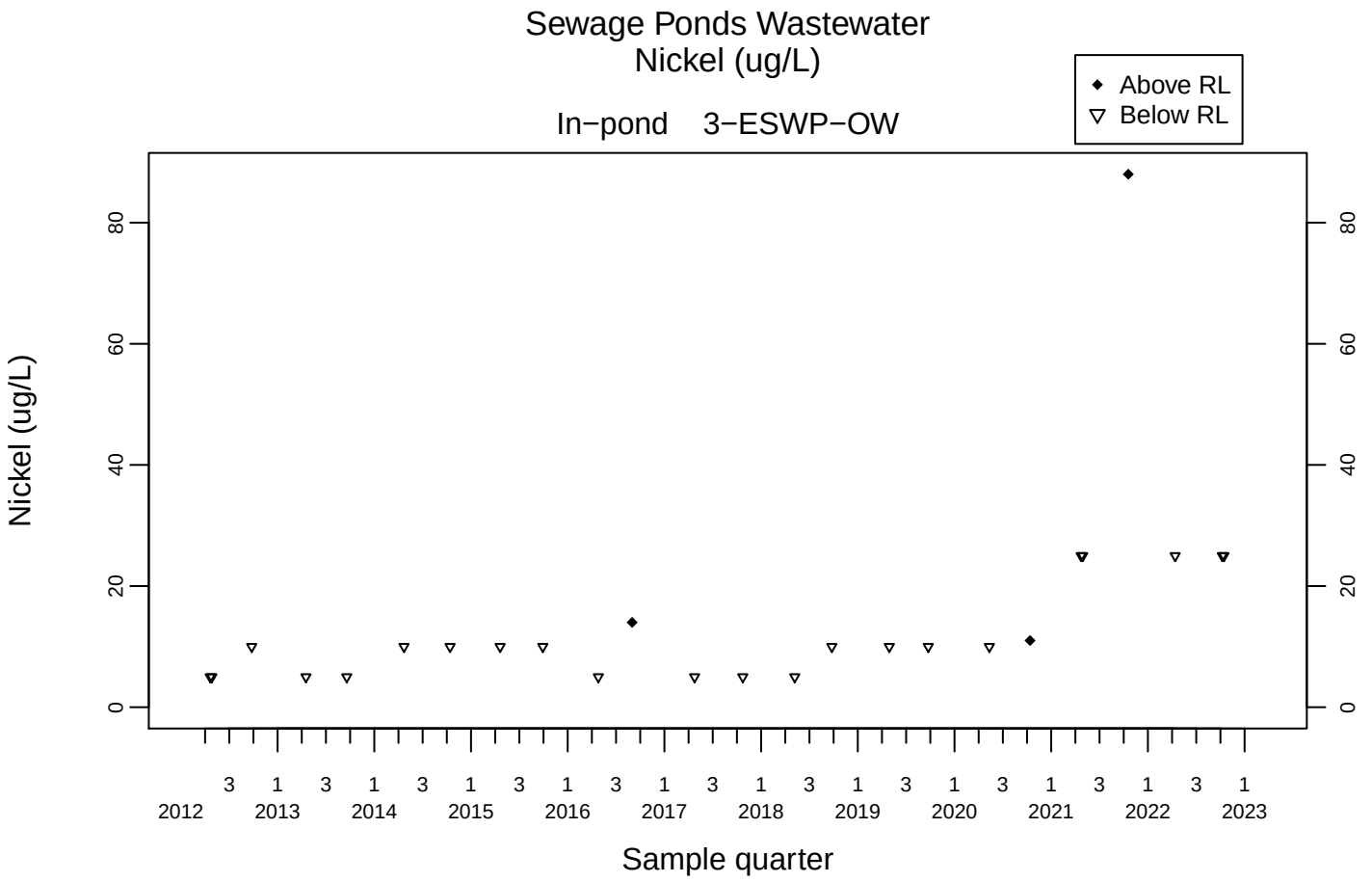

Sewage Ponds Wastewater
Calcium (ug/L) Zinc (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Calcium (ug/L)
Zinc (ug/L)
150000
100000
50000
0
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

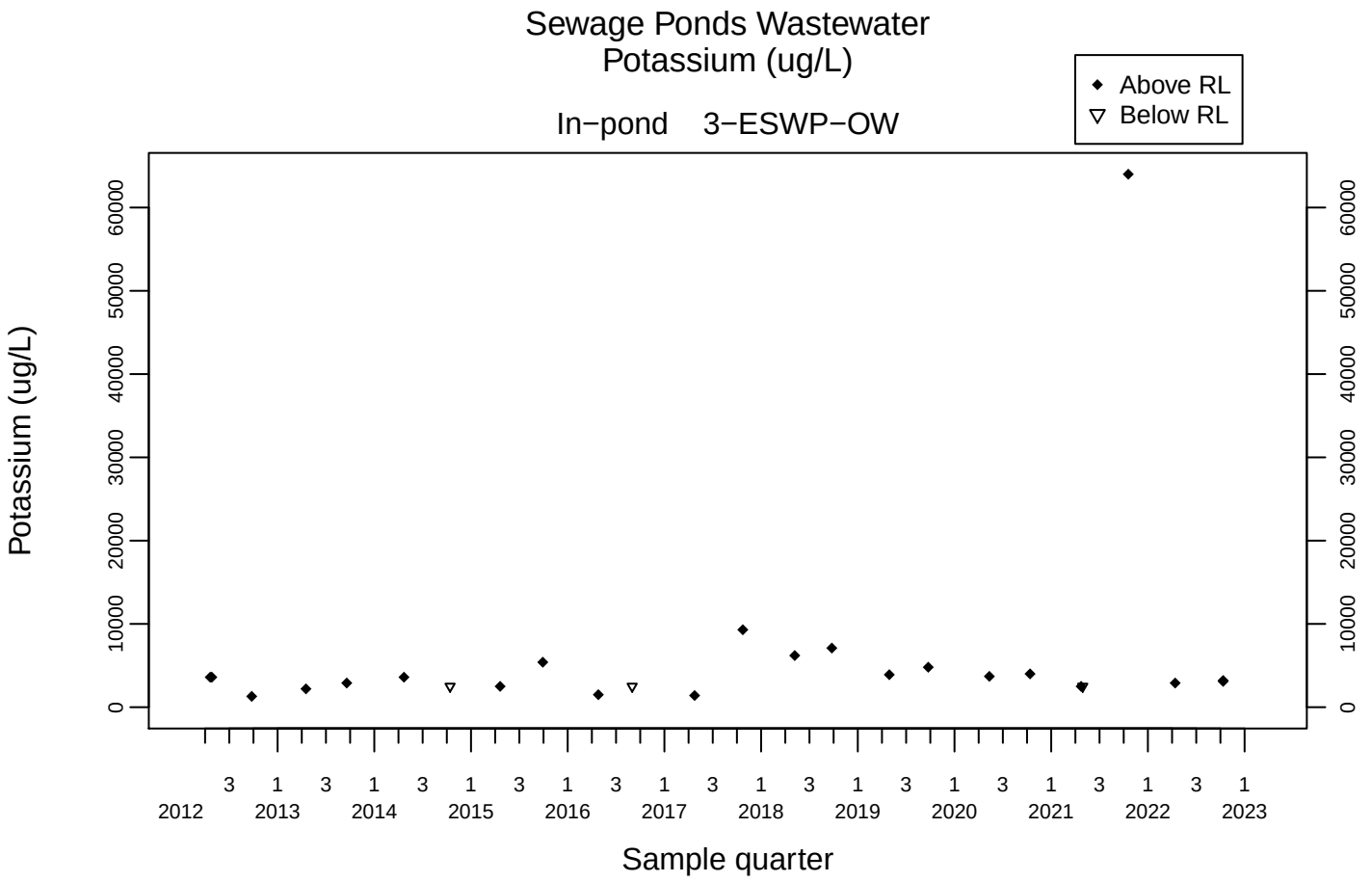

Sewage Ponds Wastewater
Cadmium (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Cadmium (ug/L)
0
100
200
300
400
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

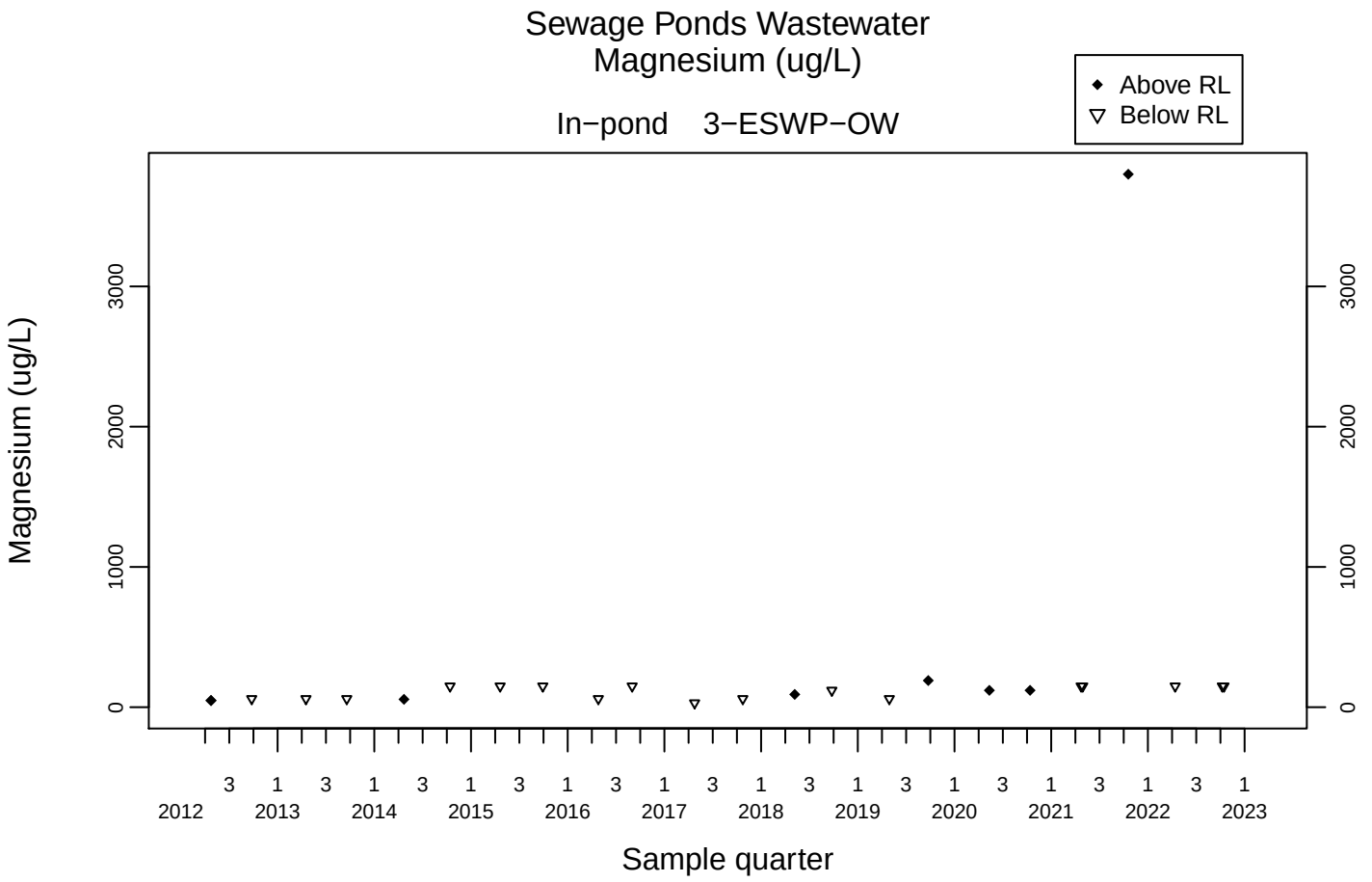

Sewage Ponds Wastewater
Chromium (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Chromium (ug/L)
0
1
2
3
4
5
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

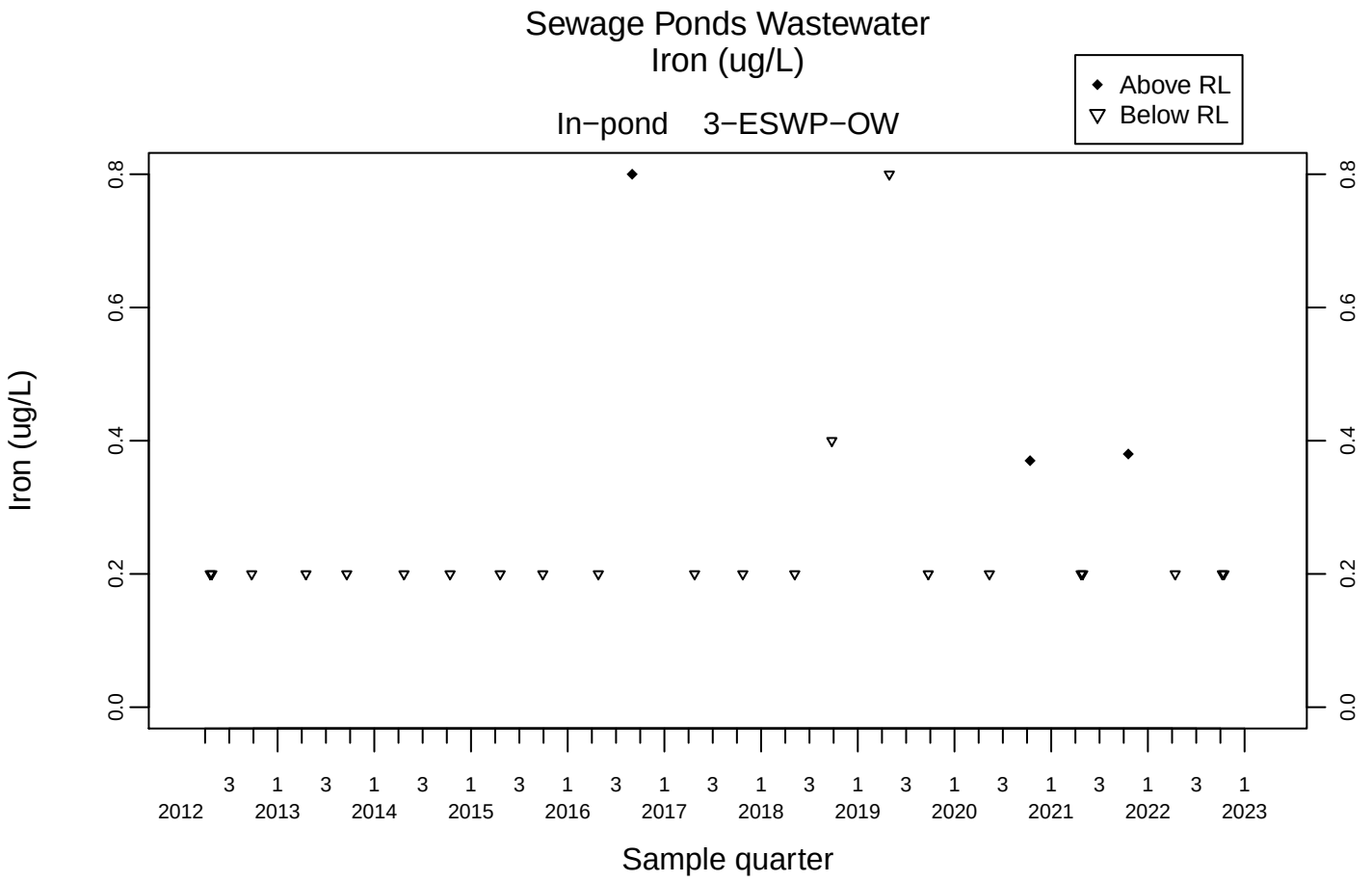

Sewage Ponds Wastewater
Hexavalent Chromium (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Hexavalent Chromium (ug/L)
0
100
200
300
400
500
600
700
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

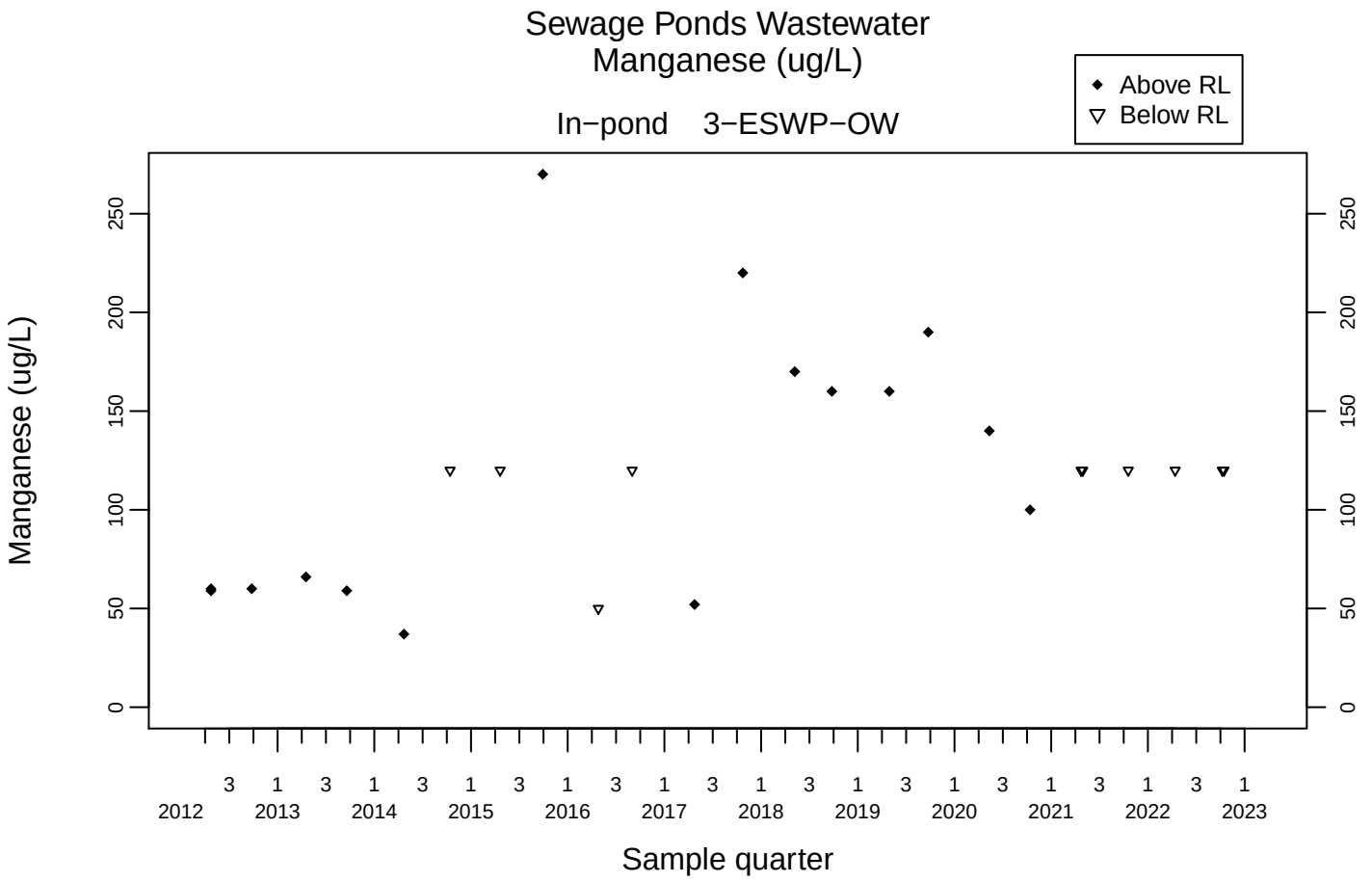

Sewage Ponds Wastewater
Copper (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Copper (ug/L)
0
20000
40000
60000
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

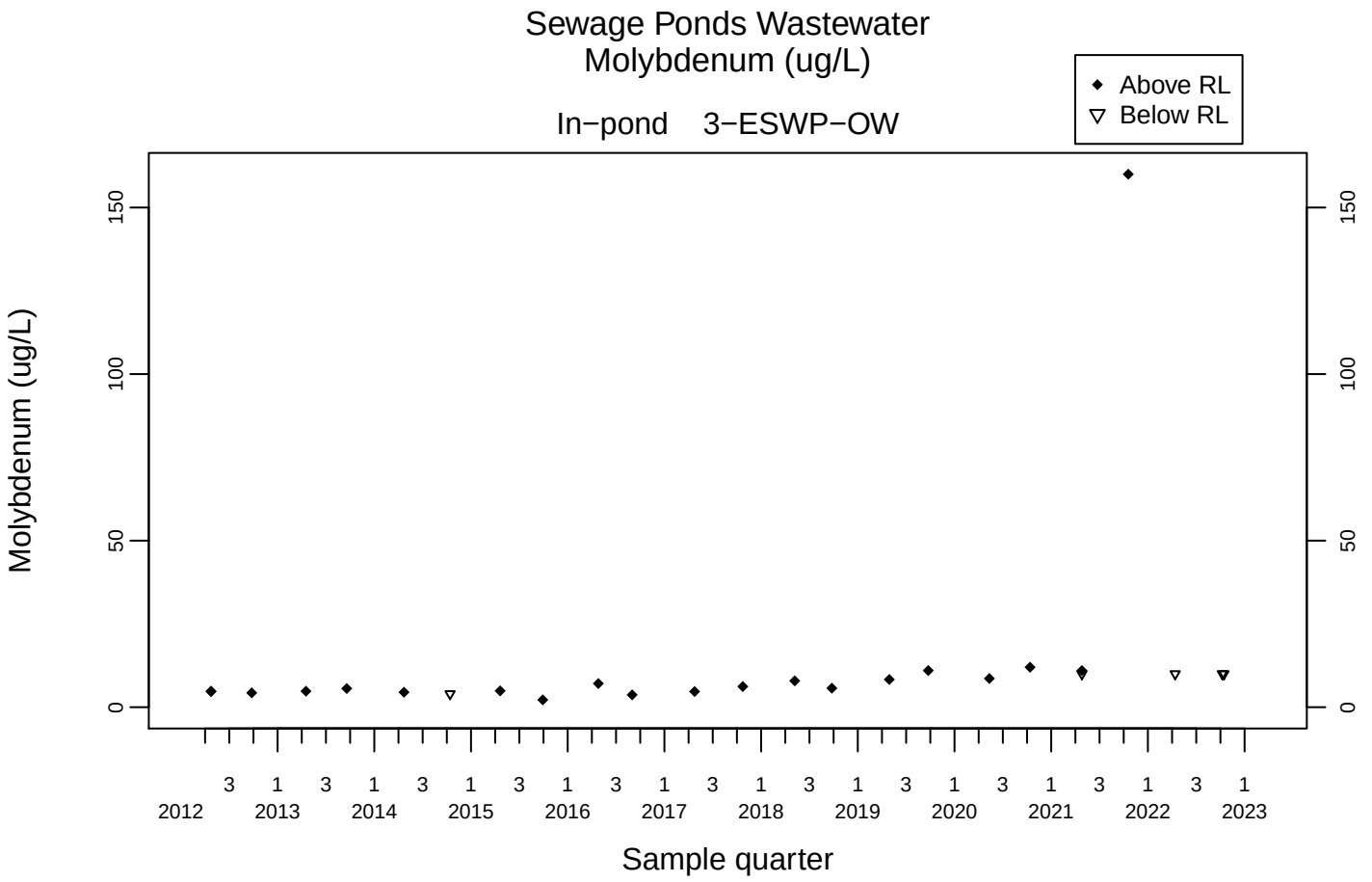

Sewage Ponds Wastewater
Nickel (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Nickel (ug/L)
0
20
40
60
80
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

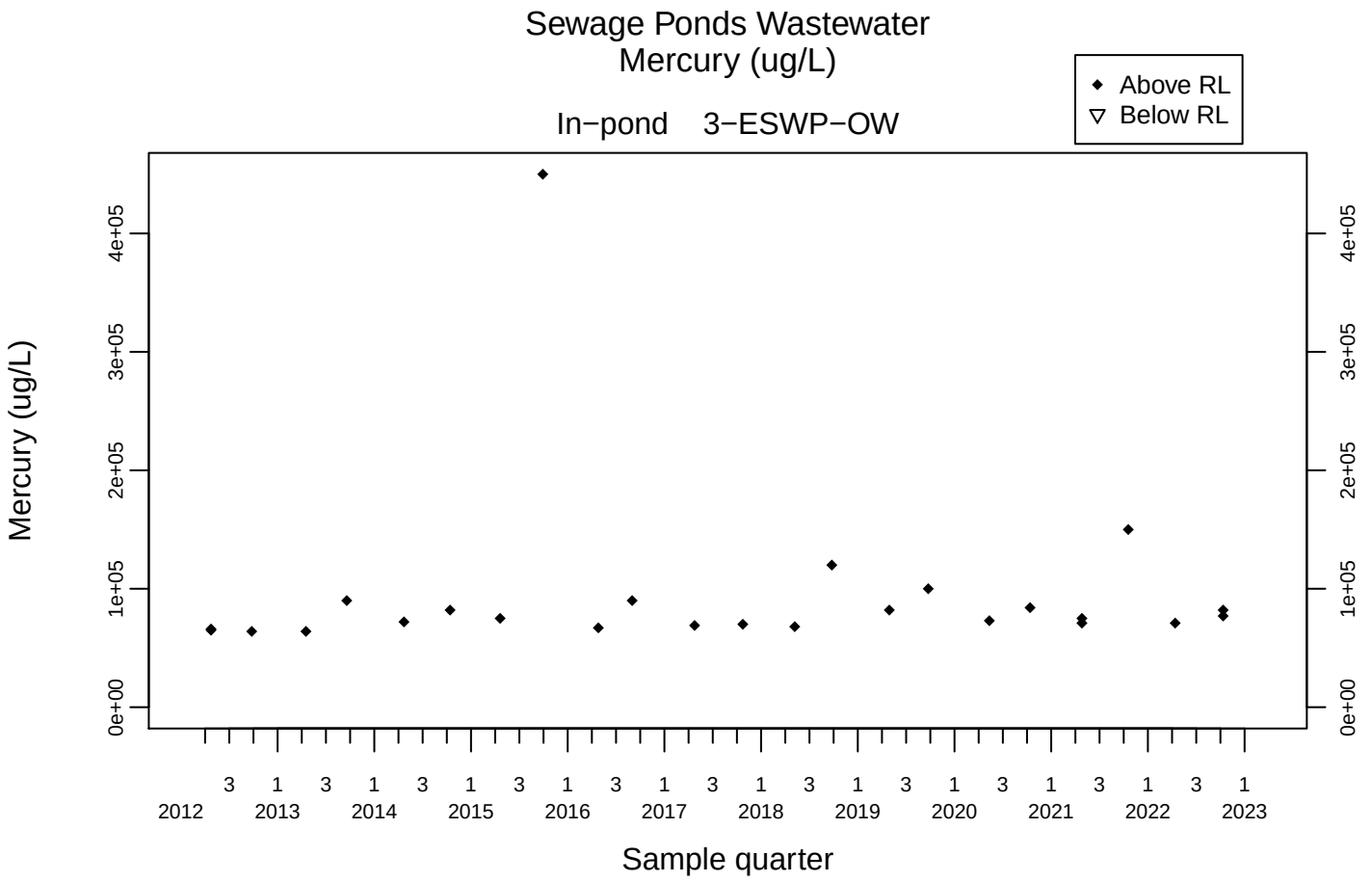

Sewage Ponds Wastewater
Potassium (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Potassium (ug/L)
0
10000
20000
30000
40000
50000
60000
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

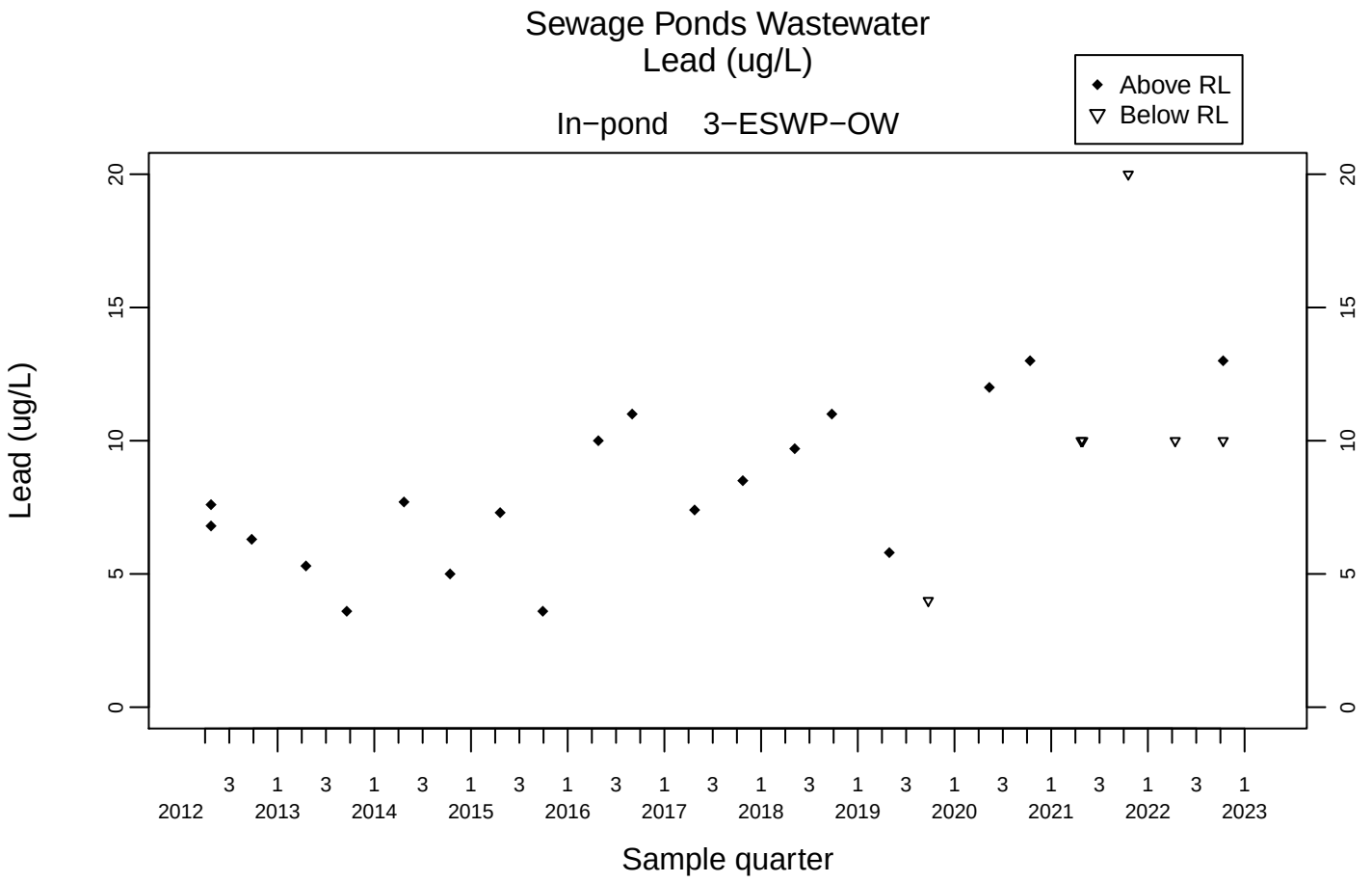

Sewage Ponds Wastewater
Magnesium (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Magnesium (ug/L)
0
1000
2000
3000
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

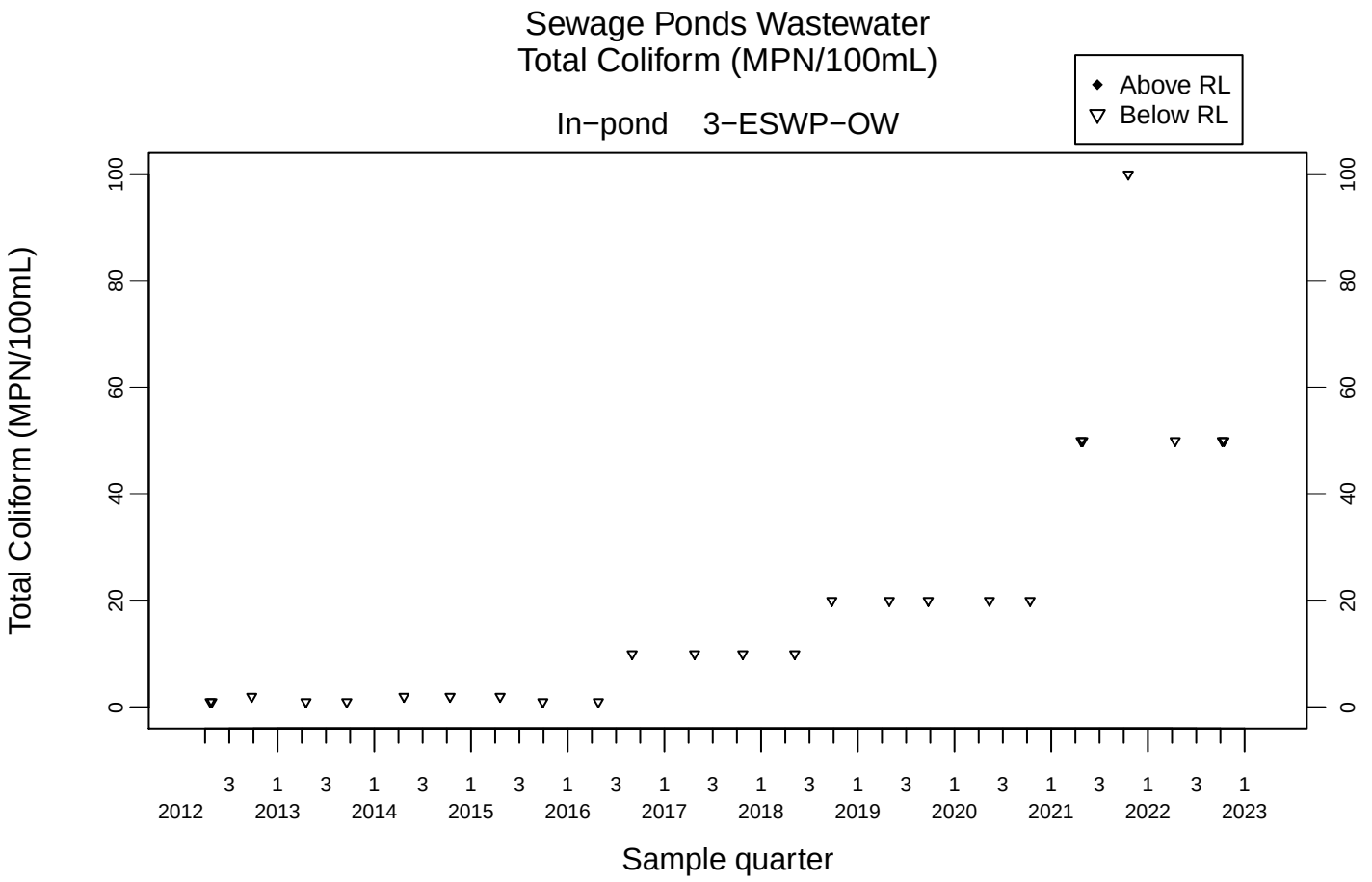

Sewage Ponds Wastewater
Iron (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Iron (ug/L)
0.0
0.2
0.4
0.6
0.8
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

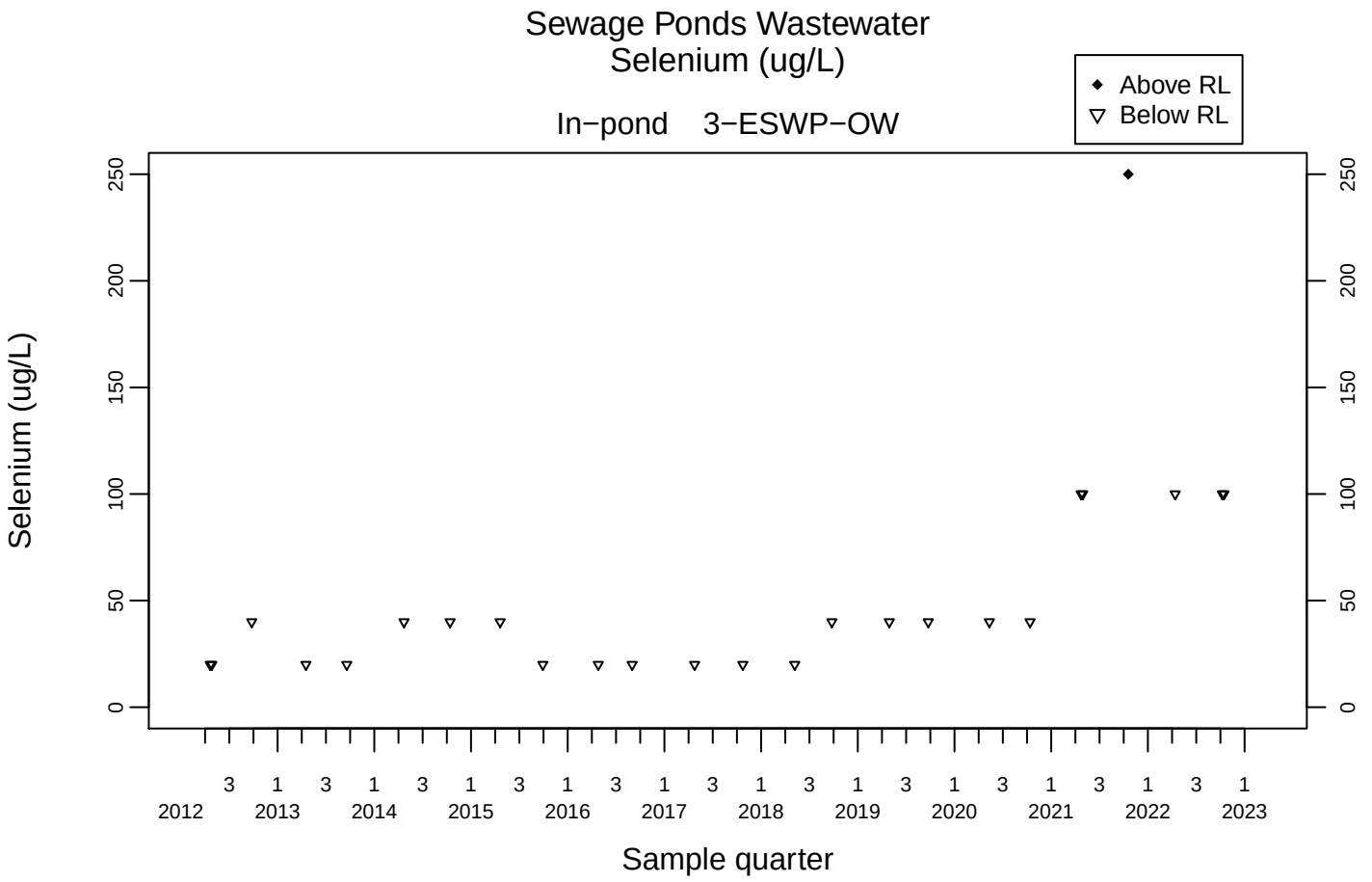

Sewage Ponds Wastewater
Manganese (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Manganese (ug/L)
0
50
100
150
200
250
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

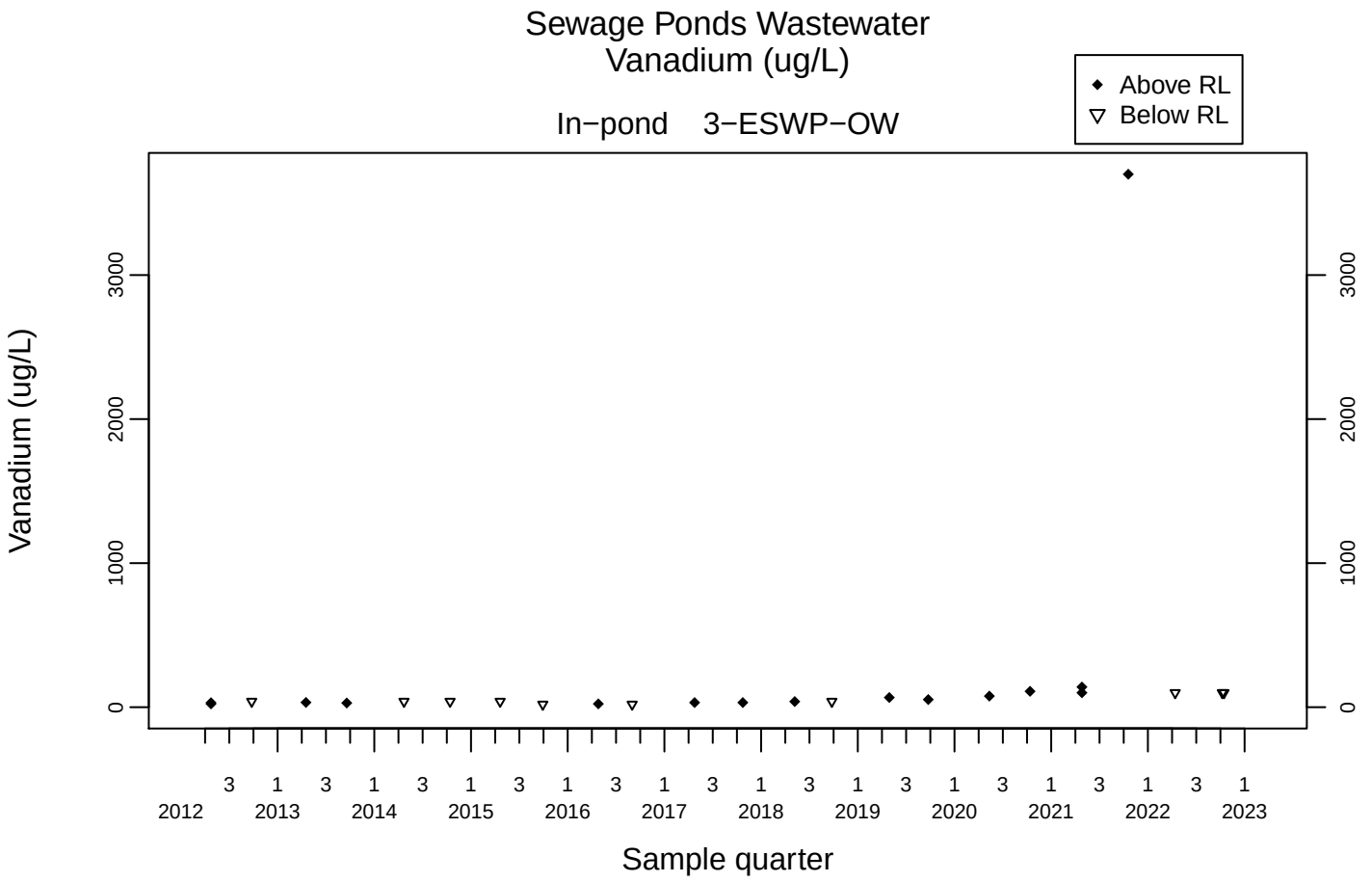

Sewage Ponds Wastewater
Molybdenum (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Molybdenum (ug/L)
0
50
100
150
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

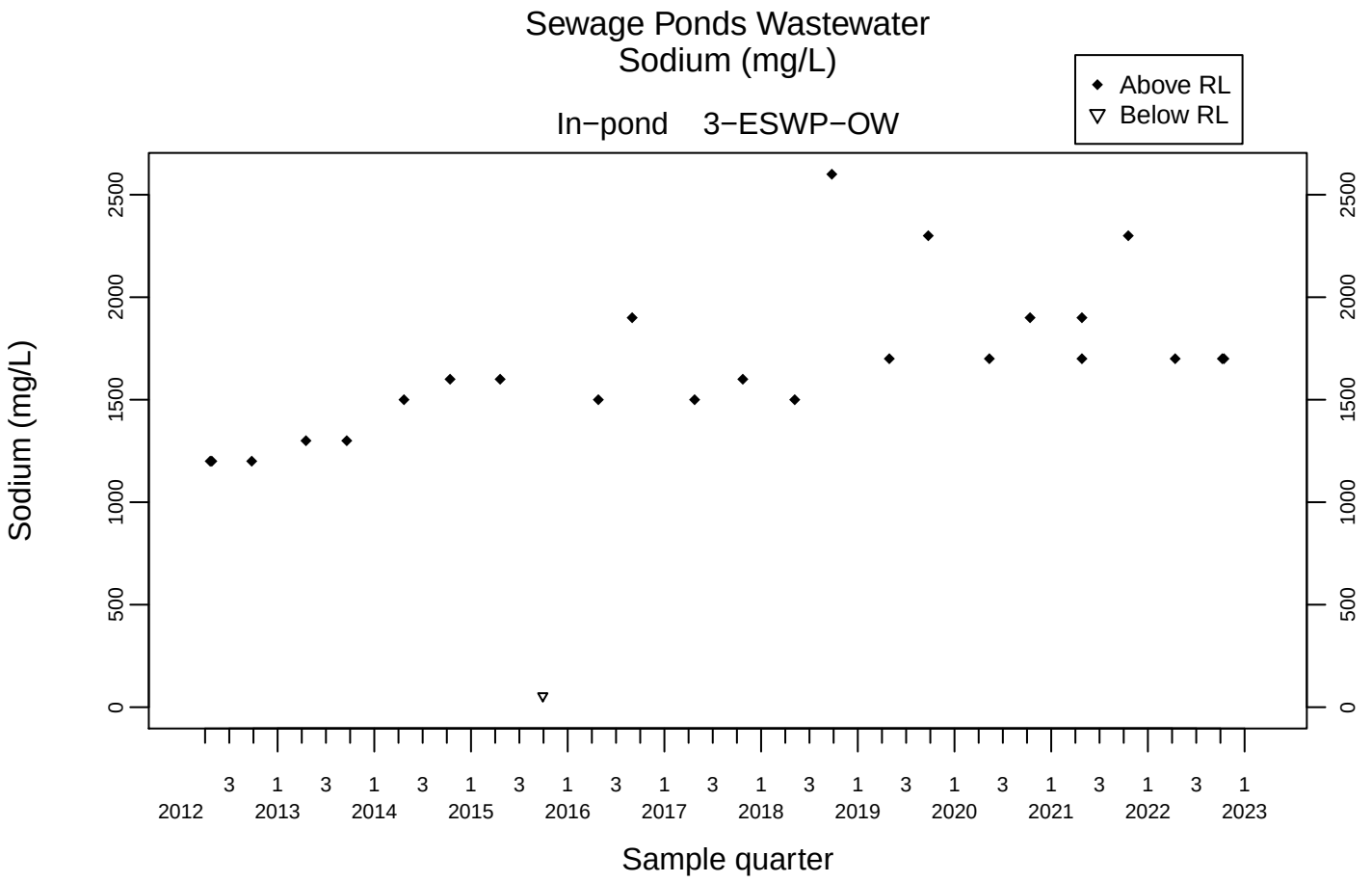

Sewage Ponds Wastewater
Mercury (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Mercury (ug/L)
0e+00
1e+05
2e+05
3e+05
4e+05
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Sewage Ponds Wastewater
Lead (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Lead (ug/L)
0
5
10
15
20
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

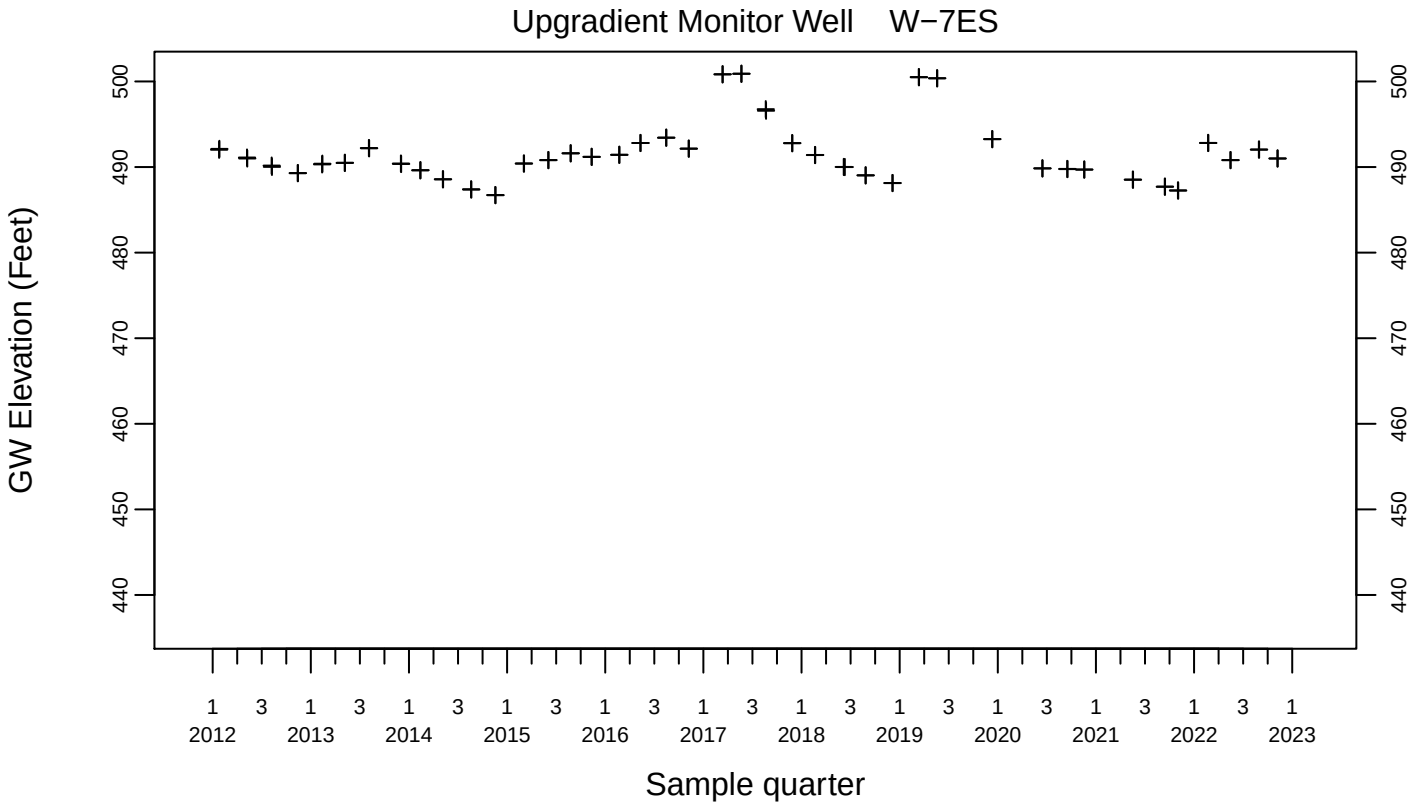

Sewage Ponds Wastewater
Total Coliform (MPN/100mL)
In−pond 3−ESWP−OW
Above RL
Below RL
Total Coliform (MPN/100mL)
0
20
40
60
80
100
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

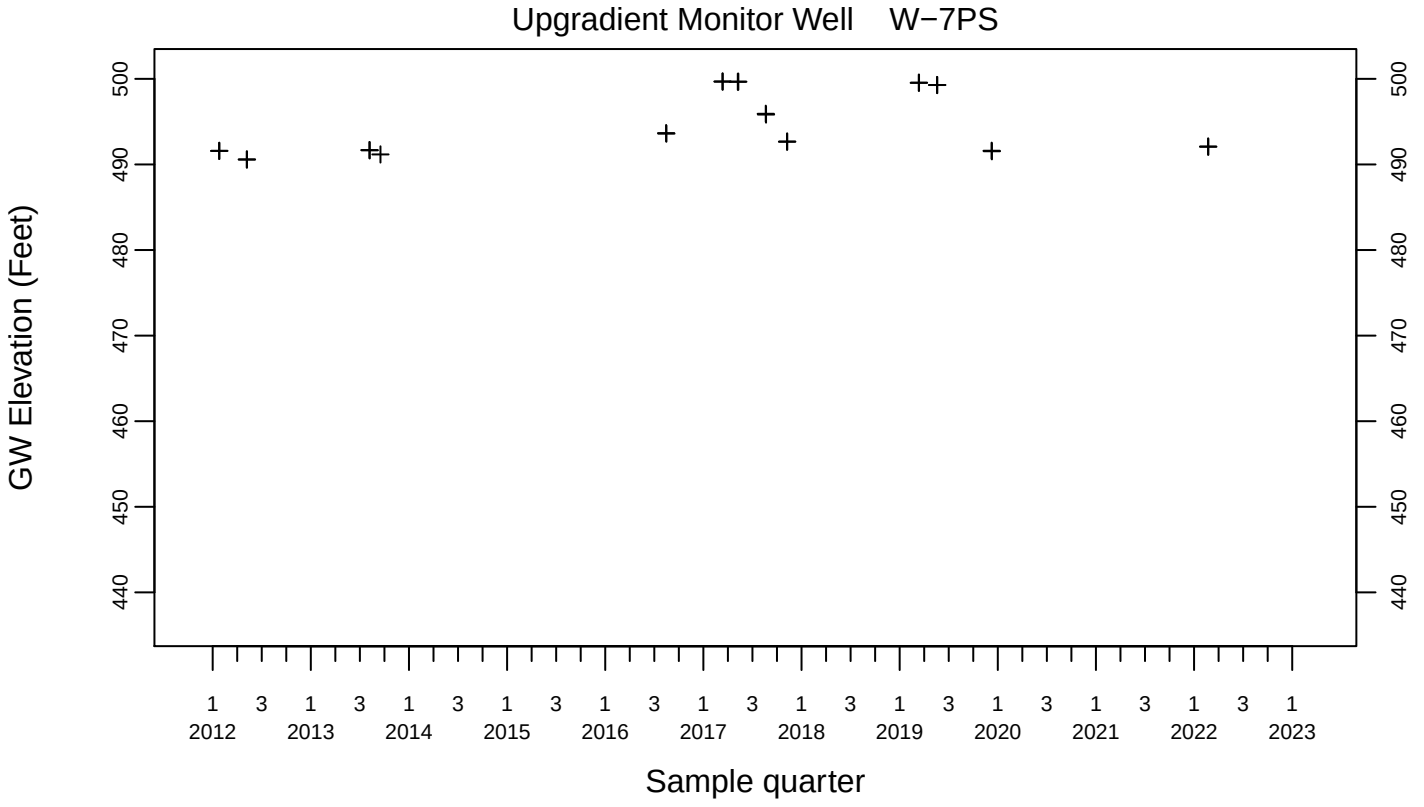

Sewage Ponds Wastewater
Selenium (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Selenium (ug/L)
0
50
100
150
200
250
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Sewage Ponds Wastewater
Vanadium (ug/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Vanadium (ug/L)
0
1000
2000
3000
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

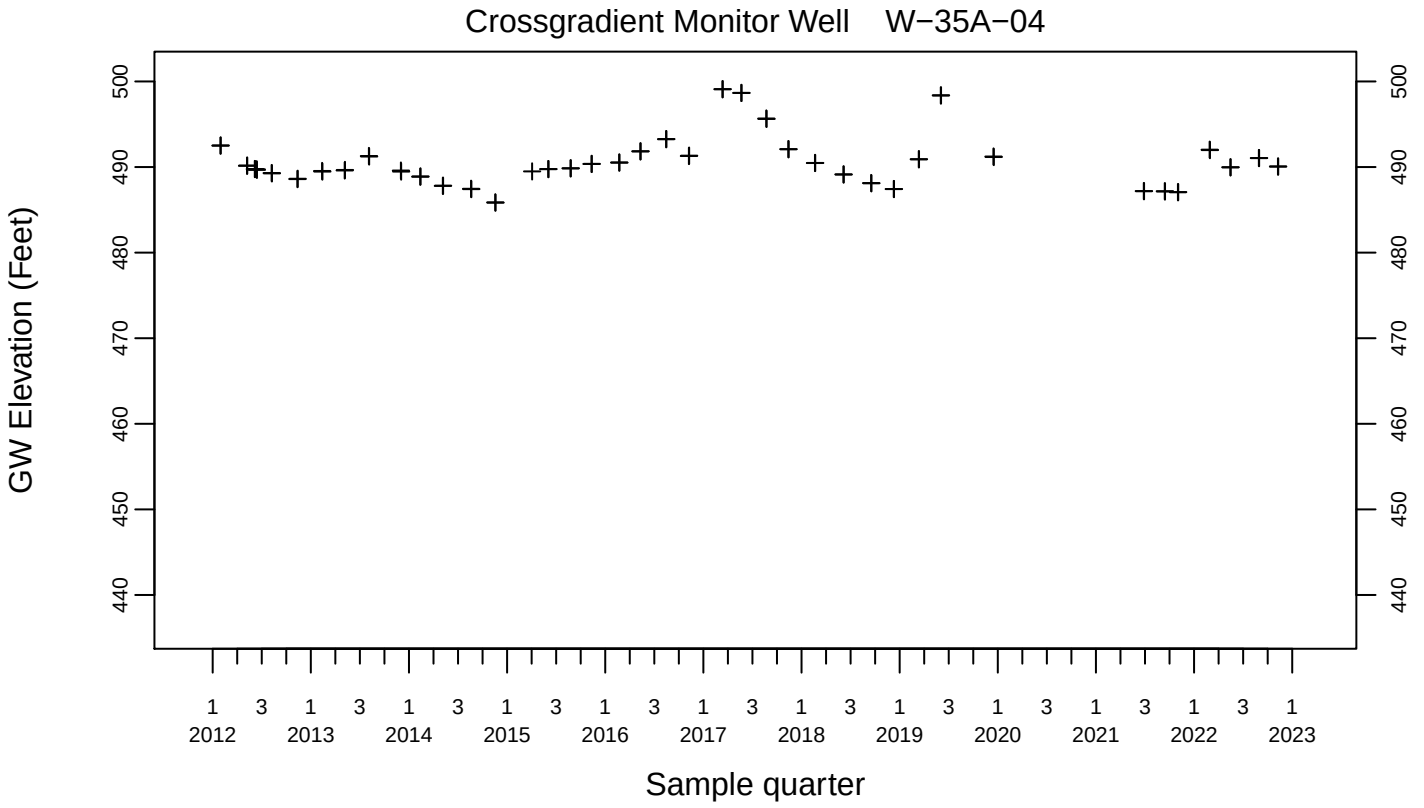

Sewage Ponds Wastewater
Sodium (mg/L)
In−pond 3−ESWP−OW
Above RL
Below RL
Sodium (mg/L)
0
500
1000
1500
2000
2500
3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

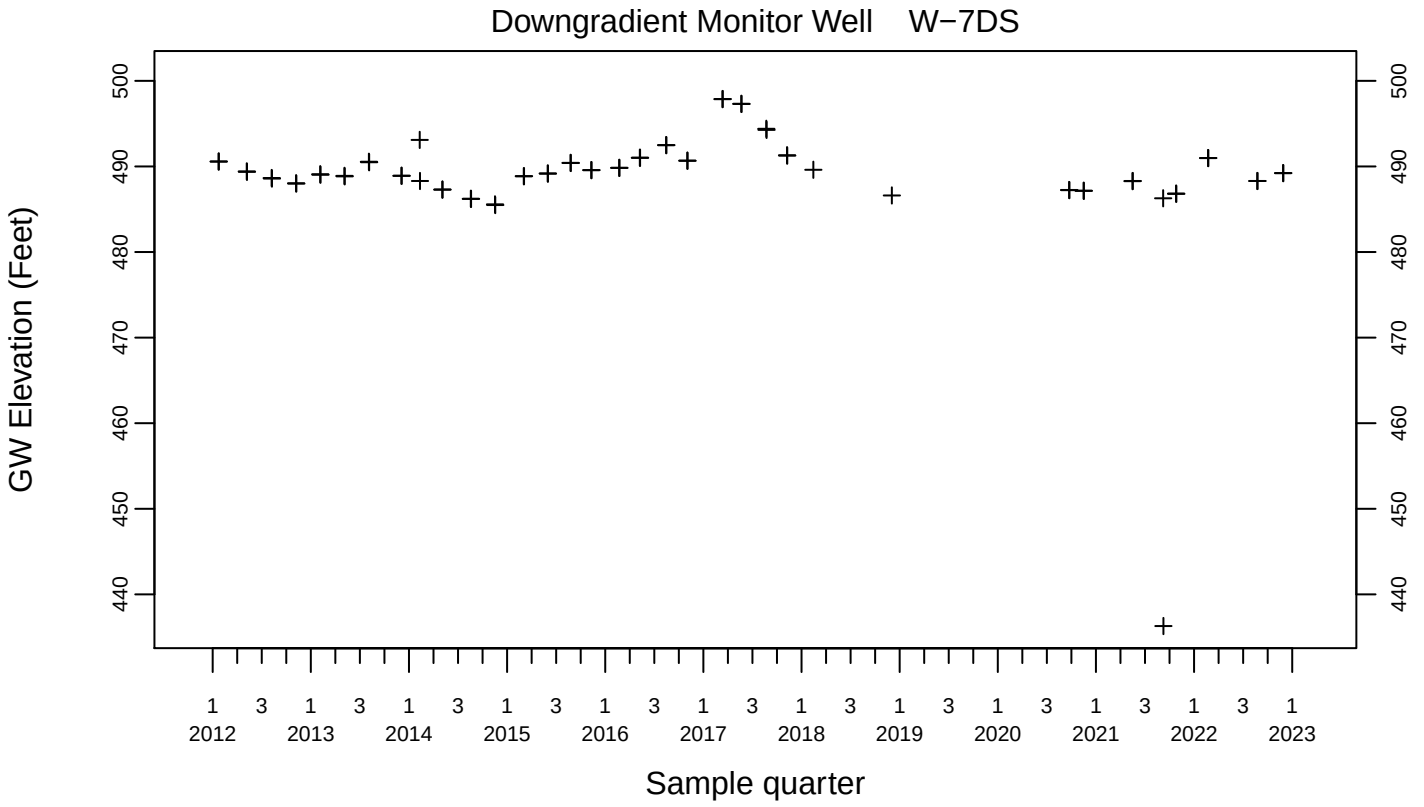
Sewage Ponds Ground Water
GW Elevation (Feet)



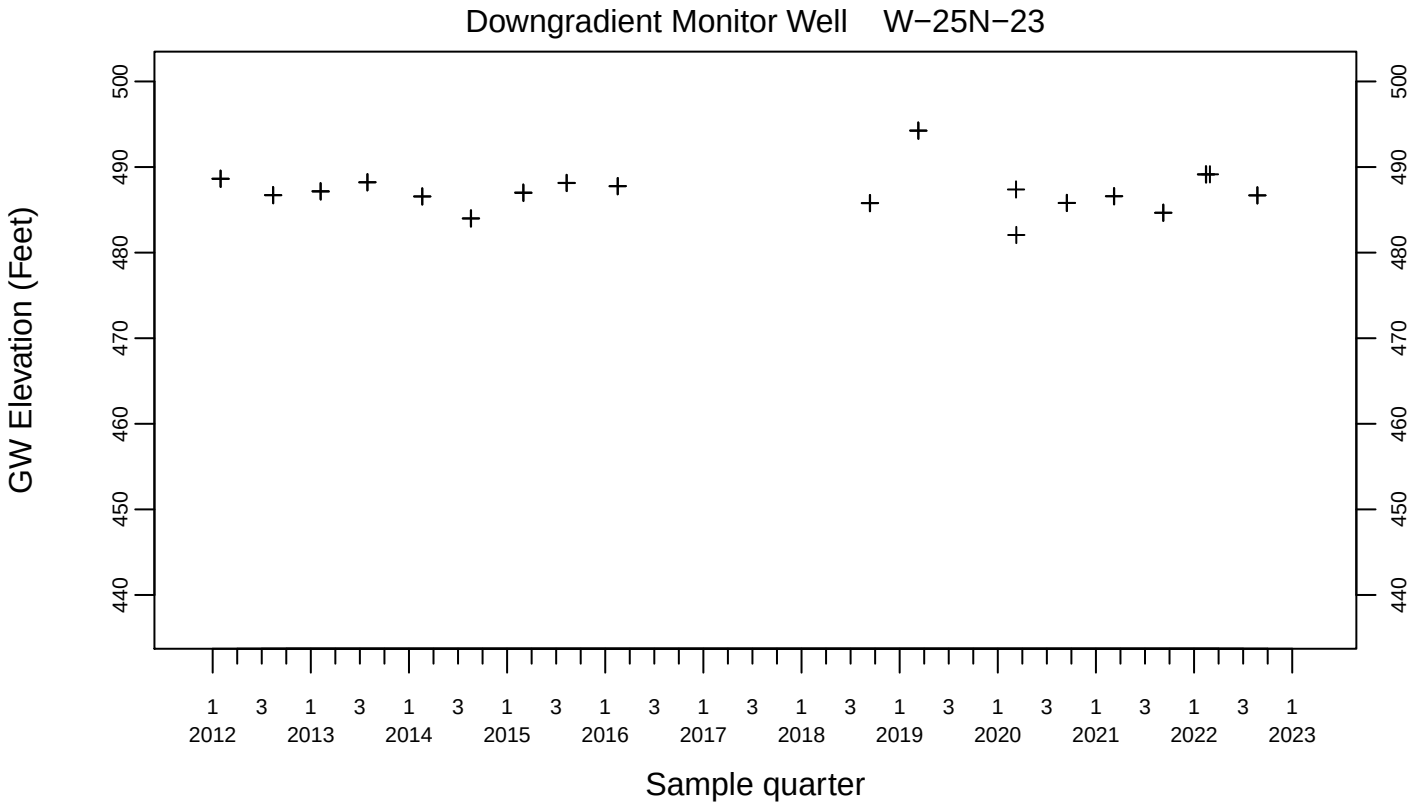


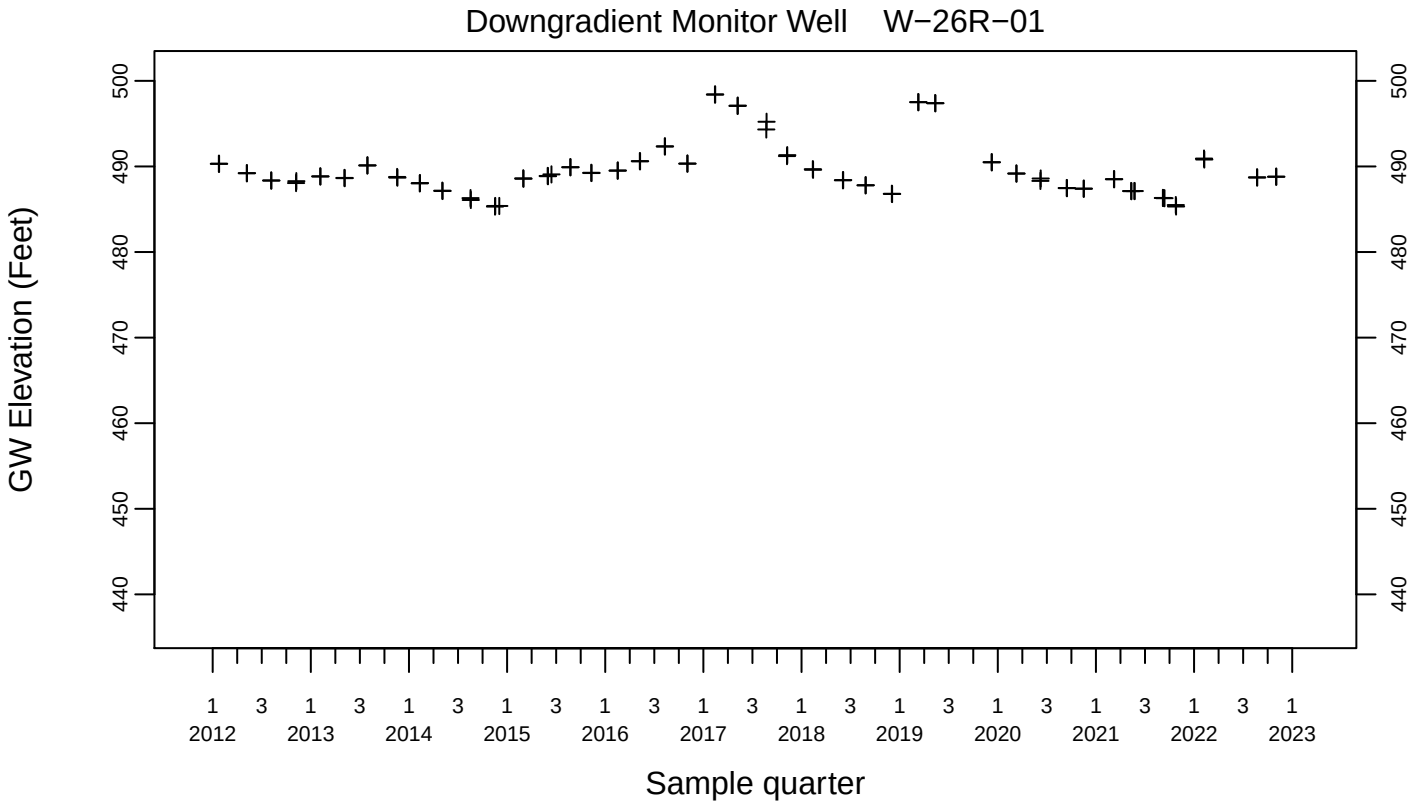
Sewage Ponds Ground Water
GW Elevation (Feet)



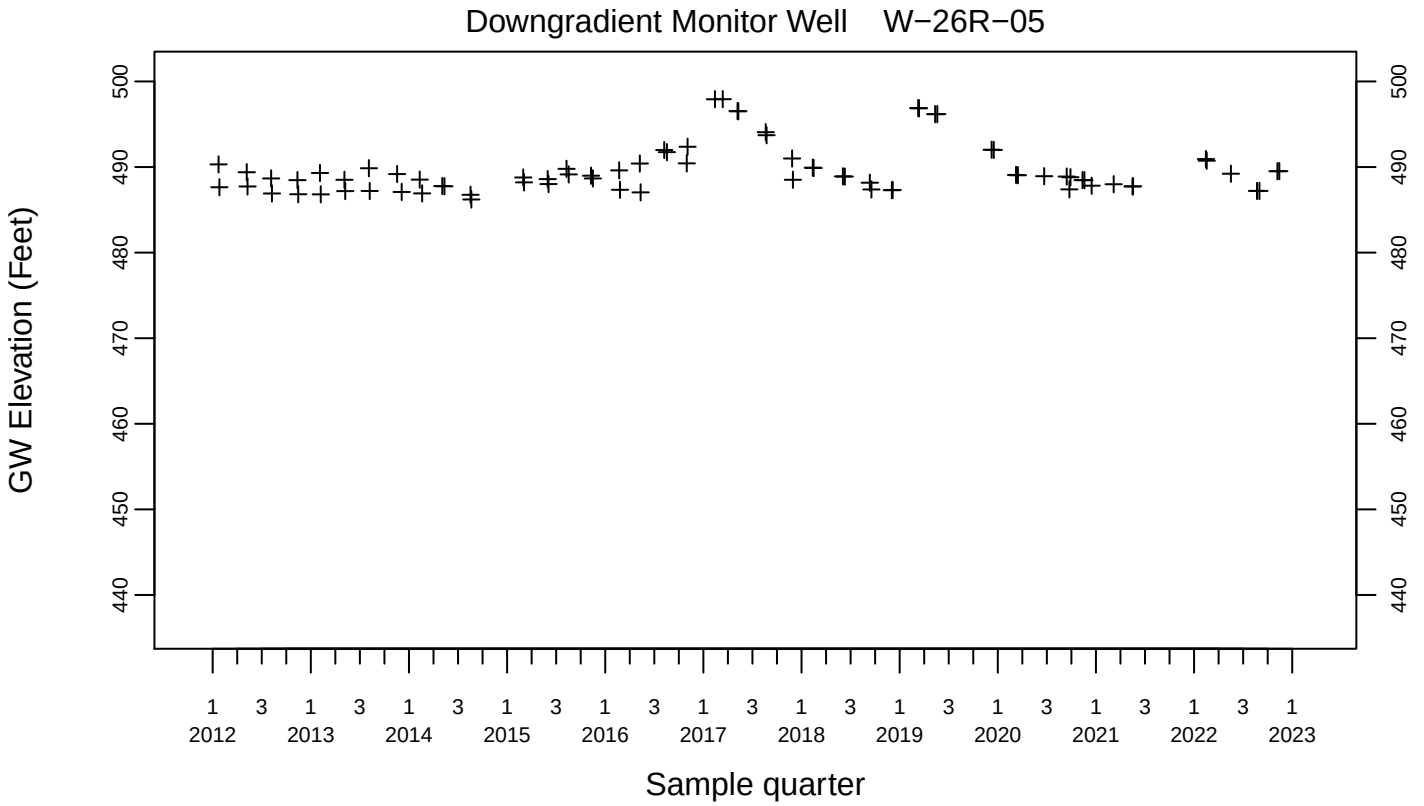


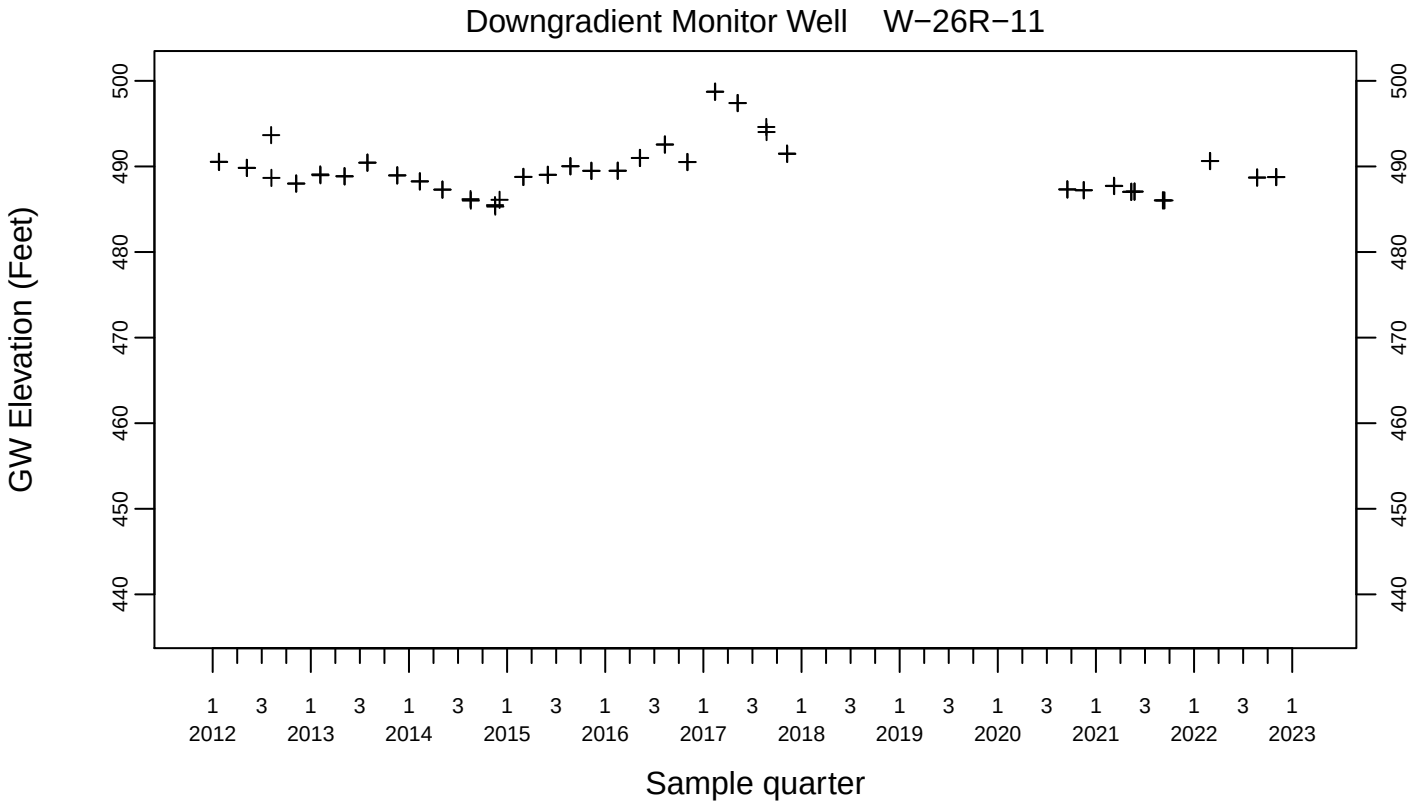
Sewage Ponds Ground Water
GW Elevation (Feet)



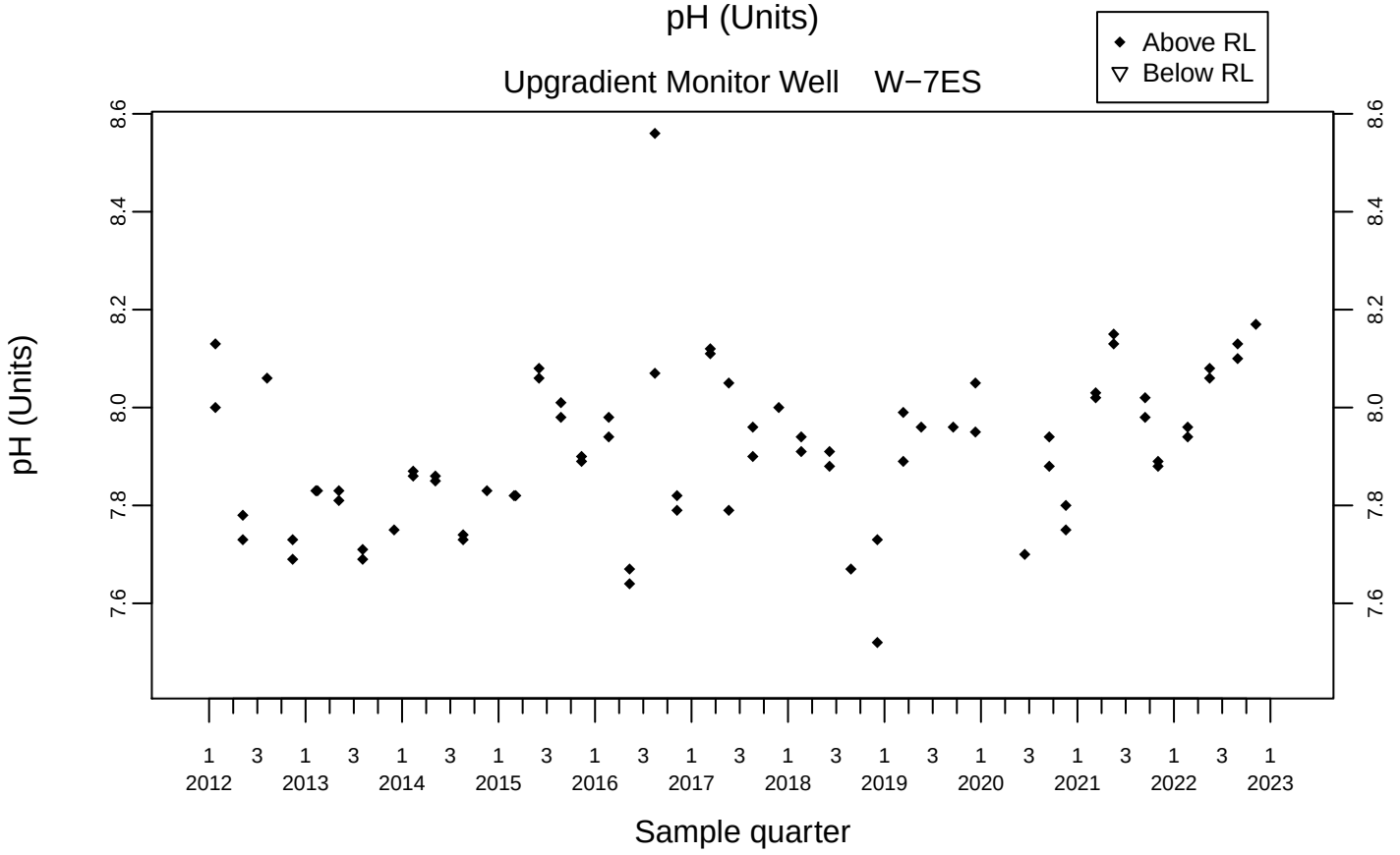


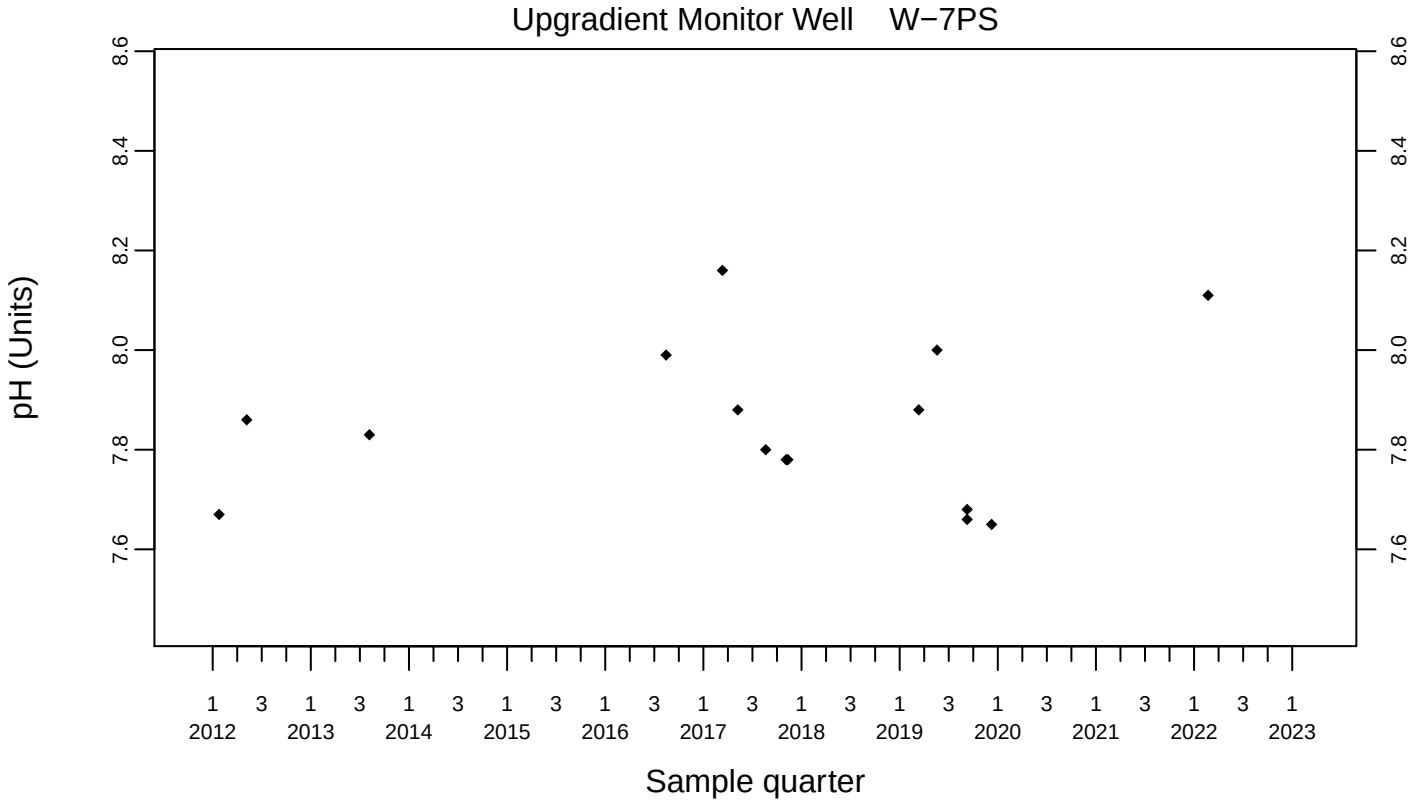
Sewage Ponds Ground Water
GW Elevation (Feet)



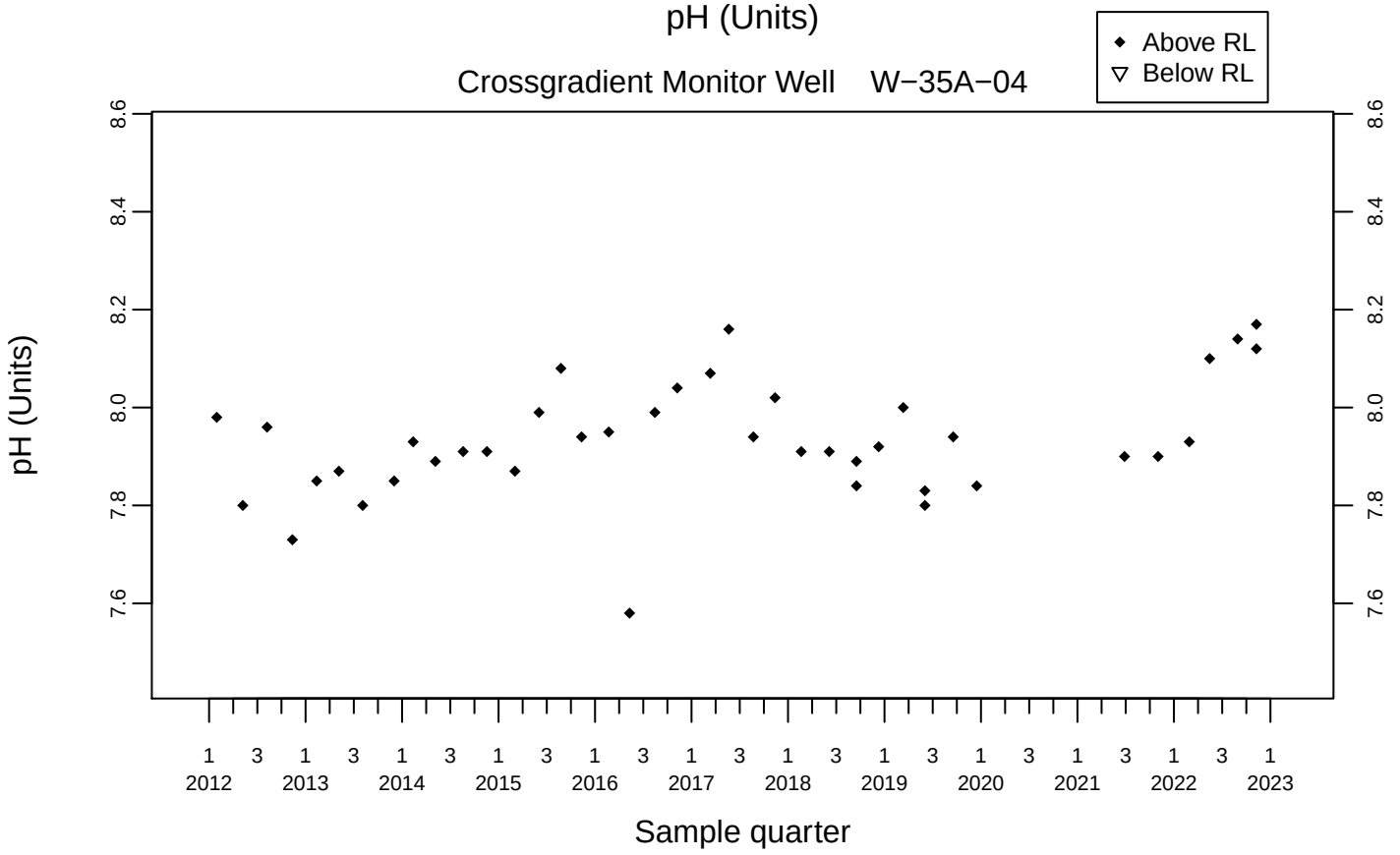


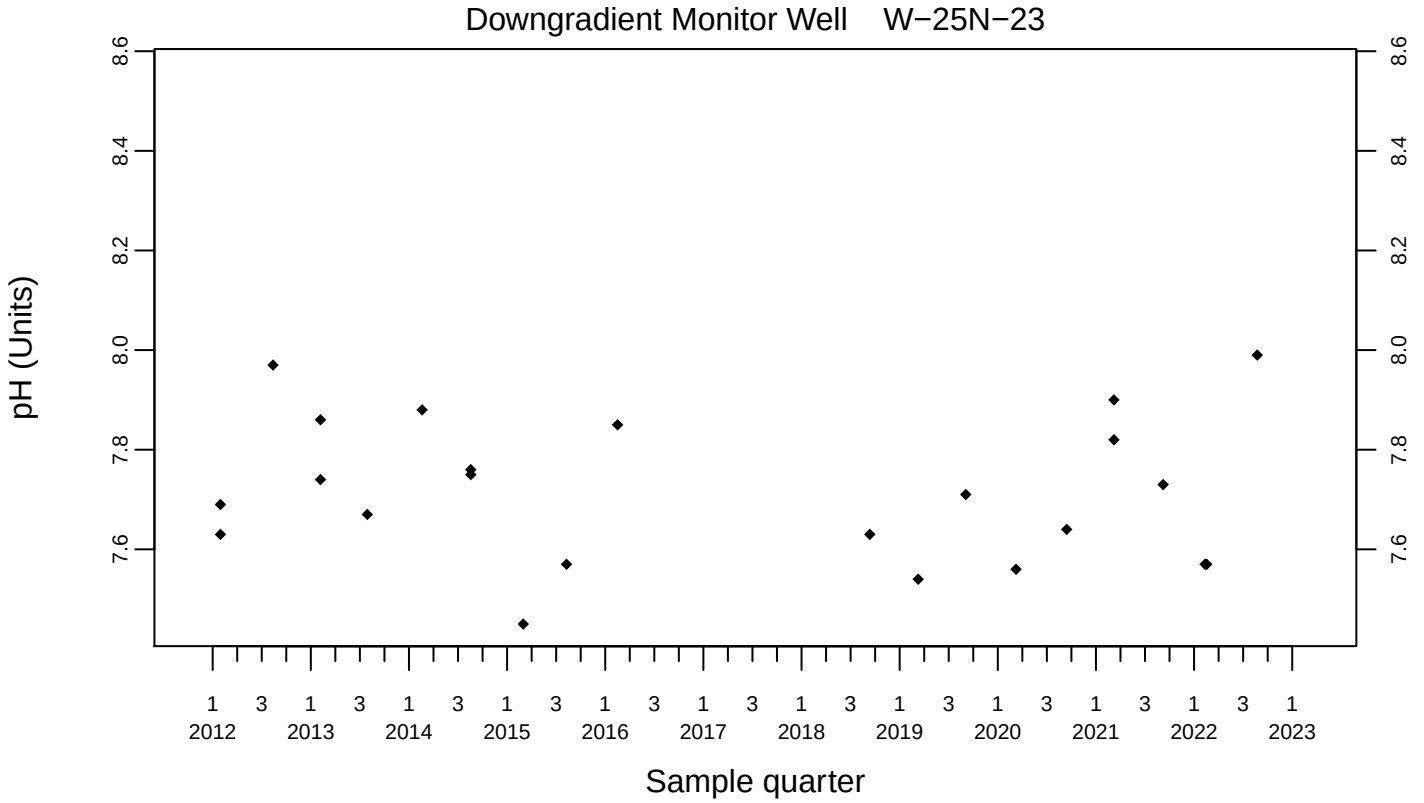
Sewage Ponds Ground Water
pH (Units)



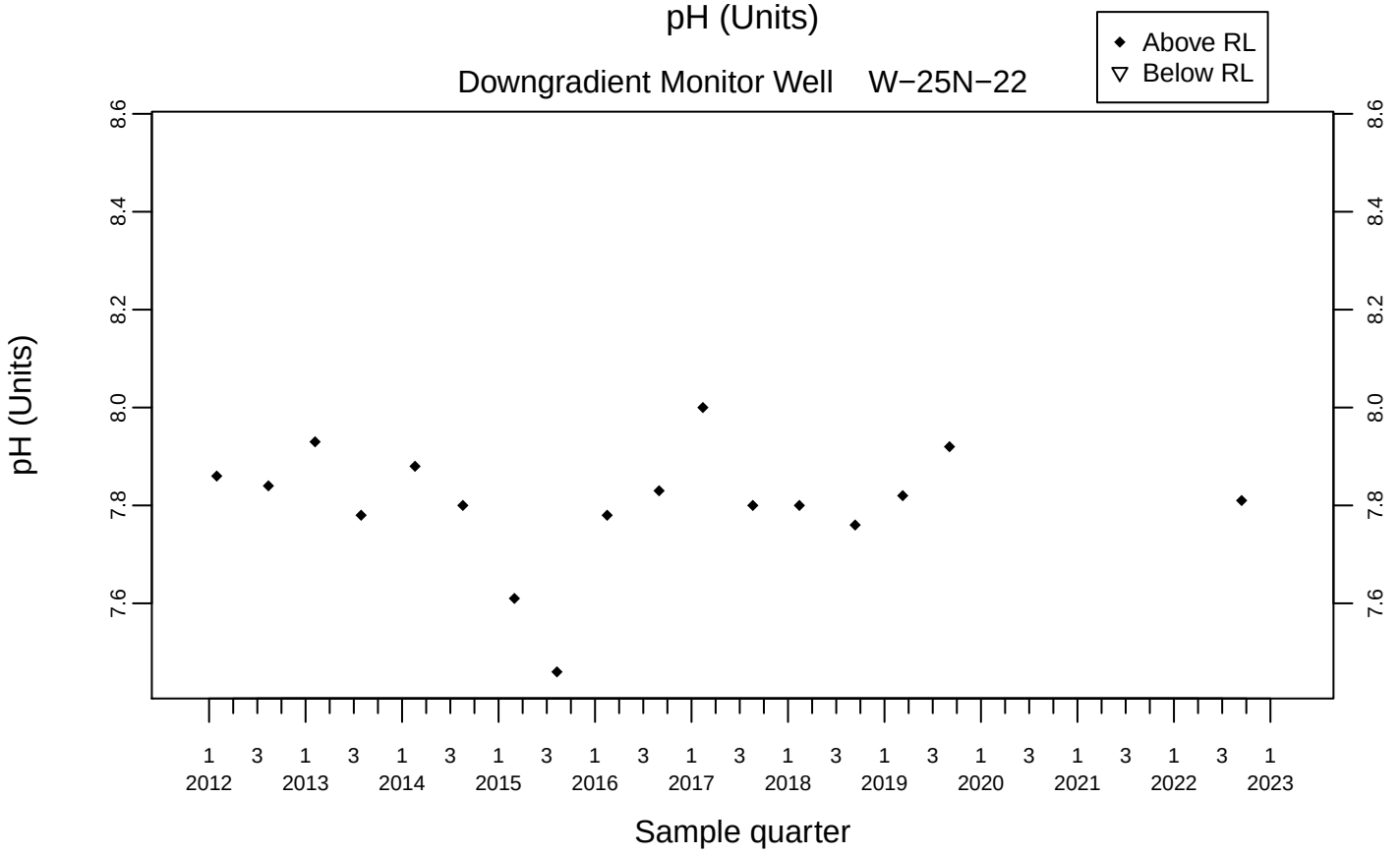


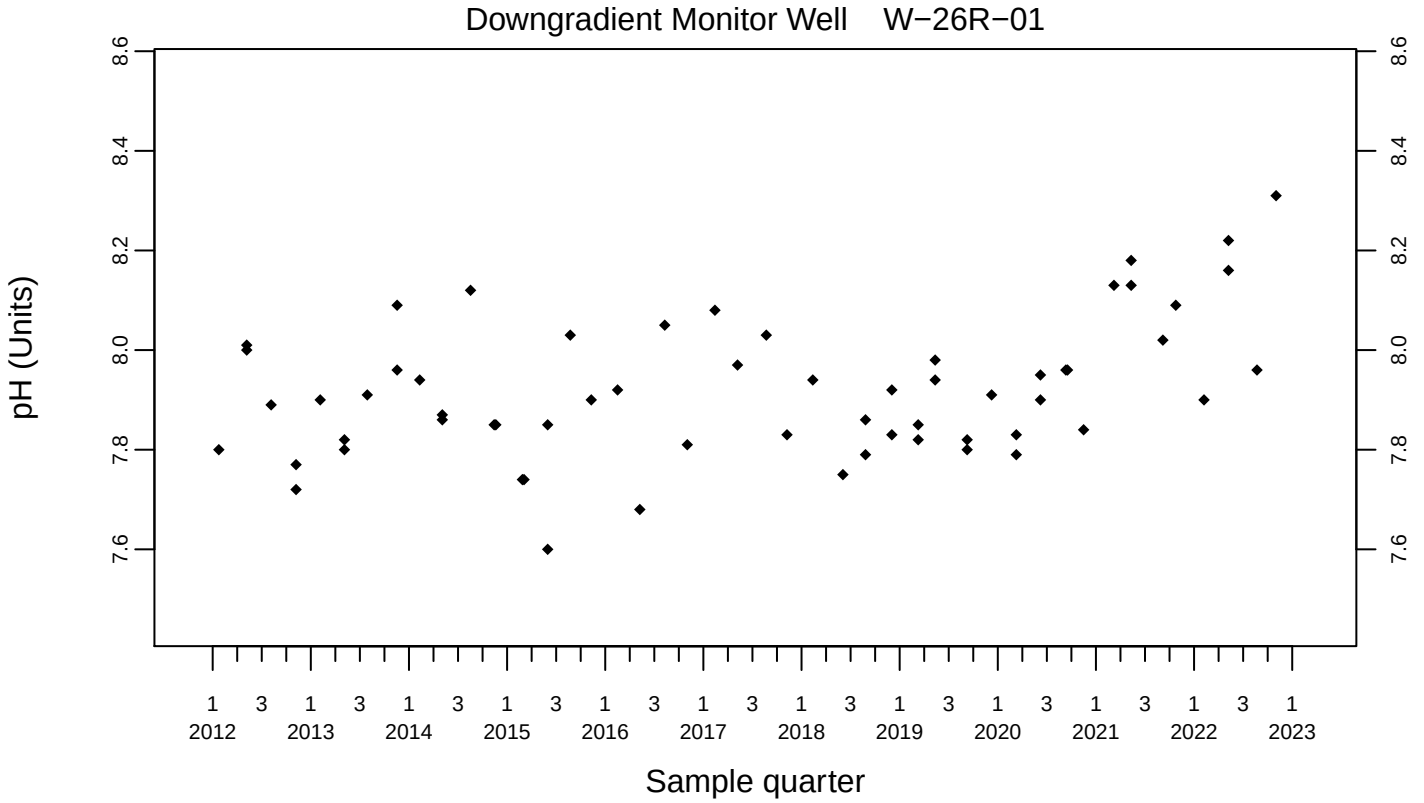
Sewage Ponds Ground Water
pH (Units)



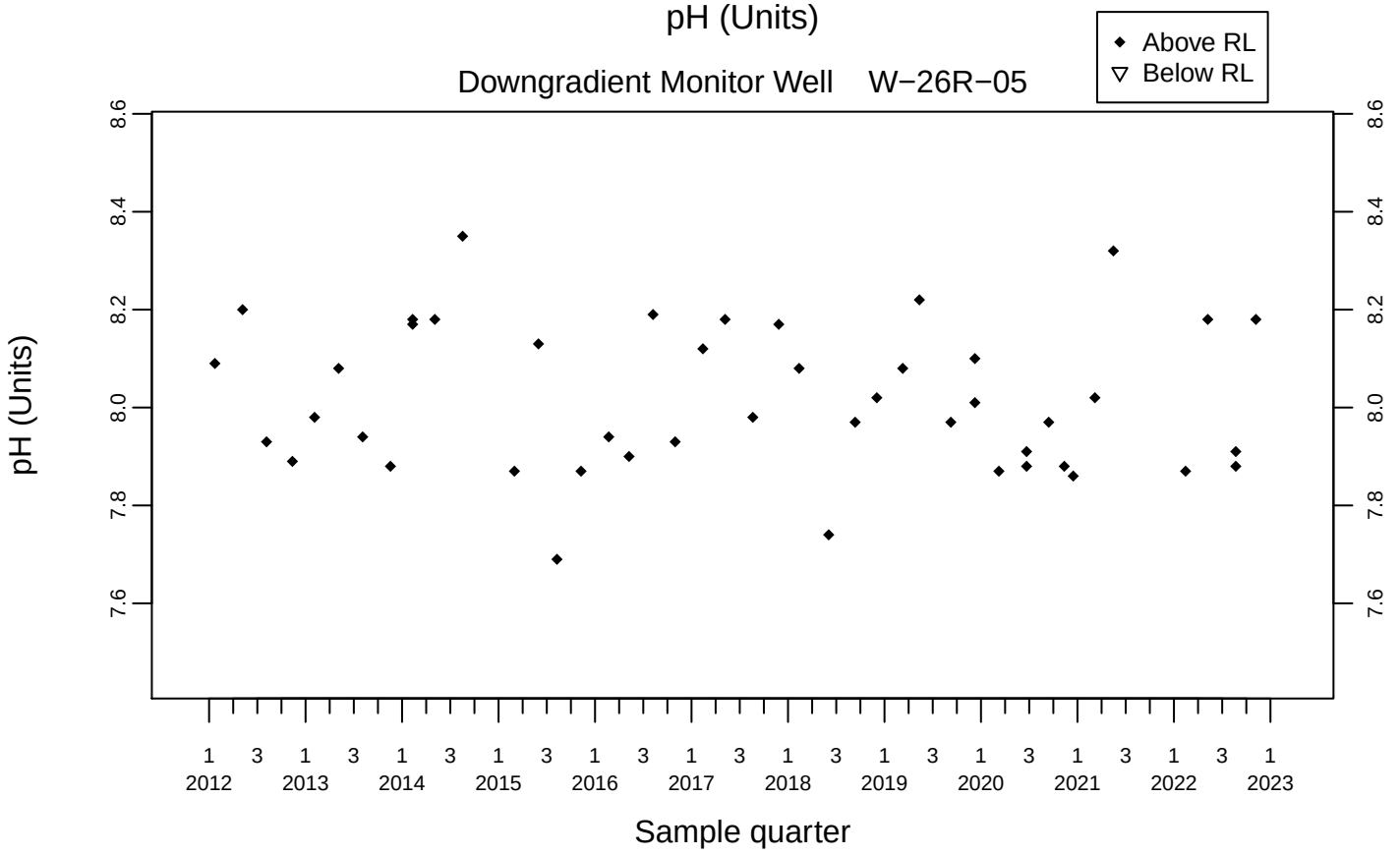


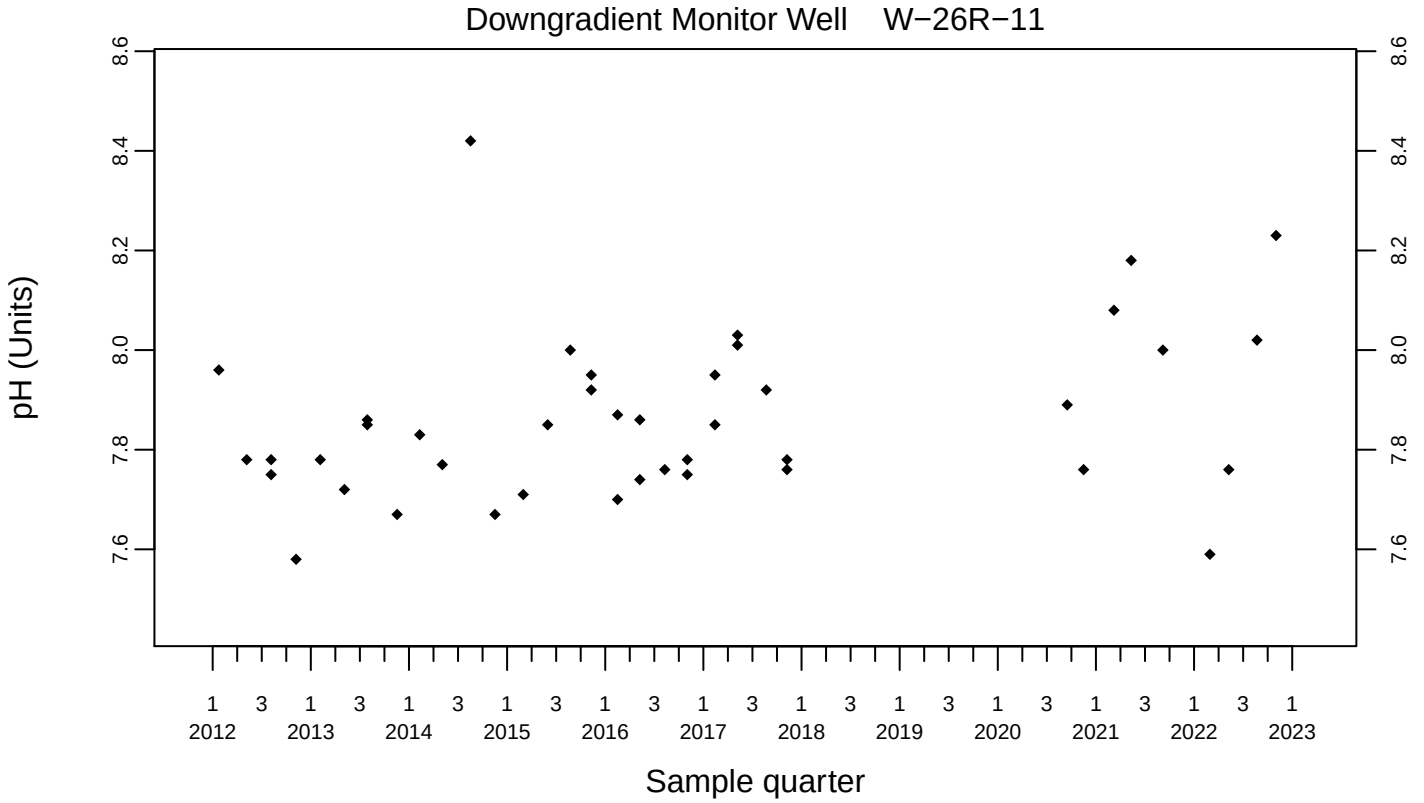
Sewage Ponds Ground Water
pH (Units)

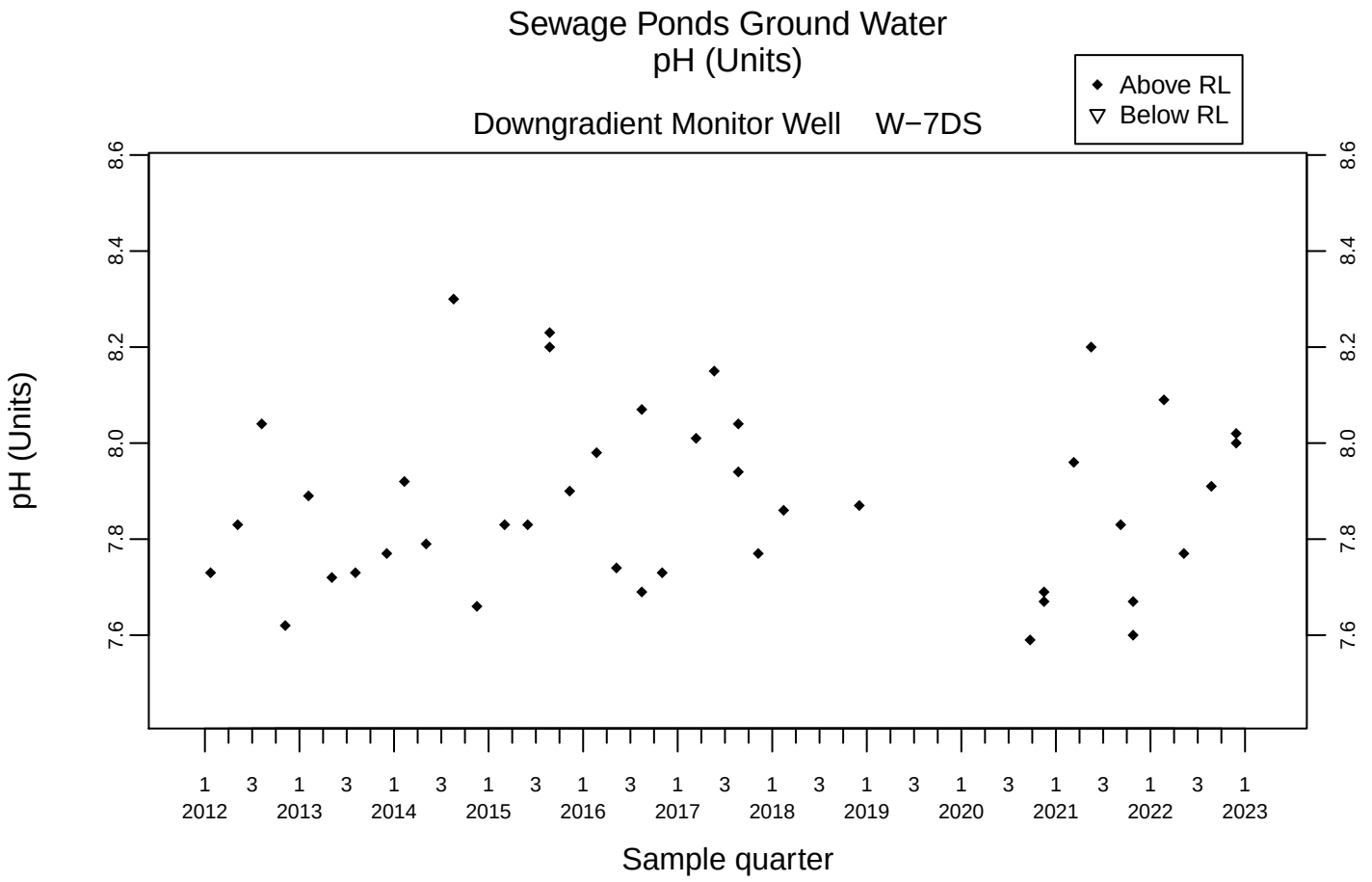




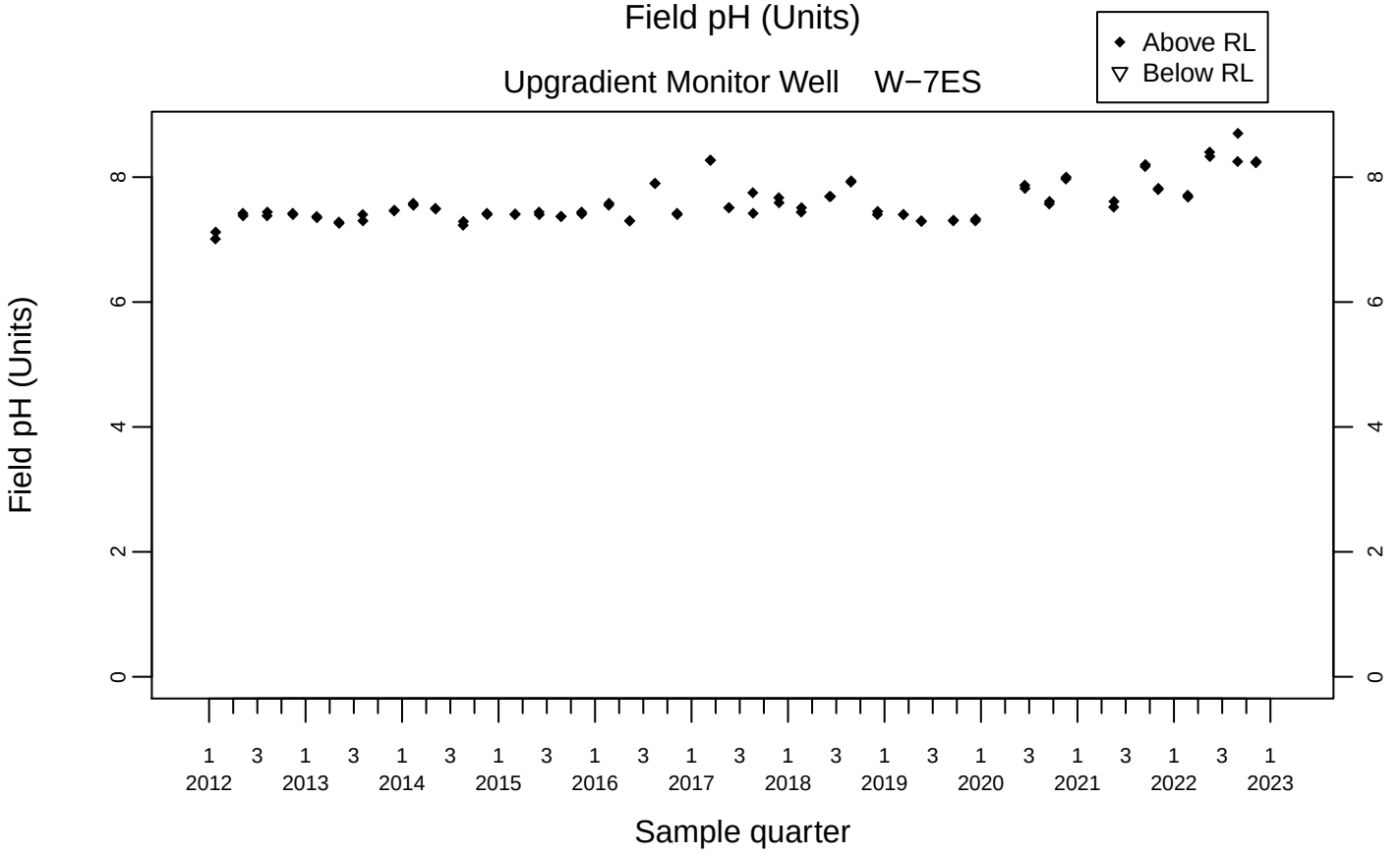
Sewage Ponds Ground Water
pH (Units)

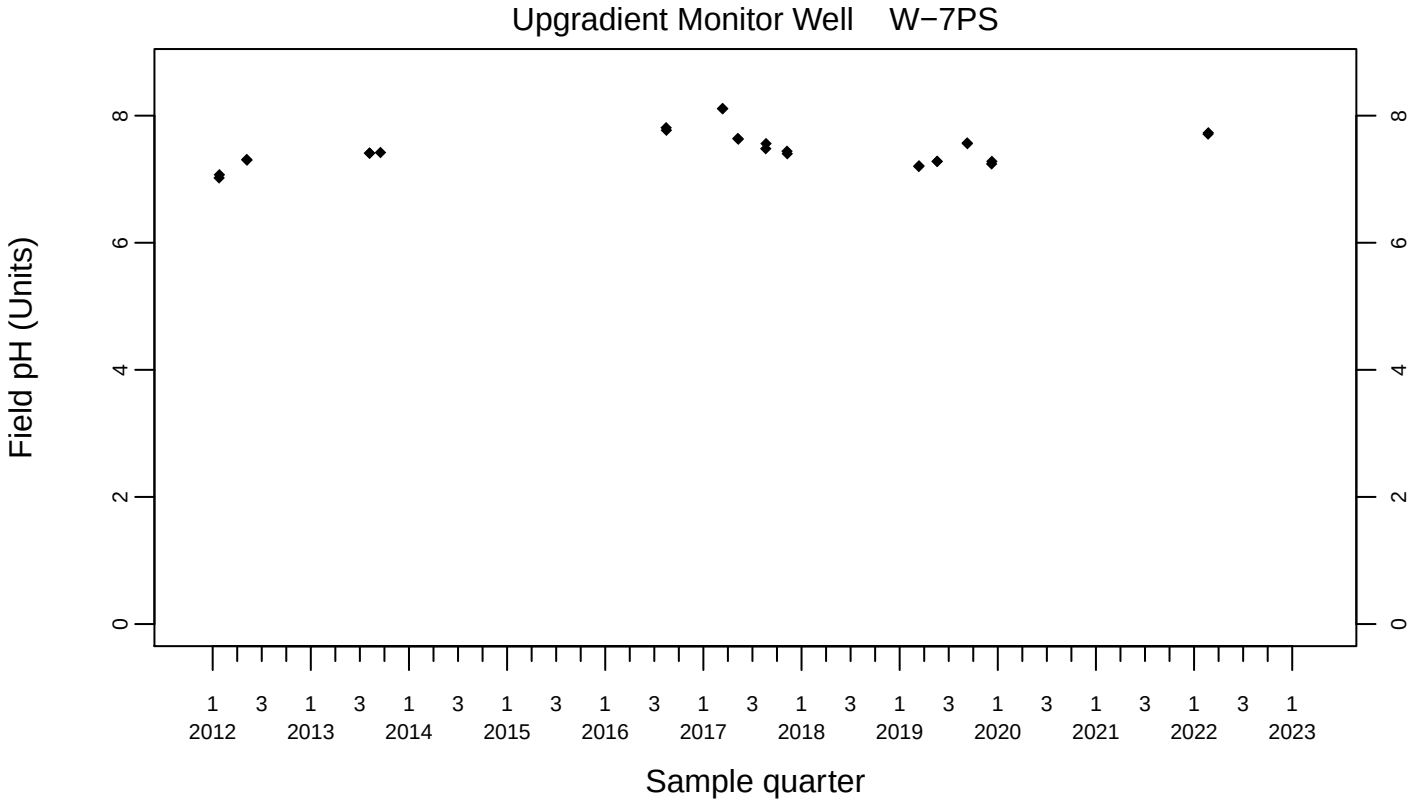




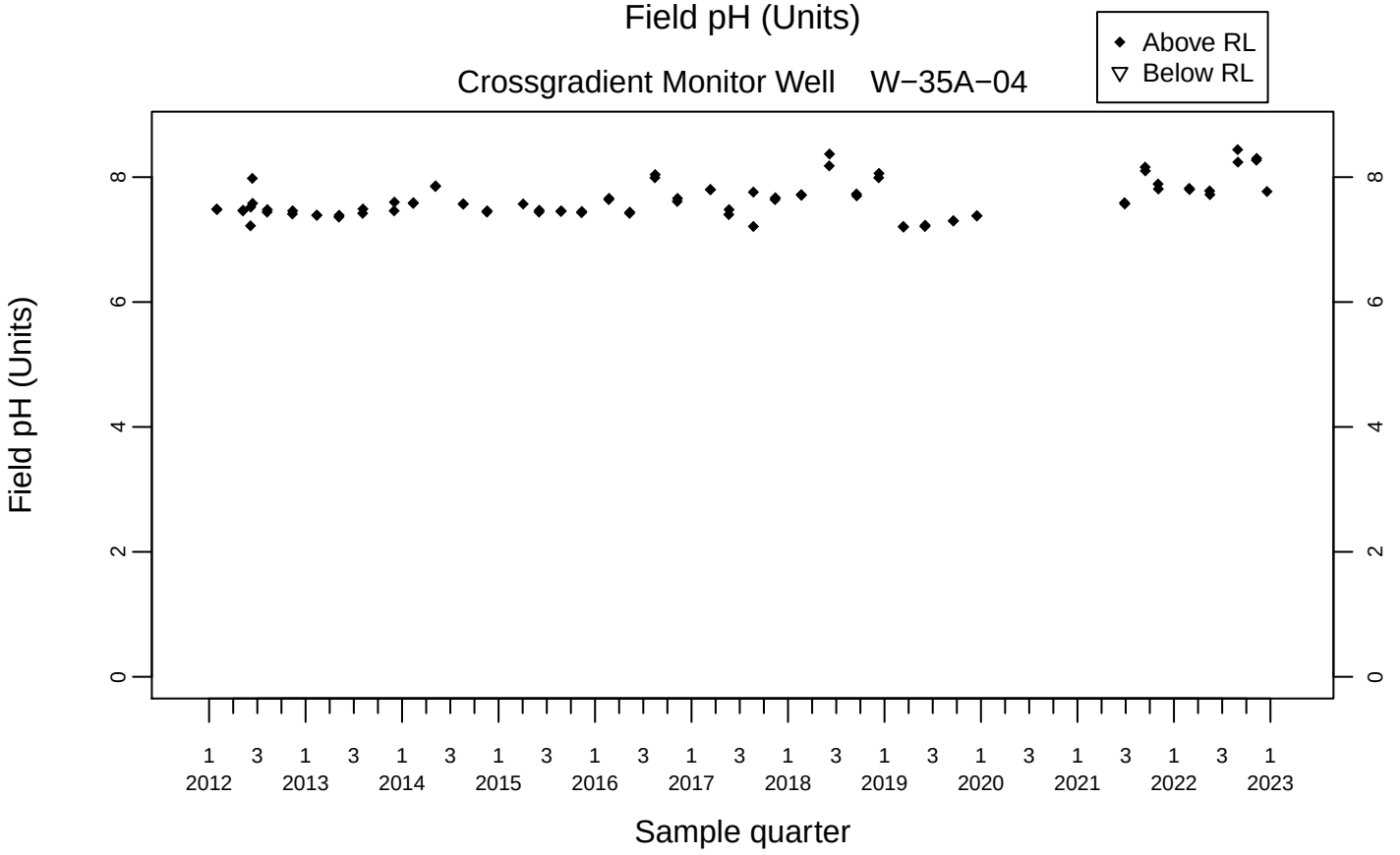

Sewage Ponds Ground Water
pH (Units)
Downgradient Monitor Well W−7DS
Above RL
Below RL
pH (Units)
8.6
8.4
8.2
8.0
7.8
7.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

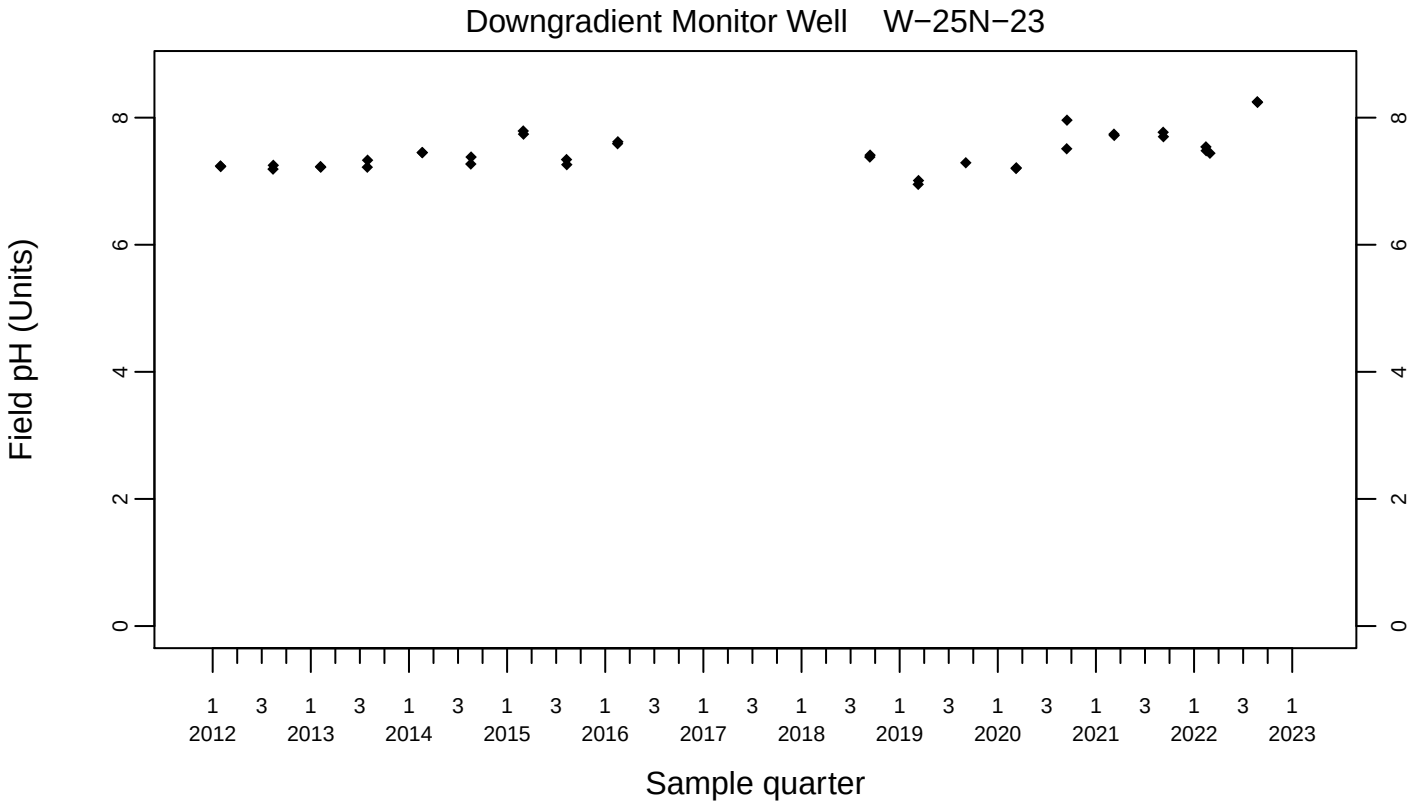
Sewage Ponds Ground Water
Field pH (Units)



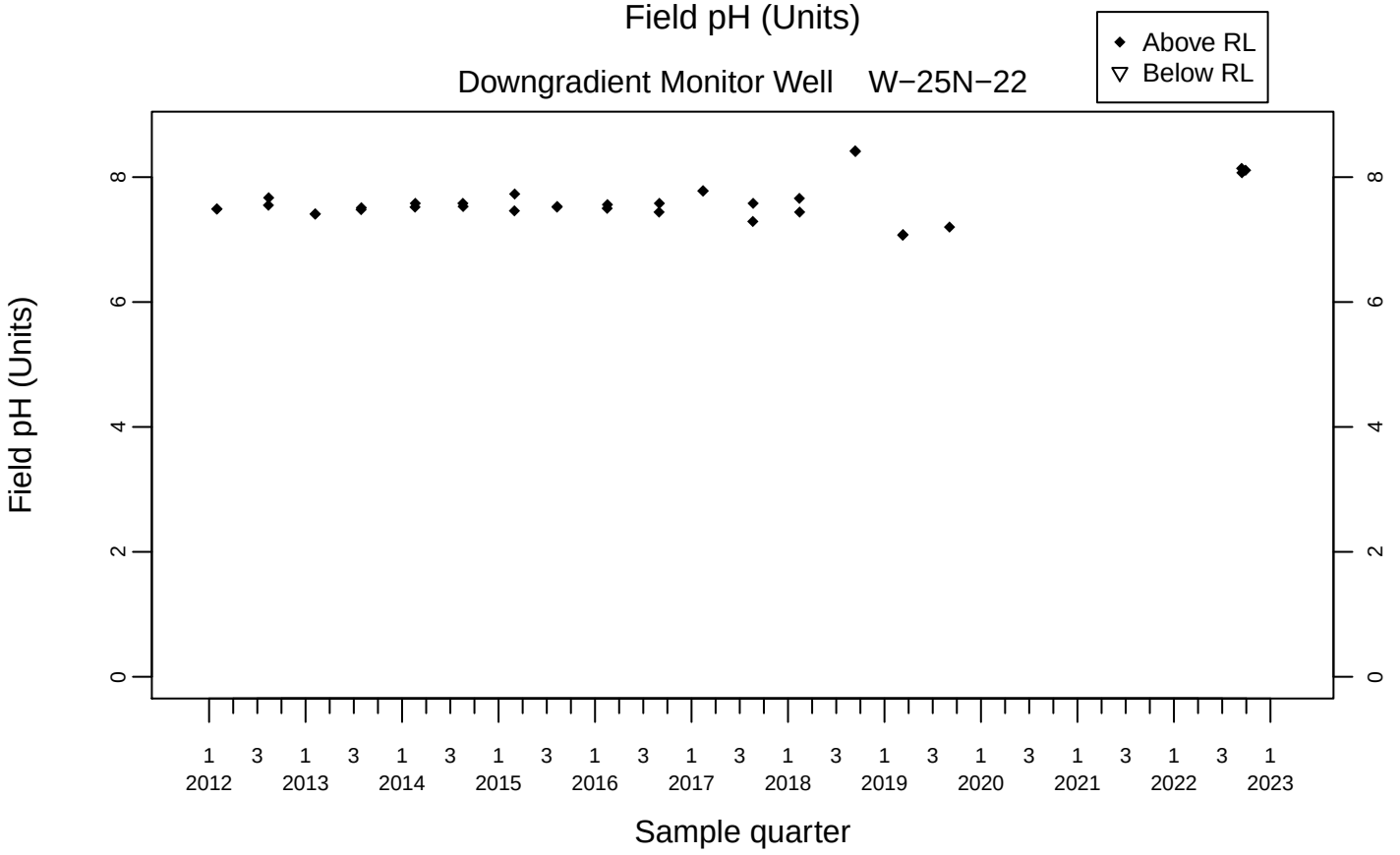


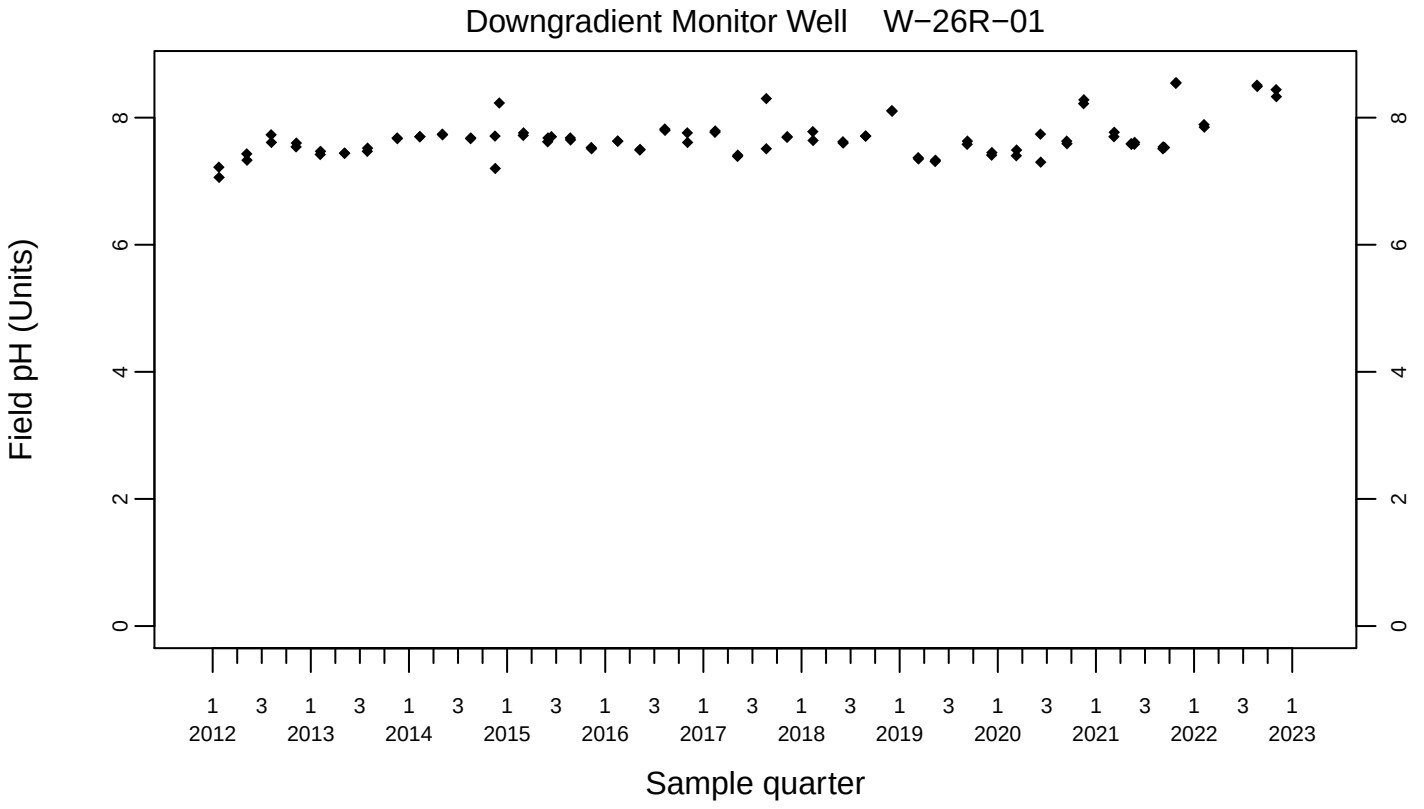
Sewage Ponds Ground Water
Field pH (Units)



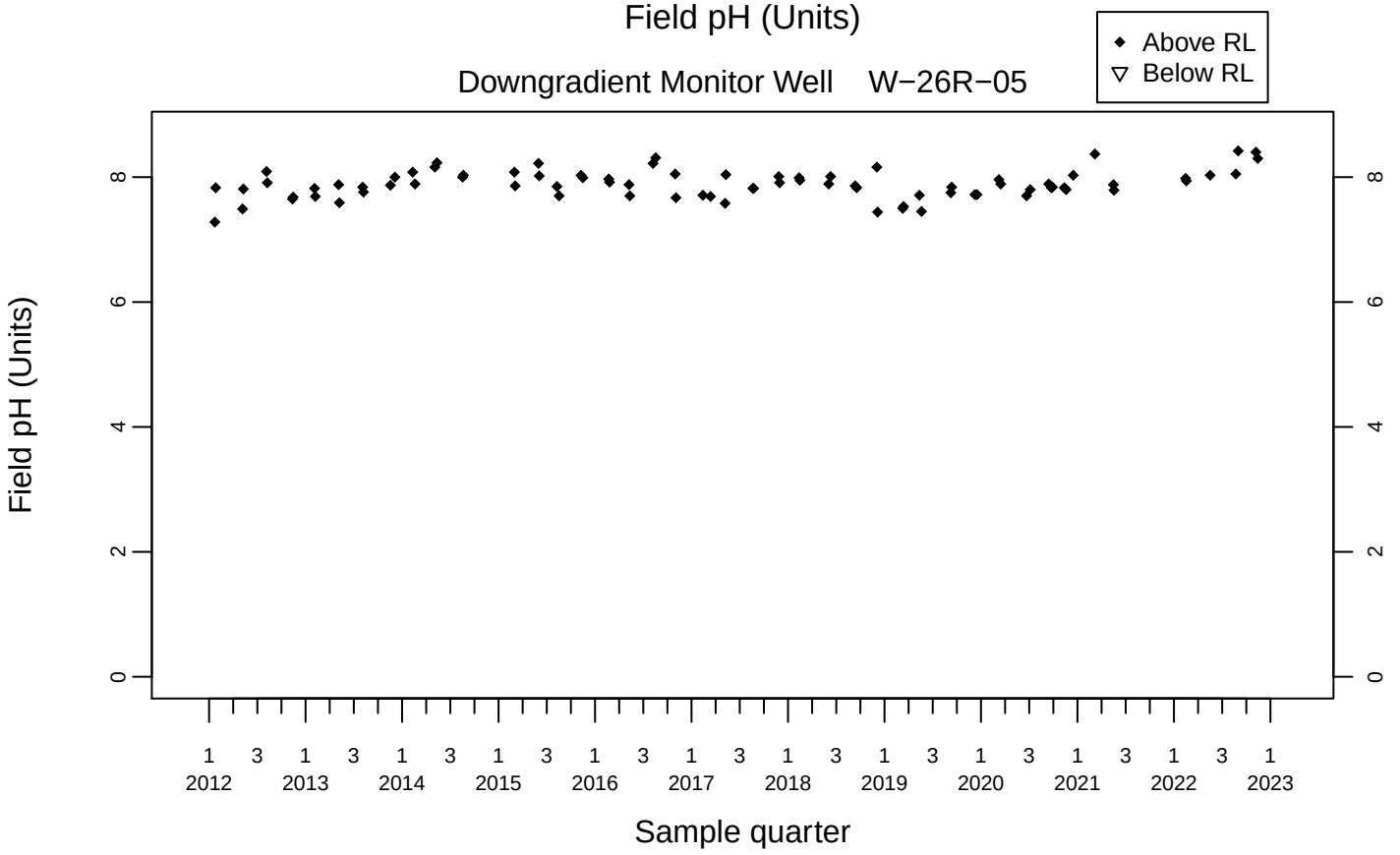


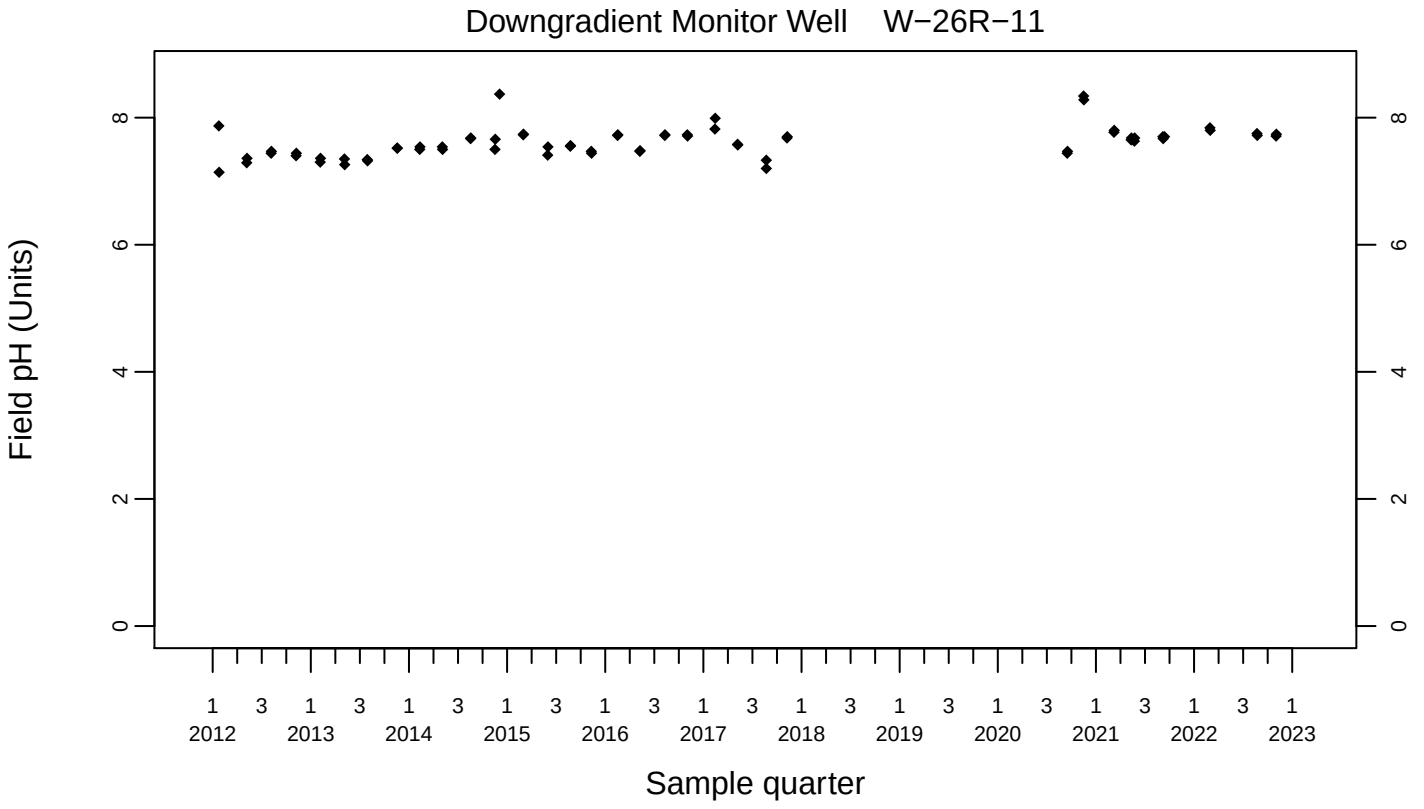
Sewage Ponds Ground Water
Field pH (Units)

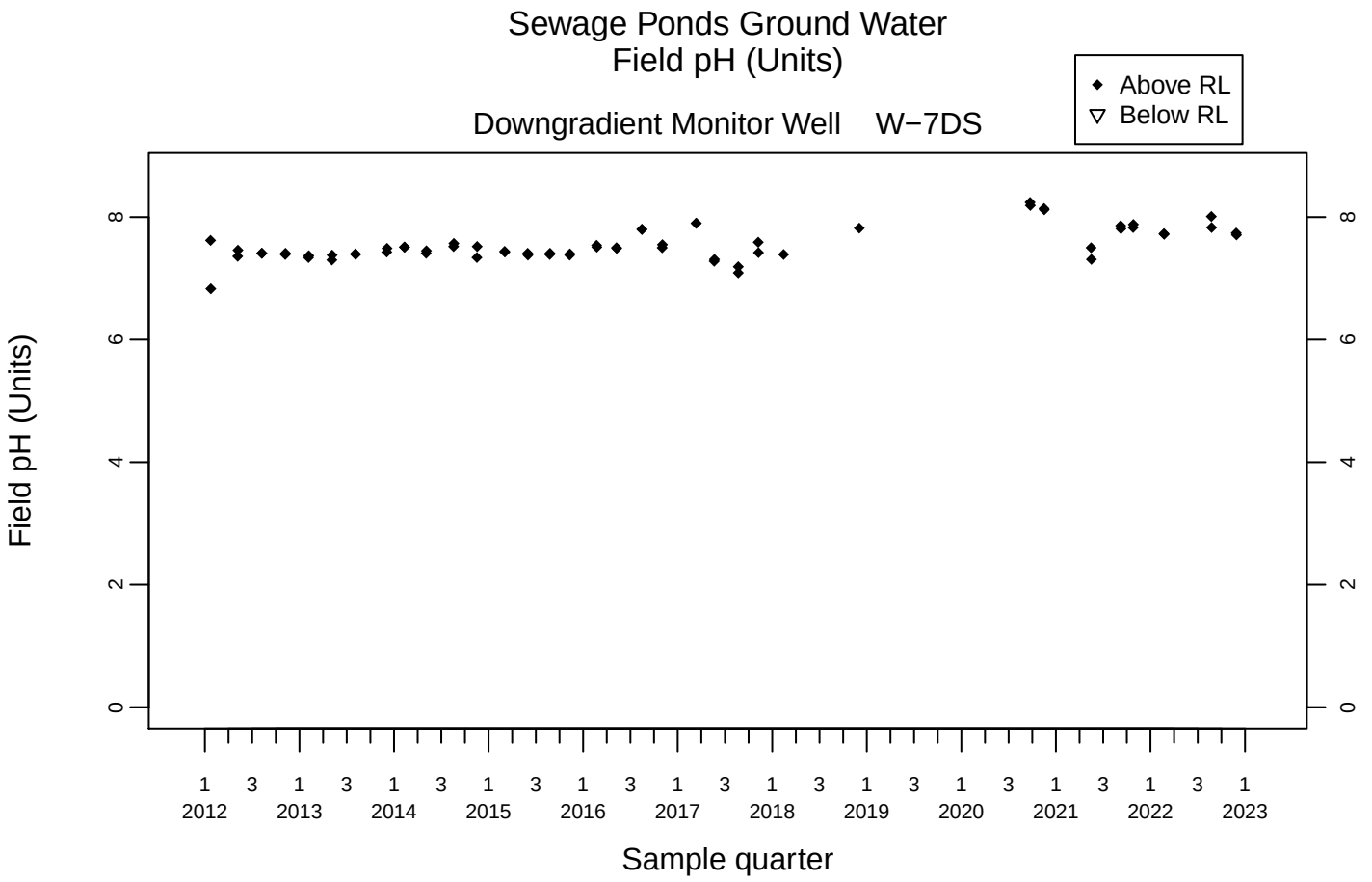




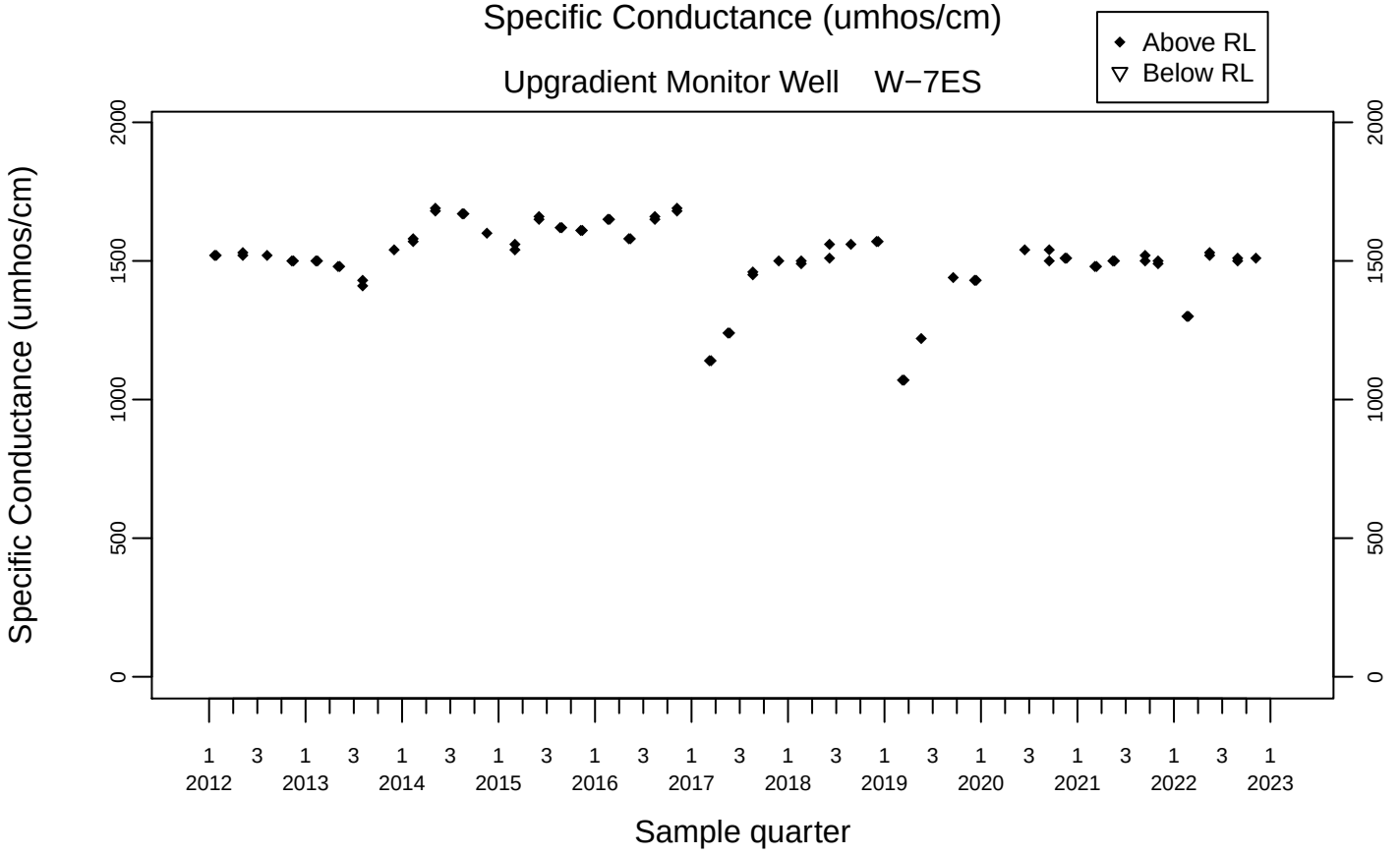
Sewage Ponds Ground Water
Field pH (Units)

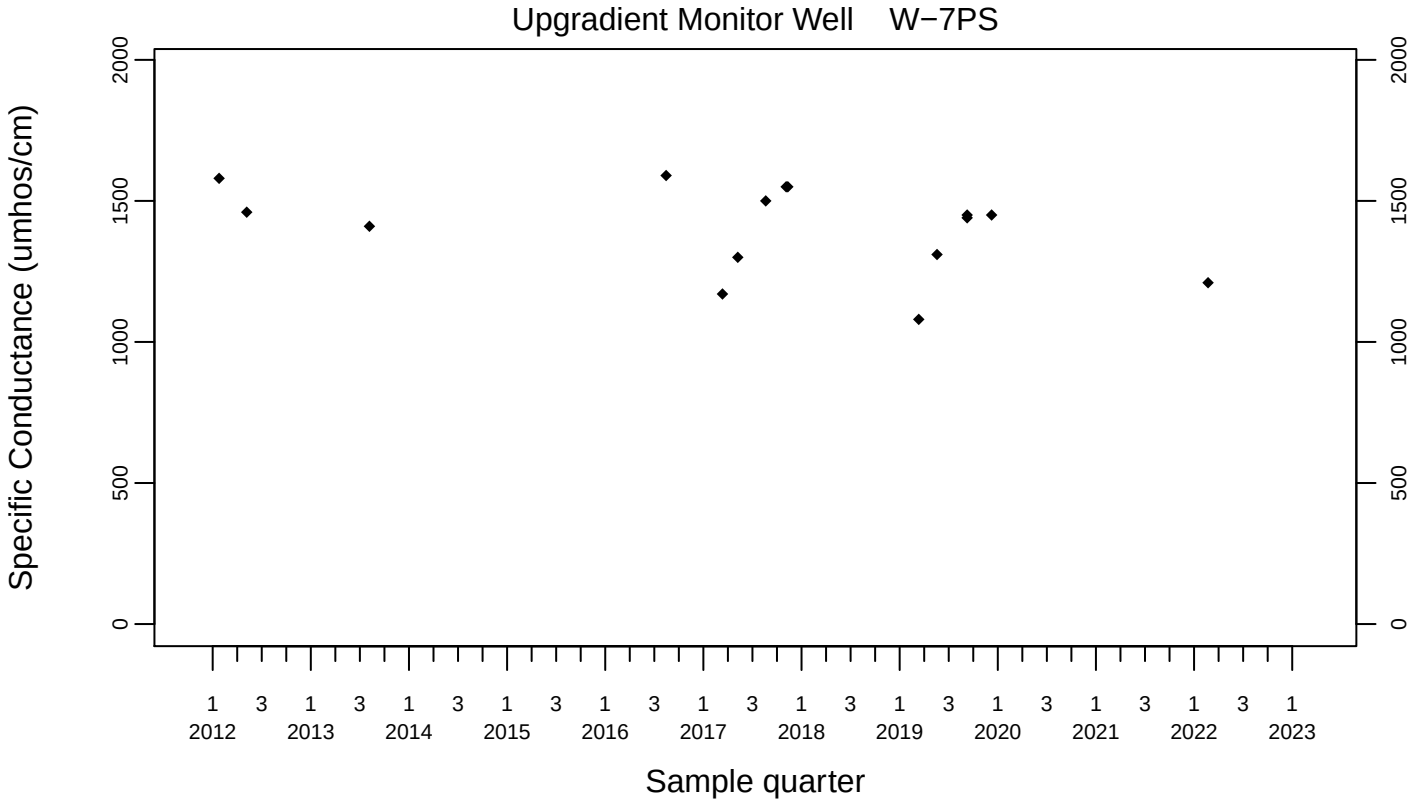




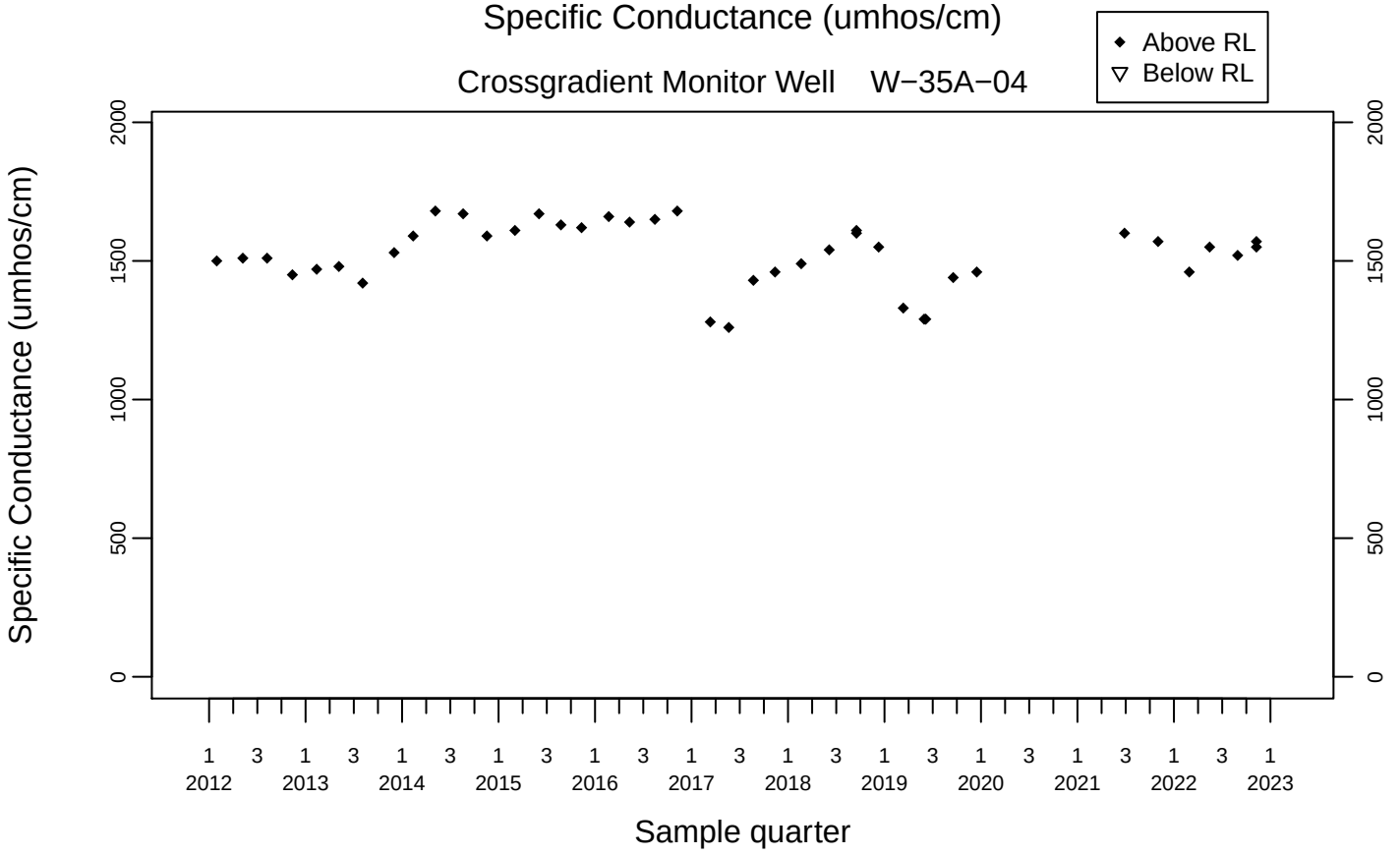

Sewage Ponds Ground Water
Field pH (Units)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Field pH (Units)
0
2
4
6
8
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

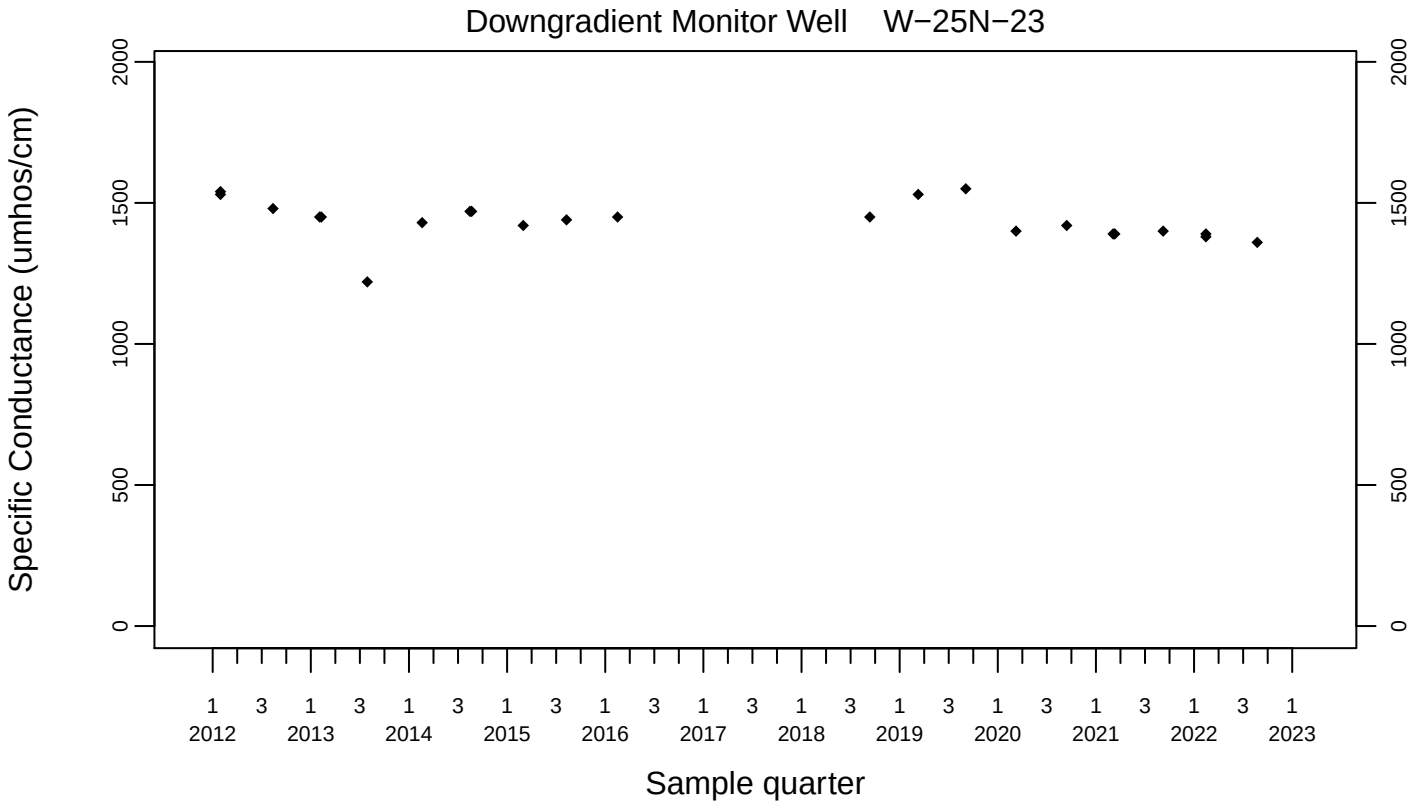
Sewage Ponds Ground Water
Specific Conductance (umhos/cm)

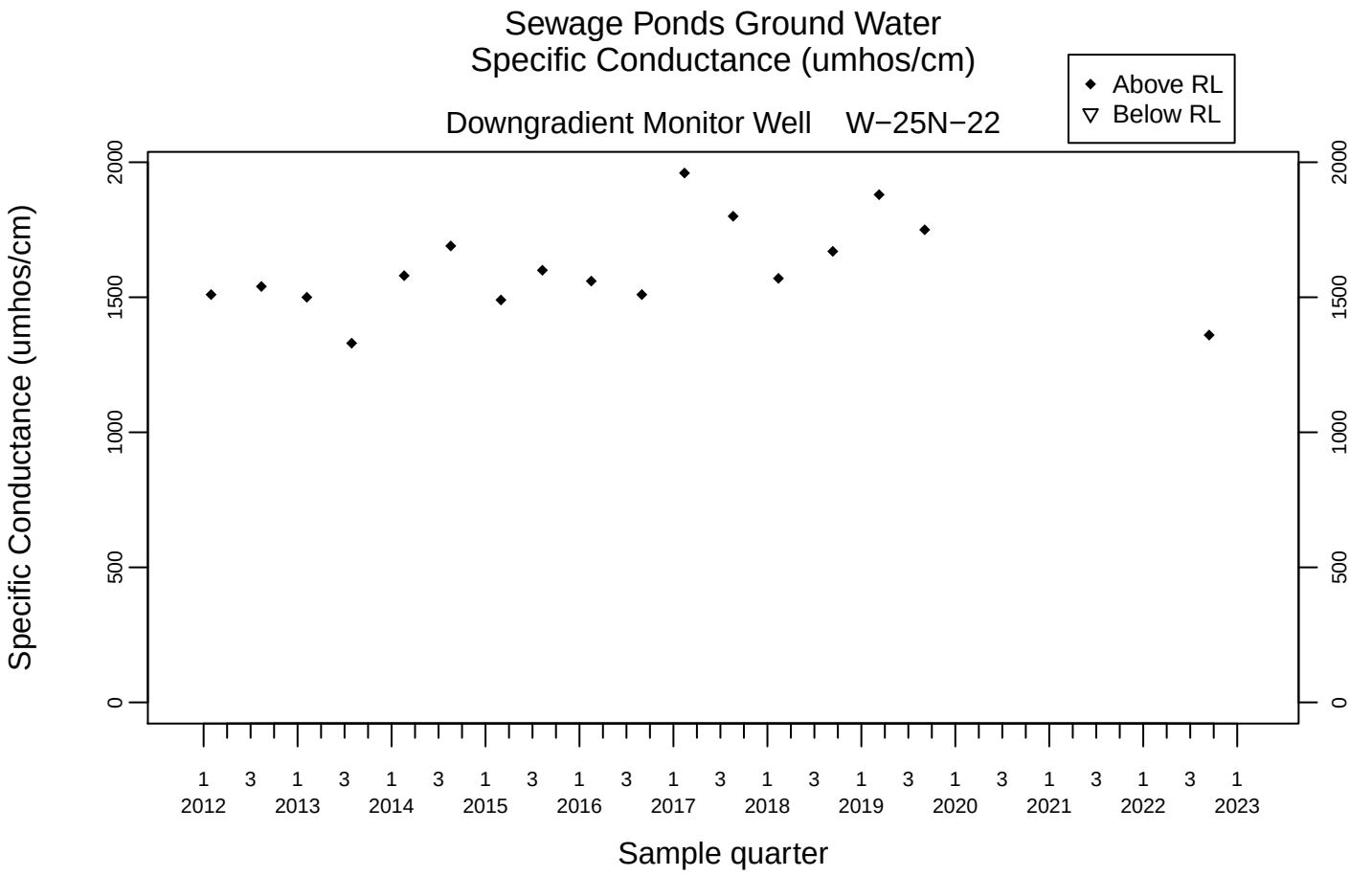


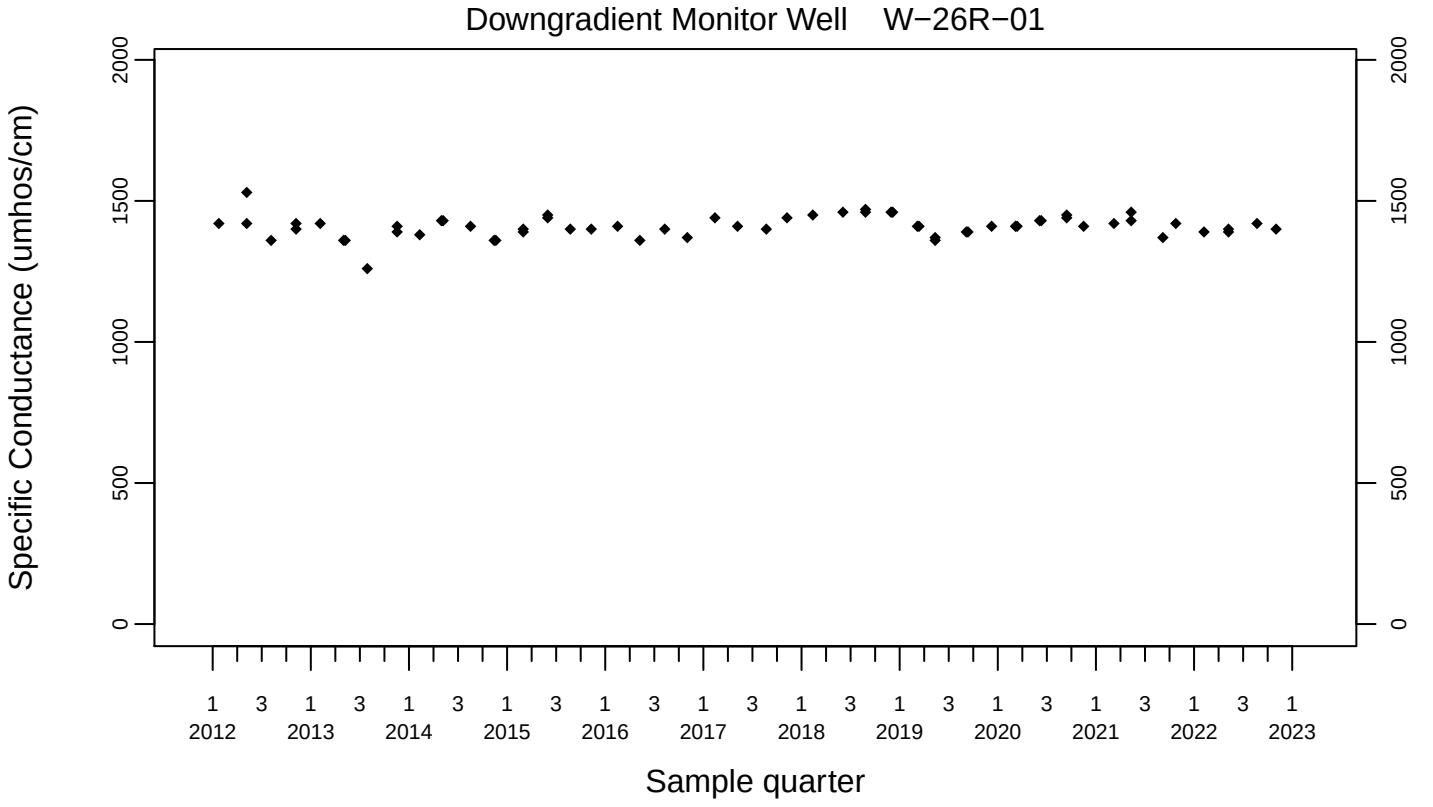


Sewage Ponds Ground Water
Specific Conductance (umhos/cm)

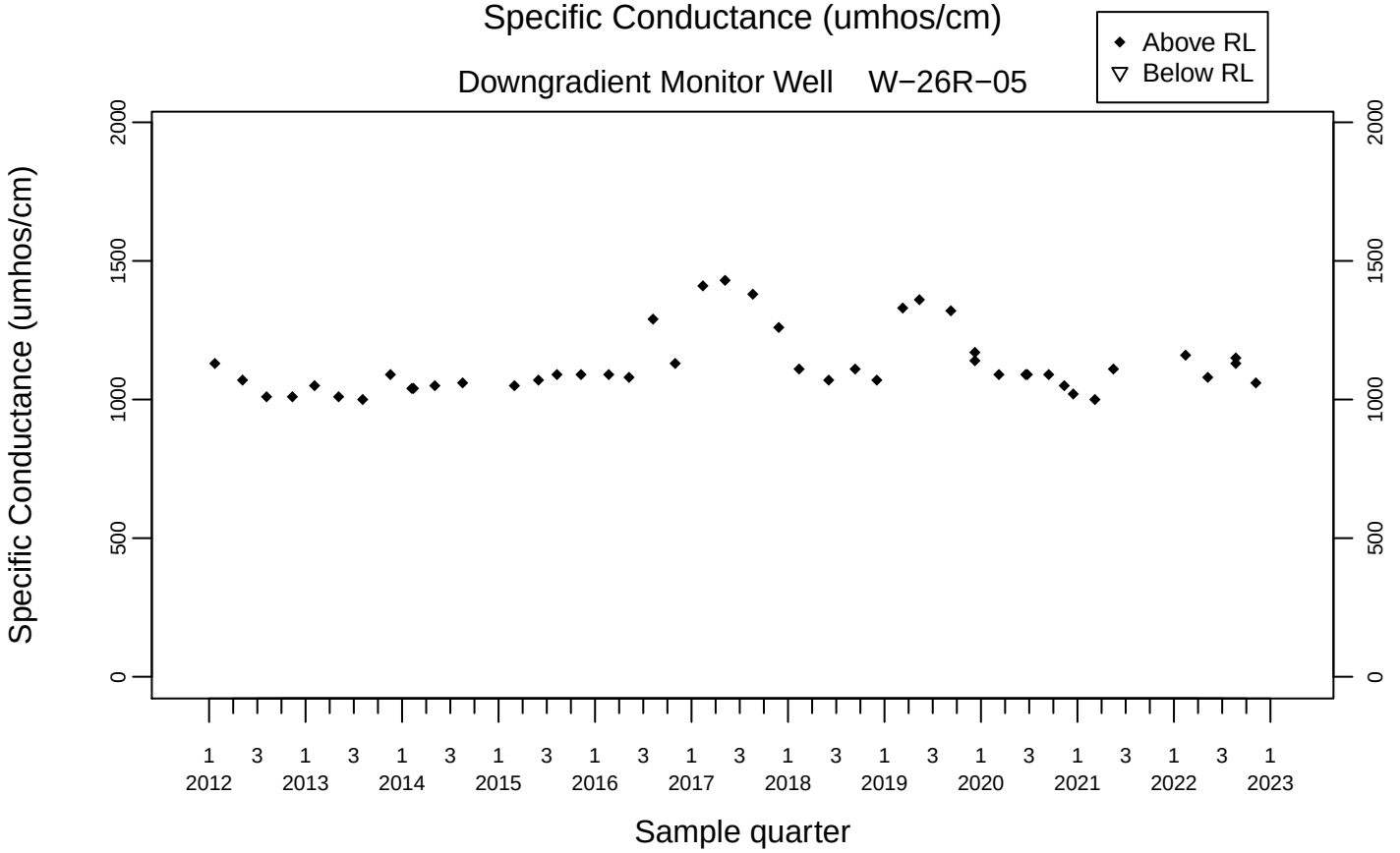


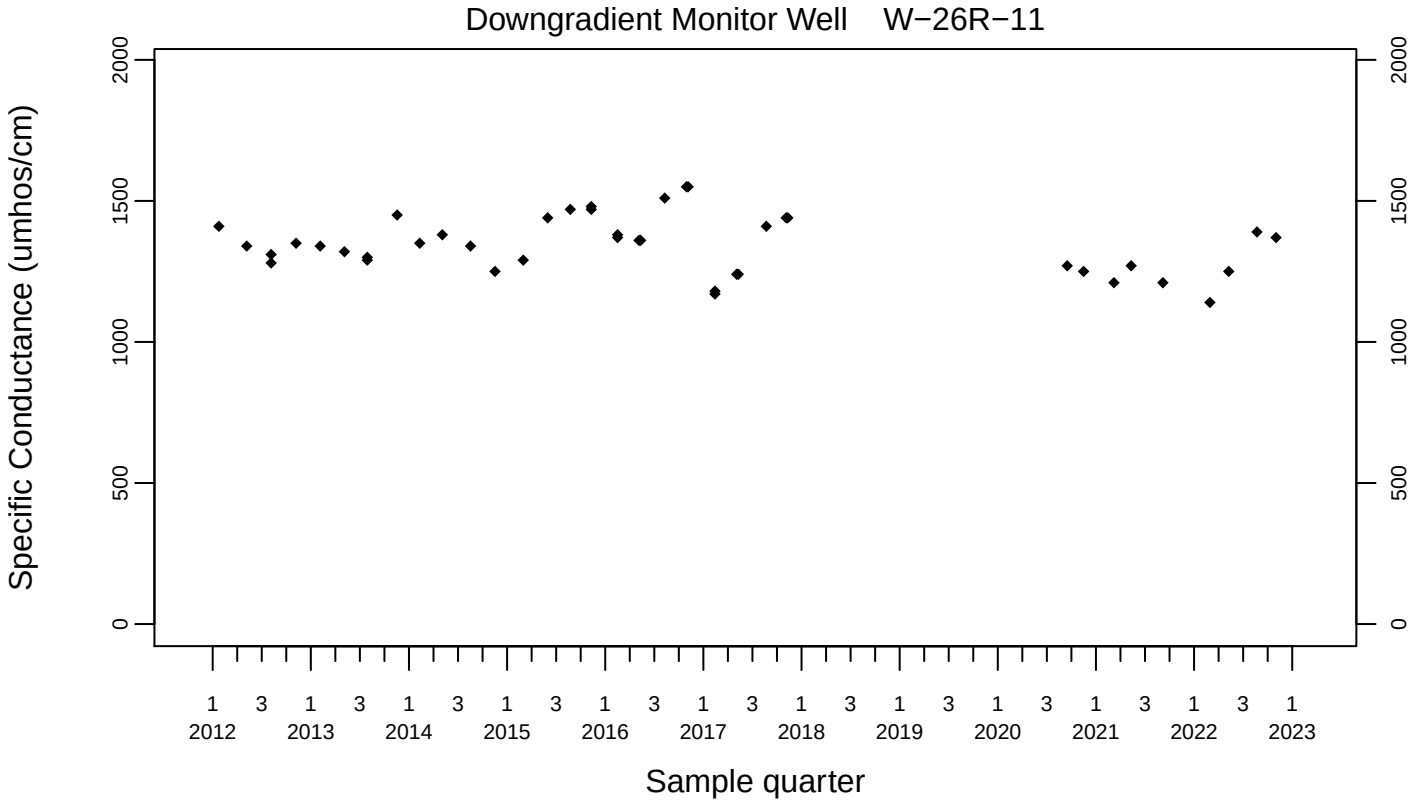


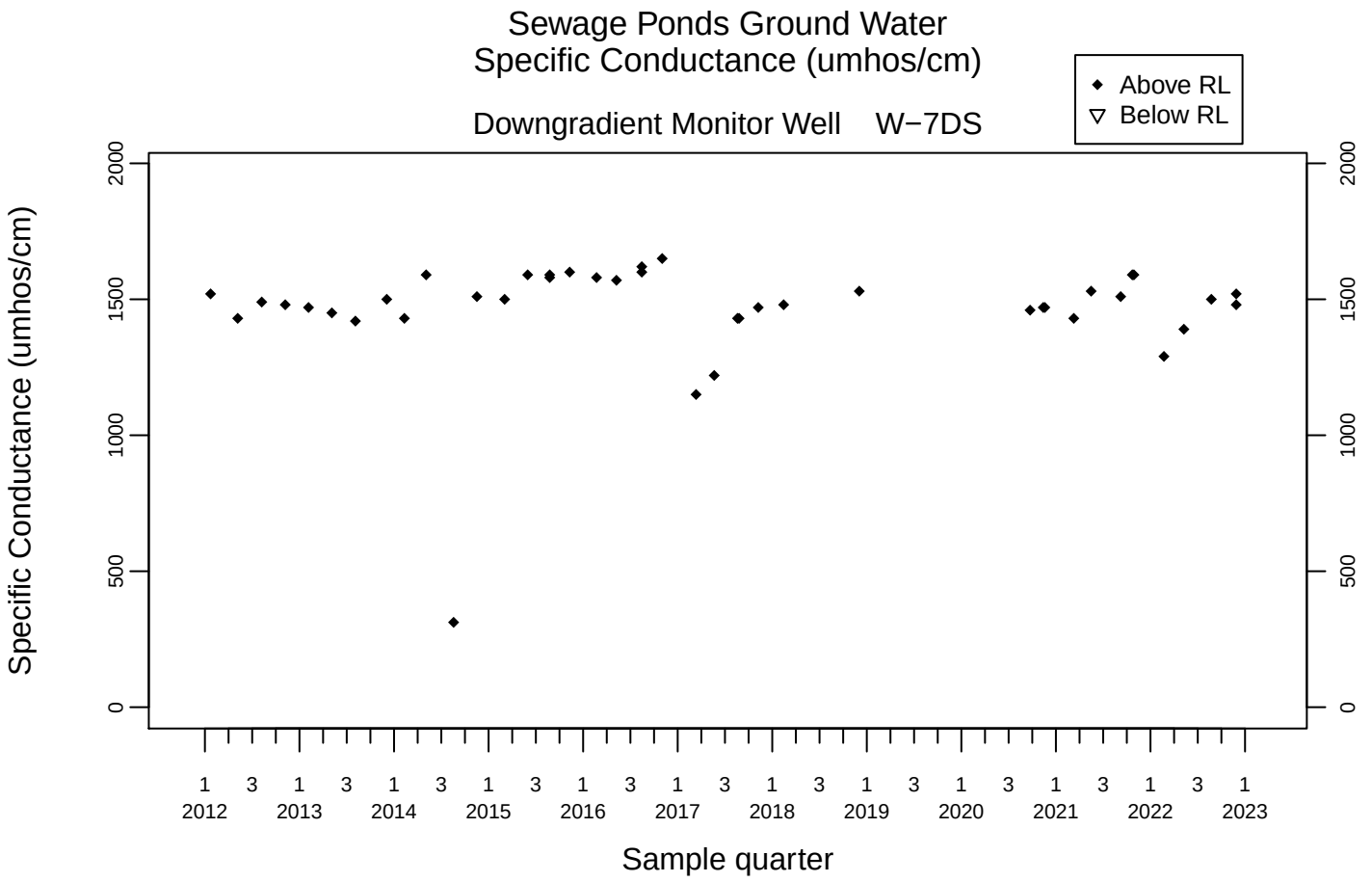

Sewage Ponds Ground Water
Specific Conductance (umhos/cm)
Above RL
Below RL
Downgradient Monitor Well W−25N−22
Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

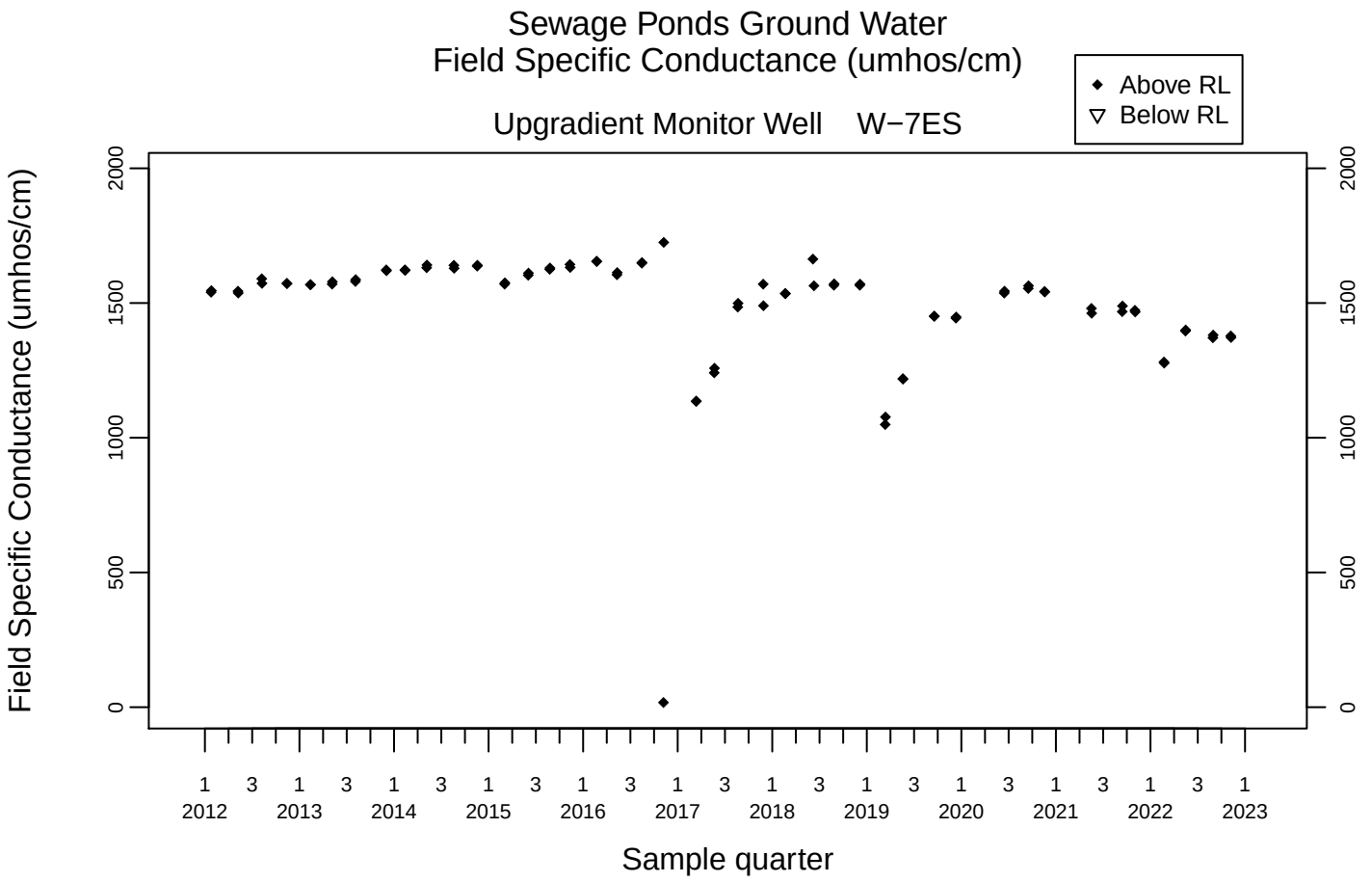

Downgradient Monitor Well W−26R−01
Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

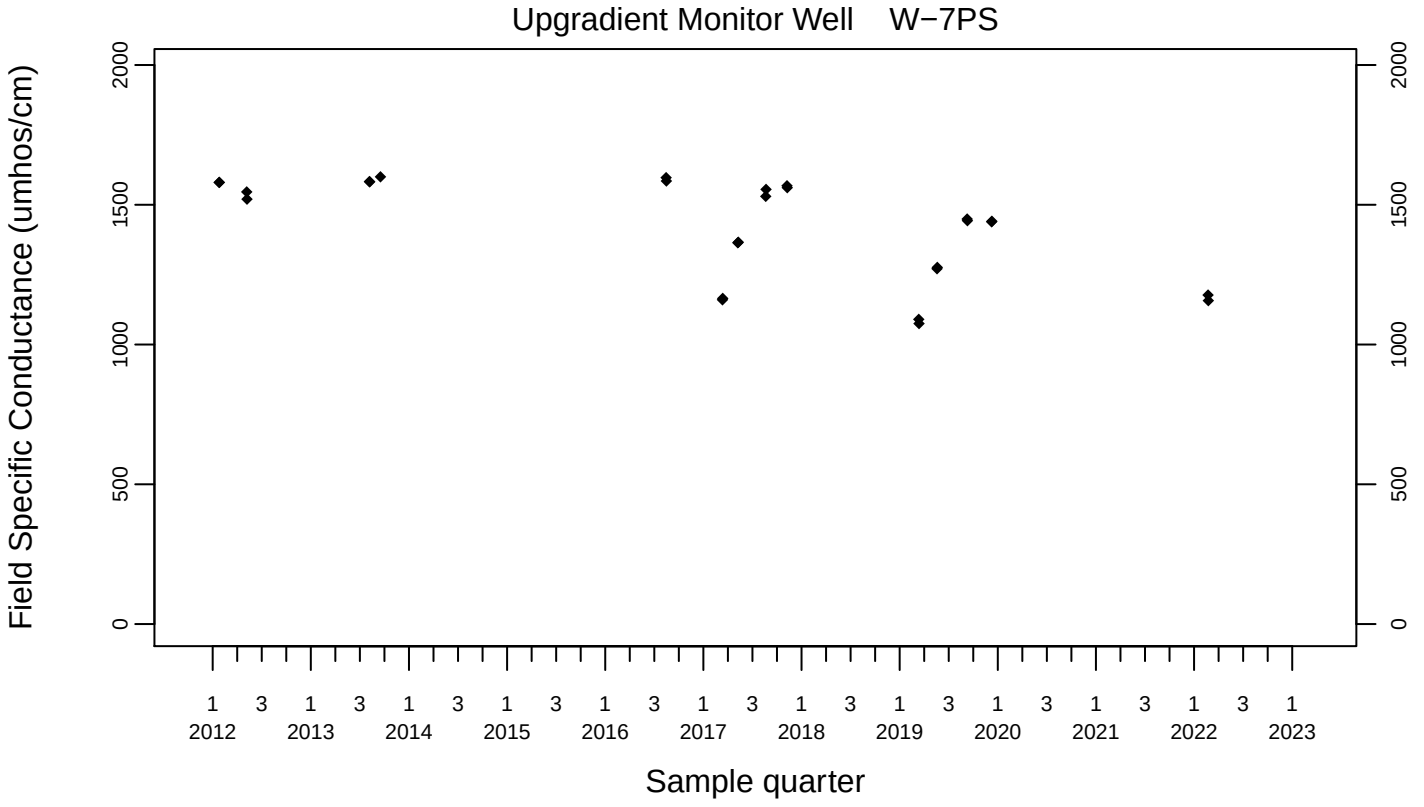
Sewage Ponds Ground Water
Specific Conductance (umhos/cm)



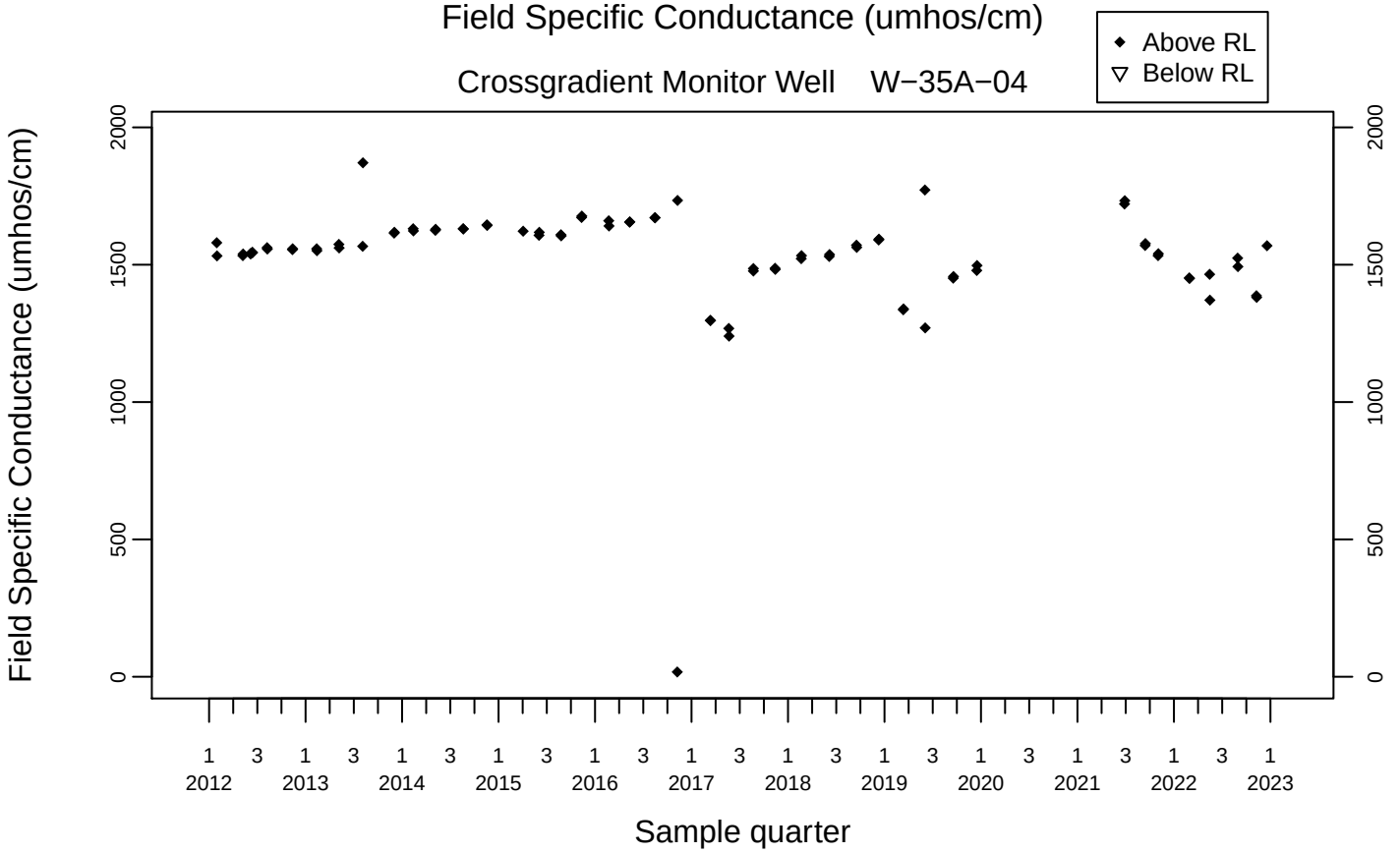


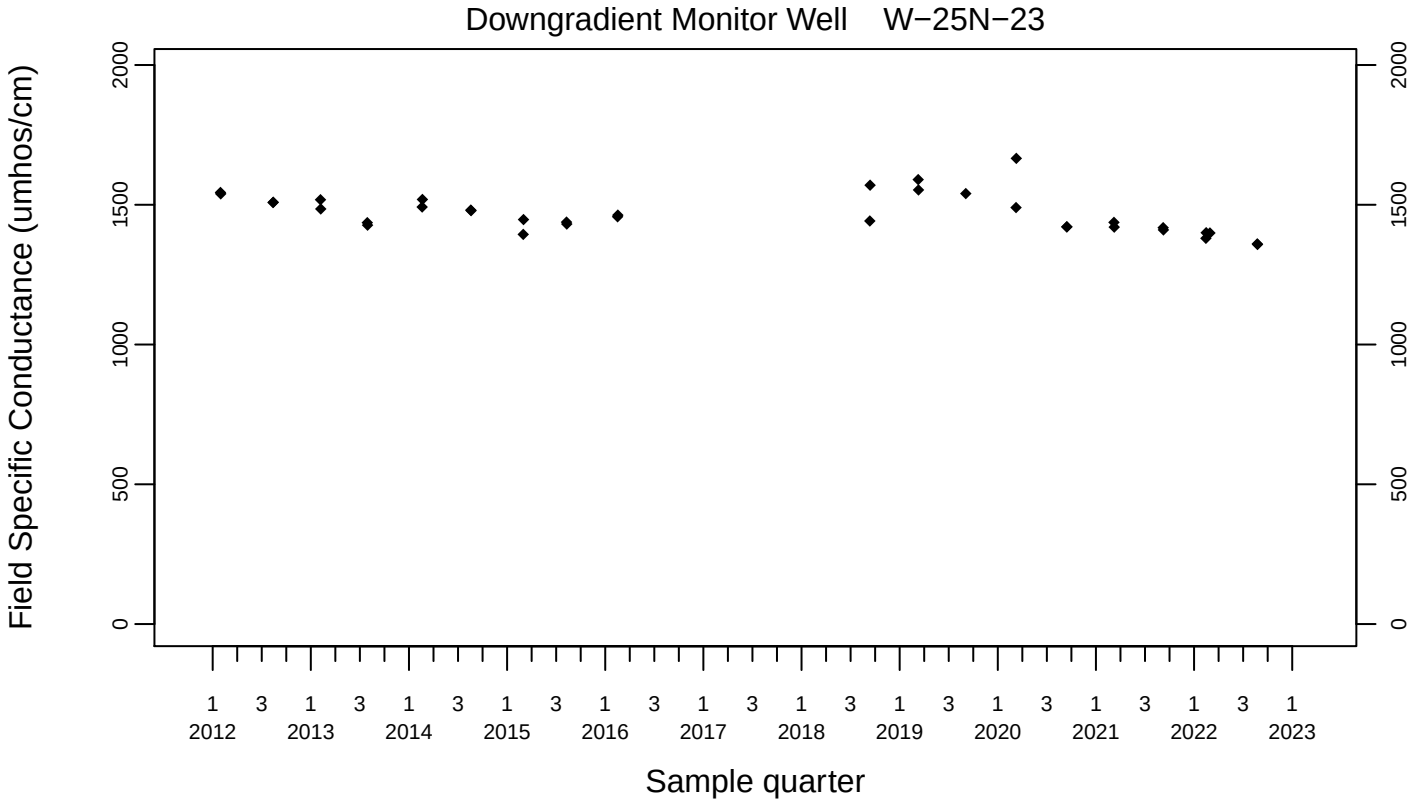

Sewage Ponds Ground Water
Specific Conductance (umhos/cm)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

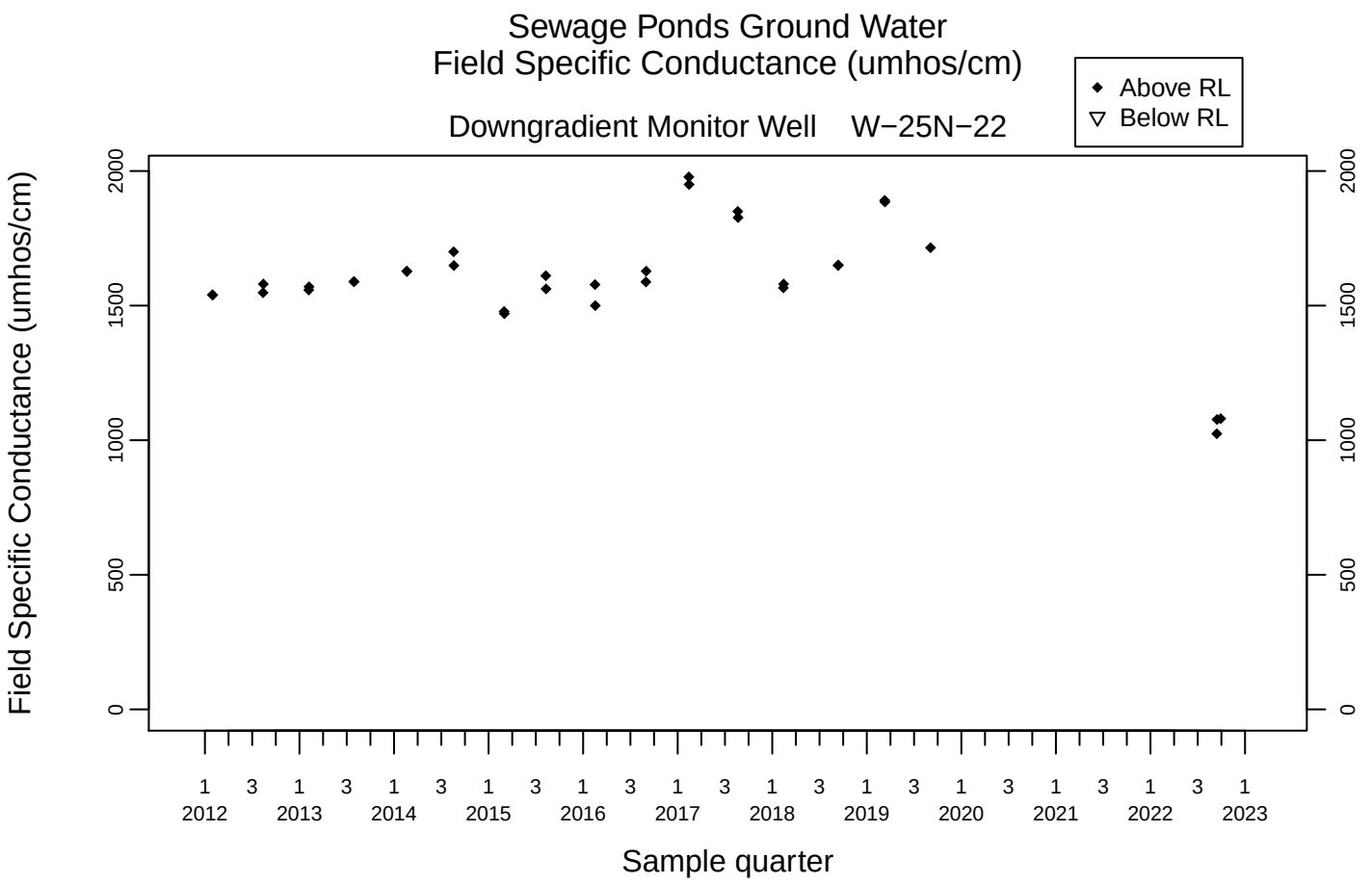

Sewage Ponds Ground Water
Field Specific Conductance (umhos/cm)
Above RL
Below RL
Upgradient Monitor Well W−7ES
Field Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

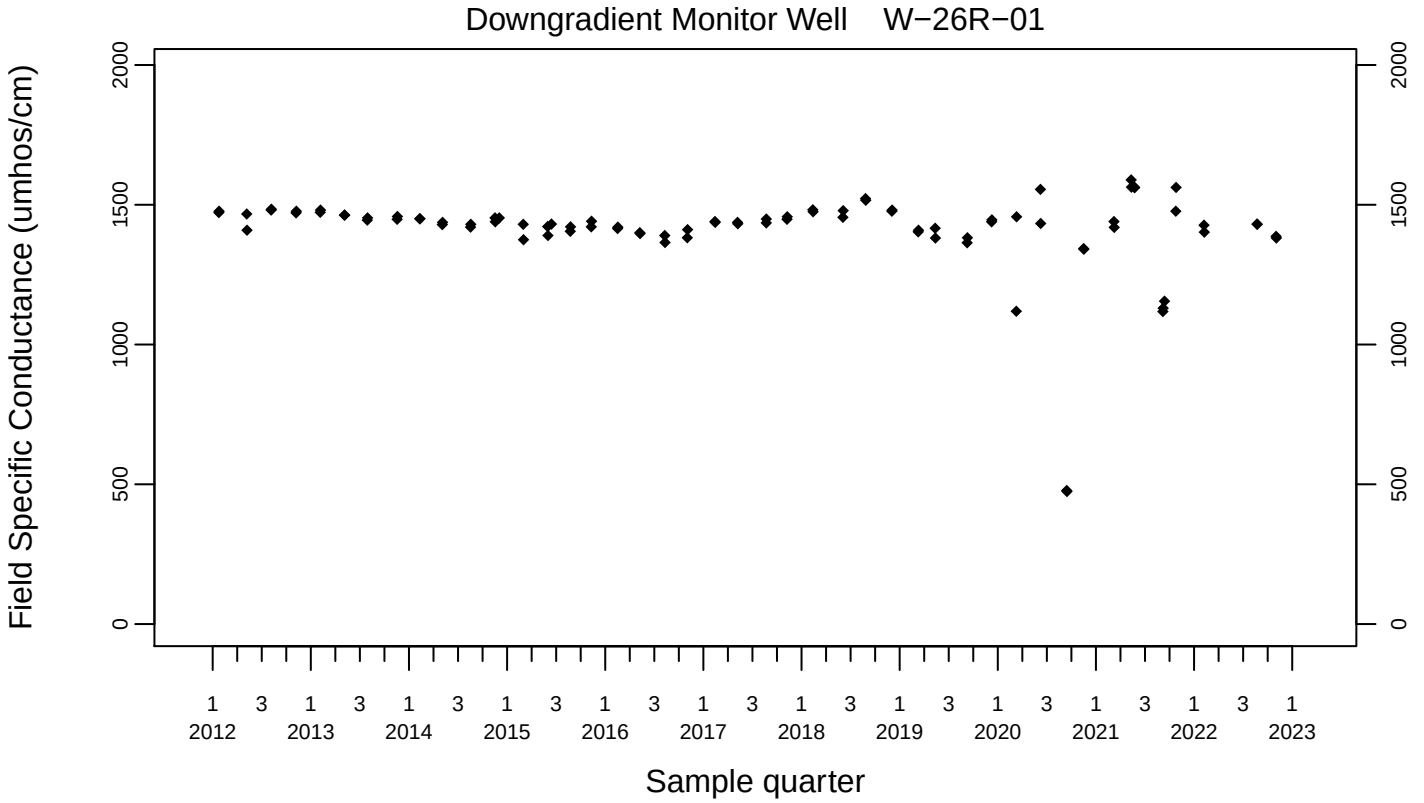

Upgradient Monitor Well W−7PS
Field Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

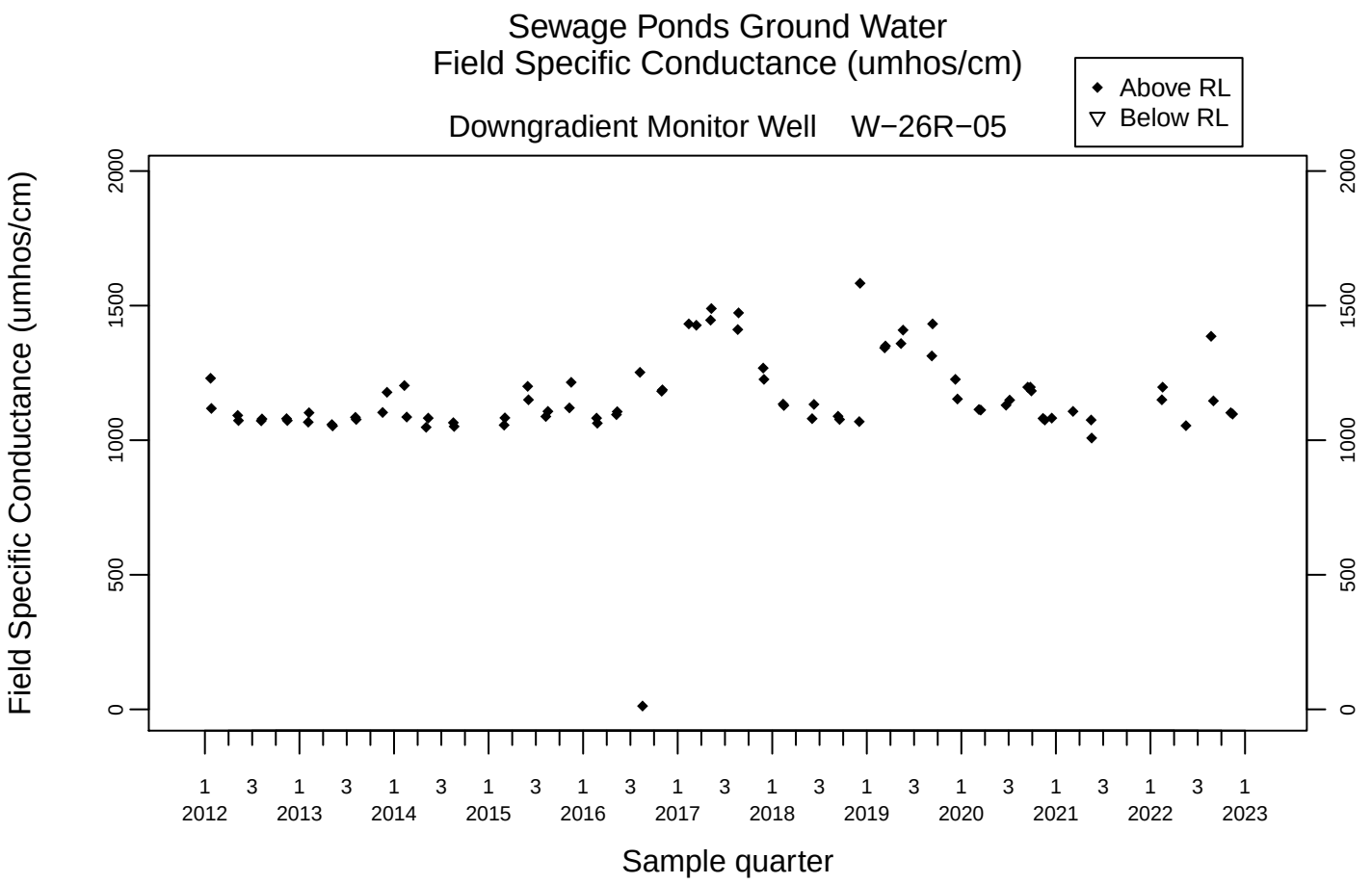
Sewage Ponds Ground Water
Field Specific Conductance (umhos/cm)

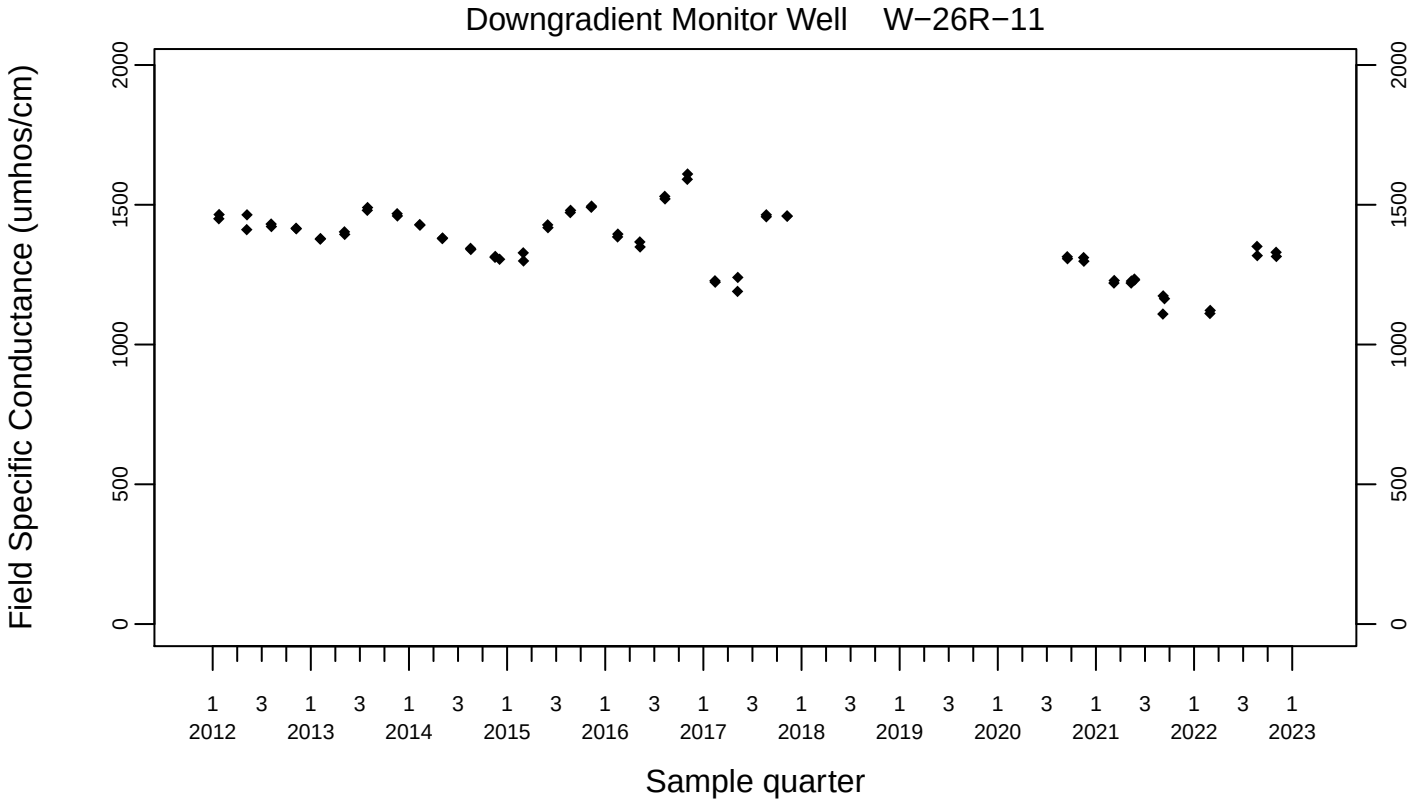


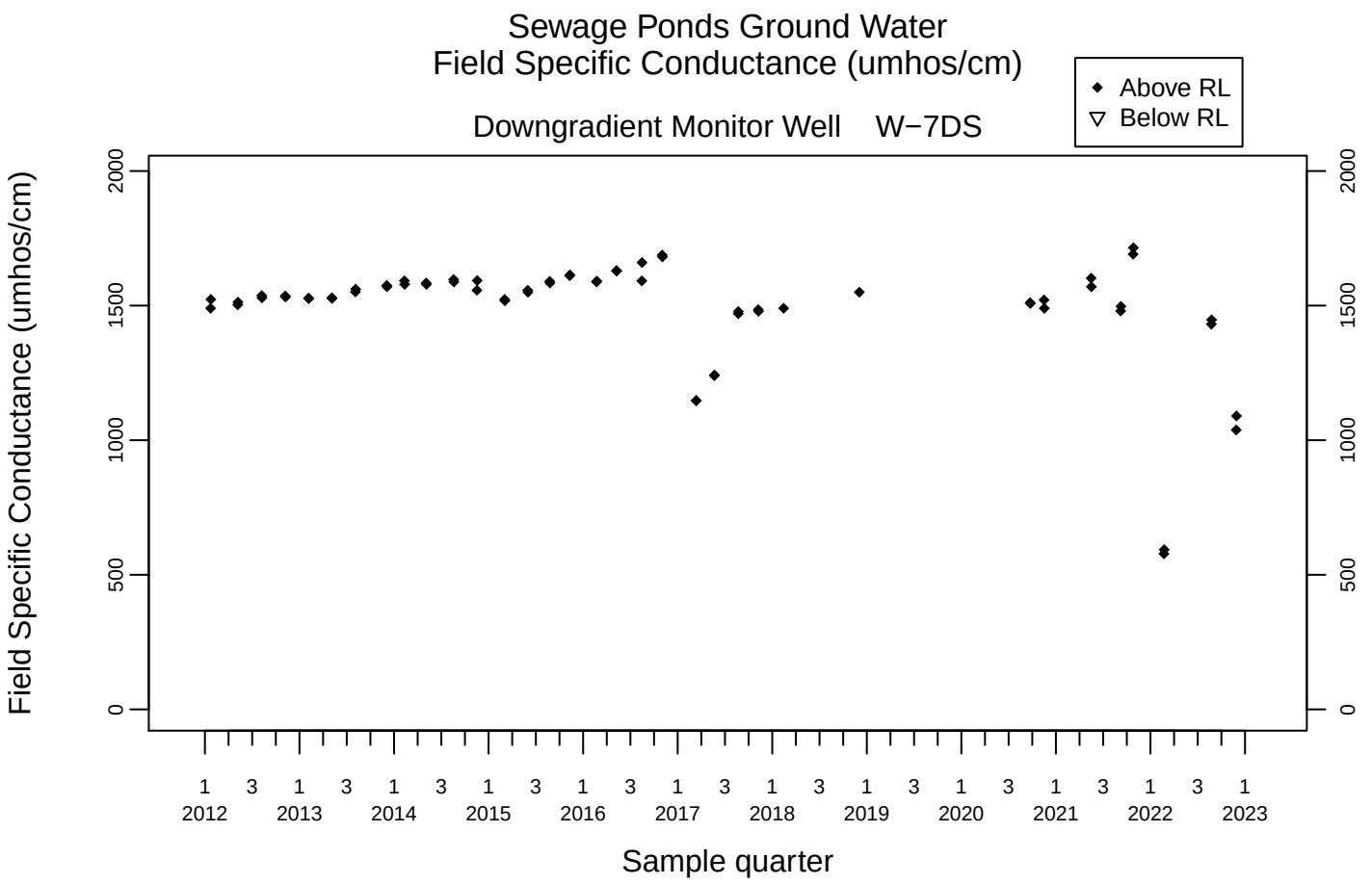


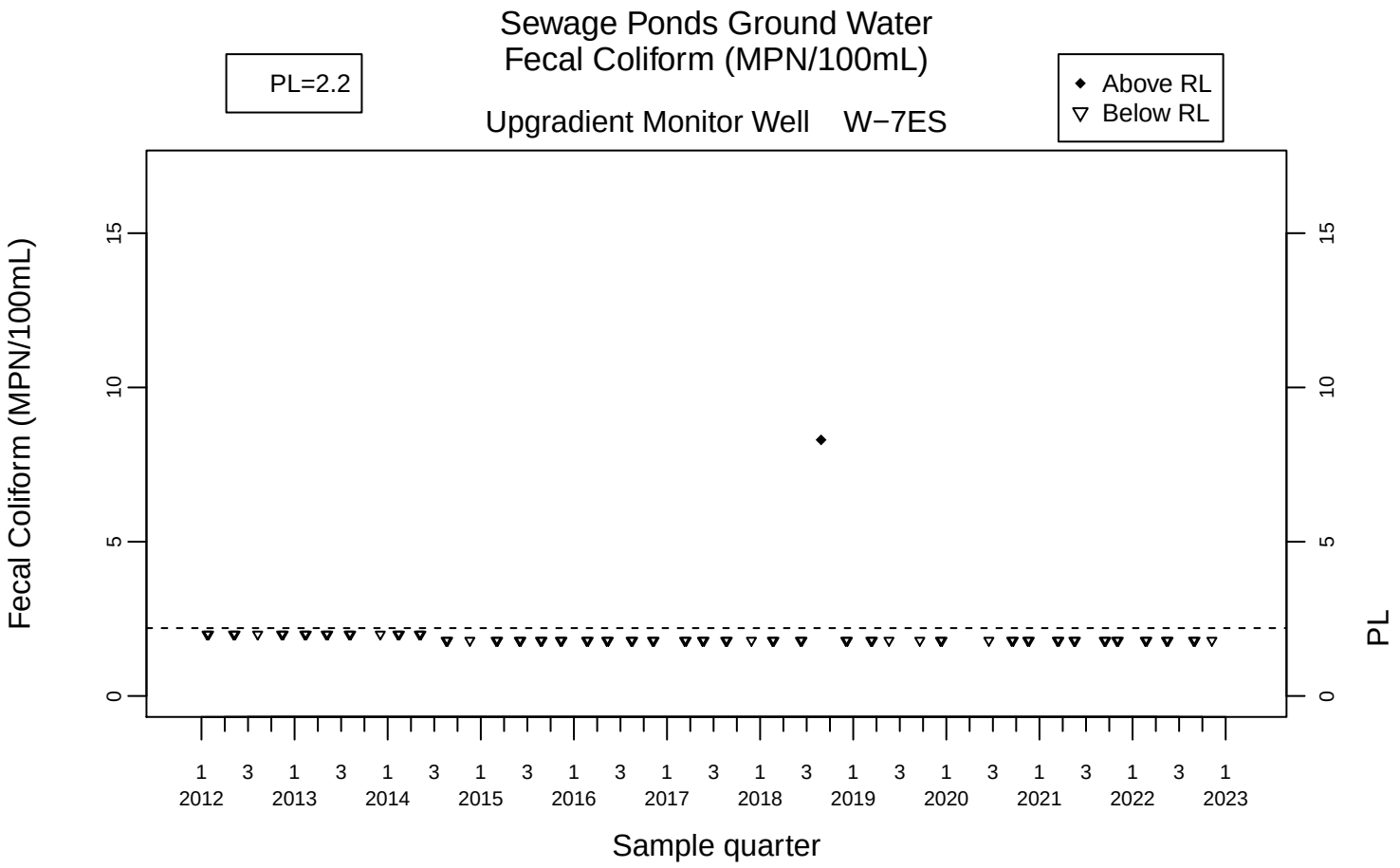

Sewage Ponds Ground Water
Field Specific Conductance (umhos/cm)
Above RL
Below RL
Downgradient Monitor Well W−25N−22
Field Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

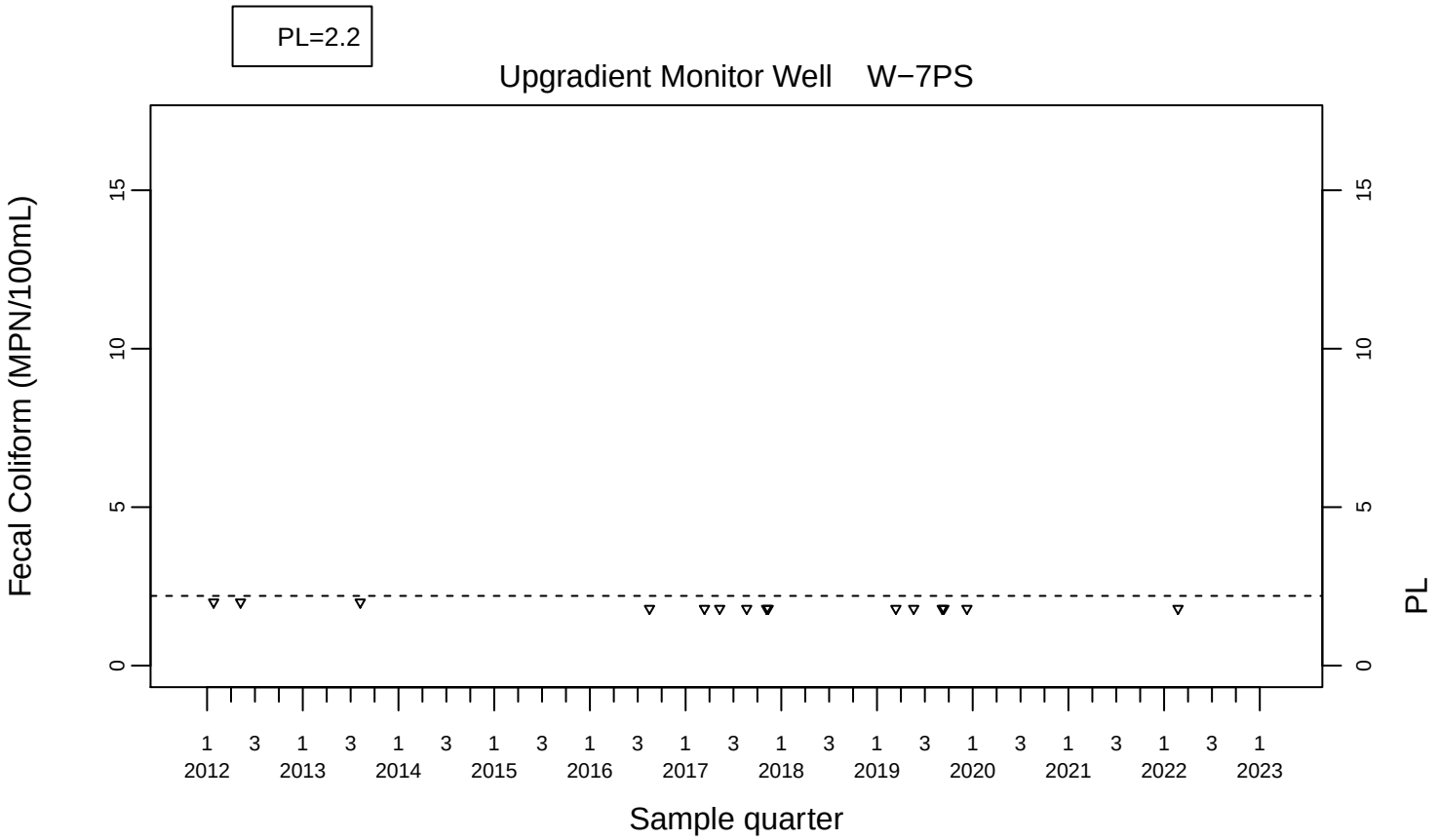

Downgradient Monitor Well W−26R−01
Field Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Sewage Ponds Ground Water
Field Specific Conductance (umhos/cm)
Above RL
Below RL
Downgradient Monitor Well W−26R−05
Field Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

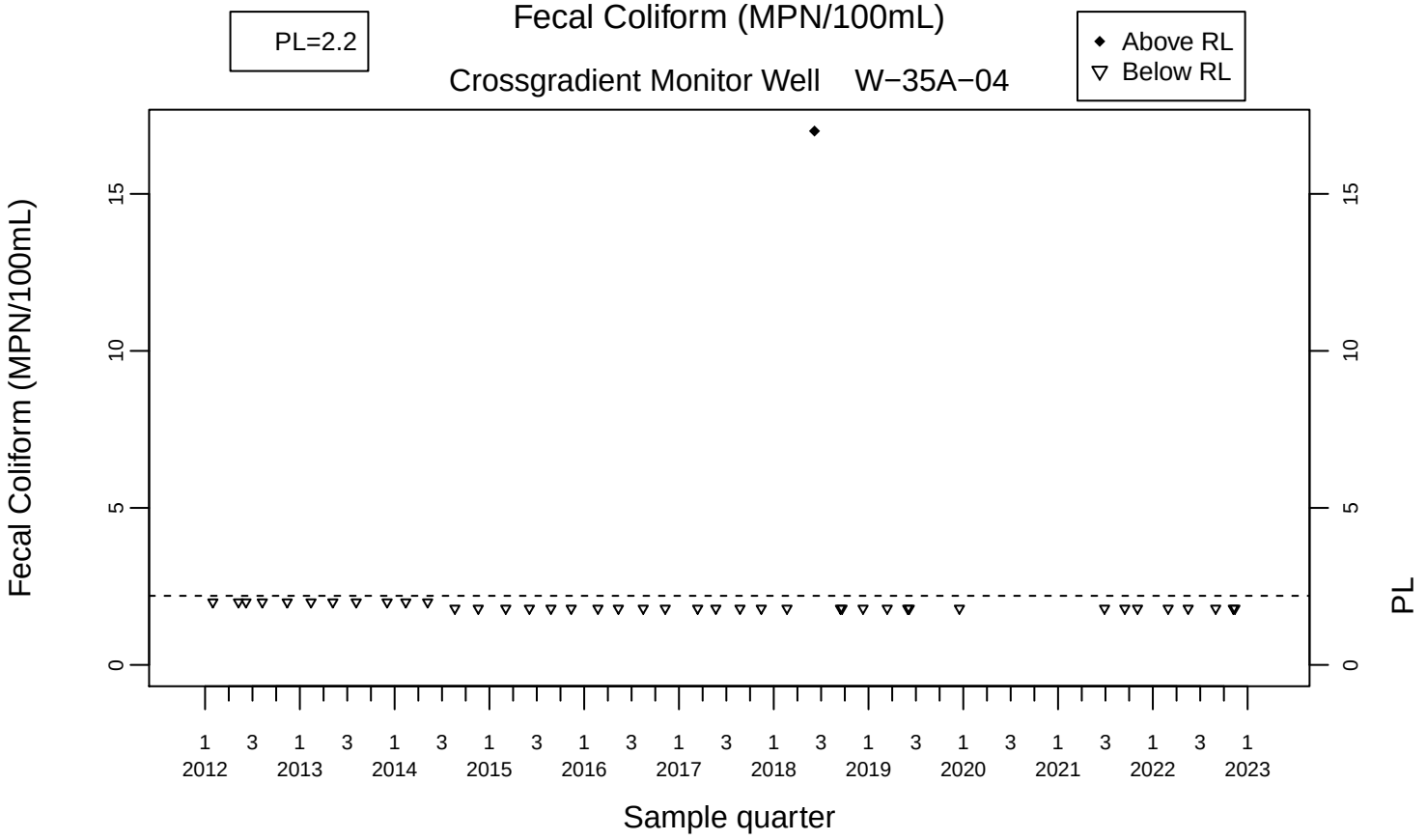

Downgradient Monitor Well W−26R−11
Field Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

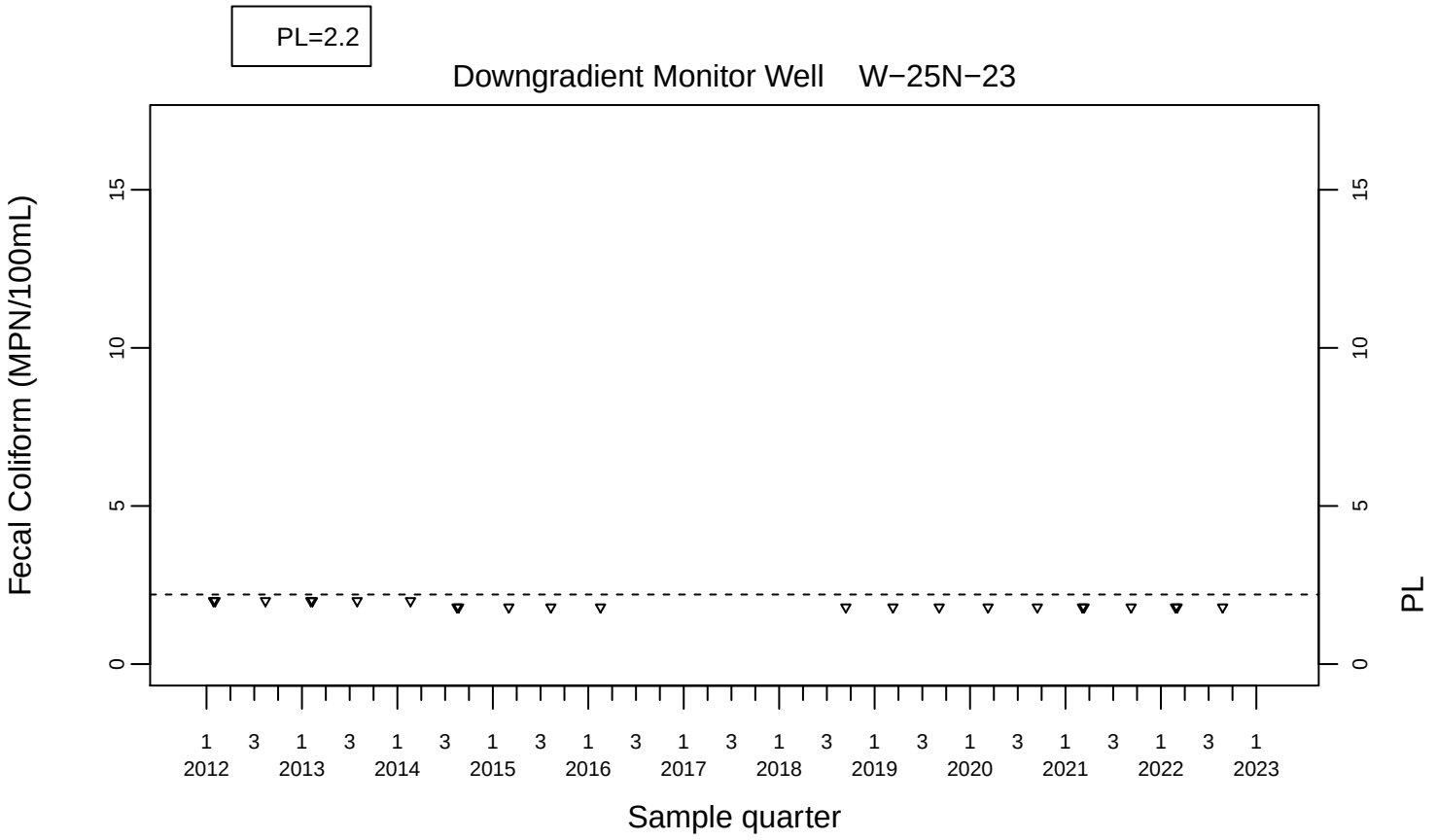

Sewage Ponds Ground Water
Field Specific Conductance (umhos/cm)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Field Specific Conductance (umhos/cm)
0
500
1000
1500
2000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

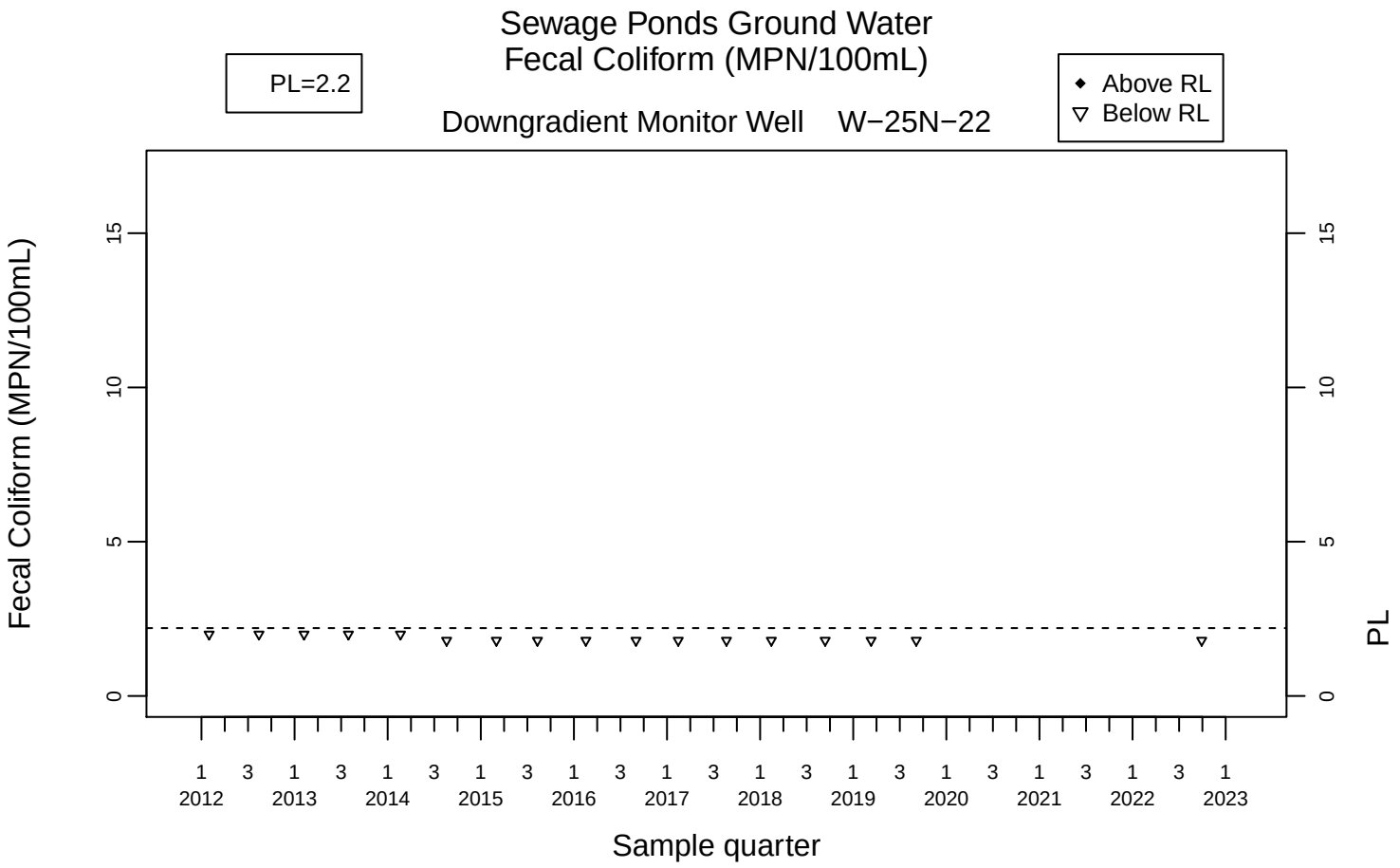

Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
PL=2.2
Above RL
Below RL
Upgradient Monitor Well W−7ES
Fecal Coliform (MPN/100mL)
PL
0
5
10
15
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

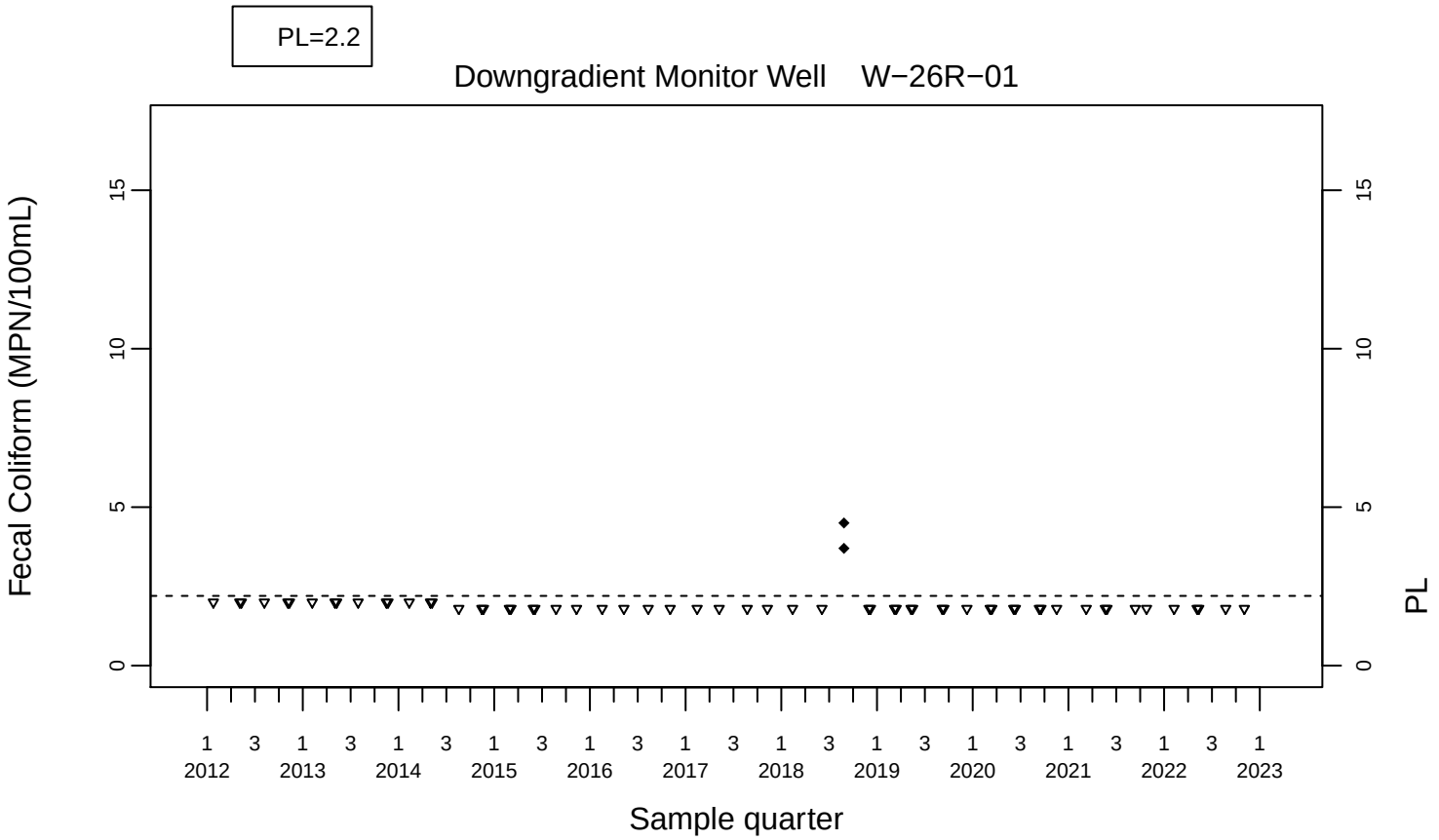

PL=2.2
Upgradient Monitor Well W−7PS
Fecal Coliform (MPN/100mL)
PL
0
5
10
15
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

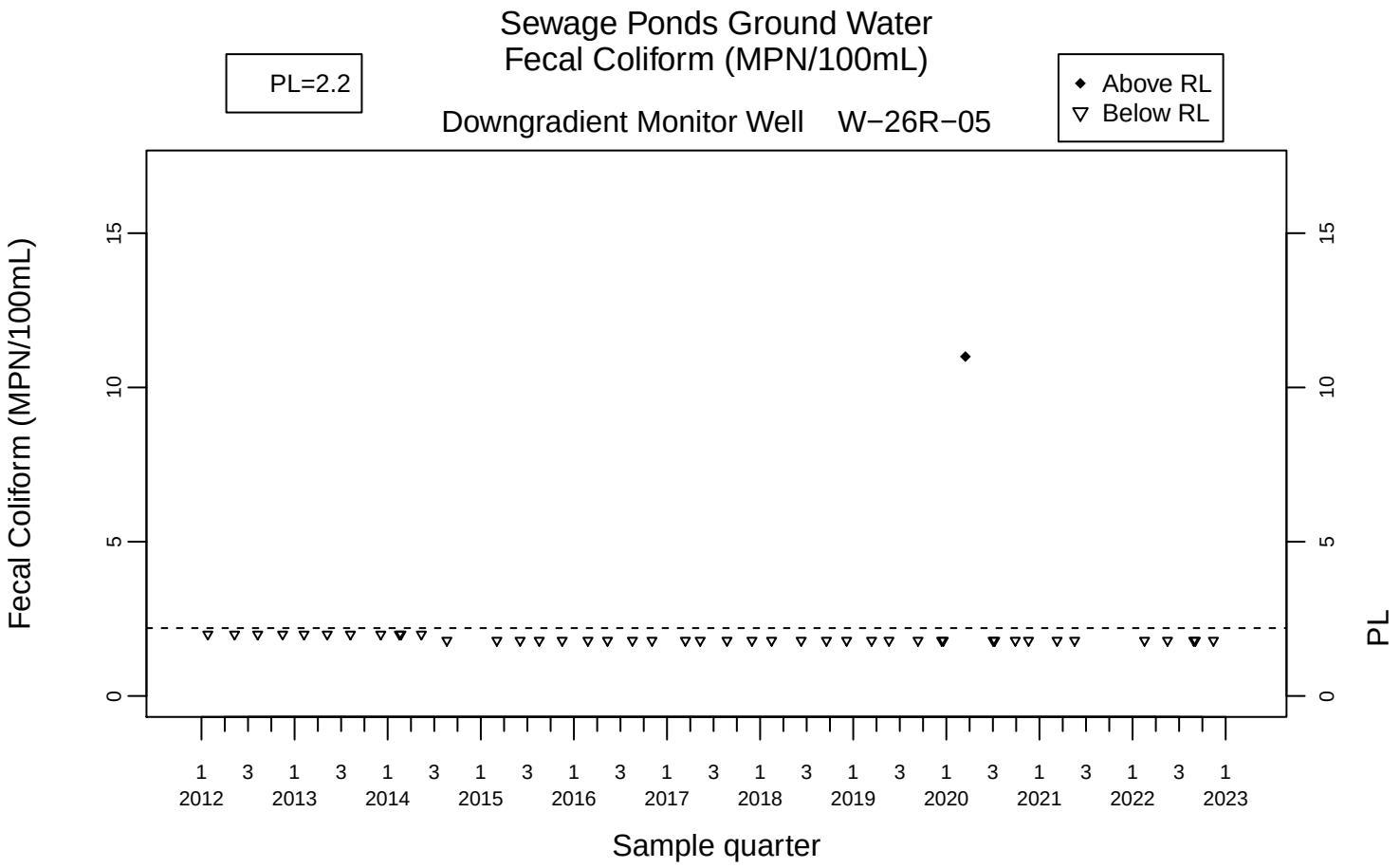
Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)

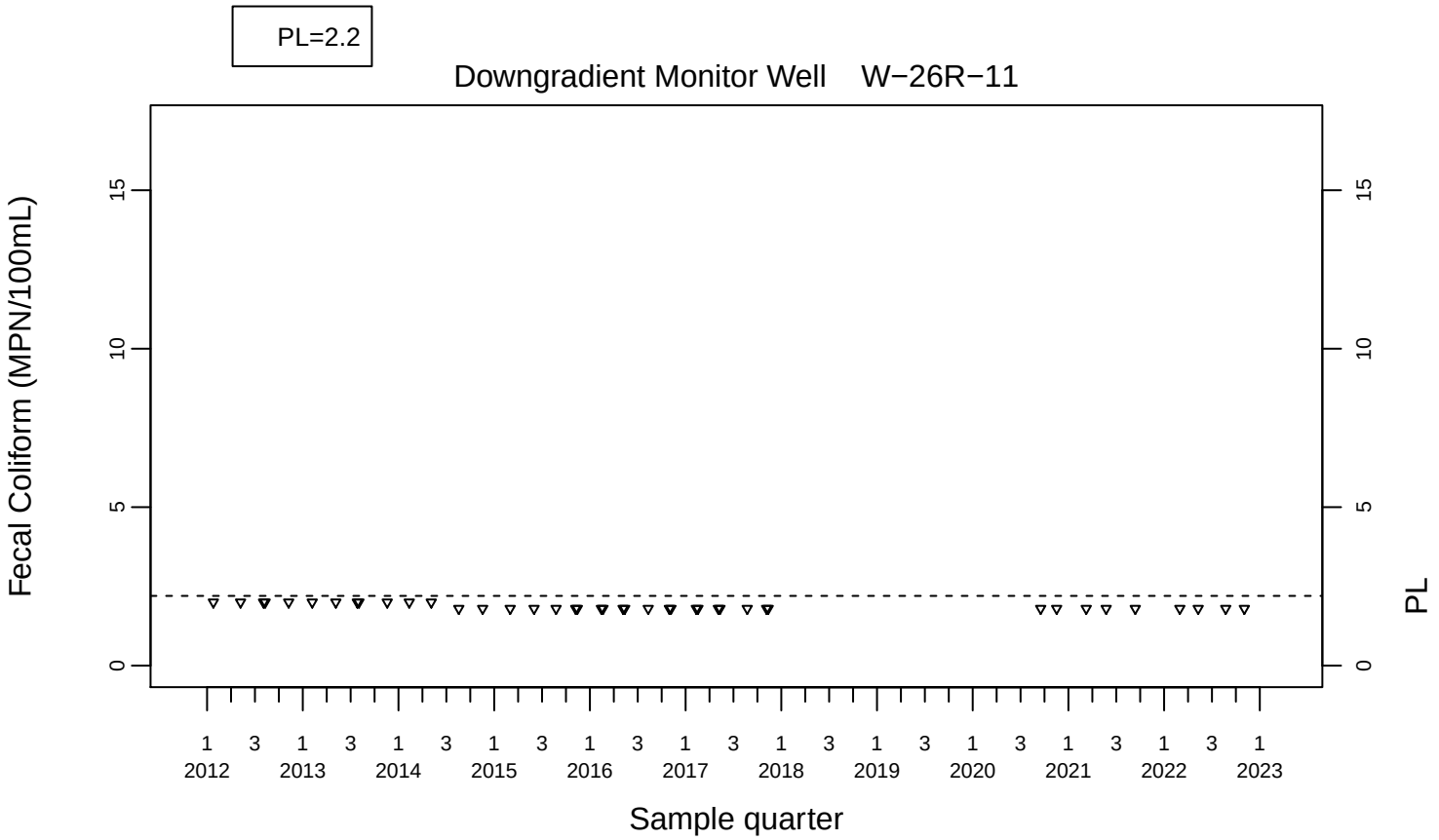


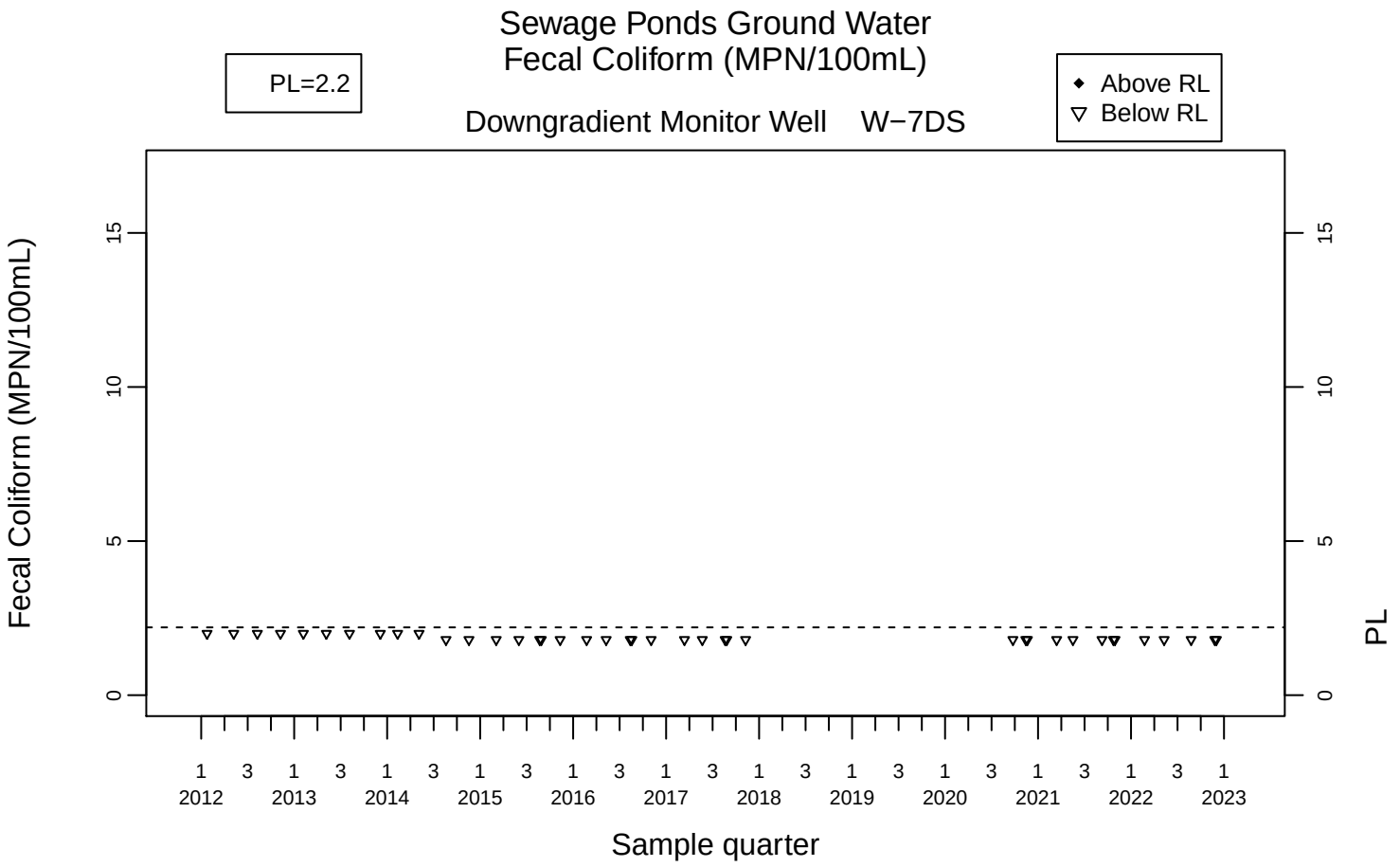



Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
PL=2.2
Above RL
Below RL
Downgradient Monitor Well W−25N−22
Fecal Coliform (MPN/100mL)
PL
0
5
10
15
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

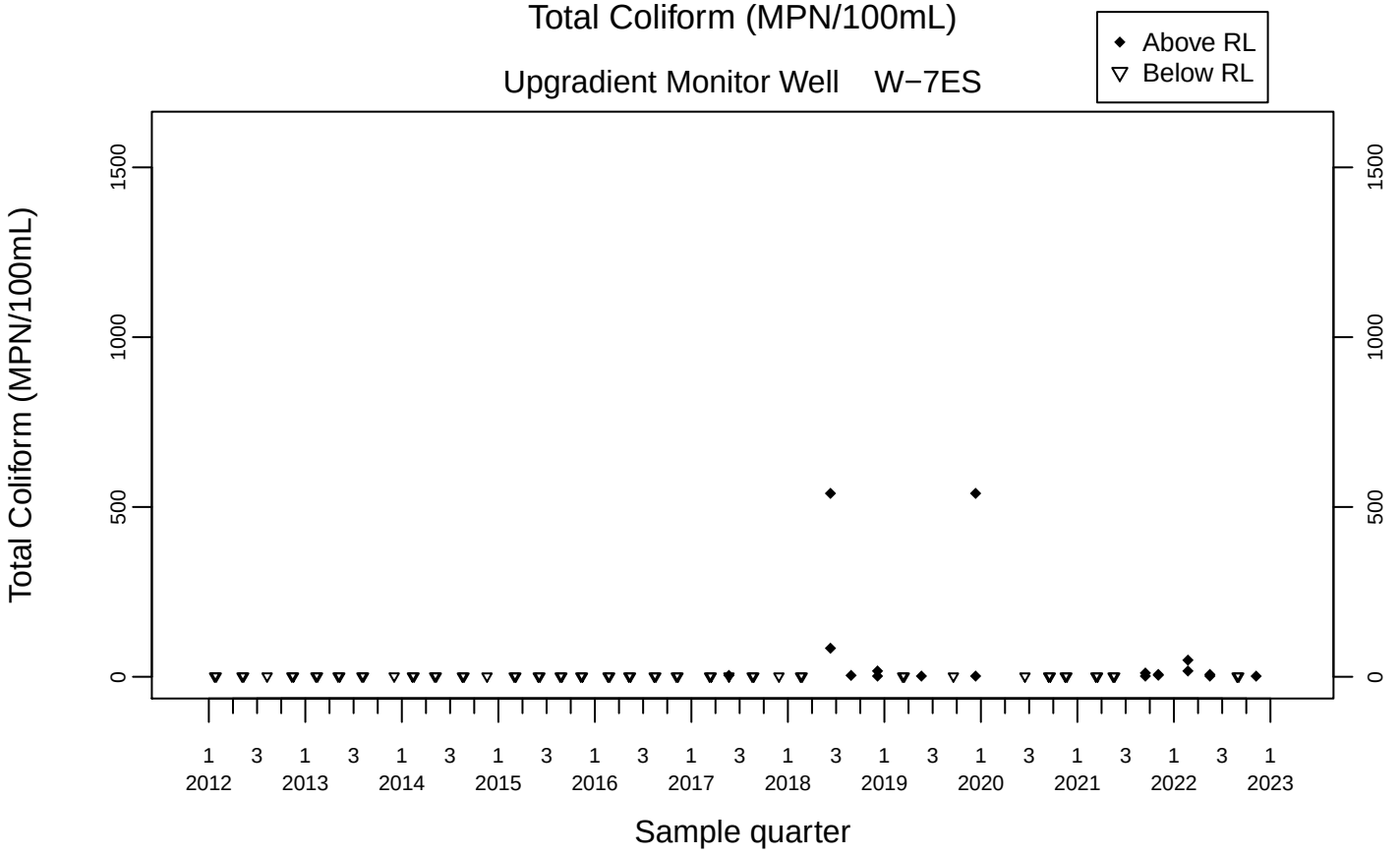

PL=2.2
Downgradient Monitor Well W−26R−01
Fecal Coliform (MPN/100mL)
PL
0
5
10
15
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

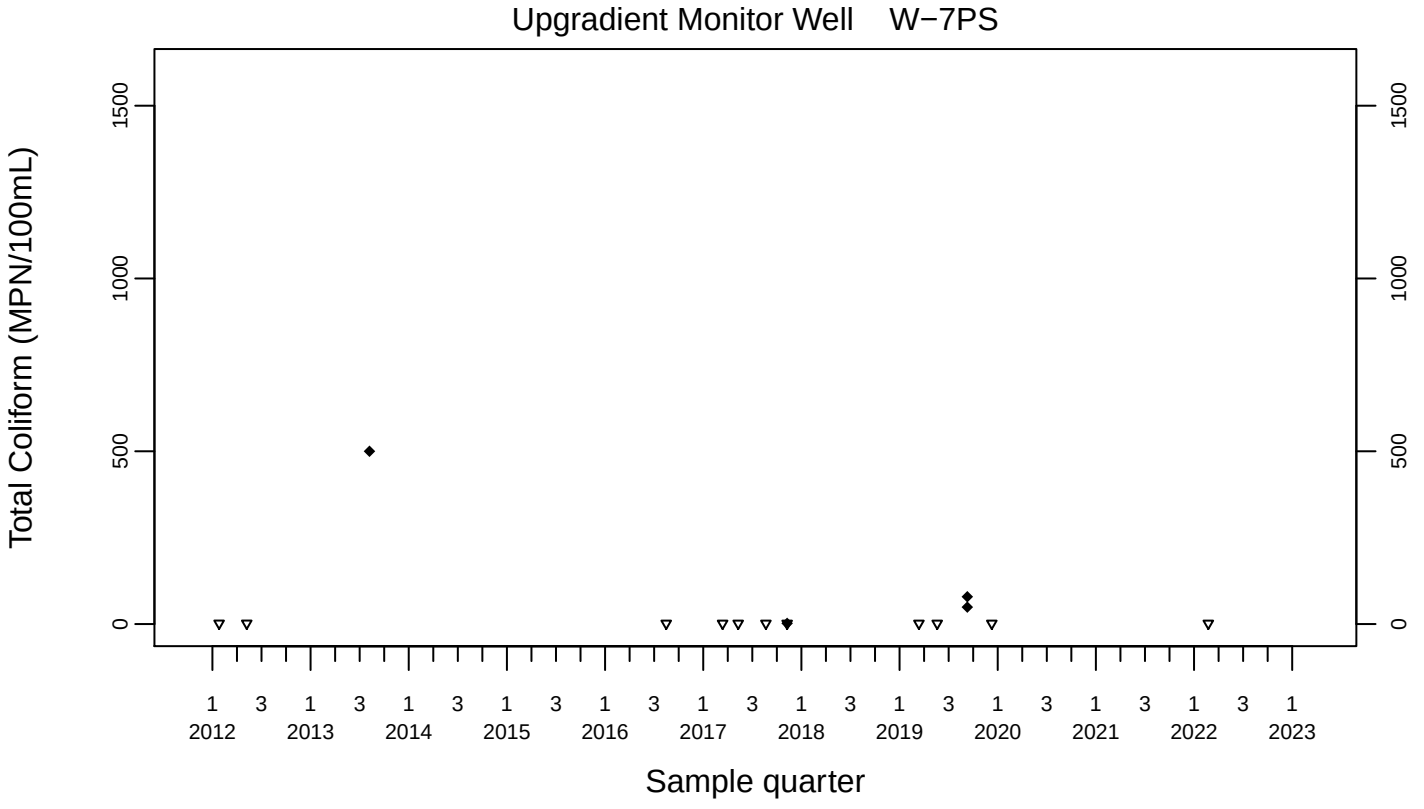

Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
PL=2.2
Above RL
Below RL
Downgradient Monitor Well W−26R−05
Fecal Coliform (MPN/100mL)
PL
0
5
10
15
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


PL=2.2
Downgradient Monitor Well W−26R−11
Fecal Coliform (MPN/100mL)
PL
0
5
10
15
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

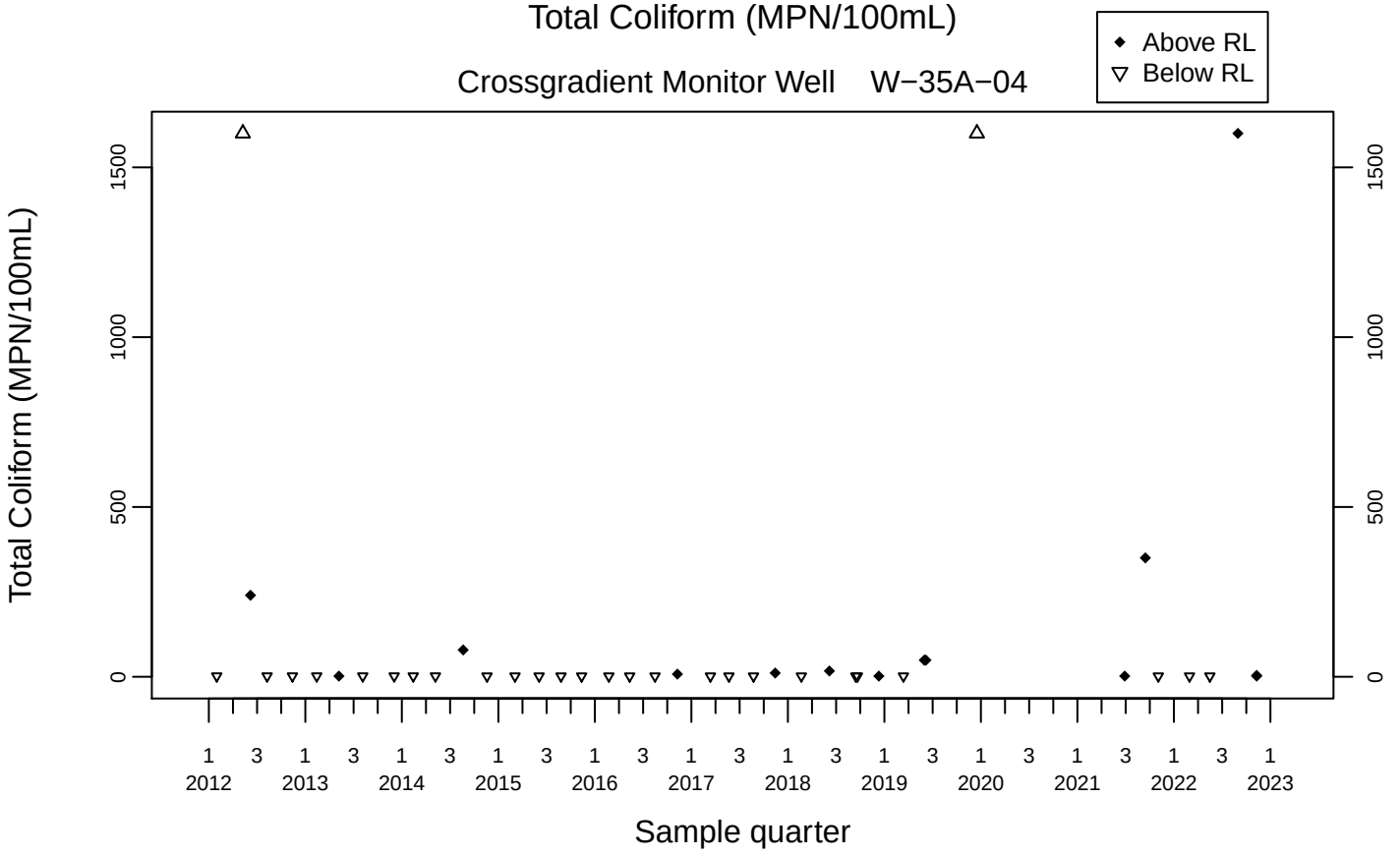

Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
Downgradient Monitor Well W−7DS
PL=2.2
Above RL
Below RL
Fecal Coliform (MPN/100mL)
PL
0
5
10
15
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

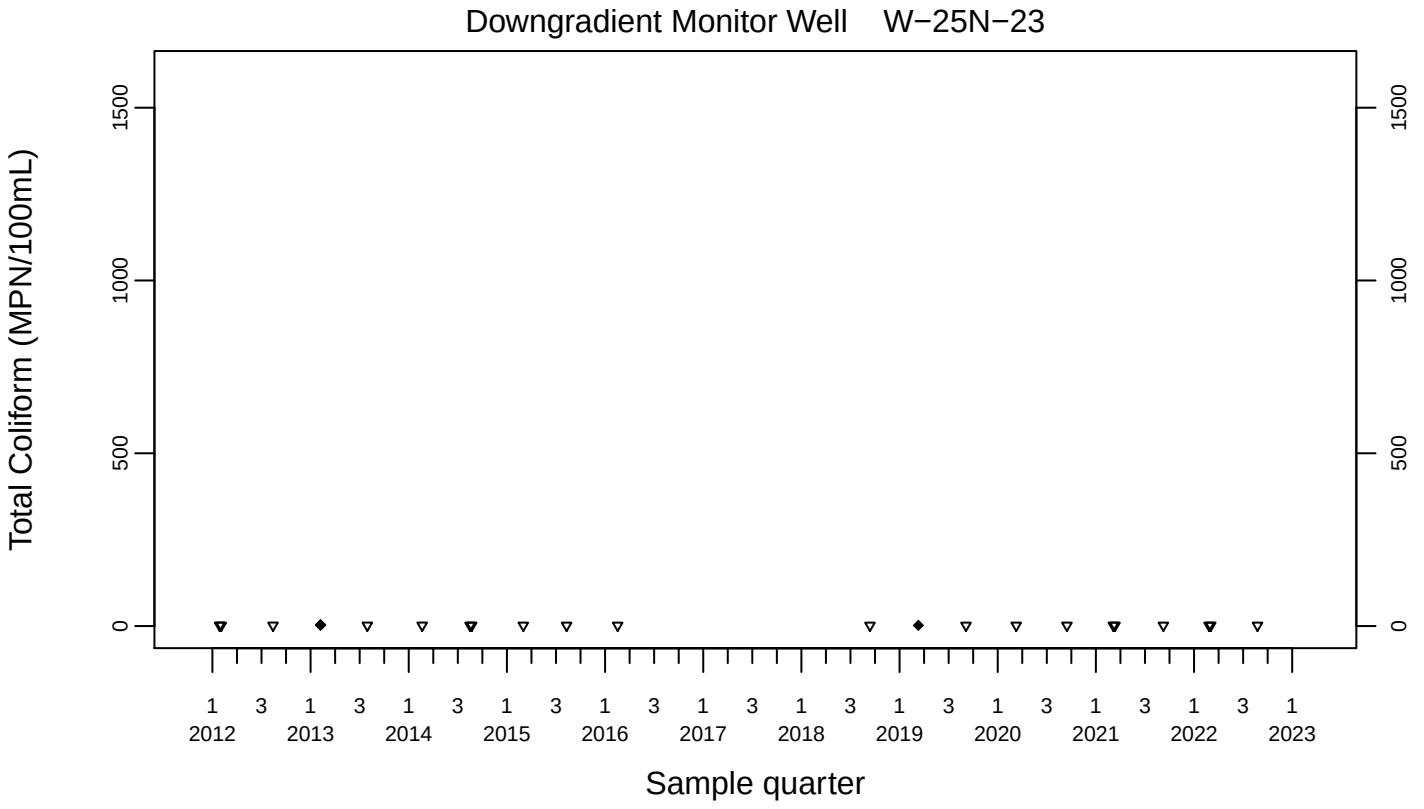
Sewage Ponds Ground Water
Total Coliform (MPN/100mL)



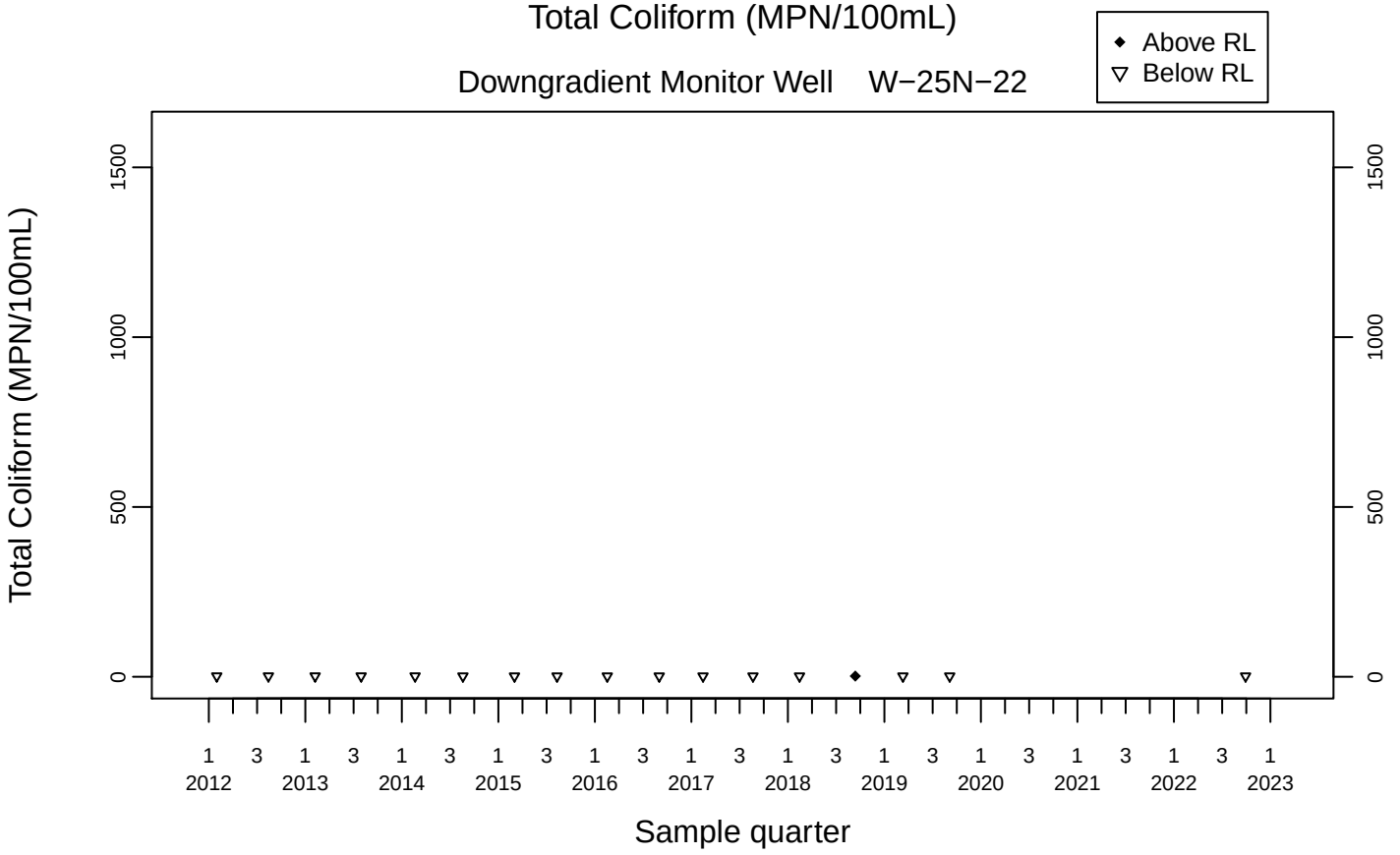


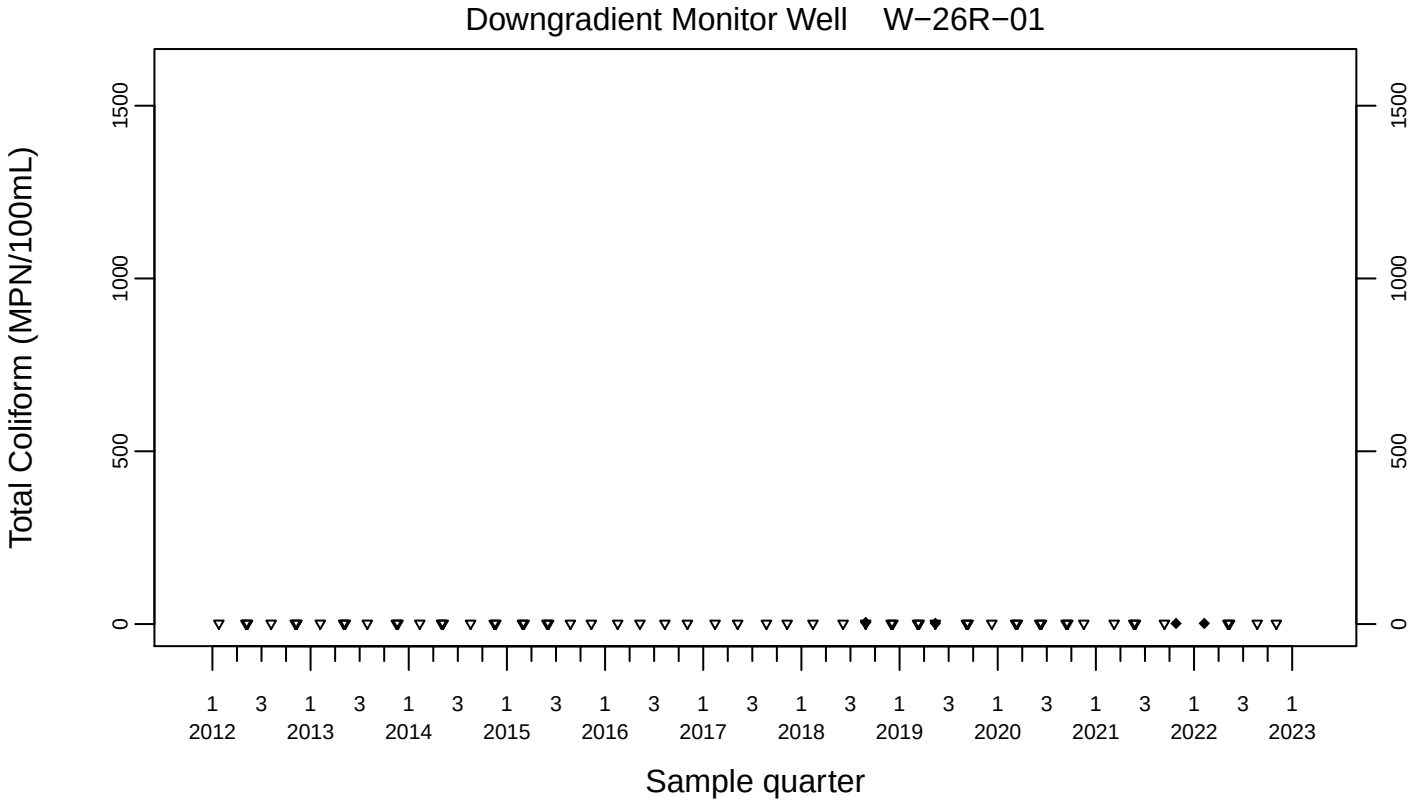
Sewage Ponds Ground Water
Total Coliform (MPN/100mL)



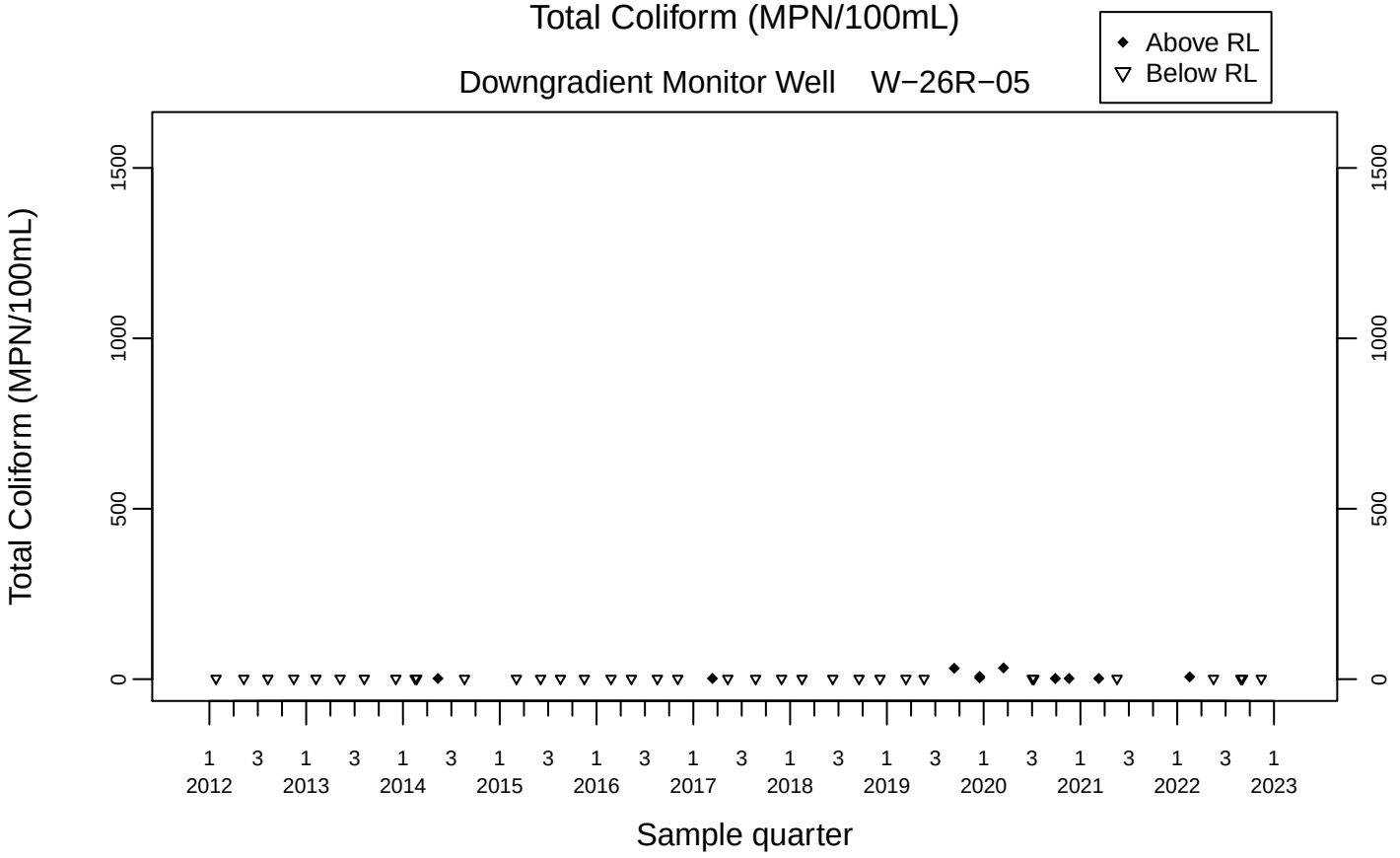


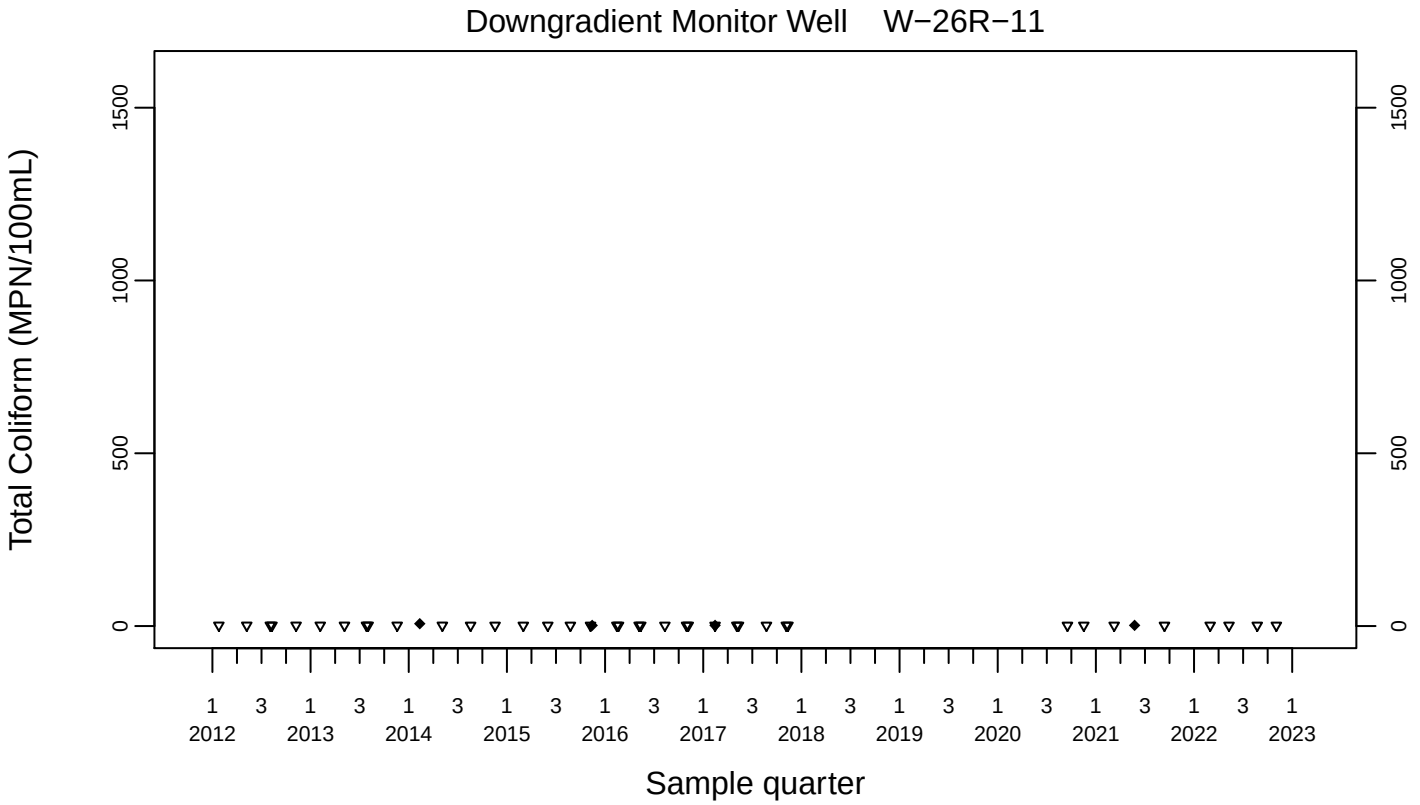
Sewage Ponds Ground Water
Total Coliform (MPN/100mL)

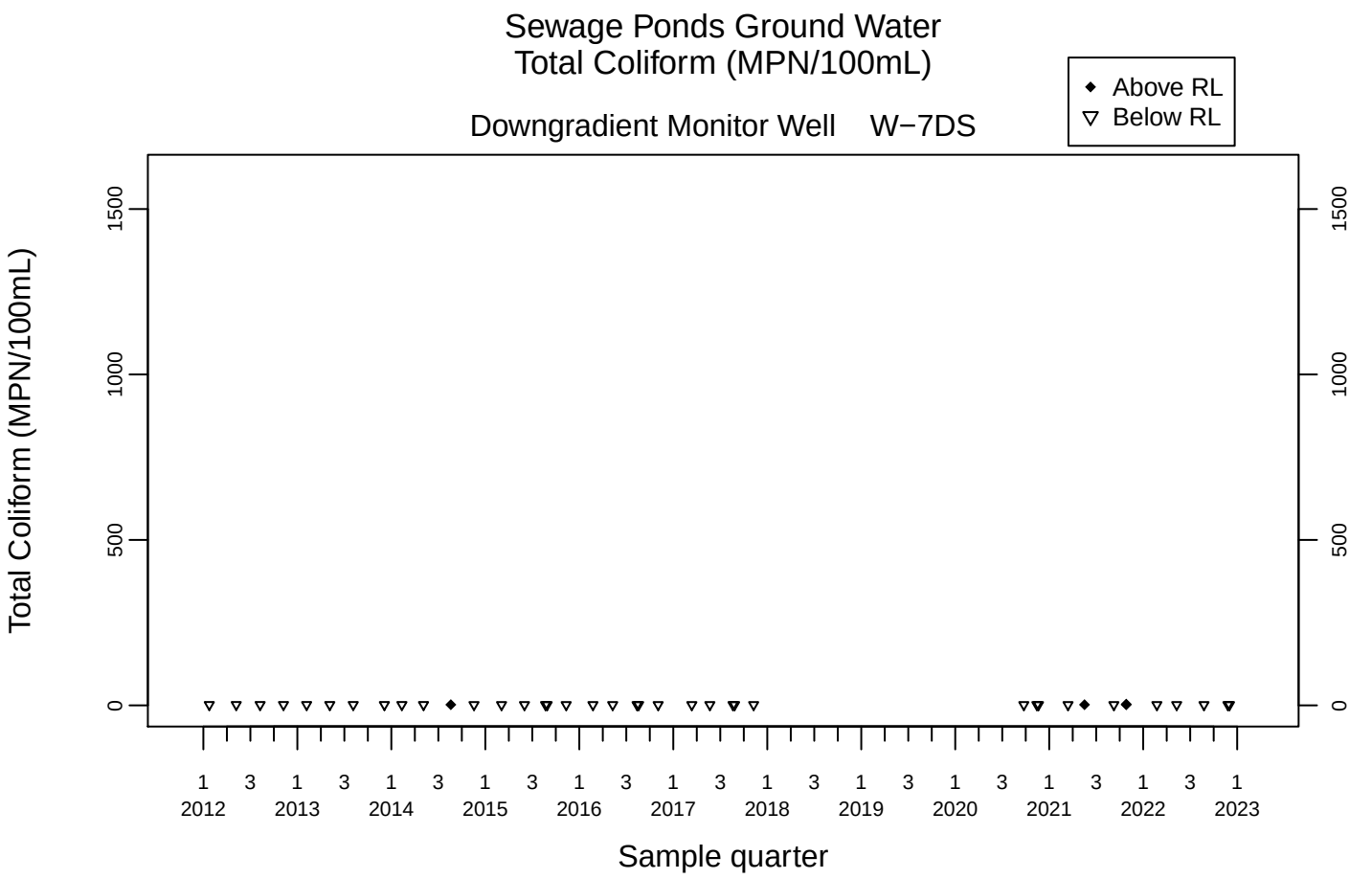




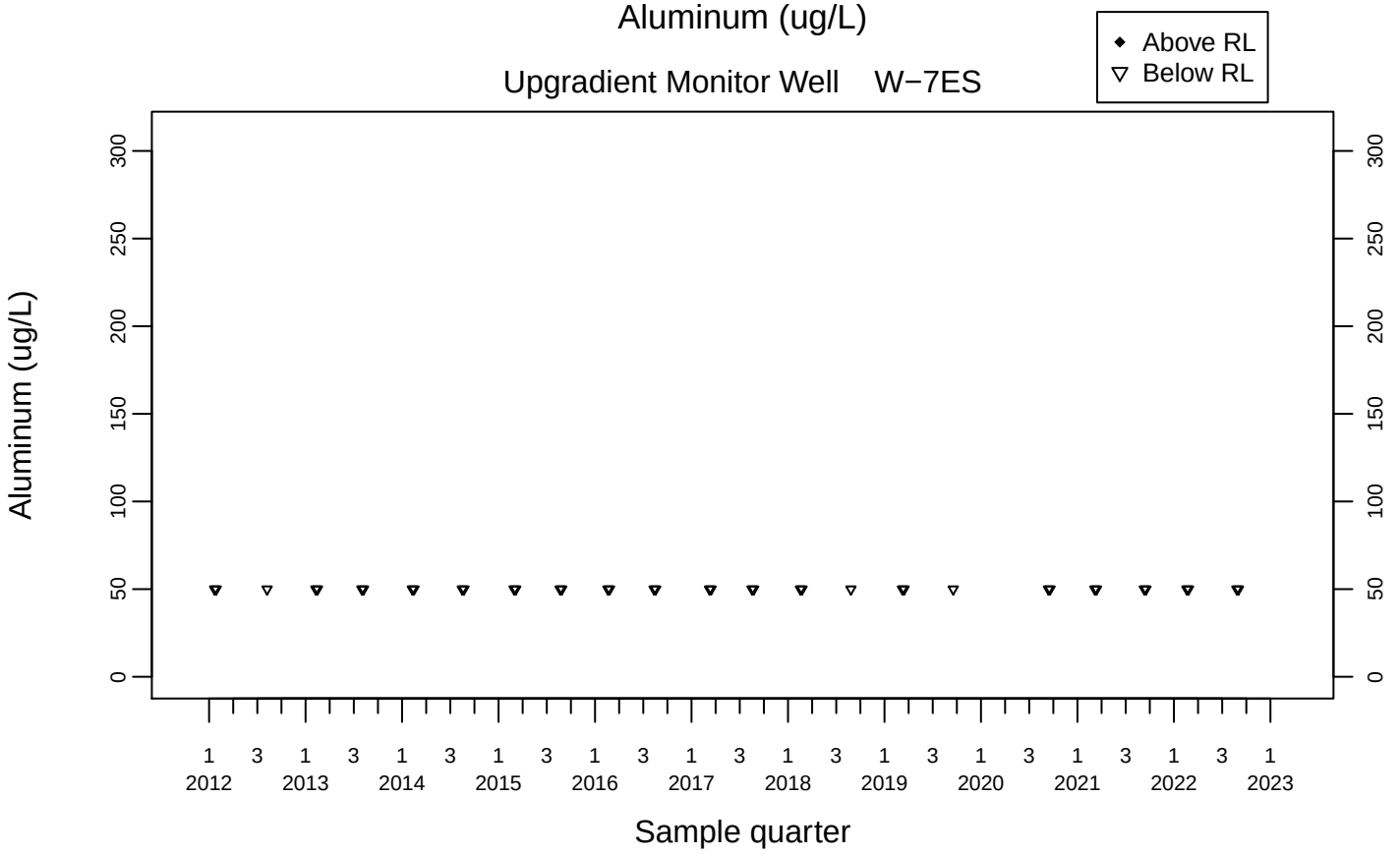
Sewage Ponds Ground Water
Total Coliform (MPN/100mL)

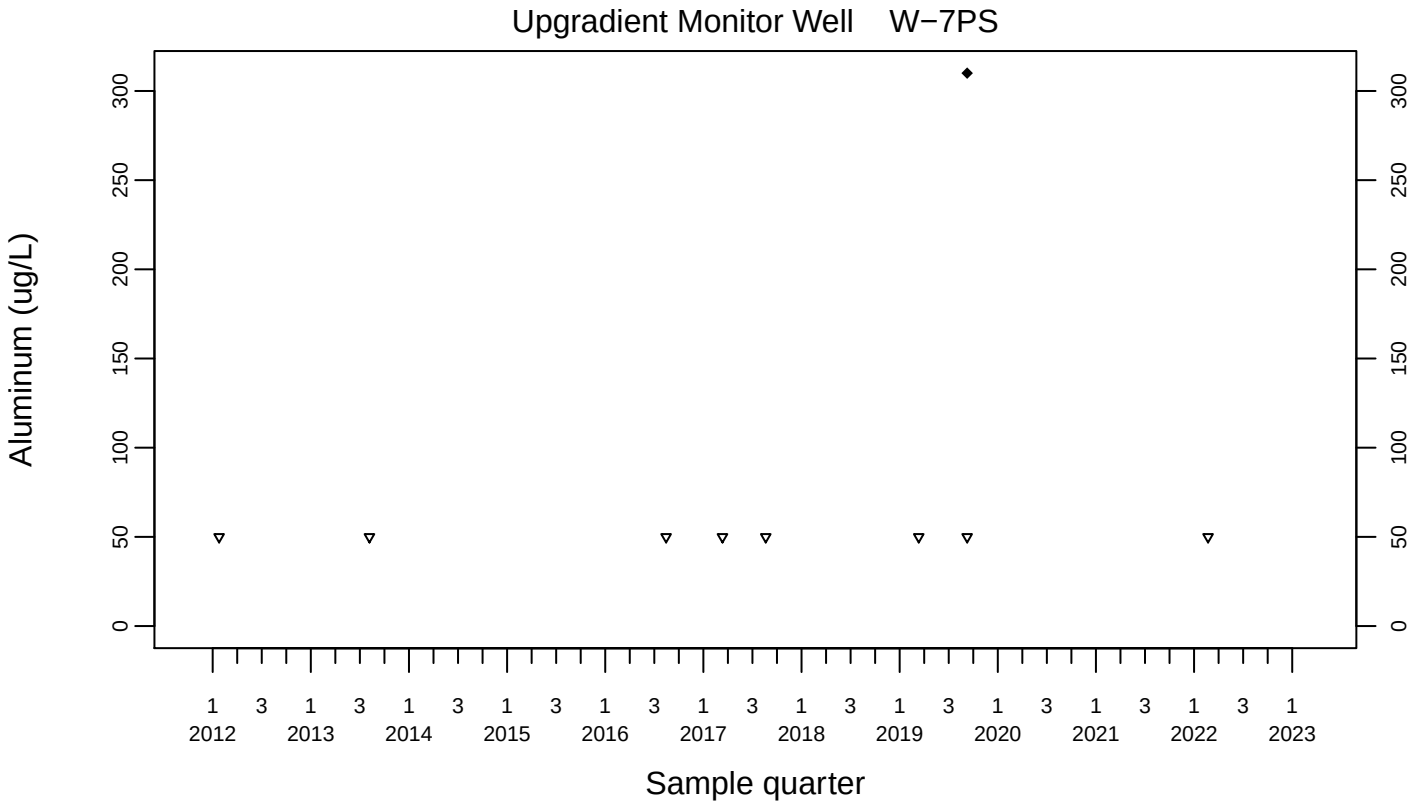




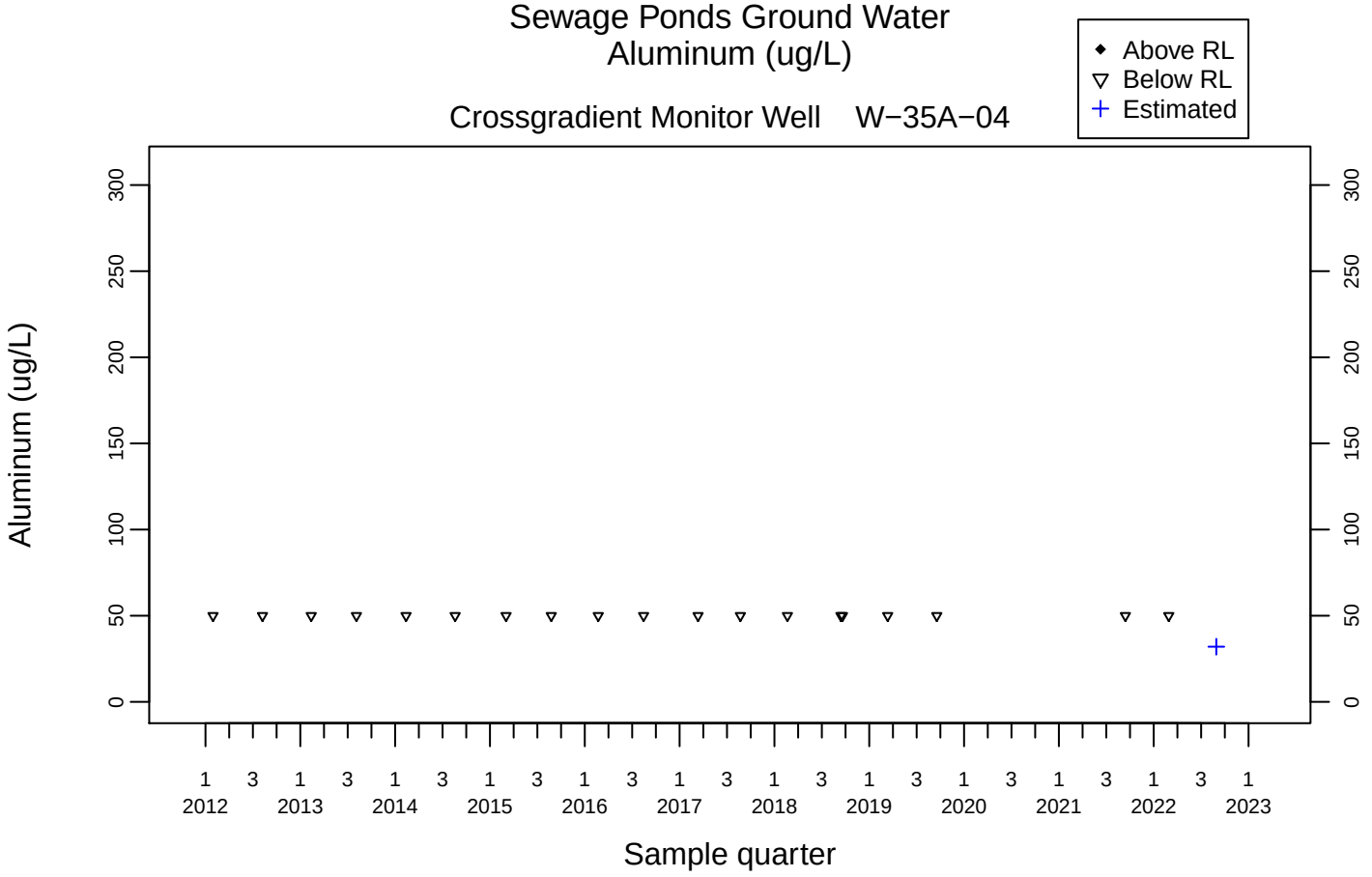

Sewage Ponds Ground Water
Total Coliform (MPN/100mL)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Total Coliform (MPN/100mL)
0
500
1000
1500
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

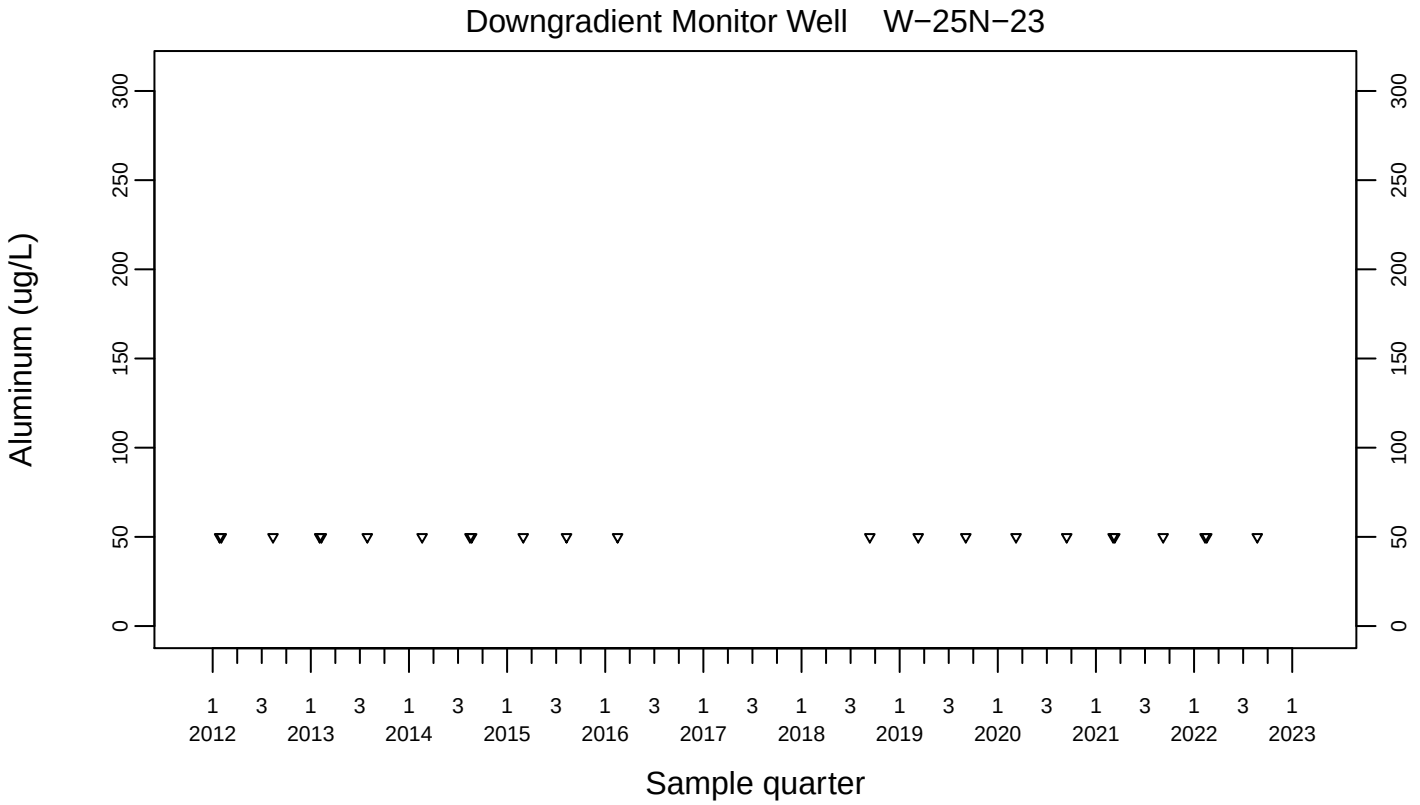
Sewage Ponds Ground Water
Aluminum (ug/L)



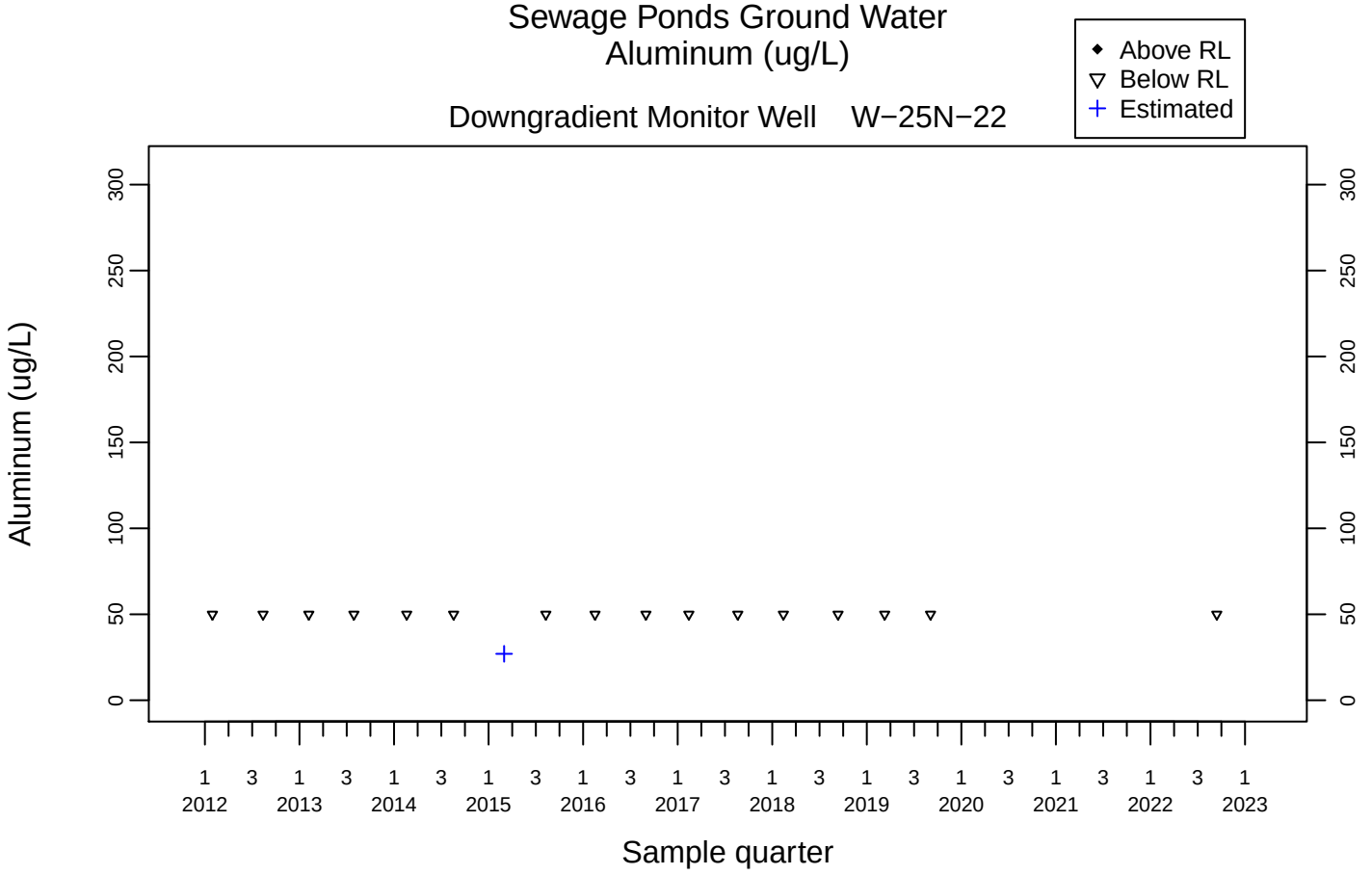


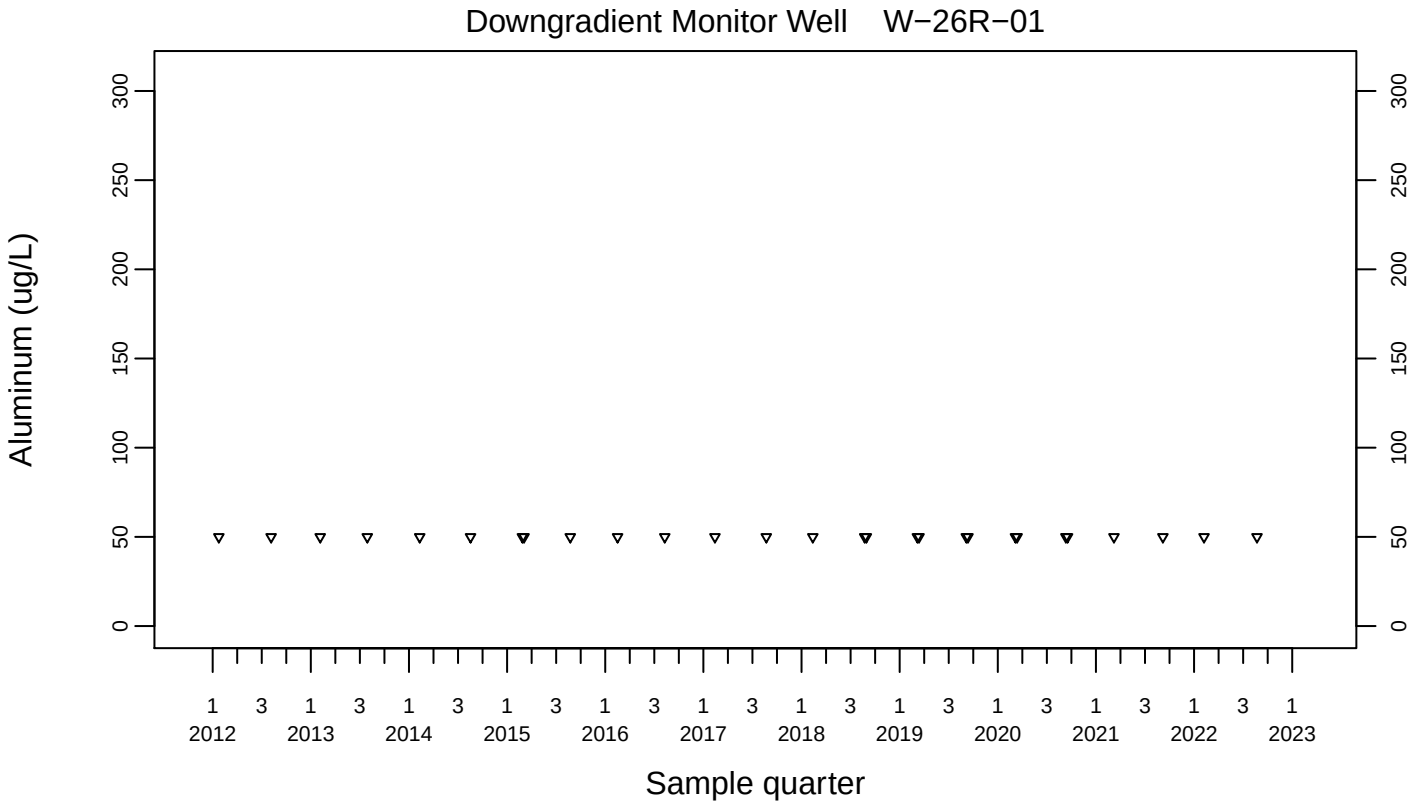
Sewage Ponds Ground Water
Aluminum (ug/L)



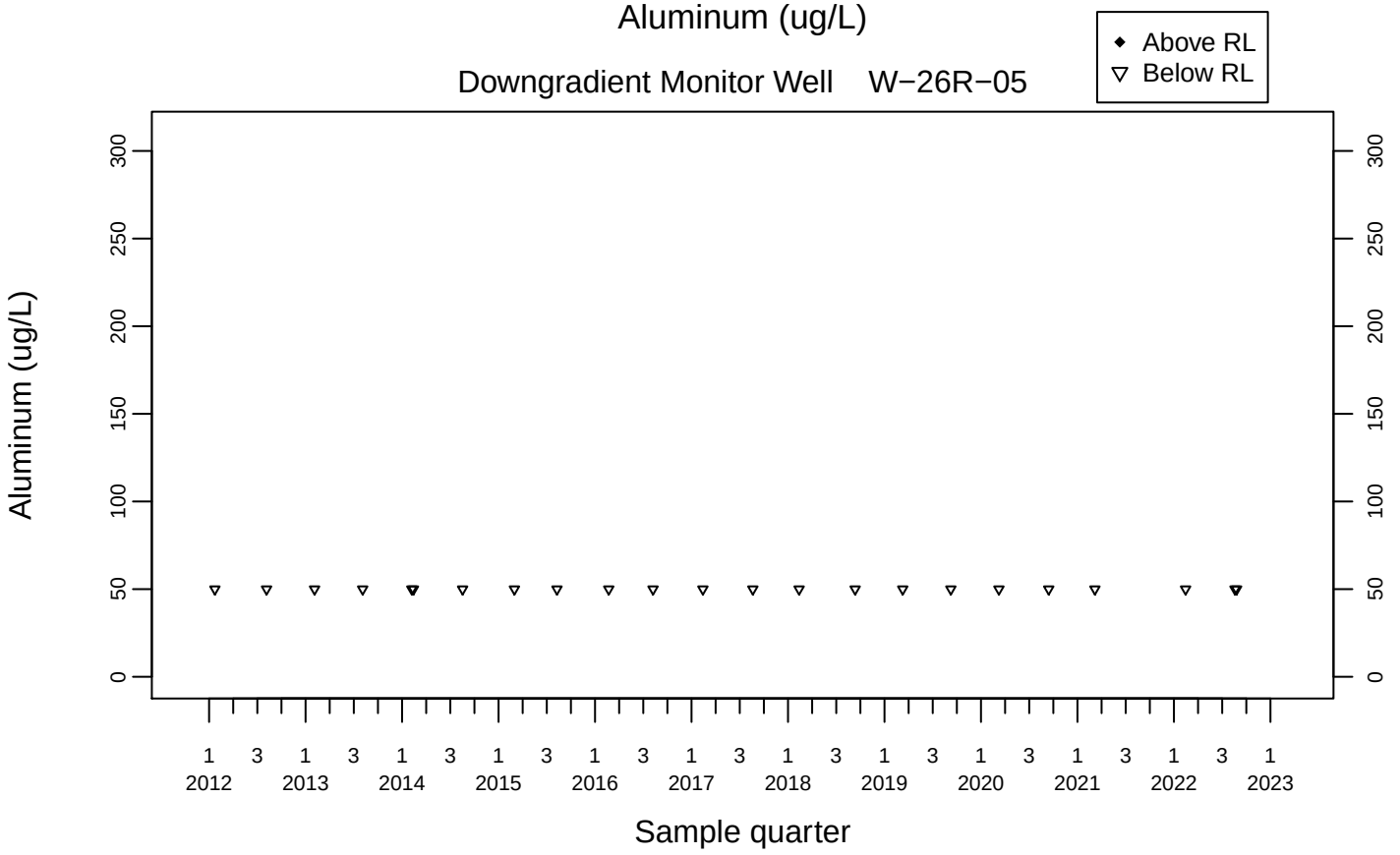


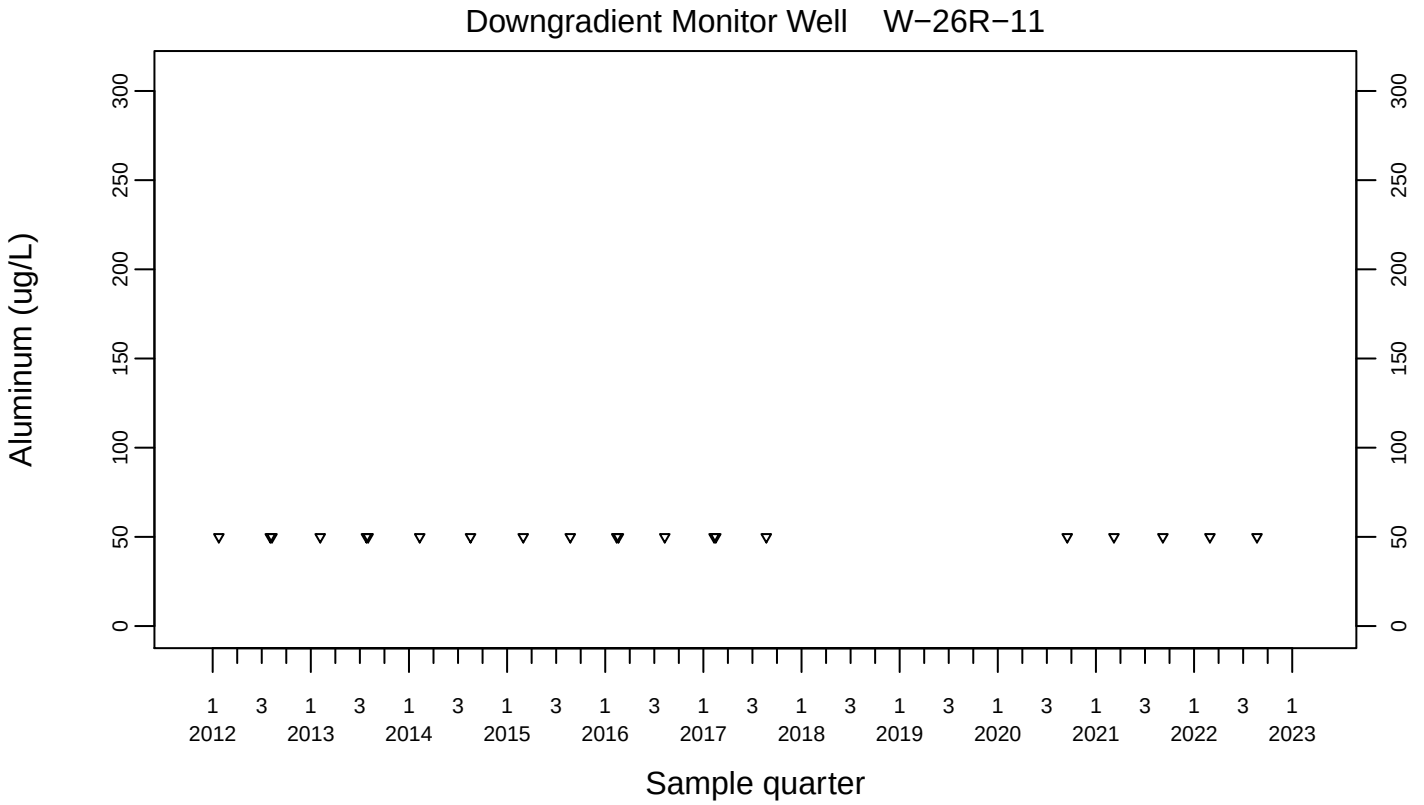
Sewage Ponds Ground Water
Aluminum (ug/L)

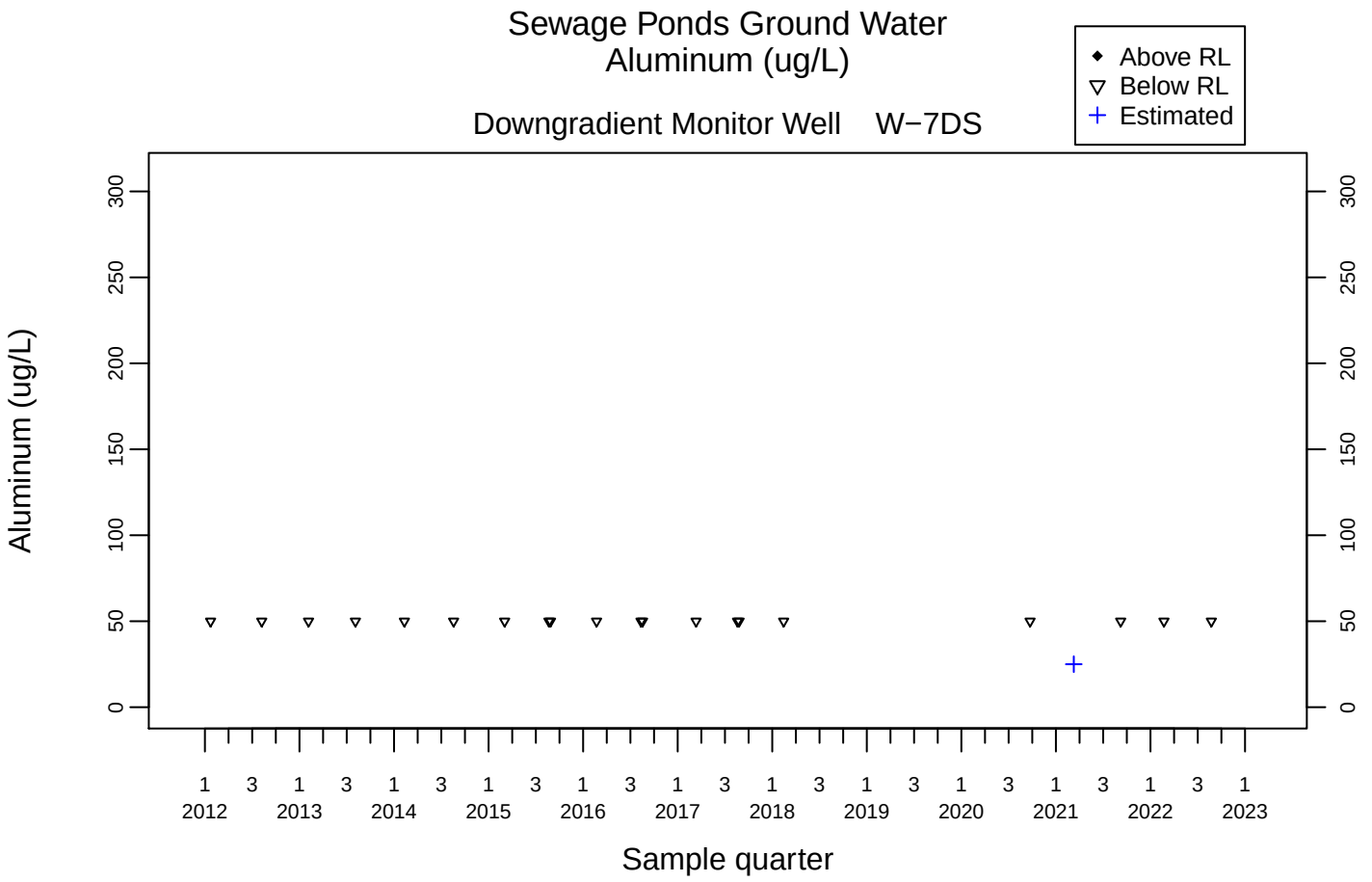


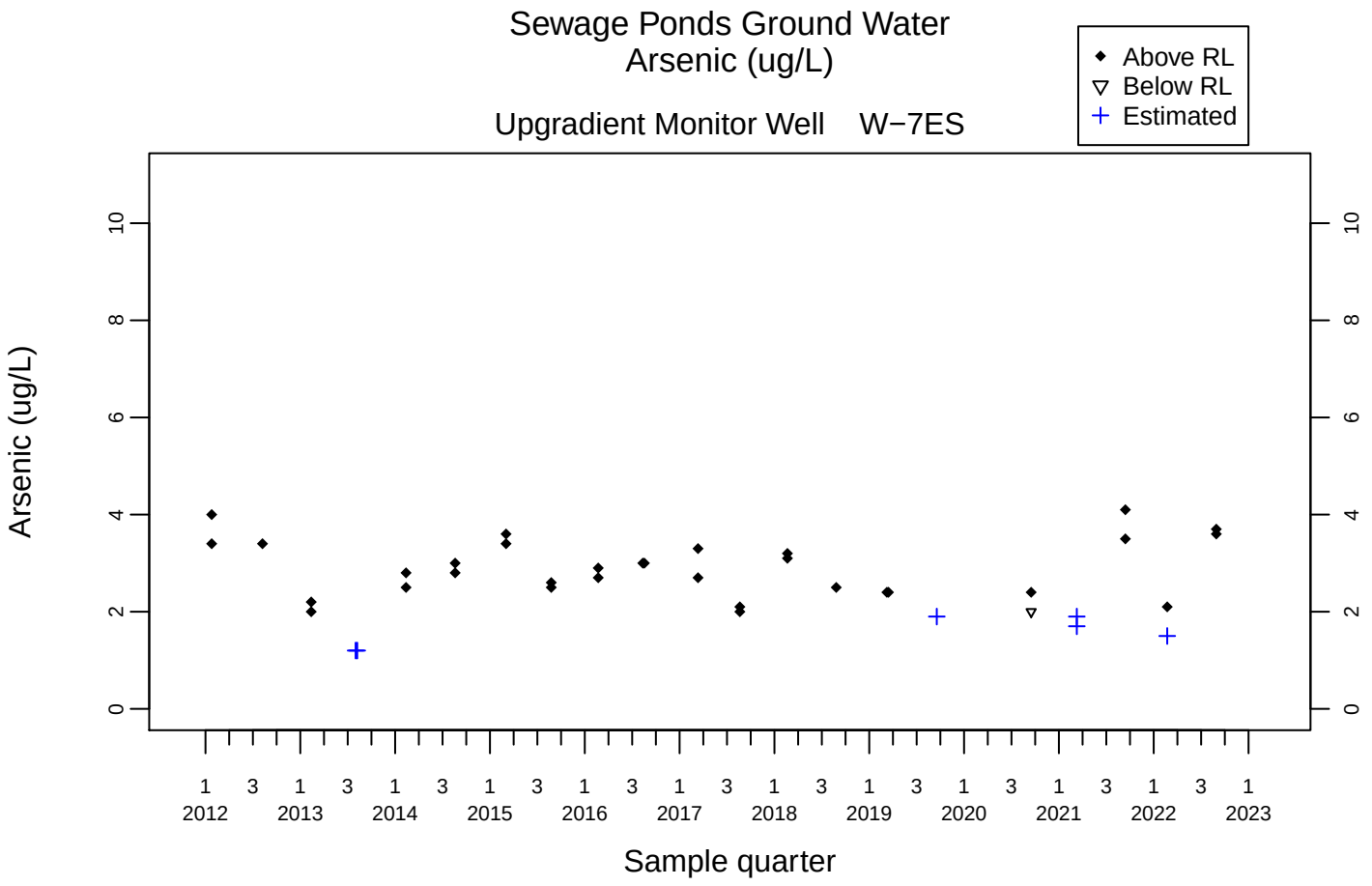


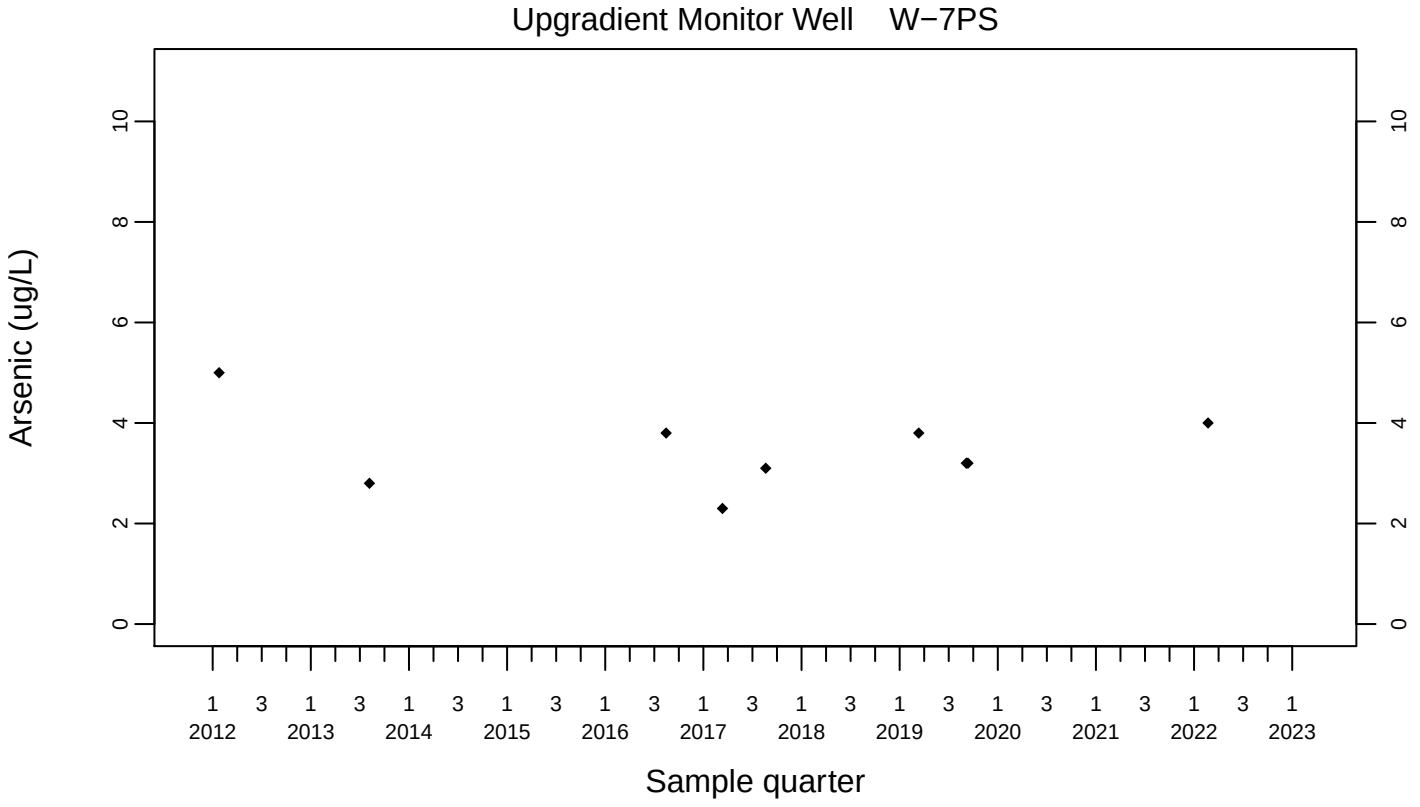
Sewage Ponds Ground Water
Aluminum (ug/L)



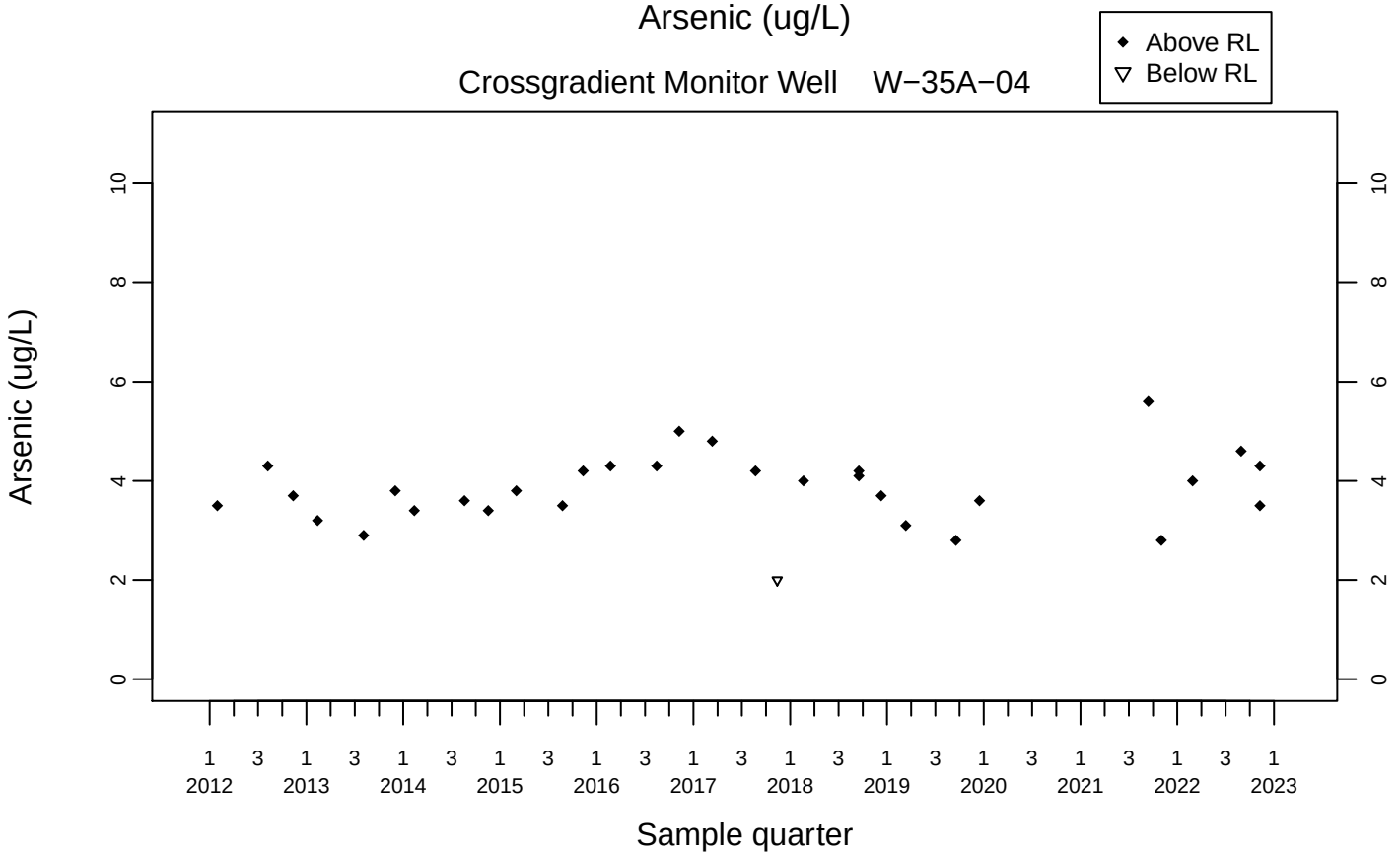


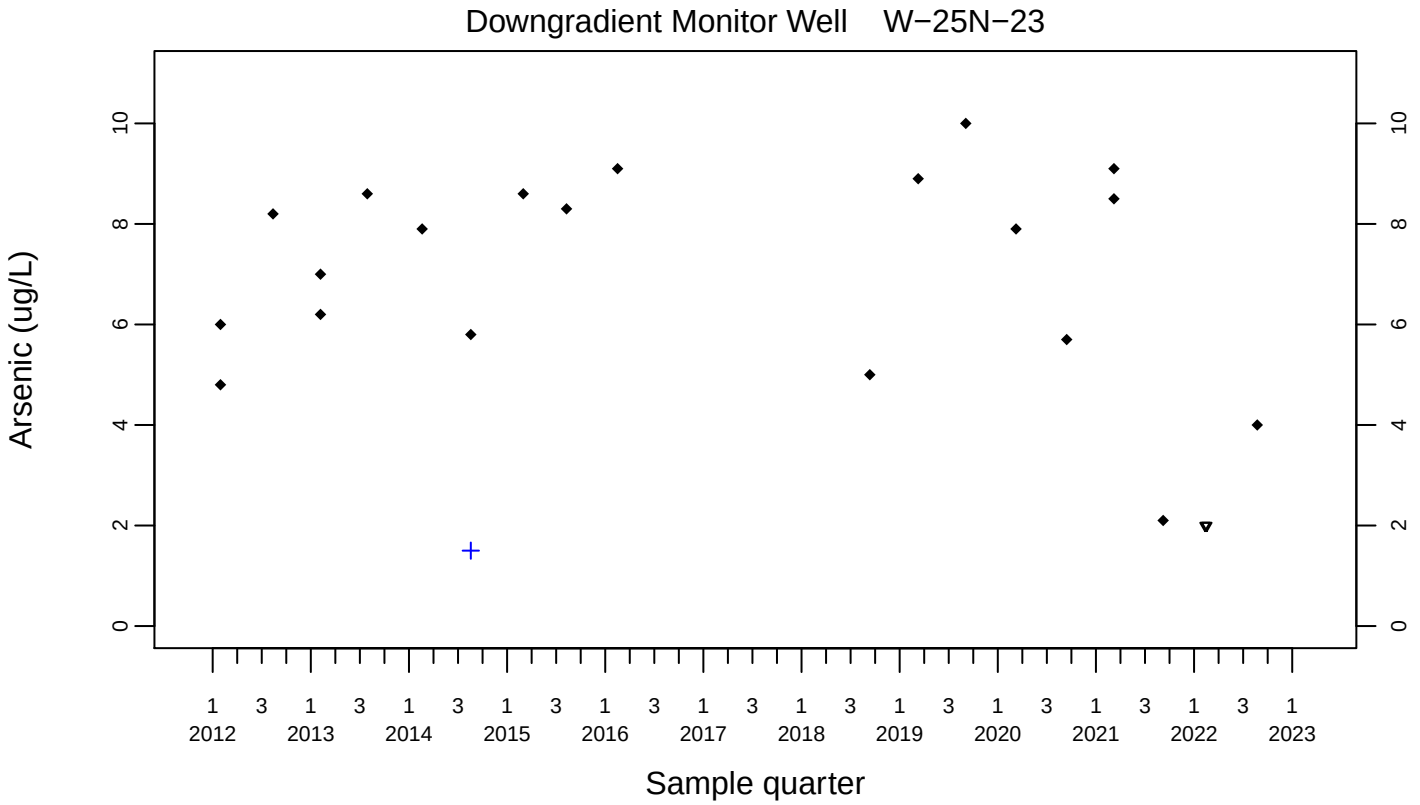

Sewage Ponds Ground Water
Aluminum (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Aluminum (ug/L)
0
50
100
150
200
250
300
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Sewage Ponds Ground Water
Arsenic (ug/L)
Above RL
Below RL
Estimated
Upgradient Monitor Well W−7ES
Arsenic (ug/L)
0
2
4
6
8
10
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

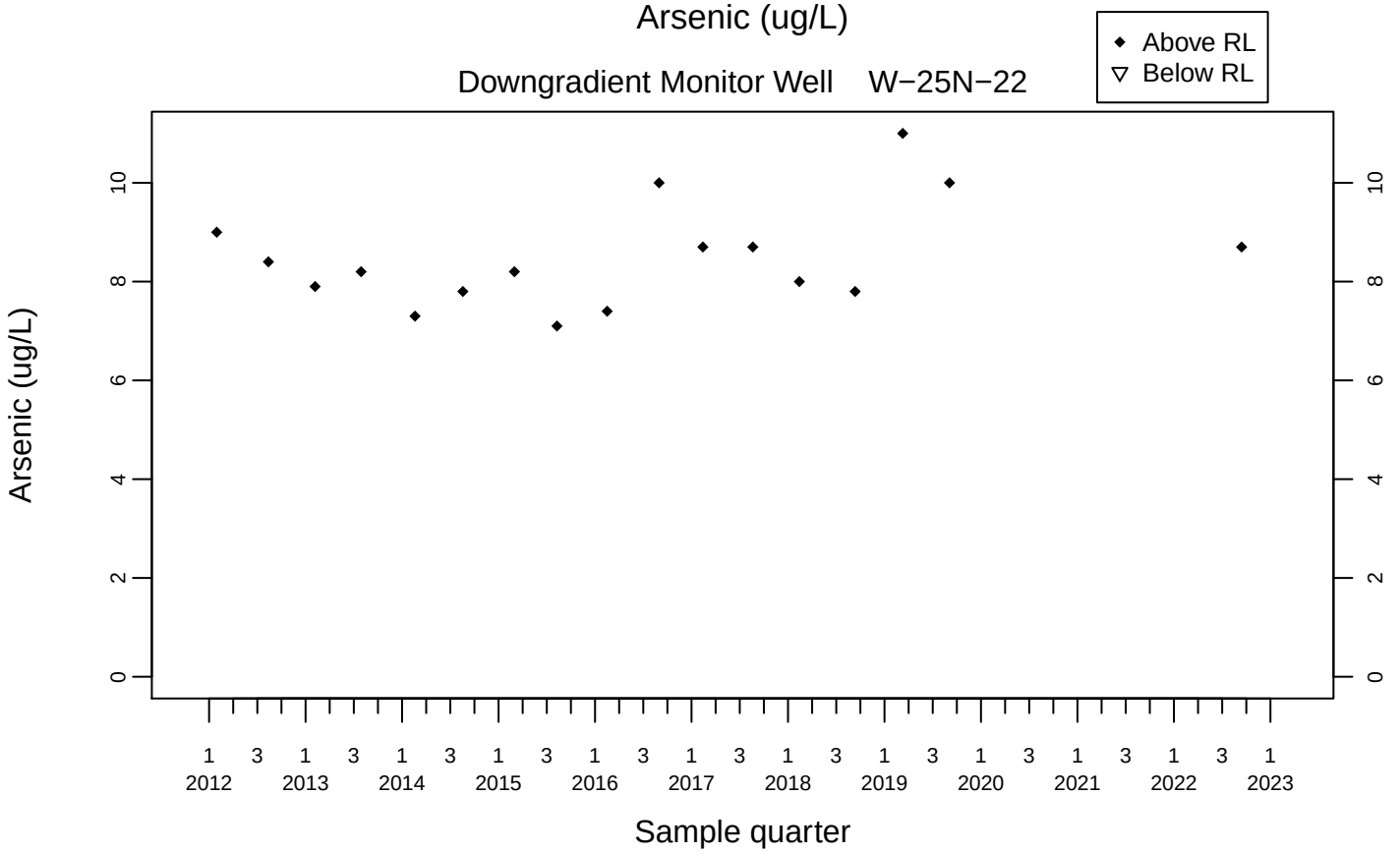

Upgradient Monitor Well W−7PS
Arsenic (ug/L)
0
2
4
6
8
10
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

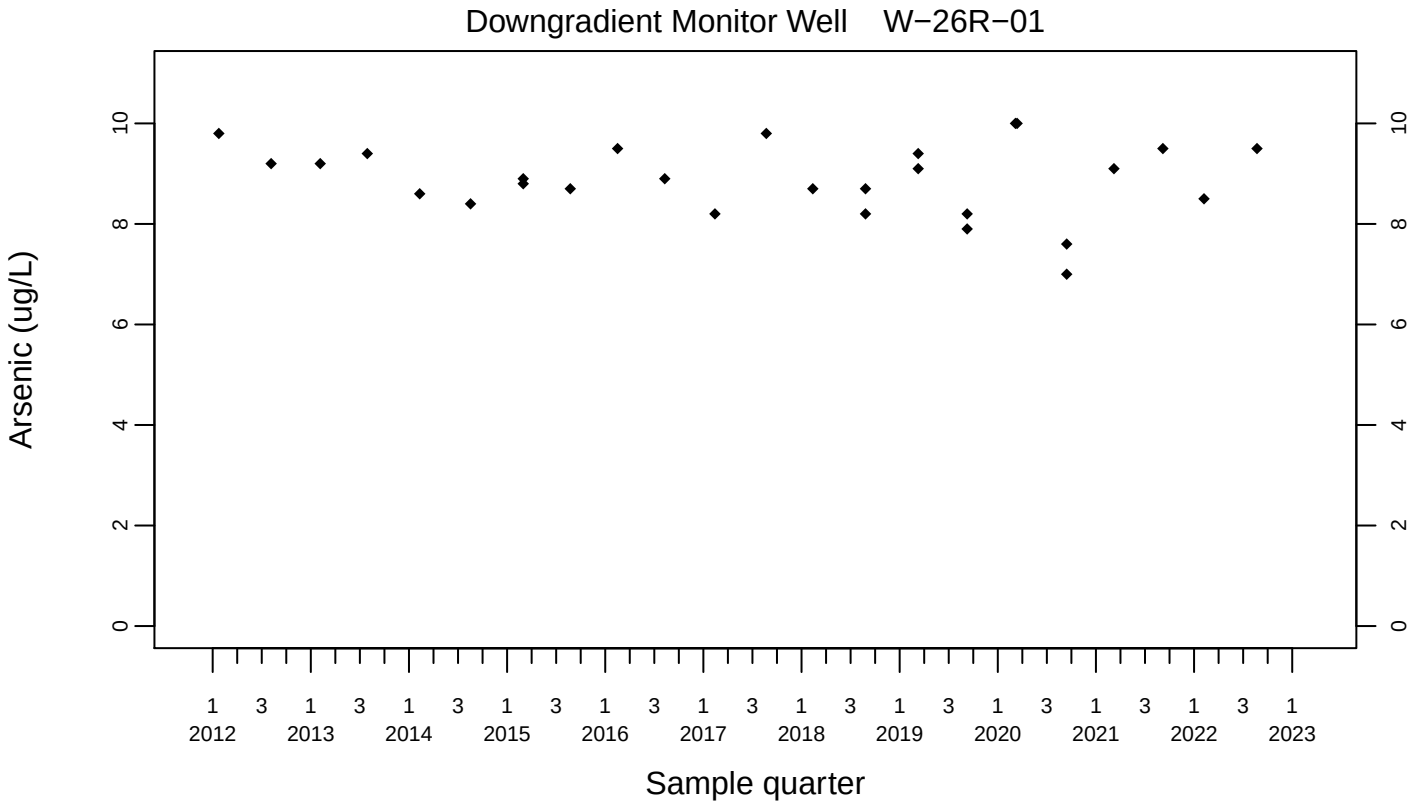
Sewage Ponds Ground Water
Arsenic (ug/L)



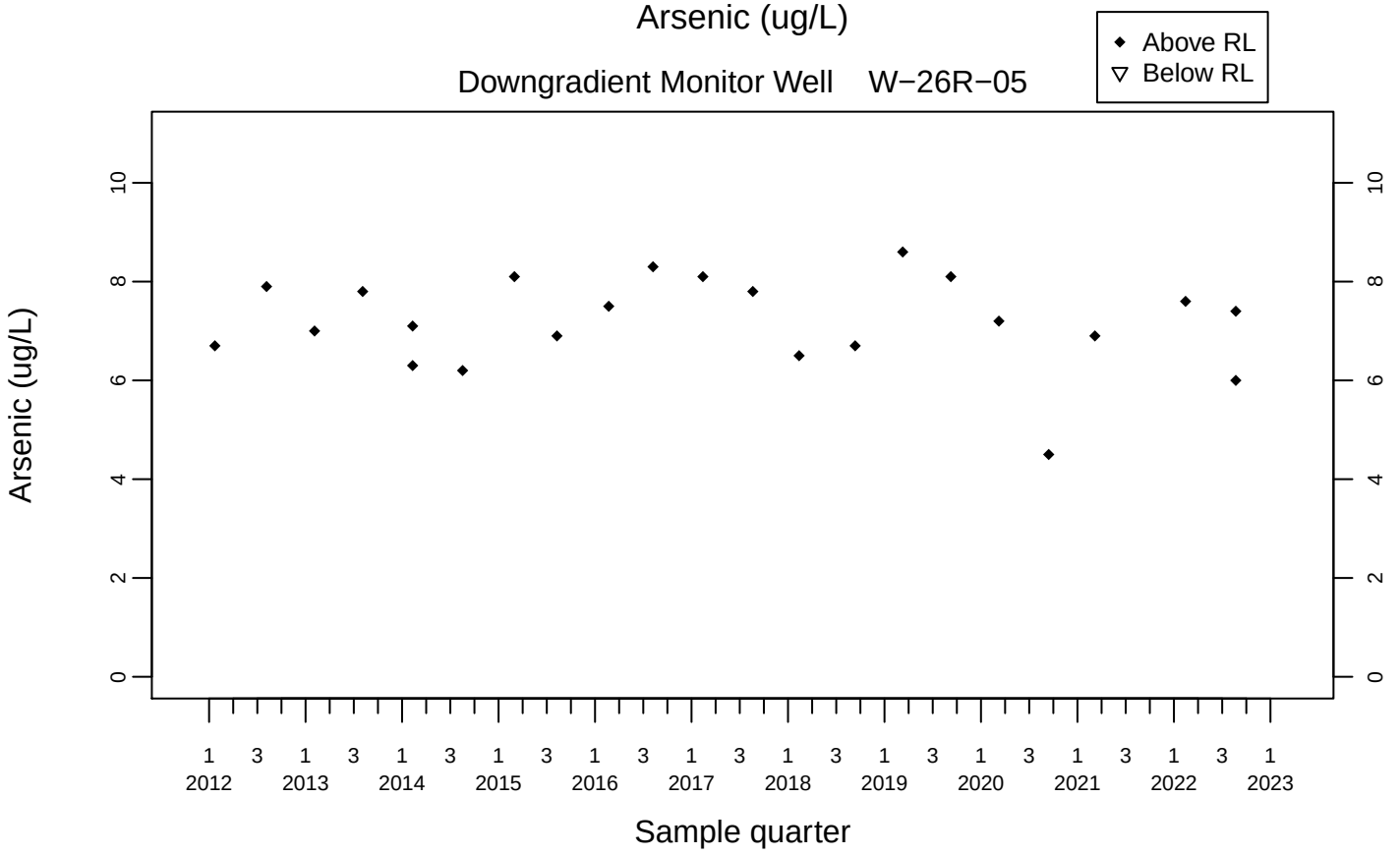


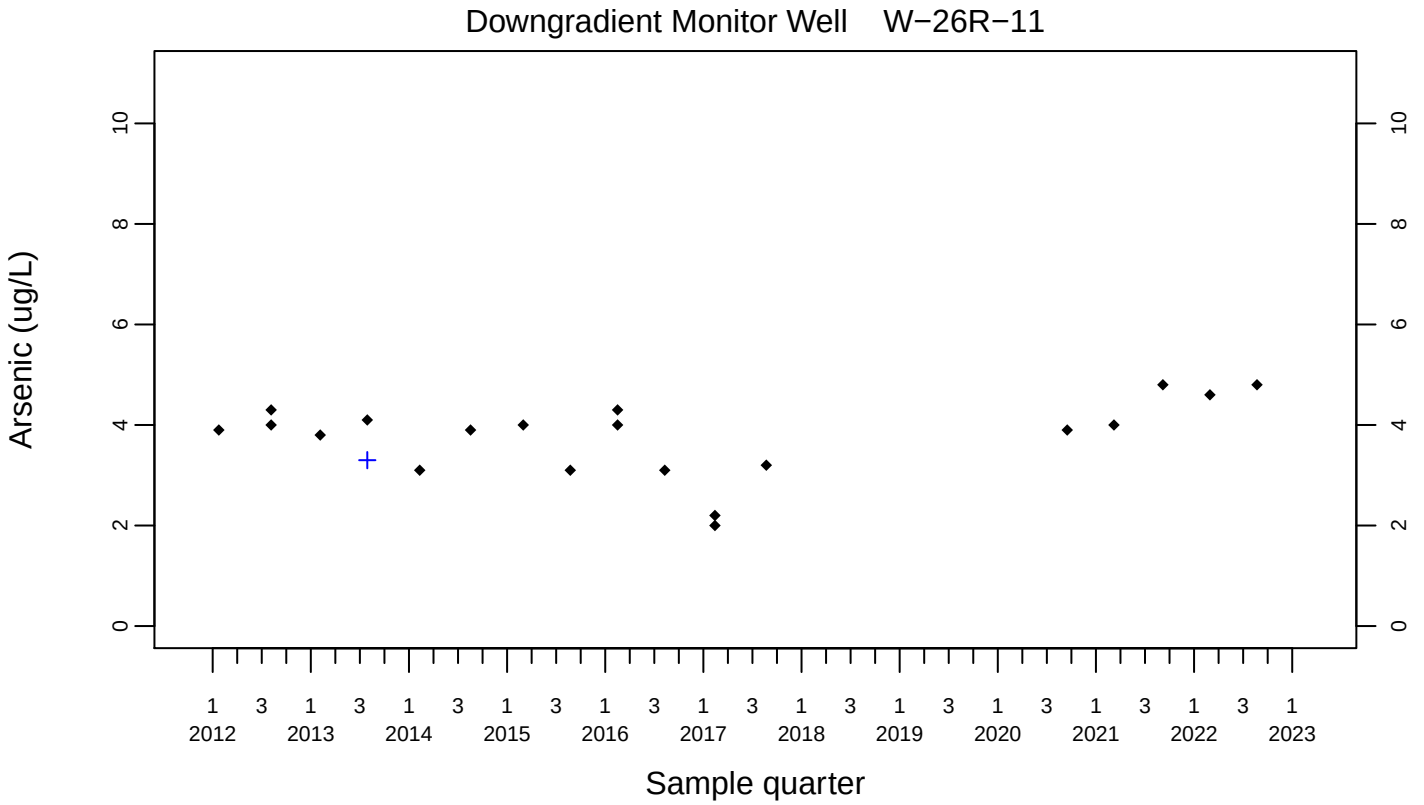
Sewage Ponds Ground Water
Arsenic (ug/L)

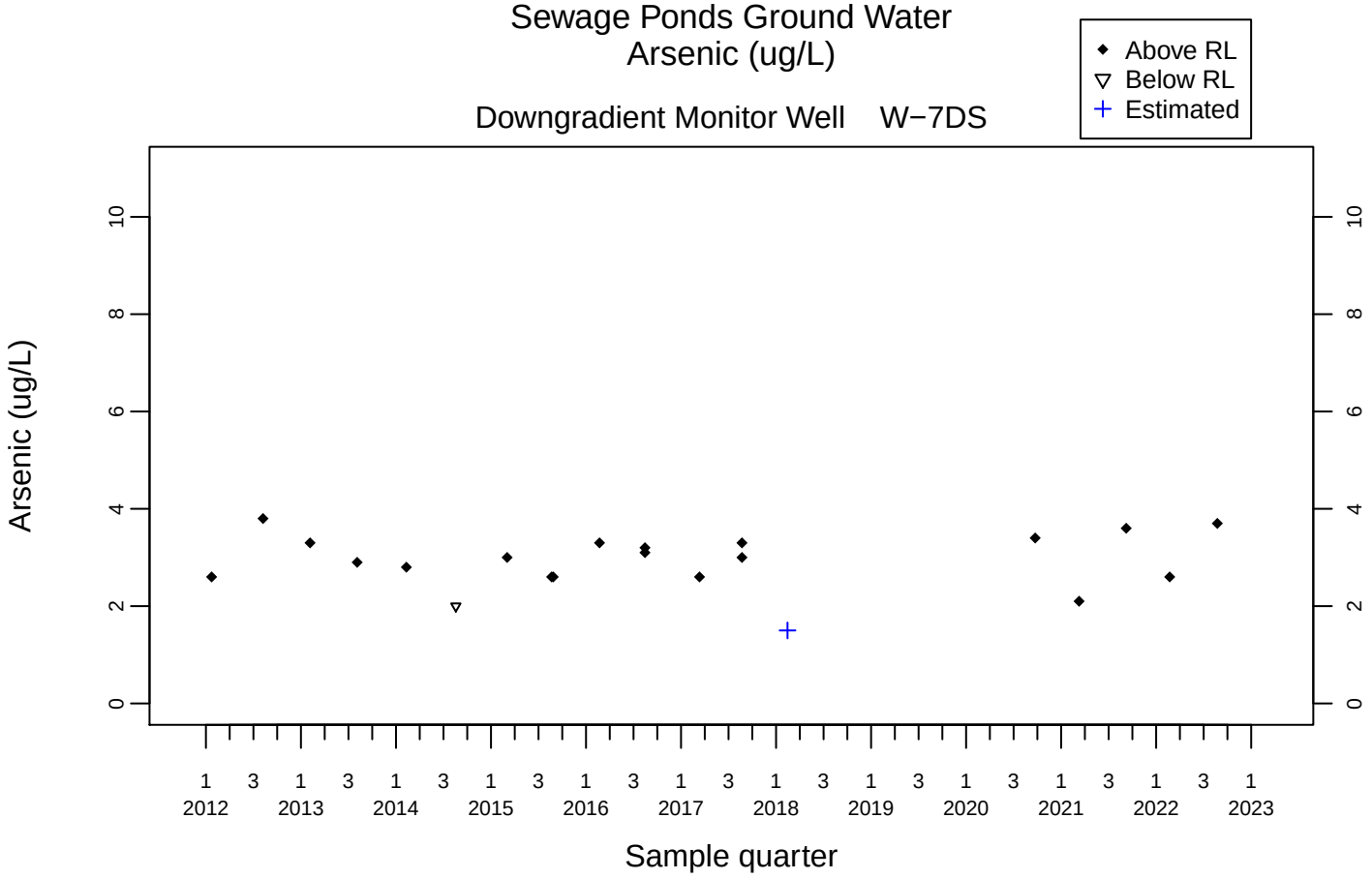




Sewage Ponds Ground Water
Arsenic (ug/L)

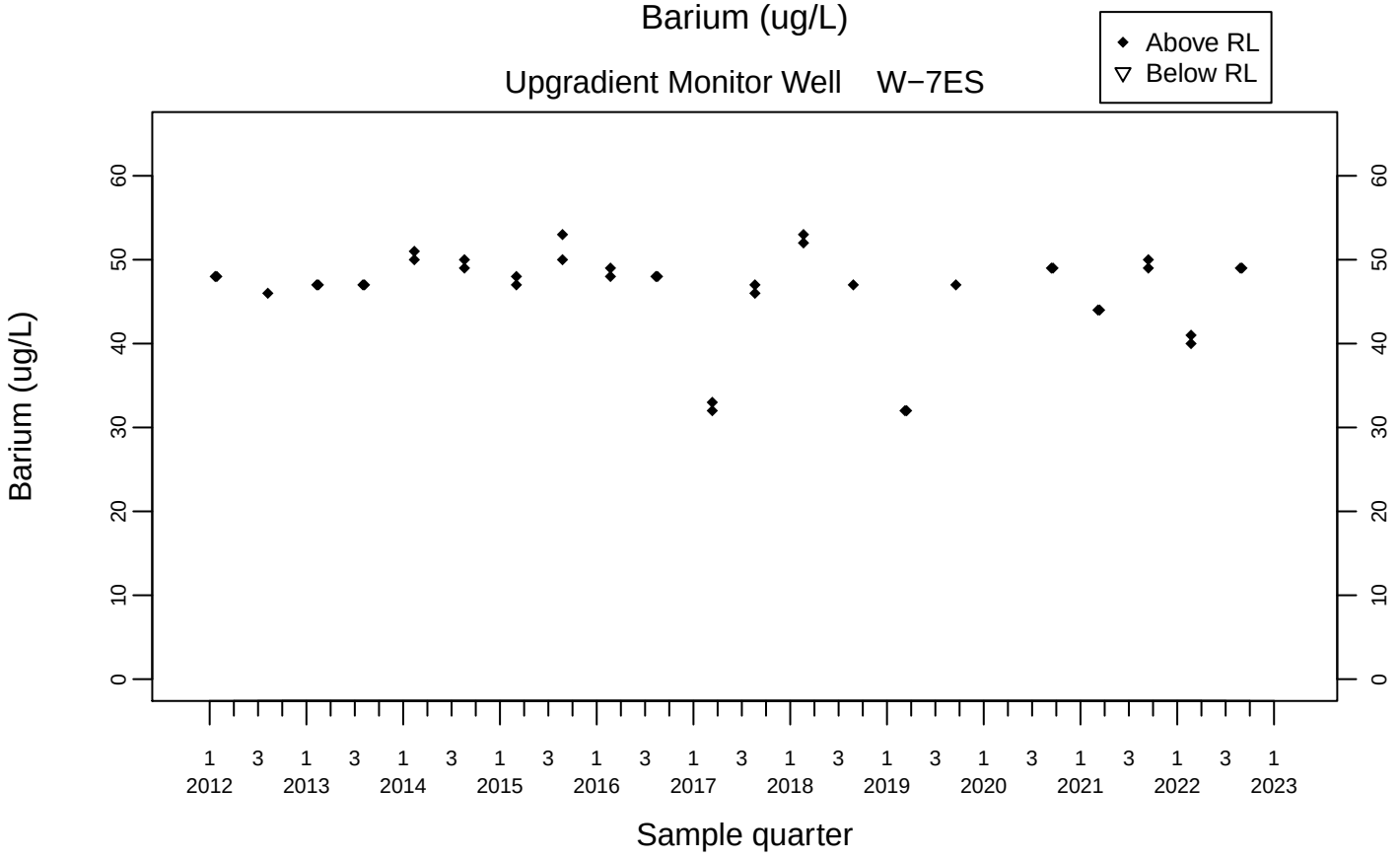




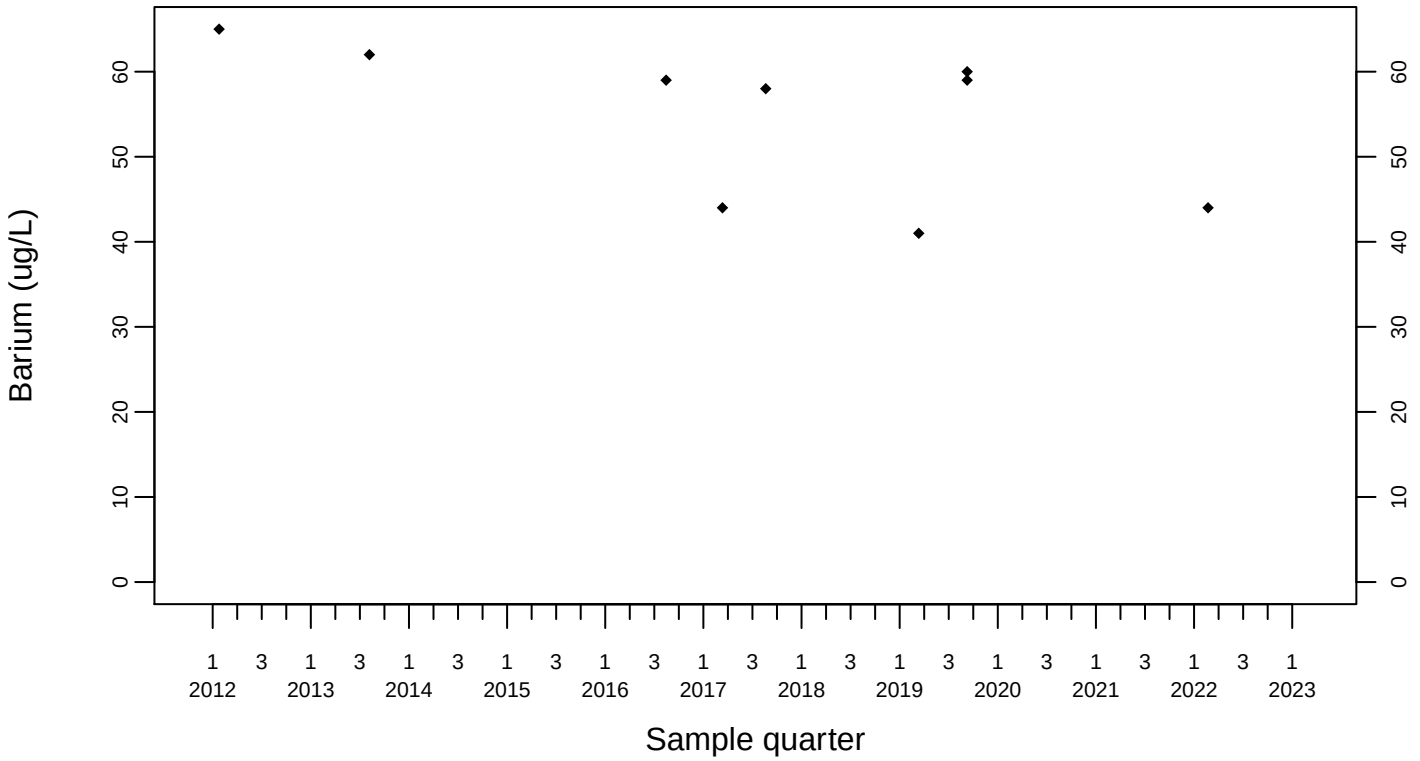

Sewage Ponds Ground Water
Arsenic (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Arsenic (ug/L)
0
2
4
6
8
10
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

Sewage Ponds Ground Water
Barium (ug/L)

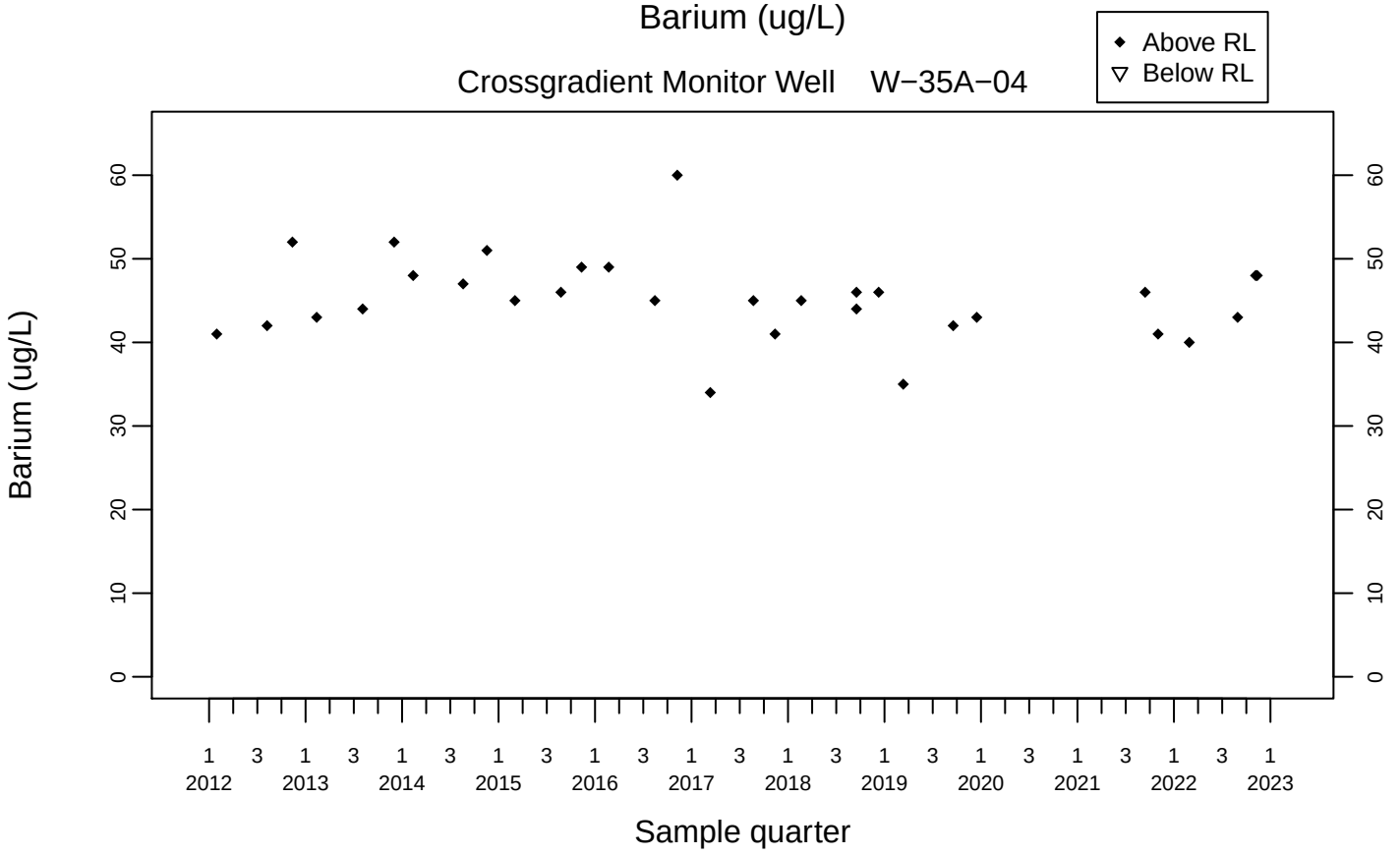
Upgradient Monitor Well W−7ES

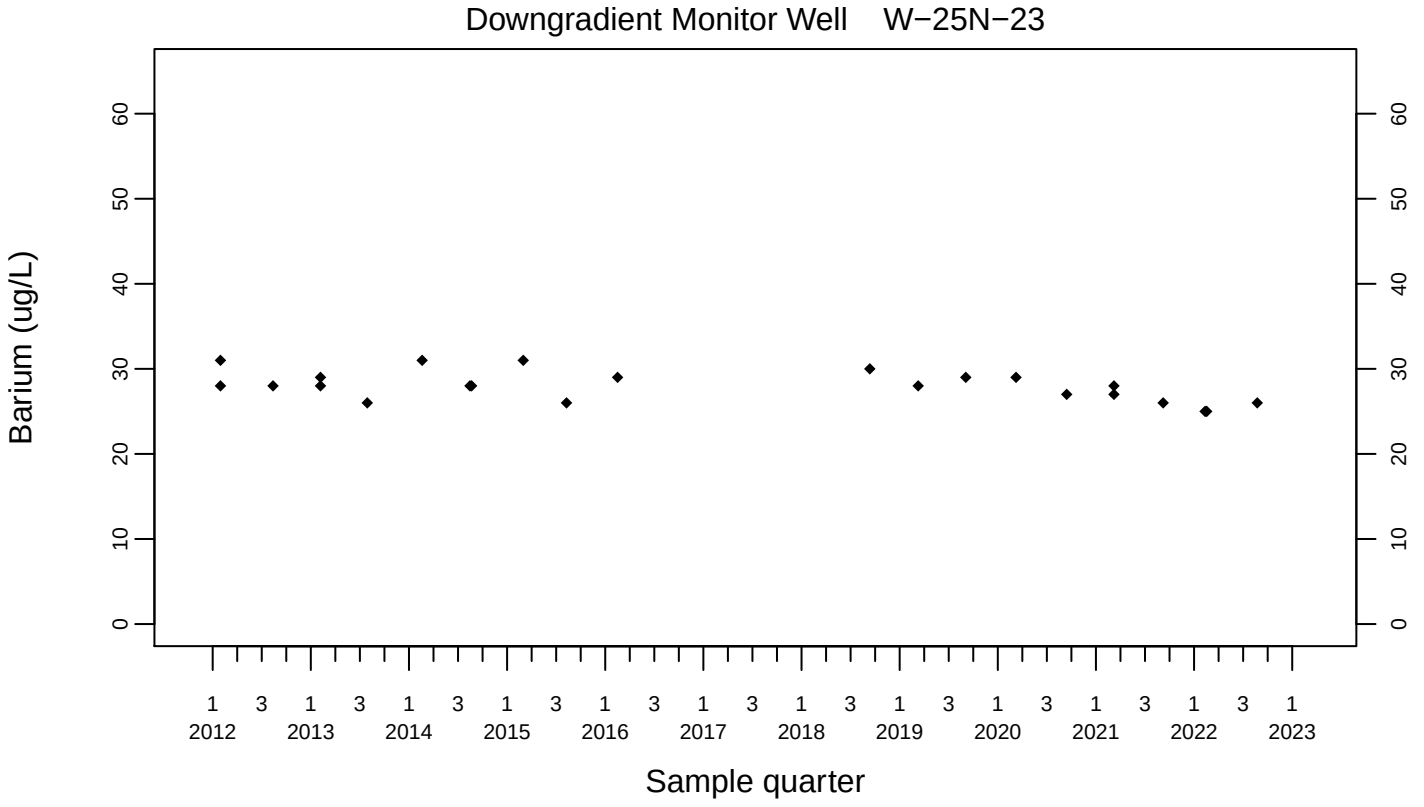


Upgradient Monitor Well W−7PS

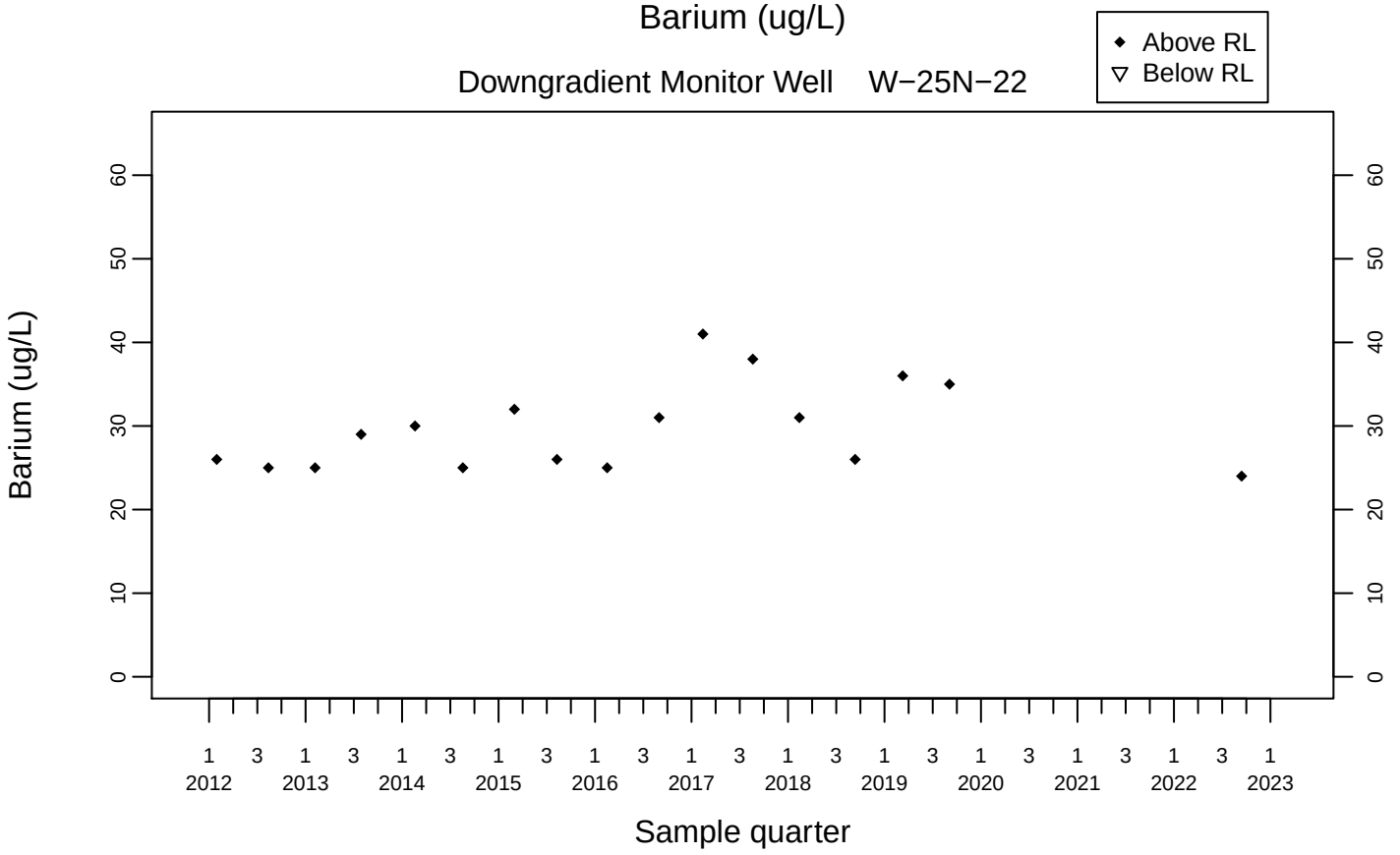


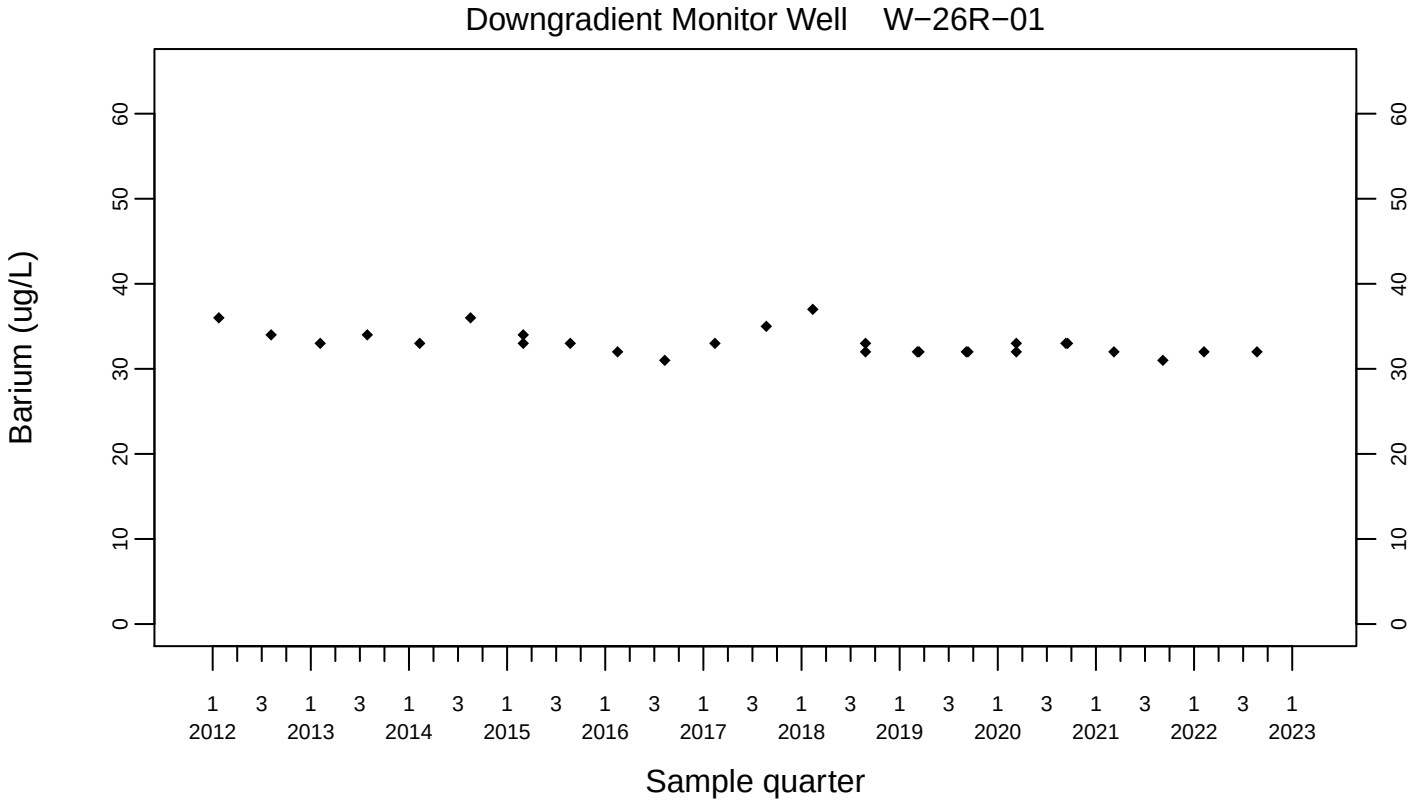
Sewage Ponds Ground Water
Barium (ug/L)



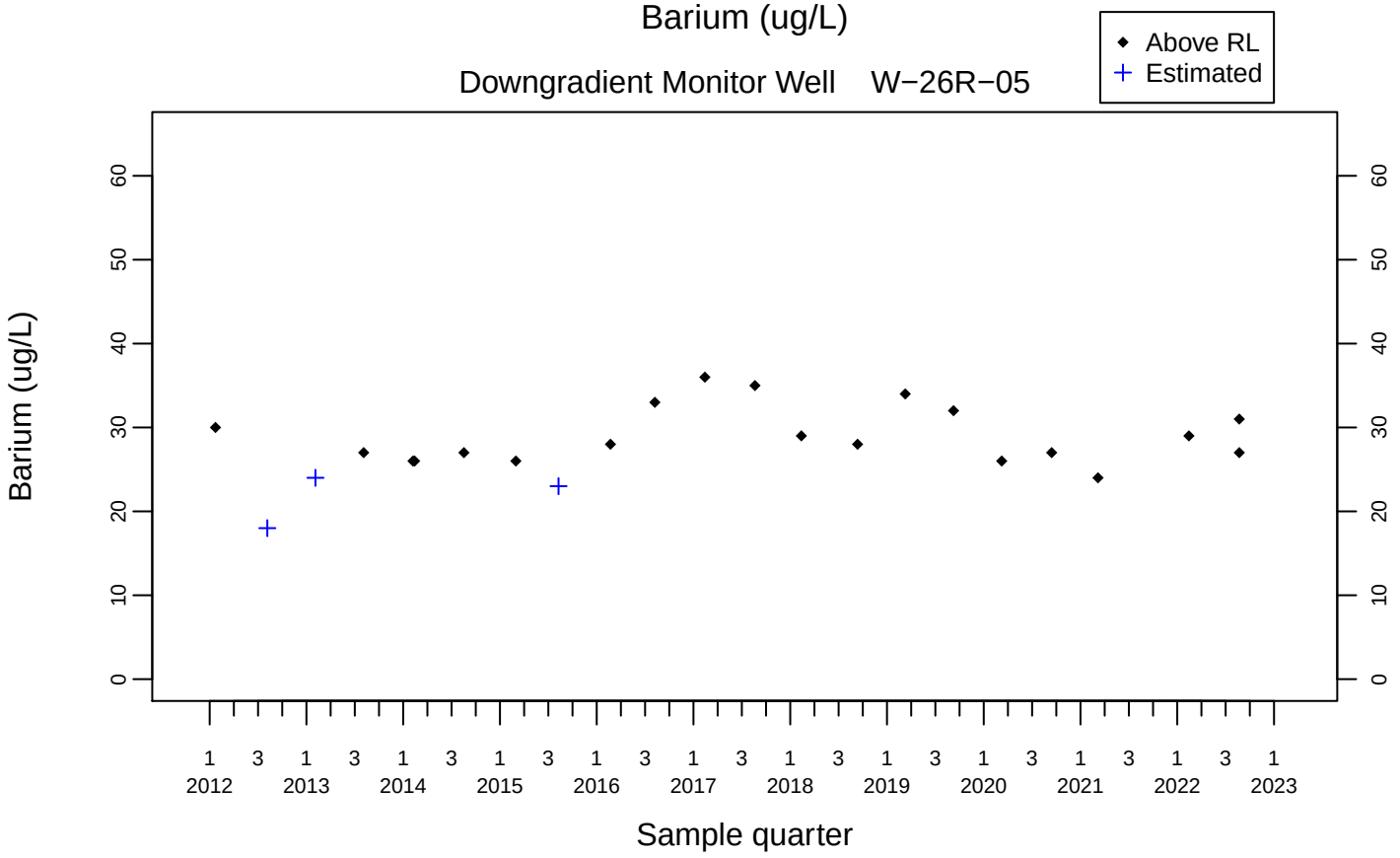


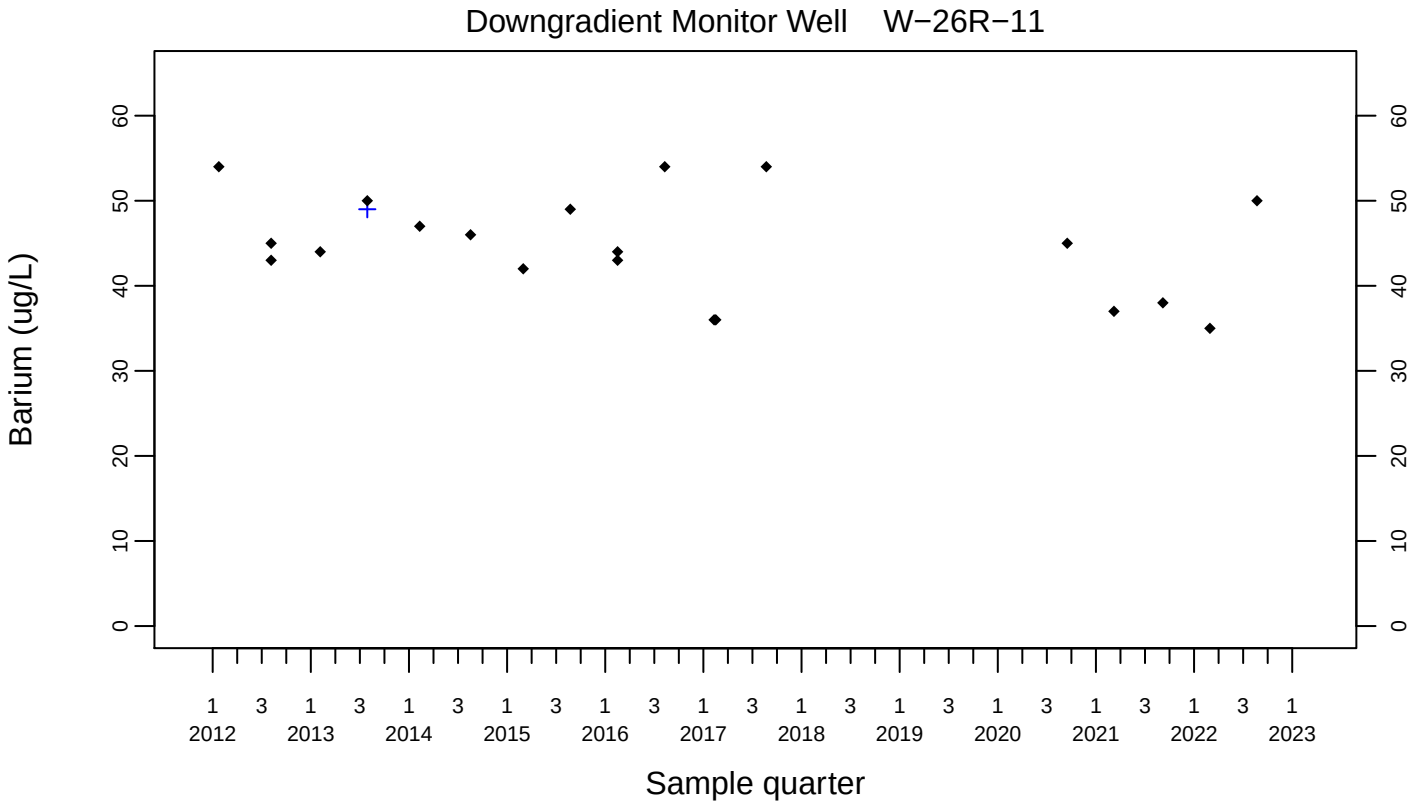
Sewage Ponds Ground Water
Barium (ug/L)

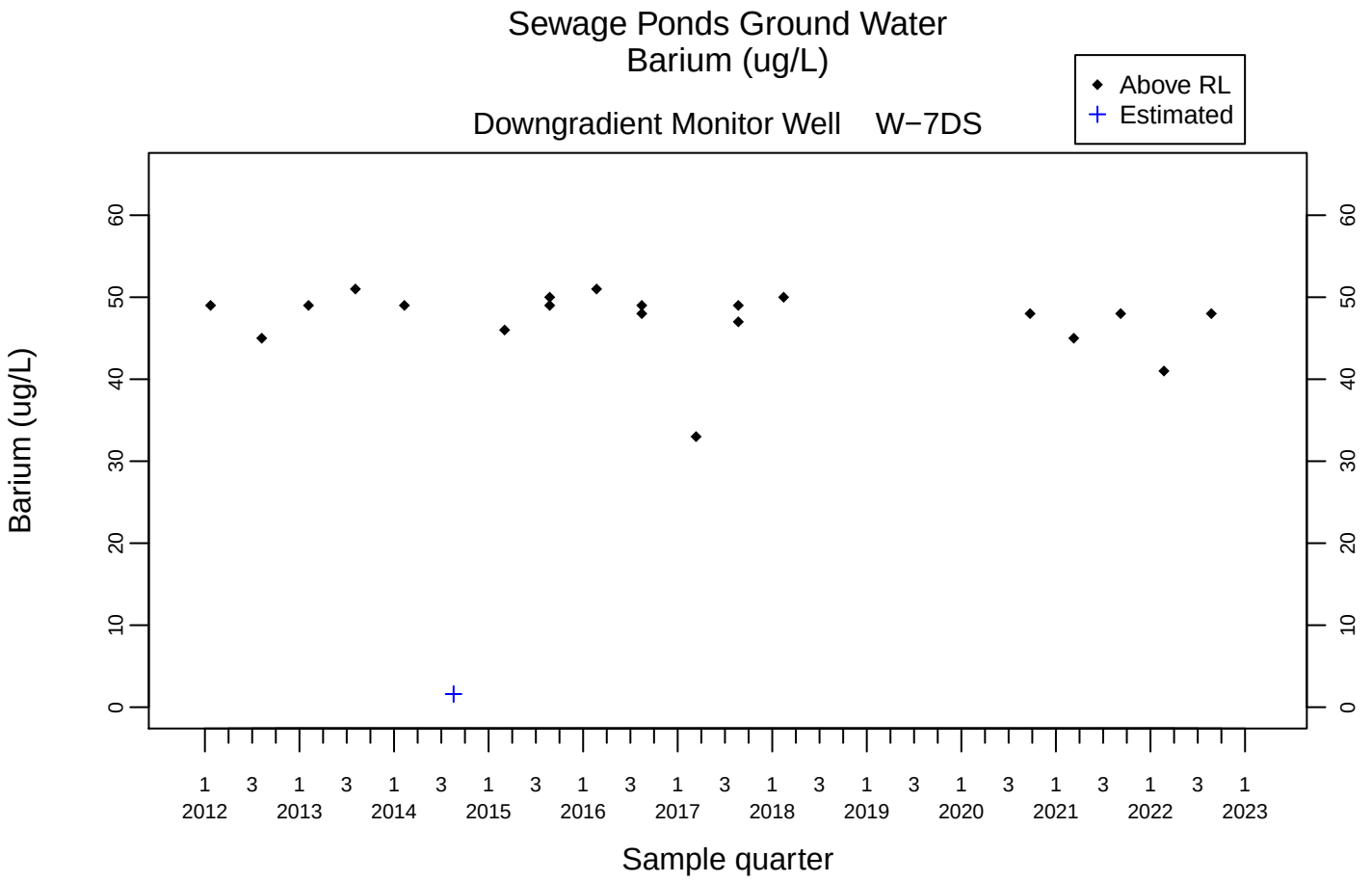


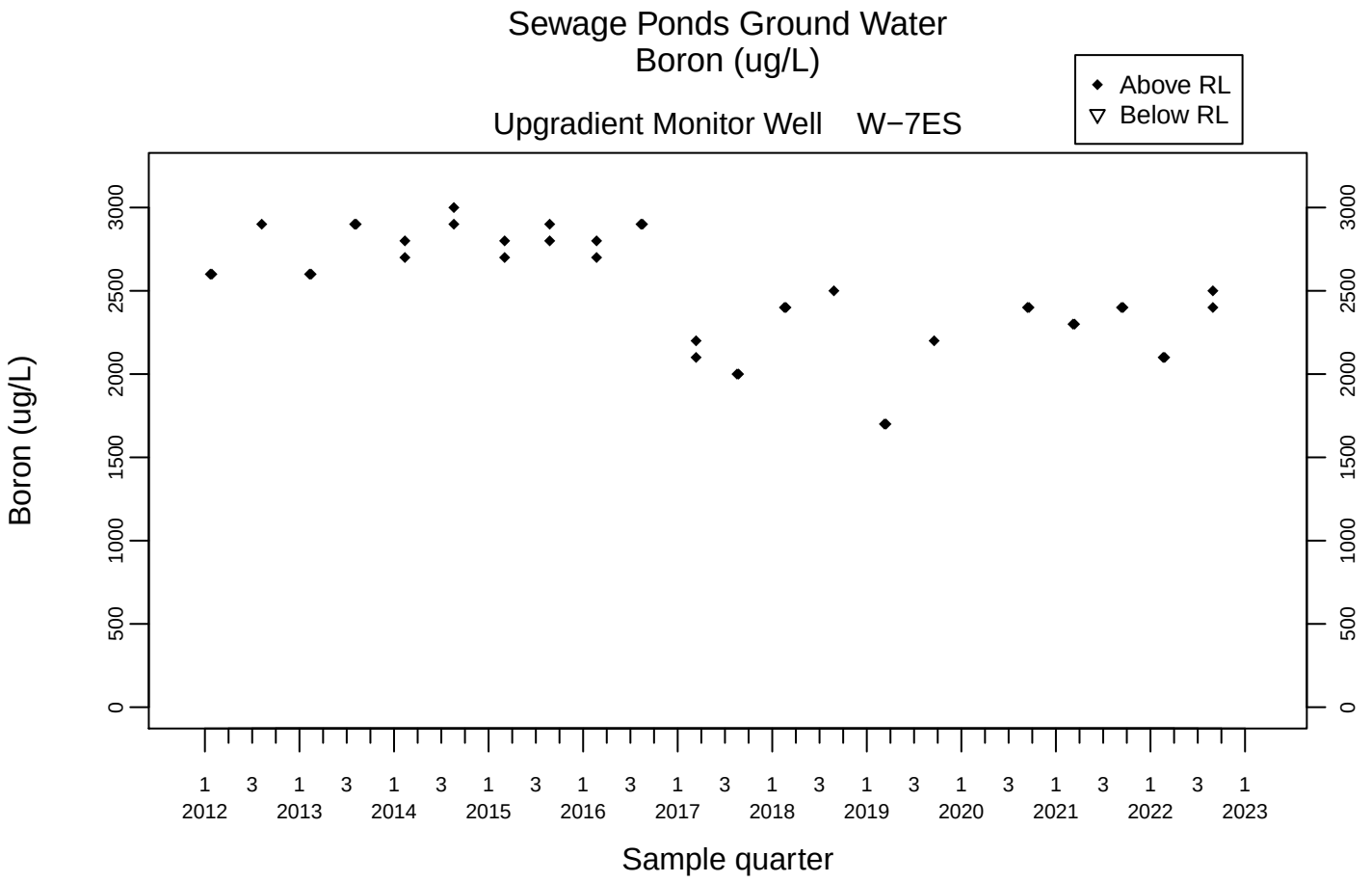


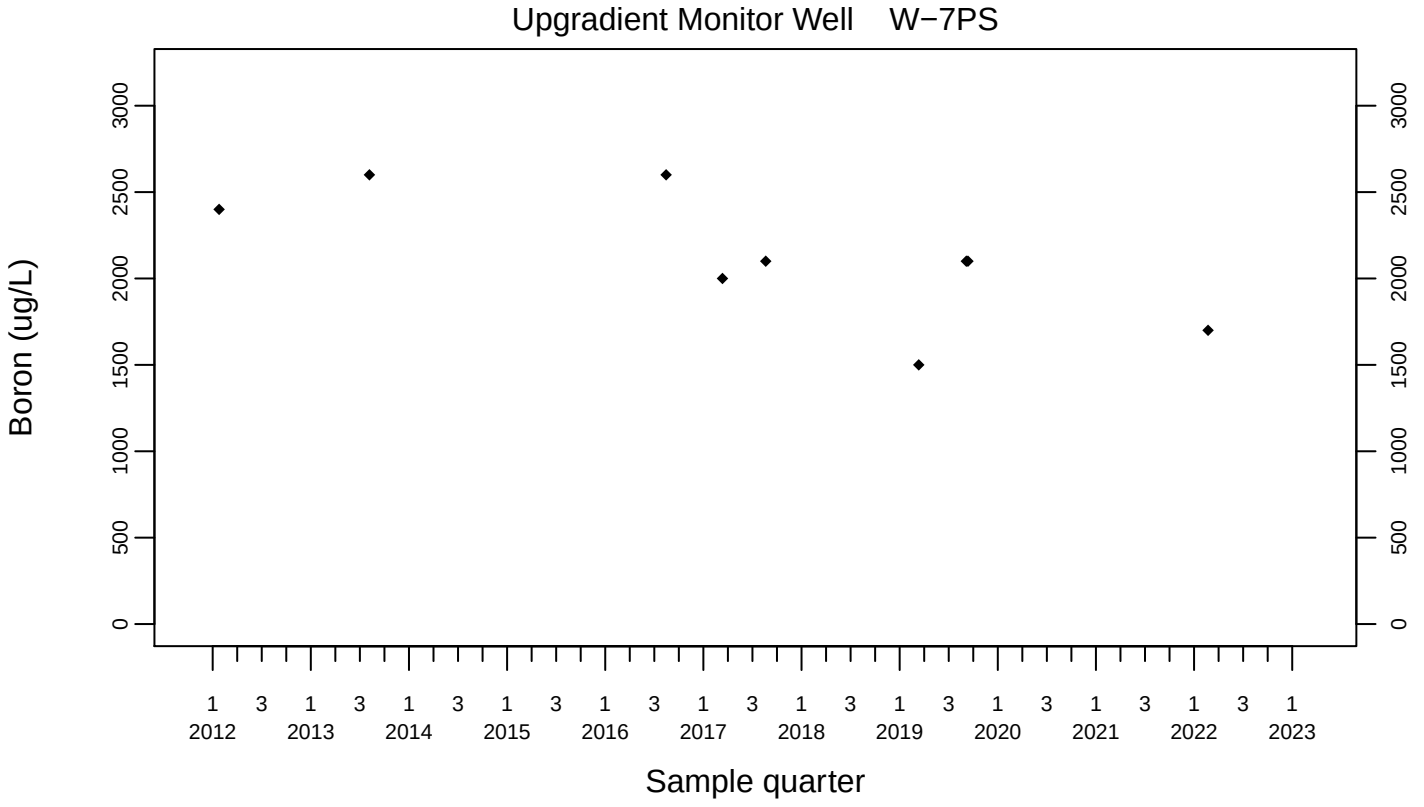
Sewage Ponds Ground Water
Barium (ug/L)



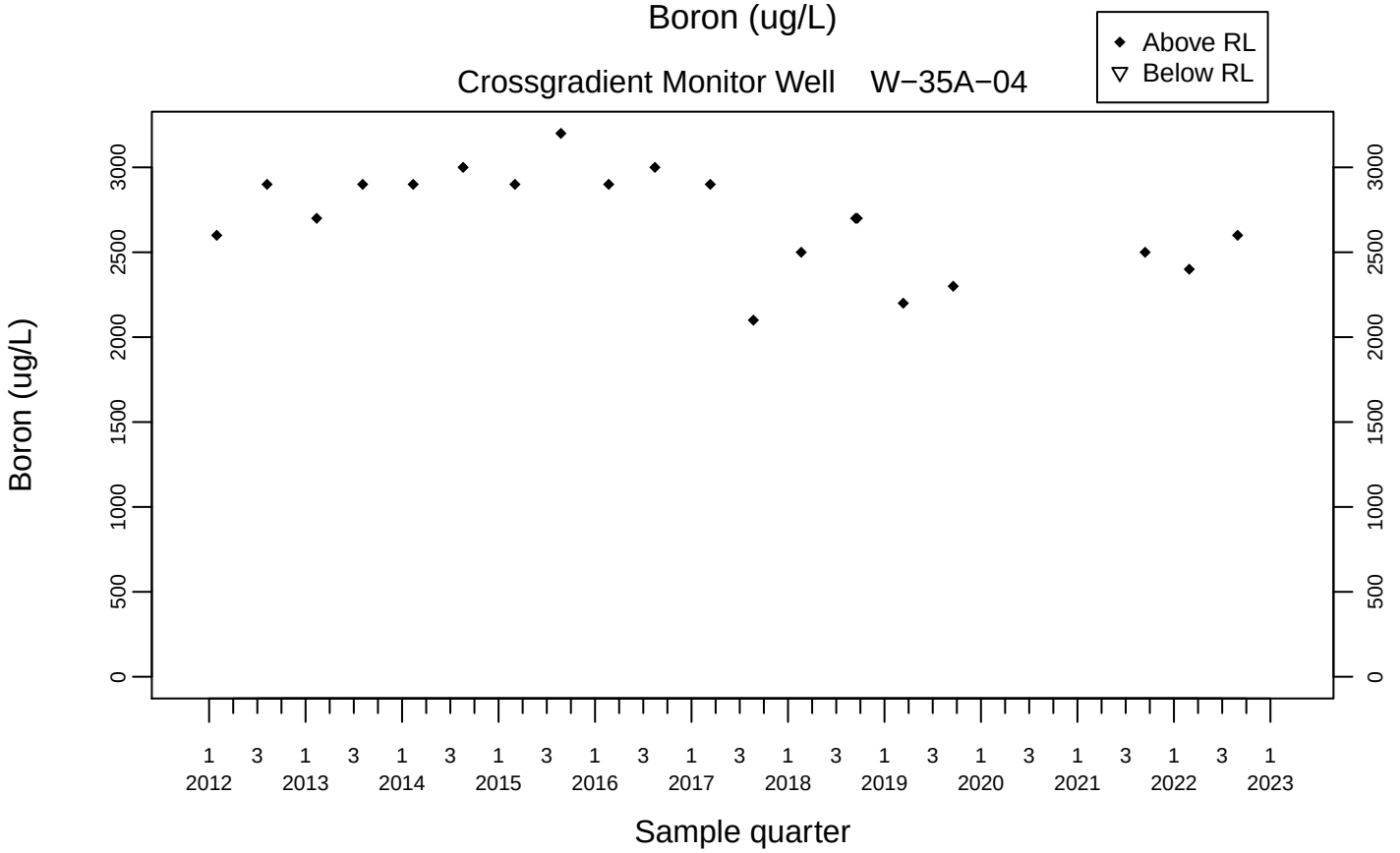


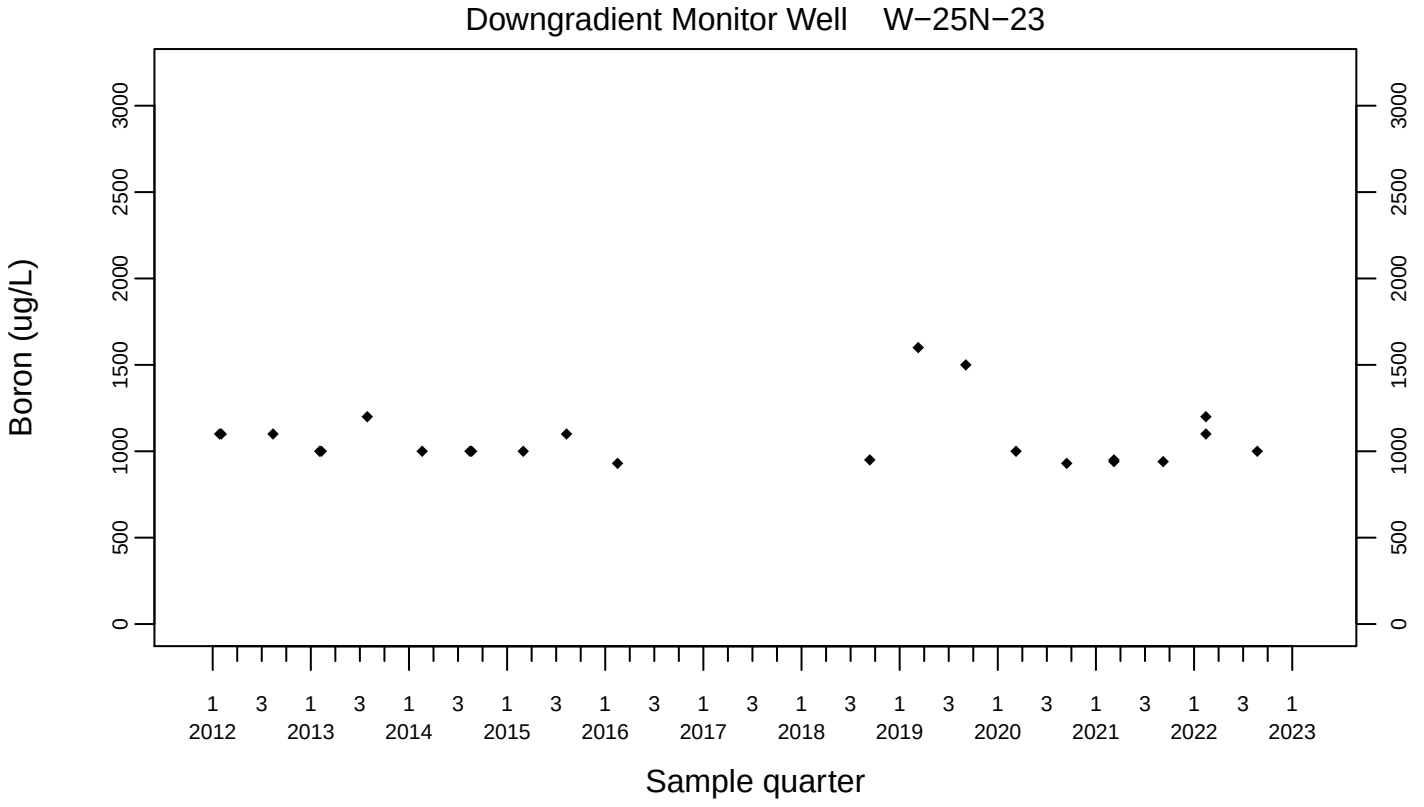

Sewage Ponds Ground Water
Barium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Estimated
Barium (ug/L)
0
10
20
30
40
50
60
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter


Sewage Ponds Ground Water
Boron (ug/L)
Above RL
Below RL
Upgradient Monitor Well W−7ES
Boron (ug/L)
0
500
1000
1500
2000
2500
3000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

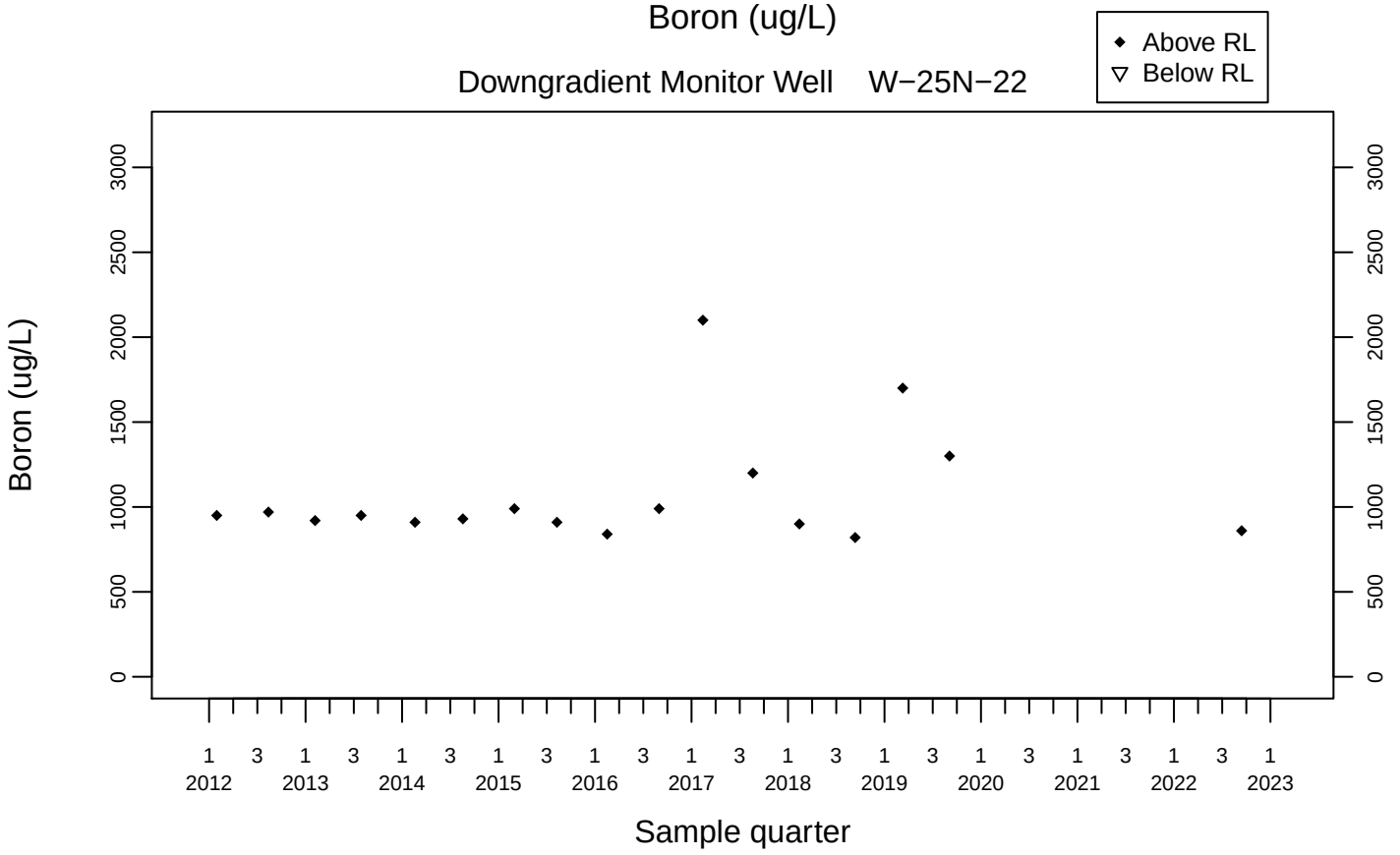

Upgradient Monitor Well W−7PS
Boron (ug/L)
0
500
1000
1500
2000
2500
3000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

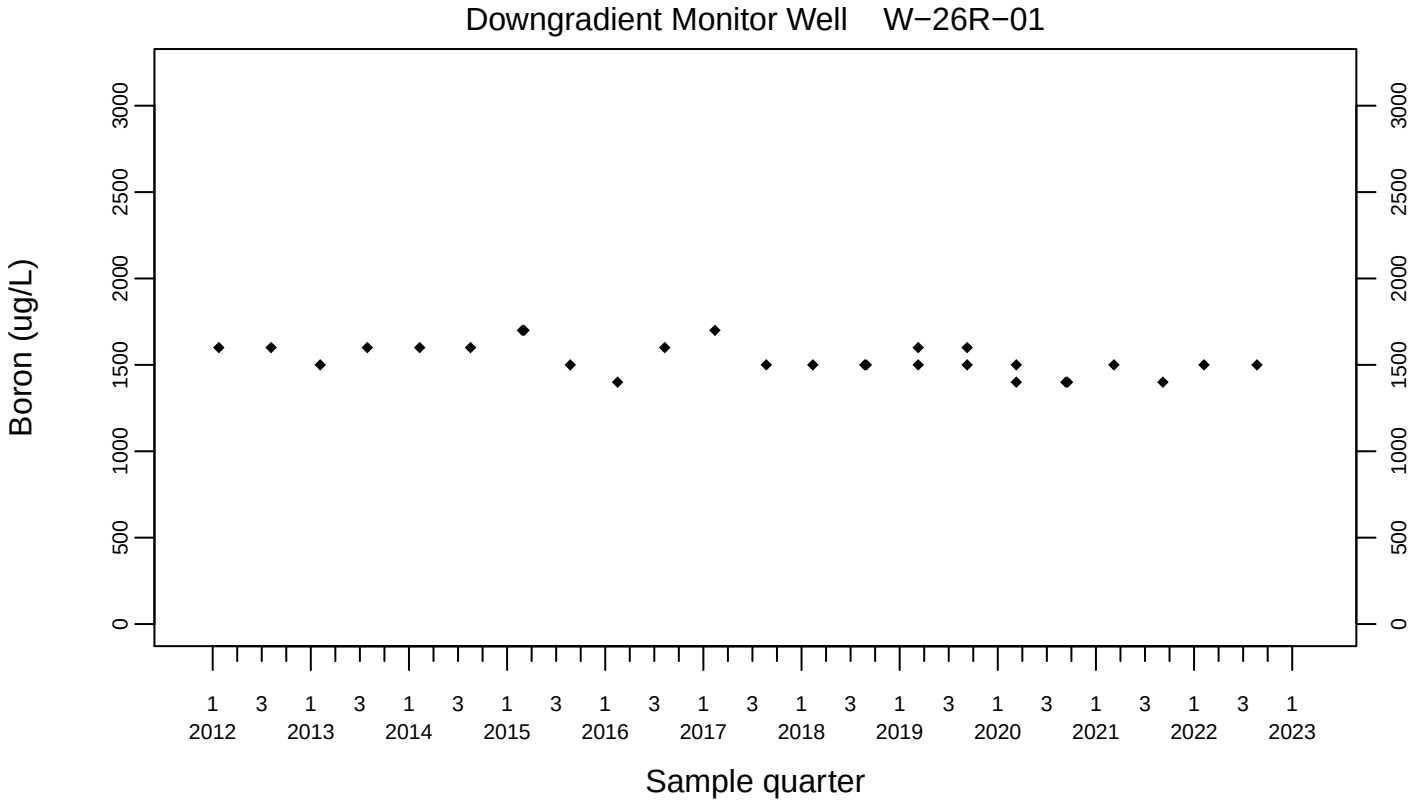
Sewage Ponds Ground Water
Boron (ug/L)



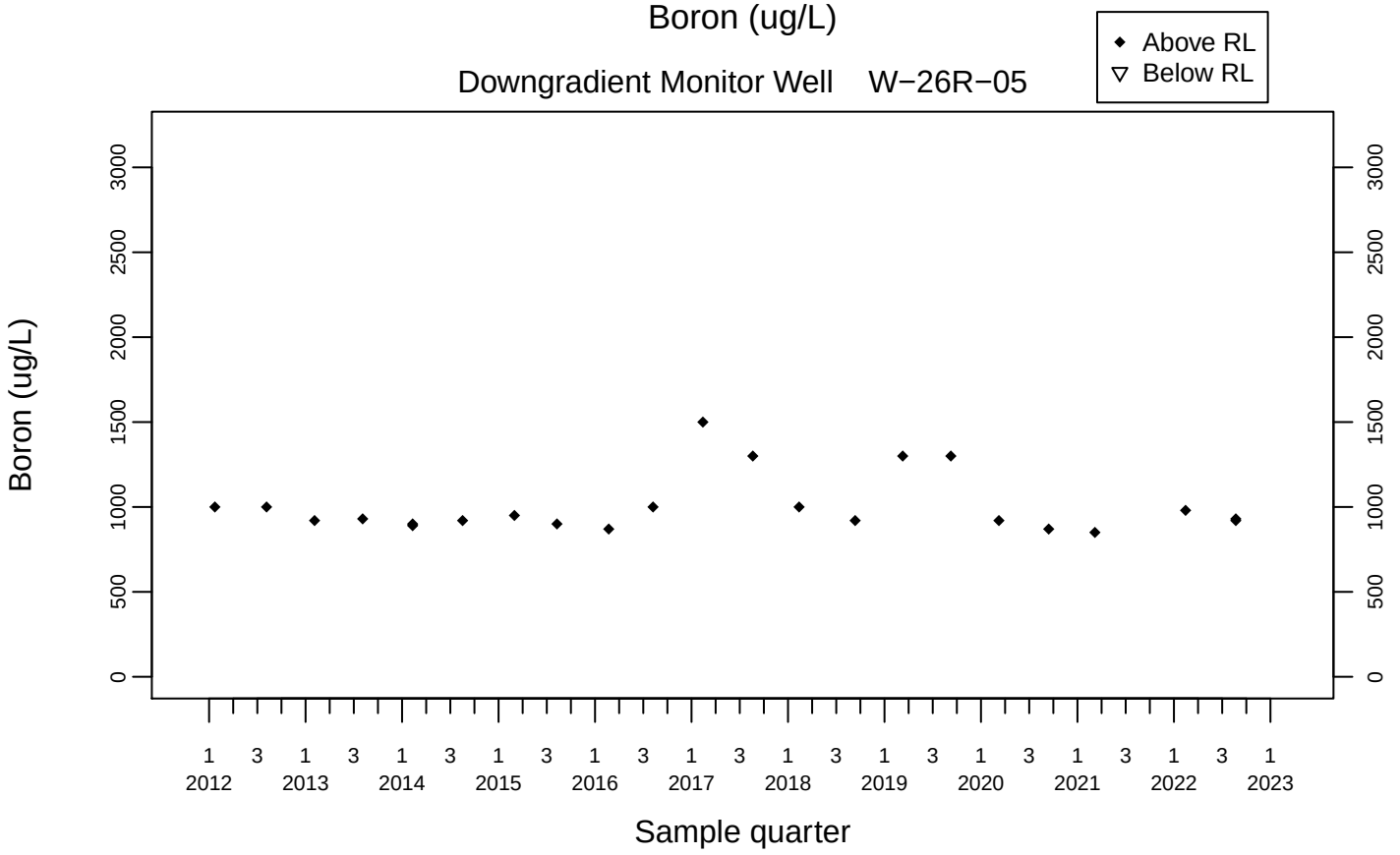


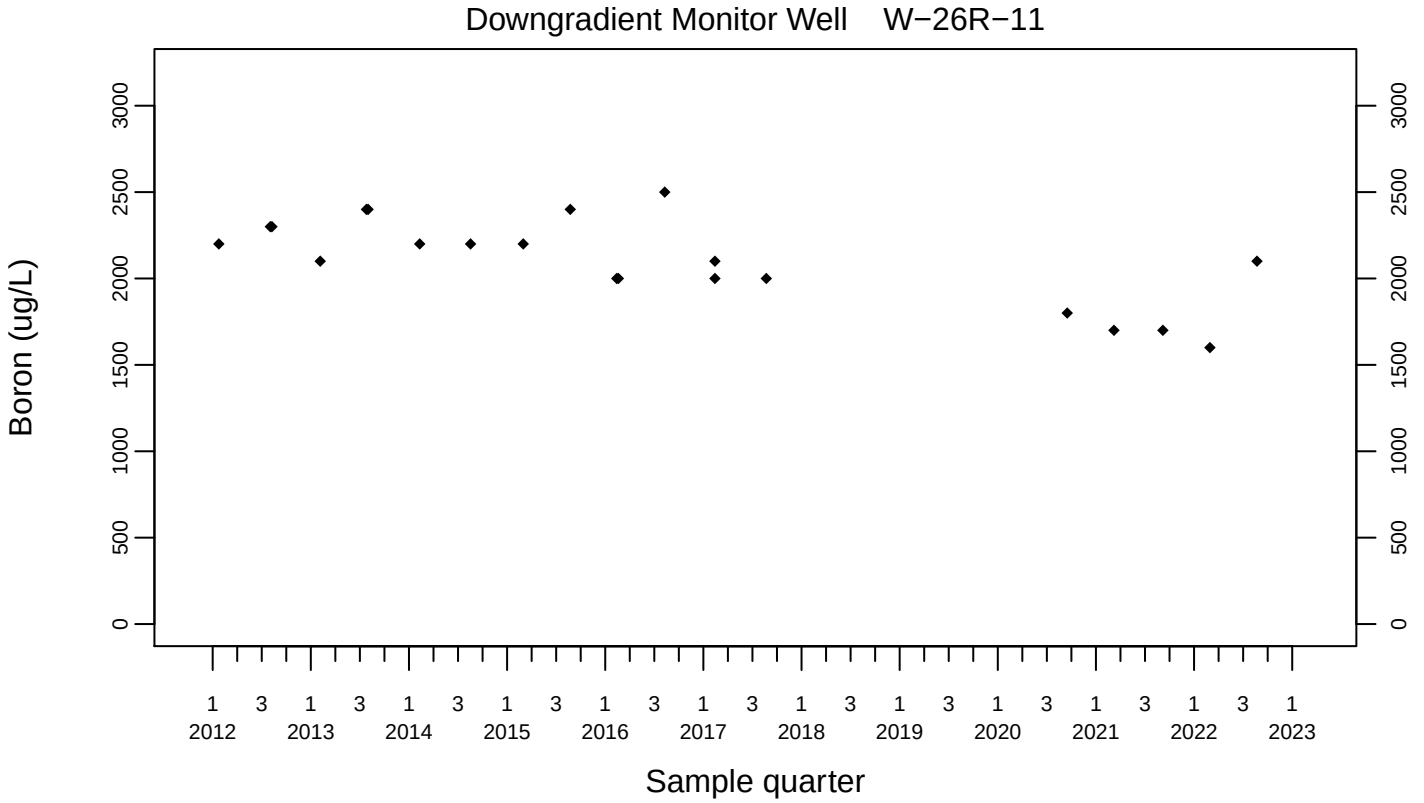
Sewage Ponds Ground Water
Boron (ug/L)

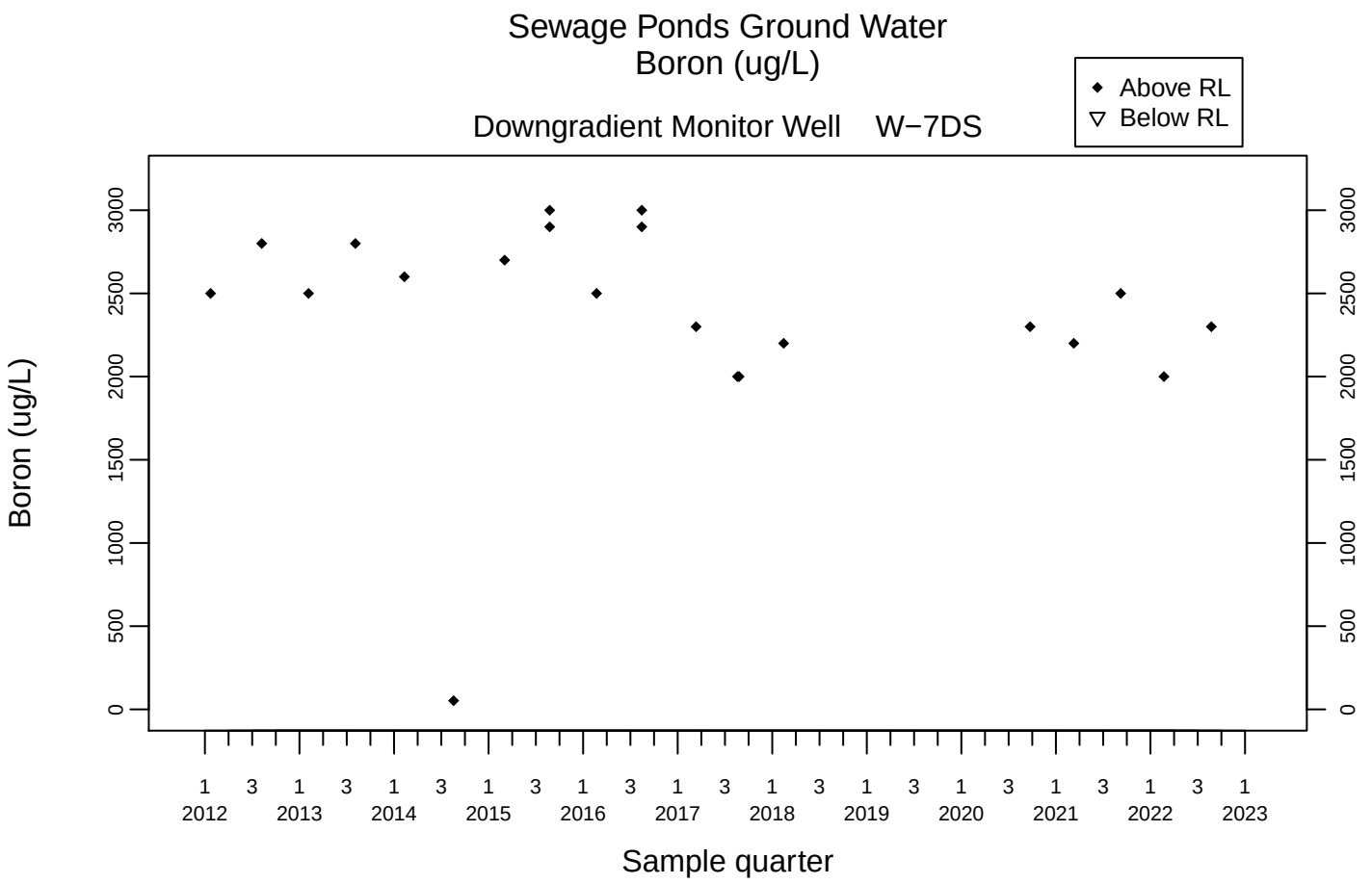


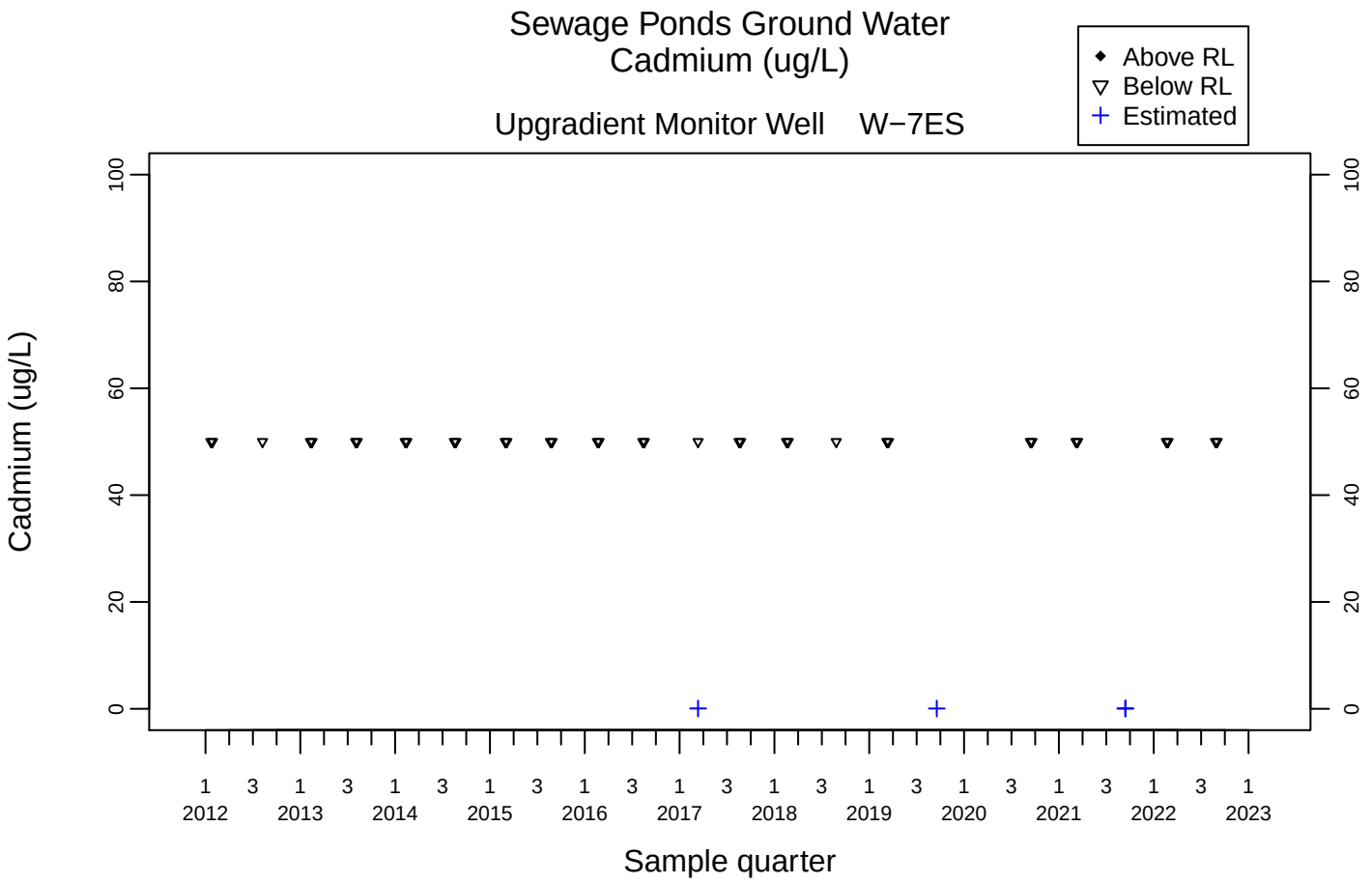


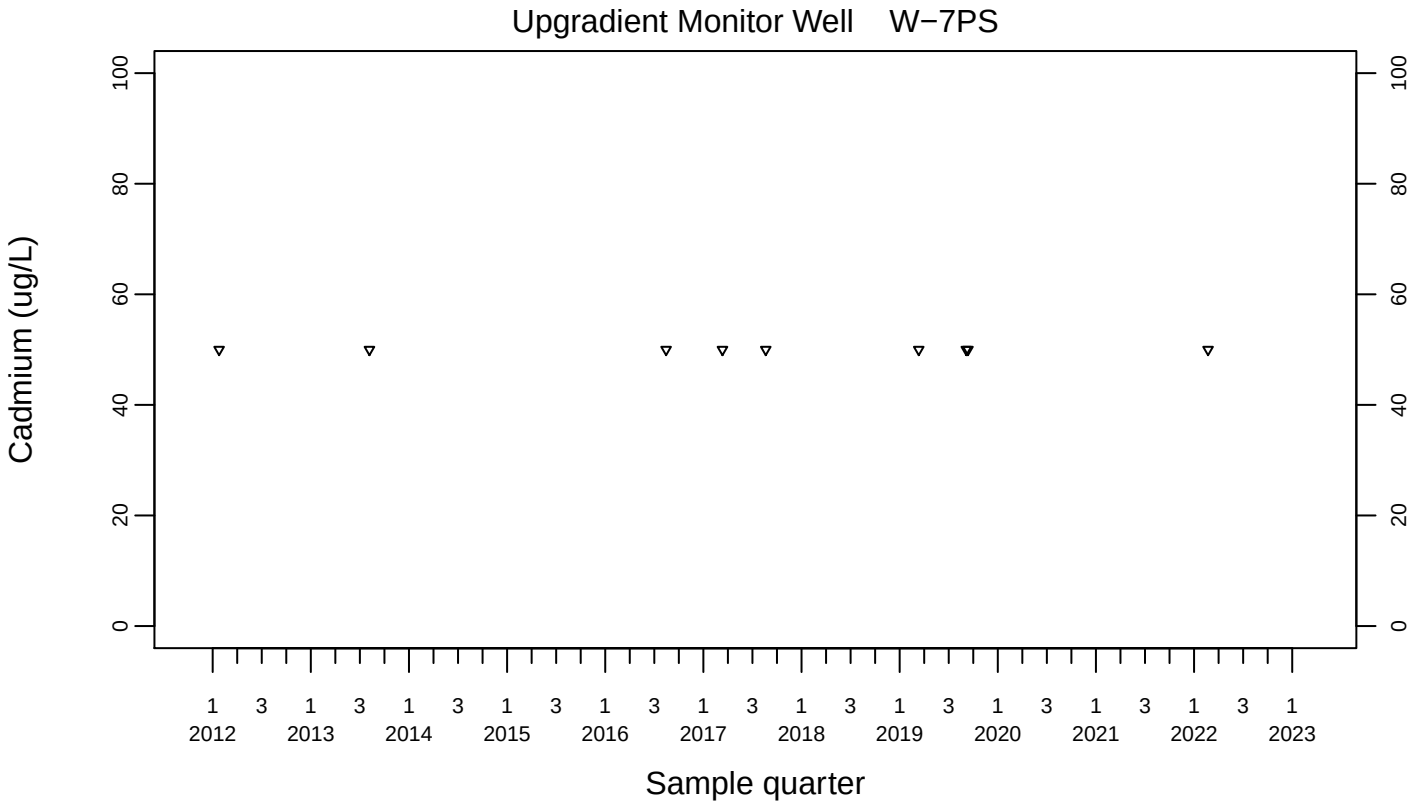
Sewage Ponds Ground Water
Boron (ug/L)



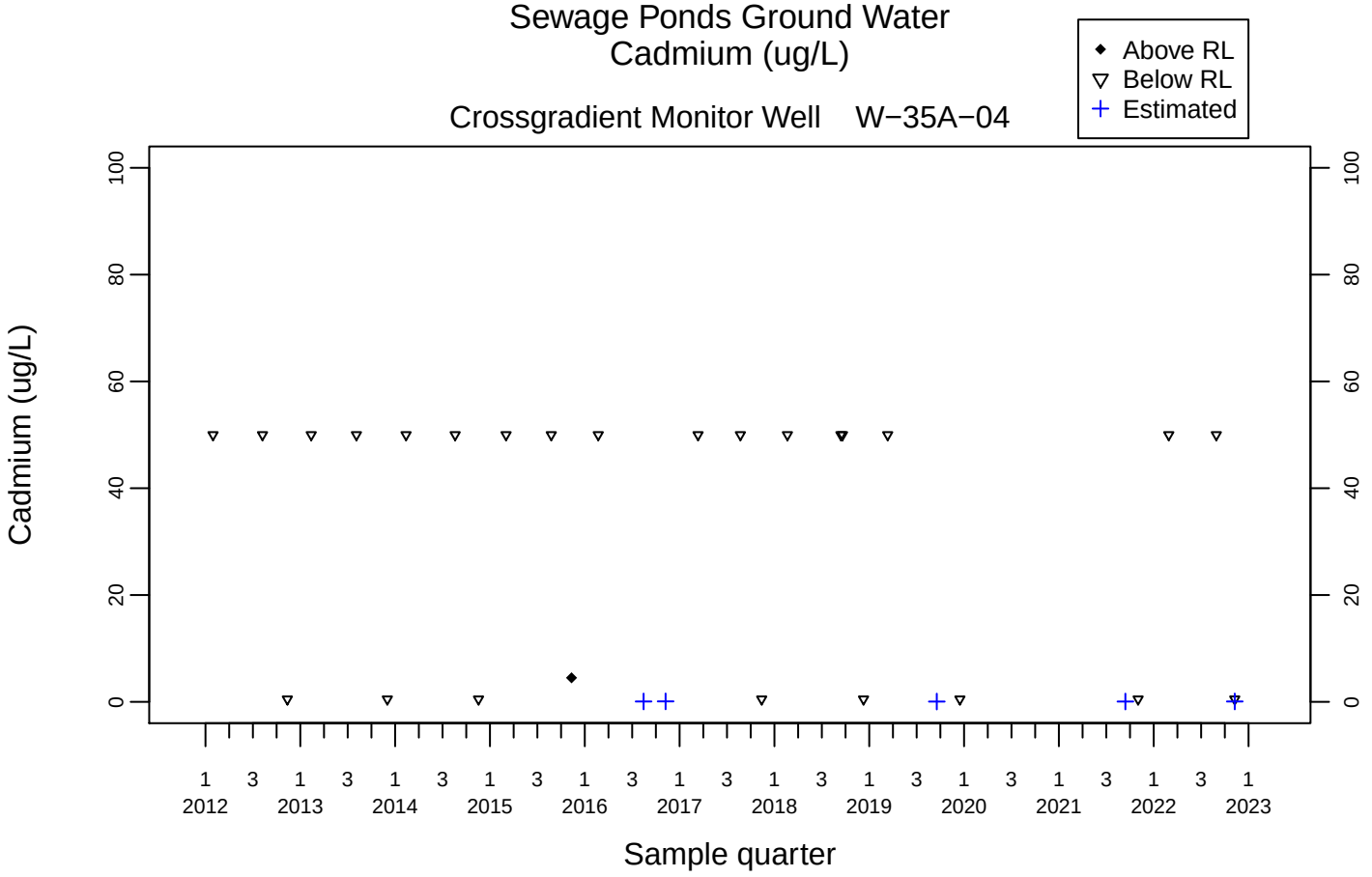


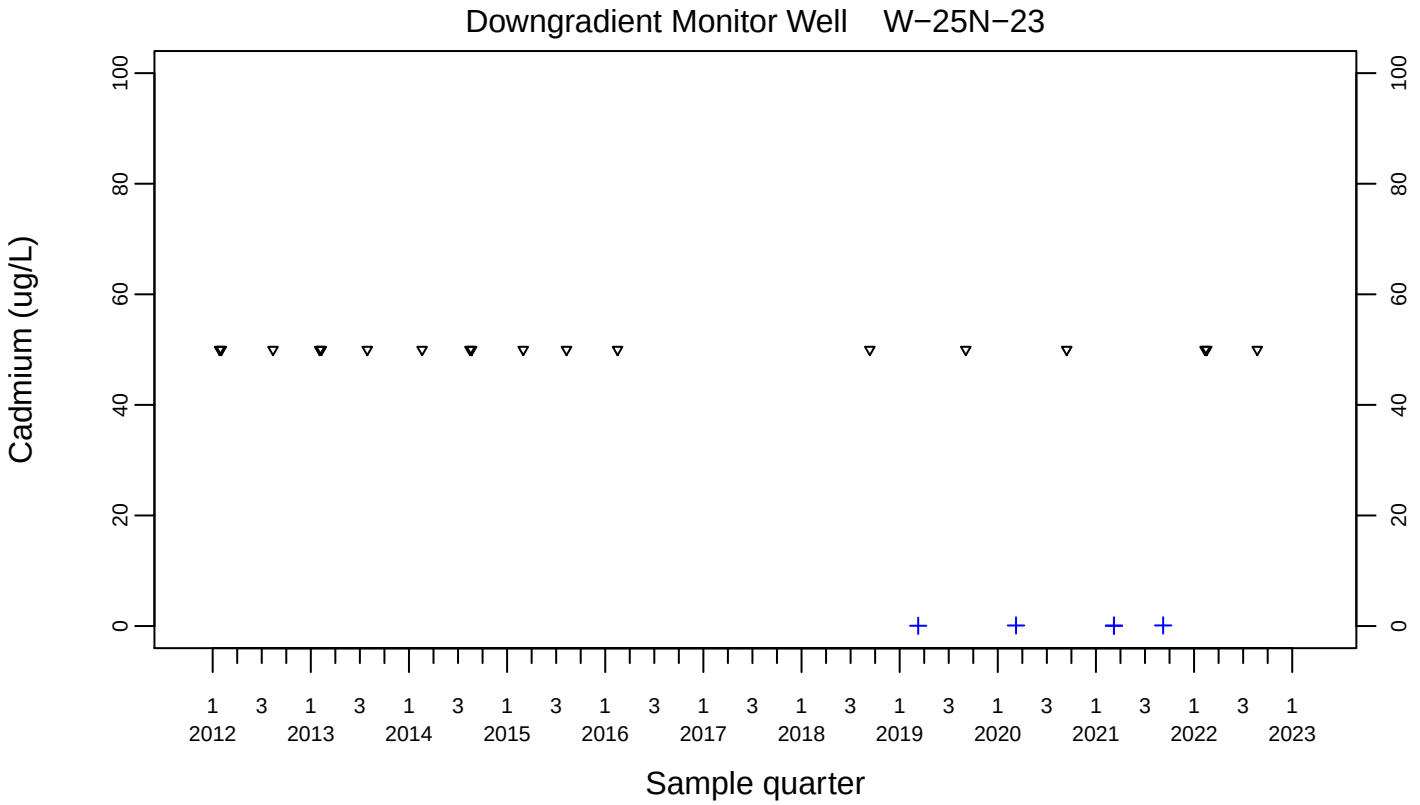

Sewage Ponds Ground Water
Boron (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Boron (ug/L)
0
500
1000
1500
2000
2500
3000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Sewage Ponds Ground Water
Cadmium (ug/L)
Above RL
Below RL
Estimated
Upgradient Monitor Well W−7ES
Cadmium (ug/L)
0
20
40
60
80
100
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

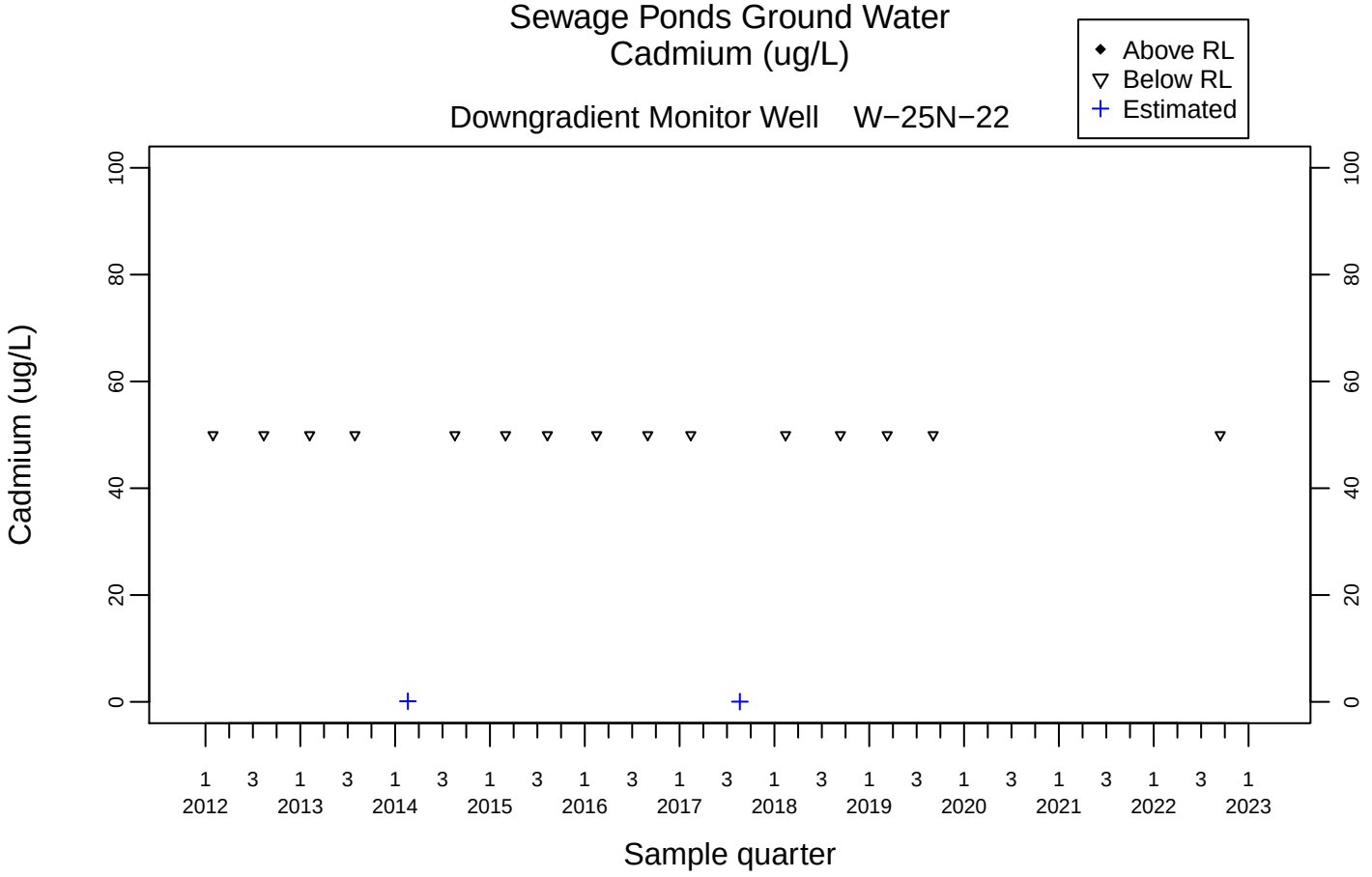

Upgradient Monitor Well W−7PS
Cadmium (ug/L)
0
20
40
60
80
100
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

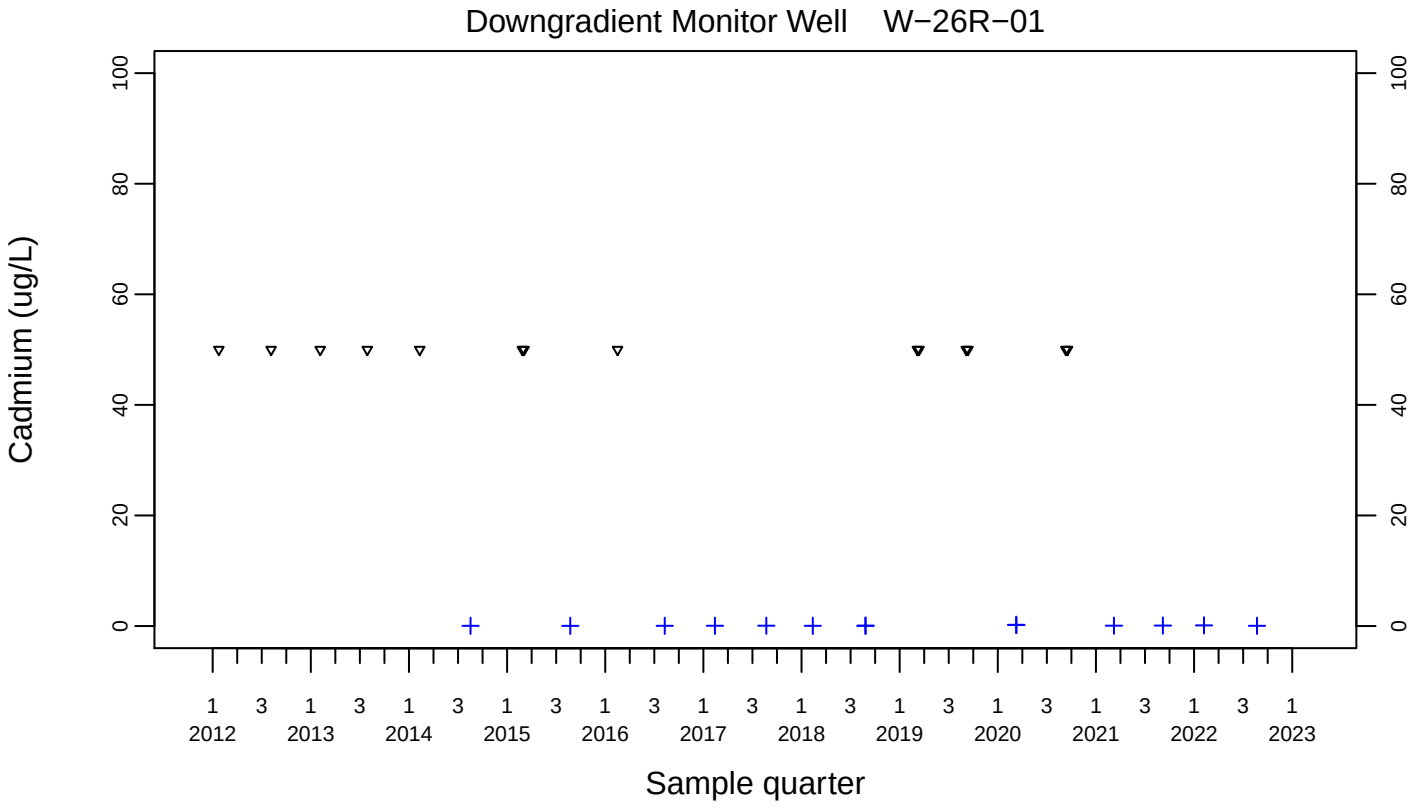
Sewage Ponds Ground Water
Cadmium (ug/L)



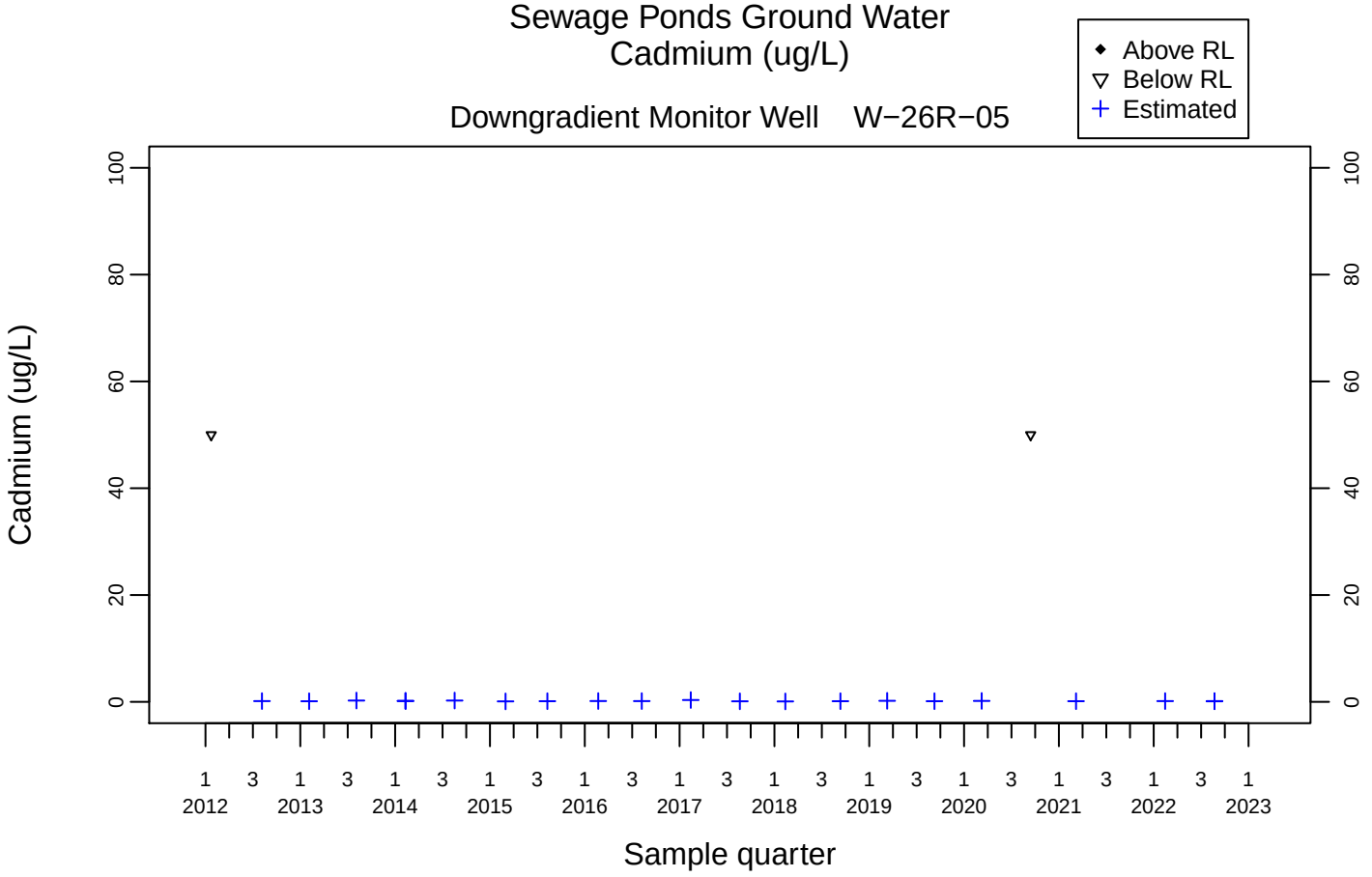


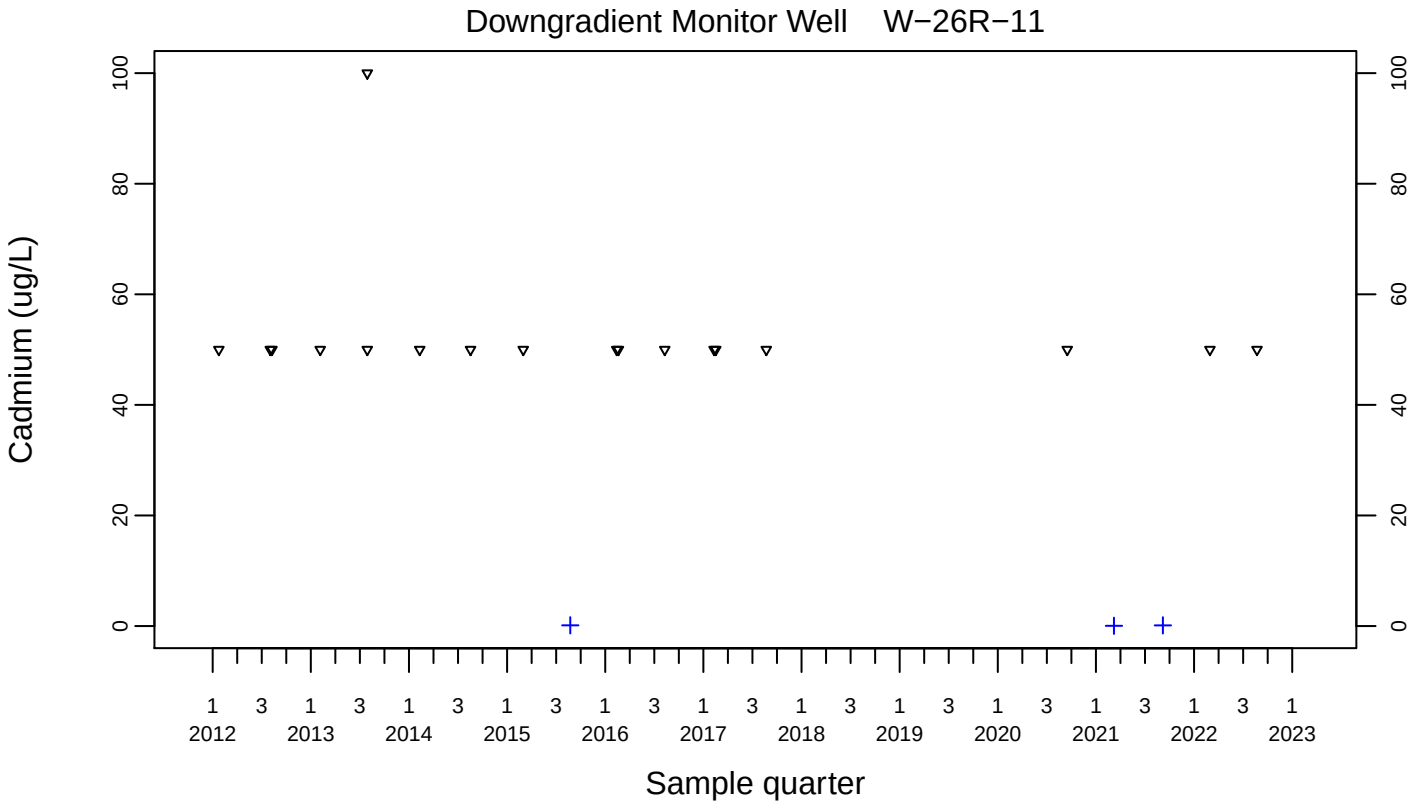
Sewage Ponds Ground Water
Cadmium (ug/L)

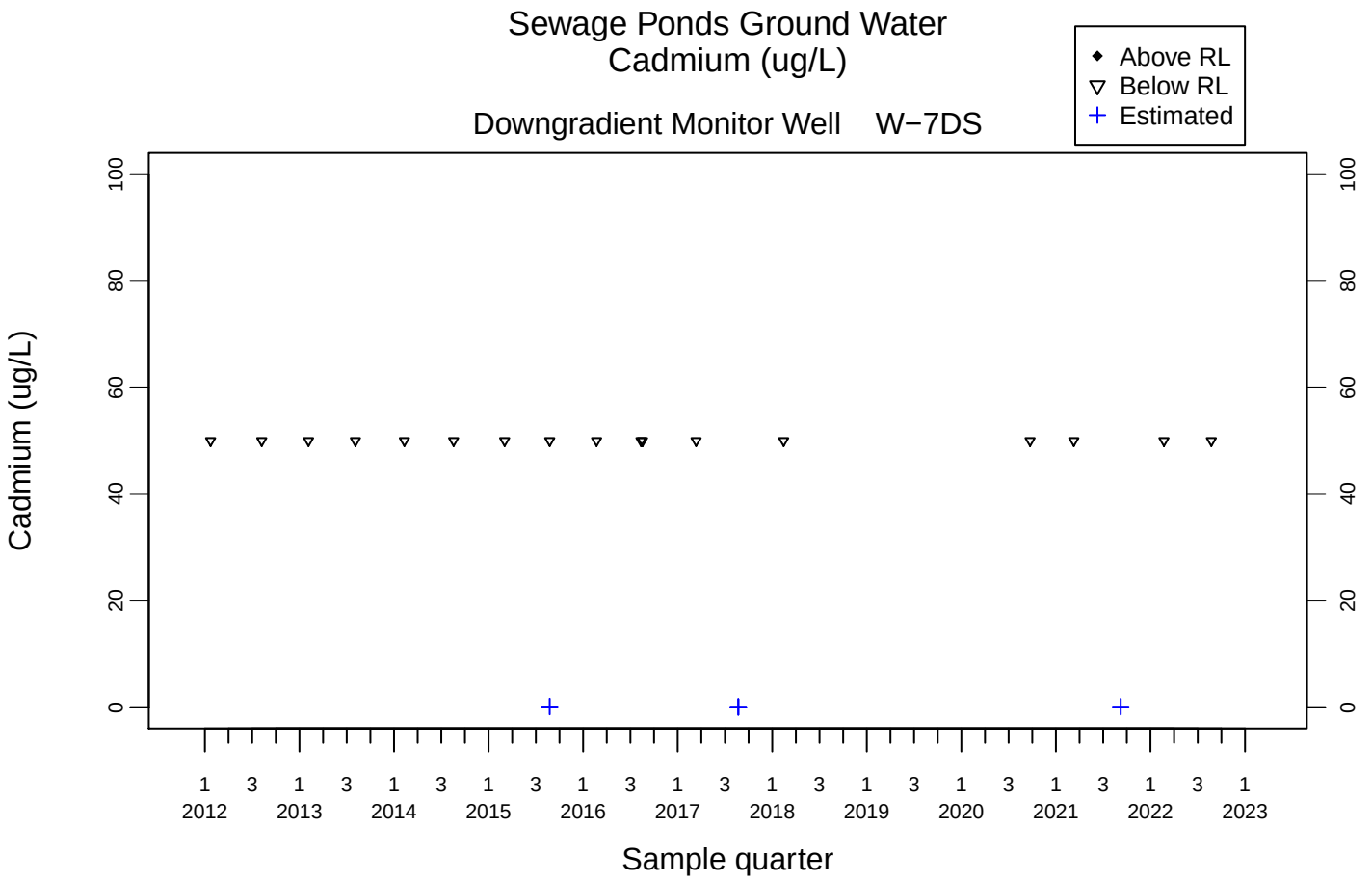


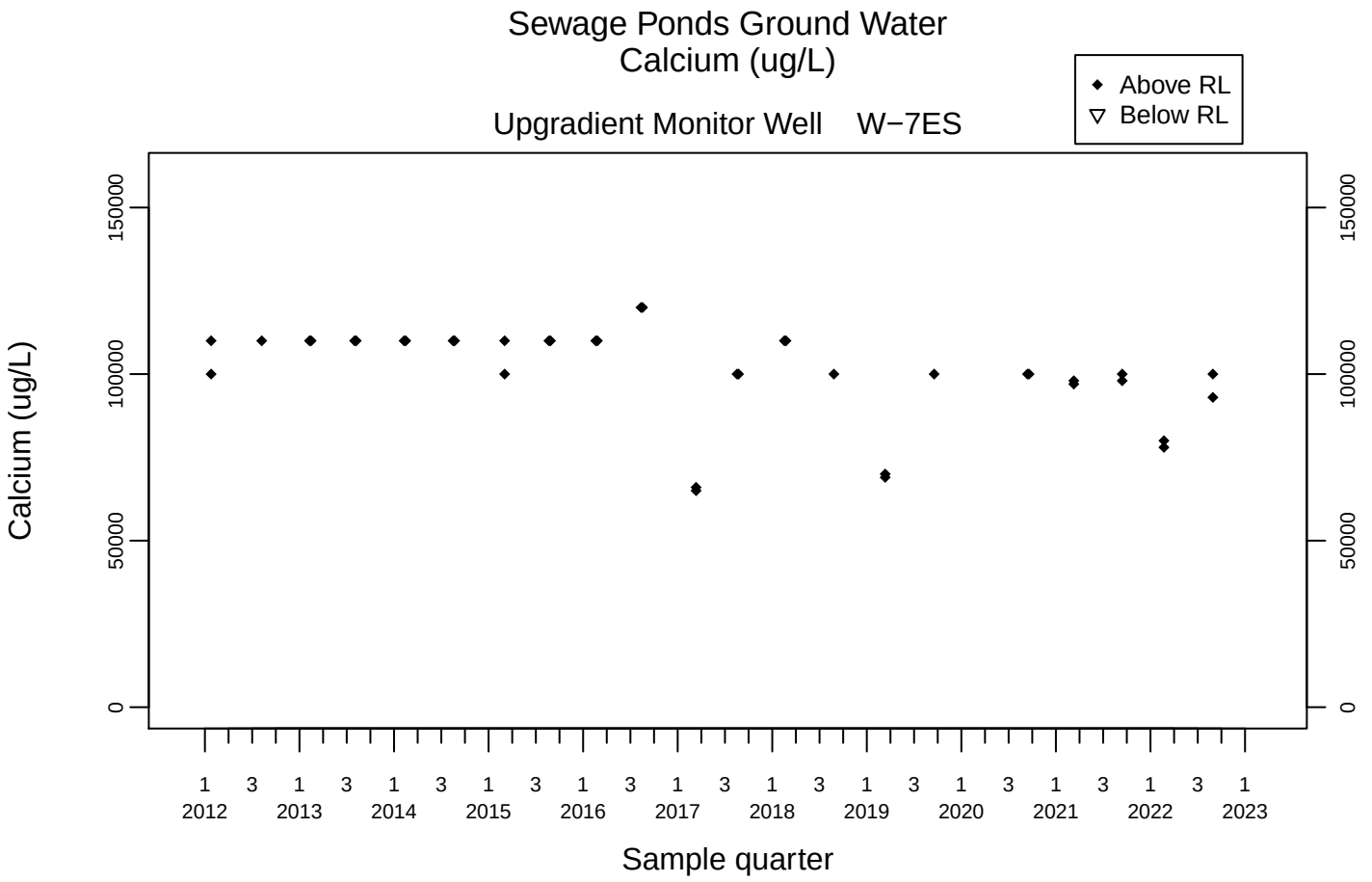


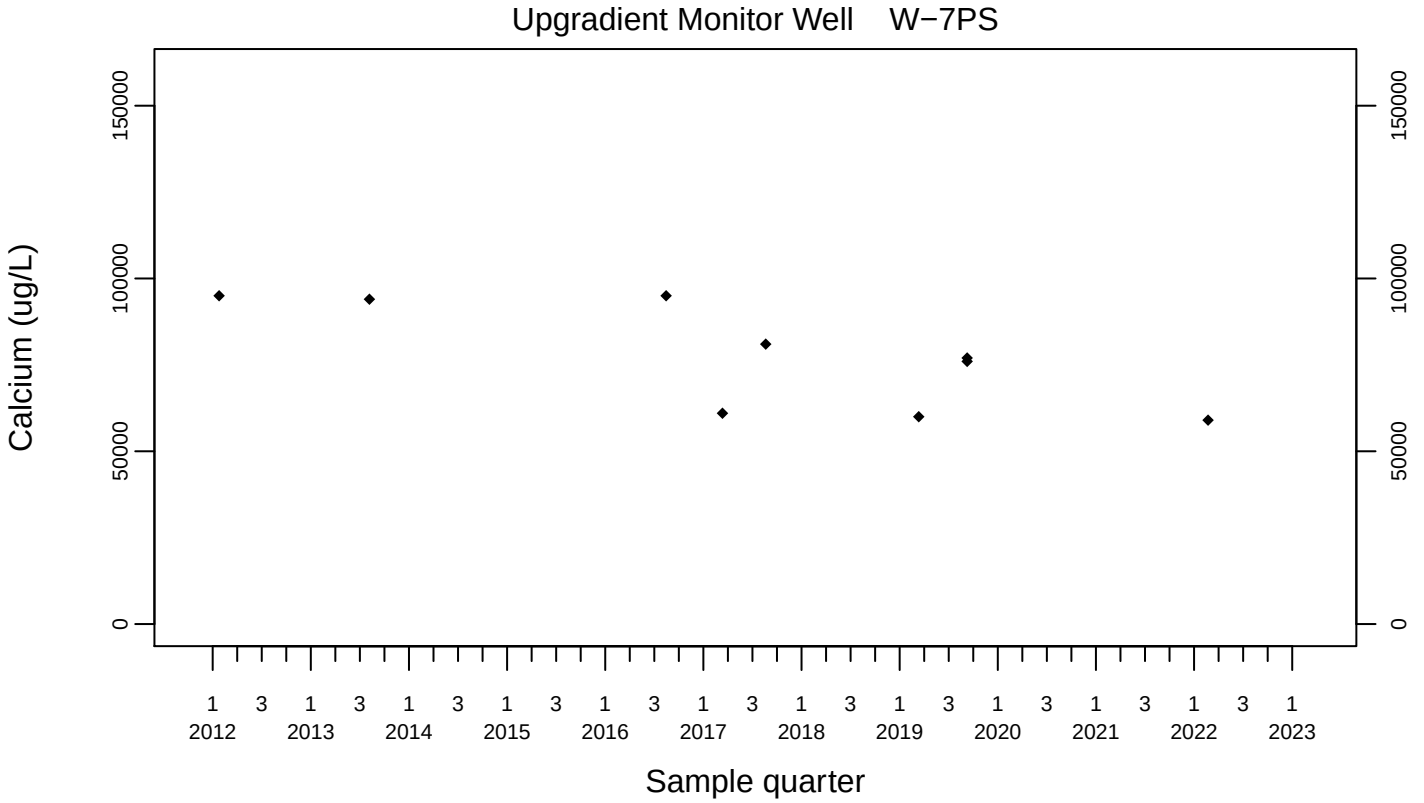
Sewage Ponds Ground Water
Cadmium (ug/L)



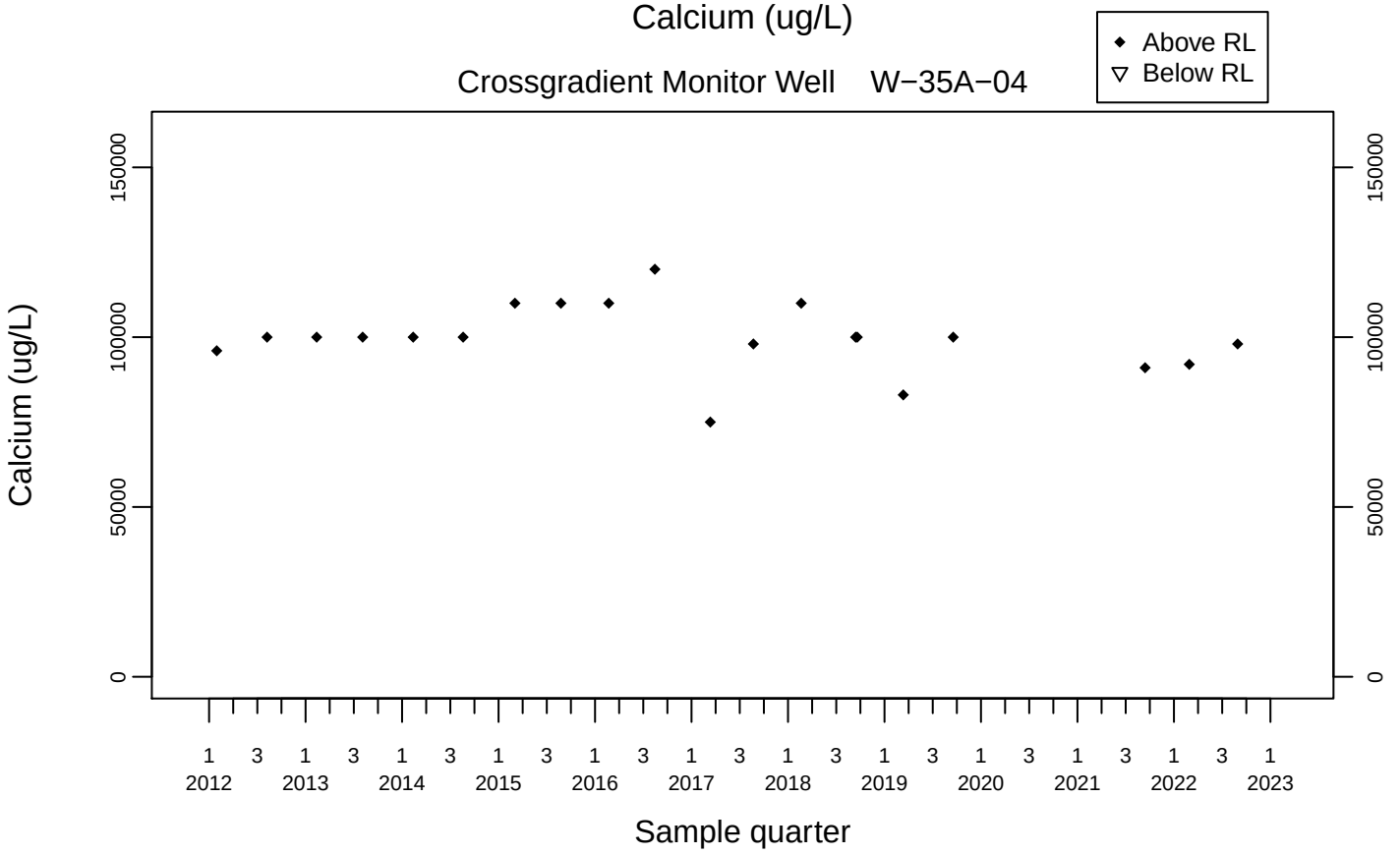


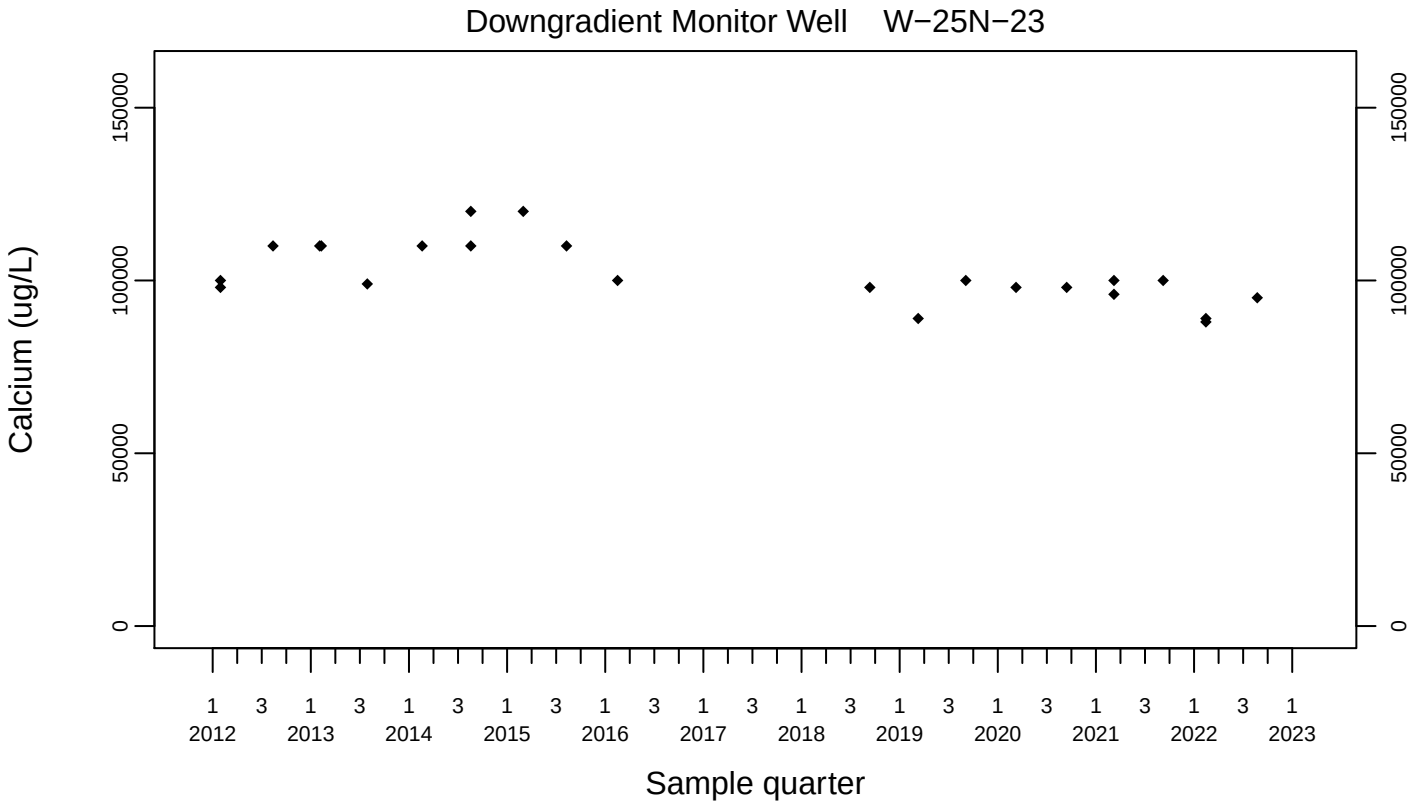

Sewage Ponds Ground Water
Cadmium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Cadmium (ug/L)
0
20
40
60
80
100
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Sewage Ponds Ground Water
Calcium (ug/L)
Above RL
Below RL
Upgradient Monitor Well W−7ES
Calcium (ug/L)
0
50000
100000
150000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

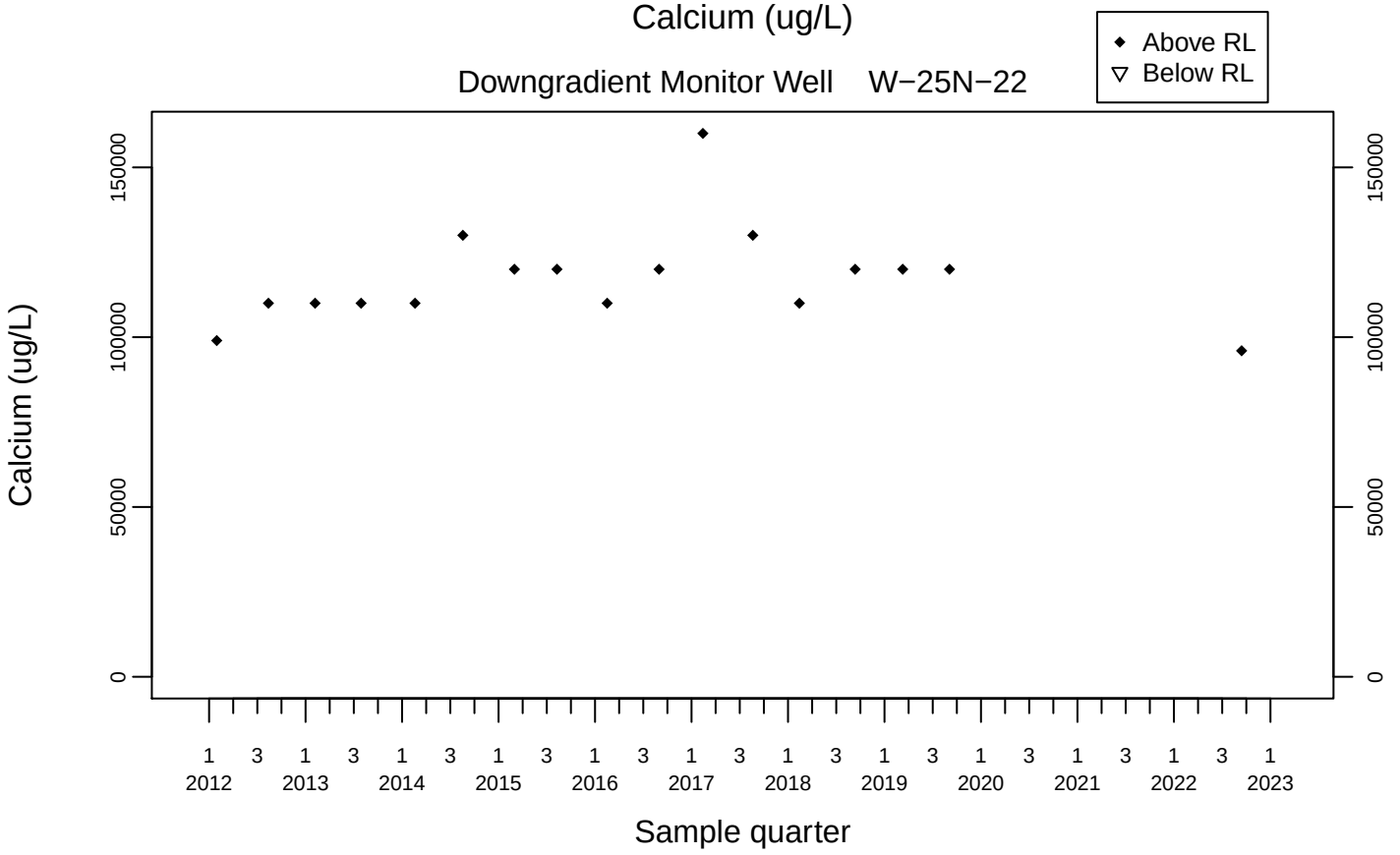

Upgradient Monitor Well W−7PS
Calcium (ug/L)
0
50000
100000
150000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

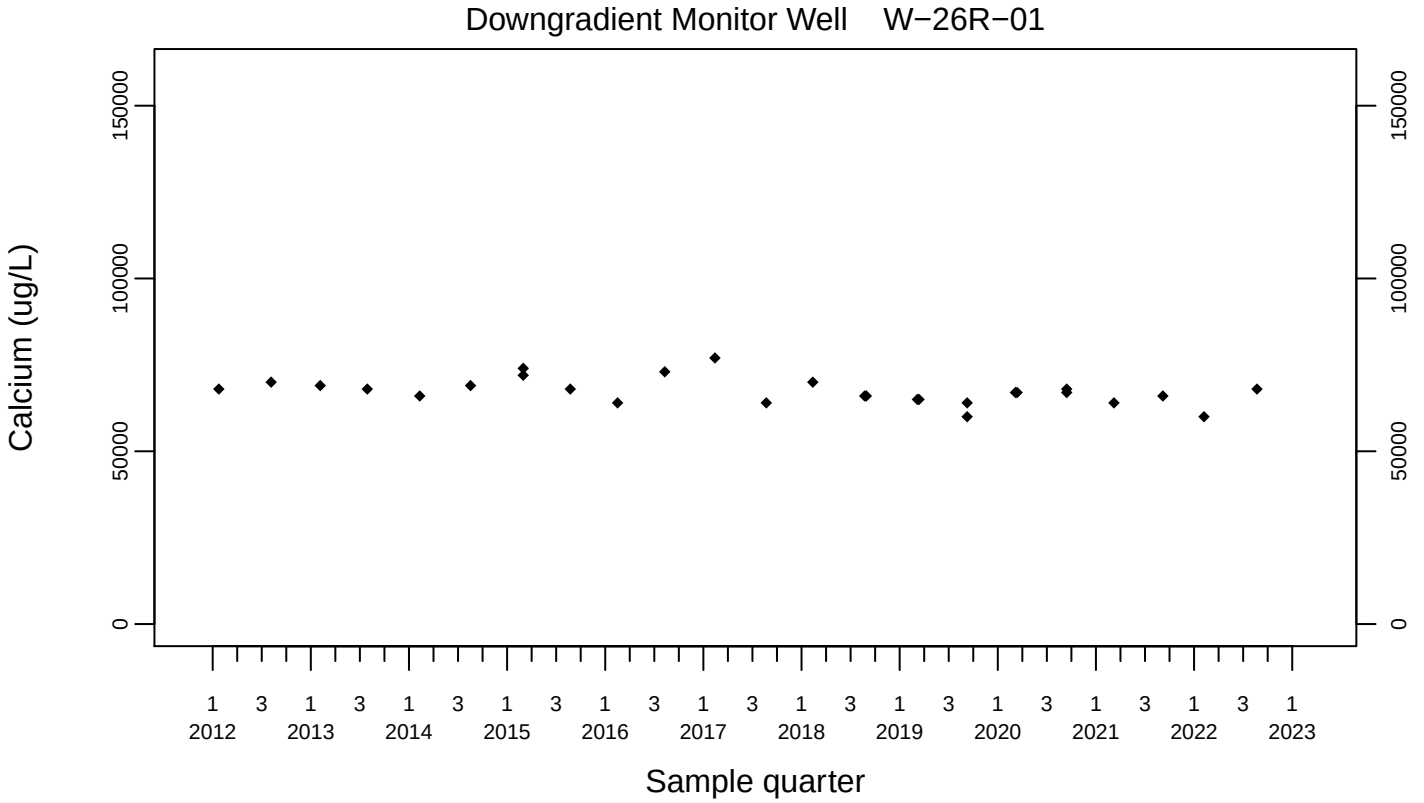
Sewage Ponds Ground Water
Calcium (ug/L)



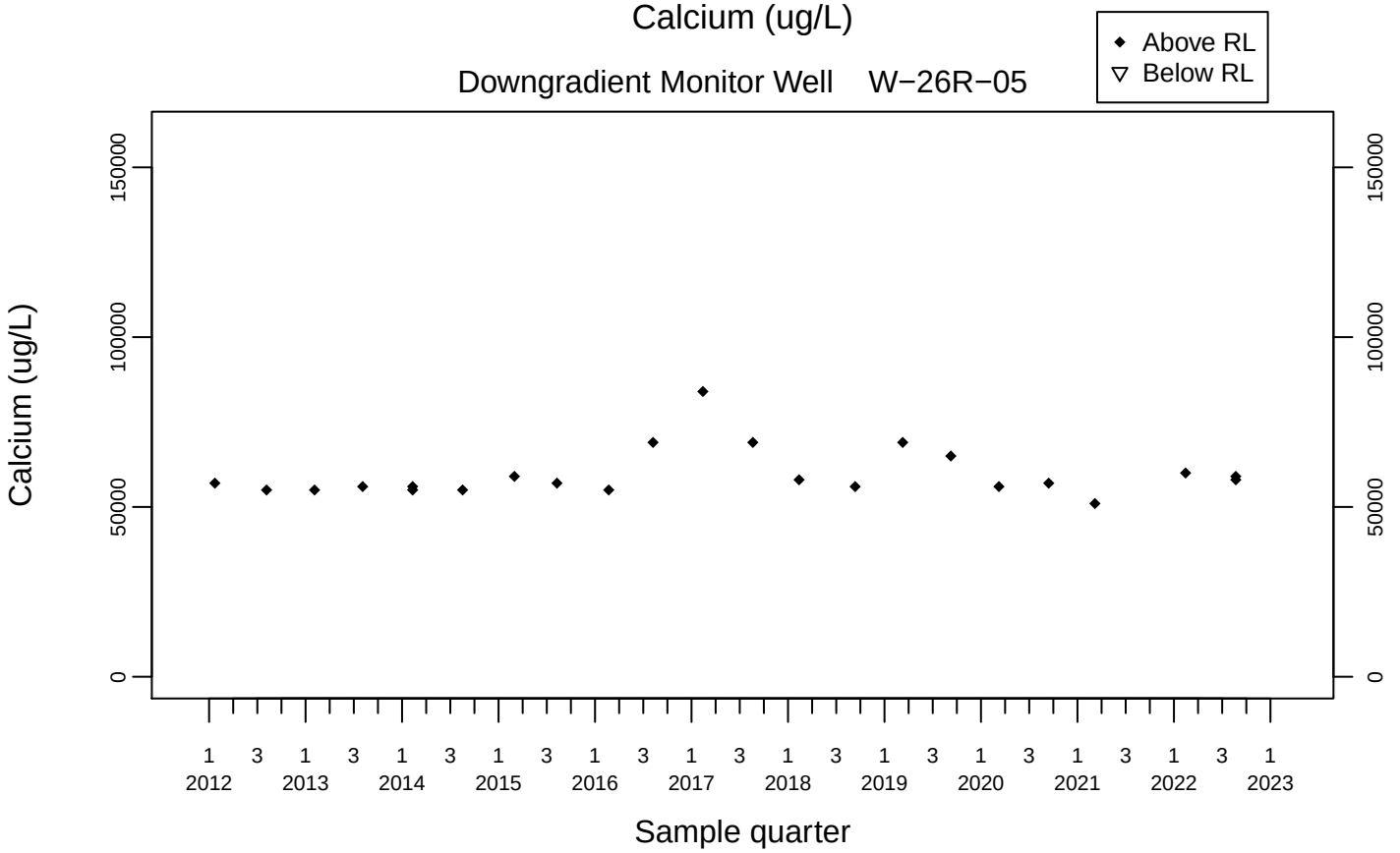


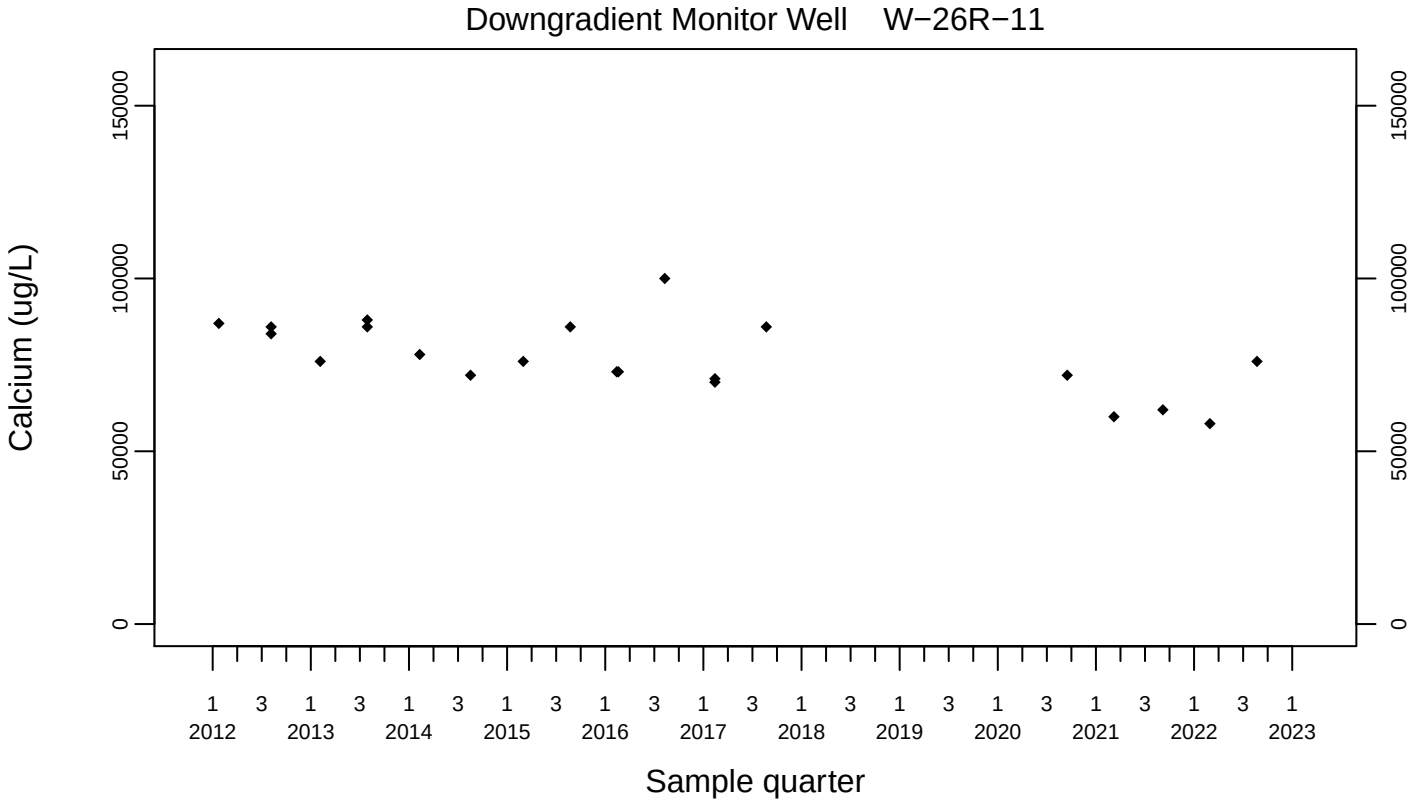
Sewage Ponds Ground Water
Calcium (ug/L)

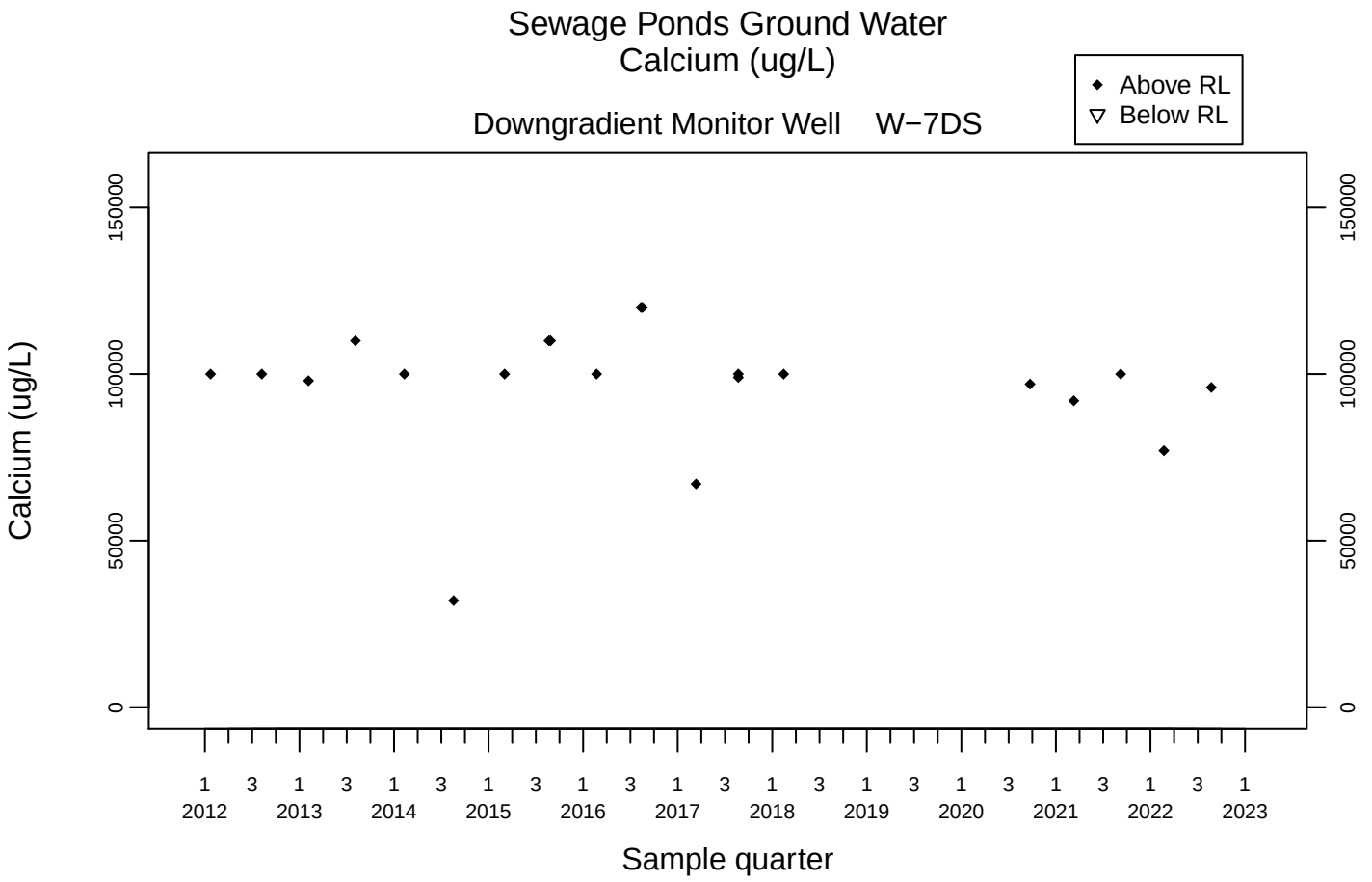




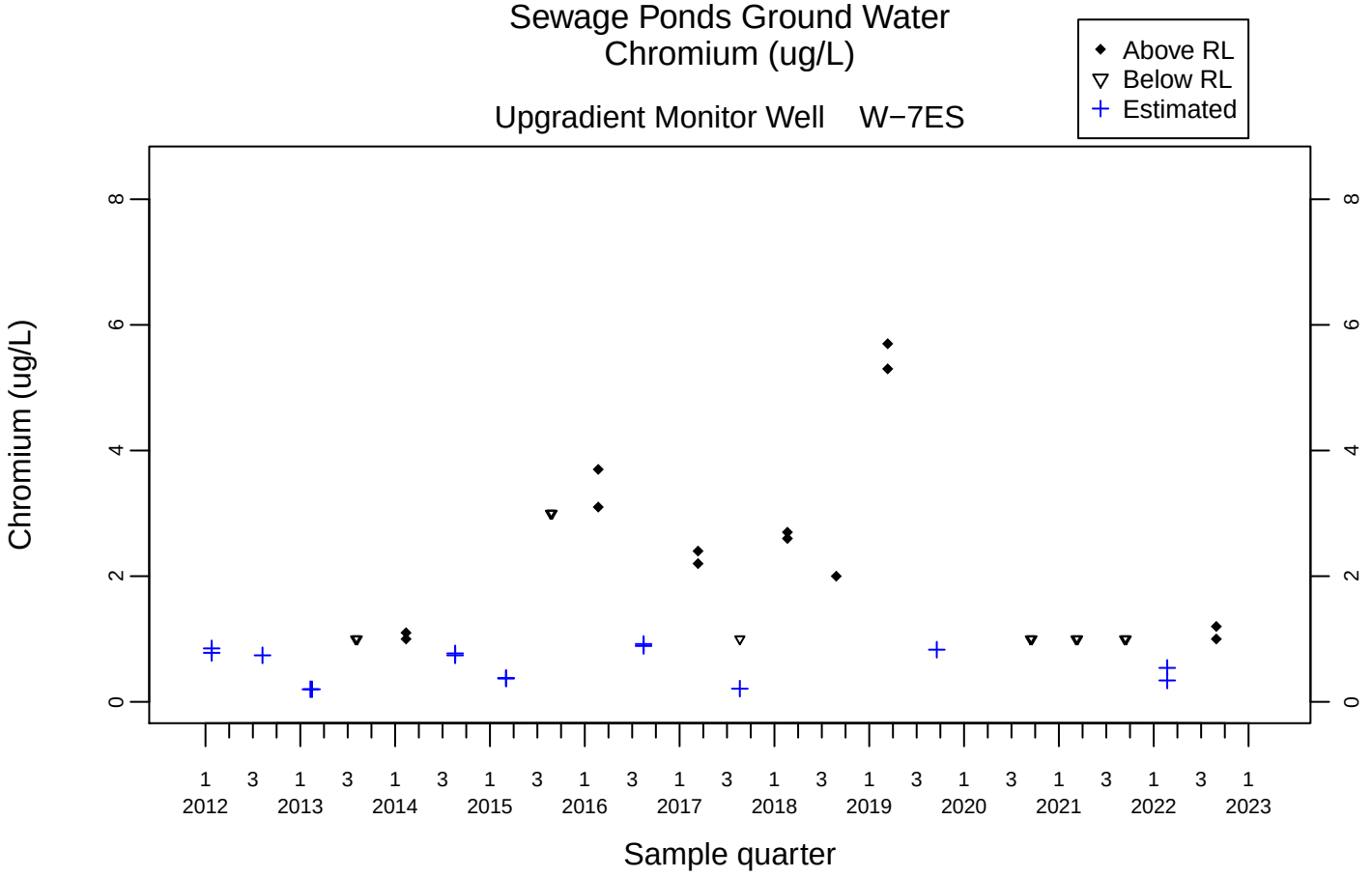
Sewage Ponds Ground Water
Calcium (ug/L)

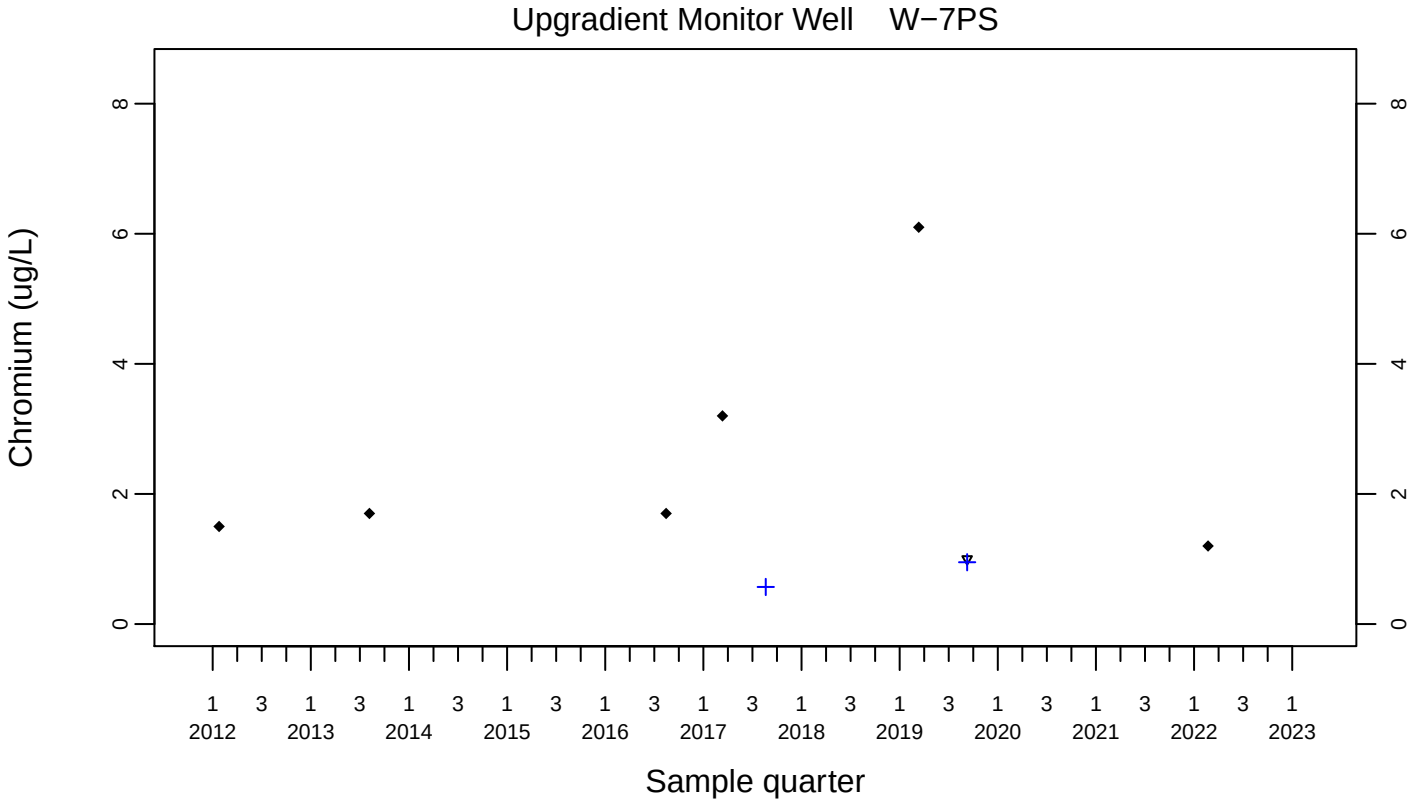




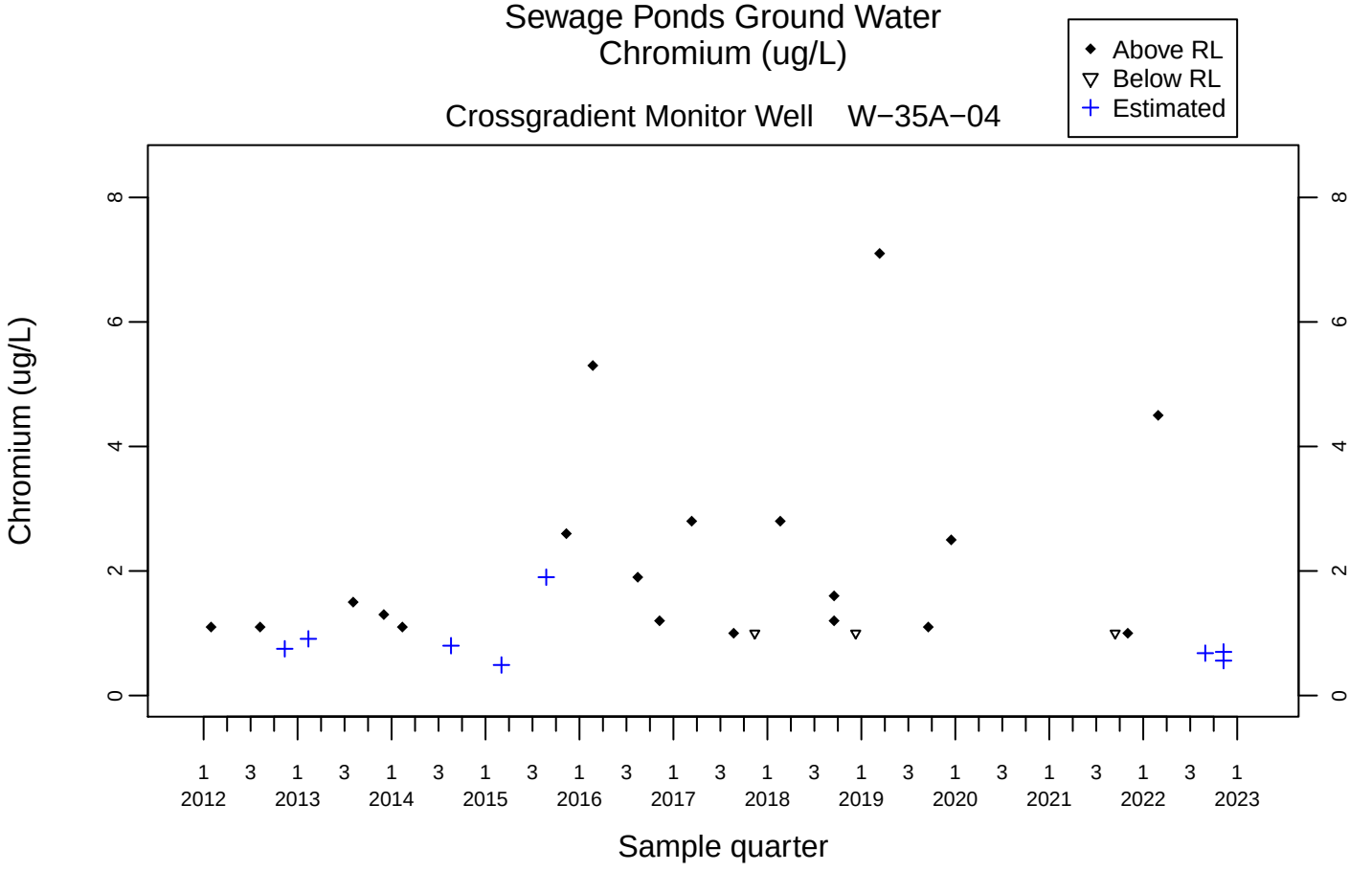

Sewage Ponds Ground Water
Calcium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Calcium (ug/L)
0
50000
100000
150000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

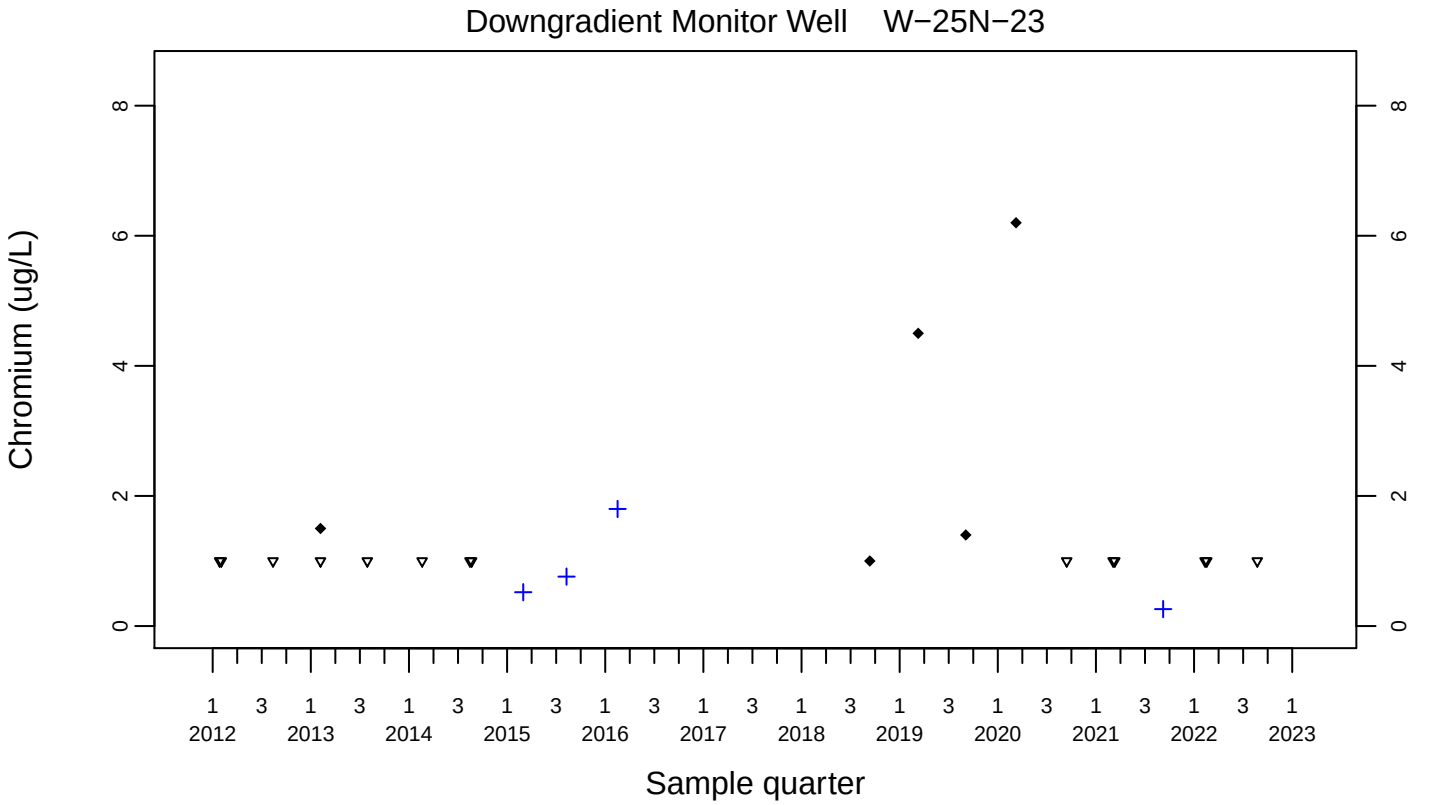
Sewage Ponds Ground Water
Chromium (ug/L)



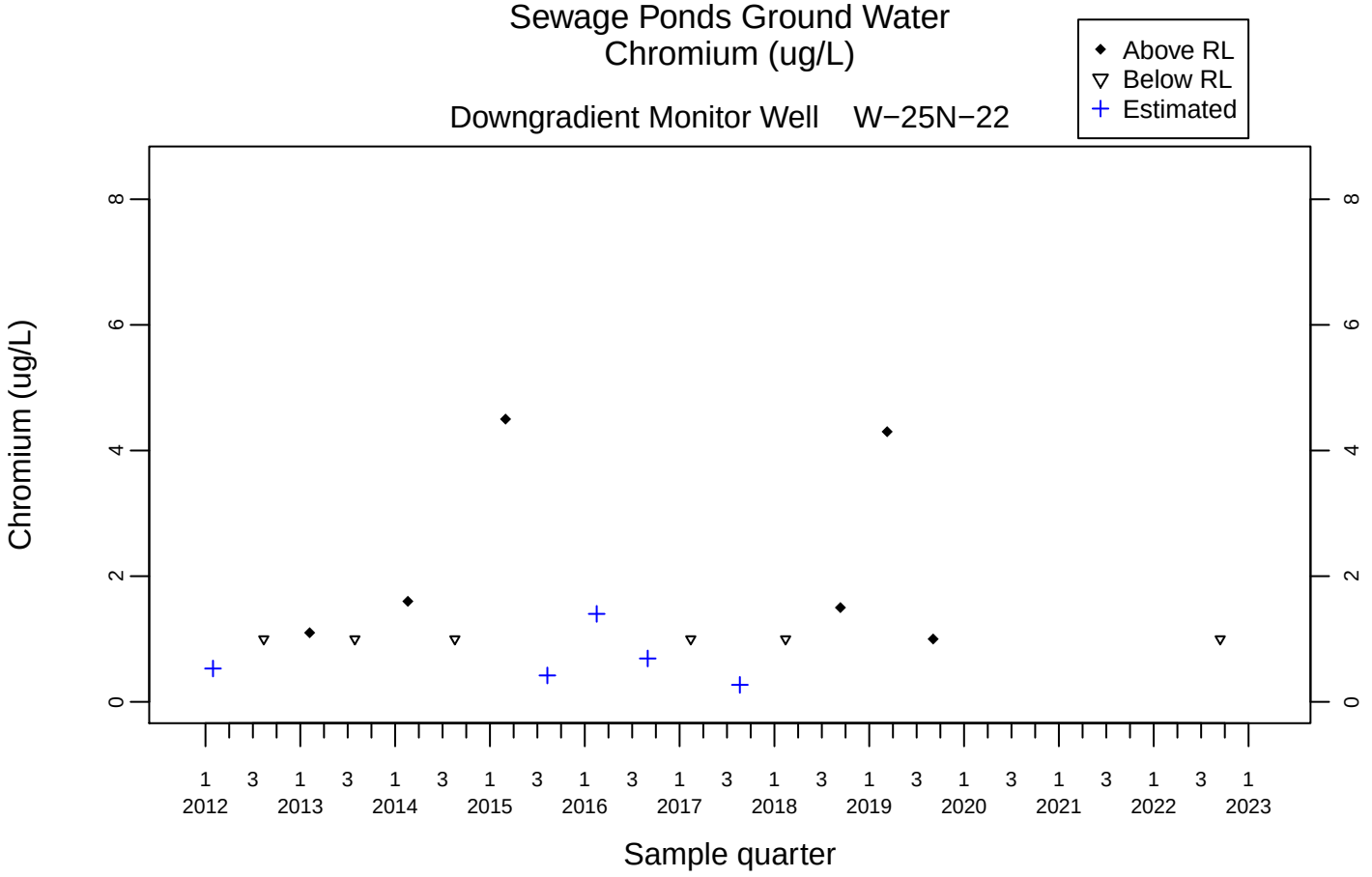


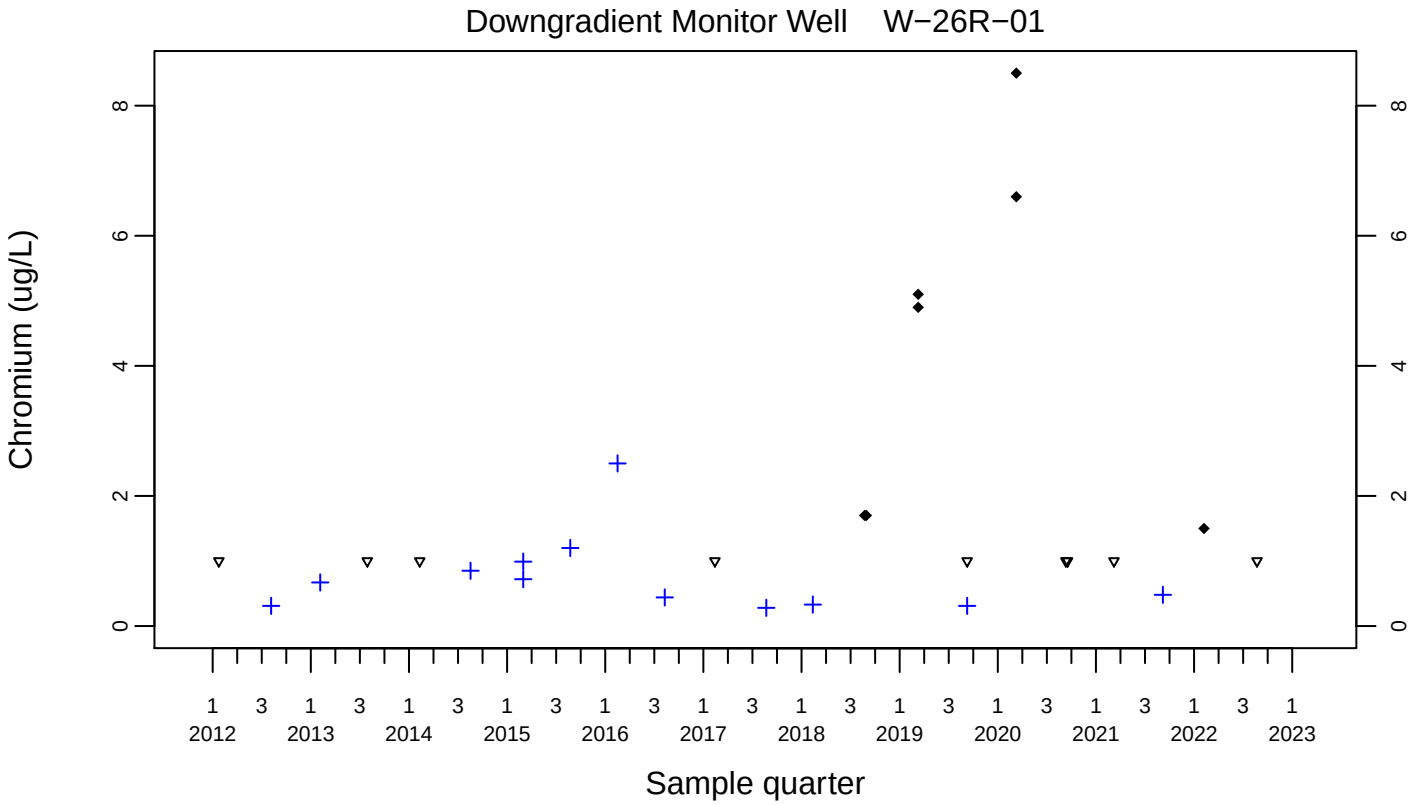
Sewage Ponds Ground Water
Chromium (ug/L)



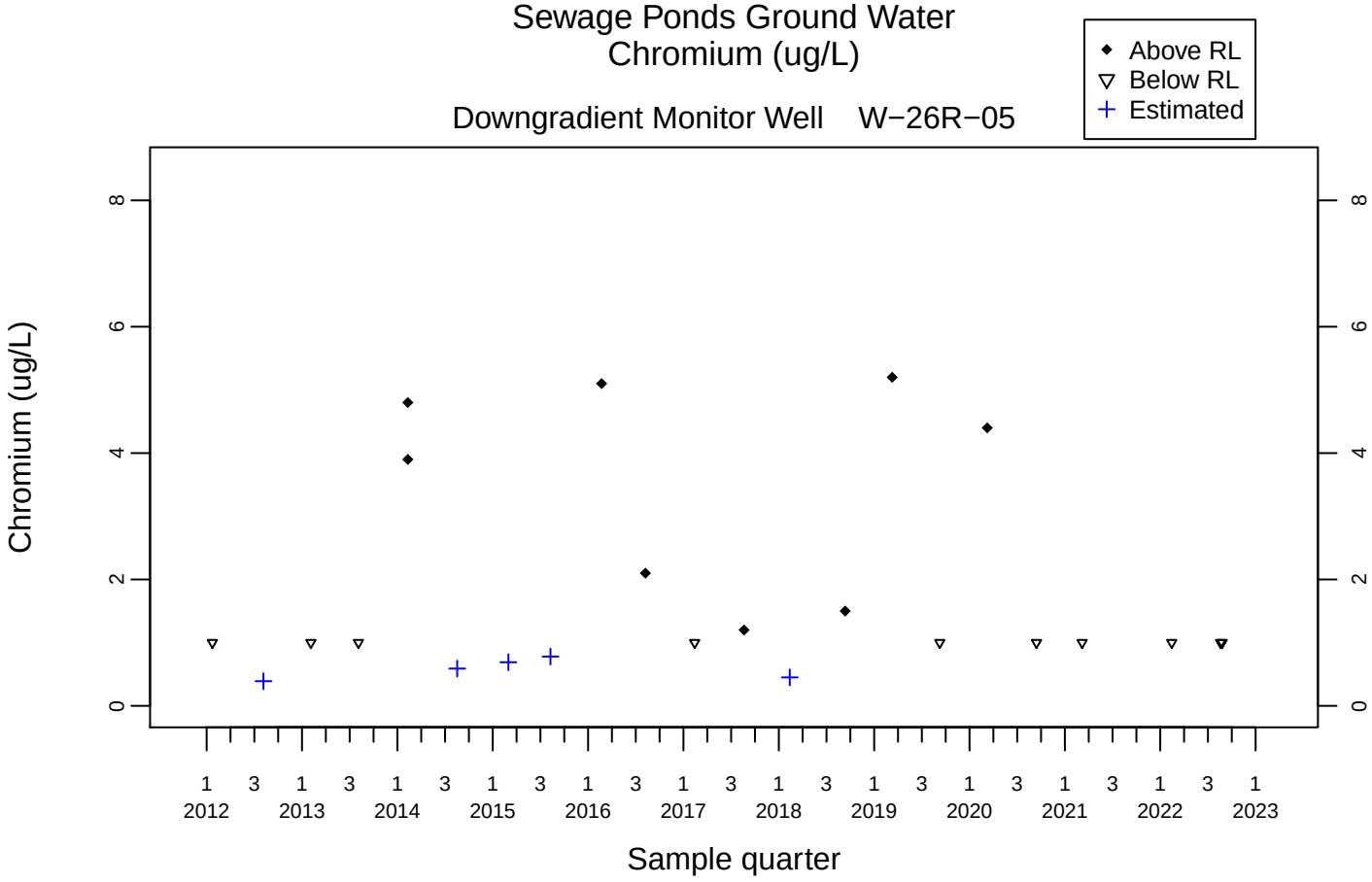


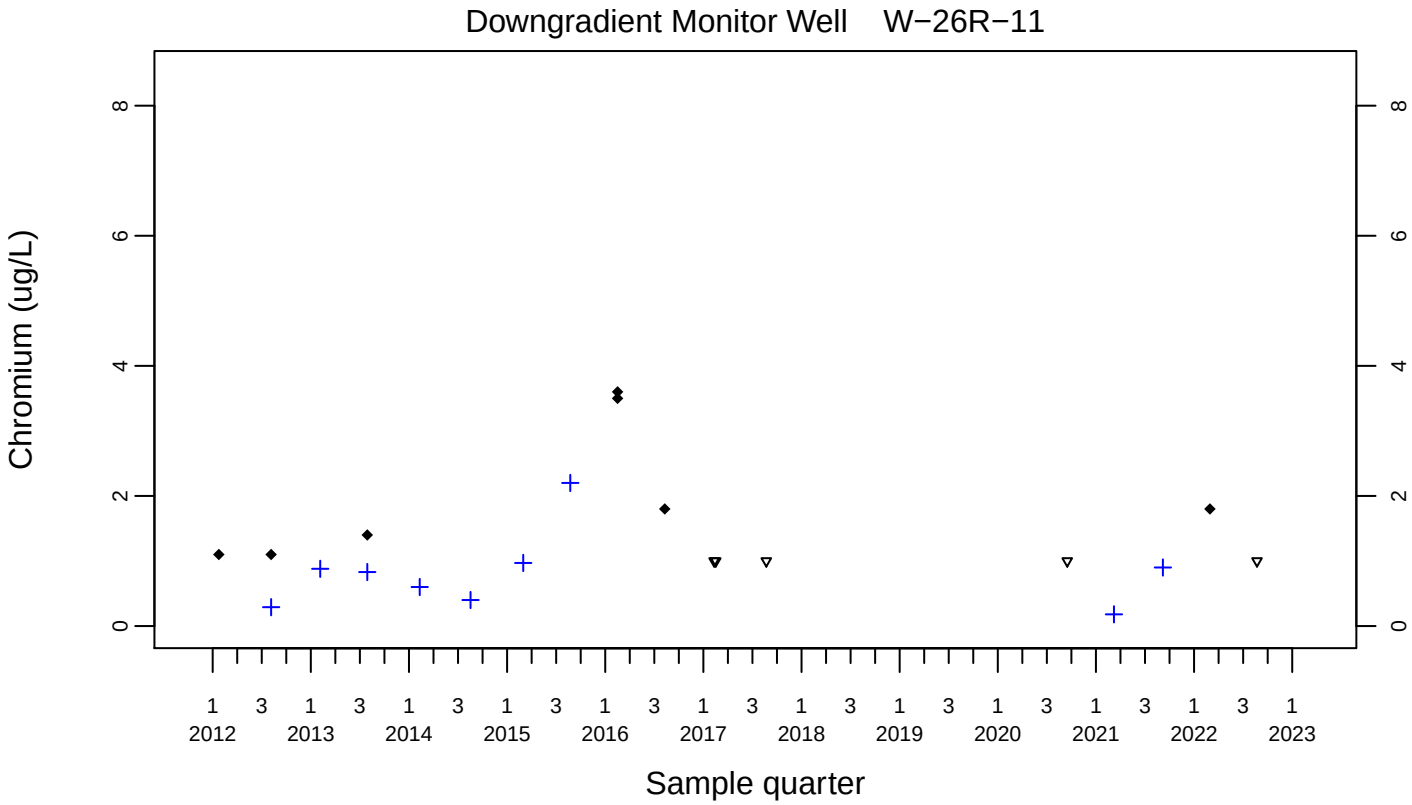
Sewage Ponds Ground Water
Chromium (ug/L)

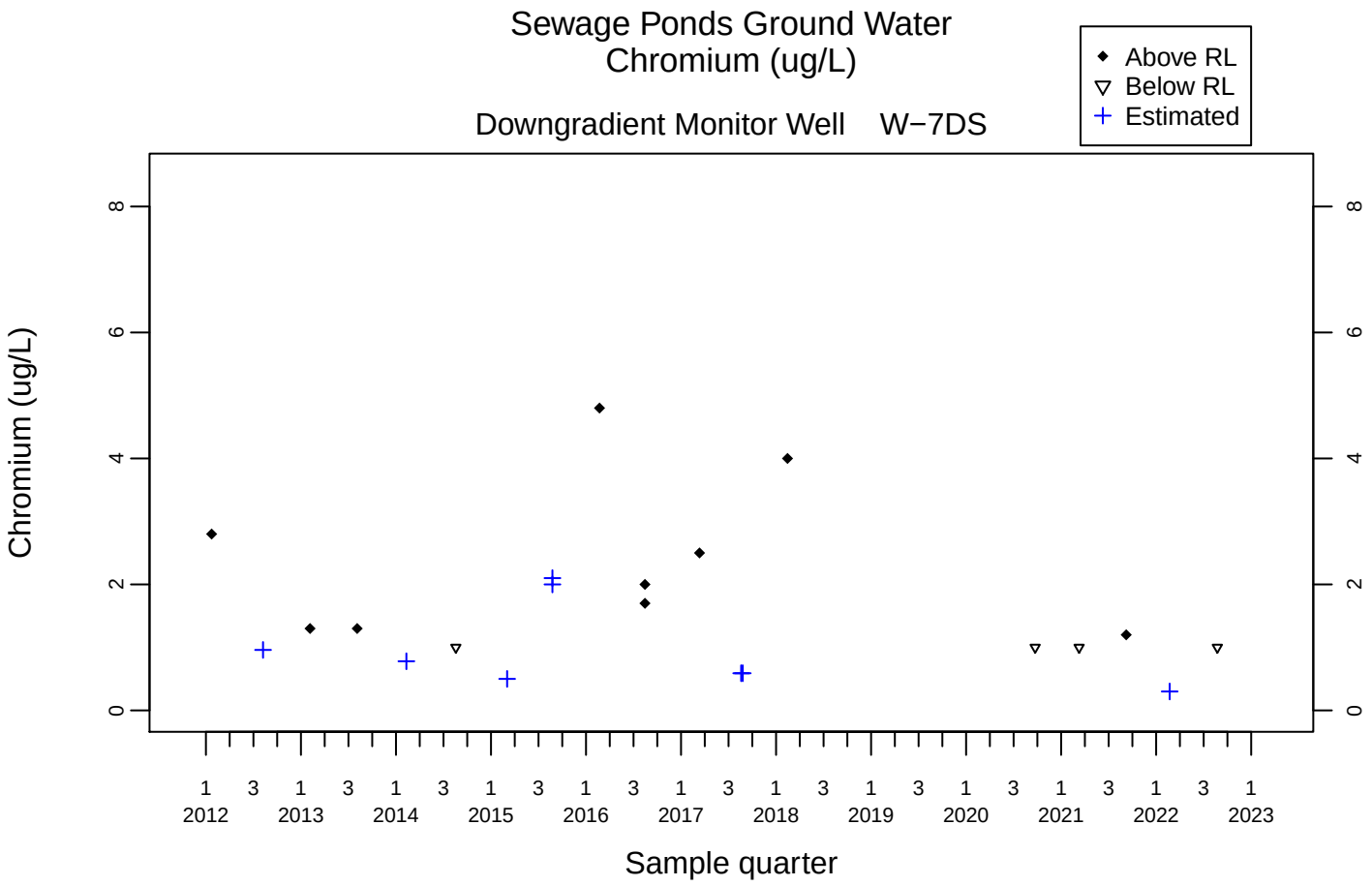




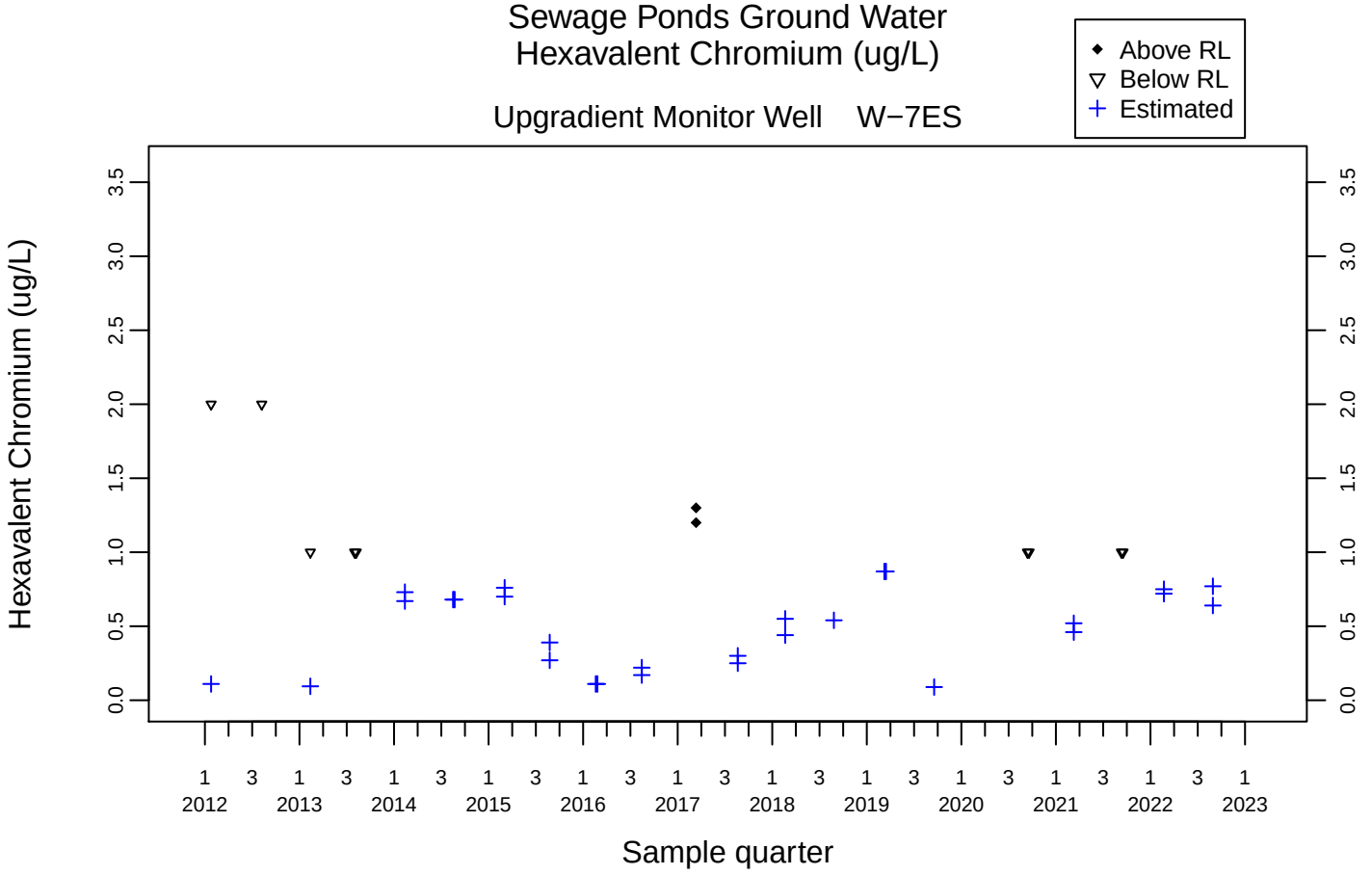
Sewage Ponds Ground Water
Chromium (ug/L)

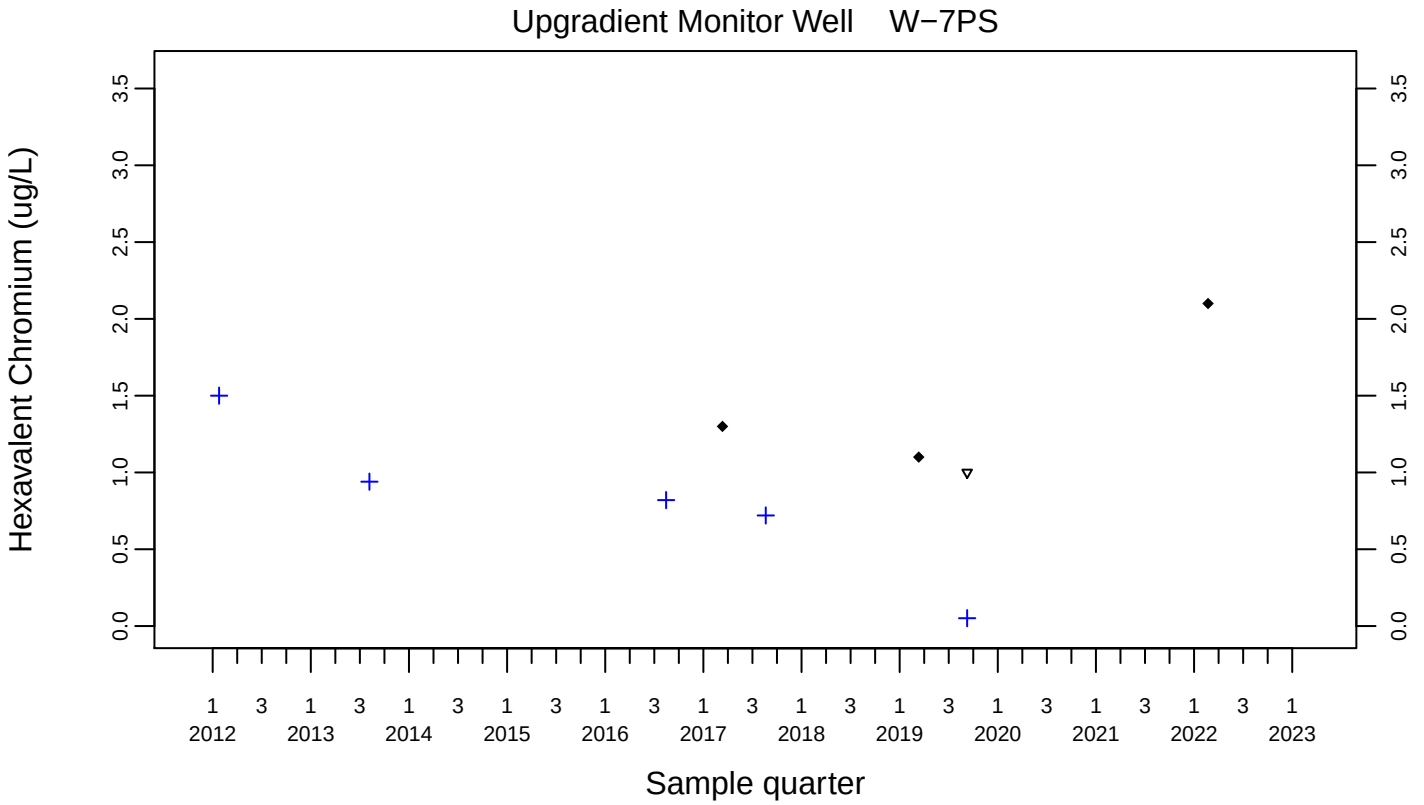




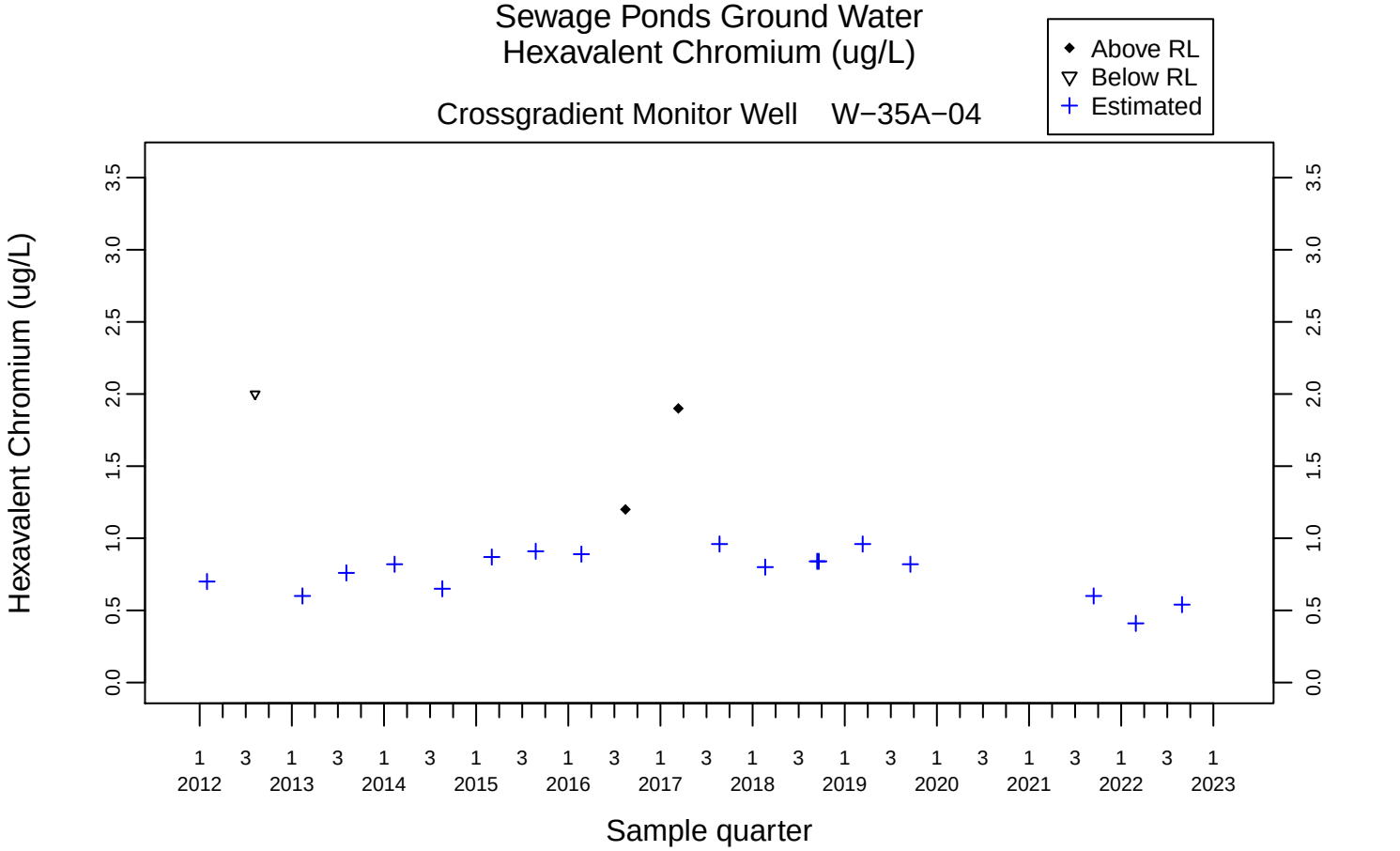

Sewage Ponds Ground Water
Chromium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Chromium (ug/L)
0
2
4
6
8
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

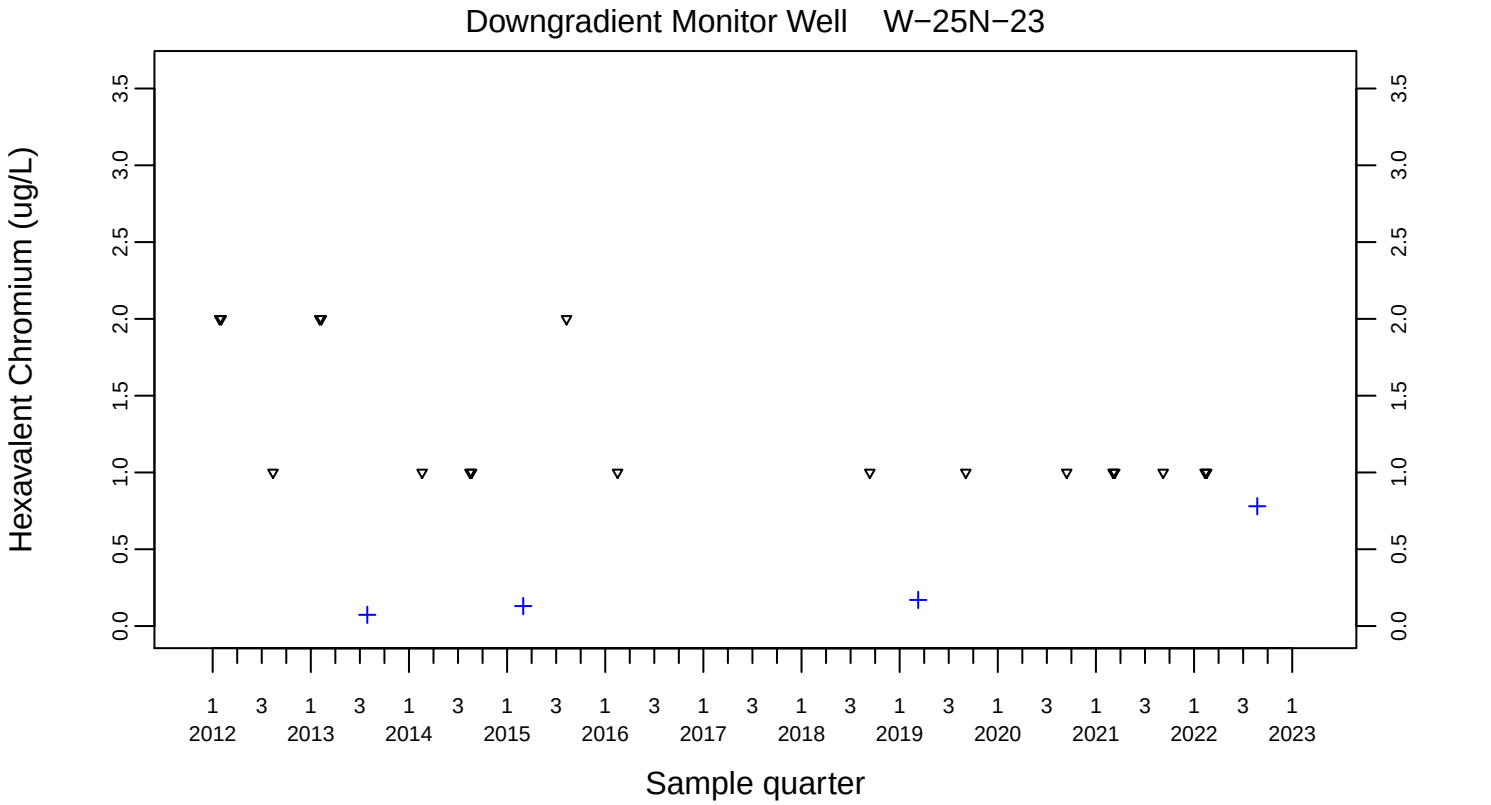
Sewage Ponds Ground Water
Hexavalent Chromium (ug/L)



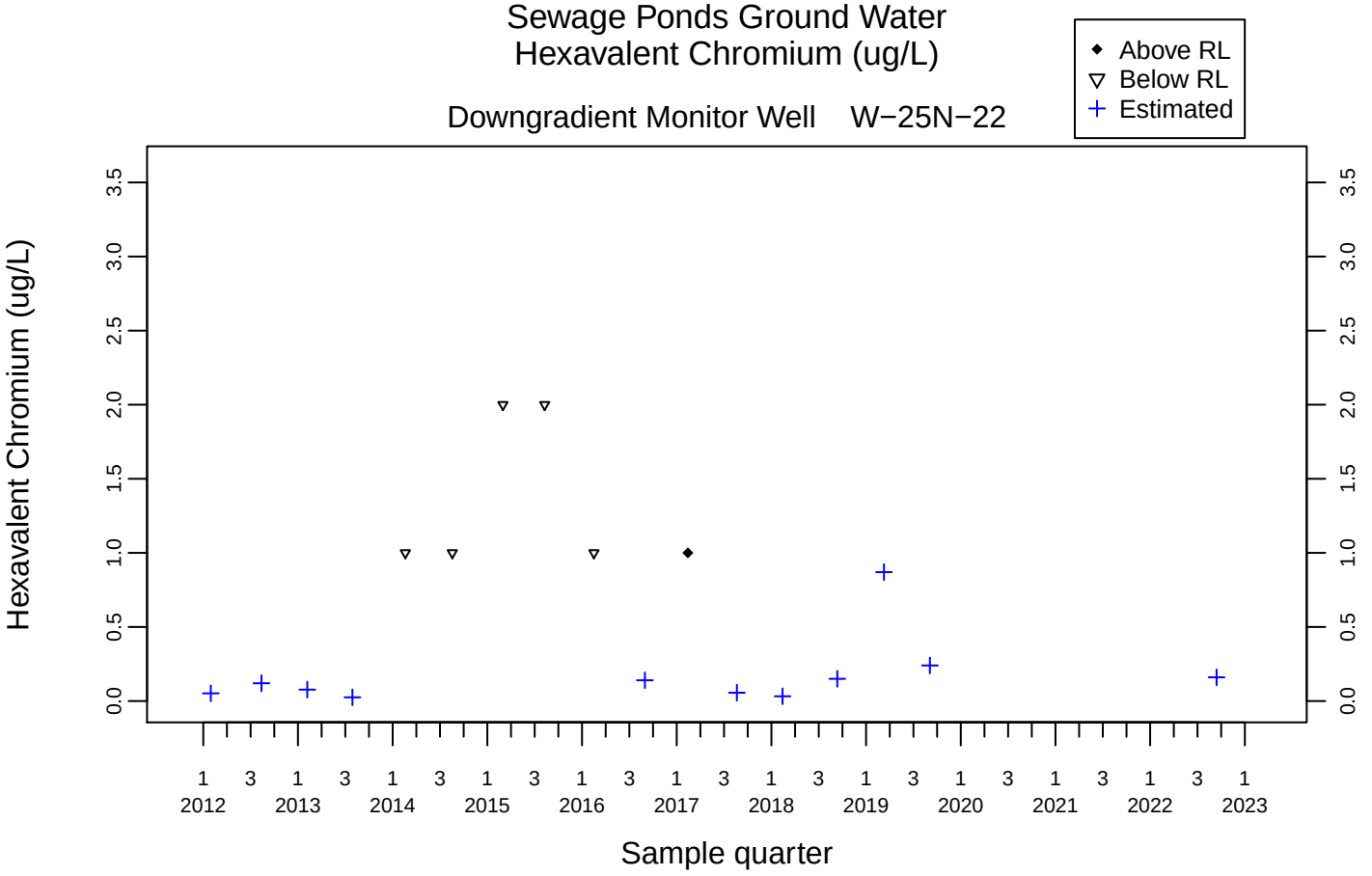


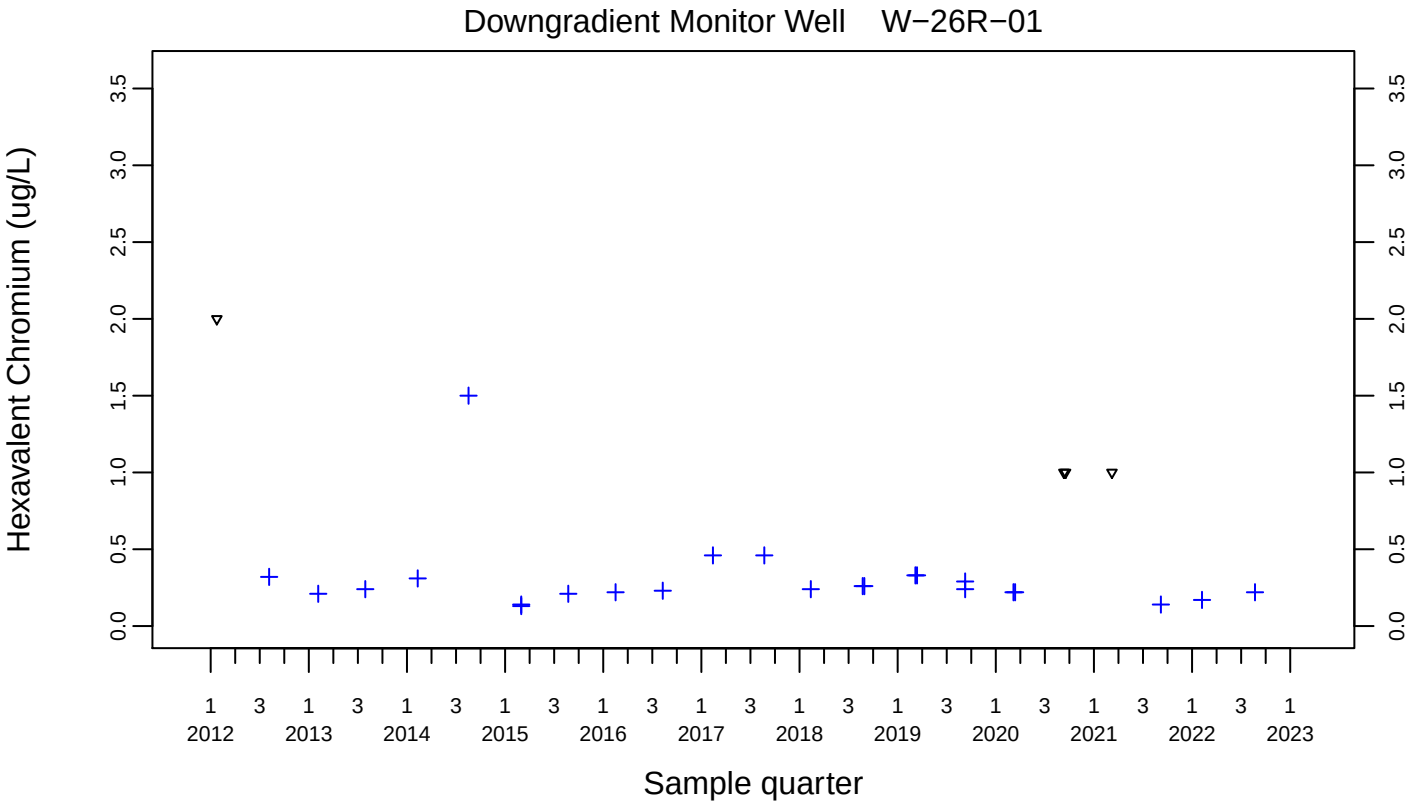
Sewage Ponds Ground Water
Hexavalent Chromium (ug/L)



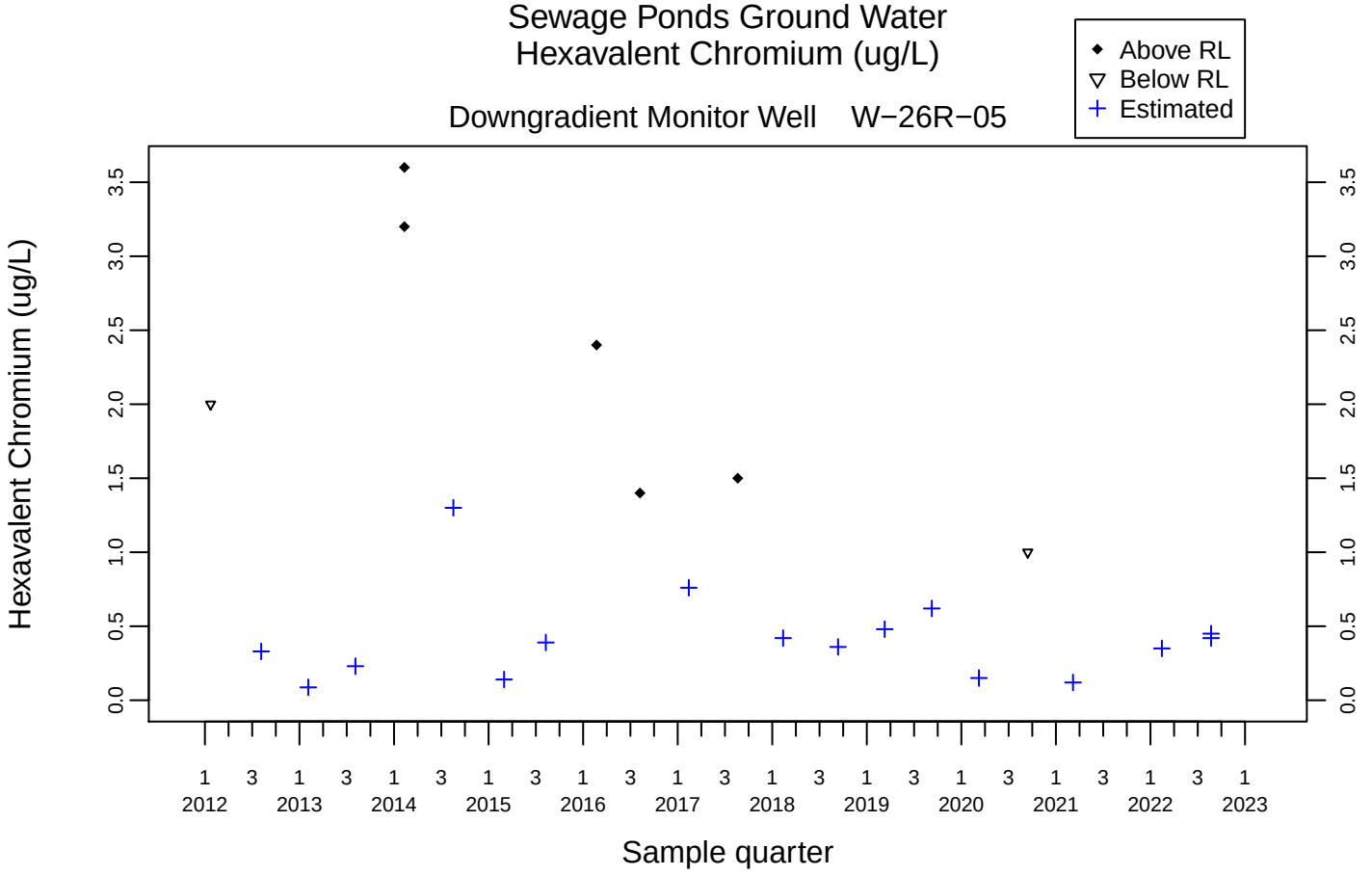


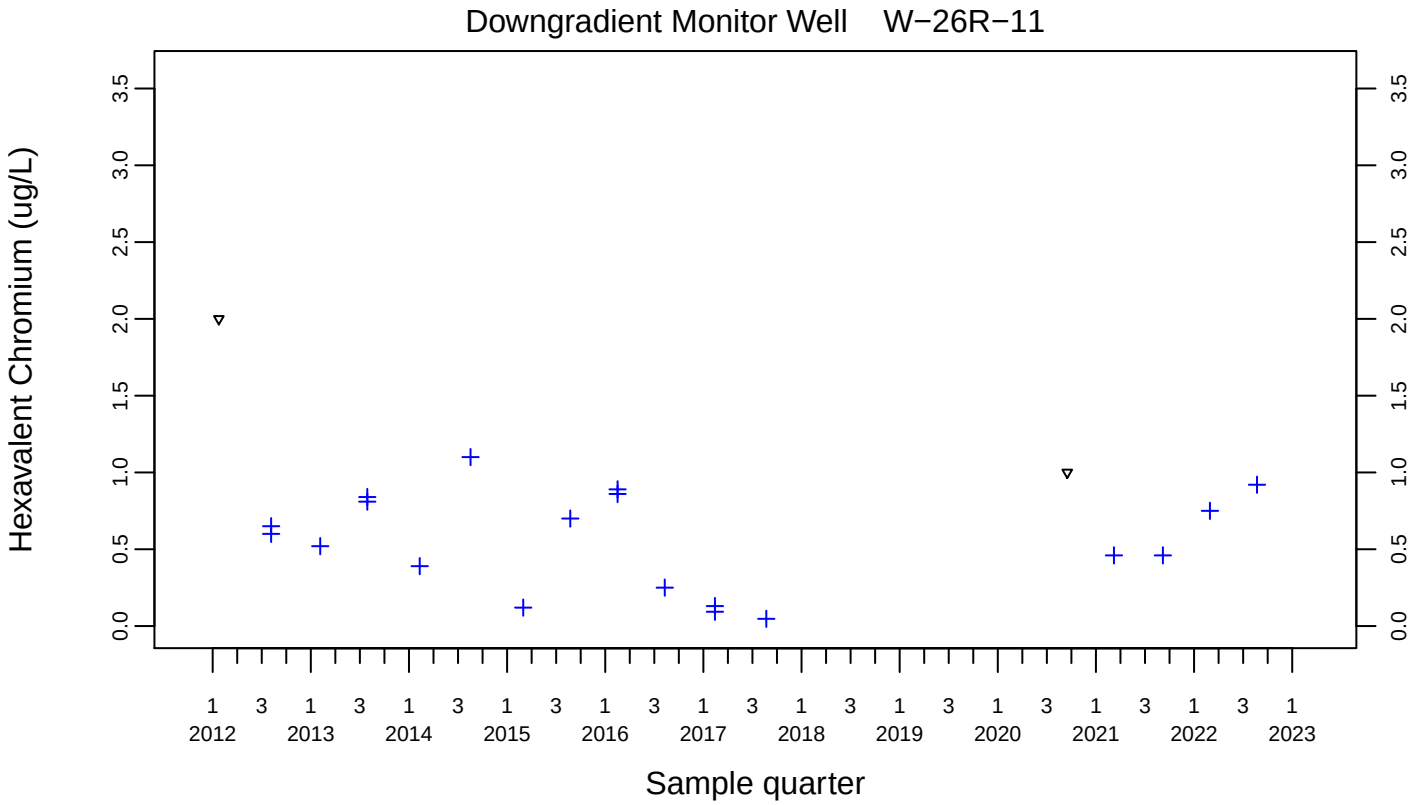
Sewage Ponds Ground Water
Hexavalent Chromium (ug/L)

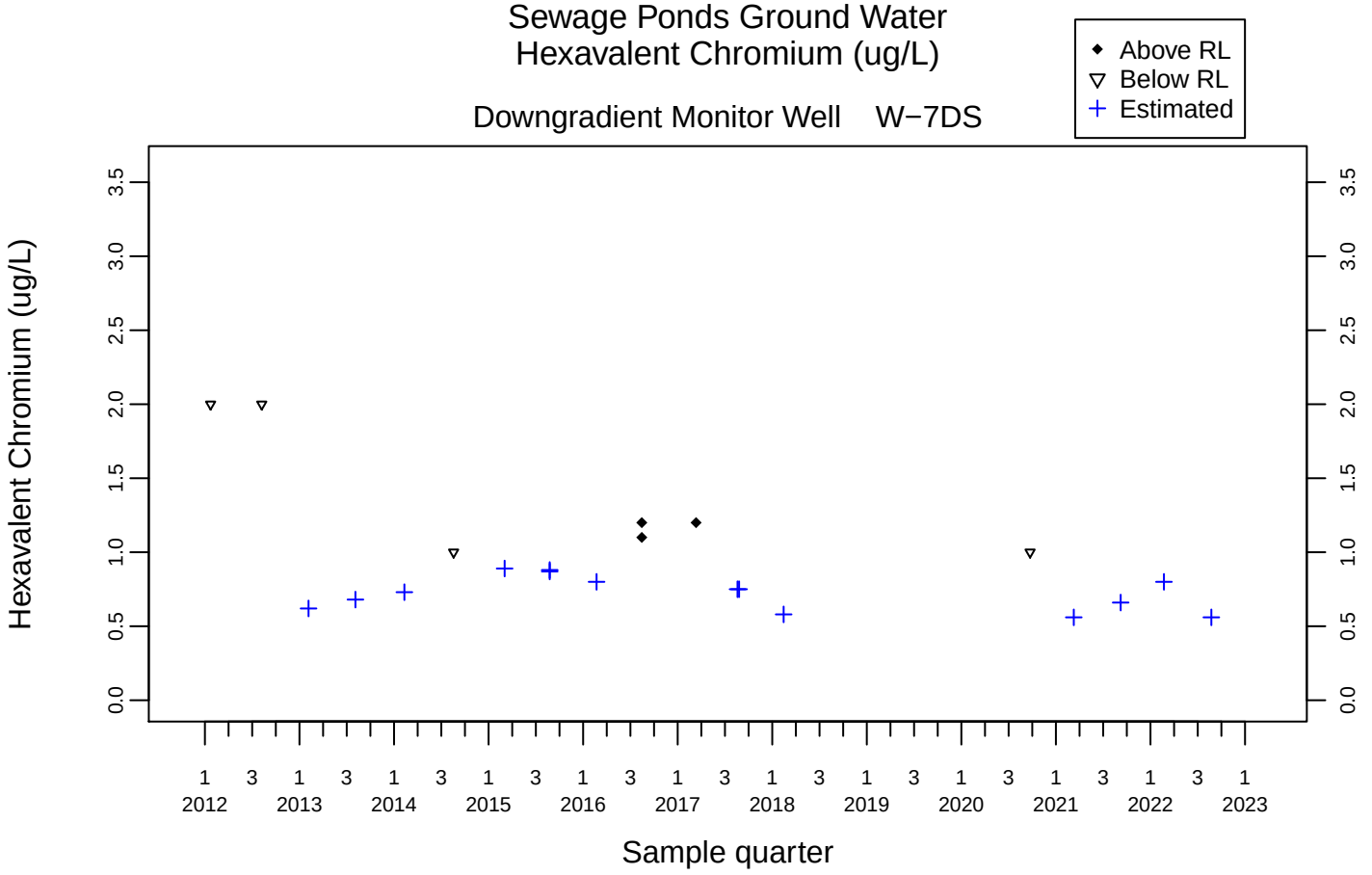




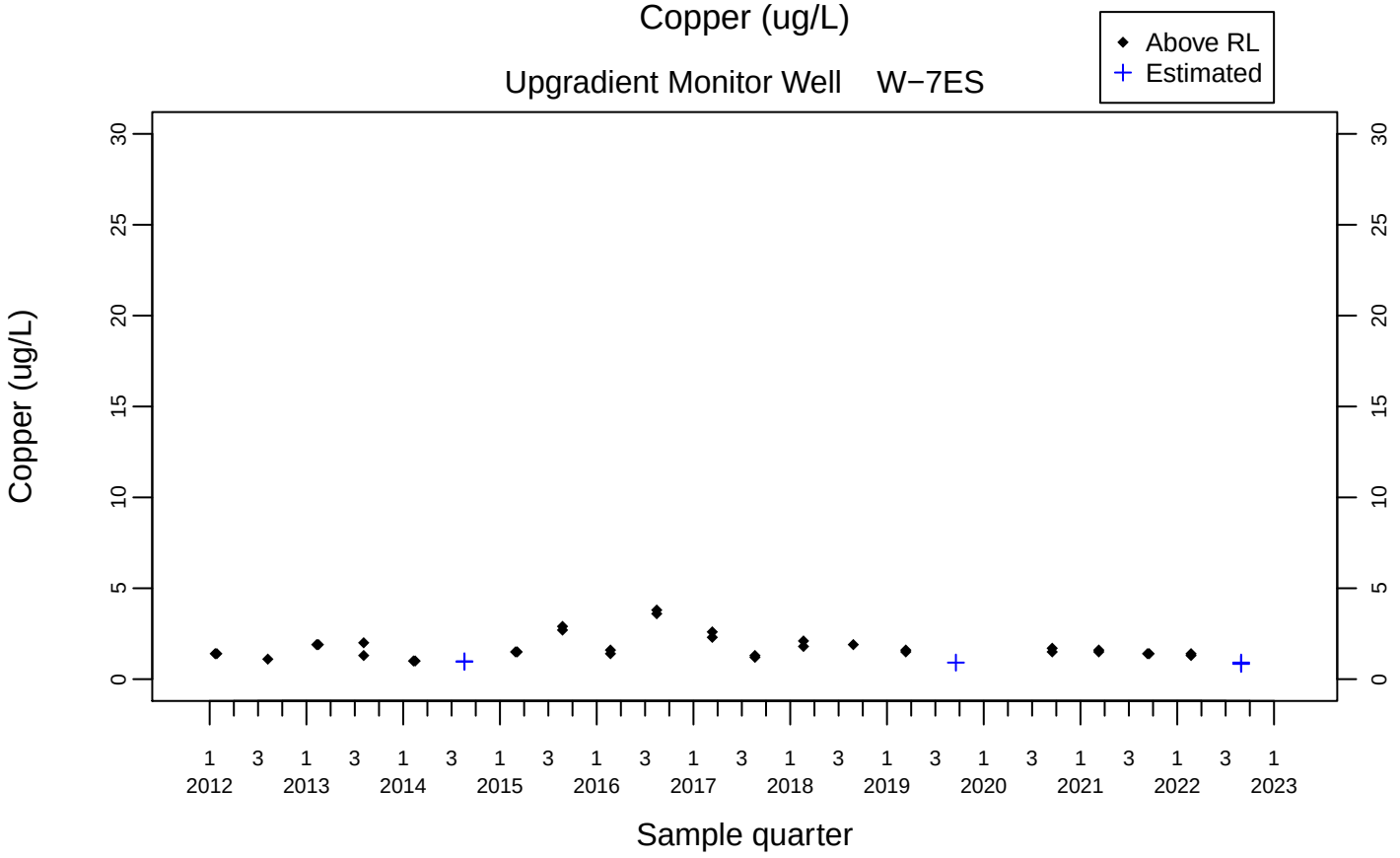
Sewage Ponds Ground Water
Hexavalent Chromium (ug/L)

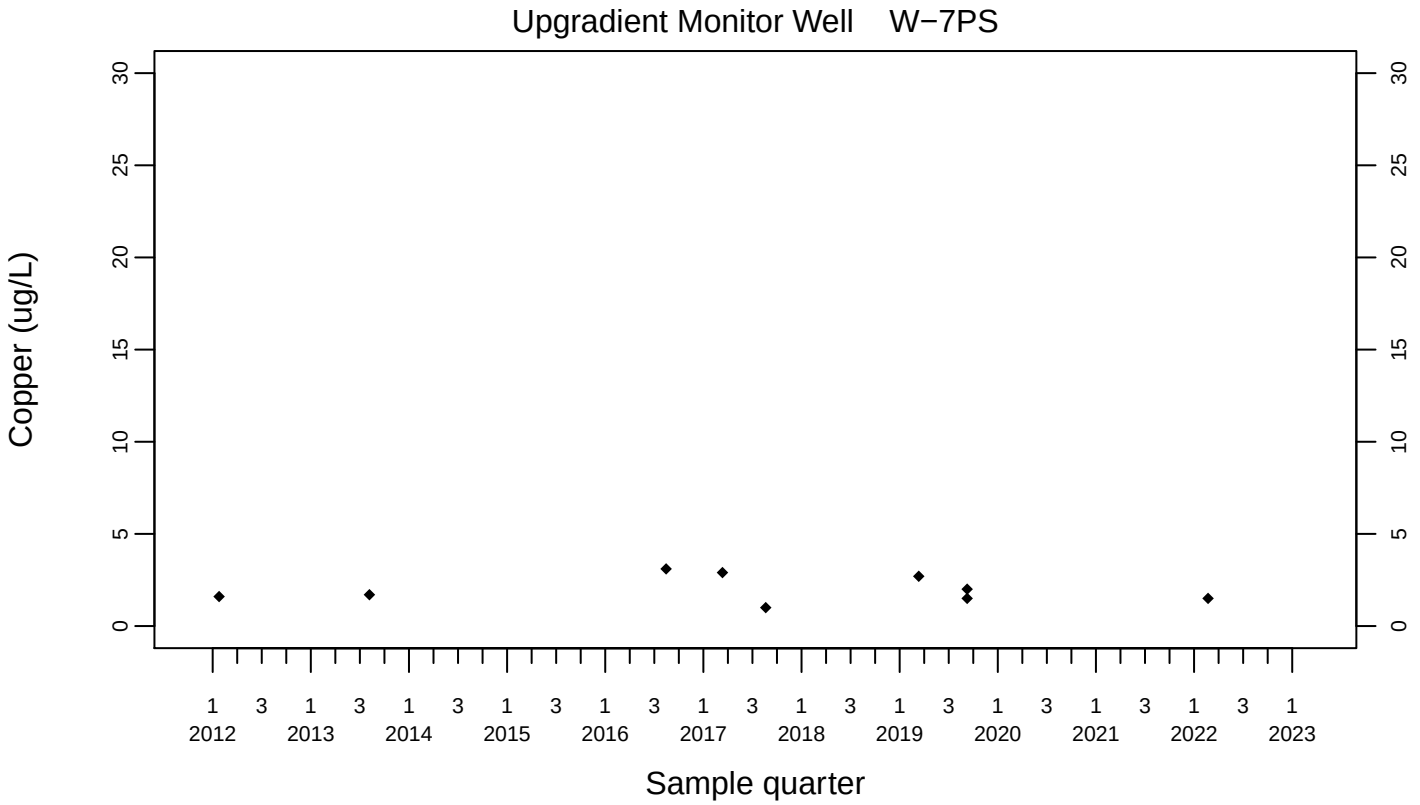





Sewage Ponds Ground Water
Hexavalent Chromium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Hexavalent Chromium (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

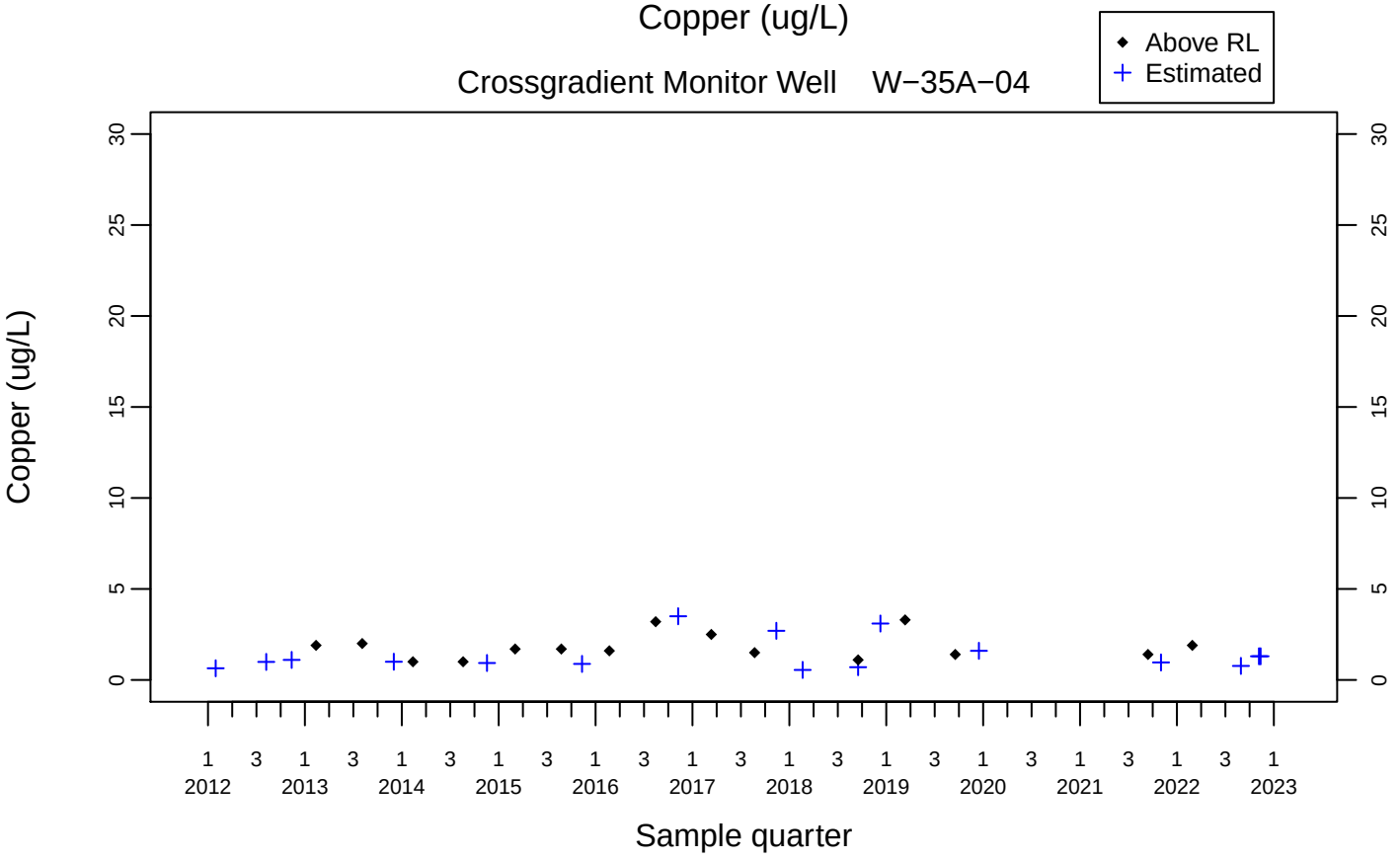
Sewage Ponds Ground Water
Copper (ug/L)



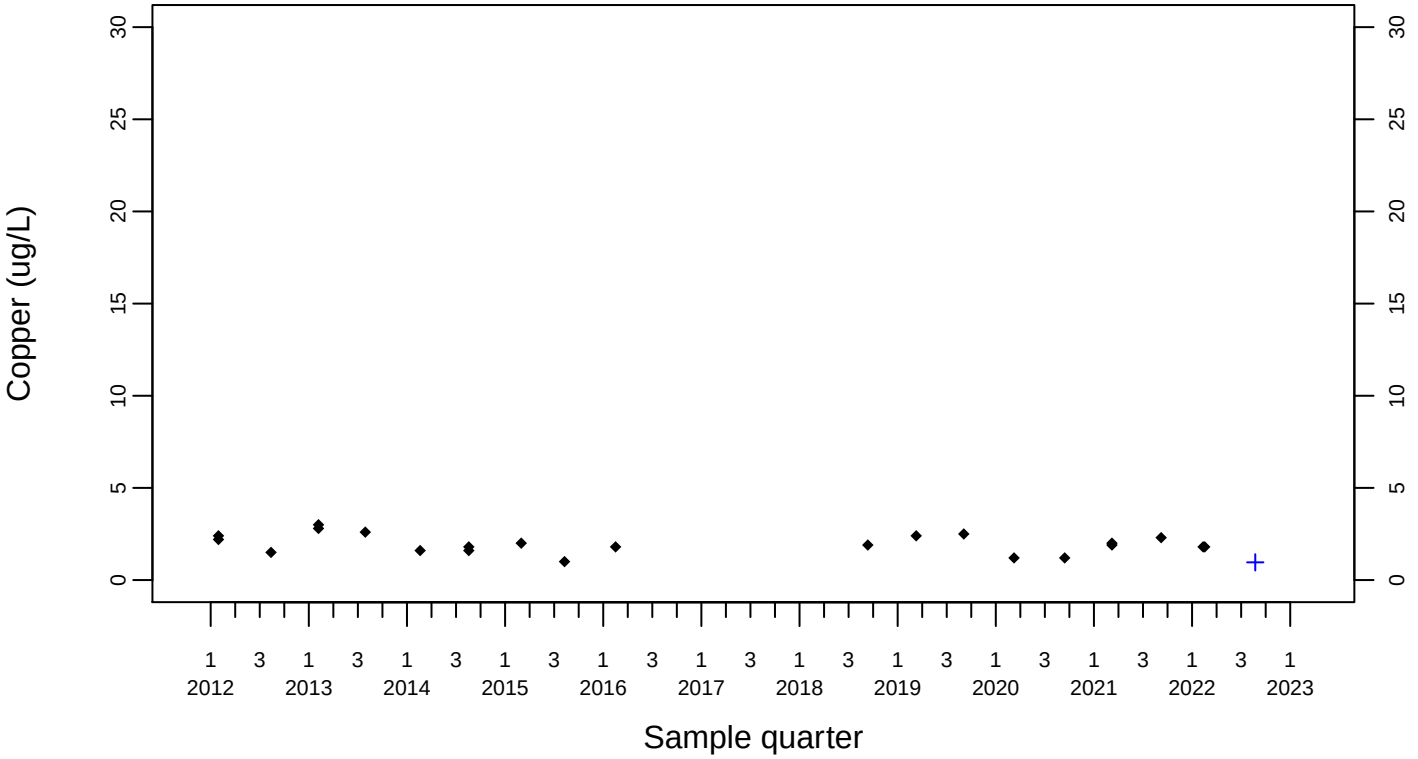


Sewage Ponds Ground Water
Copper (ug/L)

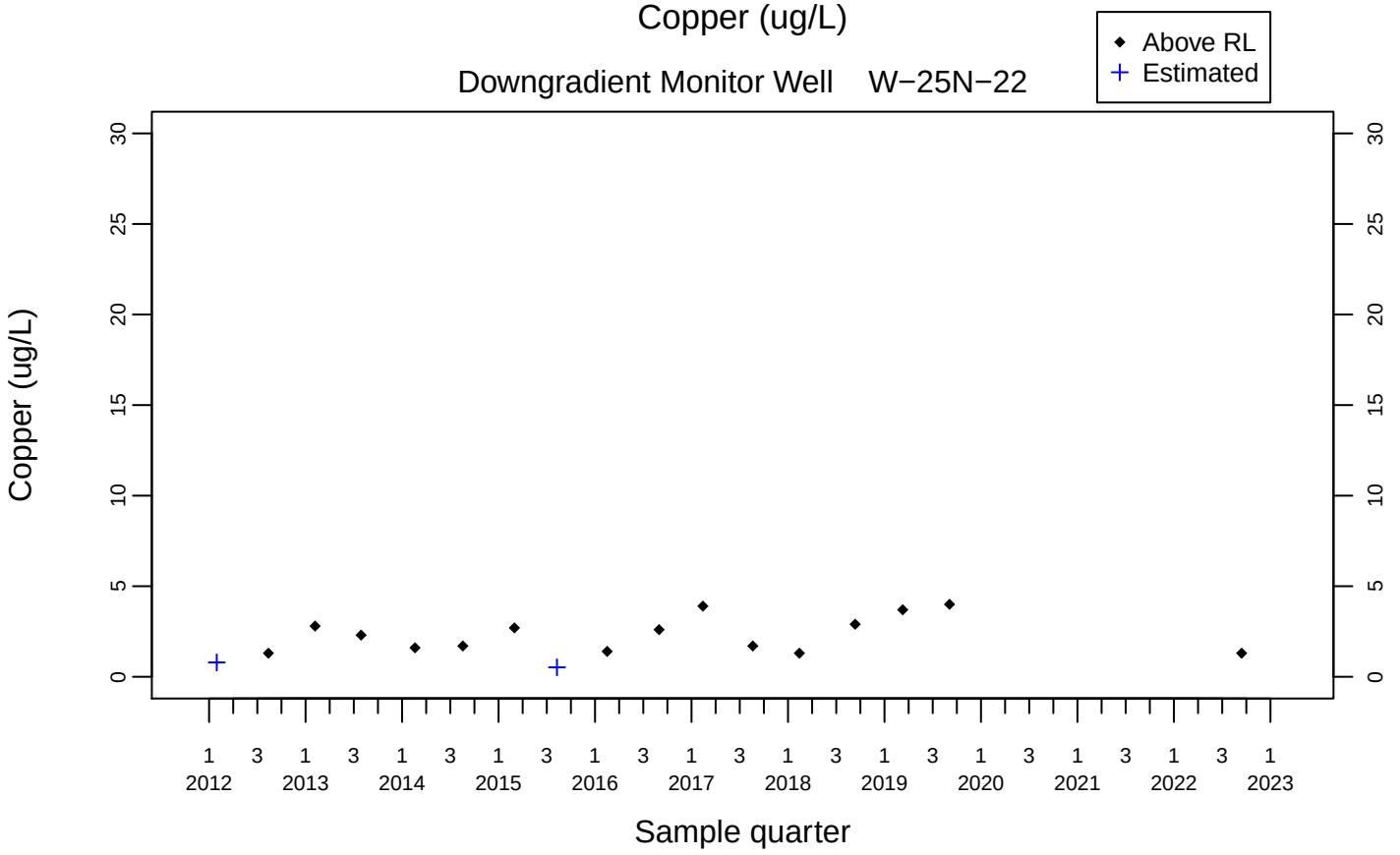
Crossgradient Monitor Well W−35A−04

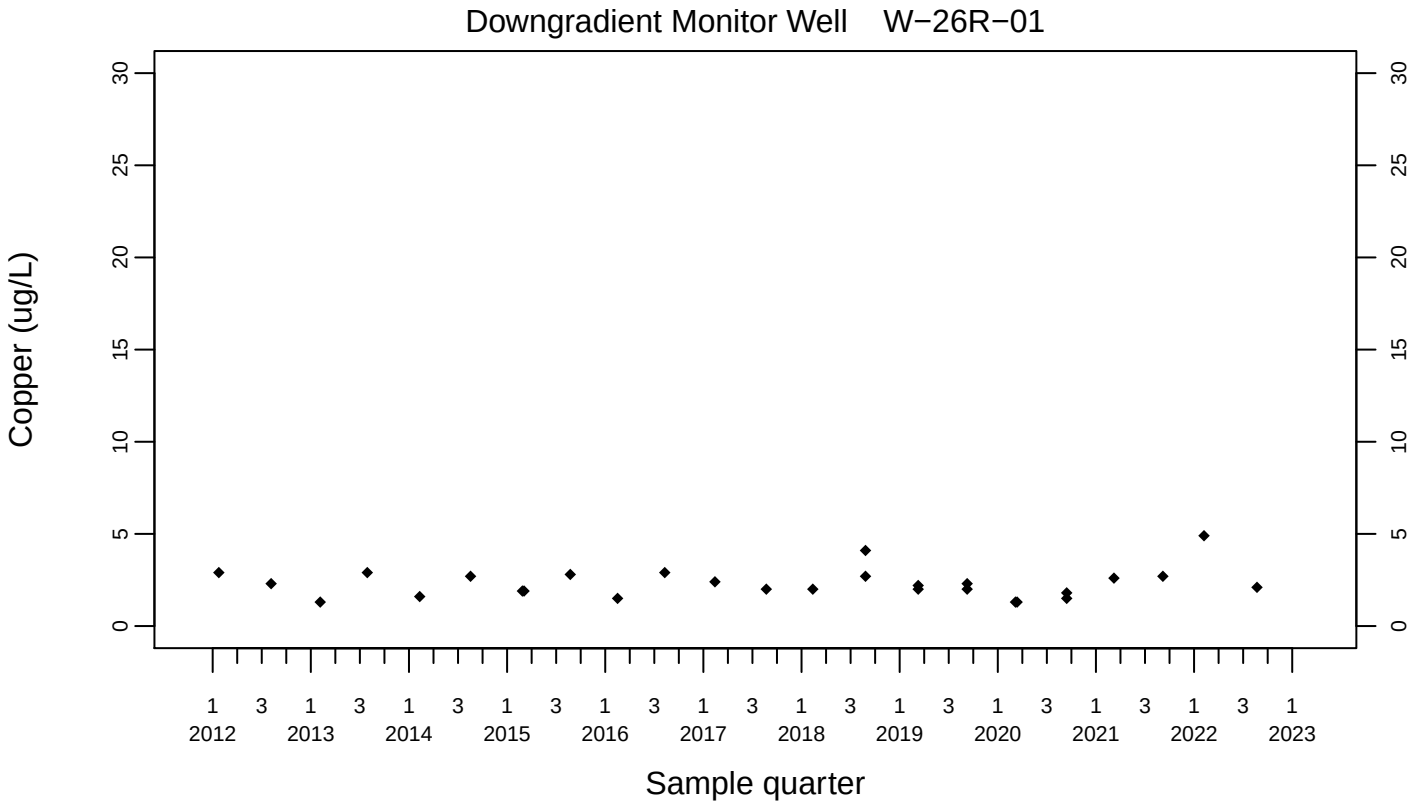


Downgradient Monitor Well W−25N−23

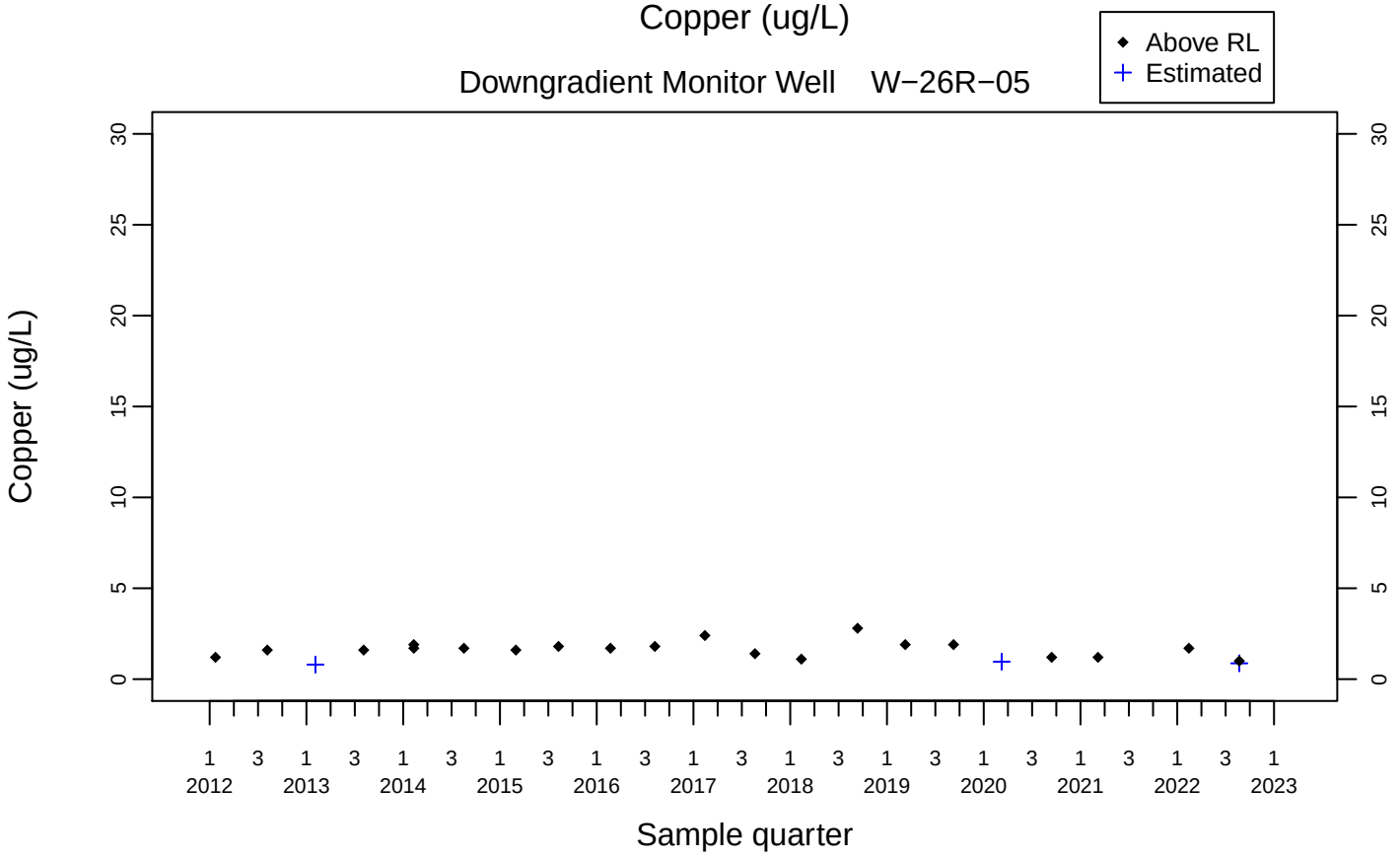


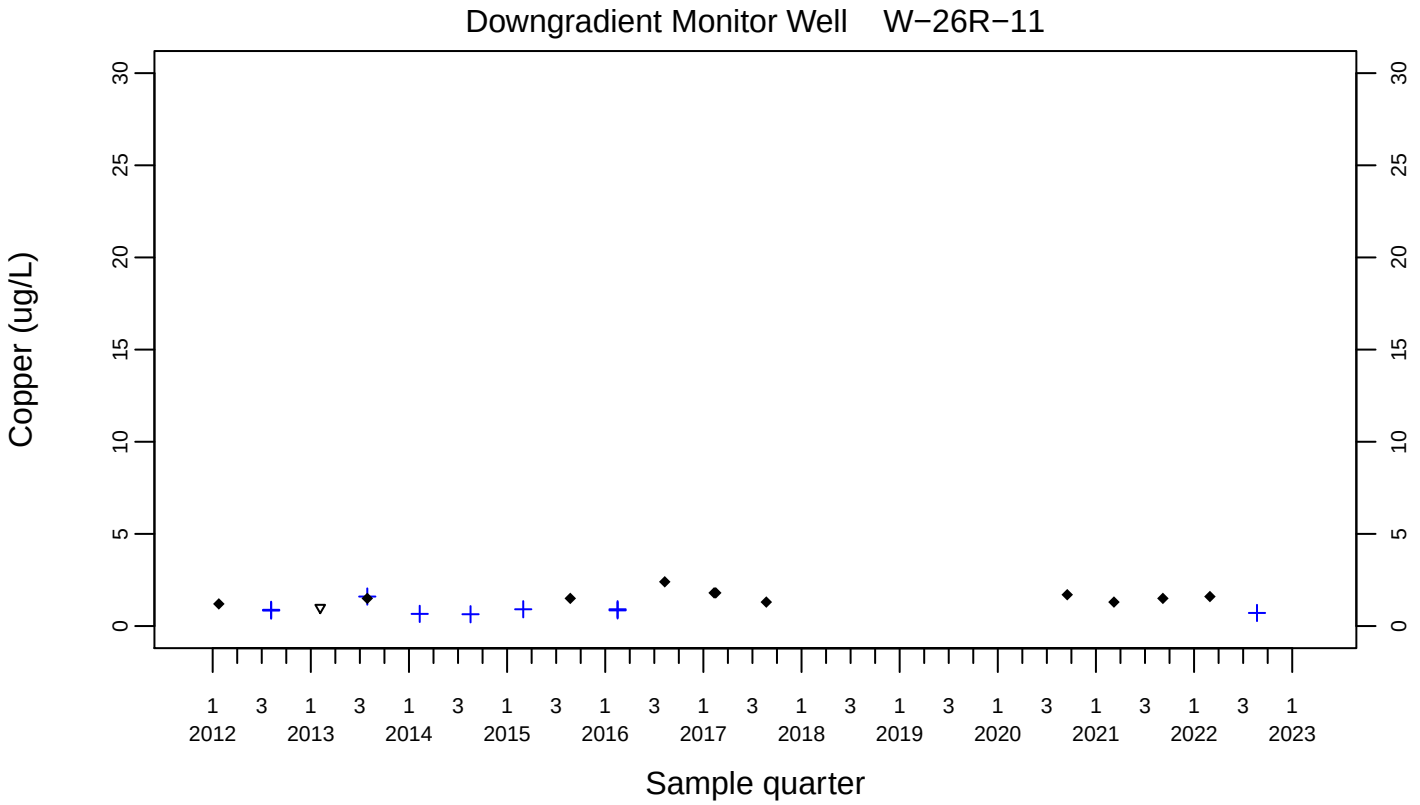
Sewage Ponds Ground Water
Copper (ug/L)

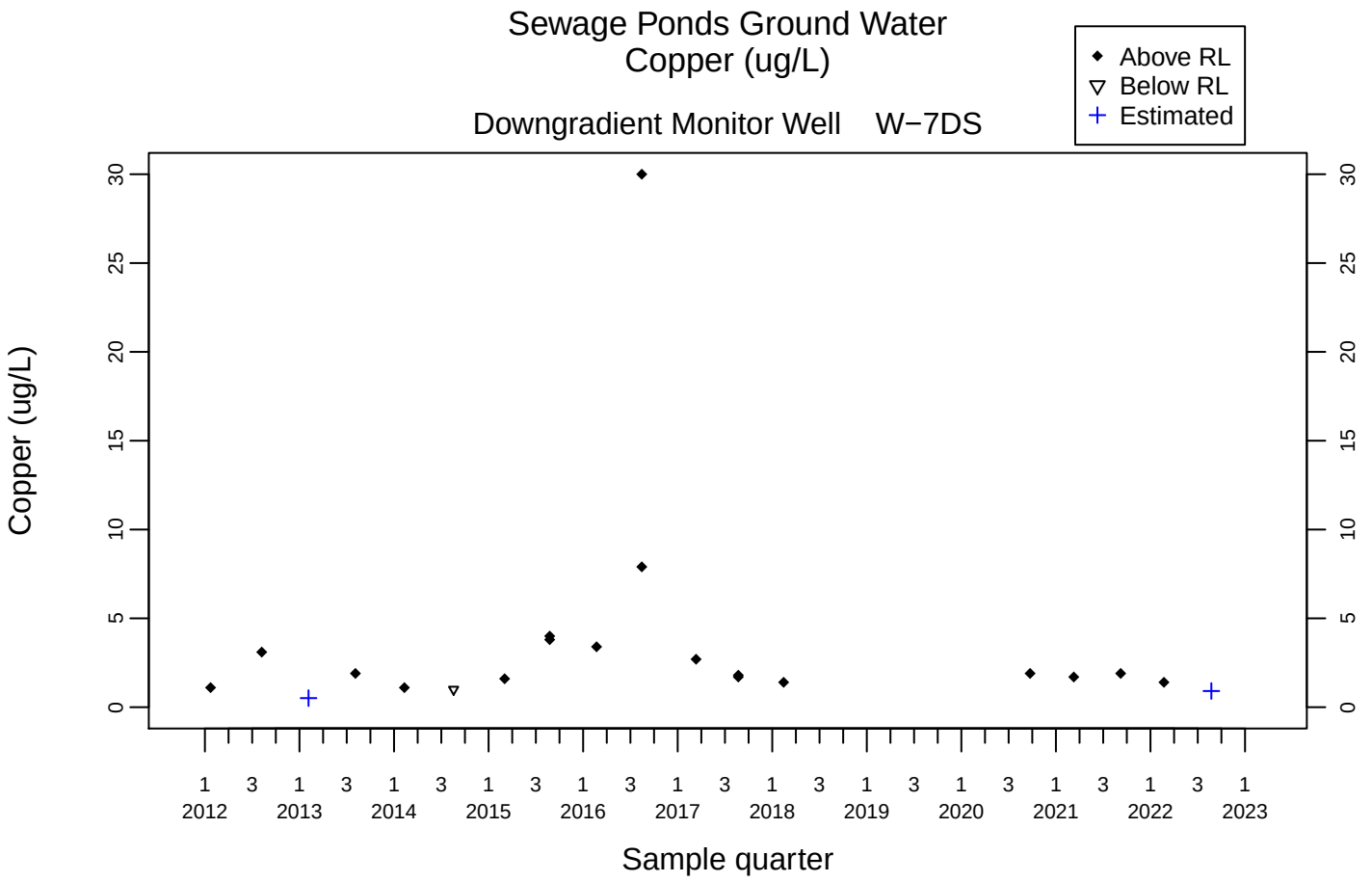




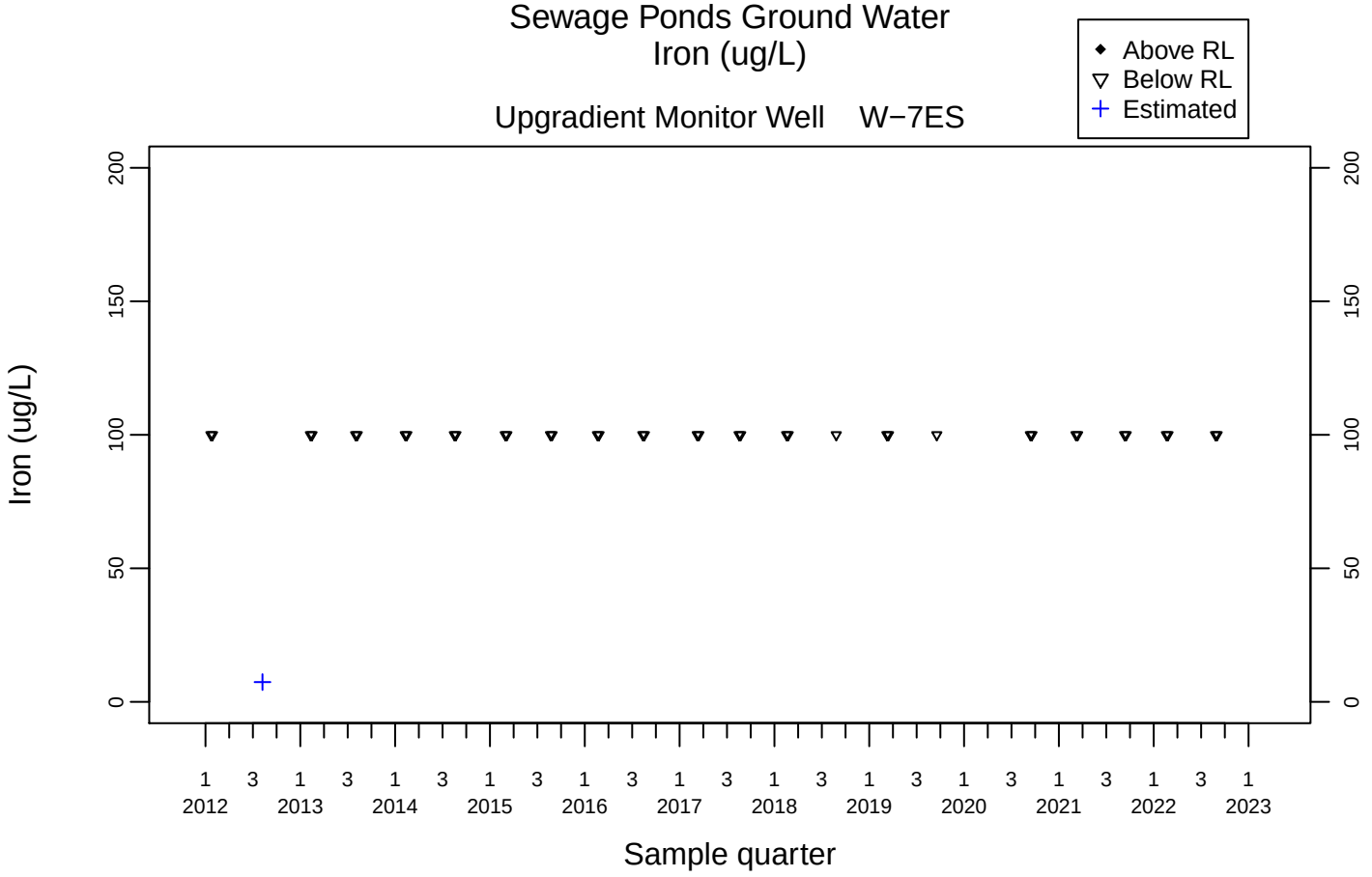
Sewage Ponds Ground Water
Copper (ug/L)

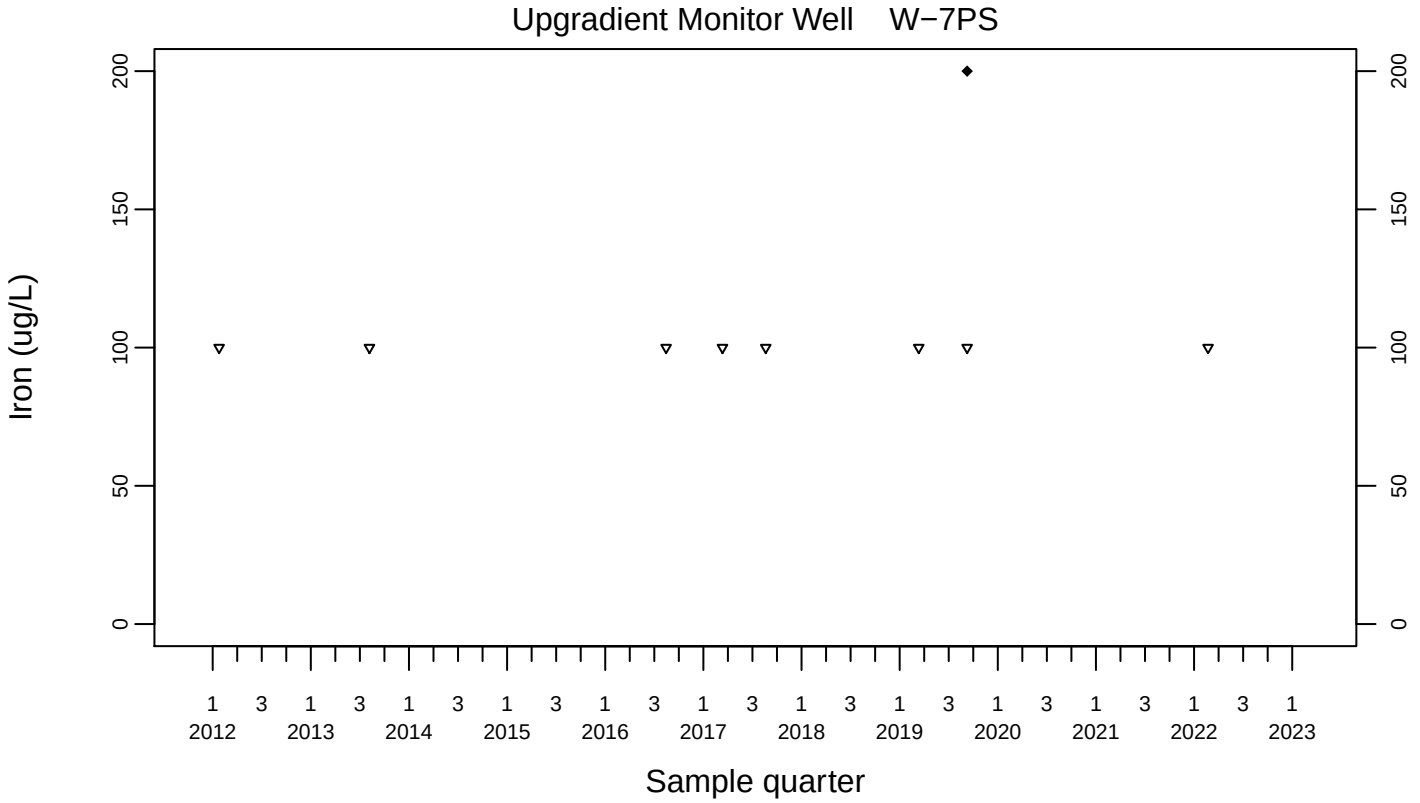





Sewage Ponds Ground Water
Copper (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Copper (ug/L)
0
5
10
15
20
25
30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

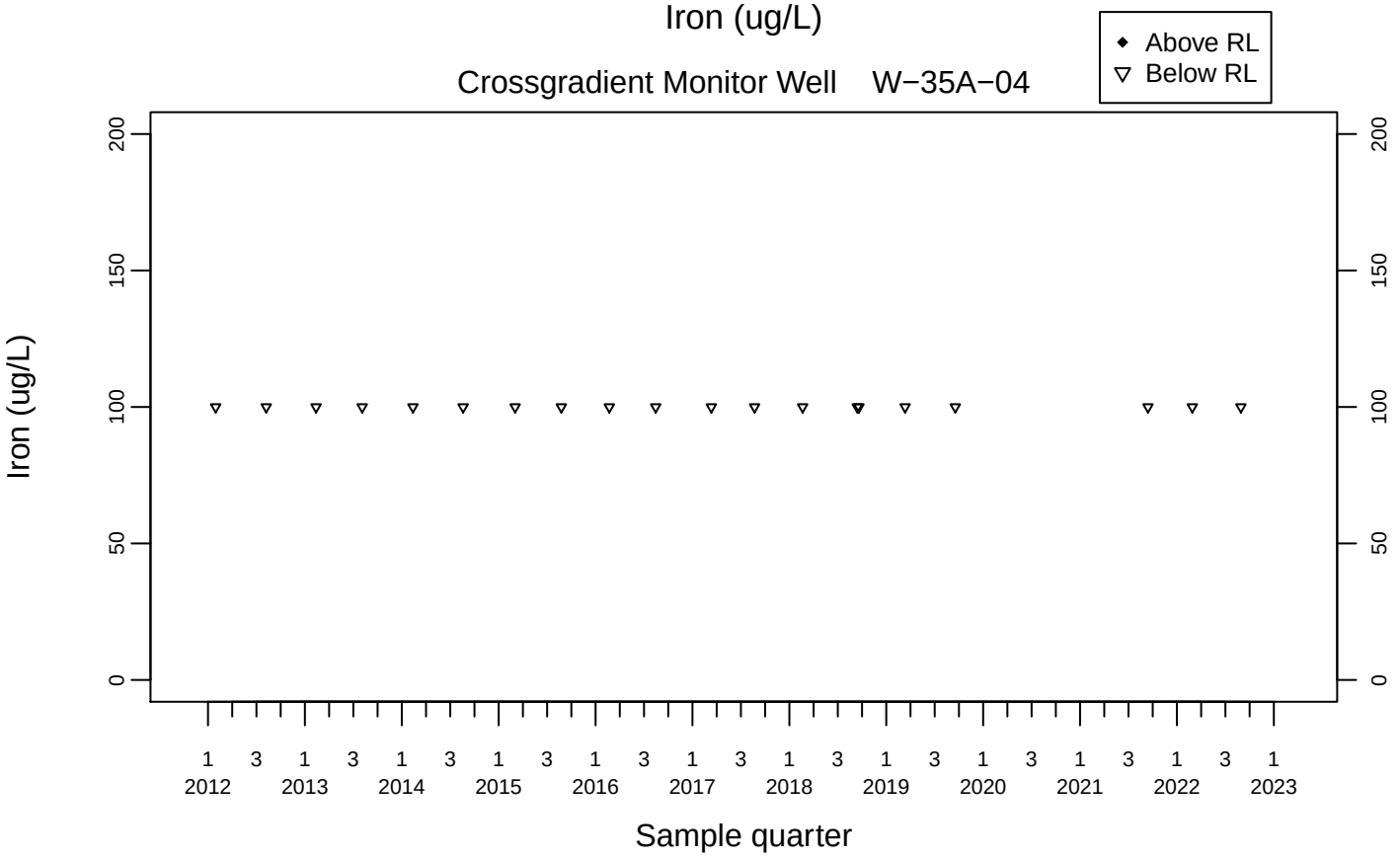
Sewage Ponds Ground Water
Iron (ug/L)



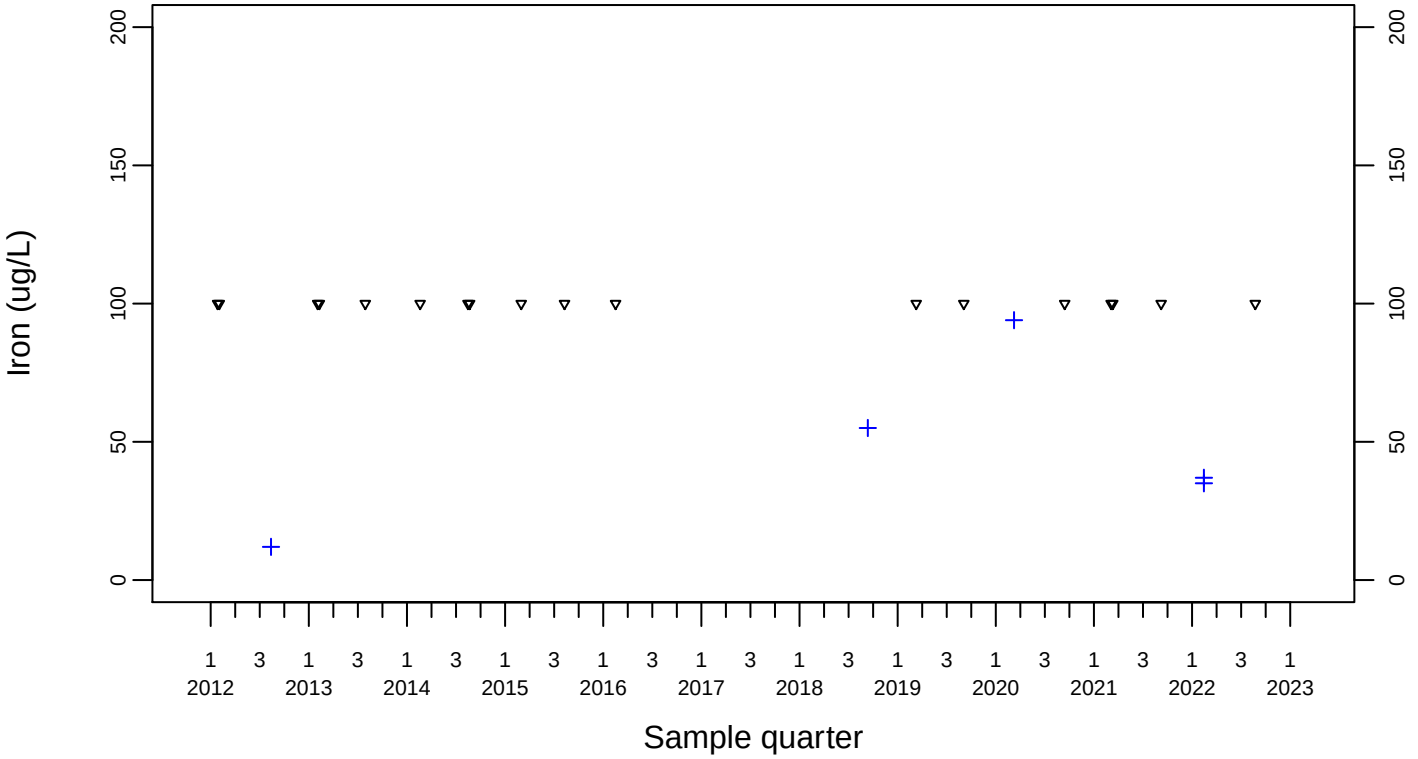


Sewage Ponds Ground Water
Iron (ug/L)

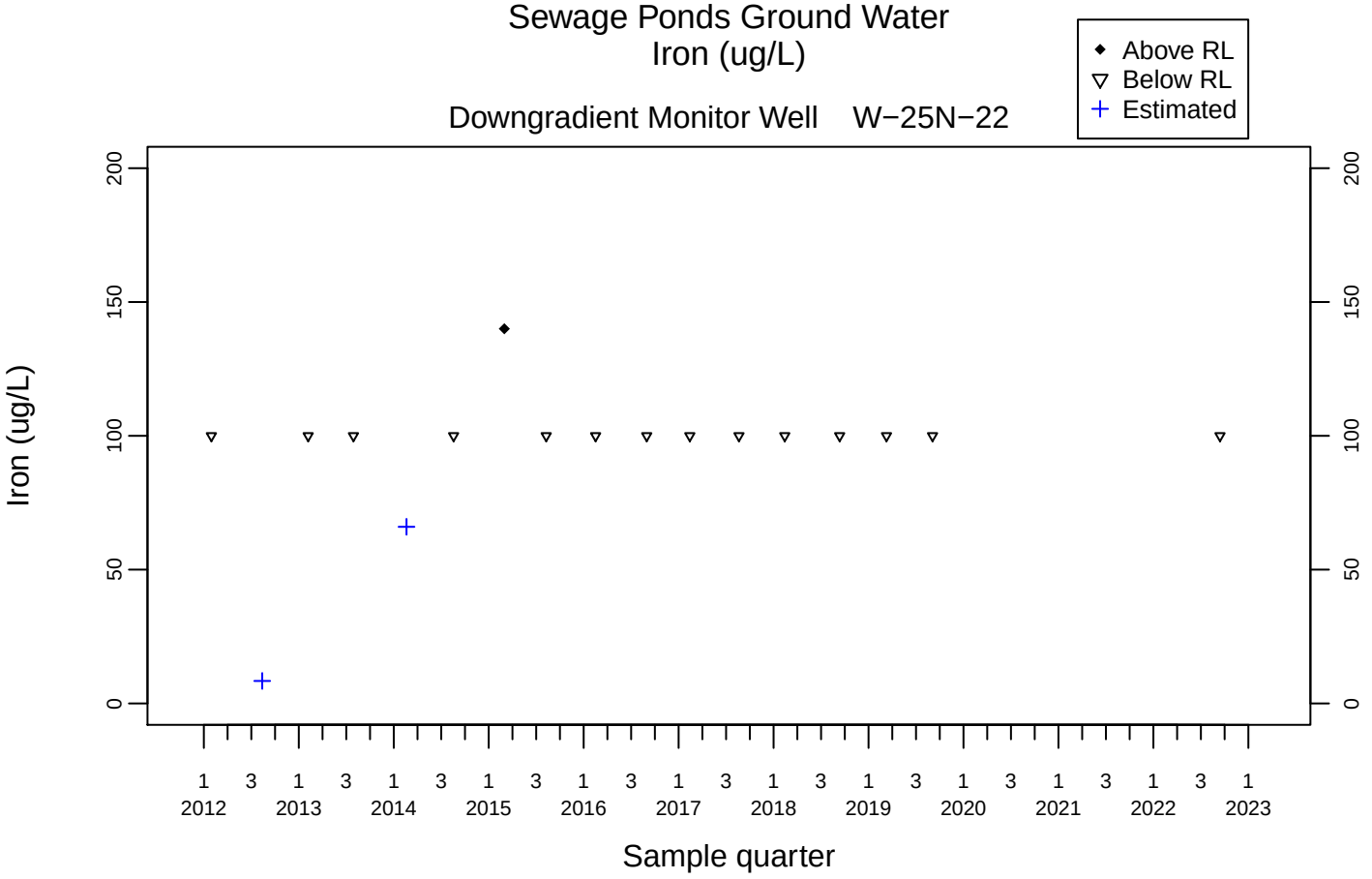
Crossgradient Monitor Well W−35A−04

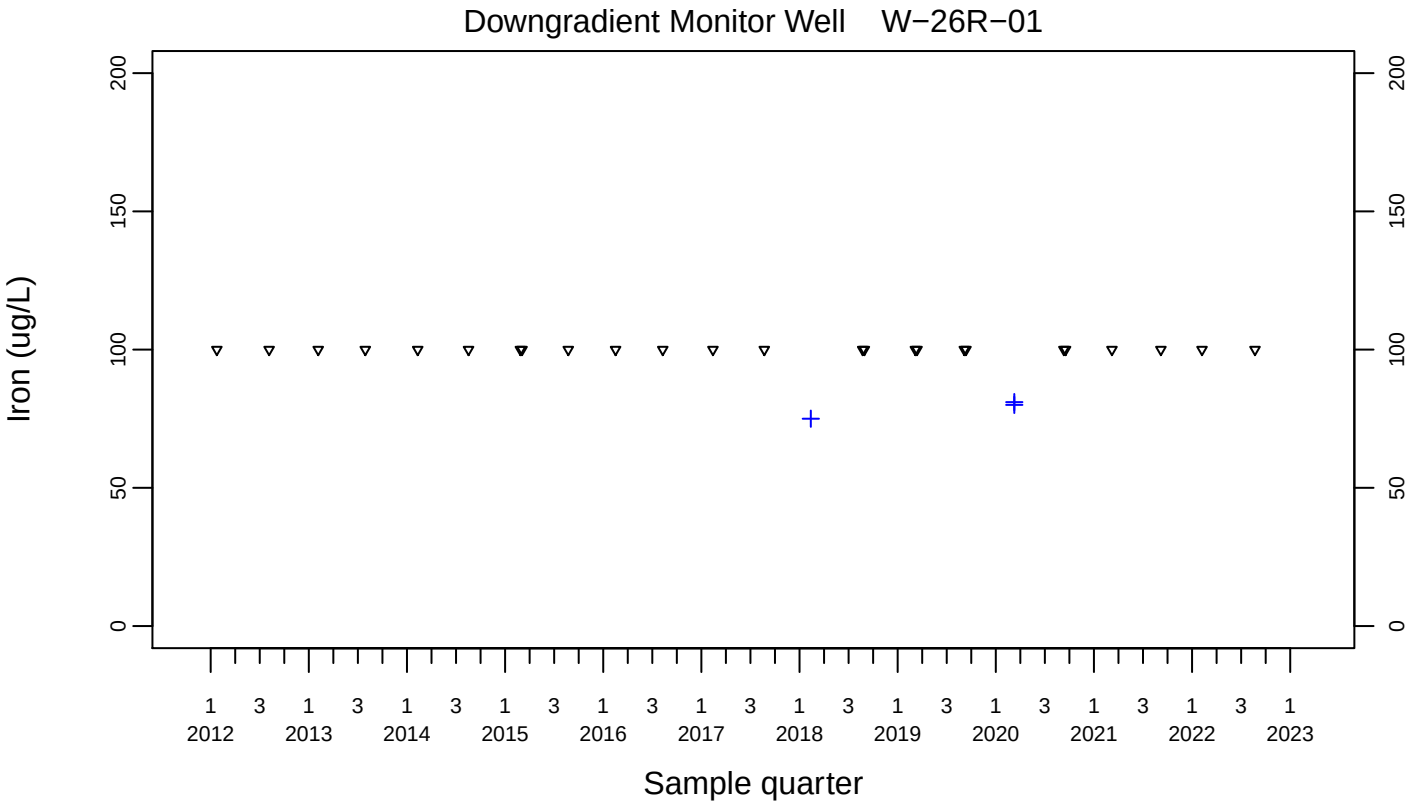


Downgradient Monitor Well W−25N−23

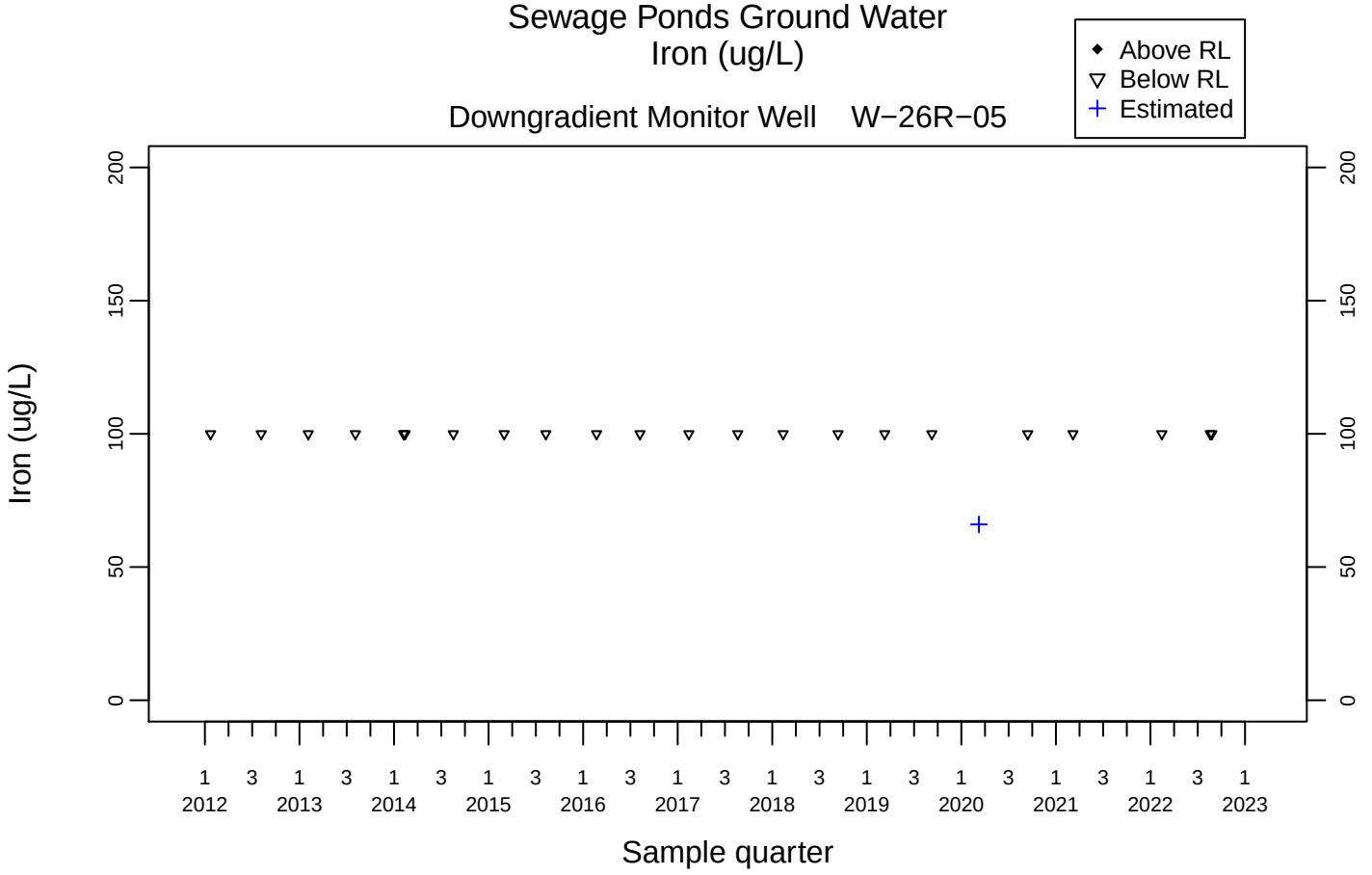


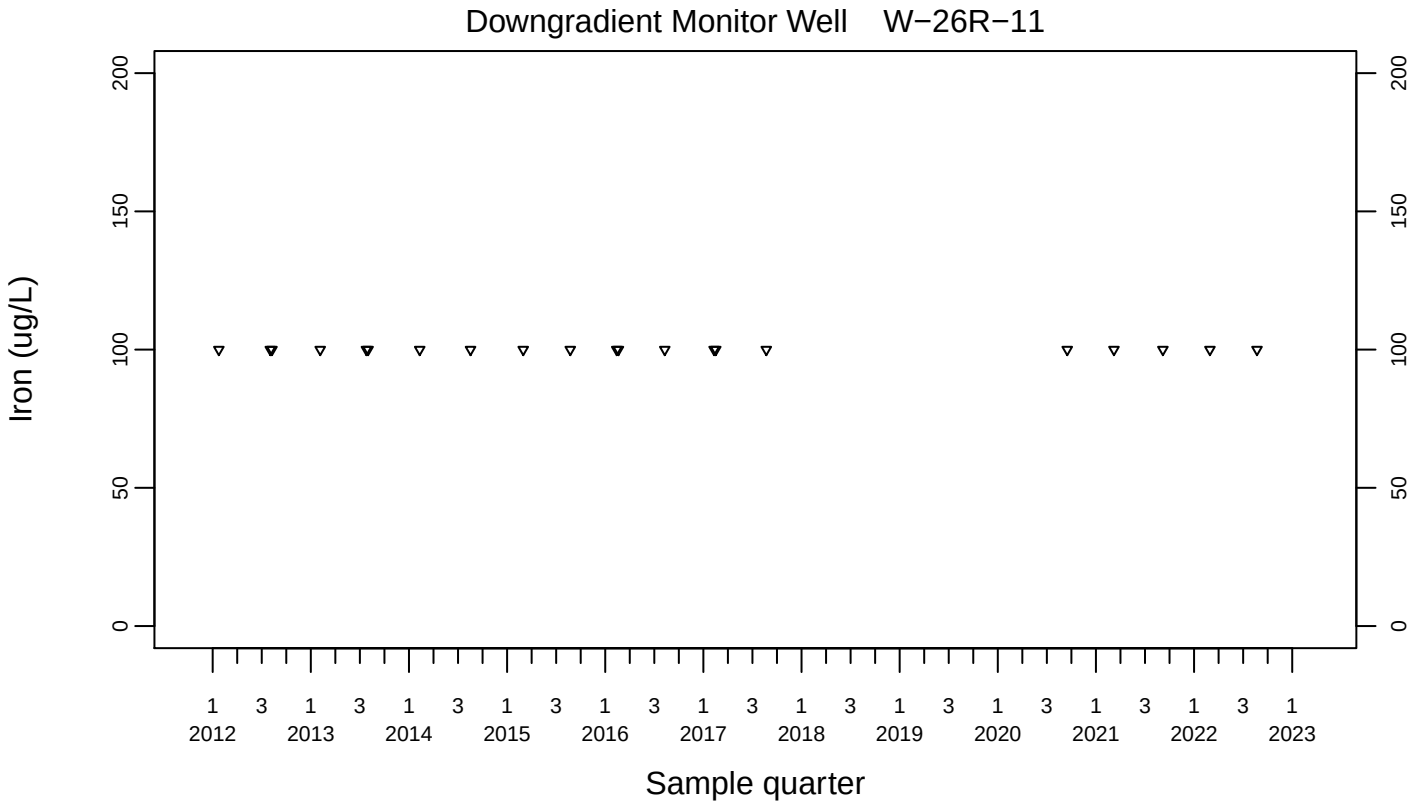
Sewage Ponds Ground Water
Iron (ug/L)

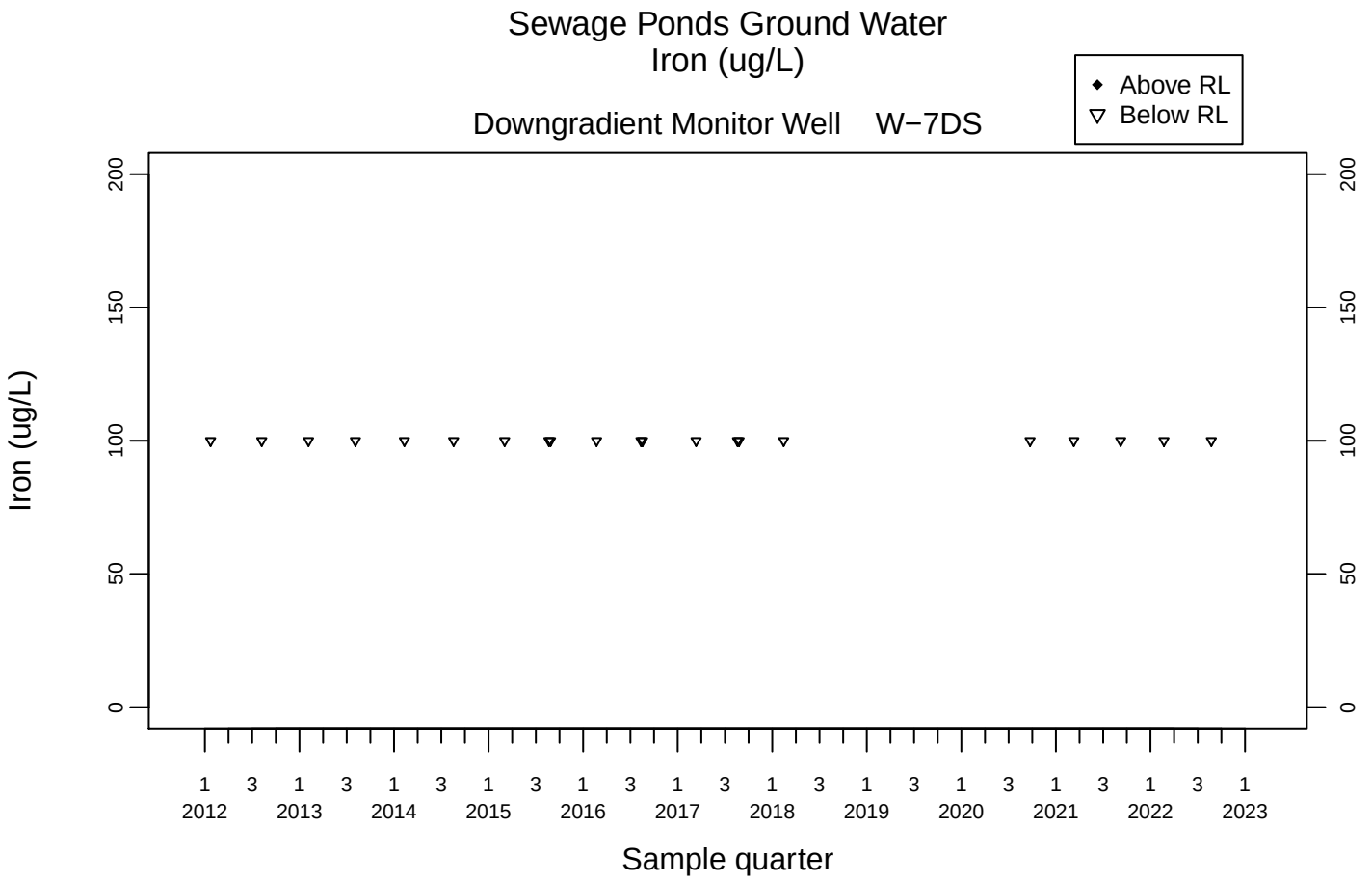




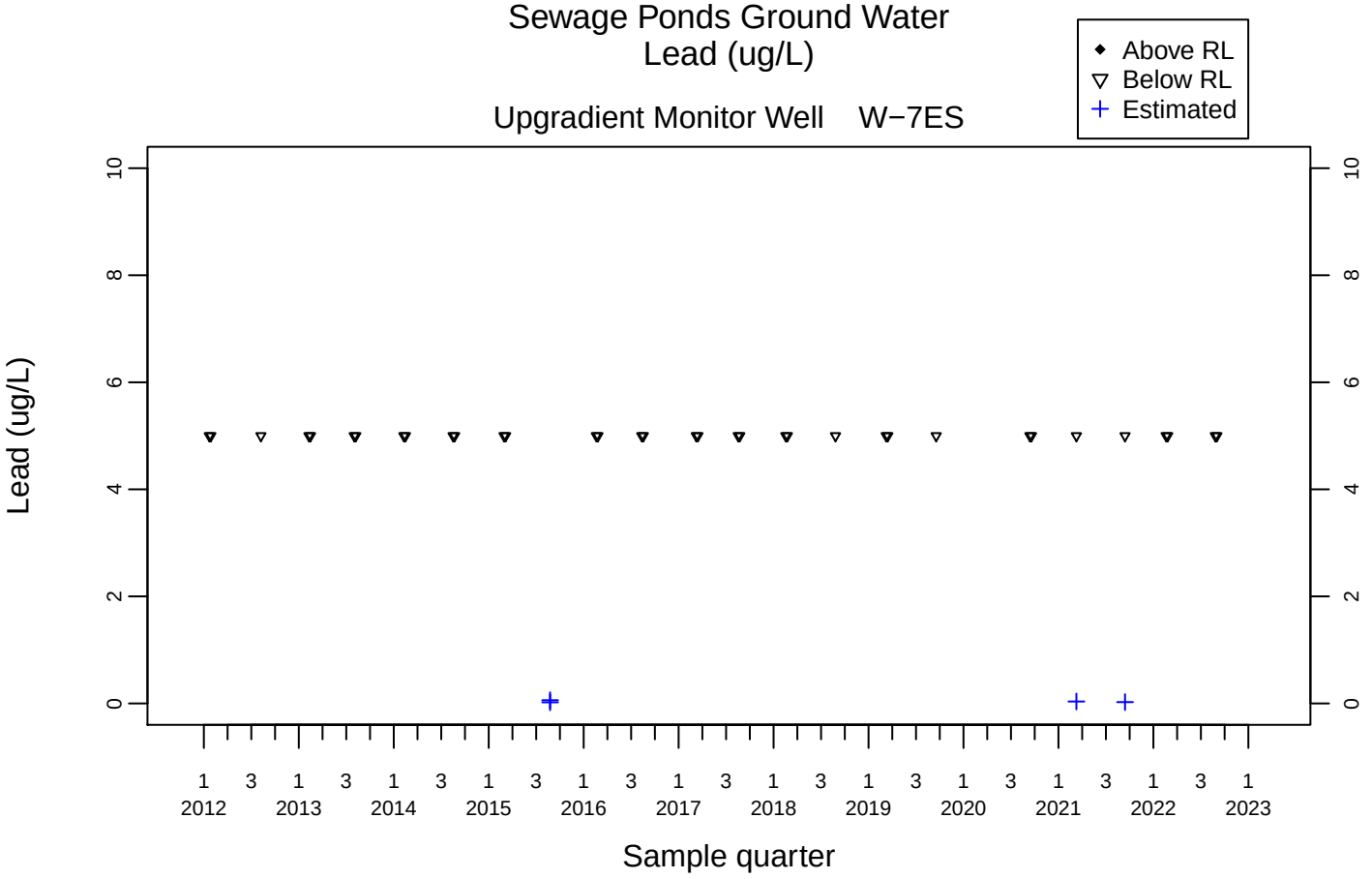
Sewage Ponds Ground Water
Iron (ug/L)

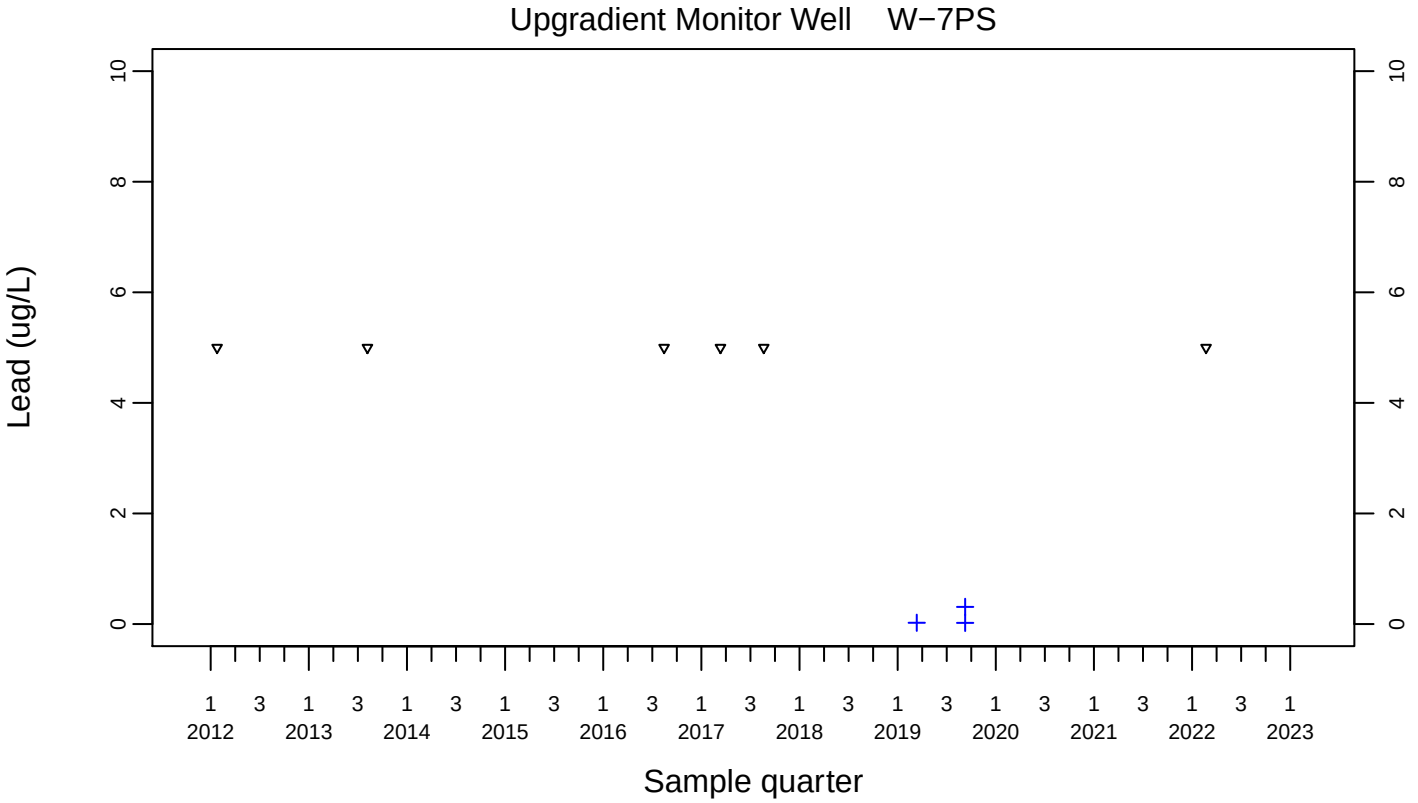




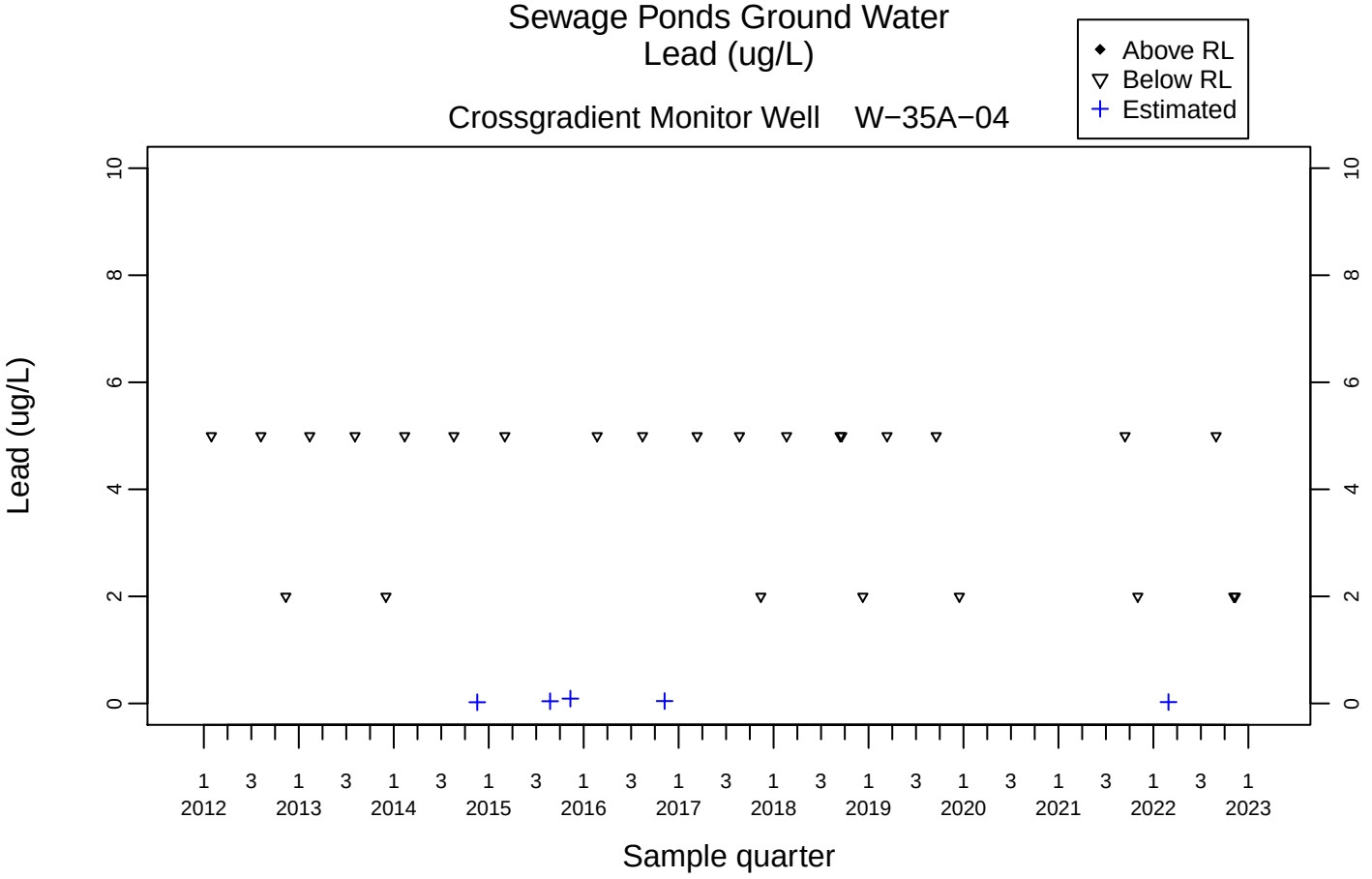

Sewage Ponds Ground Water
Iron (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Iron (ug/L)
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

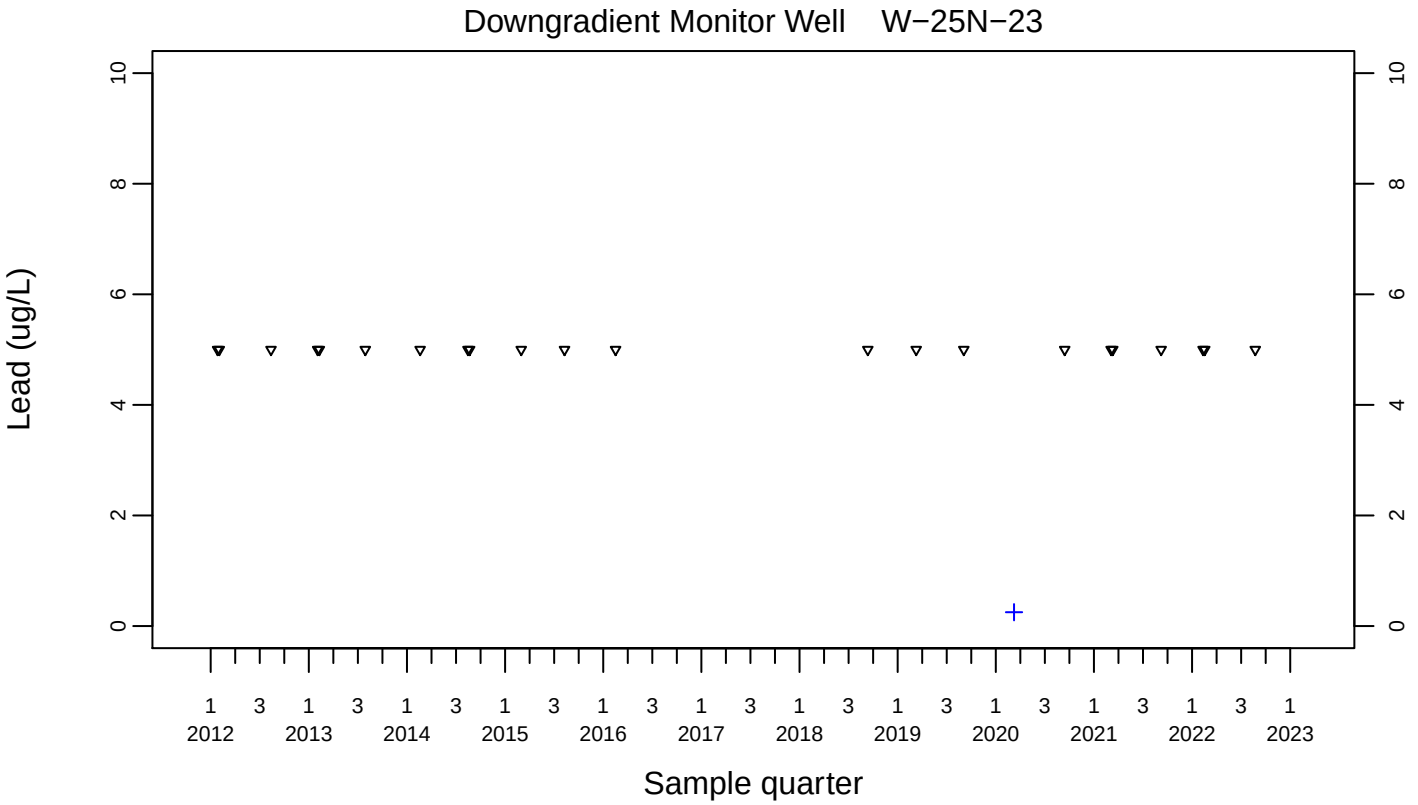
Sewage Ponds Ground Water
Lead (ug/L)



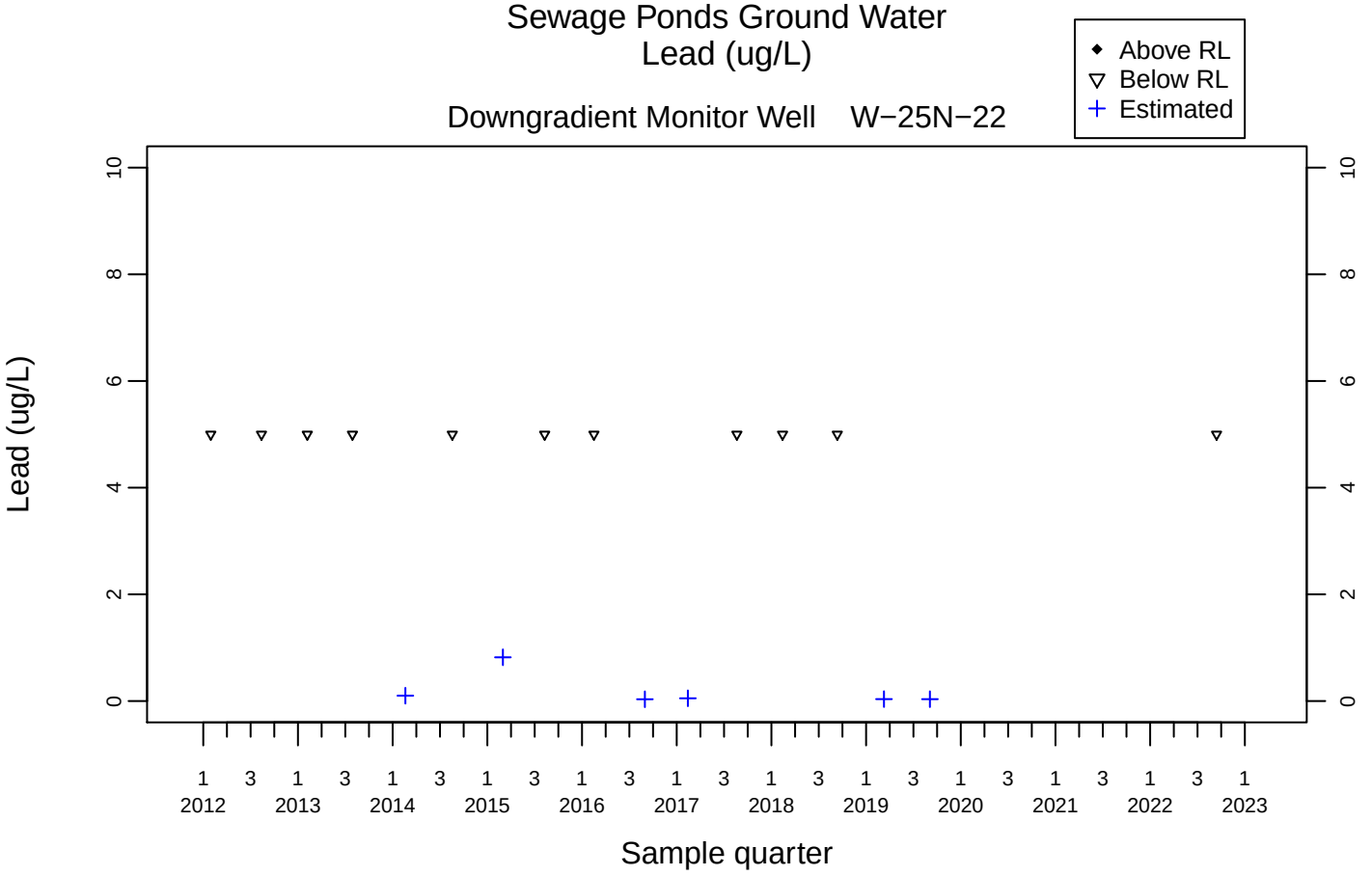


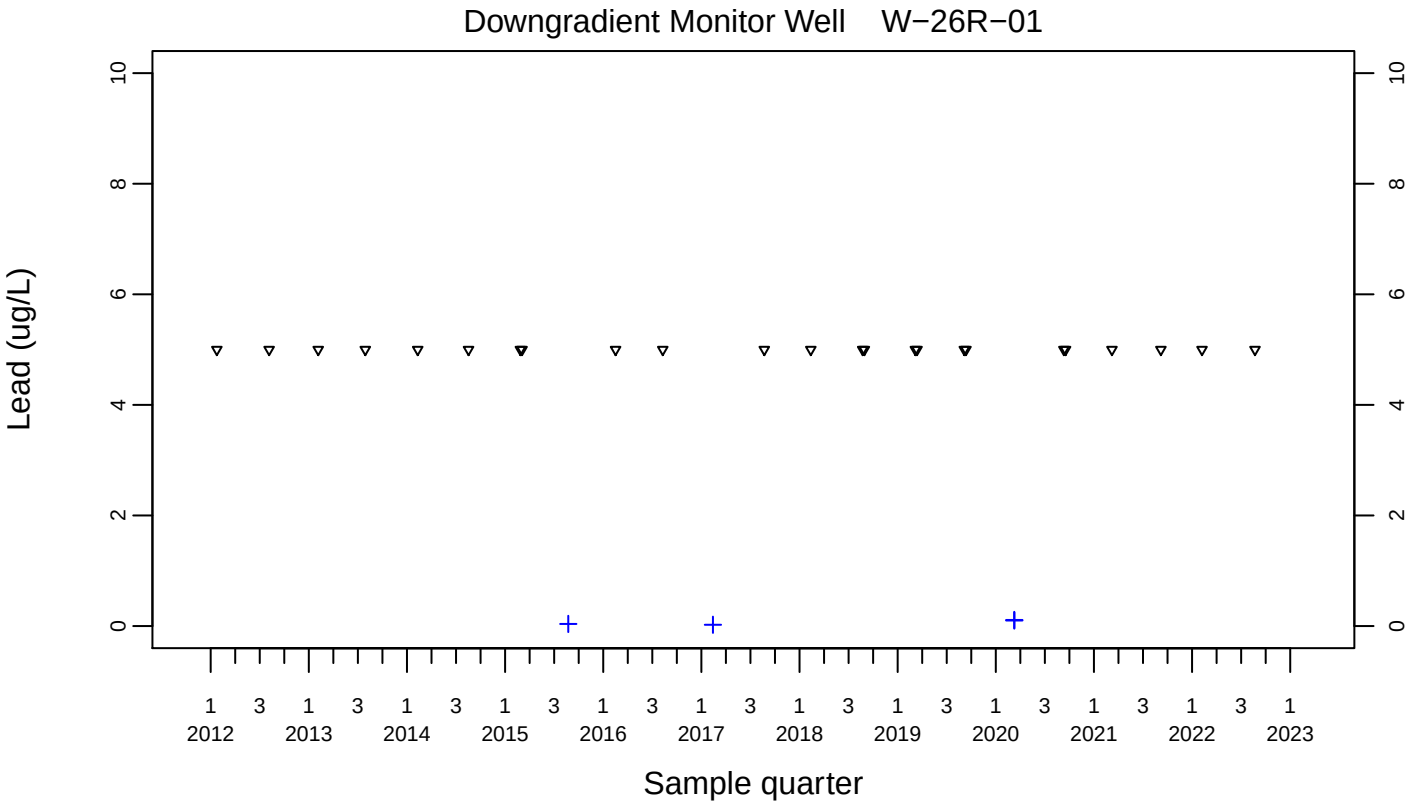
Sewage Ponds Ground Water Lead (ug/L)



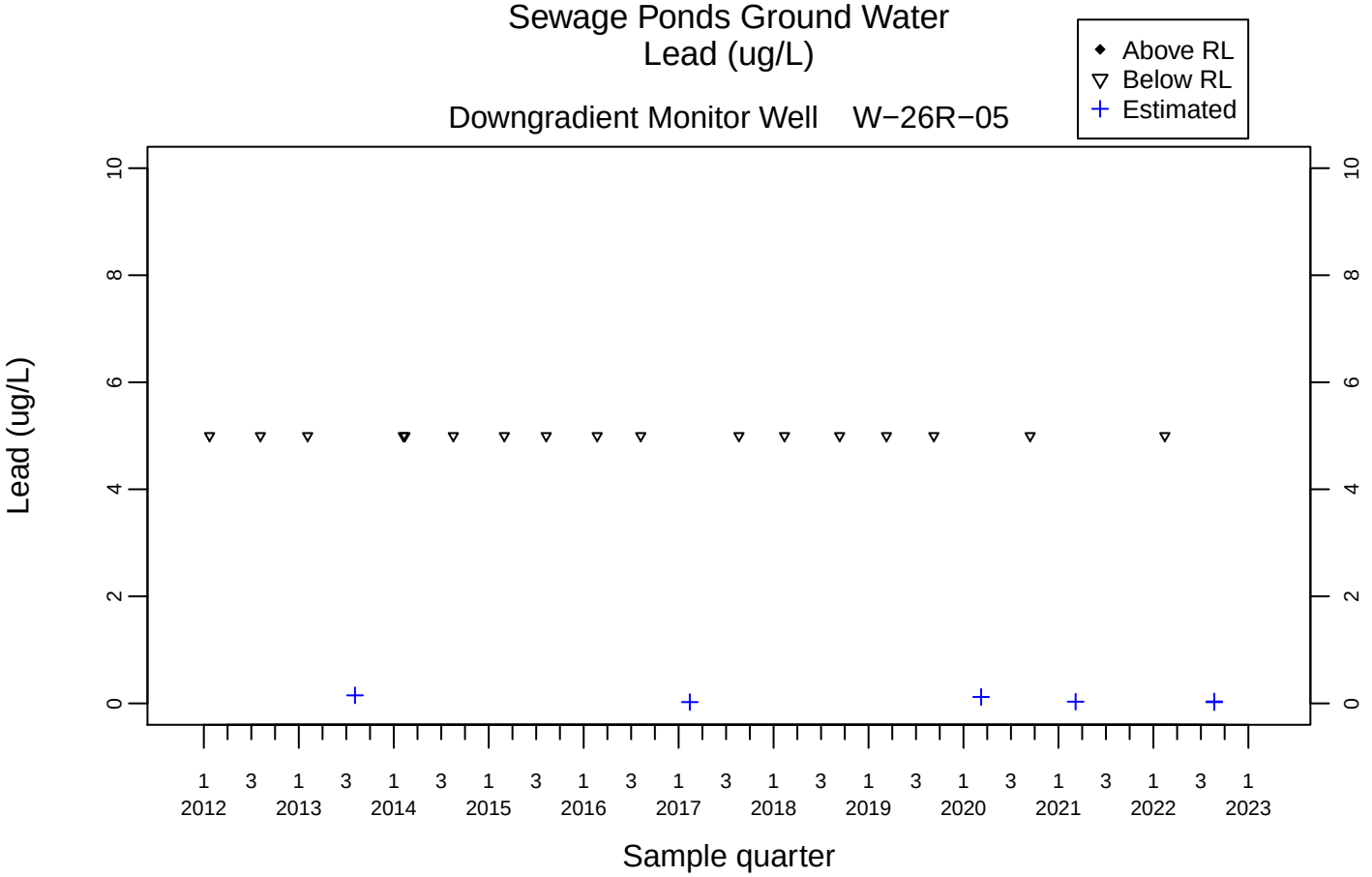


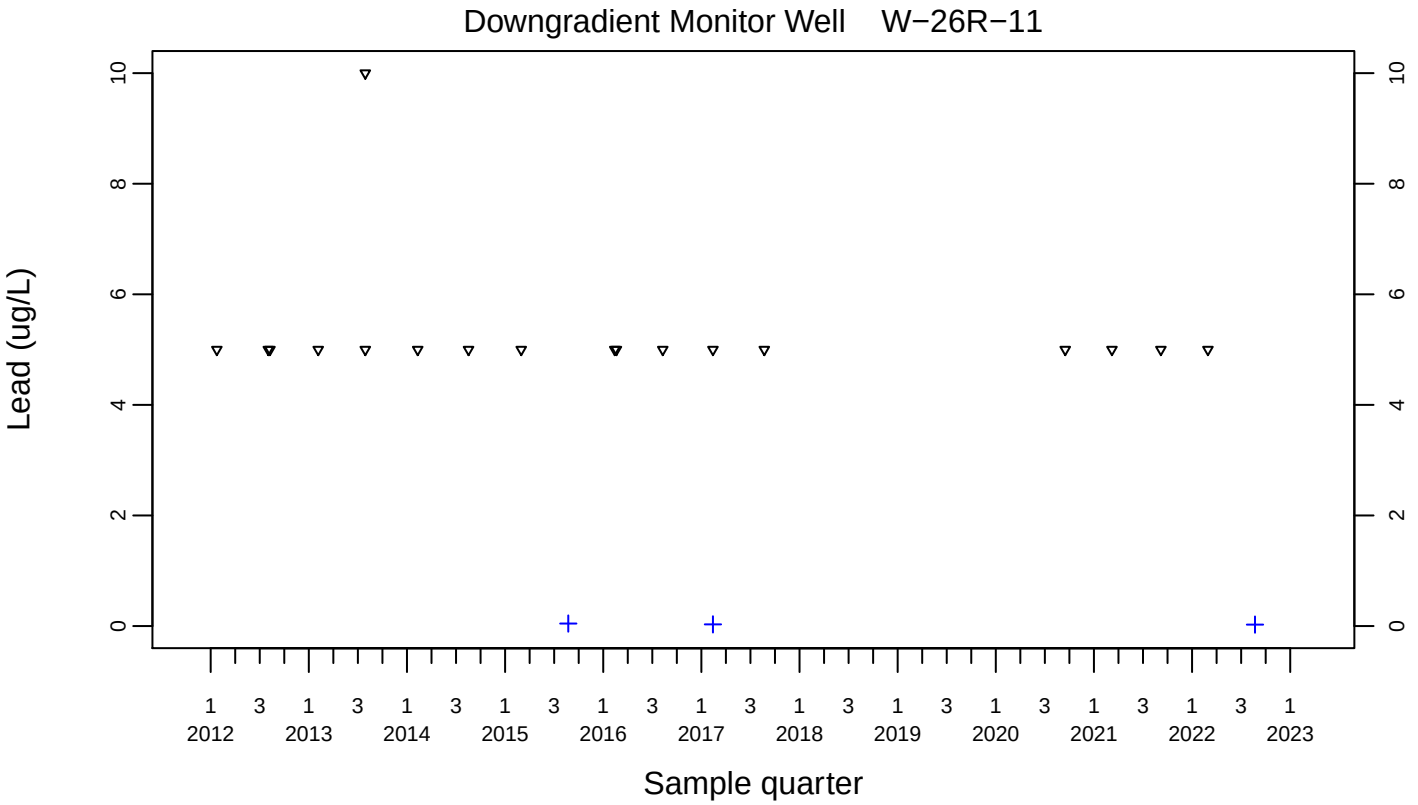
Sewage Ponds Ground Water
Lead (ug/L)

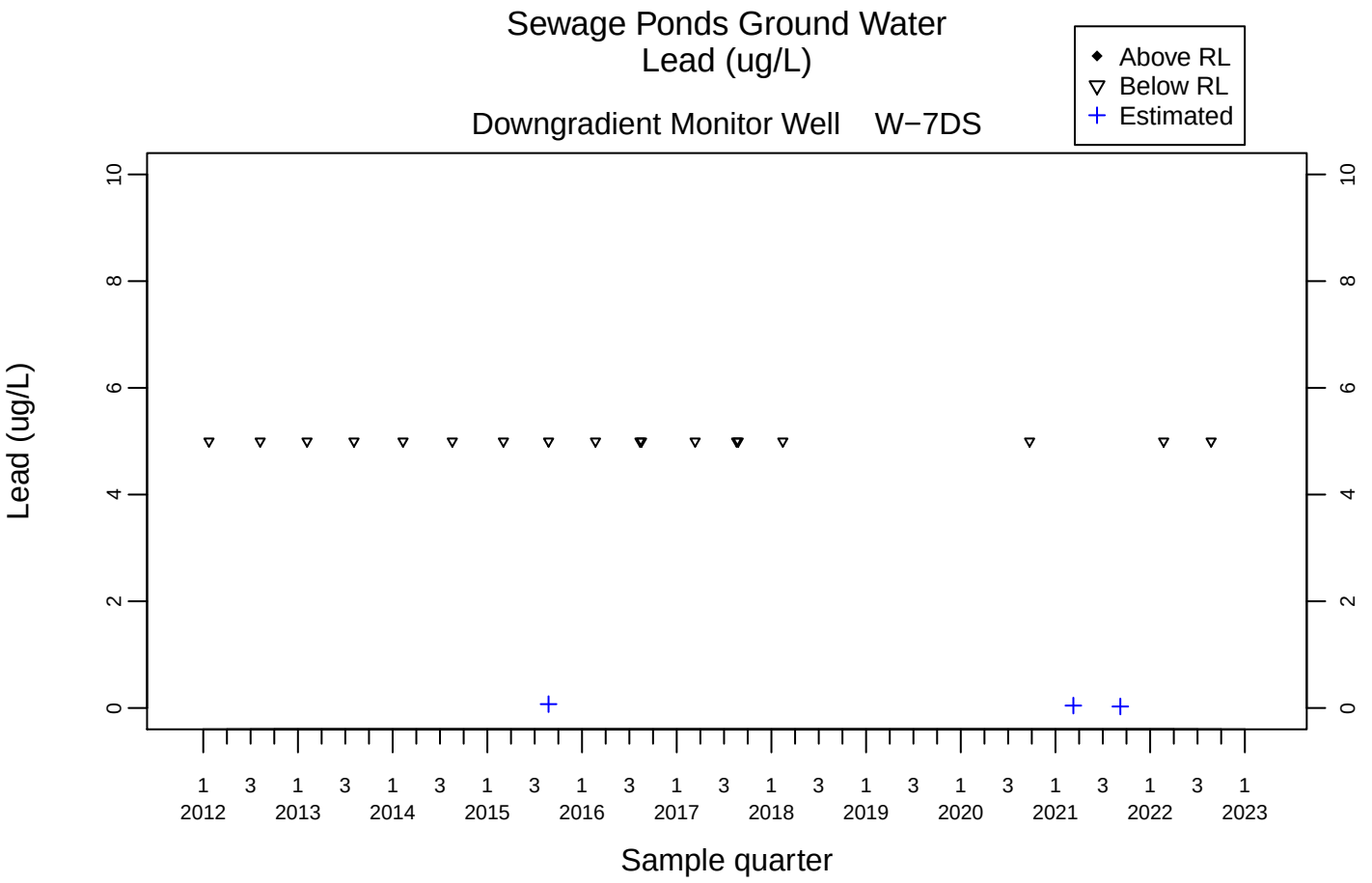




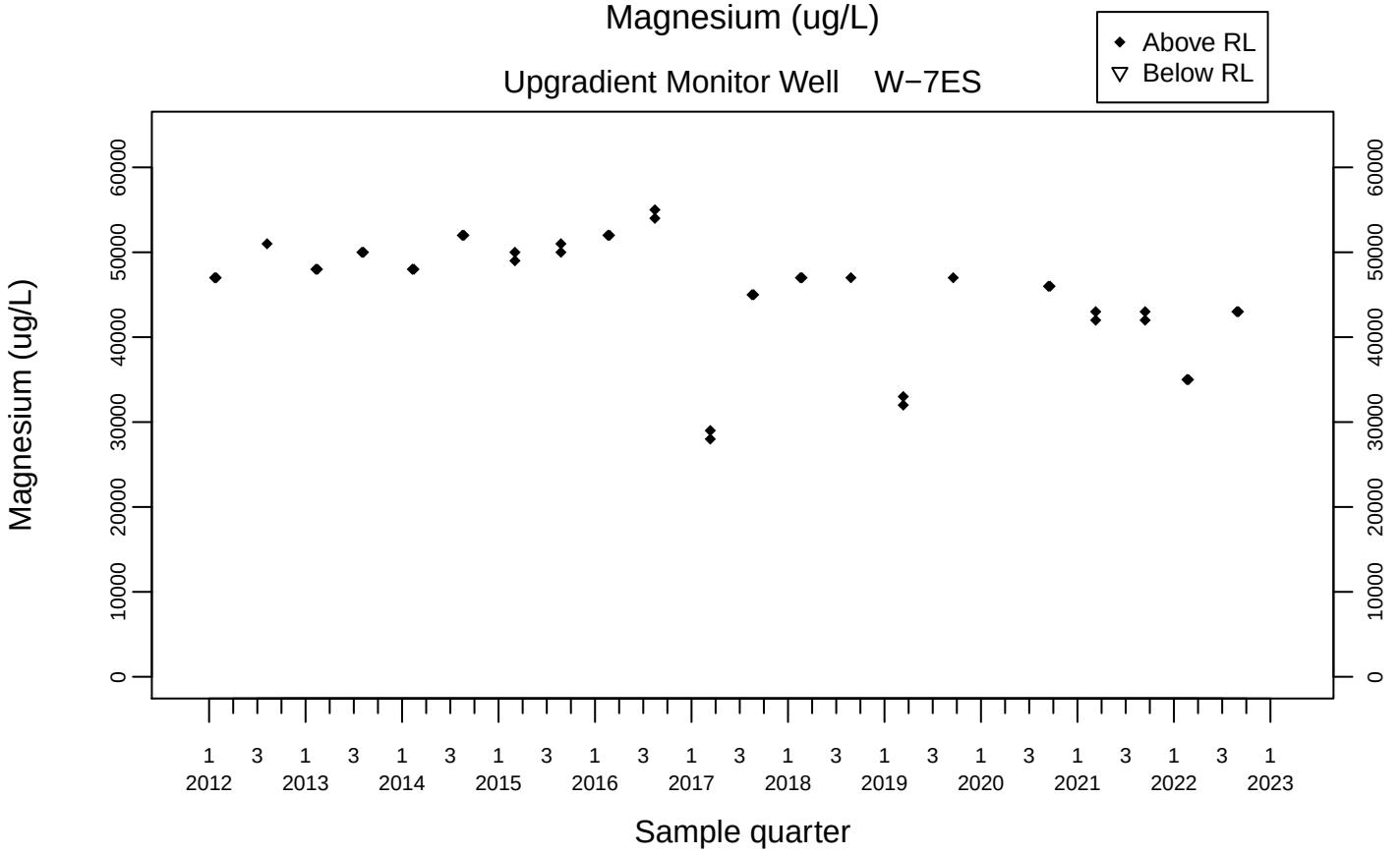
Sewage Ponds Ground Water
Lead (ug/L)

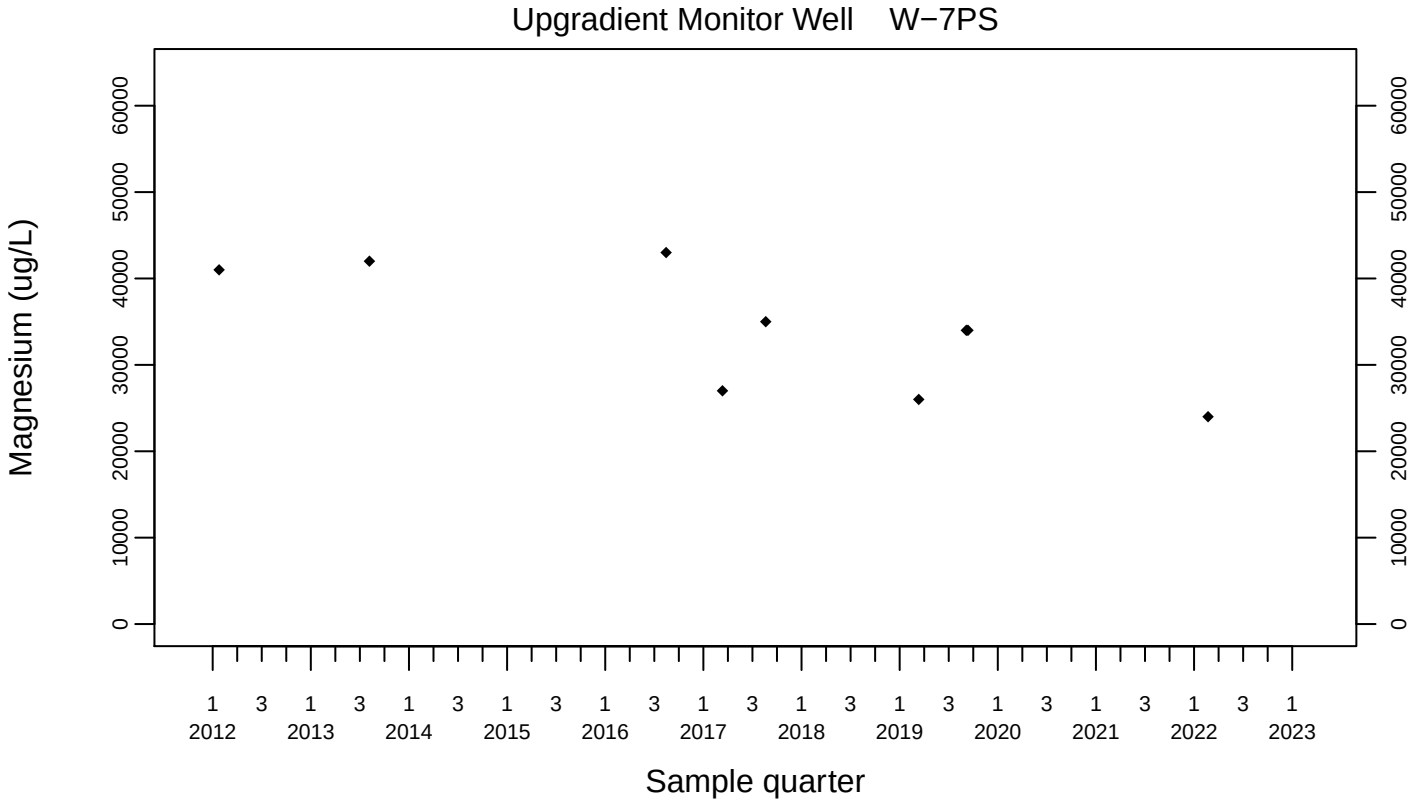




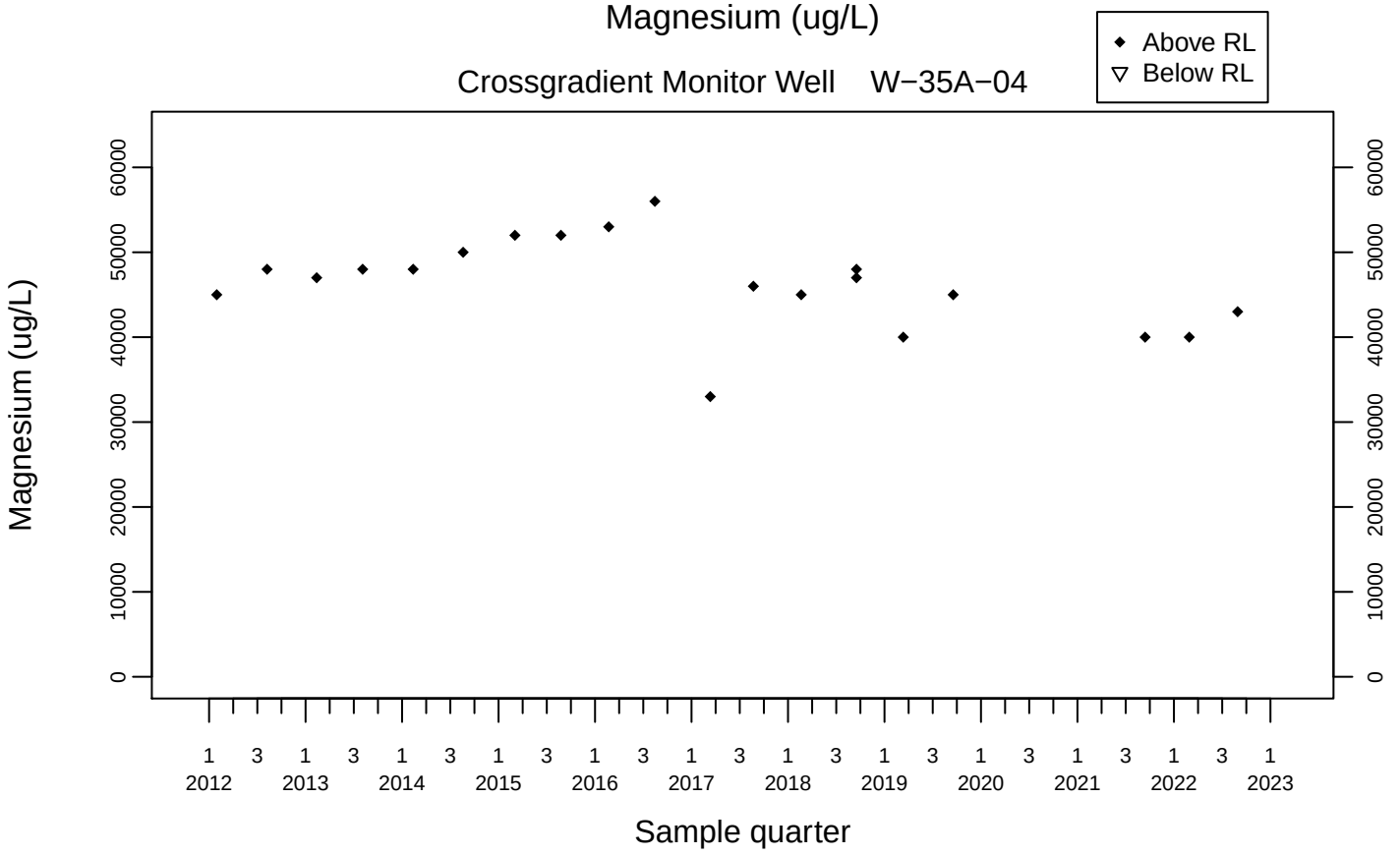

Sewage Ponds Ground Water
Lead (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Lead (ug/L)
0
2
4
6
8
10
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

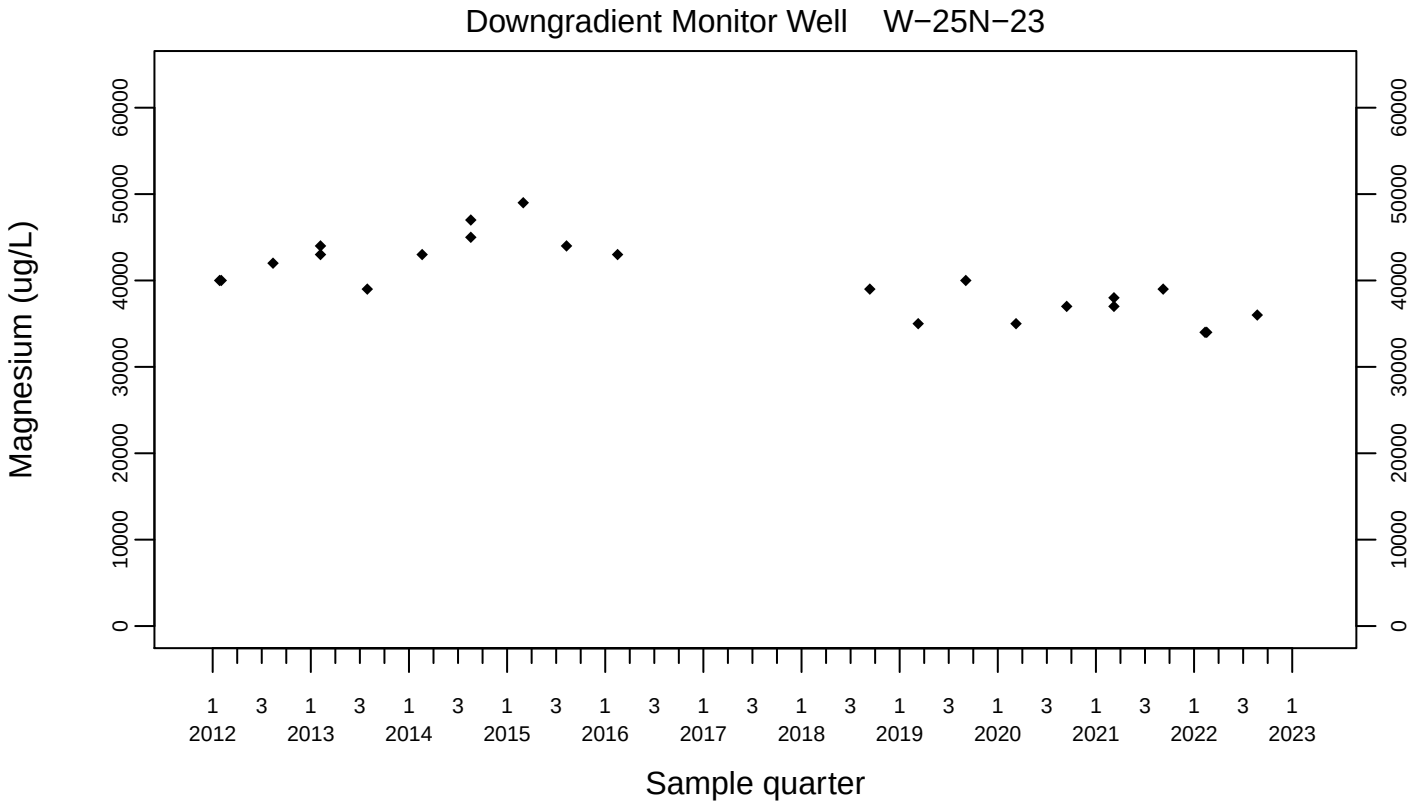
Sewage Ponds Ground Water
Magnesium (ug/L)



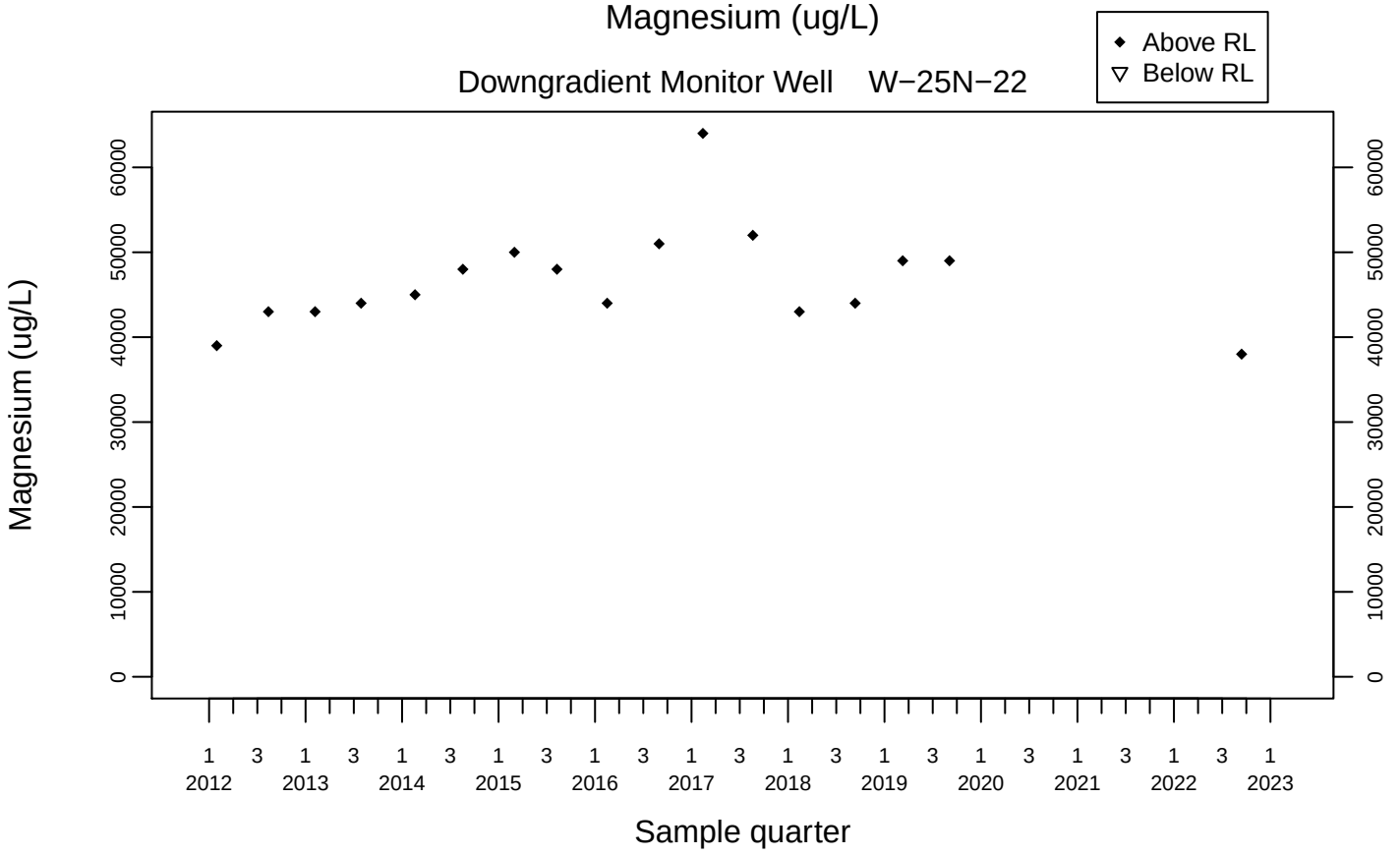


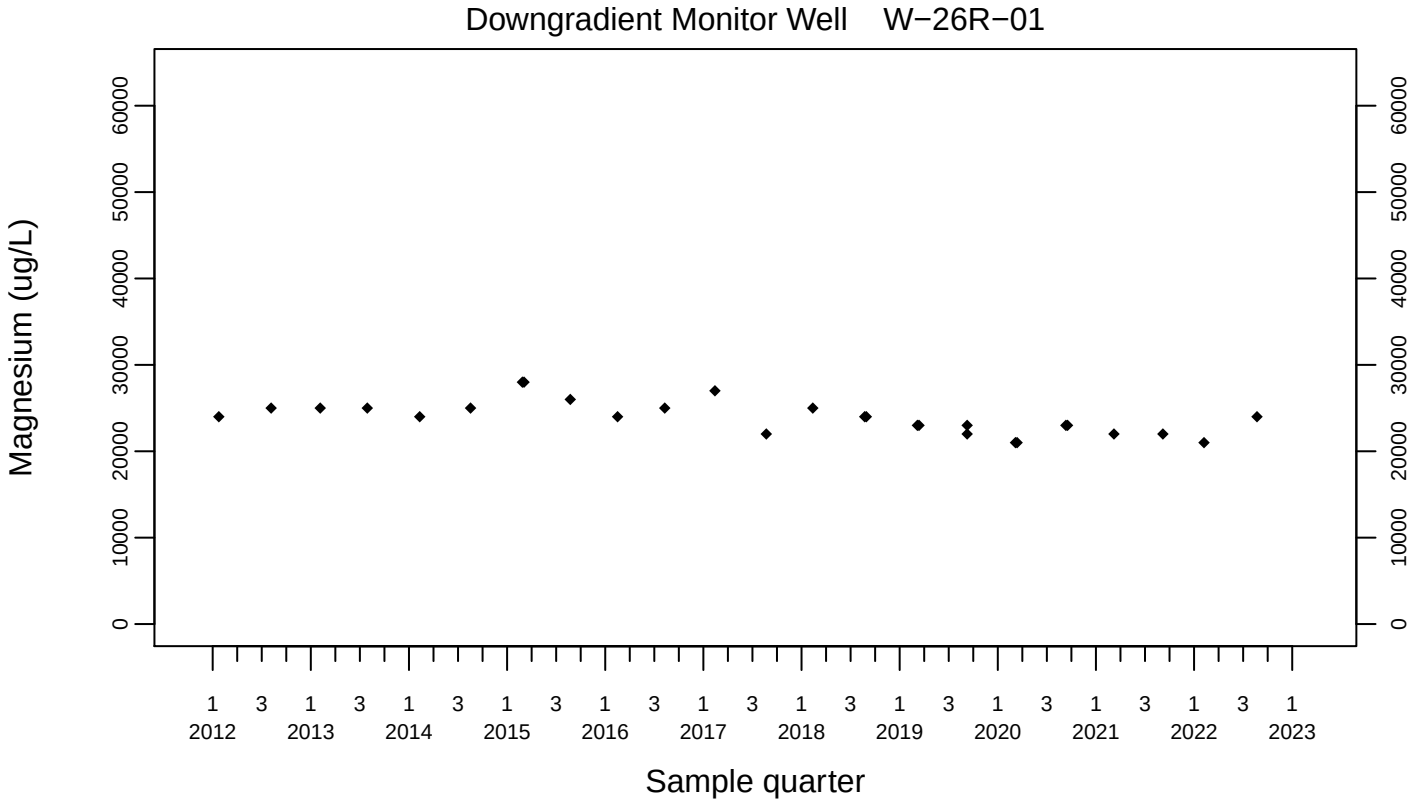
Sewage Ponds Ground Water
Magnesium (ug/L)



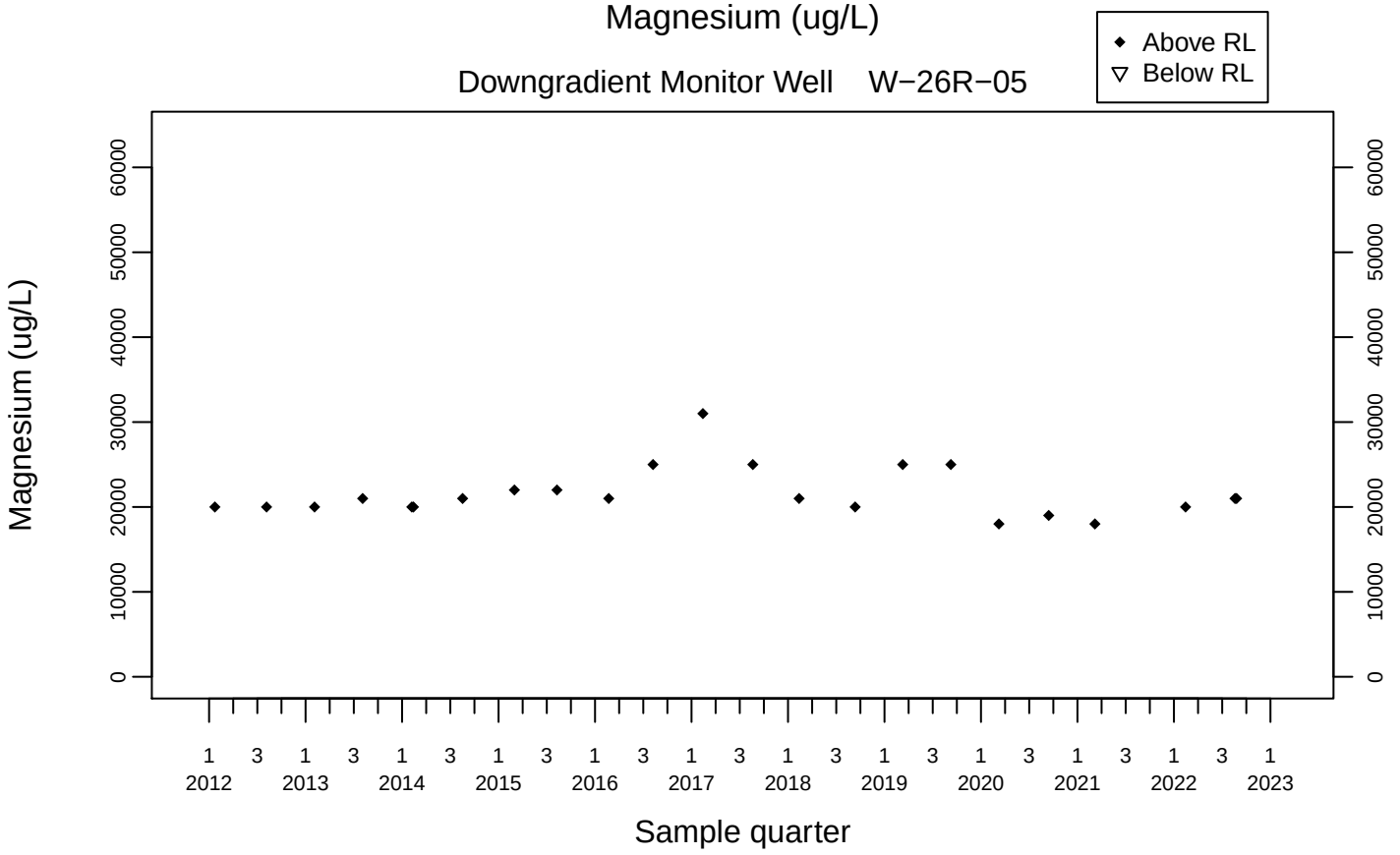


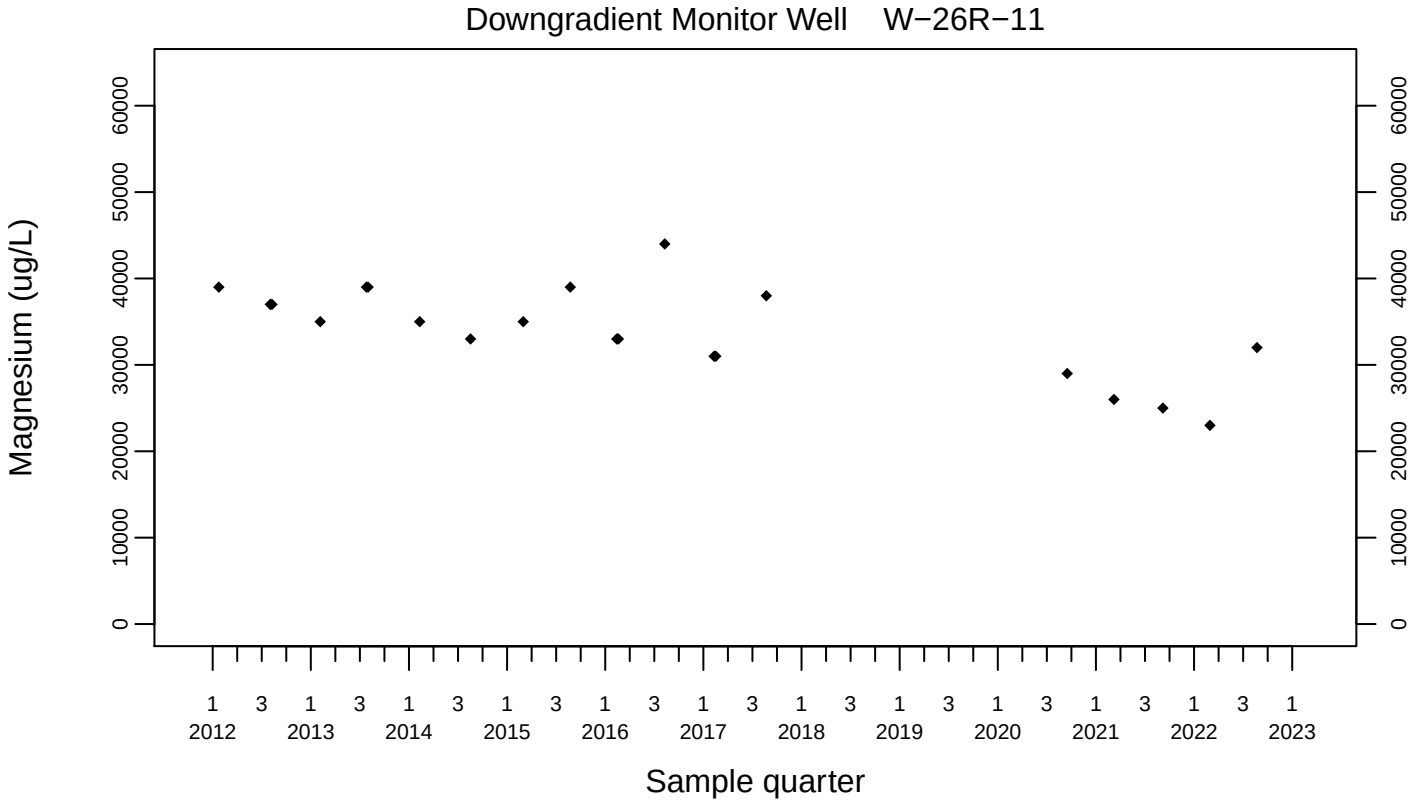
Sewage Ponds Ground Water
Magnesium (ug/L)

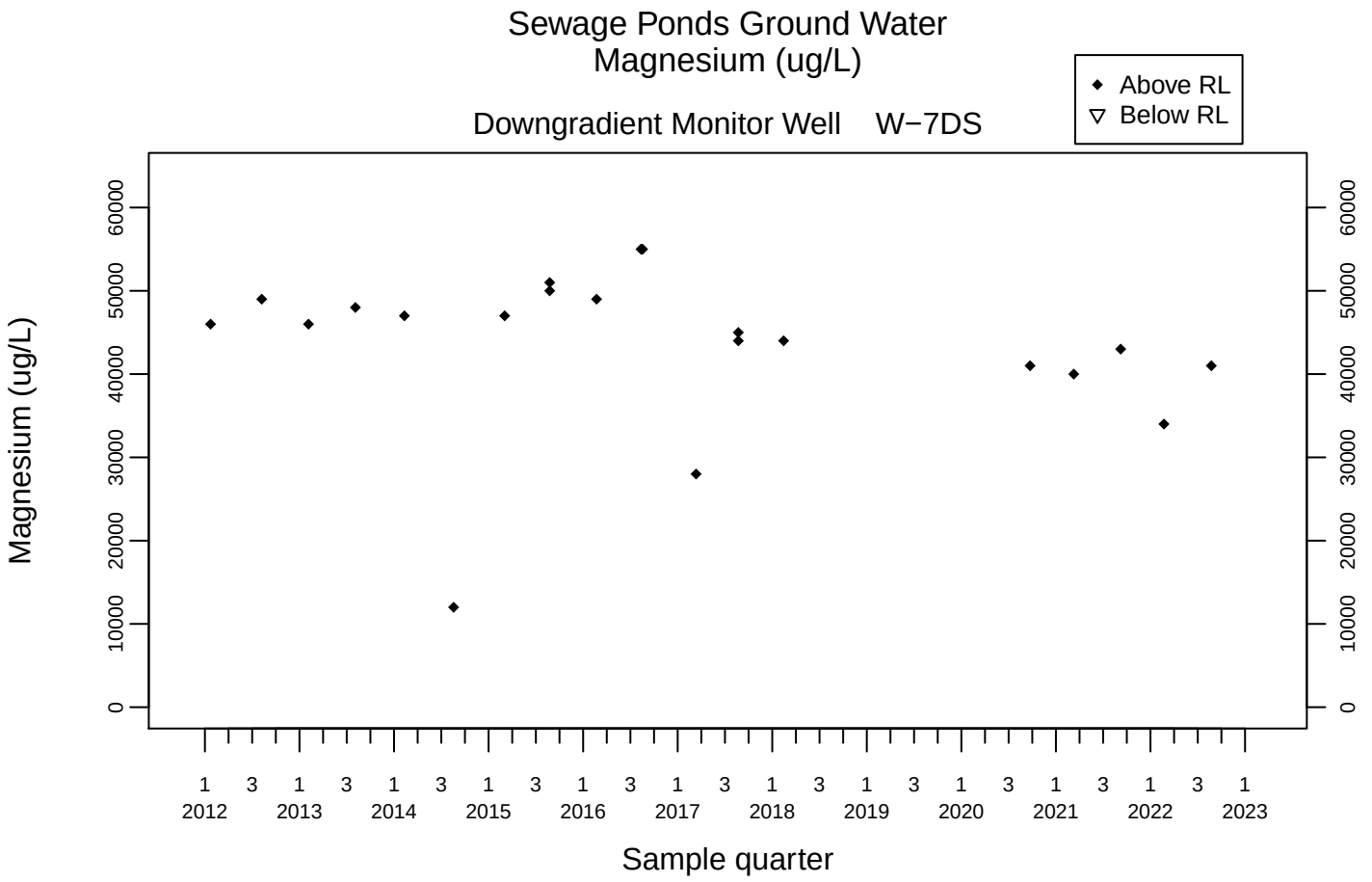




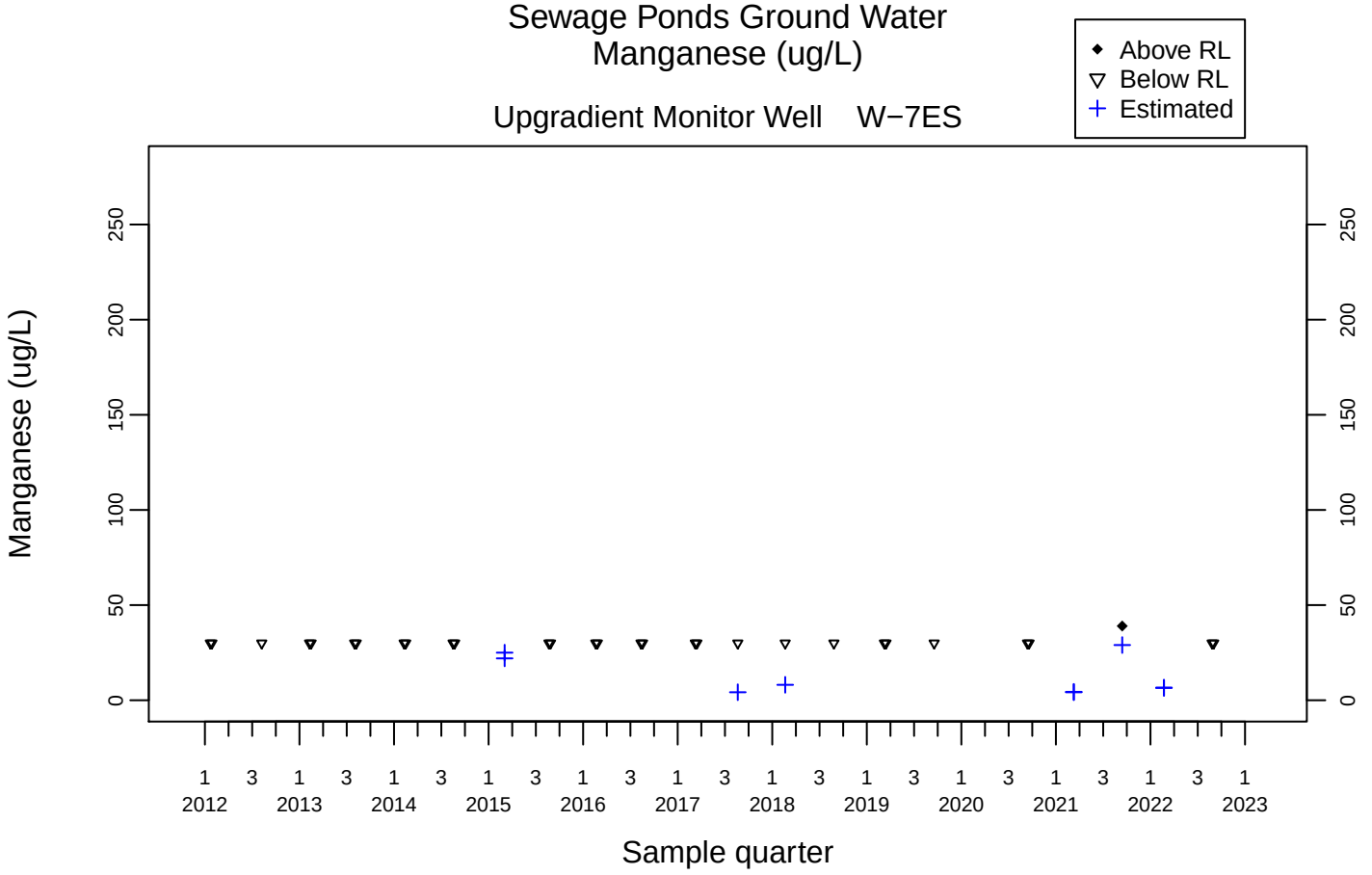
Sewage Ponds Ground Water
Magnesium (ug/L)

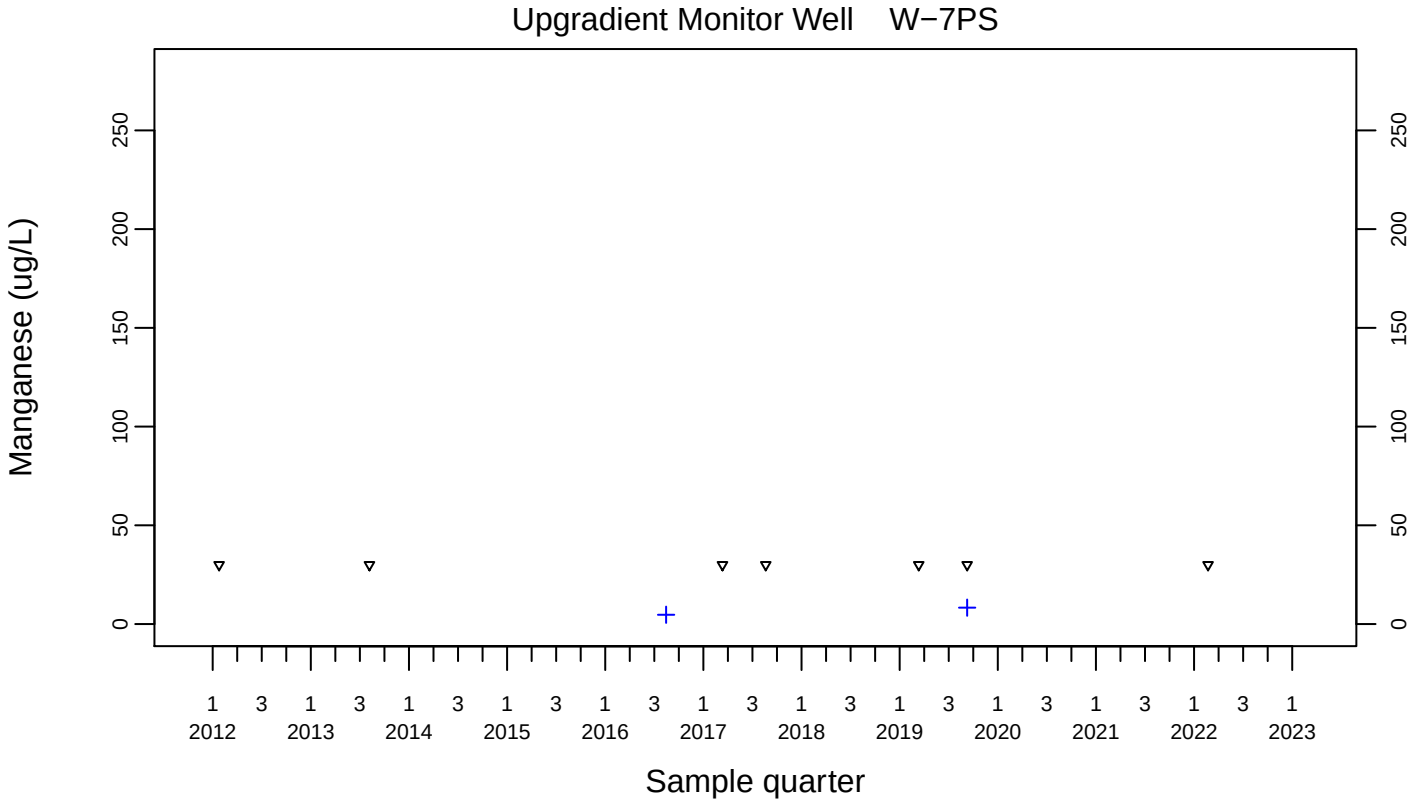




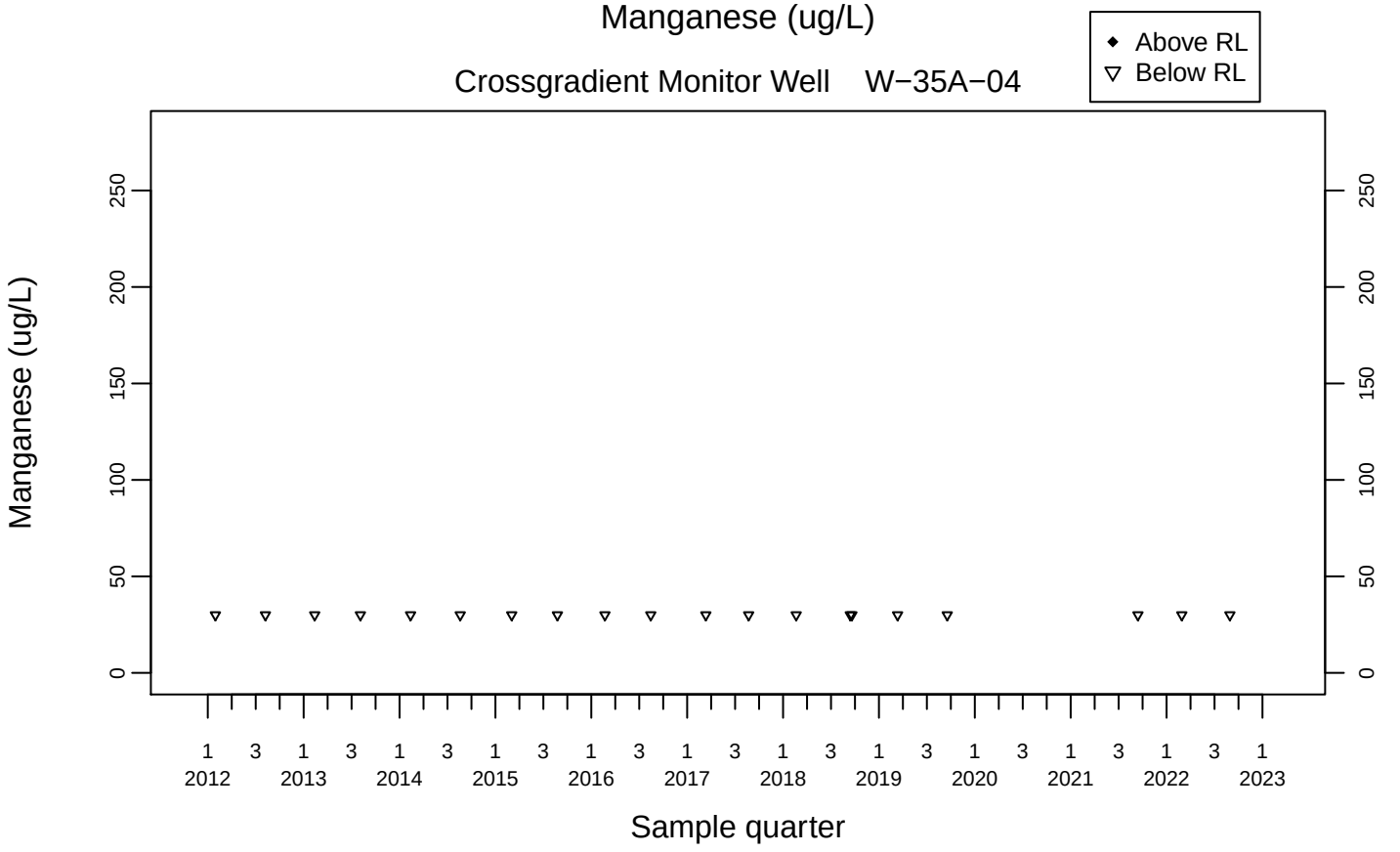

Sewage Ponds Ground Water
Magnesium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Magnesium (ug/L)
0
10000
20000
30000
40000
50000
60000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

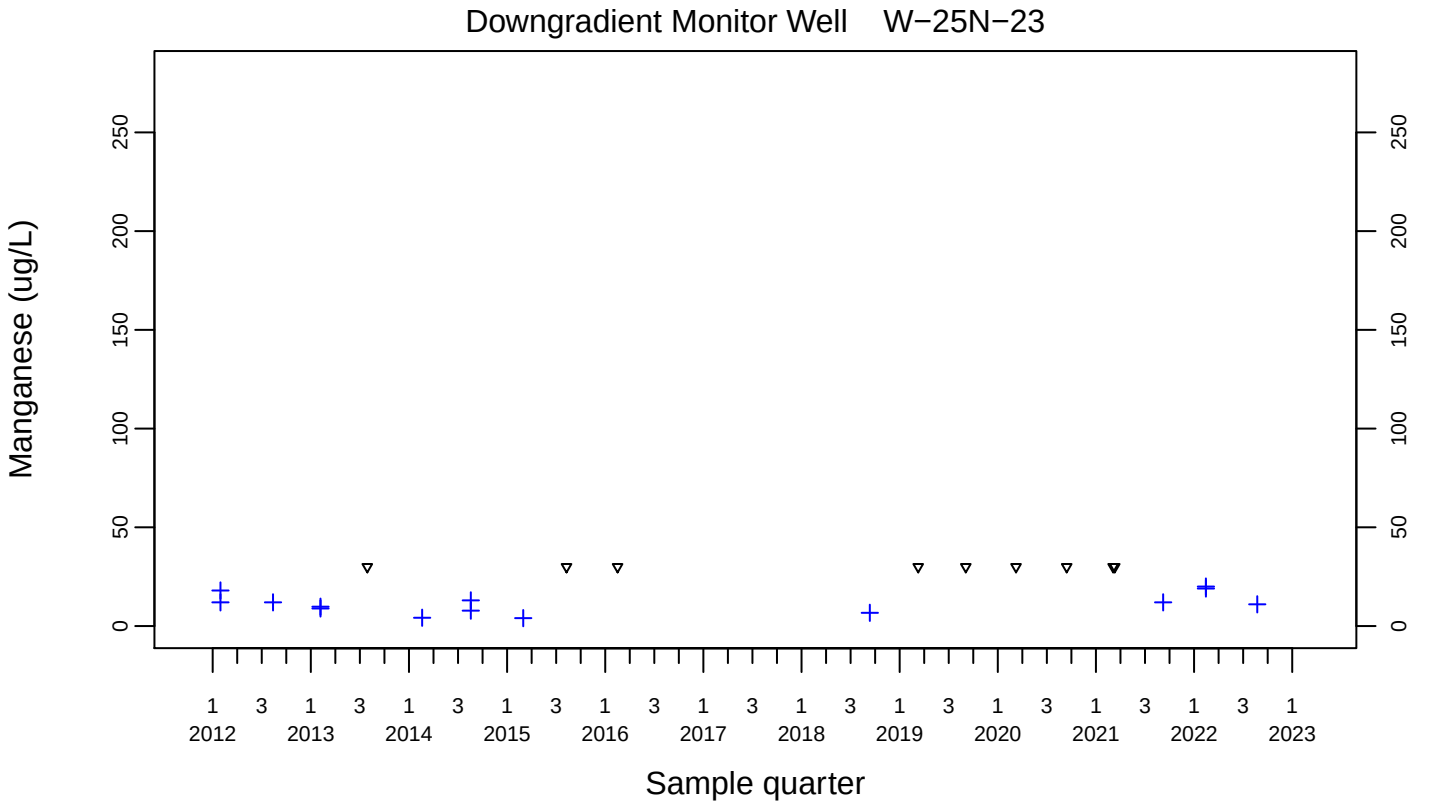
Sewage Ponds Ground Water Manganese (ug/L)



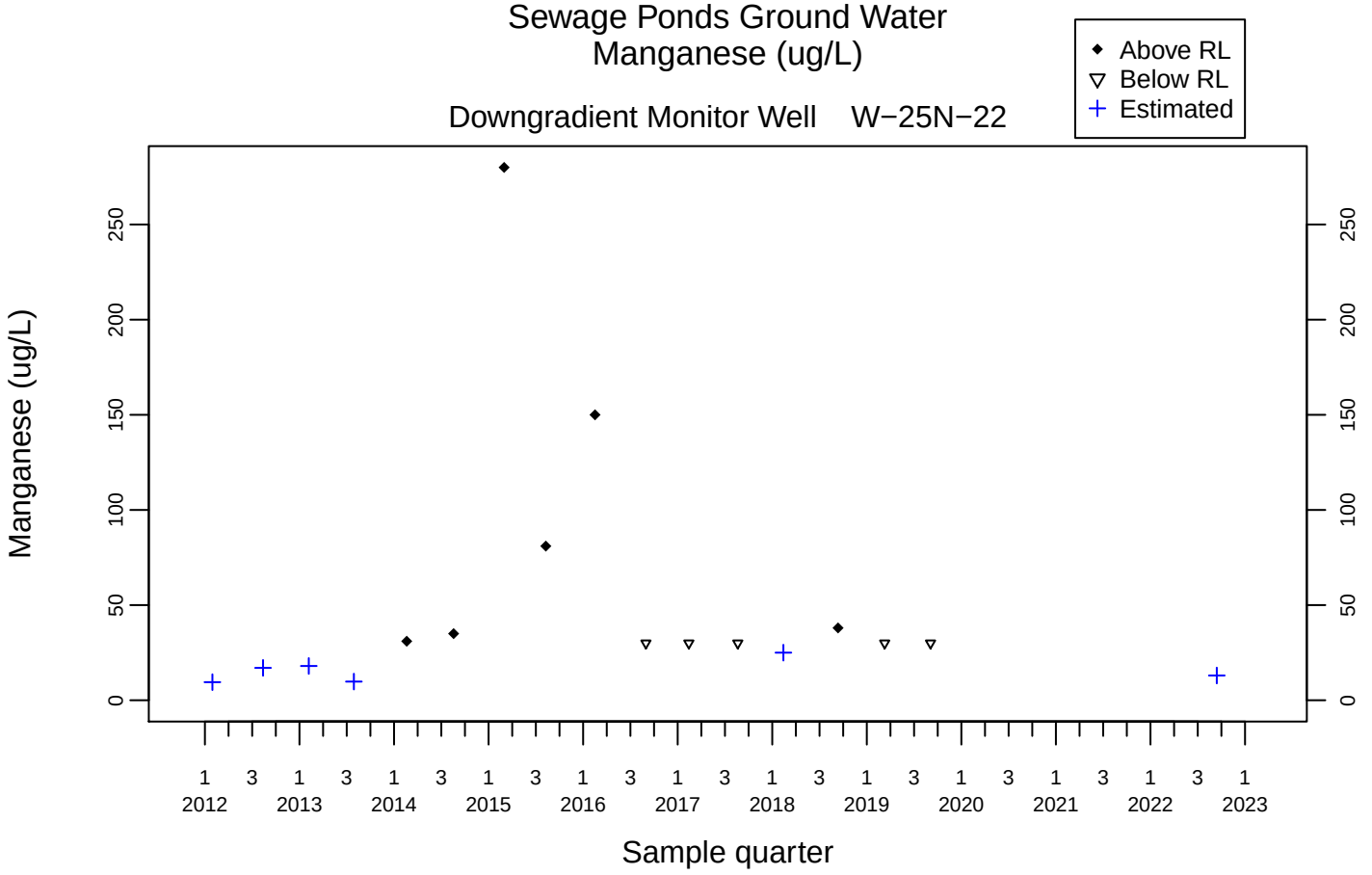


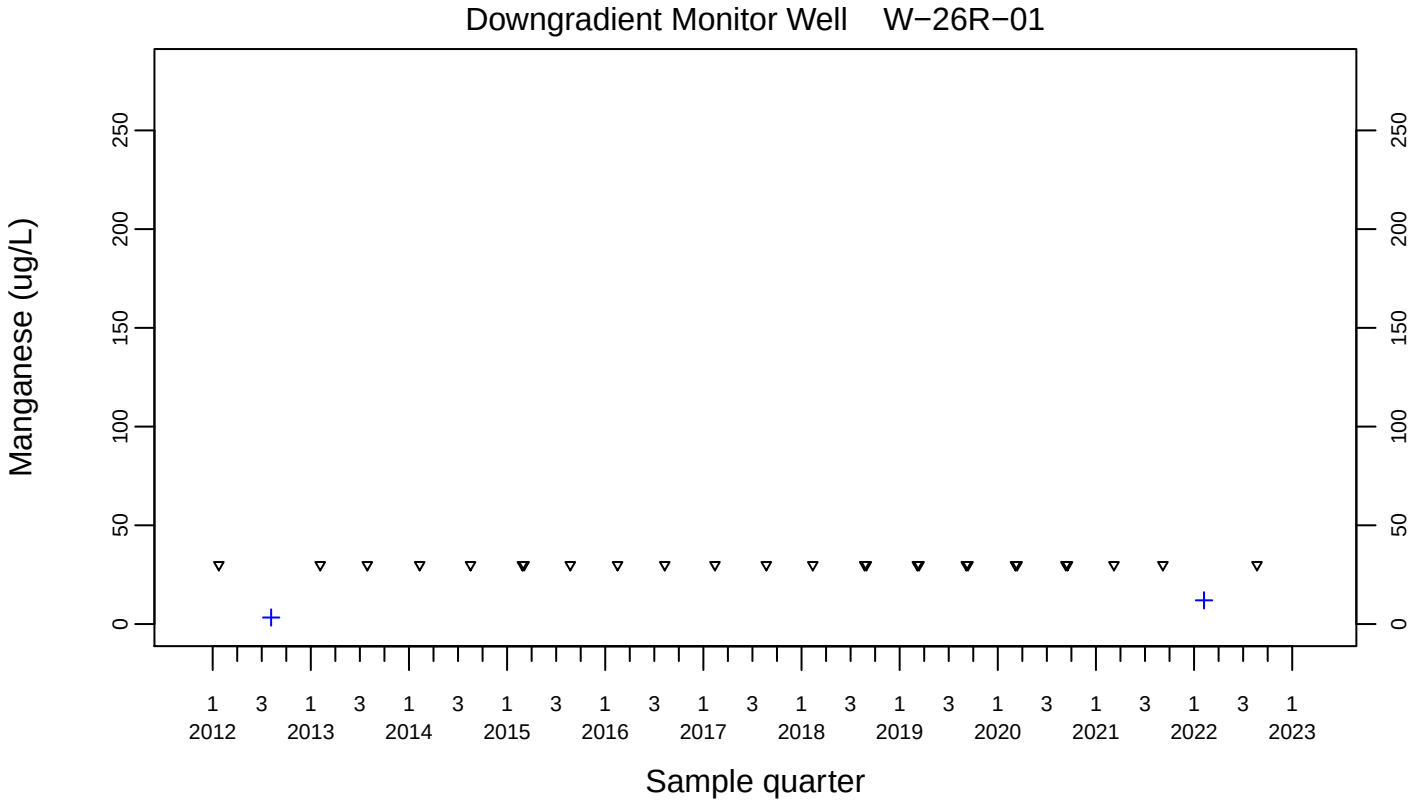
Sewage Ponds Ground Water
Manganese (ug/L)



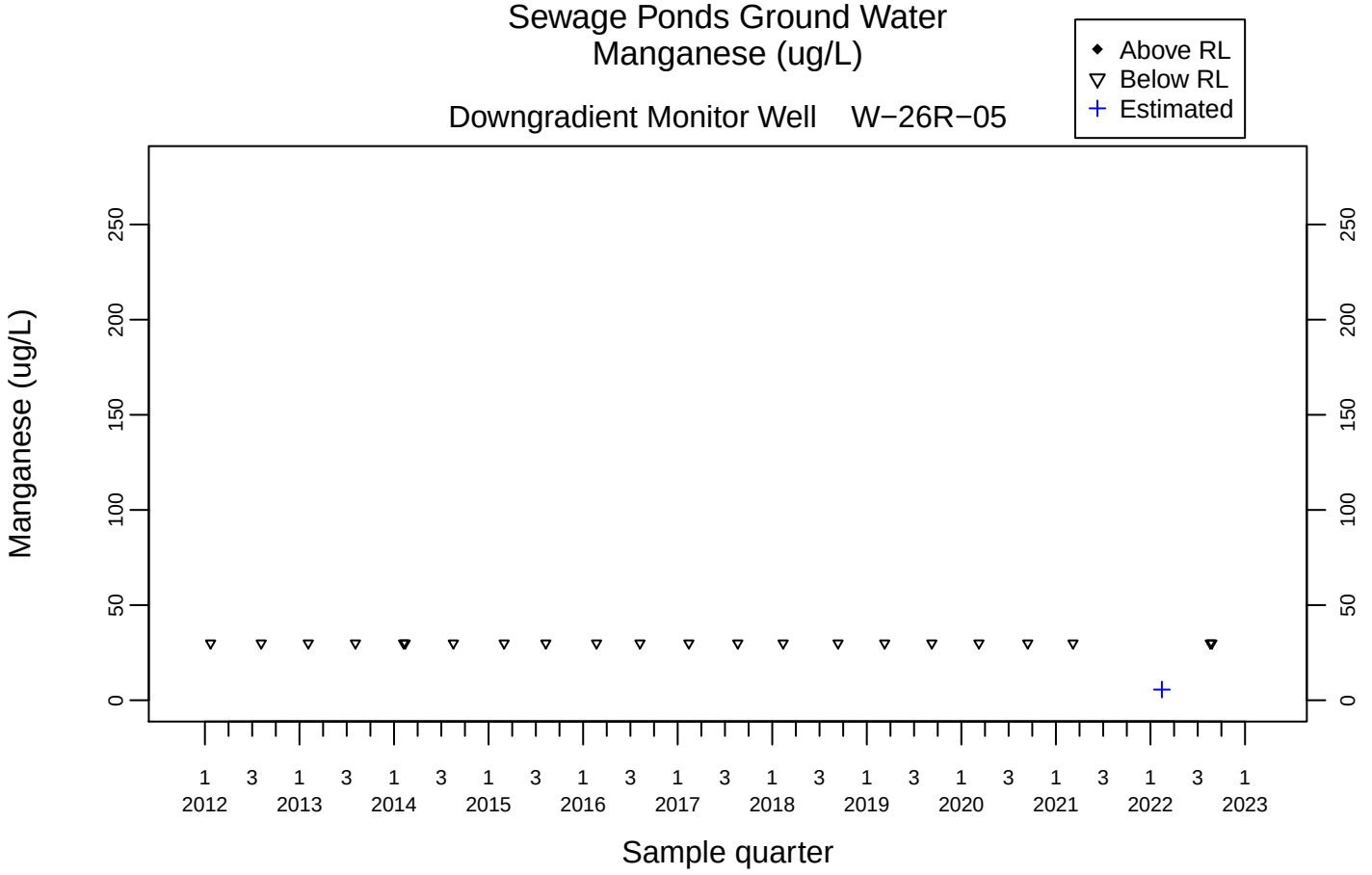


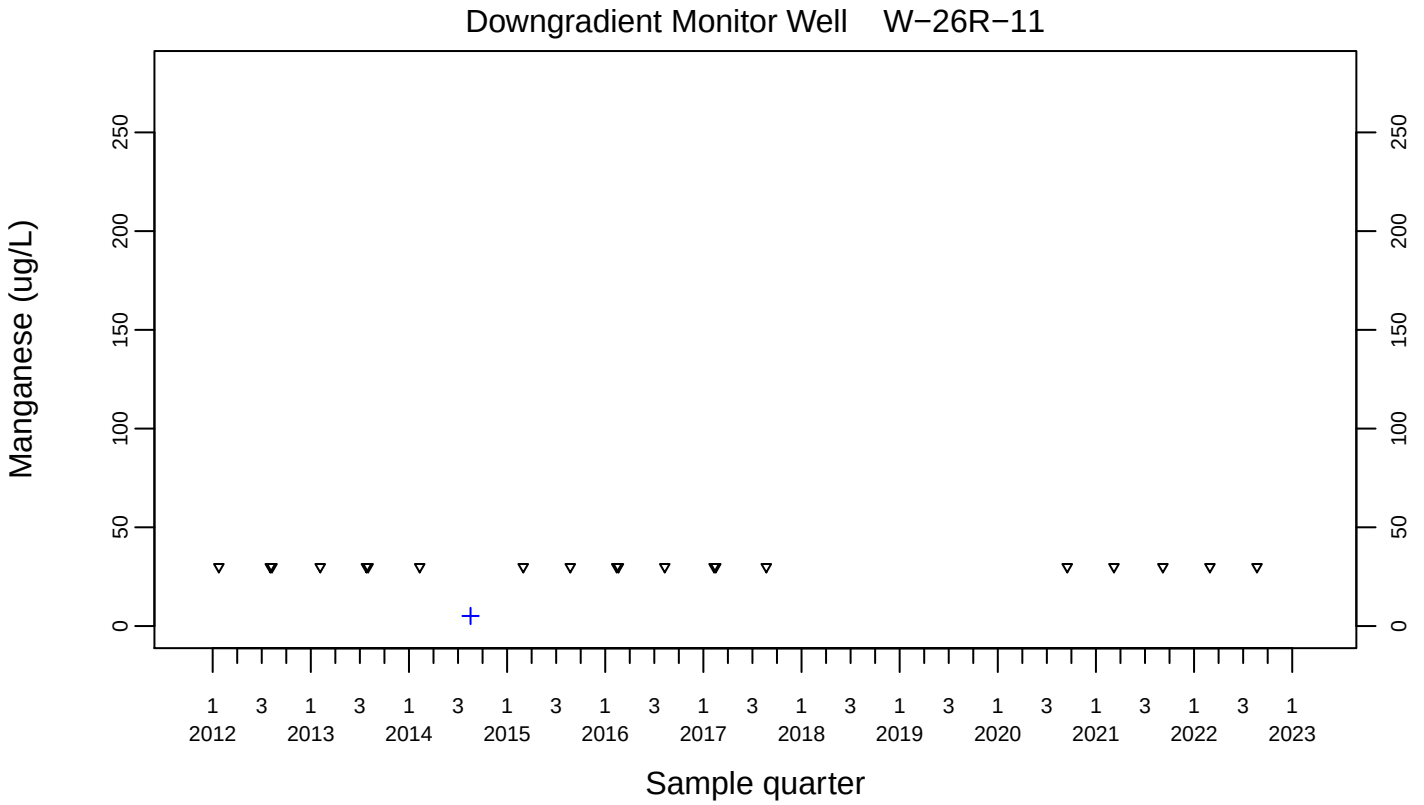
Sewage Ponds Ground Water
Manganese (ug/L)

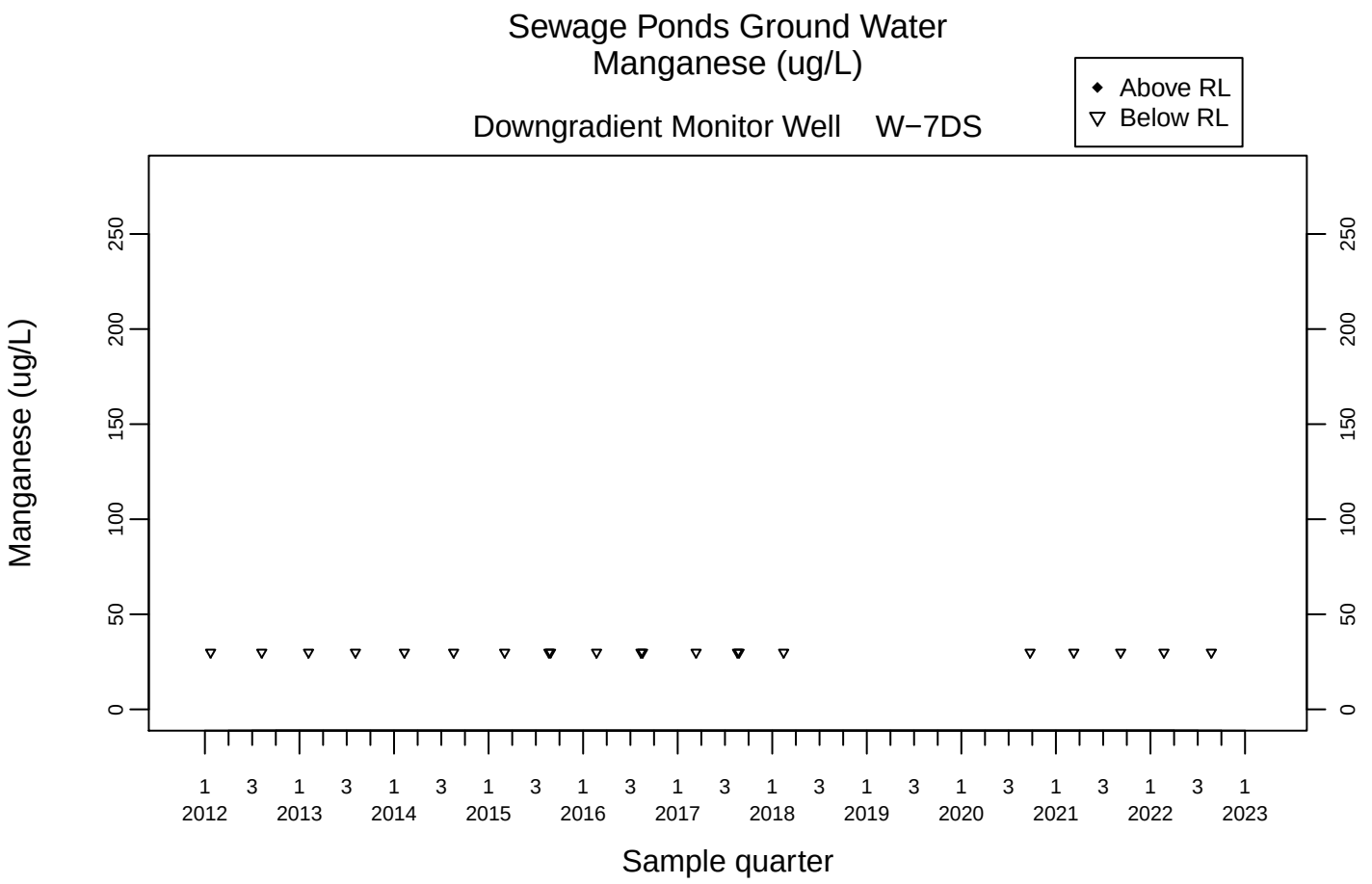


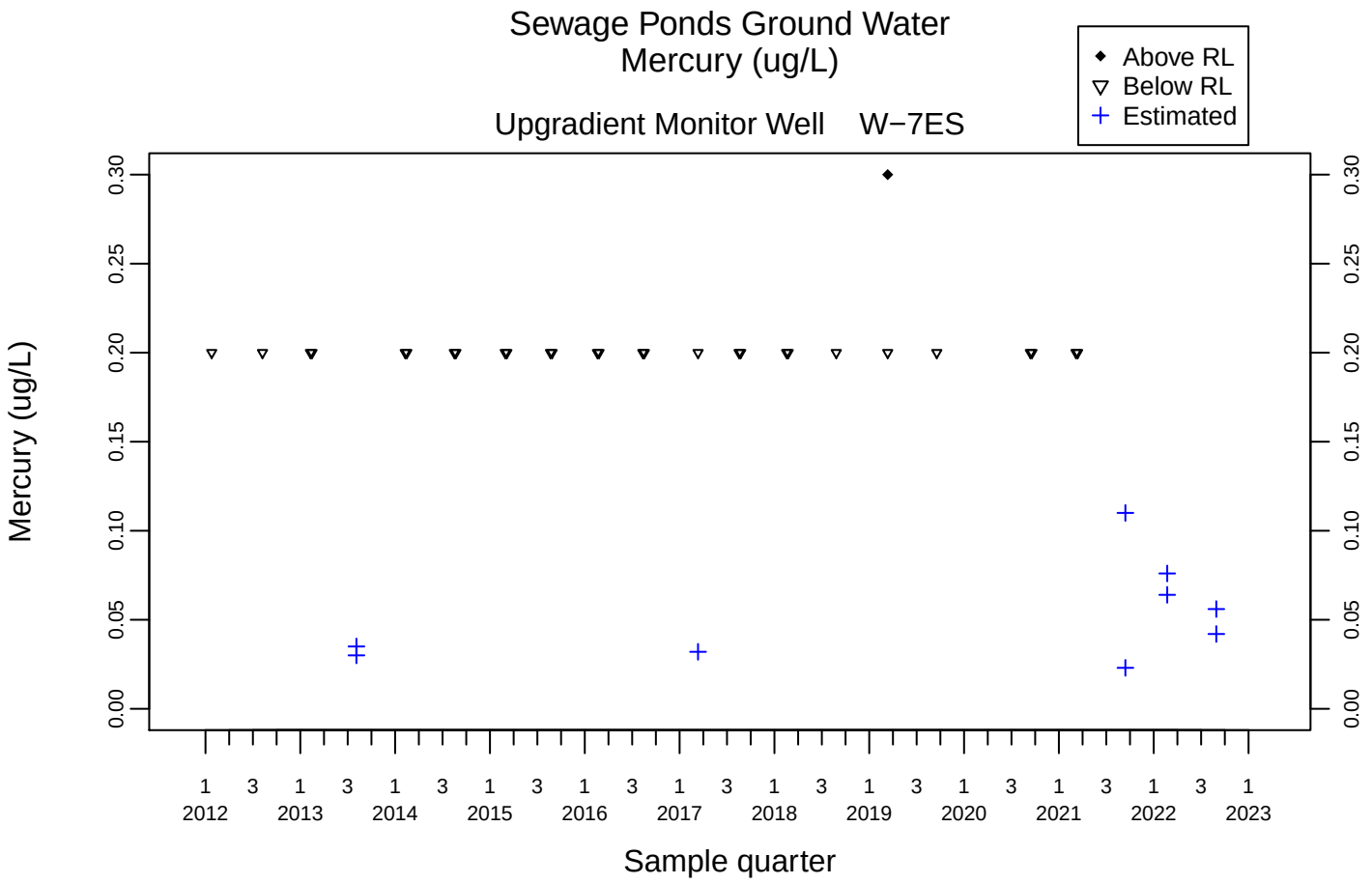


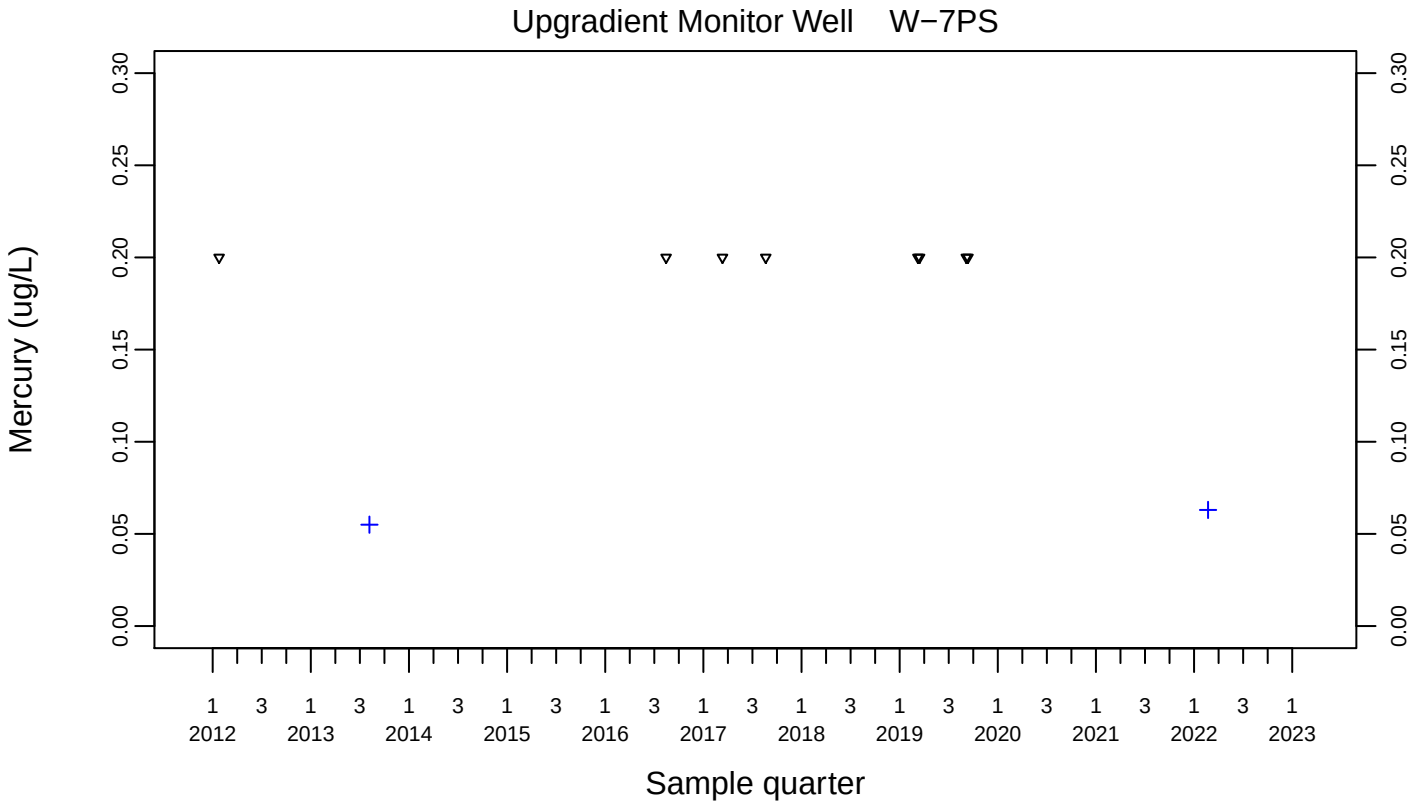
Sewage Ponds Ground Water
Manganese (ug/L)

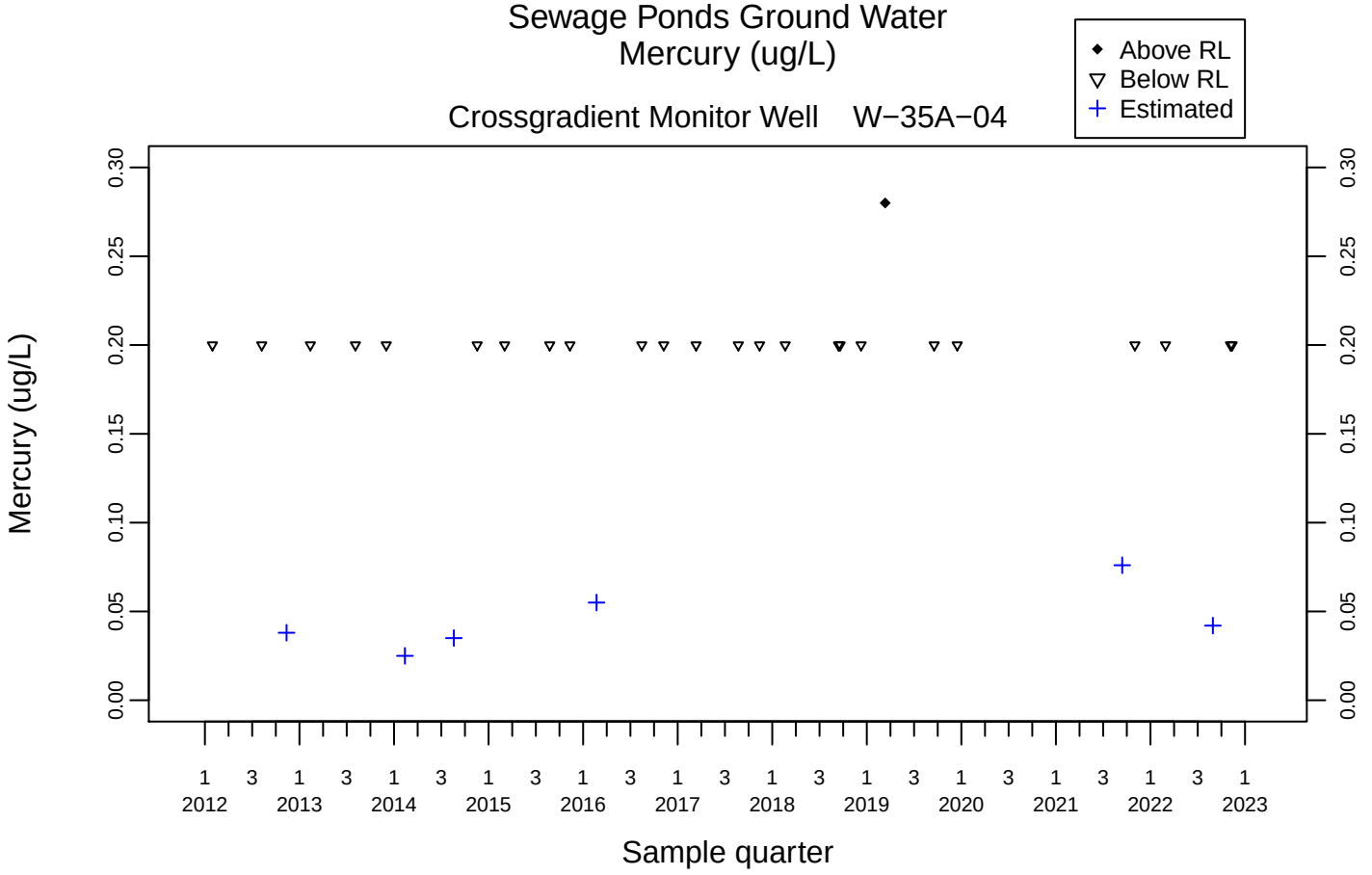


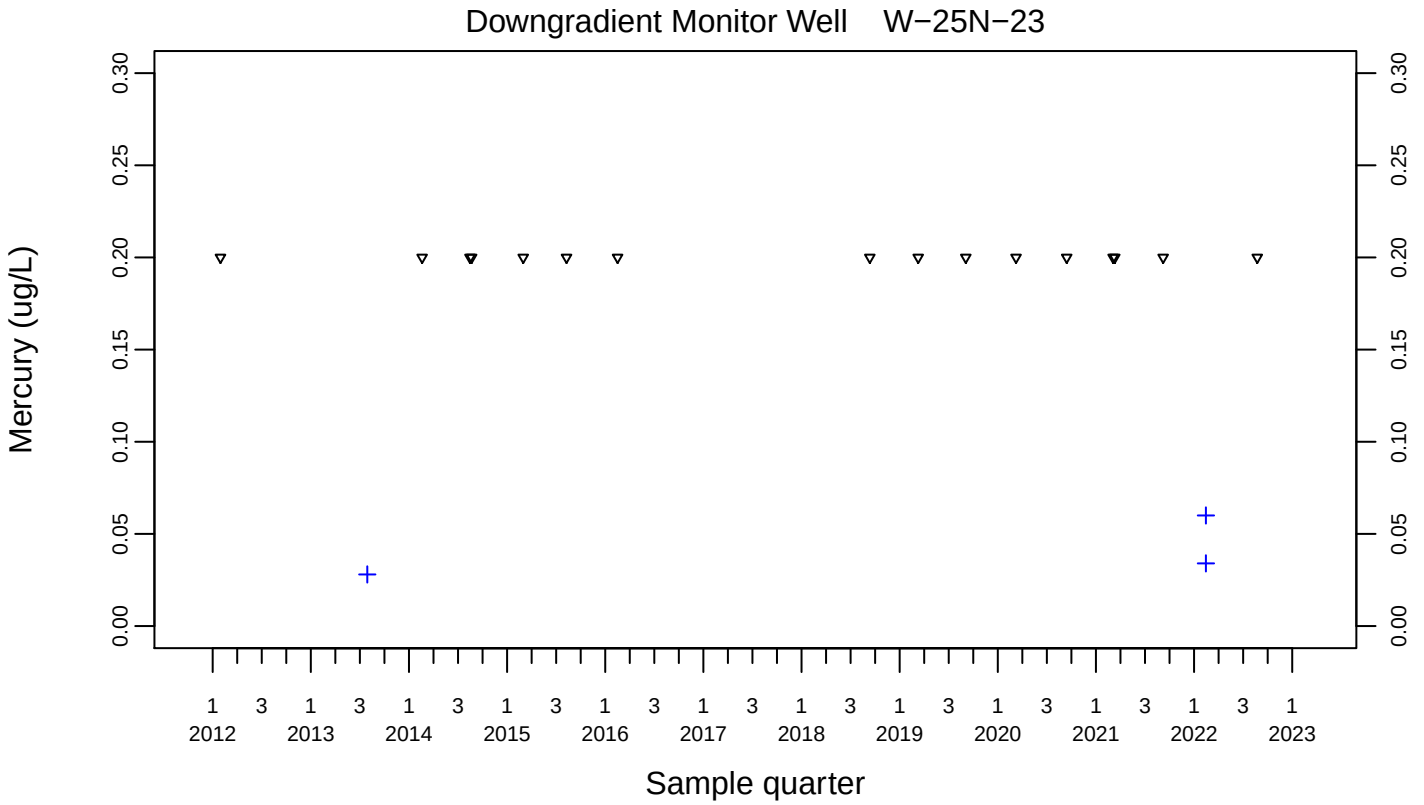



Sewage Ponds Ground Water
Manganese (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Manganese (ug/L)
0
50
100
150
200
250
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

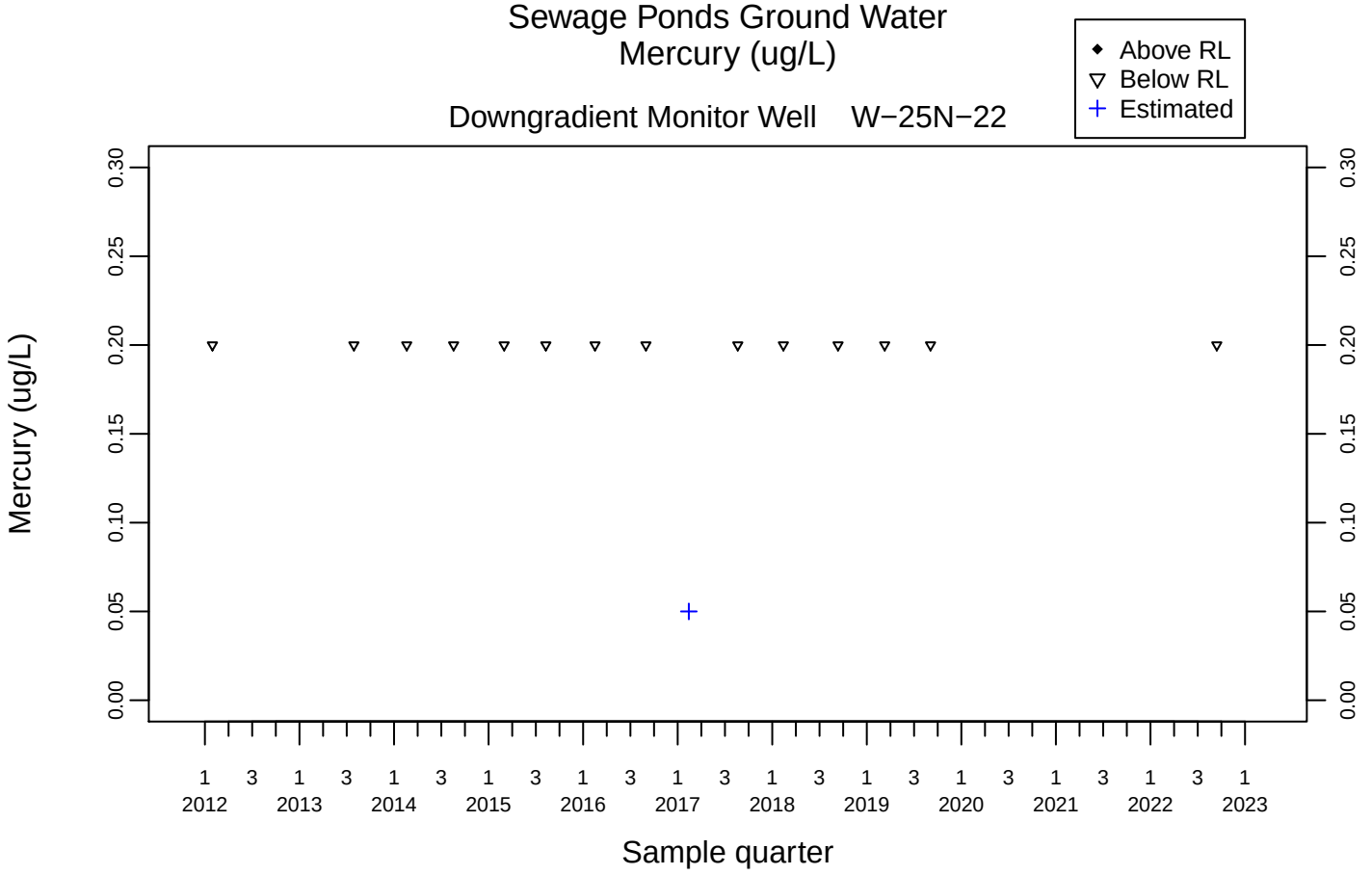

Sewage Ponds Ground Water
Mercury (ug/L)
Above RL
Below RL
Estimated
Upgradient Monitor Well W−7ES
Mercury (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

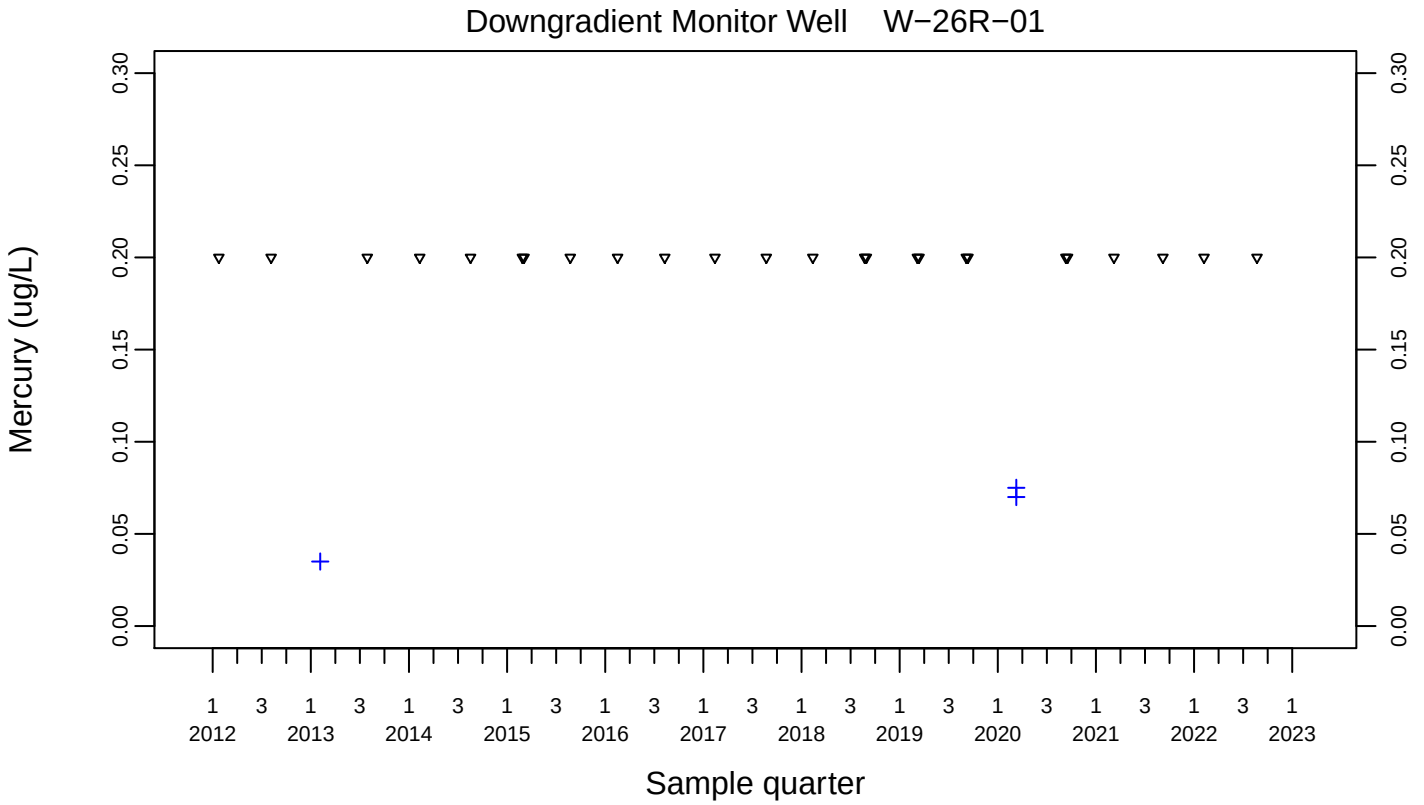

Upgradient Monitor Well W−7PS
Mercury (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

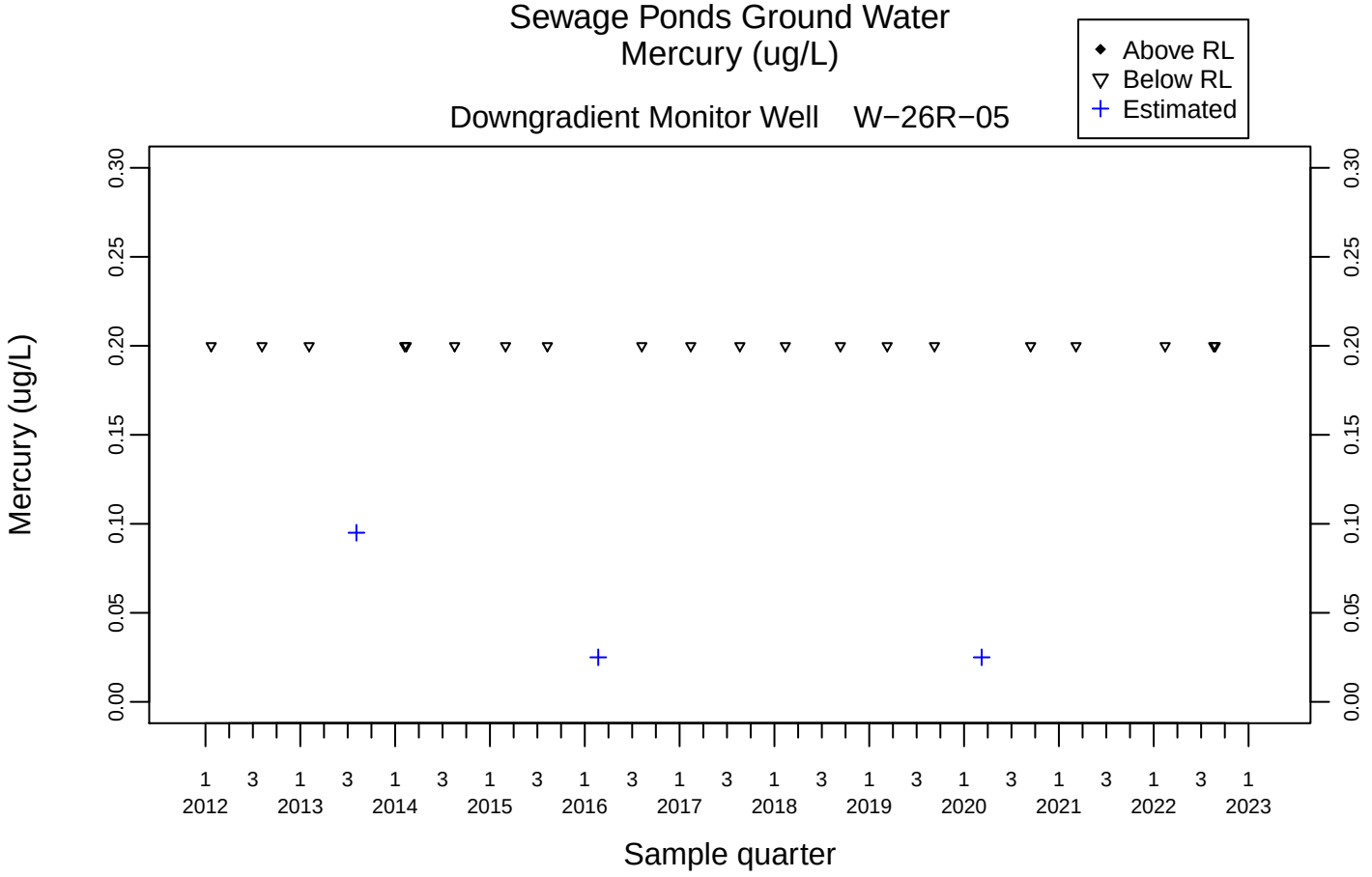

Sewage Ponds Ground Water
Mercury (ug/L)
Above RL
Below RL
Estimated
Crossgradient Monitor Well W−35A−04
Mercury (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

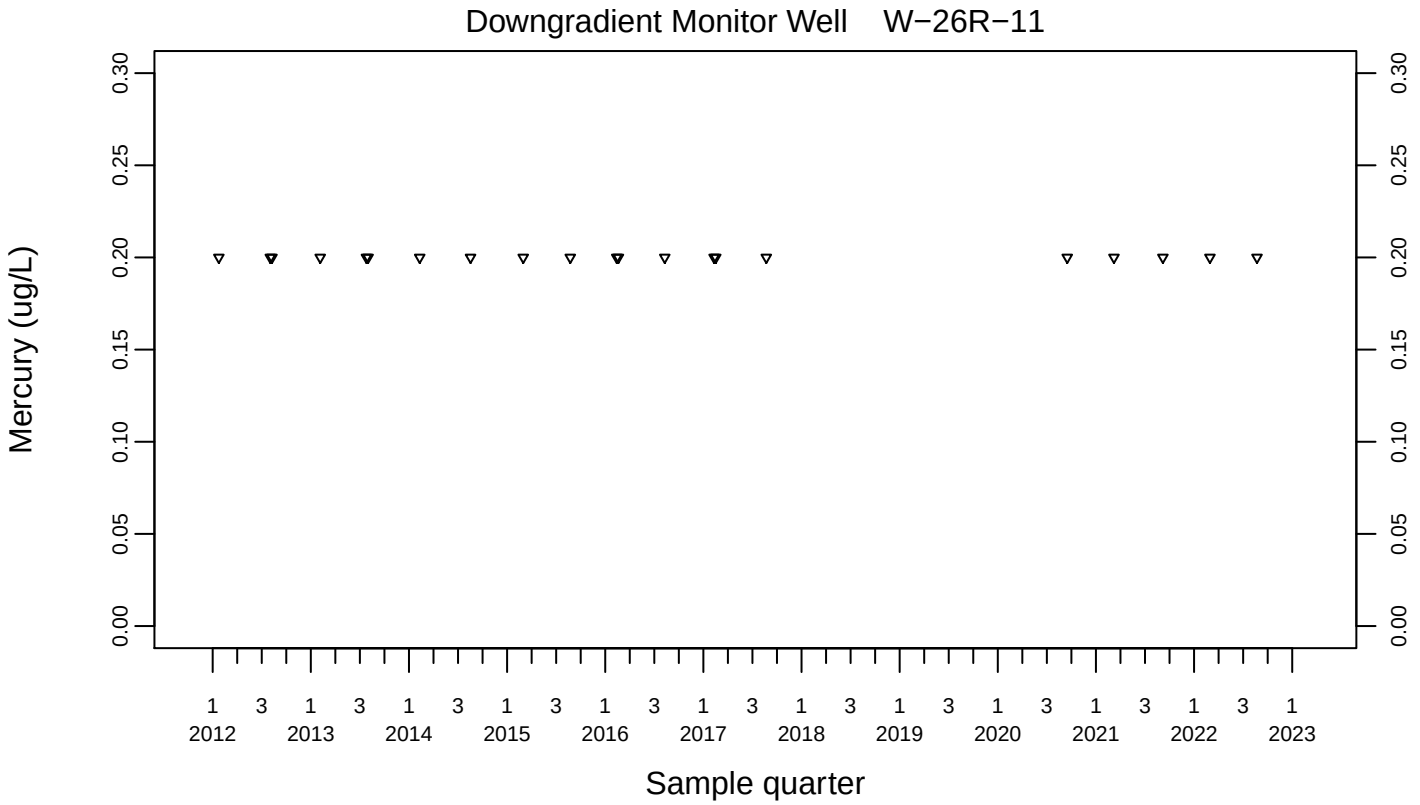

Downgradient Monitor Well W−25N−23
Mercury (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

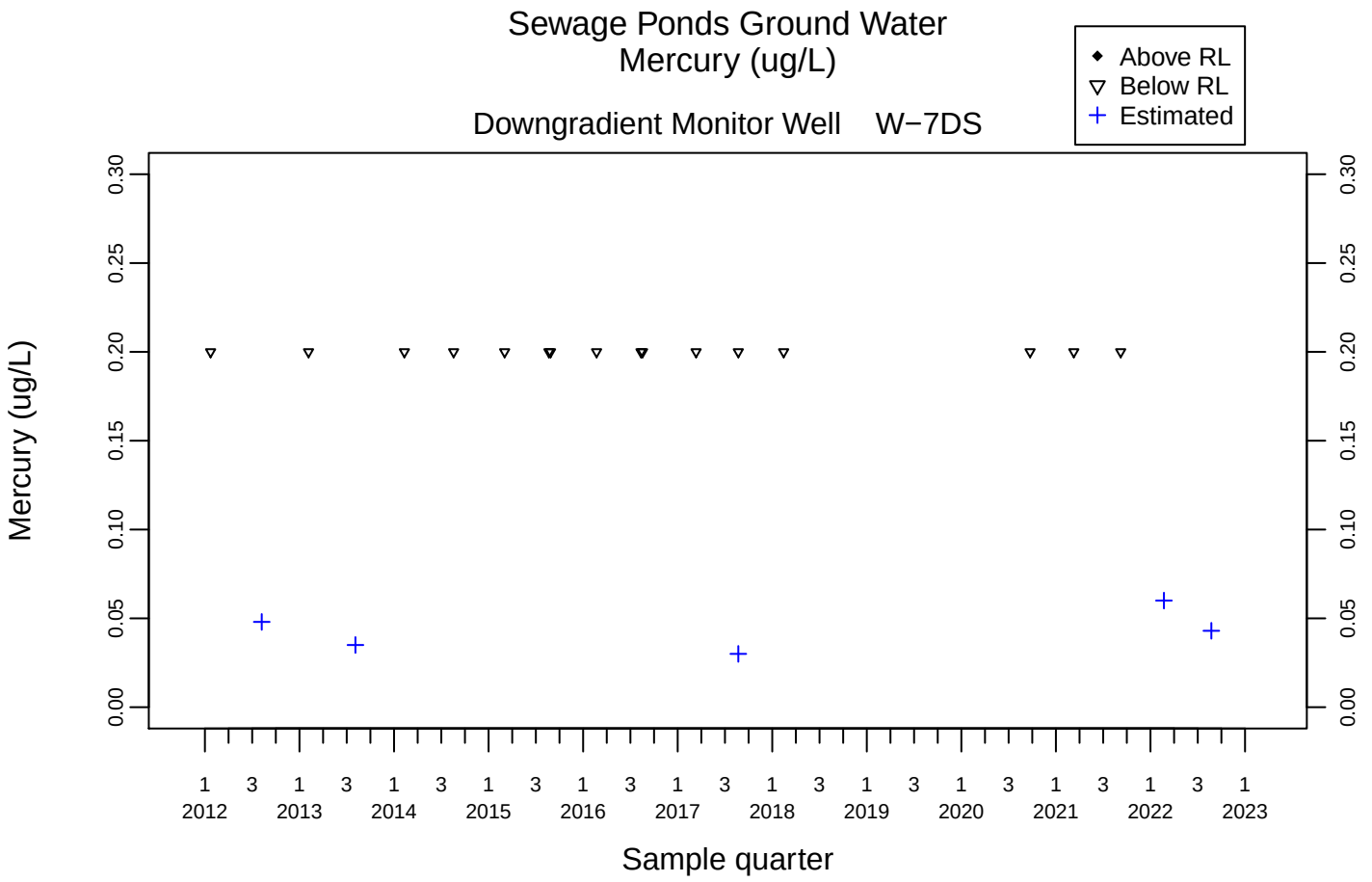
Sewage Ponds Ground Water Mercury (ug/L)



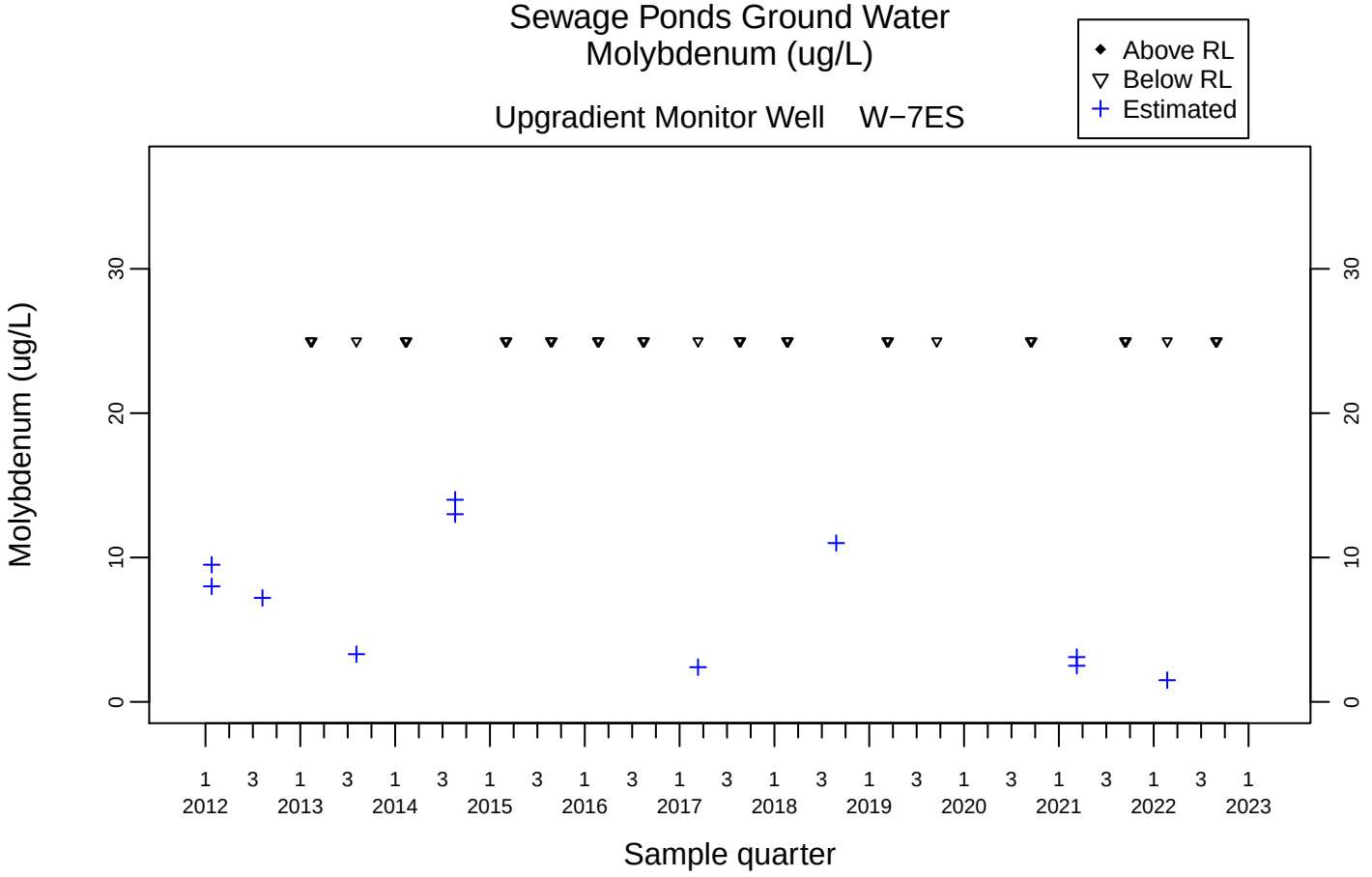


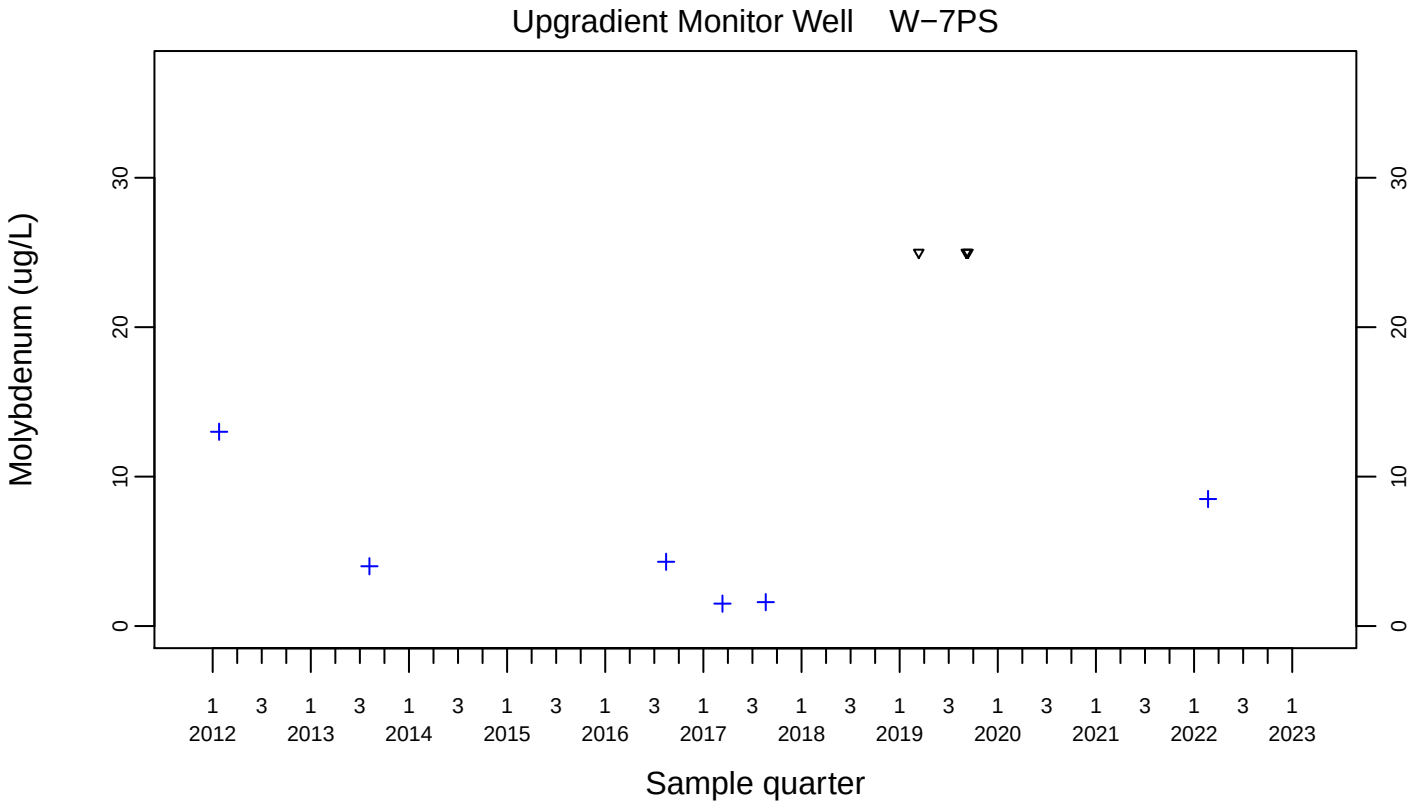

Sewage Ponds Ground Water
Mercury (ug/L)
Above RL
Below RL
Estimated
Downgradient Monitor Well W−26R−05
Mercury (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Downgradient Monitor Well W−26R−11
Mercury (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

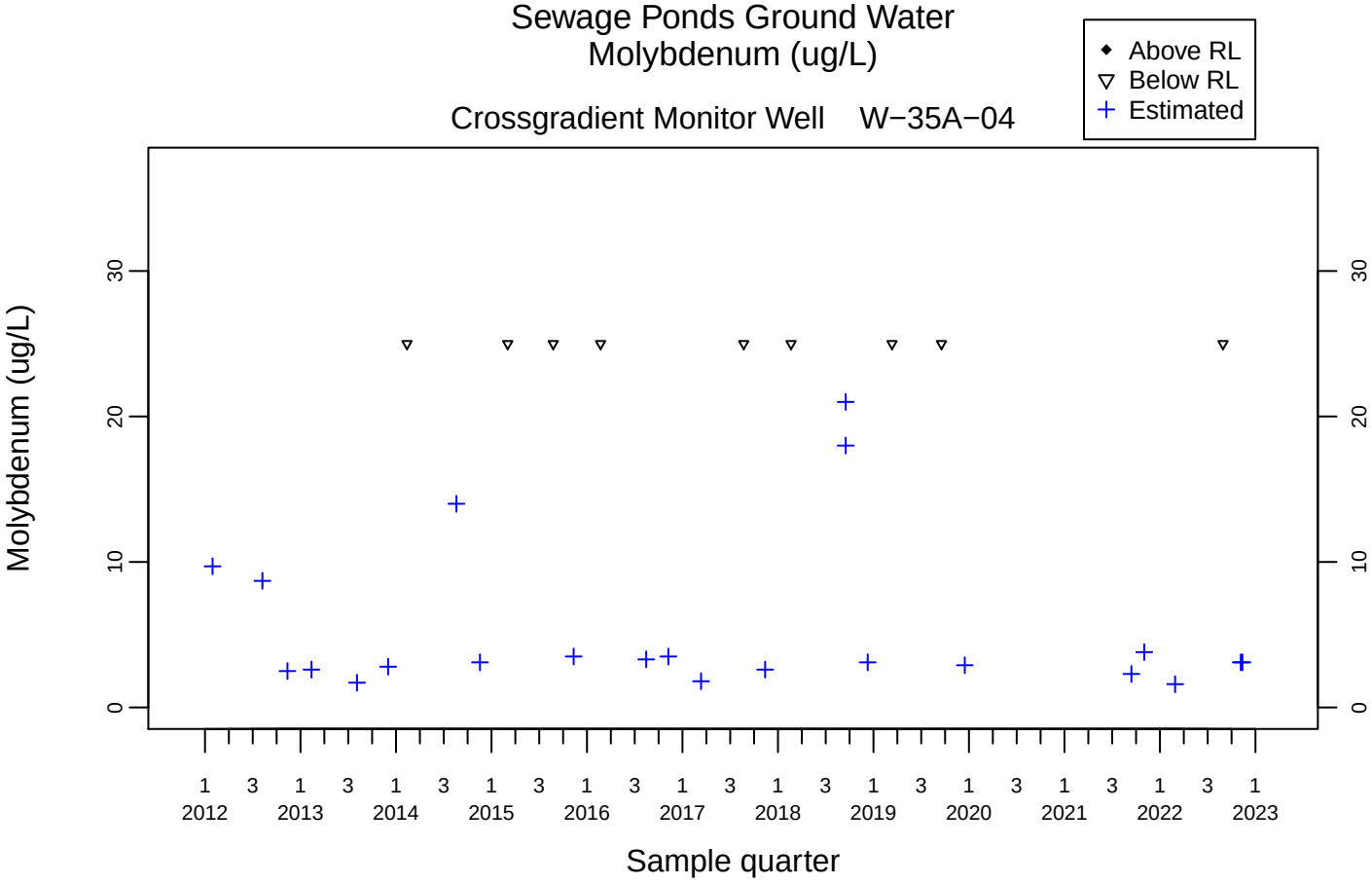

Sewage Ponds Ground Water
Mercury (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Mercury (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

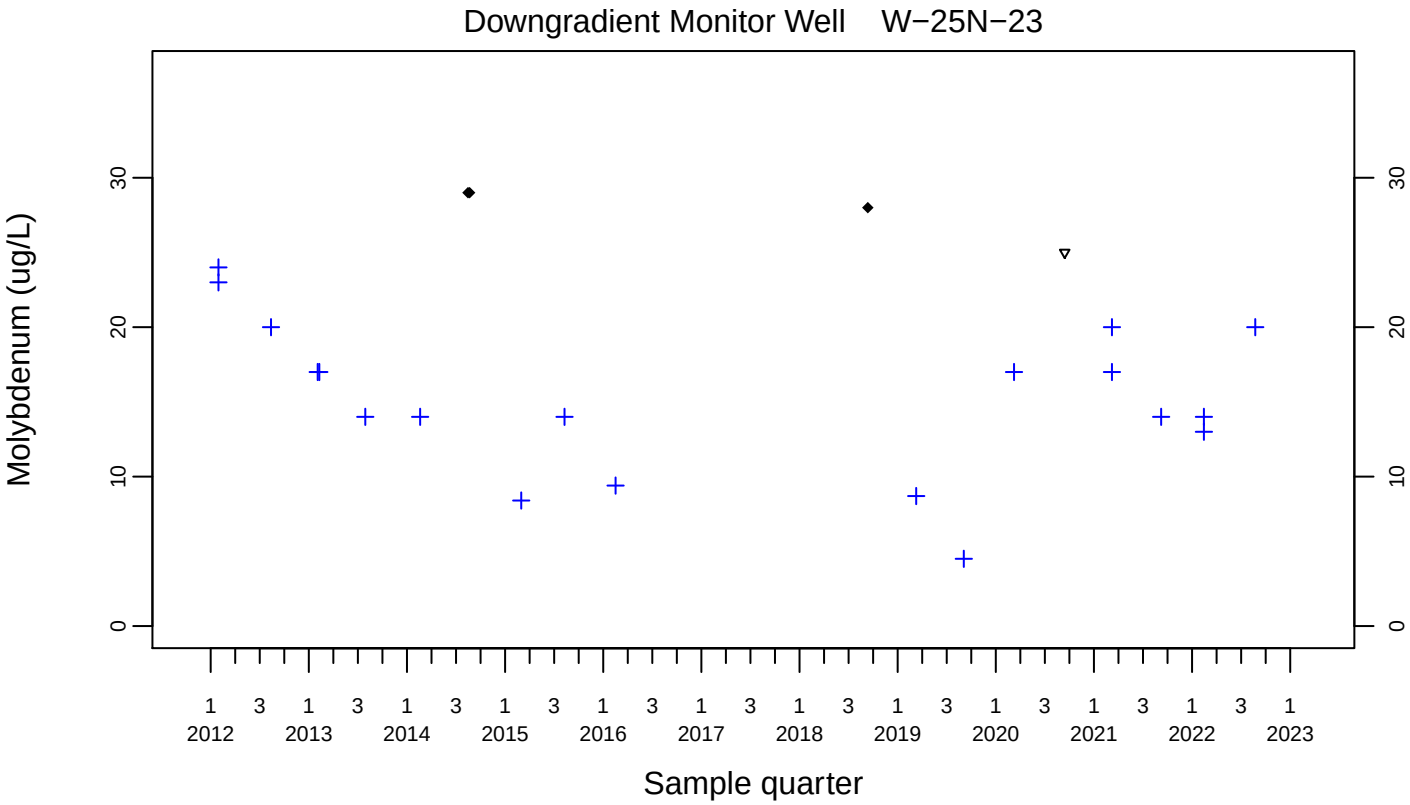
Sewage Ponds Ground Water
Molybdenum (ug/L)

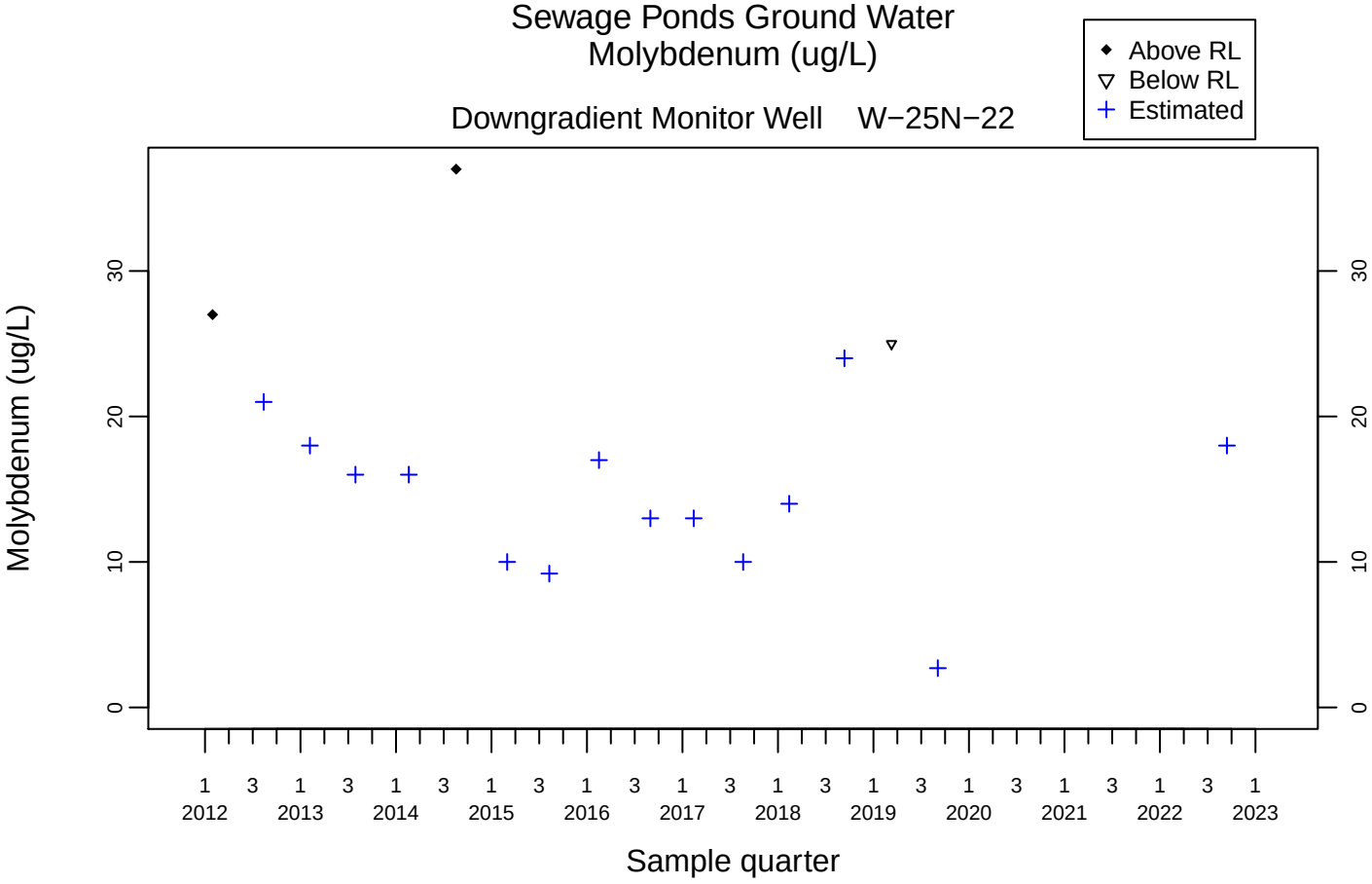


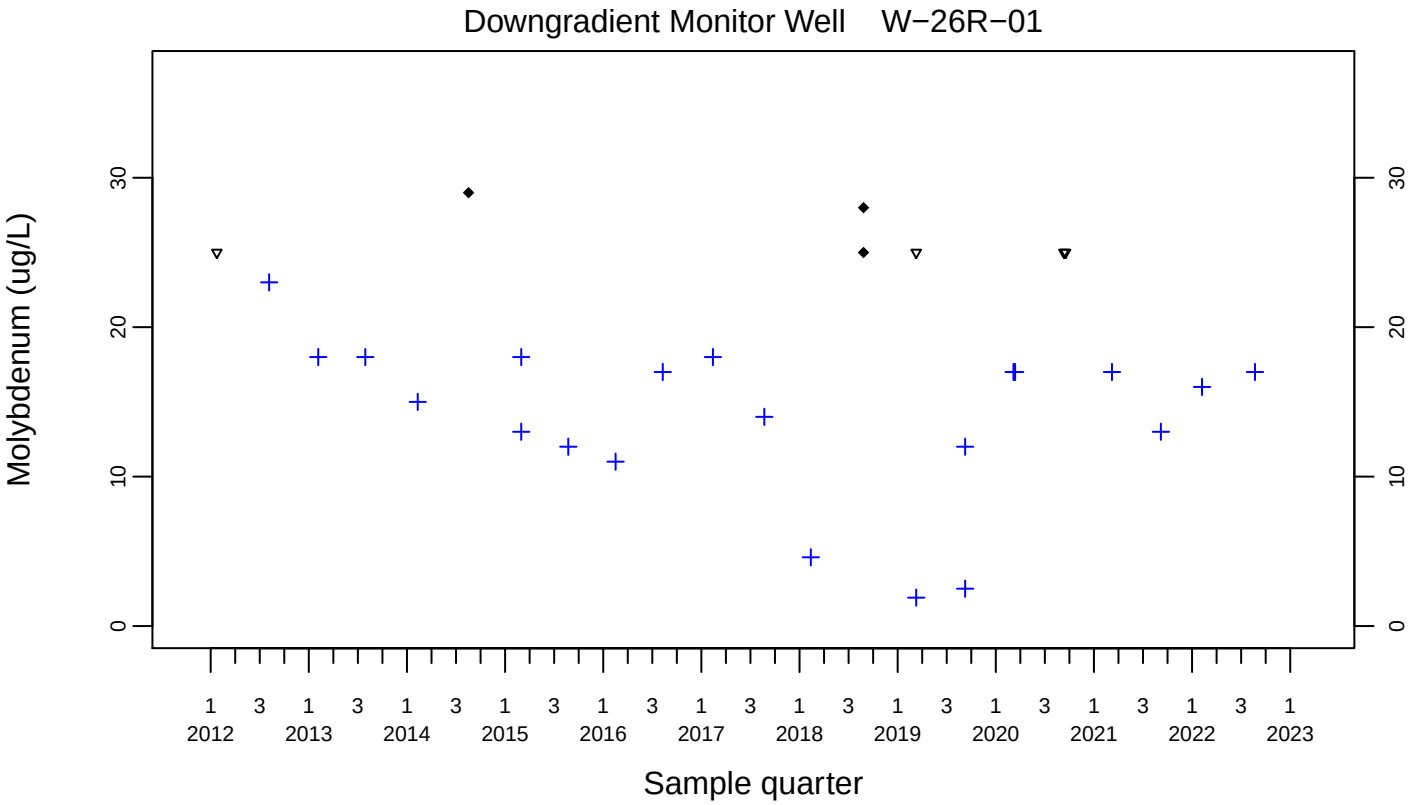


Sewage Ponds Ground Water
Molybdenum (ug/L)

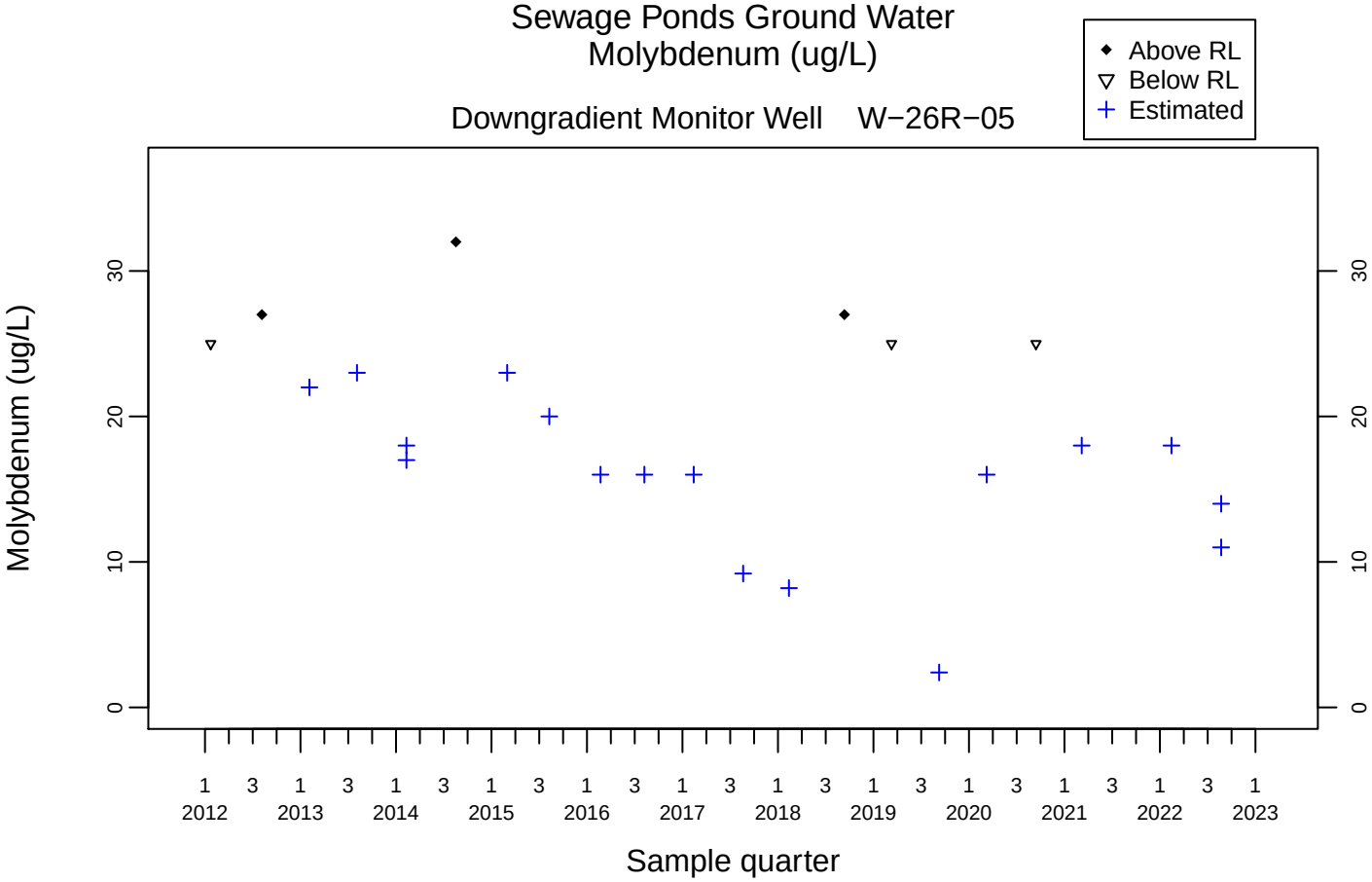


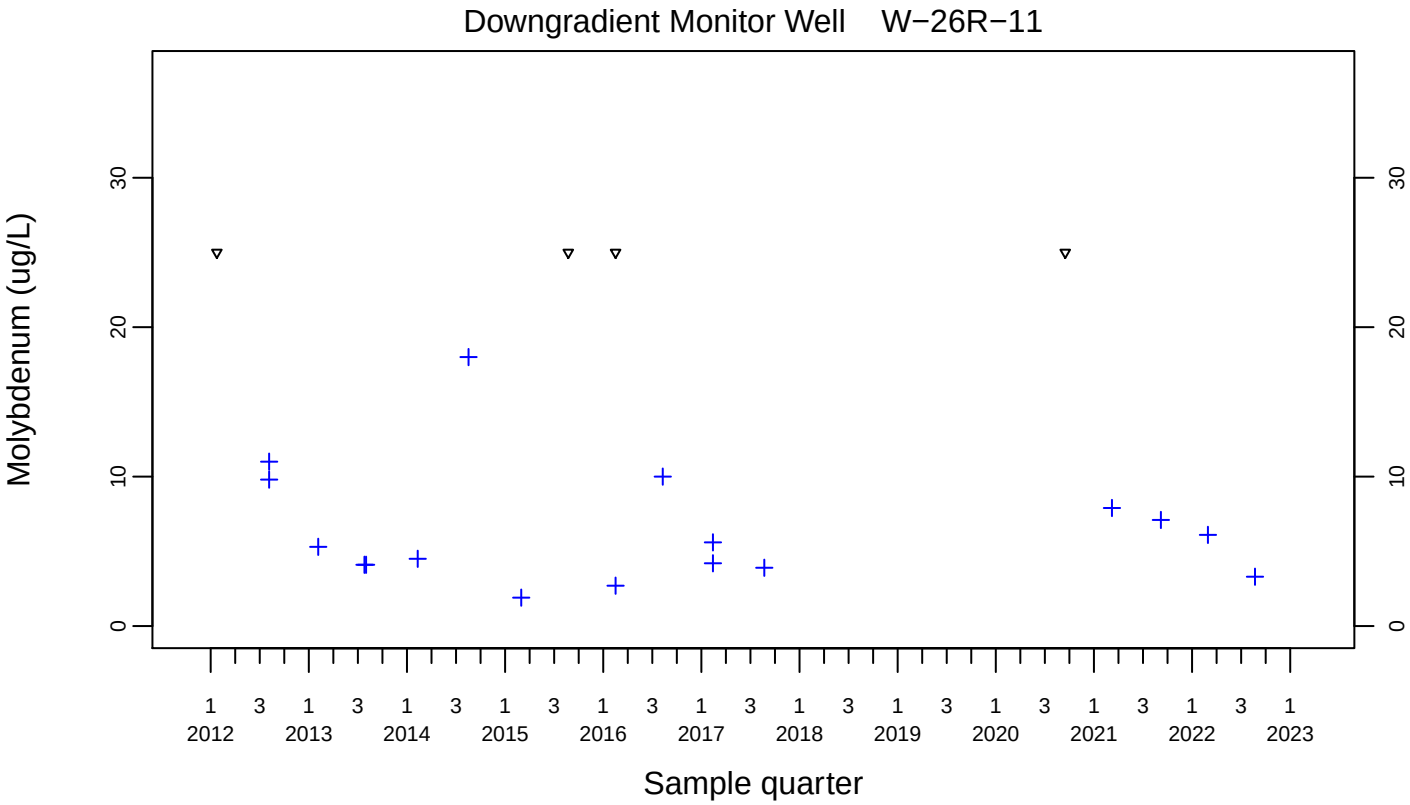


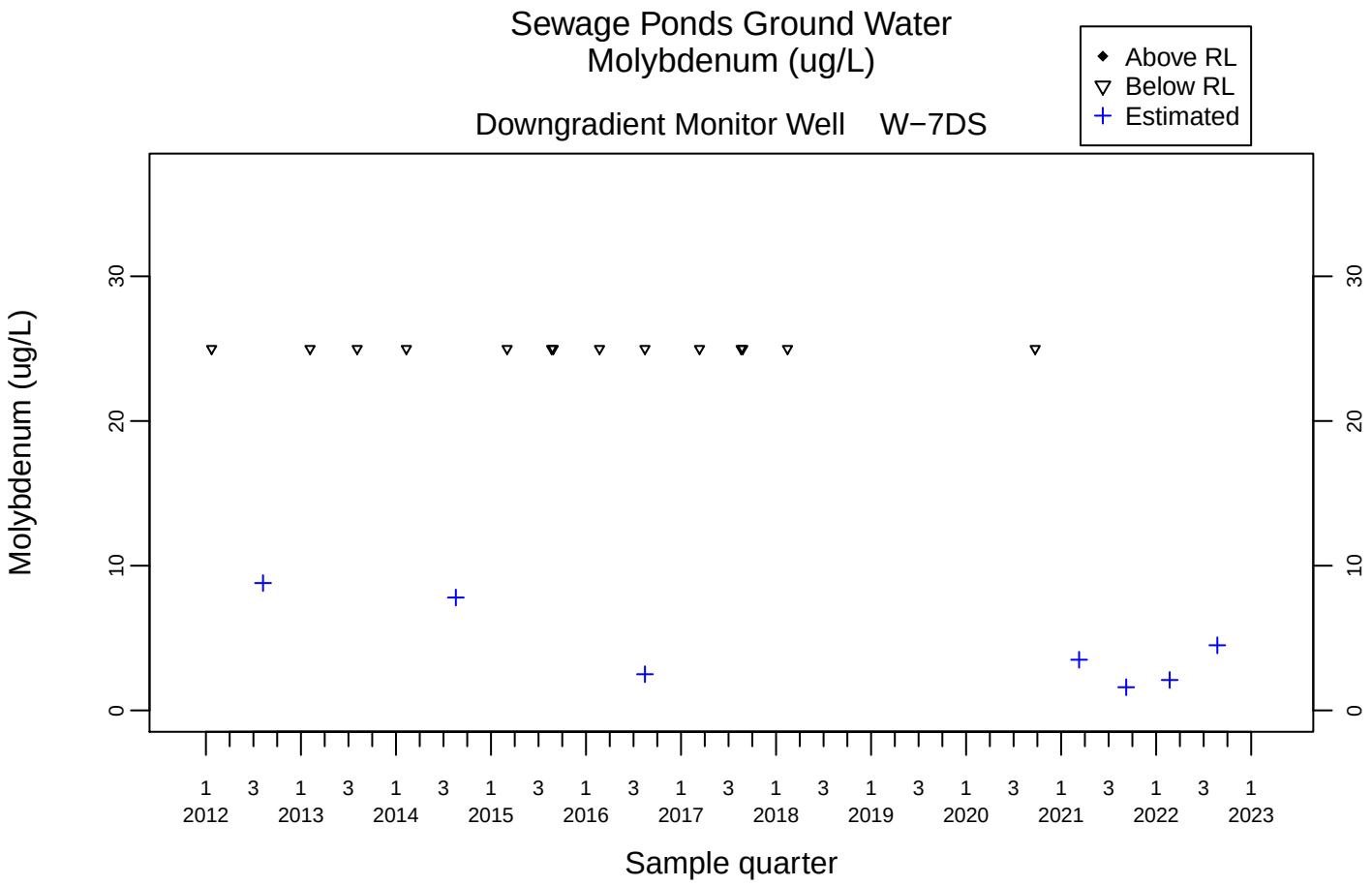

Sewage Ponds Ground Water
Molybdenum (ug/L)
Above RL
Below RL
Estimated
Downgradient Monitor Well W−25N−22
Molybdenum (ug/L)
0
10
20
30
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter


Downgradient Monitor Well W−26R−01
Molybdenum (ug/L)
0
10
20
30
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

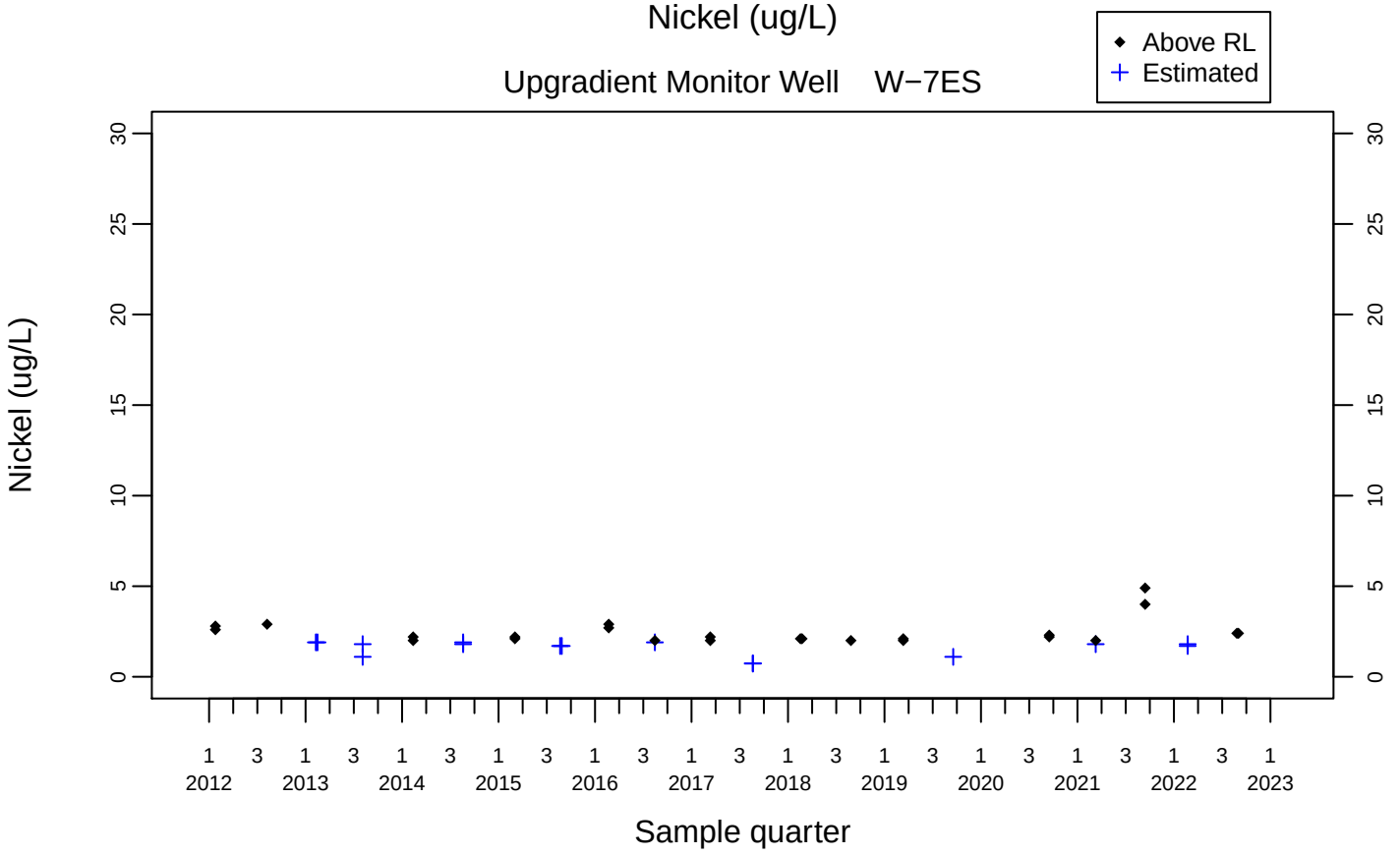
Sewage Ponds Ground Water
Molybdenum (ug/L)

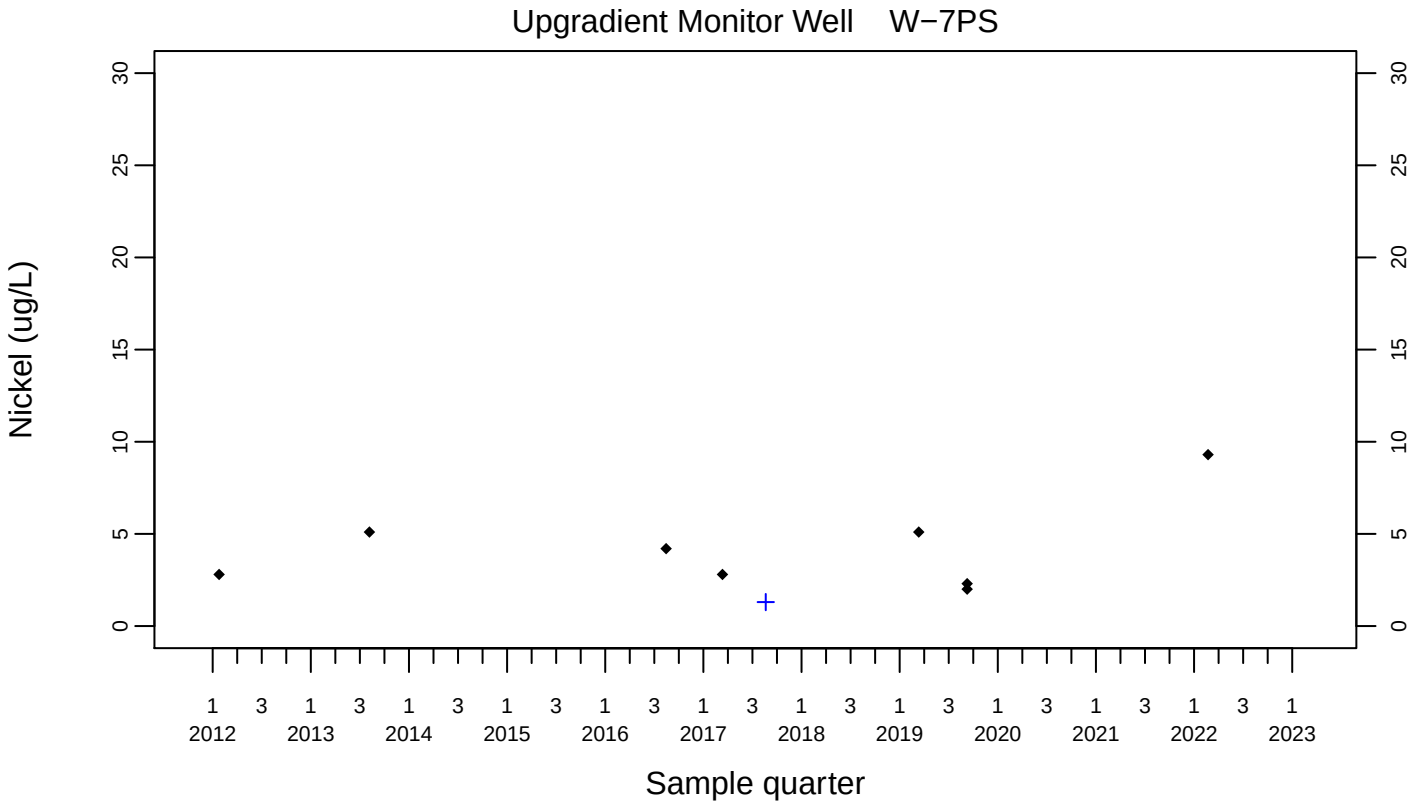




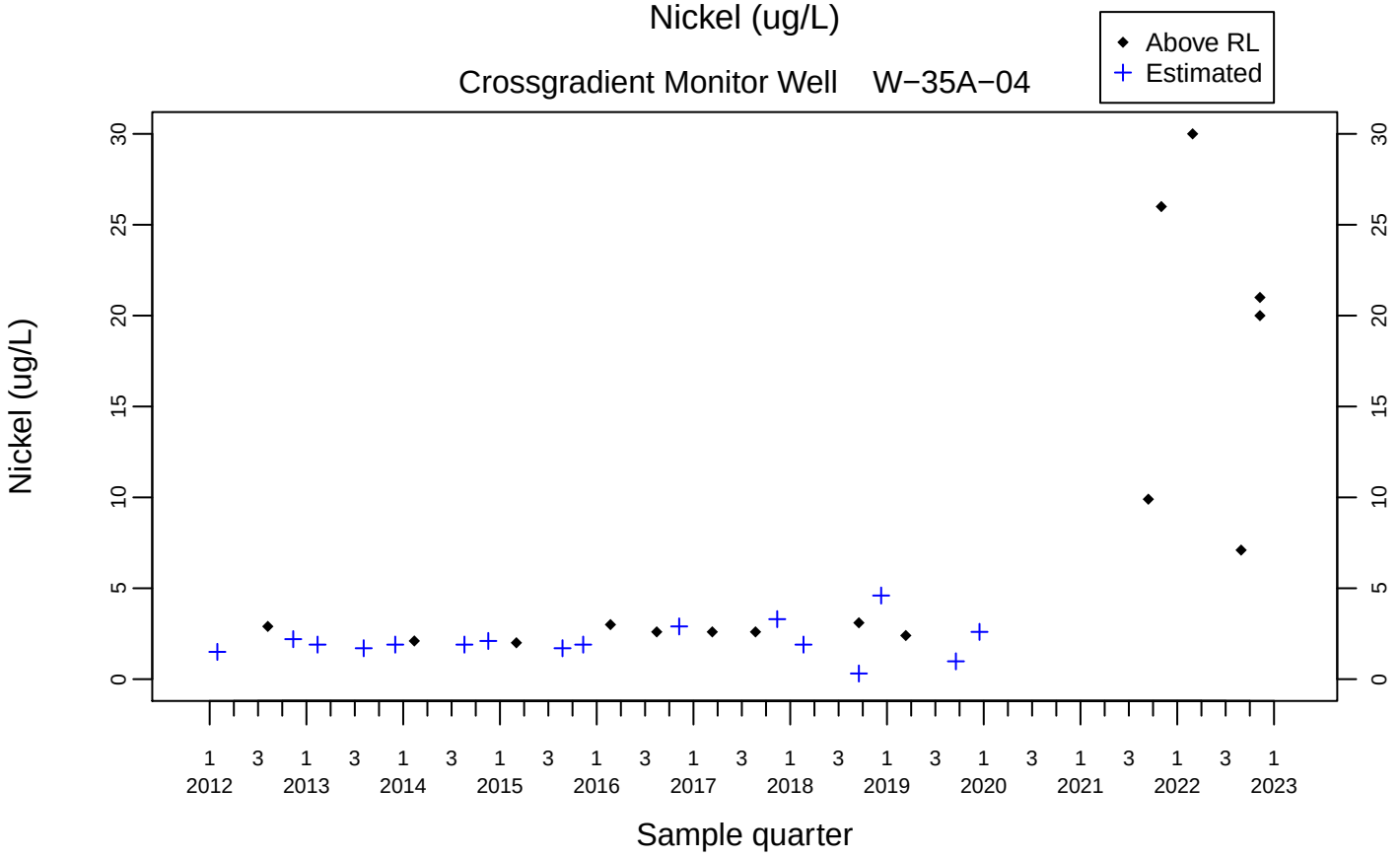

Sewage Ponds Ground Water
Molybdenum (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Molybdenum (ug/L)
0
10
20
30
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

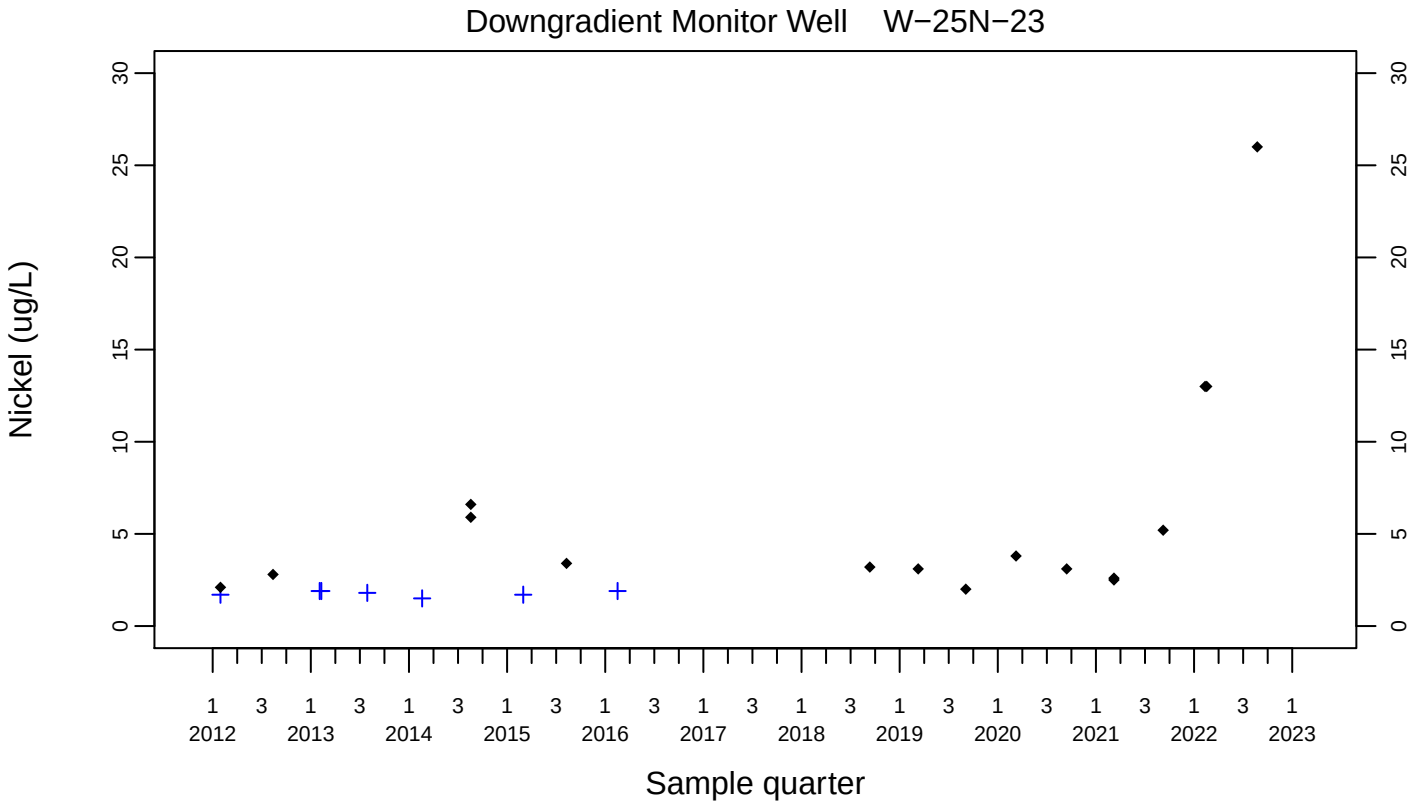
Sewage Ponds Ground Water
Nickel (ug/L)



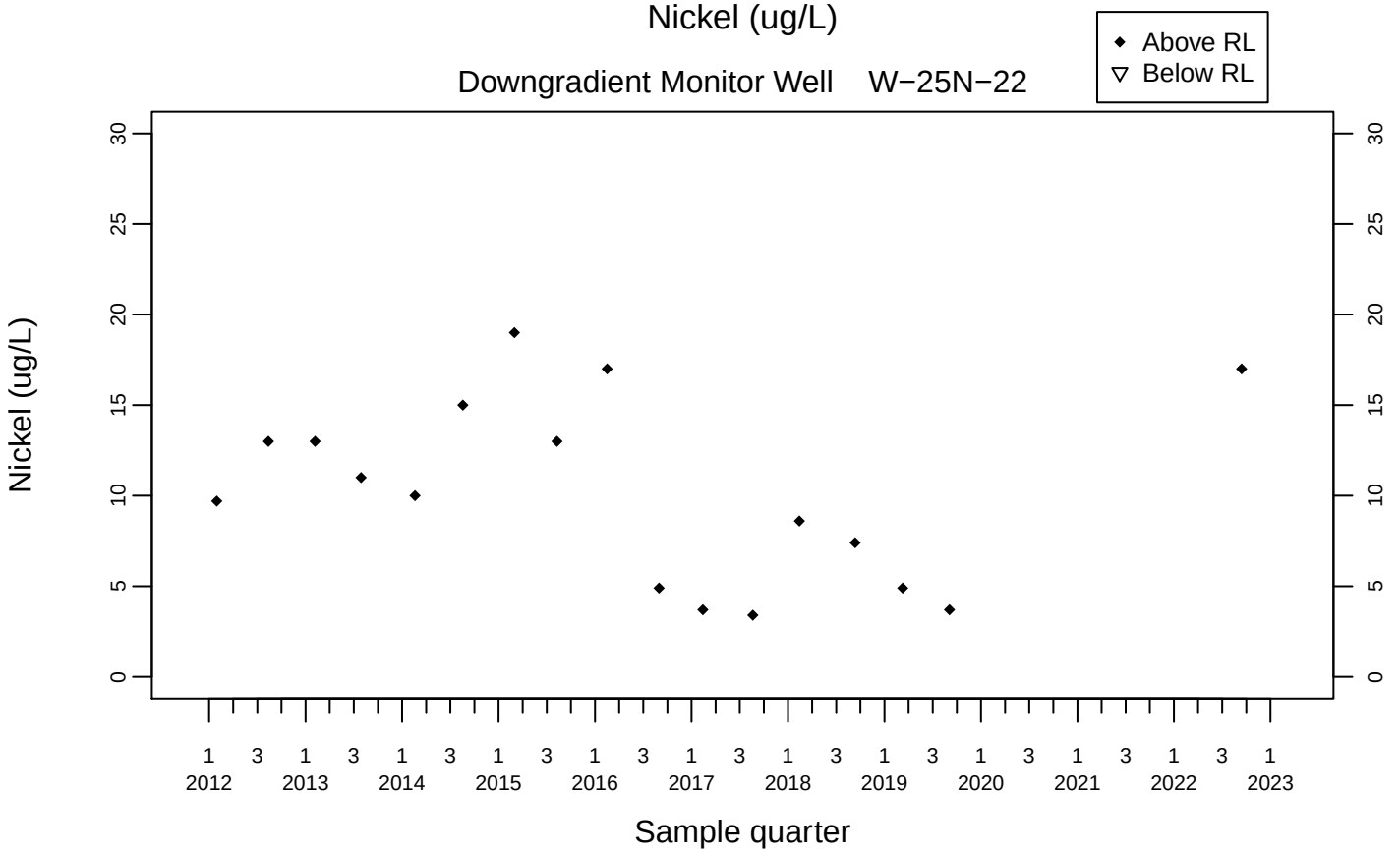


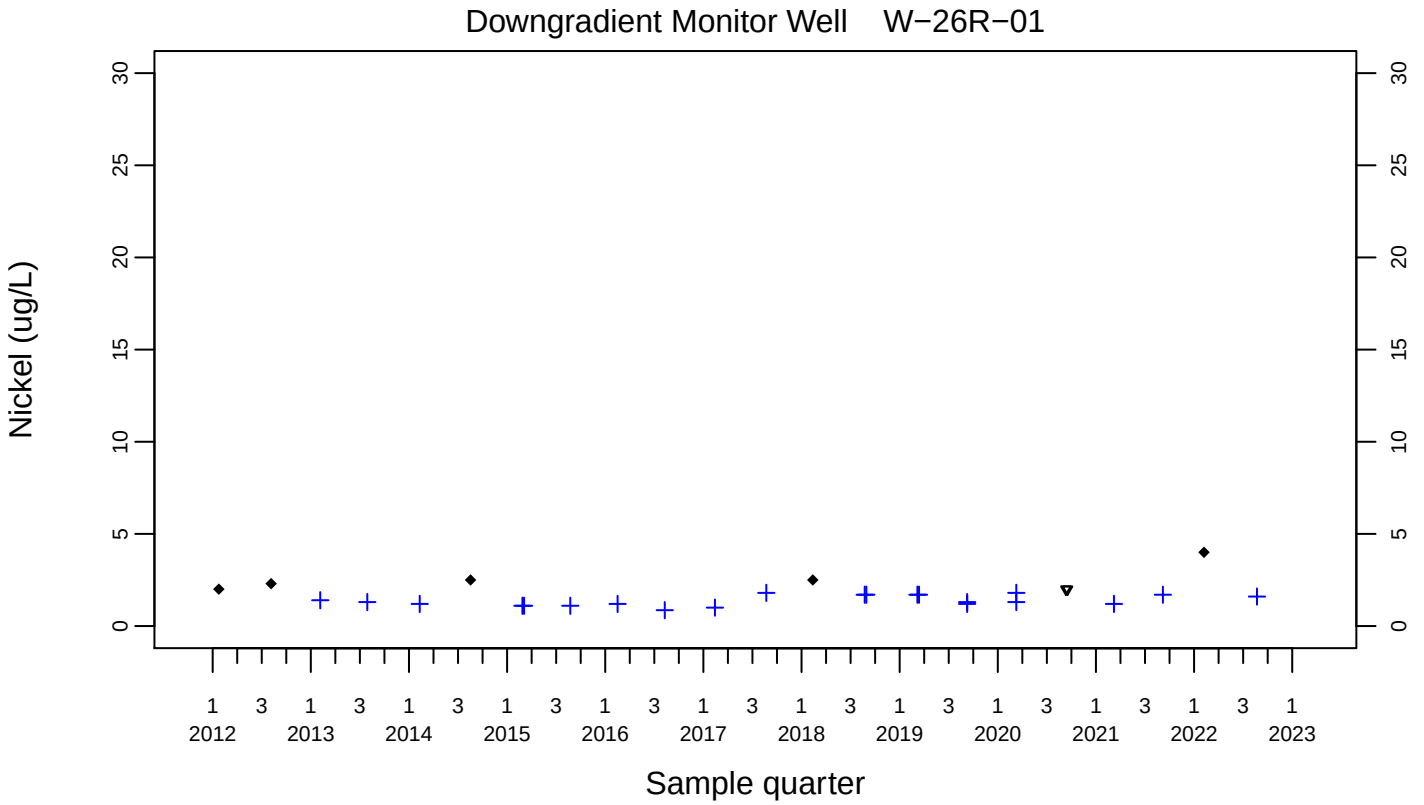
Sewage Ponds Ground Water
Nickel (ug/L)



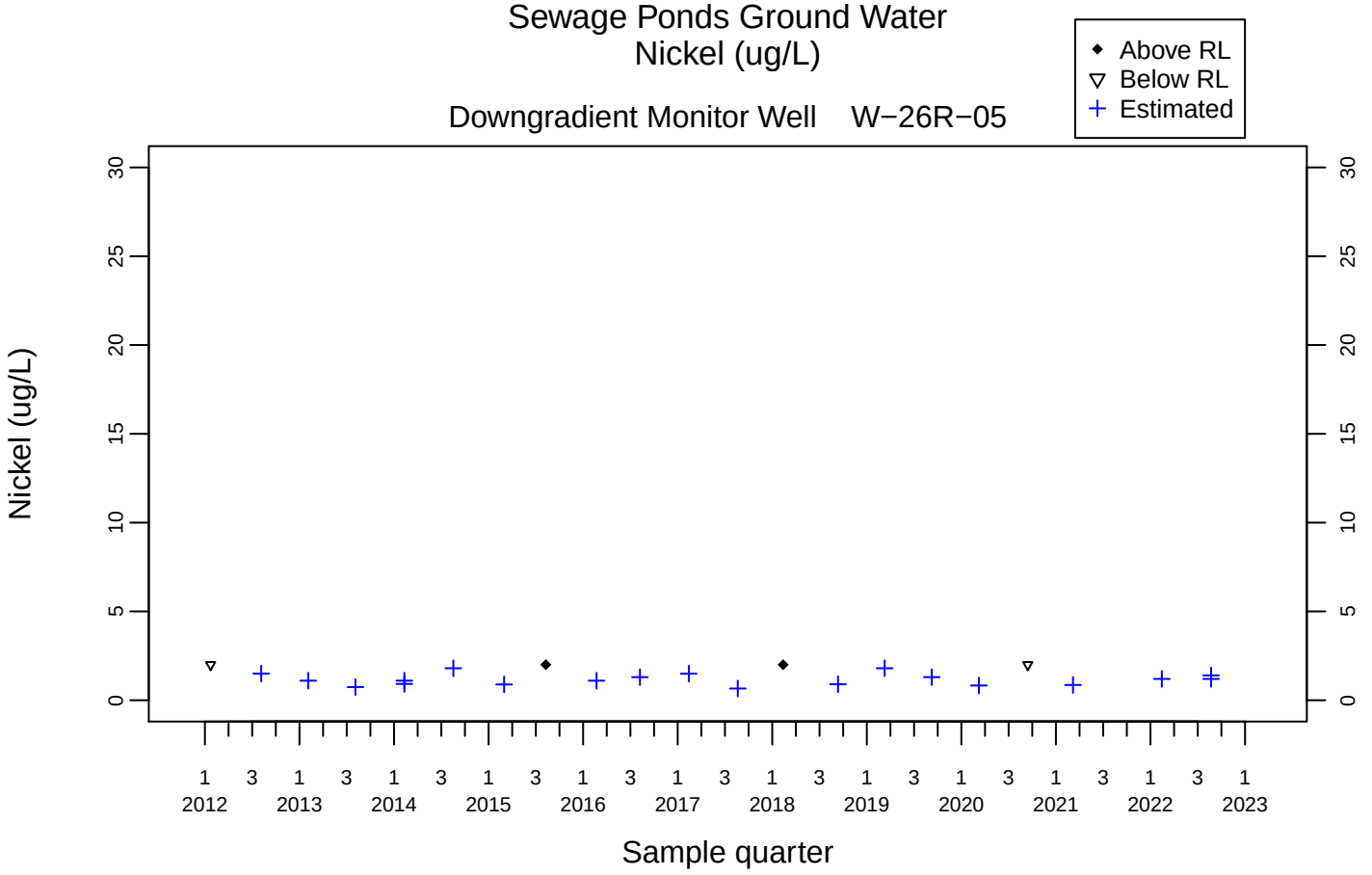


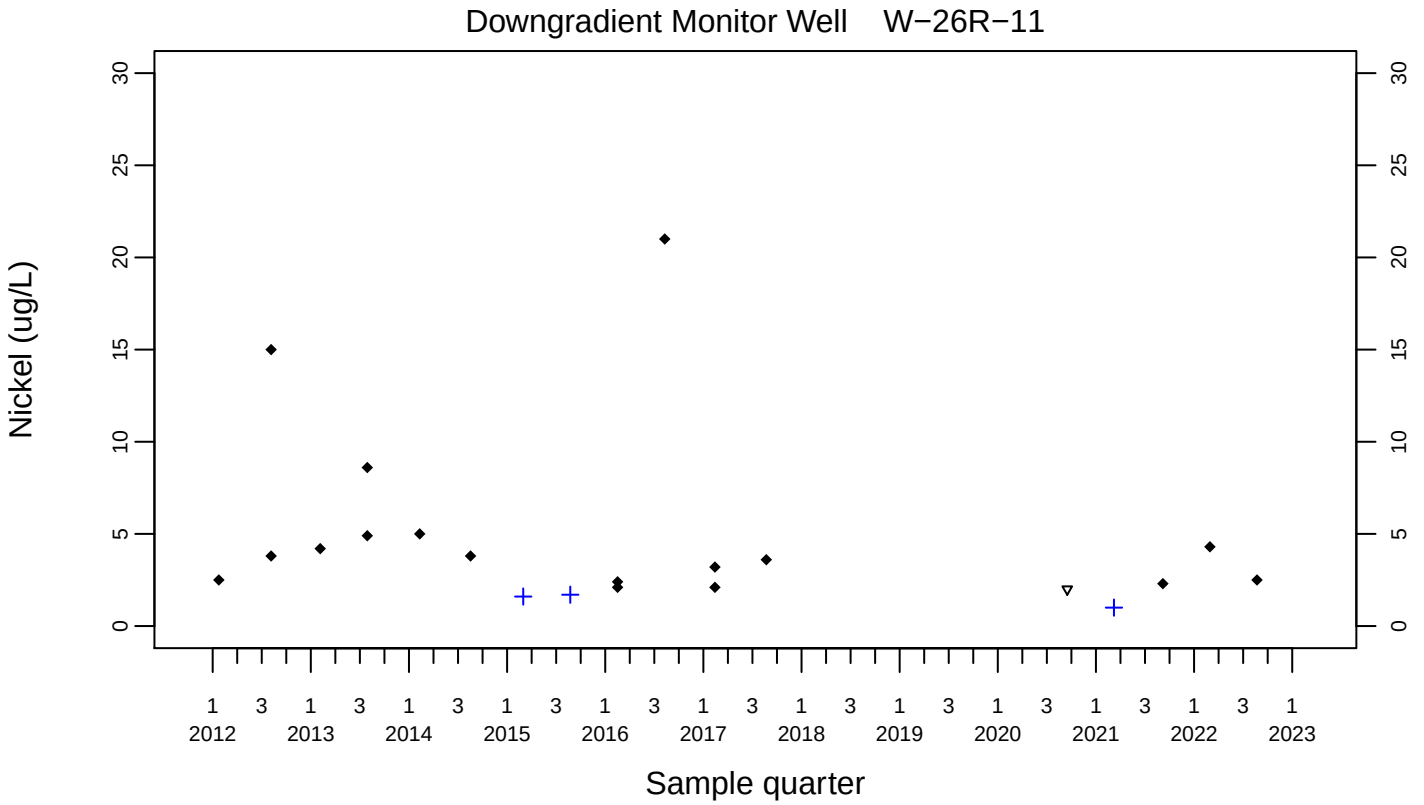
Sewage Ponds Ground Water
Nickel (ug/L)

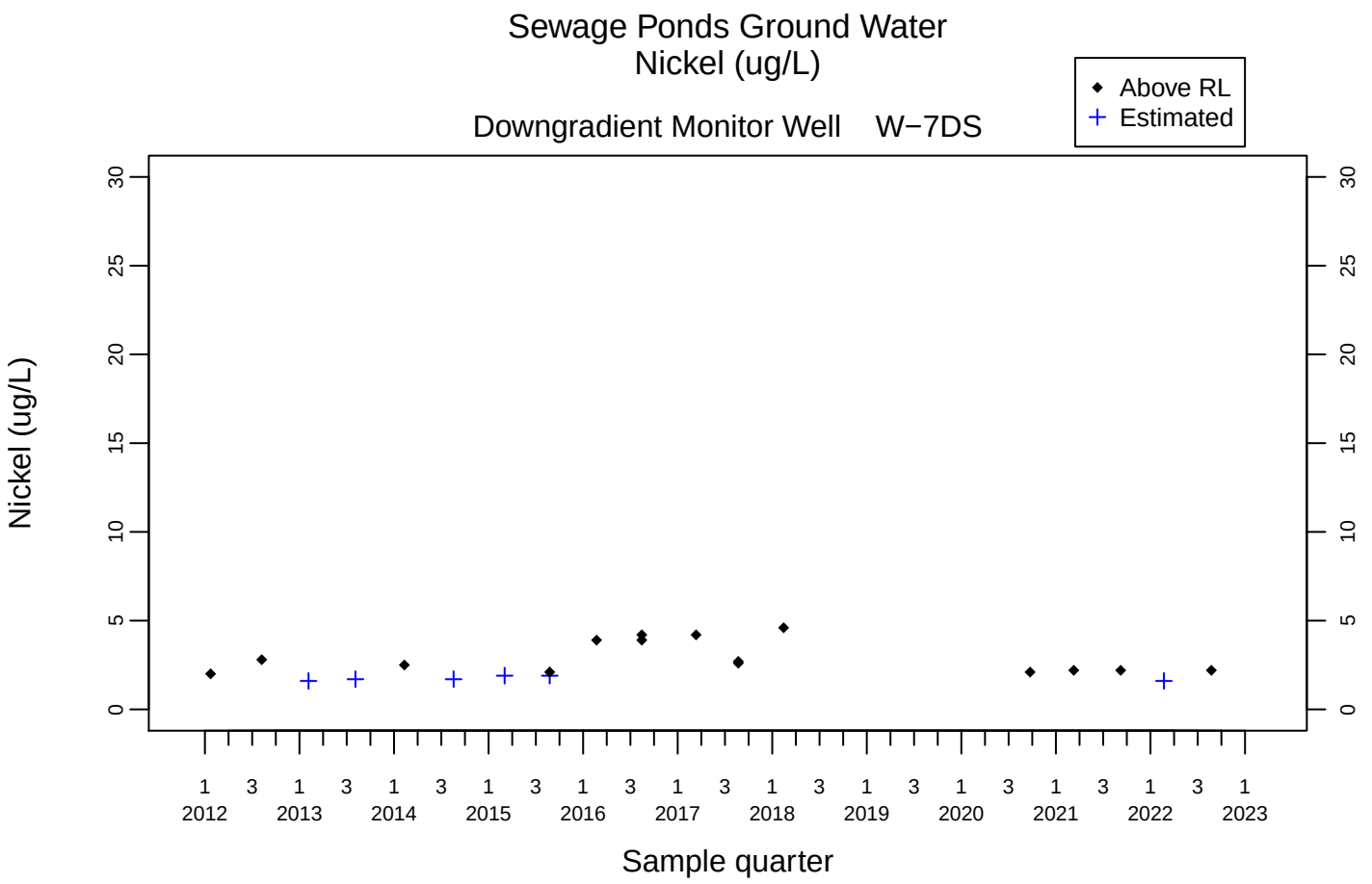


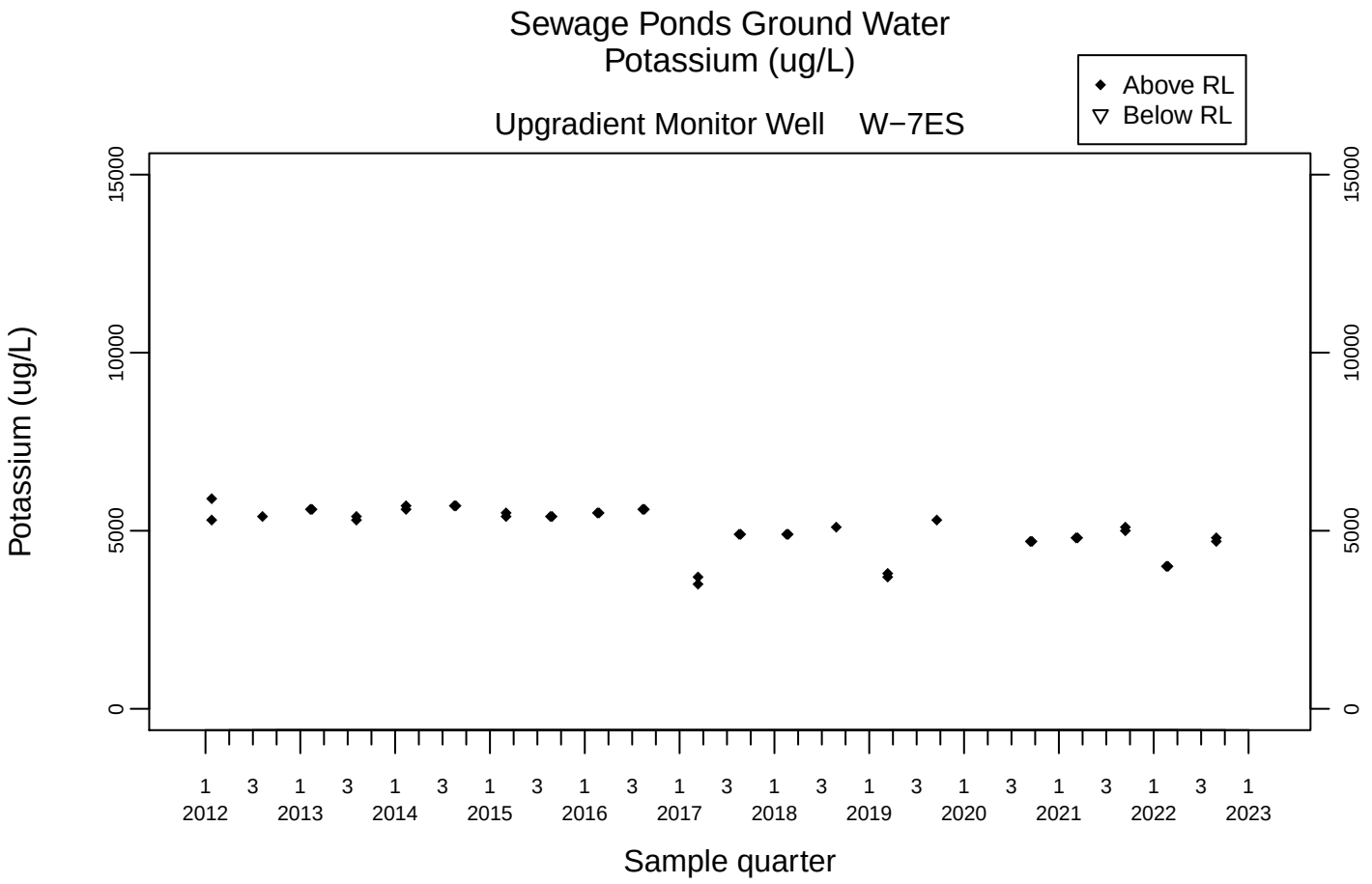


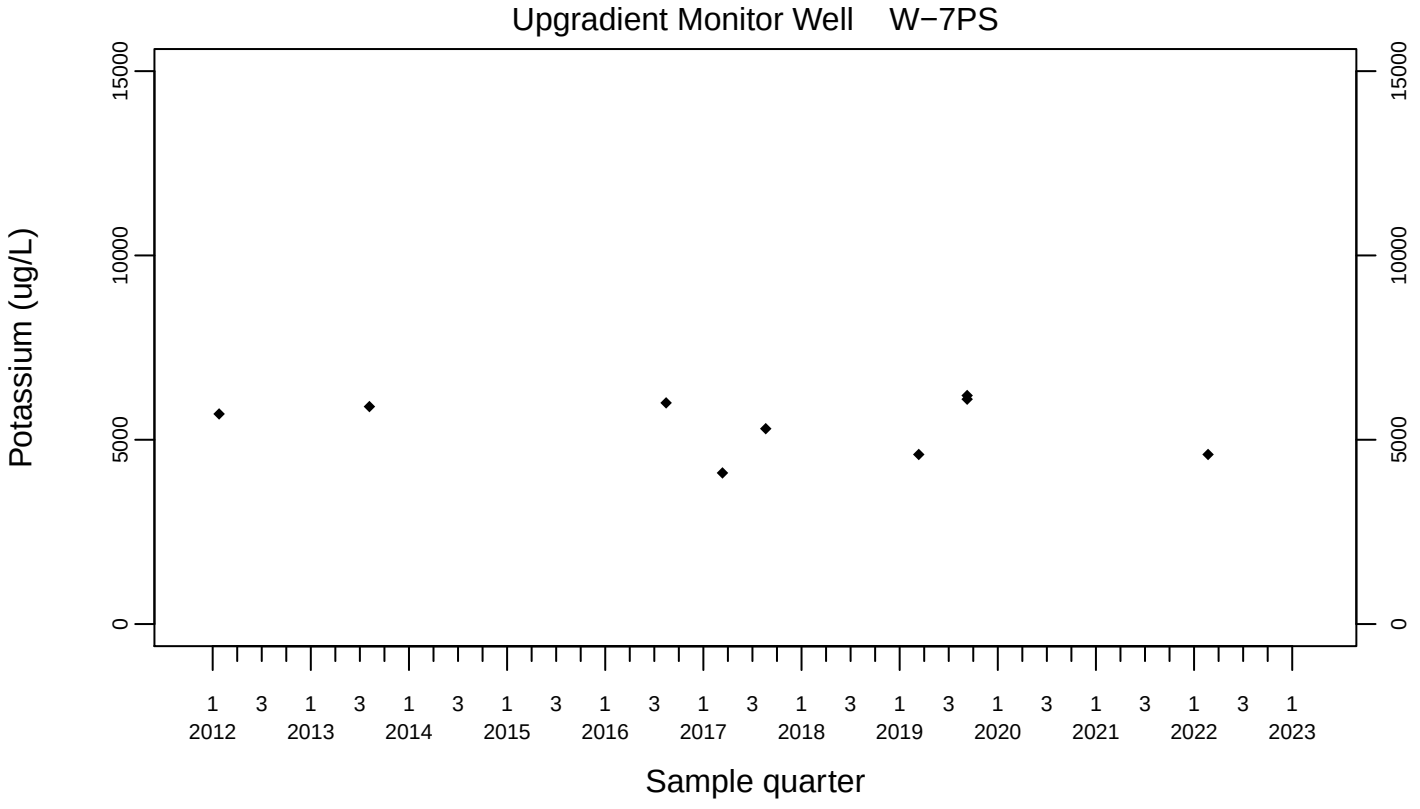
Sewage Ponds Ground Water
Nickel (ug/L)



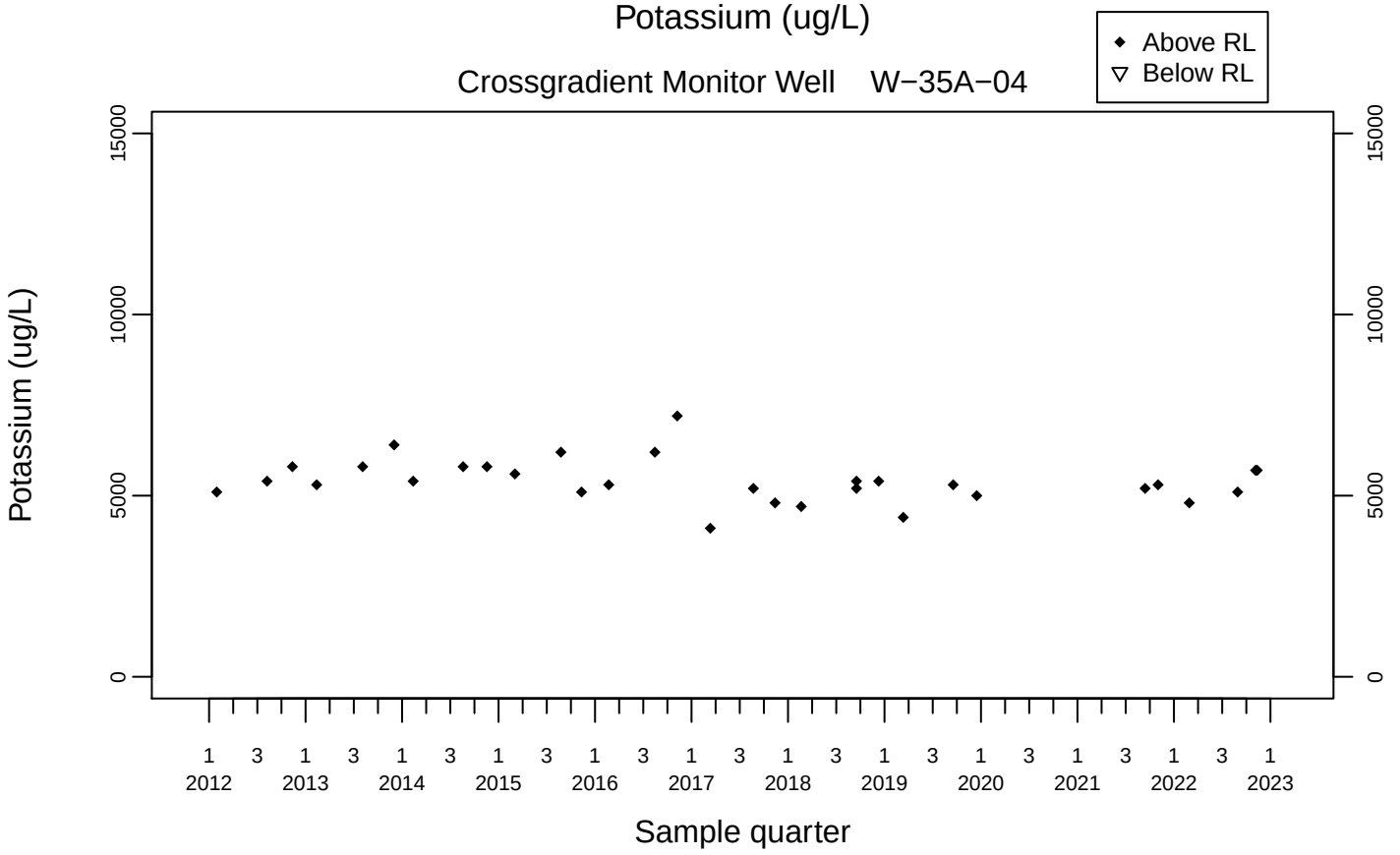


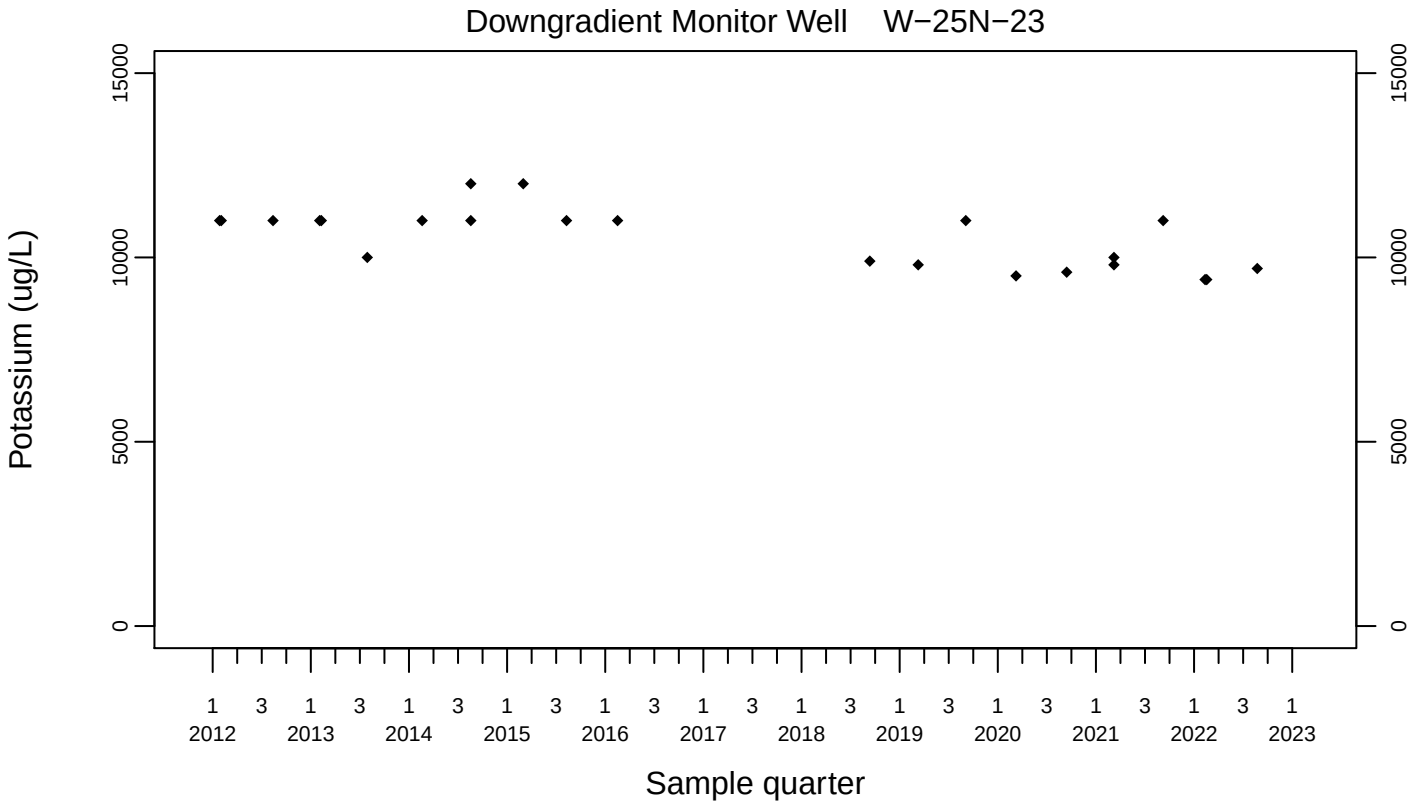

Sewage Ponds Ground Water
Nickel (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Estimated
Nickel (ug/L)
0
5
10
15
20
25
30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

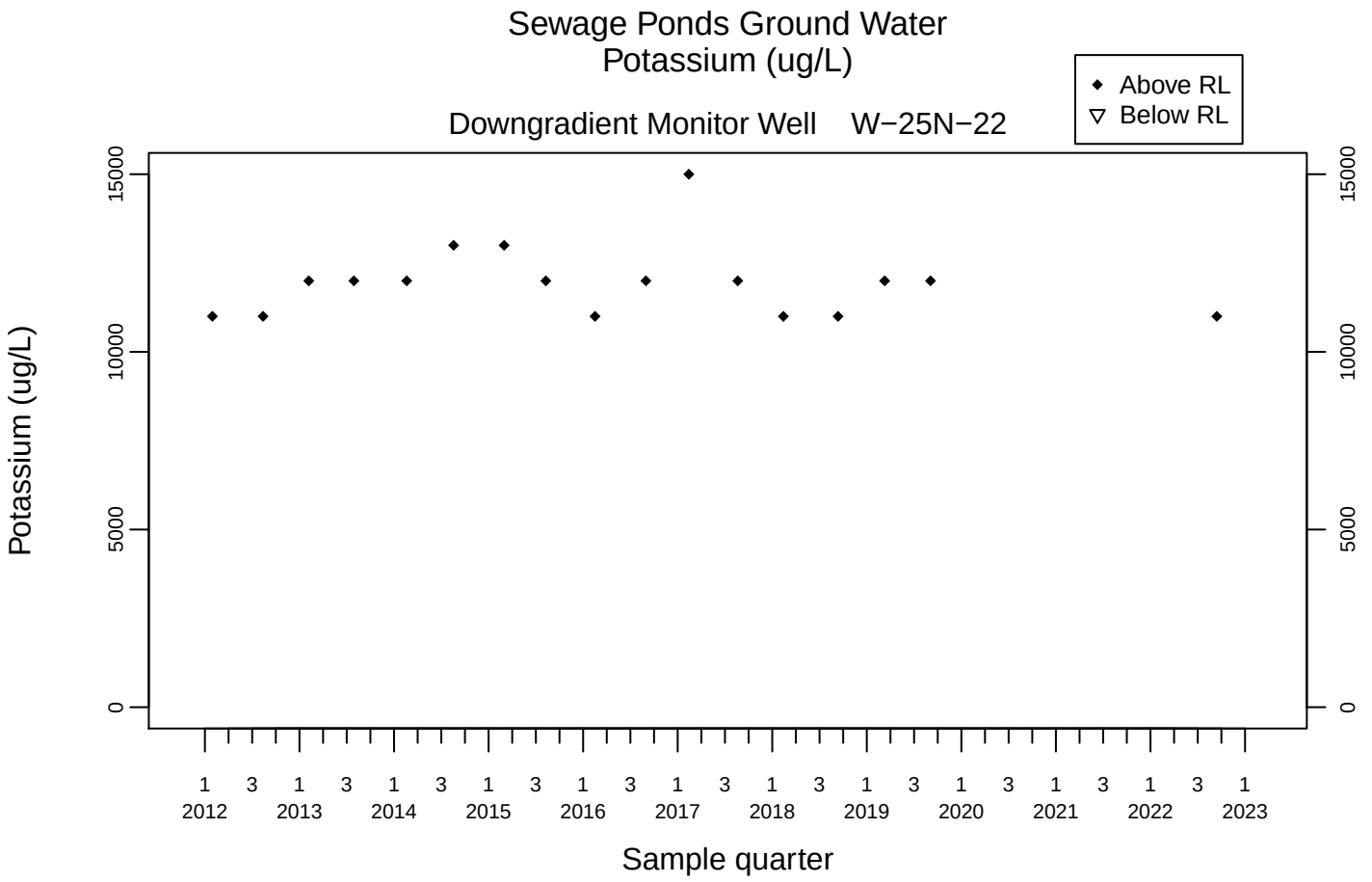

Sewage Ponds Ground Water
Potassium (ug/L)
Above RL
Below RL
Upgradient Monitor Well W−7ES
Potassium (ug/L)
0
5000
10000
15000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

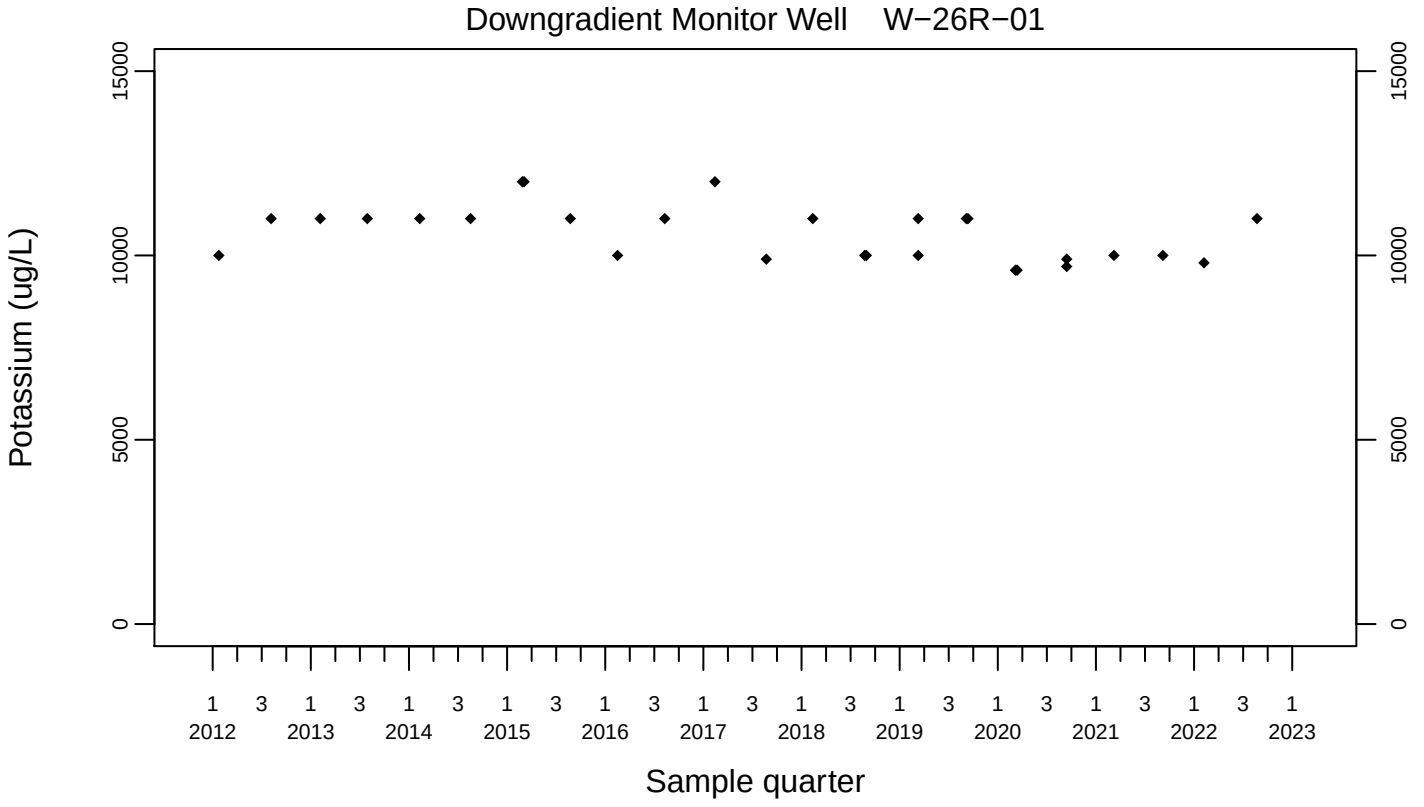

Upgradient Monitor Well W−7PS
Potassium (ug/L)
0
5000
10000
15000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

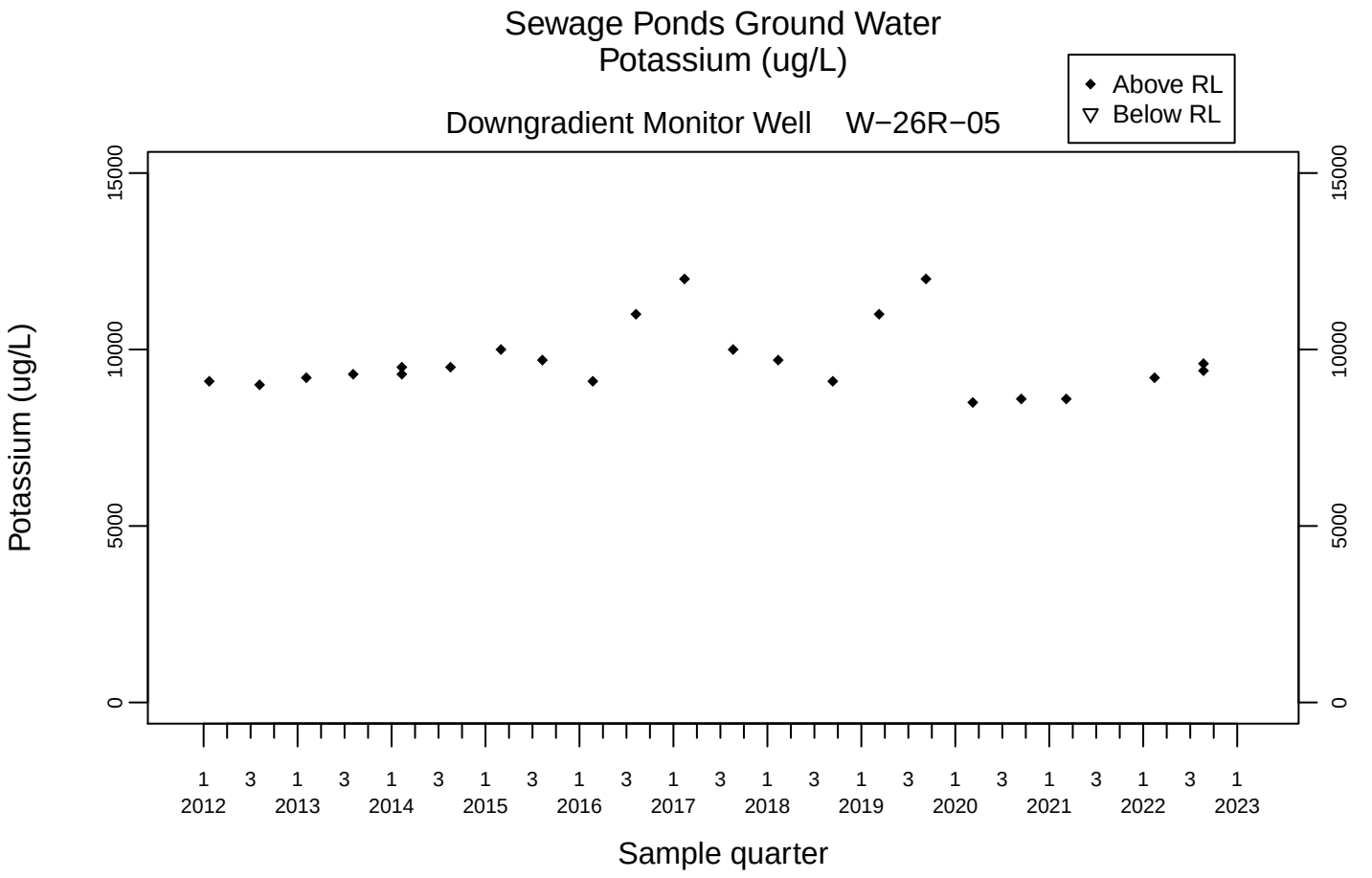
Sewage Ponds Ground Water
Potassium (ug/L)

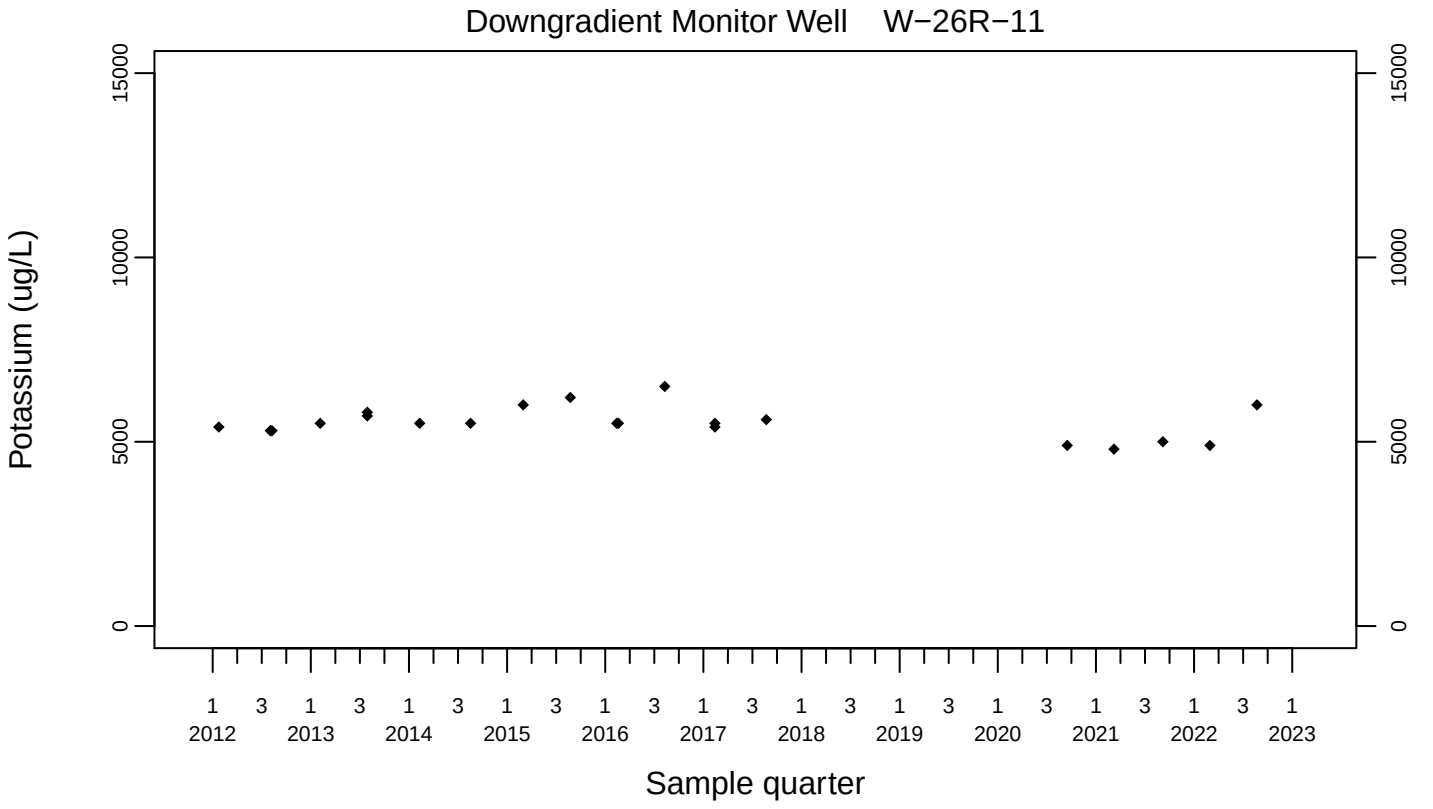


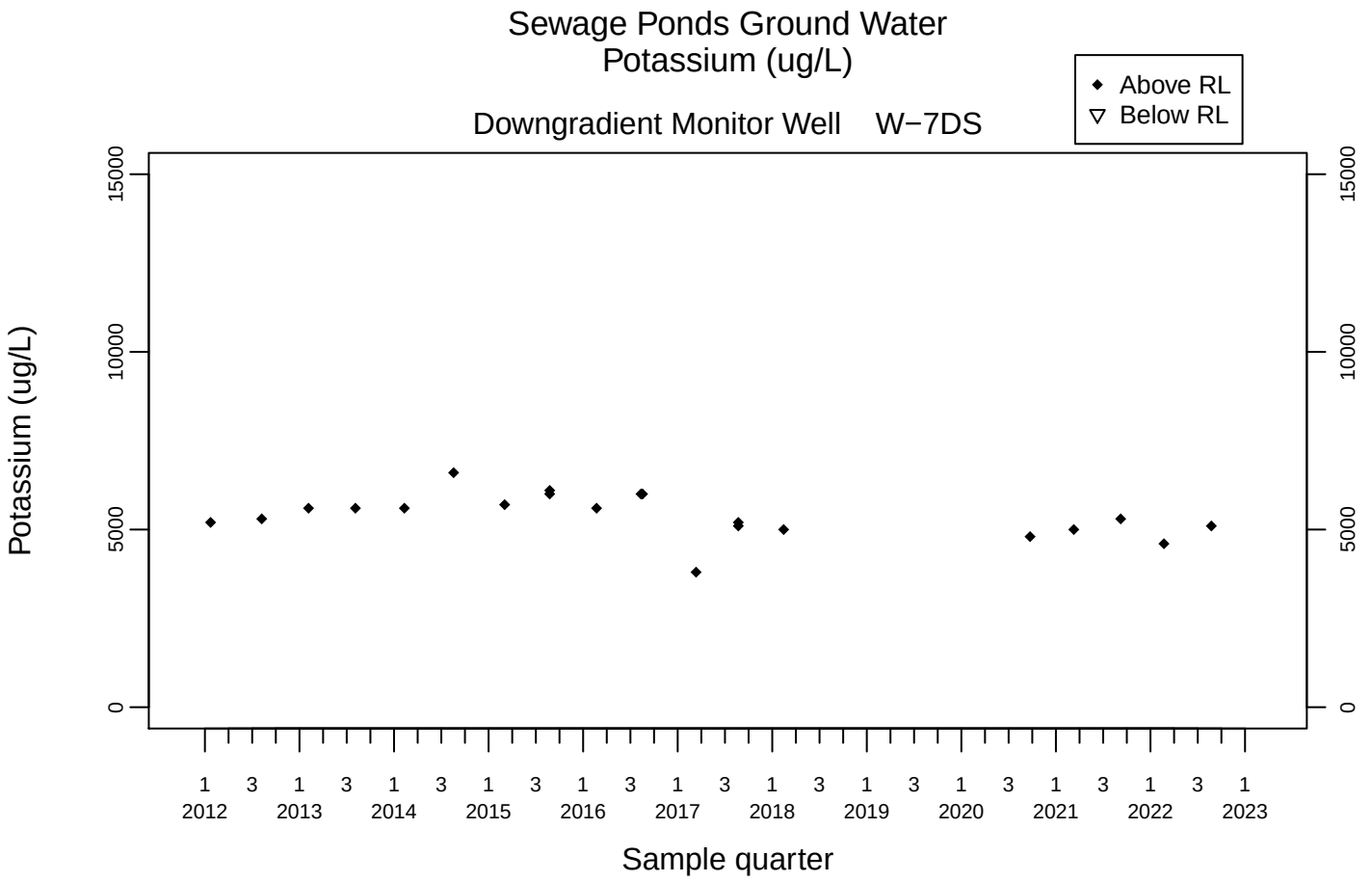



Sewage Ponds Ground Water
Potassium (ug/L)
Above RL
Below RL
Downgradient Monitor Well W−25N−22
Potassium (ug/L)
0
5000
10000
15000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

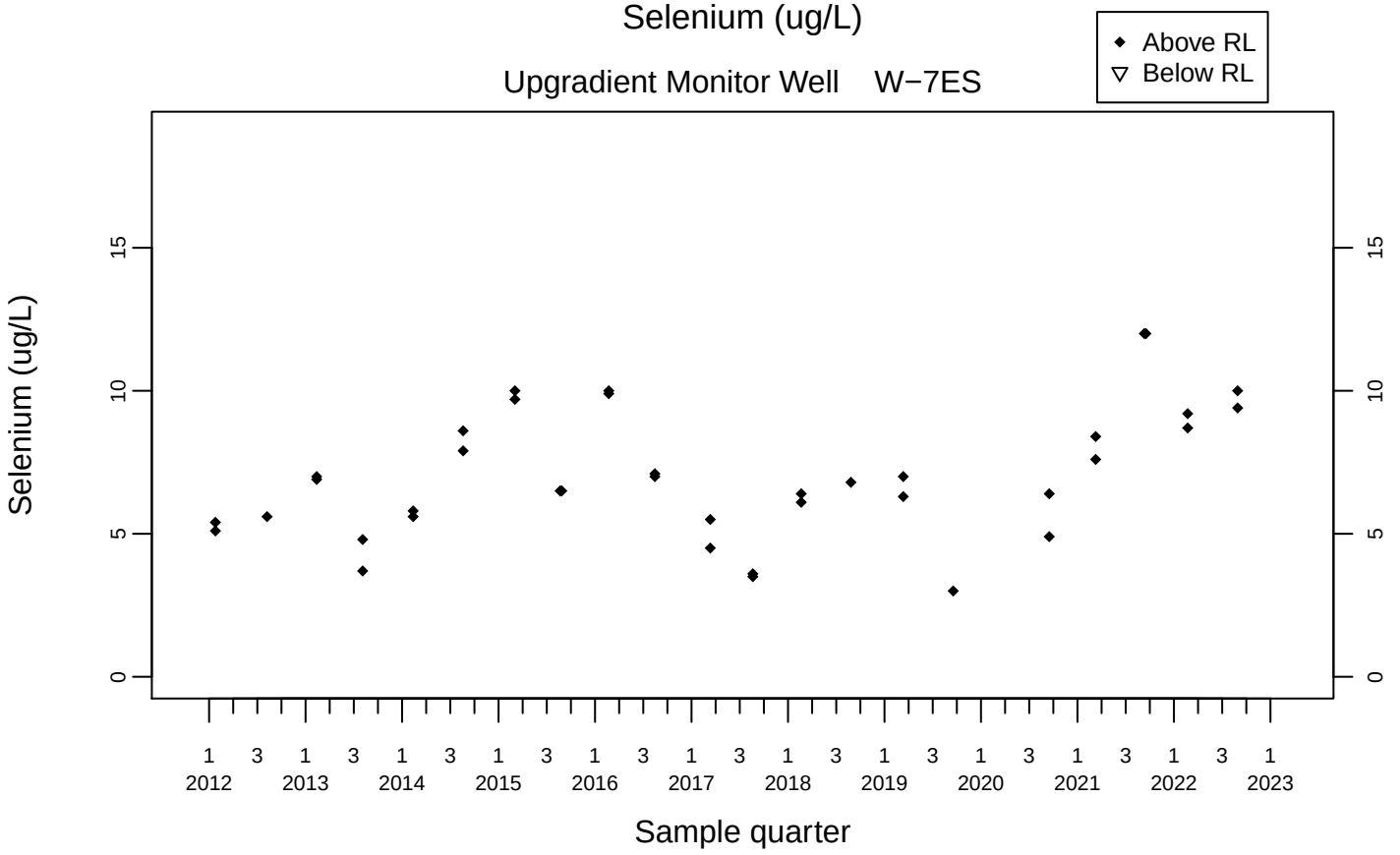

Downgradient Monitor Well W−26R−01
Potassium (ug/L)
0
5000
10000
15000
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

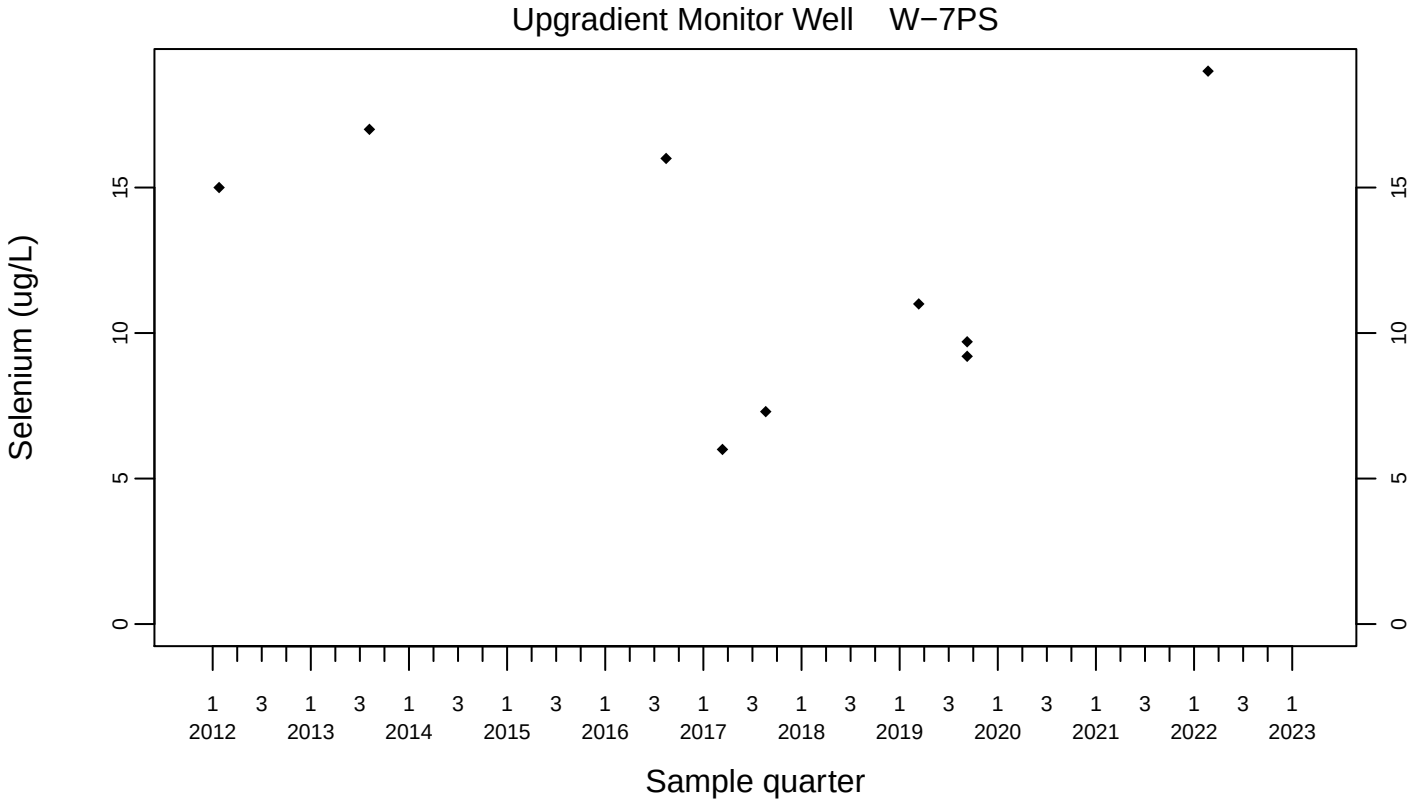

Sewage Ponds Ground Water
Potassium (ug/L)
Above RL
Below RL
Downgradient Monitor Well W−26R−05
Potassium (ug/L)
0
5000
10000
15000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Downgradient Monitor Well W−26R−11
Potassium (ug/L)
0
5000
10000
15000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Sewage Ponds Ground Water
Potassium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Potassium (ug/L)
0
5000
10000
15000
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

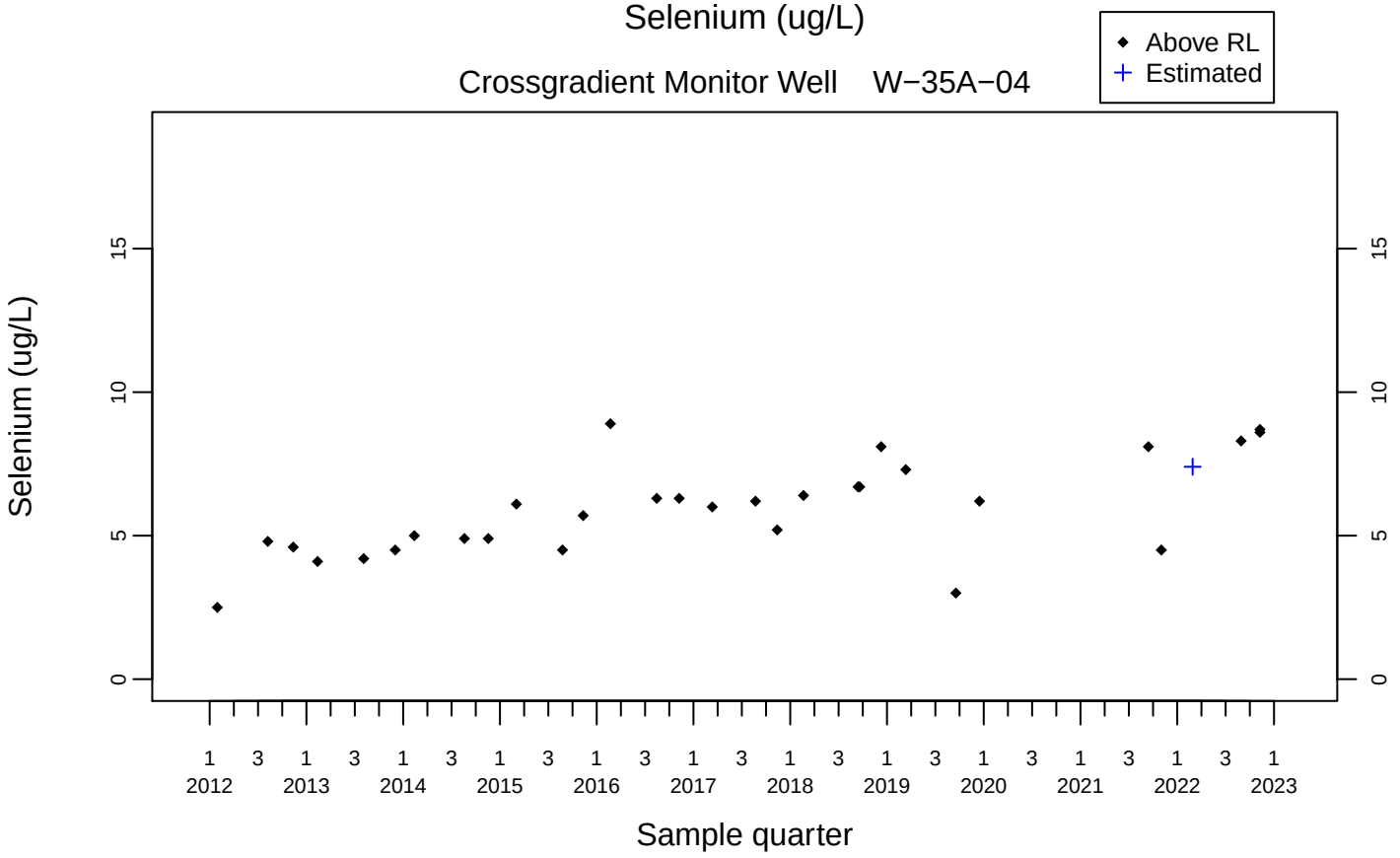
Sewage Ponds Ground Water
Selenium (ug/L)



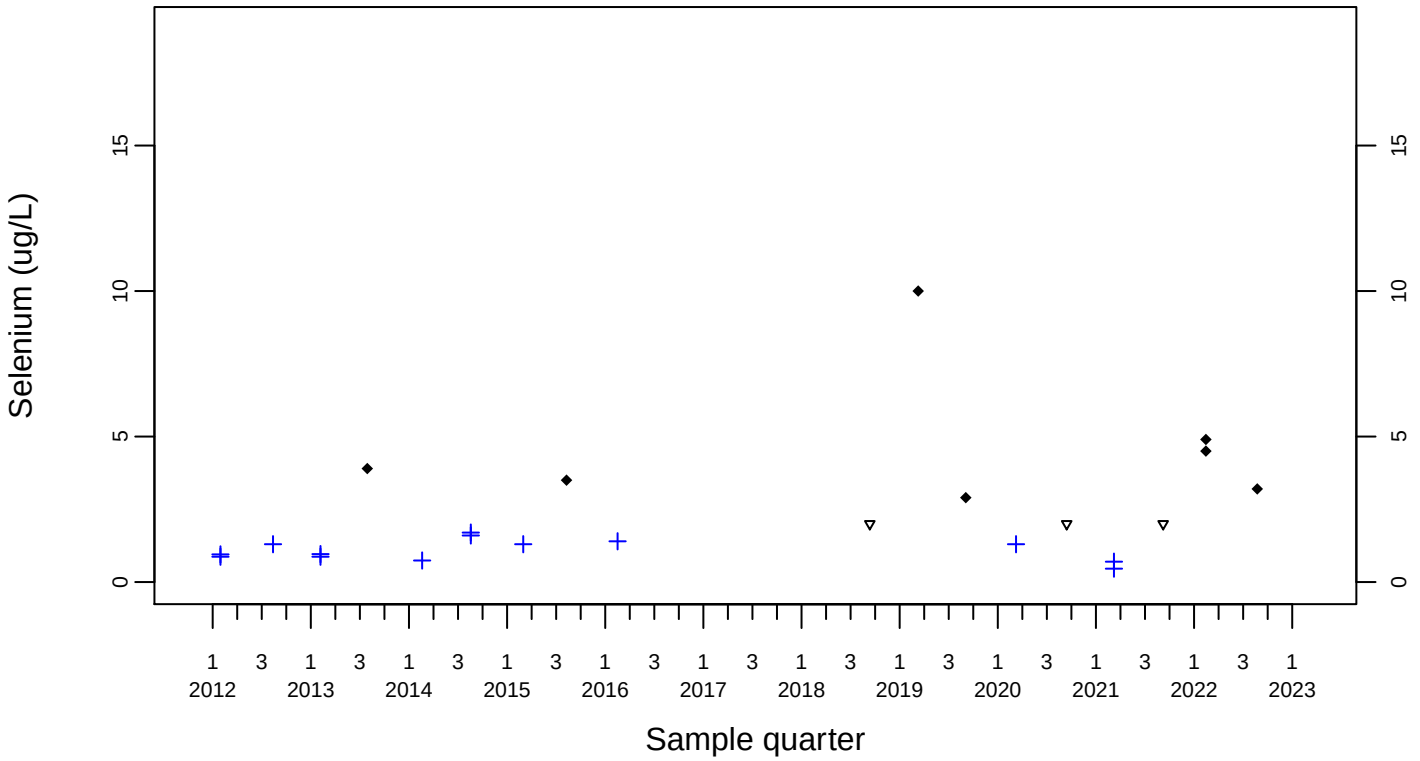


Sewage Ponds Ground Water
Selenium (ug/L)

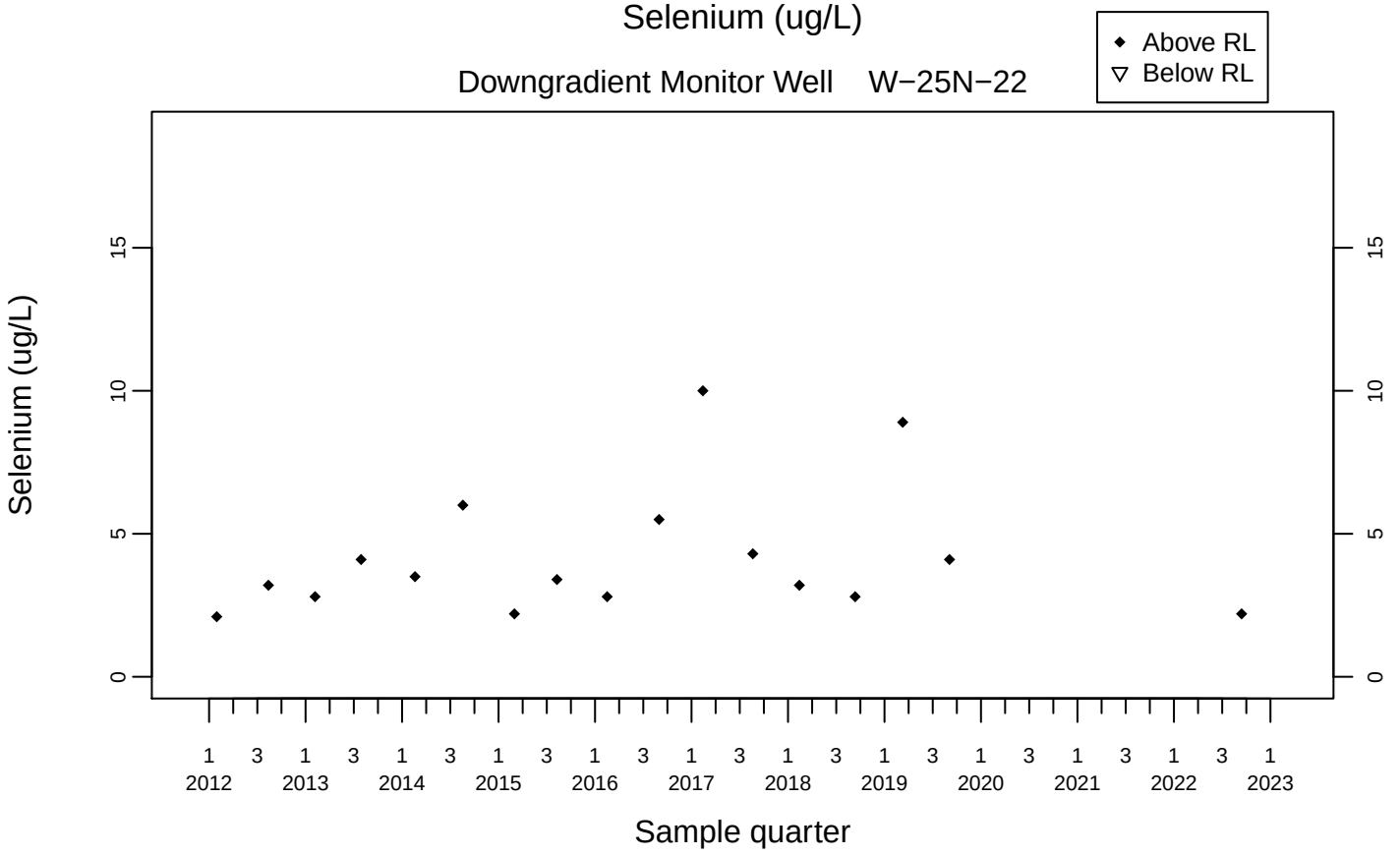
Crossgradient Monitor Well W−35A−04

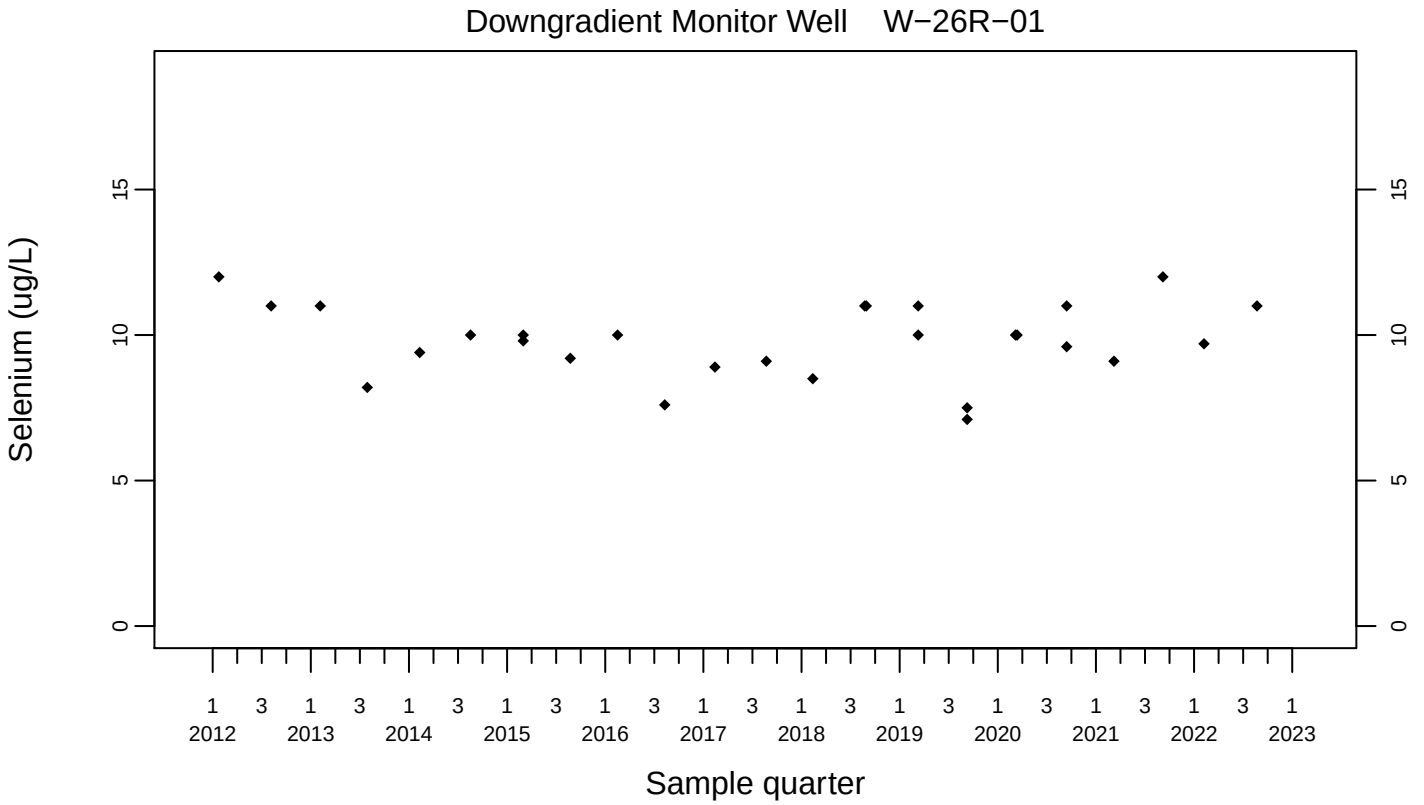


Downgradient Monitor Well W−25N−23



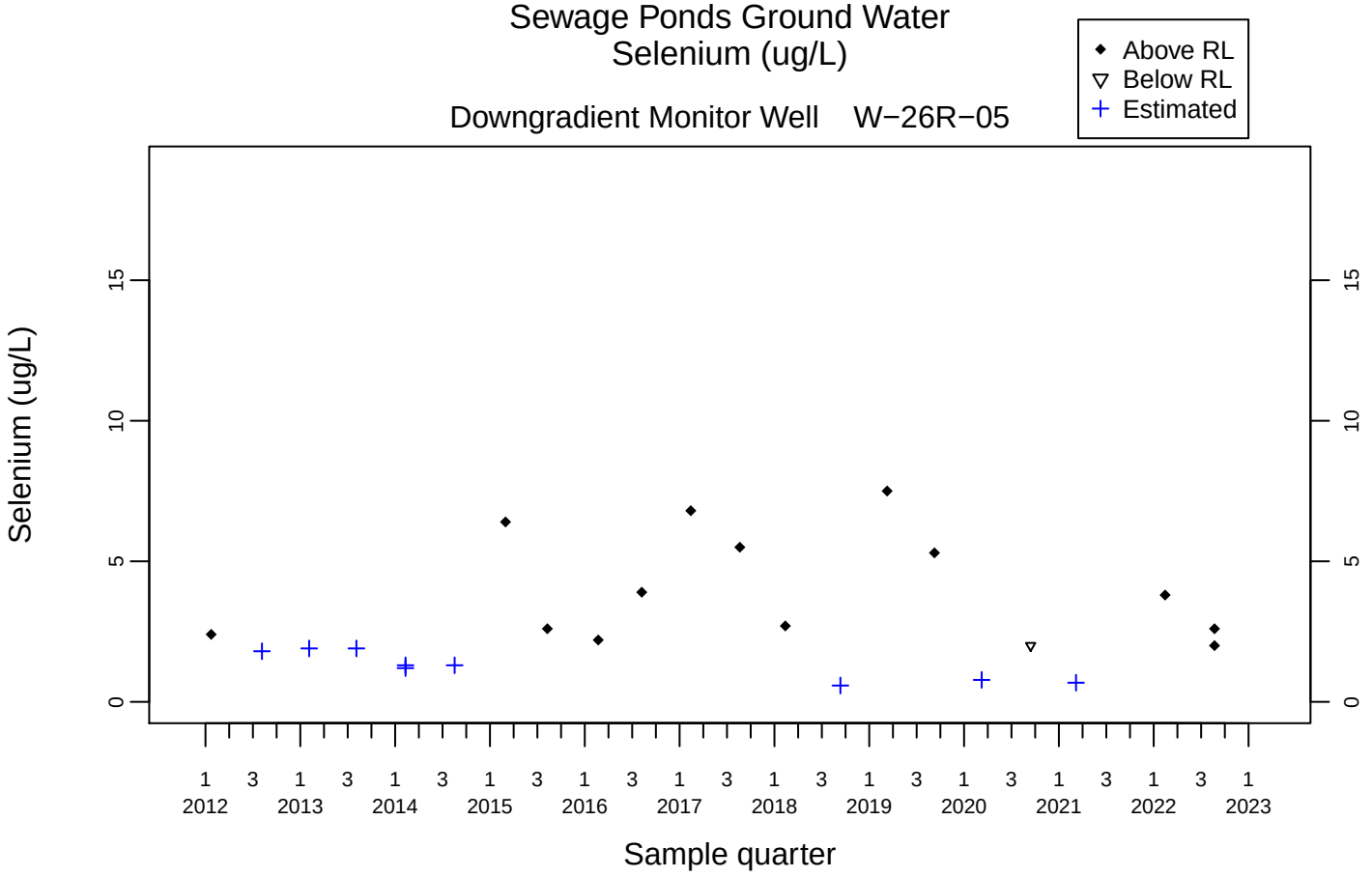
Sewage Ponds Ground Water
Selenium (ug/L)



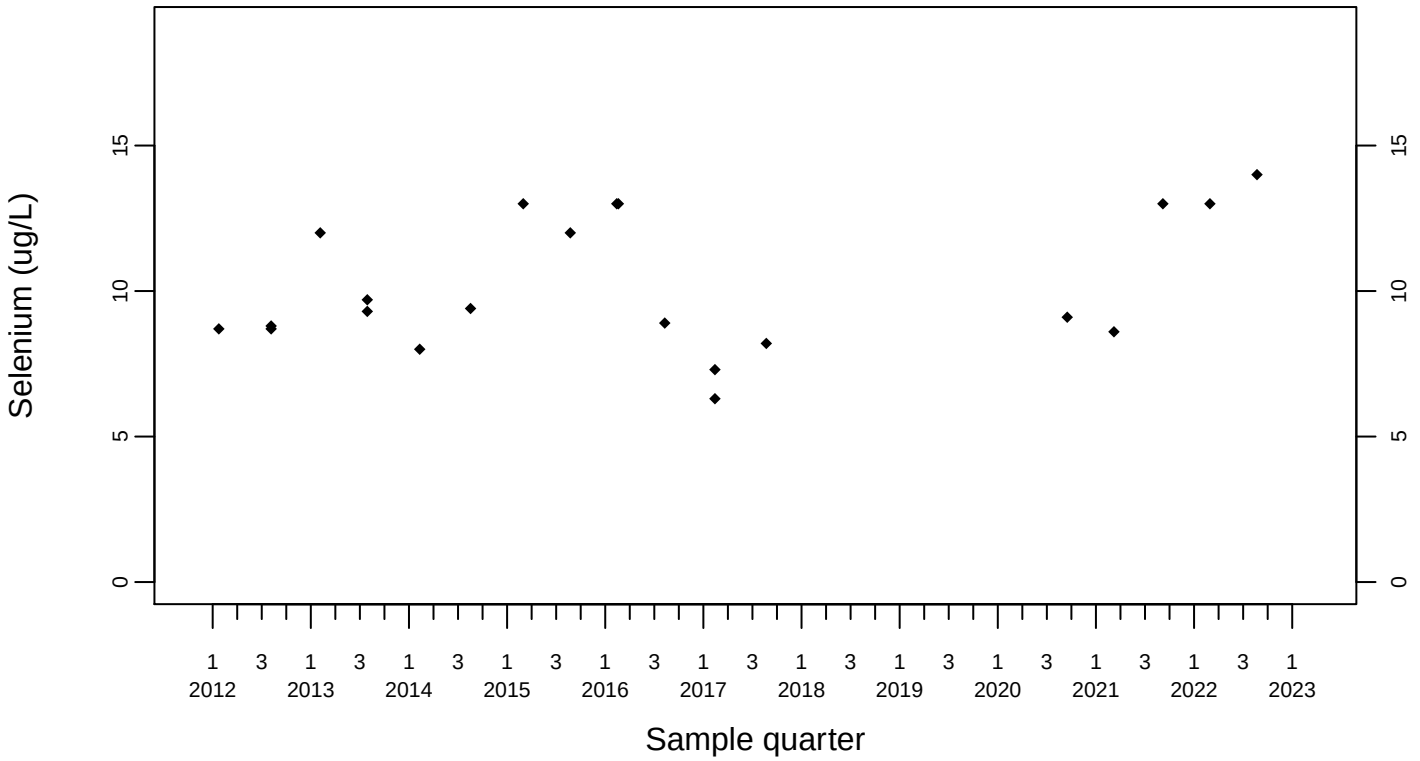


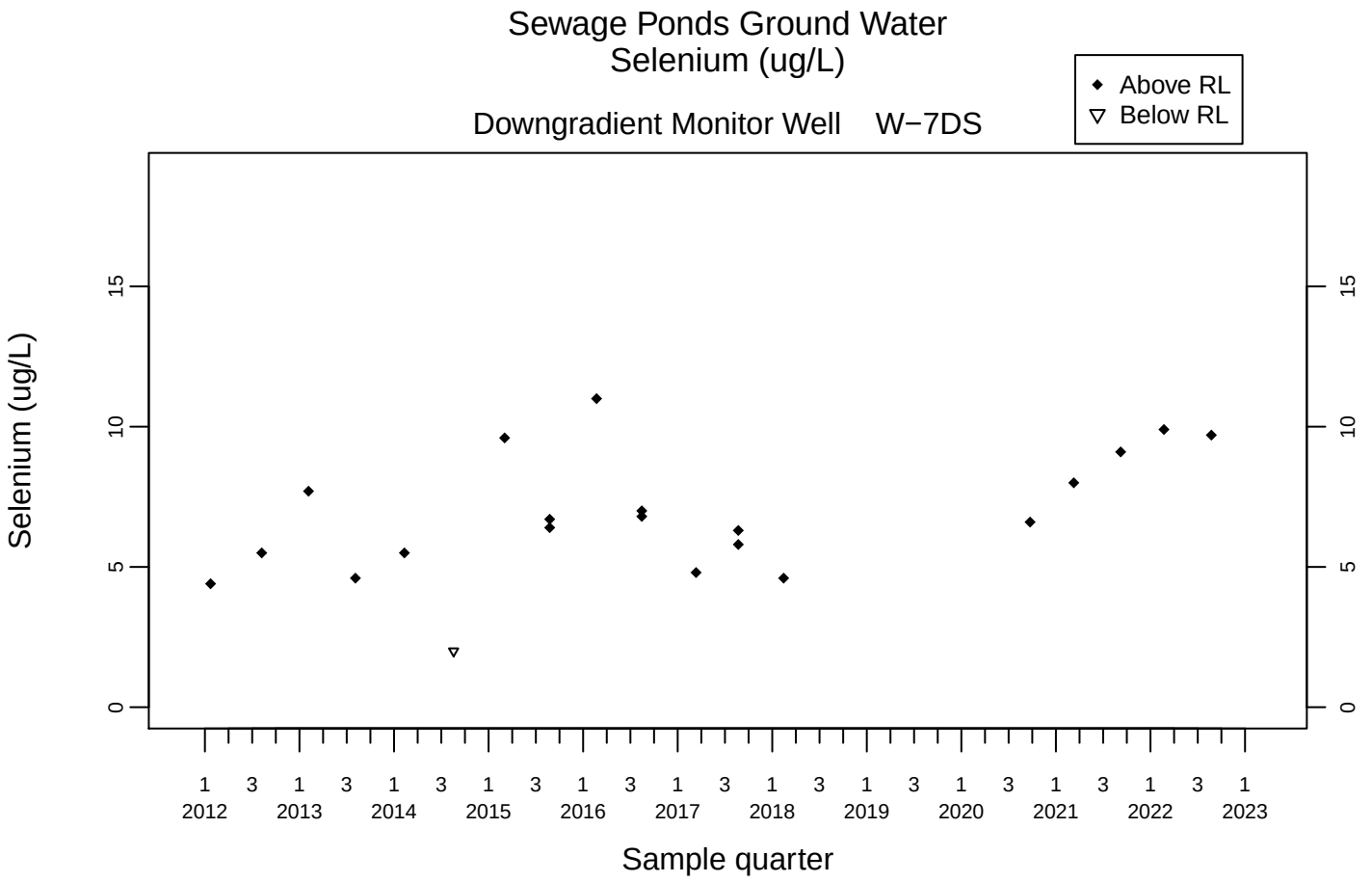
Sewage Ponds Ground Water
Selenium (ug/L)

Downgradient Monitor Well W−26R−05

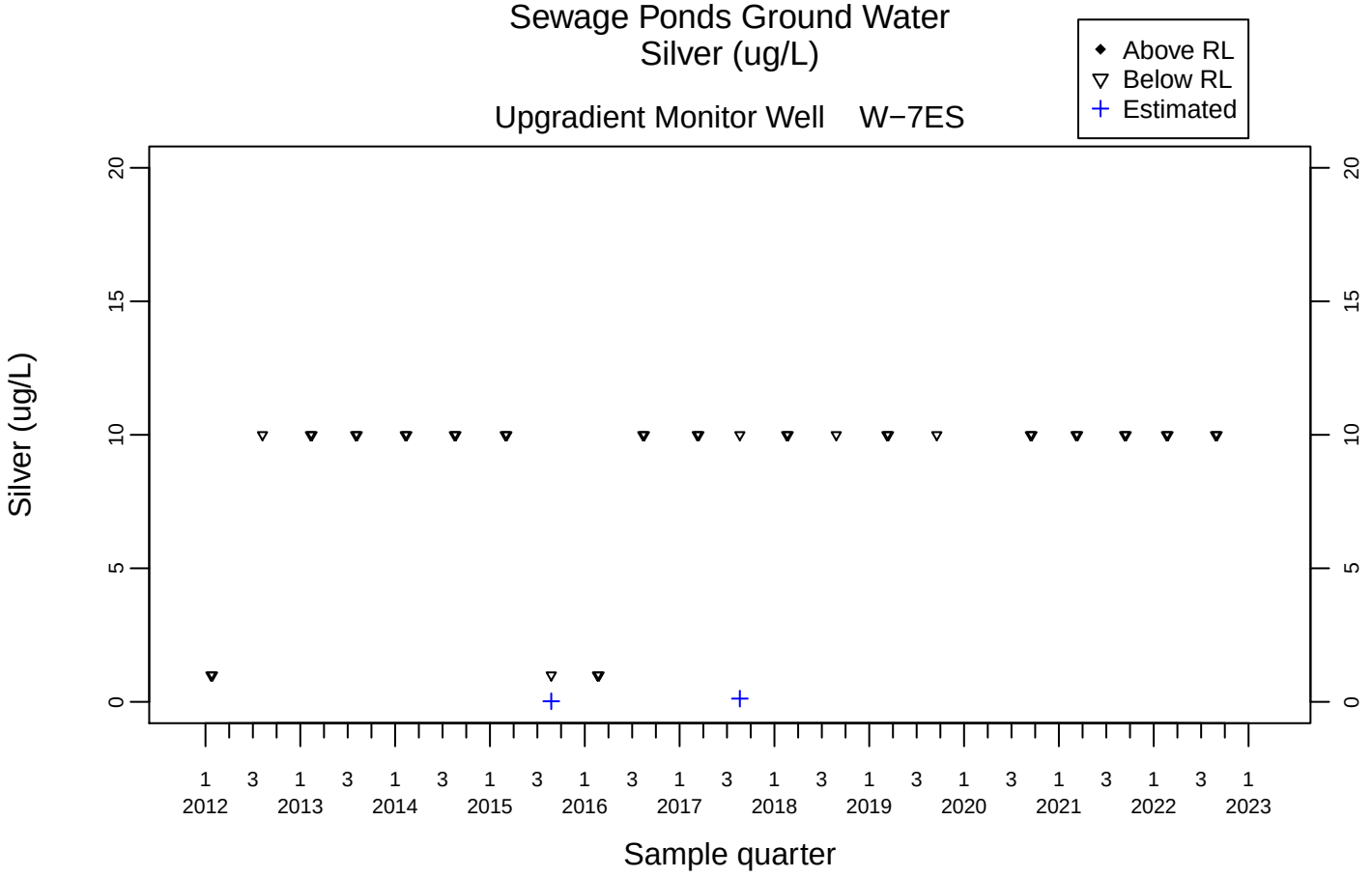


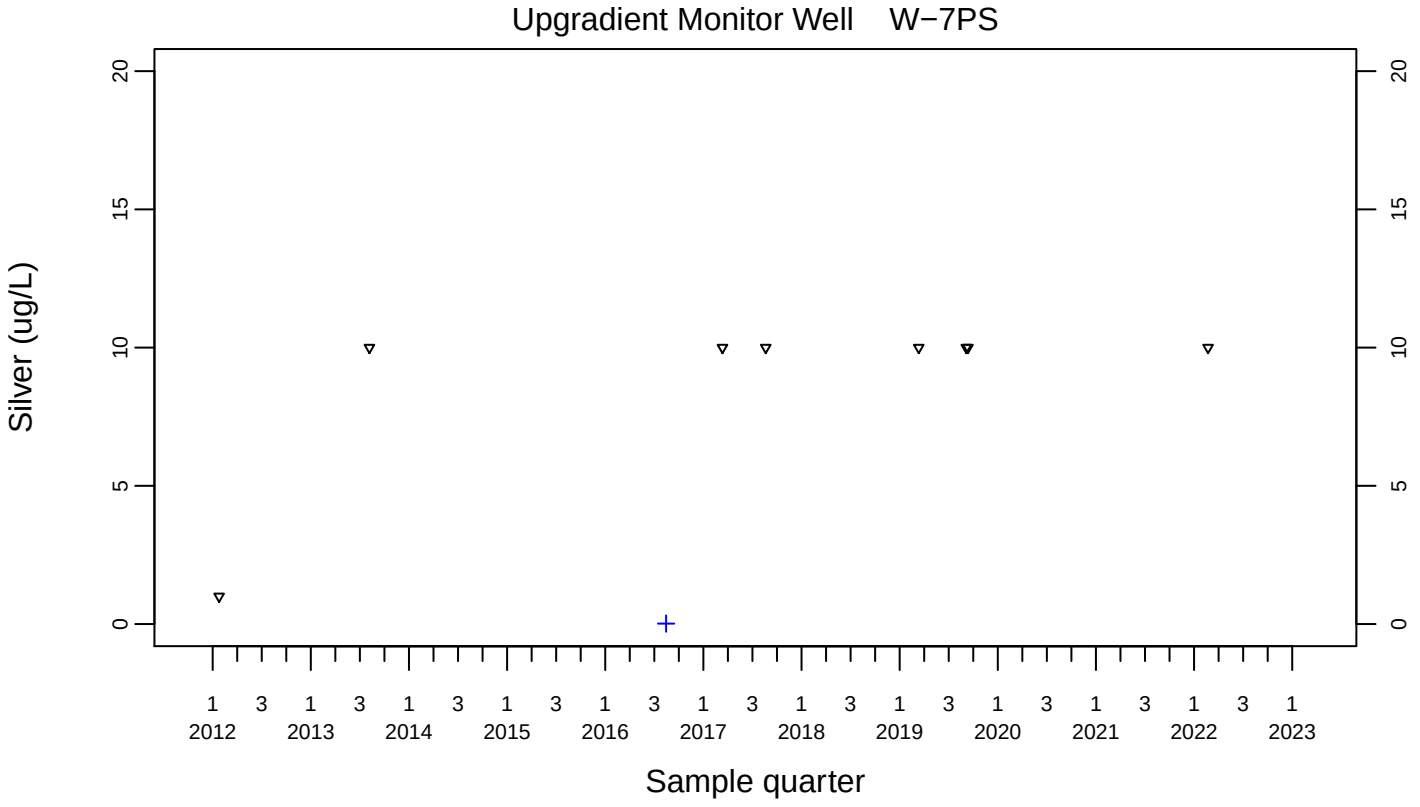
Downgradient Monitor Well W−26R−11



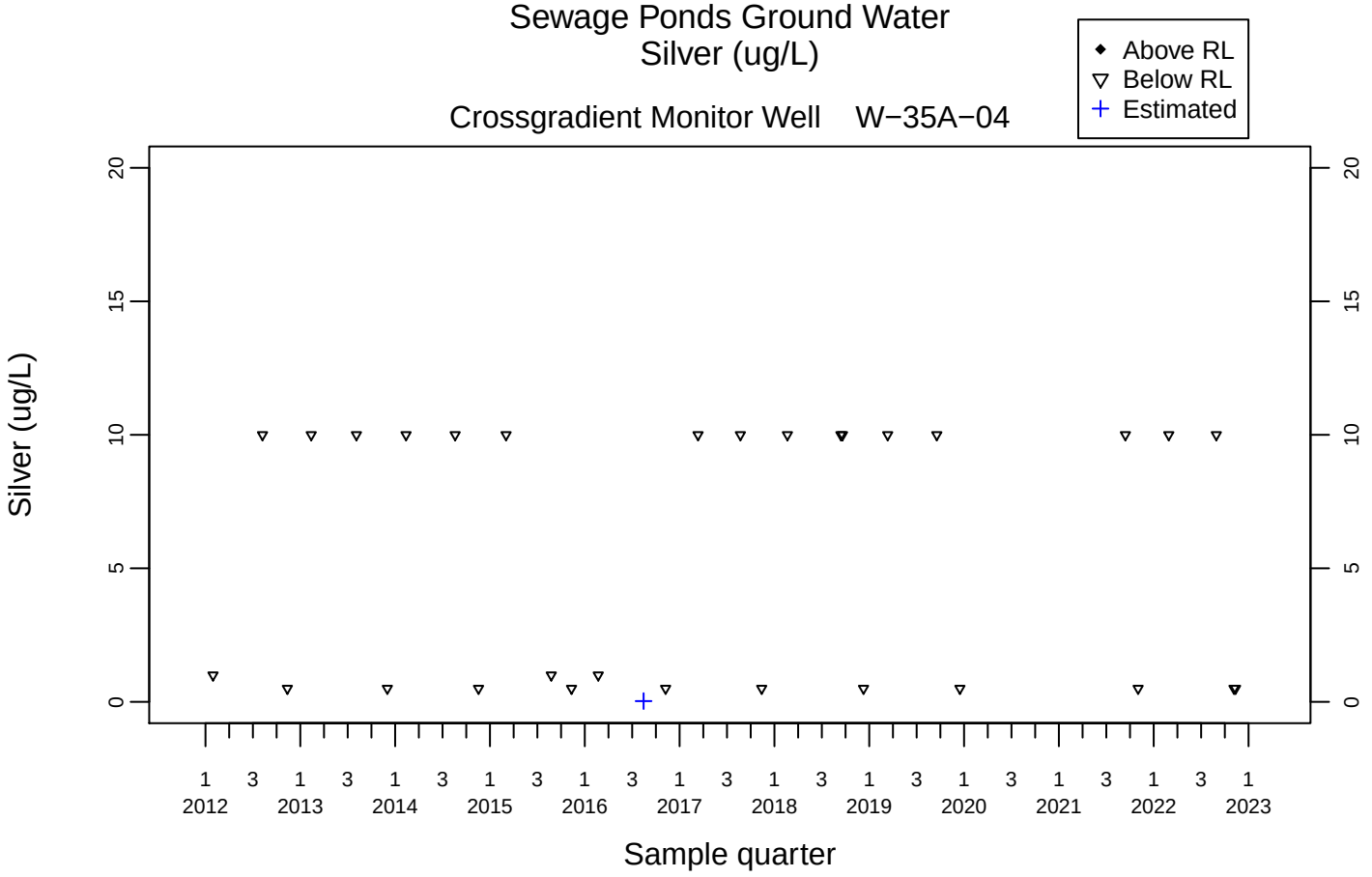

Sewage Ponds Ground Water
Selenium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Selenium (ug/L)
0
5
10
15
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

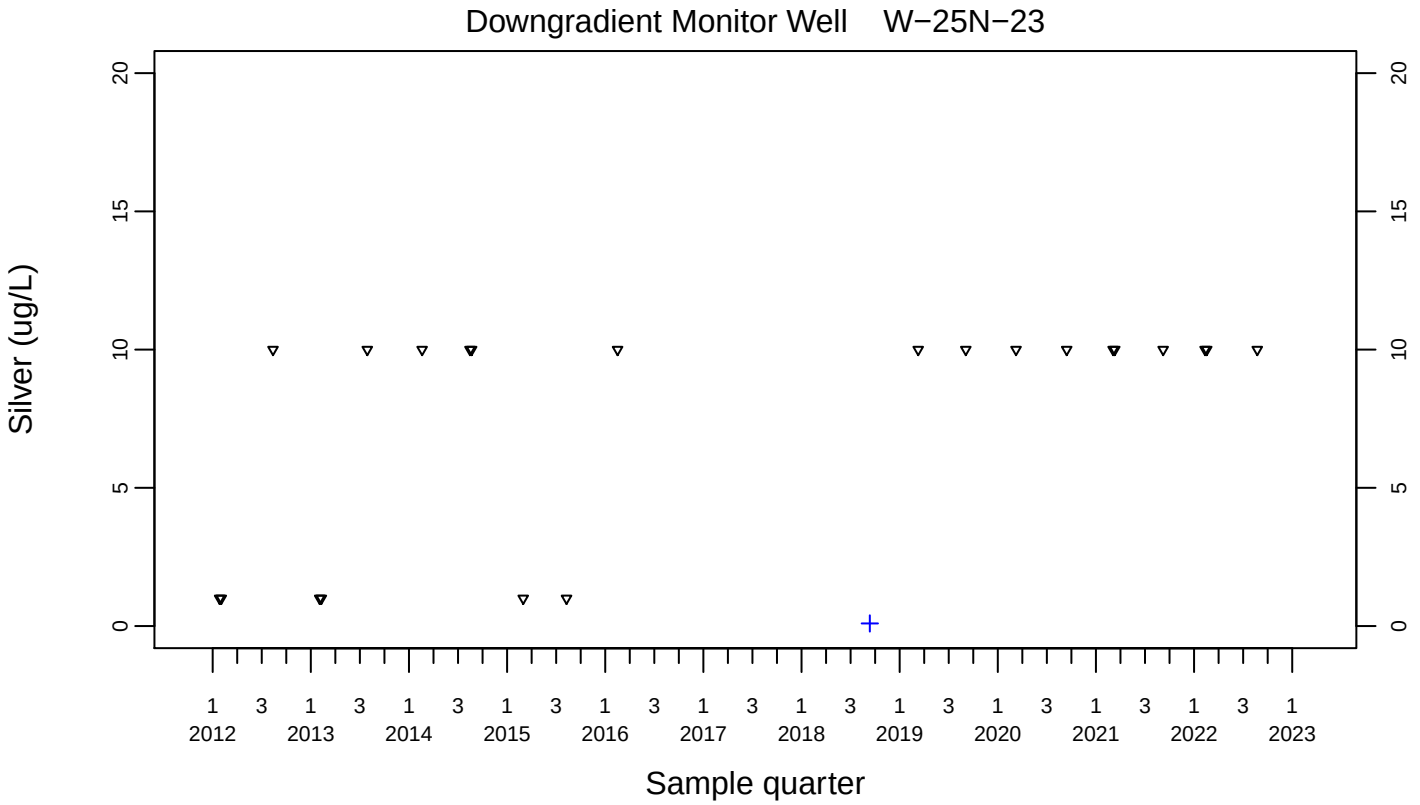
Sewage Ponds Ground Water
Silver (ug/L)



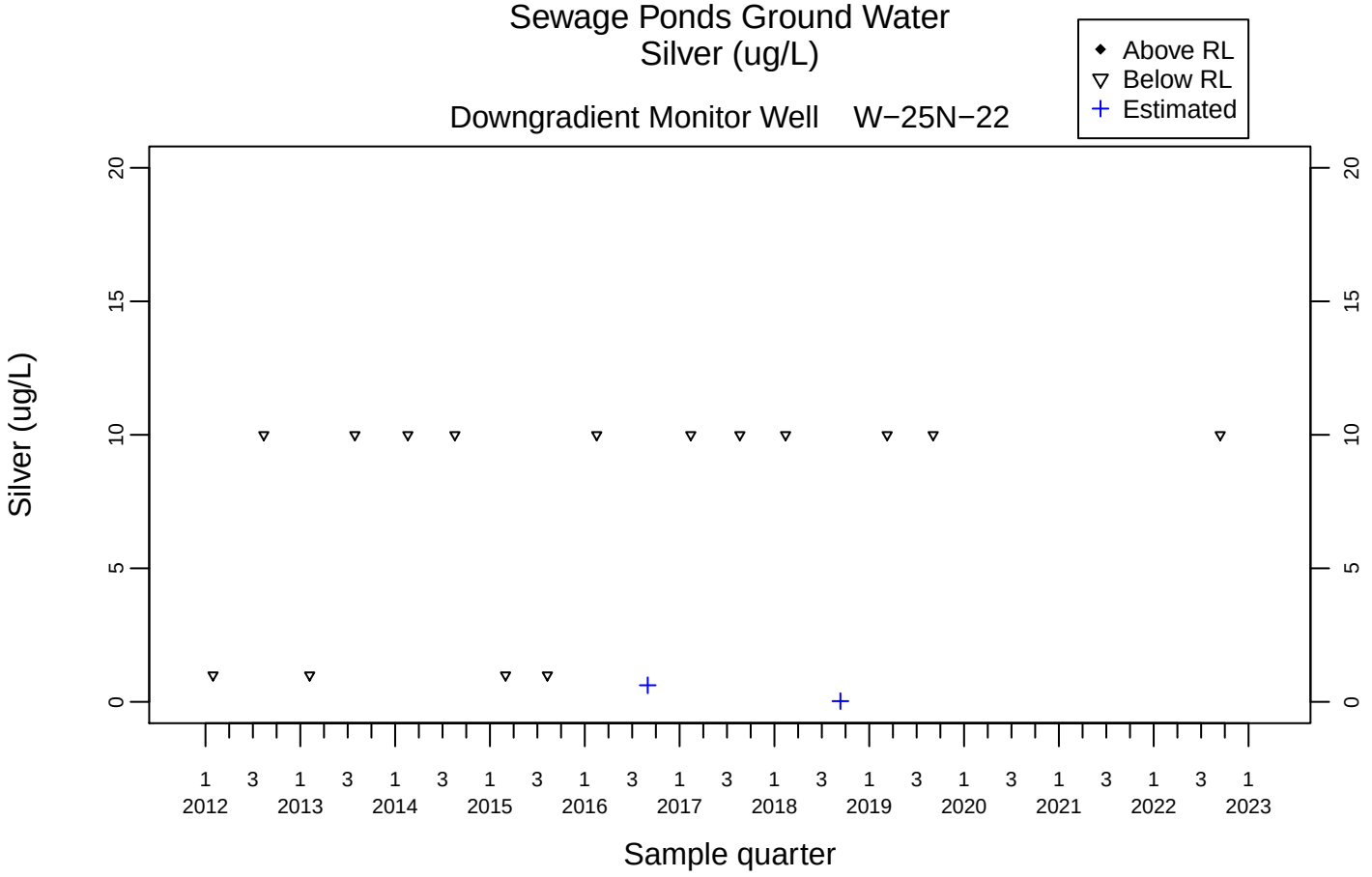


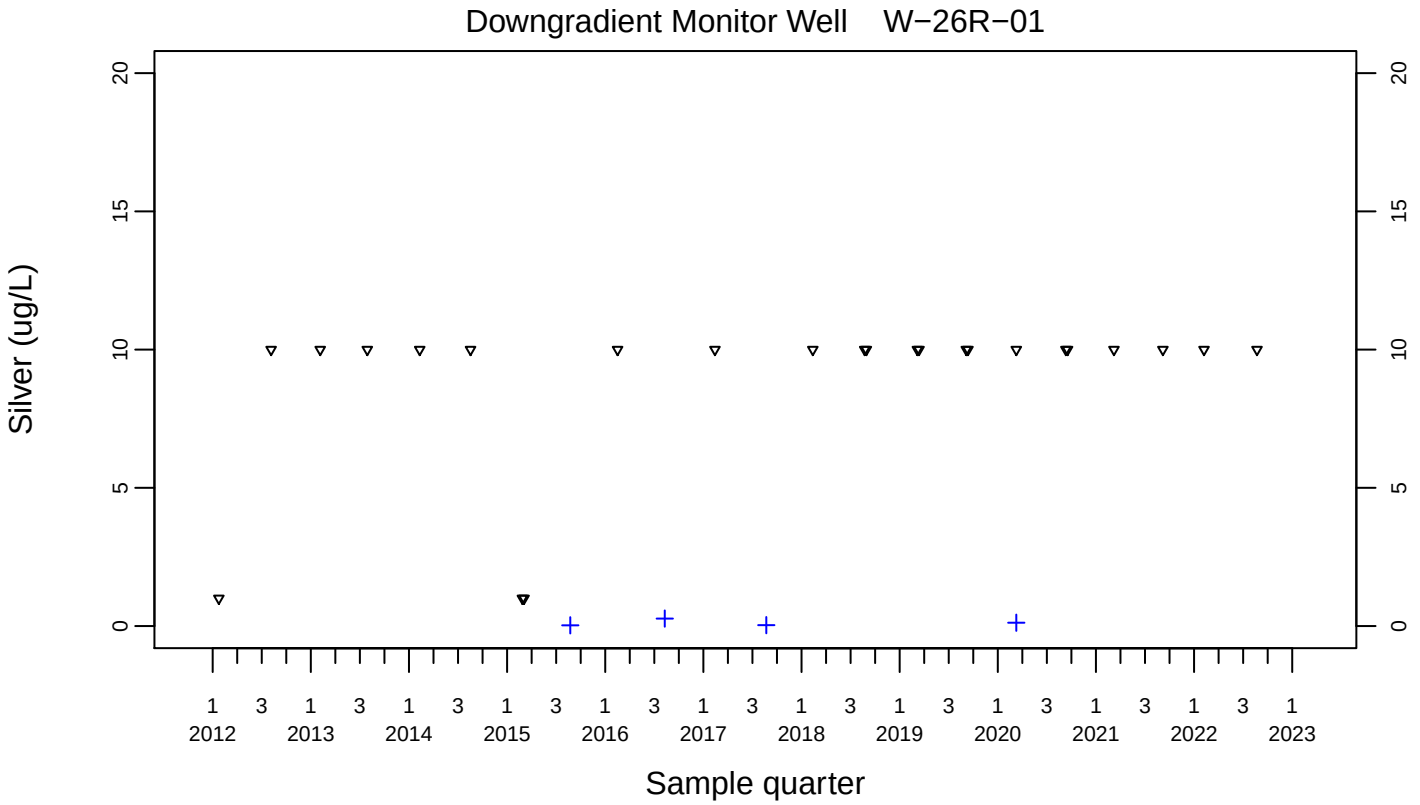
Sewage Ponds Ground Water
Silver (ug/L)



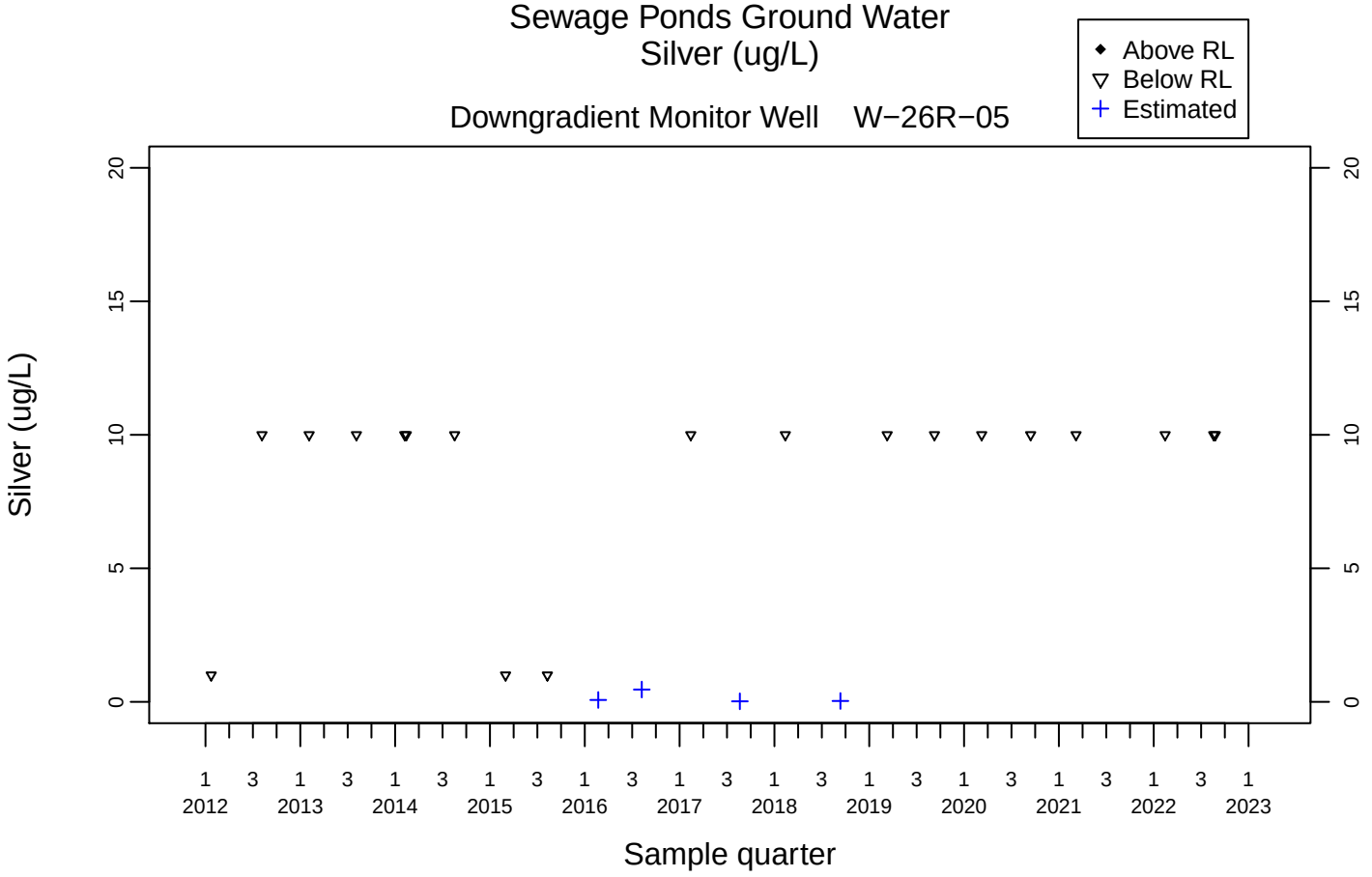


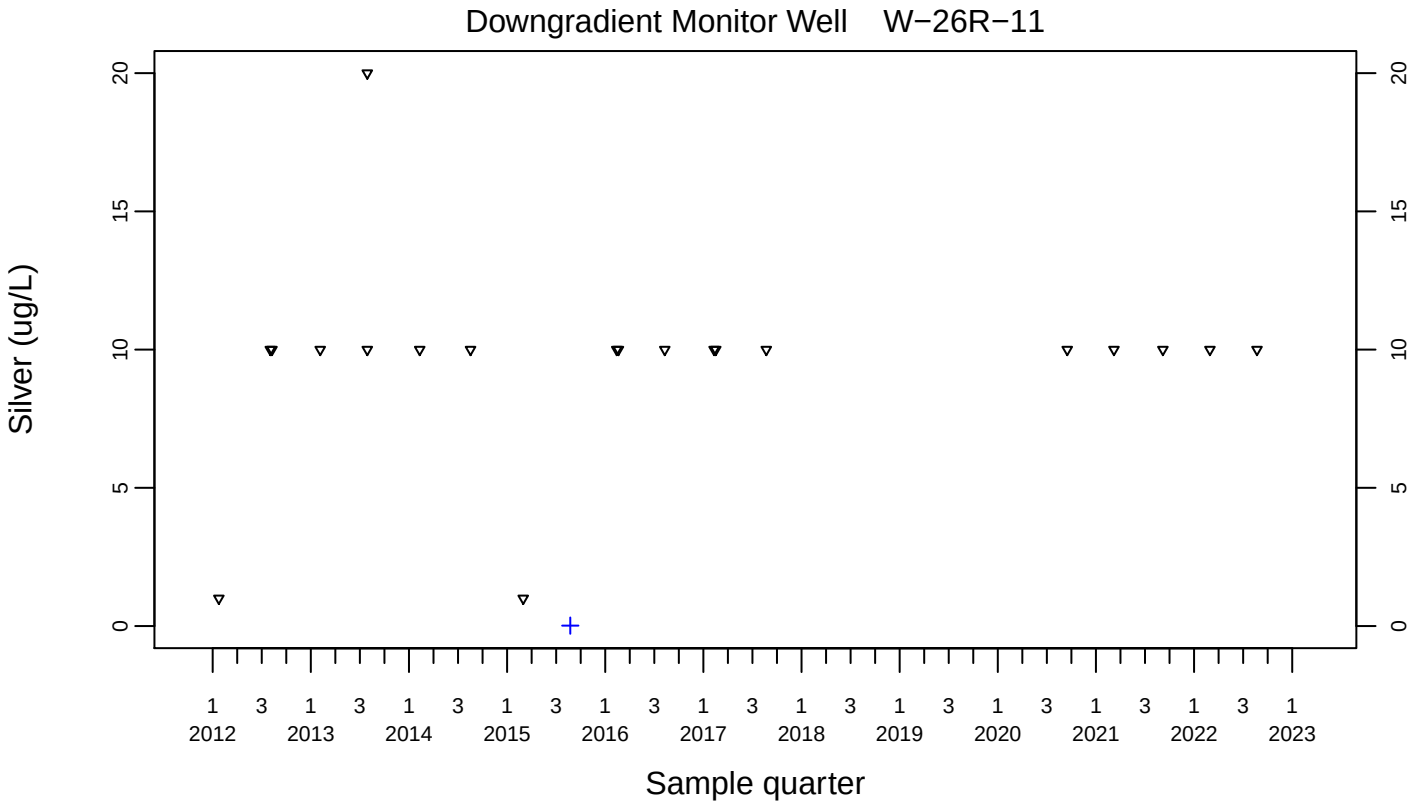
Sewage Ponds Ground Water
Silver (ug/L)

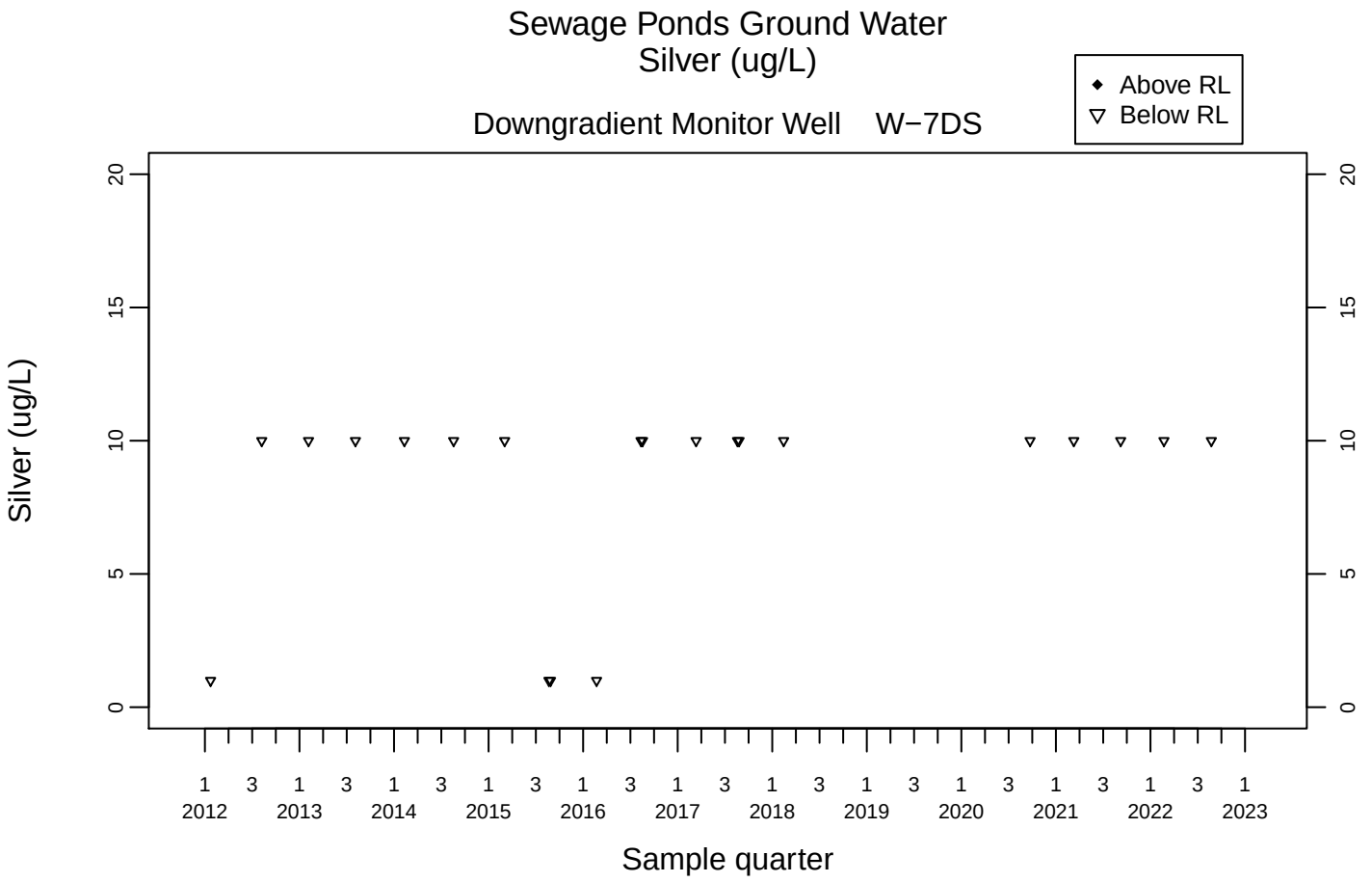




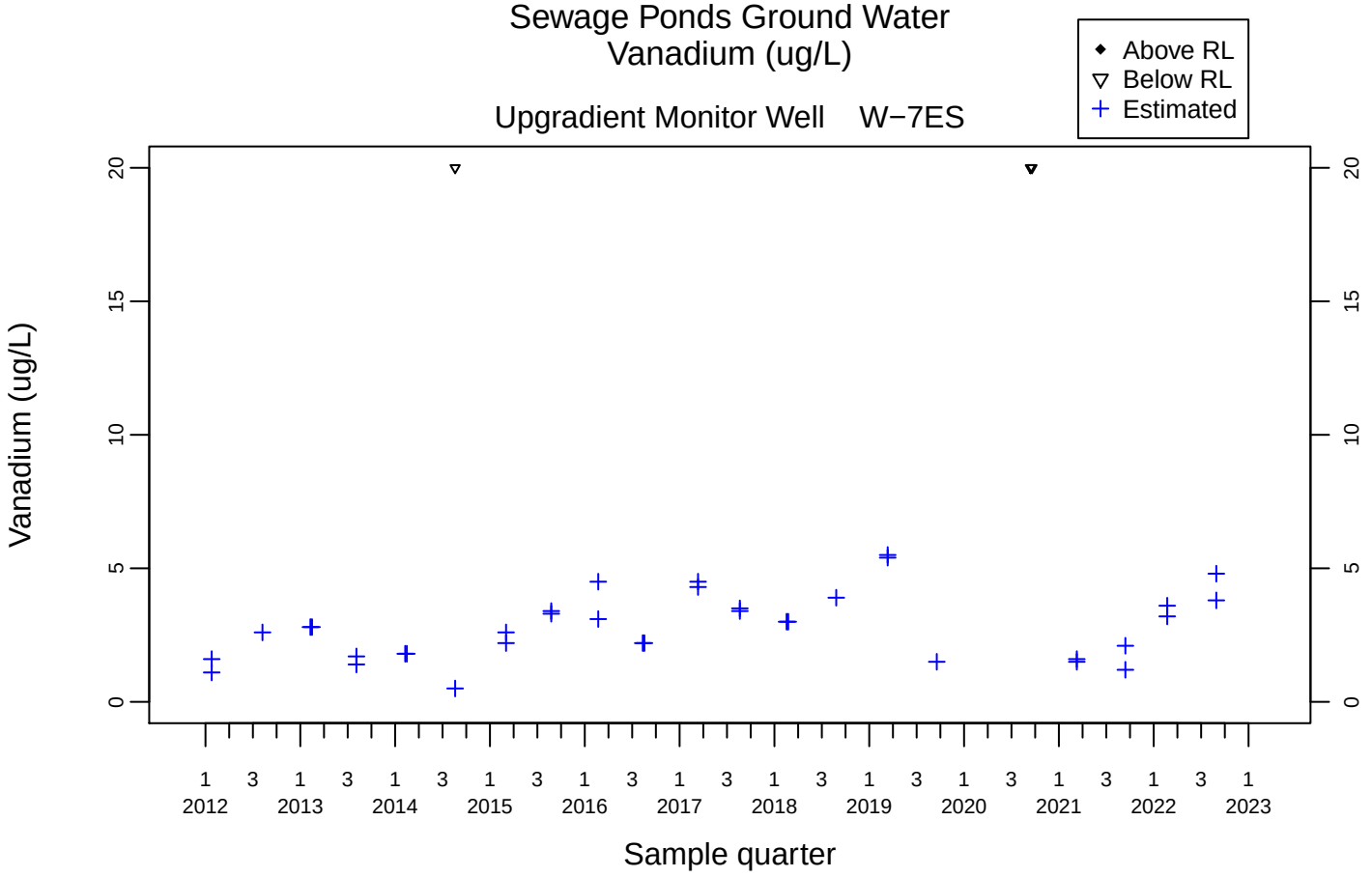
Sewage Ponds Ground Water
Silver (ug/L)

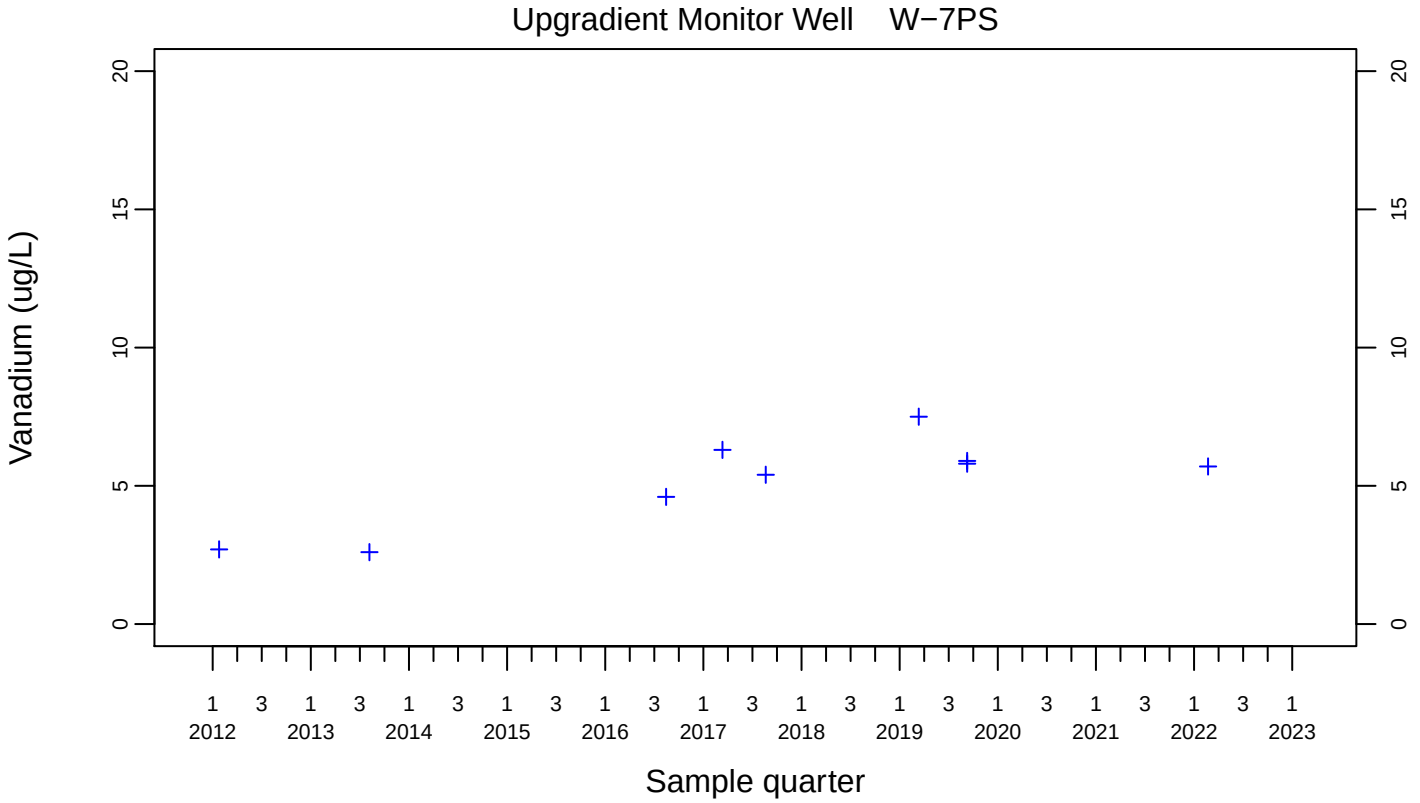




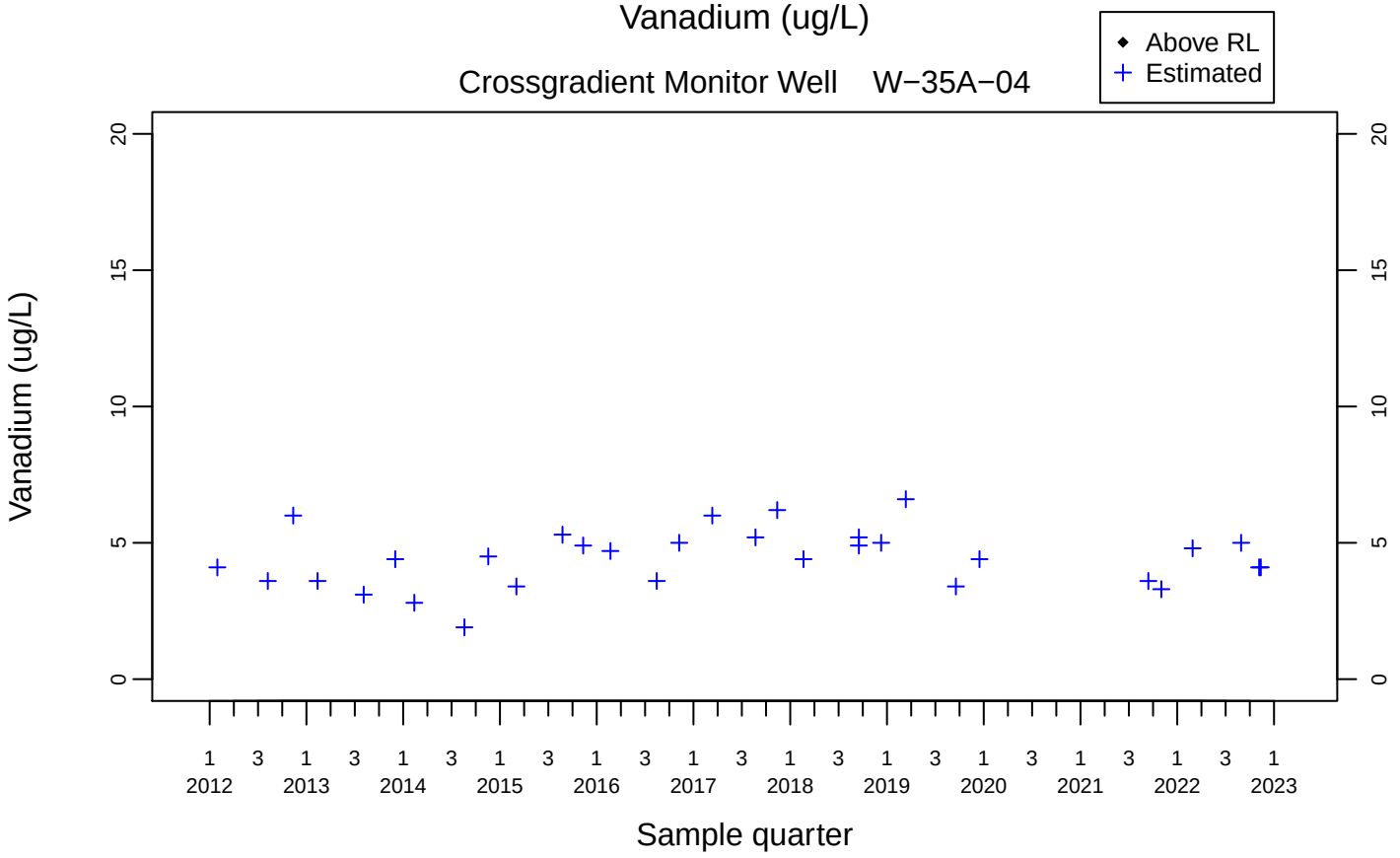

Sewage Ponds Ground Water
Silver (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Silver (ug/L)
0
5
10
15
20
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

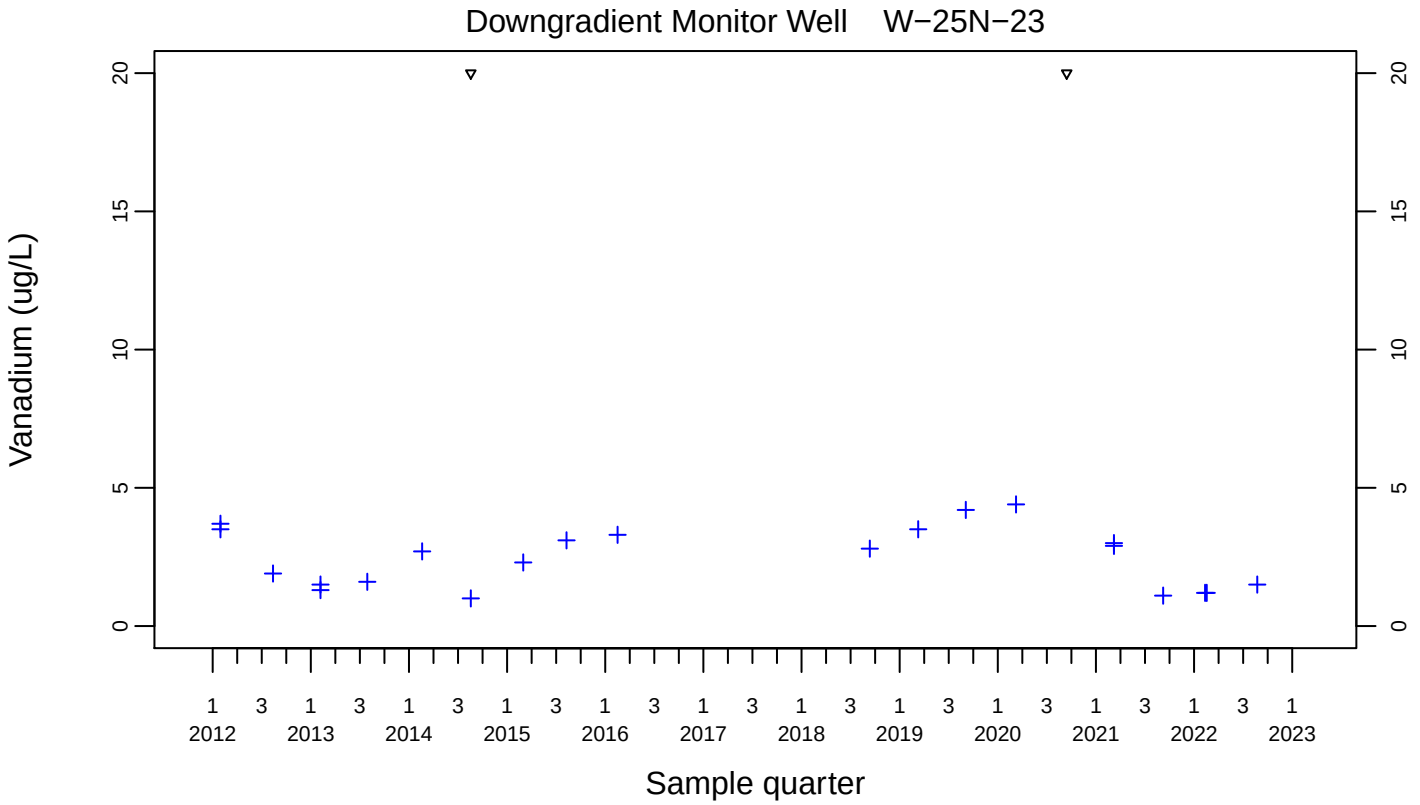
Sewage Ponds Ground Water
Vanadium (ug/L)



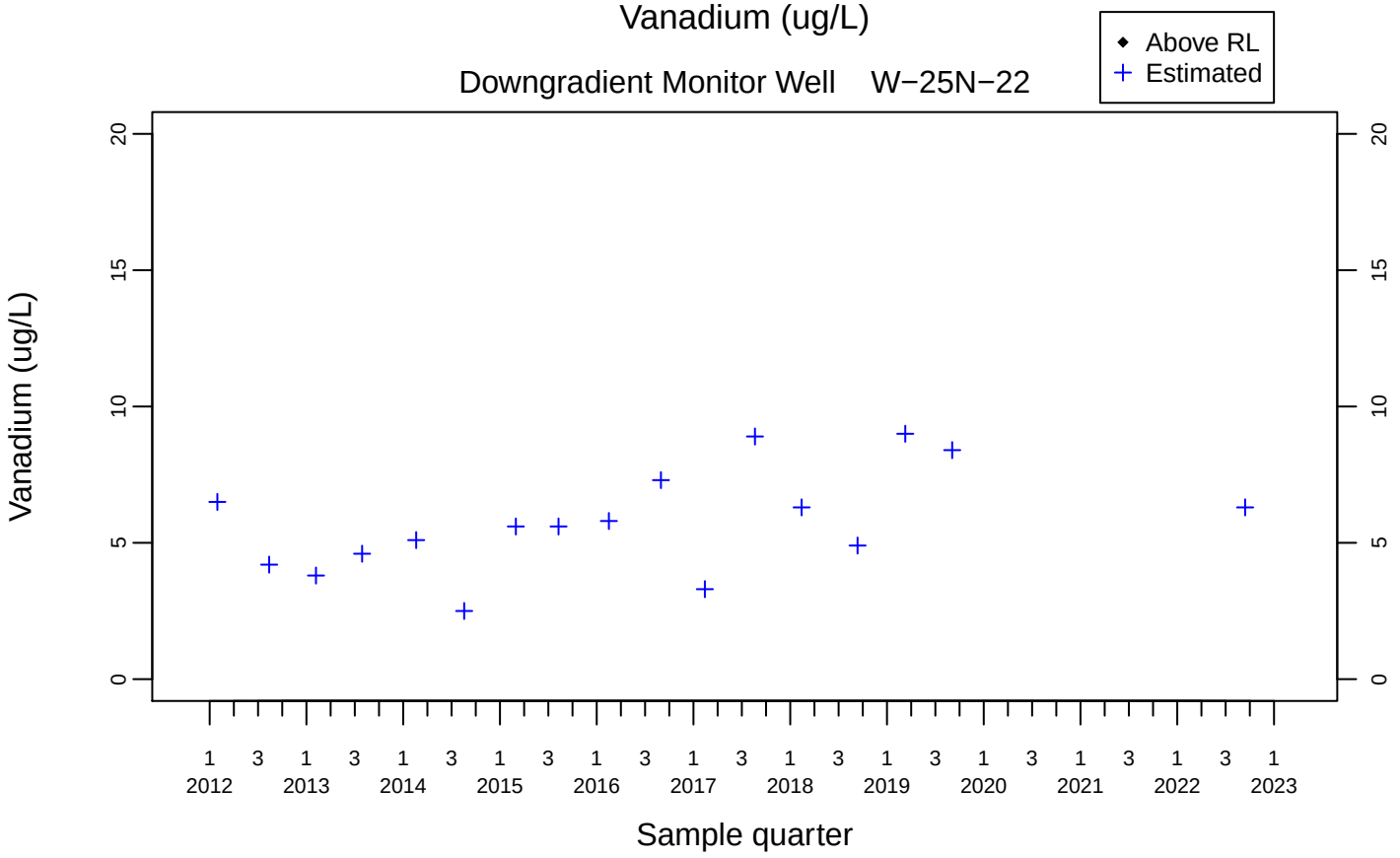


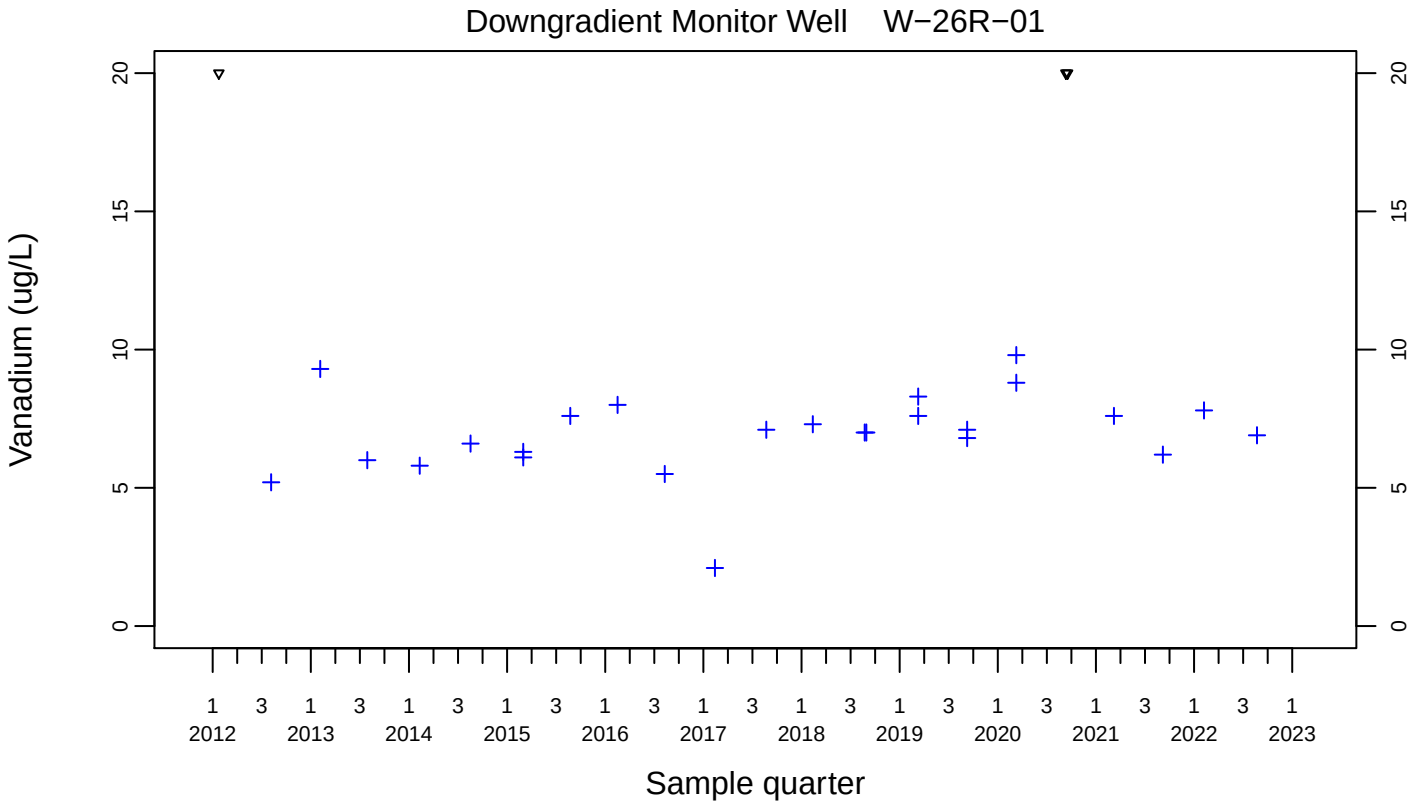
Sewage Ponds Ground Water
Vanadium (ug/L)



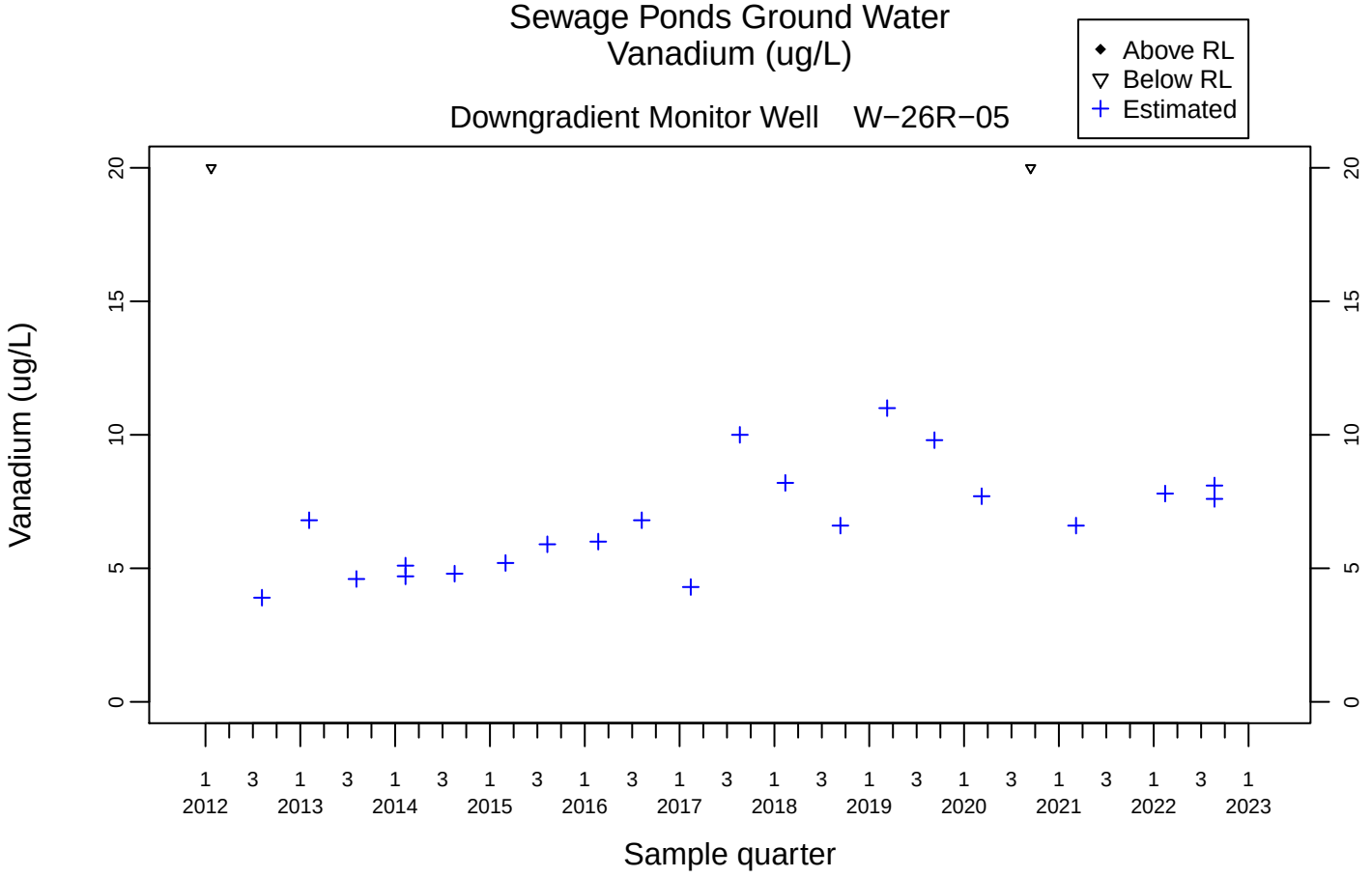


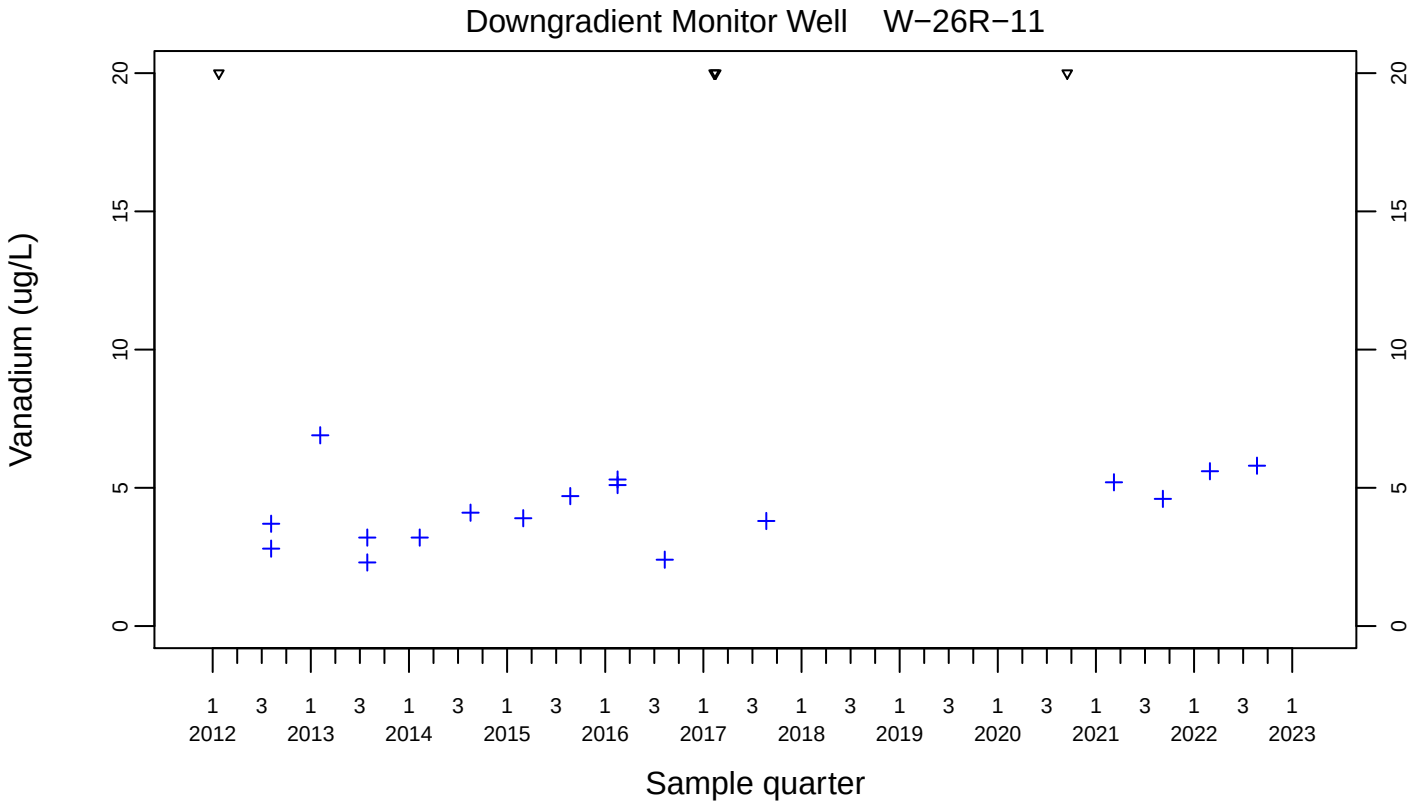
Sewage Ponds Ground Water
Vanadium (ug/L)

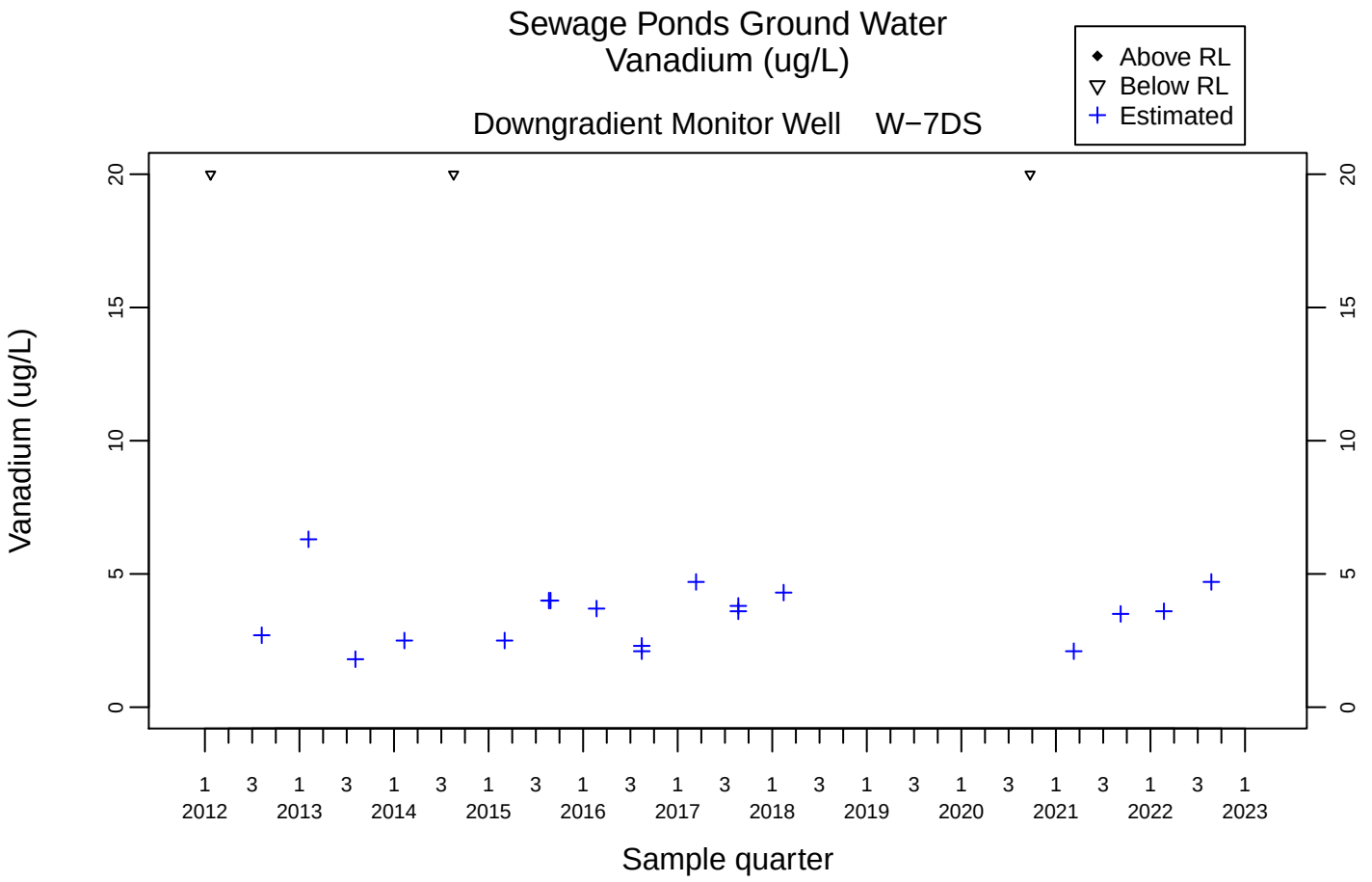




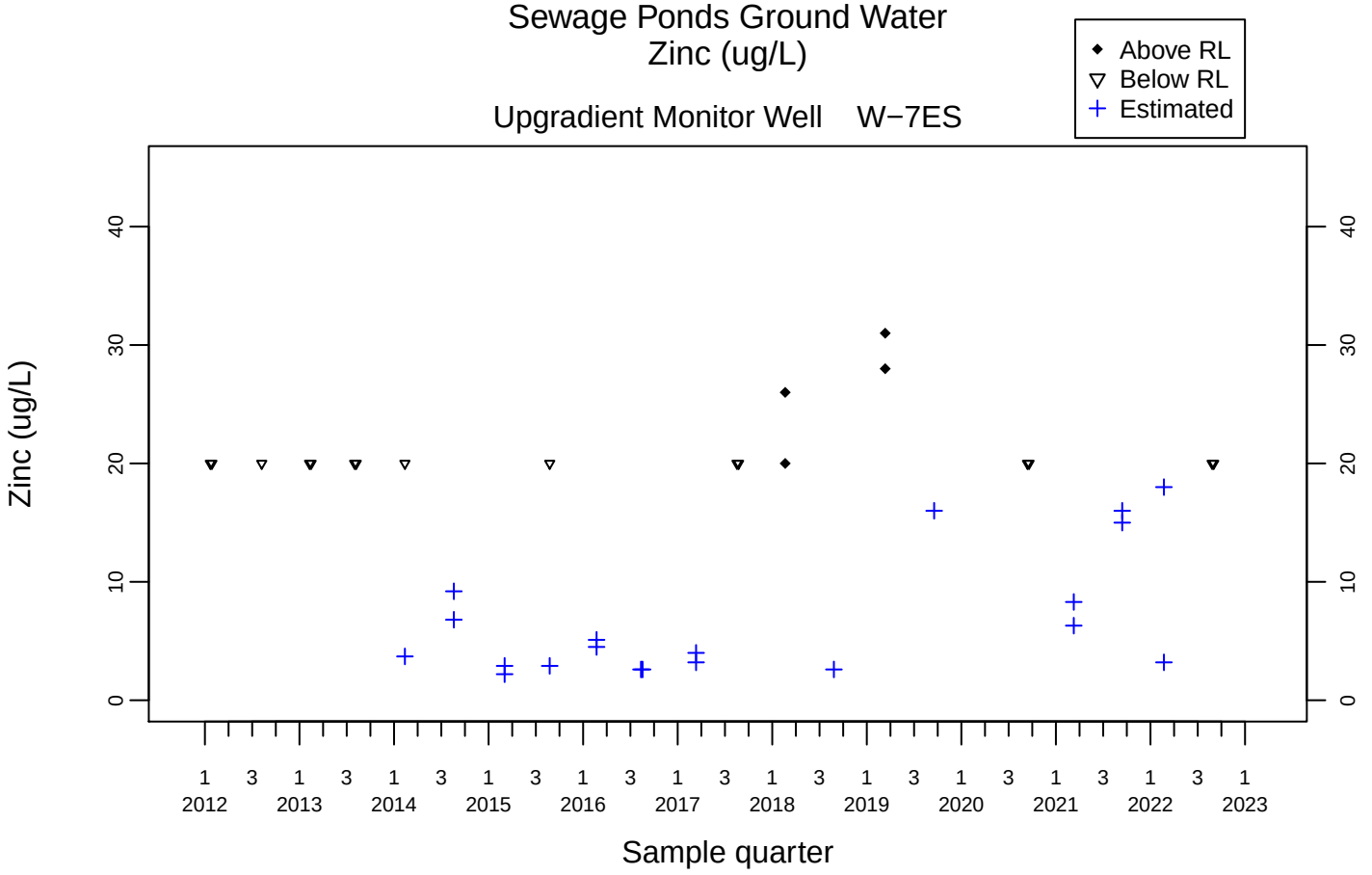
Sewage Ponds Ground Water
Vanadium (ug/L)

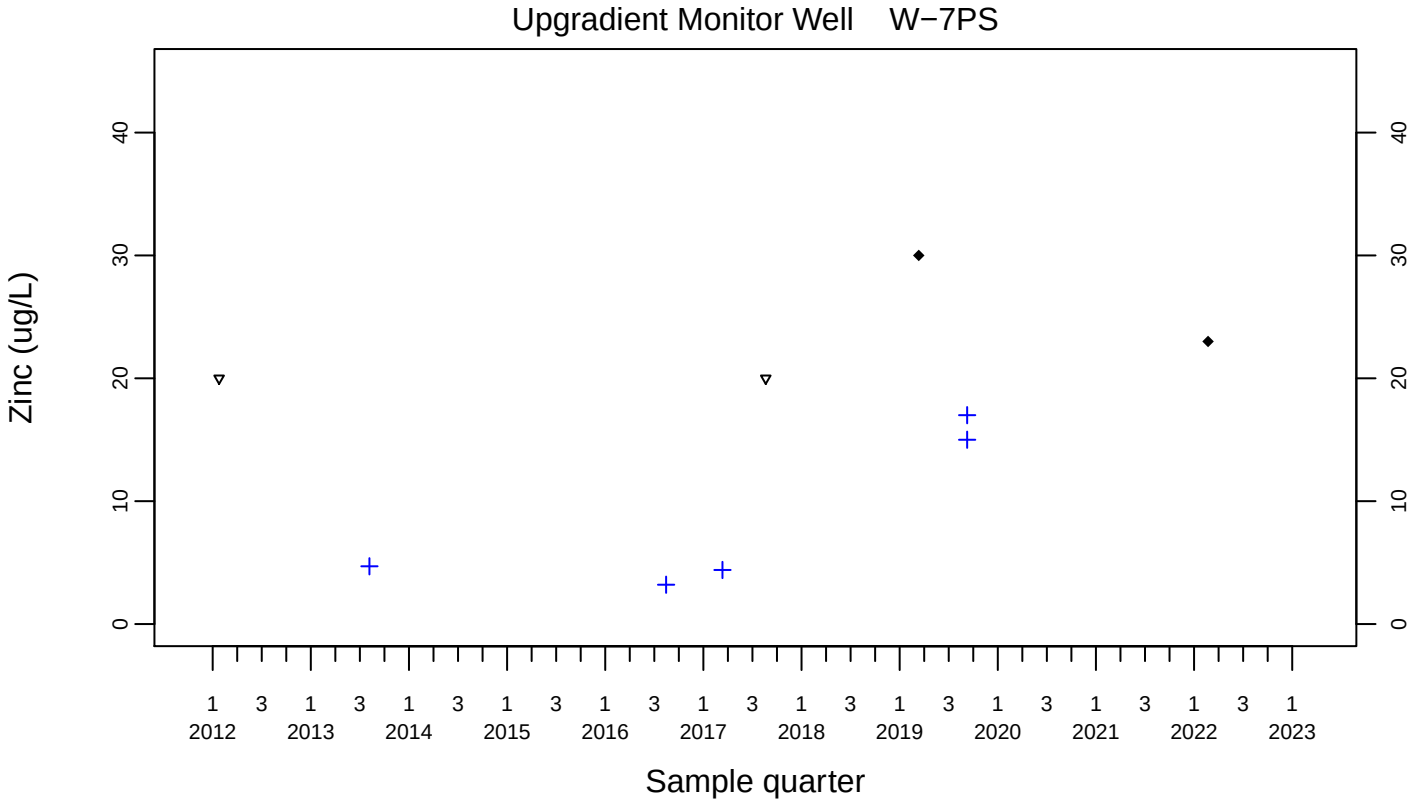




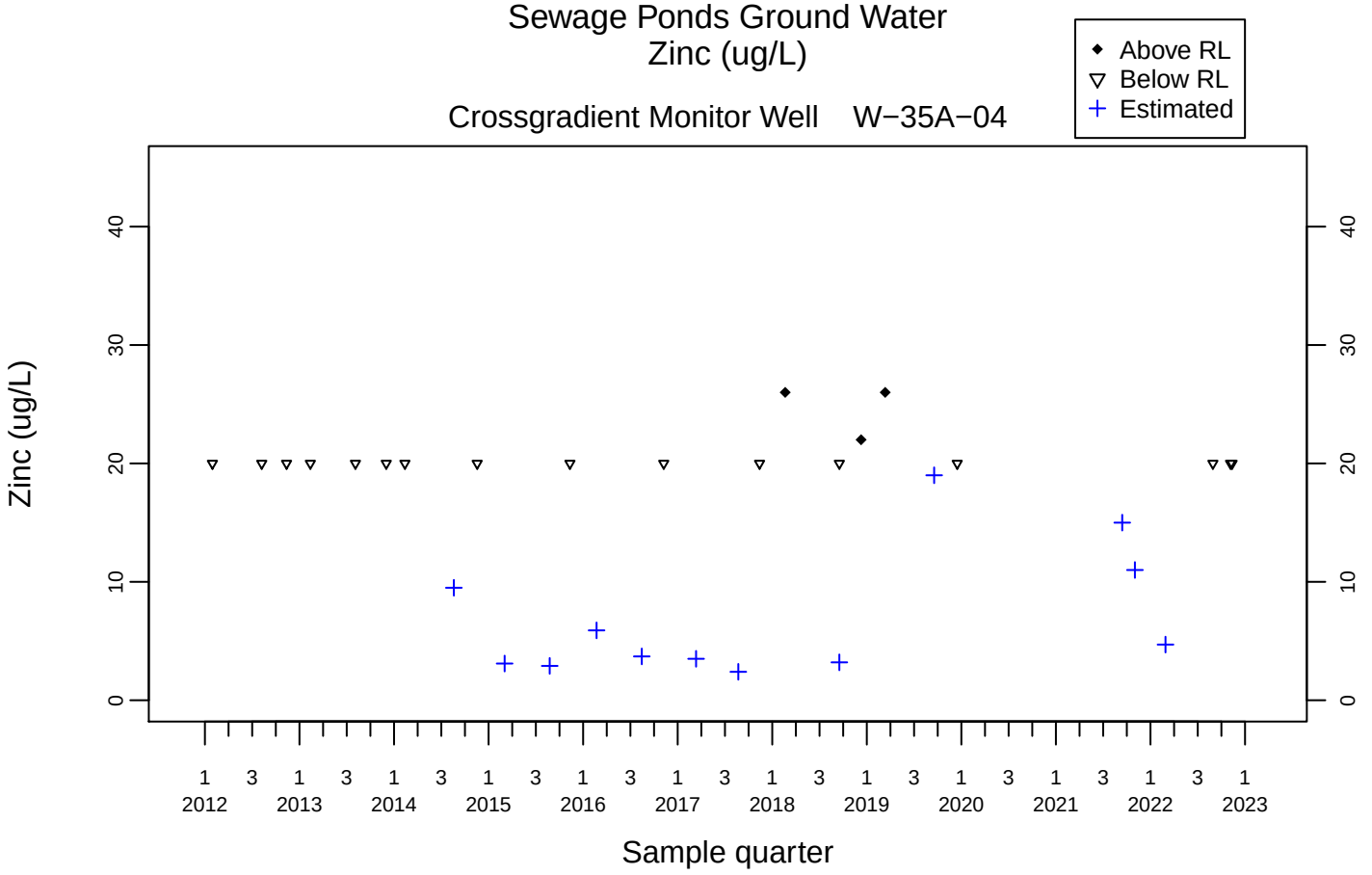

Sewage Ponds Ground Water
Vanadium (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Vanadium (ug/L)
0
5
10
15
20
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

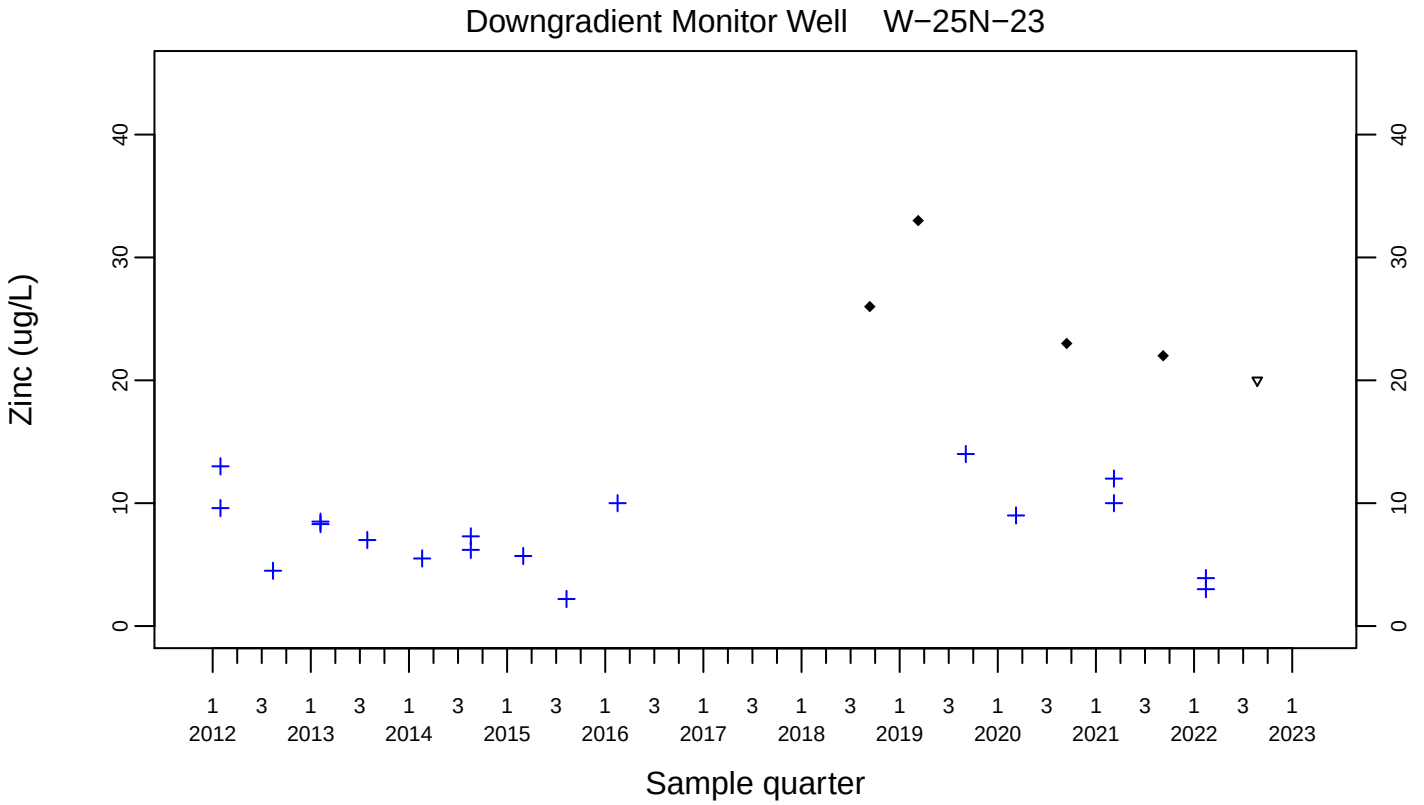
Sewage Ponds Ground Water
Zinc (ug/L)





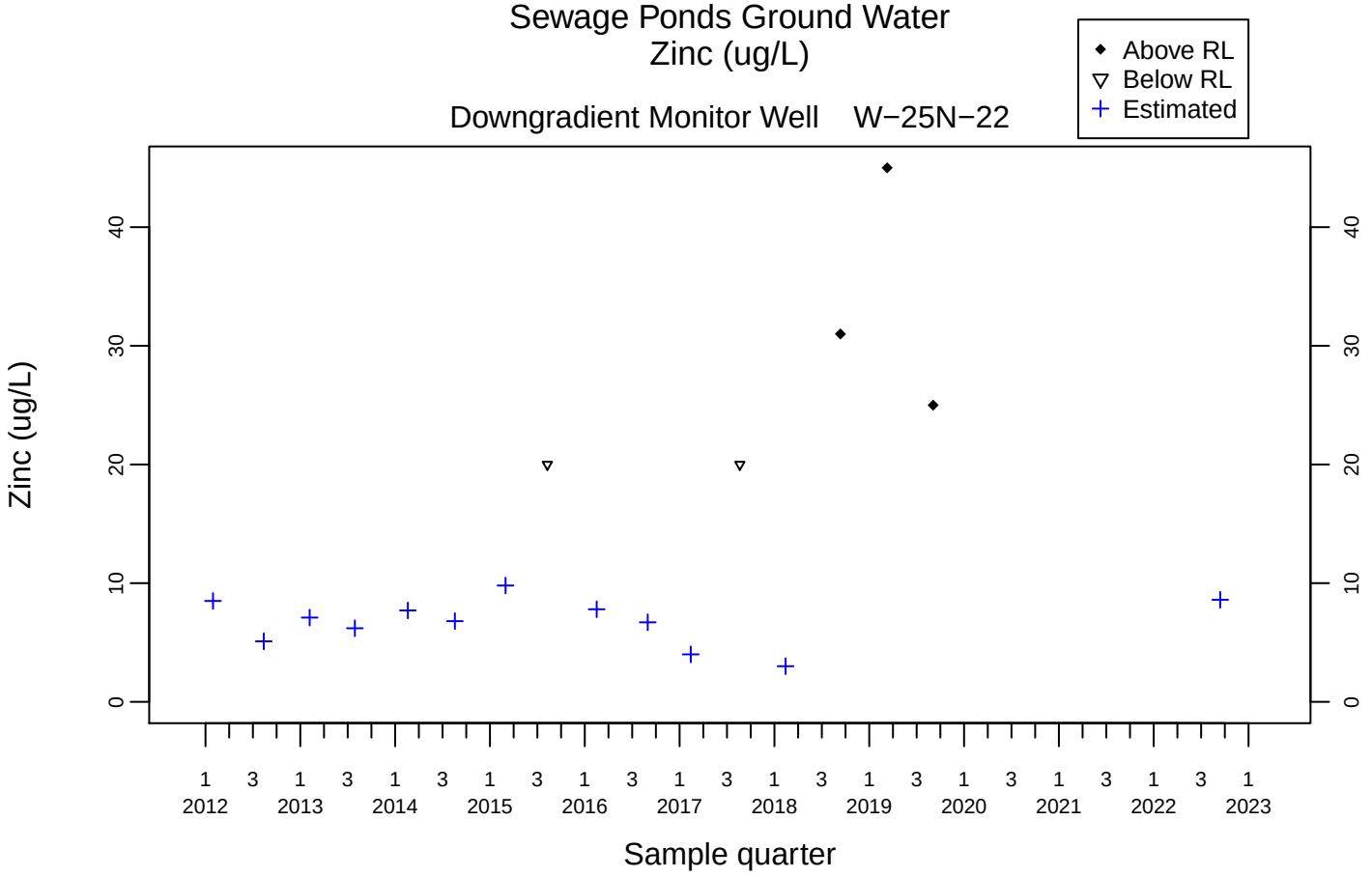
Sewage Ponds Ground Water
Zinc (ug/L)



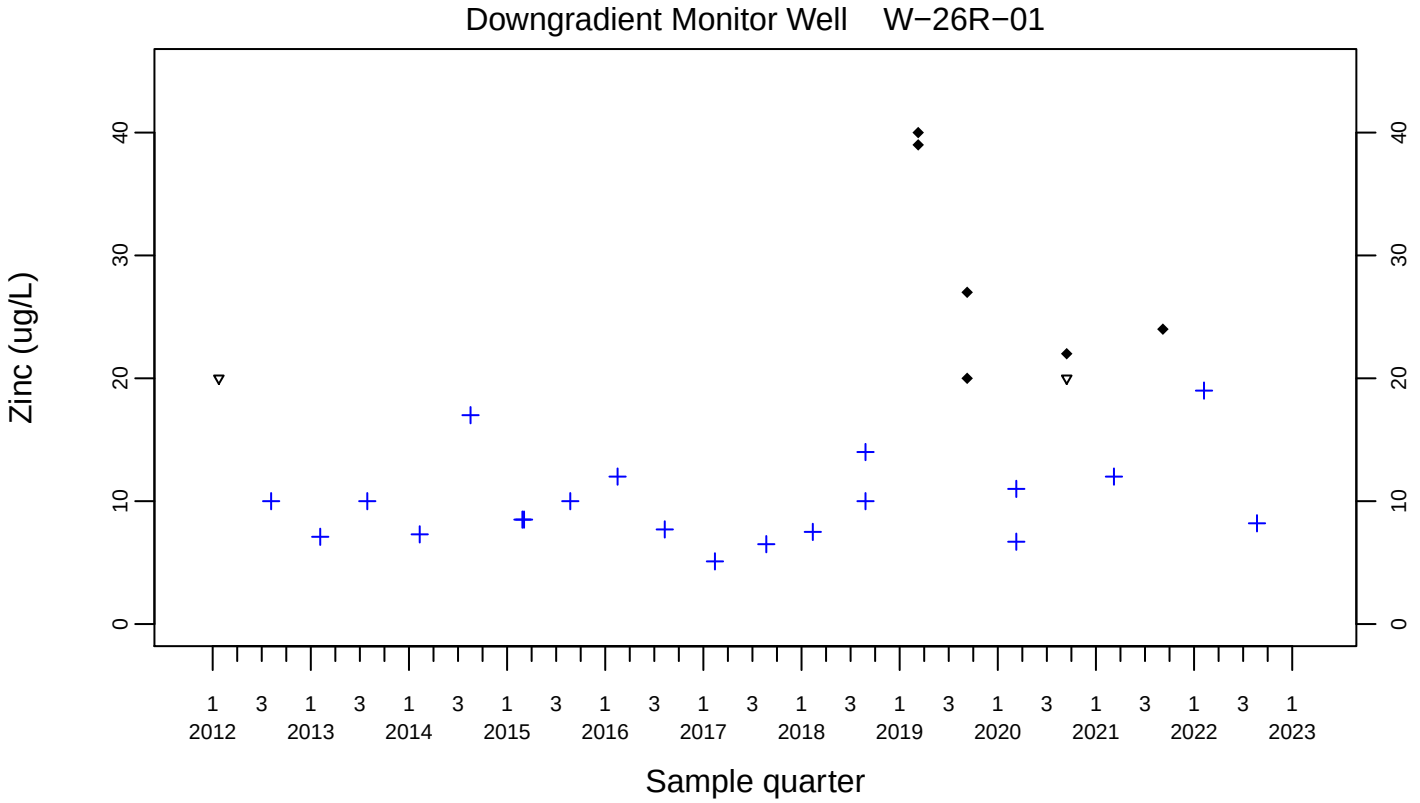


Sewage Ponds Ground Water
Zinc (ug/L)

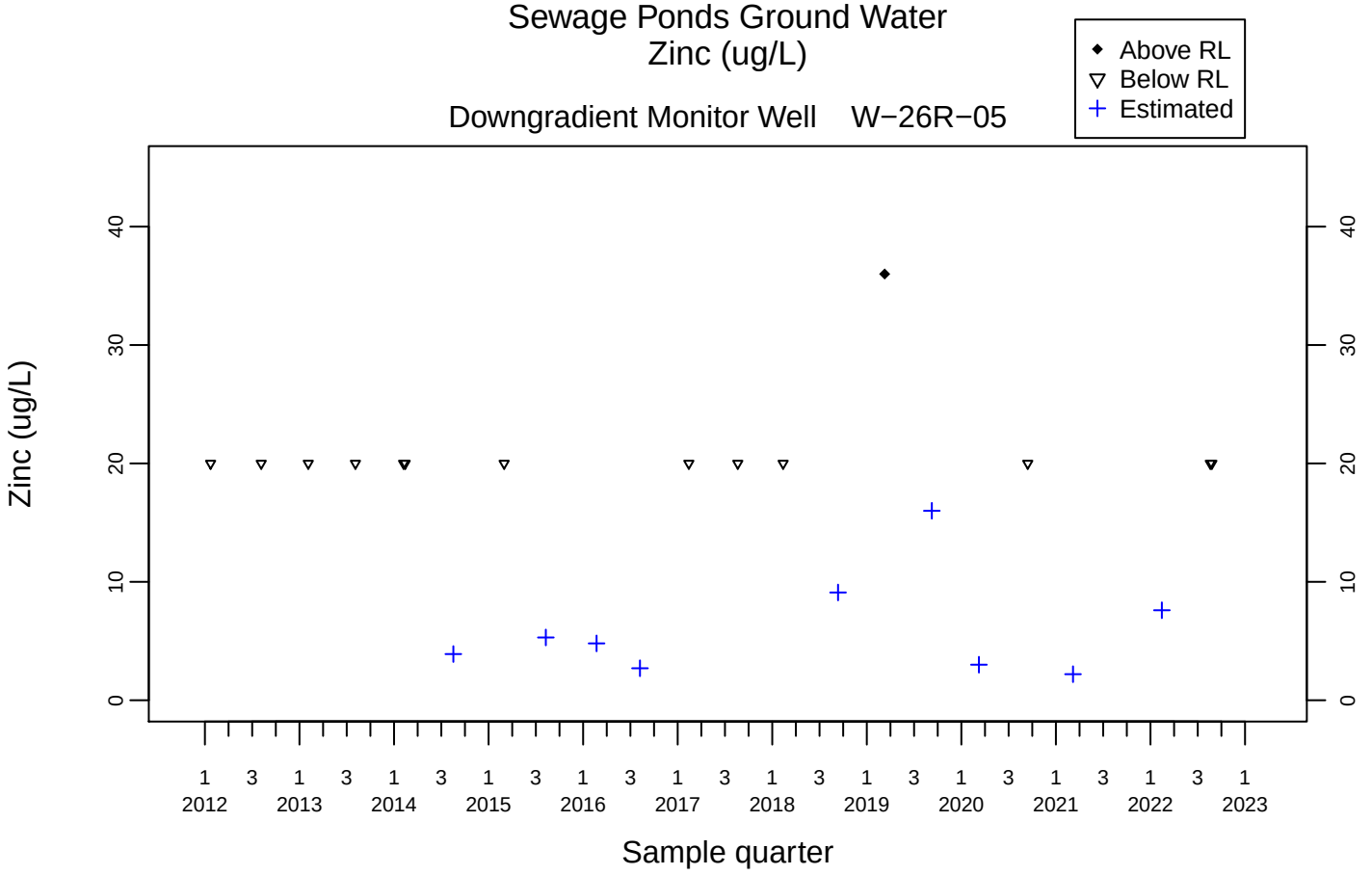
Downgradient Monitor Well W−25N−22

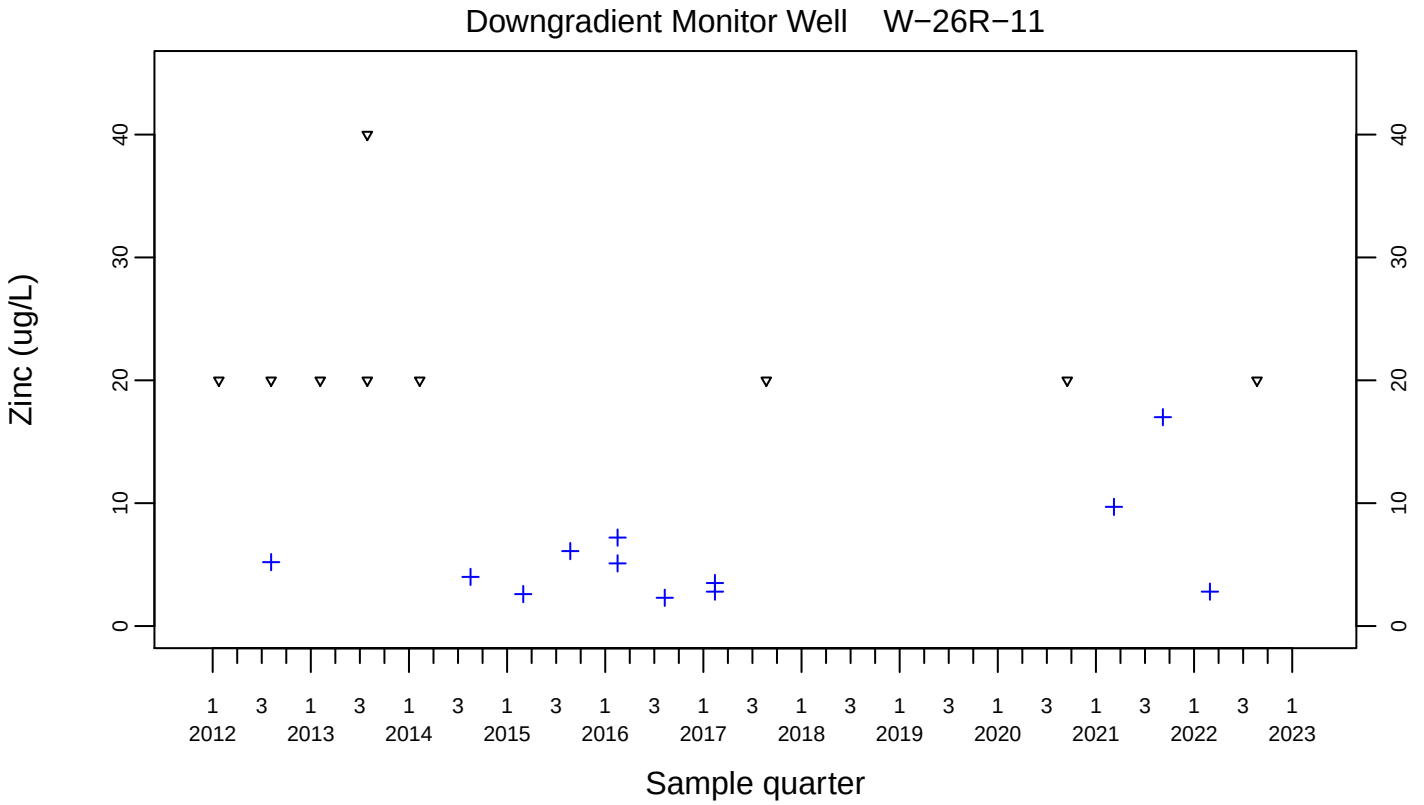


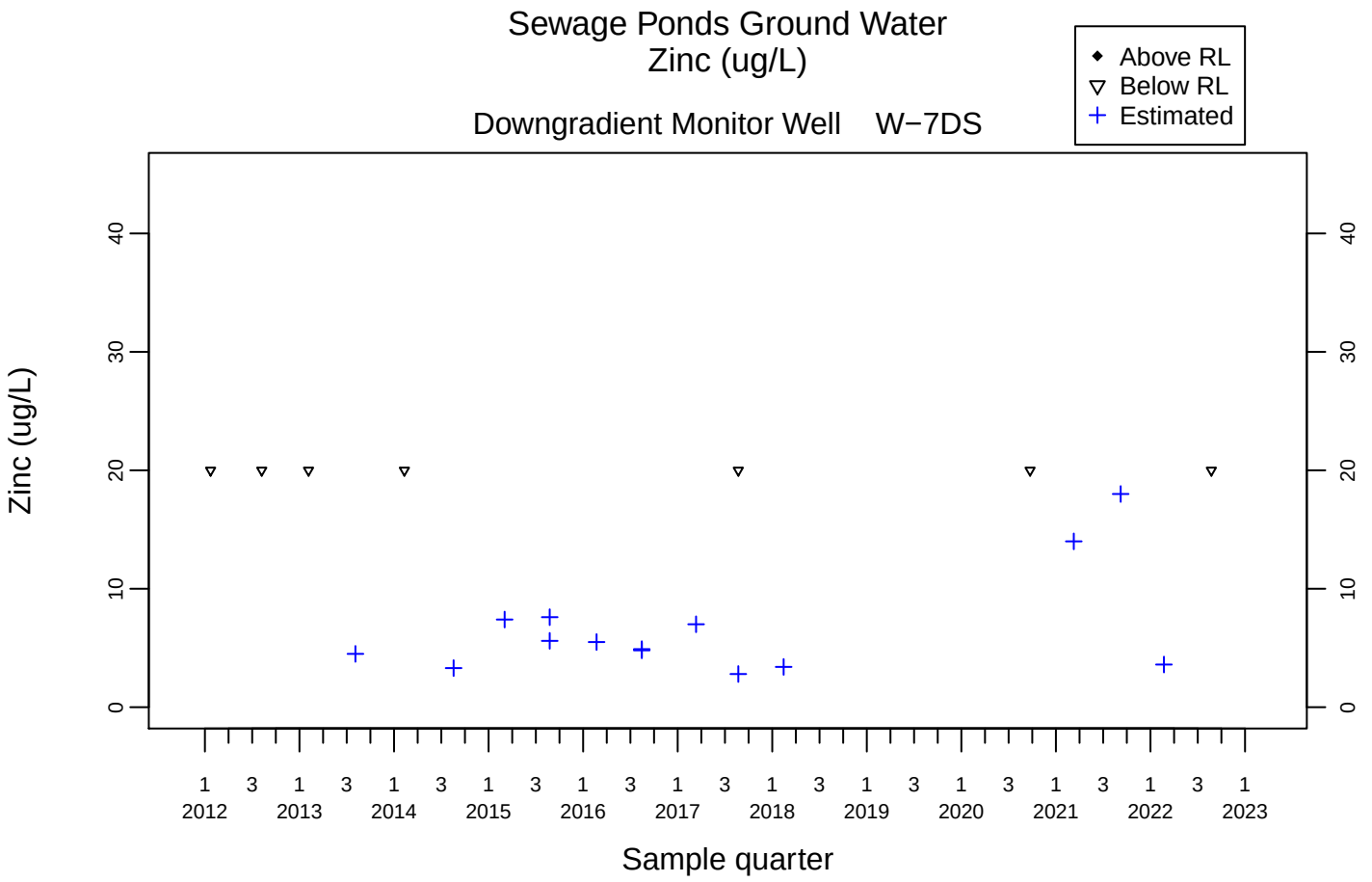
Downgradient Monitor Well W−26R−01

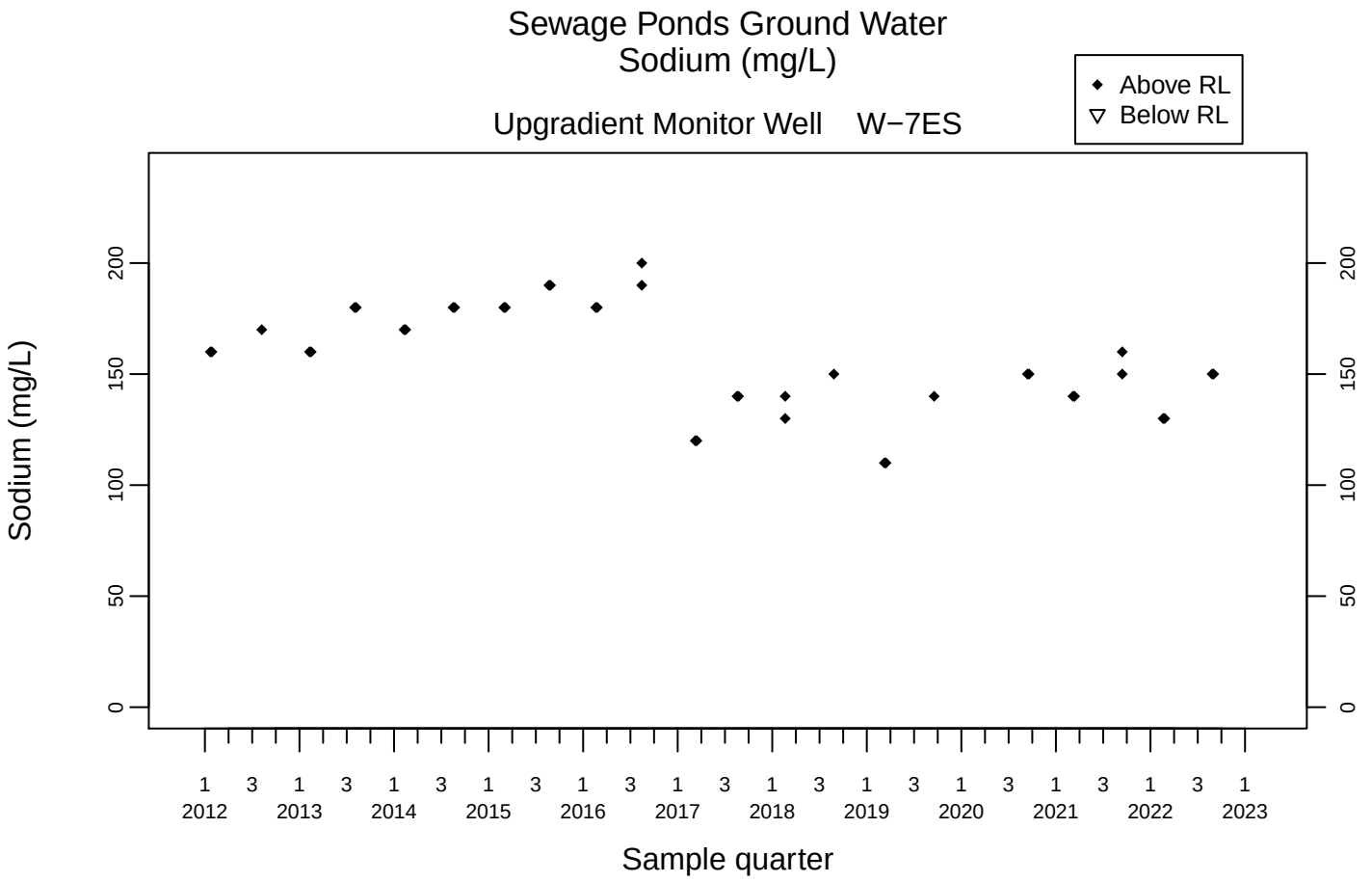


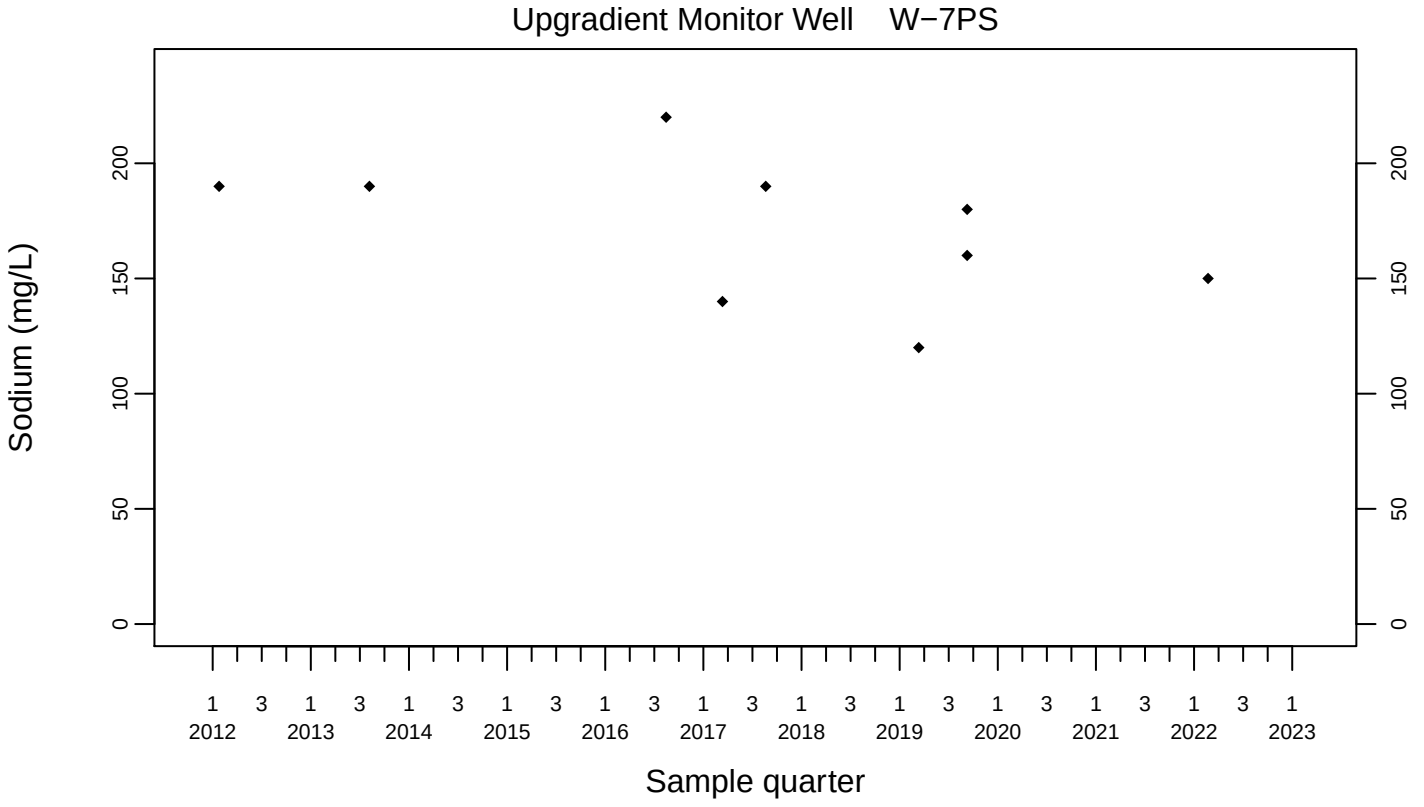
Sewage Ponds Ground Water
Zinc (ug/L)



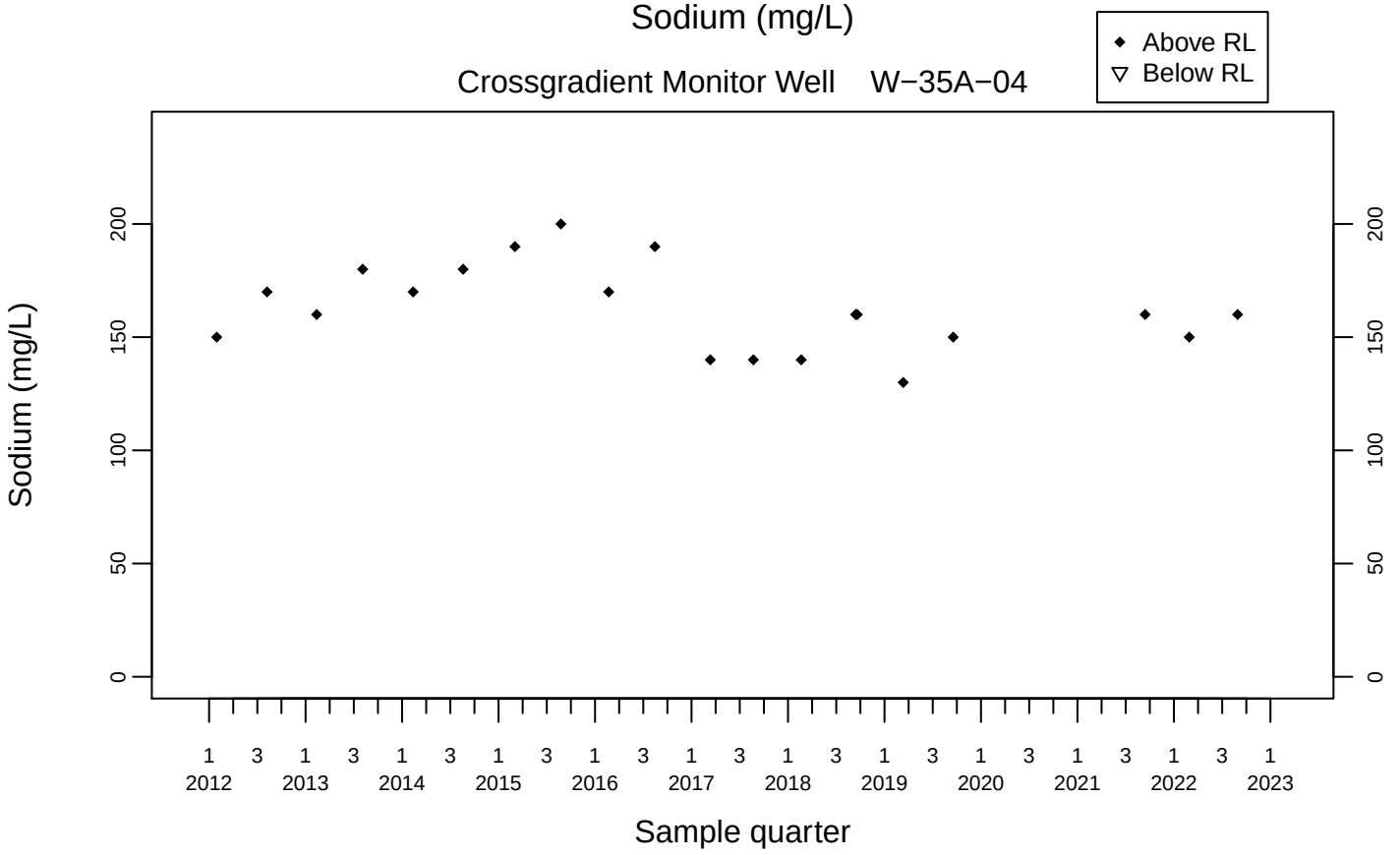


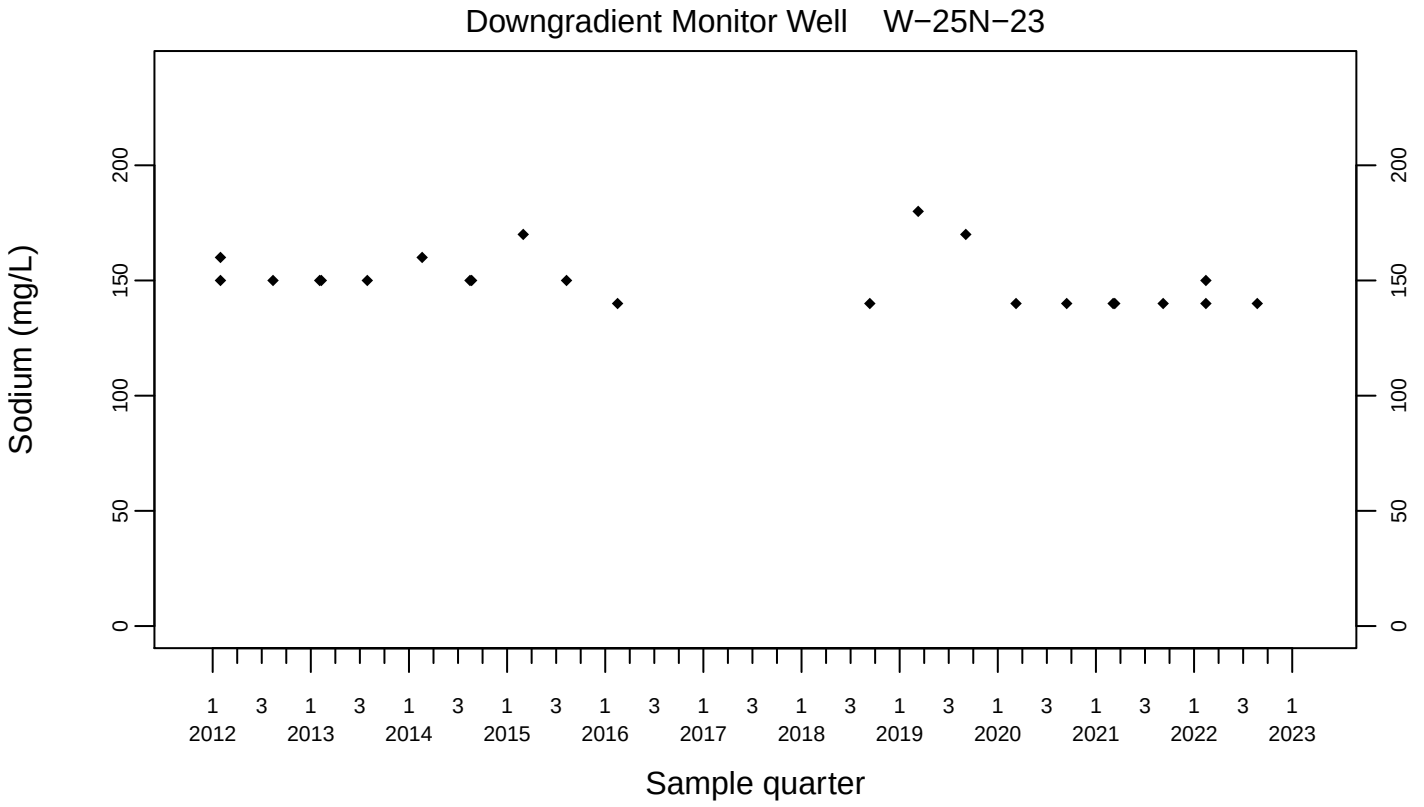

Sewage Ponds Ground Water
Zinc (ug/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Estimated
Zinc (ug/L)
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

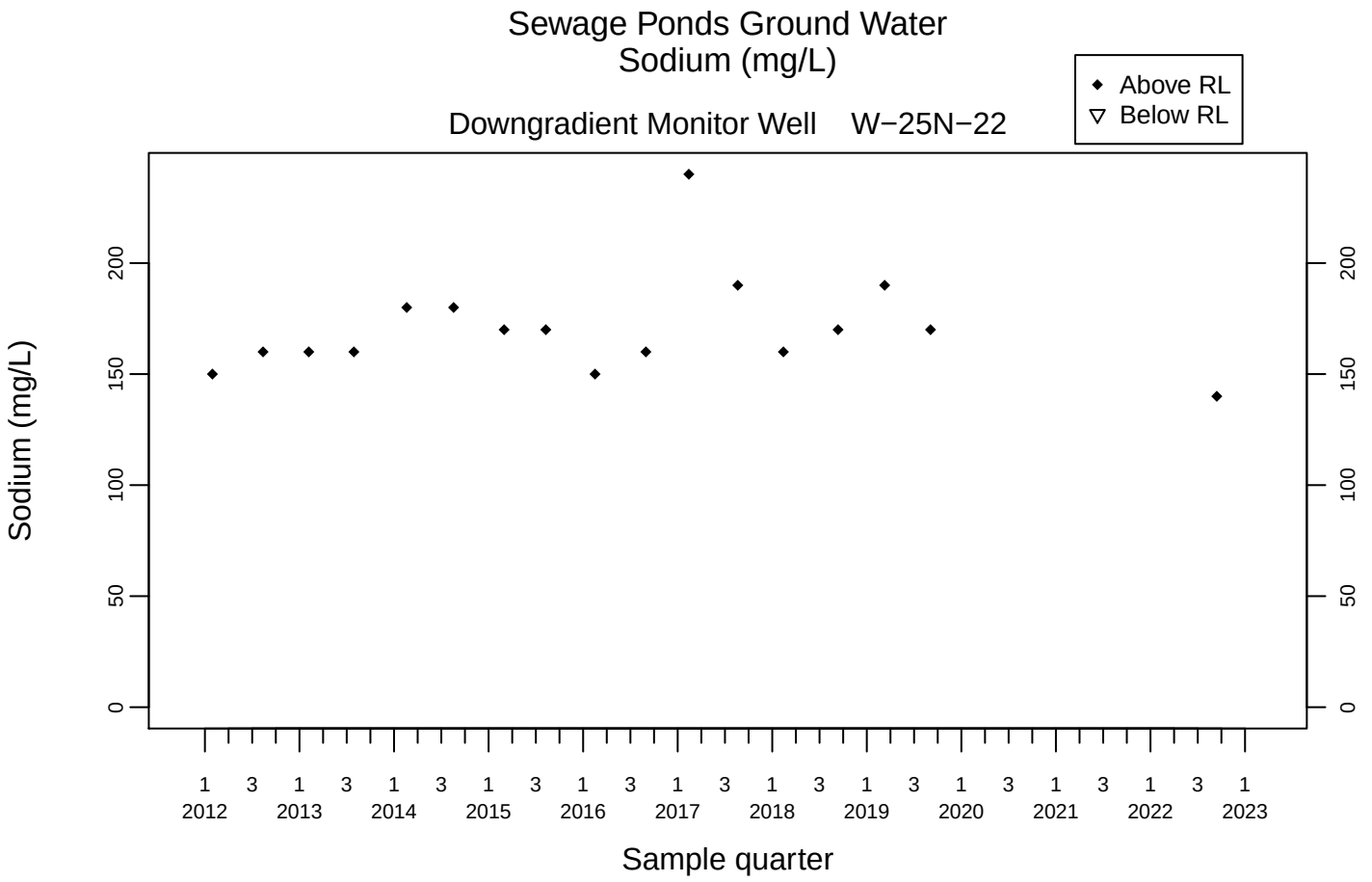

Sewage Ponds Ground Water
Sodium (mg/L)
Above RL
Below RL
Upgradient Monitor Well W−7ES
Sodium (mg/L)
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

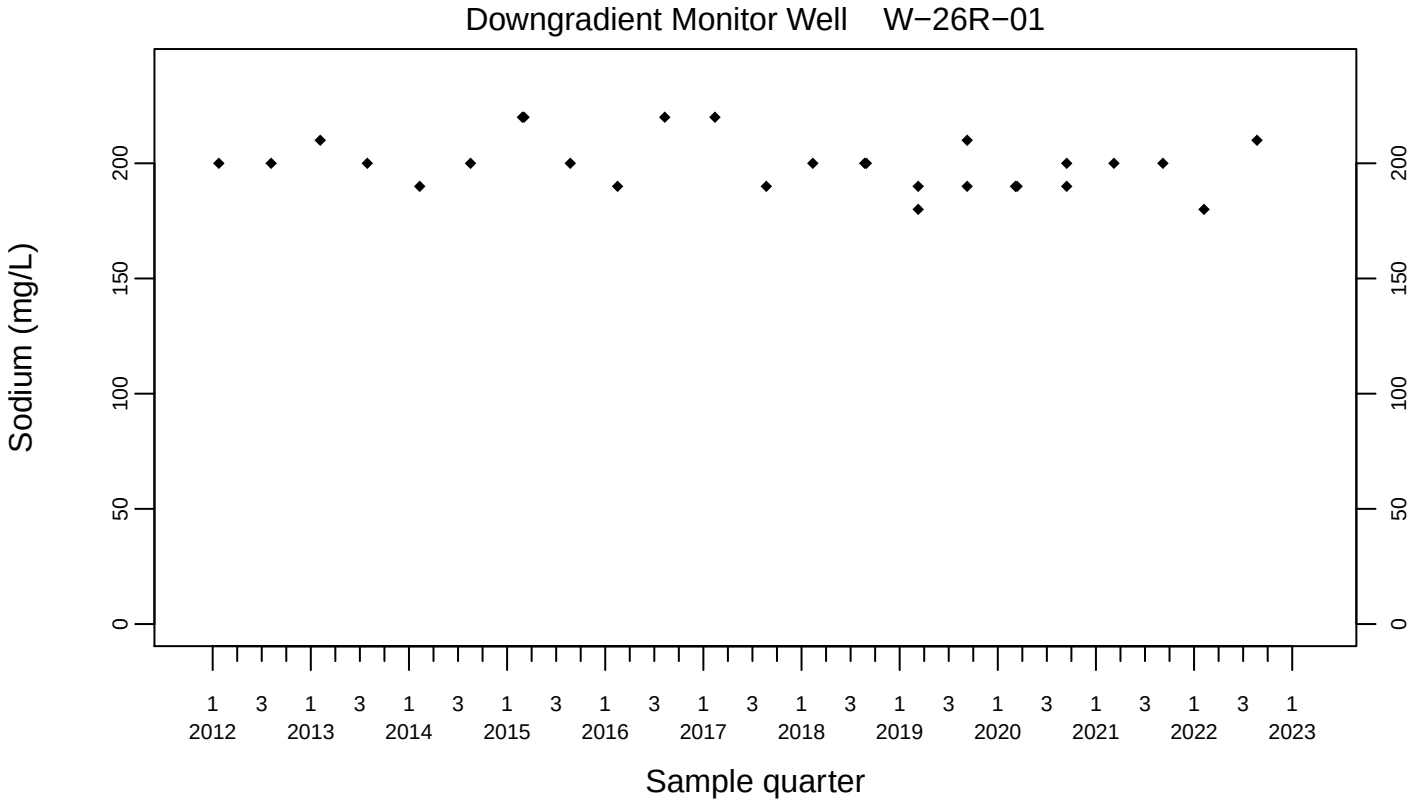

Upgradient Monitor Well W−7PS
Sodium (mg/L)
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

Sewage Ponds Ground Water
Sodium (mg/L)

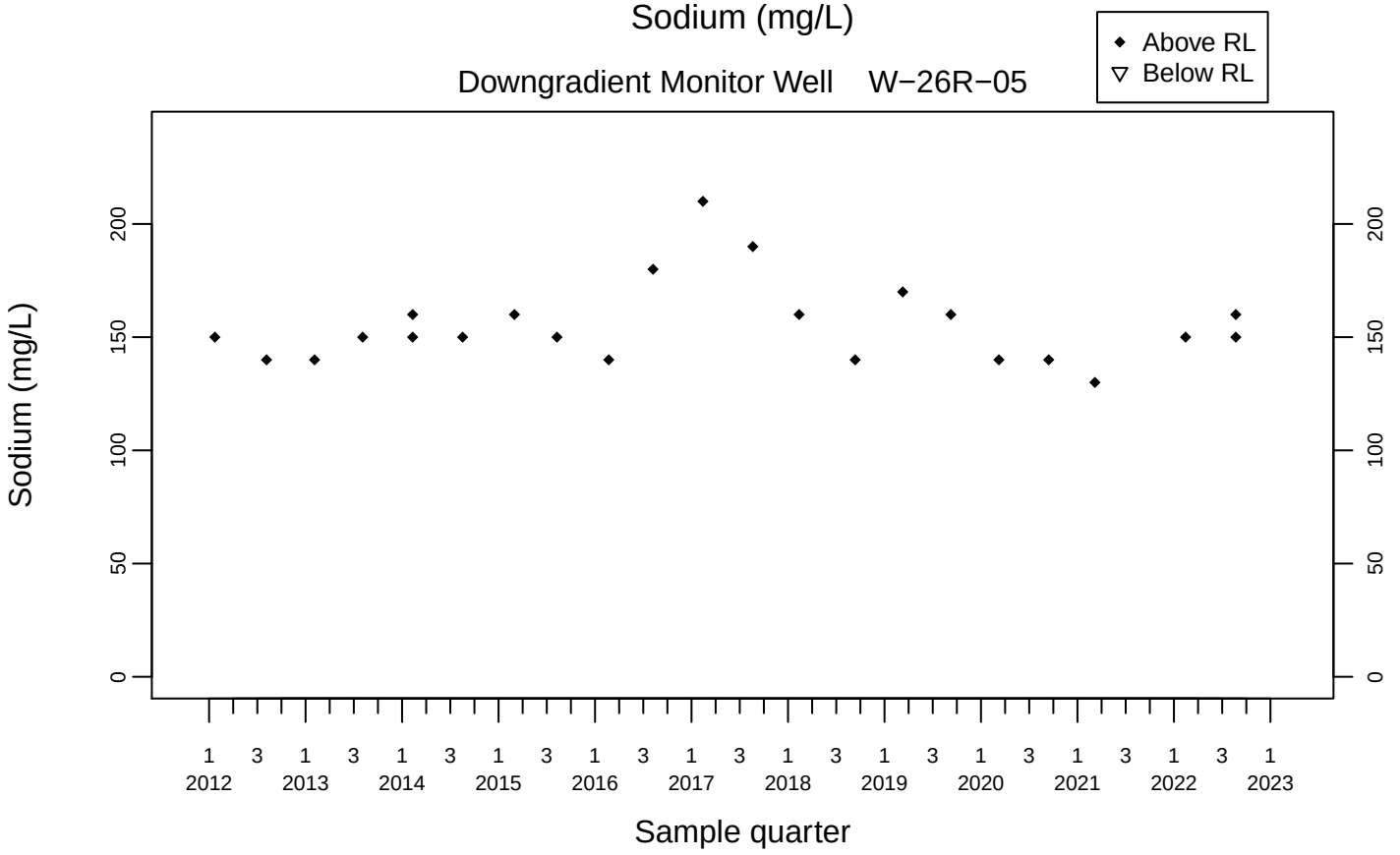


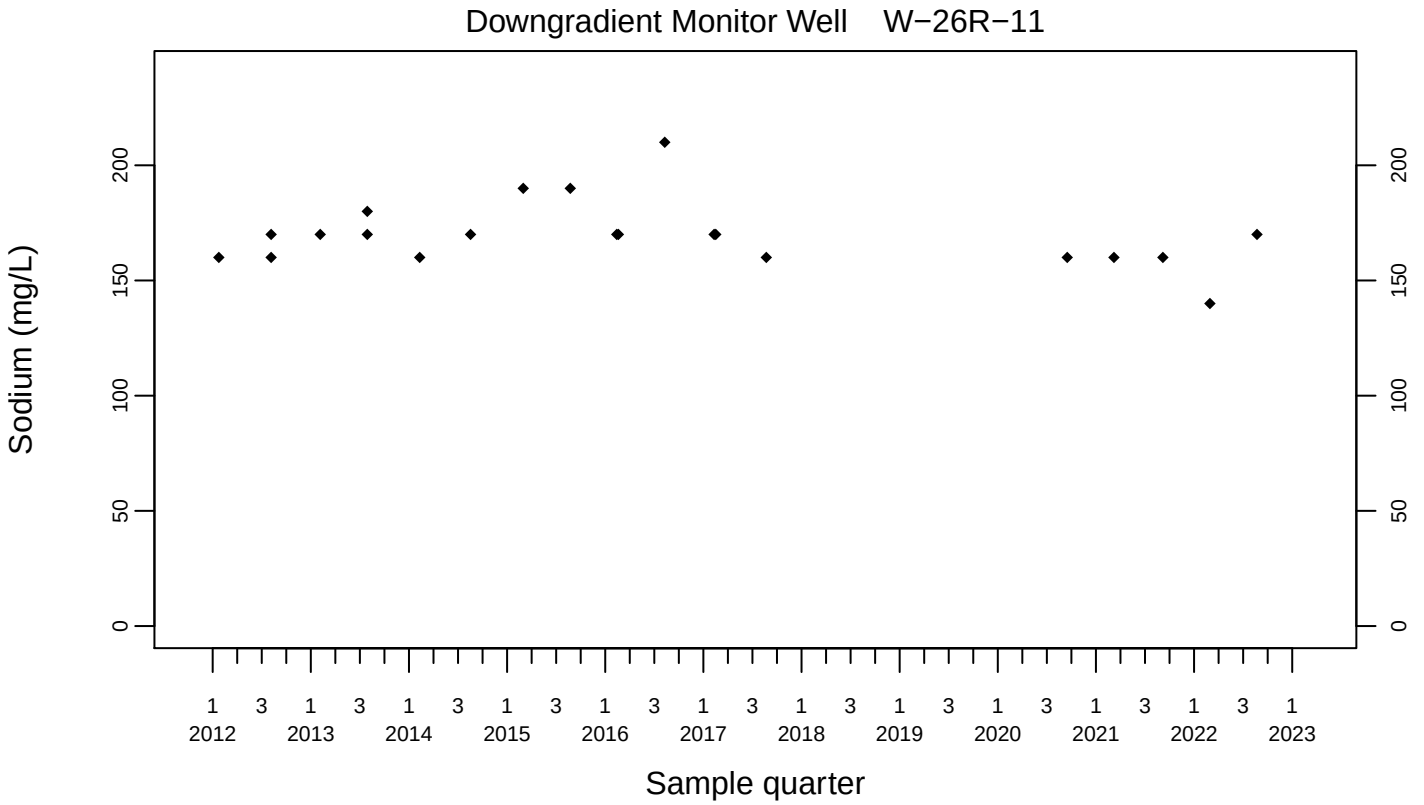


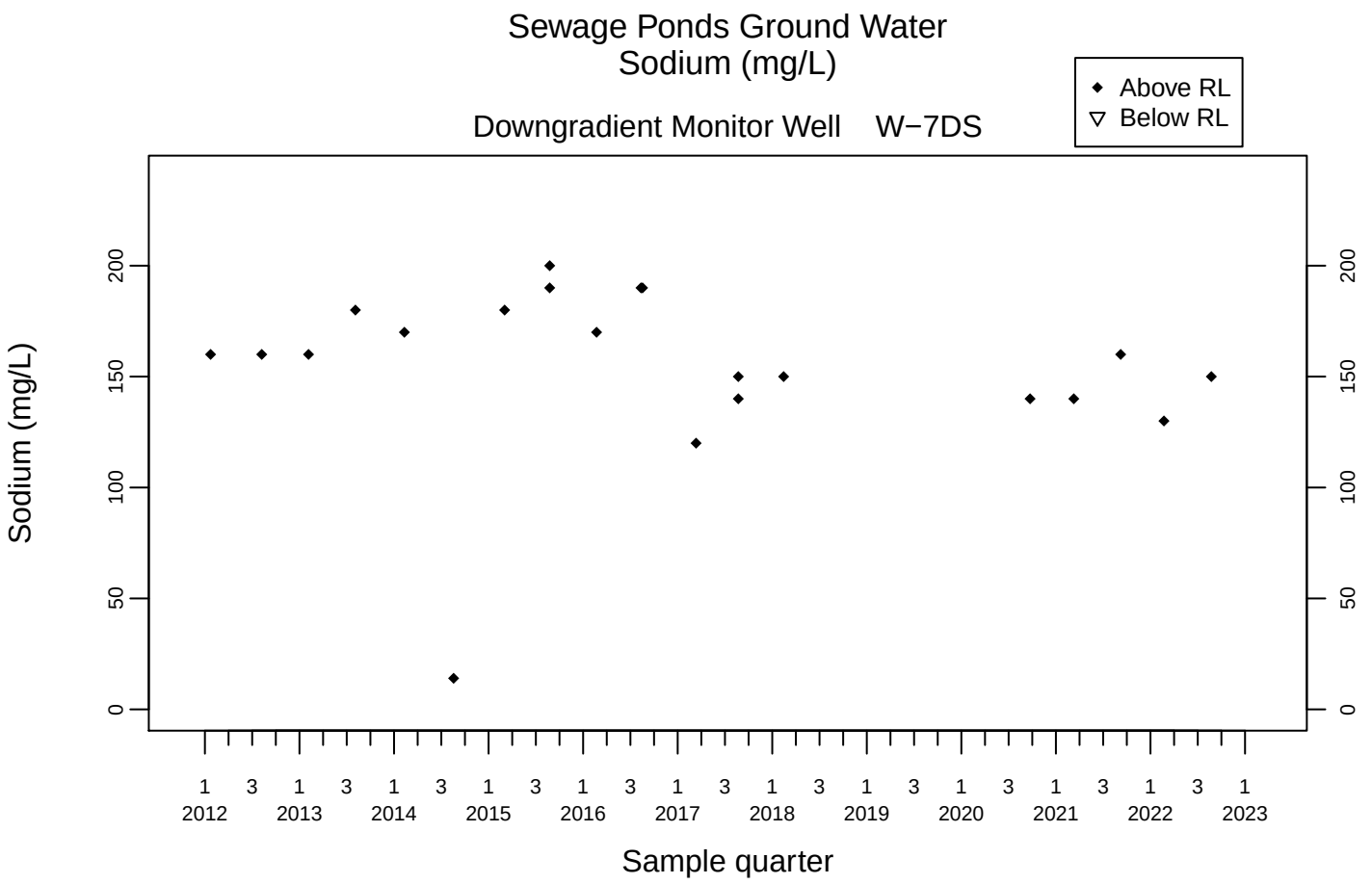

Sewage Ponds Ground Water
Sodium (mg/L)
Above RL
Below RL
Downgradient Monitor Well W−25N−22
Sodium (mg/L)
0
50
100
150
200
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

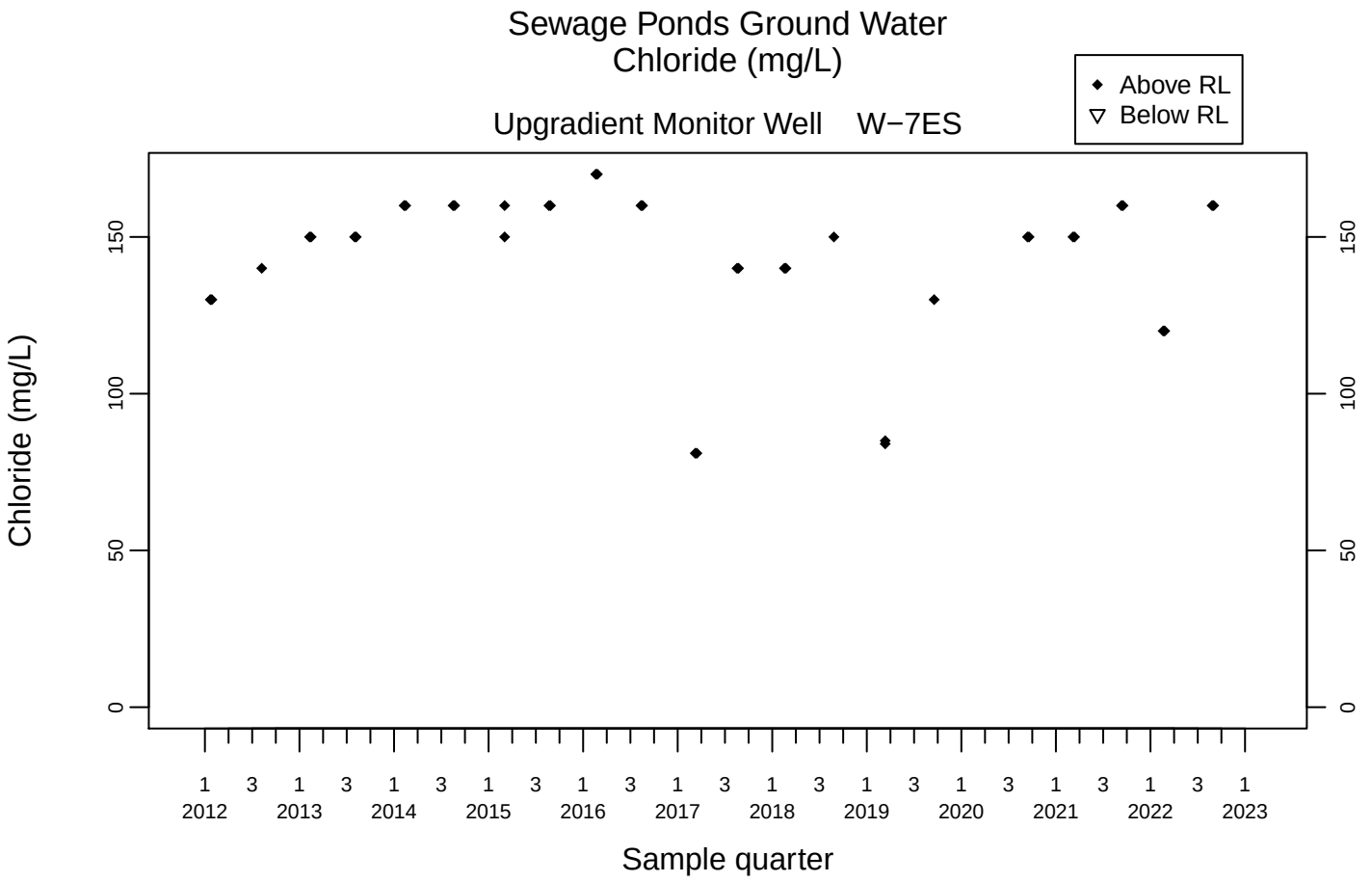

Downgradient Monitor Well W−26R−01
Sodium (mg/L)
0
50
100
150
200
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

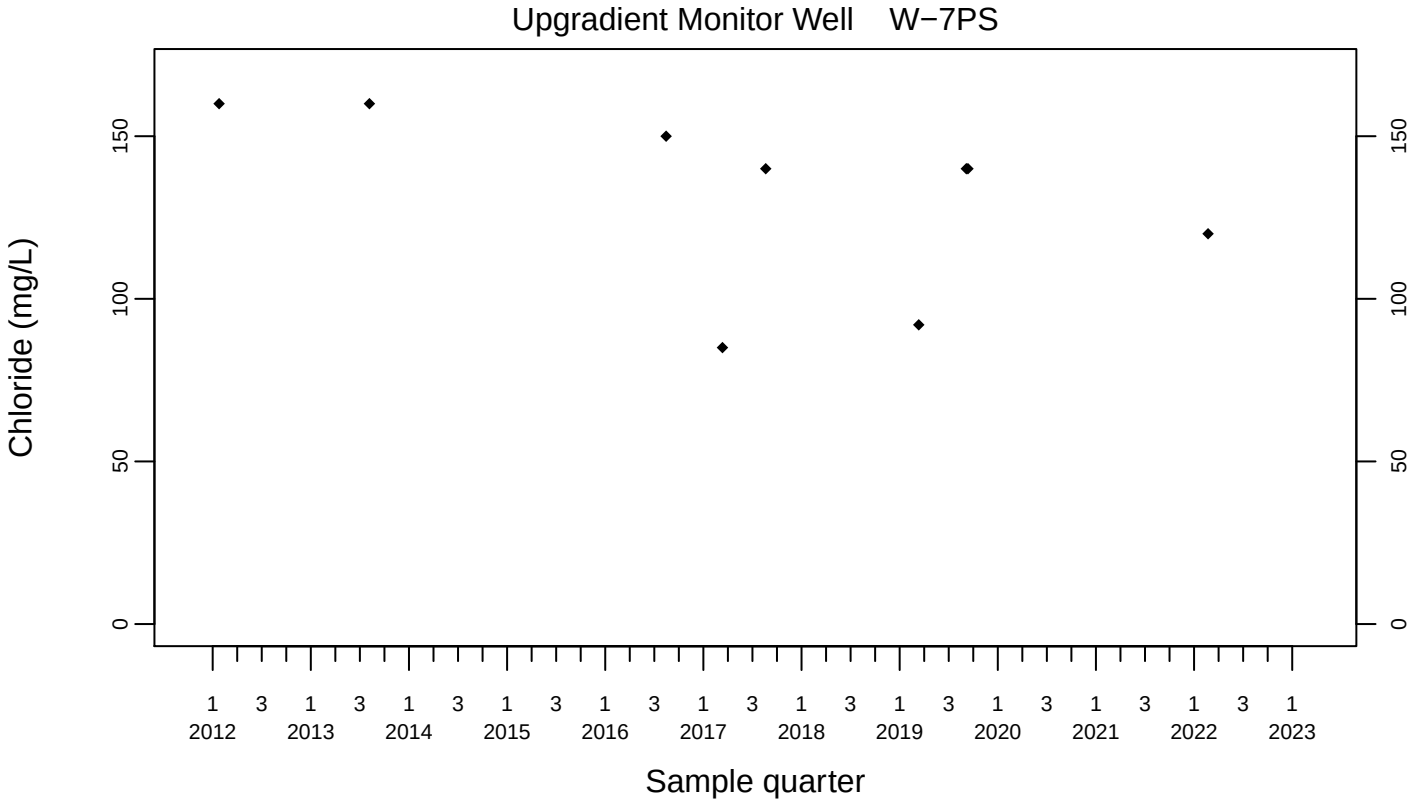
Sewage Ponds Ground Water
Sodium (mg/L)



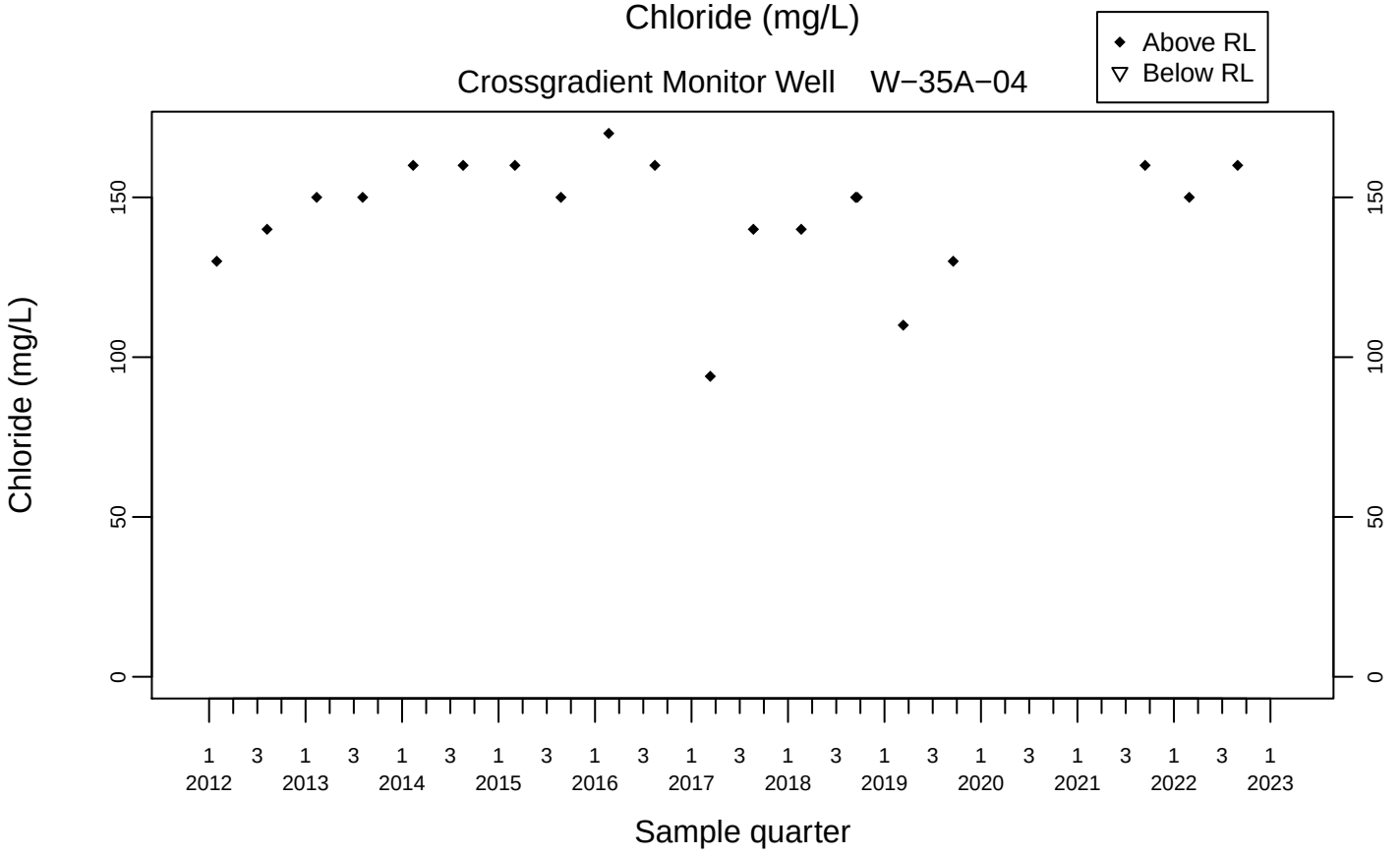


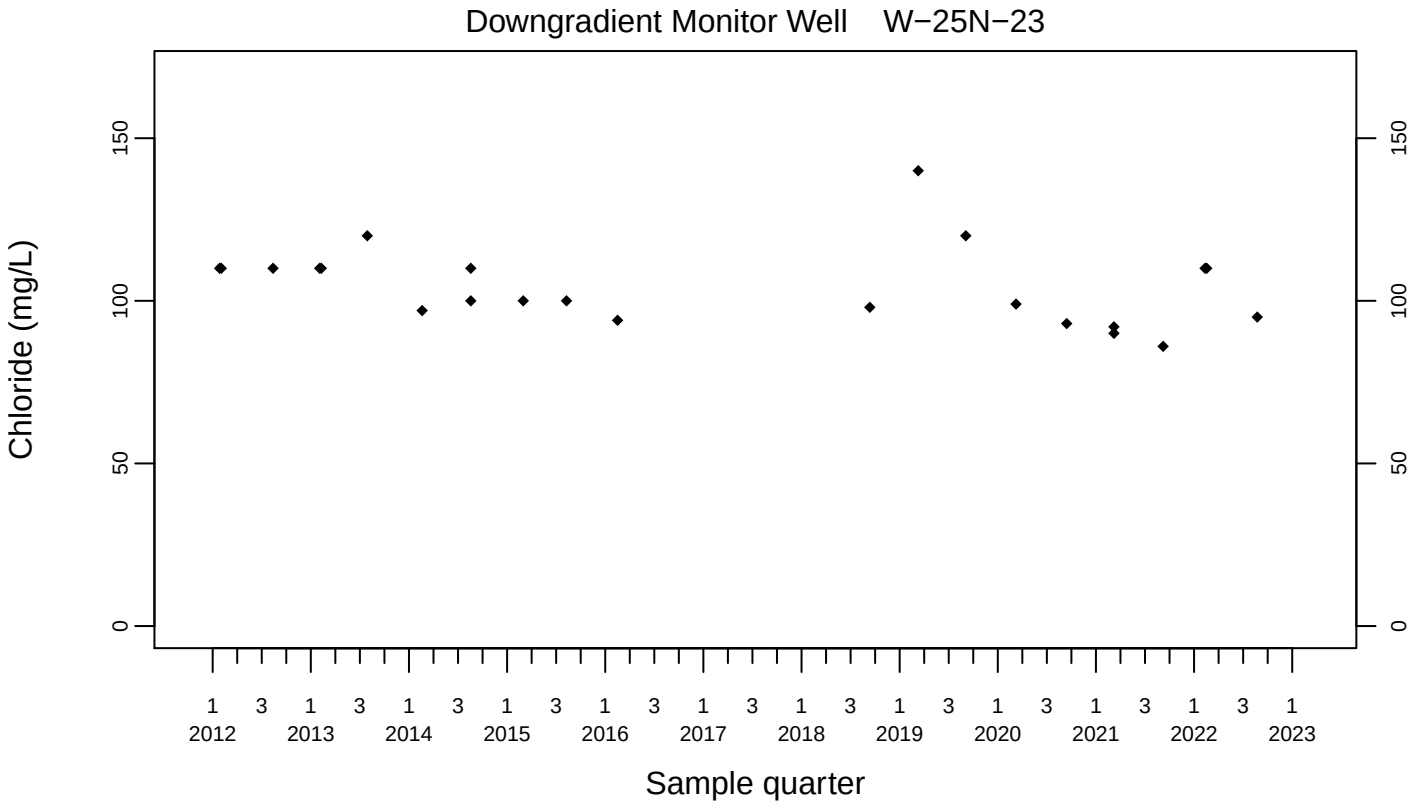

Sewage Ponds Ground Water
Sodium (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Sodium (mg/L)
0
50
100
150
200
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

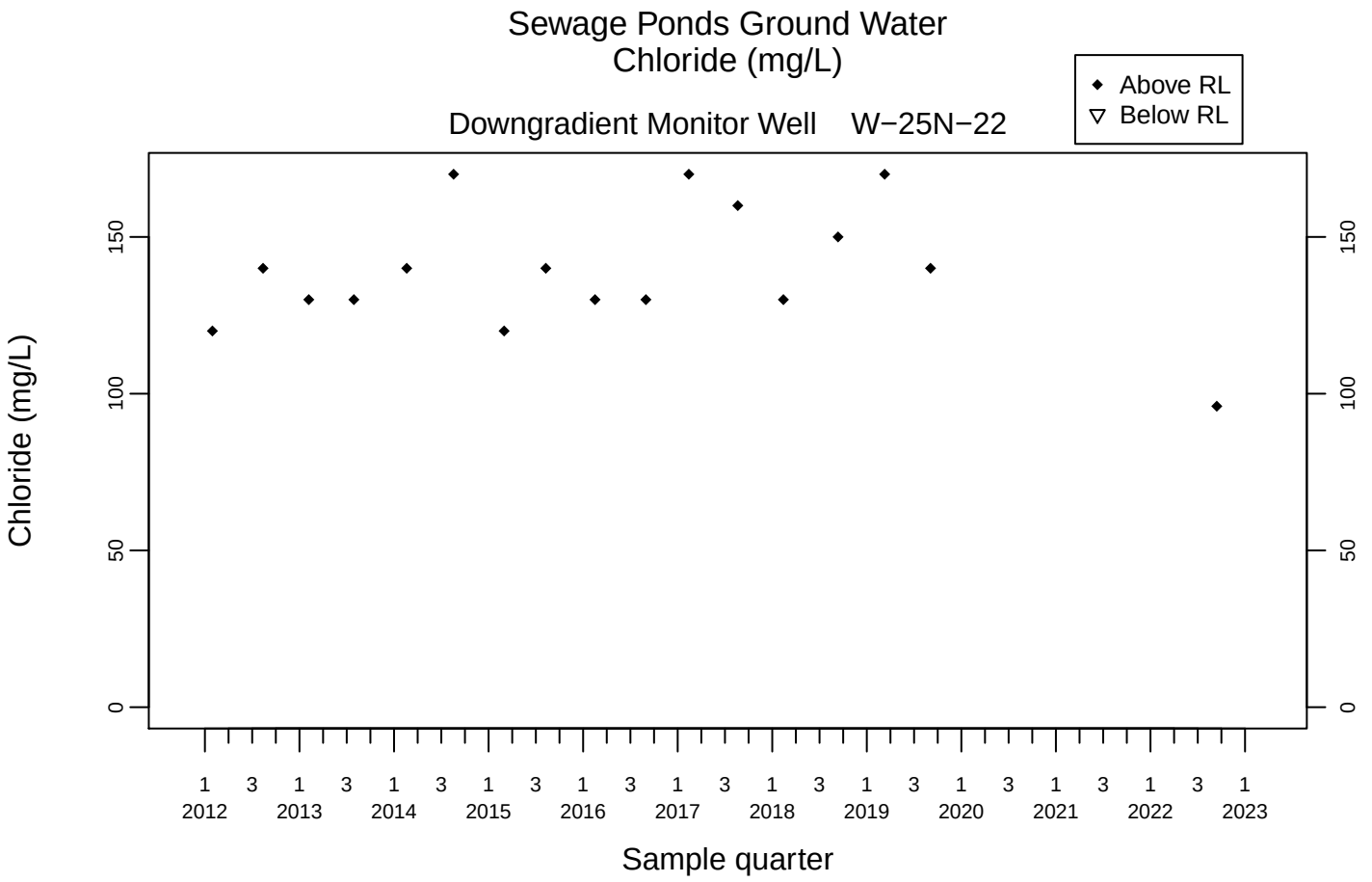

Sewage Ponds Ground Water
Chloride (mg/L)
Above RL
Below RL
Upgradient Monitor Well W−7ES
Chloride (mg/L)
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

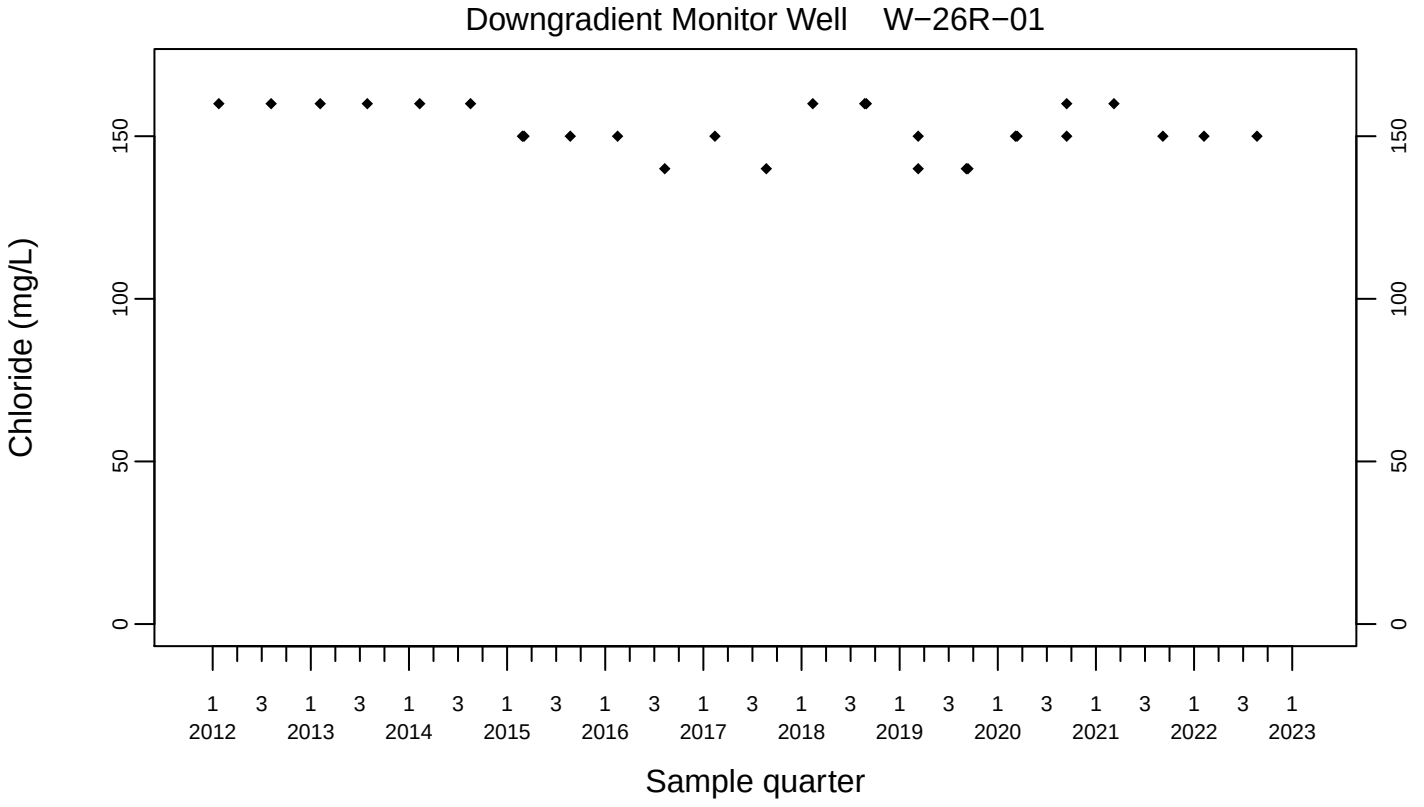

Upgradient Monitor Well W−7PS
Chloride (mg/L)
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

Sewage Ponds Ground Water
Chloride (mg/L)

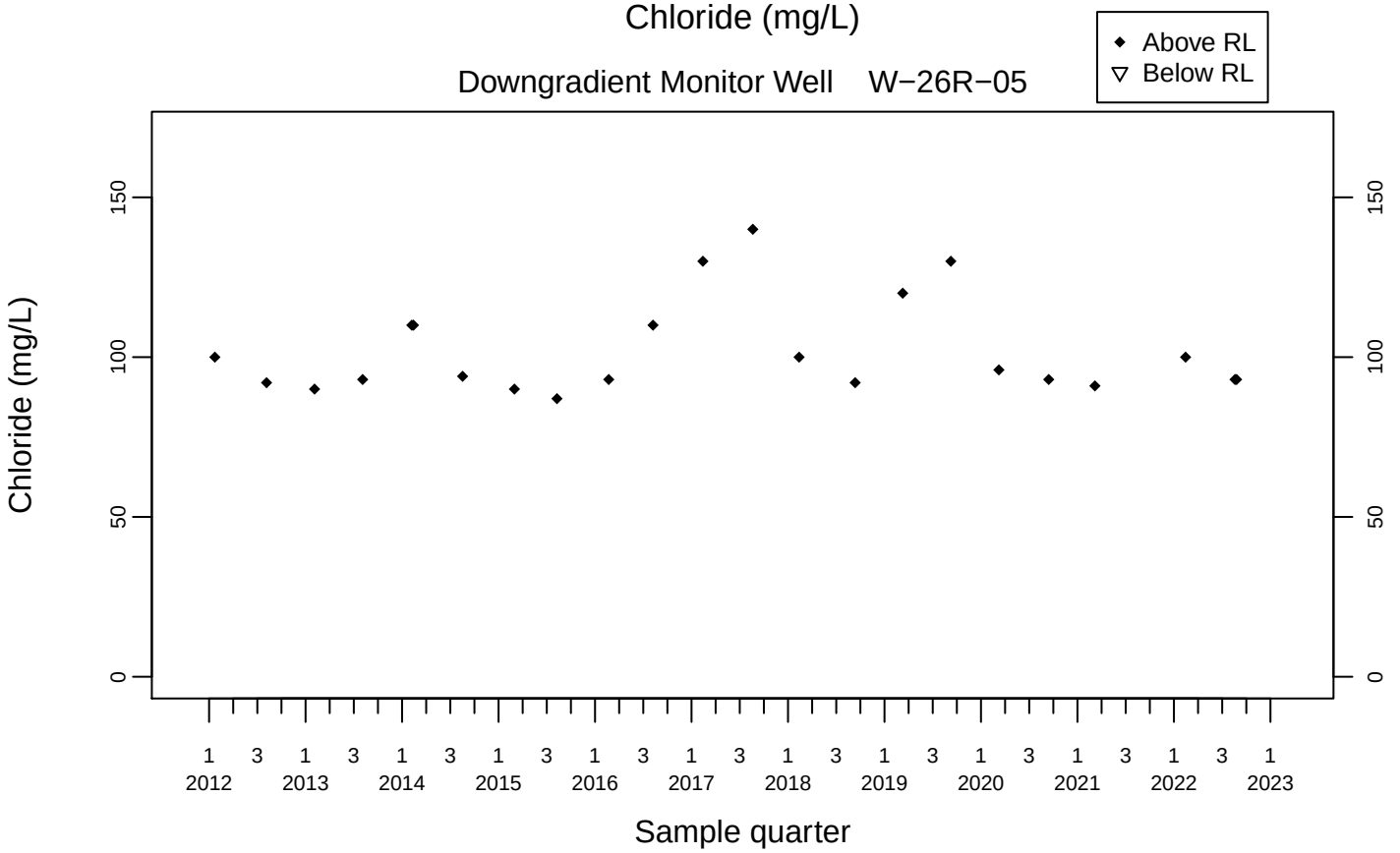


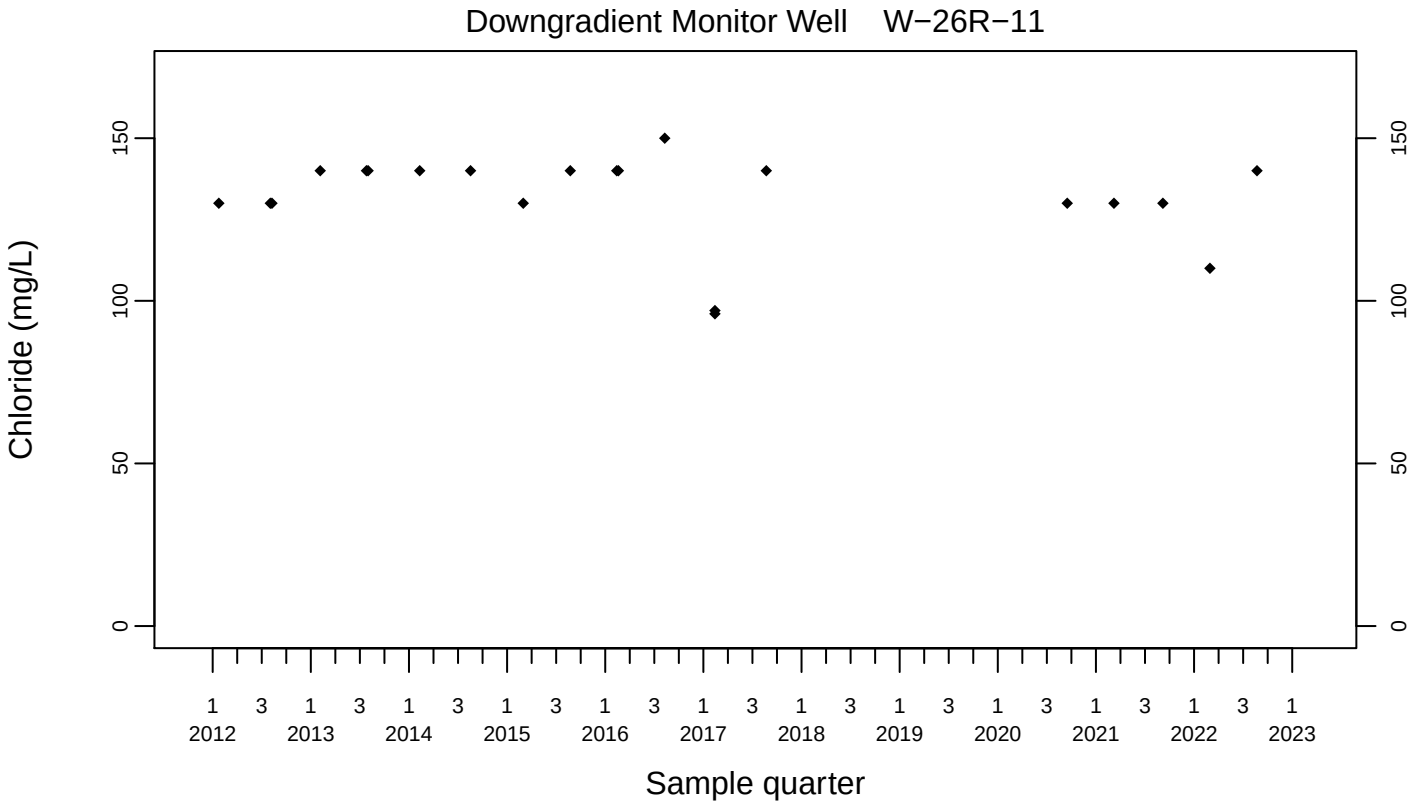


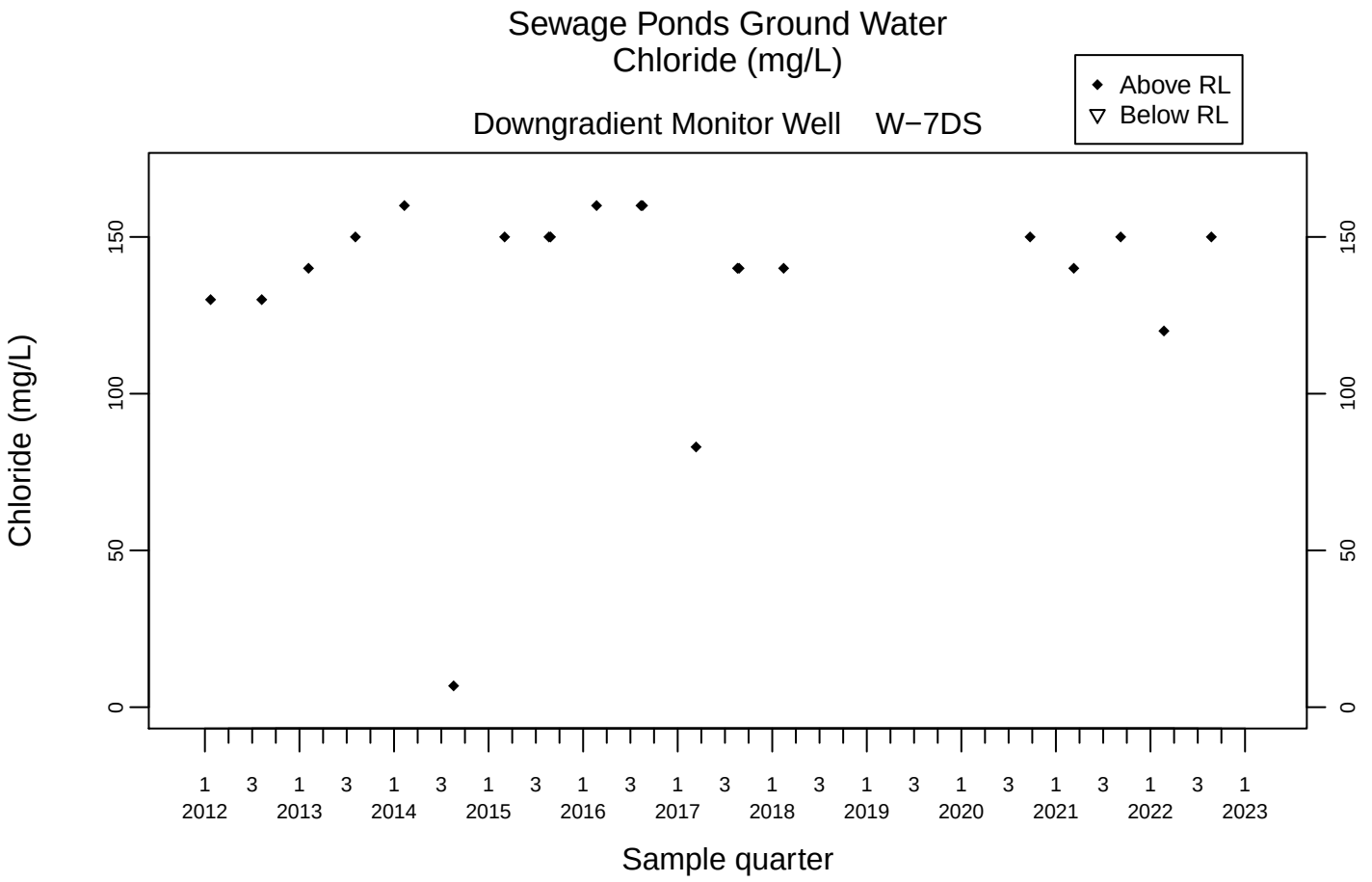

Sewage Ponds Ground Water
Chloride (mg/L)
Above RL
Below RL
Downgradient Monitor Well W−25N−22
Chloride (mg/L)
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Downgradient Monitor Well W−26R−01
Chloride (mg/L)
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

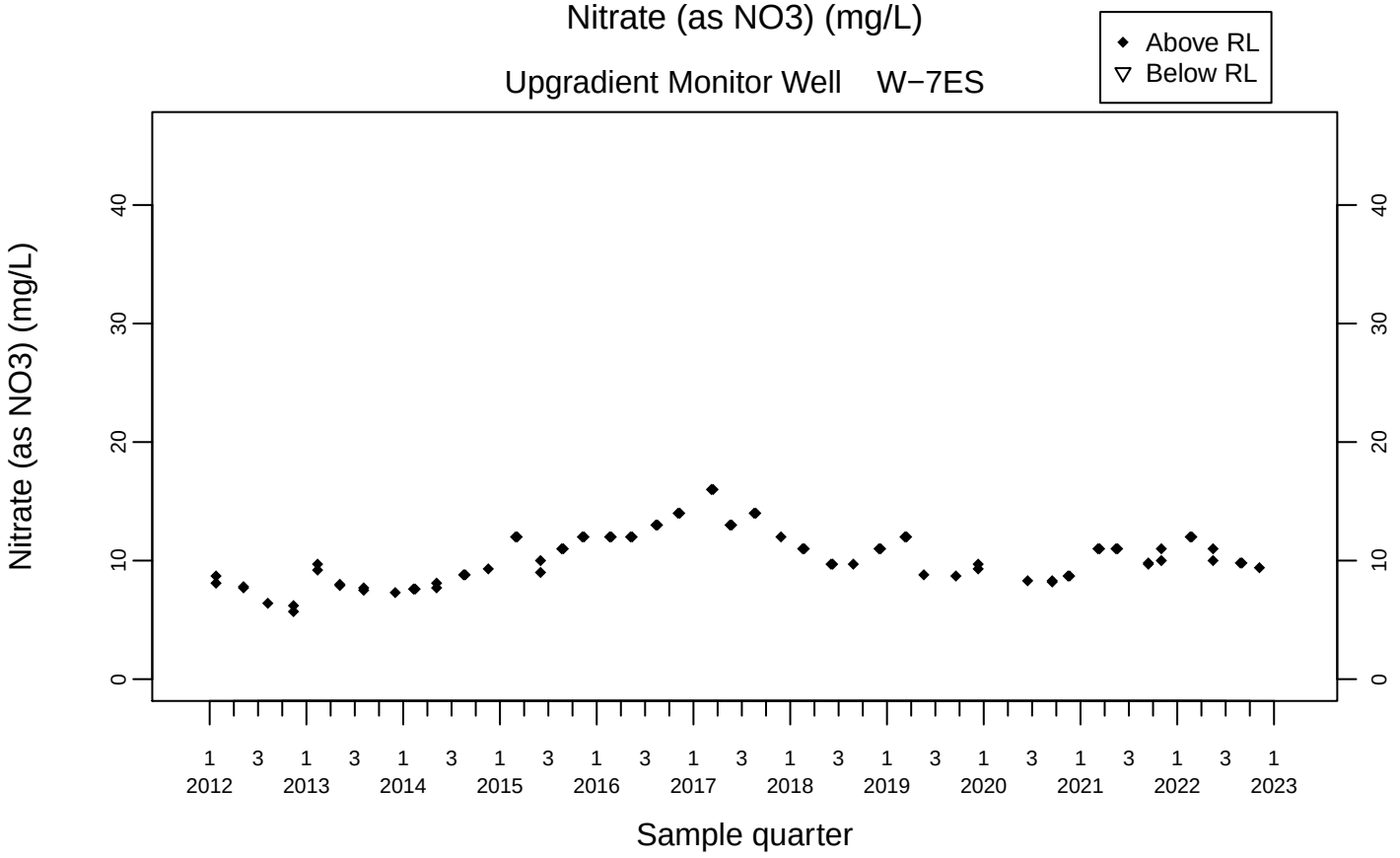
Sewage Ponds Ground Water
Chloride (mg/L)

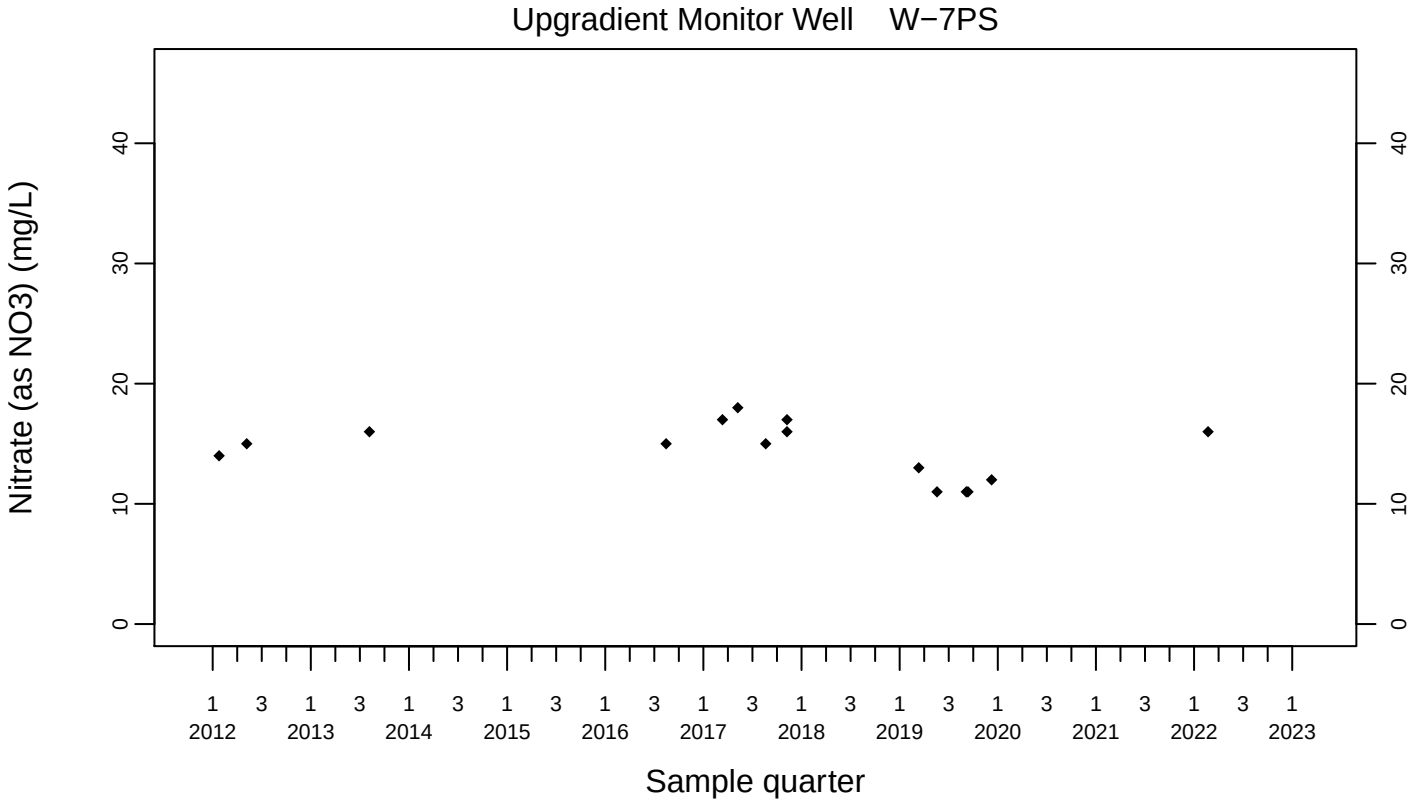




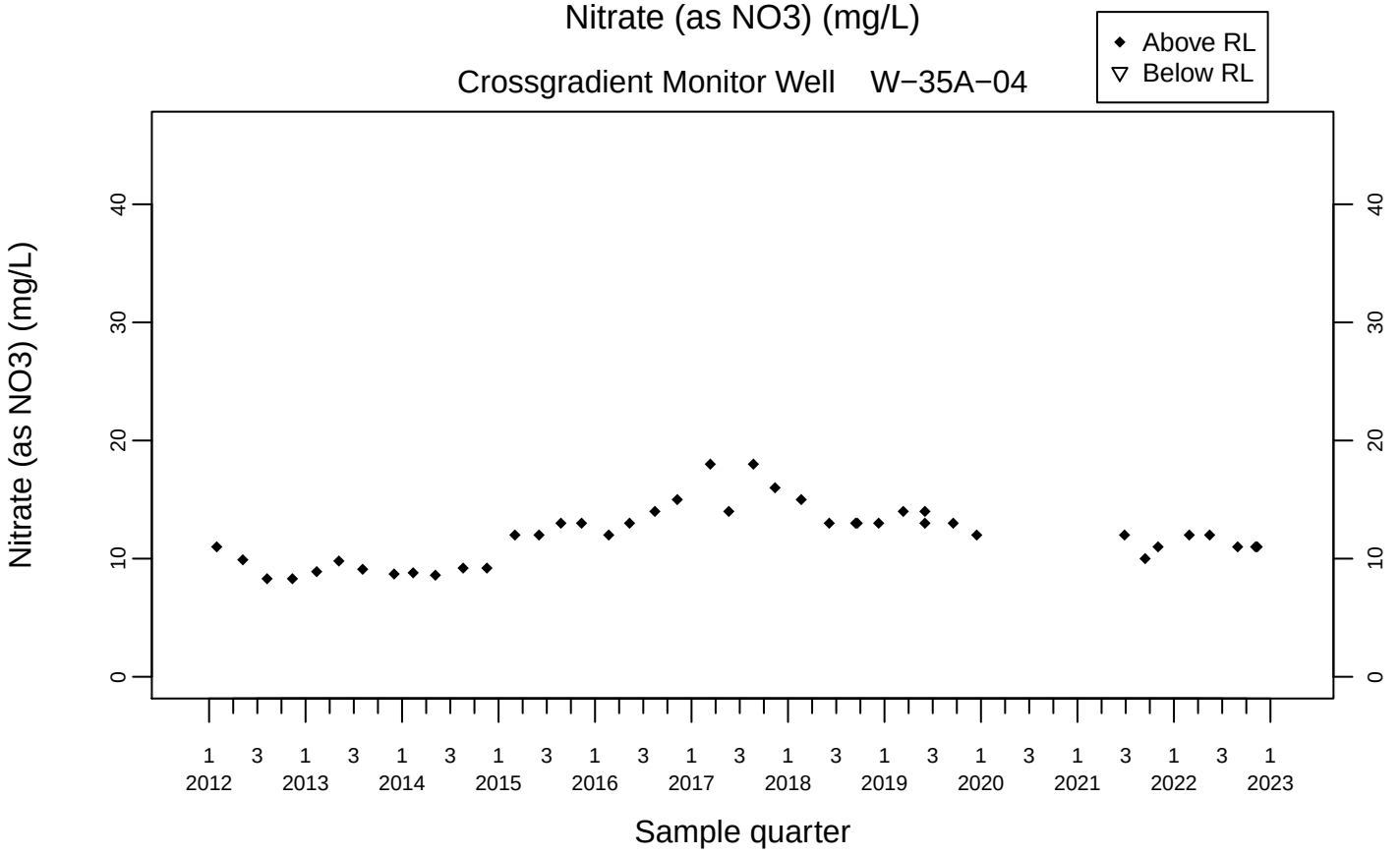

Sewage Ponds Ground Water
Chloride (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Chloride (mg/L)
0
50
100
150
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

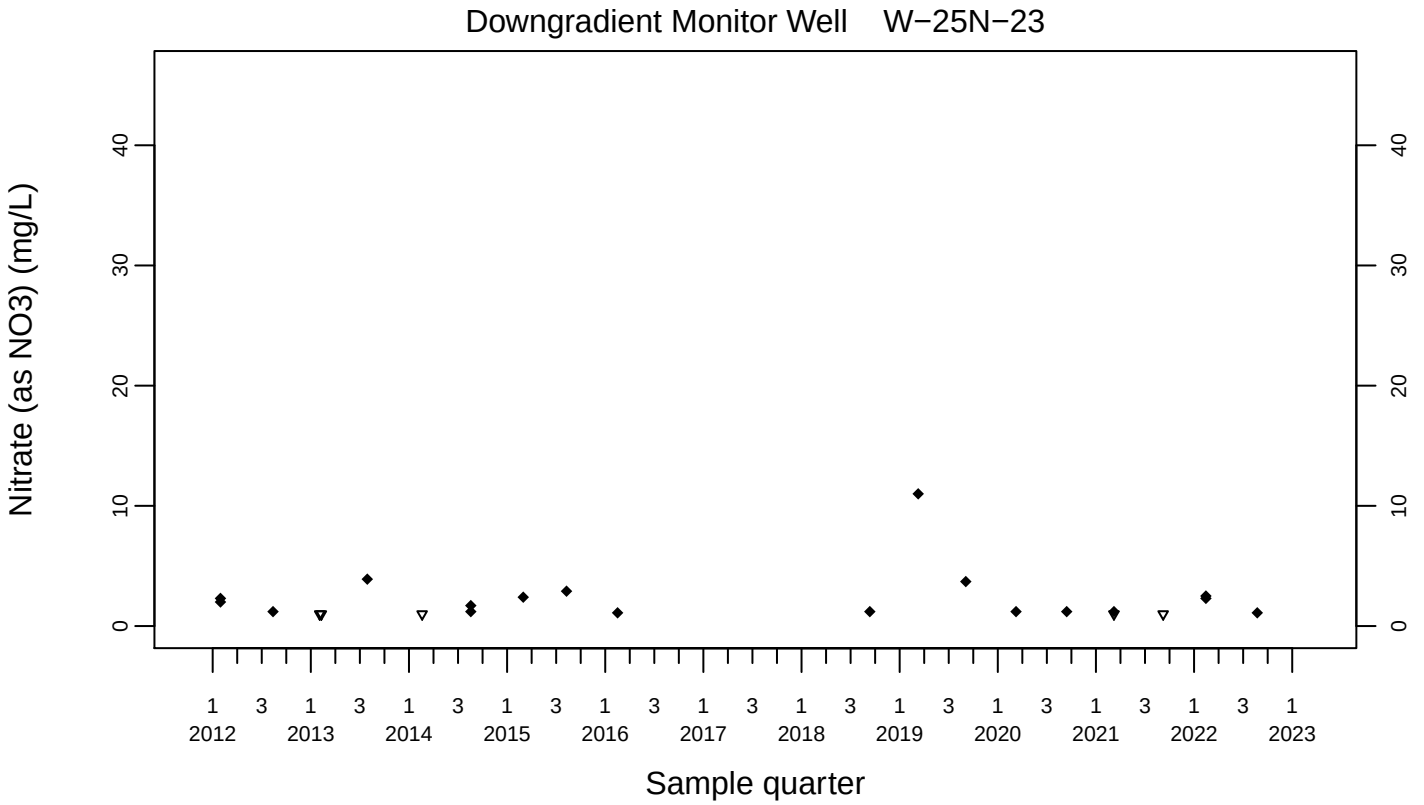
Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)



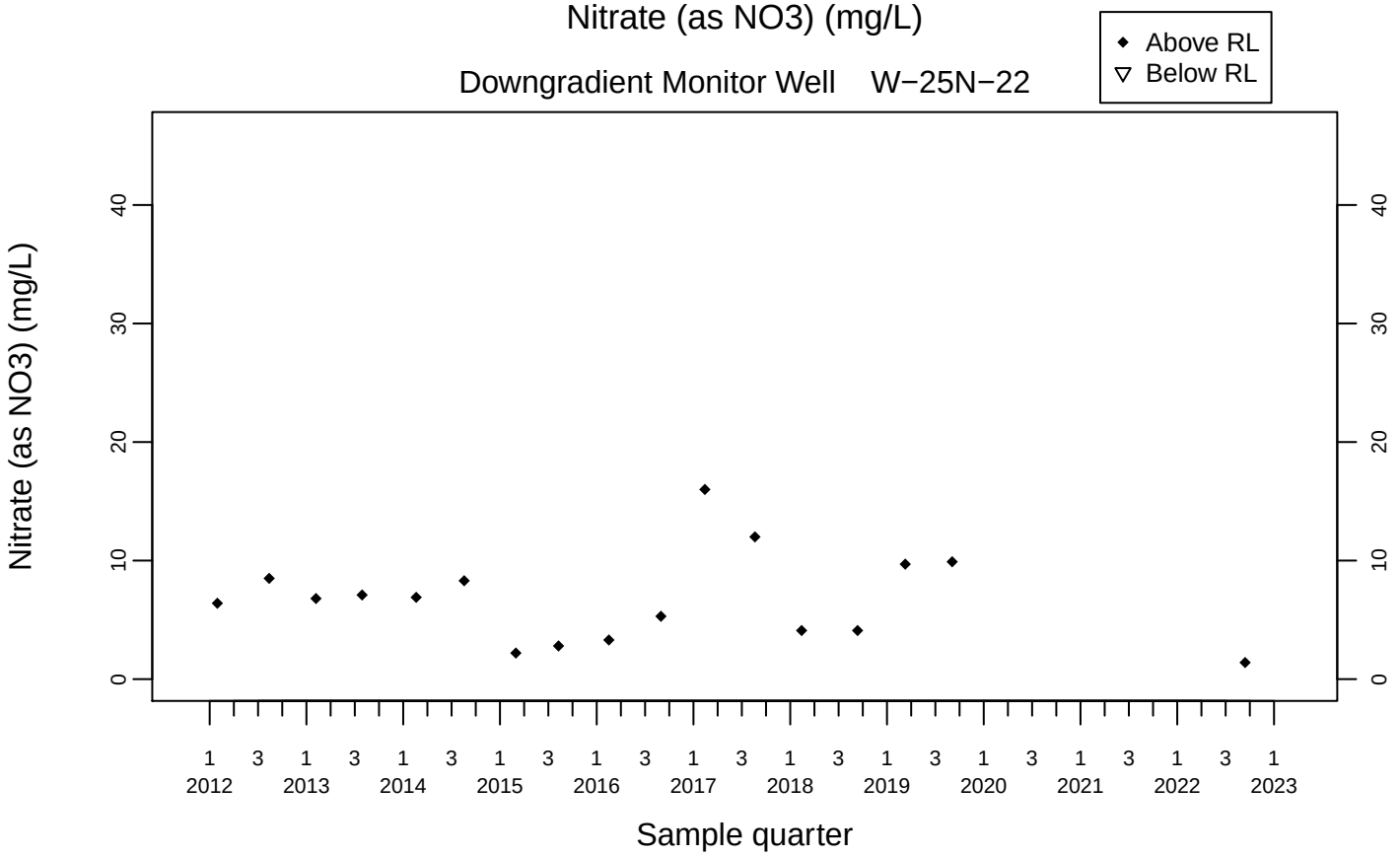


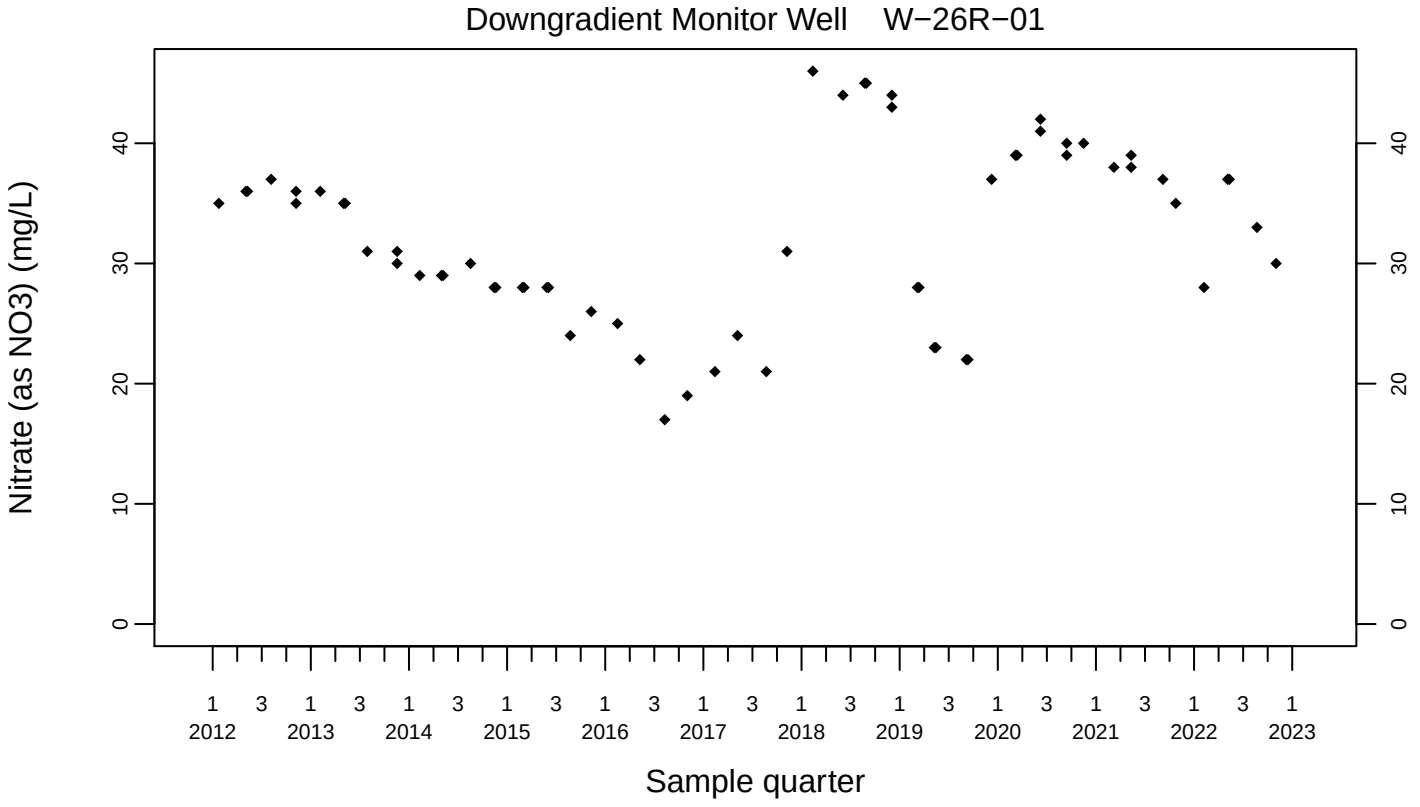
Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)





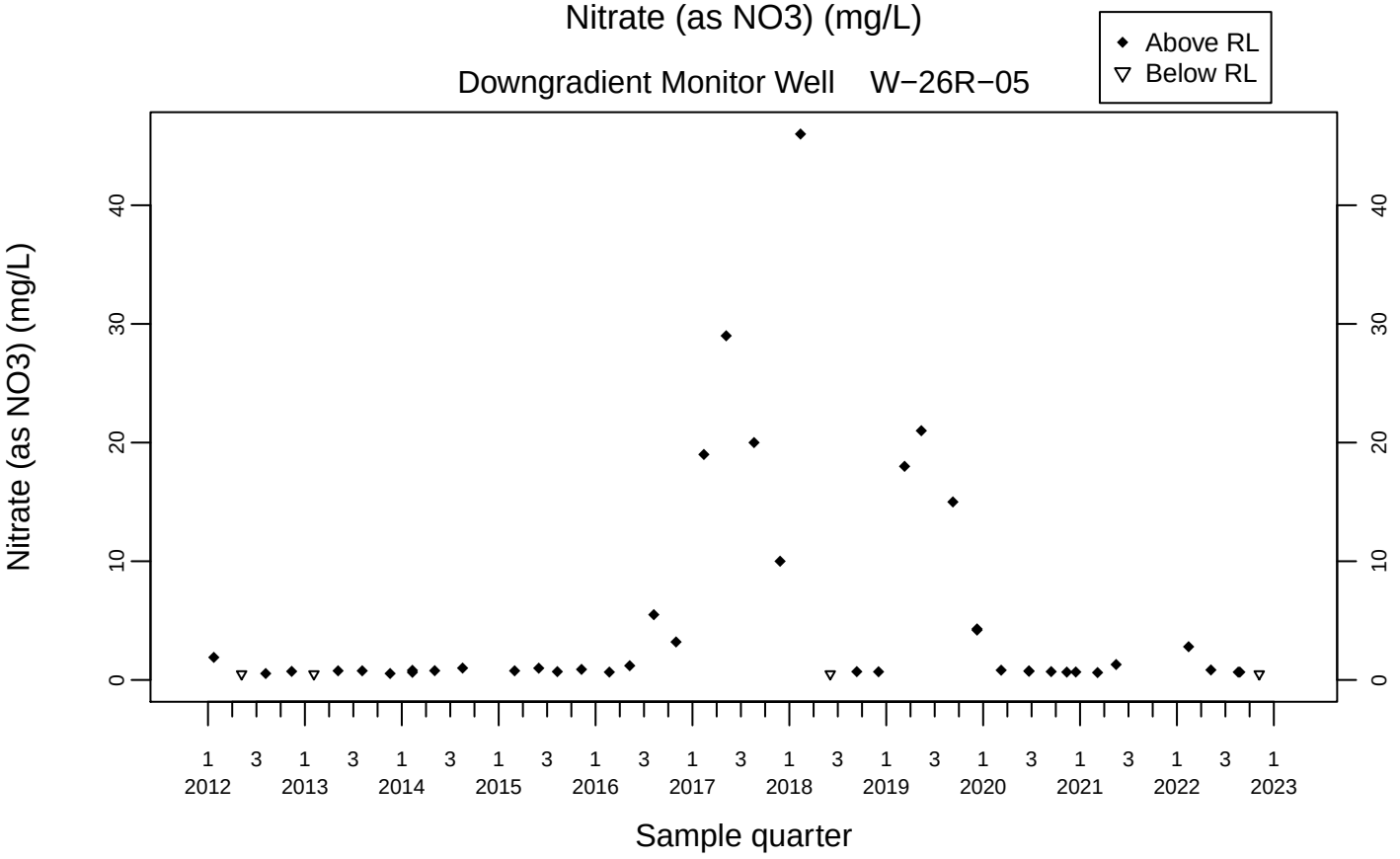
Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)



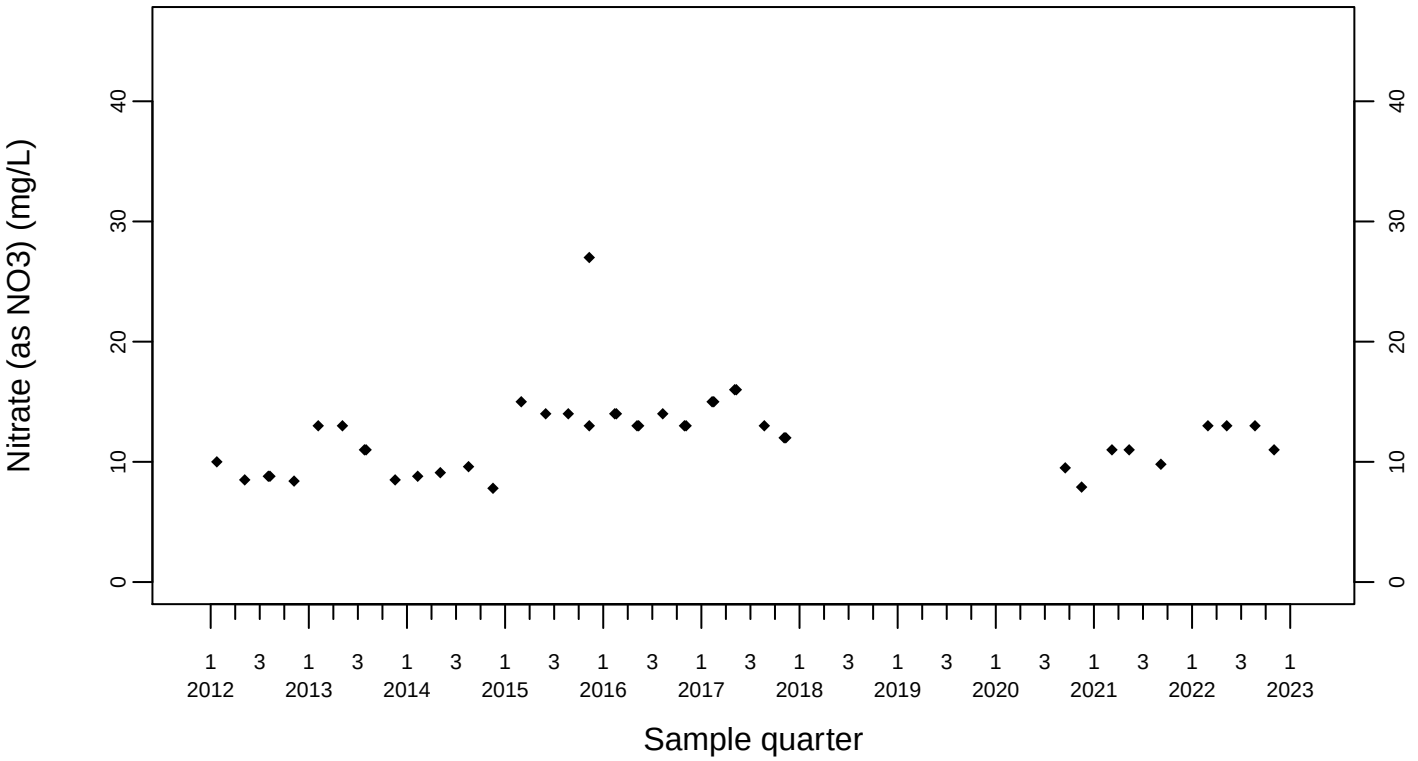


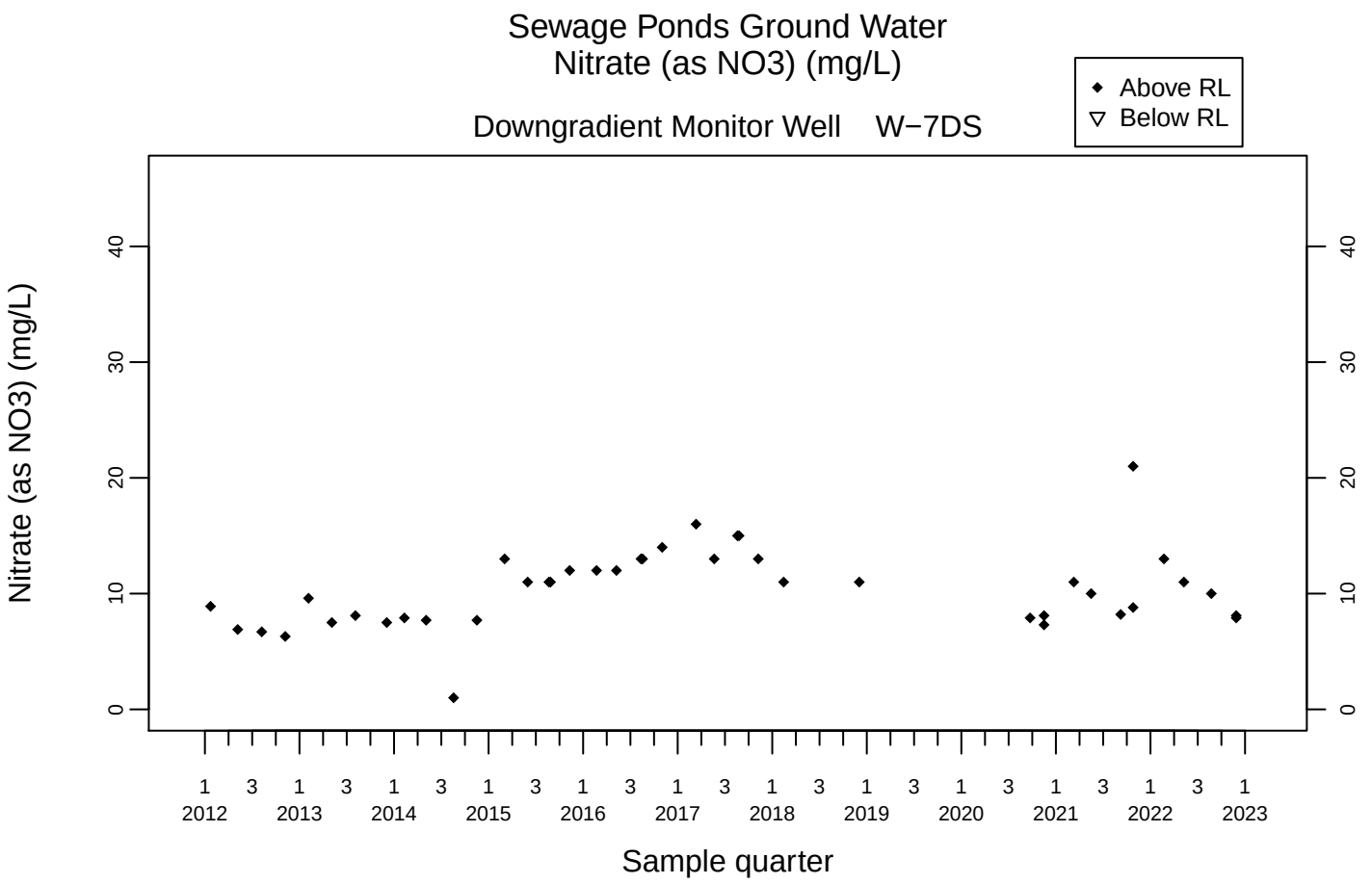
Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)

Downgradient Monitor Well W−26R−05

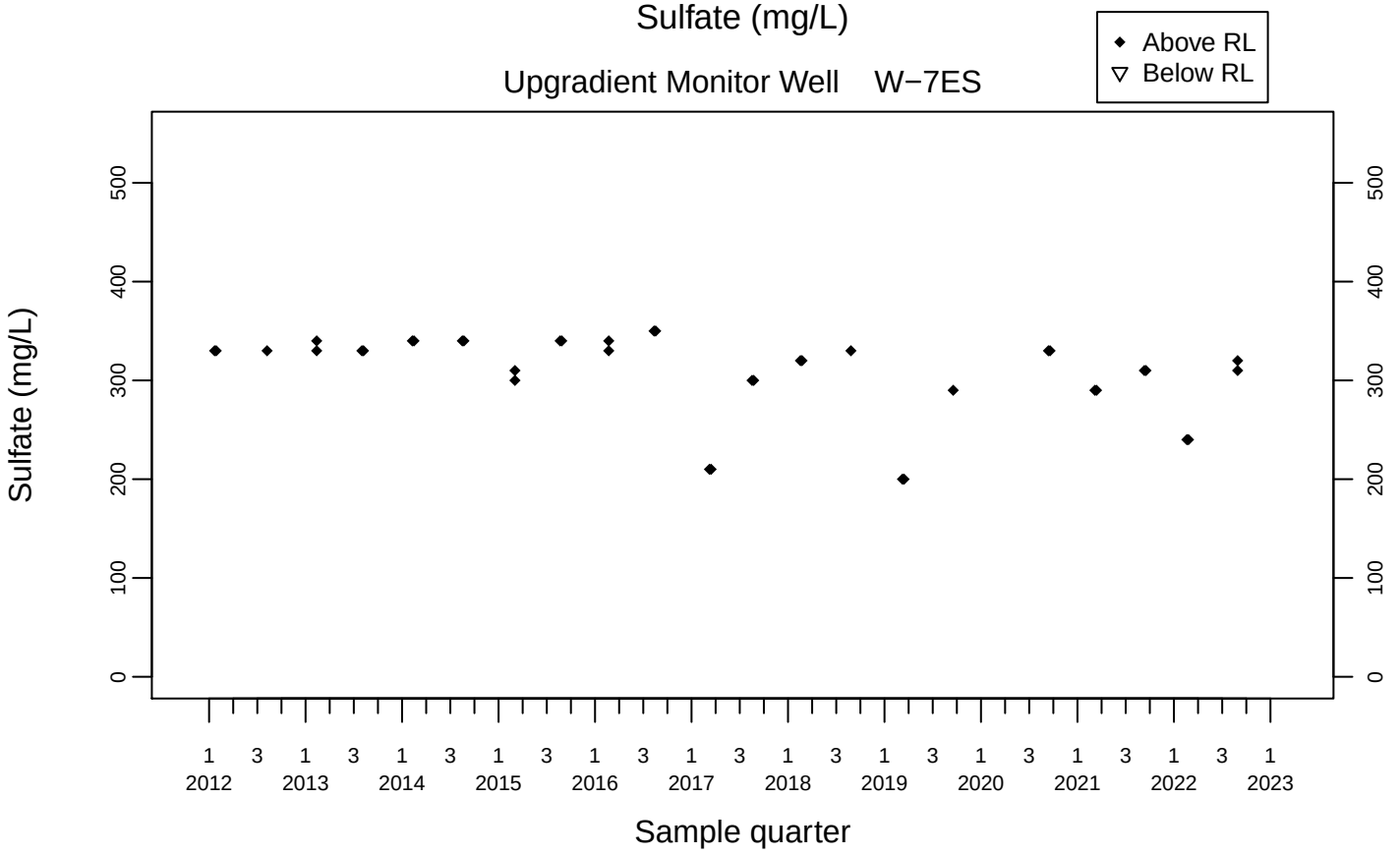


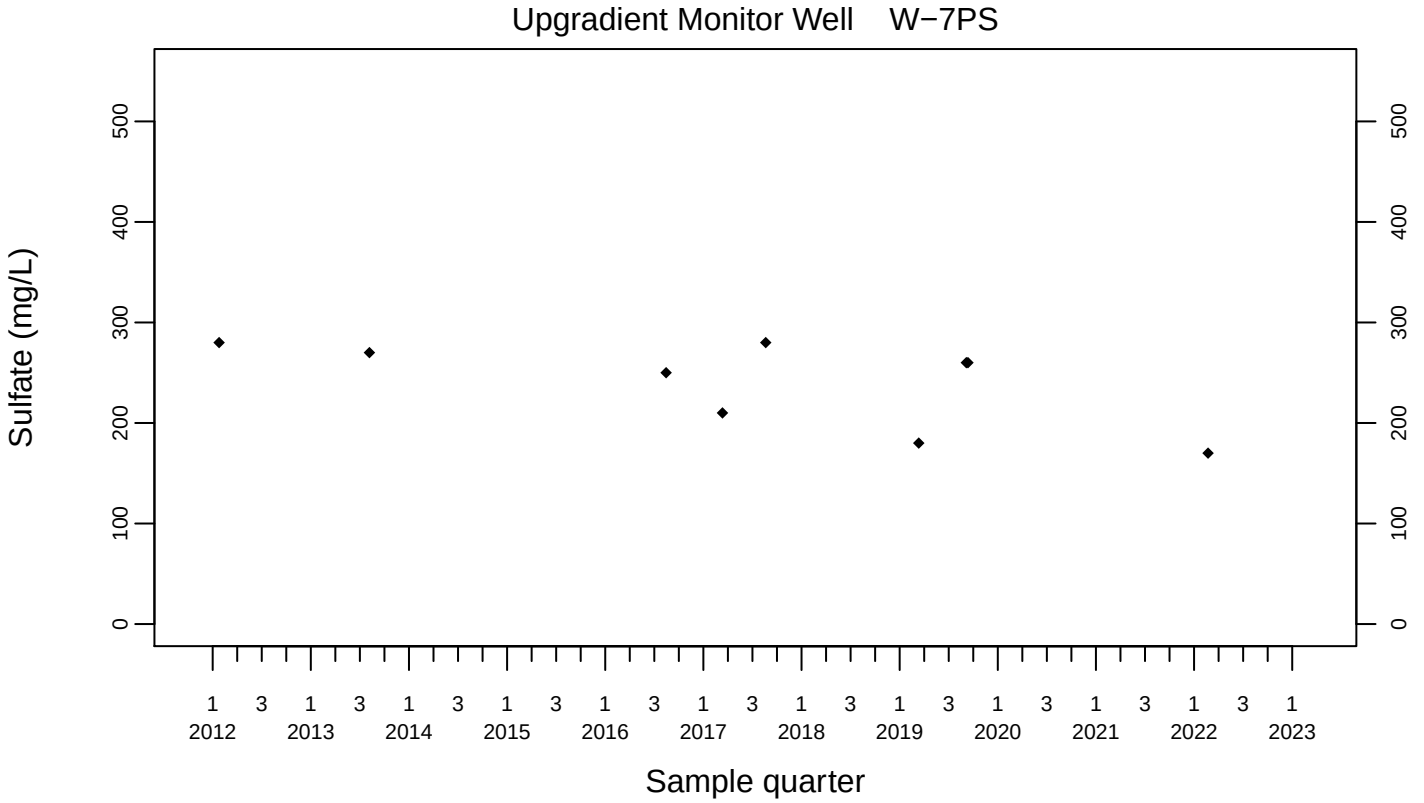
Downgradient Monitor Well W−26R−11



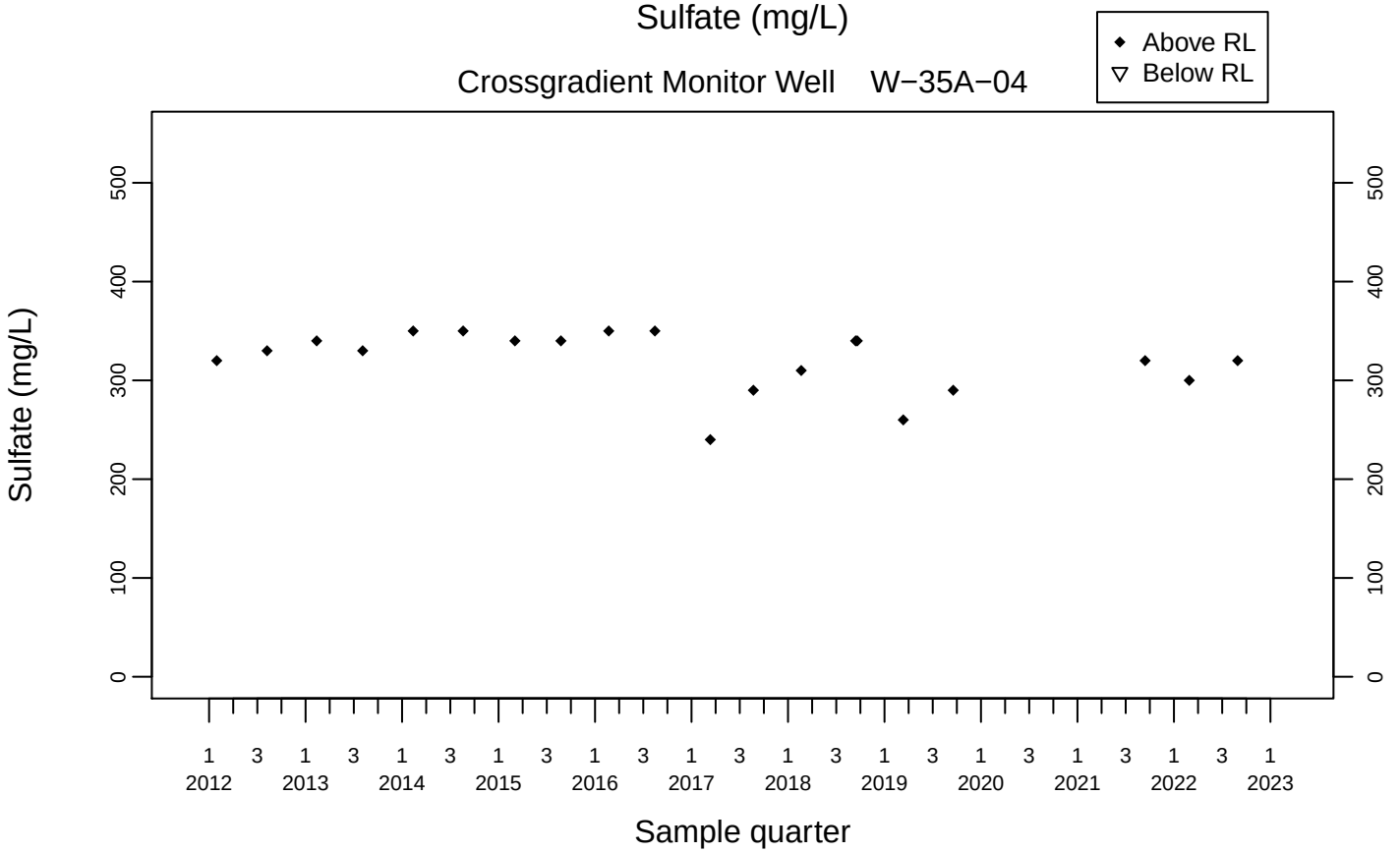

Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Nitrate (as NO3) (mg/L)
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

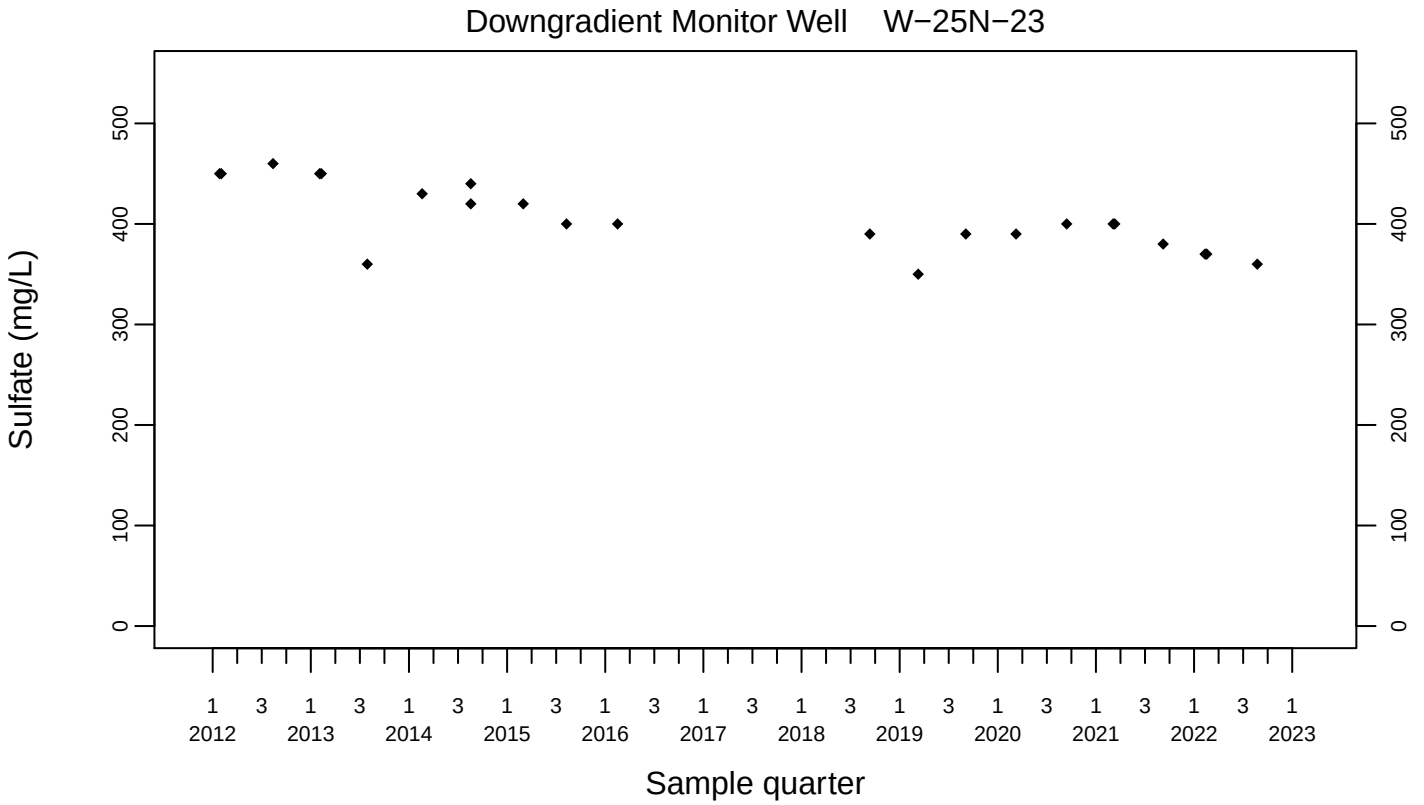
Sewage Ponds Ground Water
Sulfate (mg/L)



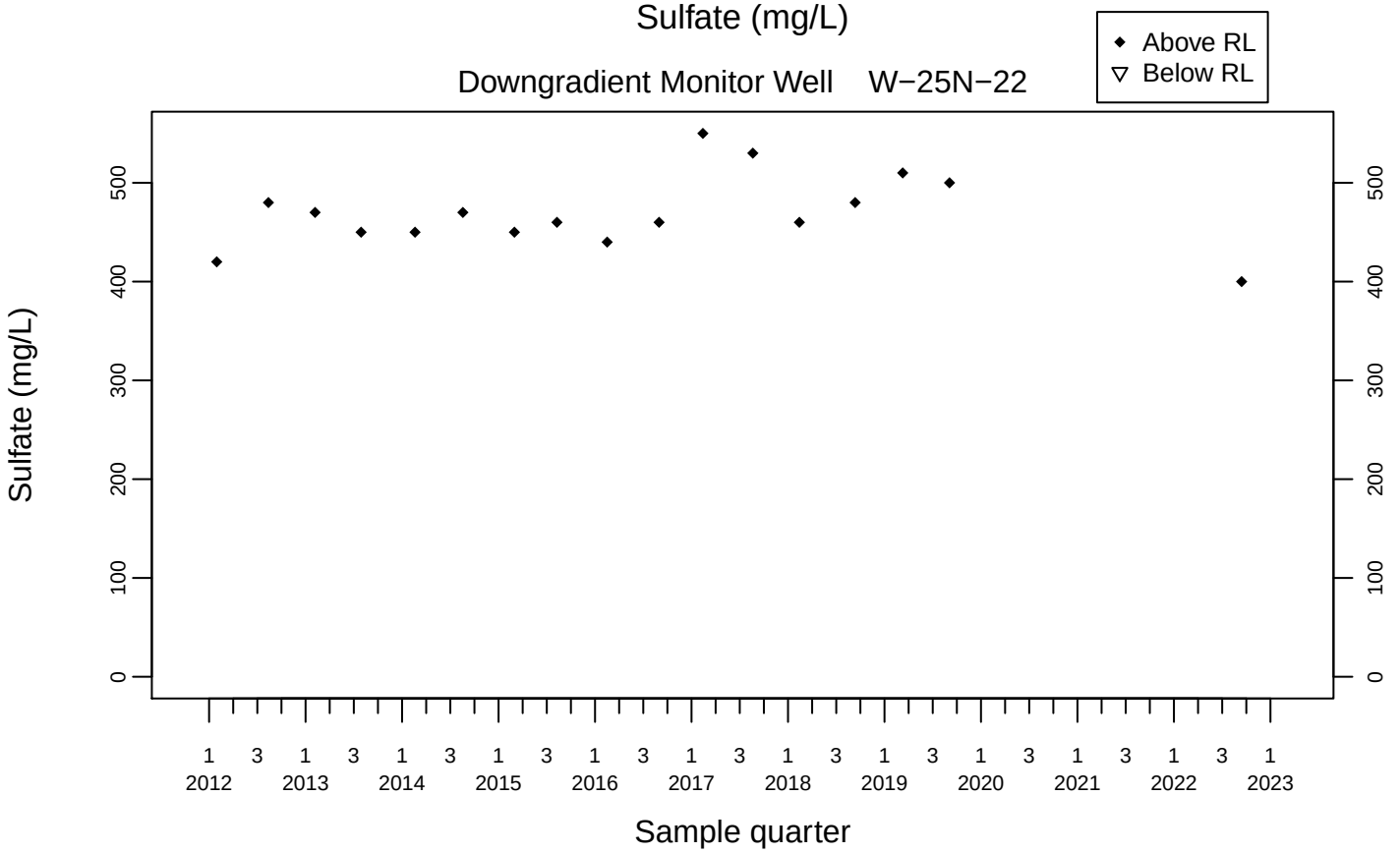


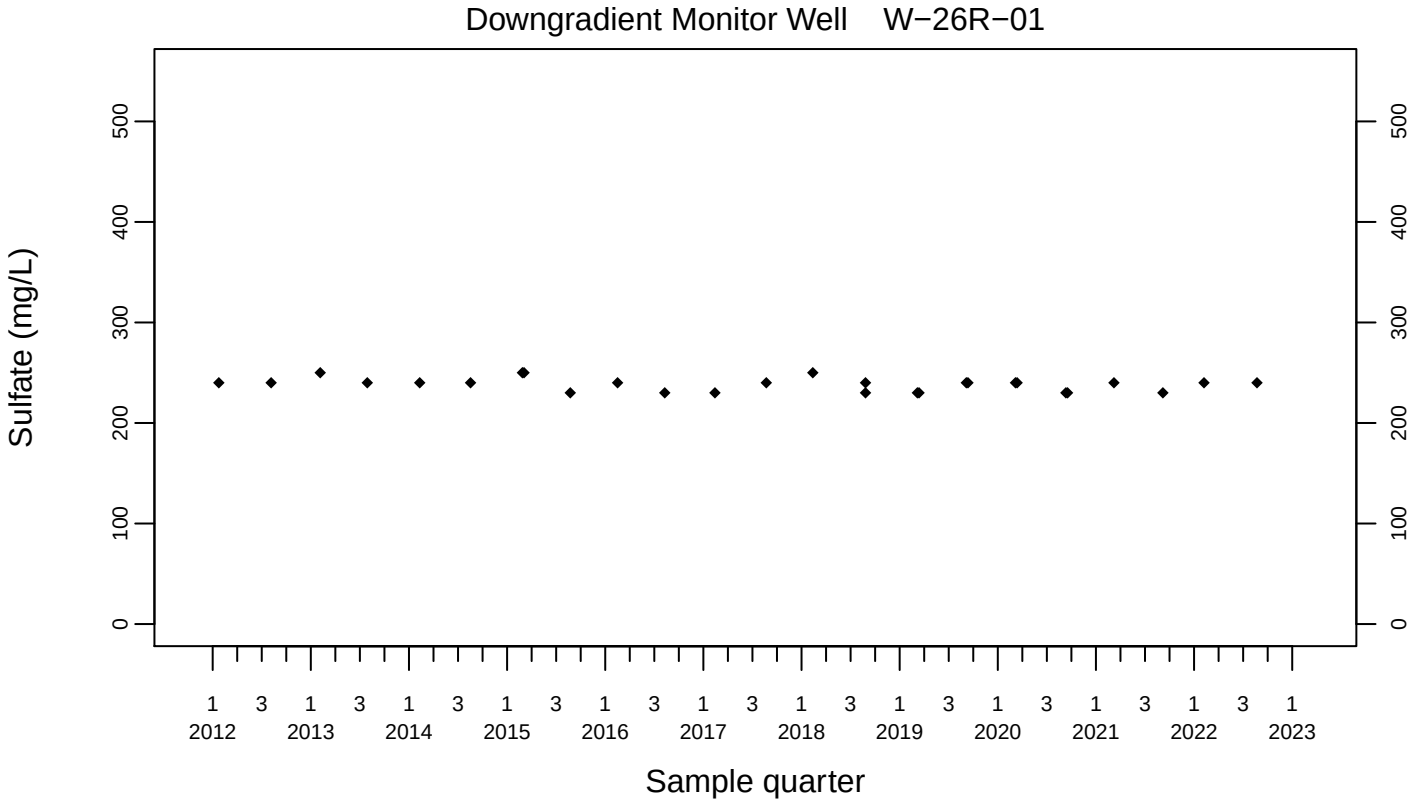
Sewage Ponds Ground Water
Sulfate (mg/L)



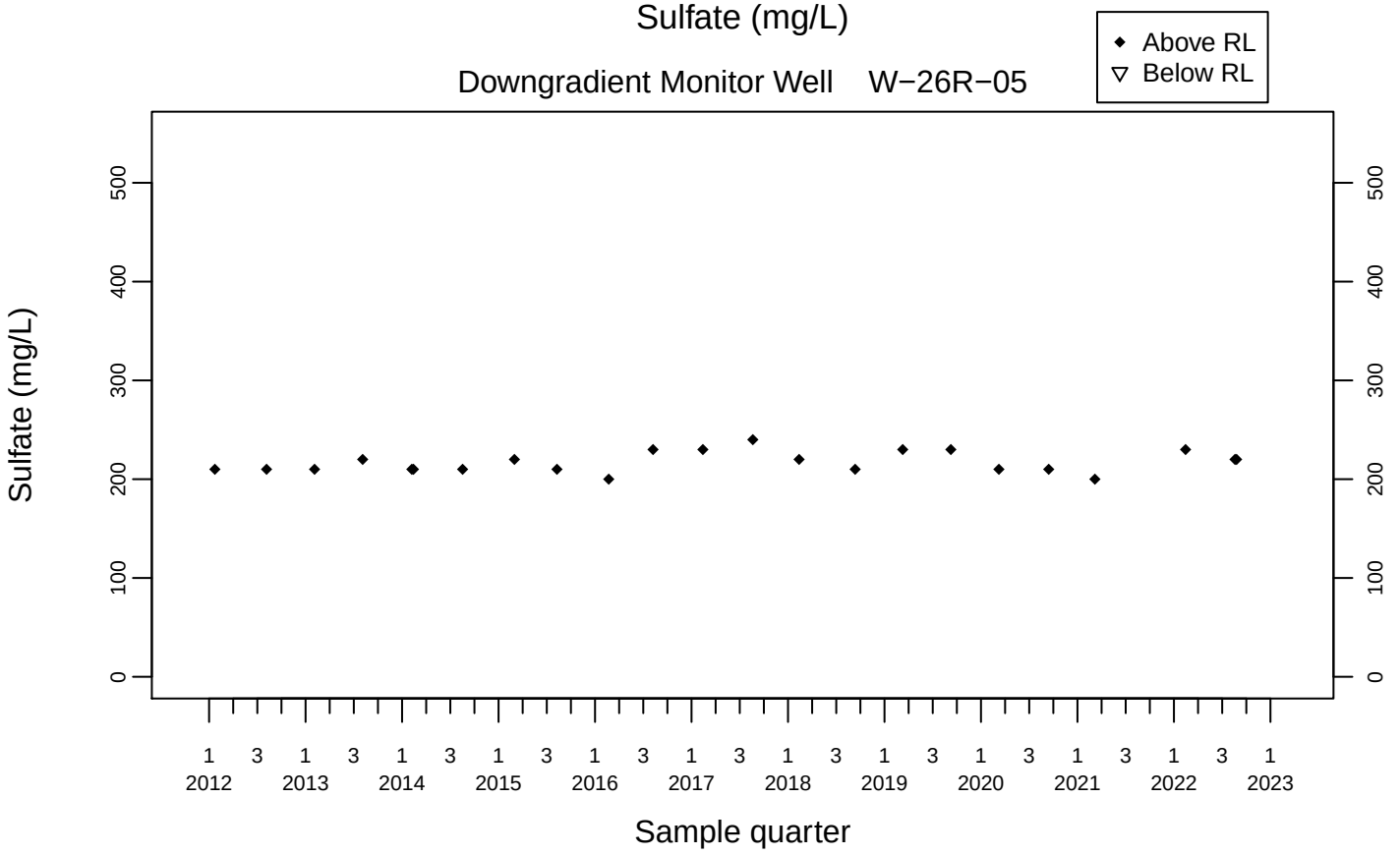


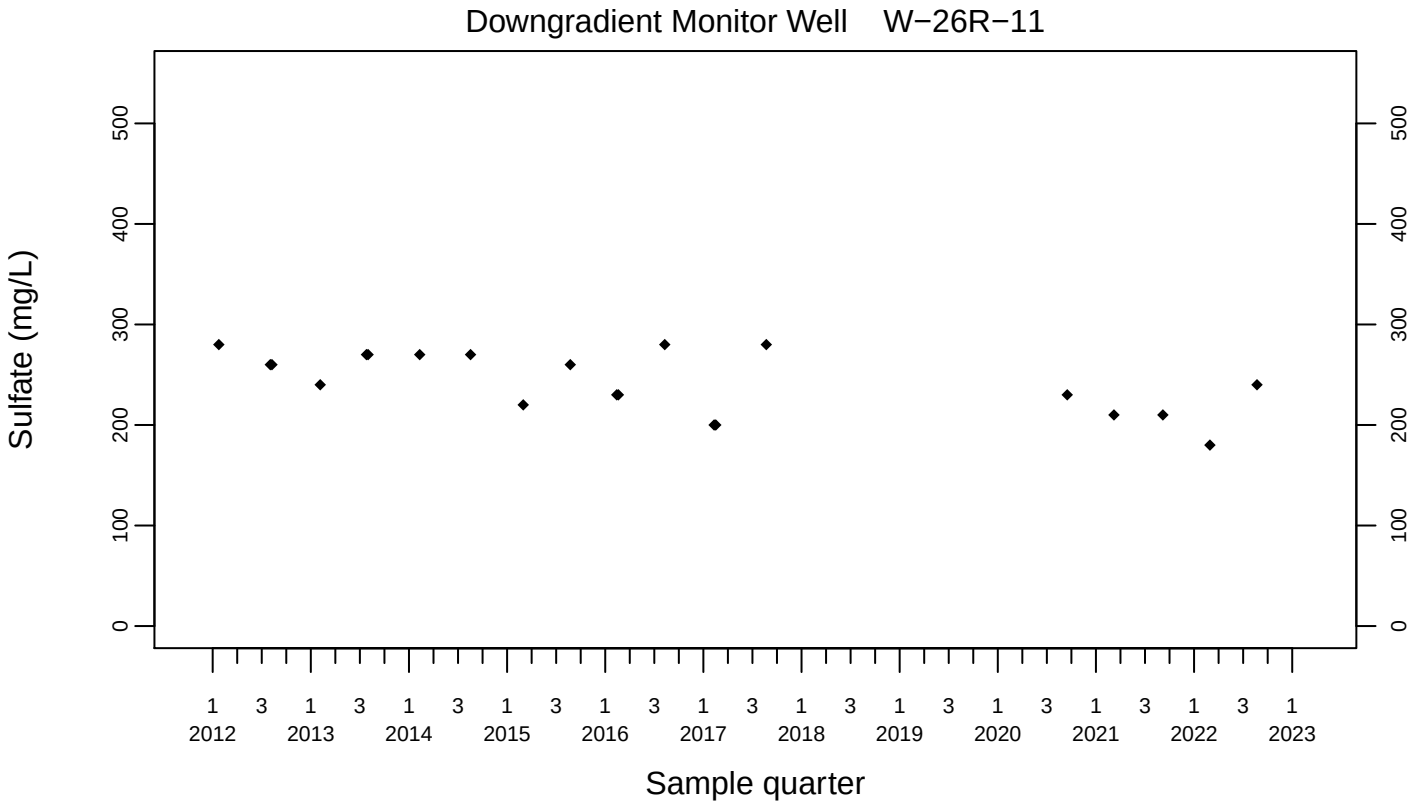
Sewage Ponds Ground Water
Sulfate (mg/L)

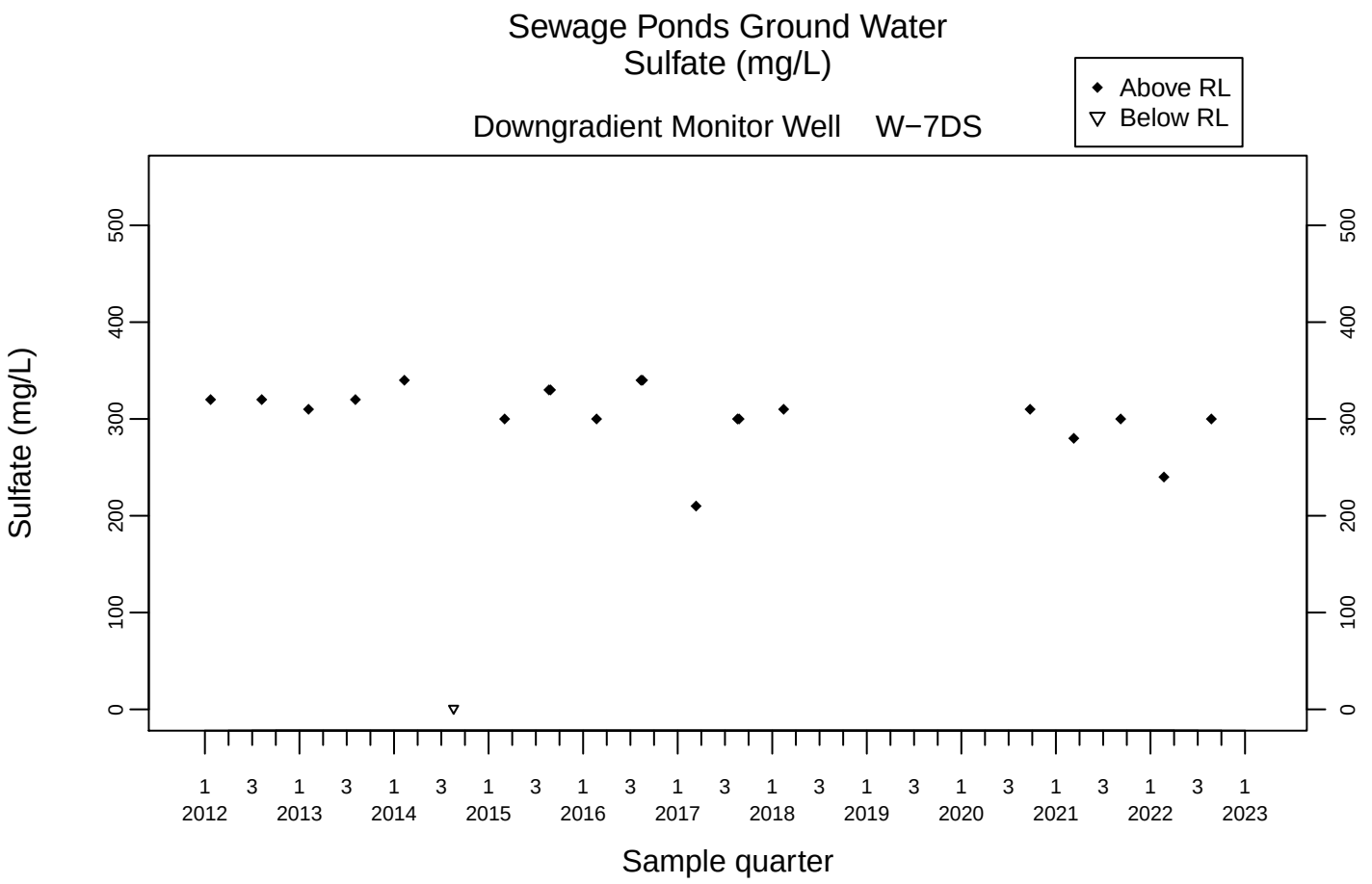


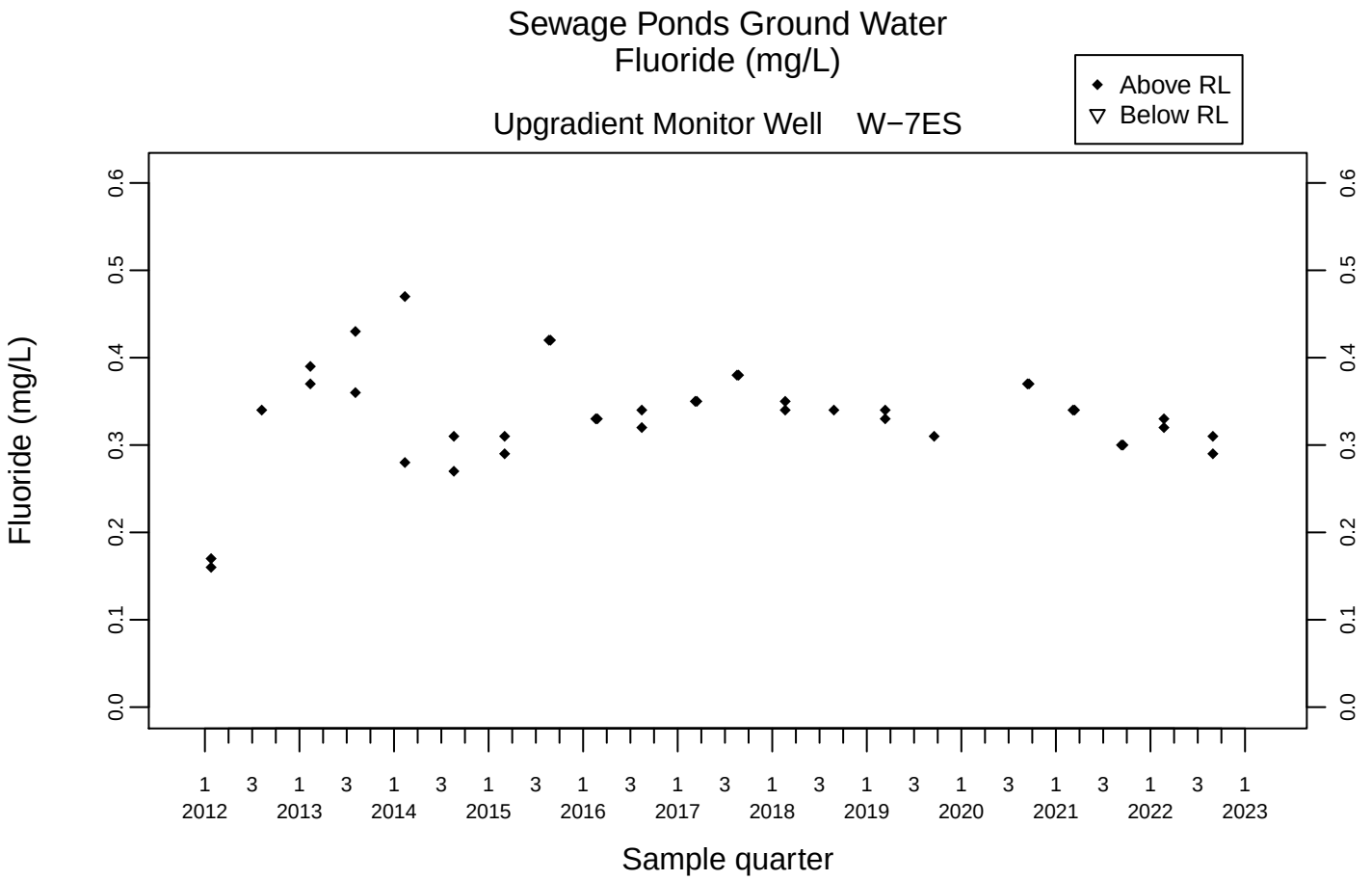


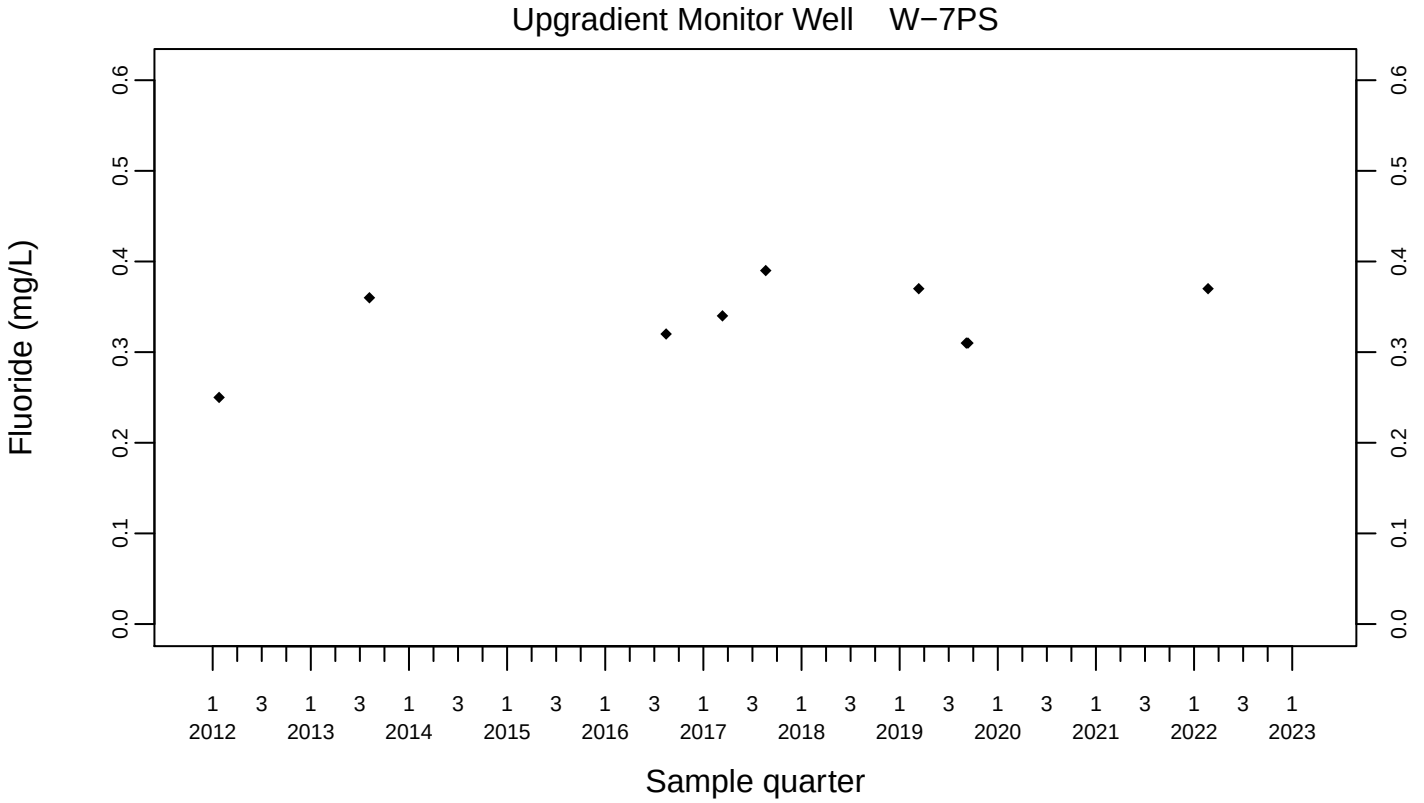
Sewage Ponds Ground Water
Sulfate (mg/L)



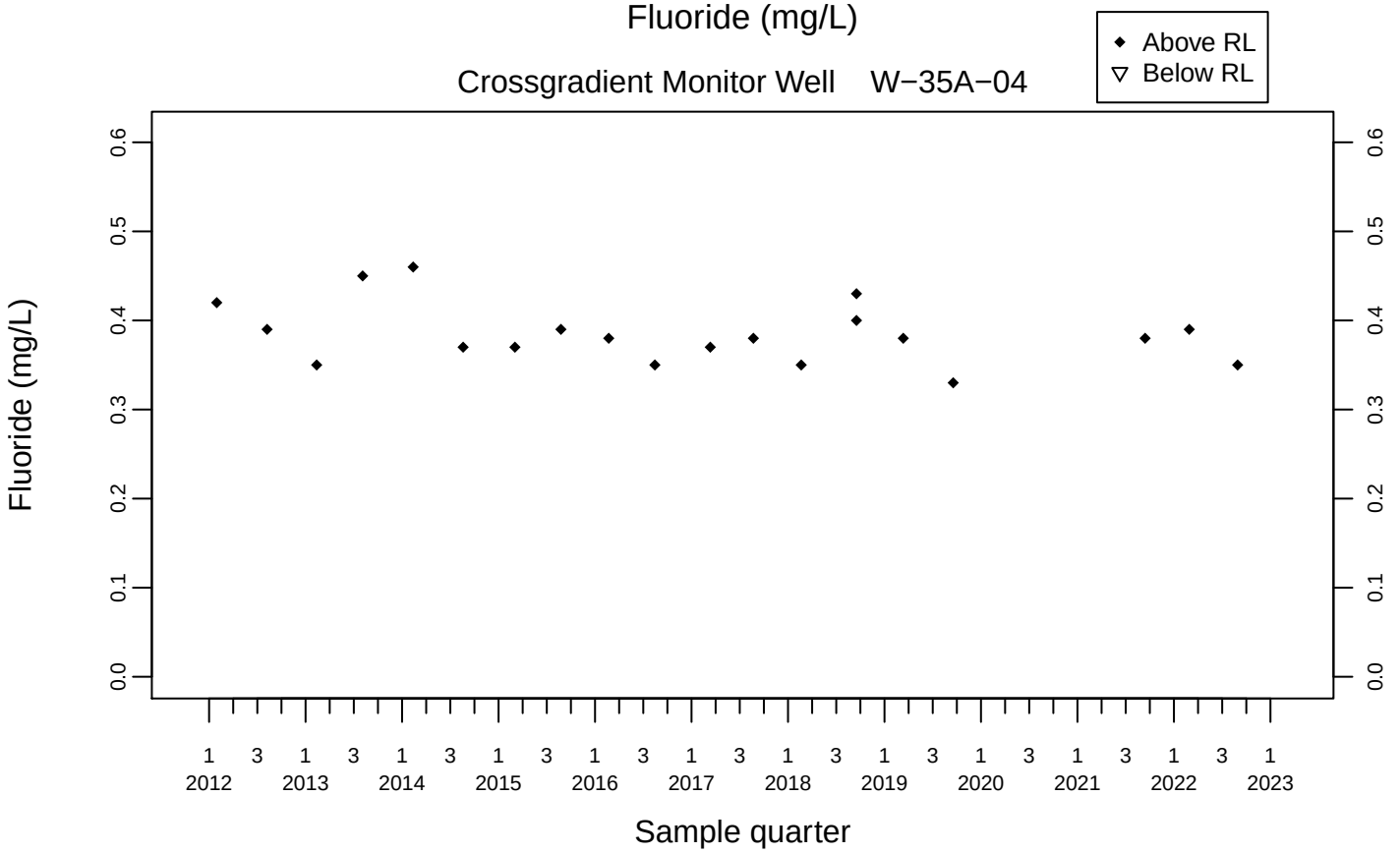


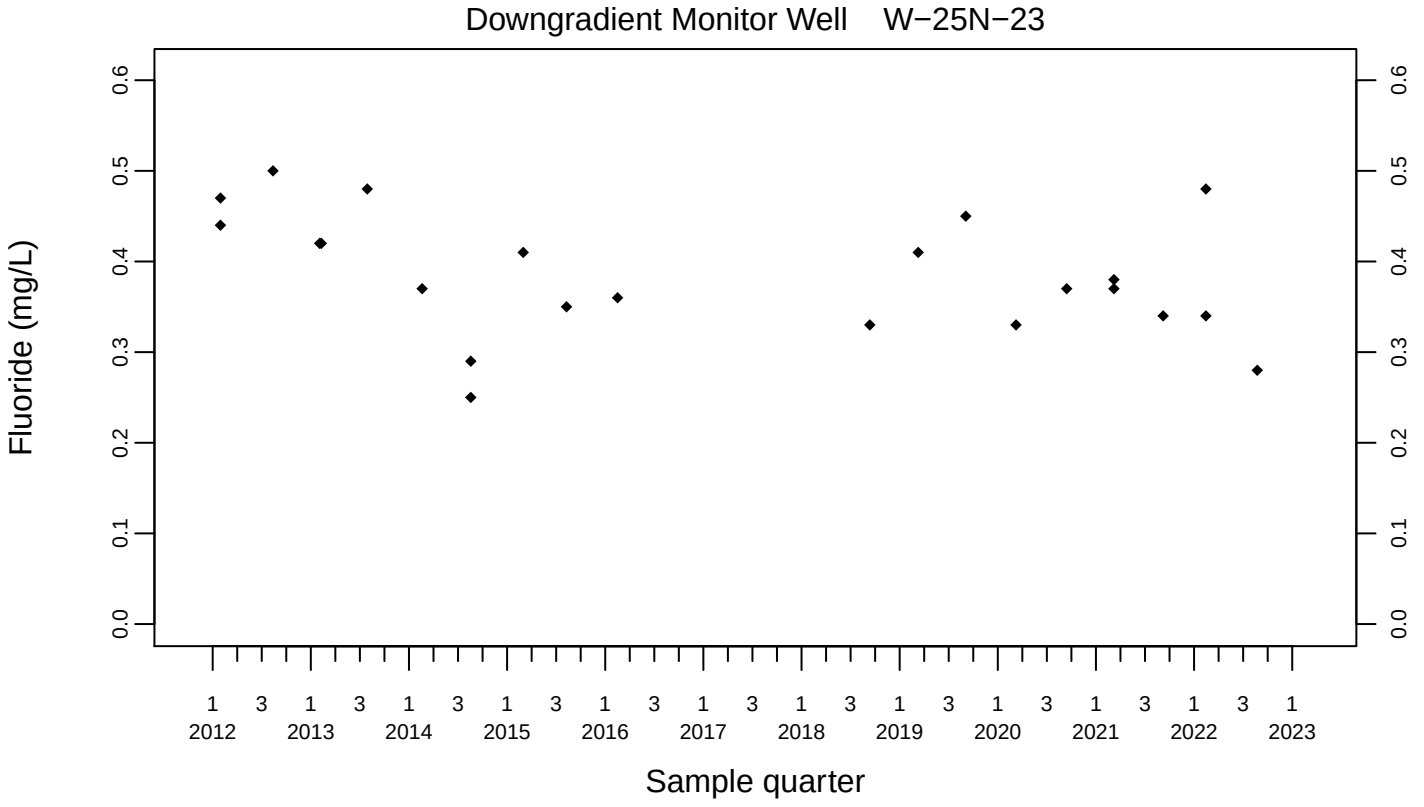

Sewage Ponds Ground Water
Sulfate (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Sulfate (mg/L)
0
100
200
300
400
500
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter


Sewage Ponds Ground Water
Fluoride (mg/L)
Above RL
Below RL
Upgradient Monitor Well W−7ES
Fluoride (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

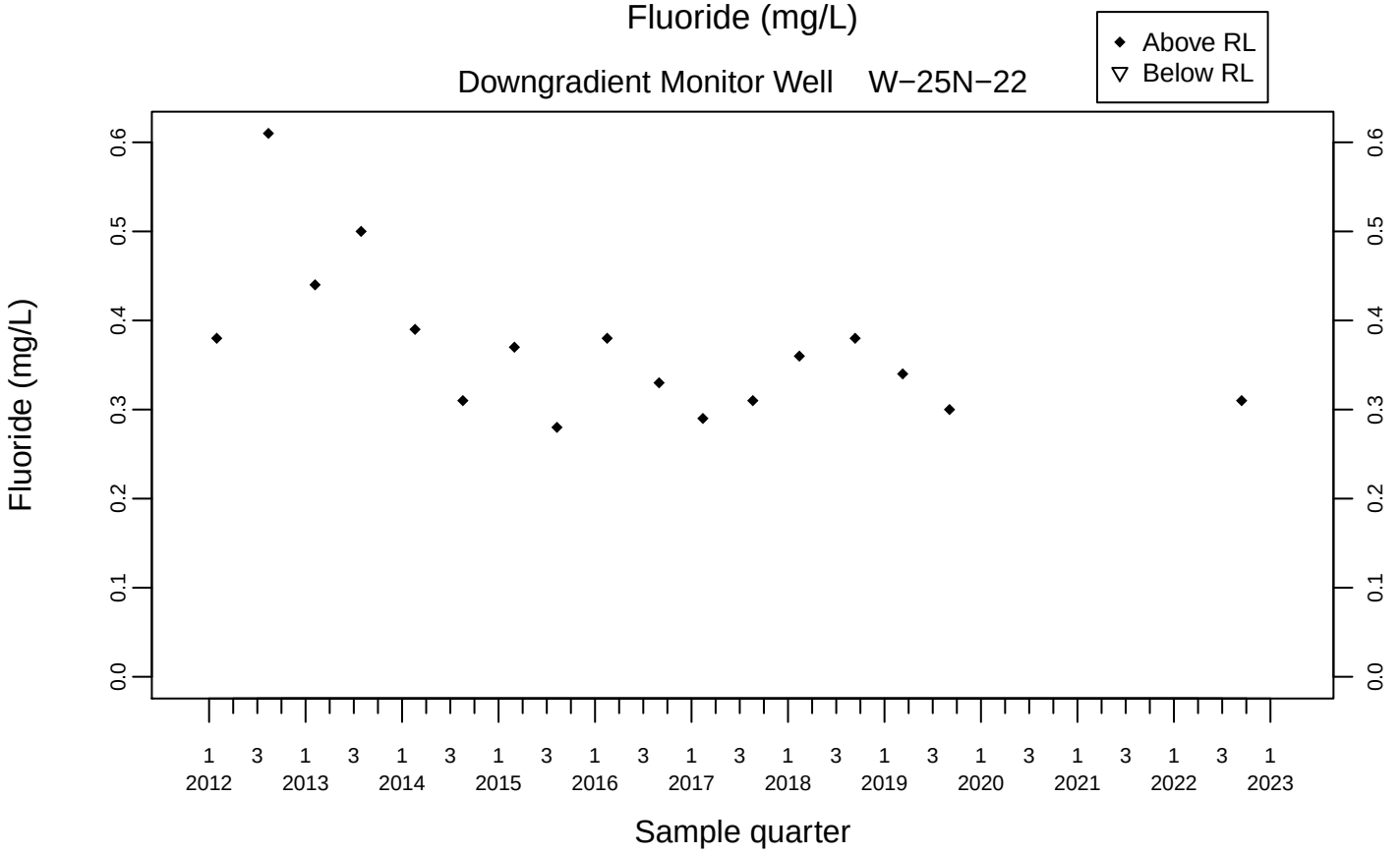

Upgradient Monitor Well W−7PS
Fluoride (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

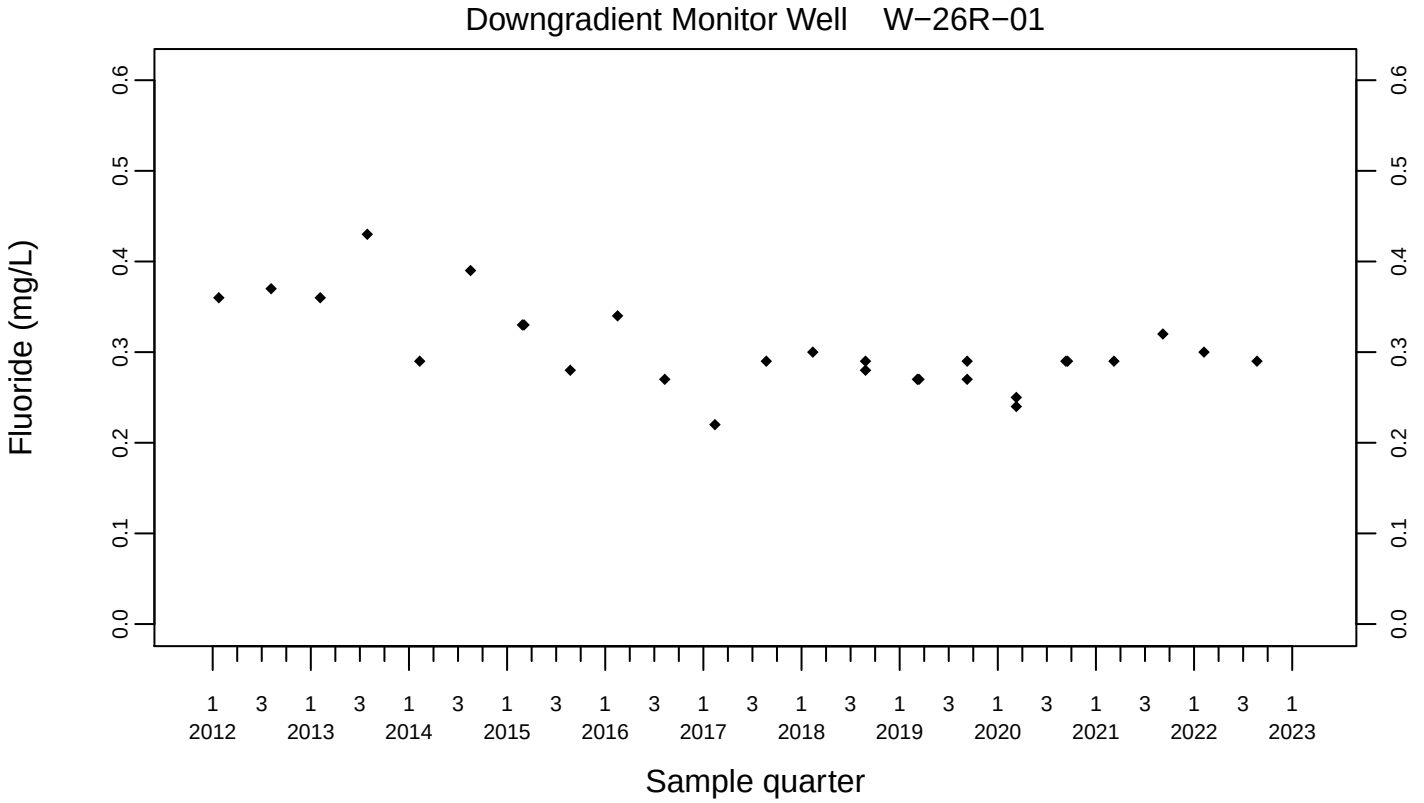
Sewage Ponds Ground Water Fluoride (mg/L)

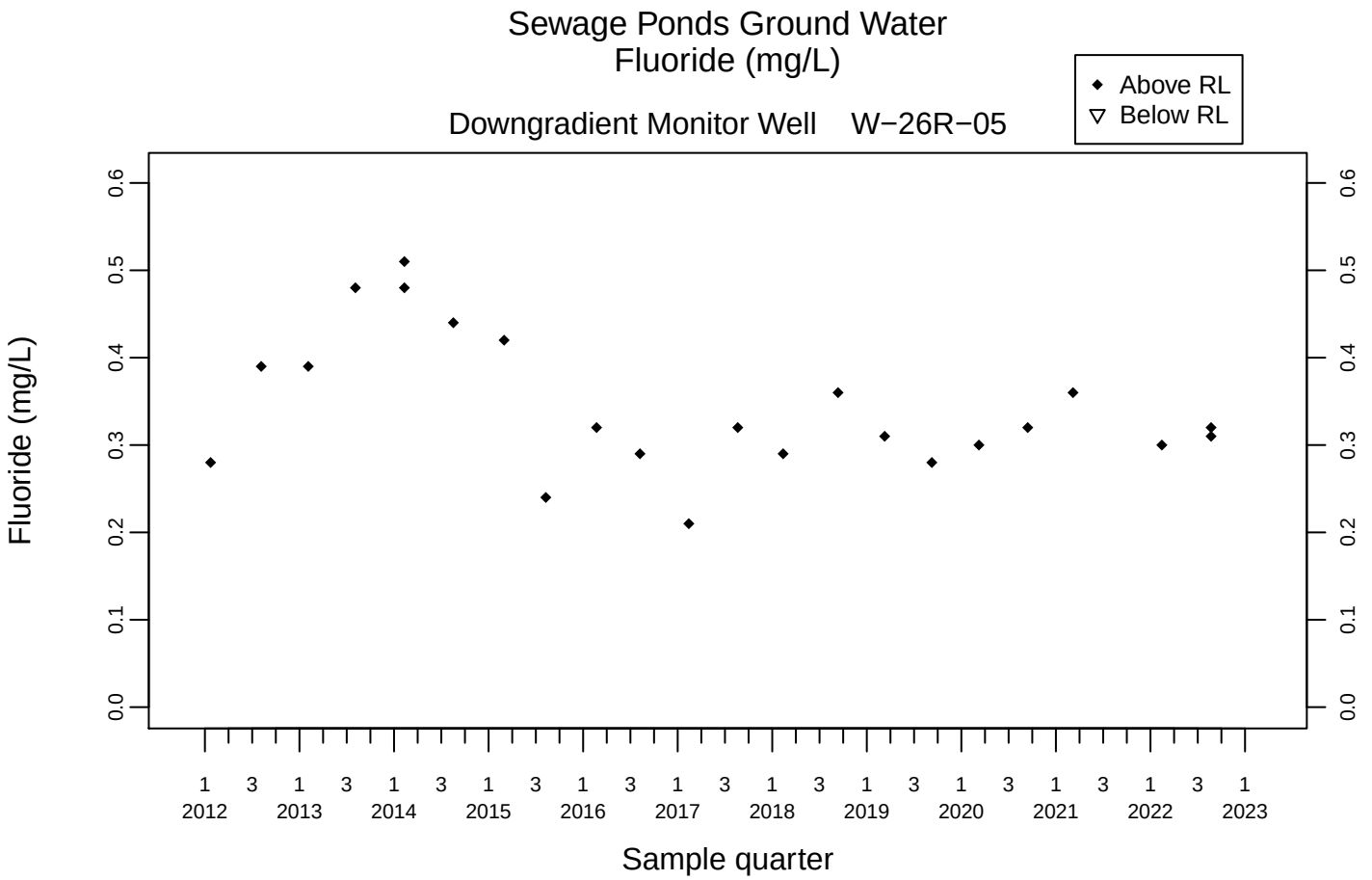


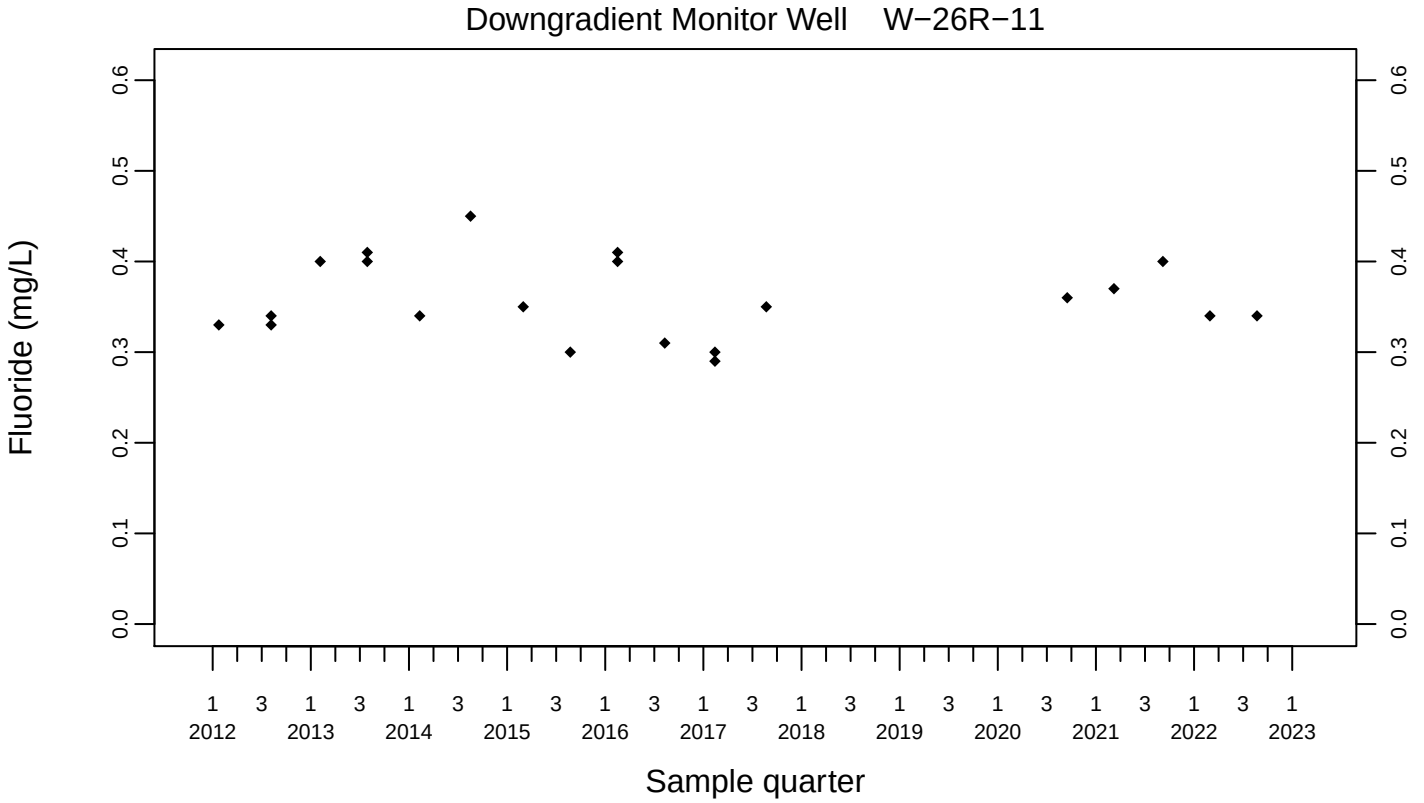


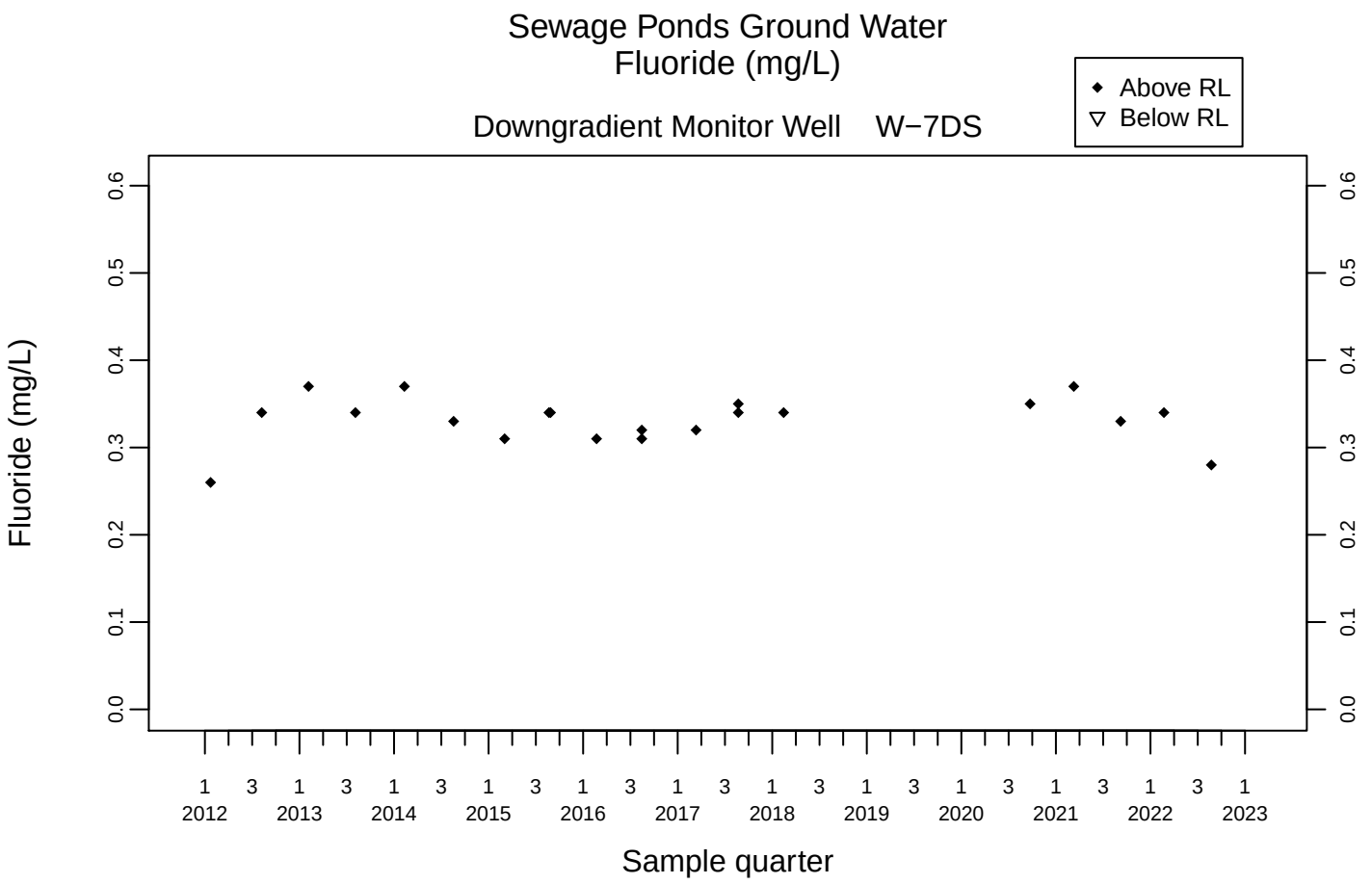
Sewage Ponds Ground Water
Fluoride (mg/L)

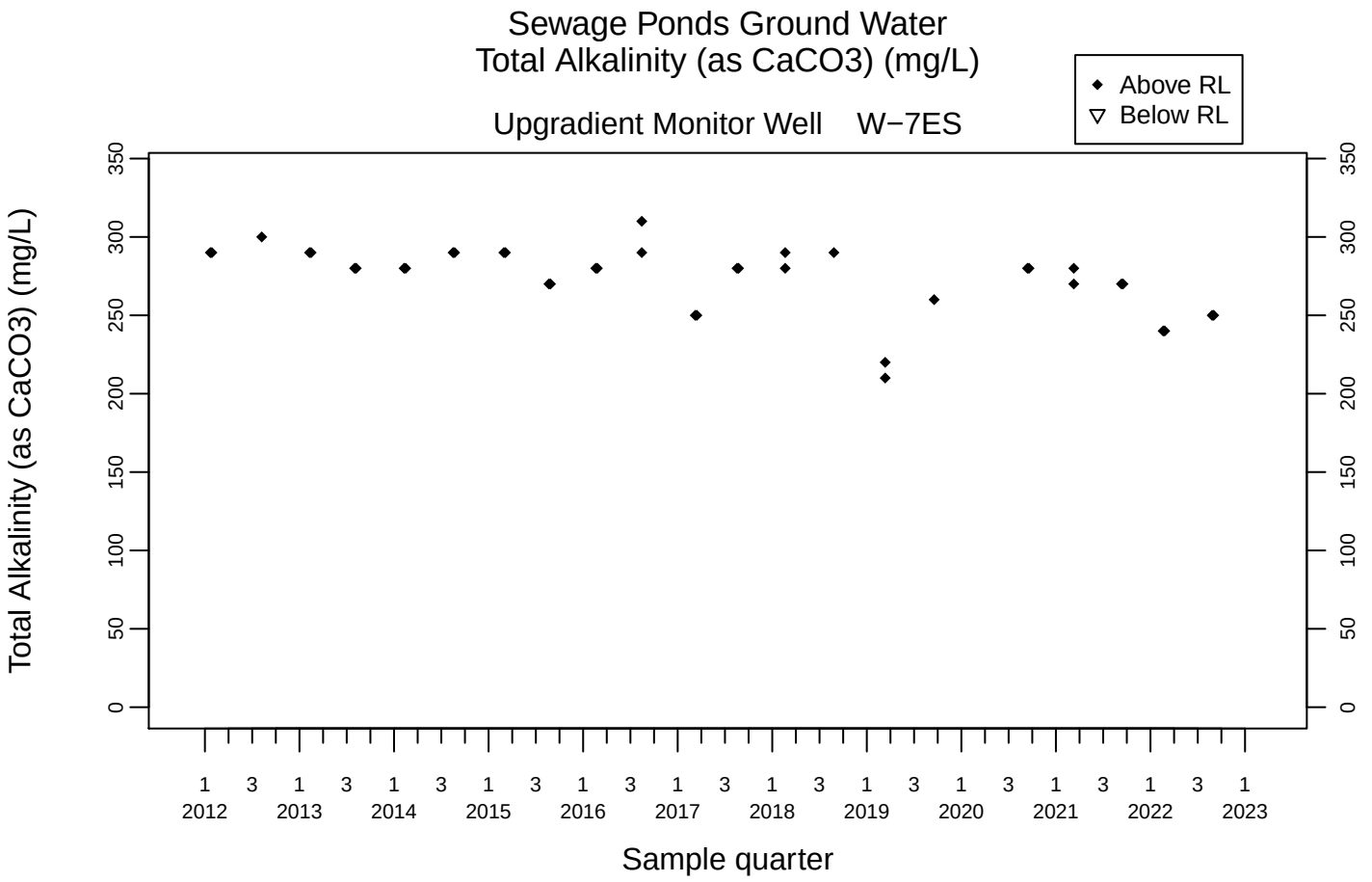


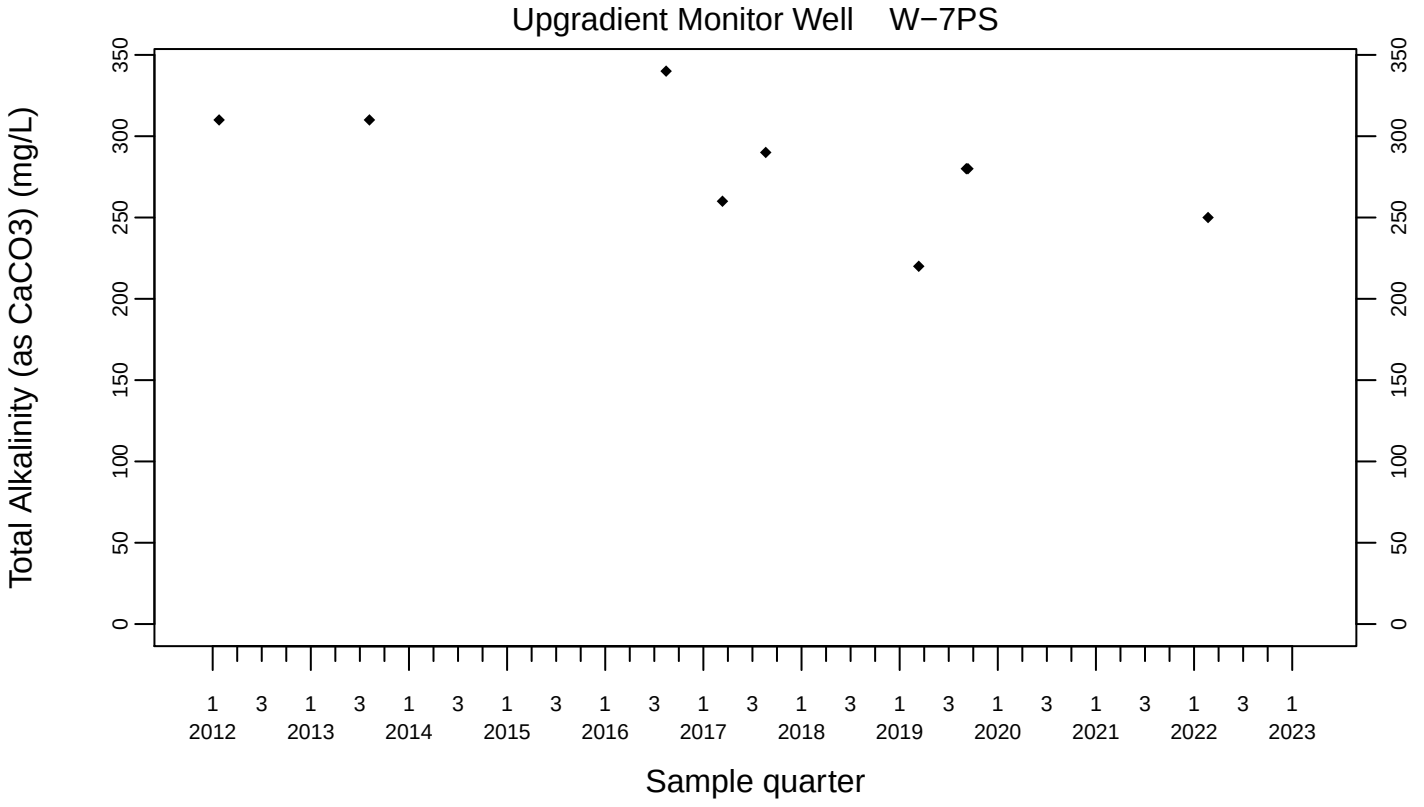



Sewage Ponds Ground Water
Fluoride (mg/L)
Above RL
Below RL
Downgradient Monitor Well W−26R−05
Fluoride (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Downgradient Monitor Well W−26R−11
Fluoride (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

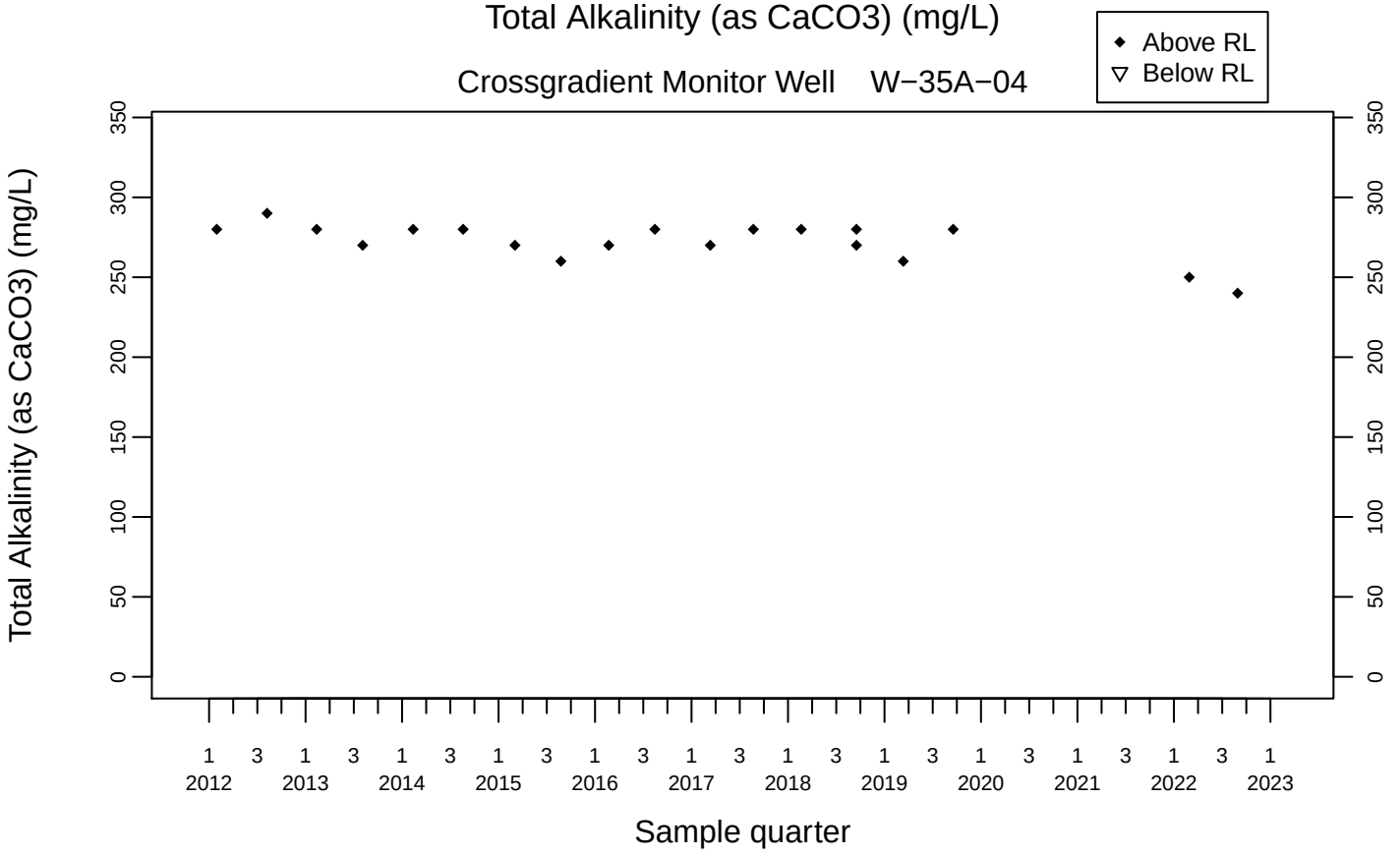

Sewage Ponds Ground Water
Fluoride (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Fluoride (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Sewage Ponds Ground Water
Total Alkalinity (as CaCO3) (mg/L)
Above RL
Below RL
Upgradient Monitor Well W−7ES
Total Alkalinity (as CaCO3) (mg/L)
0
50
100
150
200
250
300
350
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

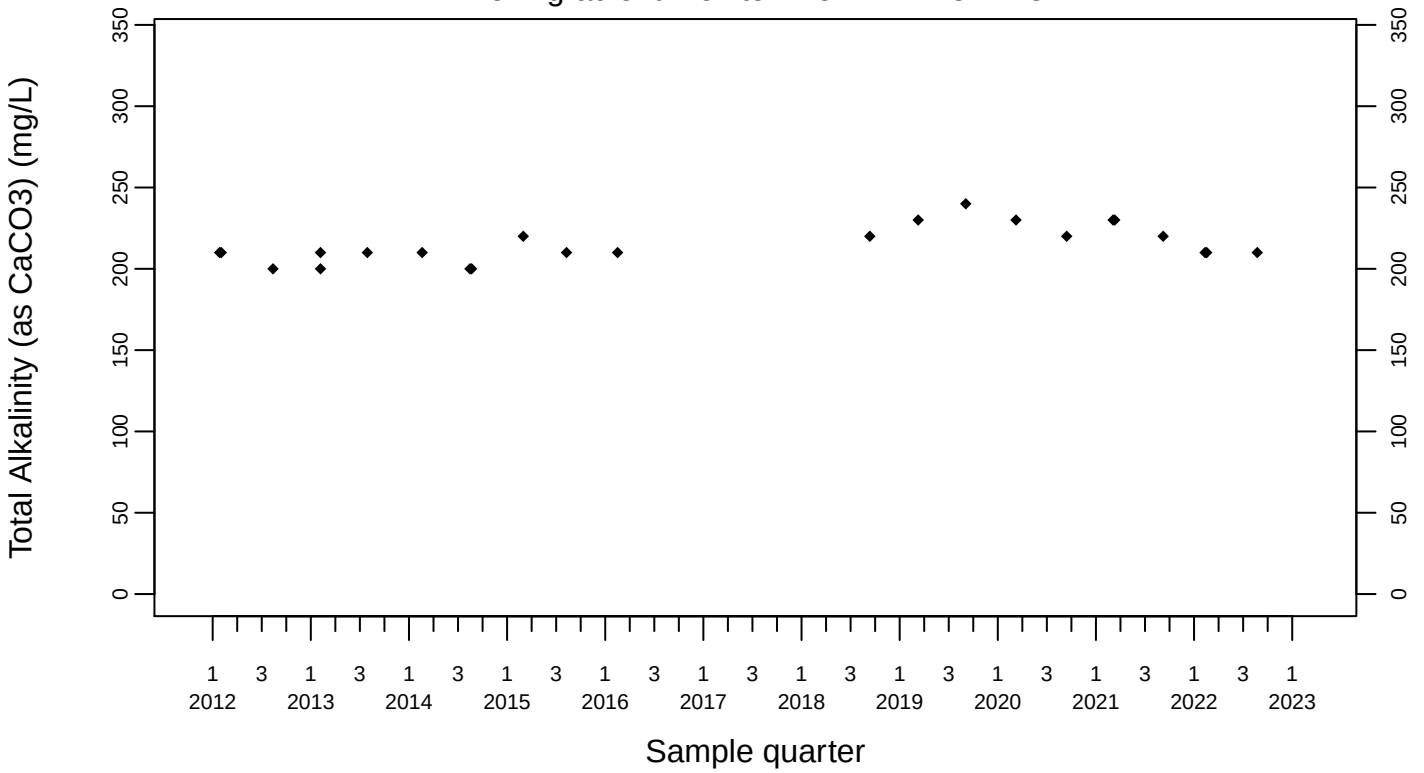

Upgradient Monitor Well W−7PS
Total Alkalinity (as CaCO3) (mg/L)
0
50
100
150
200
250
300
350
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

Sewage Ponds Ground Water
Total Alkalinity (as CaCO3) (mg/L)

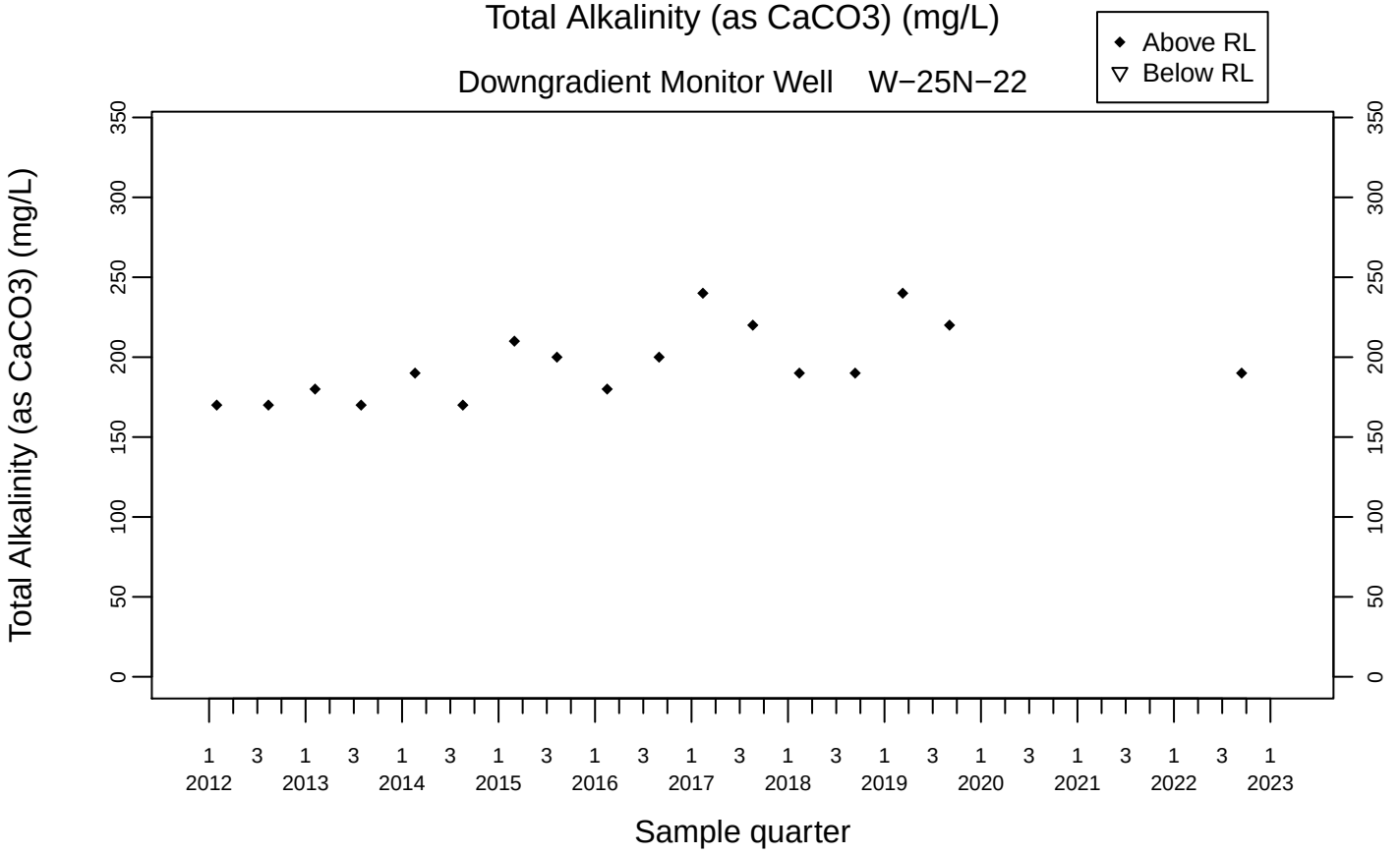
Crossgradient Monitor Well W−35A−04

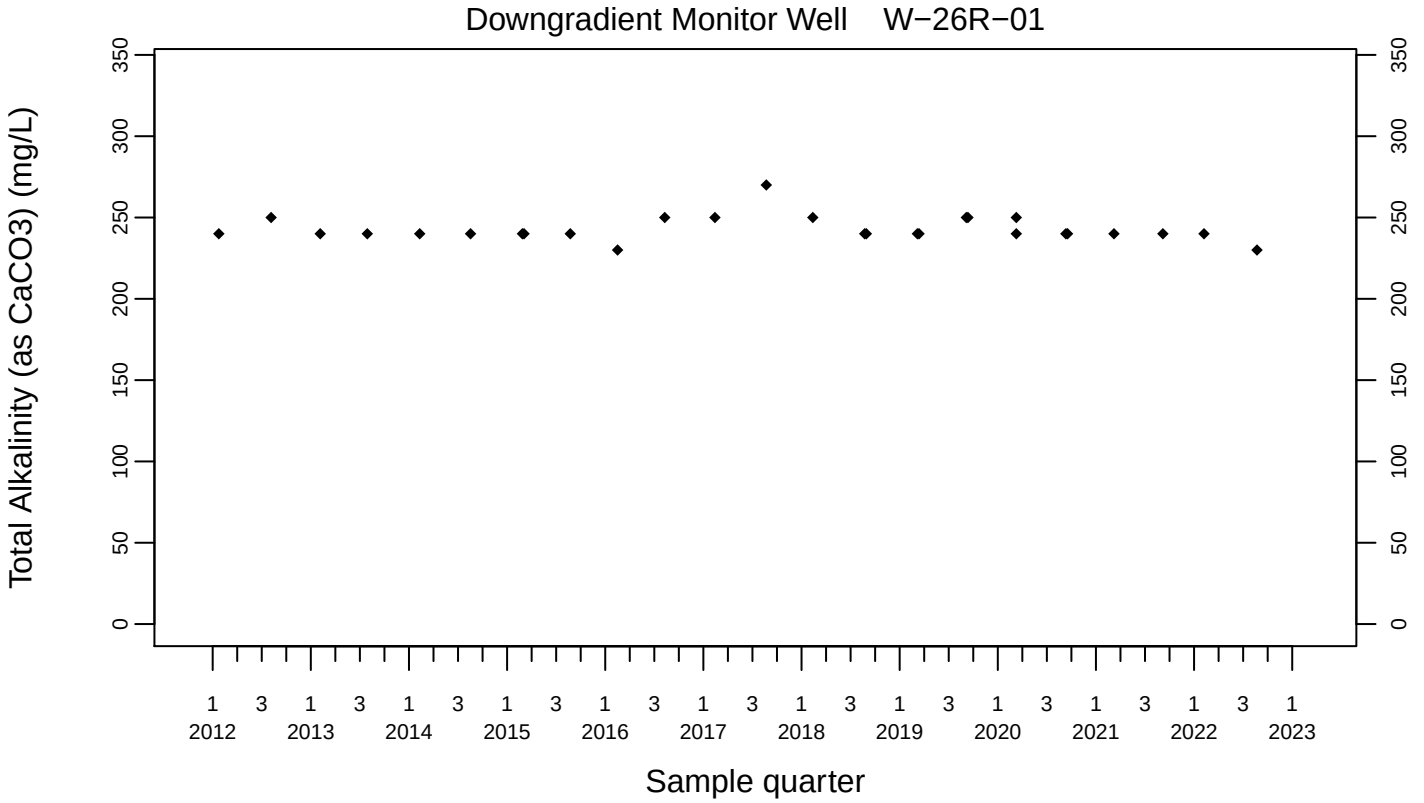


Downgradient Monitor Well W−25N−23

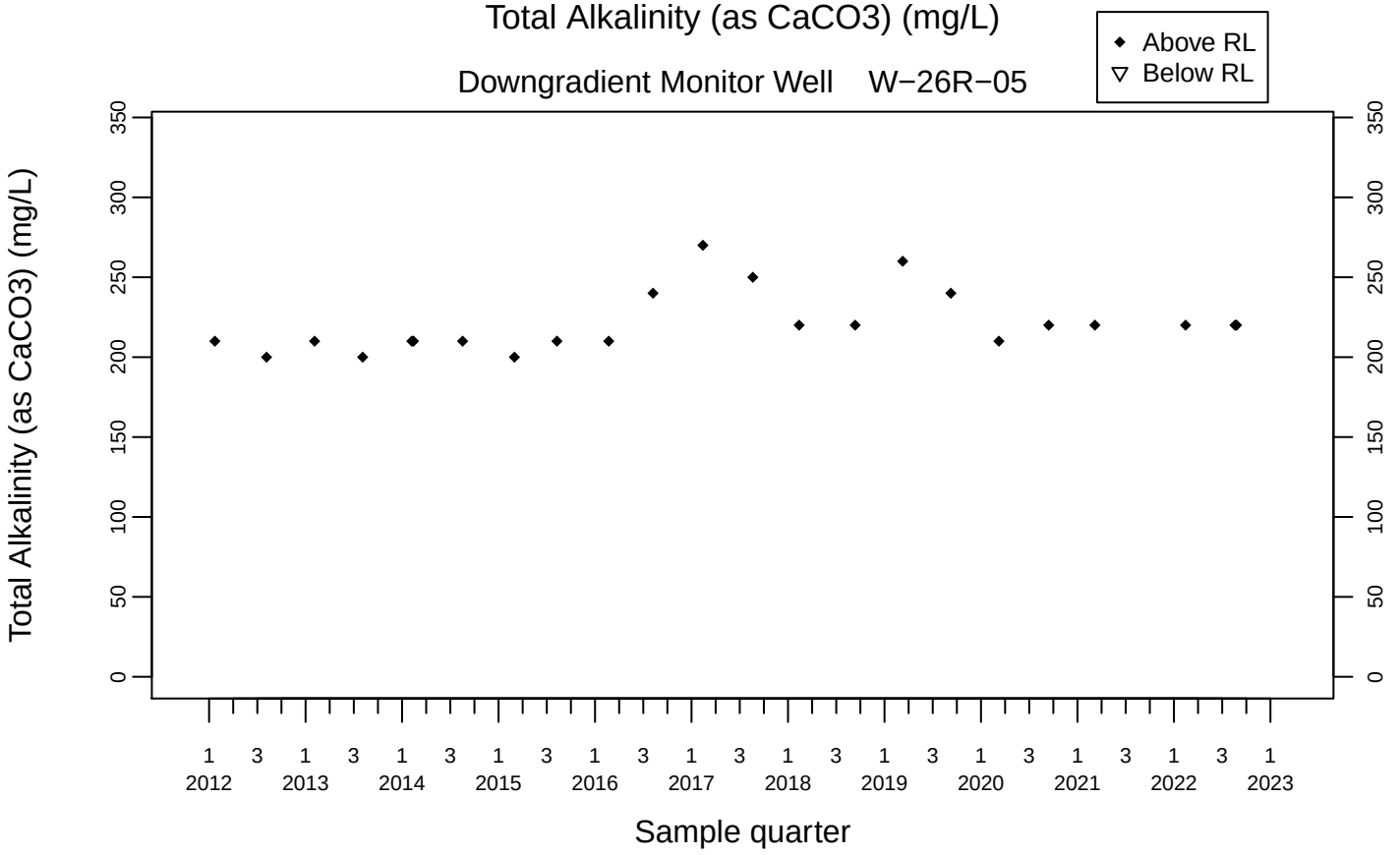


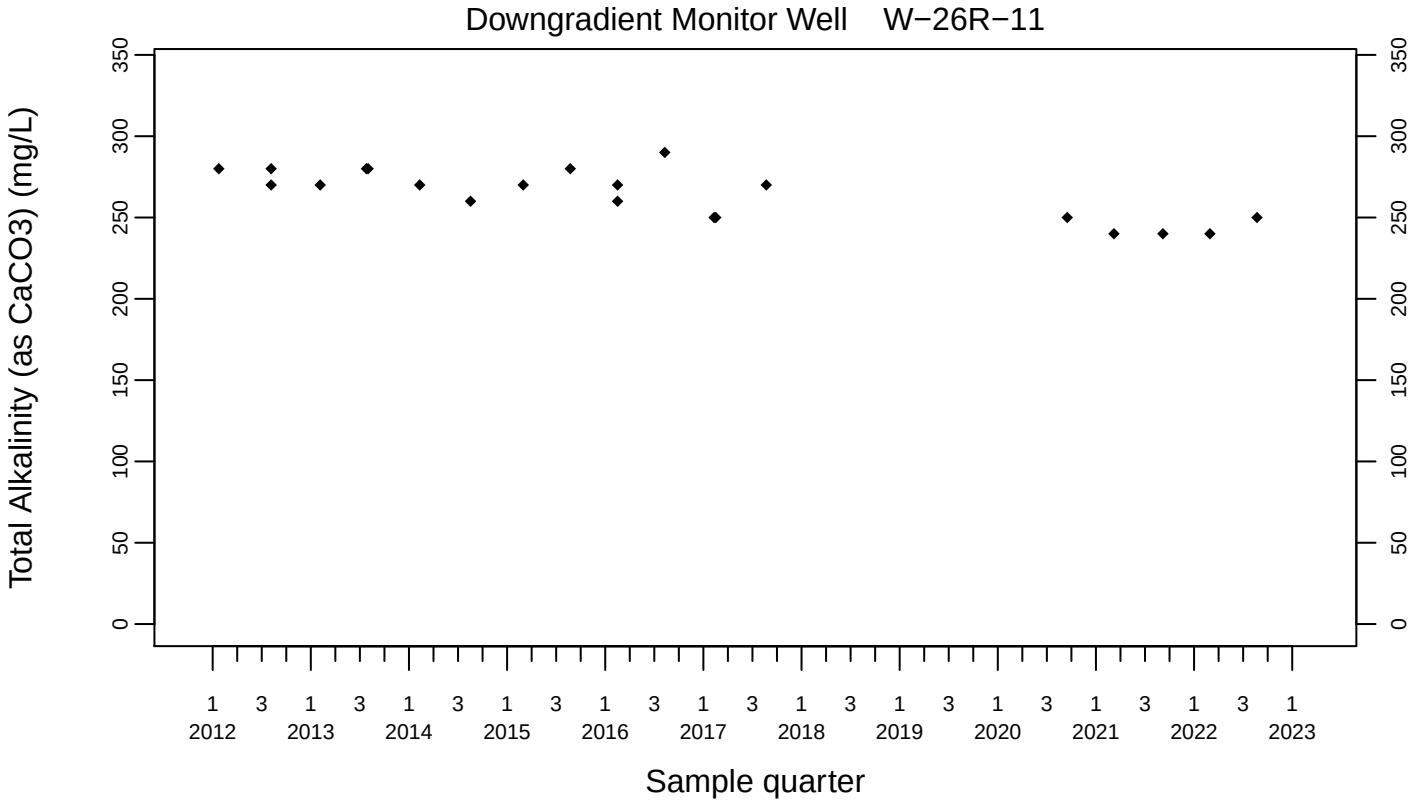
Sewage Ponds Ground Water
Total Alkalinity (as CaCO3) (mg/L)

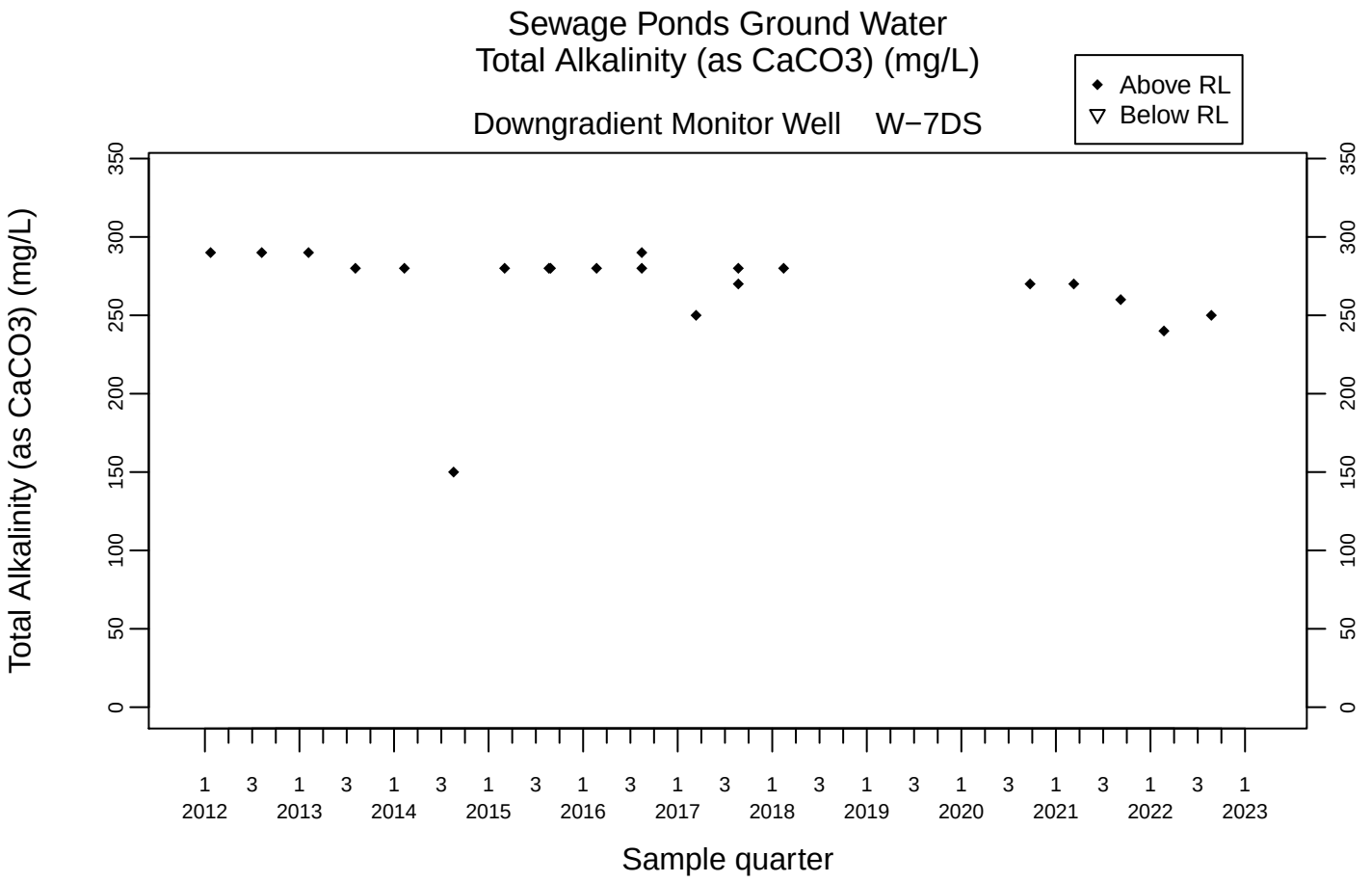




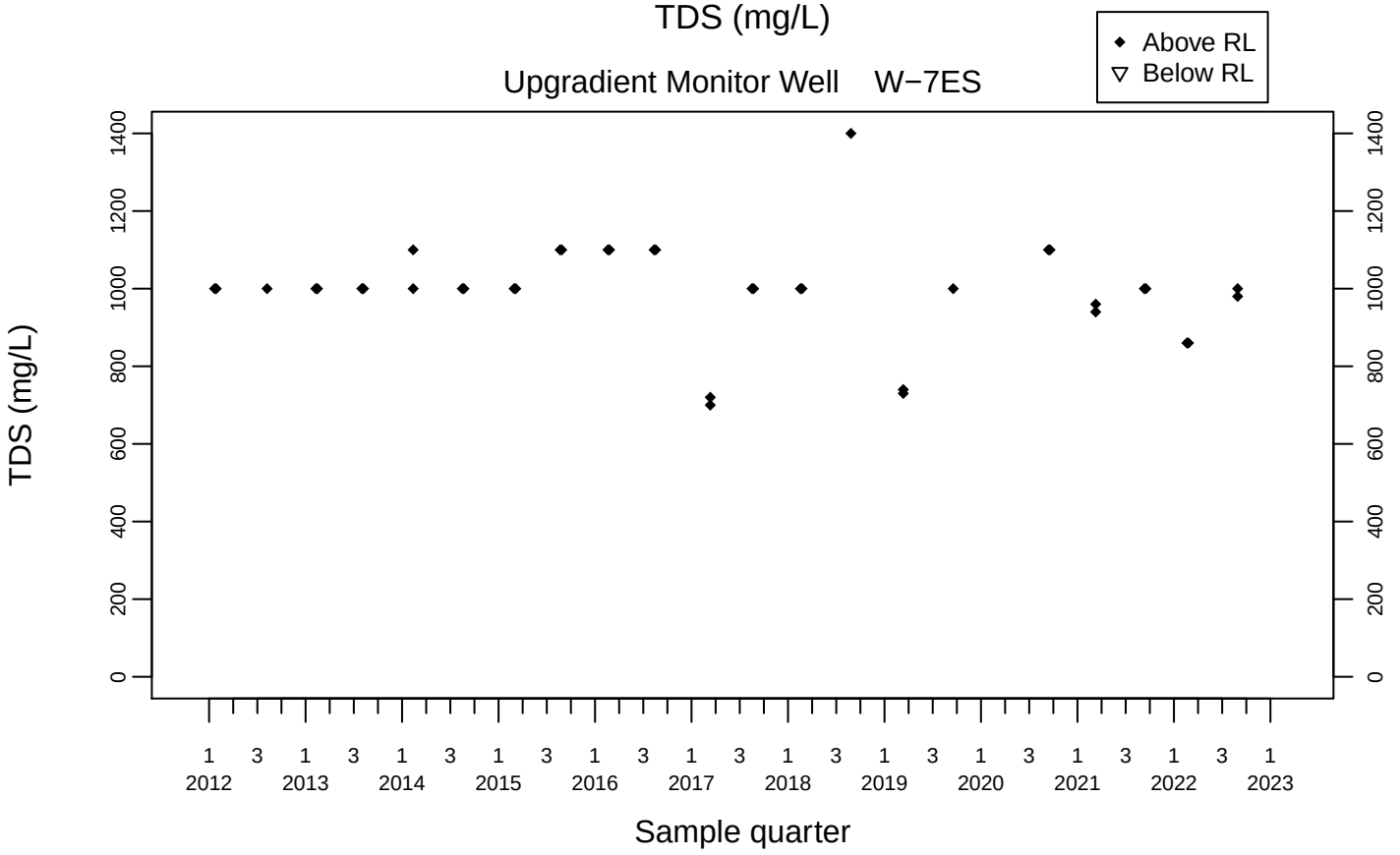
Sewage Ponds Ground Water
Total Alkalinity (as CaCO3) (mg/L)

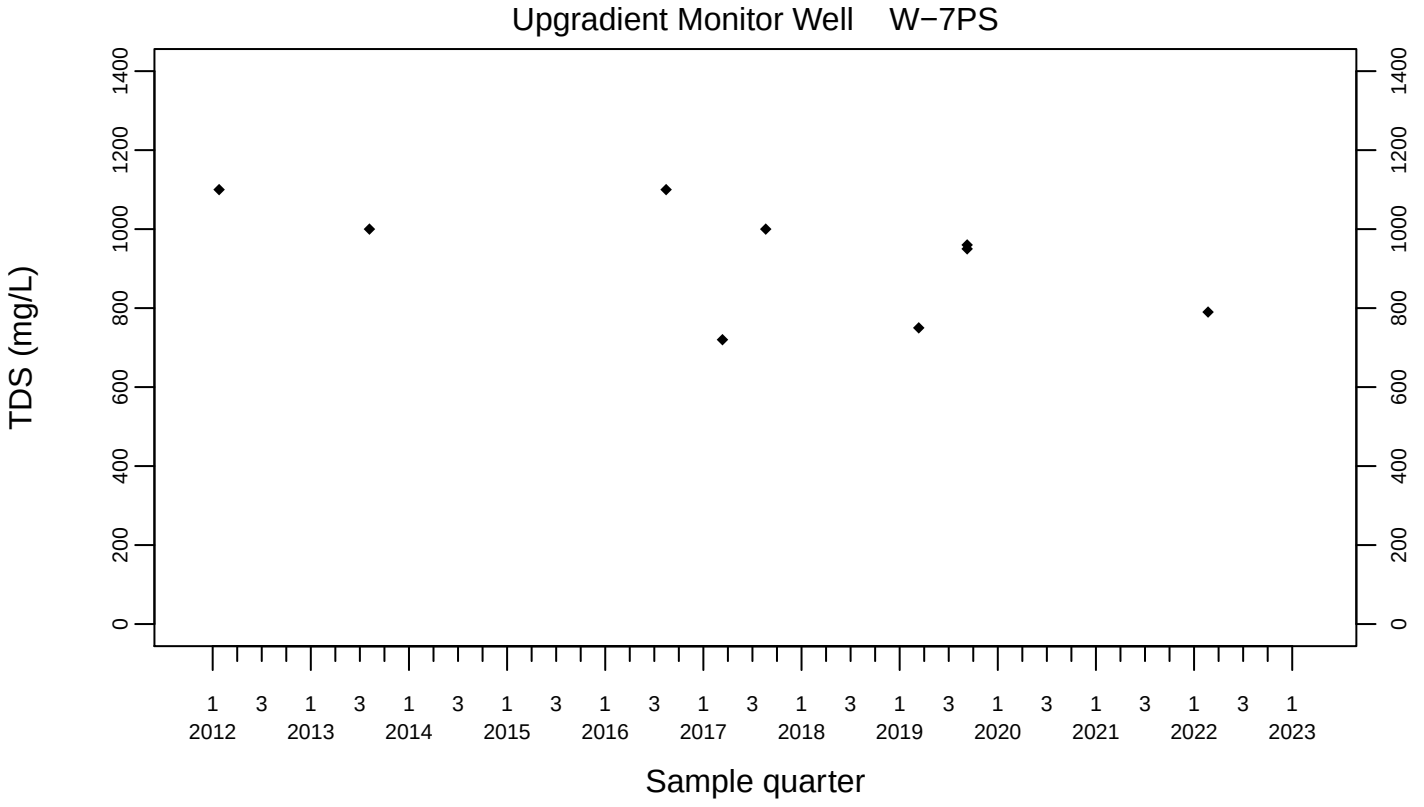




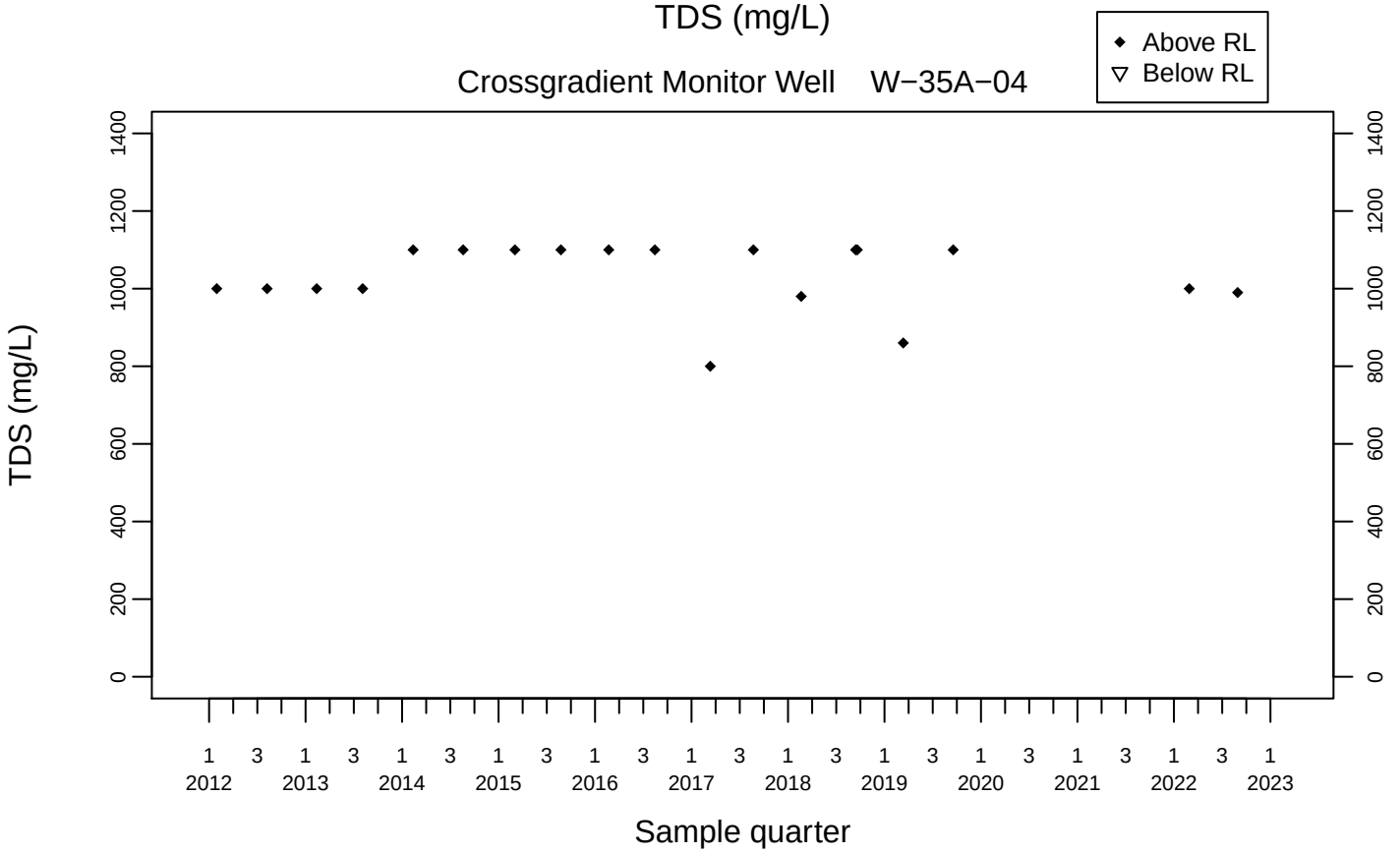

Sewage Ponds Ground Water
Total Alkalinity (as CaCO3) (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Total Alkalinity (as CaCO3) (mg/L)
0
50
100
150
200
250
300
350
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

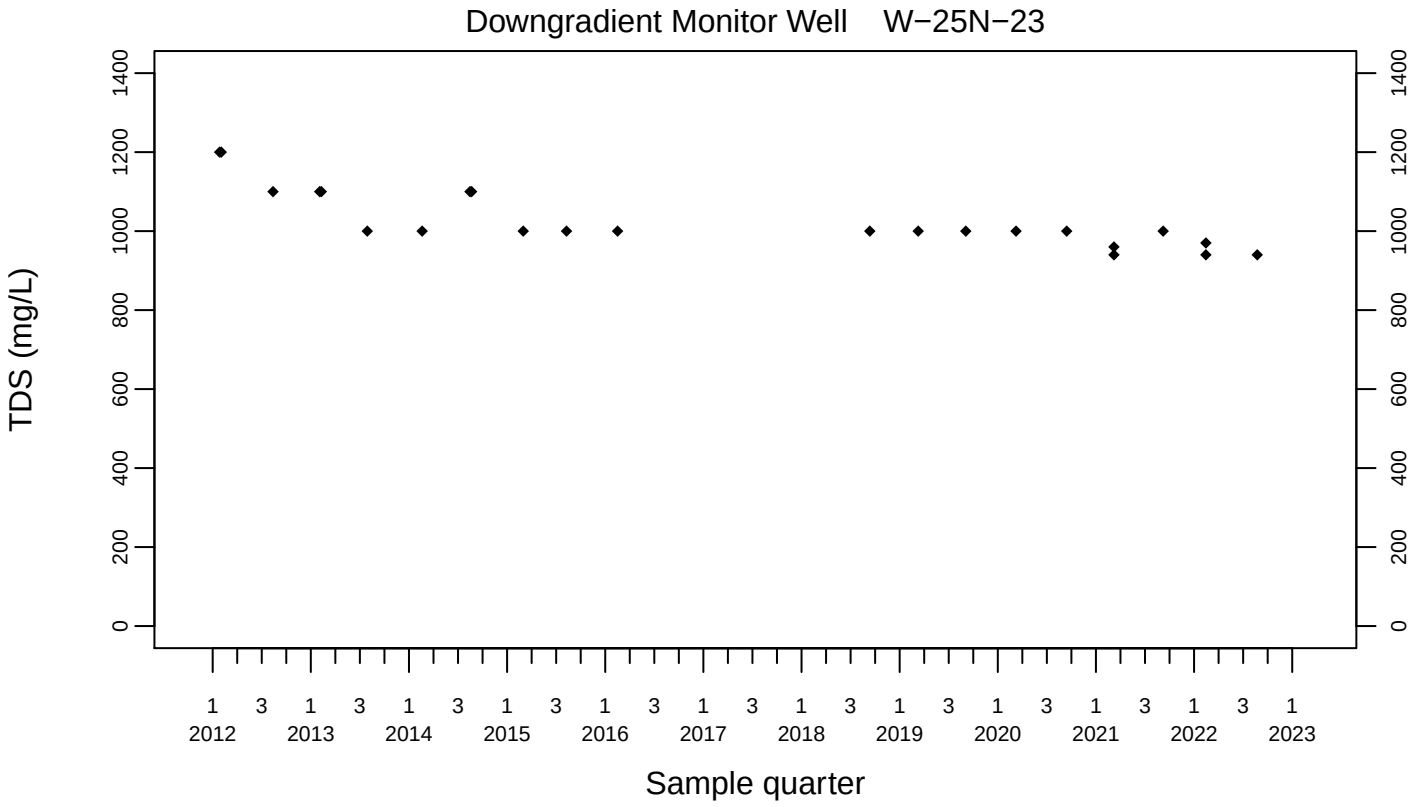
Sewage Ponds Ground Water
TDS (mg/L)



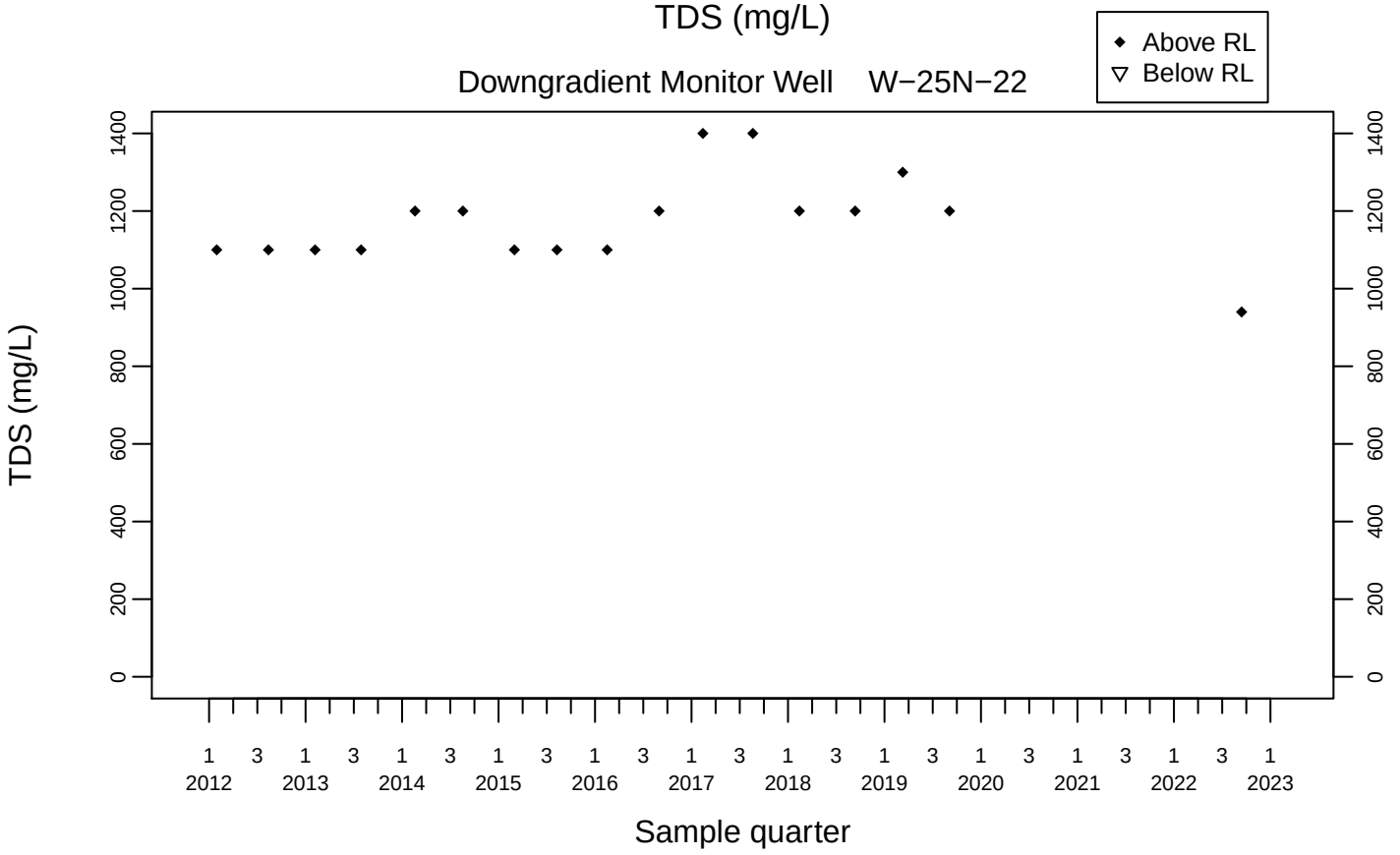


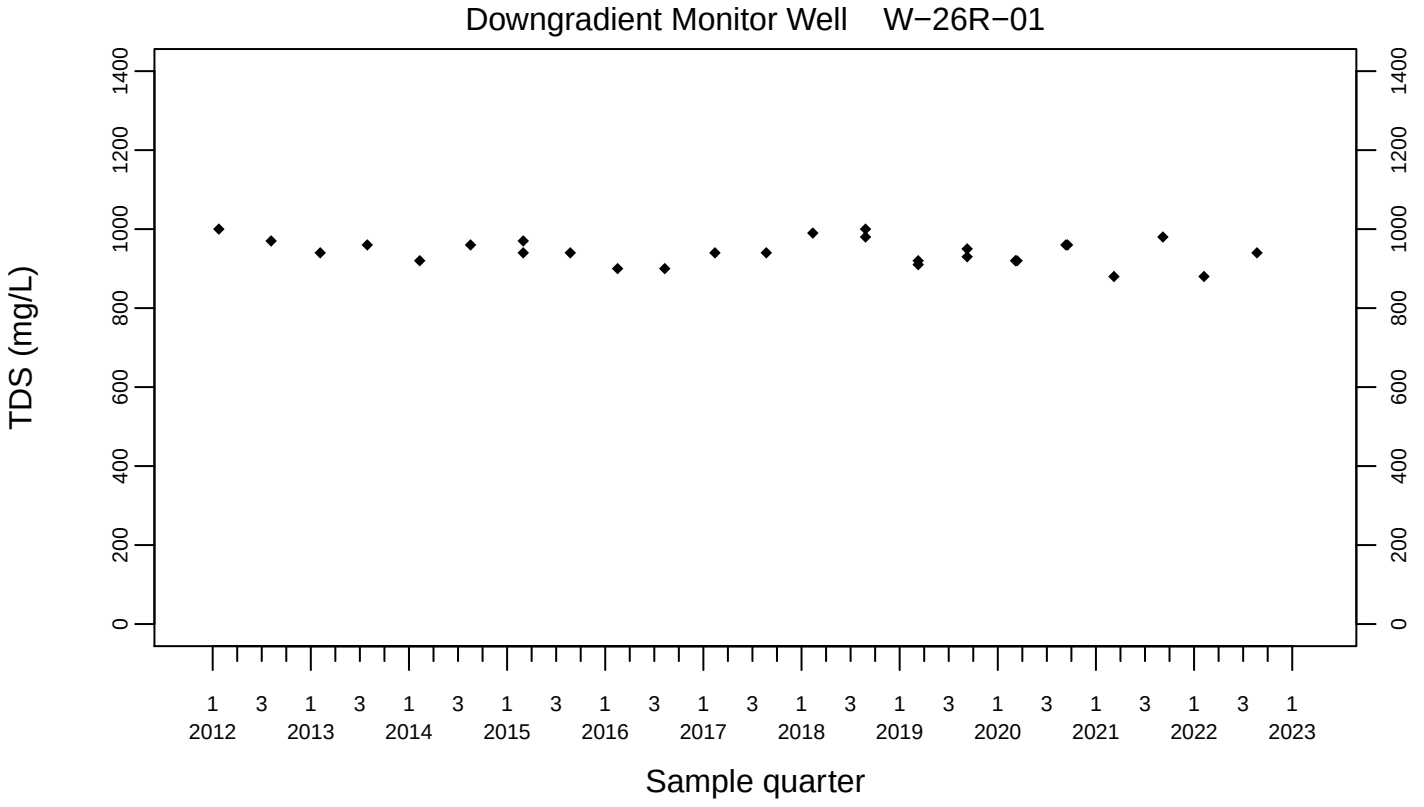
Sewage Ponds Ground Water
TDS (mg/L)



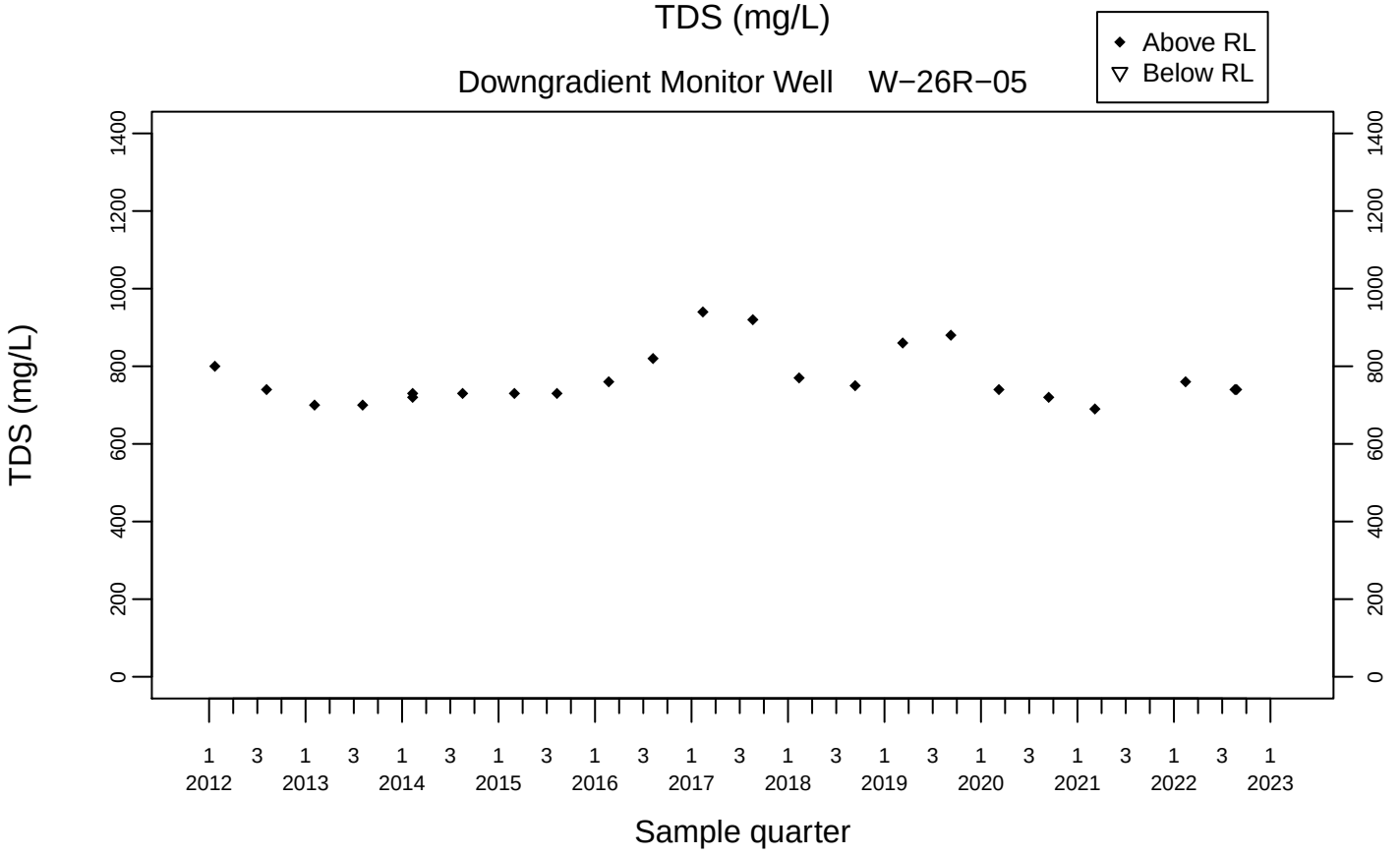


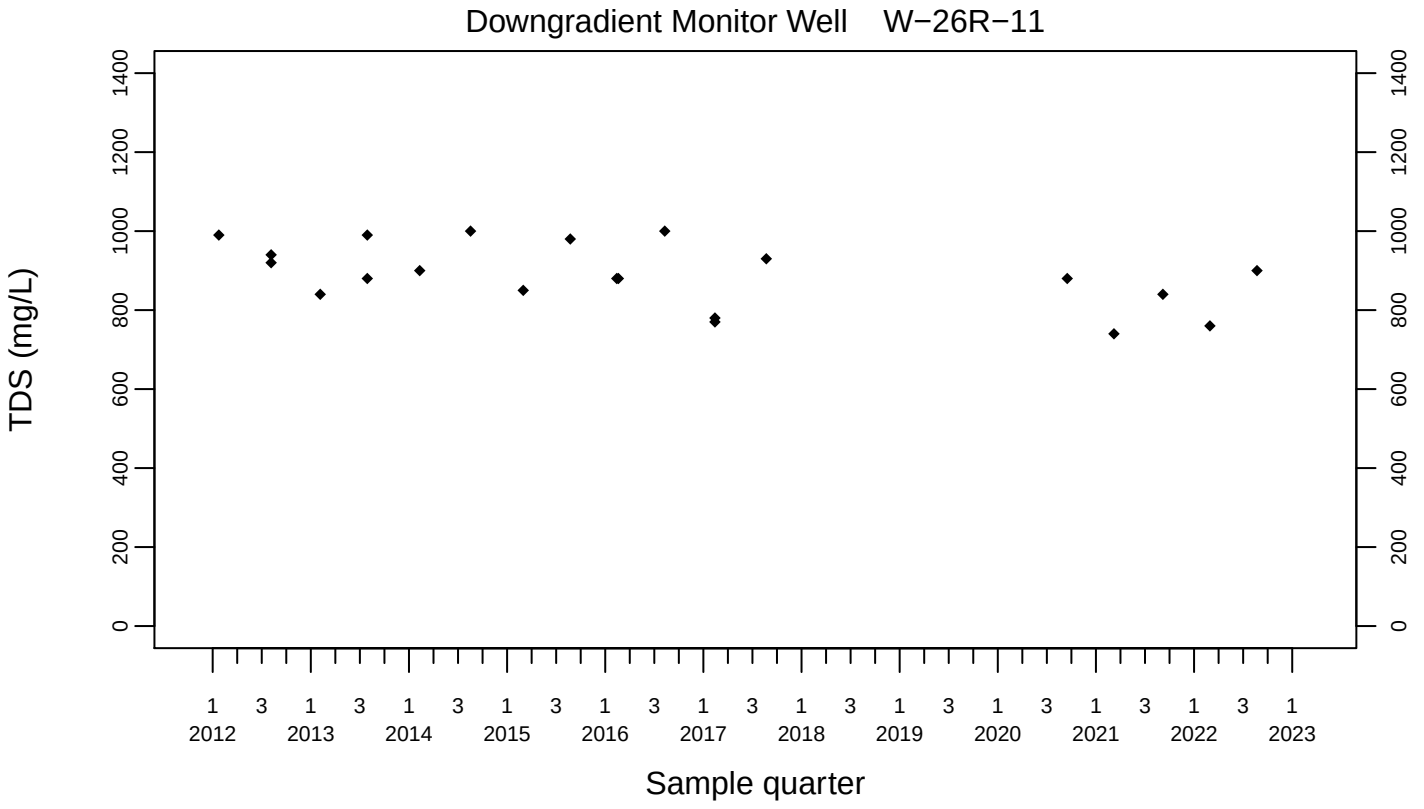
Sewage Ponds Ground Water
TDS (mg/L)

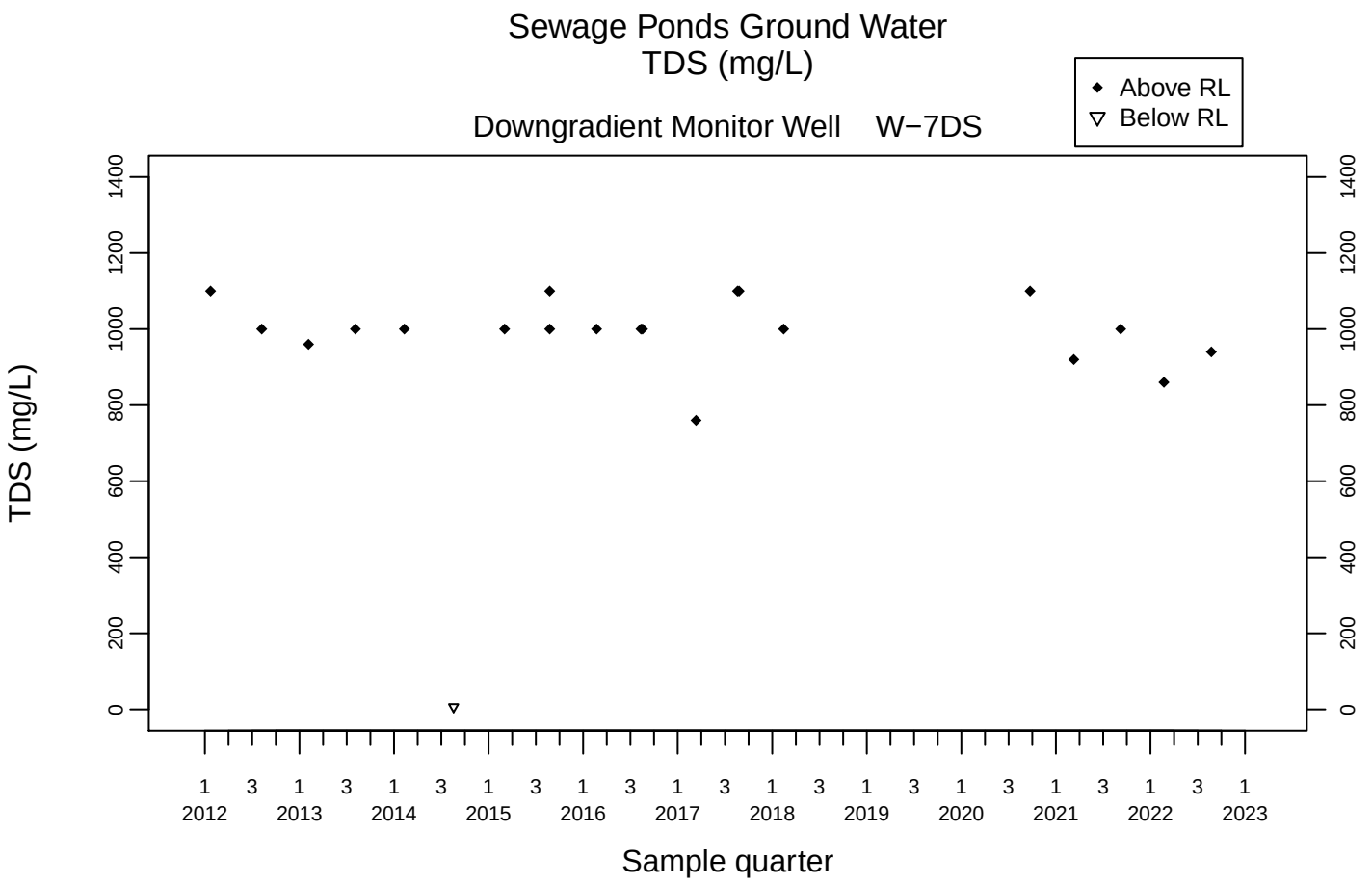




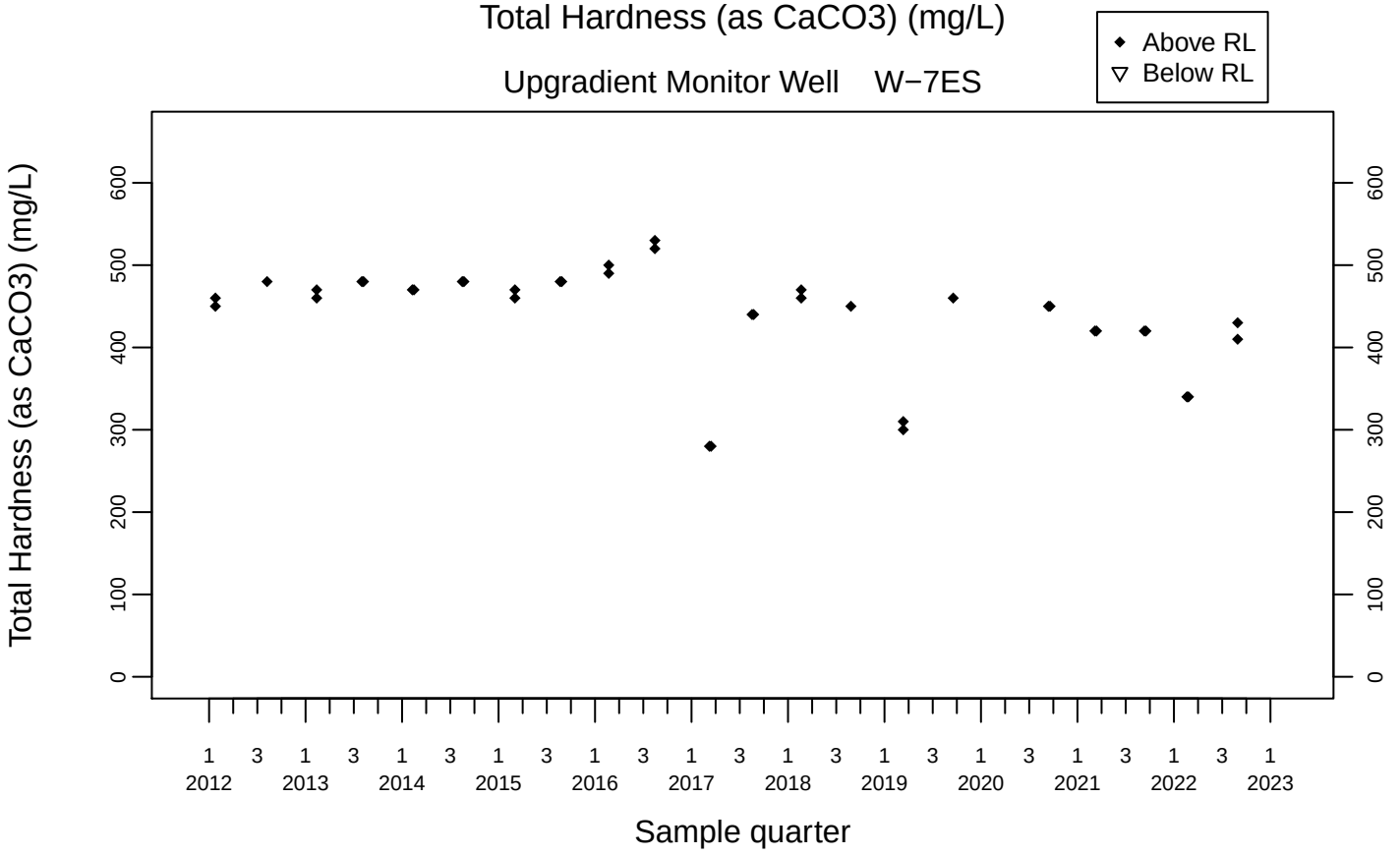
Sewage Ponds Ground Water
TDS (mg/L)

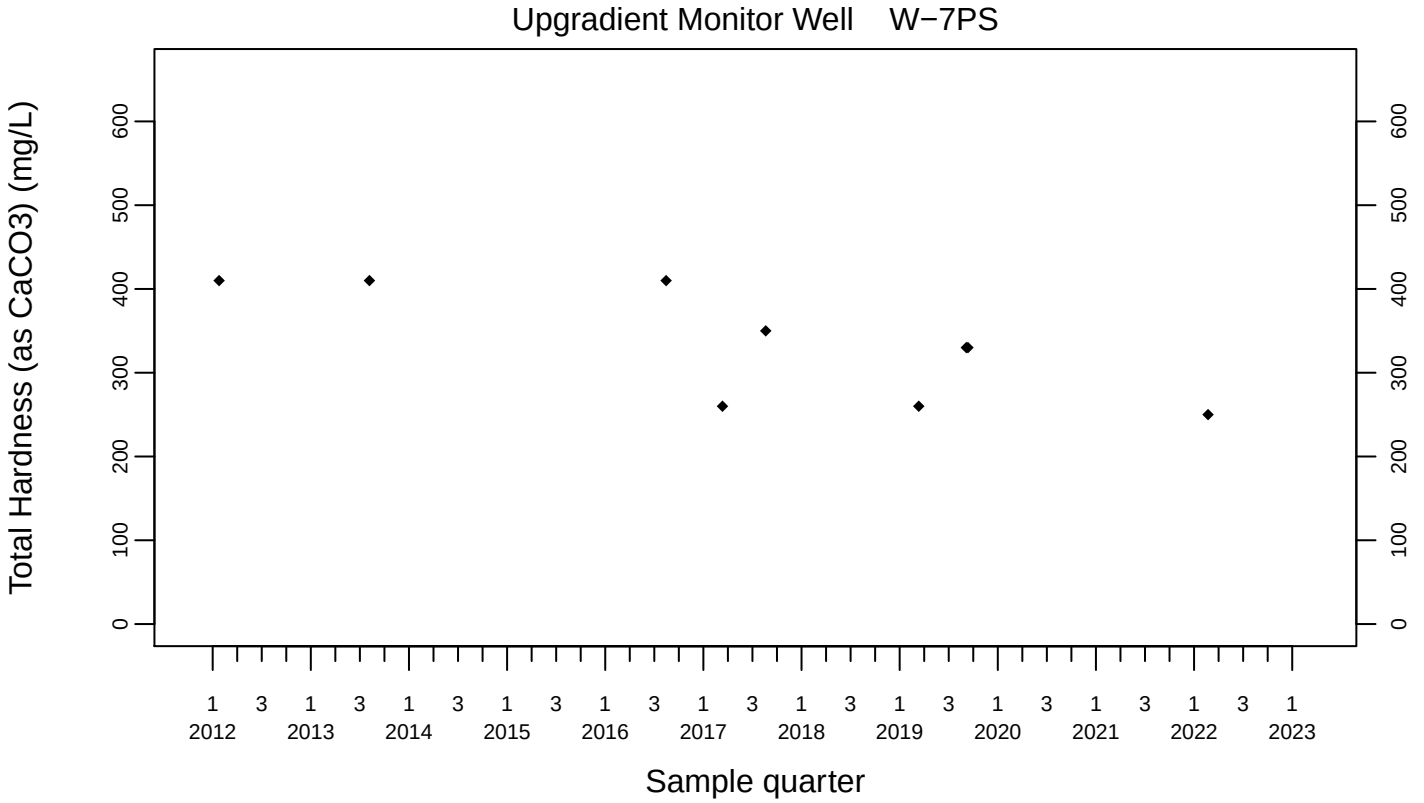




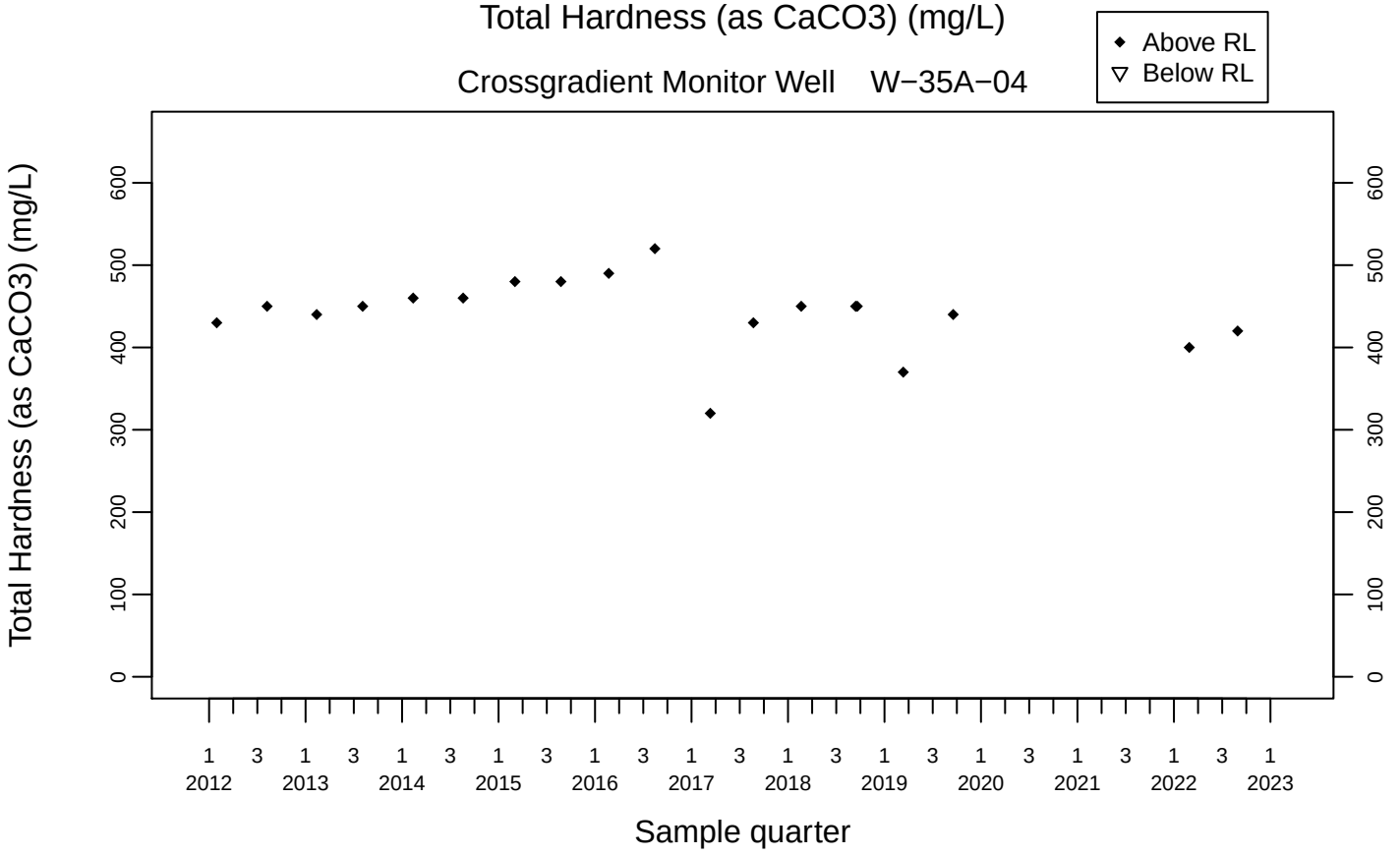

Sewage Ponds Ground Water
TDS (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
TDS (mg/L)
0
200
400
600
800
1000
1200
1400
1 2012
3
1 2013
3
1 2014
3
1 2015
3
1 2016
3
1 2017
3
1 2018
3
1 2019
3
1 2020
3
1 2021
3
1 2022
3
1 2023
Sample quarter

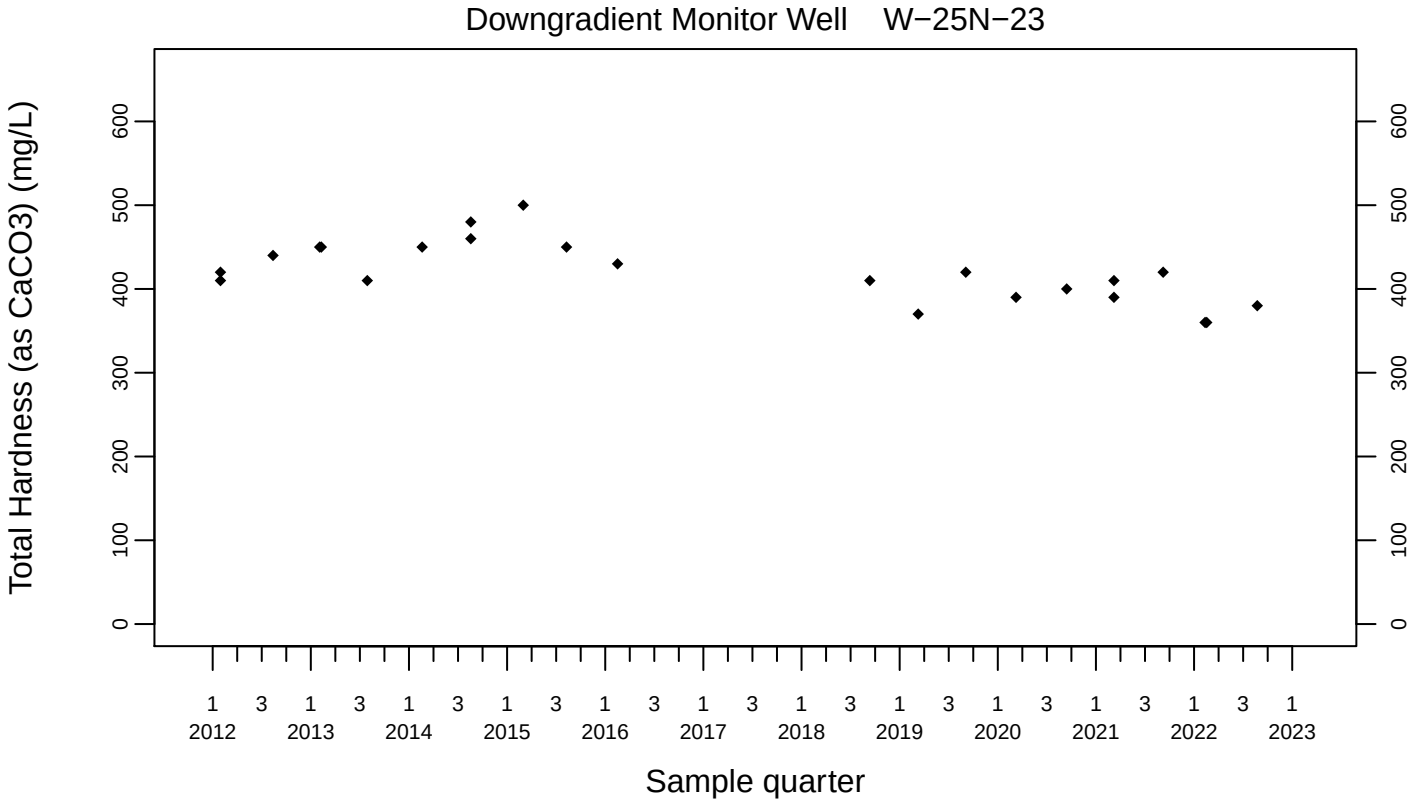
Sewage Ponds Ground Water
Total Hardness (as CaCO3) (mg/L)



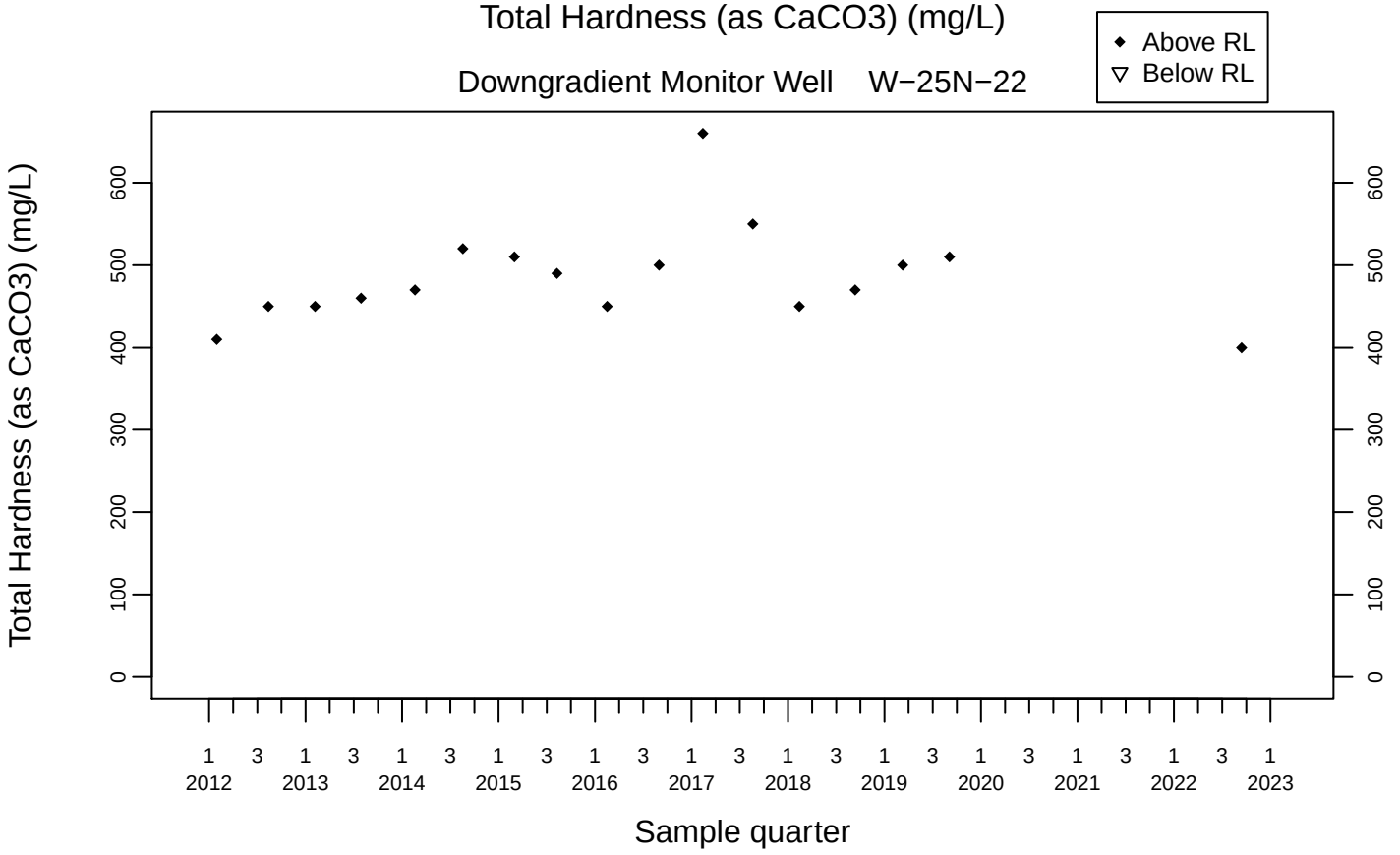


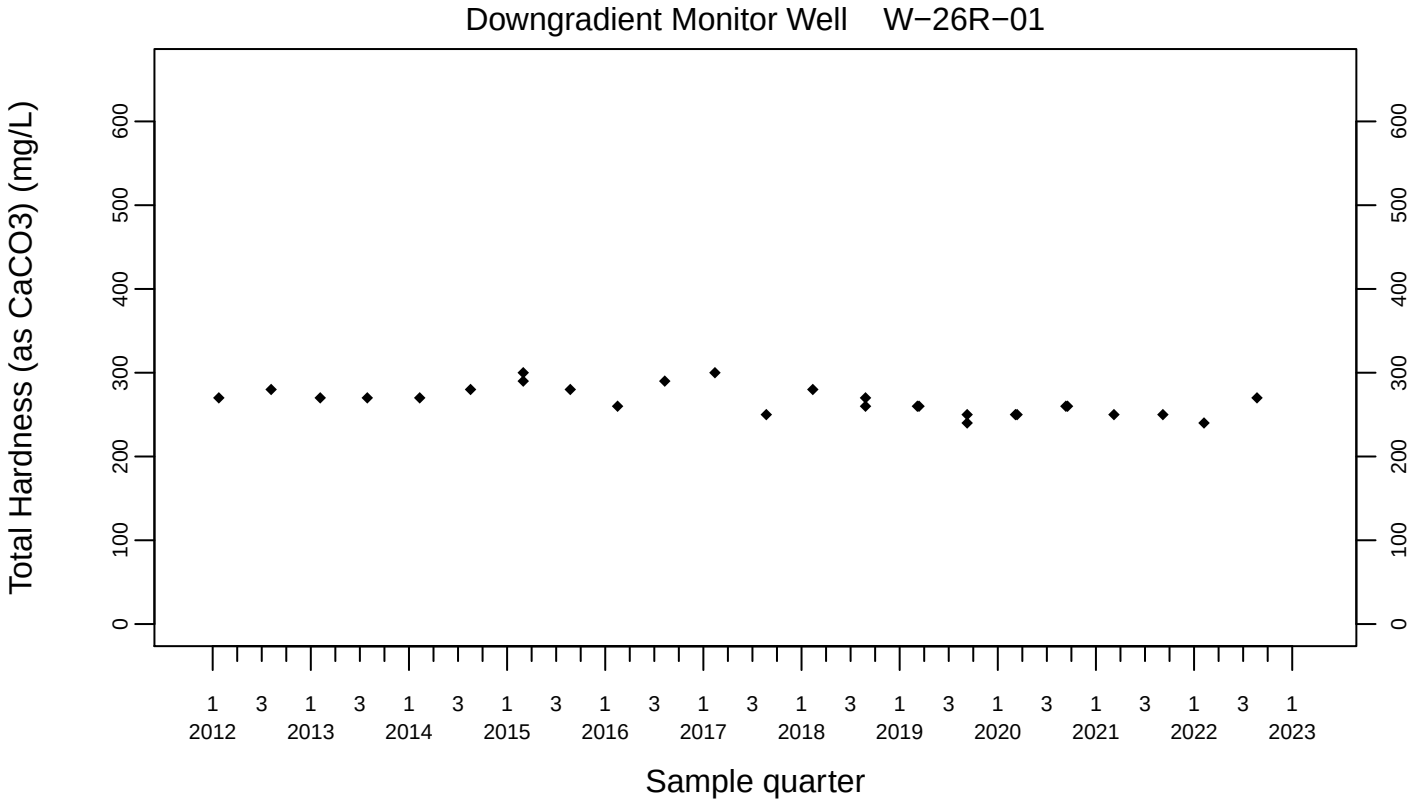
Sewage Ponds Ground Water
Total Hardness (as CaCO3) (mg/L)



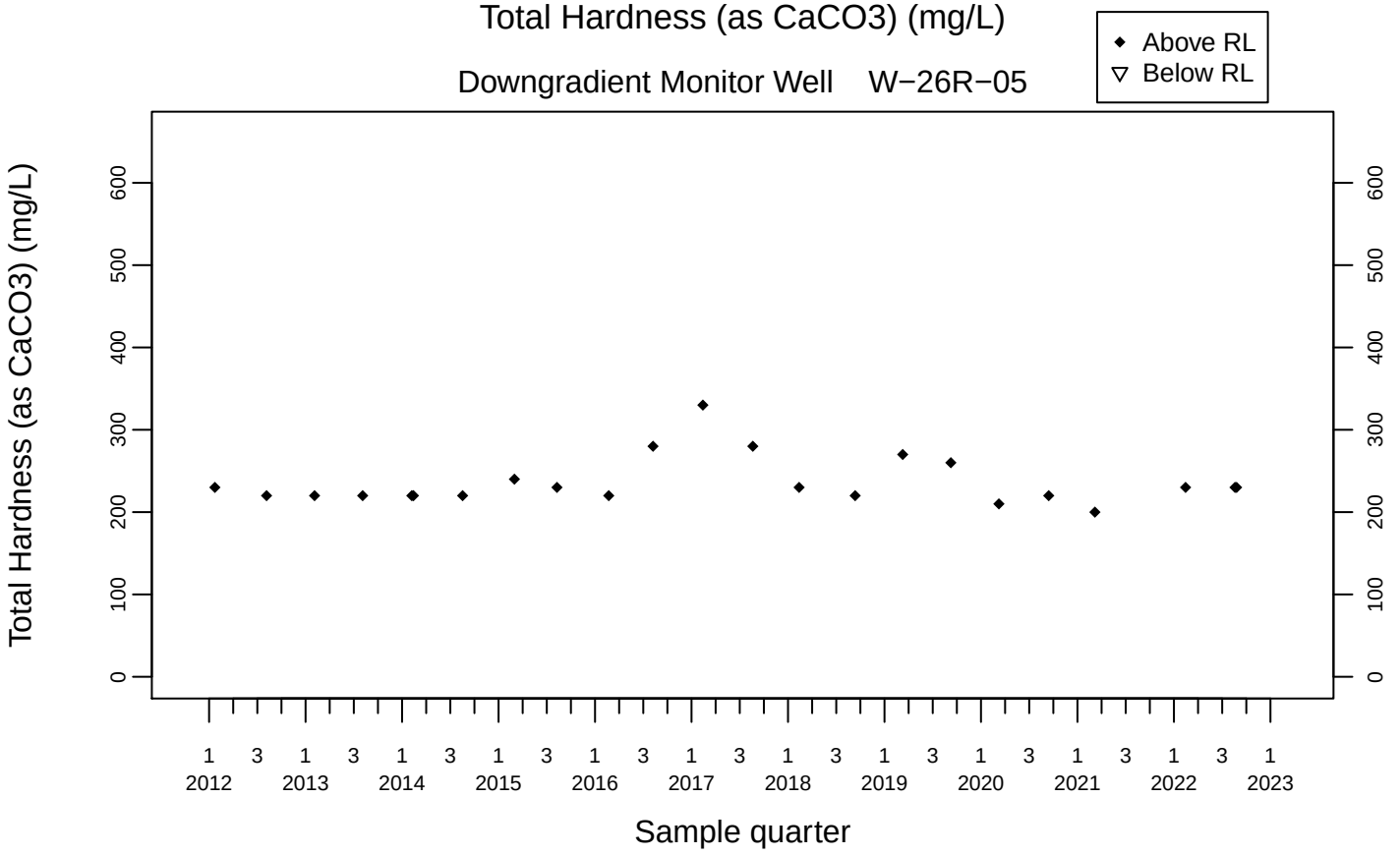


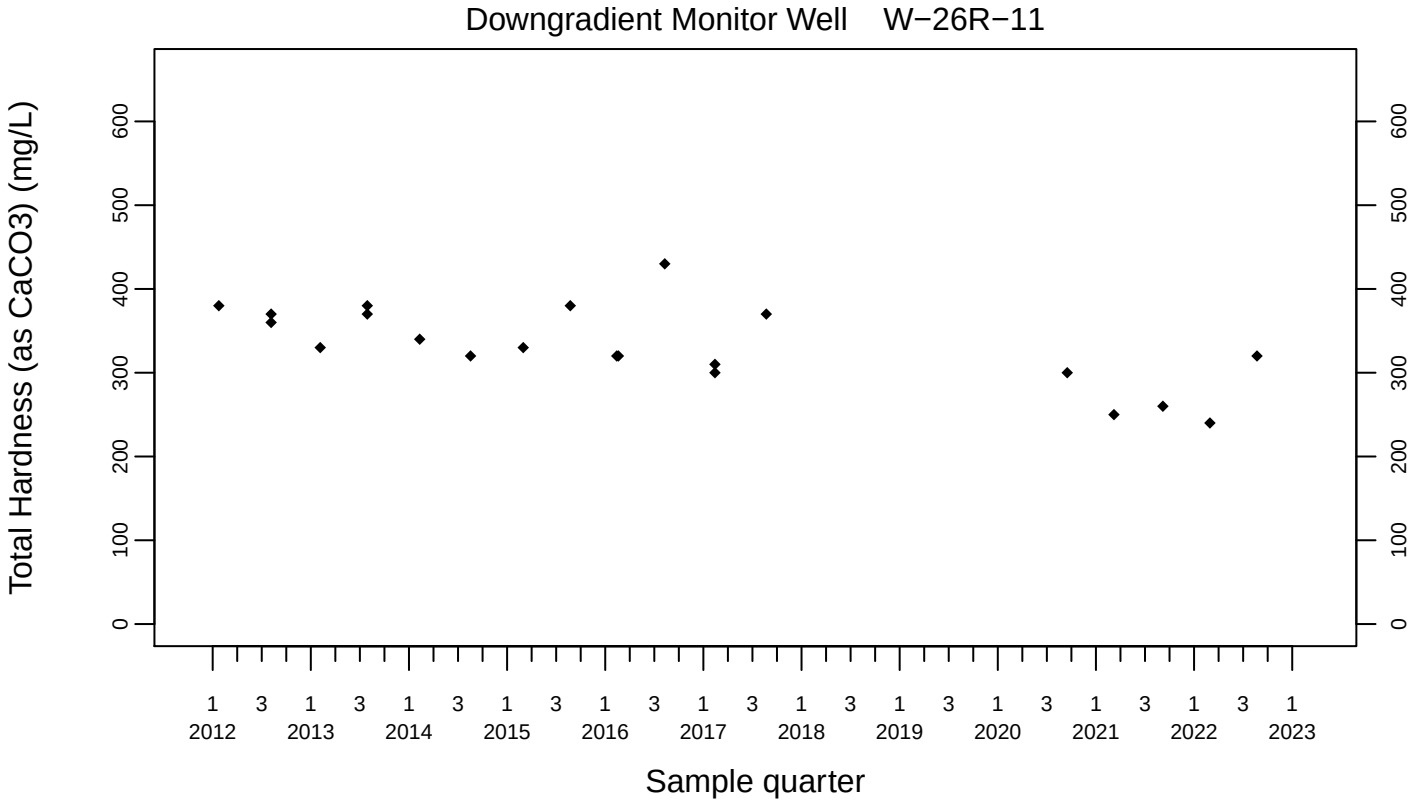
Sewage Ponds Ground Water
Total Hardness (as CaCO3) (mg/L)

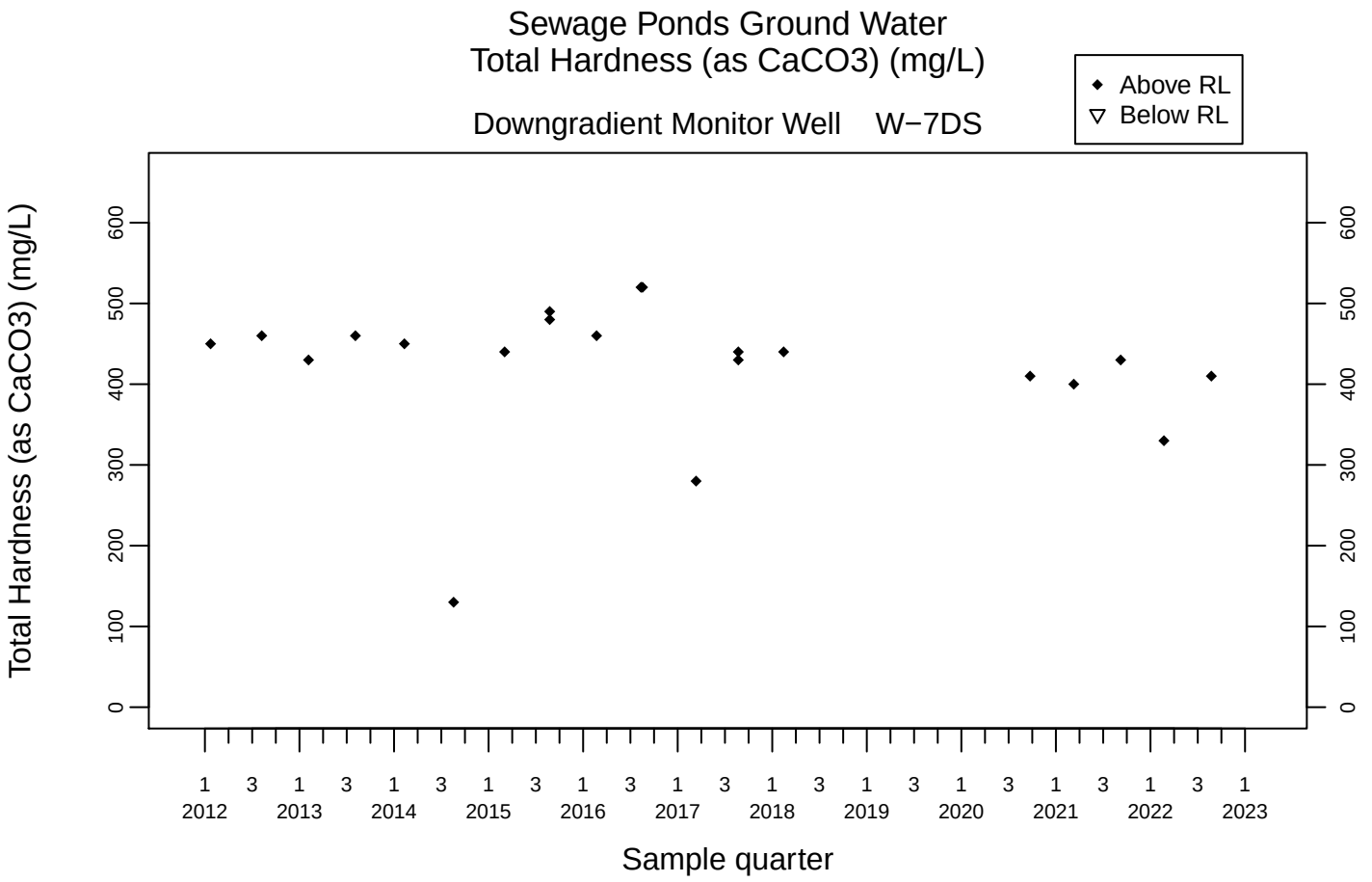




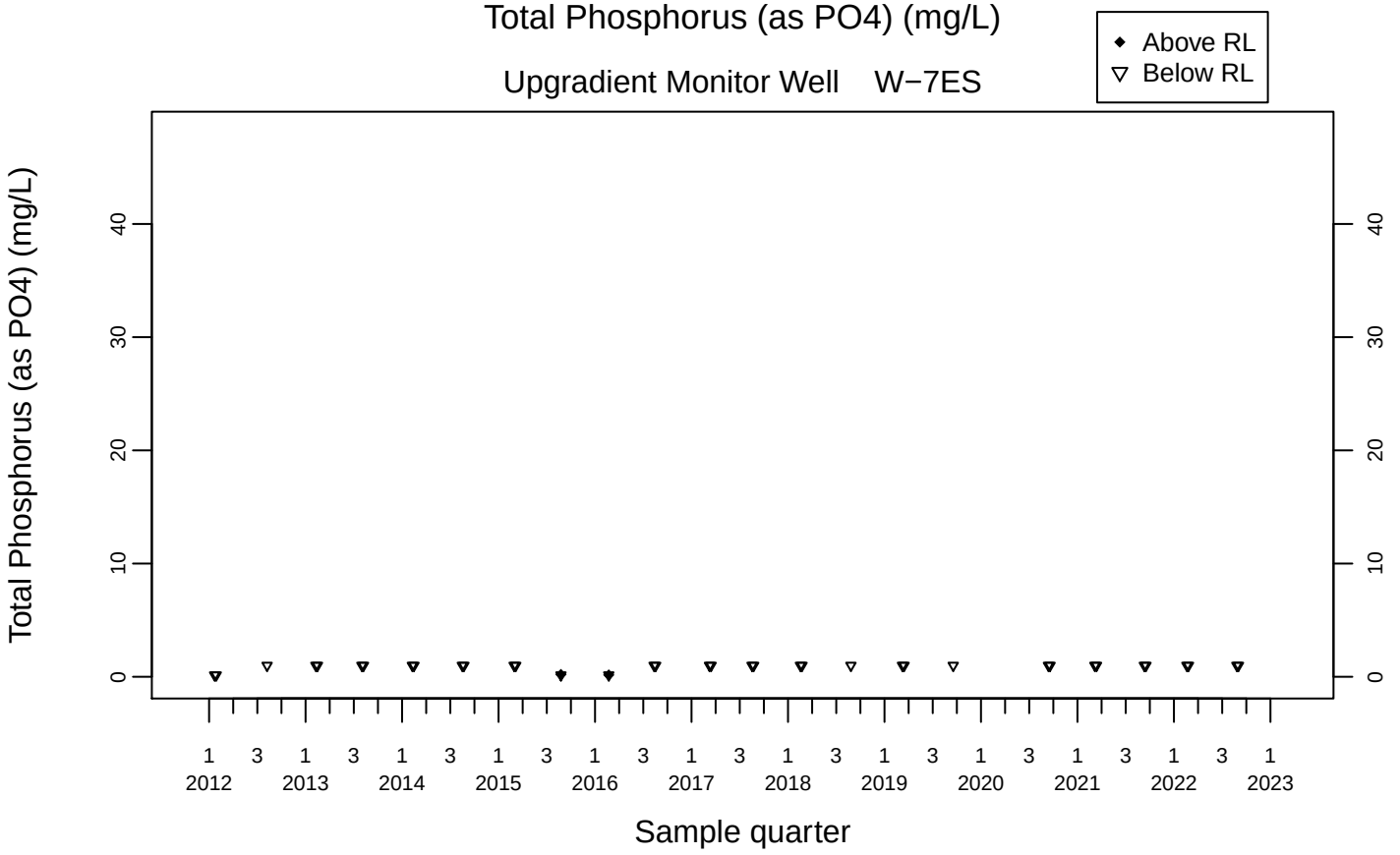
Sewage Ponds Ground Water
Total Hardness (as CaCO3) (mg/L)

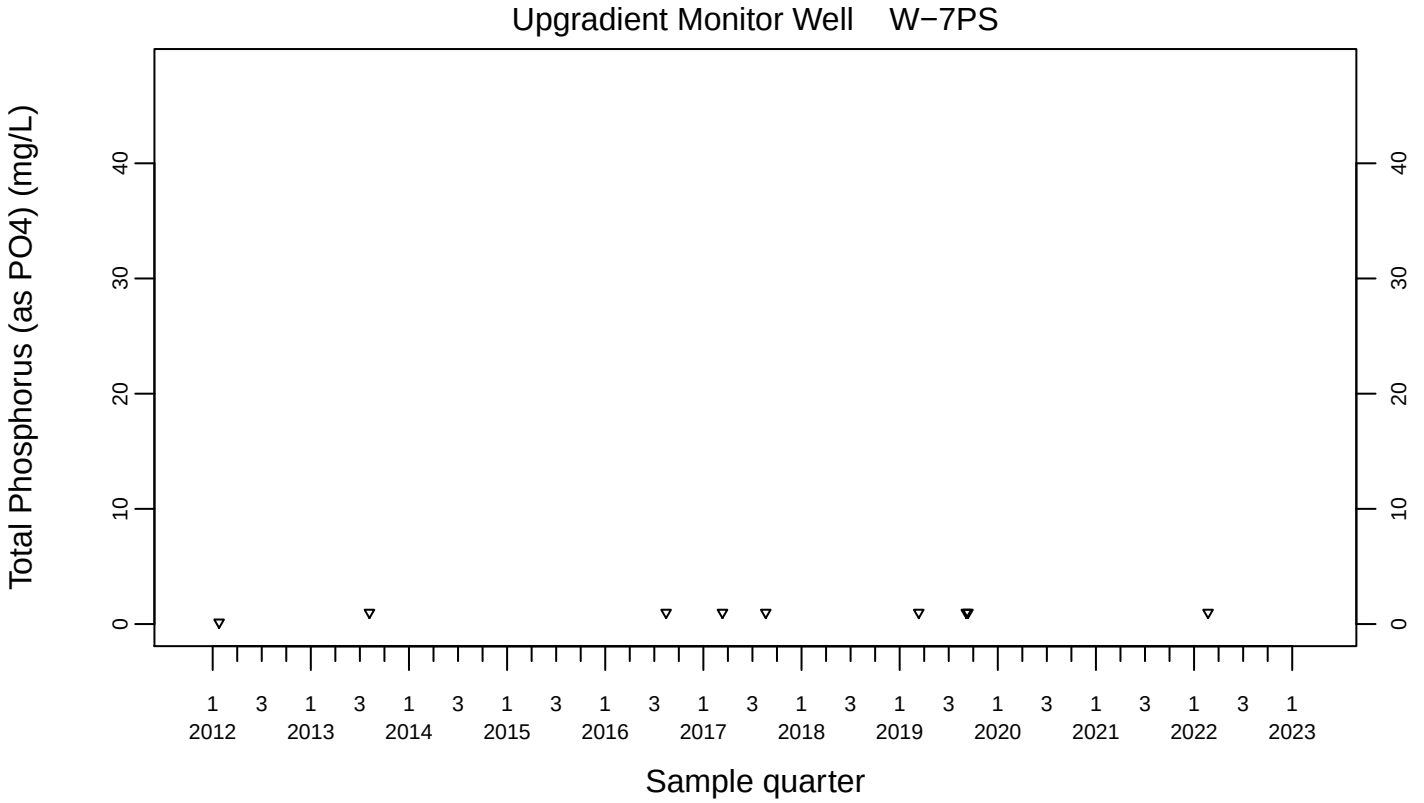




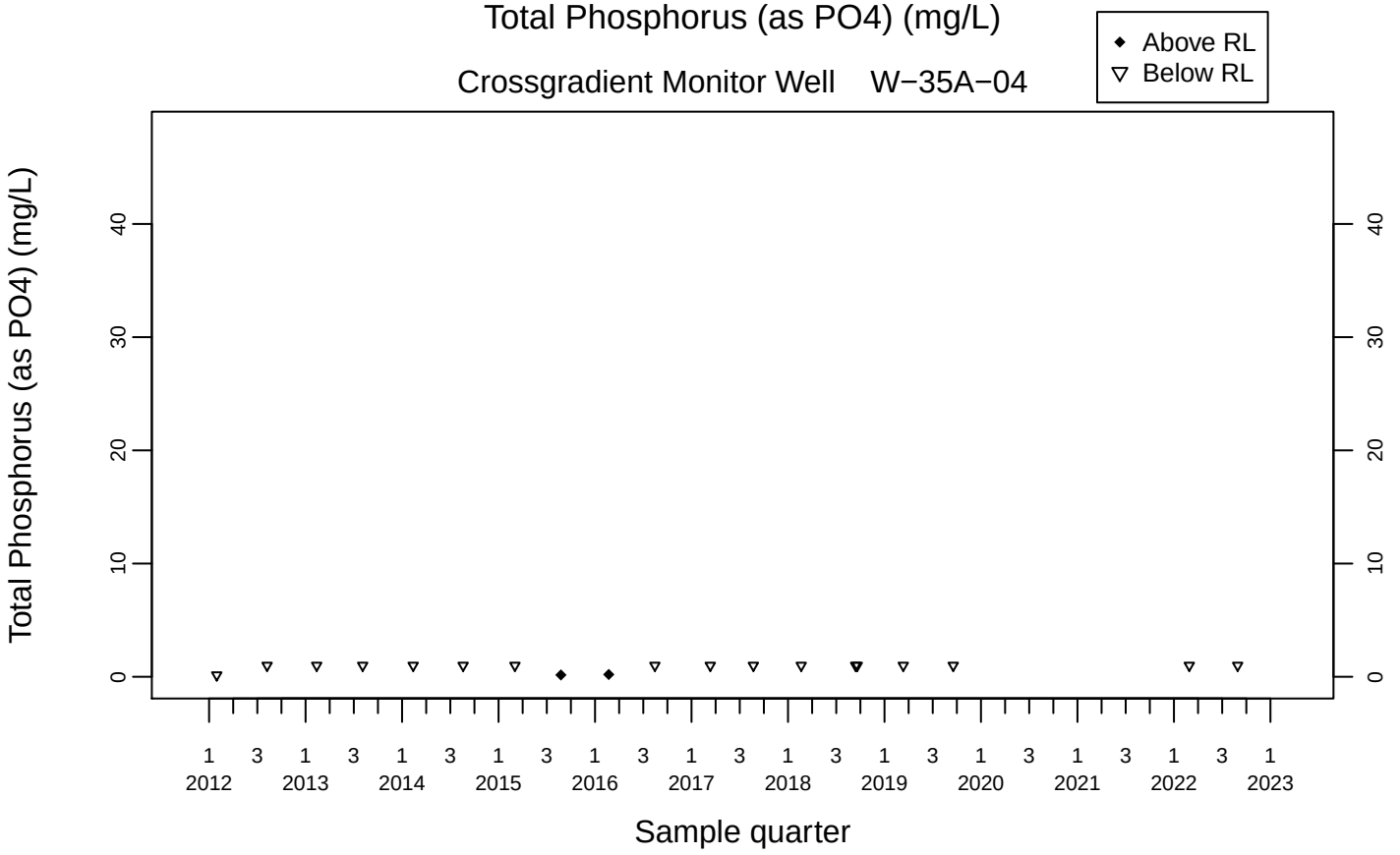

Sewage Ponds Ground Water
Total Hardness (as CaCO3) (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Total Hardness (as CaCO3) (mg/L)
0
100
200
300
400
500
600
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

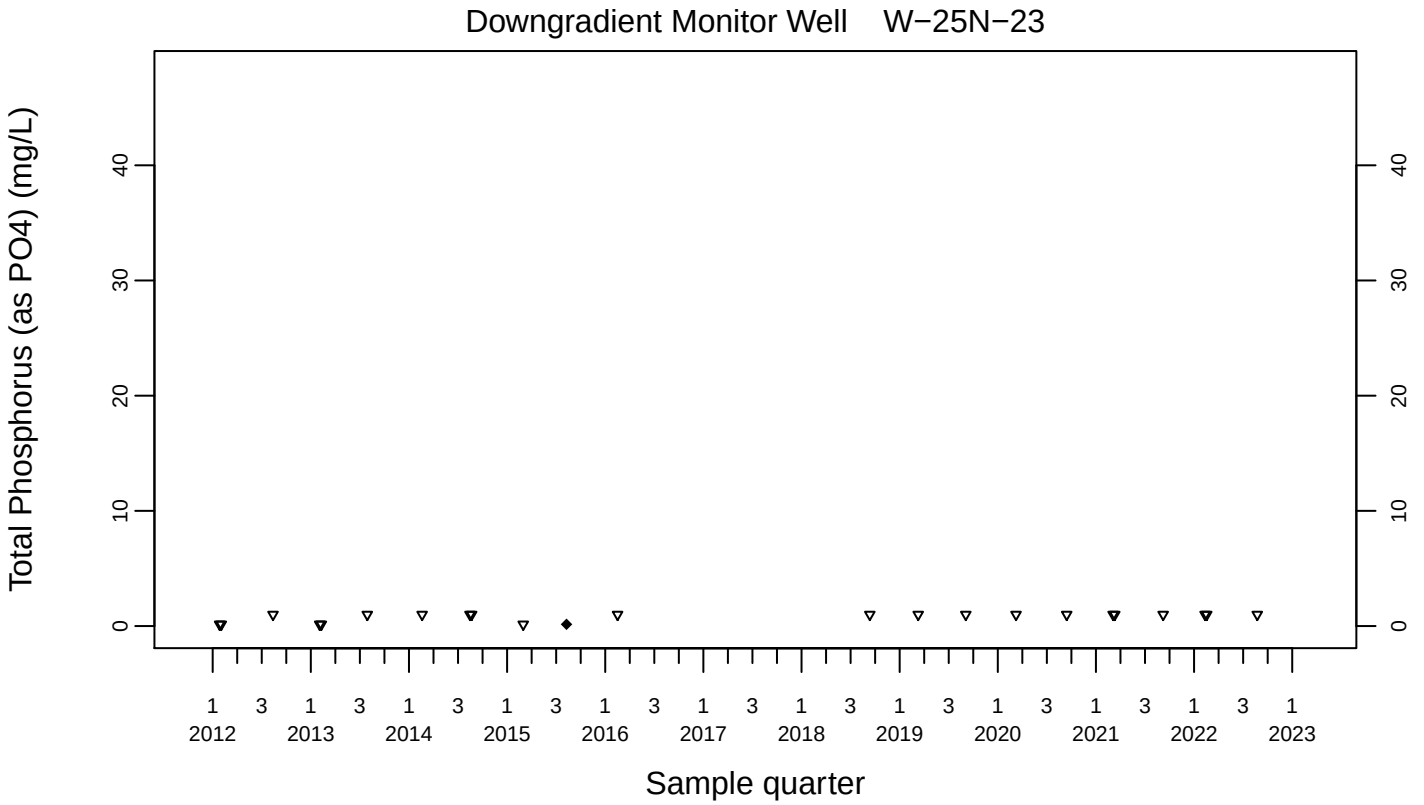
Sewage Ponds Ground Water
Total Phosphorus (as PO4) (mg/L)

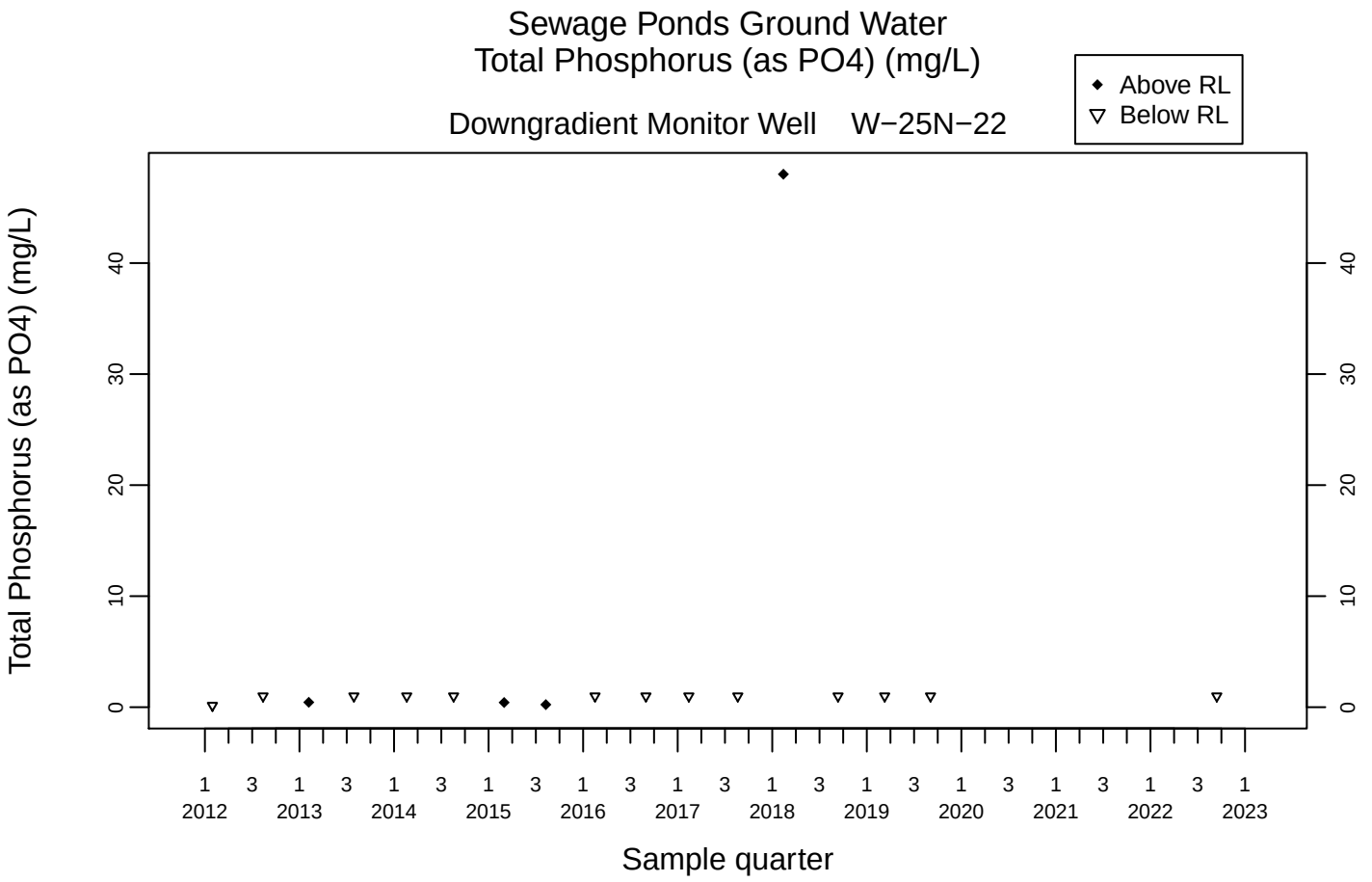


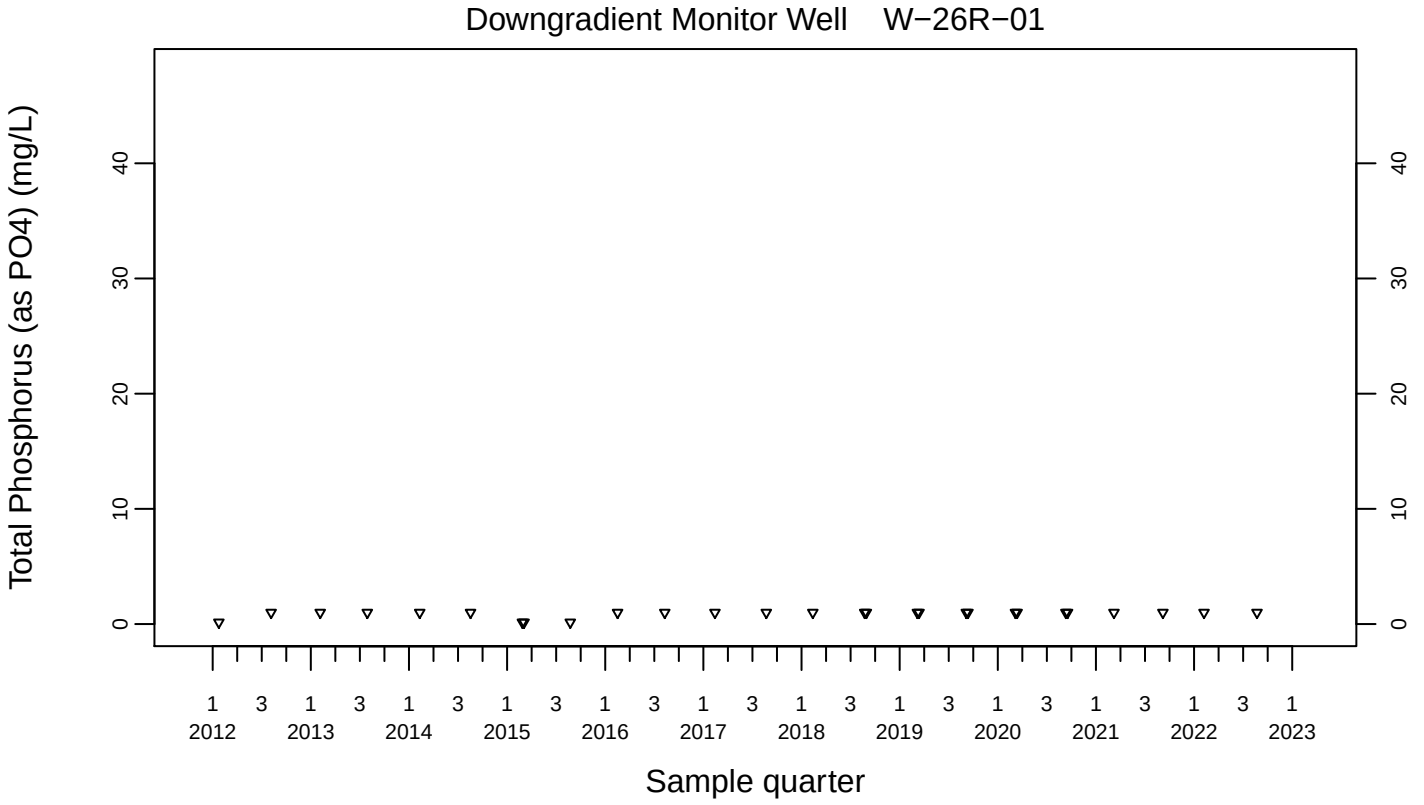


Sewage Ponds Ground Water
Total Phosphorus (as PO4) (mg/L)

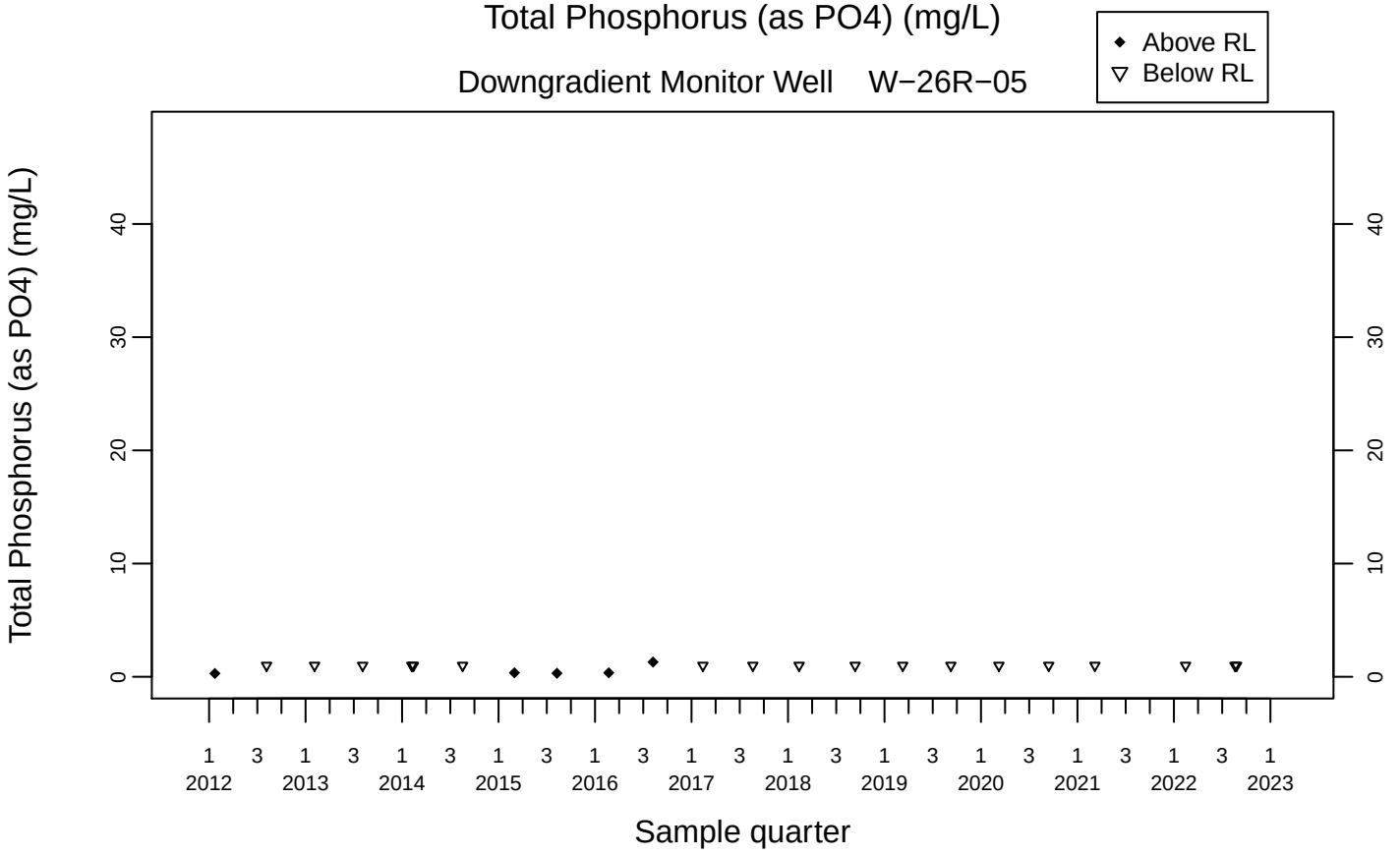


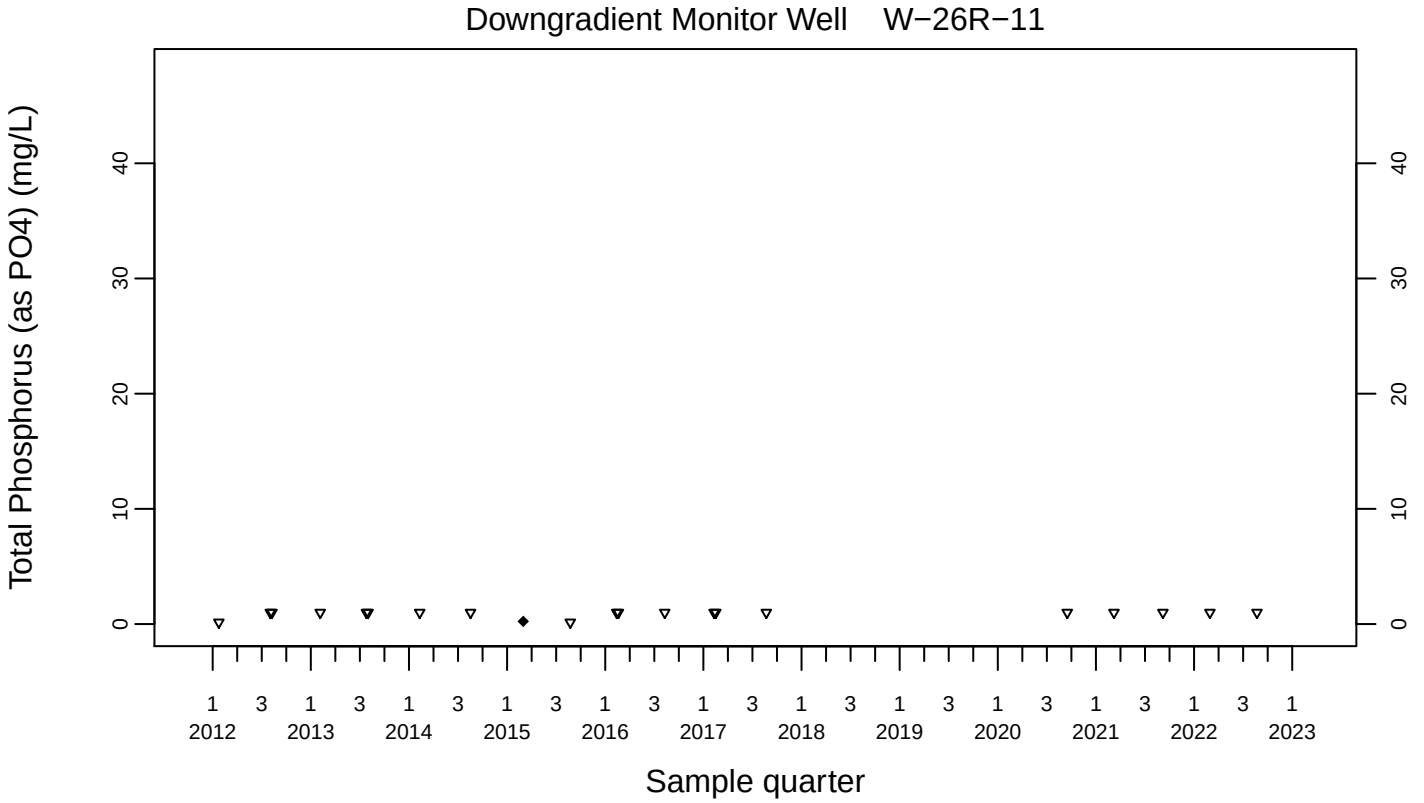


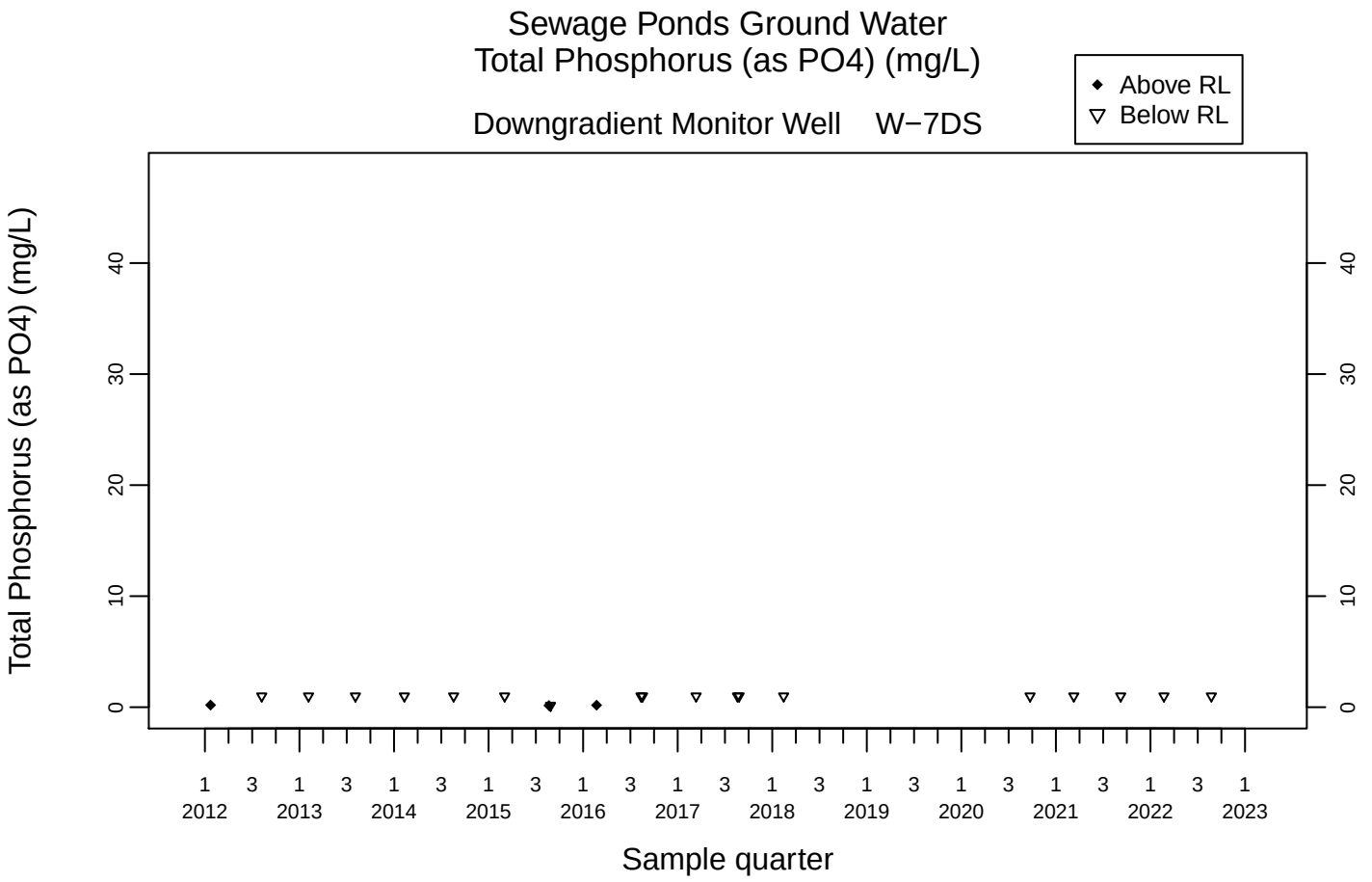

Sewage Ponds Ground Water
Total Phosphorus (as PO4) (mg/L)
Above RL
Below RL
Downgradient Monitor Well W−25N−22
Total Phosphorus (as PO4) (mg/L)
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter


Downgradient Monitor Well W−26R−01
Total Phosphorus (as PO4) (mg/L)
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

Sewage Ponds Ground Water
Total Phosphorus (as PO4) (mg/L)






Sewage Ponds Ground Water
Total Phosphorus (as PO4) (mg/L)
Downgradient Monitor Well W−7DS
Above RL
Below RL
Total Phosphorus (as PO4) (mg/L)
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Sample quarter

Appendix B

Cooling Tower Network
Buildings 801, 817A, 826, 827A, and 851

- Cooling Tower Blowdown Effluent Monitoring Network Data Tables
- Cooling Tower Sampling Chain of Custody forms
- Cooling Tower Percolation Pit Inspection Forms

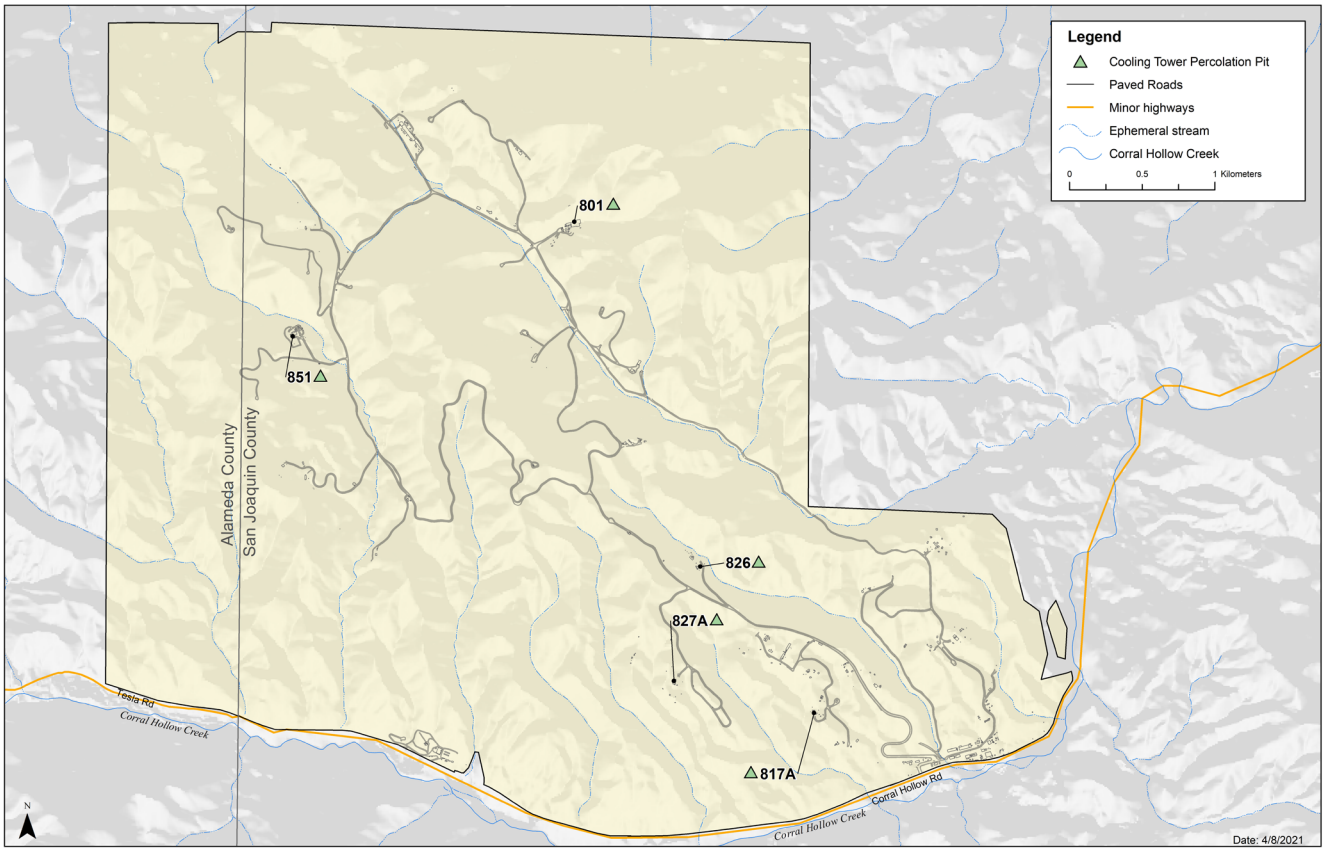


Figure B-1. Location of Site 300 cooling towers.

Table B-1. Site 300 cooling tower wastewater monitoring network 2022 sodium and anions data summary.

Discharge Location	Date	Sodium (mg/L)	Chloride (mg/L)	Nitrate (as NO3) (mg/L)	Sulfate (mg/L)	Fluoride (mg/L)	Bromide (mg/L)
3-801ACT01-TW	Apr 13	700	390	7.0	440	3.8	98
3-801ACT01-TW	Oct 11	810	470	9.5	450	8.8	30
3-817ACT01-TW	Apr 12	1400	700	<5	1100	4.7	40
3-817ACT01-TW	Apr 20	1300	-	-	-	-	-
3-817ACT01-TW	Oct 11	2300	1500	17	1400	22	66
3-826FCT01-TW	Apr 12	1400	810	<5	1400	3.2	17
3-826FCT01-TW	Apr 20	1200	-	-	-	-	-
3-826FCT01-TW	Oct 11	6300	3600	29	4800	38	<4
3-827ACT01-TW	Apr 12	680	320	<2.5	560	1.6	19
3-827ACT01-TW	Apr 20	690	-	-	-	-	-
3-827ACT01-TW	Oct 11	7400	4200	28	5800	21	<10
3-827ACT02-TW	Apr 12	590	270	<1	490	1.4	5.2
3-827ACT02-TW	Apr 20	600	-	-	-	-	-
3-827ACT02-TW	Oct 11	7100	2300	14	3200	14	<4
3-851BFCT03-TW	Apr 12	3100	2000	10	3400	9.2	<4
3-851BFCT03-TW	Apr 20	3400	-	-	-	-	-
3-851BFCT03-TW	Oct 11	770	450	4.4	420	5.2	46

Notes:
– Analysis not required.
Additional samples were collected on 4/20/2022 due to a sample hold time violation.

Table B-2. Site 300 cooling tower wastewater monitoring network 2022 metals analysis data summary.

Constituent	Units	3-801ACT01-TW	3-801ACT01-TW	3-817ACT01-TW	3-817ACT01-TW	3-817ACT01-TW	3-826FCT01-TW	3-826FCT01-TW	3-826FCT01-TW	3-827ACT01-TW	3-827ACT01-TW	3-827ACT01-TW
		Apr 13	Oct 11	Apr 12	Apr 20	Oct 11	Apr 12	Apr 20	Oct 11	Apr 12	Apr 20	Oct 11
		Routine	Routine	Routine	Routine	Routine	Routine	Routine	Routine	Routine	Routine	Routine
Aluminum	µg/L	<50	<50	<250	<250	<250	<250	<250	<500	<50	<250	<500
Arsenic	µg/L	20	10	15	20	36	9.0	16	110	8.7	8.1	79
Barium	µg/L	54	29	<50	<120	35	83	<120	150	33	26	<120
Boron	µg/L	2400	3200	4500	4500	7400	5700	4100	24000	2700	2600	26000
Cadmium	µg/L	<50	<50	<100	<250	<50	<100	<250	<250	<50	<50	<250
Calcium	µg/L	100000	94000	37000	30000	47000	83000	54000	15000	46000	40000	55000
Chromium	µg/L	6.0	8.0	4.6	<5	8.5	5.0	<5	41	2.4	2.6	46
Hexavalent Chromium	µg/L	7.8	12	-	4.8	12	-	6.8	<1	-	4.6	<1
Copper	µg/L	58	17	100	130	150	26	34	45	19	11	42
Iron	µg/L	570	180	500	<500	<500	<500	<500	<1000	310	<500	<1000
Lead	µg/L	<5	<5	<10	<25	<5	<10	<25	<25	<5	<5	<25
Magnesium	µg/L	<500	<500	<2500	<2500	<2500	<2500	<2500	<5000	<500	<2500	<5000
Manganese	µg/L	<30	<30	<150	<150	<150	<150	<150	<300	<30	<150	<300
Mercury	µg/L	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	0.20	<0.2	<0.2	<0.2
Molybdenum	µg/L	42	50	<120	<120	180	150	<120	590	50	<120	710
Nickel	µg/L	2.7	2.0	<4	<10	2.1	<4	<10	<10	<2	<2	<10
Potassium	µg/L	45000	42000	57000	56000	100000	50000	44000	240000	25000	25000	220000
Selenium	µg/L	71	18	45	50	56	14	71	16	27	30	<10
Silver	µg/L	<10	<10	<20	<50	<10	<20	<50	<50	<10	<10	<50
Vanadium	µg/L	<20	<20	<40	<100	<20	<40	<100	<100	<20	<20	<100
Zinc	µg/L	100	32	100	100	42	45	100	<100	67	52	<100

Notes:
– Hexavalent chromium hold time violation. Resamples were collected on 4/20/2022.

Table B-2. Site 300 cooling tower wastewater monitoring network 2022 metals analysis data summary continued.

Constituent	Units	3-827ACT02-TW	3-827ACT02-TW	3-827ACT02-TW	3-851BFCT03-TW	3-851BFCT03-TW	3-851BFCT03-TW
		Apr 12	Apr 20	Oct 11	Apr 12	Apr 20	Oct 11
		Routine	Routine	Routine	Routine	Routine	Routine
Aluminum	µg/L	50	<250	<500	<500	<250	73
Arsenic	µg/L	7.2	16	80	18	13	9.2
Barium	µg/L	33	31	<120	<120	<120	<25
Boron	µg/L	2300	2200	24000	12000	14000	2700
Cadmium	µg/L	<50	<50	<250	<250	<250	<50
Calcium	µg/L	46000	41000	59000	83000	84000	84000
Chromium	µg/L	2.6	2.7	48	40	43	11
Hexavalent Chromium	µg/L	-	2.9	35	-	49	13
Copper	µg/L	89	94	72	55	42	67
Iron	µg/L	310	<500	<1000	<1000	550	860
Lead	µg/L	<5	<5	<25	<25	<25	<5
Magnesium	µg/L	<500	<2500	<5000	<5000	<2500	<500
Manganese	µg/L	<30	<150	<300	<300	<150	<30
Mercury	µg/L	<0.2	<0.2	0.20	<0.2	<0.2	<0.2
Molybdenum	µg/L	46	<120	630	340	380	37
Nickel	µg/L	2.2	2.0	<10	<10	<10	2.1
Potassium	µg/L	47000	49000	210000	120000	140000	43000
Selenium	µg/L	16	64	12	<10	<10	19
Silver	µg/L	<10	<10	<50	<50	<50	<10
Vanadium	µg/L	<20	<20	<100	<100	<100	<20
Zinc	µg/L	320	330	<100	130	<100	430

Notes:
– Hexavalent chromium hold time violation. Resamples were collected on 4/20/2022.

Table B-3. Site 300 cooling tower wastewater monitoring network 2022 physical characteristics data summary.

Discharge Location	Date	pH (Units)	Specific Conductance (µmhos/cm)	Total Alkalinity (as $CaCO_3$) (mg/L)	TDS (mg/L)	Total Hardness (as $CaCO_3$) (mg/L)	Total Phosphorus (as PO_4) (mg/L)
3-801ACT01-TW	Apr 13	9.0	3580	750	2700	260	8.4
3-801ACT01-TW	Oct 11	9.1	3660	720	2500	240	2.3
3-817ACT01-TW	Apr 12	9.2	6480	1300	4500	95	4.2
3-817ACT01-TW	Oct 11	9.4	9690	1700	7600	120	7.6
3-826FCT01-TW	Apr 12	9.1	6750	1100	4700	210	1.7
3-826FCT01-TW	Oct 11	9.6	22400	3700	17000	52	1.5
3-827ACT01-TW	Apr 12	9.2	3450	780	2400	110	51
3-827ACT01-TW	Oct 11	9.5	25000	3900	20000	140	4.6
3-827ACT02-TW	Apr 12	9.0	2980	650	2300	120	52
3-827ACT02-TW	Oct 11	9.5	24600	3800	19000	150	5.5
3-851BFCT03-TW	Apr 12	9.2	13400	1300	9400	210	1.5
3-851BFCT03-TW	Oct 11	9.2	3630	740	2700	210	3.6

Table B-4. Site 300 cooling tower wastewater monitoring network 2022 QA data summary.

Constituent	Units	3-817ACT01-TW	3-817ACT01-TW	3-817ACT01-TW	3-817ACT01-TW	3-851BFCT03-TW	3-851BFCT03-TW
		Apr 12	Apr 12	Apr 20	Apr 20	Oct 11	Oct 11
		Routine	Duplicate	Routine	Duplicate	Routine	Duplicate
pH	Units	9.2	9.2	-	-	9.2	9.2
Specific Conductance	µmhos/cm	6,480	6,480	-	-	3630	3620
Aluminum	µg/L	<250	<250	<250	<250	73	54
Arsenic	µg/L	15	16	20	18	9.2	10
Barium	µg/L	<50	<50	<120	<120	<25	<25
Boron	µg/L	4,500	4,600	4,500	4,400	2700	2800
Cadmium	µg/L	<100	<100	<250	<250	<50	<50
Calcium	µg/L	37,000	38,000	30,000	31,000	84000	76000
Chromium	µg/L	4.6	4.3	<5	<5	11	11
Hexavalent Chromium	µg/L	-	-	4.8	5.2	13	14
Copper	µg/L	100	94	130	130	67	66
Iron	µg/L	500	<500	<500	<500	860	880
Lead	µg/L	<10	<10	<25	<25	<5	<5
Magnesium	µg/L	<2,500	<2,500	<2,500	<2,500	<500	<500
Manganese	µg/L	<150	<150	<150	<150	<30	<30
Mercury	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	µg/L	<120	<120	<120	<120	37	39
Nickel	µg/L	<4	<4	<10	<10	2.1	2.3
Potassium	µg/L	57,000	60,000	56,000	58,000	43000	43000
Selenium	µg/L	45	41	50	60	19	24
Silver	µg/L	<20	<20	<50	<50	<10	<10
Vanadium	µg/L	<40	<40	<100	<100	<20	<20

Table B-4. Site 300 cooling tower wastewater monitoring network 2022 QA data summary continued.

Constituent	Units	3-817ACT01-TW	3-817ACT01-TW	3-817ACT01-TW	3-817ACT01-TW	3-851BFCT03-TW	3-851BFCT03-TW
Zinc	µg/L	100	95	100	<100	430	420
Sodium	mg/L	1,400	1,400	1,300	1,400	770	780
Chloride	mg/L	700	700	-	-	450	450
Nitrate (as NO3)	mg/L	<5	<5	-	-	4.4	4.4
Sulfate	mg/L	1,100	1,100	-	-	420	420
Fluoride	mg/L	4.7	4.7	-	-	5.2	5.2
Bromide	mg/L	40	40	-	-	46	46
Total Alkalinity (as CaCO3)	mg/L	1,300	1,400	-	-	740	710
Total Dissolved Solids (TDS)	mg/L	4,500	4,400	-	-	2700	2600
Total Hardness (as CaCO3)	mg/L	95	98	-	-	210	190
Total Phosphorus (as PO4)	mg/L	4.2	<1	-	-	3.6	4.0

Note: – Analysis not required.

Chain of Custody

EFA/TSD Data Management Team
Lawrence Livermore National Laboratory
P.O. Box 808 L-379
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Work Authorized By: EFA/TSD
TRR Approver: DELLA BURRUSS
Project Info:

Access/COC #: 91536
Document Control #: 91536
Requester/LLNL Analyst: A. Thomas
Organization / Sampler: EFA/TSD / brunckhorst2
PCI Project #: 44497
PCI Task #: ES&H Bills and Taxes
Email: efa-dmt@llnl.gov
DMT Additional Copies:

Analytical Lab : BCLABS-BAK
TAT: 20d
Analytical Lab Log #:
Project/Network: COOLTOWER
ShipIt Release #: 294108
Add'l Email:

Additional Instructions:

Sample ID	Sampled Date/Time	Matrix	Cont. Type	Cont. Count	Study Area	Req. Analysis	Analysis Detail	Lab Instructions
3-801ACT01-01-TW	10/11/2022 11:15	TW	P	1	COOLTOWER	E300.0	BR	
3-801ACT01-01-TW	10/11/2022 11:15	TW	P	1	COOLTOWER	S3ANIONS	ALL	
3-801ACT01-01-TW	10/11/2022 11:15	TW	P	1	COOLTOWER	S3METALS	ALL	
3-801ACT01-01-TW	10/11/2022 11:15	TW	P	1	COOLTOWER	S3METALS	TOTAL	
3-801ACT01-01-TW	10/11/2022 11:15	TW	P	1	COOLTOWER	S3WETCHEM	ALL	
3-817ACT01-01-TW	10/11/2022 09:30	TW	P	1	COOLTOWER	E300.0	BR	
3-817ACT01-01-TW	10/11/2022 09:30	TW	P	1	COOLTOWER	S3ANIONS	ALL	
3-817ACT01-01-TW	10/11/2022 09:30	TW	P	1	COOLTOWER	S3METALS	ALL	
3-817ACT01-01-TW	10/11/2022 09:30	TW	P	1	COOLTOWER	S3METALS	TOTAL	
3-817ACT01-01-TW	10/11/2022 09:30	TW	P	1	COOLTOWER	S3WETCHEM	ALL	
3-826FCT01-01-TW	10/11/2022 09:50	TW	P	1	COOLTOWER	E300.0	BR	
3-826FCT01-01-TW	10/11/2022 09:50	TW	P	1	COOLTOWER	S3ANIONS	ALL	
3-826FCT01-01-TW	10/11/2022 09:50	TW	P	1	COOLTOWER	S3METALS	ALL	
3-826FCT01-01-TW	10/11/2022 09:50	TW	P	1	COOLTOWER	S3METALS	TOTAL	
3-826FCT01-01-TW	10/11/2022 09:50	TW	P	1	COOLTOWER	S3WETCHEM	ALL	
3-827ACT01-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	E300.0	BR	
3-827ACT01-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	S3ANIONS	ALL	
3-827ACT01-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	S3METALS	ALL	
3-827ACT01-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	S3METALS	TOTAL	
3-827ACT01-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	S3WETCHEM	ALL	
3-827ACT02-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	E300.0	BR	
3-827ACT02-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	S3ANIONS	ALL	
3-827ACT02-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	S3METALS	ALL	
3-827ACT02-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	S3METALS	TOTAL	
3-827ACT02-01-TW	10/11/2022 10:10	TW	P	1	COOLTOWER	S3WETCHEM	ALL	
3-851BFCT03-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	E300.0	BR	
3-851BFCT03-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	S3ANIONS	ALL	

	Relinquished Signature	Company	Date	Time		Received Signature	Company	Date	Time
1		LLNL/EFA/TSD	10/11/22	1245	2	Mary Bogan	PACE	10.11.22	1630
2					3				
3					4				
4					5				

Chain of Custody

EFA/TSD Data Management Team
Lawrence Livermore National Laboratory
P.O. Box 808 L-379
Livermore, CA 94551

Work Authorized By: EFA/TSD
TRR Approver: DELLA BURRUSS
Project Info:

Access/COC #: 91536
Document Control #: 91536
Requester/LLNL Analyst: A. Thomas
Organization / Sampler: EFA/TSD / brunckhorst2
PCI Project #: 44497
PCI Task #: ES&H Bills and Taxes
Email: efa-dmt@llnl.gov
DMT Additional Copies:

Analytical Lab : BCLABS-BAK
TAT: 20d
Analytical Lab Log #:
Project/Network: COOLTOWER
ShipIt Release #: 294108
Add'l Email:

Additional Instructions:

Sample ID	Sampled Date/Time	Matrix	Cont. Type	Cont. Count	Study Area	Req. Analysis	Analysis Detail	Lab Instructions
3-851BFCT03-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	S3METALS	ALL	
3-851BFCT03-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	S3METALS	TOTAL	
3-851BFCT03-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	S3WETCHEM	ALL	
3-B9900-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	E300.0	BR	
3-B9900-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	S3ANIONS	ALL	
3-B9900-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	S3METALS	ALL	
3-B9900-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	S3METALS	TOTAL	
3-B9900-01-TW	10/11/2022 10:50	TW	P	1	COOLTOWER	S3WETCHEM	ALL	

	Relinquished Signature	Company	Date	Time		Received Signature	Company	Date	Time
1		LLNL/EFA/TSD	10/11/22	1245	2		PACE	10-11-22	1635
2					3				
3					4				
4					5				

FIELD TRACKING FORM

Semi-Annual SITE 300 Cooling Towers

Special Instructions:
Should be sampled in early April and October.
See back of form for additional access information

LAB	CoC#	Ship It #
BC Labs	91536	294108

pH meter calibrated on: 10/11/22

Specific Conductance meter calibrated on: 10/11/22

Sample Date: 10/11/22

Location Indentifier	Location DUP taken - year/quarter	Sample Time	Initials	Field Measurments		BC Labs				Comments
				pH	Specific Conductance	S3METALS 500mL Poly 24hr hold for Cr6	S3ANIONS 500mL Poly	S3WETCHEM 1000mL Poly	E300.0/BR 250ml Poly	
3-801ACT01-TW	2019/2nd	1115	TG	9.41	3.54mS	✓	✓	✓	✓	
3-817ACT01-TW	2022/2nd	0930	TG	9.67	7.70mS	✓	✓	✓	✓	
3-826FCT01-TW	2021/2nd	0950	TG	9.82	16.92 mS	✓	✓	✓	✓	
3-827ACT01-TW	2020/4TH	1010	TG	9.64	1874 mS	✓	✓	✓	✓	
3-827ACT02-TW	2021/4TH	1010	TG	9.20	1086µS	✓	✓	✓	✓	
3-851BFCT03-TW	2022/4TH	1050	TG	9.49	3.45mS	✓	✓	✓	✓	
Duplicate of 3-851BFCT03-TW										
3-B9900-01-TW		1050	TG	9.49	3.45mS	✓	✓	✓	✓	

☑ Copy to Analyst, Ashley Thomas

Reference Document:
EMP-QAS-FTF

Revised 09/16/2022

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/18/22 Inspector Kale Building Number 827

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/~~No~~	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/18/22 Inspector Kalp Building Number 826

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/~~No~~	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/~~No~~	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/~~No~~	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/~~No~~	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/18/22 Inspector Kale Building Number 817

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/18/22 Inspector Kalo Building Number 801

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	5'4"
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/No	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/18/22 Inspector Kale Building Number 851

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made		

Supervisor's Signature Thomas Hunt Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/25/22 Inspector Kale Building Number 827

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/No	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/No	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/No	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/No	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/25/22 Inspector Kale Building Number 826

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made		

Supervisor's Signature Thomas Mudd Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/25/22 Inspector Kale Building Number 817

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/~~No~~	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/~~No~~	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/~~No~~	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/~~No~~	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/25/22 Inspector Kale Building Number 801

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	3' 8"
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/25/22 Inspector Kale Building Number 851

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/~~No~~	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/~~No~~	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/~~No~~	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/~~No~~	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/3/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9-27-22 Inspector Kale Building Number 827

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made		

Supervisor's Signature [signature] Date 10/24/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9-27-22 Inspector Kalf Building Number 826

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/24/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9-27-22 Inspector Kalf Building Number 817

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/24/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9-27-22 Inspector Kale Building Number 801

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	3' to water from surface
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/24/22

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Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9-27-22 Inspector Kale Building Number 851

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/~~No~~	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/~~No~~	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/~~No~~	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/~~No~~	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/24/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency to weekly until no standing water is observed.

Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/19/22 Inspector Kale Building Number 827

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 12/20/22

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Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/18/22 Inspector Kale Building Number 826

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made		

Supervisor's Signature [signature] Date 12/20/22

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For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/18/22 Inspector Kale Building Number 817

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Send a completed copy to the attention of Ada Chan, EFA, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/No	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/No	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/No	
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4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/No	
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Supervisor's Signature [signature] Date 12/20/22

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For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/18/22 Inspector Kale Building Number 801

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
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If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	3' from surface
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
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Supervisor's Signature [signature] Date 12/20/22

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Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/18/22 Inspector Kalo Building Number 851

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Check Items	Response	Description and Comments:
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Supervisor's Signature _____ Date 12/20/22

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For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/23/22 Inspector Kale Building Number 827

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Send a completed copy to the attention of Ada Chan, EFA (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
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Supervisor's Signature [signature] Date 12/20/22

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Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/23/22 Inspector Kale Building Number 826

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Send a completed copy to the attention of Ada Chan, EFA (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
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Supervisor's Signature [signature] Date 12/20/22

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For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/23/22 Inspector Kale Building Number 817

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
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Supervisor's Signature [signature] Date 12/20/22

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Monthly/Weekly Cooling Tower Percolation Pit Inspection Checklist*
For Buildings 801, 817A, 826, 827A, and 851
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/23/22 Inspector Kale Building Number 801

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Check Items	Response	Description and Comments:
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If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	3' from surface
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris)	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made		

Supervisor's Signature [signature] Date 12/20/22

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Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/23/22 Inspector Kale Building Number 851

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Check Items	Response	Description and Comments:
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Supervisor's Signature [signature] Date 12/20/22

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Waste Discharge Requirements Order Number R5-2008-0148
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Date 12-27-22 Inspector Kale Building Number 827

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Check Items	Response	Description and Comments:
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Supervisor's Signature [signature] Date 2/9/23

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Waste Discharge Requirements Order Number R5-2008-0148
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Date 12-27-22 Inspector Kale Building Number 826

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Check Items	Response	Description and Comments:
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3. Is there standing water in the Christy box?	Yes/(No)	
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4. Are there any other indications that the percolation pit requires maintenance (e.g. excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
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Supervisor's Signature [signature] Date 2/9/23

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Waste Discharge Requirements Order Number R5-2008-0148
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Date 12-27-22 Inspector Kale Building Number 817

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Check Items	Response	Description and Comments:
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Date 12-27-22 Inspector Kalo Building Number 801

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3. Is there standing water in the Christy box?	(Yes)/No	3' from surface
If yes is indicated in 3, note depth and increase inspection frequency to weekly until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
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Appendix C

Mechanical Equipment Network Buildings 827A, 827C, 827D, 827E, and 806A

– Mechanical Equipment Effluent Monitoring Network Data Tables

– Mechanical Equipment Sampling Chain of Custody forms

– Mechanical Equipment Percolation Pit Inspection Forms

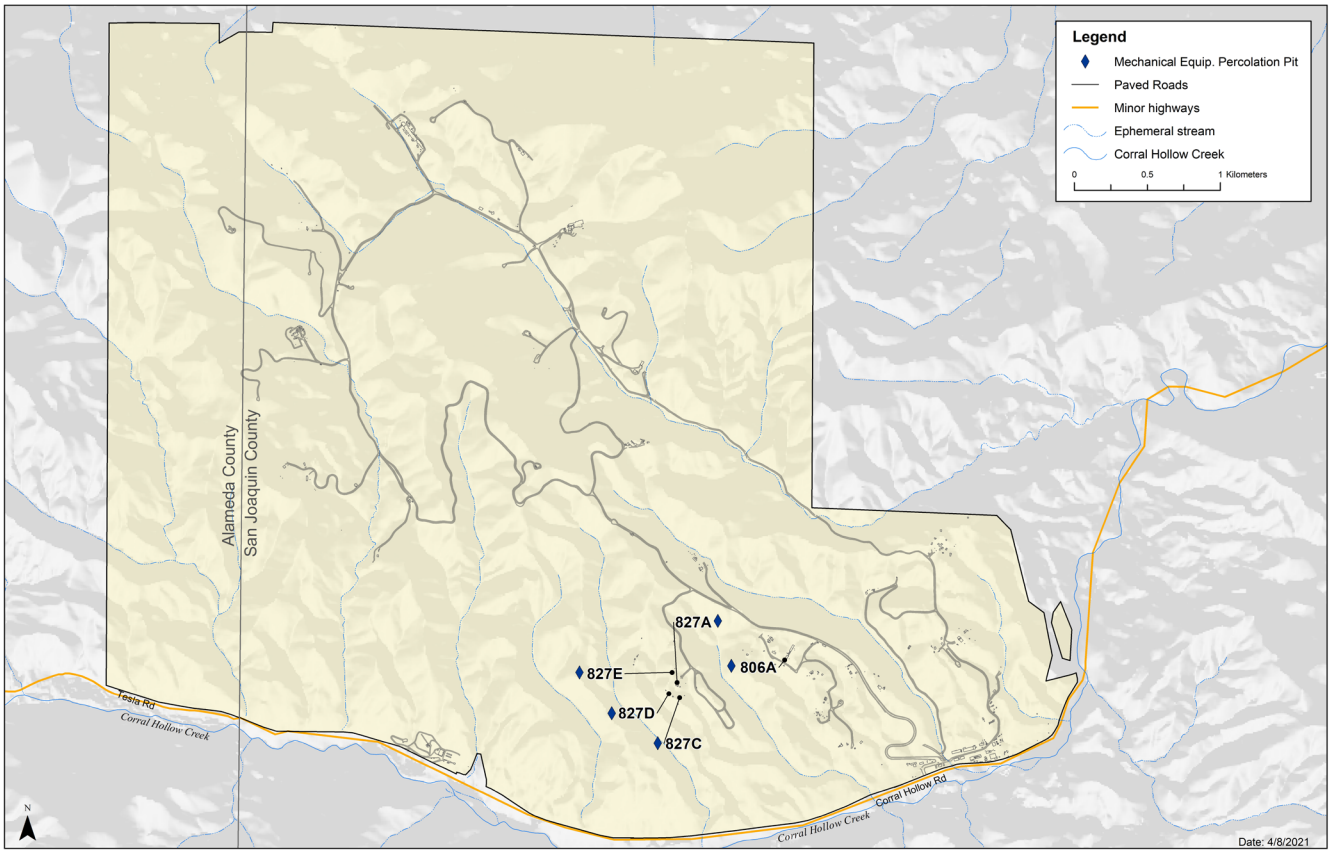

Figure C-1. Location of mechanical equipment wastewater percolation pits.

Table C-1. Site 300 mechanical equipment discharge effluent monitoring 2022 anions data summary.

Discharge Location	Date	Sodium (mg/L)	Chloride (mg/L)	Nitrate (as NO_3) (mg/L)	Sulfate (mg/L)	Fluoride (mg/L)
3-B806A-OW	May 5	51	21	<0.5	28	0.56
3-B806A-OW	Oct 17	110	50	<0.5	73	0.44
3-B806A-OW	Oct 17 DUP	110	50	<0.5	73	0.44
3-B827A-OW	May 4	770	330	<2.5	500	3.7
3-B827A-OW	Oct 17	2600	1400	11	2000	9.6
3-B827C-OW	May 4	88	41	0.73	65	0.52
3-B827C-OW	May 4 DUP	90	41	0.73	65	0.50
3-B827C-OW	Oct 18	89	140	5.0	74	0.42
3-B827E-OW	May 3	370	440	1.4	100	0.34
3-B827E-OW	Oct 18	110	52	<0.5	76	0.44

Table C–2. Site 300 mechanical equipment discharge effluent monitoring 2022 metals data summary.

Analyte	Date	3-B806A-OW	3-B806A-OW DUP	3-B827A-OW	3-B827C-OW	3-B827C-OW DUP	3-B827E-OW
Aluminum (µg/L)	May 3	-	-	-	-	-	210
	May 4	-	-	<50	57	54	-
	May 5	110	-	-	-	-	-
	Oct 17	55	<50	<250	-	-	-
	Oct 18	-	-	-	60	-	63
Arsenic (µg/L)	May 3	-	-	-	-	-	<2
	May 4	-	-	<10	<2	<2	-
	May 5	<2	-	-	-	-	-
	Oct 17	<2	<2	29	-	-	-
	Oct 18	-	-	-	<2	-	<2
Barium (µg/L)	May 3	-	-	-	-	-	<25
	May 4	-	-	<120	<25	<25	-
	May 5	67	-	-	-	-	-
	Oct 17	<25	<25	<25	-	-	-
	Oct 18	-	-	-	56	-	<25
Boron (µg/L)	May 3	-	-	-	-	-	580
	May 4	-	-	3100	410	390	-
	May 5	190	-	-	-	-	-
	Oct 17	420	420	8900	-	-	-
	Oct 18	-	-	-	310	-	410
Cadmium (µg/L)	May 3	-	-	-	-	-	<50
	May 4	-	-	<250	<50	<50	-
	May 5	<50	-	-	-	-	-
	Oct 17	<50	<50	<50	-	-	-
	Oct 18	-	-	-	<50	-	<50
Calcium (µg/L)	May 3	-	-	-	-	-	14000
	May 4	-	-	43000	5700	5900	-

Table C–2. Site 300 mechanical equipment discharge effluent monitoring 2022 metals data summary continued.

Analyte	Date	3-B806A-OW	3-B806A-OW DUP	3-B827A-OW	3-B827C-OW	3-B827C-OW DUP	3-B827E-OW
	May 5	2700	-	-	-	-	-
	Oct 17	8000	8300	19000	-	-	-
	Oct 18	-	-	-	39000	-	15000
Chromium (µg/L)	May 3	-	-	-	-	-	1.9
	May 4	-	-	<5	<1	<1	-
	May 5	2.0	-	-	-	-	-
	Oct 17	<1	<1	17	-	-	-
	Oct 18	-	-	-	<1	-	1.9
Chromium (VI) (µg/L)	May 3	-	-	-	-	-	<1
	May 4	-	-	5.0	<1	<1	-
	May 5	<1	-	-	-	-	-
	Oct 17	<1	<1	19	-	-	-
	Oct 18	-	-	-	<1	-	1.4
Copper (µg/L)	May 3	-	-	-	-	-	460
	May 4	-	-	12	25	25	-
	May 5	50	-	-	-	-	-
	Oct 17	12	12	90	-	-	-
	Oct 18	-	-	-	98	-	28
Iron (µg/L)	May 3	-	-	-	-	-	1400
	May 4	-	-	400	360	350	-
	May 5	160	-	-	-	-	-
	Oct 17	<100	<100	<500	-	-	-
	Oct 18	-	-	-	1700	-	450
Lead (µg/L)	May 3	-	-	-	-	-	13
	May 4	-	-	<25	<5	<5	-
	May 5	<5	-	-	-	-	-

Table C–2. Site 300 mechanical equipment discharge effluent monitoring 2022 metals data summary continued.

Analyte	Date	3-B806A-OW	3-B806A-OW DUP	3-B827A-OW	3-B827C-OW	3-B827C-OW DUP	3-B827E-OW
	Oct 17	<5	<5	<5	-	-	-
	Oct 18	-	-	-	<5	-	<5
Magnesium (µg/L)	May 3	-	-	-	-	-	<500
	May 4	-	-	<500	<500	<500	-
	May 5	<500	-	-	-	-	-
	Oct 17	<500	<500	<2500	-	-	-
	Oct 18	-	-	-	1500	-	<500
Manganese (µg/L)	May 3	-	-	-	-	-	<30
	May 4	-	-	<30	<30	<30	-
	May 5	<30	-	-	-	-	-
	Oct 17	<30	<30	<150	-	-	-
	Oct 18	-	-	-	600	-	<30
Mercury (µg/L)	May 3	-	-	-	-	-	0.25
	May 4	-	-	<0.2	0.69	<0.2	-
	May 5	<0.2	-	-	-	-	-
	Oct 17	<0.2	<0.2	0.27	-	-	-
	Oct 18	-	-	-	<0.2	-	<0.2
Molybdenum (µg/L)	May 3	-	-	-	-	-	<25
	May 4	-	-	49	<25	<25	-
	May 5	<25	-	-	-	-	-
	Oct 17	<25	<25	230	-	-	-
	Oct 18	-	-	-	<25	-	<25
Nickel (µg/L)	May 3	-	-	-	-	-	13
	May 4	-	-	<10	<2	<2	-
	May 5	2.2	-	-	-	-	-
	Oct 17	<2	<2	2.9	-	-	-

Table C–2. Site 300 mechanical equipment discharge effluent monitoring 2022 metals data summary continued.

Analyte	Date	3-B806A-OW	3-B806A-OW DUP	3-B827A-OW	3-B827C-OW	3-B827C-OW DUP	3-B827E-OW
	Oct 18	-	-	-	16	-	<2
Potassium (µg/L)	May 3	-	-	-	-	-	28000
	May 4	-	-	32000	3300	3300	-
	May 5	1800	-	-	-	-	-
	Oct 17	3400	3500	72000	-	-	-
	Oct 18	-	-	-	7700	-	3200
Selenium (µg/L)	May 3	-	-	-	-	-	<2
	May 4	-	-	31	<2	<2	-
	May 5	<2	-	-	-	-	-
	Oct 17	<2	<2	3.9	-	-	-
	Oct 18	-	-	-	<2	-	<2
Silver (µg/L)	May 3	-	-	-	-	-	<10
	May 4	-	-	<50	<10	<10	-
	May 5	<10	-	-	-	-	-
	Oct 17	<10	<10	<10	-	-	-
	Oct 18	-	-	-	<10	-	<10
Vanadium (µg/L)	May 3	-	-	-	-	-	<20
	May 4	-	-	<100	<20	<20	-
	May 5	<20	-	-	-	-	-
	Oct 17	<20	<20	20	-	-	-
	Oct 18	-	-	-	<20	-	<20
Zinc (µg/L)	May 3	-	-	-	-	-	96
	May 4	-	-	<100	21	23	-
	May 5	67	-	-	-	-	-
	Oct 17	26	22	150	-	-	-
	Oct 18	-	-	-	76	-	35

Note: – Analysis not required.

Table C-3. Site 300 mechanical equipment discharge effluent monitoring 2022 physical data.

Discharge Location	Date	pH	Specific Conductance (µmhos/cm)	Total Alkalinity (as $CaCO_3$) (mg/L)	Total Dissolved Solids (TDS) (mg/L)	Total Hardness (as $CaCO_3$) (mg/L)	Total Phosphorus (as PO_4) (mg/L)
3-B806A-OW	May 5	8.2	278	62.0	170	7.2	<1
3-B806A-OW	Oct 17	8.6	537	110	340	21	<1
3-B806A-OW	Oct 17 DUP	8.6	536	110	350	21	<1
3-B827A-OW	May 4	9.2	3380	810	2300	110	19
3-B827A-OW	Oct 17	9.6	9700	1400	7000	49	6.7
3-B827C-OW	May 4	8.9	485	110	310	15	<1
3-B827C-OW	May 4 DUP	9.0	485	110	310	16	<1
3-B827C-OW	Oct 18	7.5	706	26.0	420	100	<1
3-B827E-OW	May 3	8.9	1930	180	1200	36	10
3-B827E-OW	Oct 18	8.6	549	100	350	37	<1

FIELD TRACKING FORM
Semi-Annual Site 300 Mechanical Equipment Room/Percolation Pit Discharge

Special Instructions: Should be sampled in early April and October.
See back of form for additional access information
** For 3-B827A-OW Contact FPOC; Off-road travel

Location name change info: 3-B827A-OW previously 3-CT-PERC-OW
3-B806A-OW previously 3-806B-OW

LAB	CoC#	Ship It #
BC Labs	91610	294469

pH meter calibrated on: 10/18
Specific Conductance meter calibrated on: 10/18

Sample Date: 10/18/22

			Field Meas		BC Labs				Comments
Location Indentifier	Sample Time	Initials	pH	Specific Conductance	S3METALS 500mL Poly 24hr hold for Cr6	S3ANIONS 500mL Poly	S3WETCHEM 1000mL Poly		
3-B827A-OW**									827E started at 06:20 90, 130ml Samples collected over a 7 1/2 hour time frame, one sample every 5 min. Approx 7.5 Liters collected.
3-B827C-OW	1405	KB	7.02	619 µS	✓	✓	✓		827C started at 06:35, 92, 130ml Samples collected over a 7 1/2 hour time frame, one sample every 5 min. Approx 7 Liters collected
3-B827D-OW	NOT	Discharging							
3-B827E-OW	1350	KB	8.34	561 µS	✓	✓	✓		
3-B806A-OW									
Duplicate of 3-B827C-OW 2nd Qtr									
Duplicate of 3-B806A-OW 4th Qtr									
3-B9900-OW									

☐ Copy to Analyst, Ashley Thomas

Reference Document:
EMP-QAS-FTF

Revised 9/14/2022

Chain of Custody

Attn: EFA/TSD Data Management Team
Lawrence Livermore National Laboratory
P.O. Box 808 L-379
Livermore, CA 94551

Authorization: H100596
PCI Project #: 44497
PCI Task #: ES&H; Bills and Taxes

COC #: 91610
Document Control #: 91610
Requestor/LLNL Analyst: A. Thomas
Organization/Sampler: EFA/TSD/brunckhorst2
Project Info:
Email: efa-dmt@llnl.gov
Add'l Email:
Notes:

Analytical Lab: BCLABS-BAK
TAT: 20d
Analytical Lab Log #:
Project/Network: MECHEQUIPMNTRMS
ShipIt Release #: 294469

Additional Instructions:

Sample ID	Sampled Date/Time	Matrix	Cont Type	Cont Cnt	Study Area	Req. Analysis	Analysis Detail	Lab Instructions
3-B827C-01-OW	10/18/2022 14:05	AQ	P	1	MECHEQUIPM	S3ANIONS	ALL	
3-B827C-01-OW	10/18/2022 14:05	AQ	P	0	MECHEQUIPM	S3METALS	ALL	
3-B827C-01-OW	10/18/2022 14:05	AQ	P	1	MECHEQUIPM	S3METALS	TOTAL	
3-B827C-01-OW	10/18/2022 14:05	AQ	P	1	MECHEQUIPM	S3WETCHEM	ALL	
3-B827E-01-OW	10/18/2022 13:50	AQ	P	1	MECHEQUIPM	S3ANIONS	ALL	
3-B827E-01-OW	10/18/2022 13:50	AQ	P	0	MECHEQUIPM	S3METALS	ALL	
3-B827E-01-OW	10/18/2022 13:50	AQ	P	1	MECHEQUIPM	S3METALS	TOTAL	
3-B827E-01-OW	10/18/2022 13:50	AQ	P	1	MECHEQUIPM	S3WETCHEM	ALL	

	Relinquished Signature	Company	Date	Time		Received Signature	Company	Date	Time
1	Neal Brunckhorst	LLNL/EFA/TSD	10/18/2022	1510	2	Mary Brown	FACE	10-18-22	16:30
2					3				
3									

FIELD TRACKING FORM
Semi-Annual Site 300 Mechanical Equipment Room/Percolation Pit Discharge

Special Instructions: Should be sampled in early April and October.
See back of form for additional access information
** For 3-B827A-OW Contact FPOC; Off-road travel

Location name change info: 3-B827A-OW previously 3-CT-PERC-OW
3-B806A-OW previously 3-806B-OW

LAB	CoC#	Ship It #
BC Labs	91606	294433

pH meter calibrated on: 10/17
Specific Conductance meter calibrated on: 10/17

Sample Date: 10/17/22

Location Indentifier	Sample Time	Initials	Field Meas: pH	Field Meas: Specific Conductance	BC Labs: S3METALS 500mL Poly 24hr hold for Cr6	BC Labs: S3ANIONS 500mL Poly	BC Labs: S3WETCHEM 1000mL Poly	BC Labs:	Comments
3-B827A-OW**	1410	KB	9.27	5.42ms	✓	✓	✓		806A started at 06:20. 90, 130ml samples collected over a 7½ hour time frame, one sample every 5 min. Approx 7 Liters collected 827A started at 06:45. 91 130ml samples collected over a 7½ hour time frame. one sample every 5 min. Approx 7 Liter collected
3-B827C-OW									
3-B827D-OW	NOT	Discharging							
3-B827E-OW									
3-B806A-OW	1345	KB	8.46	482 µs	✓	✓	✓		
Duplicate of 3-B827C-OW **2nd Qtr**									
Duplicate of 3-B806A-OW **4th Qtr**									
3-B9900-OW	1345	KB			✓	✓	✓		

☐ Copy to Analyst, Ashley Thomas

Reference Document:
EMP-QAS-FTF

Revised 9/14/2022

Chain of Custody

Attn: EFA/TSD Data Management Team
Lawrence Livermore National Laboratory
P.O. Box 808 L-379
Livermore, CA 94551

Authorization: H100596
PCI Project #: 44497
PCI Task #: ES&H; Bills and Taxes

COC #: 91606
Document Control #: 91606
Requestor/LLNL Analyst: A. Thomas
Organization/Sampler: EFA/TSD/brunckhorst2
Project Info:
Email: efa-dmt@llnl.gov
Add'l Email:
Notes:

Analytical Lab: BCLABS-BAK
TAT: 20d
Analytical Lab Log #:
Project/Network: MECHEQUIPMNTRMS
ShipIt Release #: 294433

Additional Instructions:

Sample ID	Sampled Date/Time	Matrix	Cont Type	Cont Cnt	Study Area	Req. Analysis	Analysis Detail	Lab Instructions
3-B806A-01-OW	10/17/2022 13:45	AQ	P	1	MECHEQUIPM	S3ANIONS	ALL	
3-B806A-01-OW	10/17/2022 13:45	AQ	P	0	MECHEQUIPM	S3METALS	ALL	
3-B806A-01-OW	10/17/2022 13:45	AQ	P	1	MECHEQUIPM	S3METALS	TOTAL	
3-B806A-01-OW	10/17/2022 13:45	AQ	P	1	MECHEQUIPM	S3WETCHEM	ALL	
3-B9900-01-OW	10/17/2022 13:45	AQ	P	1	MECHEQUIPM	S3ANIONS	ALL	
3-B9900-01-OW	10/17/2022 13:45	AQ	P	0	MECHEQUIPM	S3METALS	ALL	
3-B9900-01-OW	10/17/2022 13:45	AQ	P	1	MECHEQUIPM	S3METALS	TOTAL	
3-B9900-01-OW	10/17/2022 13:45	AQ	P	1	MECHEQUIPM	S3WETCHEM	ALL	
3-B827A-01-OW	10/17/2022 14:10	AQ	P	1	MECHEQUIPM	S3ANIONS	ALL	
3-B827A-01-OW	10/17/2022 14:10	AQ	P	0	MECHEQUIPM	S3METALS	ALL	
3-B827A-01-OW	10/17/2022 14:10	AQ	P	1	MECHEQUIPM	S3METALS	TOTAL	
3-B827A-01-OW	10/17/2022 14:10	AQ	P	1	MECHEQUIPM	S3WETCHEM	ALL	

	Relinquished Signature	Company	Date	Time		Received Signature	Company	Date	Time
1		LLNL/EFA/TSD	10/17/2022	1325	2		PACE	10-17-22	1630
2					3				
3									

July

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/5/22 Inspector TODD WEST Building Number 806B

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made		

Supervisor's Signature [signature] Date 7/11/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency as needed until no standing water is observed.

July

Lawrence Livermore National Laboratory

Frequent Inspection to be Performed Monthly on Cranes and Hoists

Unreviewed Safety Question (USQ)

Revisions to this document must go through the Unreviewed Safety Question (USQ) review process before they are approved for implementation and posted on the web.

Location:	Crane ID	Building	Room Number	Rated Capacity: Bridge	Rail	Block	Hoist
	809 ACRJ01	809		2 TON			

Type: ☐ Bridge Crane ☐ Monorail Hoist ☐ Gantry Crane ☑ Other Type MODIFIED JIB

Visual Inspections:

1. Bridge or Monorail:	Labeled indicating rated capacity	☑ Yes	☐ No	☐ N/A
	Directional Sign	☑ Yes	☐ No	☐ N/A
2. Hoist Blocks:	Labeled indicating rated capacity	☑ Yes	☐ No	☐ N/A
3. Main Electric Disconnect:	Lockout capability	☑ Yes	☐ No	☐ N/A
	Clearly labeled	☑ Yes	☐ No	☐ N/A
4. Hoist Hooks:	Free of cracks, wear, or deformations	☑ Yes	☐ No	☐ N/A
	Safety latch intact and working properly	☑ Yes	☐ No	☐ N/A
	Swivels freely	☑ Yes	☐ No	☐ N/A
5. Hoist Cables/Chain:	Free of kinks, broken wires, corrosion, etc. (chain deformation, cracks, broken links, & corrosion)	☑ Yes	☐ No	☐ N/A
6. Hoist Drum	Check for proper spooling	☑ Yes	☐ No	☐ N/A
7. Check for current annual and monthly crane inspection label/tag		☑ Yes	☐ No	☐ N/A

Operational Tests:

8. Upper limit switch operates	☑ Yes	☐ No	☐ N/A
9. Lower limit switch (if applicable) operates (2 full wraps on hoist drum at lowest hook elevation)	☑ Yes	☐ No	☐ N/A
10. Pendant Control has functional emergency stop switch	☑ Yes	☐ No	☐ N/A
11. Pendant emergency stop switch operates	☑ Yes	☐ No	☐ N/A
12. Pendant Control buttons labeled	☑ Yes	☐ No	☐ N/A
13. Pendant/remote control push button controls operate (each speed)	☑ Yes	☐ No	☐ N/A
14. Equipment operation is free of any unusual noises and/or movement	☑ Yes	☐ No	☐ N/A
15. Hoist, Trolley, and Bridge brake operate	☑ Yes	☐ No	☐ N/A
16. Bridge and trolley limit switches (if applicable) operate	☐ Yes	☐ No	☑ N/A
17. Bridge movement audible alarm (if applicable) operates	☐ Yes	☐ No	☑ N/A

Comments

Action Required:

If Items 1 through 17 checked "No"
- Reported to equipment owner ☐ Yes ☐ No
- Administratively lock and tag out equipment.

Any deficiencies that can affect safety shall be corrected before hoist/crane is returned to service.
Signed and dated inspection records shall be kept on file and shall be readily available.

Date	Equipment Owner Signature

Date Inspected	Inspector Name	Signature
6-30-22	PEDRO F JIMENEZ	
Date Reviewed	Facility Supervisor/Manager or Designee Name	Signature
7/11/22	Scott Dossey	

Distribution: Facility Manager or Facility Point of Contact
Environment Safety &Health Team
Inspector

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/12/22 Inspector Raudel Hernandez Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 7/12/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency as needed until no standing water is observed.

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/12/22 Inspector Raudel Hernandez Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 7/12/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency as needed until no standing water is observed.

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/12/22 Inspector Raudel Hernandez Building Number 827D

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 7/12/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency as needed until no standing water is observed.

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 7/12/22 Inspector Raudel Hernandez Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 7/12/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/4/22 Inspector Raudel Hernandez Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 8/4/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/4/22 Inspector Raudel Hernandez Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 8/4/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/4/22 Inspector Raudel Hernandez Building Number 827D

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 8/4/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency as needed until no standing water is observed.

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8/4/22 Inspector Raudel Hernandez Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 8/4/22

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August

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 8-1-22 Inspector TODD WEST Building Number 806B

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature _____ Date 8/9/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency as needed until no standing water is observed.

SEPT 2022

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9/1/22 Inspector TODD WEST Building Number 806B

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 9/12/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9/12/22 Inspector Raudel Hernandez Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 9/12/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9/12/22 Inspector Raudel Hernandez Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature _____ Date 9/12/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9/12/22 Inspector Raudel Hernandez Building Number 827D

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 9/12/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 9/12/22 Inspector Raudel Hernandez Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 9/12/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/13/22 Inspector Raudel Hernandez Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/13/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/13/22 Inspector Raudel Hernandez Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/13/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/13/22 Inspector Raubel Hernandez Building Number 827D

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/13/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 10/13/22 Inspector Raudel Hernandez Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 10/13/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/6/22 Inspector LEVI MERRELL Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 11/6/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/6/22 Inspector LEVI MERRELL Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 11/6/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency as needed until no standing water is observed.

Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/6/22 Inspector LEW MERRELL Building Number 827D

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature _____ Date 11/6/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/6/22 Inspector LEVI MERRELL Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
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4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 11/6/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/28/22 Inspector TODD WEST Building Number 806B

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature Matt Jones Date 12-5-2022

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 11/1/22 Inspector TODD WEST Building Number 806B

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
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4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 11/8/2022

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 12/4/22 Inspector LEVI MERRELL Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
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4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 12/4/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 12/4/22 Inspector LEVI MERRELL Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

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Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
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4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 12/4/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 12/4/22 Inspector LEVI MORRELL Building Number 827D

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
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If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 12/4/22

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Monthly/Weekly Mechanical Equipment Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E, and 806A
Waste Discharge Requirements Order Number R5-2008-0148
Monitoring and Reporting Program Order No. R5-2008-0148, Revision 1

Date 12/4/22 Inspector LEVI MERRELL Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Elyse Will, Environmental Functional Area, (L-627)

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the ES&H Team EA or off hours contact the EDO (pager 04097 or 27595) immediately to arrange for reporting to the regulatory agency and sample collection.		
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If yes is indicated in 3, note depth and increase inspection frequency as needed until no water is noted		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature [signature] Date 12/4/22

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Monitoring and Reporting Program Order Number R5-2008-0148, Revision 1. If standing water is observed in the monthly inspection, increase inspection frequency as needed until no standing water is observed.

Appendix D

– California Regional Water Quality Control Board Central Valley Region Monitoring and Reporting - LLNL

LAWRENCE LIVERMORE NATIONAL LABORATORY SITE 300
SAN JOAQUIN AND ALAMEDA COUNTIES

ATTACHMENT 16

Evaluation of cooling tower and mechanical equipment discharges threat to groundwater quality using the designated level methodology (DLM); comparison of maximum value detected in samples with the DLM values for disposal units (percolation pits or septic systems) using attenuation factor of 100 for systems more than 30 feet above ground water.

Parameter	Units	Maximum value detected in effluent	Designated level methodology value	Corresponding water quality goal[a]	Source of water quality goal[a]
Aluminum	mg/L	0.25	100	1	CA primary MCL[b]
Bicarbonate alkalinity (as $CaCO_3$)	mg/L	220	None	None	None
Boron	mg/L	2.2	140	1.4	IRIS[c]
Calcium	mg/L	22	None	None	None
Carbonate alkalinity (as $CaCO_3$)	mg/L	800	None	None	None
Chloride	mg/L	210	Not applicable	250	CA secondary MCL
Chromium (total)	mg/L	0.0072	5	0.05	CA primary MCL
Chromium (hexavalent)	mg/L	0.0067	2.1	0.021	IRIS
Copper	mg/L	2.4	130	1.3	CA primary MCL
Fluoride	mg/L	1.1	200	2	CA primary MCL
Hydroxide alkalinity (as $CaCO_3$)	mg/L	120	None	None	None
Iron	mg/L	2.3	30	0.3	CA secondary MCL
Lead	mg/L	0.0077	1.5	0.015	CA primary MCL
Magnesium	mg/L	1.4	None	None	None
Manganese	mg/L	0.2	5	0.05	CA secondary MCL
Molybdenum	mg/L	0.045	3.5	0.035	IRIS

continued

ATTACHMENT 16 - CONTINUED

Evaluation of cooling tower and mechanical equipment discharges on ground water quality using the designated level methodology (DLM); comparison of maximum value detected in samples with the DLM values for disposal units (percolation pits or septic systems) using attenuation factor of 100 for systems more than 30 feet above ground water.

Parameter	Units	Maximum value detected in effluent	Designated level methodology value	Corresponding water quality goal[a]	Source of water quality goal[a]
Nickel	mg/L	0.019	10	0.1	CA primary MCL
Nitrate (as N)	mg/L	0.4	Not applicable	10	CA primary MCL
Nitrate (as NO_3)	mg/L	1.8	Not applicable	45	CA primary MCL
Nitrate plus Nitrite (as N)	mg/L	0.17	Not applicable	10	CA primary MCL
Ortho-phosphate	mg/L	180	None	None	None
Potassium	mg/L	280	None	None	None
Selenium	mg/L	0.0036	5	0.05	CA primary MCL
Sodium	mg/L	740	Not applicable	30-60	Taste & odor
Specific conductance	µmhos/cm	4,340	Not applicable	900	CA secondary MCL
Sulfate	mg/L	885	Not applicable	250	CA secondary MCL
Total alkalinity (as $CaCO_3$)	mg/L	920	None	None	None
Total dissolved solids	mg/L	3,300	Not applicable	500	CA secondary MCL
Total hardness (as CaCO)	mg/L	58	None	None	None
Total phosphorus (as P)	mg/L	54	None	None	None
Total trihalomethanes	mg/L	0.011	Not applicable	0.08	CA primary MCL
Vanadium	mg/L	0.1	6.3	0.063	IRIS
Zinc	mg/L	0.34	500	5	CA secondary MCL

[a] From *A Compilation of Water Quality Goals* (Marshack August 2007).
[b] MCL – Maximum contaminant level.
[c] IRIS – USEPA Integrated Risk Information System reference dose for drinking water.

Appendix E

– WDR-R5-2008-0148 Attachment 4: Low Threat Discharges

ATTACHMENT 4

Description of Site 300 low threat discharges to ground along with required Best Management Practices

Type of discharge (estimated volume)	Best management practices
Water (varies, one time discharges from a few gallons up to 5,000 gallons)	Minor discharges primarily associated with maintenance and operations of potable, deionized water or low-conductivity water systems. Large volume discharges reaching surface waters are permitted by NPDES permit CAG9950001. Small discharge volumes of potable, deionized water or low-conductivity water may be allowed to evaporate or percolate into the ground to prevent discharge directly into storm drain or surface water. Minimize erosion during discharge.
Air conditioner and compressor condensate (at most continuous drip)	Condensate must evaporate or percolate into the ground. Direct discharge to storm drain or surface waters is prohibited. No treatment chemicals are added. Units that discharge elevated metals as a result of corrosion in the system have condensate captured and characterized for proper disposal.
Landscape irrigation (varies from 10 to 300 gallons)	Excess runoff must evaporate or percolate into the ground to prevent discharge directly into storm drain or surface water. Minimize use of water to prevent excess runoff. Follow BMPs for pesticide and fertilizer application.
Pavement, building and window washing and equipment rinsing (varies from 10 to 300 gallons)	Excess water must evaporate or percolate into the ground to prevent discharge directly into storm drain or surface water. Use no soaps, detergents, or other cleaning chemicals. Use dry-cleaning methods for pavement cleaning when possible. Use water only when deemed necessary. Care is taken to ensure that water-washed areas have had no spills of toxic or hazardous materials, or that the spills were properly cleaned prior to any washing activity. Minimize water use.
Culvert flushing (varies from 100 to 5000 gallons)	Culverts are visually inspected annually and cleaned when needed. Cleaning involves removing accumulated sediments either with a backhoe or hand digging. Residual sediments may be flushed from the culvert with potable water. Removed sediments are used to reinforce channel banks or removed from the drainage channel for disposal or reuse elsewhere at Site 300.

Continued

ATTACHMENT 4 - CONTINUED

Description of Site 300 low threat discharges to ground along with required Best Management Practices

Type of discharge	Best management practices
Rainwater collected in secondary containment (varies based on size of berm and size of rain event, 60 gallons up to 5000 gallons)	Water collected in secondary containment berms must be evaluated prior to release to ensure the water is uncontaminated. Secondary containment maybe used for oil containing equipment, industrial wastewater retention systems, hazardous wastewater retention systems, hazardous waste accumulation areas (WAAs) and hazardous waste permitted facilities (TSDFs). These release evaluation protocols depend on the system containing the rainwater, and may include visual evaluation for sheens (at oil containing equipment), visual evaluation for contaminants (all systems), review of records to ensure no unexpected loss of liquid from the primary container, review of records to verify that any spills or releases have been cleaned up (all systems), sampling and analysis of the first rainwater of the season (industrial and hazardous wastewater retention systems, WAAs and TSDFs). Any water released to ground from berms must be released in a manner such that it evaporates or percolates into the ground to prevent discharge directly into storm drain or surface water.
Emergency eye wash and safety showers (30 gallons per unit tested)	Excess water from tests must evaporate or percolate into the ground to prevent discharge directly into storm drain or surface water. After use in an emergency, follow emergency response procedures to address any contamination that may need to be cleaned up.
Building fire sprinkler system tests (50 gallons per sprinkler system to several thousand gallons for deluge systems)	When no chemicals are added to the fire suppression system, water from tests may be allowed to evaporate or percolate into the ground to prevent discharge directly into storm drain or surface water. Measures are taken to ensure that no property damage, including erosion, results from the tests. When used in the event of an emergency, normal emergency response procedures are followed to address any contamination.
Fire hydrant testing (varies 750 to 1,500 gallons per hydrant)	When discharge will not reach surface waters, water may be discharged without dechlorination. If discharge may reach surface waters, follow requirements of WDR 5-00-175. Use erosion control measures during discharge to prevent soil erosion at the release site. Erosion prevention measures may include the use of a banana tube to direct flow away from erosion-prone areas and the use of hoses if necessary to direct the discharge to a suitable discharge location.

Continued

ATTACHMENT 4 - CONTINUED

Description of Site 300 low threat discharges to ground along with required Best Management Practices

Type of discharge	Best management practices
Wet hose drills and hose tests (hose tests, up to 3000 gallons annually; drills, vary depending on drill scenario)	Allow water from drills to evaporate or percolate into the ground to prevent discharge directly into storm drain or surface water. Implement erosion prevention measures.
Fire apparatus rinsing (up to 100 gallons per vehicle)	Rinse one to two times per week at the Fire House using a minimum amount of potable water and wipe down. Allow excess water to evaporate or percolate into the ground to prevent discharge directly into storm drain or surface water. No soaps, detergents, or chemical cleaners can be used. When a full cleaning is required, the equipment is taken to an approved wash facility.

Environmental Functional Area, Lawrence Livermore National Laboratory
P.O. Box 808, L-627, Livermore, California 94551