Environmental Functional Area

Environmental Support & Programmatic Outreach Group

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Lawrence Livermore National Laboratory (LLNL) Experimental Test Site (Site 300)

Compliance Monitoring Program for Closed Pit 1 Landfill

Fourth Quarter/Annual Report for 2015

Author

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Summary

This fourth quarter/annual report for 2015 summarizes compliance activities performed at the Lawrence Livermore National Laboratory (LLNL) Experimental Test Site (Site 300) landfill known as Pit 1. Compliance activities at the pit consist of groundwater sampling and analysis, pit cap inspections, and reporting of analytical results. Groundwater measurements are contained in **Appendix A, Tables A-1** to **A-4**.

No evidence of a new release of constituents of concern from Pit 1 was indicated by the fourth quarter groundwater measurements. Analytical data did, however, detect one constituent of concern, total uranium, above the statistical limit (SL) during this period from two monitoring wells. Details of these SL detections have been described in past reports and are discussed in detail in the Summary of Analytical Results section of this report.

Site 300 staff conducted a visual inspection of Pit 1 on November 4, 2015 and determined that the pit cap and drainage structures continue to function properly, and the vegetation cover and drainage systems are in proper operating condition.

Introduction

This fourth quarter/annual report for 2015 summarizes compliance monitoring results for a closed landfill known as Pit 1 at LLNL's Site 300. Site 300 is a 28.3 square kilometer (km^2) (10.9 square miles [mi^2]) site located in the Altamont Hills approximately 10.5 km (6.5 mi) southwest of downtown Tracy, California (**Figure 1**). The landfill is located in the northern portion of the site (**Figure 2**). Closure of this unlined Class I waste management unit was completed with waste in place in December 1992 following a California Department of Health Services (now Department of Toxic Substances Control, or DTSC) approved RCRA Closure and Post-Closure Plan (PCP) using the LLNL Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Federal Facilities Agreement (FFA) process. Site 300 is owned by the U.S. Department of Energy (U.S. DOE) and is operated by Lawrence Livermore National Security, LLC.

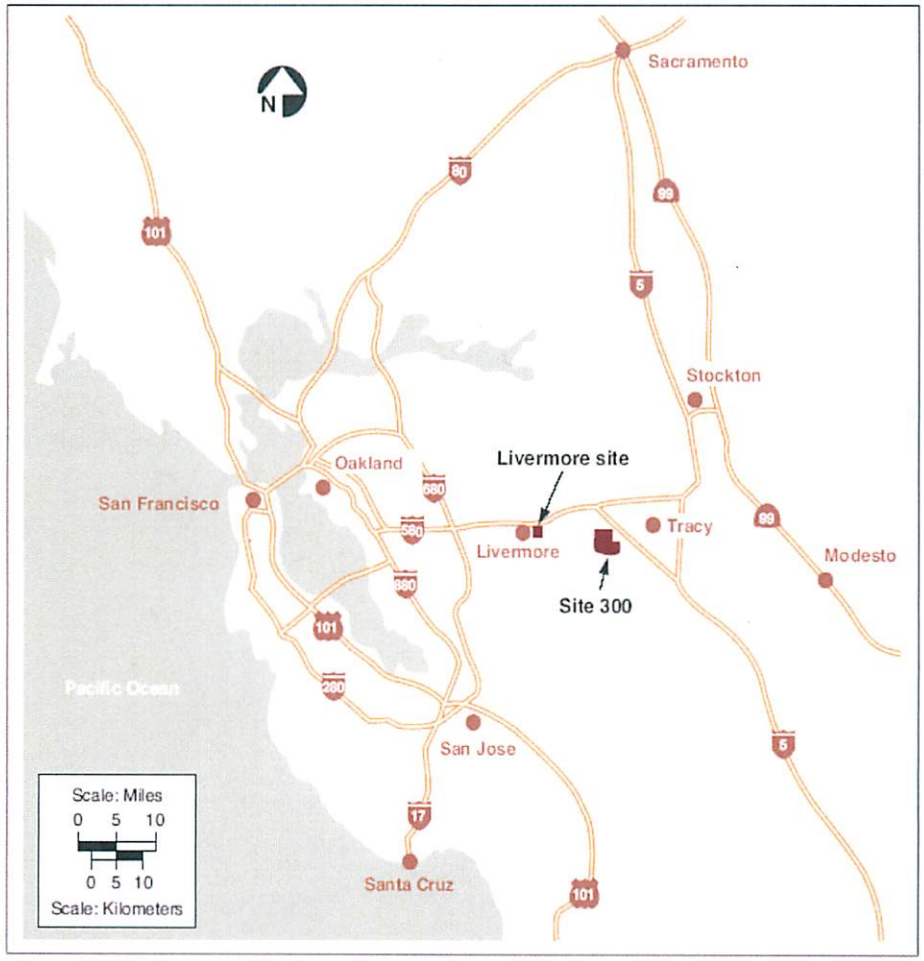

Figure 1. Location of LLNL Site 300.

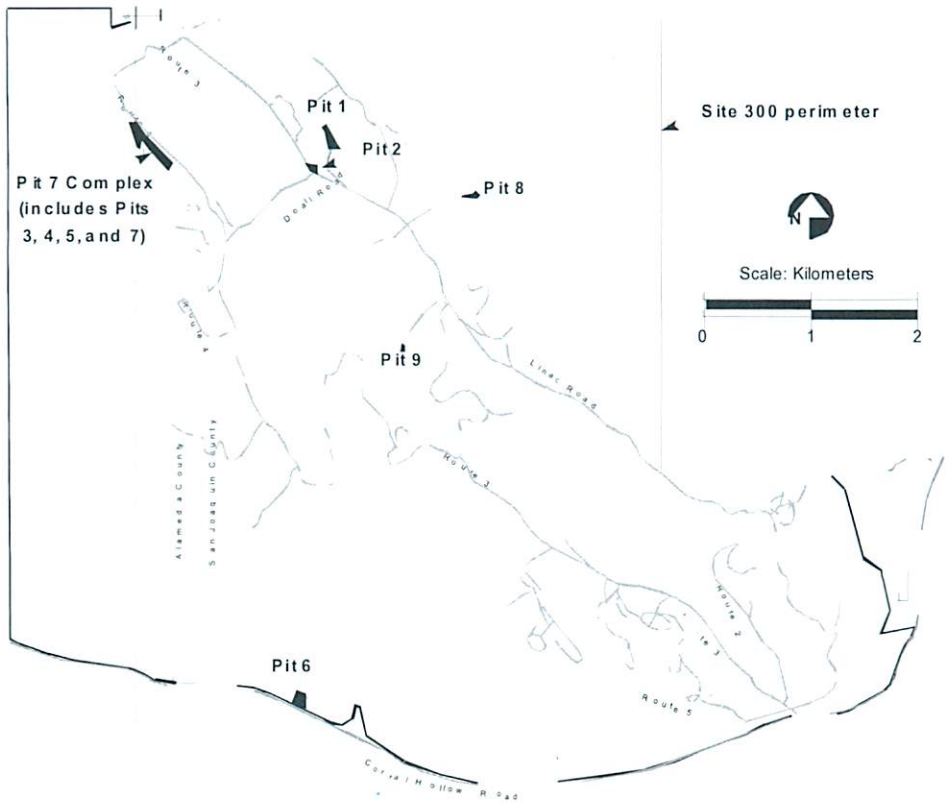

Figure 2. Location of closed landfill Pit 1 at LLNL Site 300.

Pit 1 is located in the Elk Ravine drainage area, about 300 meters (m) or 984 feet (ft) above mean sea level (MSL). Groundwater generally flows in an east-northeast direction beneath Pit 1 **(Figure 3)**, following the inclination (dip) of underlying Miocene-age sedimentary rocks (Webster-Scholten, 1994).

The current monitoring network at Pit 1 consists of twelve monitoring wells. These include eight detection monitoring wells and four evaluation monitoring wells (**Figure 3)**. The detection monitoring wells that are used to sample the groundwater in the vicinity of Pit 1 include: wells K1-01C and K1-07 located hydrologically upgradient from Pit 1; down-gradient wells K1-02B, K1-04, K1-05, and W-PIT1-2326; and cross-gradient wells K1-08 and K1-09. The primary objective of the detection monitoring wells is to detect any new release of constituents of concern to groundwater. Constituents of concern, as defined by Title 23 of the California Code of Regulations (CCR), Chapter 15, are waste constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste buried in the Pit 1 Landfill. LLNL collects, analyzes, and statistically evaluates one sample quarterly from each detection monitoring well.

The evaluation monitoring wells are all downgradient of Pit 1 wells and include K1-06, W-PIT1-2620, W-PIT1-2209, and W-865-2005 as required by the Monitoring Reporting Program (MRP). Well W-PIT1-02 is no longer sampled because it was abandoned and replaced by well W-PIT1-2620 during the third quarter of 2011 due to well damage. These evaluation

monitoring wells were added to Pit 1 monitoring and reporting requirements to track existing plumes of perchlorate and tritium from an up-gradient source. LLNL collects and analyzes one sample quarterly from each evaluation monitoring well and annually conducts trend analyses for tritium and perchlorate.

All of these wells are screened in the uppermost water-bearing zone in the Neroly Formation lower blue sandstone unit ($Tnbs_1/Tnbs_0$). The Neroly Formation contains the main aquifer beneath Site 300. Pit 2, which was closed before RCRA was enacted, is hydrologically upgradient from Pit 1. In 1992, a 2.4 m (8 ft) thick RCRA cap containing an impermeable layer of clay that is 0.6 m (2 ft) thick was constructed over Pit 1. The cap prevents rainwater from percolating through the waste buried in the pit. A water diversion channel was constructed around the pit cap to remove storm water runoff. The diversion channel empties into the adjacent arroyo, the headwater of Elk Ravine.

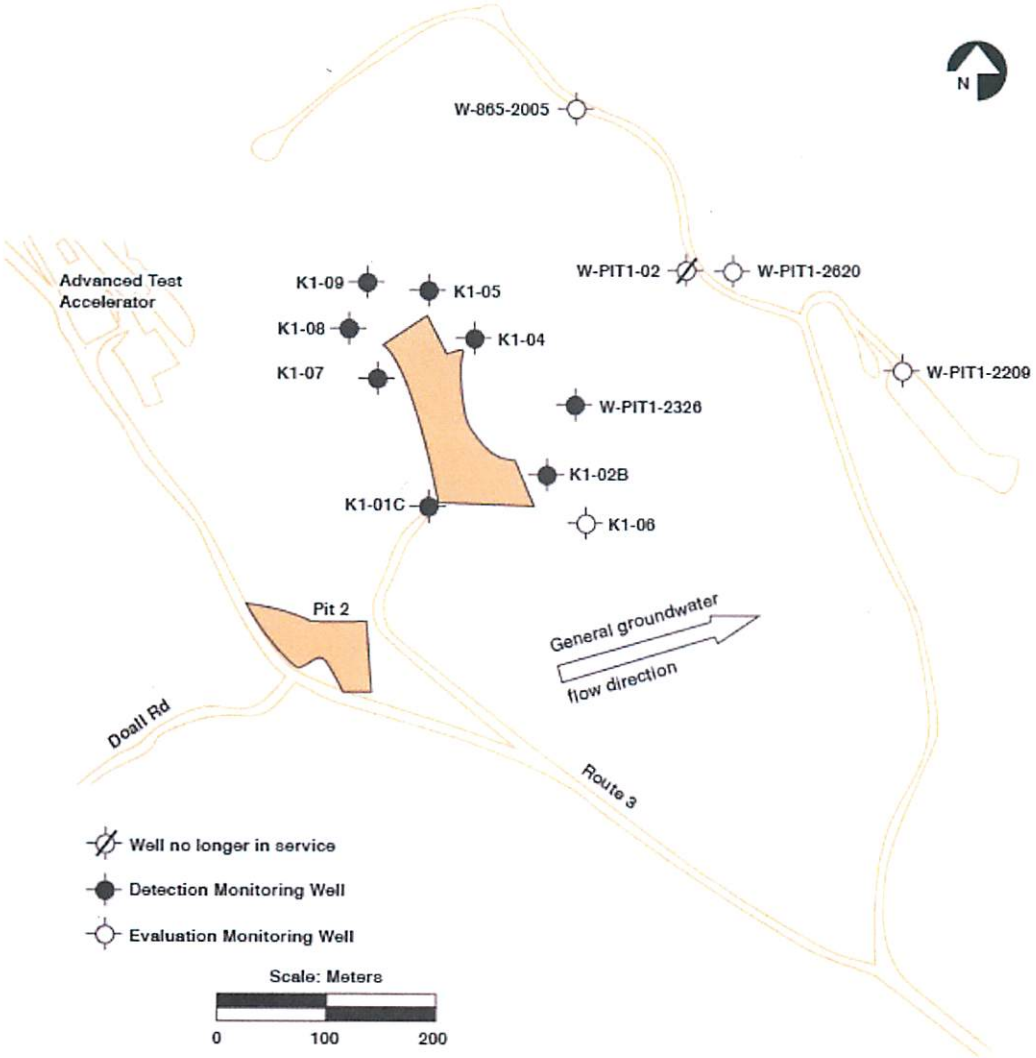

Figure 3. Locations of Pit 1 compliance monitoring wells.

Compliance Monitoring Program Overview

This report fulfills quarterly requirements set forth in the following two documents: (1) Waste Discharge Requirements (WDR) Order 93-100 and the February 18, 2010, MRP No. 93-100, administered by the California CVRWQCB (CVRWQCB 1993 and 2010) and (2) LLNL Site 300 RCRA Closure and Post-Closure Plans (PCPs), Landfill Pits 1 and 7 (Rogers/Pacific Corporation 1990). The PCP was approved by the California Department of Health Services (currently the California Department of Toxic Substances Control). The combined requirements include quarterly groundwater sampling and analyses to detect potential releases of constituents of concern from the landfill, annual and post-major storm event visual inspections of pit cap integrity, repairs as necessary to maintain the integrity of the landfill and its water-diversion system, annual measurements of cap survey markers to detect subsidence, an annual inspection of the cap by an independent engineer, and quarterly written monitoring reports.

Quality Assurance

To ensure quality data, LLNL works within the established Quality Assurance (QA) program of the LLNL Environment, Safety & Health Directorate. LLNL uses protocols and procedures that cover all aspects of groundwater sampling, sample tracking, and data management. These written protocols and procedures are contained in the *LLNL Livermore Site and Site 300 Environmental Restoration Project Standard Operating Procedures (SOPs)* (Goodrich and Lorega, 2012), and the *Environmental Monitoring Plan* (Gallegos, 2012). SOPs are used to minimize inadvertent sample contamination and maintain sample integrity from the well to the analytical laboratory. Data management SOPs ensure that all laboratory measurements are received, accurately recorded, and properly stored both in a computer database and in hardcopy format.

Each quarter, a duplicate (collocated) set of groundwater samples is collected from each monitoring network and a set of blank samples is prepared from a randomly chosen well. In addition, equipment blanks are prepared and analyzed to ensure that sampling equipment is properly cleaned before use. Each day, when samples are collected for volatile organic compound (VOC) analysis, a trip blank (prepared at the analytical laboratory) is carried into the field. It is returned unopened to the analytical laboratory for VOC analysis. If VOCs are detected in a trip blank and in any of the routine samples obtained that day, sample results may be discounted and new sampling may be performed.

As required by Executive Order 12770, measurements are reported in *Système Internationale* (SI) units. The SI unit for radioactivity is the becquerel (Bq), equal to 1 nuclear disintegration per second. The more commonly used unit, picocurie (pCi), is equal to 1 nuclear disintegration per 27 seconds. As a convenience, maximum contaminant levels (MCLs) for radioactivity in drinking water are given in both becquerels per liter (Bq/L) and picocuries per liter (pCi/L) in **Table 1**. Note that MCLs are provided for reference only, because this report does not involve wells used for potable domestic, livestock, or industrial water supply.

Table 1. MCLs for radioactivity in drinking water.

Radiological parameter	MCL (Bq/L)	MCL (pCi/L)
Gross alpha	0.555	15
Gross beta	1.85	50
Tritium	740	20,000
Radium (total)	0.185	5
Uranium (total)	0.74	20

Description of Report Contents

The "Summary of Analytical Results" section reviews any constituents of concern detected in groundwater during the fourth quarter of 2015 from detection monitoring and perchlorate and tritium in evaluation monitoring wells. Constituents of concern measurements that exceeded SLs or MCLs in drinking water are discussed in this report.

Appendix A contains the groundwater analytical measurements for the fourth quarter of 2015. Pit 1 data are in **Tables A-1**, **A-2**, and **A-3**. **Table A-4** shows the sample dates for Pit 1, and **A-5** shows the reporting limits (RLs) for the Pit 1 VOC constituents of concern. In **Tables A-1** through **A-3**, results that are less than the RL are prefaced with a less than sign (<). Note that the **Appendix A** tables may include some small negative values for radioactivity measurements. These are below the method RLs and are calculated values. They simply indicate that the radioactivity for that groundwater sample is less than a low reference standard. **Appendix A** also contains a groundwater contour map of water levels from the $Tnbs_1/Tnbs_0$ Hydrostratigraphic Unit (HSU) at Pit 1.

Appendix B explains the methods used to determine the SL of concentration for a constituent of concern. Requirements for statistical treatment of groundwater data are established in the CCR, Title 23, Division 3, Chapter 15, Section 2550.7. LLNL uses a statistical prediction limit method to implement intrawell comparisons. The method uses the average and standard deviation of historical measurements to calculate a SL value. If a routine quarterly constituent of concern measurement exceeds its SL and is confirmed by retesting, it is reported to the CVRWQCB as statistically significant evidence of a release.

Appendix C contains the results for QA sample analyses performed during the fourth quarter of 2015 at Pit 1 (**Table C-1**).

Appendix D consists of **Table D-1** summarizing constituents of concern and the sampling frequencies in the monitoring network for the pit. The regulatory drivers for each constituent of concern are also included in **Table D-1**.

Appendix E consists of **Table E-1** and presents well specification and construction details for detection monitoring and evaluation monitoring wells.

Appendix F consists of hydrographs for all compliance monitoring wells.

Appendix G consists of **Table G-1** and includes field logs for all compliance monitoring wells.

Summary of Analytical Results

This section summarizes the analytical results for Pit 1 for the fourth quarter report of 2015 and reports on the requirements of the CVRWQCB Pit 1 MRP and post closure plan requirements. During the fourth quarter monitoring period, no new releases of constituents of concern to groundwater from the pit are evident in the data. As part of the MRP, statistical limits (SLs) used to monitor groundwater constituents of concern are shown on **Table A-1**. The MRP requires that two confirmation samples be collected from wells with constituents of concern exceeding SLs. If either of the two confirmation samples exceeds the SL, a finding of statistically significant evidence of a release is confirmed and a seven-day notification letter must be submitted to the CVRWQCB. The statistical tests used to evaluate this data are those identified in **Appendix B**.

Detection Monitoring Wells

Analytical results indicate that there were no new constituents of concern detected at Pit 1 detection monitoring wells. Analytical data did detect one normally monitored constituent of concern that was above the statistical limit (SL) during this period in two wells. This includes total uranium in wells K1-02B and W-PIT1-2326. Details of these SL detections are explained below.

The total uranium activities detected above the SL from routine samples from these wells were K1-02B (0.183 Bq/L, [SL=0.145 Bq/L]), and W-PIT1-2326 (0.144 BQ/L, [SL=0.139 Bq/L]). The total uranium activities in these wells and other Pit 1 wells have been discussed in past reports (Blake, 2011; Blake, 2015) and in letters to the CVRWQCB (Schultz, 2010 [90-Day Letter]; Pierce, 2011 [Seven-Day Written Notification]).

As stated in these letters and reports, the analysis and information that LLNL provided to the CVRWQCB indicated that the total uranium activities in the Pit 1 wells have historically had natural uranium signatures and are within background ranges. LLNL conducted additional analyses (Blake, 2011) for uranium isotopes on various Pit 1 monitoring wells to further investigate total uranium at Pit 1. LLNL concluded in all cases, that the uranium 235/238 isotopic ratios were very close to a ratio of 0.0072 indicating that the uranium in the Pit 1 wells is of natural origin. This information therefore indicates that the SL exceedance of total uranium in Pit 1 wells does not indicate a significant evidence of a release of total uranium from the pit.

Tritium was detected at 9.40 Bq/L (254 pCi/L) in detection monitoring well K1-09 (SL=8.66 Bq/L, [234 pCi/L]) from a routine sample. Last quarter, the routine sample from this well was above the SL (8.03 Bq/L (217 pCi/L). Tritium activities in this well have traditionally fluctuated and LLNL does not believe this tritium data is indicative of a statistically significant evidence of a release of tritium from Pit 1, but rather has been attributed to an upgradient source near Pit 7 and the Building 850 area. The relationship of Pit 1 to these upgradient sources is described in the *2014 Annual Compliance Monitoring Report, Lawrence Livermore National Laboratory, Site 300* (Ferry, 2015).

Analytical results from a sample taken from well K1-08 on October 20, 2015 indicate that nickel was above the SL (5 µg/L), with a result of 16 µg/L, however resamples taken on December 14 (<2.0 µg/L) and December 21 (<2µg/L) were below the SL and are therefore not considered statistical evidence of a release from Pit 1.

The concentrations of selected VOCs detected in groundwater samples from detection monitoring wells are summarized and presented as total VOCs (**Table A-2**). VOCs were detected in the groundwater samples from down-gradient well K1-05 (9.3 µg/L) and cross-gradient wells K1-08 (12 µg/L) and K1-09 (41 µg/L). All VOC values are similar to levels reported last quarter. The only VOC observed in these samples was Freon-113. Freon-113 arises from a source at Building 865, about 300 m (984 ft) west of Pit 1 (Ferry and Holtzapple, 2006). While Freon-113 is not a constituent of concern for Pit 1, concentrations have generally decreased from historic maxima, and in the past few years the concentrations appear to be stable or declining.

In addition to the normal reporting on constituents of concern with statistical limits, this report evaluates additional constituents that historically have elevated concentrations and are monitored under the post closure plan or under LLNL's surveillance monitoring program under DOE Order 458.1. For this annual report, Freon-113 results for ground waste samples collected from monitoring wells K1-05, K1-08, and K1-09 are plotted on **Figure 4**.

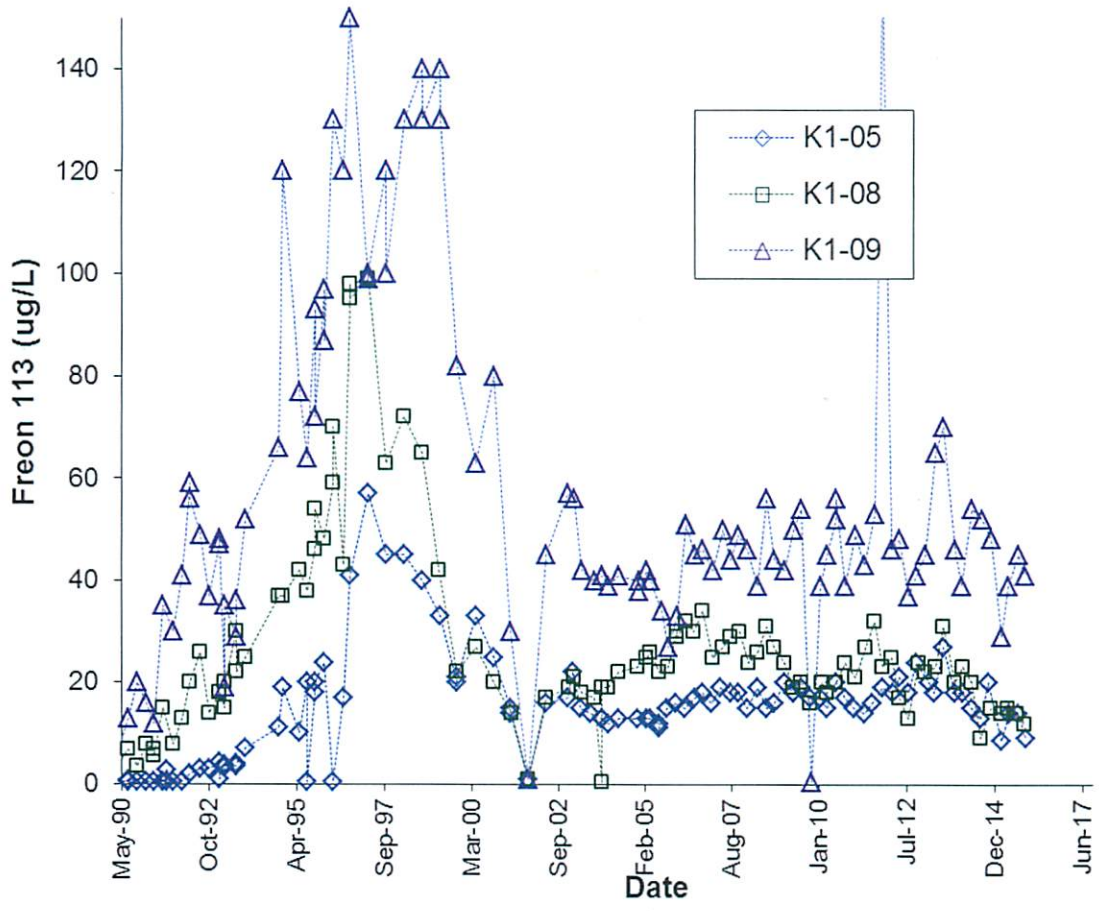

Figure 4. Freon-113 concentrations in water samples collected from detection ground water monitoring wells around Pit 1.

Evaluation Monitoring Wells

Evaluation monitoring wells are required by the MRP and sample analytical results from these wells are shown on **Table A-3**. The table lists physical parameters as well as the results of perchlorate and tritium analyses. These wells are used to track existing plumes of perchlorate and tritium from an up-gradient source. As required by the MRP, annual trend analyses graphs for both percholorate and tritium evaluation monitoring wells are presented in each fourth quarter/annual report. During this quarter, evaluation monitoring well K1-06 was not sampled due to insufficient water.

During the fourth quarter 2015, analytical results indicate that the perchlorate concentration in one evaluation monitoring well (W-PIT1-2620 [5.5 µg/L]) exceeded the reporting limit of 4.0 µg/L and was slightly less than the 6.0 µg/L MCL for perchlorate. The perchlorate concentration in this well is slightly less than the value reported last quarter (5.6 µg/L) and similar to the concentrations reported in previous quarterly reports. LLNL will continue to monitor the perchlorate concentrations in this well.

Tritium activity in a sample from one of the four evaluation monitoring wells (W-PIT1-2620) (72.5 Bq/L [1959 pCi/L]) exceeded the detection limit of 3.7 Bq/L (100 pCi/L), and is slightly lower than the activity reported last quarter (74.0 Bq/L [2140 pCi/L]). The MCL for tritium in drinking water is (740 Bq/L [20,000 pCi/L]).

For this annual report, perchlorate results for ground waste samples collected from evaluation monitoring wells W-PIT1-02, W-PIT1-2209, W-865-2005, K1-06, and W-PIT1-2620 are plotted on **Figure 5**.

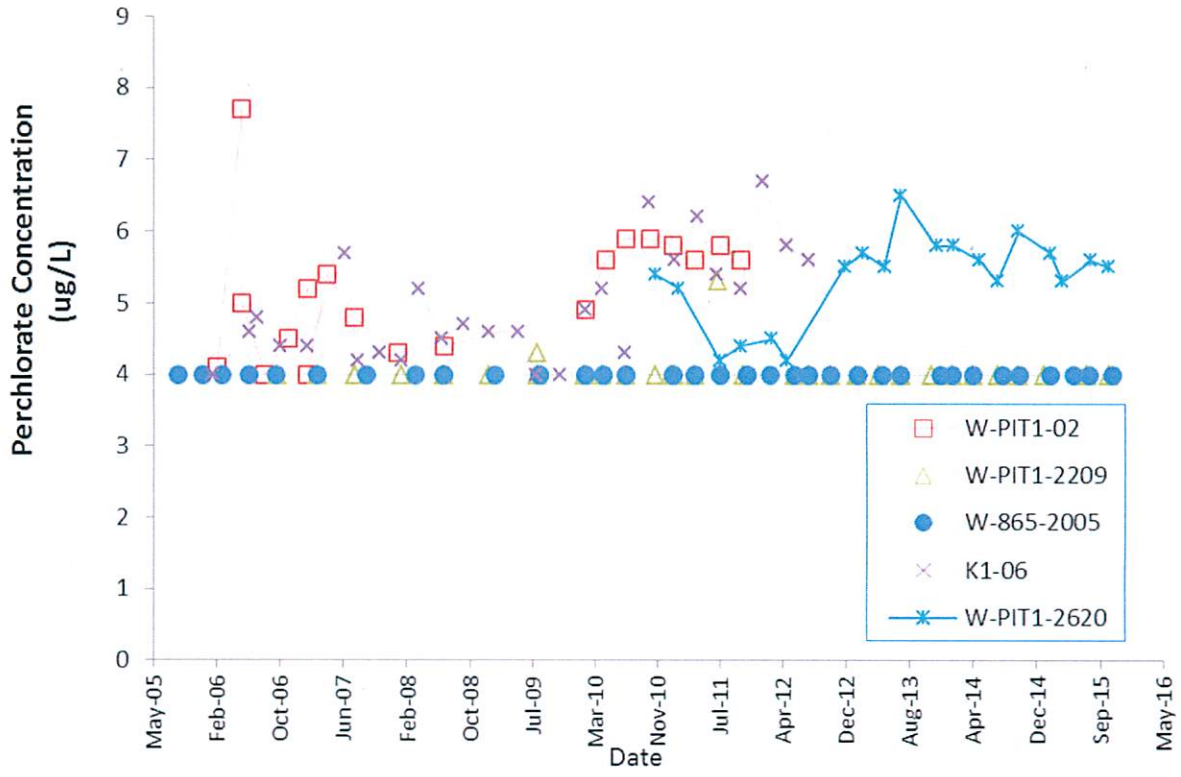

Figure 5. Perchlorate concentrations in water samples collected from evaluation ground water monitoring wells around Pit 1.

For this annual report, tritium results for ground waste samples collected from evaluation monitoring wells W-PIT1-02, W-PIT1-2209, W-865-2005, K1-06, and W-PIT1-2620 are plotted on **Figure 6**.

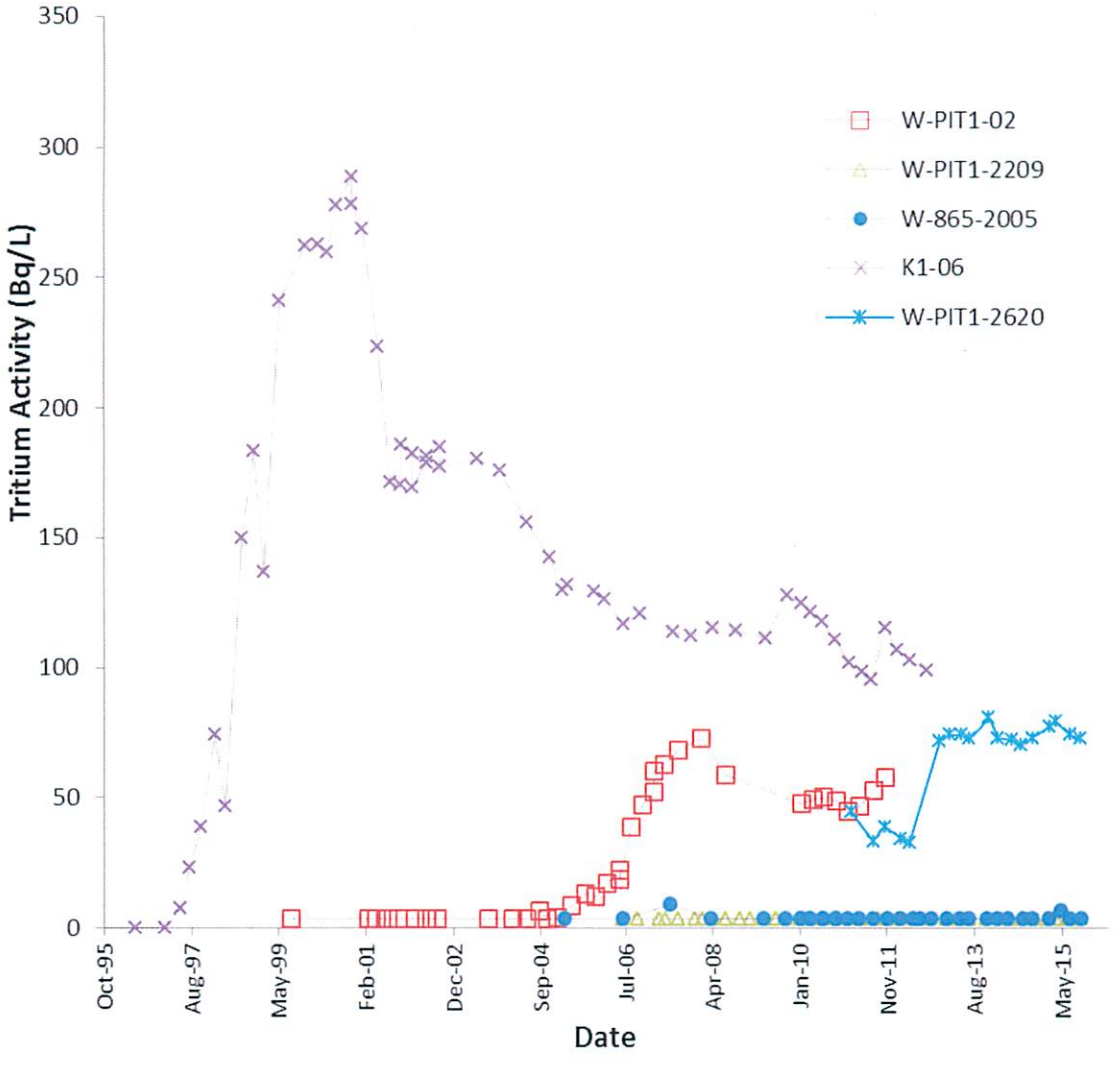

Figure 6. Tritium activities in water samples collected from evaluation ground water monitoring wells around Pit 1.

Inspection and Maintenance Summary

Site 300 staff conducted a visual inspection of Pit 1 on November 4, 2015 and determined that the pit cap and drainage structures continue to function properly, and the vegetation cover and drainage systems are in proper operating condition.

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Acknowledgments

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Abbreviations and Acronyms

Bq	becquerel (international unit of radioactivity equal to 27 pCi)
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CVRWQCB	Central Valley Regional Water Quality Control Board
DOE	U.S. Department of Energy
DTSC	Department of Toxic Substances Control (California)
EFA	Environmental Functional Area (LLNL)
ERD	Environmental Restoration Department
FFA	Federal Facility Agreement
ft	foot (used as a measure of elevation above MSL)
HSU	Hydrostratigraphic Unit
km	kilometer
km^2	square kilometer
L	liter
LLNL	Lawrence Livermore National Laboratory
m	meter
m^2	square meter
MCL	maximum contaminant level (for drinking water)
mg	milligram
MRP	Monitoring and Reporting Plan
MSL	mean sea level (datum for elevation measurements)
µg	microgram
pCi	picocurie (unit of radioactivity equal to 0.037 Bq)
PCP	post-closure plan
QA	quality assurance
RCRA	Resource Conservation and Recovery Act
RL	reporting limit (contractual concentration near zero)
SI	*Système Internationale* (units of measurement)
Site 300	Experimental Test Site, LLNL
SL	statistically determined concentration limit
SOP	standard operating procedure
$Tnbs_0$	Neroly Formation basal sandstone
$Tnbs_1$	Neroly Formation lower blue sandstone
VOC	volatile organic compound
WDR	Waste Discharge Requirements (permit)

Appendix A

Tables of Groundwater Measurements

Table A-1. Pit 1 detection monitoring wells, constituents of concern, SLs, and quarterly analytical results for 2015.

Quarter			1	2	3	4
COC (units)	**Well**	**SL**	**Result**	**Result**	**Result**	**Result**
Arsenic (µg/L)	K1-01C	–[(a)]	12	12	12	13
	K1-07	–[(a)]	11	13	13	12
	K1-02B	15	11	12	11	11
	K1-04	16	11	12	11	12
	K1-05	18	14	14	14	15
	K1-08	17	15	14	14	13
	K1-09	16	14	14	14	12
	W-PIT1-2326	14	12	12	11	11
Barium (µg/L)	K1-01C	–[(a)]	26	<25	<25	<25
	K1-07	–[(a)]	30	40	29	29
	K1-02B	26	29	26	<25	25
	K1-04	32	30	30	28	29
	K1-05	43	41	36	37	36
	K1-08	49	47	42	43	41
	K1-09	51	48	45	45	43
	W-PIT1-2326	46	40	37	38	34
Beryllium (µg/L)	K1-01C	–[(a)]	<0.5	<0.5	<0.5	<0.5
	K1-07	–[(a)]	<0.5	<0.5	<0.5	<0.5
	K1-02B	0.5	<0.5	<0.5	<0.5	<0.5
	K1-04	0.5	<0.5	<0.5	<0.5	<0.5
	K1-05	0.5	<0.5	<0.5	<0.5	<0.5
	K1-08	0.5	<0.5	<0.5	<0.5	<0.5
	K1-09	0.5	<0.5	<0.5	<0.5	<0.5
	W-PIT1-2326	0.5	<0.5	<0.5	<0.5	<0.5
Cadmium (µg/L)	K1-01C	–[(a)]	<0.5	<0.5	<0.5	<0.5
	K1-07	–[(a)]	<0.5	<0.5	<0.5	<0.5
	K1-02B	0.52	<0.5	<0.5	<0.5	<0.5
	K1-04	0.5	<0.5	<0.5	<0.5	<0.5
	K1-05	0.5	<0.5	<0.5	<0.5	<0.5
	K1-08	0.5	<0.5	<0.5	<0.5	<0.5
	K1-09	0.5	<0.5	<0.5	<0.5	<0.5
	W-PIT1-2326	0.5	<0.5	<0.5	<0.5	<0.5
Cobalt (µg/L)	K1-01C	–[(a)]	<25	<25	<25	<25
	K1-07	–[(a)]	<25	<25	<25	<25
	K1-02B	25	<25	<25	<25	<25
	K1-04	25	<25	<25	<25	<25
	K1-05	25	<25	<25	<25	<25
	K1-08	25	<25	<25	<25	<25
	K1-09	25	<25	<25	<25	<25
	W-PIT1-2326	25	<25	<25	<25	<25

Table A-1. Pit 1 detection monitoring wells, constituents of concern, SLs, and quarterly analytical results for 2015.

Quarter			1	2	3	4
COC (units)	**Well**	**SL**	**Result**	**Result**	**Result**	**Result**
Copper (µg/L)	K1-01C	–[a]	<10	<10	<10	<10
	K1-07	–[a]	<10	<10	<10	<10
	K1-02B	60	<10	<10	<10	<10
	K1-04	10	<10	<10	<10	<10
	K1-05	30	<10	<10	<10	<10
	K1-08	10	<10	<10	<10	<10
	K1-09	10	<10	<10	<10	<10
	W-PIT1-2326	10	<10	<10	<10	<10
Lead (µg/L)	K1-01C	–[a]	<2	<2	<2	<2
	K1-07	–[a]	<2	<2	<2	<2
	K1-02B	2	<2	<2	<2	<2
	K1-04	2	<2	<2	<2	<2
	K1-05	2	<2	<2	<2	<2
	K1-08	2	<2	<2	<2	<2
	K1-09	2	<2	<2	<2	<2
	W-PIT1-2326	2	<2	<2	<2	<2
Nickel (µg/L)	K1-01C	–[a]	<5	<5	10	<5
	K1-07	–[a]	<5	<5	<5	<5
	K1-02B	9	<5	<5	<5	<5
	K1-04	5	<5	<5	<5	<5
	K1-05	13	<5	<5	<5	<5
	K1-08	5	<5	<5	<5	16, <2, <2
	K1-09	5	<5	<5	<5	<5
	W-PIT1-2326	5	<5	<5	<5	<5
Vanadium (µg/L)	K1-01C	–[a]	68	70	63	70
	K1-07	–[a]	59	65	62	66
	K1-02B	59	47	46	48	46
	K1-04	46	35	36	32	35
	K1-05	79	64	53	61	65
	K1-08	78	61	61	64	56
	K1-09	69	58	61	59	56
	W-PIT1-2326	63	52	50	52	48
Zinc (µg/L)	K1-01C	–[a]	<20	<20	<20	<20
	K1-07	–[a]	<20	<20	<20	<20
	K1-02B	98	<20	<20	<20	<20
	K1-04	51	<20	<20	<20	<20
	K1-05	24	<20	<20	<20	<20
	K1-08	20	<20	<20	<20	<20
	K1-09	20	<20	<20	<20	<20
	W-PIT1-2326	48	<20	<20	<20	<20

Table A-1. Pit 1 detection monitoring wells, constituents of concern, SLs, and quarterly analytical results for 2015.

Quarter			1	2	3	4
COC (units)	**Well**	**SL**	**Result**	**Result**	**Result**	**Result**
Radium 226 (Bq/L)[b]	K1-01C	–[a]	0.007	0.009	0.009	0.011
	K1-07	–[a]	0.005	0.006	0.011	0.007
	K1-02B	0.012	0.005	0.005	0.004	0.003
	K1-04	0.012	0.006	0.003	0.001	0.008
	K1-05	0.012	0.004	0.009	0.002	0.009
	K1-08	0.009	0.001	0.002	0.002	0.004
	K1-09	0.012	0.002	0.006	0.006	0.007
	W-PIT1-2326	0.019	0.004	0.009	0.004	0.008
Tritium (Bq/L)	K1-01C	–[a]	25.4	28.3	27.4	34.0
	K1-07	–[a]	1.95	3.22	1.30	0.496
	K1-02B	158	131	124	120	122
	K1-04	19.2	9.55	18.1	15.2	19.9
	K1-05	11.4	10.1	8.18	8.14	10.8
	K1-08	10.7	7.25	8.32	5.85	8.70
	K1-09	8.66	9.51	8.70	8.03	9.40
	W-PIT1-2326	133	95.1	93.2	91.8	83.6
Uranium (total, Bq/L)	K1-01C	–[a]	0.130	0.142	0.132	0.125
	K1-07	–[a]	0.112	0.108	0.121	0.108
	K1-02B	0.145	0.162	0.153	0.197	0.183
	K1-04	0.085	0.064	0.072	0.068	0.069
	K1-05	0.115	0.145	0.114	0.110	0.110
	K1-08	0.149	0.108	0.107	0.106	0.104
	K1-09	0.137	0.125	0.112	0.123	0.123
	W-PIT1-2326	0.139	0.151	0.131	0.141	0.144
Thorium 228 (Bq/L)	K1-01C	–[a]	0.000	0.000	0.000	0.001
	K1-07	–[a]	0.000	0.000	0.000	0.001
	K1-02B	0.003	0.001	0.000	0.000	0.000
	K1-04	0.005	0.000	0.001	0.001	0.000
	K1-05	0.003	0.000	0.001	0.000	0.001
	K1-08	0.004	0.000	0.000	-0.001	0.000
	K1-09	0.008	0.000	-0.001	0.001	0.000
	W-PIT1-2326	0.005	0.000	0.000	0.000	0.000
Thorium 232 (Bq/L)	K1-01C	–[a]	0.000	0.000	0.000	0.001
	K1-07	–[a]	0.000	0.000	0.000	0.000
	K1-02B	0.004	0.000	0.000	0.000	0.000
	K1-04	0.001	0.000	0.000	0.001	0.000
	K1-05	0.004	0.000	0.000	0.000	0.000
	K1-08	0.004	0.000	0.000	0.000	0.000
	K1-09	0.002	0.000	0.000	0.000	0.000
	W-PIT1-2326	0.001	0.000	0.000	0.001	0.000

Table A-1. Pit 1 detection monitoring wells, constituents of concern, SLs, and quarterly analytical results for 2015.

Quarter			1	2	3	4
COC (units)	**Well**	**SL**	**Result**	**Result**	**Result**	**Result**
HMX (µg/L)	K1-01C	–[a]	<0.89	<0.87	<1	<1
	K1-07	–[a]	<1	<1	<0.71	<1
	K1-02B	1	<0.87	<1	<1	<1
	K1-04	1	<1	<1	<0.77	<1
	K1-05	1	<1	<1	<1	<0.83
	K1-08	1	<1	<1	<0.85	<0.8
	K1-09	1	<1	<1	<0.67	<1
	W-PIT1-2326	1	<1	<1	<1	<1
RDX (µg/L)	K1-01C	–[a]	<0.89	<0.87	<1	<1
	K1-07	–[a]	<1	<1	<0.71	<1
	K1-02B	1	<0.87	<1	<1	<1
	K1-04	1	<1	<1	<0.77	<1
	K1-05	1	<1	<1	<1	<0.83
	K1-08	1	<1	<1	<0.85	<0.8
	K1-09	1	<1	<1	<0.67	<1
	W-PIT1-2326	1	<1	<1	<1	<1

[a] Wells K1-01C and K1-07 have no release detection SLs for COCs because they are upgradient of Pit 1.

[b] Radioactivity measurements are corrected for the background radioactivity inside the measurement chamber.

A negative result for radioactivity indicates that the sample measured lower than the background by the amount shown. Radioactivity values shown as 0.000 measured less than 0.0005 Bq/L.

Table A-2. Pit 1 additional PCP constituents for the fourth quarter 2015 analytical results for detection monitoring wells.

	Monitoring Well									
	K1-01C	K1-07	K1-02B	K1-04	K1-05	K1-08	K1-08	K1-08	K1-09	W-PIT1-2326
Date Sampled	Oct 29	Oct 13	Oct 19	Nov 4	Nov 4	Oct 20	Dec 14	Dec 21	Oct 20	Oct 28
Depth to water (ft)	112.11	145.33	139.90	160.37	174.13	159.82	159.81	159.80	166.04	183.49
Ground water elevation (ft)	969.83	964.30	967.33	962.30	956.73	962.92	962.93	962.94	960.64	964.30
Field pH (Units)	8.02	7.80	7.66	8.00	8.06	8.00	8.00	8.01	7.74	7.70
Field Specific Conductance (µmhos/cm)	697	604	746	612	621	623	631	632	667	728
Field Temperature (Degrees C)	21.7	22.4	22.2	19.7	19.8	21.6	19.9	20.2	21.0	21.8
Gross alpha (Bq/L)	0.082	0.127	0.087	0.083	0.222	0.119	-	-	0.081	0.107
Gross beta (Bq/L)	0.357	0.112	0.137	0.181	0.188	0.122	-	-	0.151	0.118
Nitrate (as NO3) (mg/L)	36	33	33	30	37	34	-	-	36	33
Perchlorate (µg/L)	<4	<4	4.6	<4	<4	<4	-	-	<4	5.9
Total VOCs (calculated) (µg/L)	ND	ND	ND	ND	9.3	12	-	-	41	ND
Freon 113 (µg/L)	<0.5	<0.5	<0.5	<0.5	9.3	12	-	-	41	<0.5

Note:
ND = Not detected above reporting limit. Reporting limits vary with individual VOCs.

Table A-3. Pit 1 evaluation monitoring wells, constituents of concern, physical parameters, and analytical results for fourth quarter 2015.

	W-PIT1-2620	W-PIT1-2209	W-865-2005
Date Sampled	Oct 8	Oct 5	Oct 22
Depth to water (ft)	233.58	218.43	330.17
Ground water elevation (ft)	946.29	947.62	944.70
Tritium (Bq/L)	72.5	0.299	2.58
Field pH (Units)	7.89	7.91	8.06
Field Specific Conductance (µmhos/cm)	767	67	609
Field Temperature (Degrees C)	23.1	21.2	22.8
Perchlorate (µg/L)	5.5	<4	<4

Table A-4. Pit 1 groundwater well routine sampling dates.

Location	Quarter	Sample Date
K1-01C	1	9-Mar-2015
	2	9-Apr-2015
	3	17-Aug-2015
	4	29-Oct-2015
K1-02B	1	4-Feb-2015
	2	1-Apr-2015
	3	28-Jul-2015
	4	19-Oct-2015
K1-04	1	9-Mar-2015
	2	12-May-2015
	3	17-Aug-2015
	4	4-Nov-2015
K1-05	1	5-Feb-2015
	2	19-May-2015
	3	17-Aug-2015
	4	4-Nov-2015
K1-07	1	18-Feb-2015
	2	14-May-2015
	3	11-Aug-2015
	4	13-Oct-2015
K1-08	1	25-Feb-2015
	2	12-May-2015
	3	13-Aug-2015
	4	20-Oct-2015
K1-09	1	25-Feb-2015
	2	12-May-2015
	3	19-Aug-2015
	4	20-Oct-2015
W-PIT1-2326	1	5-Feb-2015
	2	13-May-2015
	3	28-Jul-2015
	4	28-Oct-2015
K1-06	1	22-Jan-2015
	2	1-Apr-2015
	3	9-Jul-2015
	4	1-Oct-2015
W-PIT1-2209	1	26-Jan-2015
	2	18-Apr-2015
	3	9-Jul-2015
	4	5-Oct-2015
W-PIT1-2620	1	17-Feb-2015
	2	8-Apr-2015
	3	28-Jul-2015
	4	8-Oct-2015
W-865-2005	1	18-Feb-2015
	2	20-May-2015
	3	21-Jul-2015
	4	22-Oct-2015

Table A-5. Pit 1 VOC Reporting Limits (µg/L).

VOC/Location	K1-04	K1-05	K1-07	K1-02B	K1-09	K1-08	K1-01C	W-PIT1-2326
Acetonitrile	100	100	100	100	100	100	100	100
Acetone	10	10	10	10	10	10	10	10
Acrolein	50	50	50	50	50	50	50	50
Acrylonitrile	50	50	50	50	50	50	50	50
Benzene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Bromodichloromethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Bromoform	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Bromomethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2-Butanone	10	10	10	10	10	10	10	10
Carbon disulfide	5	5	5	5	5	5	5	5
Carbon tetrachloride	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Chlorobenzene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2-Chloro-1,3-butadiene	5	5	5	5	5	5	5	5
Chloroethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2-Chloroethylvinylether	10	10	10	10	10	10	10	10
Chloroform	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Chloromethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,2-Dibromo-3-chloropropane	1	1	1	1	1	1	1	1
Dibromochloromethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,4-Dichloro-2-butene	5	5	5	5	5	5	5	5
Dichlorodifluoromethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,1-Dichloroethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,2-Dichloroethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,1-Dichloroethene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
cis-1,2-Dichloroethene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
trans-1,2-Dichloroethene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,2-Dichloroethene (total)	1	1	1	1	1	1	1	1
1,2-Dichloropropane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
cis-1,3-Dichloropropene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
trans-1,3-Dichloropropene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,4-Dioxane	100	100	100	100	100	100	100	100
Ethanol	1,000	1,000	1,000	1,000	1,000	1,000	1,000	114,000
Ethylbenzene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Freon 113	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2-Hexanone	10	10	10	10	10	10	10	10
4-Methyl-2-pentanone	10	10	10	10	10	10	10	10
Methylene chloride	1	1	1	1	1	1	1	1
Styrene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,1,1,2-Tetrachloroethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,1,2,2-Tetrachloroethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Tetrachloroethene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Trichloroethene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Toluene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,1,1-Trichloroethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,1,2-Trichloroethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Trichlorofluoromethane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Vinyl acetate	20	20	20	20	20	20	20	20
Vinyl chloride	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total xylene isomers	1	1	1	1	1	1	1	1

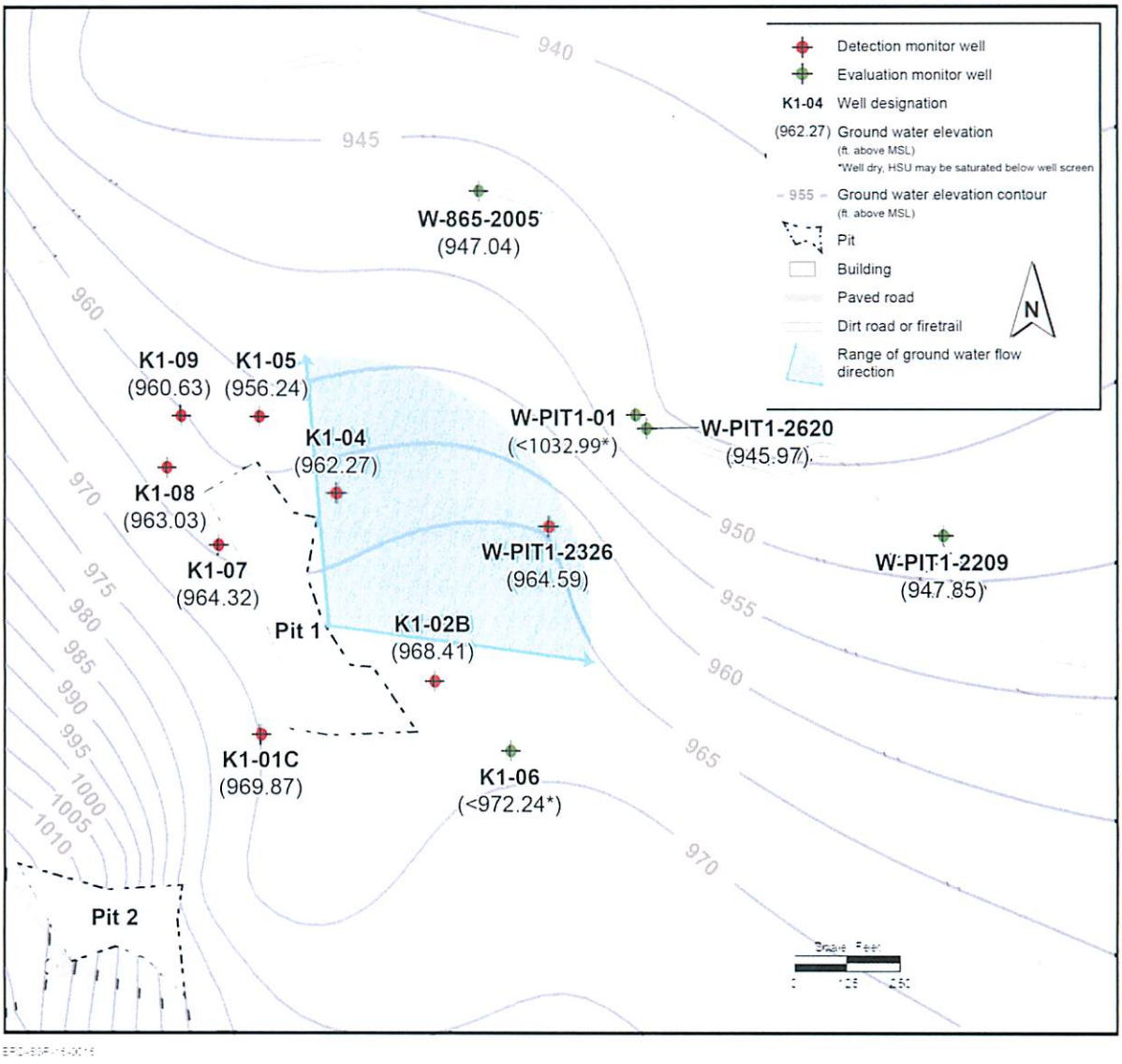


Figure A-1. Ground water elevation contour map for the $Tnbs_1/Tnbs_0$ HSU at Pit 1.

Appendix B

Statistical Methods for Release Detection

Appendix B

Statistical Methods for Release Detection

Statistical monitoring of the RCRA closure and PCP for the Pit 1 landfill is described in the Revised MRP No. 93-100 (February 18, 2010) to satisfy the provisions of CCR Title 23, Chapter 15, Section 2550.7.

LLNL uses an intrawell comparison for each analyte at each down-gradient and cross-gradient well to detect potential releases of constituents of concern to ground water. Intrawell tests compare each measurement at a well to past measurements at that well in order to detect increases in concentration that statistically exceed the variation historically seen at that well.

Where sufficient detections are available, LLNL uses a statistical prediction limit method to implement intrawell comparisons. The method uses the average and standard deviation of historical measurements to calculate a SL value. The SL is calculated so that it will be exceeded by approximately one percent of individual measurements when there has not been a release. When too few detections are available, either the analytical reporting limit or maximum recent detection is used as an SL. The SLs currently in use are documented in the MRP.

Each quarter, each measurement is compared with its associated SL. The SL comparison is augmented by a verification procedure containing two discreet retests, in accordance with CCR Title 23, Chapter 15, Section 2550.7. This protects against false positives due to other causes, such as analytical error in the laboratory. Retests are used when the original measurement exceeds the SL. If either or both of the retests also exceed the SL, the result is considered to be a "statistically significant evidence of a release." Based on the MRP, monitoring is conducted to evaluate SL detections for all constituents of concern in **Table A-1** detection monitoring wells. In addition, sampling is performed to evaluate whether tritium and perchlorate results for ground water samples collected from evaluation monitoring wells near Pit 1 indicate a release from Pit 1 or another source.

A change of the SL for total uranium at well W-PIT1-2326 was sent to the CVRWQCB in a letter request on June 13, 2011 because the total uranium values at the well had been elevated for several quarters. However, the value was below the closed upgradient well. The SL for this well continued to be slightly elevated during the remainder of 2011 and during the first quarter of 2012. LLNL communicated with the CVRWQCB in past letters and quarterly reports that we did not believe that the total uranium activities in this monitoring well represent statistical evidence of a release from Pit 1. LLNL's conclusion is based on samples collected from upgradient wells, as well as the natural uranium-235/238 ratio at the well. In the June 13, 2011 letter, LLNL proposed to update the total uranium SL from 3.12 pCi/L to 3.75 pCi/L for this well. LLNL received a letter response from the CVRWQCB on July 16, 2012 indicating that the CVRWQCB agreed to the SL changes proposed by LLNL, and changes were incorporated into this report commencing during the third quarter of 2012.

Appendix C

Quality Assurance Samples

Table C-1. Pit 1 quality assurance for routine, duplicate, and field blank samples for the fourth quarter 2015.

		W-PIT1-2326	W-PIT1-2326	PIT1FB
Constituent [a]	**Units**	Routine (Oct 28)	Duplicate (Oct 28)	Field blank (Oct 28)
Arsenic	µg/L	11	11	<2
Barium	µg/L	34	34	<25
Beryllium	µg/L	<0.5	<0.5	<0.5
Cadmium	µg/L	<0.5	<0.5	<0.5
Cobalt	µg/L	<25	<25	<25
Copper	µg/L	<10	<10	<10
Lead	µg/L	<2	<2	<2
Nickel	µg/L	<5	<5	<5
Vanadium	µg/L	48	46	<25
Zinc	µg/L	<20	<20	<20
Nitrate (as NO3)	mg/L	33	34	<0.5
Perchlorate	µg/L	5.9	5.9	<4
He compounds				
HMX	µg/L	<1	<1	<1
RDX	µg/L	<1	<1	<1
Radioactivity				
Radium 226 [b]	Bq/L	0.008 ± 0.005	0.006 ± 0.004	0.004 ± 0.004
Tritium	Bq/L	83.6 ± 17.4	87.3 ± 18.1	-0.796 ± 2.11
Uranium (total)	Bq/L	0.144 ± 0.016	0.140 ± 0.016	0.001 ± 0.002
Thorium 228	Bq/L	0.000 ± 0.001	0.001 ± 0.001	0.000 ± 0.001
Thorium 232	Bq/L	0.000 ± 0.001	0.000 ± 0.001	0.000 ± 0.001
Gross alpha	Bq/L	0.107 ± 0.054	0.120 ± 0.054	-0.016 ± 0.022
Gross beta	Bq/L	0.118 ± 0.036	0.144 ± 0.036	0.027 ± 0.040

[a] As standard QA protocol, trip blanks were submitted with all samples in Table C-1. This quarter, all trip blank analyses were non-detects.

[b] Radioactivity is corrected for the background radioactivity inside the measurement apparatus. Negative activity indicates that the sample contained less than the background activity by the amount shown. Radioactivity equal to or less than the 2-sigma uncertainty shown is considered to be a nondetection.

Appendix D

Constituents of Concern and Monitoring Frequencies

Table D-1. Pit 1 constituents of concern and monitoring frequencies. [a]

Constituent	WDR [b]	PCP [c]	Pit 1
Arsenic	X		Q
Barium	X		Q
Beryllium	X		Q
Cadmium	X		Q
Chloride		X	A
Chromium		X	SA
Cobalt	X		Q
Copper	X		Q
Iron		X	SA
Lead	X		Q
Manganese		X	SA
Mercury		X	SA
Nickel	X		Q
Nitrate		X	SA
Selenium		X	SA
Silver		X	SA
Sodium		X	SA
Sulfate		X	A
Vanadium	X		Q
Zinc	X		Q
Total organic carbon (TOC)		X	A
Total organic halides (TOX)		X	A
EPA Method 601		X	
EPA Method 624		X	A
EPA Method 625		X	A
EPA Method 608		X	A
Gross alpha and gross beta		X	SA
Radium 226	X		Q
Thorium 228	X		Q
Thorium 232	X		Q
Tritium	X		Q
Perchlorate	X		Q
Uranium (total)	X		Q
HMX	X		Q
RDX	X		Q
Ground water elevation		X	SA
Ground water temperature		X	SA
pH		X	SA
Specific conductance		X	SA

[a] Monitoring frequencies are: Q (quarterly); SA (semiannually); A (annually).

[b] Constituents of concern required to be monitored by WDR 93-100 (CVRWQCB, 2010).

[c] Additional constituents of concern required to be monitored by the post-closure plan (Rogers/Pacific Corporation, 1990).

Appendix E

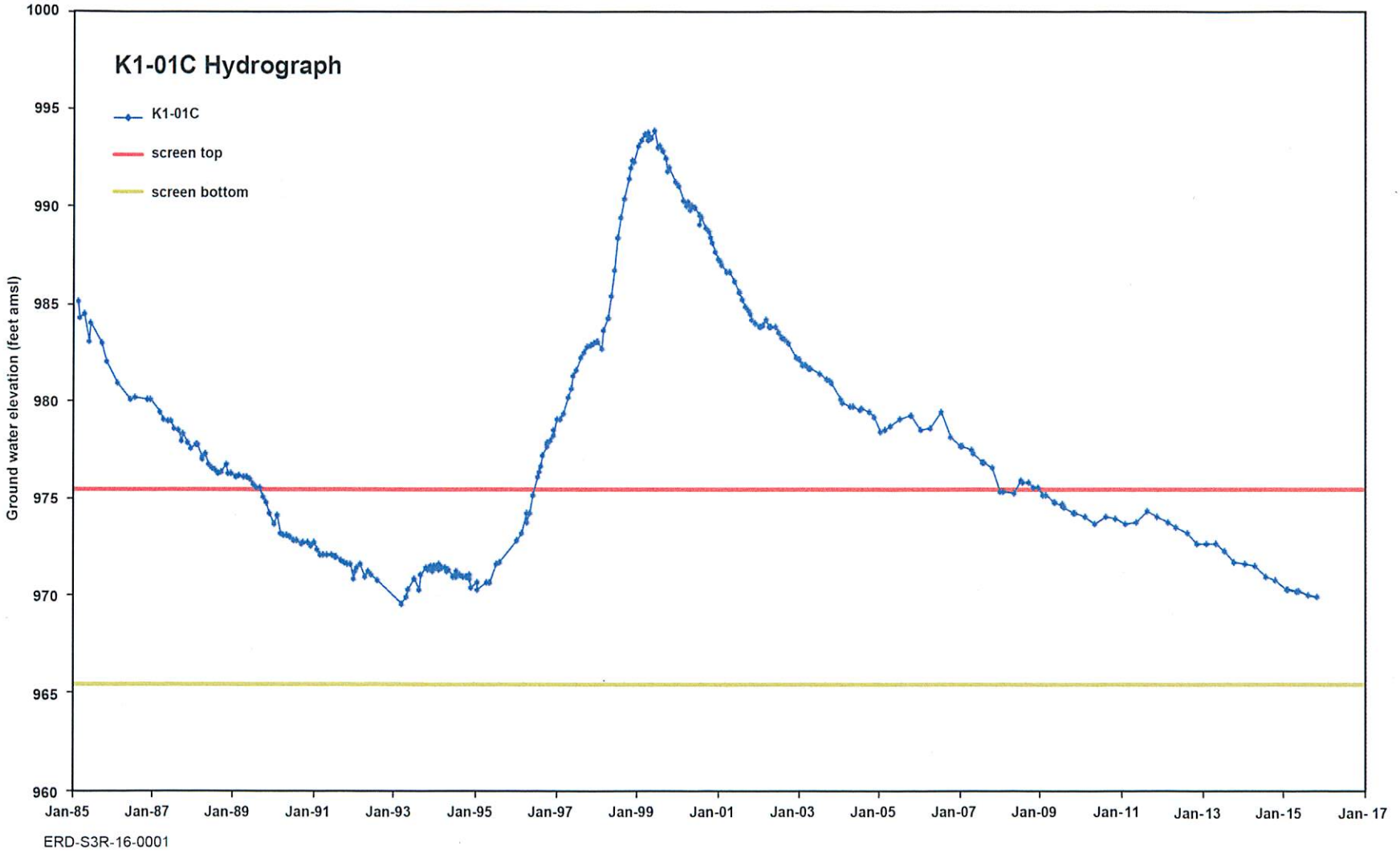
Well Specification and Construction Details for Detection Monitoring and Evaluation Monitoring Wells

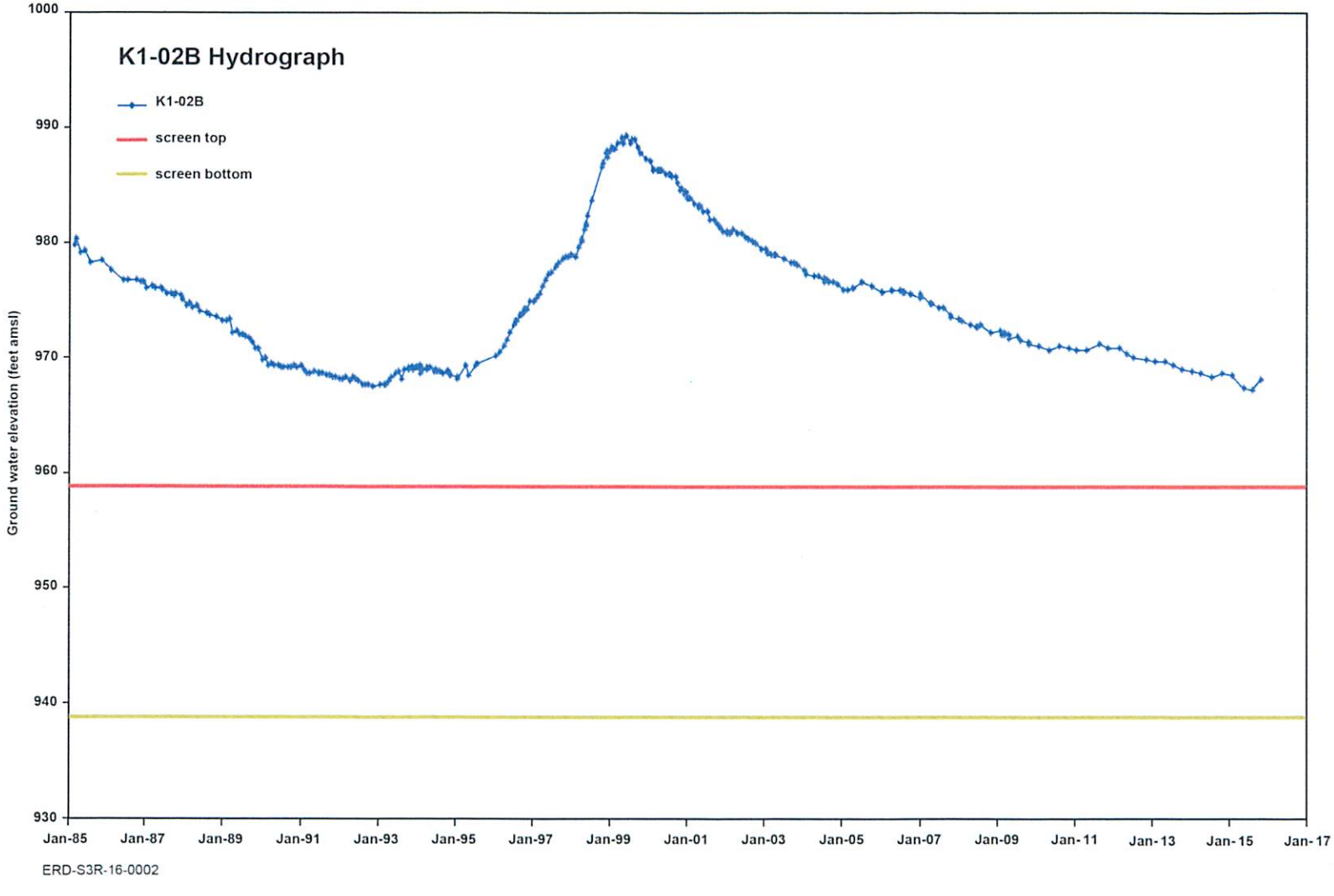
Table E-1. Well specification and construction details of the Pit 1 monitoring network.

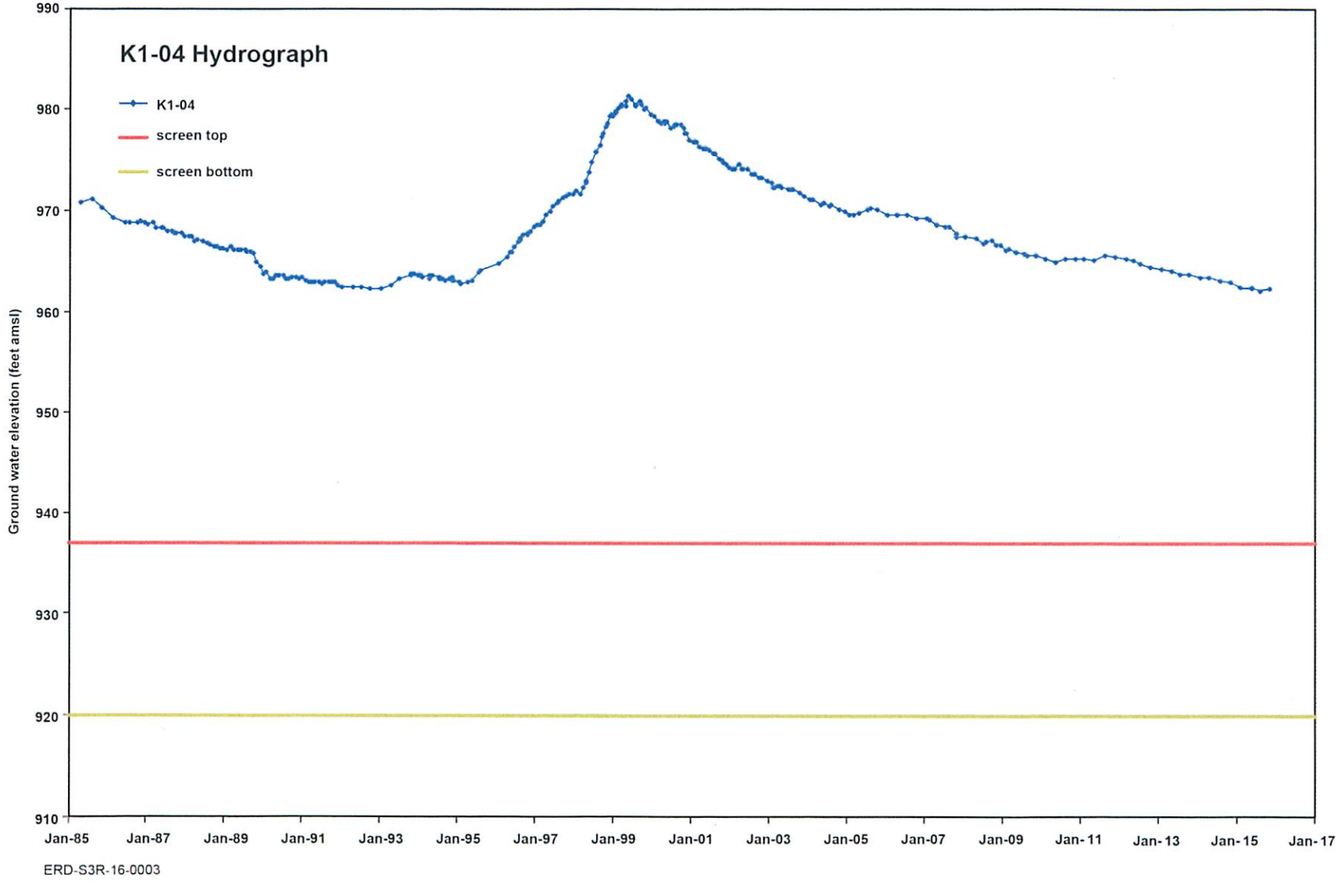
Well	HSU	Northing	Easting	Ground Surface Evaluation	Reference Evaluation	Elevation of Screen Top	Elevation of Screen Bottom	Elevation of Bentonite Top	Elevation of Bentonite Bottom	Elevation of Filter Pack Top	Elevation of Filter Pack Bottom	Elevation of Casing Bottom
K1-01C	$Tnbs_1/Tnbs_0$	427774.28	1699062.3	1,078.92	1,081.94	975.42	965.42	998.92	986.92	986.92	955.92	965.42
K1-02B	$Tnbs_1/Tnbs_0$	427893.78	1699452.58	1,105.23	1,107.23	958.73	938.73	985.23	982.13	982.13	932.73	938.73
K1-04	$Tnbs_1/Tnbs_0$	428315.51	1699231.7	1,120.00	1,122.67	937.00	920.00	978.00	968.00	968.00	919.00	919.00
K1-05	$Tnbs_1/Tnbs_0$	428485.47	1699057.58	1,128.86	1,130.86	965.86	944.86	None	None	972.86	941.86	944.86
K1-06	$Tnbs_1/Tnbs_0$	427736.68	1699627.38	1,087.54	1,089.54	982.54	972.54	None	None	995.54	971.54	972.54
K1-07	$Tnbs_1/Tnbs_0$	428199.97	1698965.54	1,106.63	1,109.63	978.63	958.63	985.63	983.93	983.93	956.63	956.63
K1-08	$Tnbs_1/Tnbs_0$	428373.1	1698848.94	1,120.72	1,122.74	979.72	954.72	991.22	985.72	985.72	952.72	952.72
K1-09	$Tnbs_1/Tnbs_0$	428488.09	1698880.26	1,124.68	1,126.68	969.68	934.68	978.18	975.68	975.68	932.68	932.68
W-865-2005	$Tnbs_1/Tnbs_0$	428990.64	1699555.36	1,272.87	1,274.87	942.87	922.87	954.87	950.87	950.87	919.87	921.87
W-PIT1-02	$Tnbs_1/Tnbs_0$	428494.39	1699912.16	1,179.30	1,181.30	929.30	919.30	942.30	934.30	934.30	911.30	918.30
W-PIT1-2209	$Tnbs_1/Tnbs_0$	428221.94	1700615.69	1,164.05	1,166.05	919.05	899.05	939.05	929.05	929.05	896.05	898.05
W-PIT1-2326	$Tnbs_1/Tnbs_0$	428240.21	1699717.26	1,145.79	1,147.79	930.79	911.09	960.79	949.79	949.79	905.79	910.67
W-PIT1-2620	$Tnbs_1/Tnbs_0$	428473.29	1699935.03	1,177.87	1,179.87	932.87	917.97	947.87	942.57	942.57	914.87	917.55

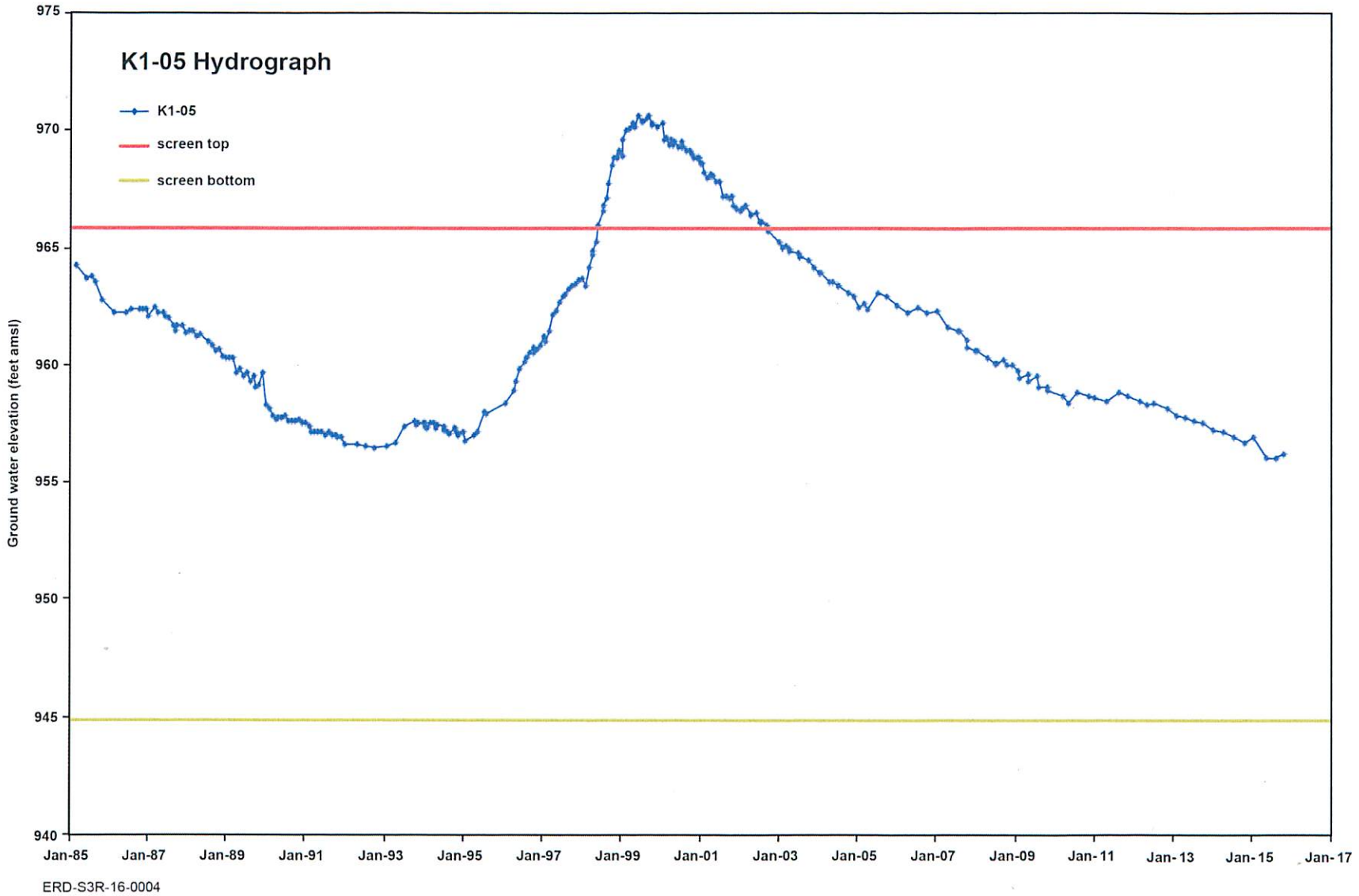
Appendix F

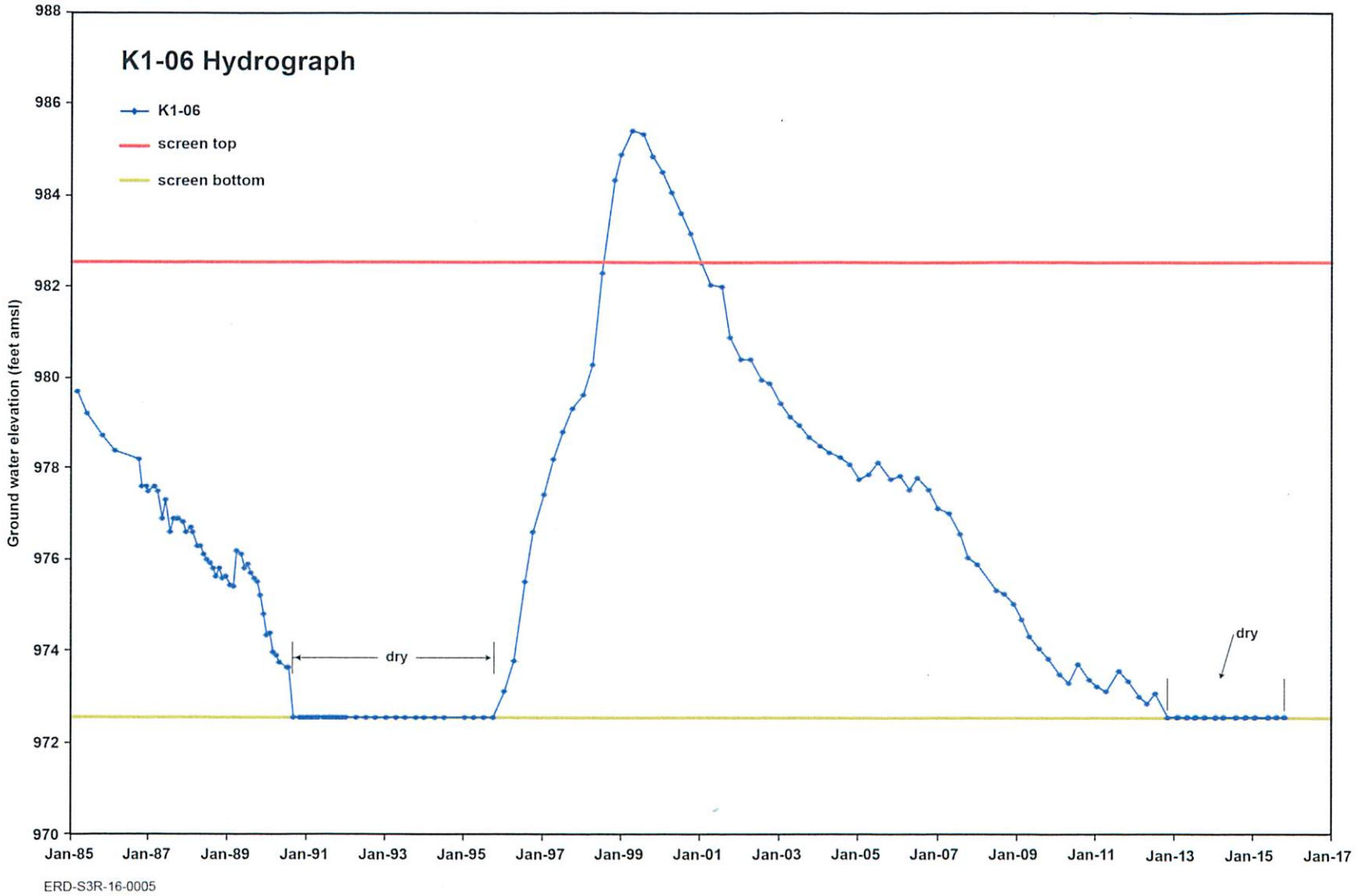
Hydrographs for All Compliance Monitoring Wells

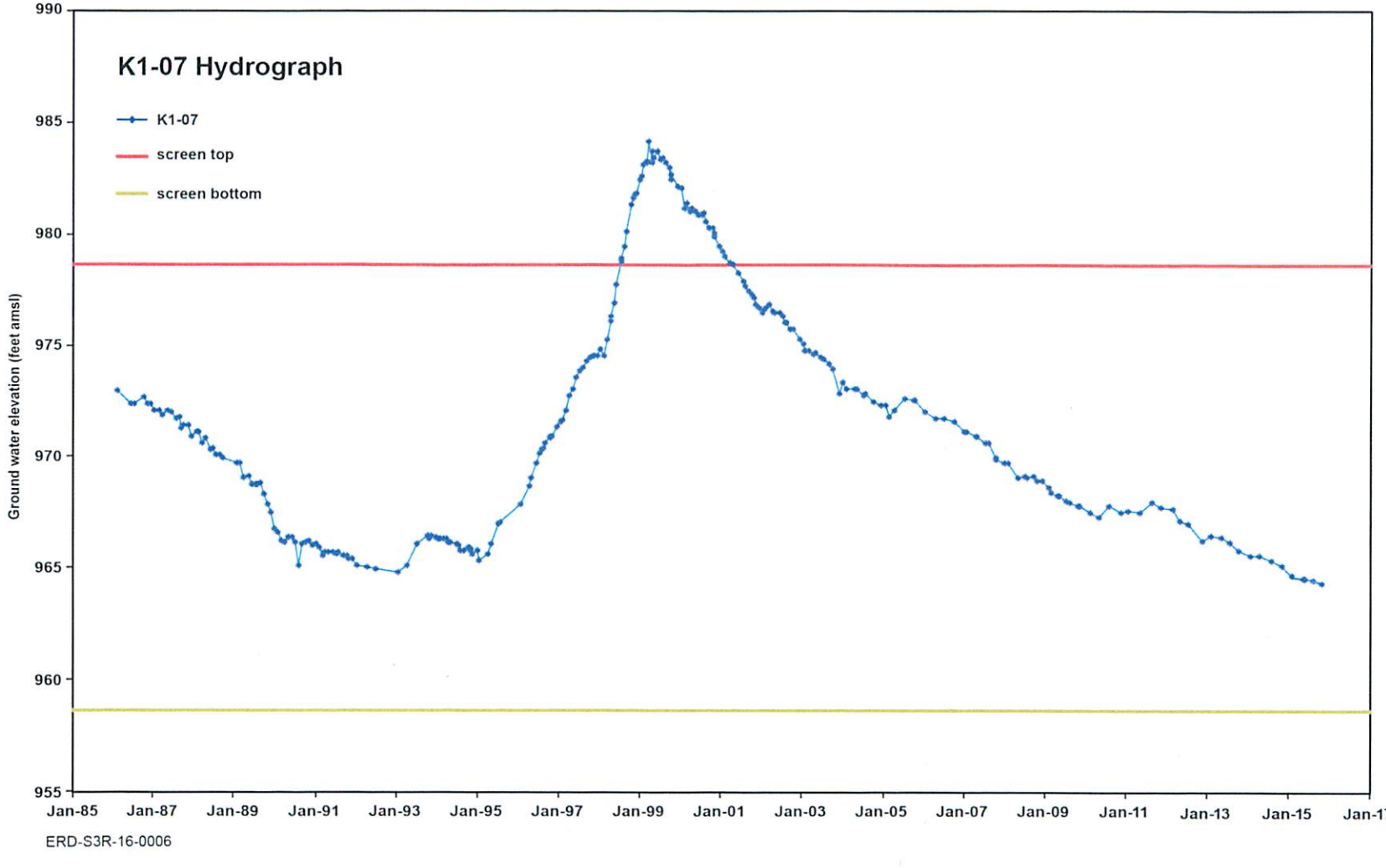

K1-01C Hydrograph
K1-01C
screen top
screen bottom
Ground water elevation (feet amsl)
1000
995
990
985
980
975
970
965
960
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan- 17
ERD-S3R-16-0001

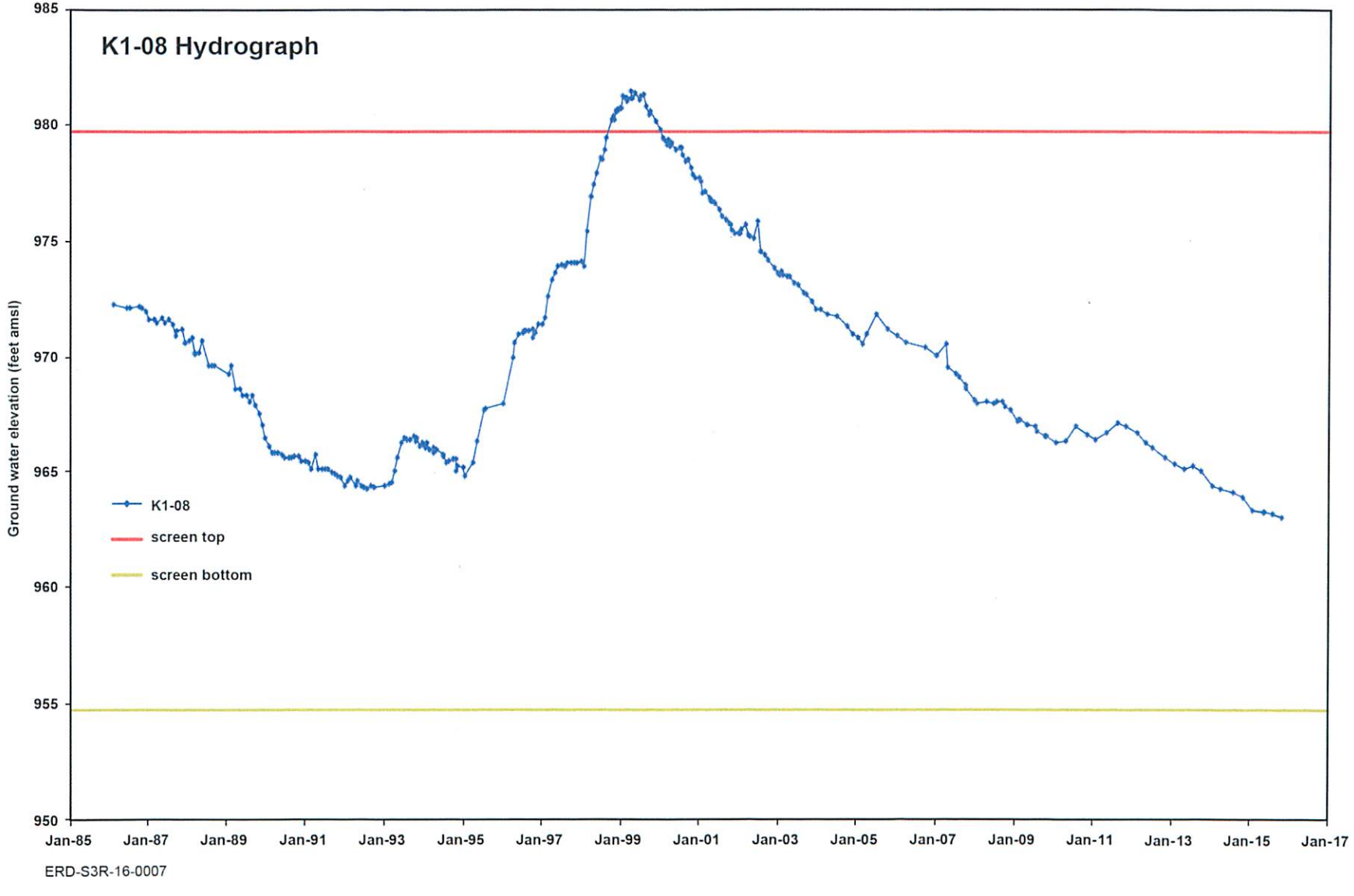

K1-02B Hydrograph
K1-02B
screen top
screen bottom
Ground water elevation (feet amsl)
1000
990
980
970
960
950
940
930
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
ERD-S3R-16-0002

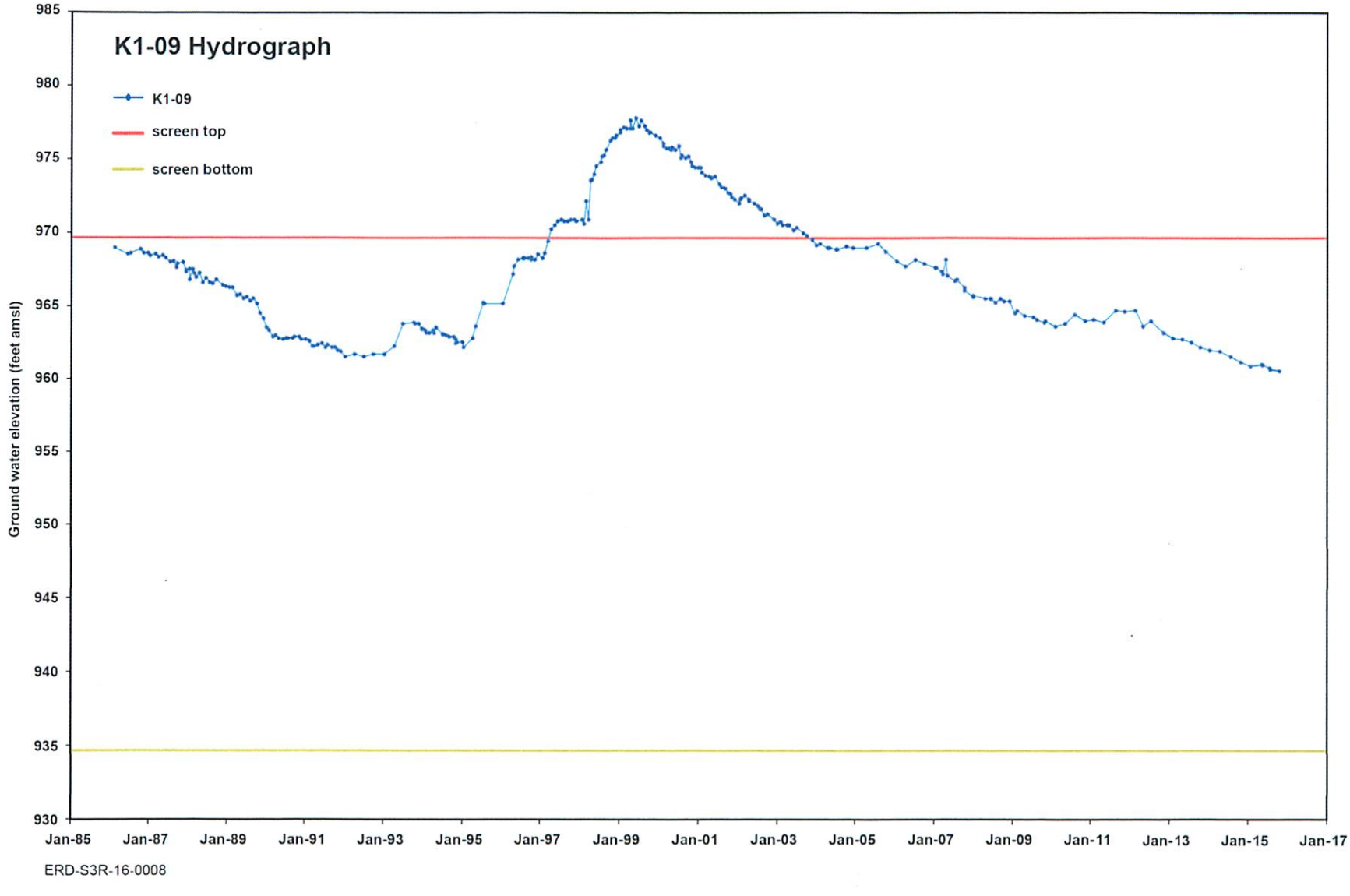

K1-04 Hydrograph
K1-04
screen top
screen bottom
Ground water elevation (feet amsl)
990
980
970
960
950
940
930
920
910
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
ERD-S3R-16-0003

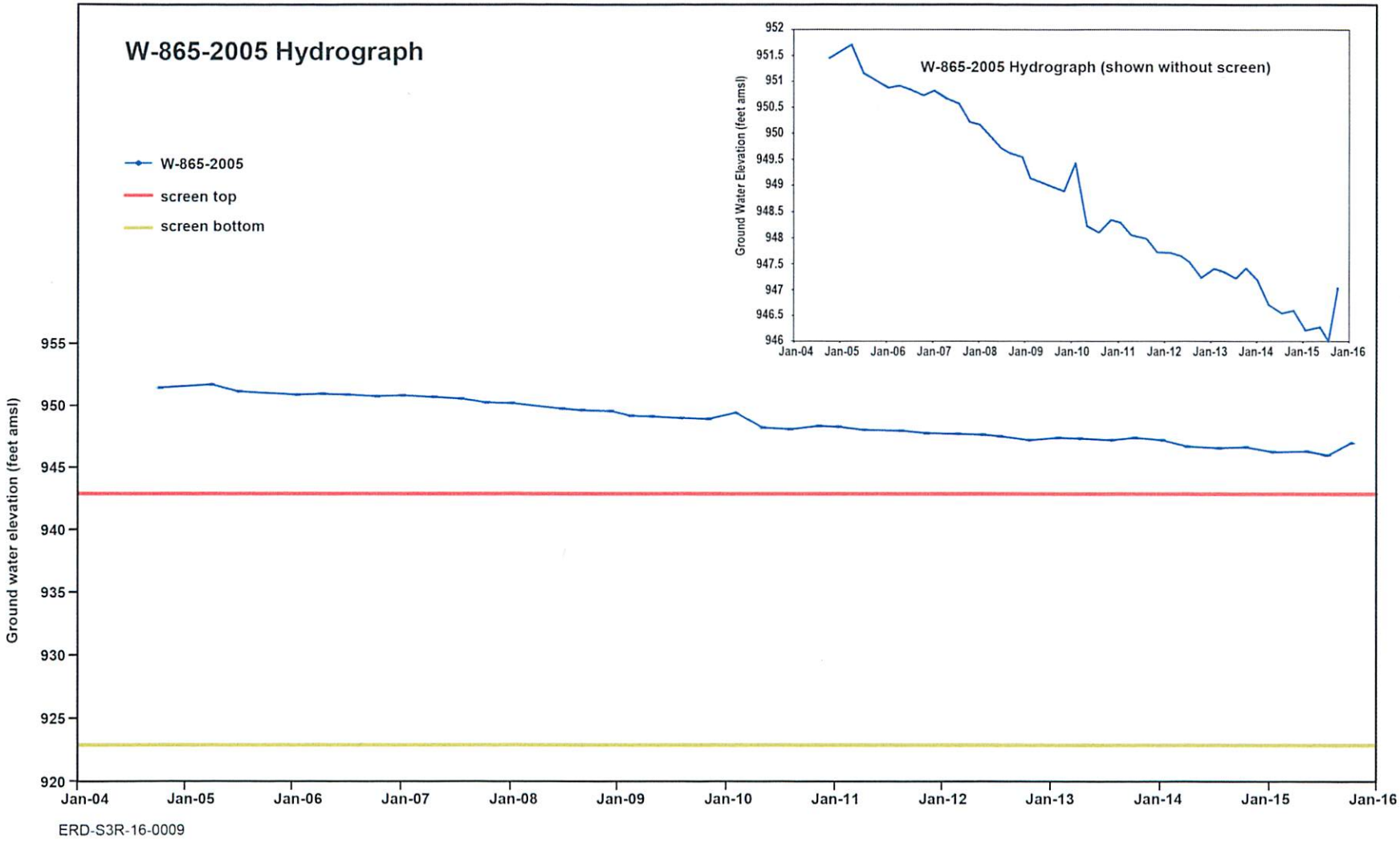

K1-05 Hydrograph
K1-05
screen top
screen bottom
Ground water elevation (feet amsl)
975
970
965
960
955
950
945
940
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
ERD-S3R-16-0004

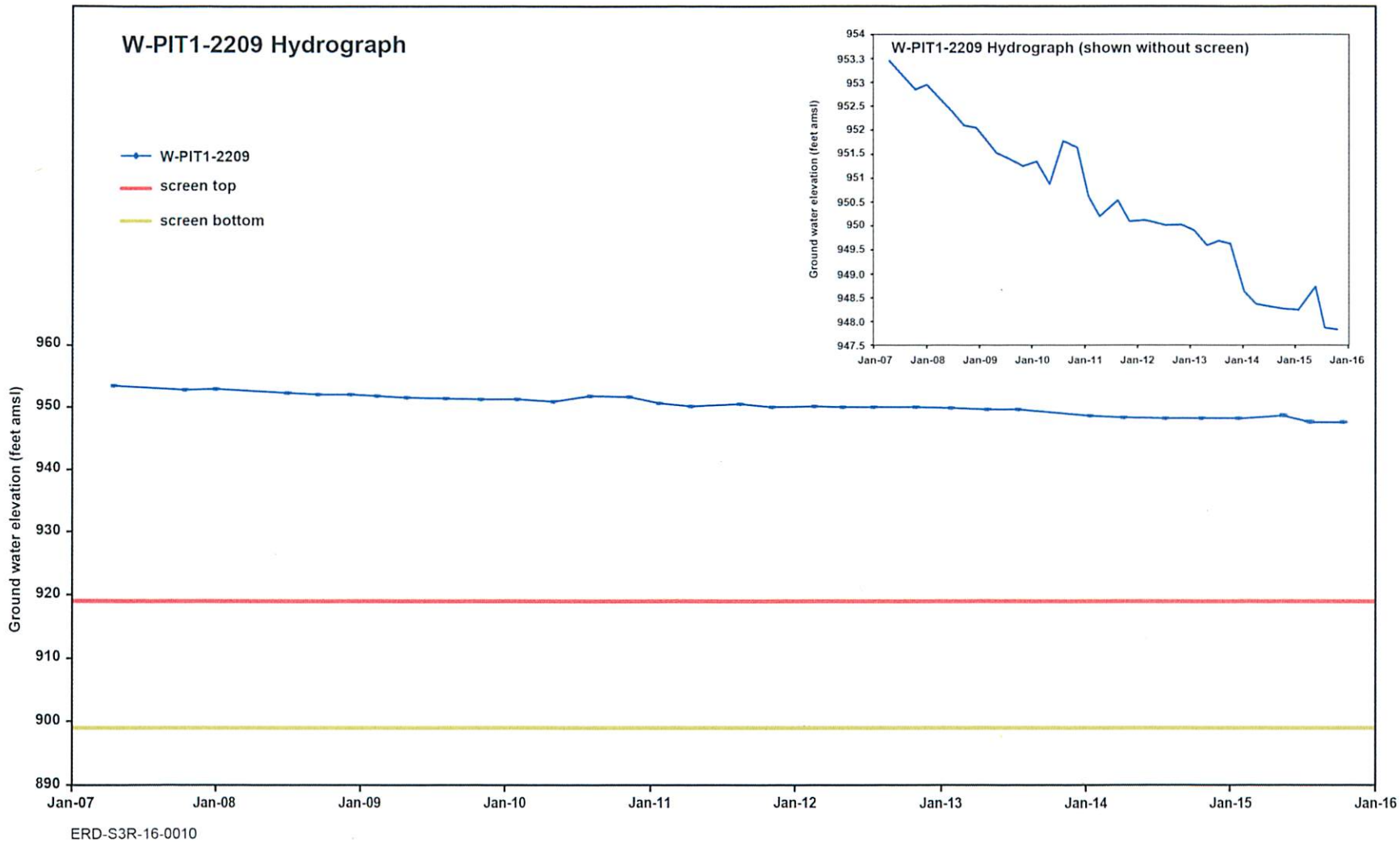

K1-06 Hydrograph
K1-06
screen top
screen bottom
Ground water elevation (feet amsl)
988
986
984
982
980
978
976
974
972
970
dry
dry
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
ERD-S3R-16-0005

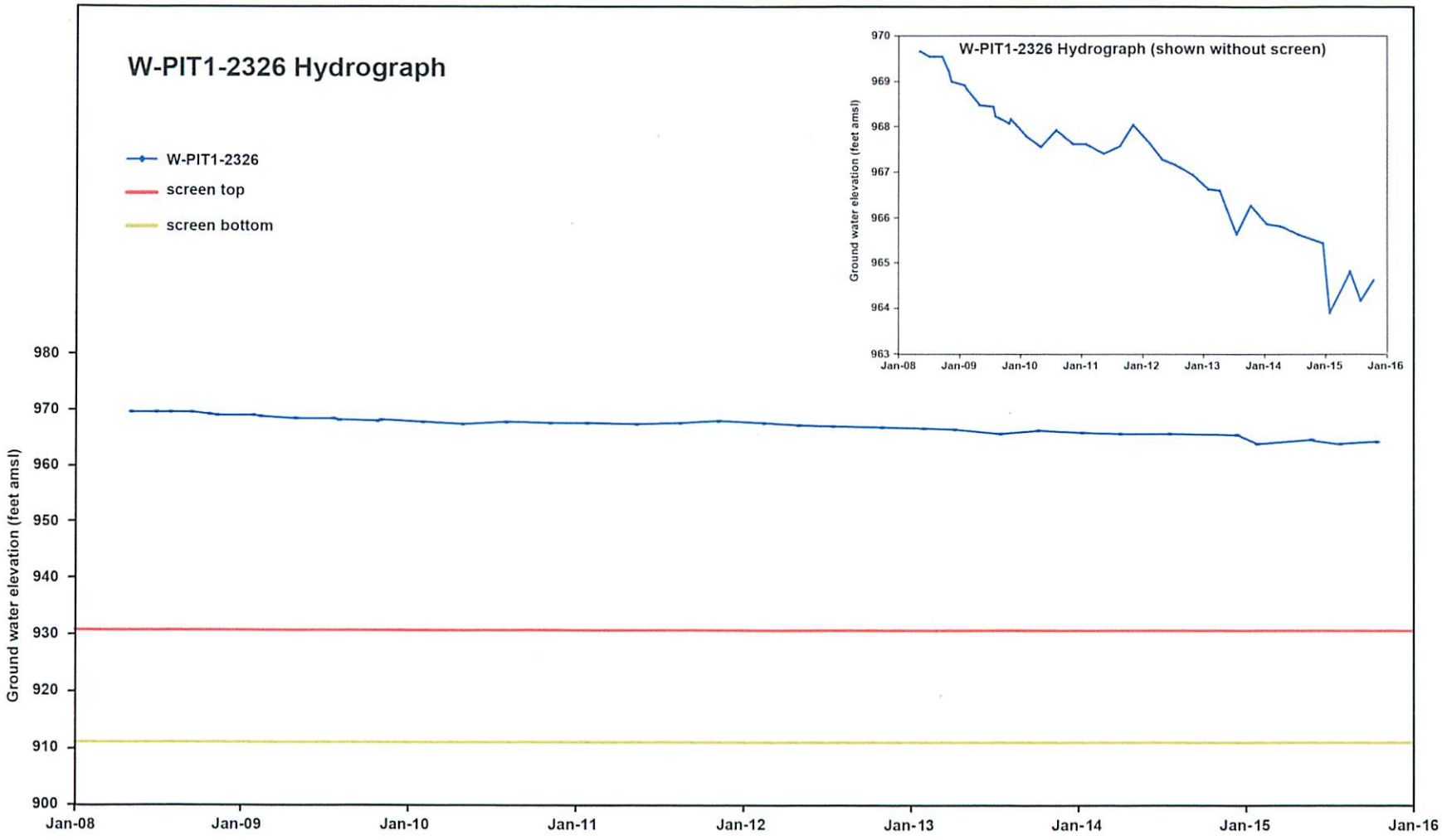

K1-07 Hydrograph
K1-07
screen top
screen bottom
Ground water elevation (feet amsl)
990
985
980
975
970
965
960
955
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
ERD-S3R-16-0006

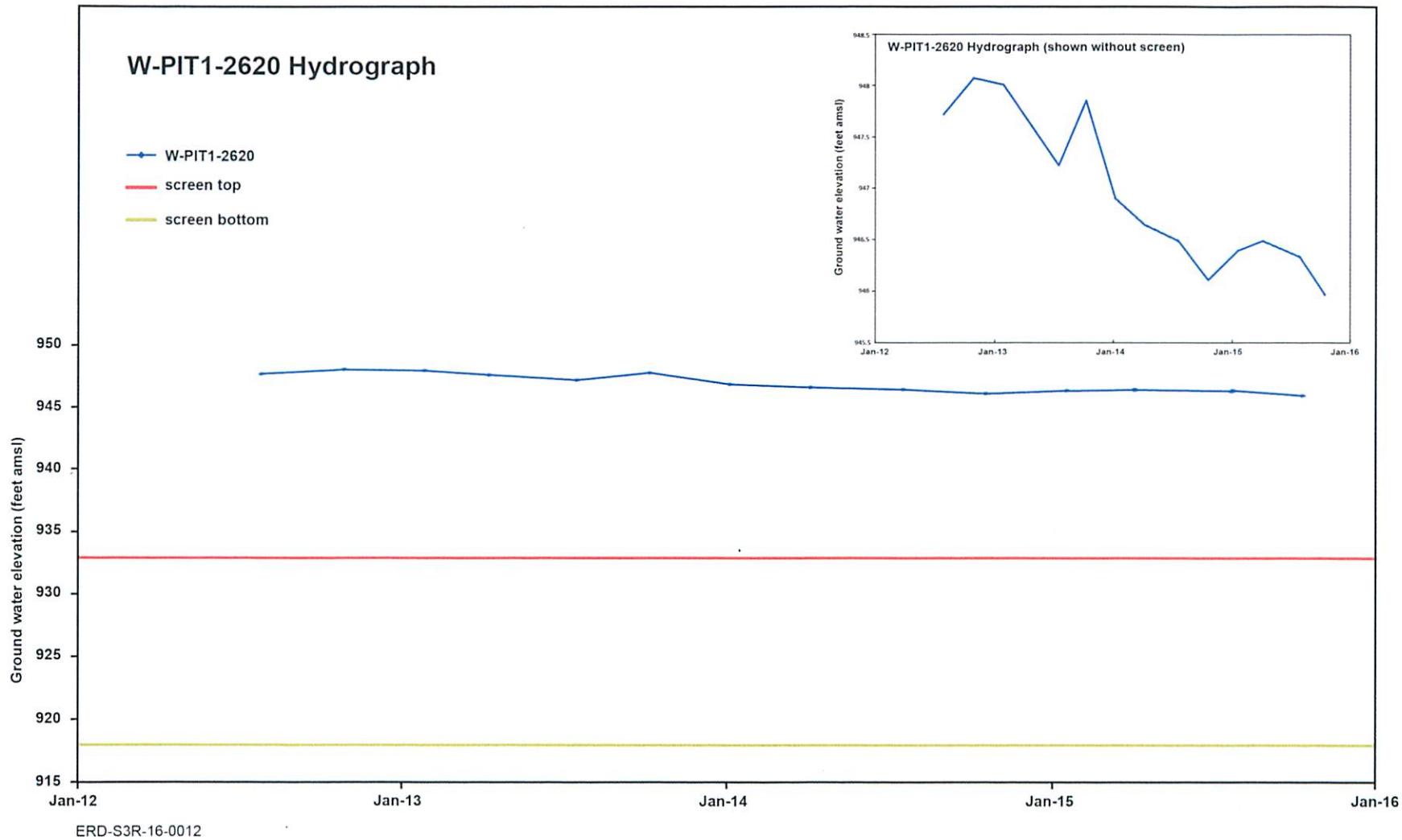

K1-08 Hydrograph
Ground water elevation (feet amsl)
985
980
975
970
965
960
955
950
K1-08
screen top
screen bottom
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
ERD-S3R-16-0007


K1-09 Hydrograph
K1-09
screen top
screen bottom
Ground water elevation (feet amsl)
985
980
975
970
965
960
955
950
945
940
935
930
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
ERD-S3R-16-0008


W-865-2005 Hydrograph
W-865-2005
screen top
screen bottom
Ground water elevation (feet amsl)
955
950
945
940
935
930
925
920
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
ERD-S3R-16-0009
W-865-2005 Hydrograph (shown without screen)
Ground Water Elevation (feet amsl)
952
951.5
951
950.5
950
949.5
949
948.5
948
947.5
947
946.5
946


W-PIT1-2209 Hydrograph
W-PIT1-2209
screen top
screen bottom
Ground water elevation (feet amsl)
960
950
940
930
920
910
900
890
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
W-PIT1-2209 Hydrograph (shown without screen)
Ground water elevation (feet amsl)
954
953.3
953
952.5
952
951.5
951
950.5
950
949.5
949.0
948.5
948.0
947.5
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
ERD-S3R-16-0010


W-PIT1-2326 Hydrograph
W-PIT1-2326
screen top
screen bottom
Ground water elevation (feet amsl)
980
970
960
950
940
930
920
910
900
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
W-PIT1-2326 Hydrograph (shown without screen)
Ground water elevation (feet amsl)
970
969
968
967
966
965
964
963
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16


W-PIT1-2620 Hydrograph
W-PIT1-2620
screen top
screen bottom
Ground water elevation (feet amsl)
950
945
940
935
930
925
920
915
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
W-PIT1-2620 Hydrograph (shown without screen)
948.5
948
947.5
947
946.5
946
945.5
ERD-S3R-16-0012

Appendix G

Field Logs for Compliance Monitoring and Evaluation Monitoring Wells

All Ground Water Sampling Data

Target Sample Date: 29-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-01C AREA INFO: S300/EWFA/PIT1

DATE: 29-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30088

PURGE METHOD/SAMPLE METHOD: Grundfos / GRVS CONTAMINANT PRESENT: NO3-37/3H<1000 pCi/L

SCREENED INTERVAL (ft-bmp): 106.82 - 116.82 PUMP INTAKE DEPTH: 115.43

CASING DEPTH(installed/sounded)(ft-bmp): 113.50 / 122.40 on 26-JAN-15 CASING VOL (Gal/Time): 2.26

DEPTH TO WATER(ft-bmp): 112.00 on 17-AUG-15 112.11 VOLUME FACTOR: 0.500

WATER IN CASING (ft): 4.52 10.29 CASING DIAMETER/TCASING HT(in): 3.5 / 3.02

TIME PUMP ON: 1049 INITIAL FLOW RATE (Q=GPM):

TIME PUMP OFF: 1101 MEASURED BY:FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1054		-	-	8.02	21.7	697.0	106	7	Top of Pump

METER SERIAL # CALIBRATED

pH : 620534 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3CMP 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: N/A

PURGE VOL/EXCESS H2O DEST: 0.00 / None

TF LOCATION: Collect

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

SAMPLE ID (VERIFY): K1-01C TIME COLLECTED: 1101

New Grundfos in place of old 110v pump.

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	K1-01C	AS:FILTER	0	O	
GE	K1-01C	AS:THISO	2	1L P	
GE	K1-01C	AS:UISO	2	1L P	
BB	K1-01C	E300.0:NO3	1	250 ml P	
BB	K1-01C	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
~~BB~~	~~K1-01C~~	~~E300.0:PERC~~	~~1~~	250 ml P	1/3-1/2 headspace, & agitate
BB	K1-01C	E8260	3	40 mL V	
BB	K1-01C	E8330:R+H	3	1L G	
GE	K1-01C	E900	1	1L P	
GE	K1-01C	E900:FILTER	0	O	
GE	K1-01C	E906	1	250 ml GA	
PF	K1-01C	RA226	1	1L P	
PF	K1-01C	RA226:FILTER	0	O	
BB	K1-01C	WGMGMET1	1	1L P	
BB	K1-01C	WGMGMET1:FILTER	0	O	

Deleted Extra COC for Perc cmp & kept Perc EMG.

All Ground Water Sampling Data

Target Sample Date: 19-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-02B AREA INFO: S300/EWFA/PIT1

DATE: 19-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30082

PURGE METHOD/SAMPLE METHOD: Grundfos / 3VES CONTAMINANT PRESENT: NO3-33/PERC-6.4/H3>1000 PCi/L

SCREENED INTERVAL (ft-bmp): 148.80 - 168.80 PUMP INTAKE DEPTH: 169.10

CASING DEPTH(installed/sounded)(ft-bmp): 166.50 / 174.55 on 14-AUG-14 CASING VOL (Gal/Time): 14.47 17.4 X3.0 = 52.2

DEPTH TO WATER(ft-bmp): 139.55 on 12-AUG-15 139.90 VOLUME FACTOR: 0.500

WATER IN CASING (ft): 28.95 34.65 CASING DIAMETER/TCASING HT(in): 3.5 / 2.00

TIME PUMP ON: 1058 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
1107		17.4	1	7.78	21.4	749.7	152	1	143.80
1116		34.8	2	7.63	22.4	749.5	138	1	144.21
1125		52.2	3	7.68	22.3	746.9	141	1	144.86
1127				7.66	22.3	746.5	140		
1129				7.66	22.2	745.5	137		

METER	SERIAL #	CALIBRATED
pH :	6205240	YES/NO
SC :		YES/NO
mV :		YES/NO
H2O:		YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: 43.41 / PIT7-SRC

TF LOCATION: PIT7-SRC

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

SAMPLE ID (VERIFY): K1-02B / 3VES TIME COLLECTED: 1137

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	K1-02B	AS:FILTER	0	O	
GE	K1-02B	AS:THISO	2	1L P	
GE	K1-02B	AS:UISO	2	1L P	
BB	K1-02B	E300.0:NO3	1	250 ml P	
BB	K1-02B	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	K1-02B	E8260	3	40 mL V	
BB	K1-02B	E8330:R+H	3	1L G	
GE	K1-02B	E900	1	1L P	
GE	K1-02B	E900:FILTER	0	O	
GE	K1-02B	E906	1	250 ml GA	
PF	K1-02B	RA226	1	1L P	
PF	K1-02B	RA226:FILTER	0	O	
BB	K1-02B	WGMGMET1	1	1L P	
BB	K1-02B	WGMGMET1:FILTER	0	O	

All Ground Water Sampling Data

Target Sample Date: 04-NOV-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-04 AREA INFO: S300/EWFA/PIT1

DATE: 04-Nov-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30089

PURGE METHOD/SAMPLE METHOD: Grundfos / 3VES CONTAMINANT PRESENT: NO3-28

SCREENED INTERVAL (ft-bmp): 185.97 - 202.97 PUMP INTAKE DEPTH: 195.10

CASING DEPTH(installed/sounded)(ft-bmp): 201.00 / 204.15 on 28-JAN-15 CASING VOL (Gal/Time): 21.67 22+3.0 = 66 Gal

DEPTH TO WATER(ft-bmp): 160.32 on 17-AUG-15 160.37 VOLUME FACTOR: 0.500

WATER IN CASING (ft): 43.35 43.78 CASING DIAMETER/TCASING HT(in): 3.5 / 2.67

TIME PUMP ON: 1052 INITIAL FLOW RATE (Q=GPM): 1.0 a

TIME PUMP OFF: 1211 MEASURED BY:FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1112		22	1	8.05	19.6	607.2	126	1	167.39
1134		44	2	8.00	19.7	611.1	110	1	173.02
1156		66	3	8.00	19.7	612.2	108	1	175.41
1158				8.02	19.7	611.8	105	1	
1200				8.00	19.7	611.5	102	1	

METER SERIAL # 6205340 CALIBRATED
pH : YES/NO
SC : YES/NO
mV : YES/NO
H2O: YES/NO

SAMPLER/EMPLOYER: silva90
PROJECT: 3EMG
SAMPLE PRESERVATION/AMT of REAGENT: NA
PURGE VOL/EXCESS H2O DEST: 65.00 / S300-DRUM
TF LOCATION: S300

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

SAMPLE ID (VERIFY): K1-04 / 3045 TIME COLLECTED: 1211

New Grundfos in place of old 110v pump.

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	K1-04	AS:FILTER	0	O	
GE	K1-04	AS:THISO	2	1L P	
GE	K1-04	AS:UISO	2	1L P	
BB	K1-04	E300.0:NO3	1	250 ml P	
BB	K1-04	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	K1-04	E8260	3	40 mL V	
BB	K1-04	E8330:R+H	3	1L G	
GE	K1-04	E900	1	1L P	
GE	K1-04	E900:FILTER	0	O	
GE	K1-04	E906	1	250 ml GA	
PF	K1-04	RA226	1	1L P	
PF	K1-04	RA226:FILTER	0	O	
BB	K1-04	WGMGMET1	1	1L P	
BB	K1-04	WGMGMET1:FILTER	0	O	

All Ground Water Sampling Data

Target Sample Date: 04-NOV-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-05 AREA INFO: S300/EWFA/PIT1

DATE: 04-Nov-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30089

PURGE METHOD/SAMPLE METHOD: GF / 3VES CONTAMINANT PRESENT: FREON 113-19.0/NO3-37

SCREENED INTERVAL (ft-bmp): 165.30 - 186.30 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 184.00 / 186.30 on 21-NOV-84 CASING VOL (Gal/Time): 11.55 12.4x3= 37.2

DEPTH TO WATER(ft-bmp): 174.68 on 17-AUG-15 174.13 VOLUME FACTOR: 1.020

WATER IN CASING (ft): 11.32 12.17 CASING DIAMETER/TCASING HT(in): 5 / 2.00

TIME PUMP ON: 0910 INITIAL FLOW RATE (Q=GPM): .65

TIME PUMP OFF: 1026 MEASURED BY: FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0924		12.4	1	7.91	20.6	622.6	78	1	* NM
0948		24.8	2	8.02	20.0	621.7	98	1	* NM
1007		32.2	3	8.07	19.9	621.3	115	1	* NM
1009				8.06	19.9	620.9	113	1	
1011				8.06	19.8	620.7	111	1	

METER SERIAL # CALIBRATED

pH : 605310 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: 34.64 / S300-DRUM

TF LOCATION: S300

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

SAMPLE ID (VERIFY): K1-05 / 3VES TIME COLLECTED: 1026

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	K1-05	AS:FILTER	0	O	
GE	K1-05	AS:THISO	2	1L P	
GE	K1-05	AS:UISO	2	1L P	
BB	K1-05	E300.0:NO3	1	250 ml P	
BB	K1-05	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	K1-05	E8260	3	40 mL V	
BB	K1-05	E8330:R+H	3	1L G	
GE	K1-05	E900	1	1L P	
GE	K1-05	E900:FILTER	0	O	
GE	K1-05	E906	1	250 ml GA	
PF	K1-05	RA226	1	1L P	
PF	K1-05	RA226:FILTER	0	O	
BB	K1-05	WGMGMET1	1	1L P	
BB	K1-05	WGMGMET1:FILTER	0	O	

* Probe Sticks

All Ground Water Sampling Data

Target Sample Date: 13-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-07 AREA INFO: S300/EWFA/PIT1

DATE: 13-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30080

PURGE METHOD/SAMPLE METHOD: GF / 3VES CONTAMINANT PRESENT: NO3-34

SCREENED INTERVAL (ft-bmp): 131.30 - 151.30 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 150.00 / 153.30 on 28-OCT-85 CASING VOL (Gal/Time): 6.46 6.5 x 3=19.5

DEPTH TO WATER(ft-bmp): 145.18 on 29-JUL-15 145.33 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 7.82 7.97 CASING DIAMETER/TCASING HT(in): 4.5 / 3.00

TIME PUMP ON: 0910 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
0917		6.5	1	7.73	22.0	605.3	-75	1	147.74
0924		13	2	7.77	22.2	606.2	-53	1	147.97
0931		19.5	3	7.80	22.5	604.8	-49	1	148.05
0933				7.81	22.5	603.6	-45	1	
0935				7.80	22.4	604.2	-44	1	

METER SERIAL # CALIBRATED

pH : 6705340 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: 19.38 / S300-DRUM

TF LOCATION: S300

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

SAMPLE ID (VERIFY): K1-07/3VES TIME COLLECTED: 0946

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	K1-07	AS:FILTER	0	O	
GE	K1-07	AS:THISO	2	1L P	
GE	K1-07	AS:UISO	2	1L P	
BB	K1-07	E300.0:NO3	1	250 ml P	
BB	K1-07	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	K1-07	E8260	3	40 mL V	
BB	K1-07	E8330:R+H	3	1L G	
GE	K1-07	E900	1	1L P	
GE	K1-07	E900:FILTER	0	O	
GE	K1-07	E906	1	250 ml GA	
PF	K1-07	RA226	1	1L P	
PF	K1-07	RA226:FILTER	0	O	
BB	K1-07	WGMGMET1	1	1L P	
BB	K1-07	WGMGMET1:FILTER	0	O	

All Ground Water Sampling Data

Target Sample Date: 20-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-08 AREA INFO: S300/EWFA/PIT1

DATE: 20-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30083

PURGE METHOD/SAMPLE METHOD: GF / 3VES CONTAMINANT PRESENT: FREON 113-37/NO3-36

SCREENED INTERVAL (ft-bmp): 143.32 - 168.32 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 168.00 / 170.32 on 31-OCT-85 CASING VOL (Gal/Time): 8.53 8.6 x 3 vol = 25.8

DEPTH TO WATER(ft-bmp): 159.70 on 13-AUG-15 159.82 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 10.32 10.5 CASING DIAMETER/TCASING HT(in): 4.5 / 2.02

TIME PUMP ON: 1017 INITIAL FLOW RATE (Q=GPM): 1.5 a

TIME PUMP OFF: 1121 MEASURED BY: (FLOW METER) / GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1035		8.6	1	8.27	20.0	618.3	115	1	163.18
1052		17.2	2	8.11	20.7	620.2	70	1	NM TOP of Pump ?
1110		25.8	3	8.04	20.9	622.3	77	1	↓
1112				8.03	21.1	622.8	74	1	↓
1114				8.00	21.6	623.2	71	1	

METER SERIAL # CALIBRATED

pH : 620540 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: 25.58 / S300-DRUM

TF LOCATION: S300

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

SAMPLE ID (VERIFY): K1-08 / 3VES TIME COLLECTED: 1121

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	K1-08	AS:FILTER	0	O	
GE	K1-08	AS:THISO	2	1L P	
GE	K1-08	AS:UISO	2	1L P	
BB	K1-08	E300.0:NO3	1	250 ml P	
BB	K1-08	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	K1-08	E8260	3	40 mL V	
BB	K1-08	E8330:R+H	3	1L G	
GE	K1-08	E900	1	1L P	
GE	K1-08	E900:FILTER	0	O	
GE	K1-08	E906	1	250 ml GA	
PF	K1-08	RA226	1	1L P	
PF	K1-08	RA226:FILTER	0	O	
BB	K1-08	WGMGMET1	1	1L P	
BB	K1-08	WGMGMET1:FILTER	0	O	

* shut off purge water while taking Sample's ~~in order~~

1st Retest

All Ground Water Sampling Data

Target Sample Date: 14-DEC-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-08 AREA INFO: S300/EWFA/PIT1

DATE: 14-Dec-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30101

PURGE METHOD/SAMPLE METHOD: GF / 3VES CONTAMINANT PRESENT: FREON 113-37/NO3-36

SCREENED INTERVAL (ft-bmp): 143.32 - 168.32 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 168.00 / 170.32 on 31-OCT-85 CASING VOL (Gal/Time): 8.53 3.7x3=26.1 GL

DEPTH TO WATER(ft-bmp): 159.70 on 13-AUG-15 159.81 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 10.32 10.51 CASING DIAMETER/TCASING HT(in): 4.5 / 2.02

TIME PUMP ON: 1005 INITIAL FLOW RATE (Q=GPM): .75

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

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1016		9.7	1	7.53	20.5	632.7	94	1	Top of Pump
1026		17.4	2	7.77	20.5	632.6	97	1	Top of Pump
1037		26.1	3	8.00	19.8	631.7	100	1	↓
1039				8.01	19.9	631.5	100	1	↓
1041				8.00	19.9	631.3	99	1	

METER SERIAL # CALIBRATED

pH : 6045340 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: 25.58 / S300-DRUM

TF LOCATION: S300

QC SAMPLE ID: K1-08 QC LAB(S): BCLABS-BAK QC SAMPLE TIME:

SAMPLE ID (VERIFY): K1-08/3VES TIME COLLECTED: 1045

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	K1-08	E200.8:NI	1	500 mL P	

1st Re-Sample

2nd Retest

All Ground Water Sampling Data

Target Sample Date: 21-DEC-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-08 AREA INFO: S300/EWFA/PIT1

DATE: 21-Dec-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30103

PURGE METHOD/SAMPLE METHOD: GF / 3VES CONTAMINANT PRESENT: FREON 113-37/NO3-36

SCREENED INTERVAL (ft-bmp): 143.32 - 168.32 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 168.00 / 170.32 on 31-OCT-85 CASING VOL (Gal/Time): 8.53

DEPTH TO WATER(ft-bmp): 159.70 on 13-AUG-15 159.80 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 10.32 CASING DIAMETER/TCASING HT(in): 4.5 / 2.02

TIME PUMP ON: 0839 INITIAL FLOW RATE (Q=GPM): .8 Q

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

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0849		8.7	1	8.10	19.9	631.9	92	1	Top of Pump
0854		17.4	2	8.02	20.1	632.7	98	1	↓
0909		26.1	3	8.01	20.1	632.8	101	1	
0911				8.00	20.2	631.7	100	1	
0913				8.01	20.2	631.5	102	1	

METER SERIAL # CALIBRATED

pH : 620540 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: 25.58 / S300-DRUM

TF LOCATION: S300

QC SAMPLE ID: K1-08 QC LAB(S): BCLABS-BAK QC SAMPLE TIME:

SAMPLE ID (VERIFY): K1-08 / 3VES TIME COLLECTED: 0917

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
BB	K1-08	E200.8:NI	1	500 mL P	

RE-Sample #2

All Ground Water Sampling Data

Target Sample Date: 20-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-09 AREA INFO: S300/EWFA/PIT1

DATE: 20-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30083

PURGE METHOD/SAMPLE METHOD: GF / 3VES CONTAMINANT PRESENT: FREON 113-120.0

SCREENED INTERVAL (ft-bmp): 157.30 - 192.30 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 192.00 / 194.30 on 05-NOV-85 CASING VOL (Gal/Time): 23.13 23x3=69Gal

DEPTH TO WATER(ft-bmp): 166.01 on 19-AUG-15 166.04 VOLUME FACTOR: 0.826

WATER IN CASING (ft): 27.99 28.26 CASING DIAMETER/TCASING HT(in): 4.5 / 2.00

TIME PUMP ON: 1215 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
1227		23	1	7.81	21.0	673.9	39	1	nm Probe Sticks
1239		46	2	7.79	21.0	670.4	56	1	
1251		69	3	7.73	21.0	670.9	58	1	
1253				7.74	21.0	668.3	58	1	
1255				7.74	21.0	667.1	59	1	

METER SERIAL # CALIBRATED

pH : 6205340 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: ~~69.38~~ / S300-DRUM

TF LOCATION: S300

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

SAMPLE ID (VERIFY): K1-09/3VES TIME COLLECTED: 1311

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	K1-09	AS:FILTER	0	O	
GE	K1-09	AS:THISO	2	1L P	
GE	K1-09	AS:UISO	2	1L P	
BB	K1-09	E300.0:NO3	1	250 ml P	
BB	K1-09	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	K1-09	E8260	3	40 mL V	
BB	K1-09	E8330:R+H	3	1L G	
GE	K1-09	E900	1	1L P	
GE	K1-09	E900:FILTER	0	O	
GE	K1-09	E906	1	250 ml GA	
PF	K1-09	RA226	1	1L P	
PF	K1-09	RA226:FILTER	0	O	
BB	K1-09	WGMGMET1	1	1L P	
BB	K1-09	WGMGMET1:FILTER	0	O	

* Probe Sticks

All Ground Water Sampling Data

Target Sample Date: 28-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: W-PIT1-2326 AREA INFO: S300/EWFA/PIT1

DATE: 28-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30087

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

SCREENED INTERVAL (ft-bmp): 217.30 - 237.02 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 235.12 / 237.42 on 09-OCT-07 CASING VOL (Gal/Time): 54.79 55*3=165 G

DEPTH TO WATER(ft-bmp): 183.40 on 12-AUG-15 183.49 VOLUME FACTOR: 1.020

WATER IN CASING (ft): 53.72 53.93 CASING DIAMETER/TCASING HT(in): 5 / 2.00

TIME PUMP ON: 1012 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
1034		55	1	7.75	21.9	719.7	103	1	186.02
1056		110	2	7.77	22.1	720.0	100	1	188.92
1118		165	3	7.73	21.8	730.0	95	1	191.73
1120				7.71	21.6	727.3	90	1	
1122				7.70	21.8	727.8	92	1	

METER SERIAL # CALIBRATED

pH : 6705345 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: 164.38 / PIT7-SRC

TF LOCATION: PIT7-SRC

QC SAMPLE ID: PIT1FB W-PIT1-78Y QC LAB(S): BCLABS-BAK, GEL QC SAMPLE TIME: 1357

SAMPLE ID (VERIFY): W-PIT1-2326 / 3035 TIME COLLECTED: 1148

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	PIT1FB	AS:FILTER	0	O	
GE	W-PIT1-2326	AS:FILTER	0	O	
GE	W-PIT1-78Y	AS:FILTER	0	O	
GE	PIT1FB	AS:THISO	2	1L P	
GE	W-PIT1-2326	AS:THISO	2	1L P	
GE	W-PIT1-78Y	AS:THISO	2	1L P	
GE	W-PIT1-2326	AS:UISO	2	1L P	
GE	PIT1FB	AS:UISO	2	1L P	
GE	W-PIT1-78Y	AS:UISO	2	1L P	
BB	W-PIT1-78Y	E300.0:NO3	1	250 ml P	
BB	PIT1FB	E300.0:NO3	1	250 ml P	
BB	W-PIT1-2326	E300.0:NO3	1	250 ml P	
BB	W-PIT1-78Y	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	PIT1FB	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	W-PIT1-2326	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	W-PIT1-2326	E8260	3	40 mL V	
BB	W-PIT1-78Y	E8260	3	40 mL V	
BB	PIT1FB	E8260	3	40 mL V	
BB	W-PIT1-2326	E8330:R+H	3	1L G	
BB	PIT1FB	E8330:R+H	2	1L G	
BB	W-PIT1-78Y	E8330:R+H	3	1L G	
GE	PIT1FB	E900	1	1L P	
GE	W-PIT1-2326	E900	1	1L P	

All Ground Water Sampling Data

Target Sample Date: 01-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: K1-06 AREA INFO: S300/EWFA/PIT1

DATE: 01-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30074

PURGE METHOD/SAMPLE METHOD: PB / GRBA CONTAMINANT PRESENT: 3H>1000pCi/L

SCREENED INTERVAL (ft-bmp): 107.30 - 117.30 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 115.00 / 117.30 on 19-NOV-84 CASING VOL (Gal/Time): -0.31

DEPTH TO WATER(ft-bmp): 117.30 on 12-MAY-15 Dry VOLUME FACTOR: 1.020

WATER IN CASING (ft): -0.30 CASING DIAMETER/TCASING HT(in): 5 / 2.00

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

METER SERIAL # CALIBRATED

pH : 6095410 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: NA

PURGE VOL/EXCESS H2O DEST: 0.00 / None

TF LOCATION: Collect

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

SAMPLE ID (VERIFY): K1-06 / GRBA TIME COLLECTED:

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
TS	K1-06	E300.0:PERC	1	250 mL P	1/3-1/2 headspace, & agitate
GE	K1-06	E906	1	250 ml GA	

* Dry, no Samples

NOTE:
Purge rate/time: N/A since est_sus_flow = 0
Purge Volume: 0 gal.
Revision: 08/12/2015

All Ground Water Sampling Data

Target Sample Date: 05-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: W-PIT1-2209 AREA INFO: S300/EWFA/PIT1

DATE: 05-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30075

PURGE METHOD/SAMPLE METHOD: GF / 3VES CONTAMINANT PRESENT:

SCREENED INTERVAL (ft-bmp): 247.30 - 267.30 PUMP INTAKE DEPTH: 265.20

CASING DEPTH(installed/sounded)(ft-bmp): 266.00 / 268.20 on 11-MAY-06 CASING VOL (Gal/Time): 51.69 51x3x0=153Gal

DEPTH TO WATER(ft-bmp): 217.32 on 18-MAY-15 218.43 VOLUME FACTOR: 1.020

WATER IN CASING (ft): 50.68 49.77 CASING DIAMETER/TCASING HT(in): 5 / 2.00

TIME PUMP ON: 1039 INITIAL FLOW RATE (Q=GPM): 3.0 a

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

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
1056		51	1	7.96	21.4	666.4	147	1	* Nm Probe stick
1114		102	2	7.91	21.3	667.4	108	1	*
1131		153	3	7.92	21.3	668.1	105	1	*
1133				7.93	21.3	668.0	105	1	*
1135				7.91	21.2	667.4	102	1	

METER	SERIAL #	CALIBRATED
pH :	6905340	YES/NO
SC :		YES/NO
mV :		YES/NO
H2O:		YES/NO

SAMPLER/EMPLOYER: silva90
PROJECT: 3CMP 3GIV 3EMG
SAMPLE PRESERVATION/AMT of REAGENT: NA
PURGE VOL/EXCESS H2O DEST: 155.08 / None
TF LOCATION: Collect

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

SAMPLE ID (VERIFY): W-PIT1-2209 3VES TIME COLLECTED: 1202

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
GE	W-PIT1-2209	AS:FILTER	0	O	
GE	W-PIT1-2209	AS:UISO	2	1L P	
BB	W-PIT1-2209	E300.0:NO3	1	250 ml P	
BB	W-PIT1-2209	E300.0:PERC	1	250 ml P	1/3-1/2 headspace, & agitate
BB	W-PIT1-2209	E624MOD	3	40 mL V	
GE	W-PIT1-2209	E906	1	250 ml GA	

* Nm probe was sticking

All Ground Water Sampling Data

Target Sample Date: 08-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: W-PIT1-2620 AREA INFO: S300/EWFA/PIT1

DATE: 08-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30078

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

SCREENED INTERVAL (ft-bmp): 247.30 - 262.20 PUMP INTAKE DEPTH: 254.97

CASING DEPTH(installed/sounded)(ft-bmp): 260.32 / 262.50 on 04-SEP-12 CASING VOL (Gal/Time): 29.52 24 x 3.0 = 87.6

DEPTH TO WATER(ft-bmp): 233.38 on 08-APR-15 233.58 VOLUME FACTOR: 1.020

WATER IN CASING (ft): 28.94 28.92 CASING DIAMETER/TCASING HT(in): 5 / 2.00

TIME PUMP ON: 0910 INITIAL FLOW RATE (Q=GPM): 1.0 Q

TIME PUMP OFF: 1051 MEASURED BY: FLOW METER/ GRAD CYL./ BUCKET/ OTHER

TIME	Q	GAL PURGED	VOLUMES	pH	TEMP C	SC	mV	OG	DTW
0910		29	1	7.85	23.1	769.3	71	1	234.39
1010		58	2	7.87	23.1	768.8	65	1	236.72
1040		87	3	7.89	23.1	768.3	67	1	237.85
1042				7.88	23.1	767.3	63		
1044				7.89	23.1	766.7	60		

METER SERIAL # CALIBRATED

pH : 620530 YES/NO

SC : YES/NO

mV : YES/NO

H2O: YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3EMG 3GIV

SAMPLE PRESERVATION/AMT of REAGENT: n/a

PURGE VOL/EXCESS H2O DEST: 88.56 / PIT7-SRC

TF LOCATION: PIT7-SRC

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

SAMPLE ID (VERIFY): W-Pit1-2620 3VES TIME COLLECTED: 1051

LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
TS	W-PIT1-2620	E300.0:PERC	1	250 mL P	1/3-1/2 headspace, & agitate
TS	W-PIT1-2620	E624MOD	~~9~~	40 mL V	
GE	W-PIT1-2620	E906	1	250 ml GA	

WL probe was sticking difficult to get a reading

Revision: 08/12/2015

All Ground Water Sampling Data

Target Sample Date: 22-OCT-2015 Month: Norm Qtr: 4 Norm Year: 2015

WELL ID: W-865-2005 AREA INFO: S300/EWFA/865

DATE: 22-Oct-2015 LOG BOOK (DOCUMENT CONTROL) #: AA30085

PURGE METHOD/SAMPLE METHOD: PB / GRBA CONTAMINANT PRESENT:

SCREENED INTERVAL (ft-bmp): 332.30 - 352.30 INTAKE DEPTH: 0.00

CASING DEPTH(installed/sounded)(ft-bmp): 351.00 / 353.20 on 11-DEC-03 CASING VOL (Gal/Time): 24.62

DEPTH TO WATER(ft-bmp): 328.86 on 21-JUL-15 330.17 VOLUME FACTOR: 1.020

WATER IN CASING (ft): 24.14 23.03 CASING DIAMETER/TCASING HT(in): 5 / 2.00

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
1040		—	—	8.06	22.8	601.3	90	1	—

METER	SERIAL #	CALIBRATED
pH :	6205340	YES/NO
SC :		YES/NO
mV :		YES/NO
H2O:		YES/NO

SAMPLER/EMPLOYER: silva90

PROJECT: 3GIV 3EMG

SAMPLE PRESERVATION/AMT of REAGENT: N/A

PURGE VOL/EXCESS H2O DEST: 0.00 / S300-DRUM

TF LOCATION: S300

QC SAMPLE ID:W-865-64Y 865FB QC LAB(S): GEL, TALSAC, BCLABS-BAK QC SAMPLE TIME: 1149

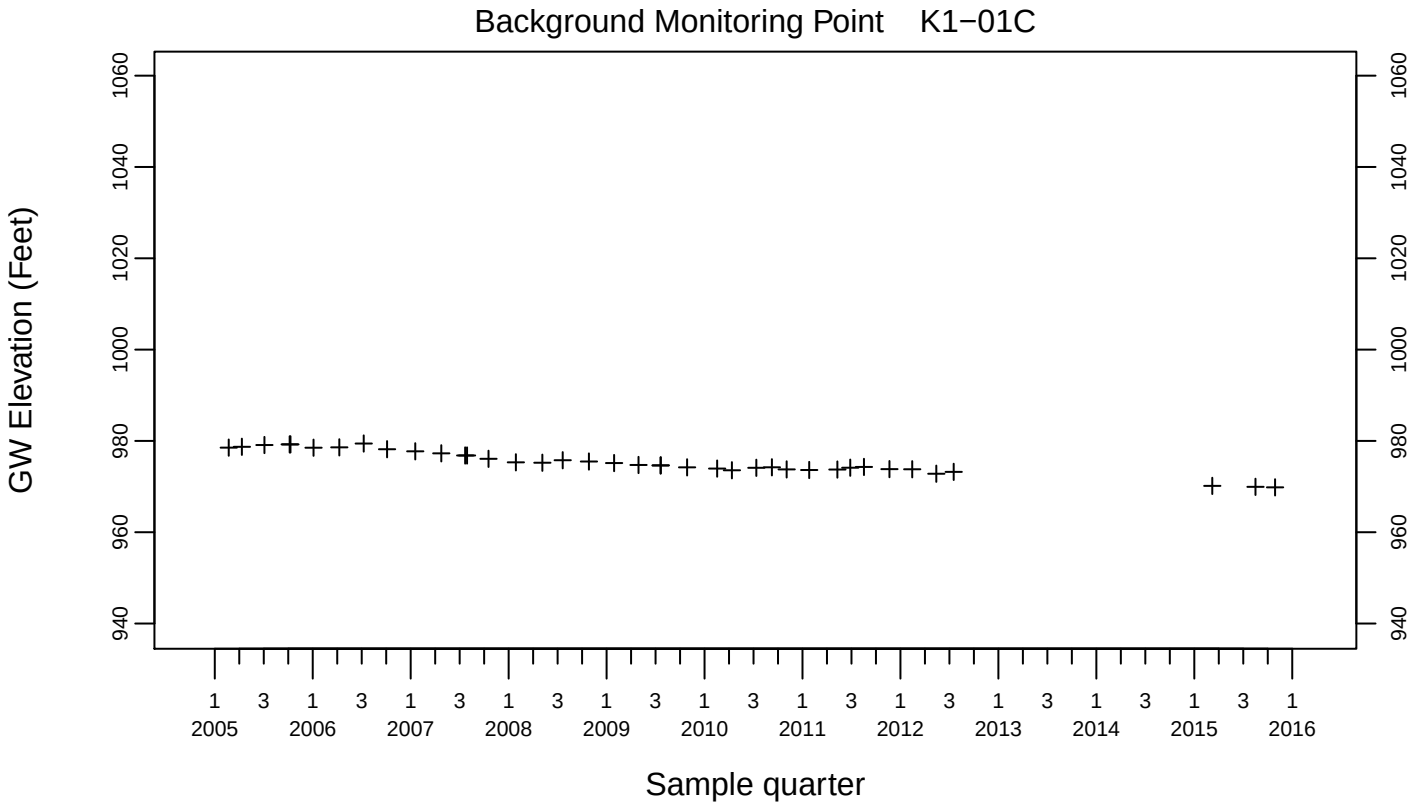
SAMPLE ID (VERIFY): W-865-2005 / GMBK TIME COLLECTED: 1110

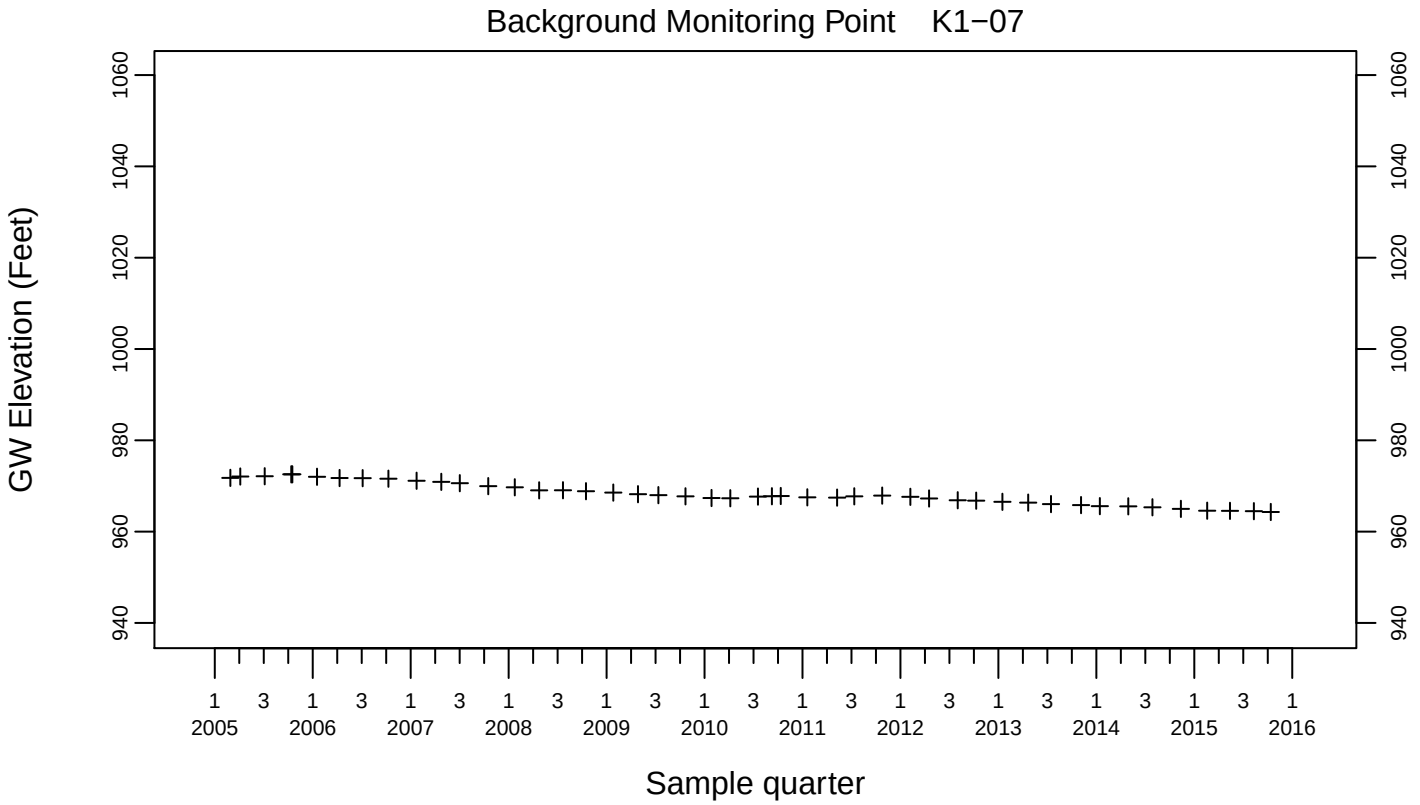
LAB	LAB_LOC_NAME	REQUESTED ANALYSIS	#	TYPE	SAMPLER_REMARKS
TS	865FB	E300.0:PERC	1	250 mL P	1/3-1/2 headspace, & agitate
TS	W-865-64Y	E300.0:PERC	1	250 mL P	1/3-1/2 headspace, & agitate
TS	W-865-2005	E300.0:PERC	1	250 mL P	1/3-1/2 headspace, & agitate
BB	W-865-64Y	E525	5	1L A	
BB	865FB	E525	5	1L A	
BB	W-865-2005	E525	5	1L A	
GE	865FB	E906	1	250 ml GA	
GE	W-865-64Y	E906	1	250 ml GA	
GE	W-865-2005	E906	1	250 ml GA	

Appendix H

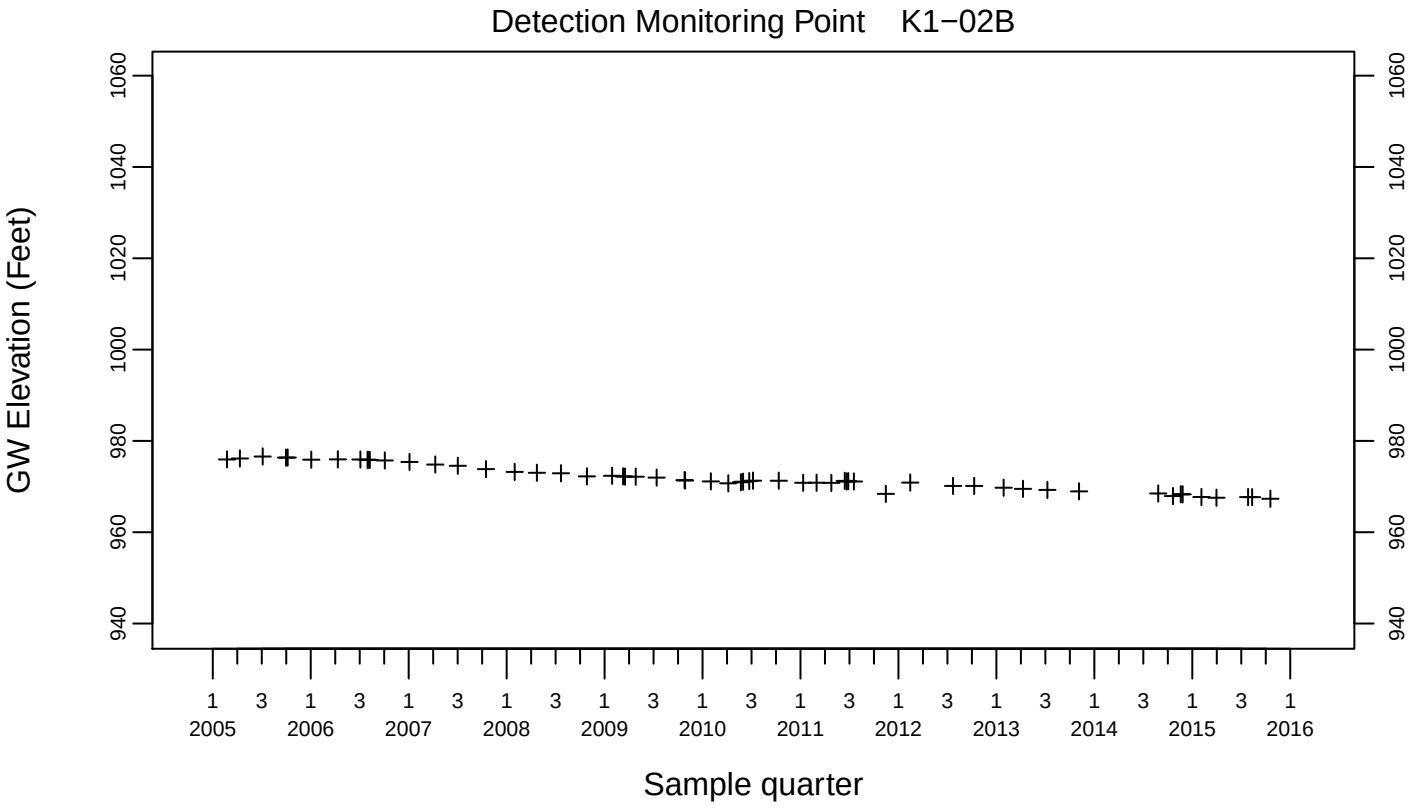
Statistical Limits and Graphs of Ground Water Measurements

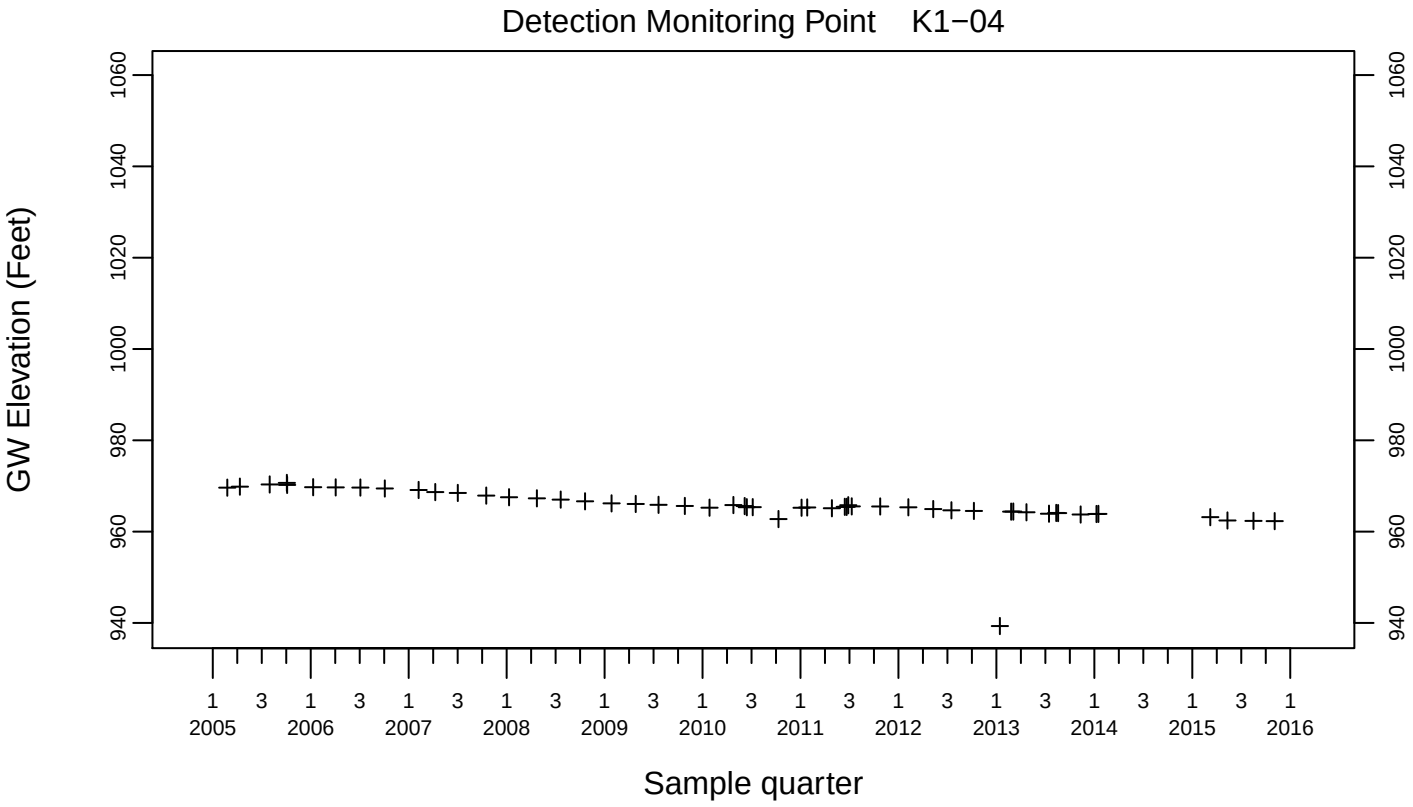
Pit 1 Area
GW Elevation (Feet)



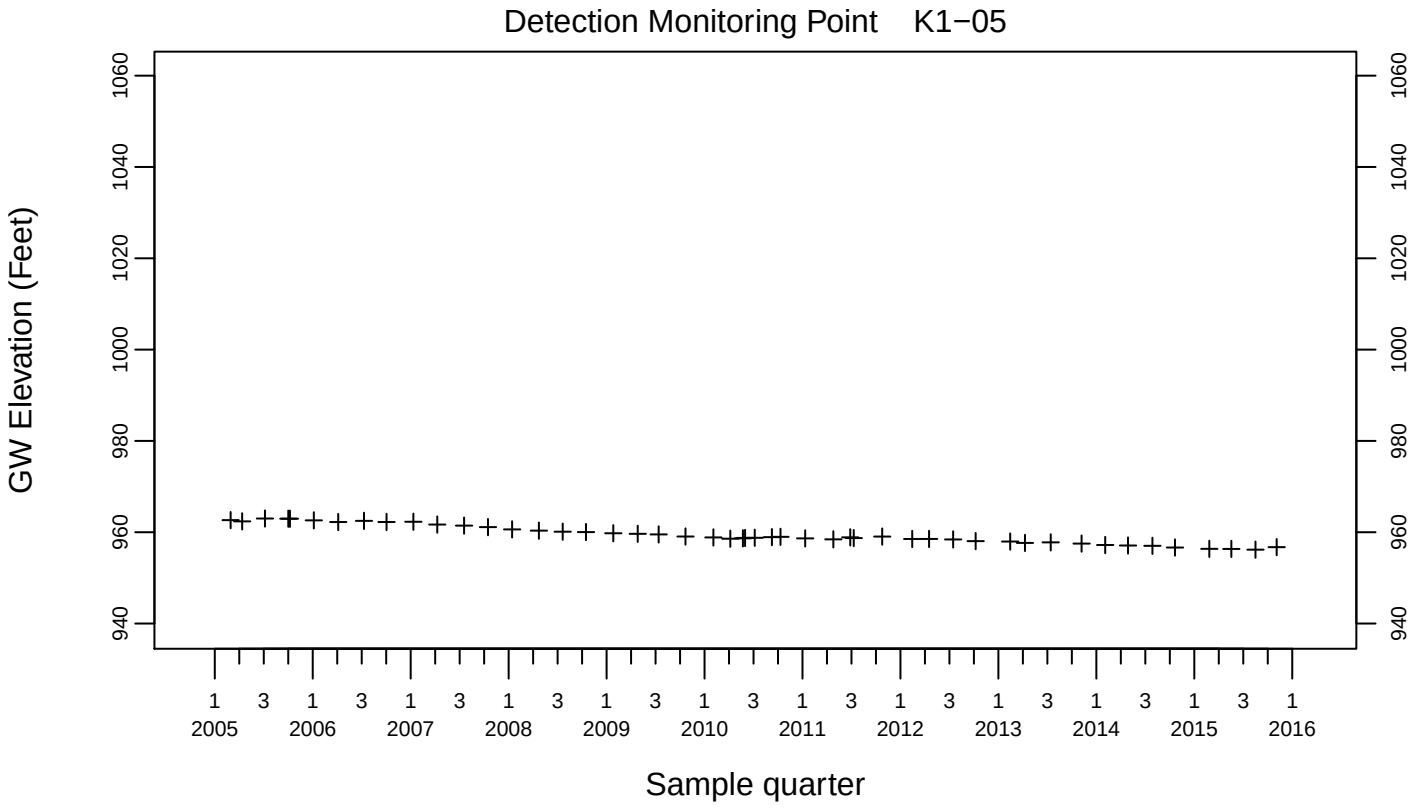


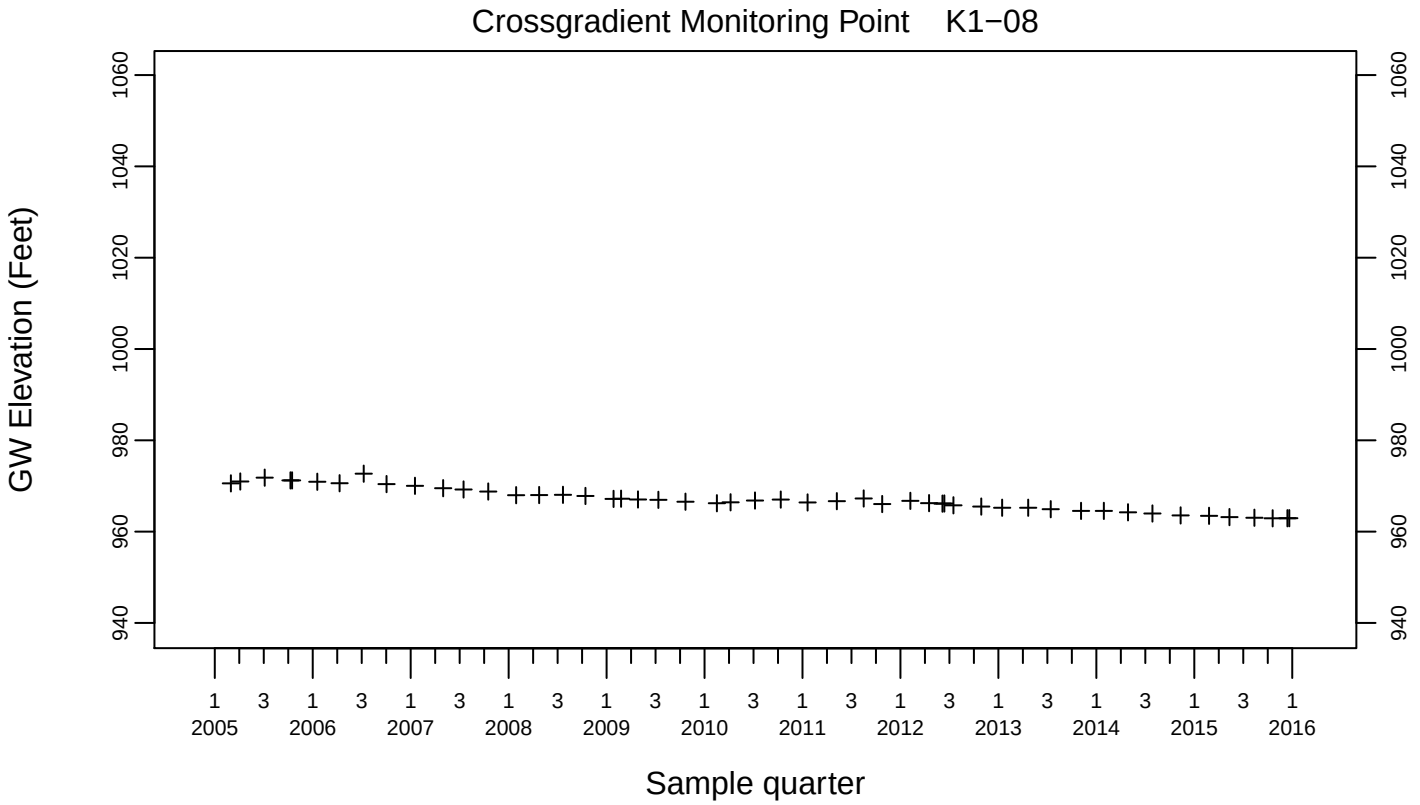
Pit 1 Area
GW Elevation (Feet)



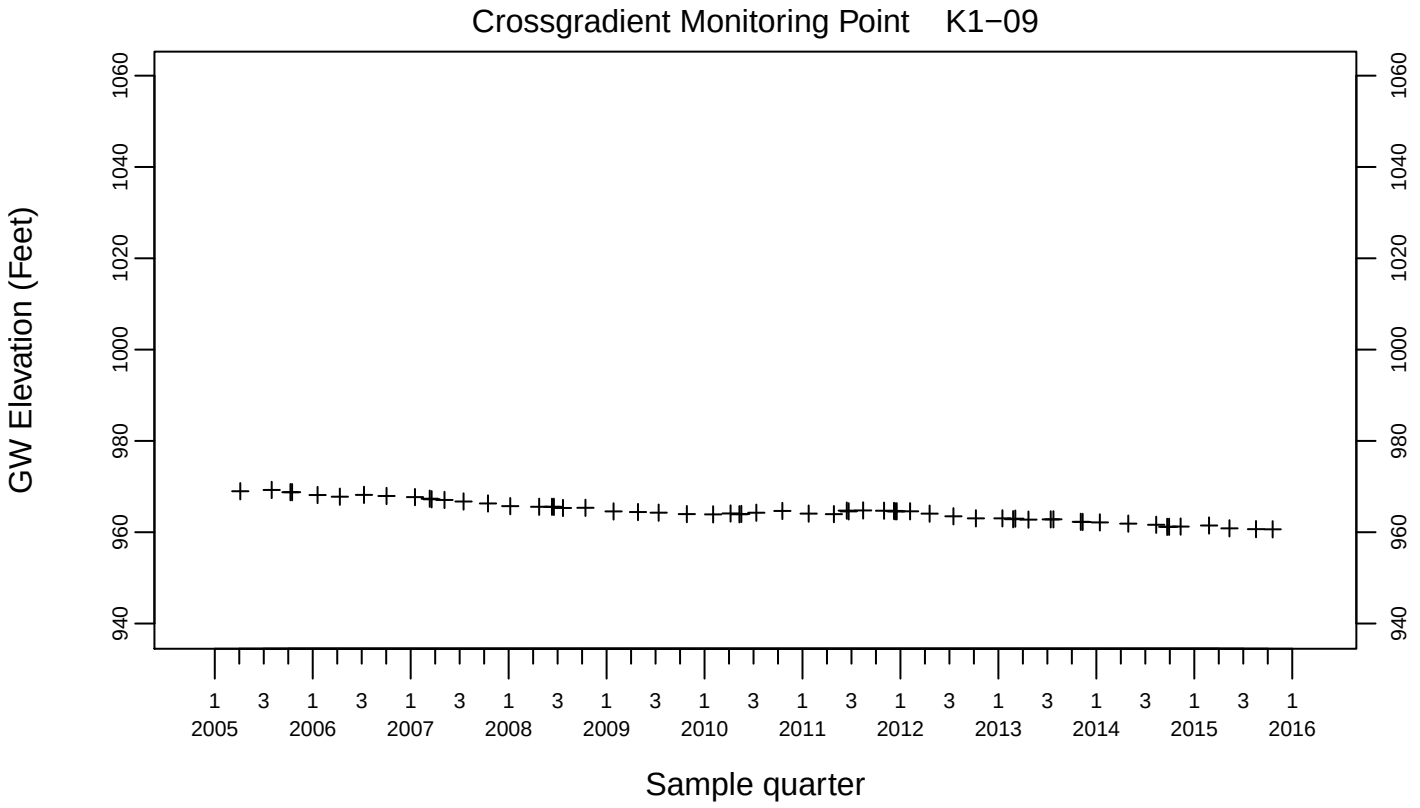


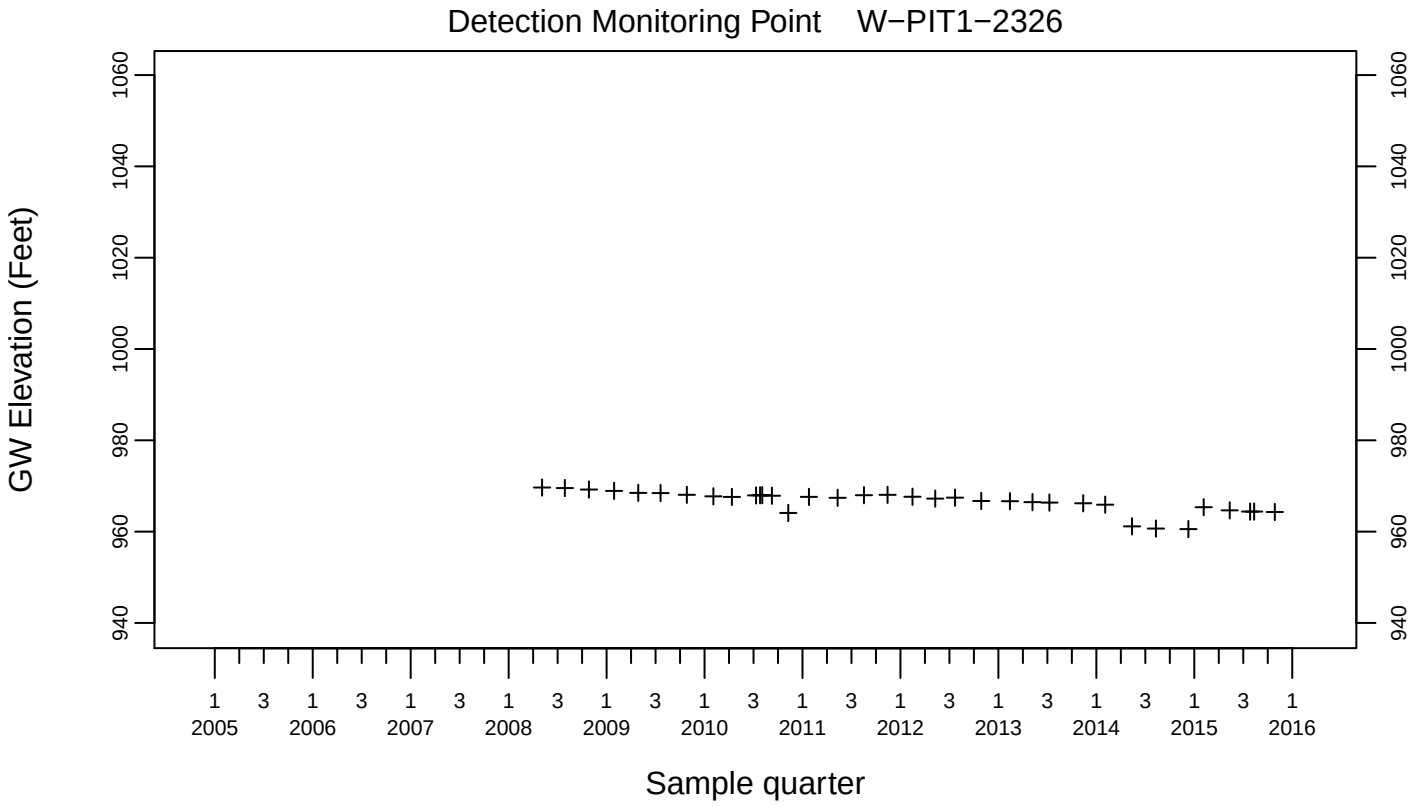
Pit 1 Area
GW Elevation (Feet)



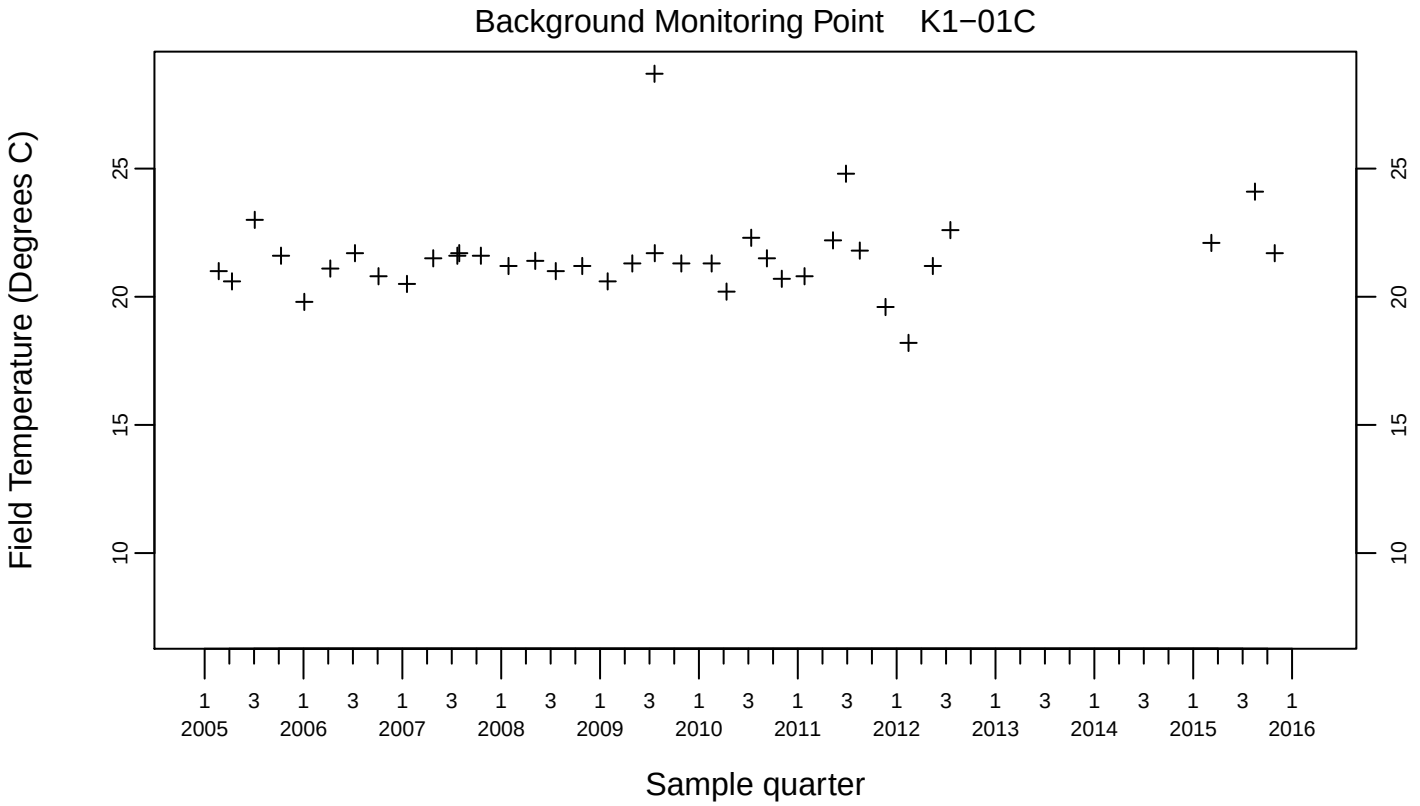


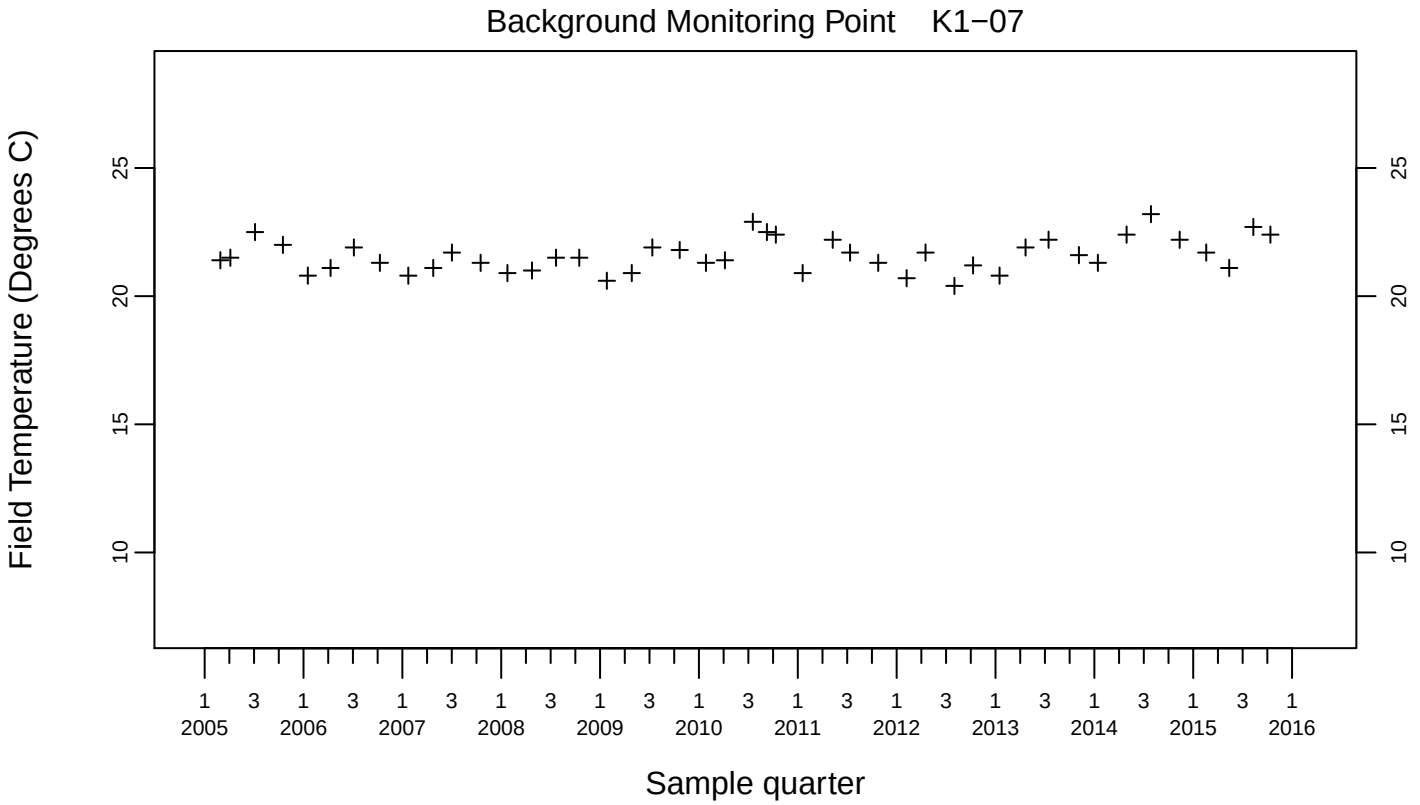
Pit 1 Area
GW Elevation (Feet)



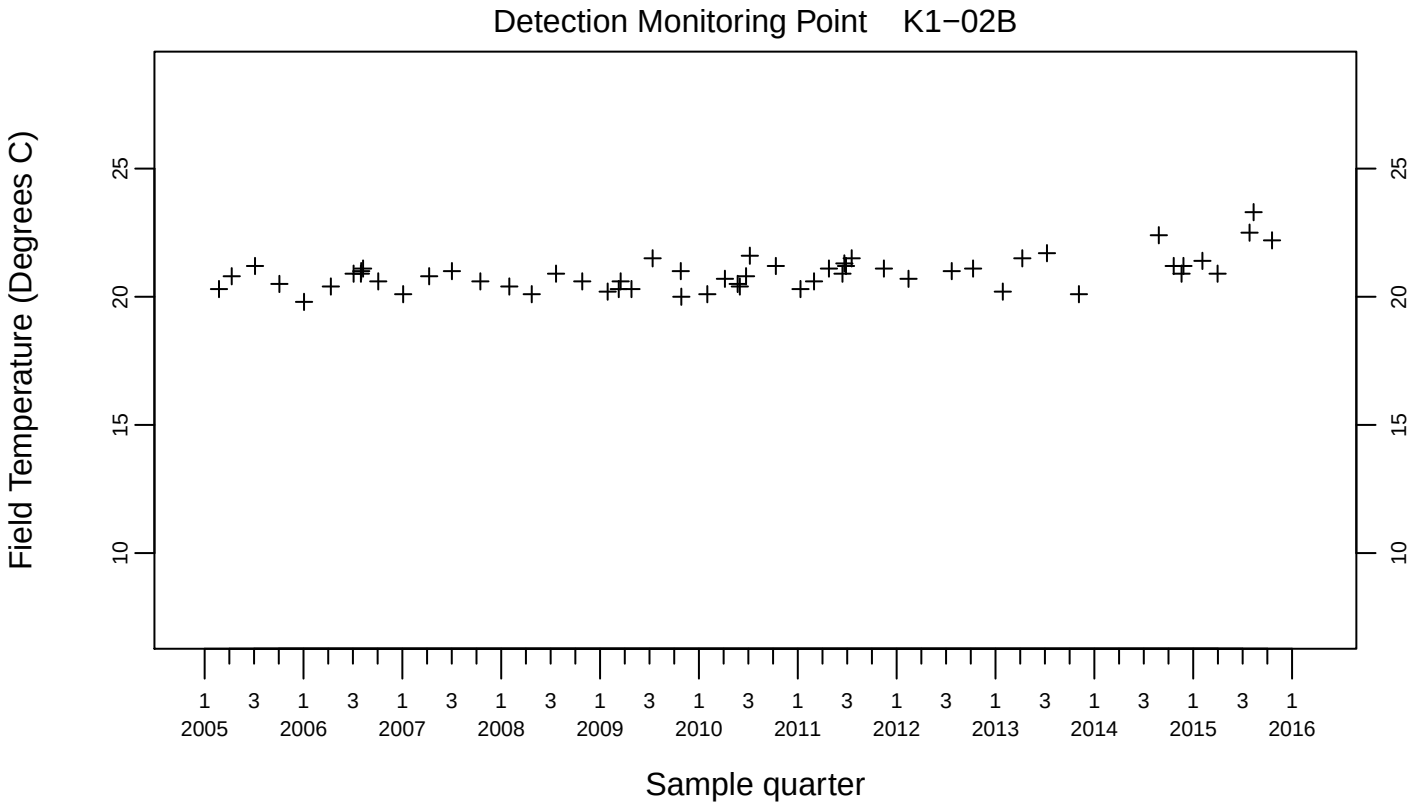


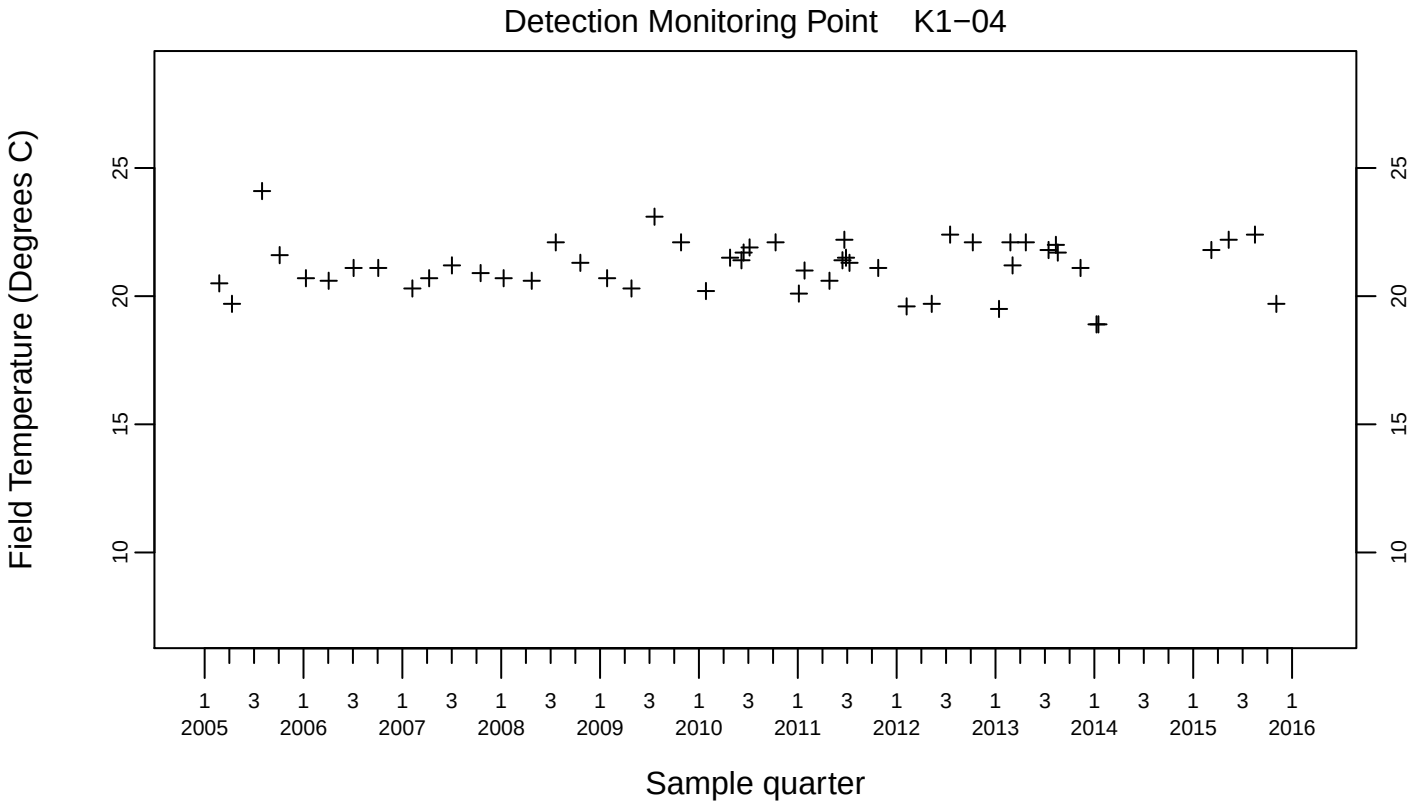
Pit 1 Area
Field Temperature (Degrees C)





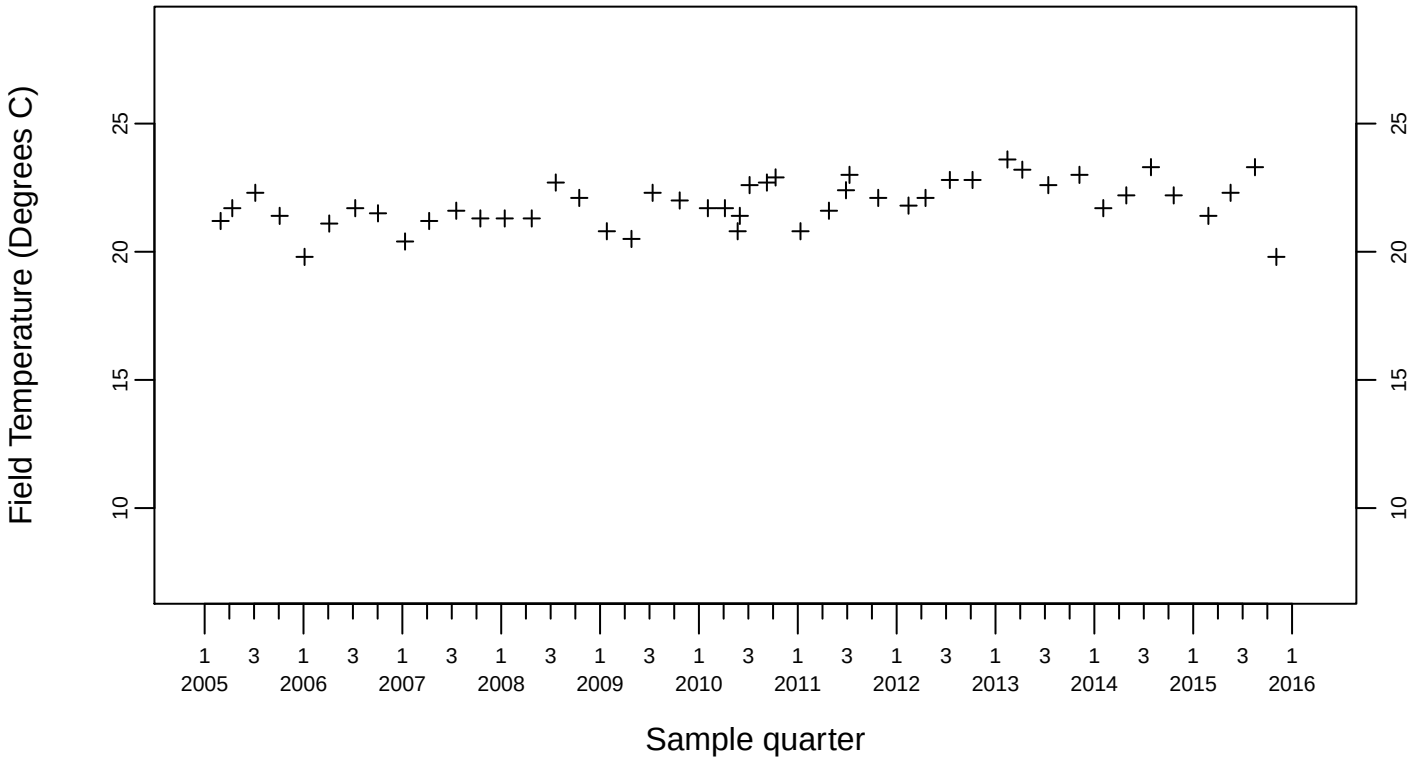
Pit 1 Area
Field Temperature (Degrees C)



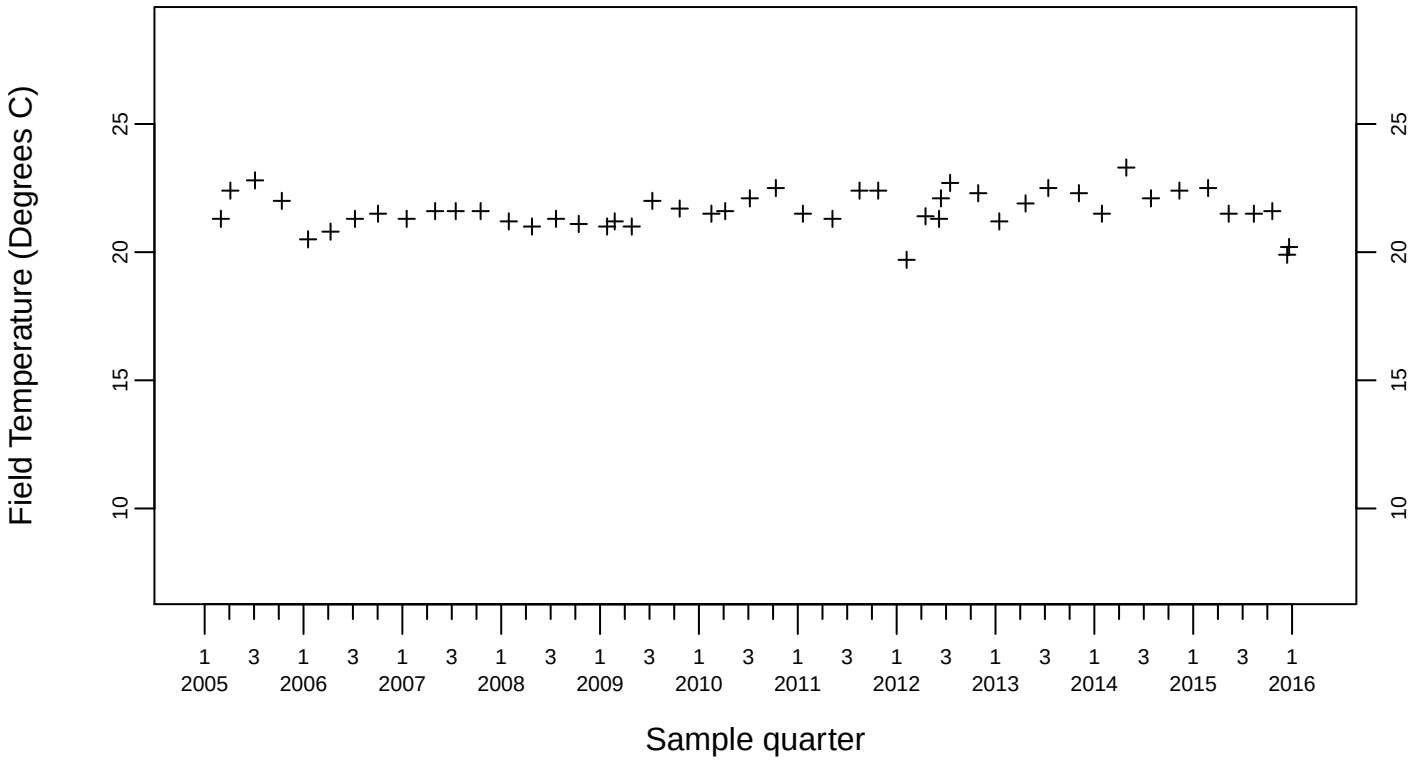


Pit 1 Area
Field Temperature (Degrees C)

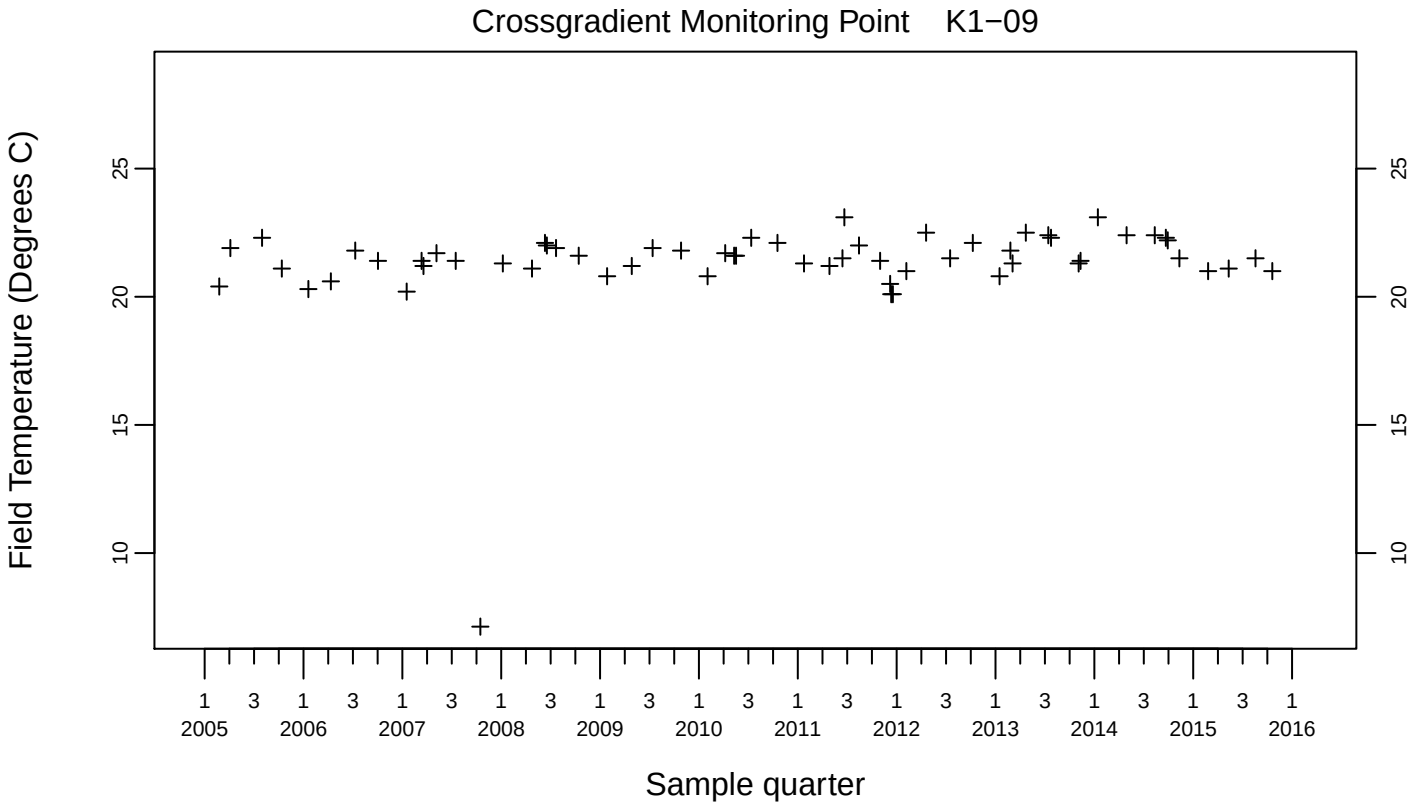
Detection Monitoring Point K1−05

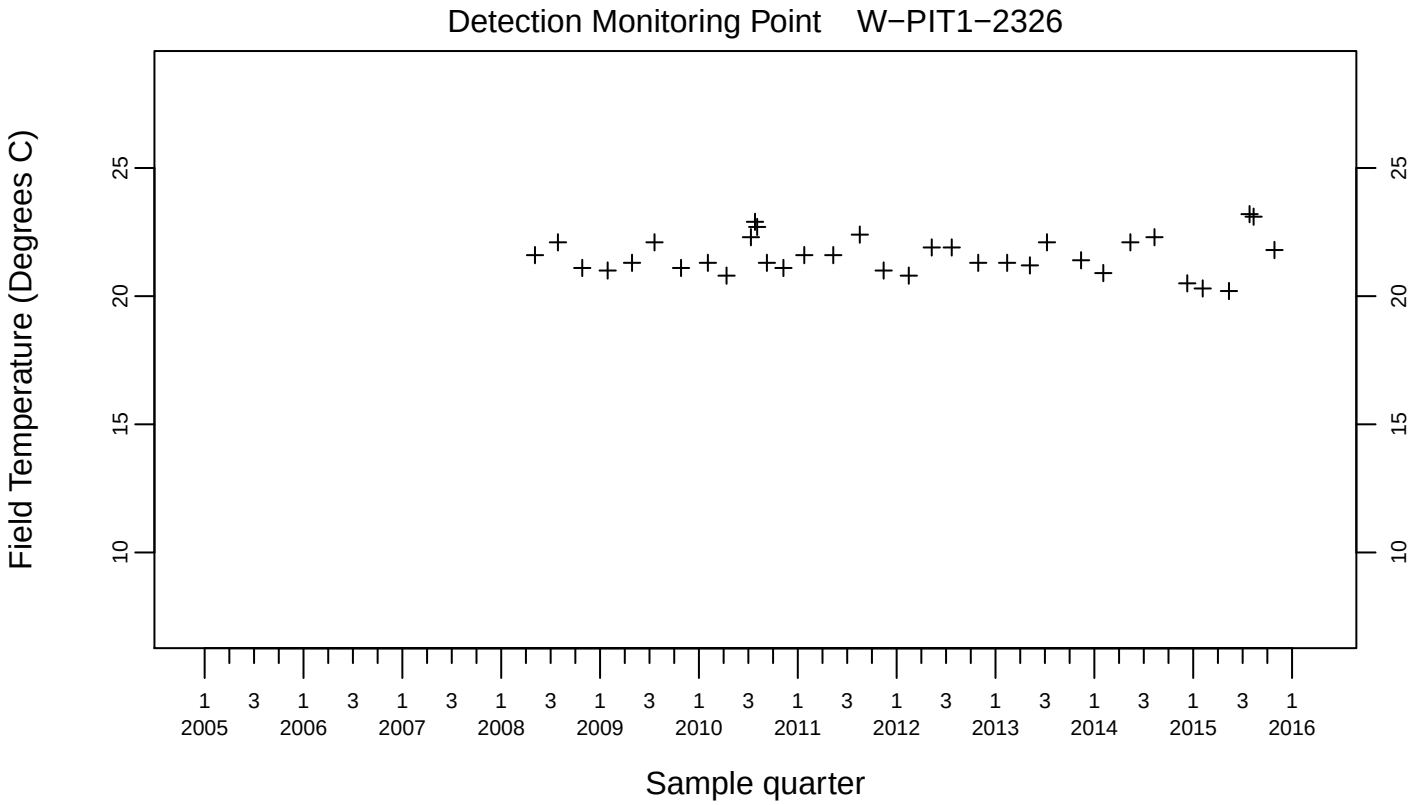


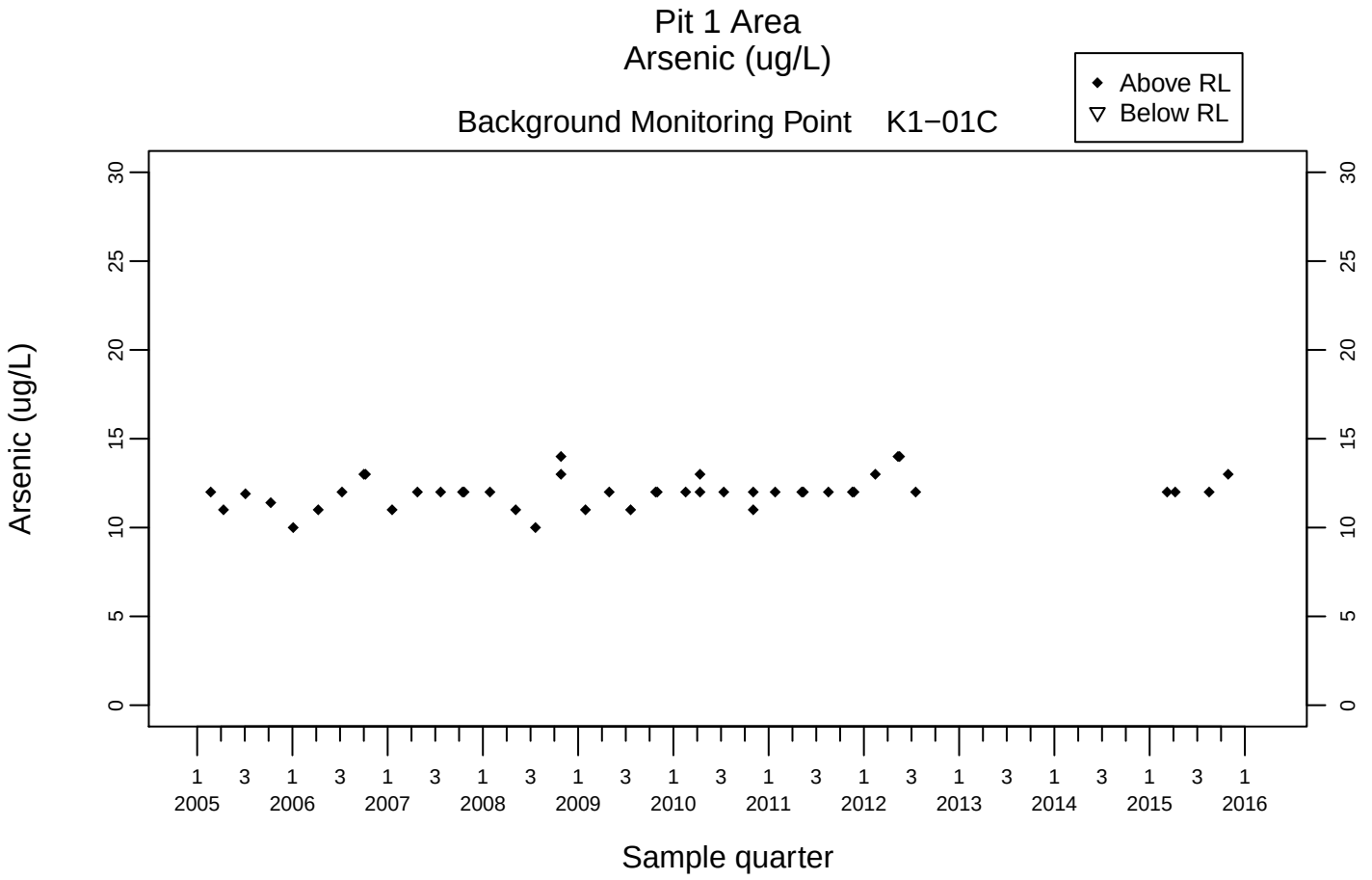
Crossgradient Monitoring Point K1−08

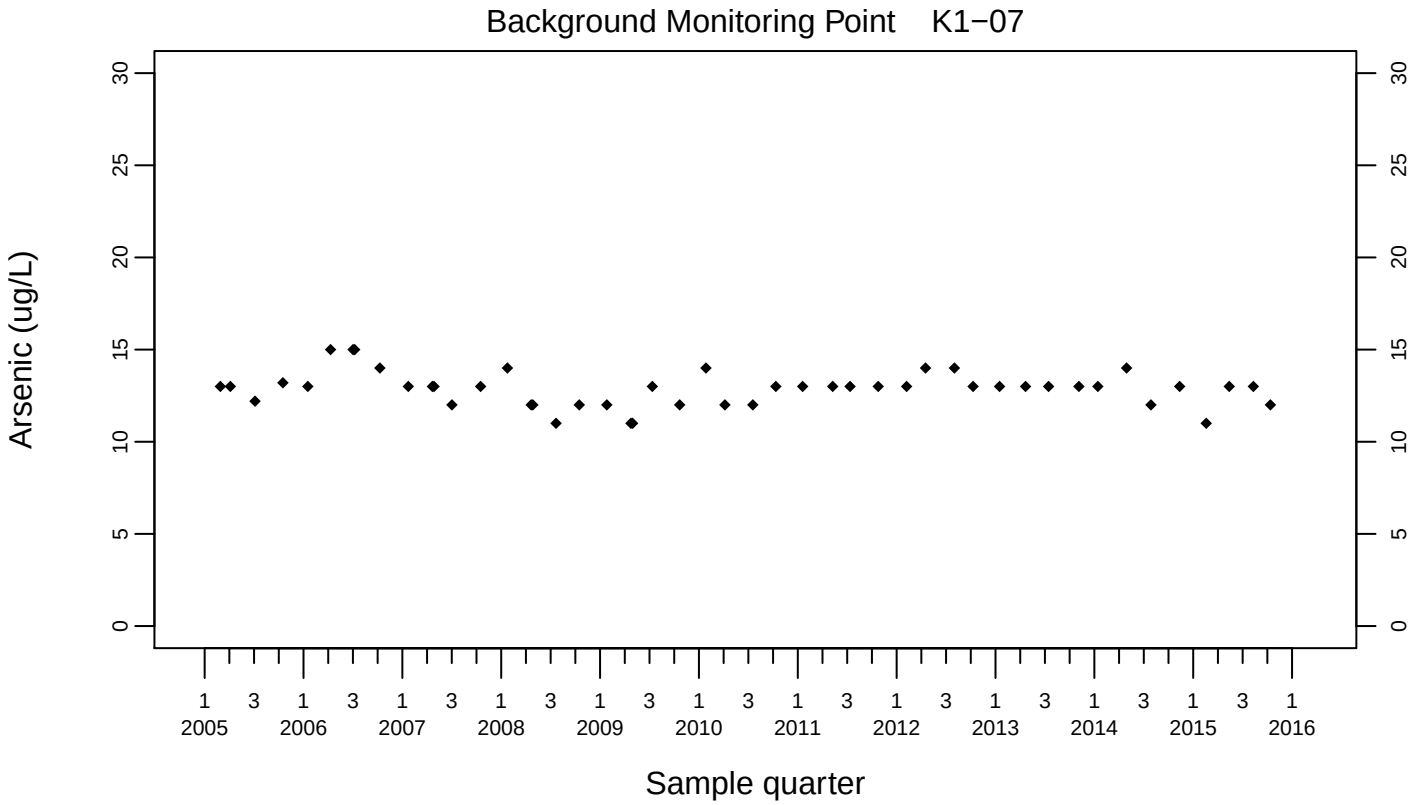


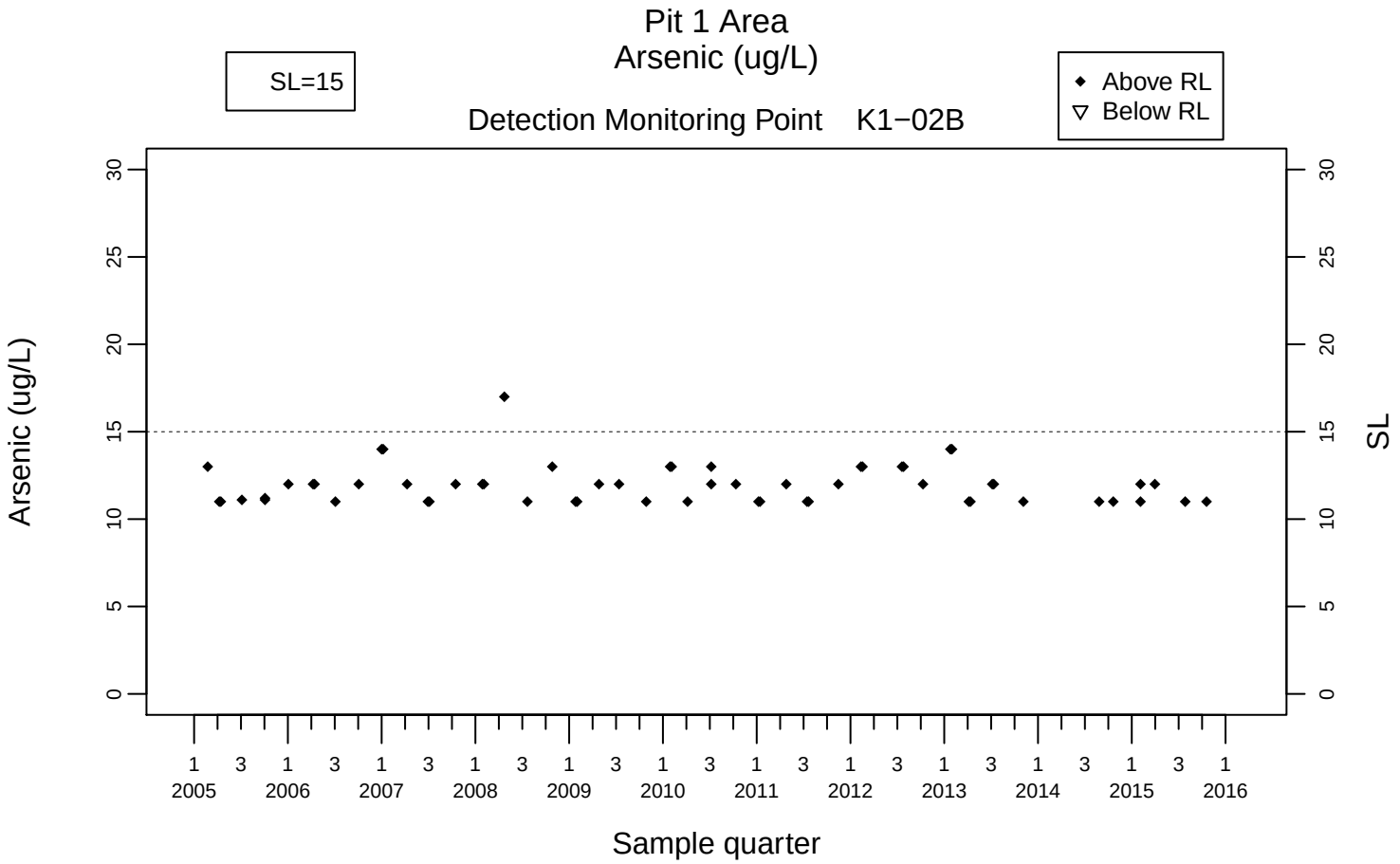
Pit 1 Area
Field Temperature (Degrees C)

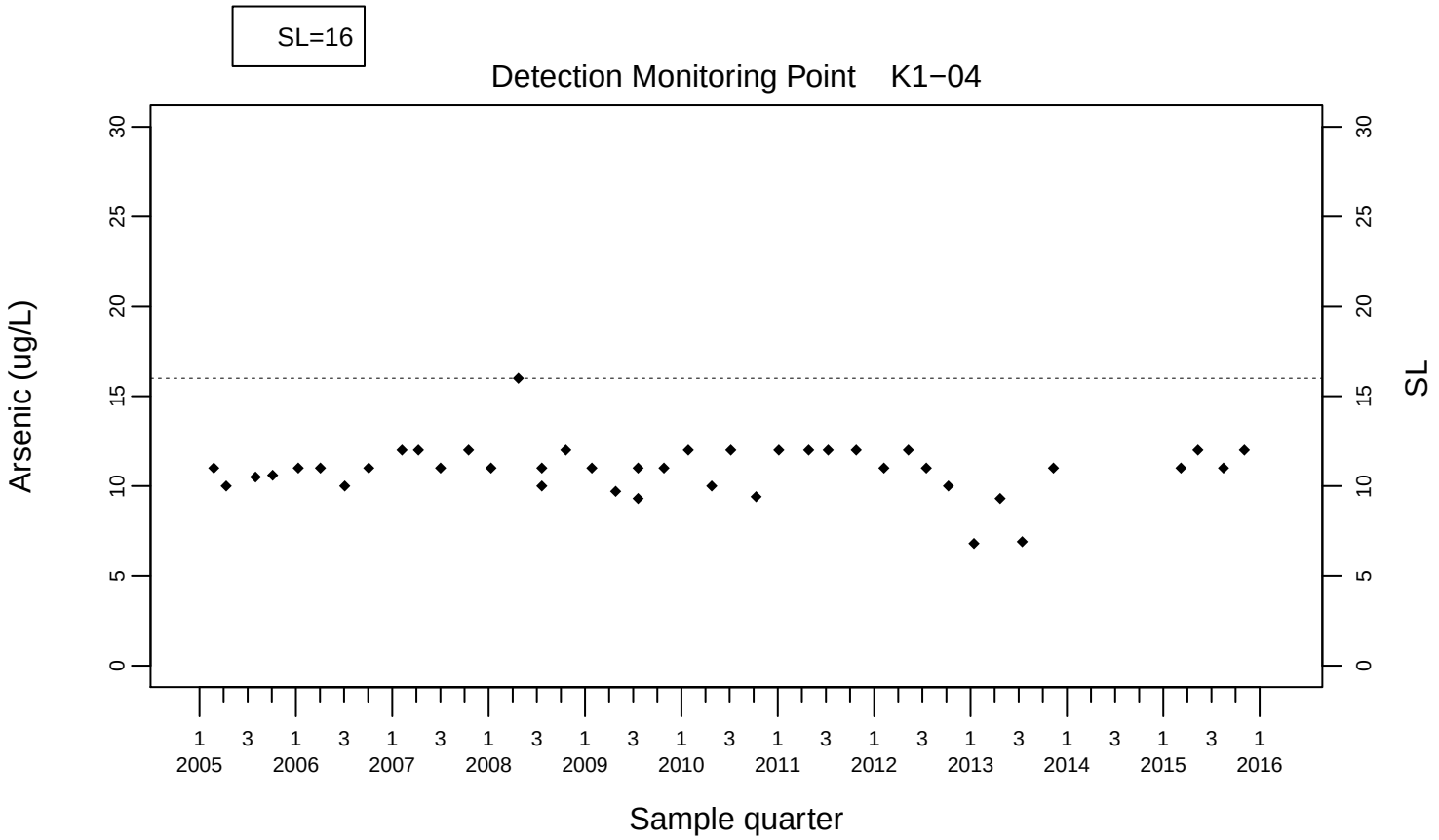


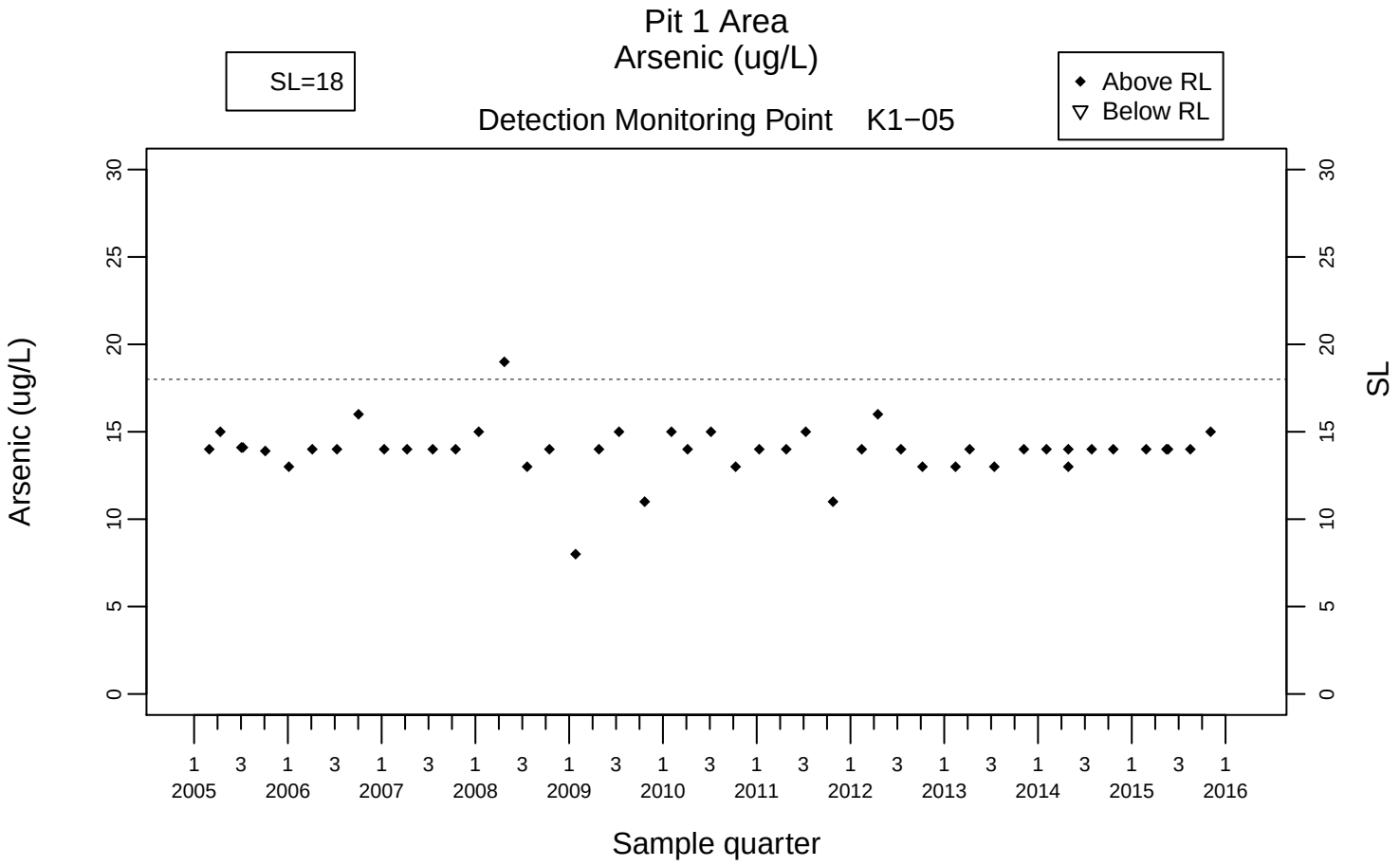


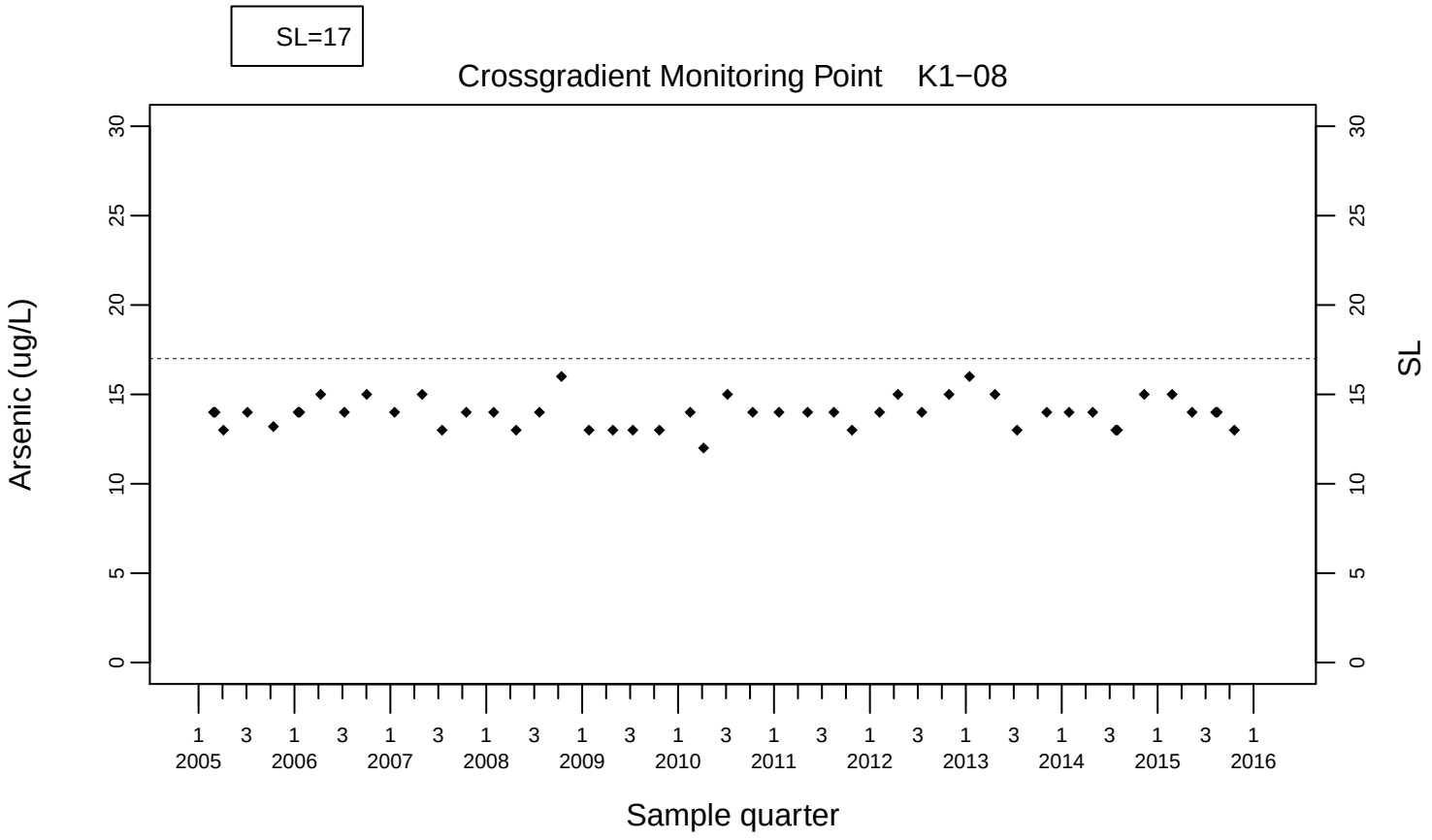

Pit 1 Area
Arsenic (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Arsenic (ug/L)
0
5
10
15
20
25
30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

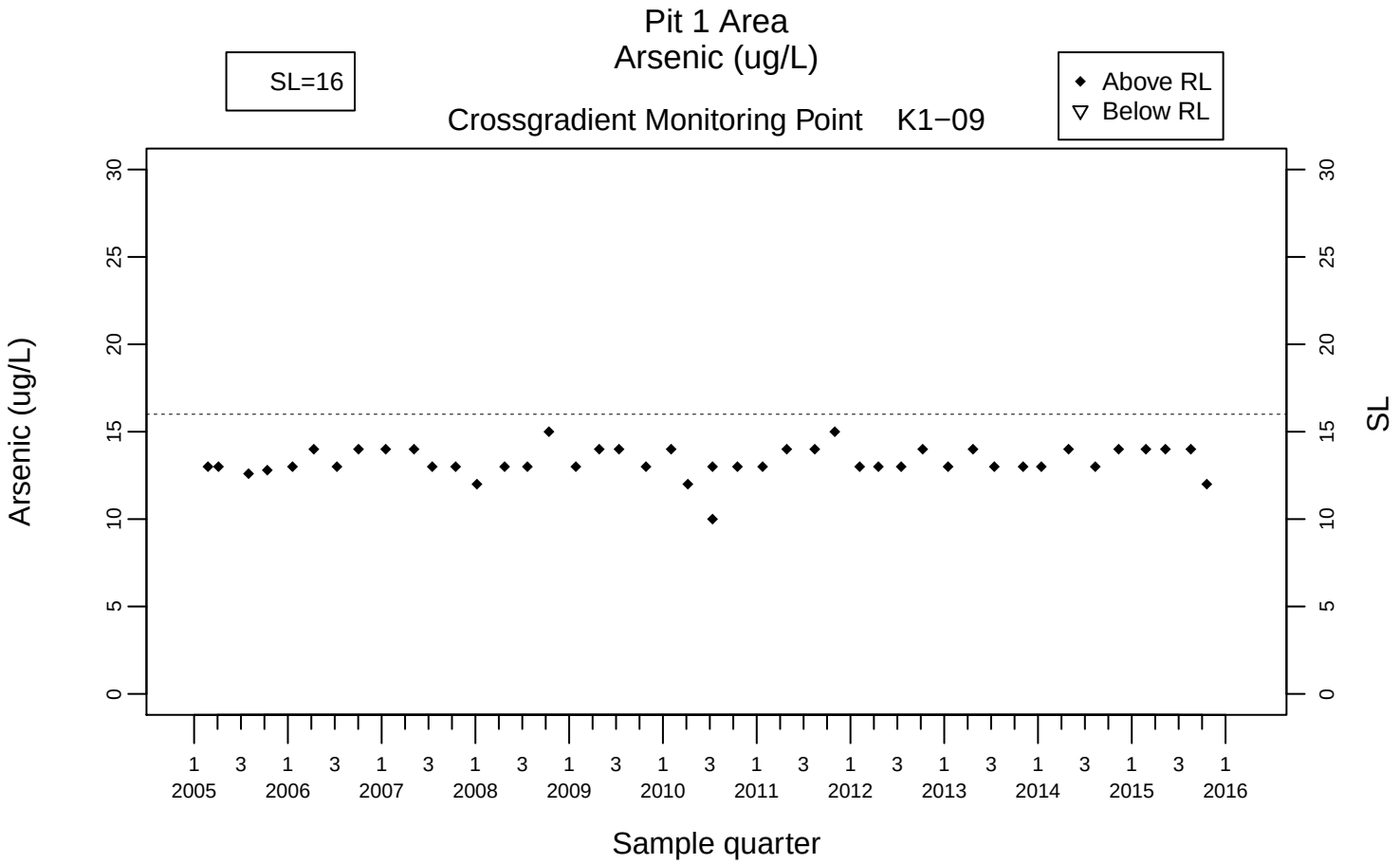

Background Monitoring Point K1−07
Arsenic (ug/L)
0
5
10
15
20
25
30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

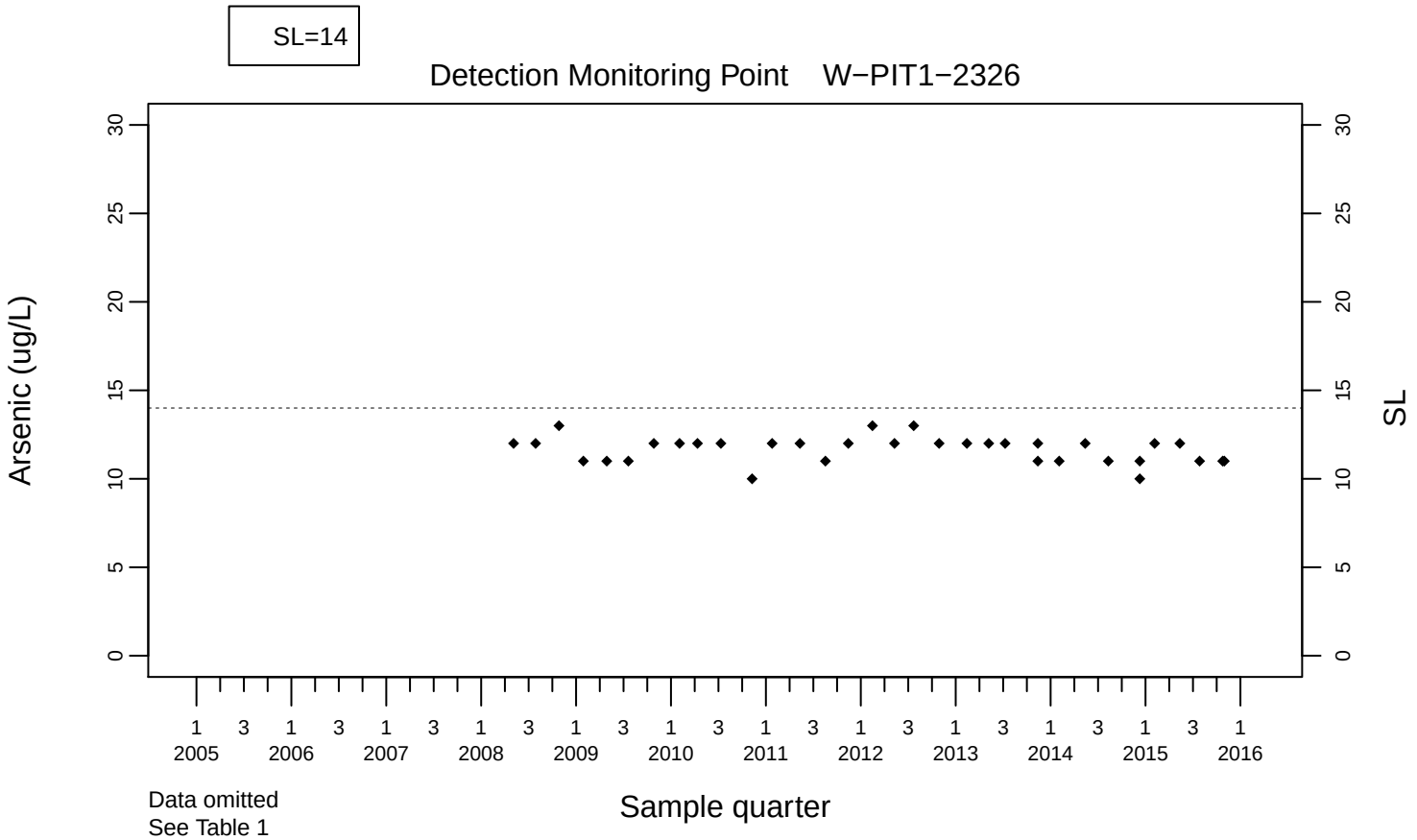

Pit 1 Area
Arsenic (ug/L)
SL=15
Above RL
Below RL
Detection Monitoring Point K1−02B
Arsenic (ug/L)
SL
0
5
10
15
20
25
30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter


SL=16
Detection Monitoring Point K1−04
Arsenic (ug/L)
SL
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
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

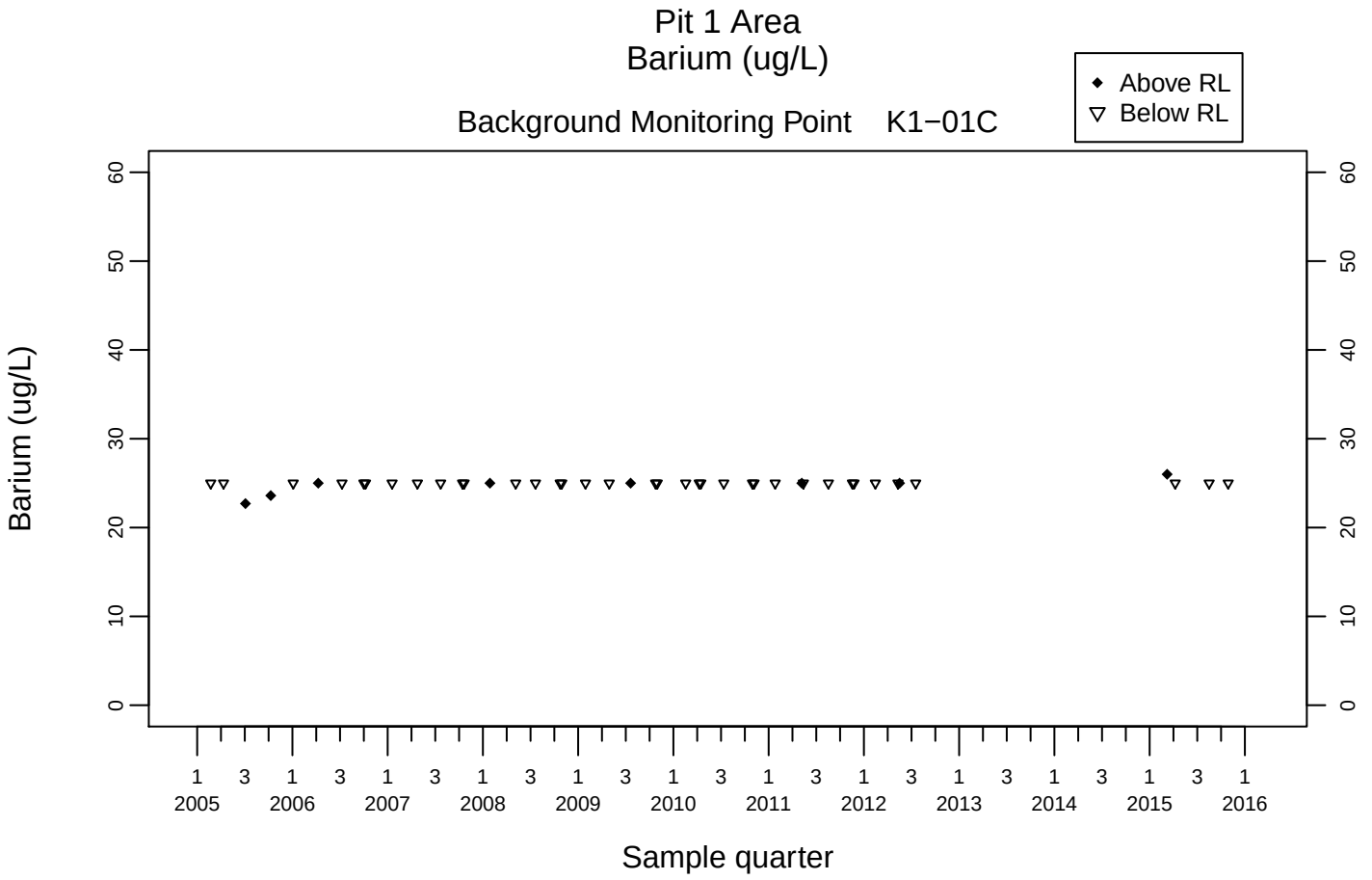

Pit 1 Area
Arsenic (ug/L)
SL=18
Above RL
Below RL
Detection Monitoring Point K1−05
Arsenic (ug/L)
SL
0
5
10
15
20
25
30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

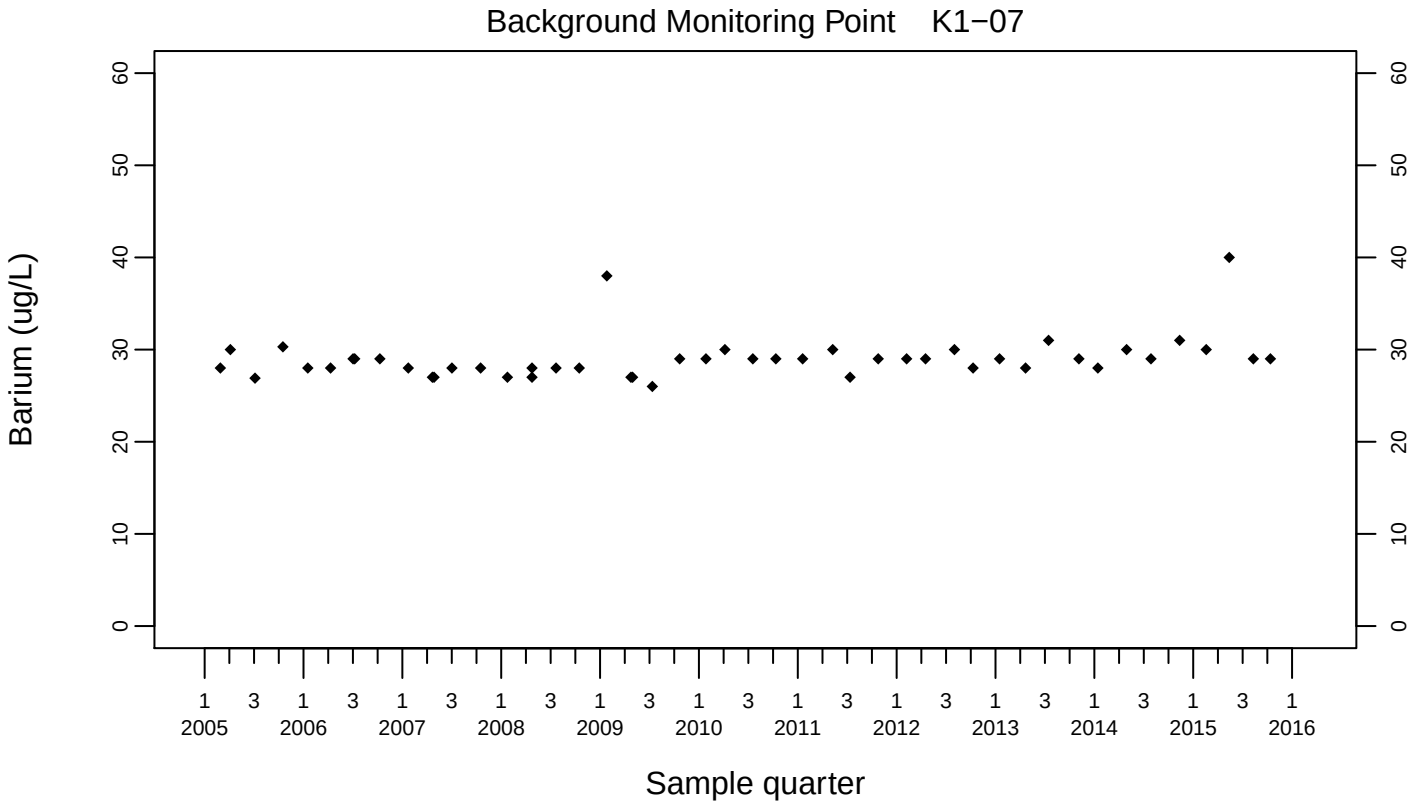

SL=17
Crossgradient Monitoring Point K1−08
Arsenic (ug/L)
SL
0
5
10
15
20
25
30
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

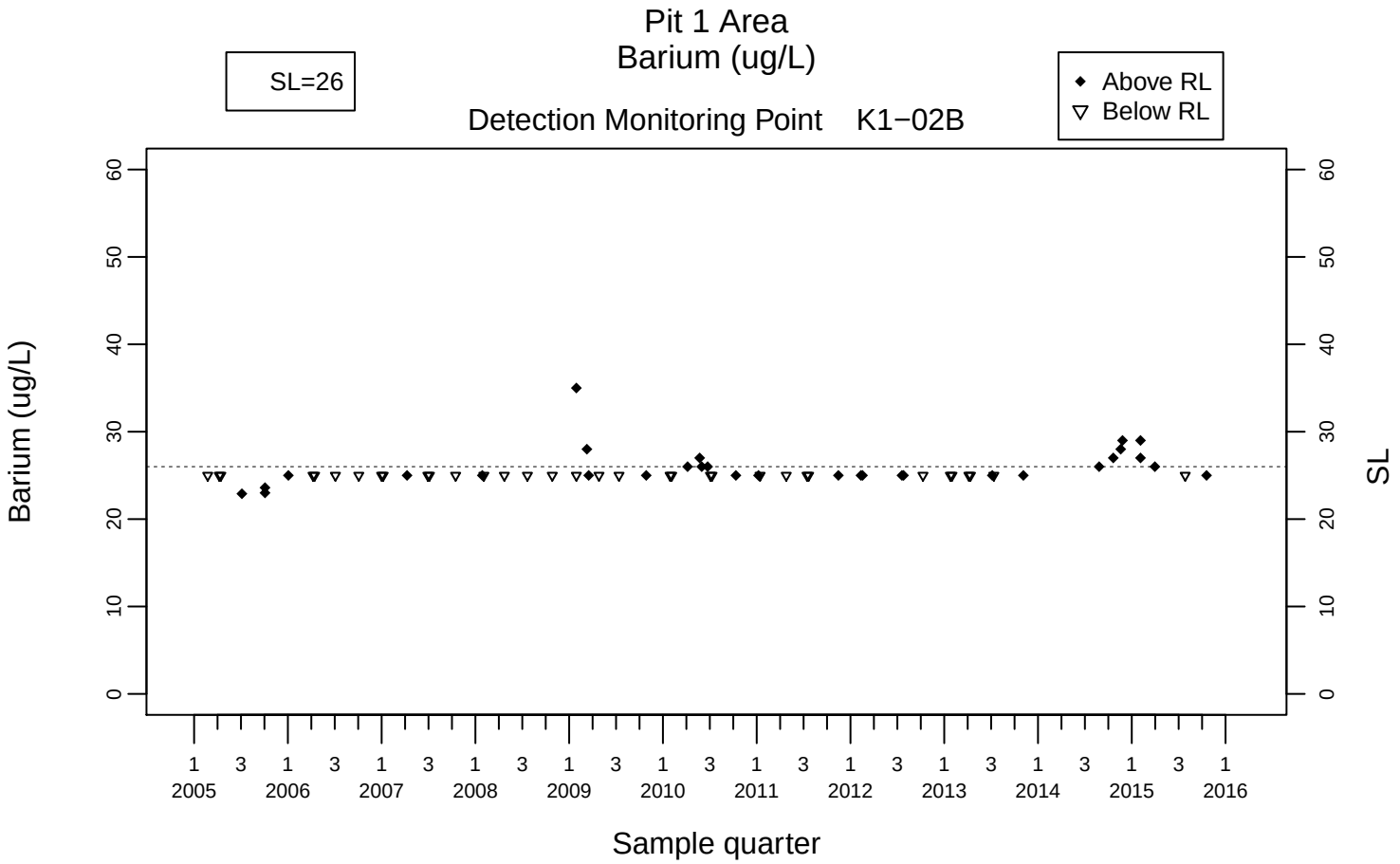


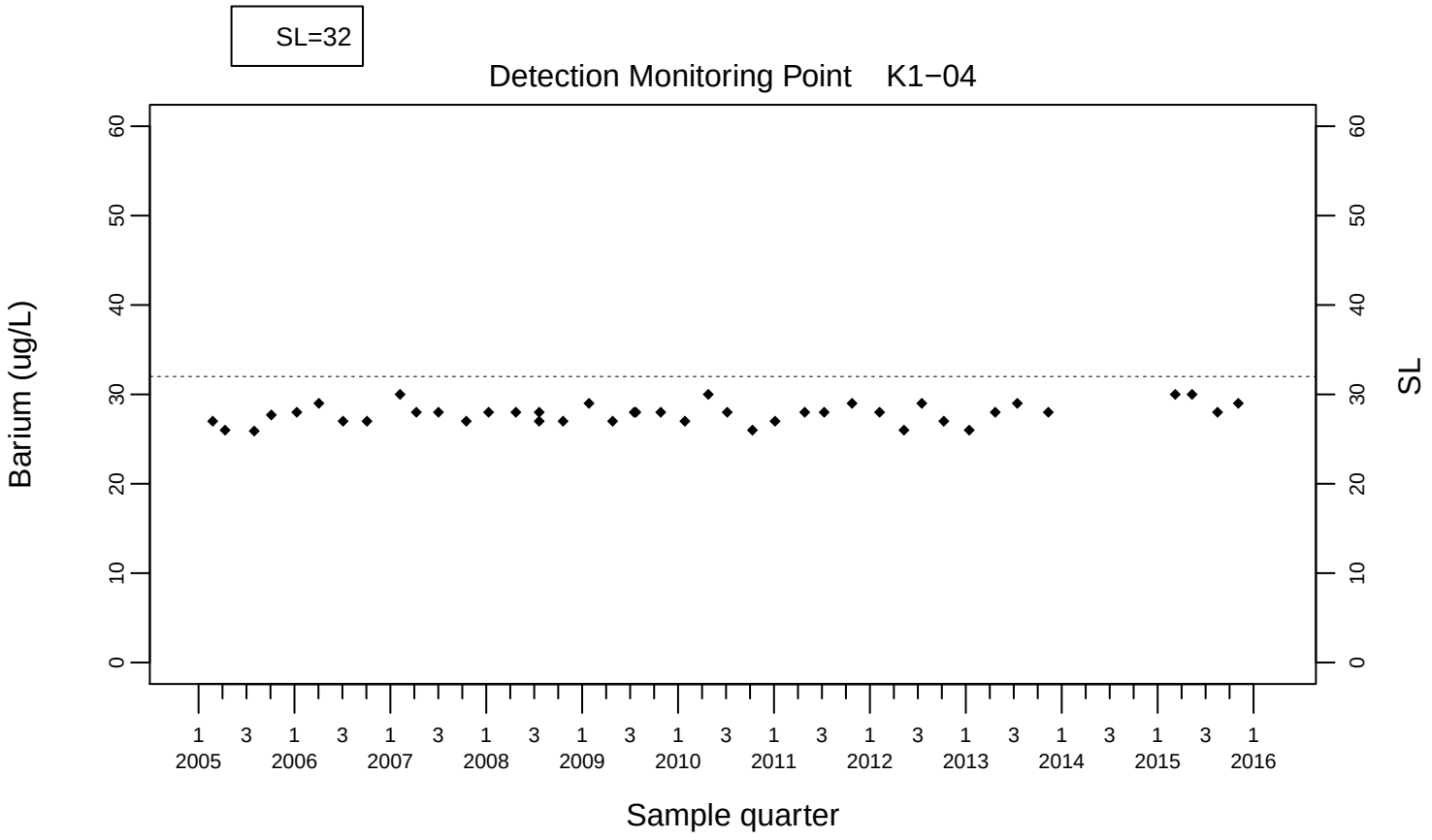


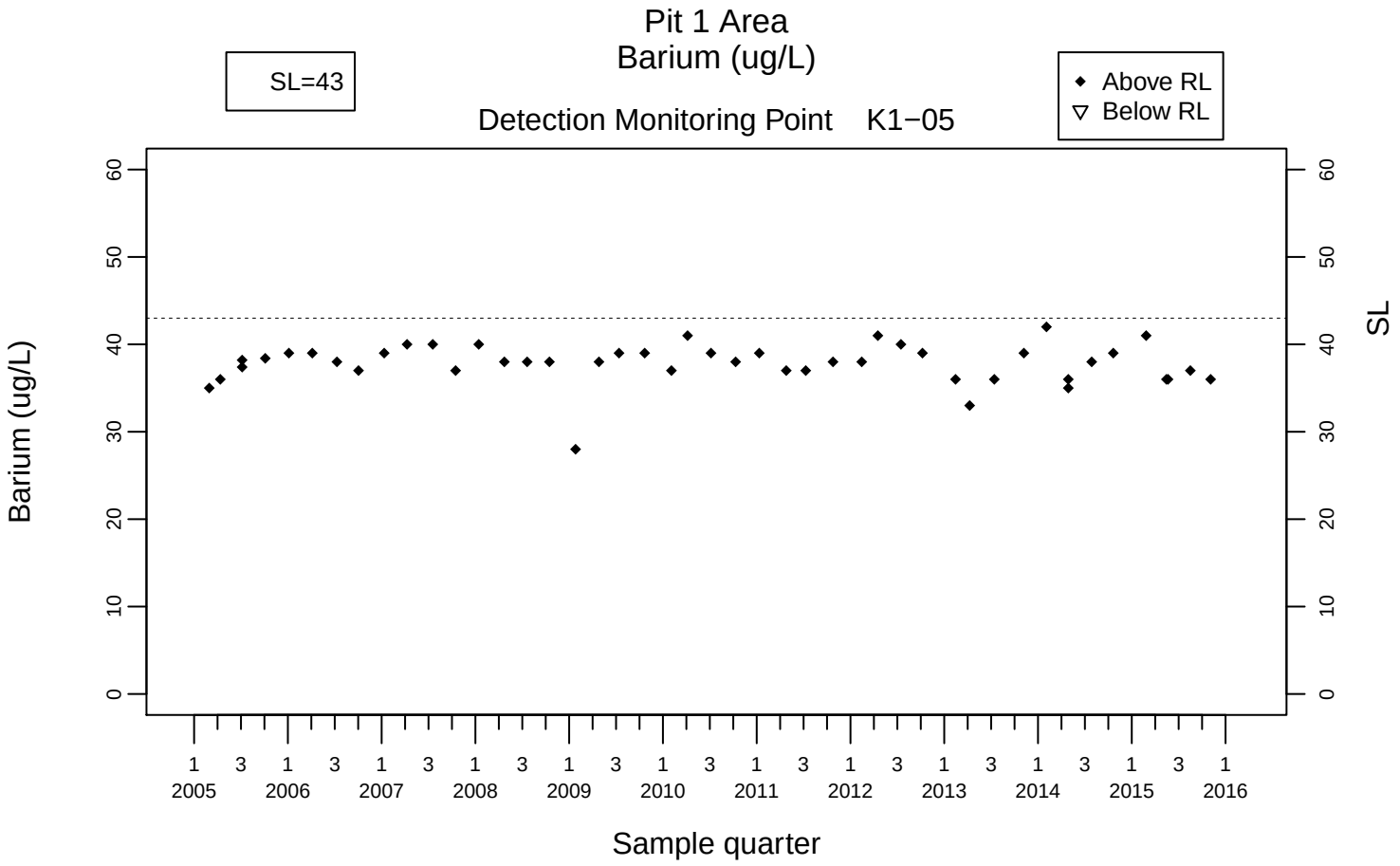
Data omitted
See Table 1

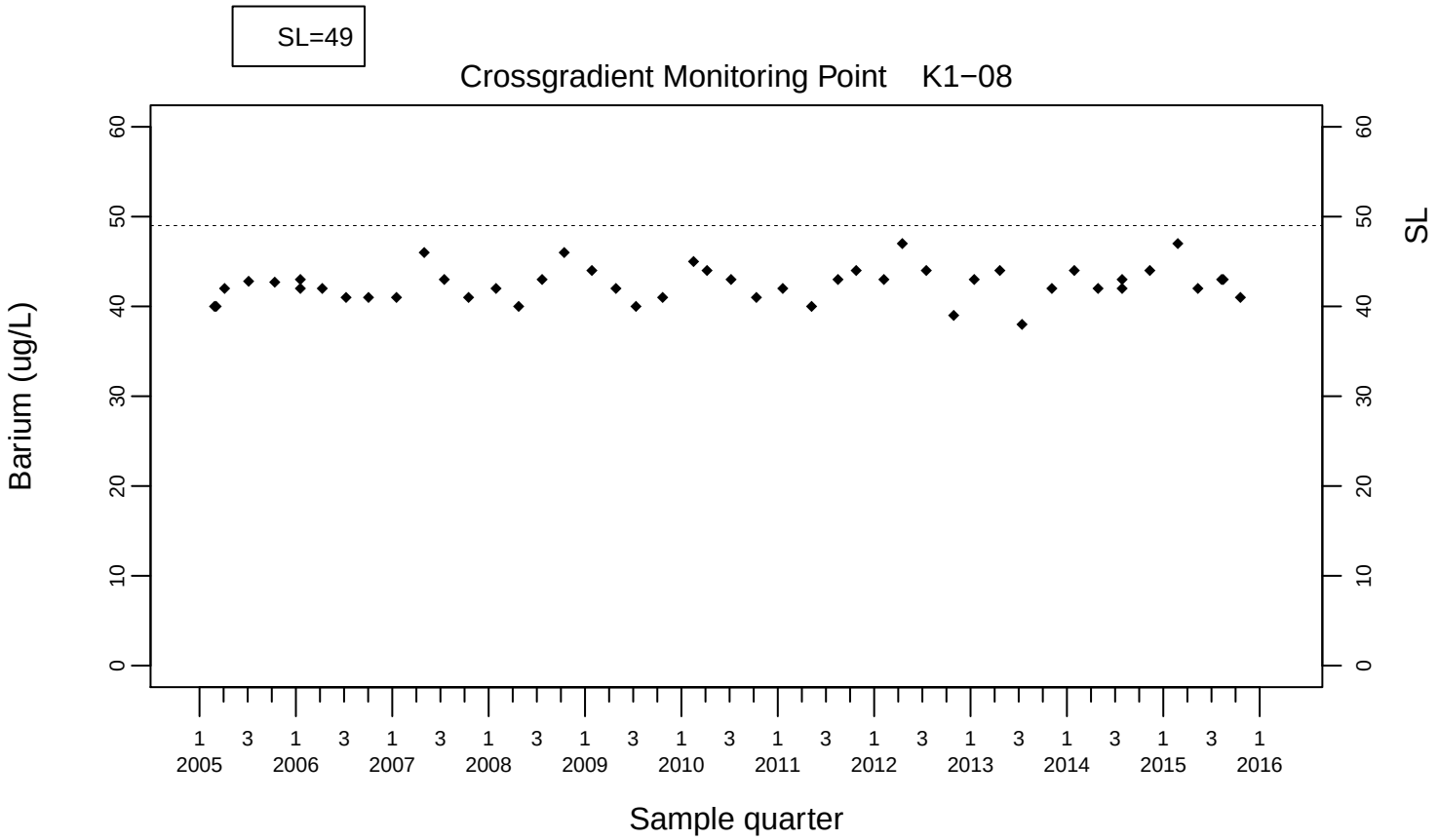

Pit 1 Area
Barium (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Barium (ug/L)
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

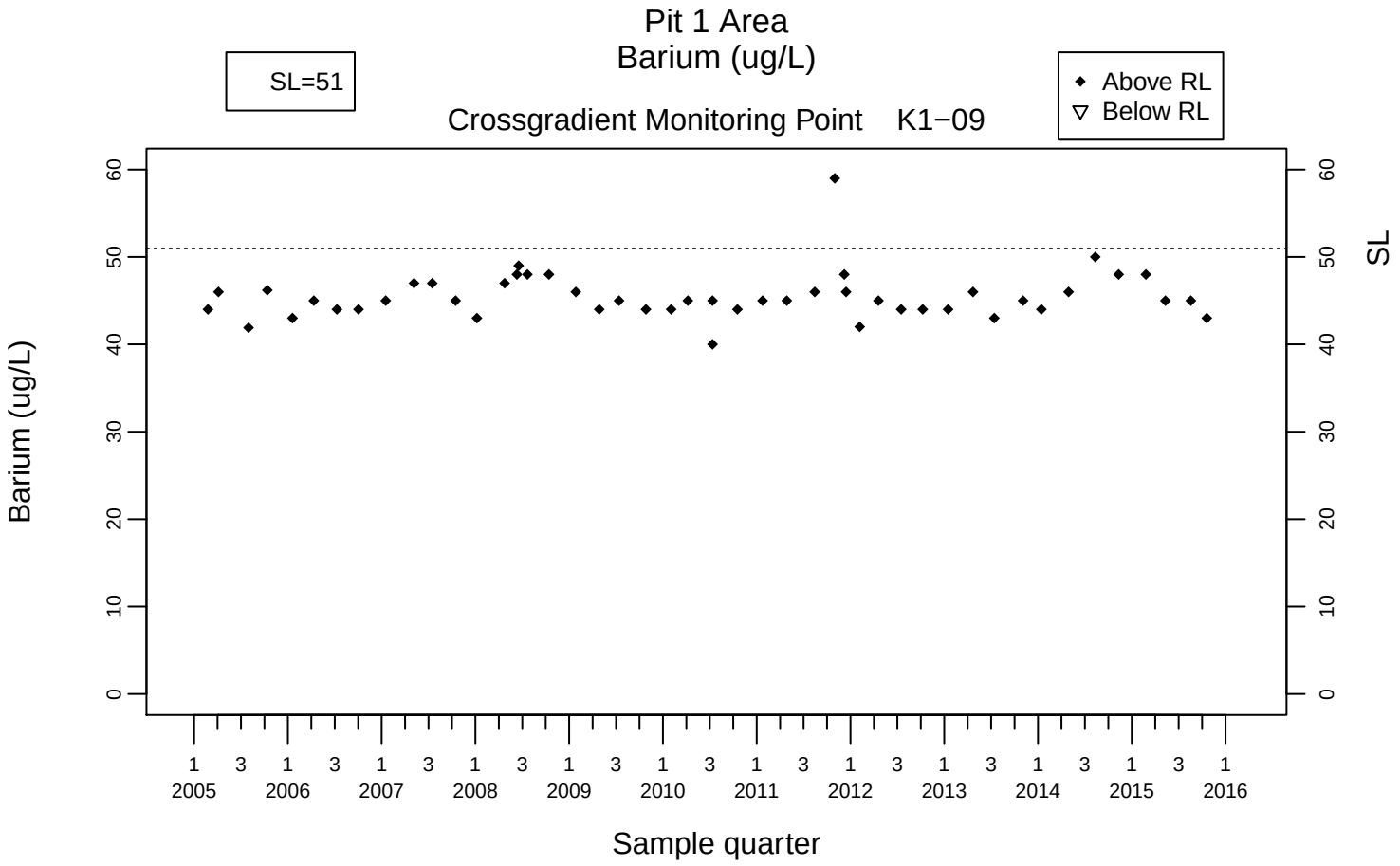

Background Monitoring Point K1−07
Barium (ug/L)
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

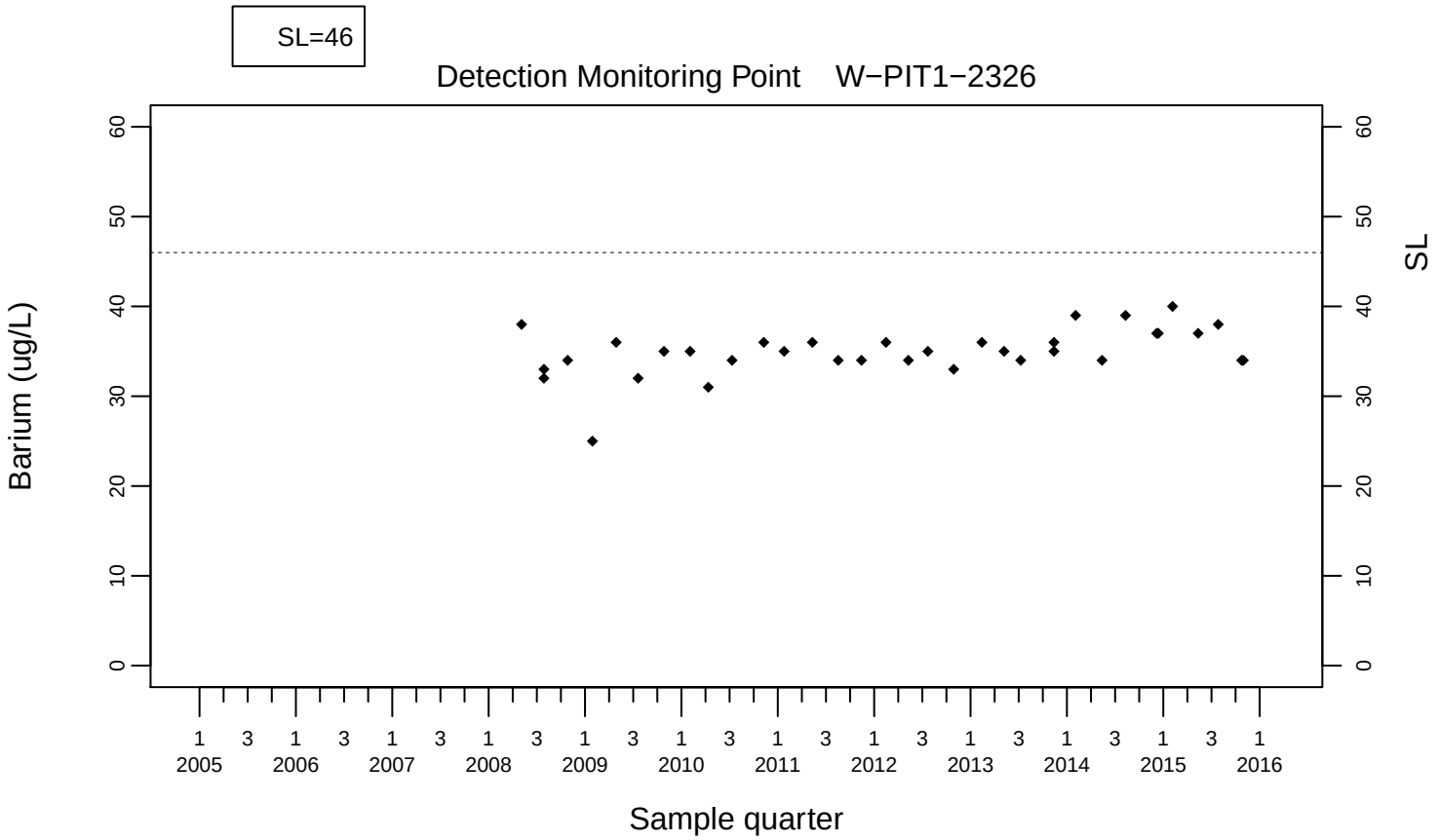

Pit 1 Area
Barium (ug/L)
SL=26
Above RL
Below RL
Detection Monitoring Point K1−02B
Barium (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

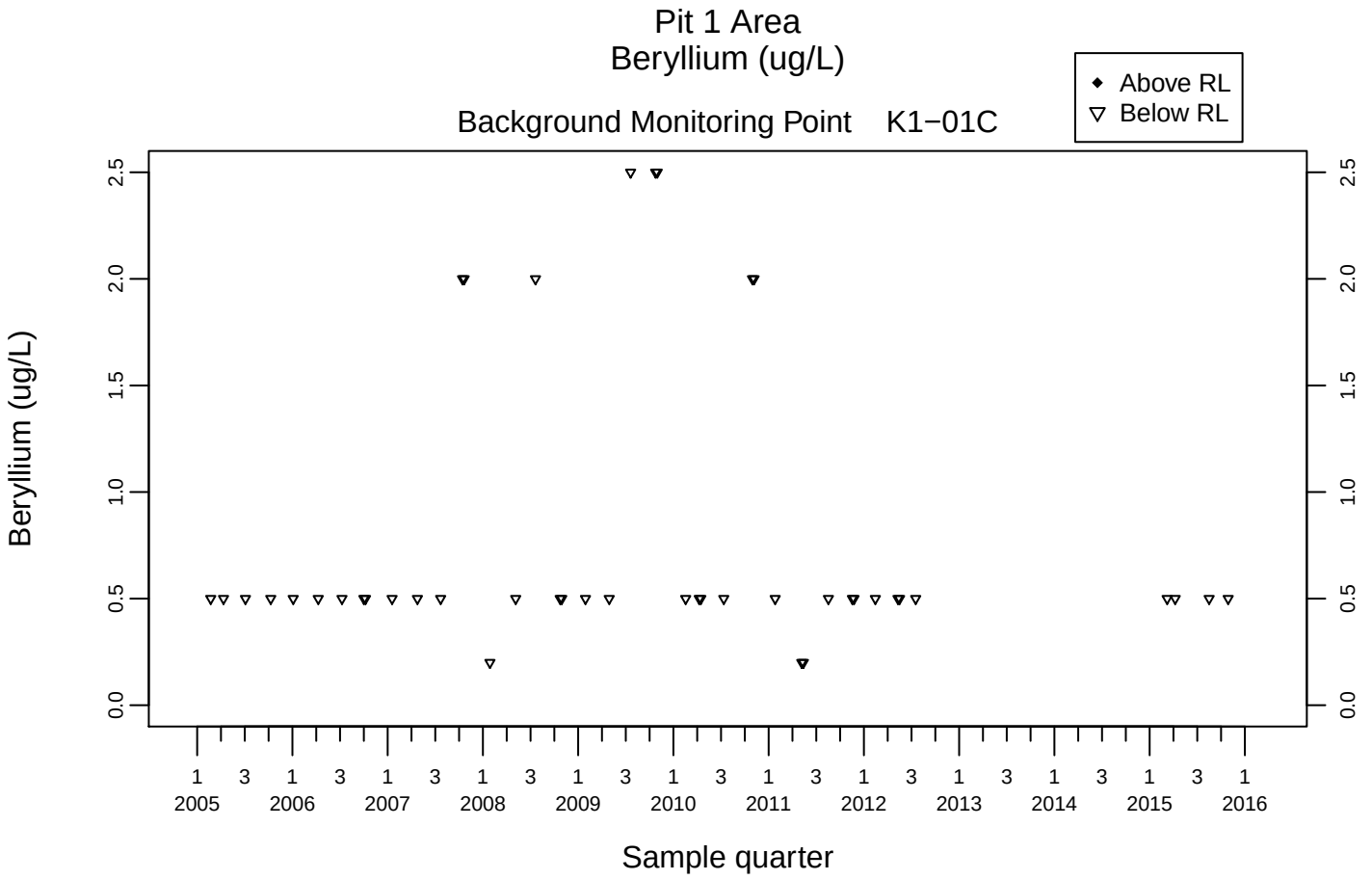

SL=32
Detection Monitoring Point K1−04
Barium (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

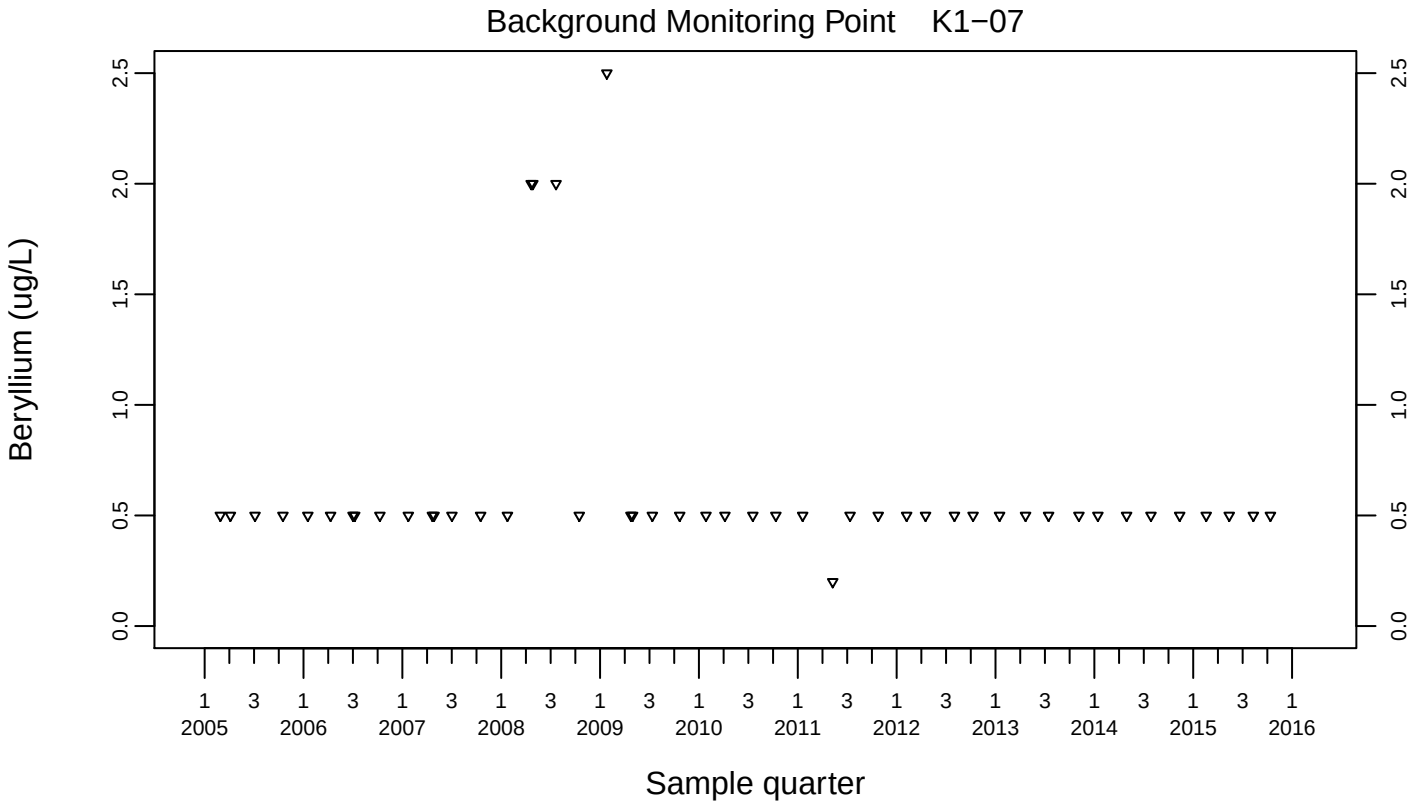

Pit 1 Area
Barium (ug/L)
SL=43
Above RL
Below RL
Detection Monitoring Point K1−05
Barium (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

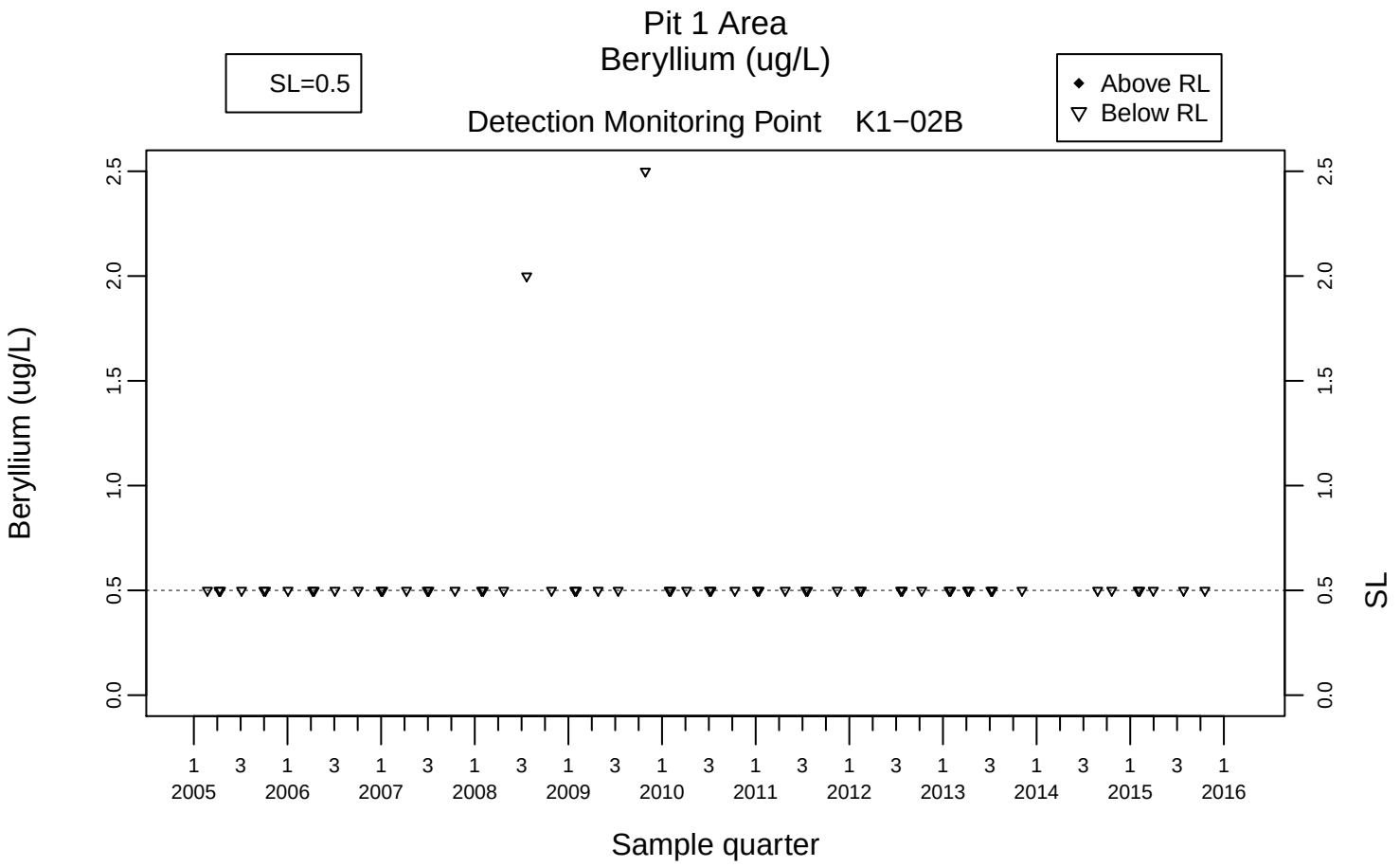

SL=49
Crossgradient Monitoring Point K1−08
Barium (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

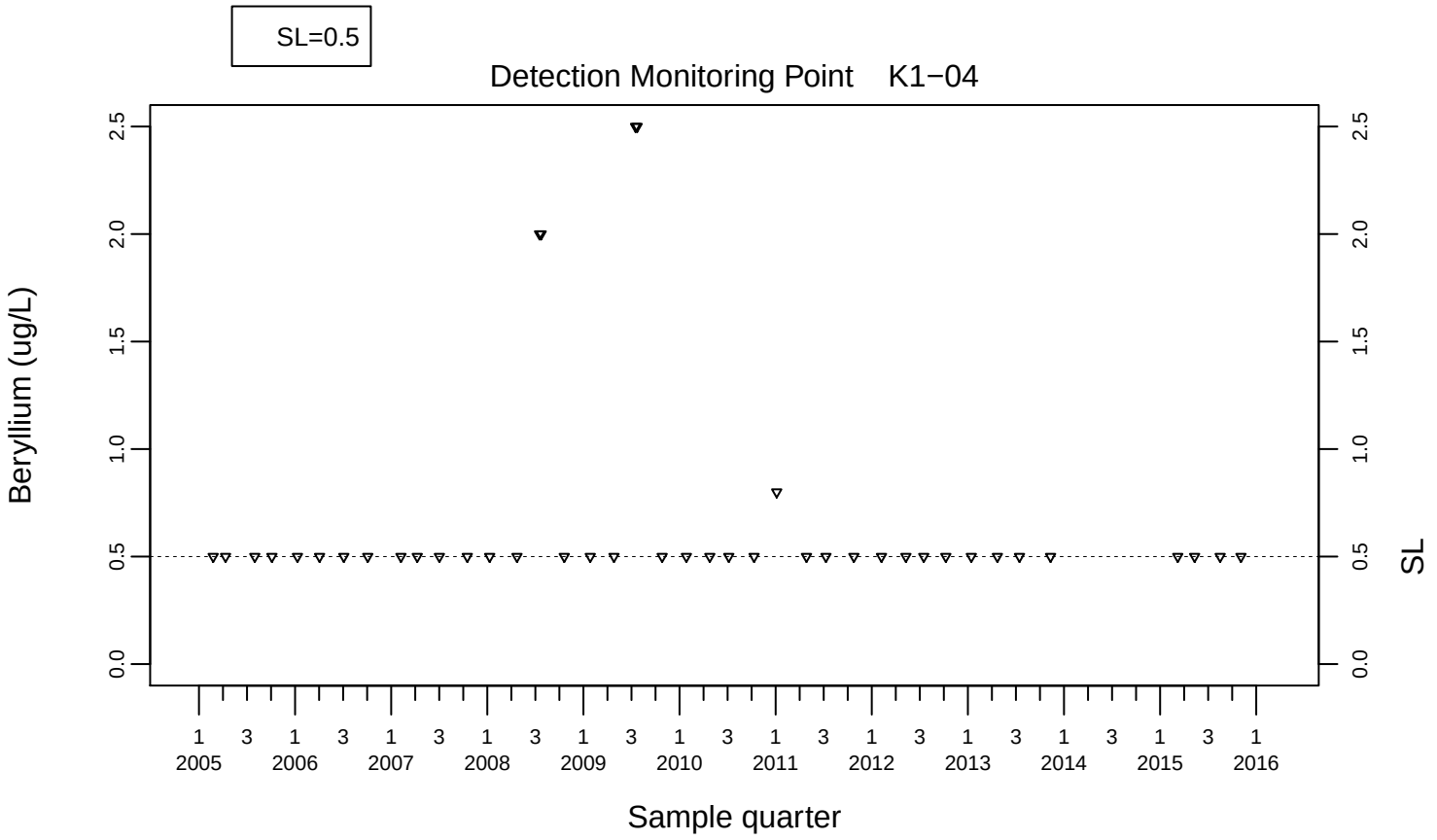

Pit 1 Area
Barium (ug/L)
SL=51
Above RL
Below RL
Crossgradient Monitoring Point K1−09
Barium (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

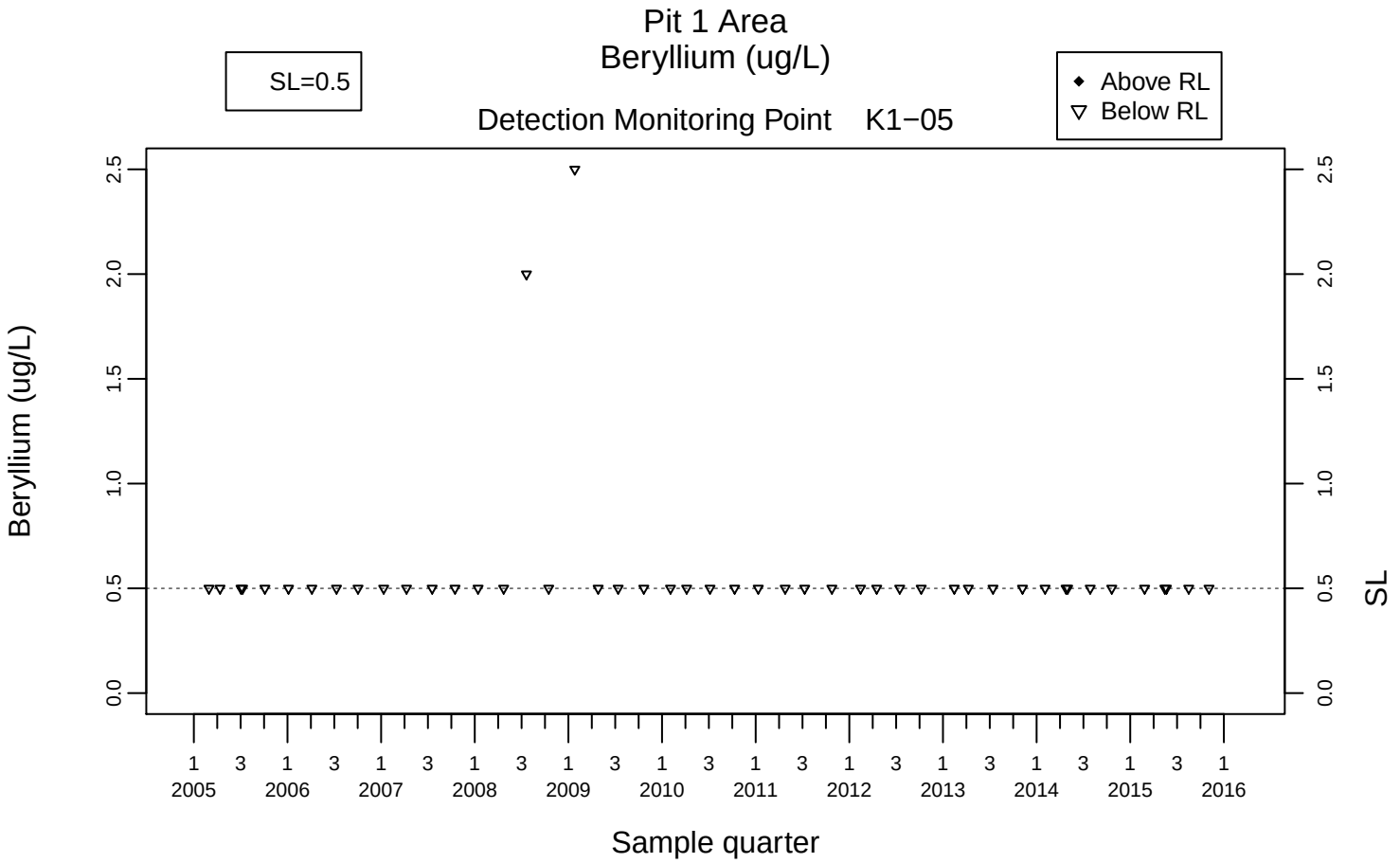

SL=46
Detection Monitoring Point W−PIT1−2326
Barium (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

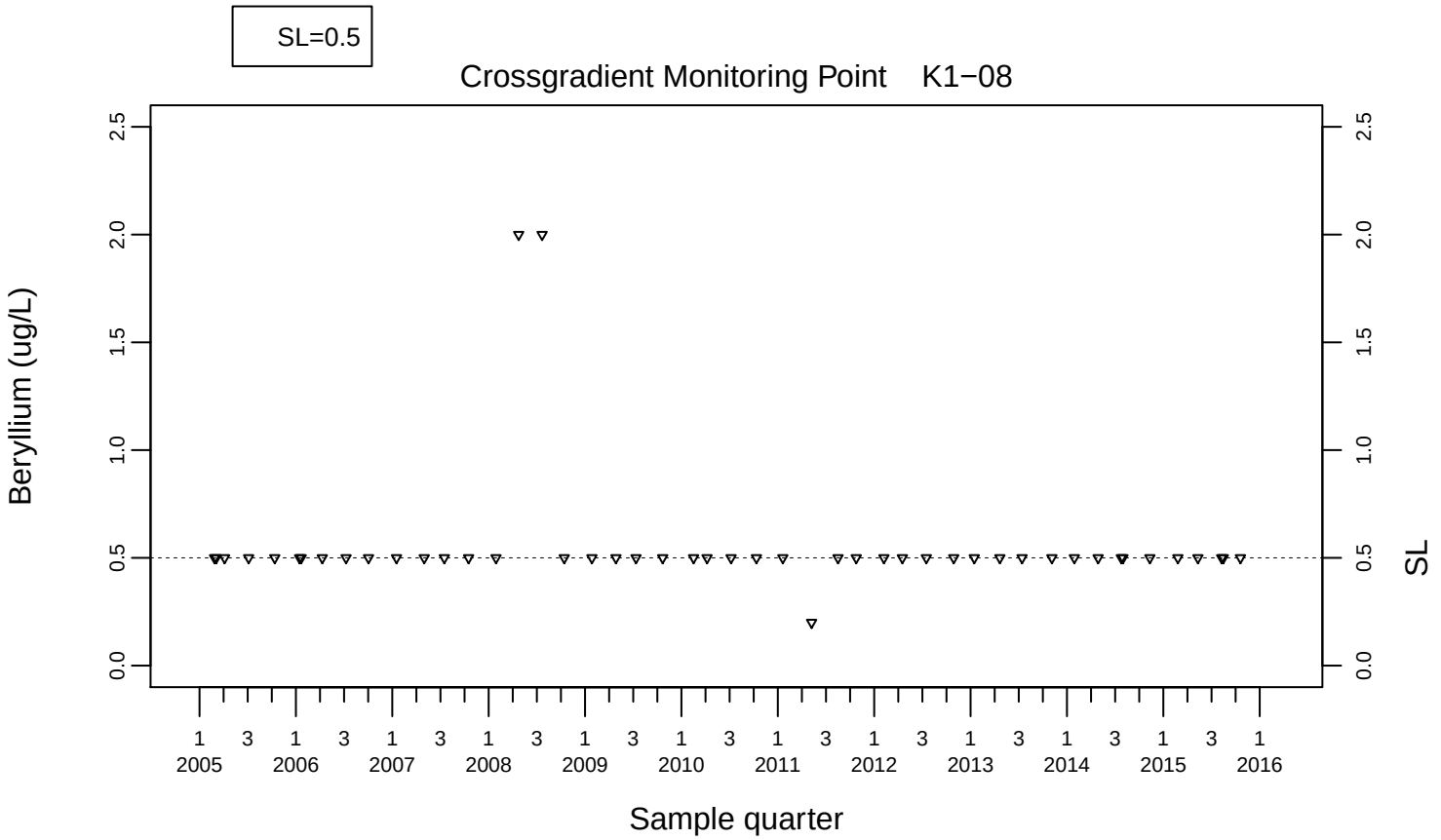

Pit 1 Area
Beryllium (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Beryllium (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

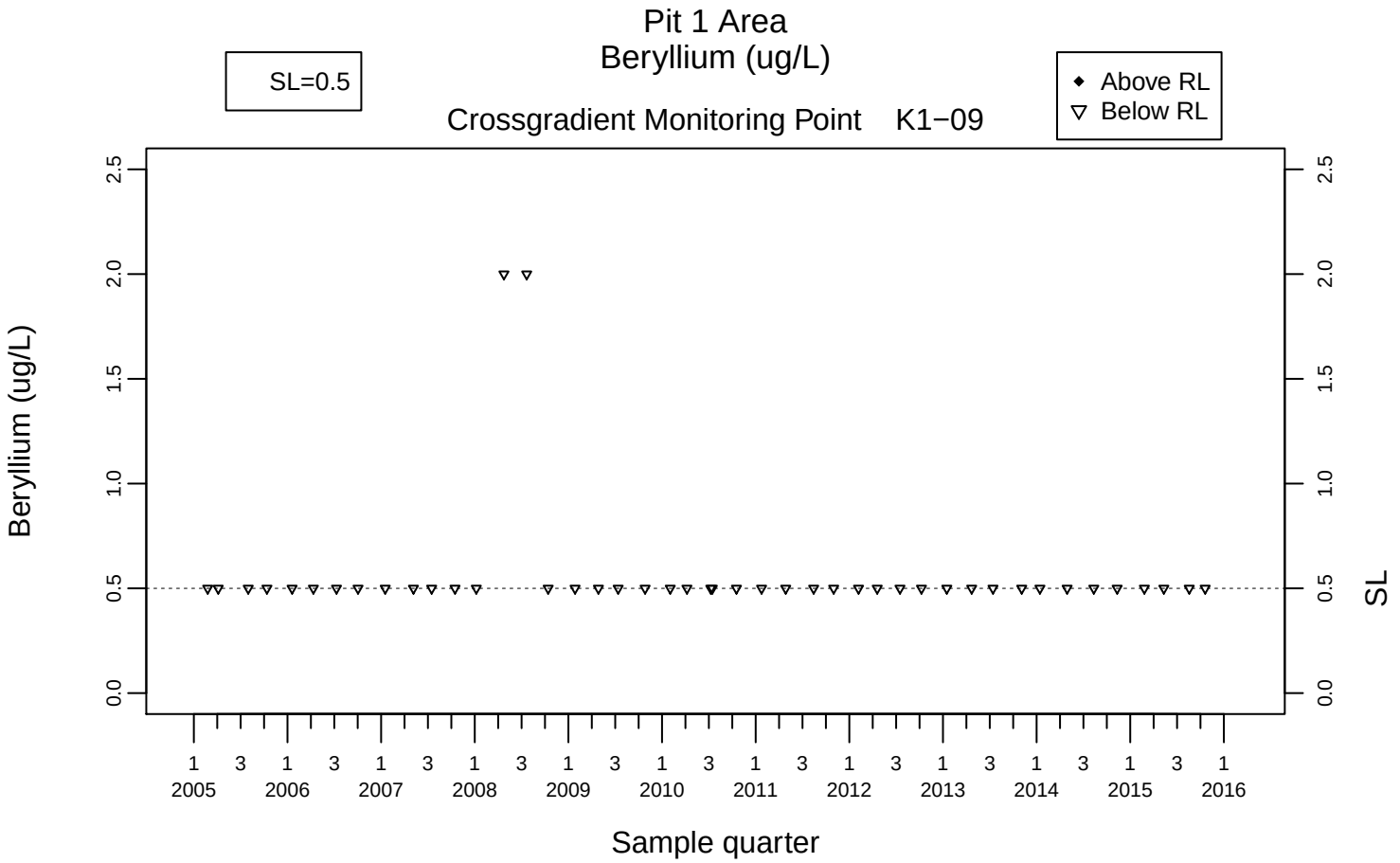

Background Monitoring Point K1−07
Beryllium (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

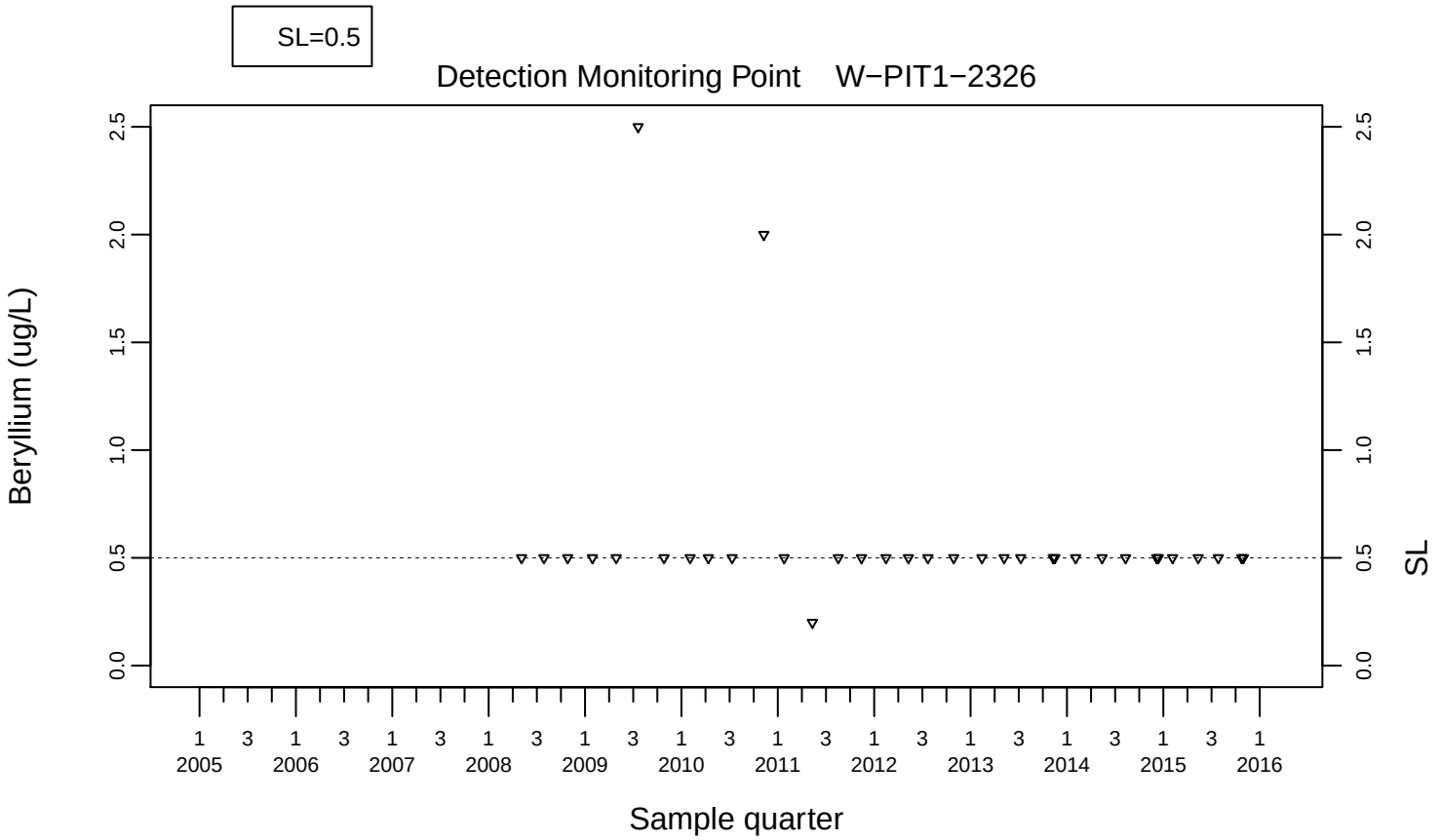

Pit 1 Area
Beryllium (ug/L)
SL=0.5
Above RL
Below RL
Detection Monitoring Point K1−02B
Beryllium (ug/L)
SL
0.0
0.5
1.0
1.5
2.0
2.5
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

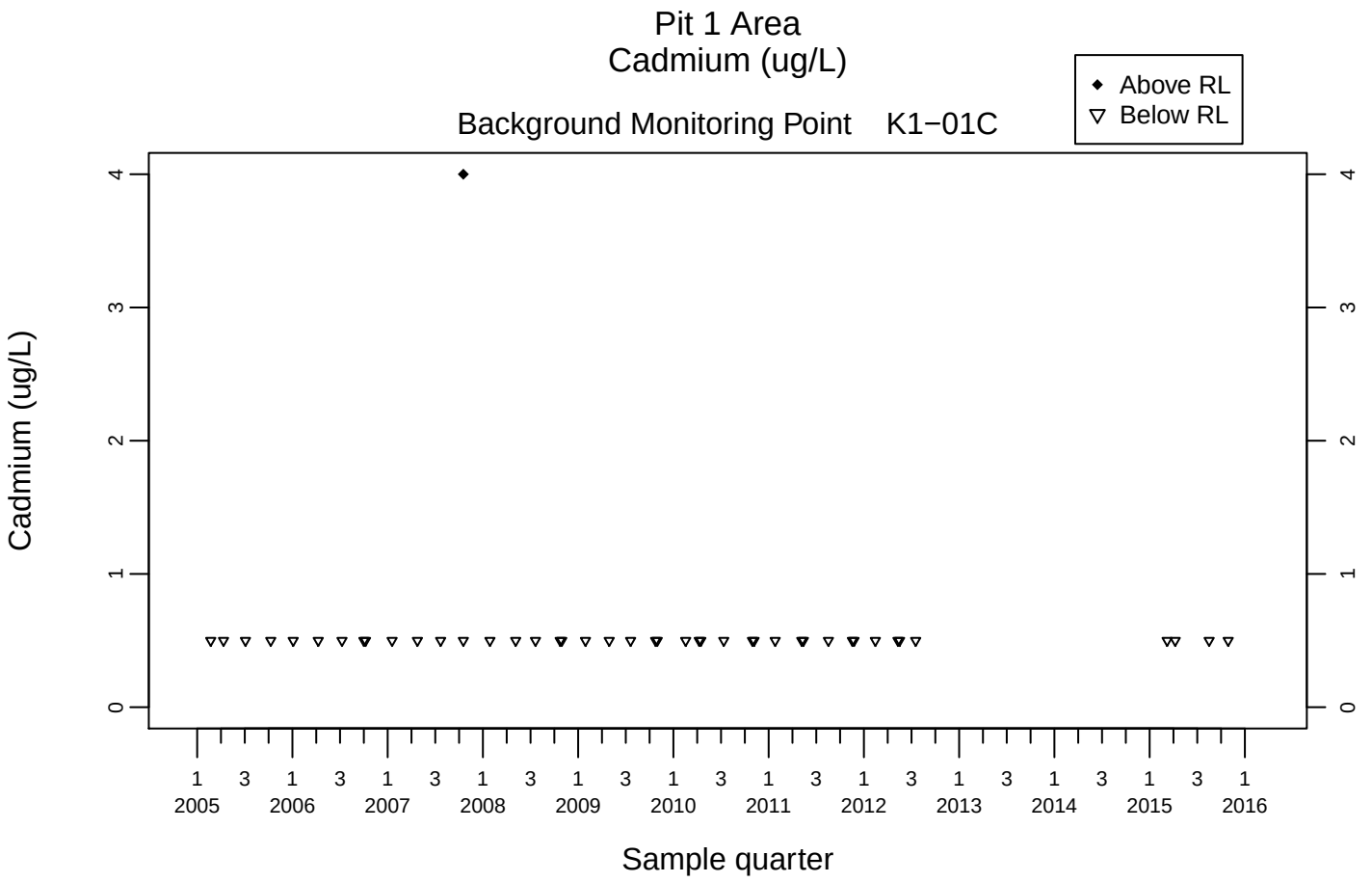

SL=0.5
Detection Monitoring Point K1−04
Beryllium (ug/L)
SL
0.0
0.5
1.0
1.5
2.0
2.5
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

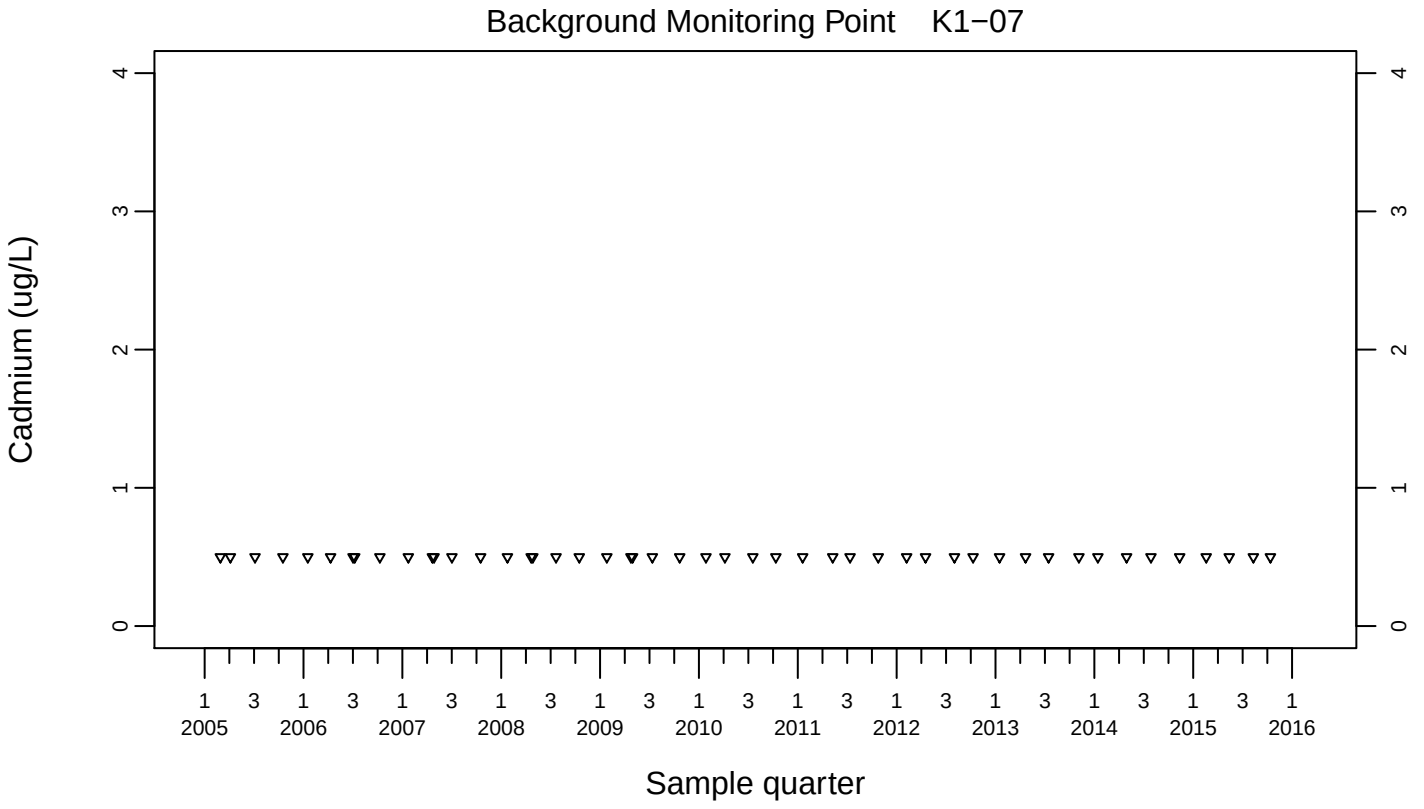

Pit 1 Area
Beryllium (ug/L)
SL=0.5
Above RL
Below RL
Detection Monitoring Point K1−05
Beryllium (ug/L)
SL
0.0
0.5
1.0
1.5
2.0
2.5
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

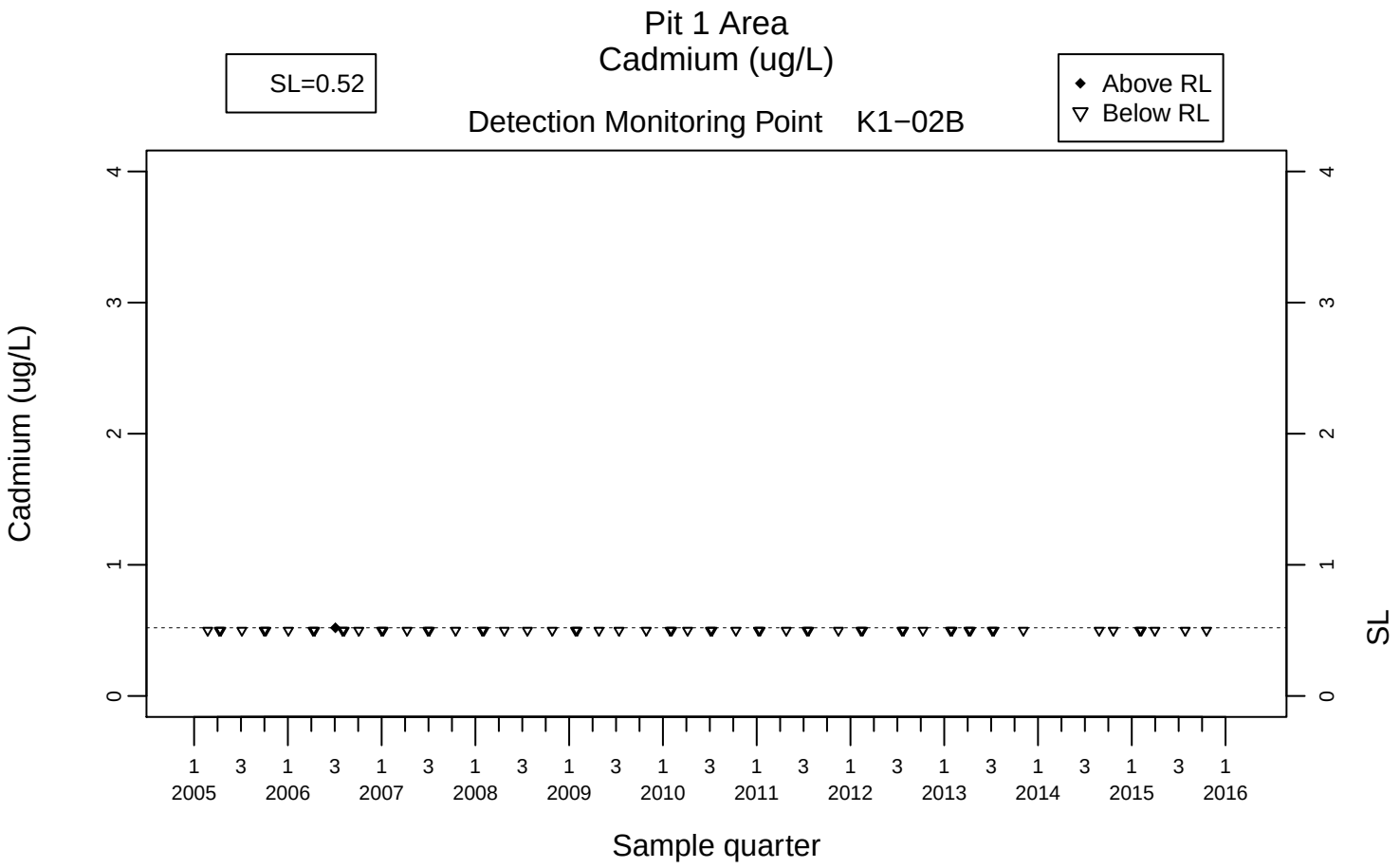

SL=0.5
Crossgradient Monitoring Point K1−08
Beryllium (ug/L)
SL
0.0
0.5
1.0
1.5
2.0
2.5
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

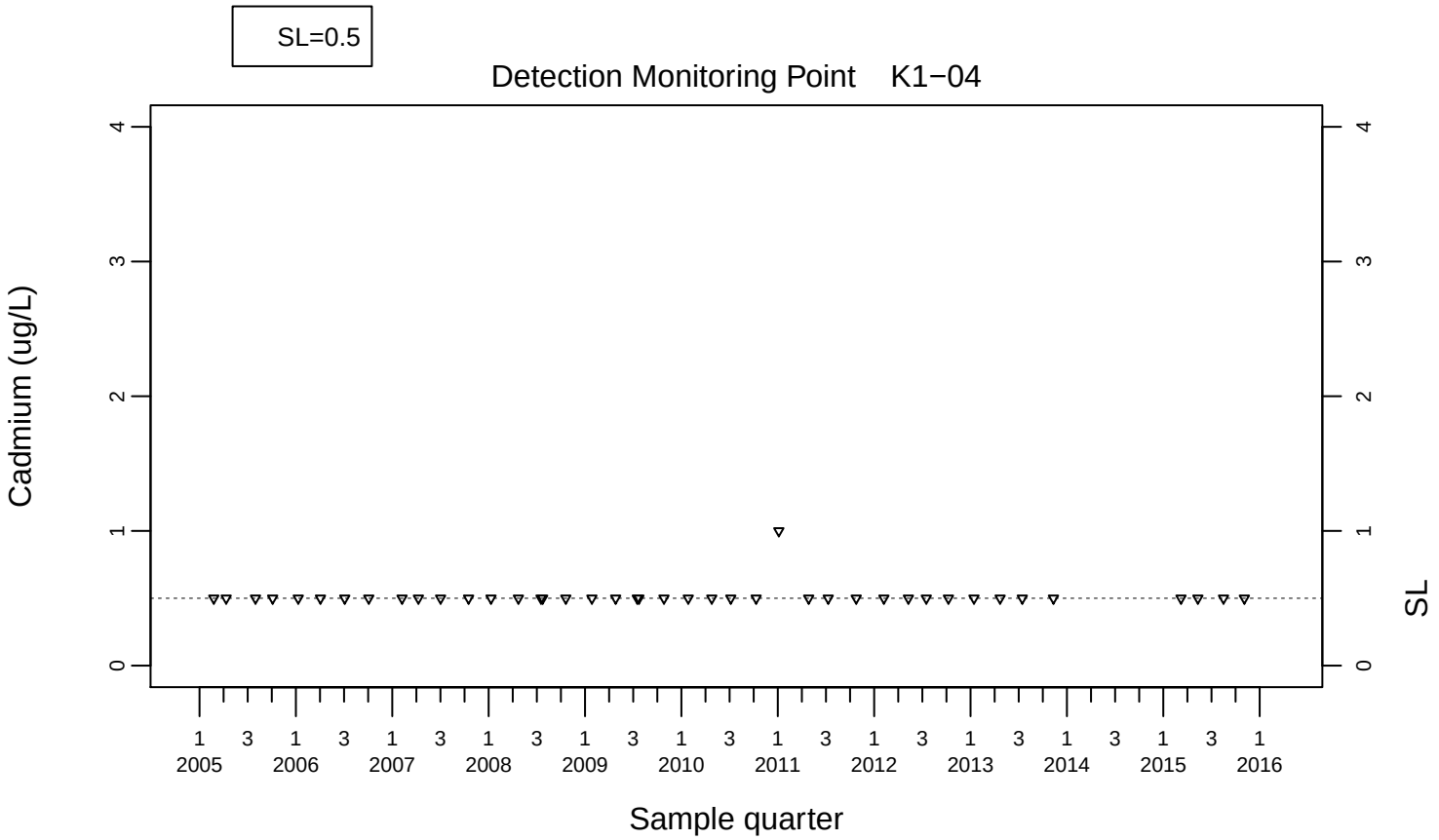

Pit 1 Area
Beryllium (ug/L)
SL=0.5
Above RL
Below RL
Crossgradient Monitoring Point K1−09
Beryllium (ug/L)
SL
Sample quarter
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

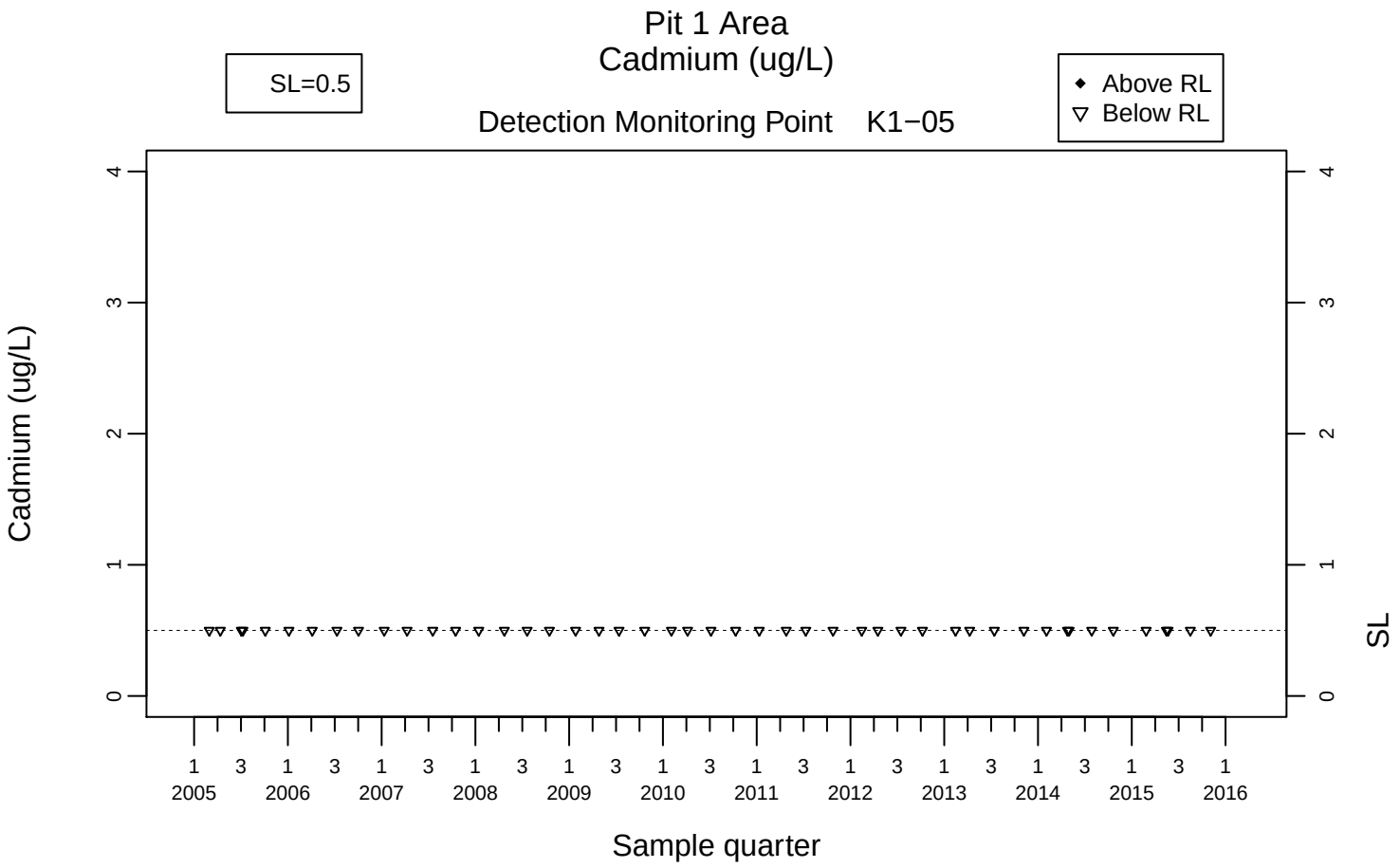

SL=0.5
Detection Monitoring Point W−PIT1−2326
Beryllium (ug/L)
SL
Sample quarter
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

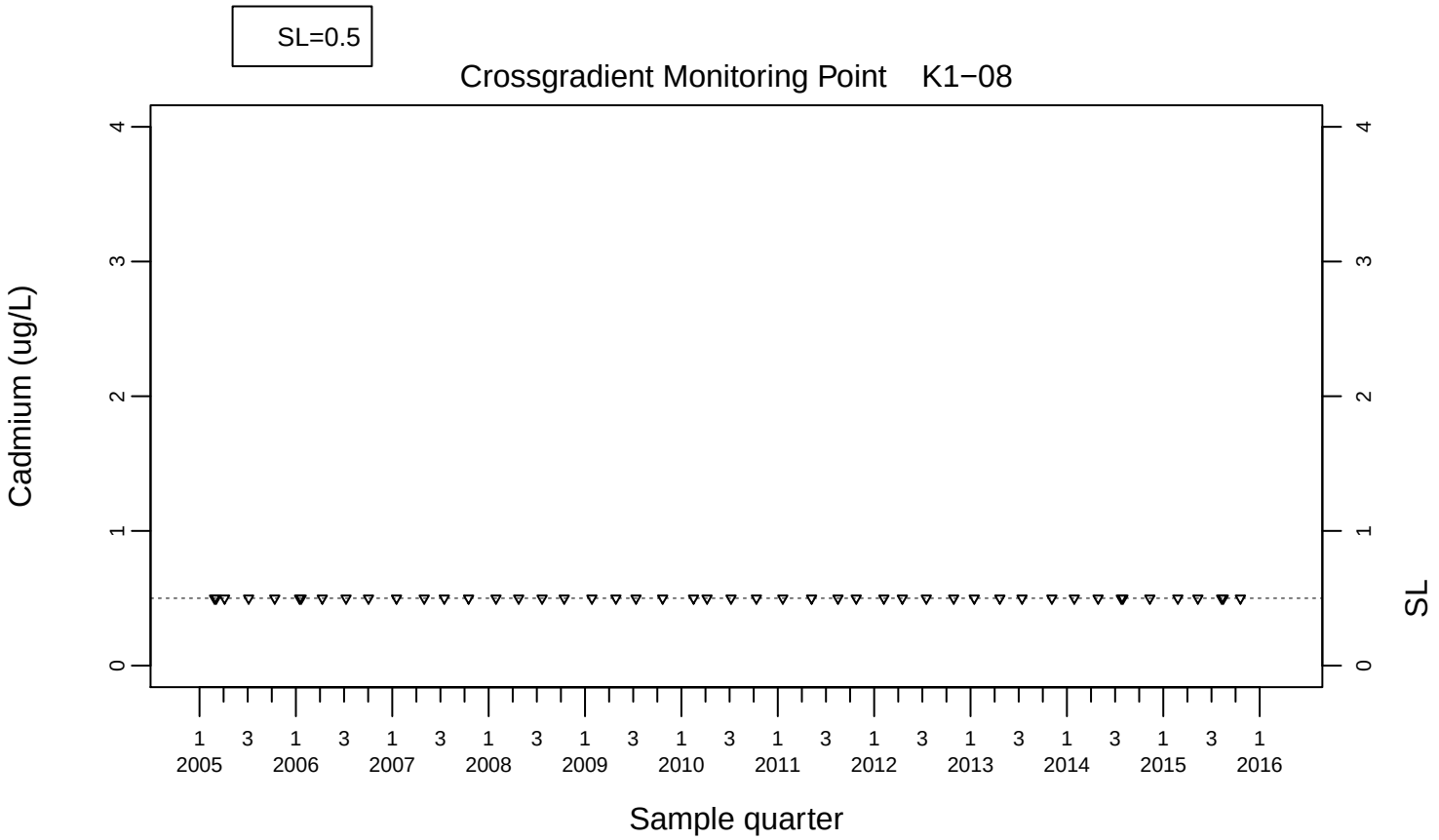

Pit 1 Area
Cadmium (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Cadmium (ug/L)
0
1
2
3
4
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

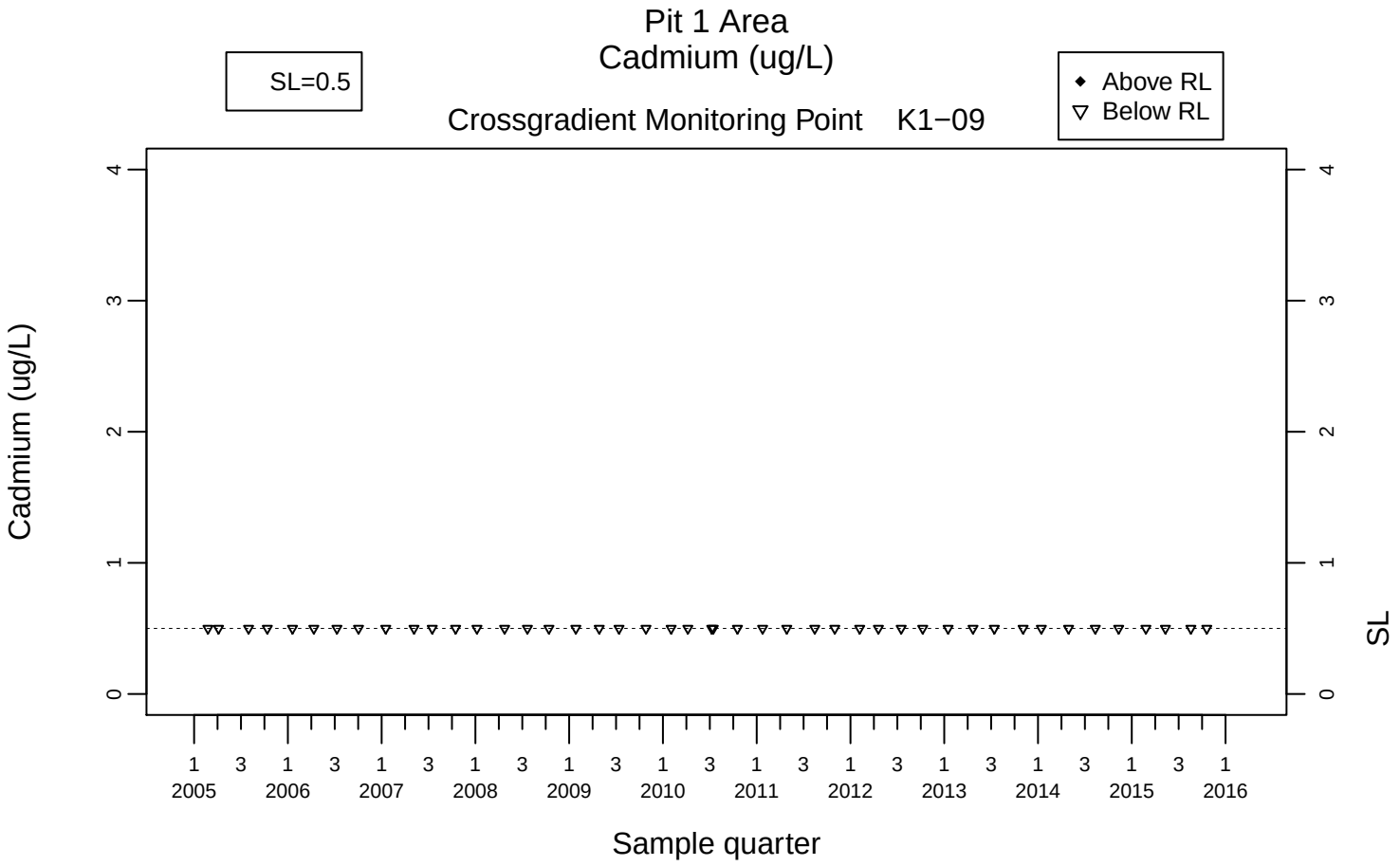

Background Monitoring Point K1−07
Cadmium (ug/L)
0
1
2
3
4
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

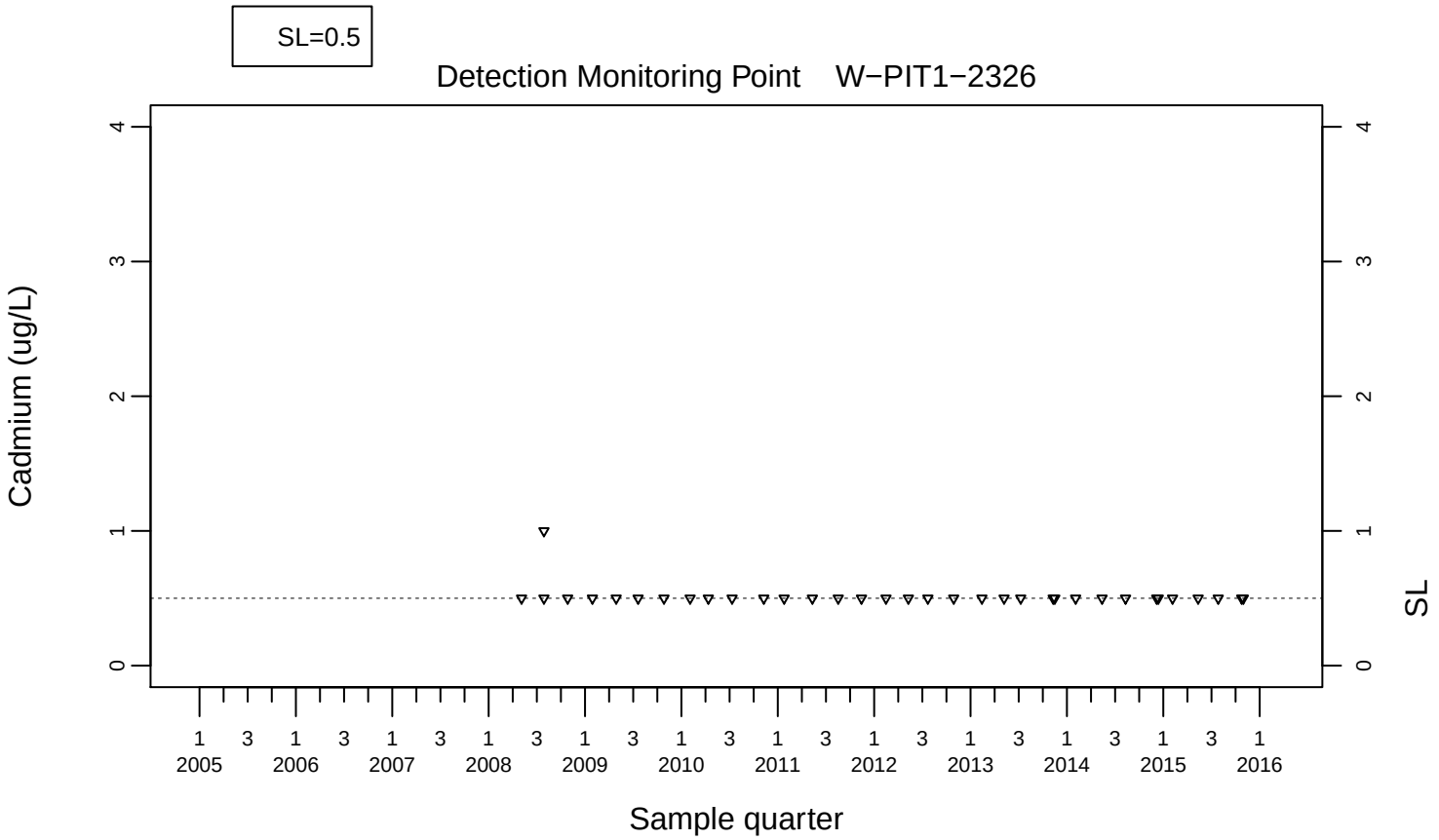

Pit 1 Area
Cadmium (ug/L)
SL=0.52
Above RL
Below RL
Detection Monitoring Point K1−02B
Cadmium (ug/L)
SL
0
1
2
3
4
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

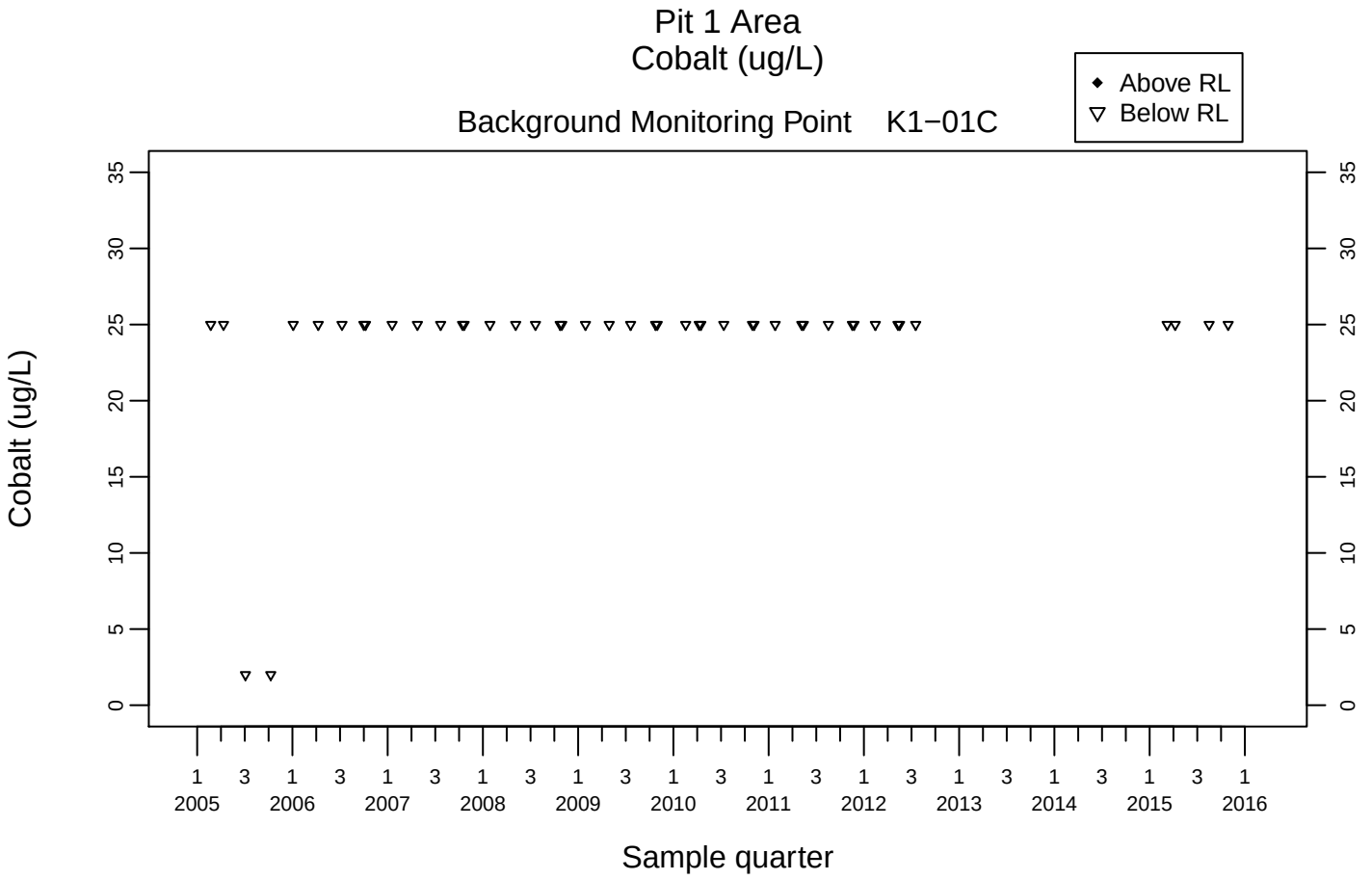

SL=0.5
Detection Monitoring Point K1−04
Cadmium (ug/L)
SL
0
1
2
3
4
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

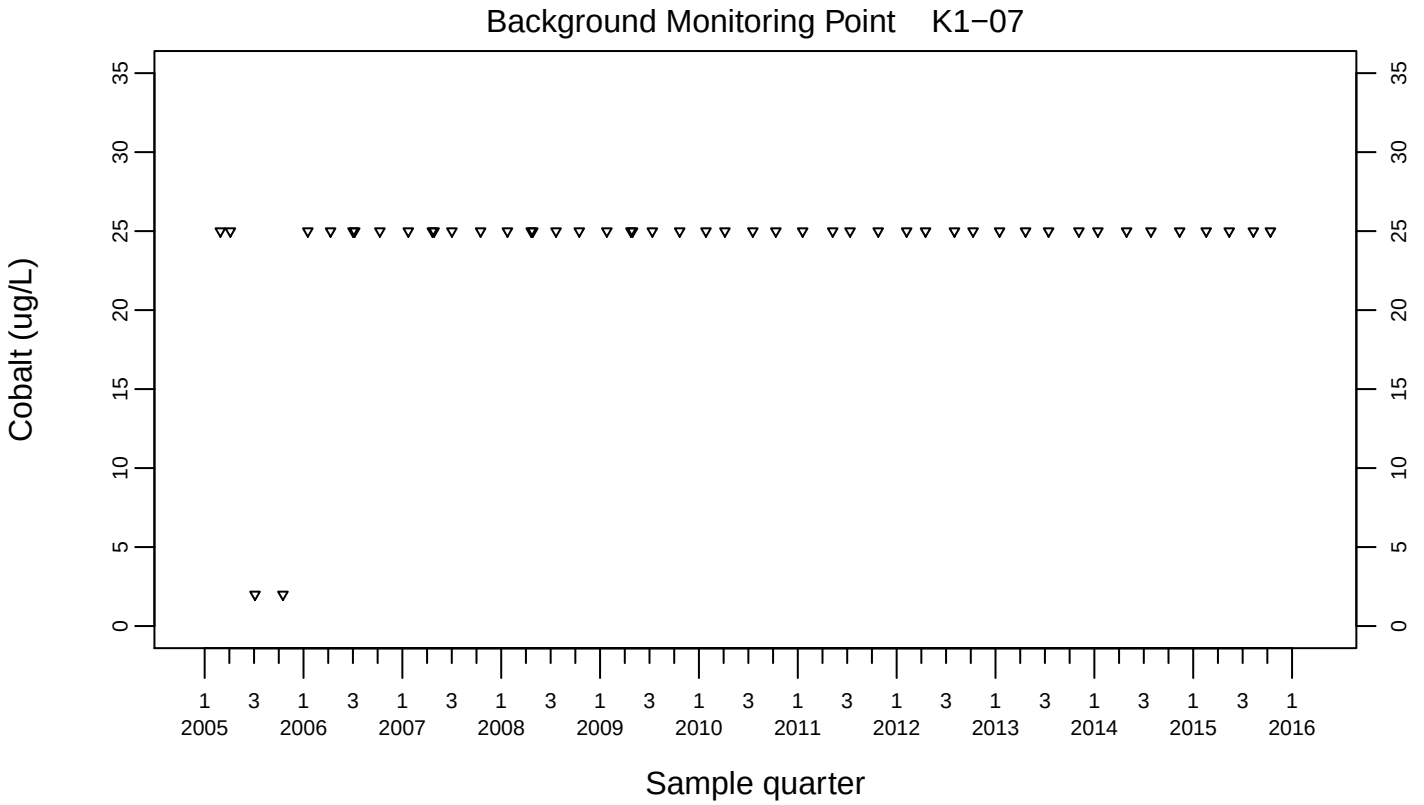

Pit 1 Area
Cadmium (ug/L)
SL=0.5
Above RL
Below RL
Detection Monitoring Point K1−05
Cadmium (ug/L)
SL
Sample quarter
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

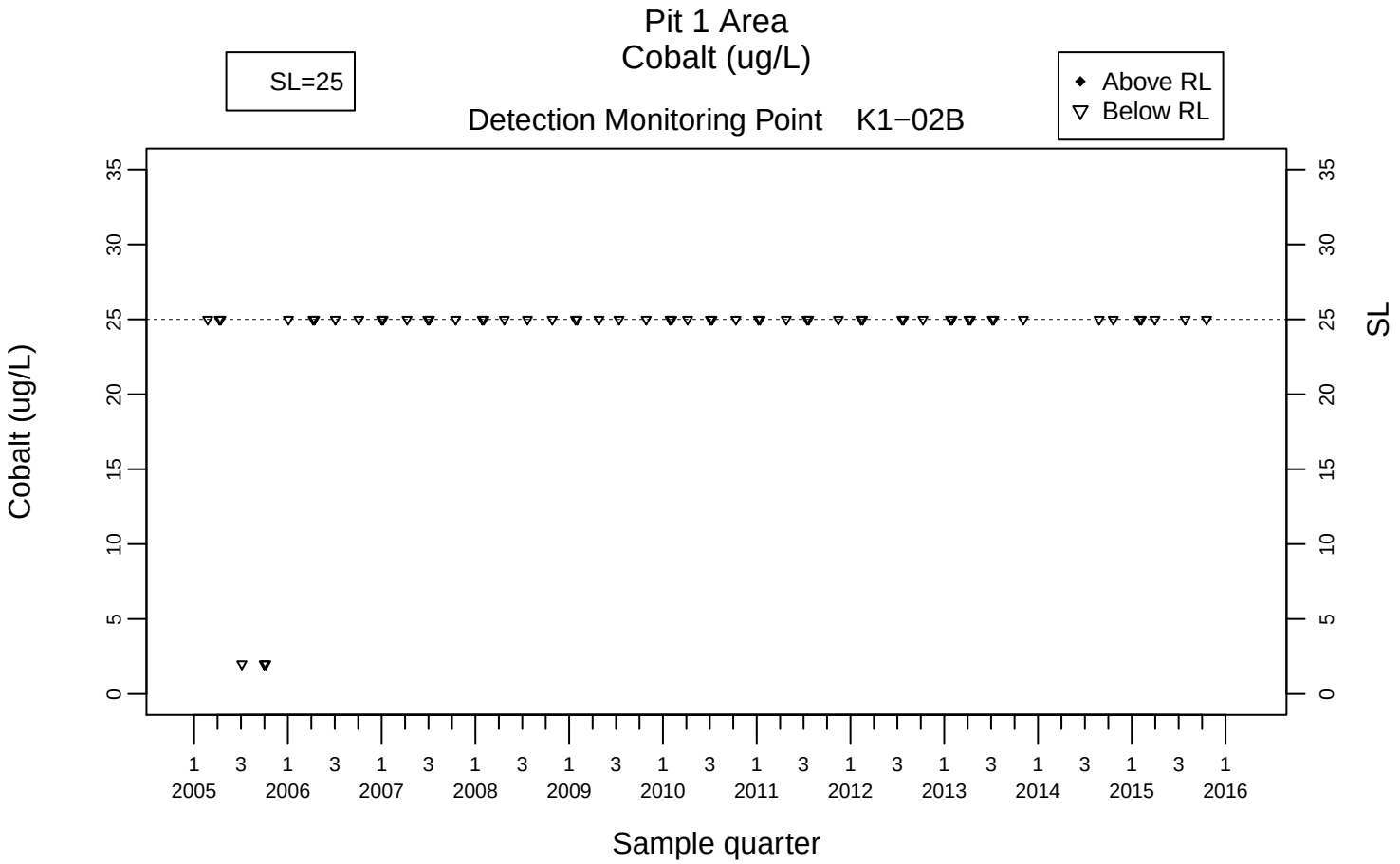

SL=0.5
Crossgradient Monitoring Point K1−08
Cadmium (ug/L)
SL
Sample quarter
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

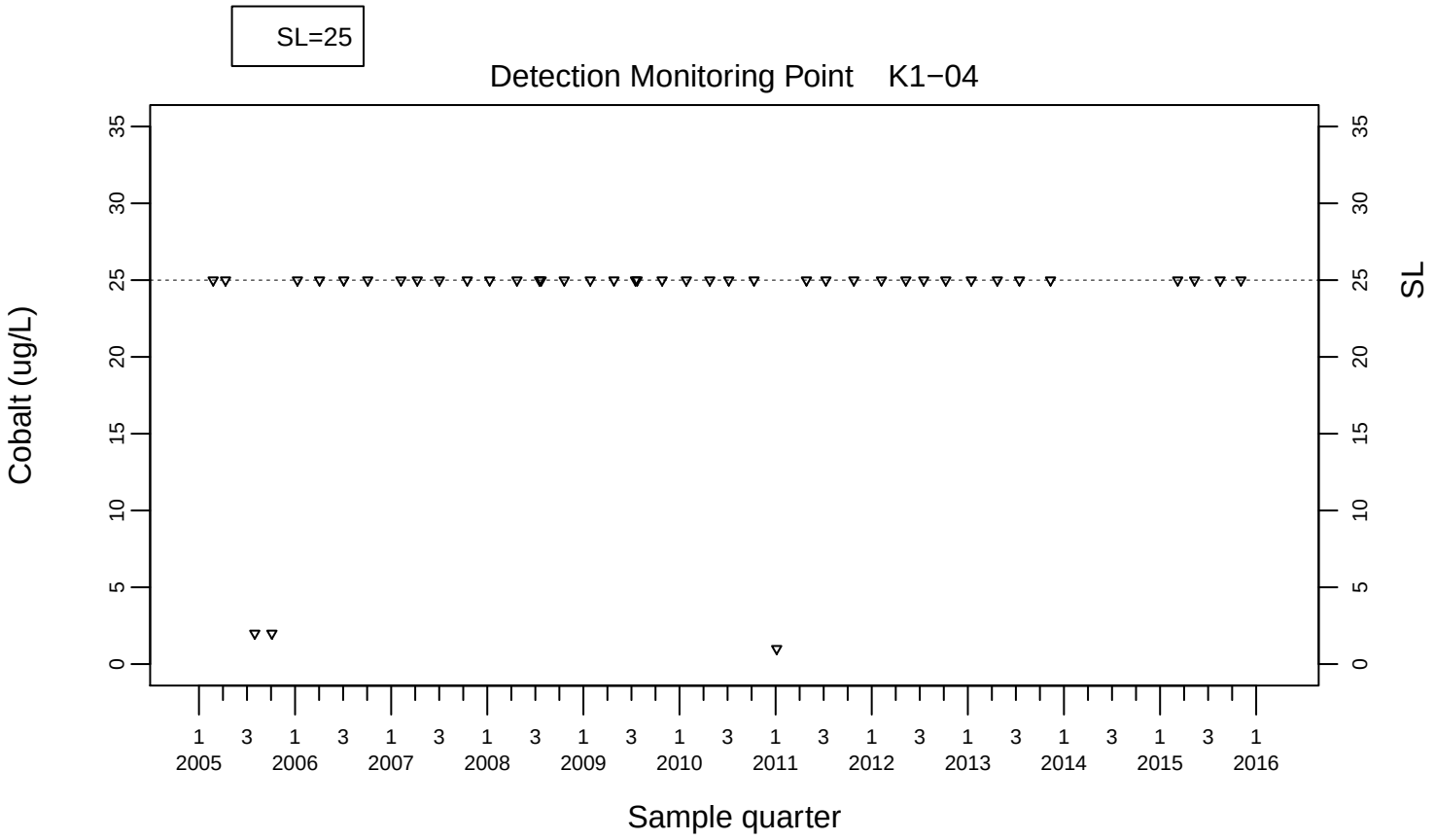

Pit 1 Area
Cadmium (ug/L)
SL=0.5
Above RL
Below RL
Crossgradient Monitoring Point K1−09
Cadmium (ug/L)
SL
0
1
2
3
4
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

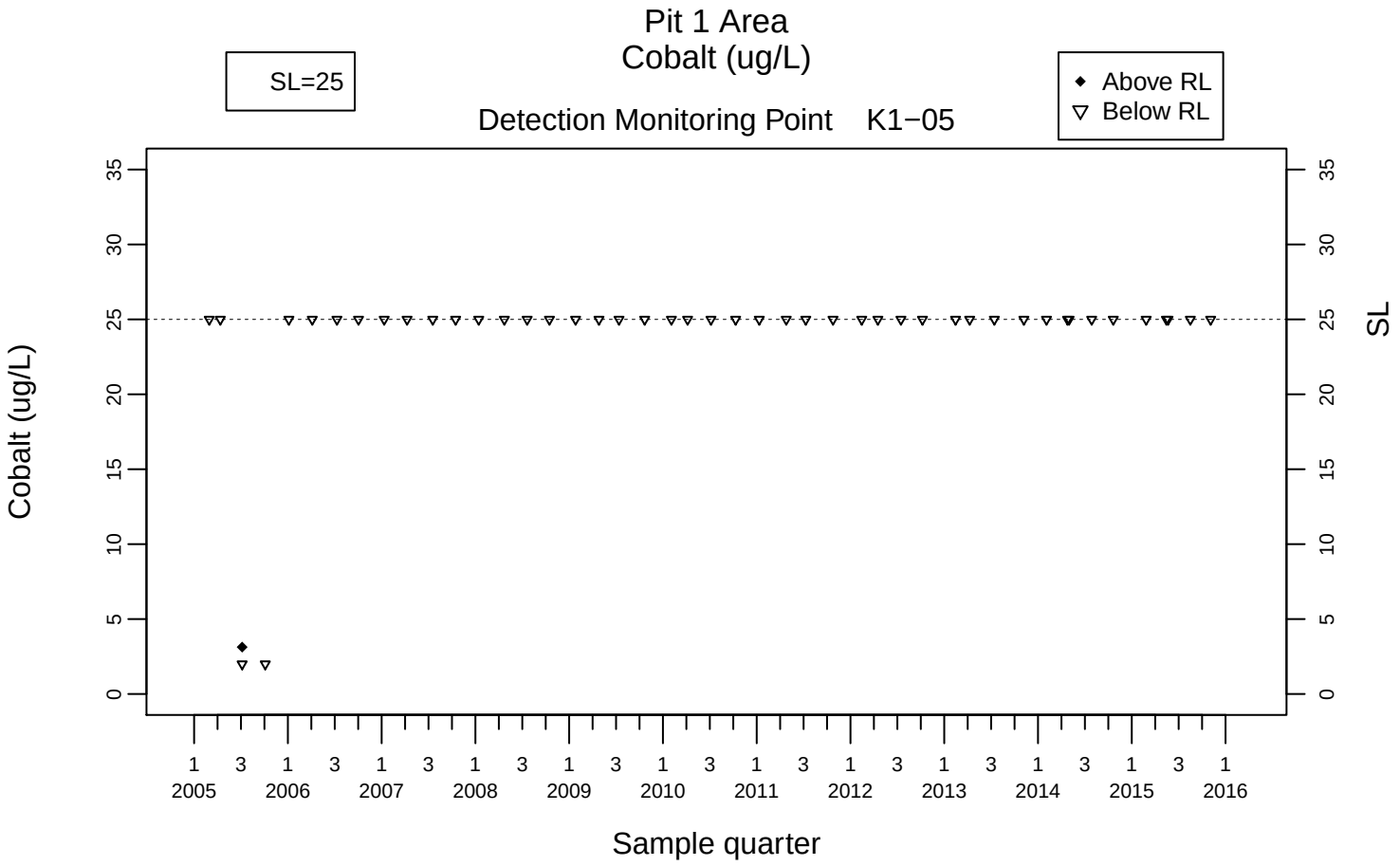

SL=0.5
Detection Monitoring Point W−PIT1−2326
Cadmium (ug/L)
SL
0
1
2
3
4
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

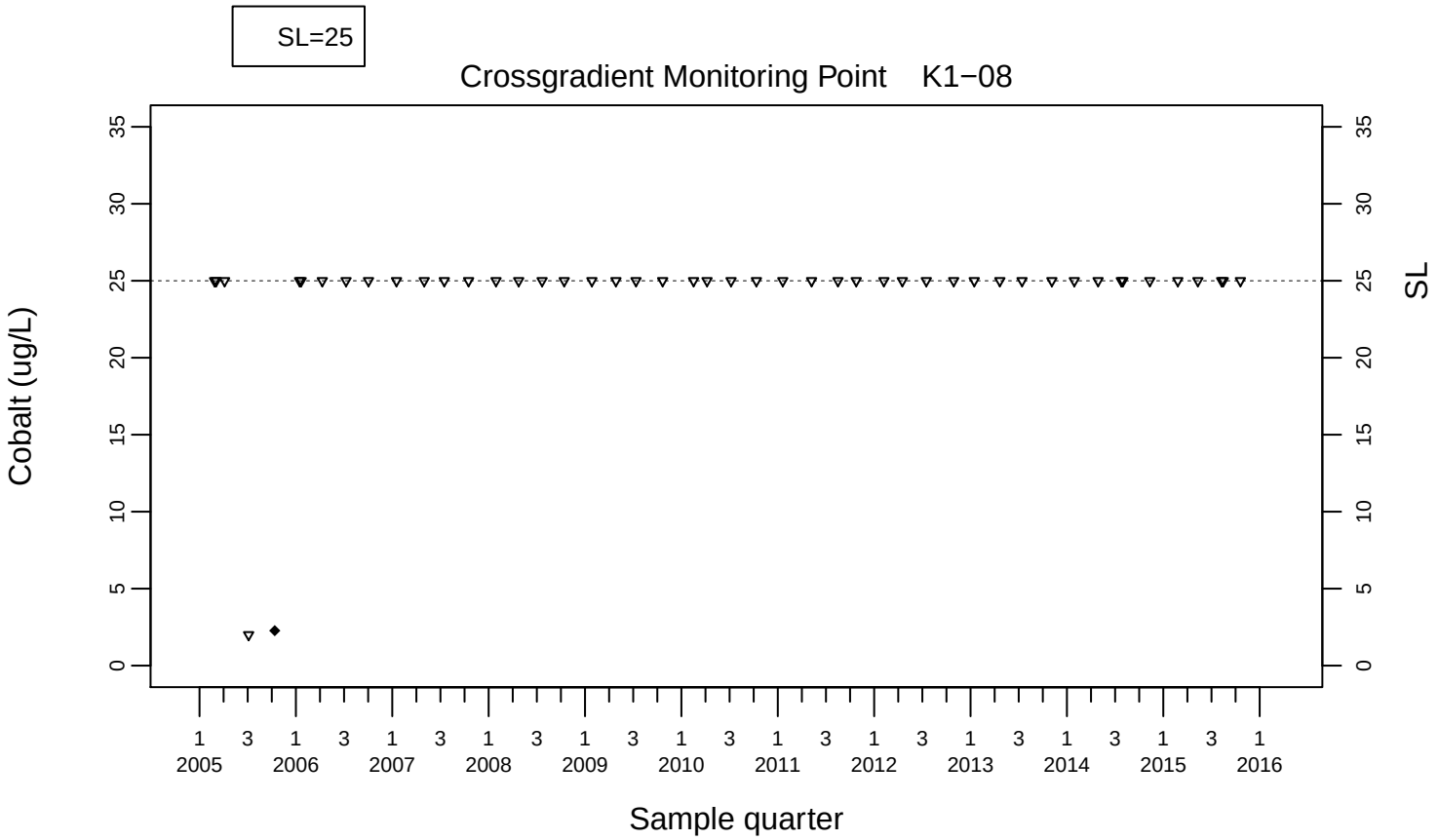

Pit 1 Area
Cobalt (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Cobalt (ug/L)
0
5
10
15
20
25
30
35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

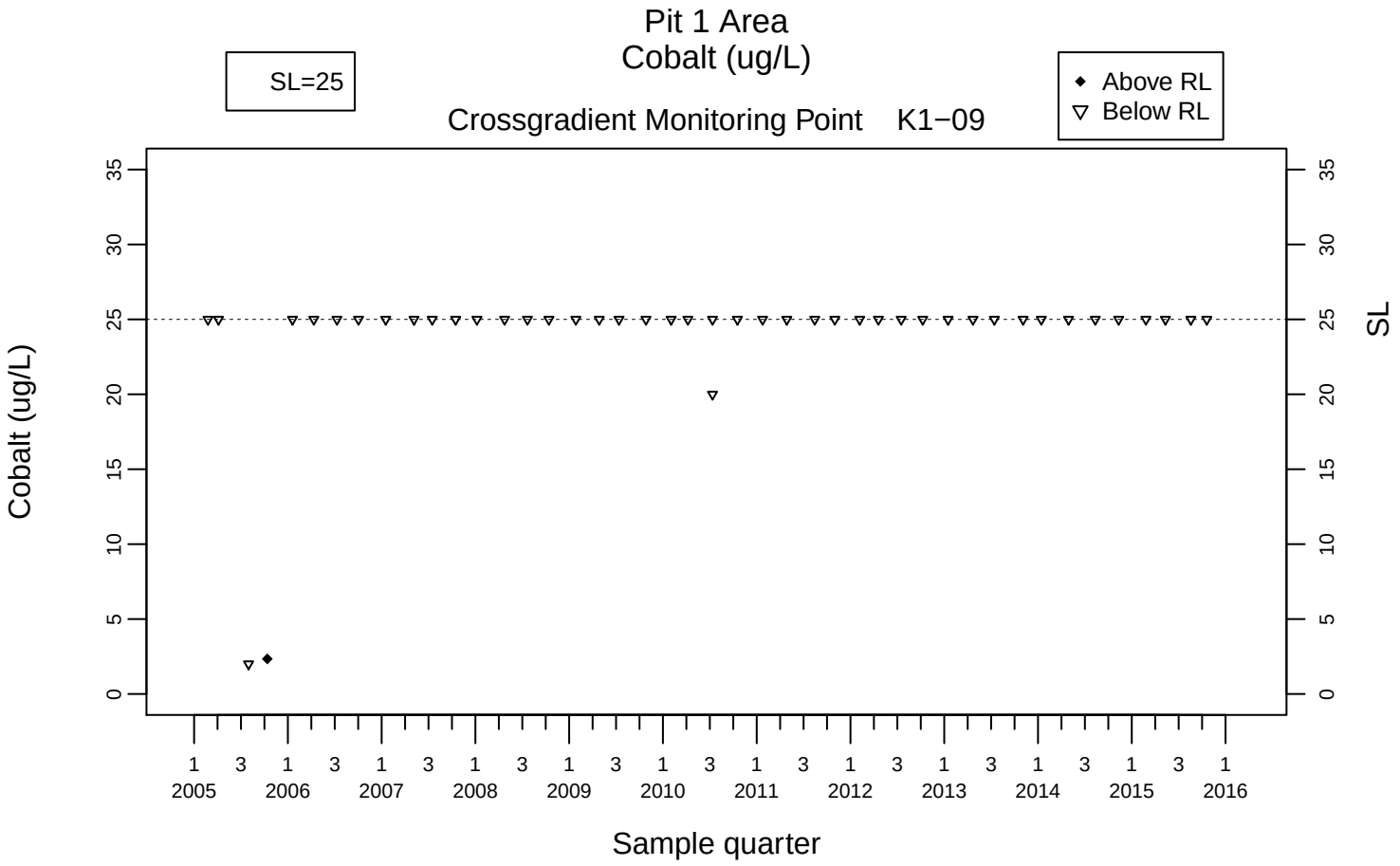

Background Monitoring Point K1−07
Cobalt (ug/L)
0
5
10
15
20
25
30
35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

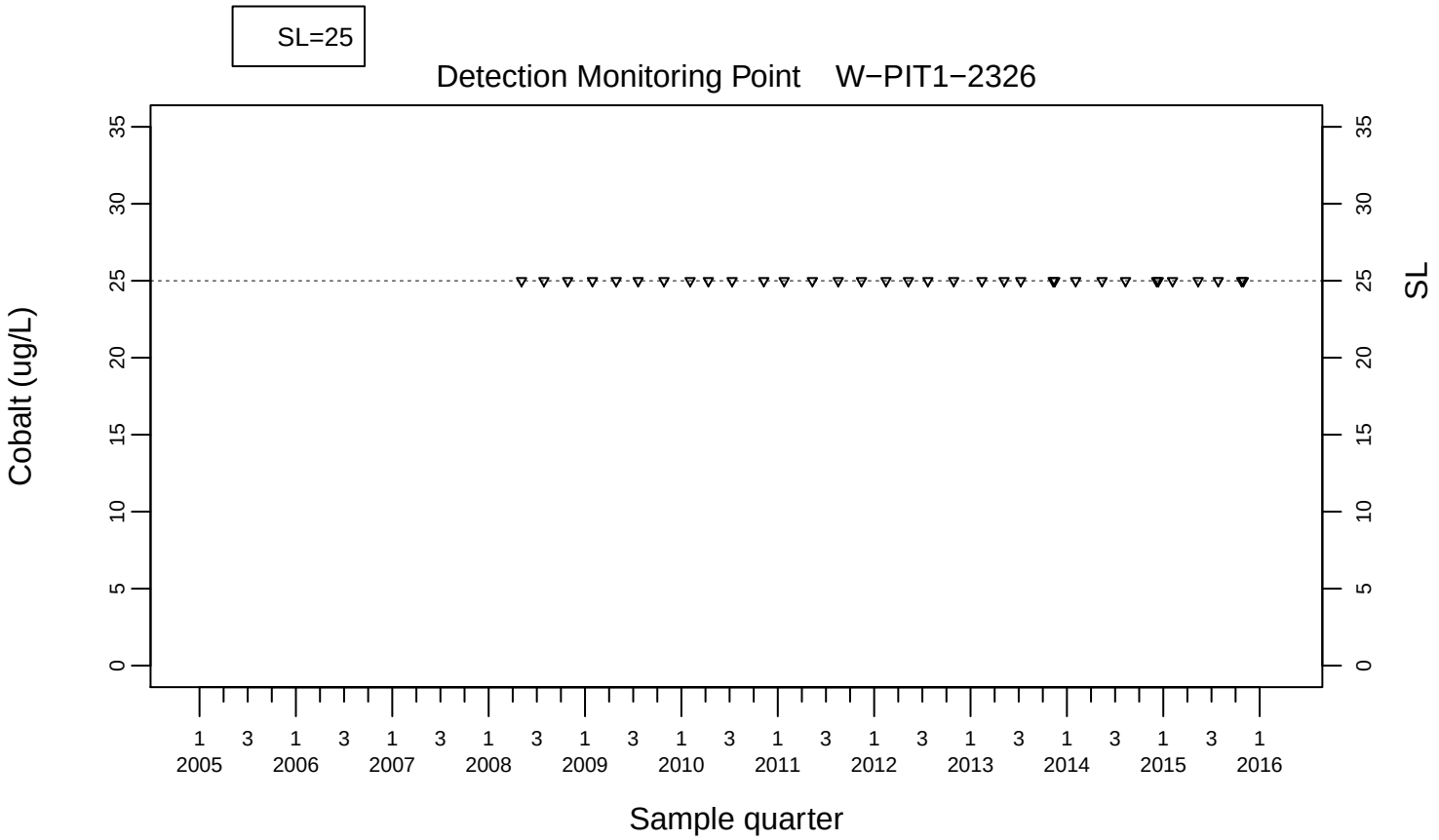

Pit 1 Area
Cobalt (ug/L)
SL=25
Above RL
Below RL
Detection Monitoring Point K1−02B
Cobalt (ug/L)
SL
0
5
10
15
20
25
30
35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

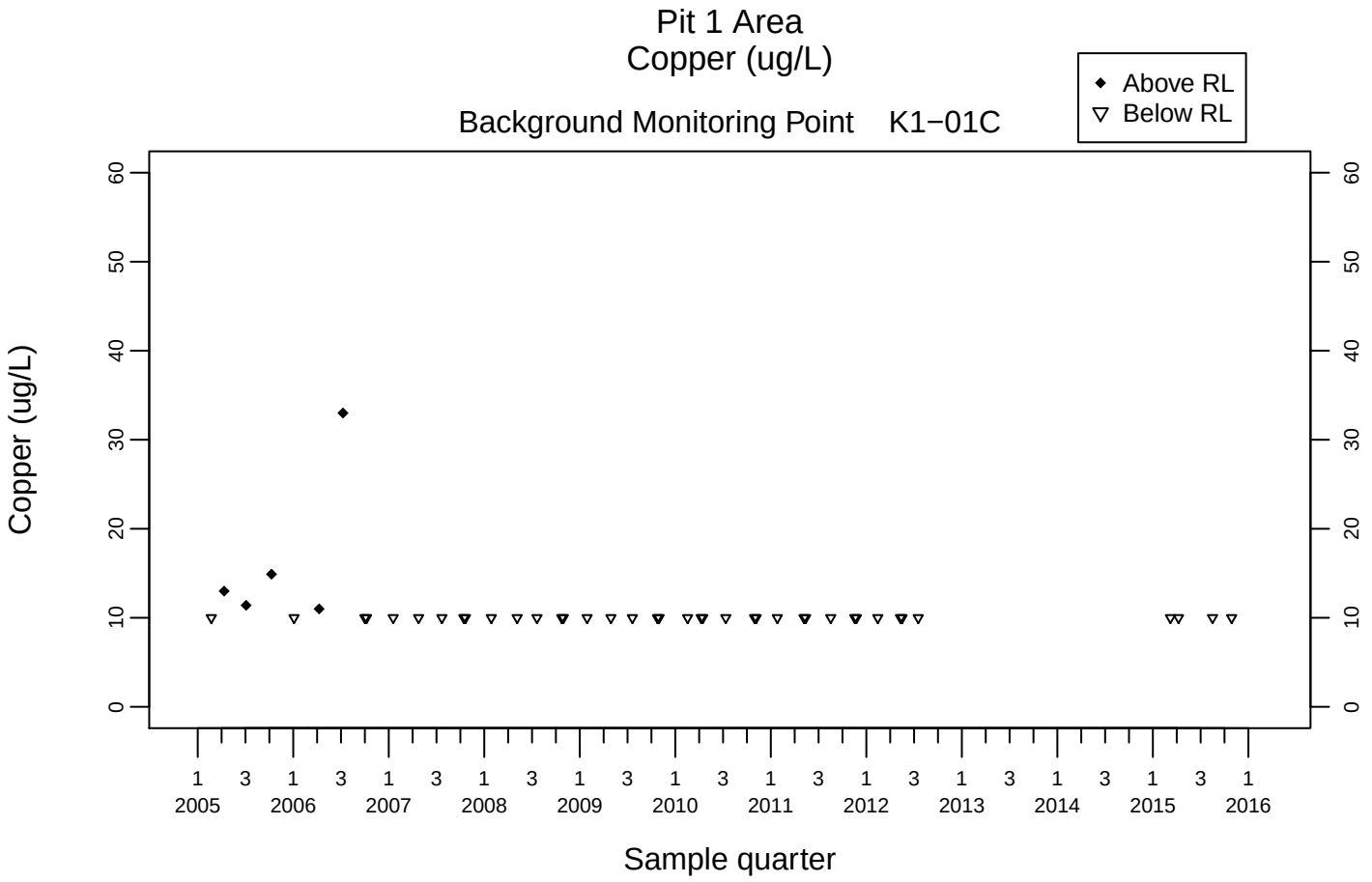

SL=25
Detection Monitoring Point K1−04
Cobalt (ug/L)
SL
0
5
10
15
20
25
30
35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

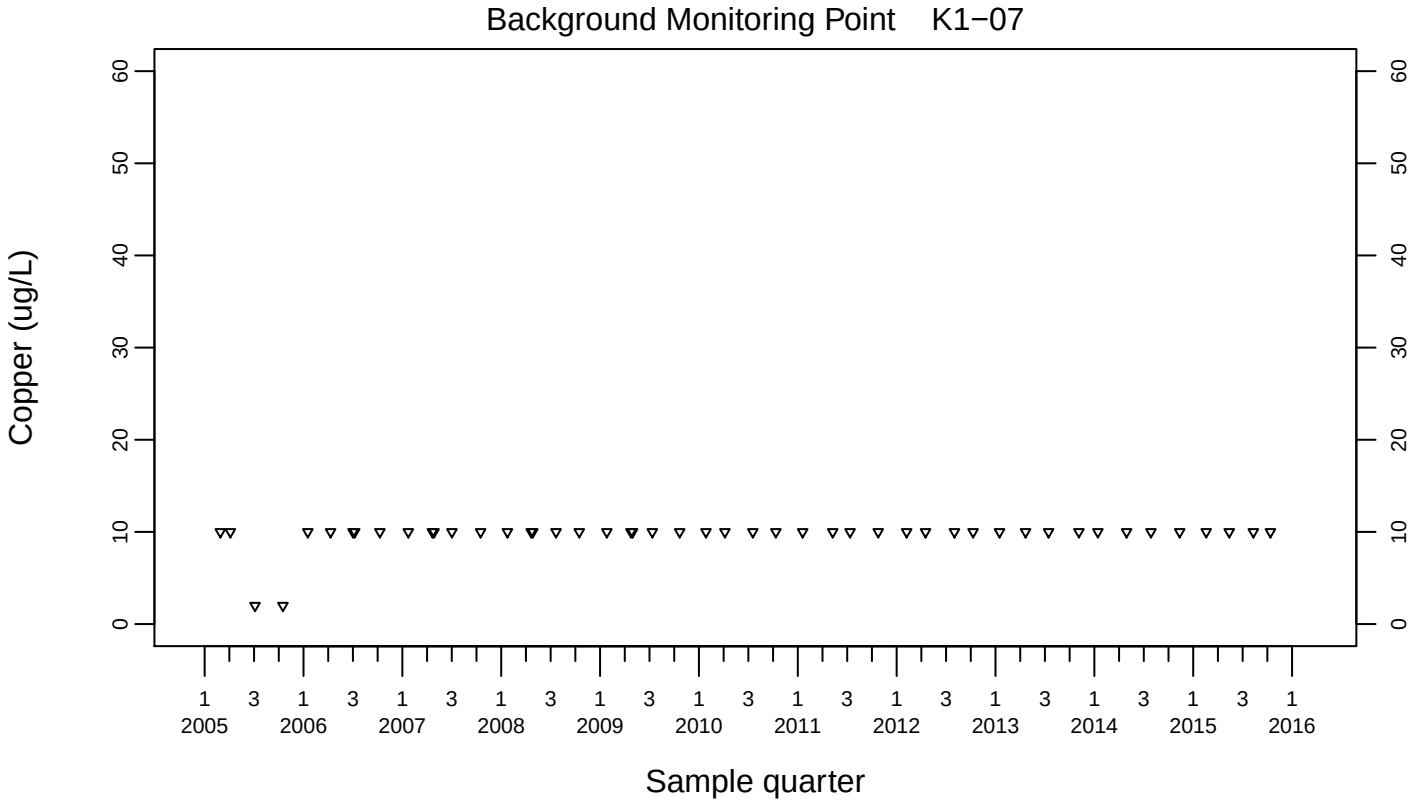

Pit 1 Area
Cobalt (ug/L)
SL=25
Above RL
Below RL
Detection Monitoring Point K1−05
Cobalt (ug/L)
SL
0
5
10
15
20
25
30
35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

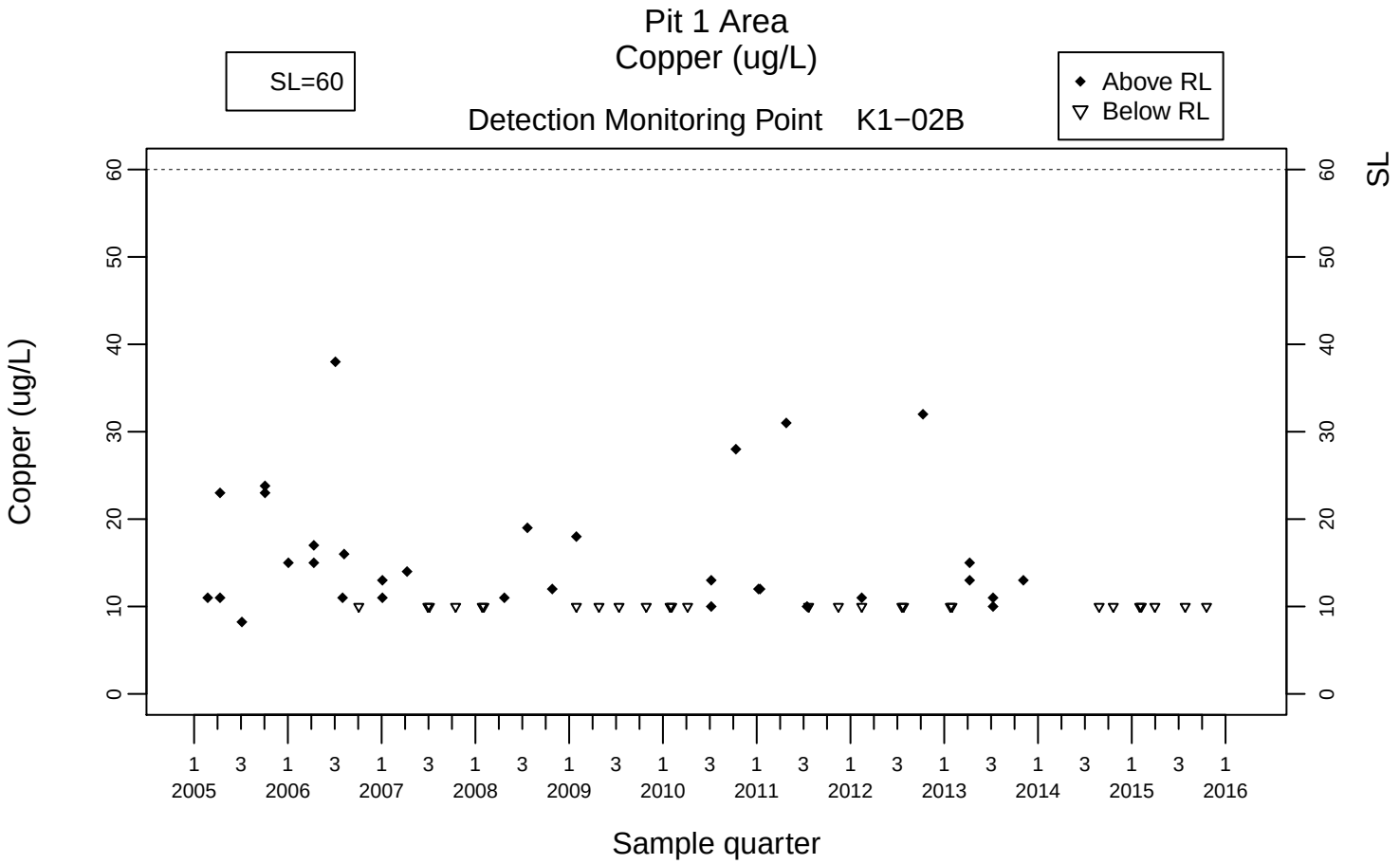

SL=25
Crossgradient Monitoring Point K1−08
Cobalt (ug/L)
SL
0
5
10
15
20
25
30
35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

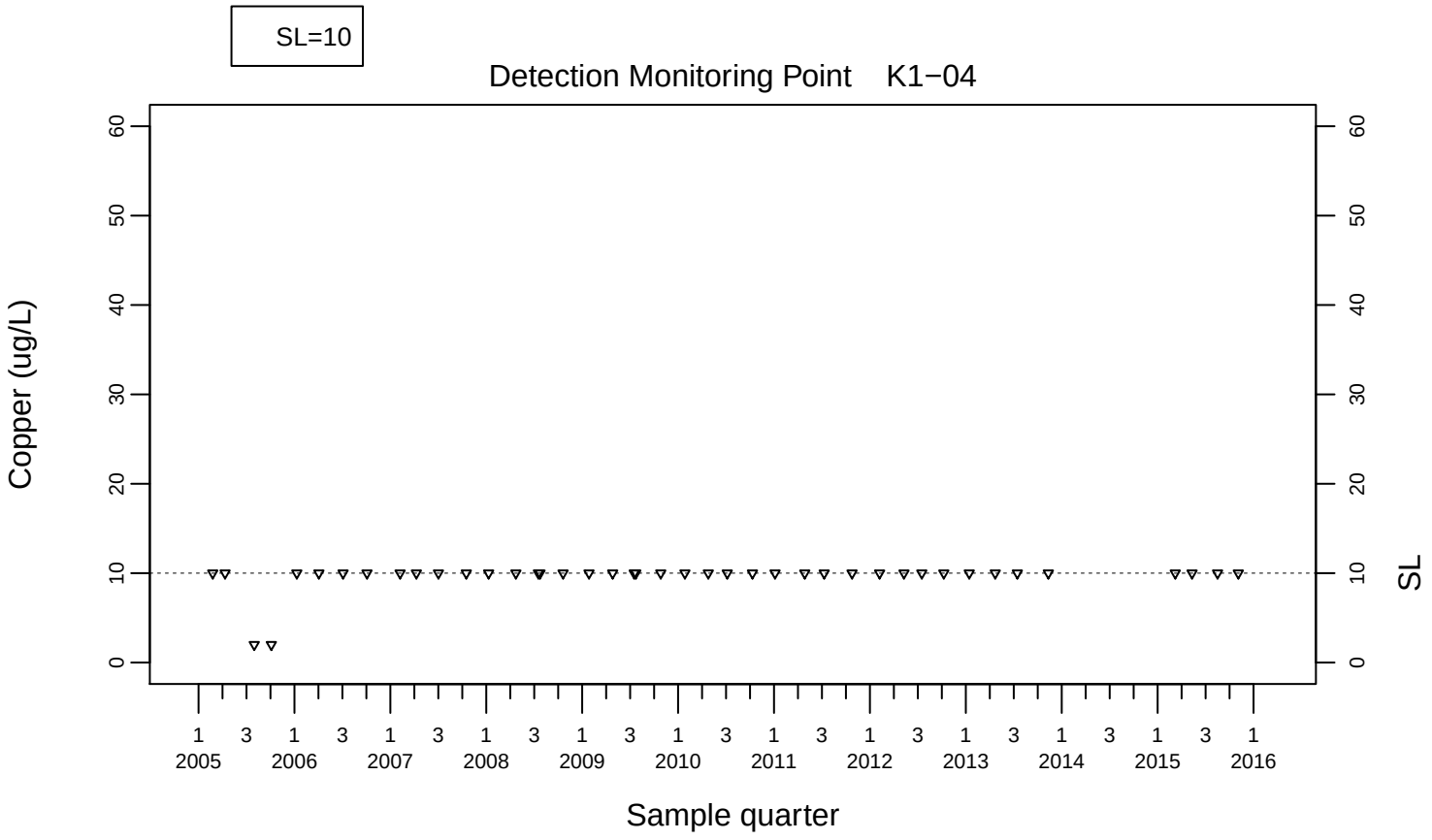

Pit 1 Area
Cobalt (ug/L)
SL=25
Above RL
Below RL
Crossgradient Monitoring Point K1−09
Cobalt (ug/L)
SL
0
5
10
15
20
25
30
35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

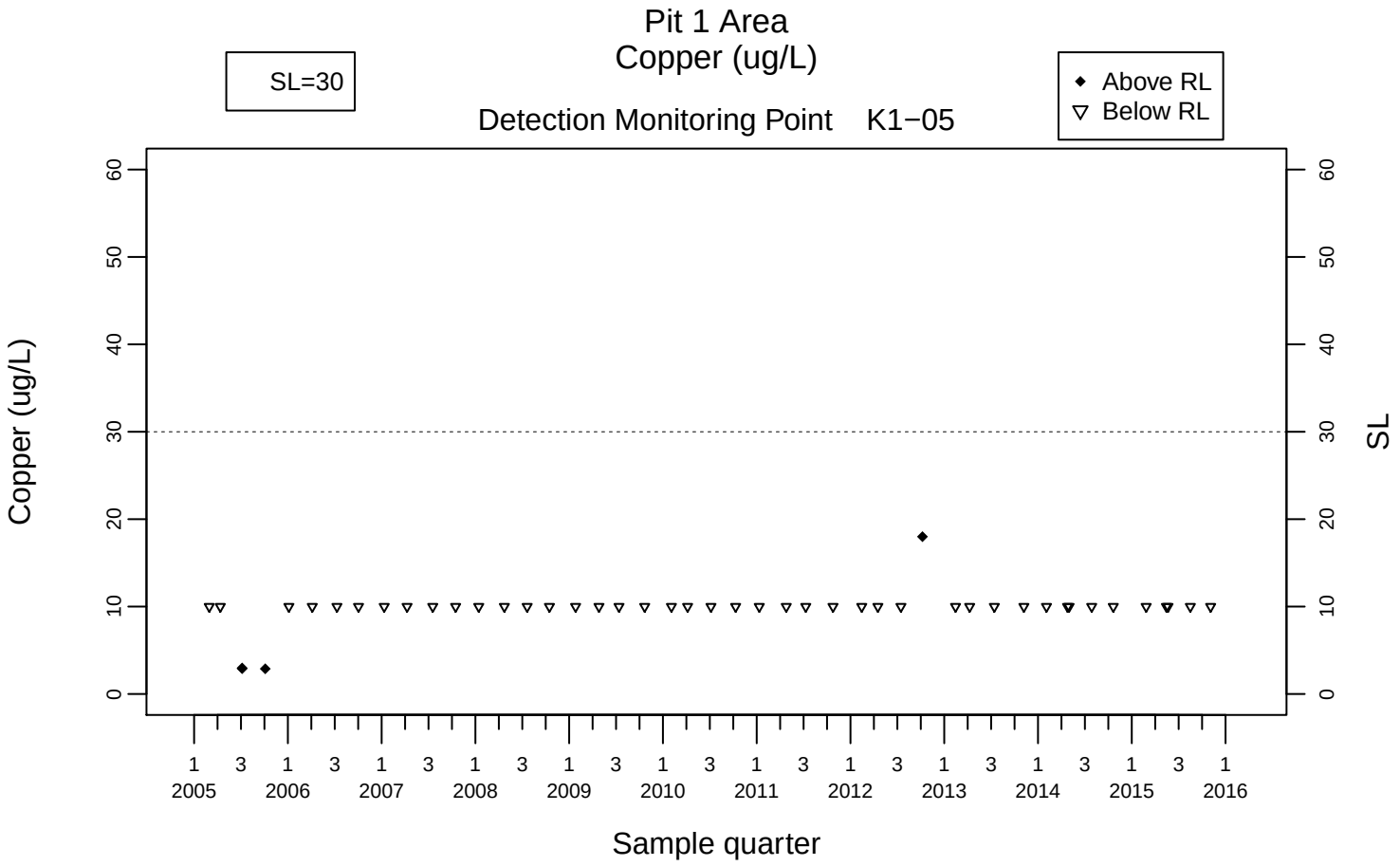

SL=25
Detection Monitoring Point W−PIT1−2326
Cobalt (ug/L)
SL
0
5
10
15
20
25
30
35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

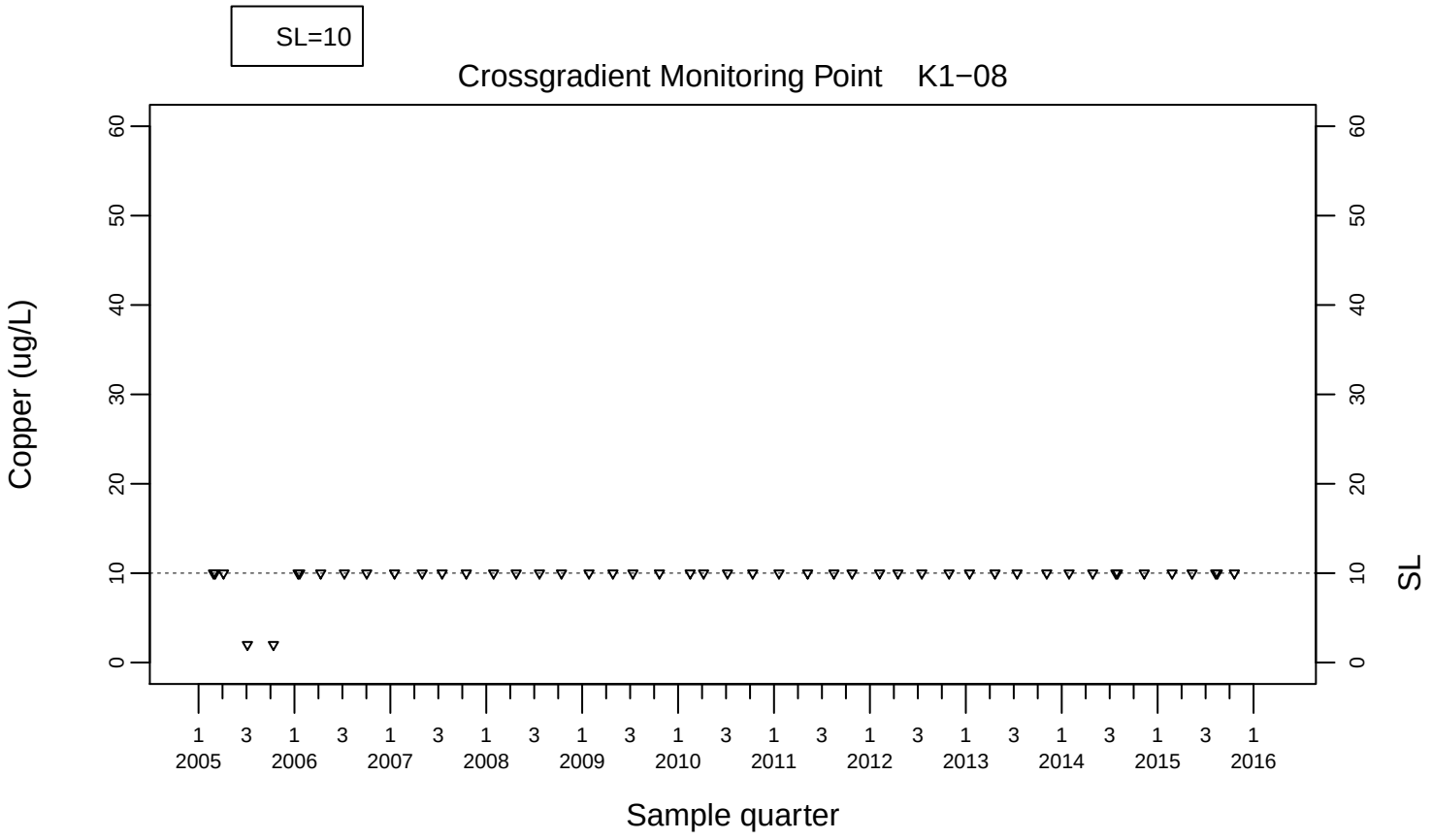

Pit 1 Area
Copper (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Copper (ug/L)
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

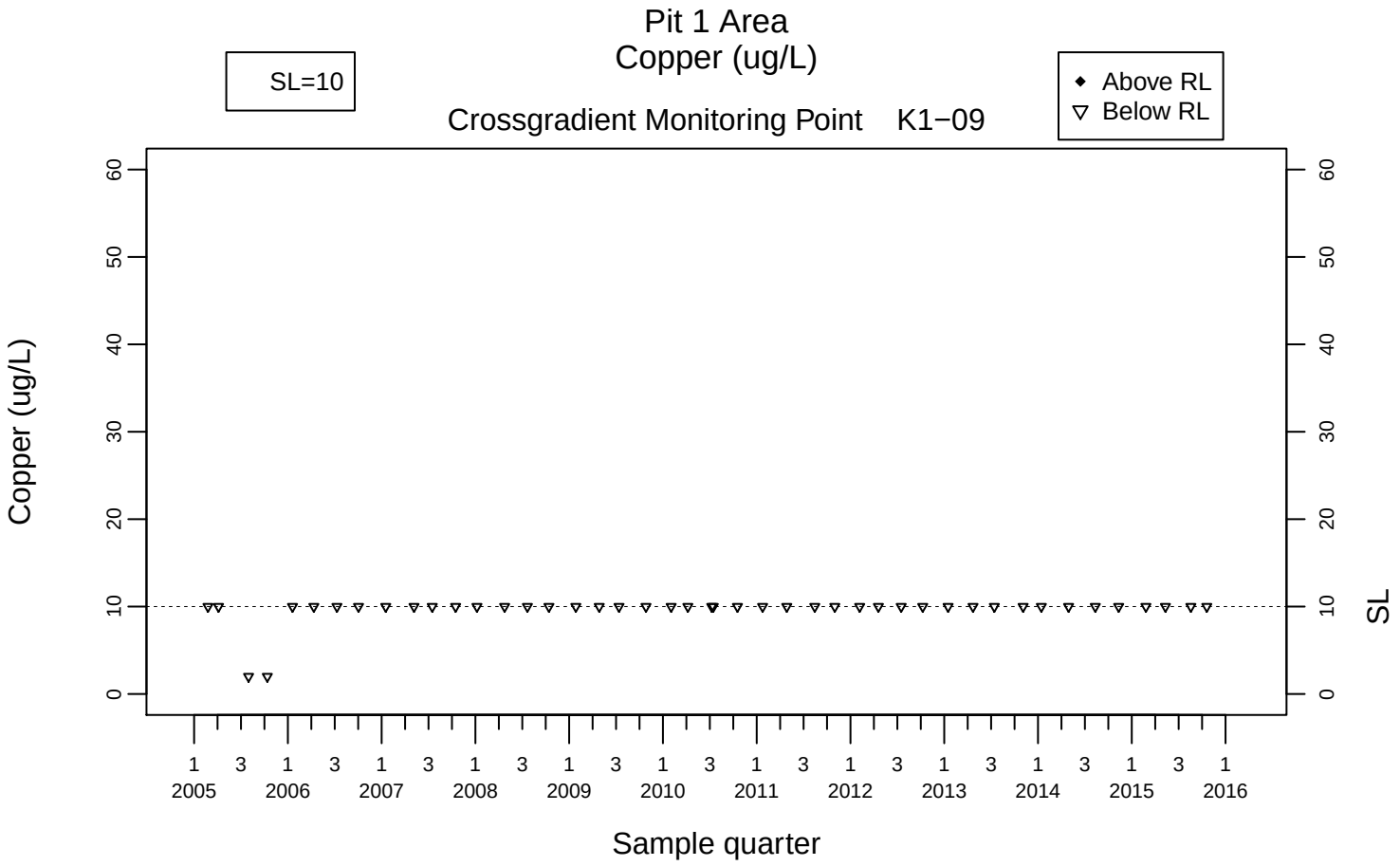

Background Monitoring Point K1−07
Copper (ug/L)
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

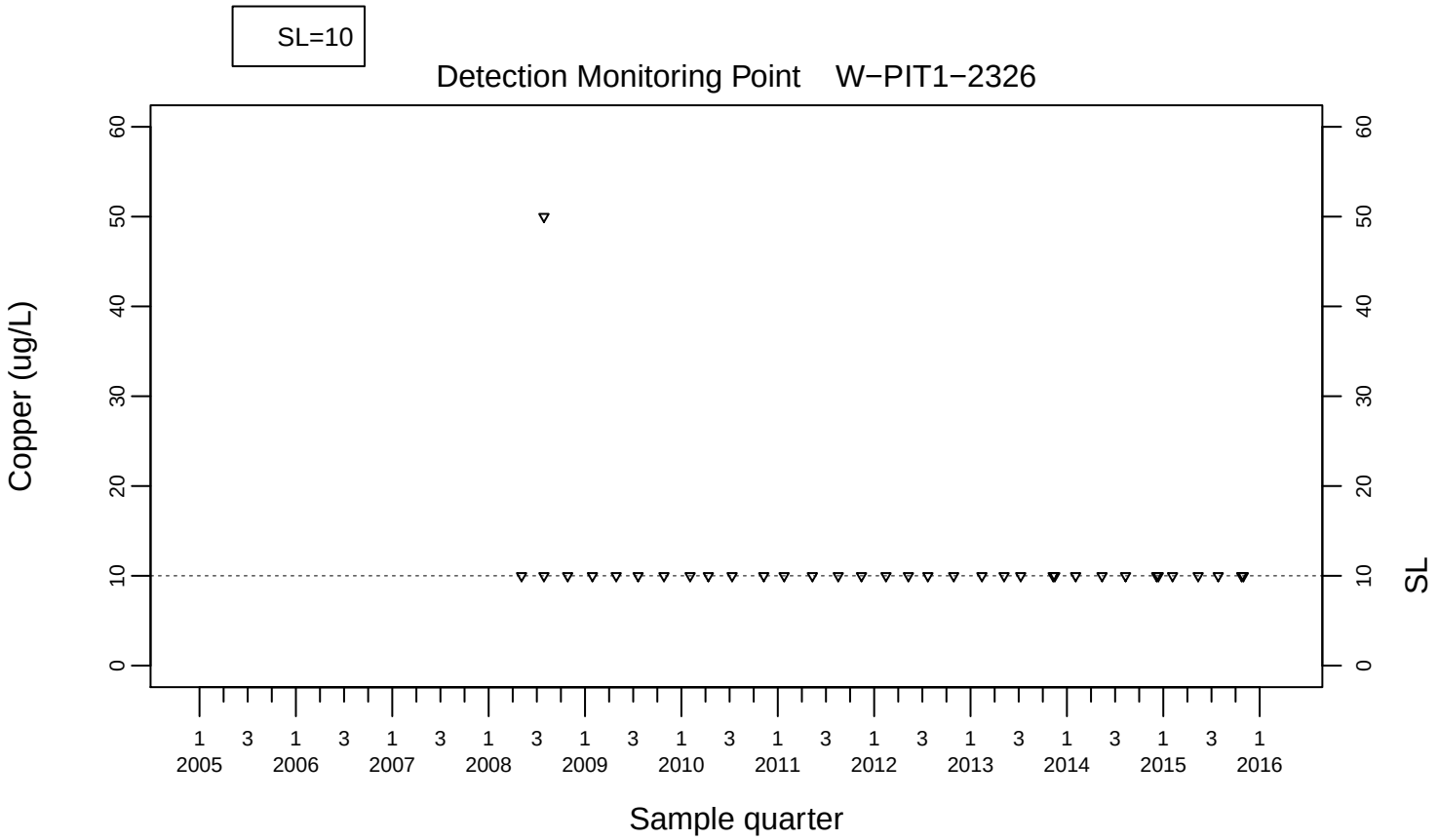

Pit 1 Area
Copper (ug/L)
SL=60
Above RL
Below RL
Detection Monitoring Point K1−02B
Copper (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

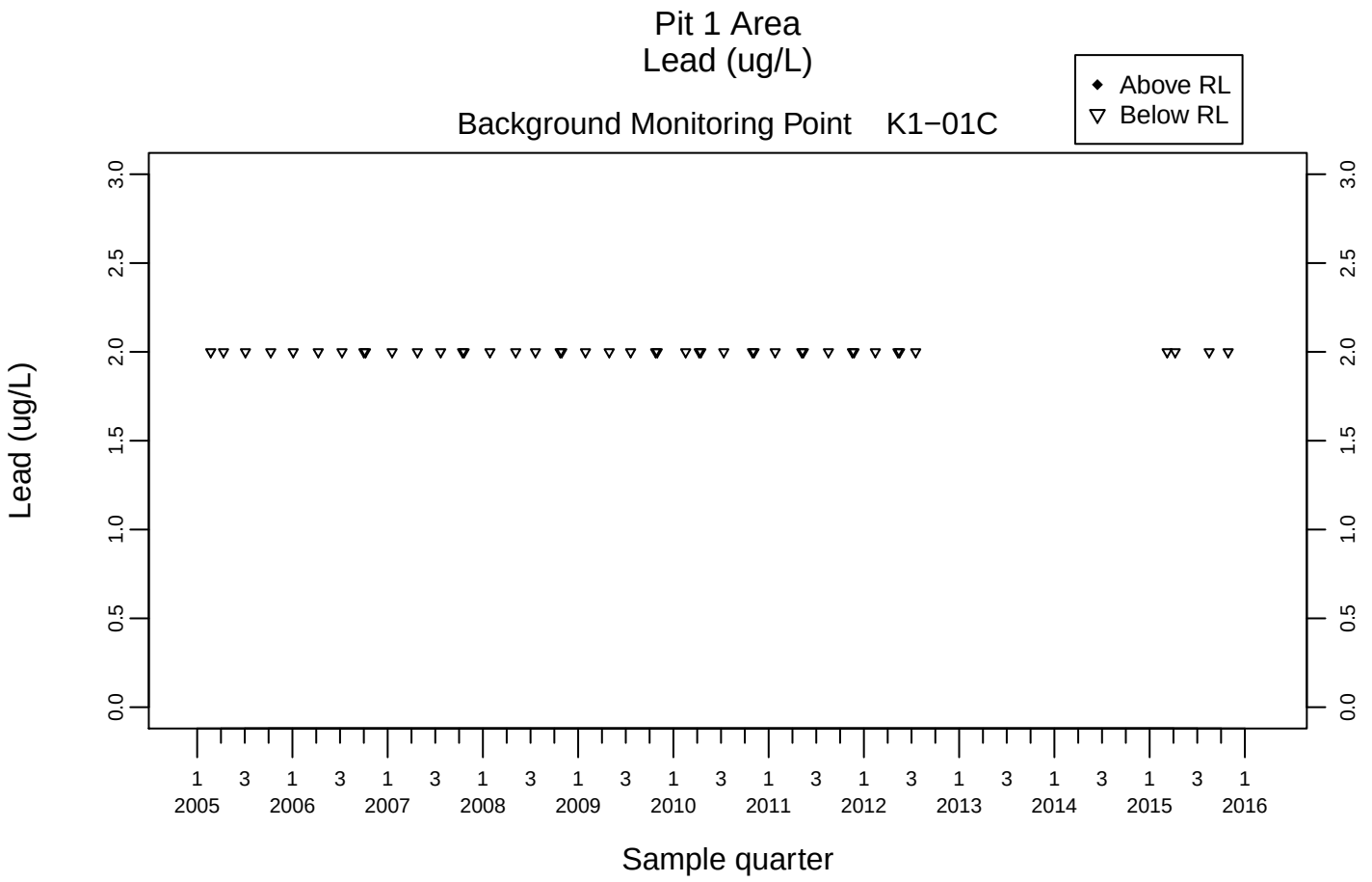

SL=10
Detection Monitoring Point K1−04
Copper (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

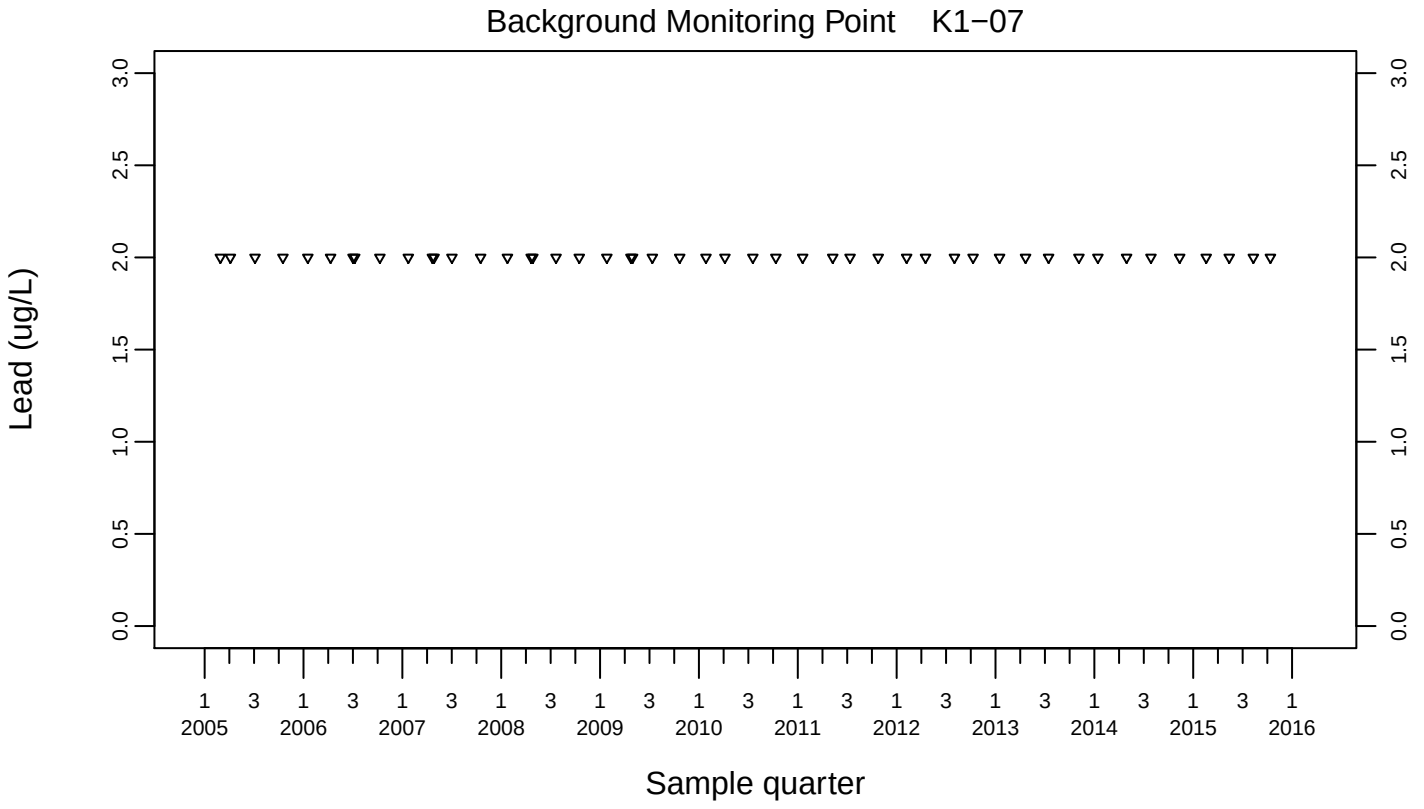

Pit 1 Area
Copper (ug/L)
SL=30
Above RL
Below RL
Detection Monitoring Point K1−05
Copper (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

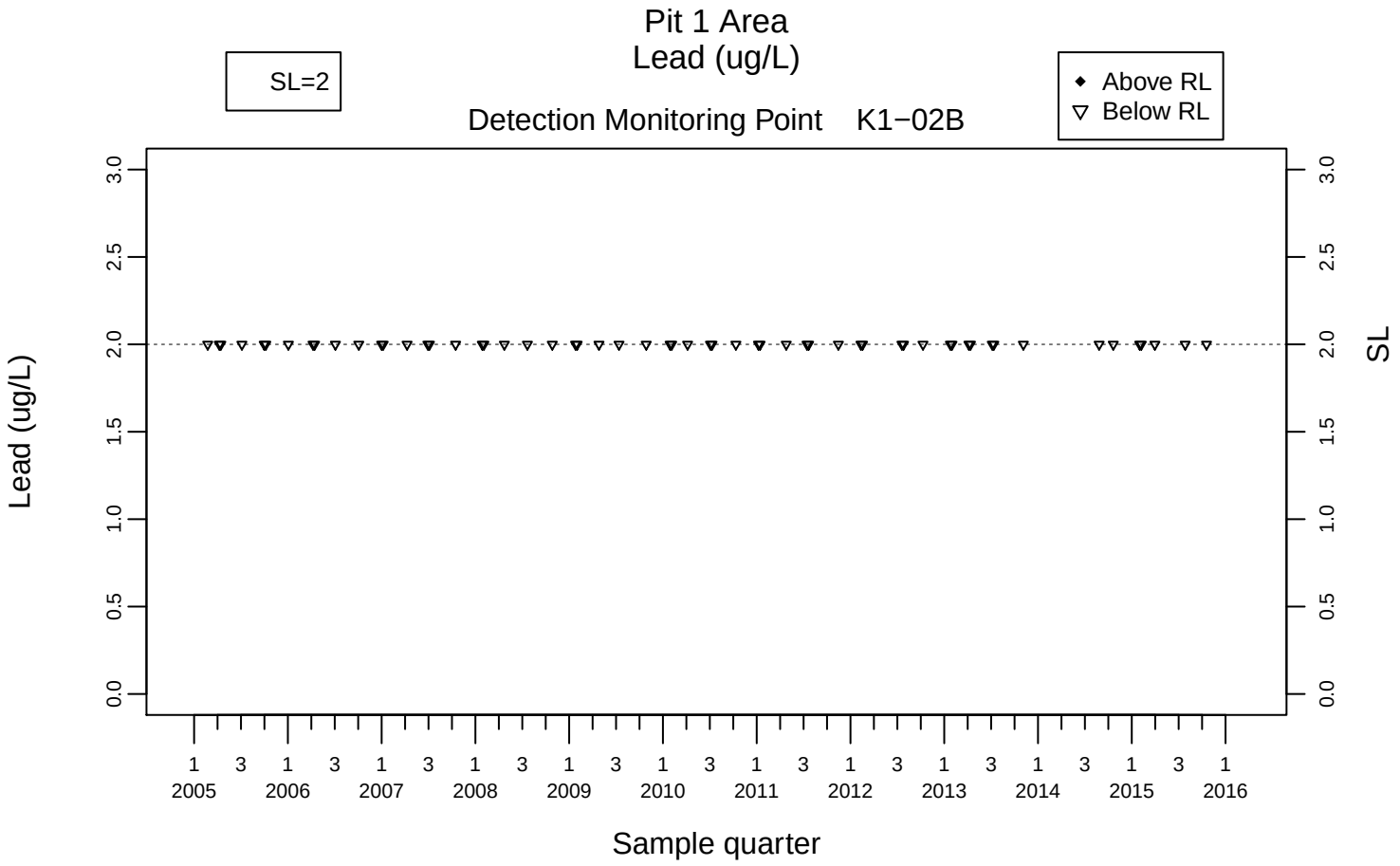

SL=10
Crossgradient Monitoring Point K1−08
Copper (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

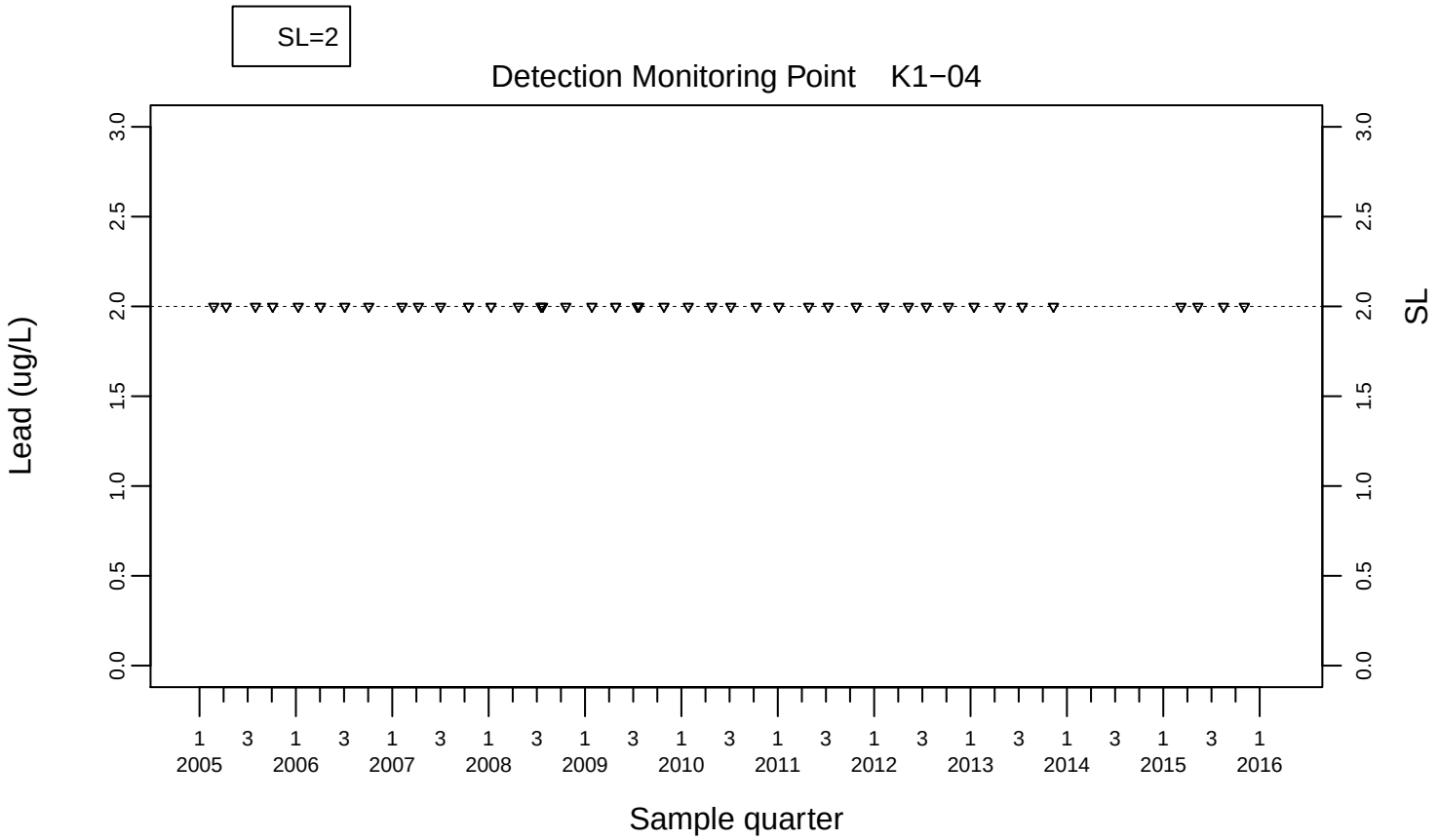

Pit 1 Area
Copper (ug/L)
SL=10
Above RL
Below RL
Crossgradient Monitoring Point K1−09
Copper (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

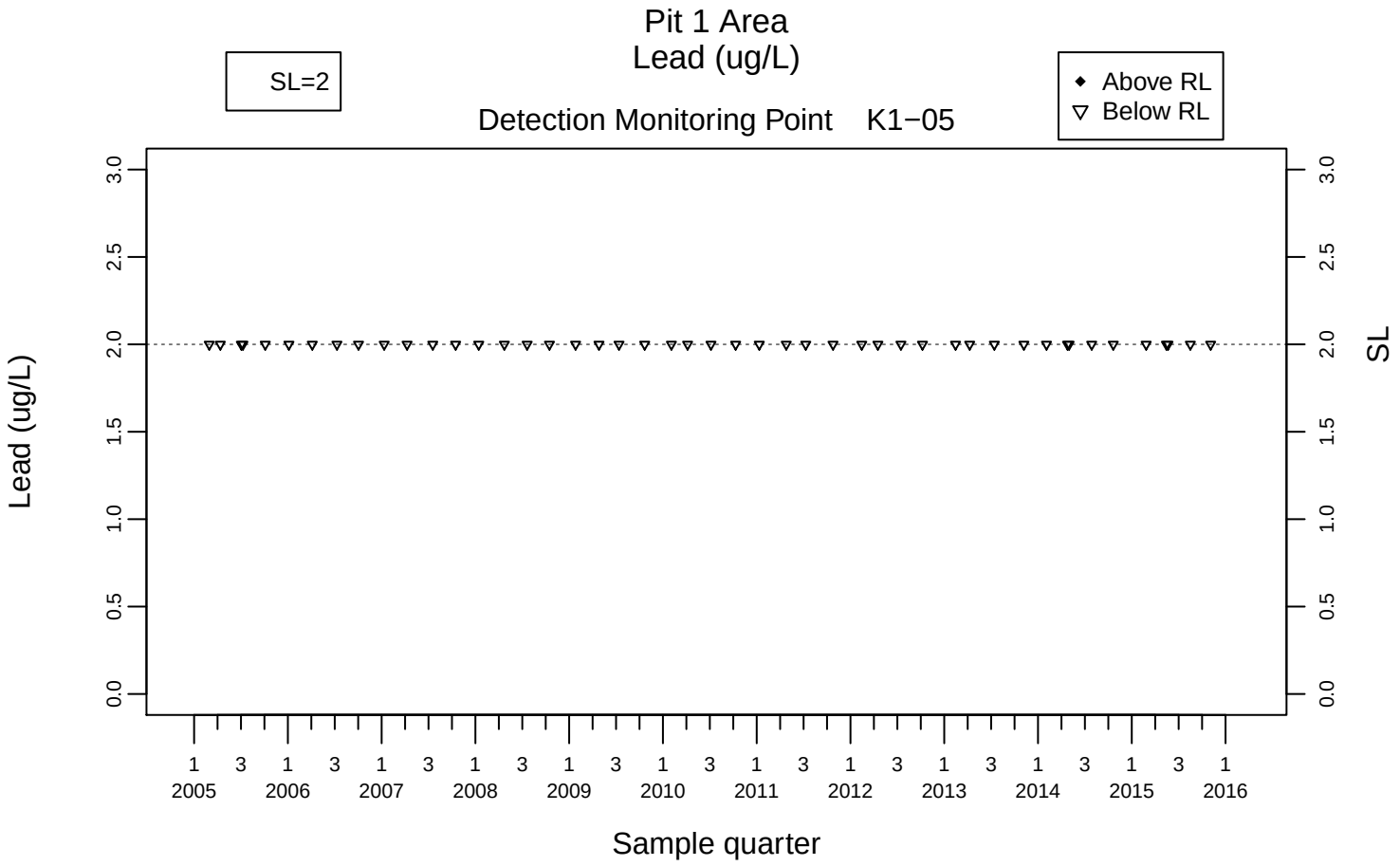

SL=10
Detection Monitoring Point W−PIT1−2326
Copper (ug/L)
SL
0
10
20
30
40
50
60
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

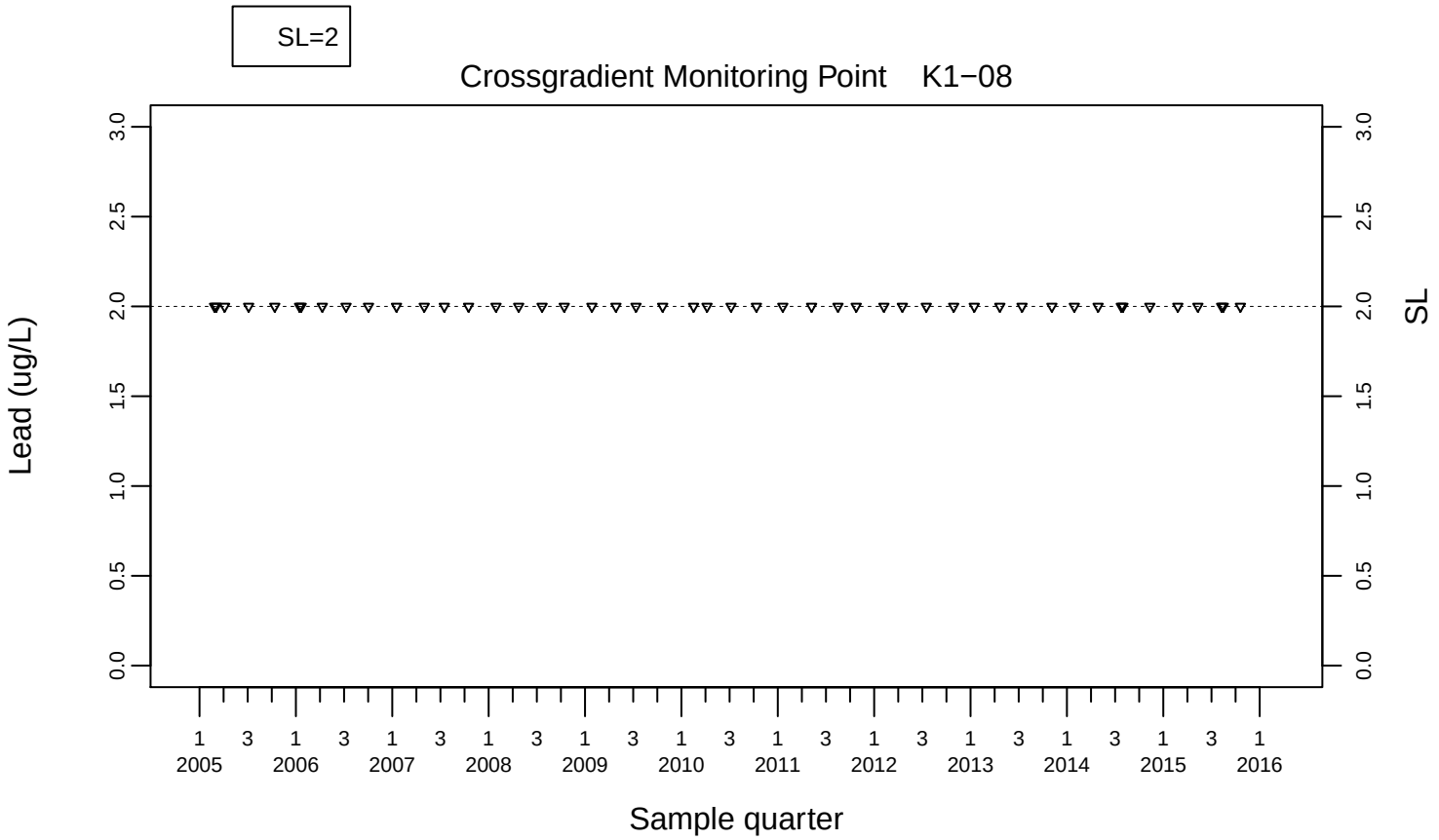

Pit 1 Area
Lead (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Lead (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

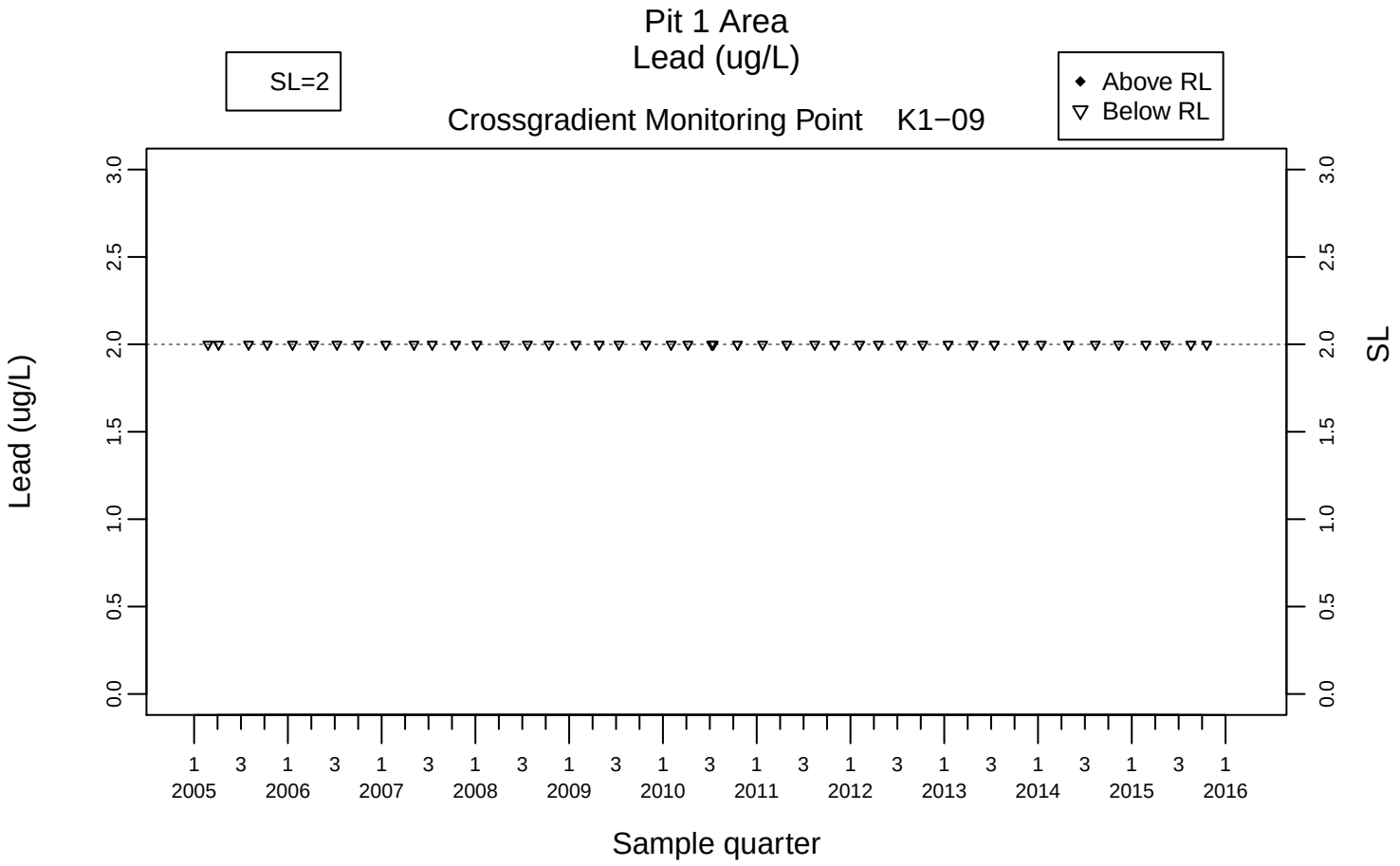

Background Monitoring Point K1−07
Lead (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

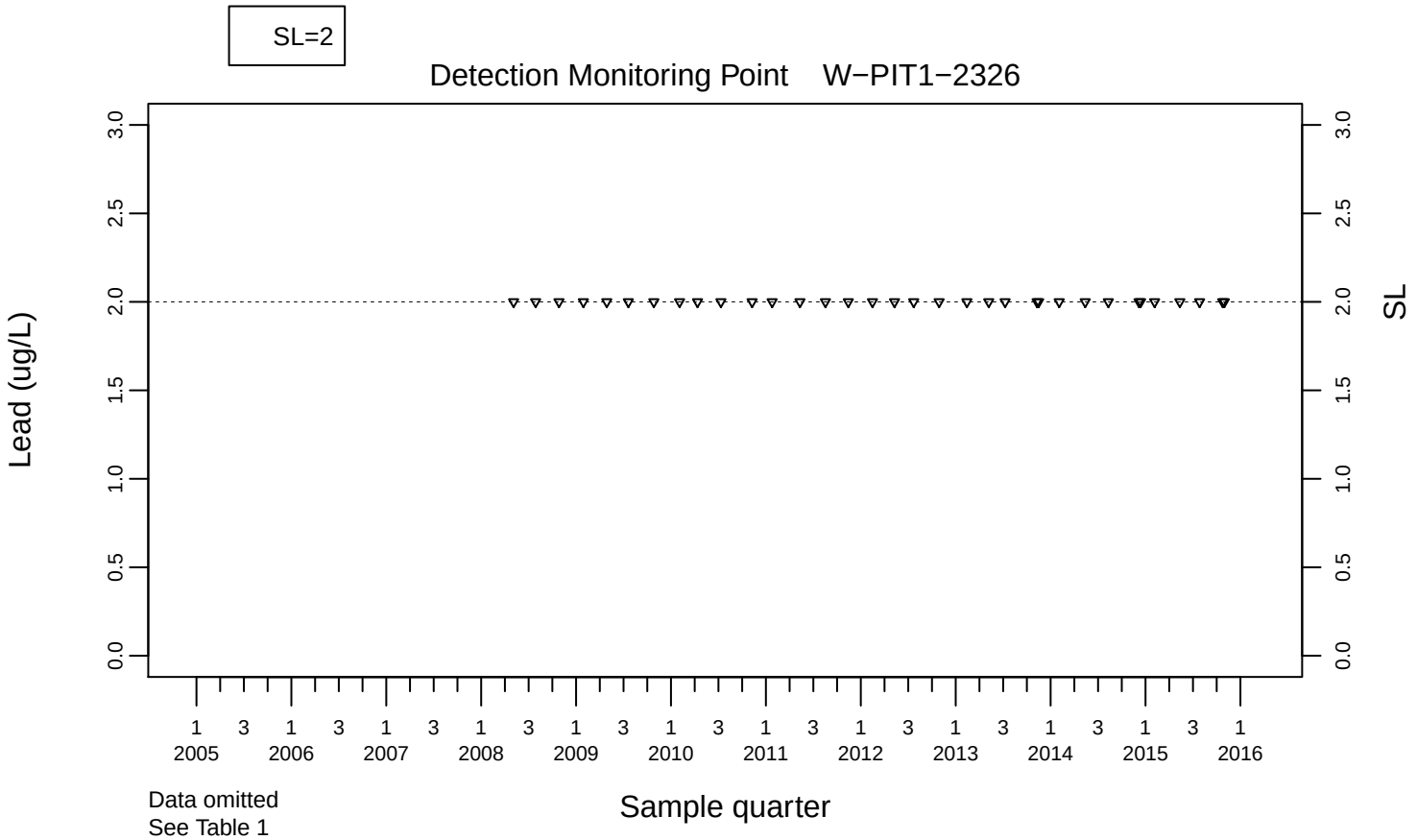

Pit 1 Area
Lead (ug/L)
SL=2
Above RL
Below RL
Detection Monitoring Point K1−02B
Lead (ug/L)
SL
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter


SL=2
Detection Monitoring Point K1−04
Lead (ug/L)
SL
0.0
0.5
1.0
1.5
2.0
2.5
3.0
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
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

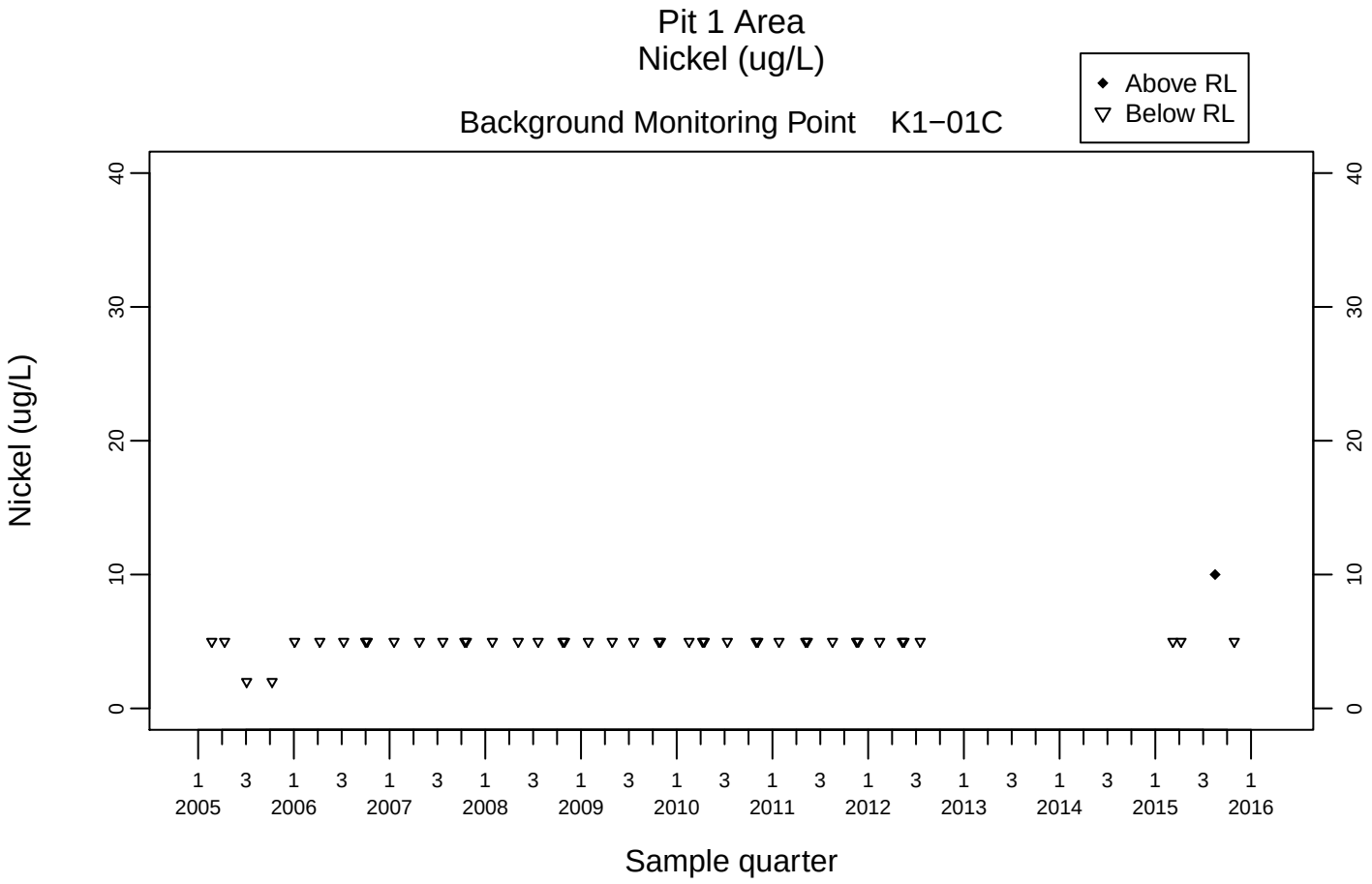

Pit 1 Area
Lead (ug/L)
SL=2
Above RL
Below RL
Detection Monitoring Point K1−05
Lead (ug/L)
SL
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

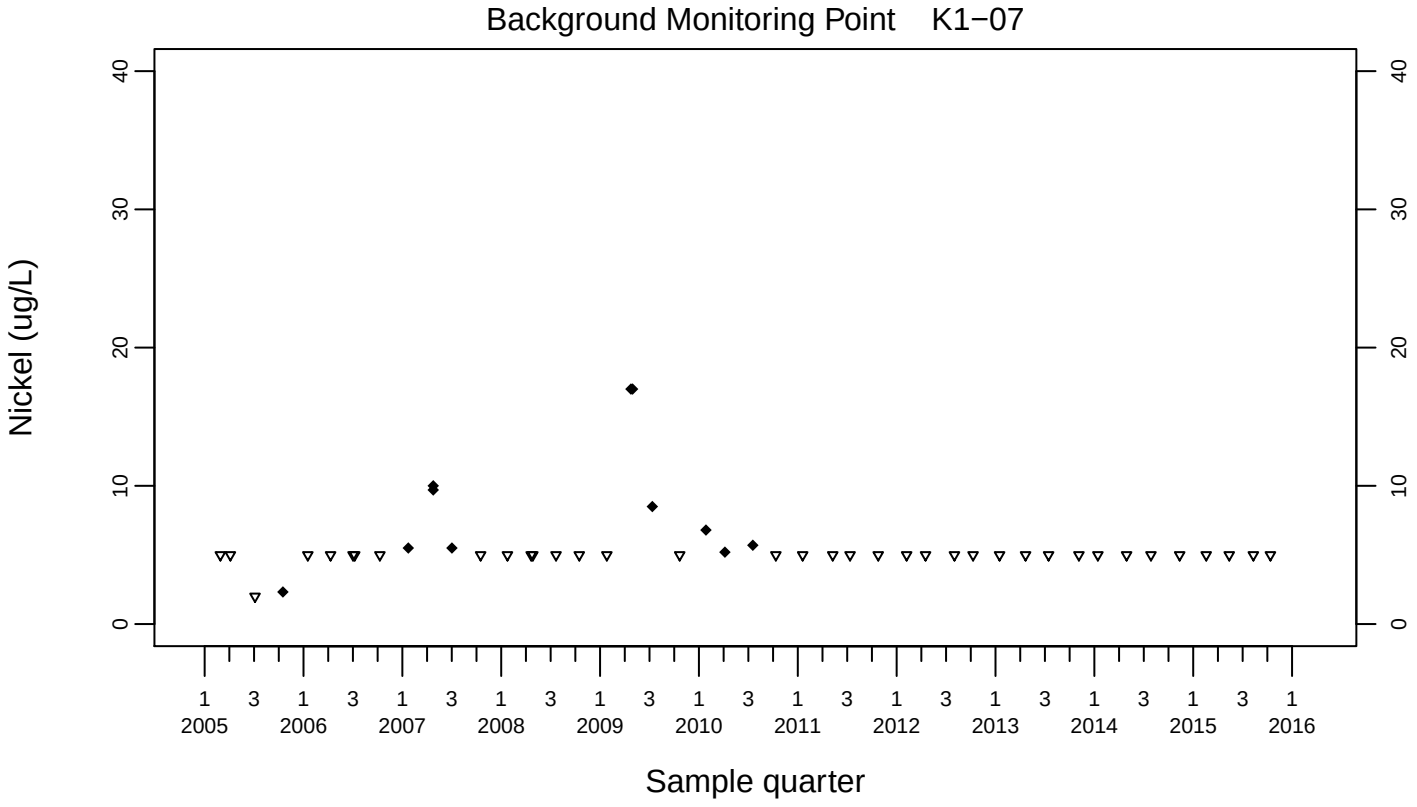

SL=2
Crossgradient Monitoring Point K1−08
Lead (ug/L)
SL
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

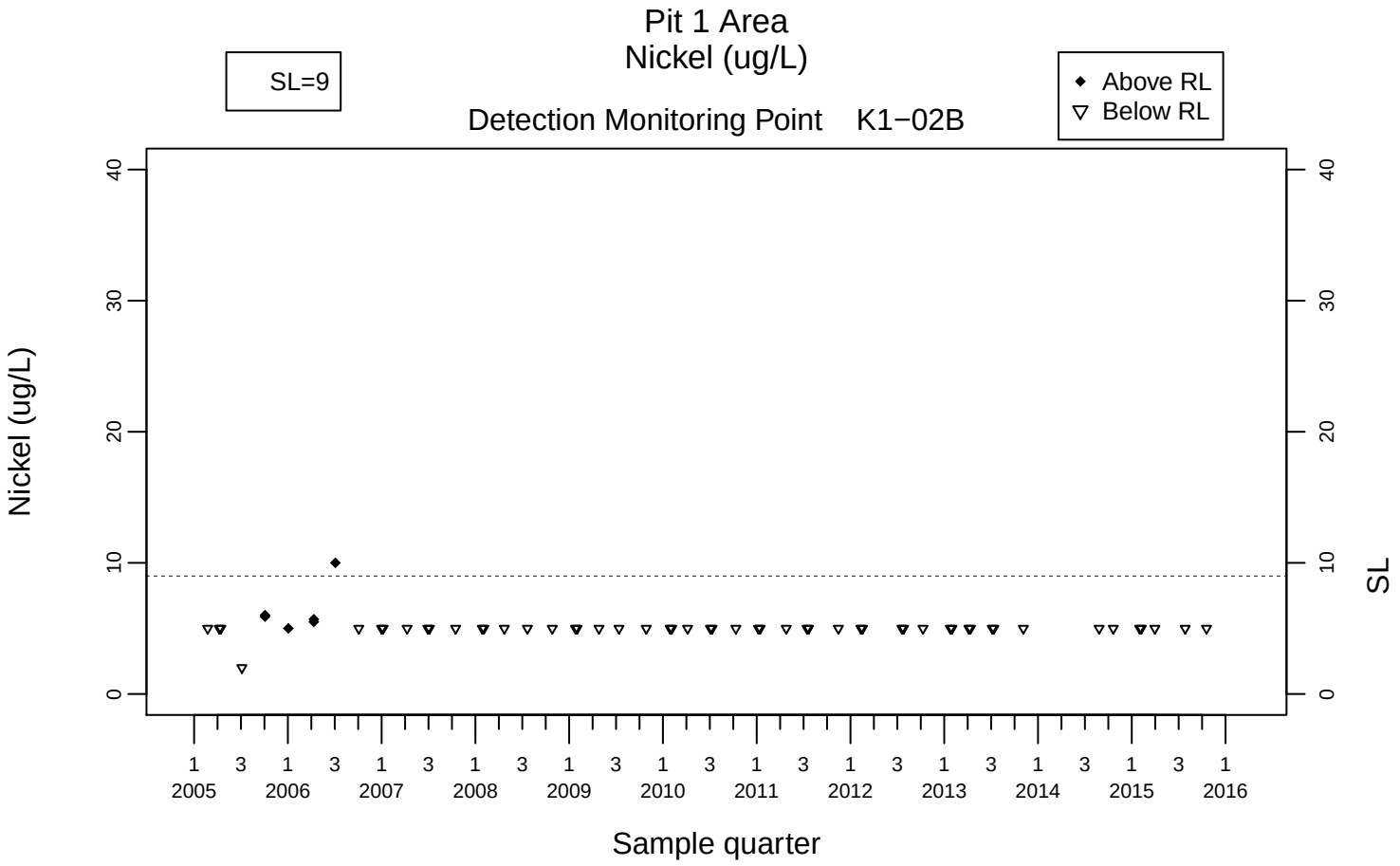


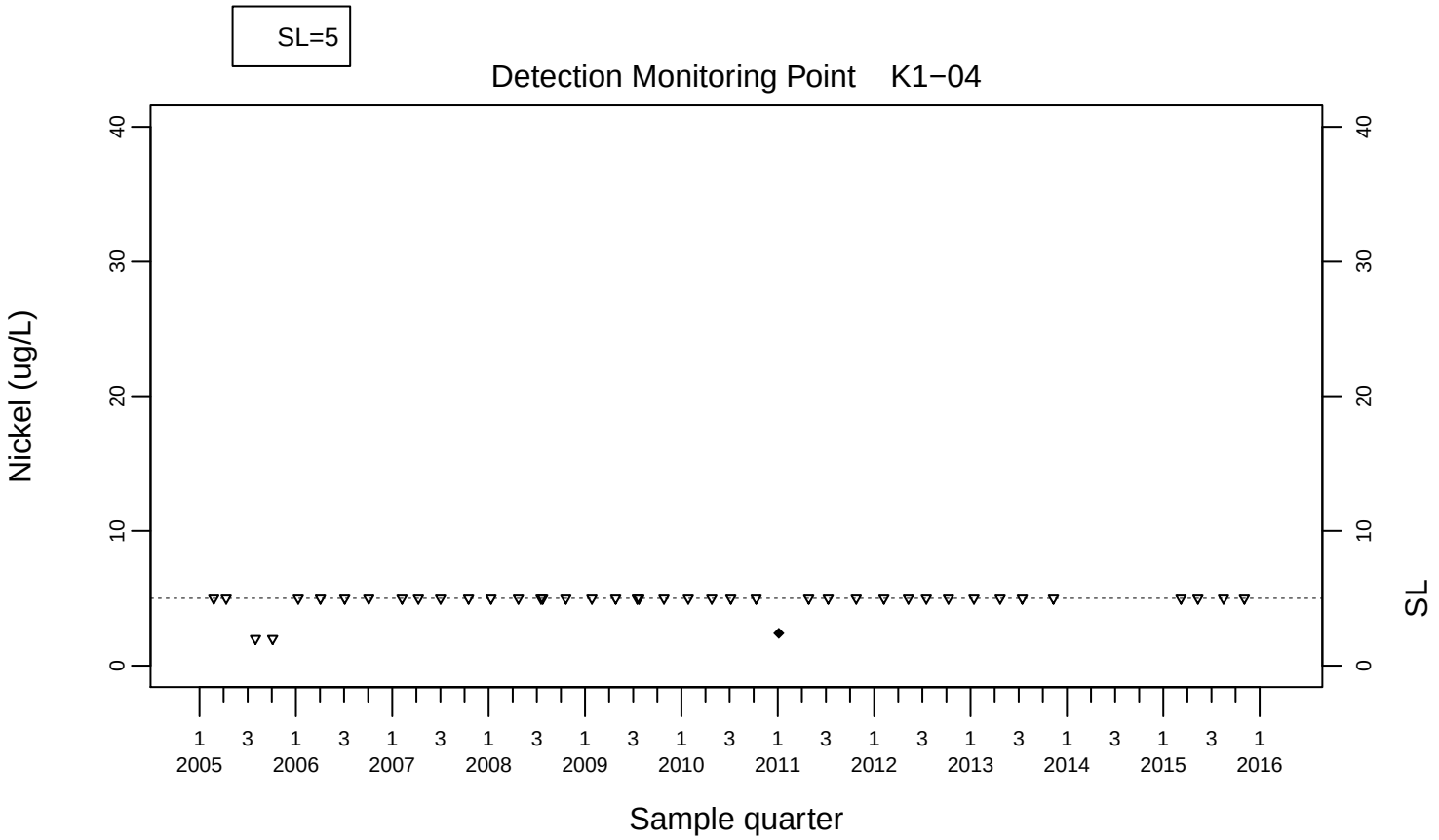


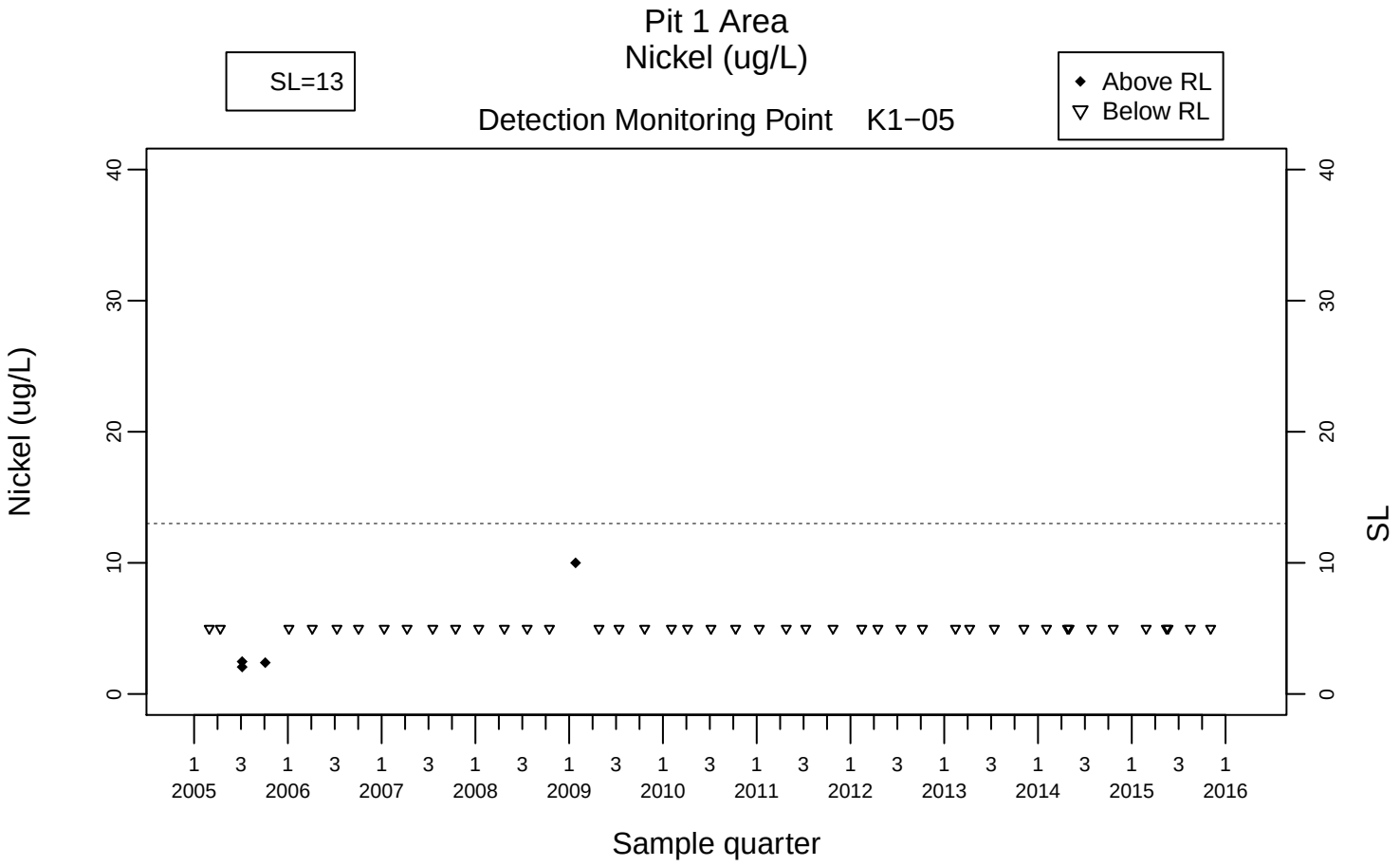
Data omitted
See Table 1

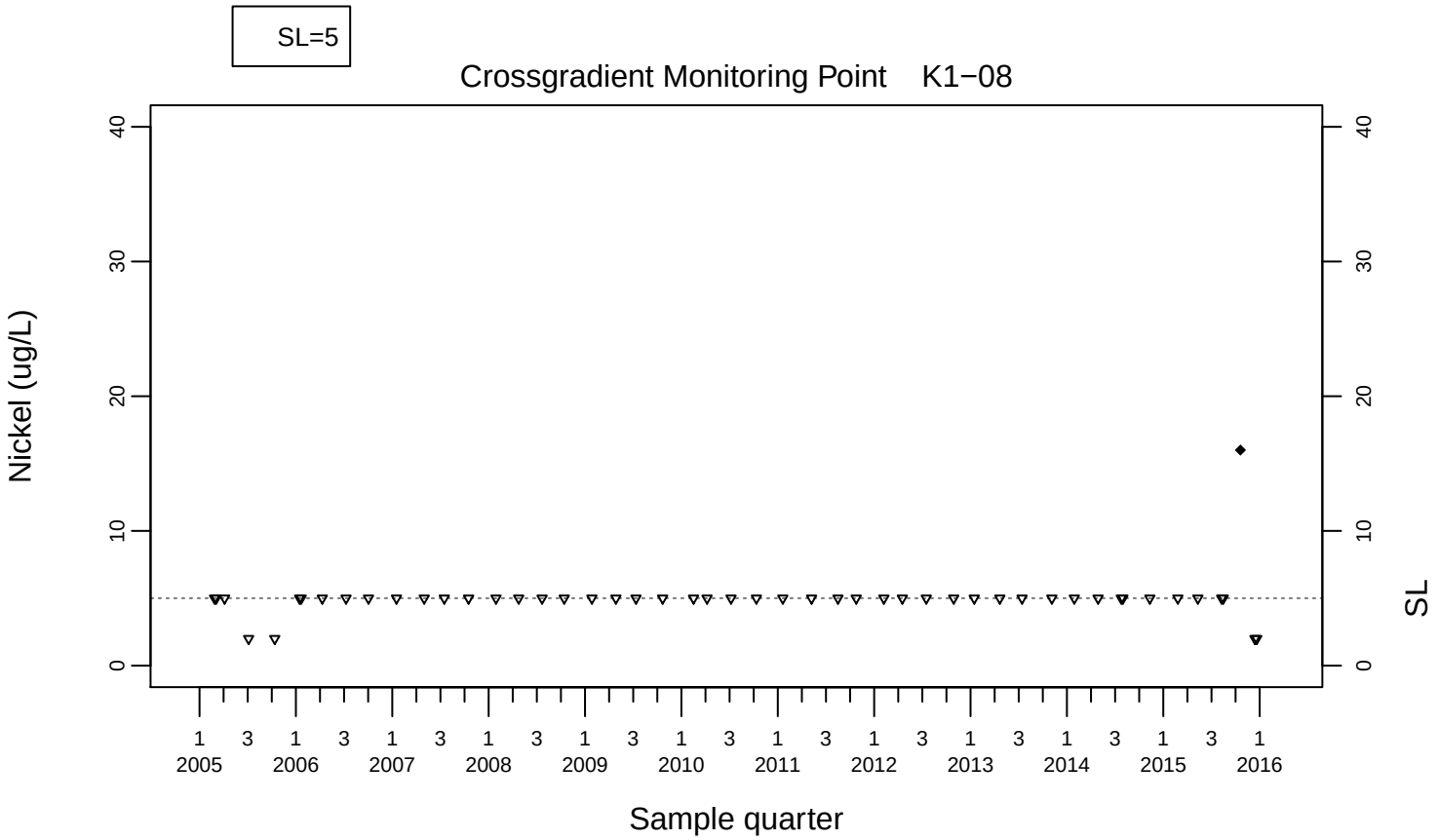

Pit 1 Area
Nickel (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Nickel (ug/L)
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

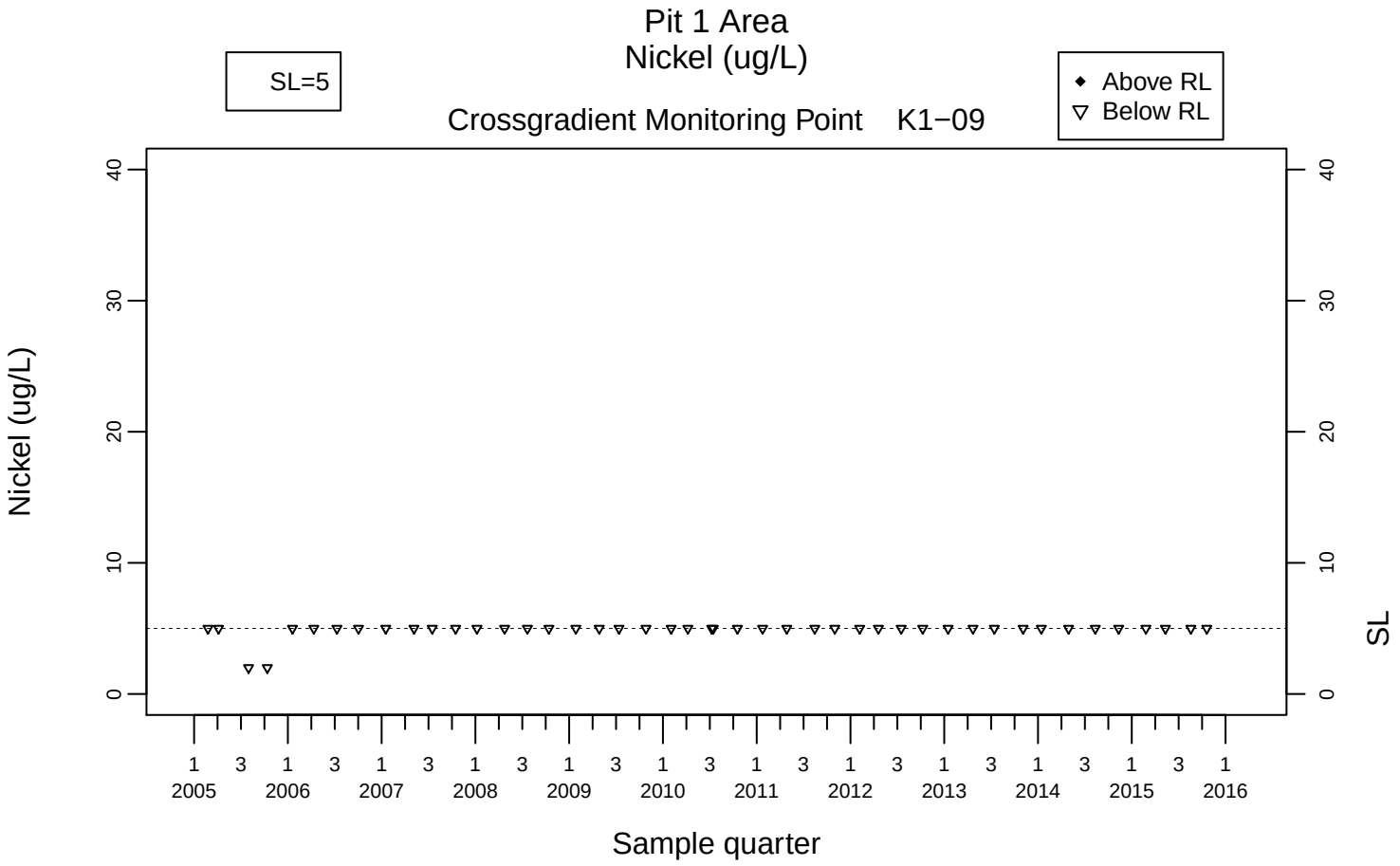

Background Monitoring Point K1−07
Nickel (ug/L)
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

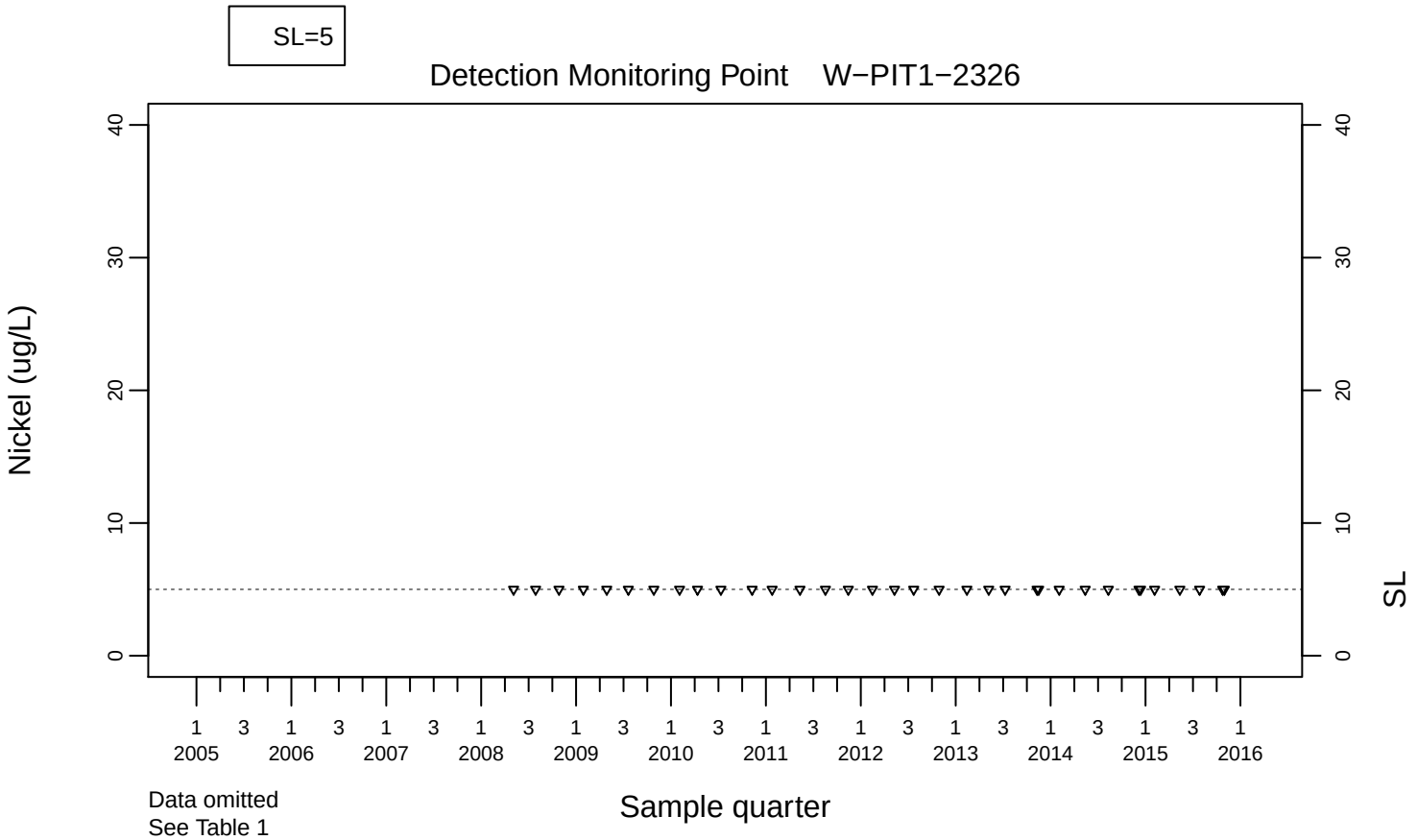

Pit 1 Area
Nickel (ug/L)
SL=9
Above RL
Below RL
Detection Monitoring Point K1−02B
Nickel (ug/L)
SL
Sample quarter
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016


SL=5
Detection Monitoring Point K1−04
Nickel (ug/L)
SL
Sample quarter
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
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

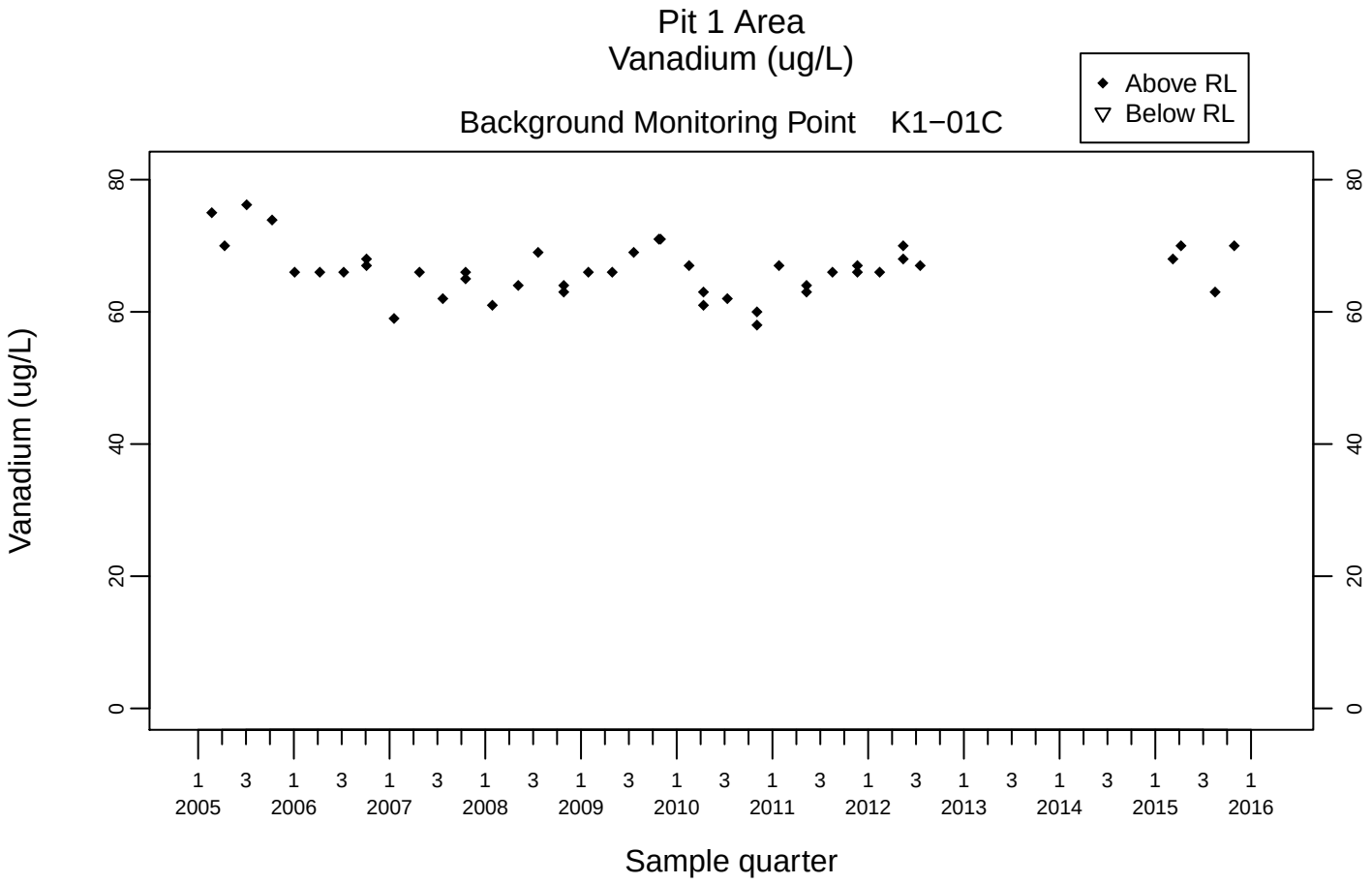

Pit 1 Area
Nickel (ug/L)
SL=13
Above RL
Below RL
Detection Monitoring Point K1−05
Nickel (ug/L)
SL
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

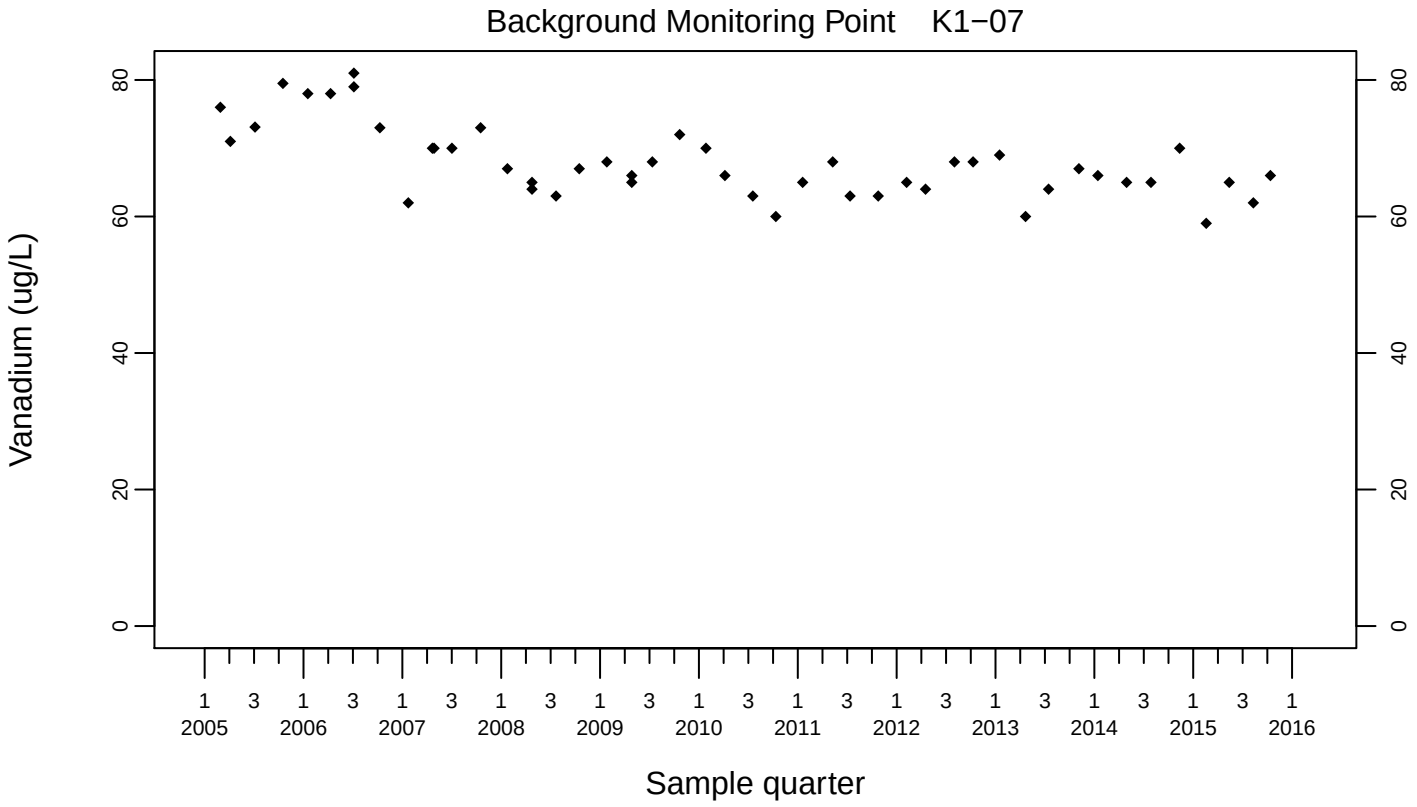

SL=5
Crossgradient Monitoring Point K1−08
Nickel (ug/L)
SL
0
10
20
30
40
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

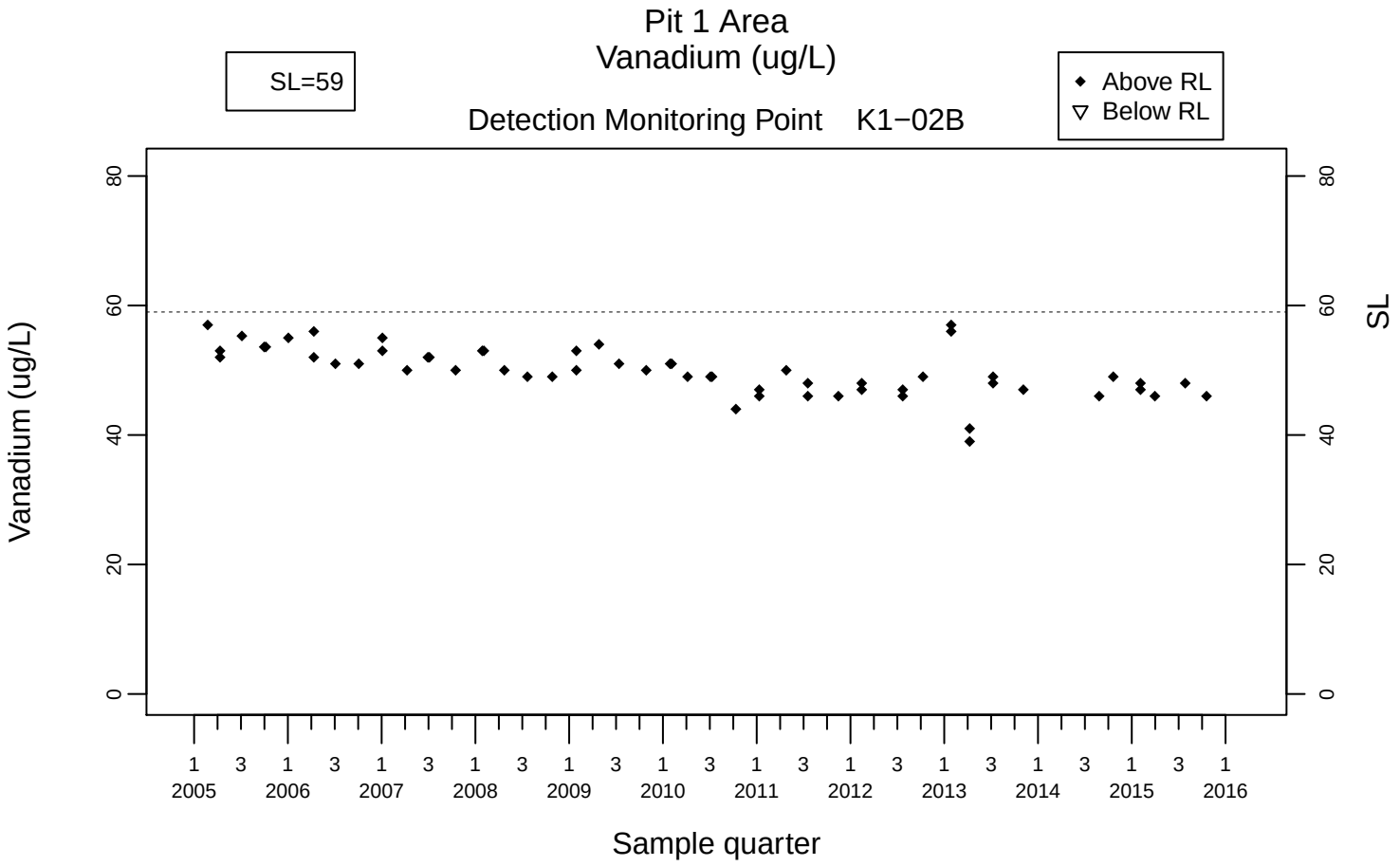


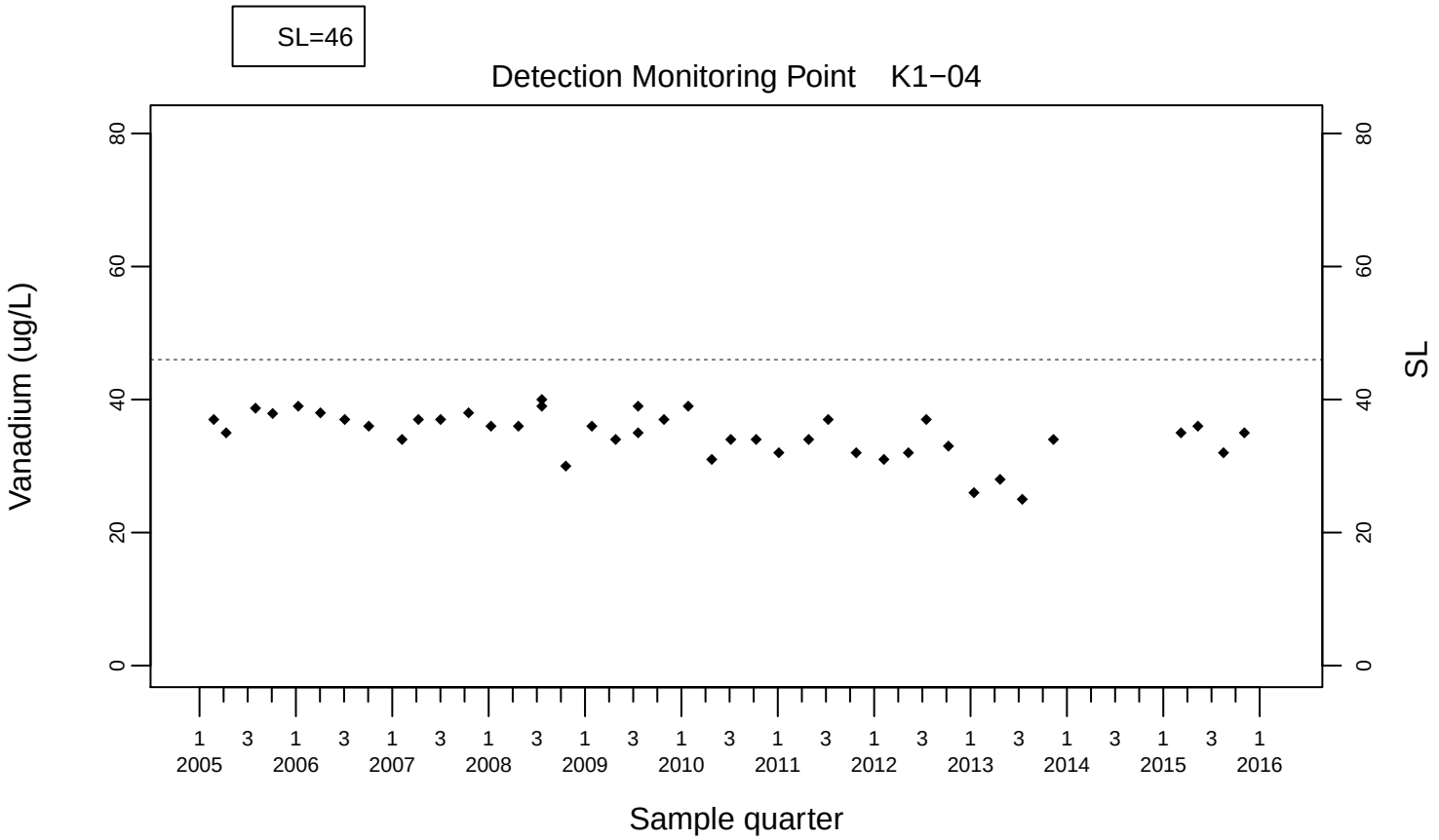


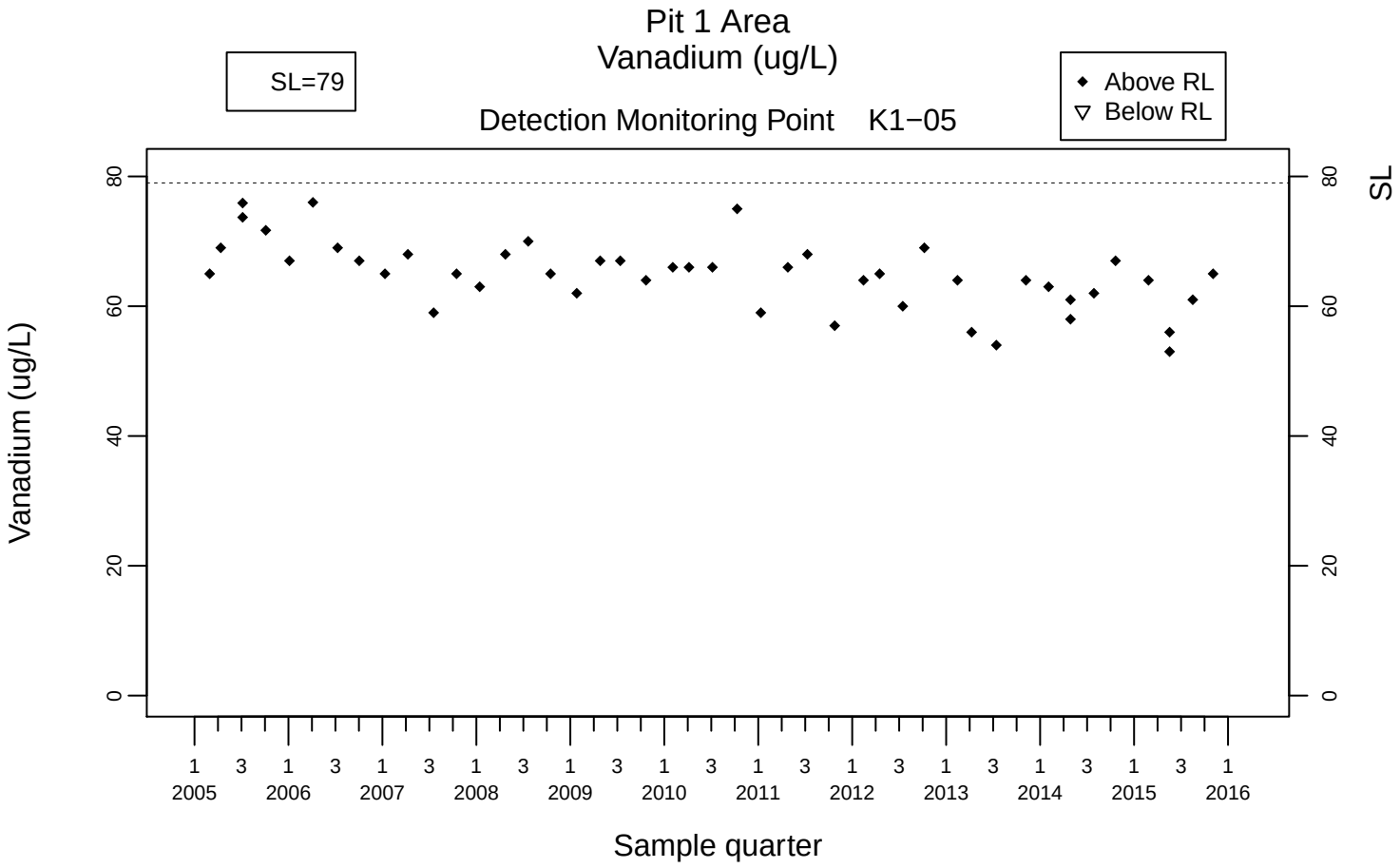
Data omitted
See Table 1

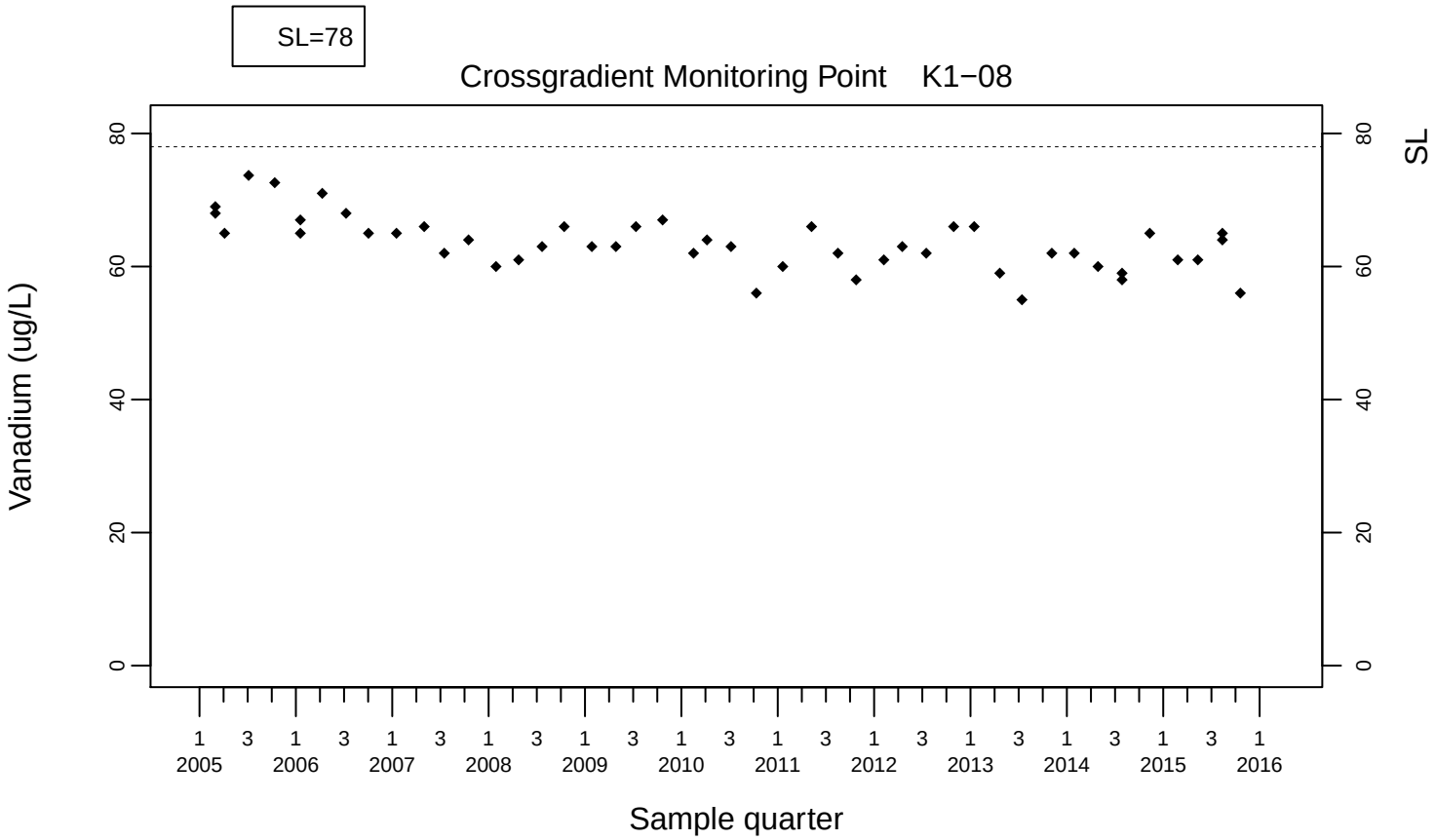

Pit 1 Area
Vanadium (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Vanadium (ug/L)
0
20
40
60
80
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

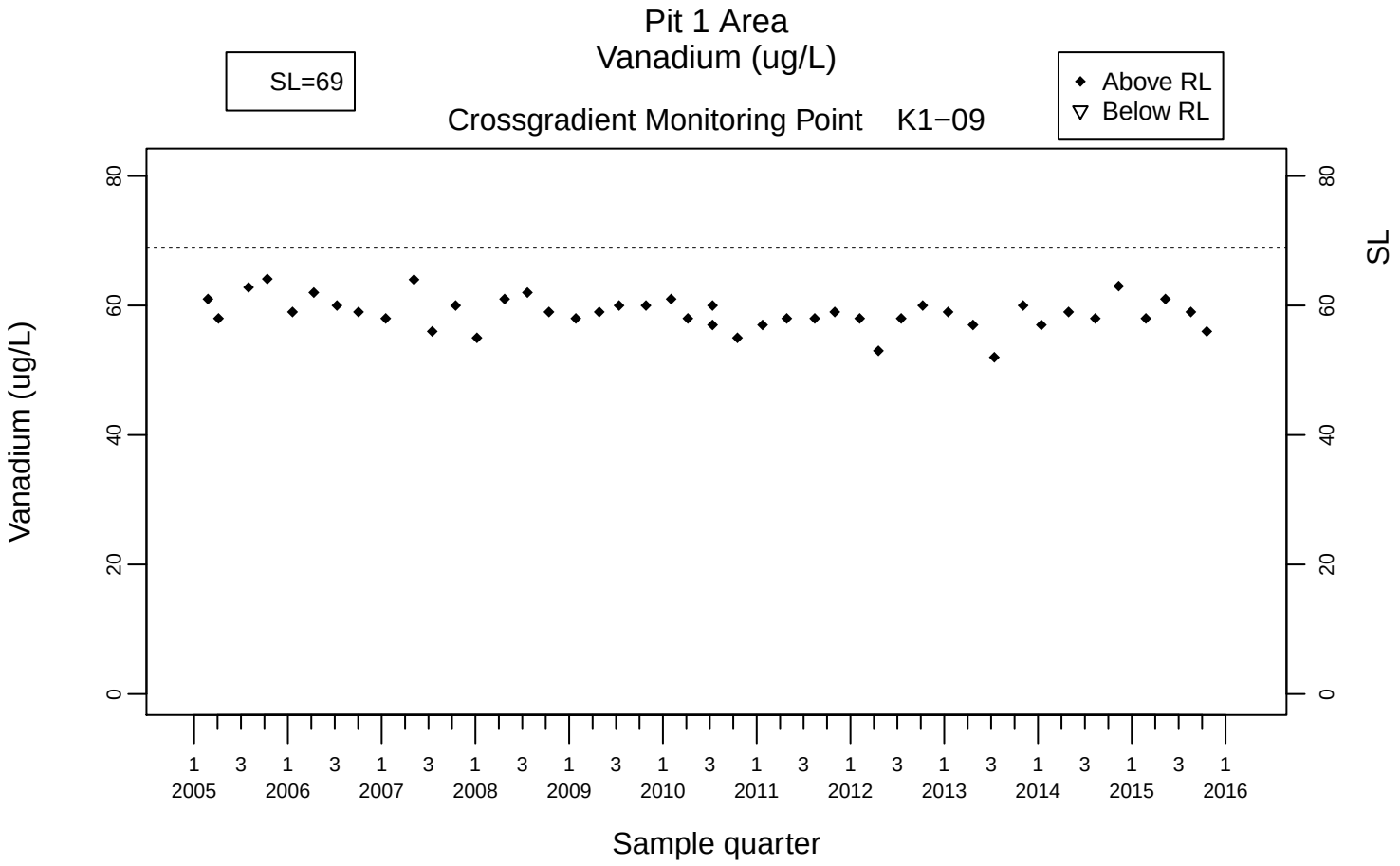

Background Monitoring Point K1−07
Vanadium (ug/L)
0
20
40
60
80
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

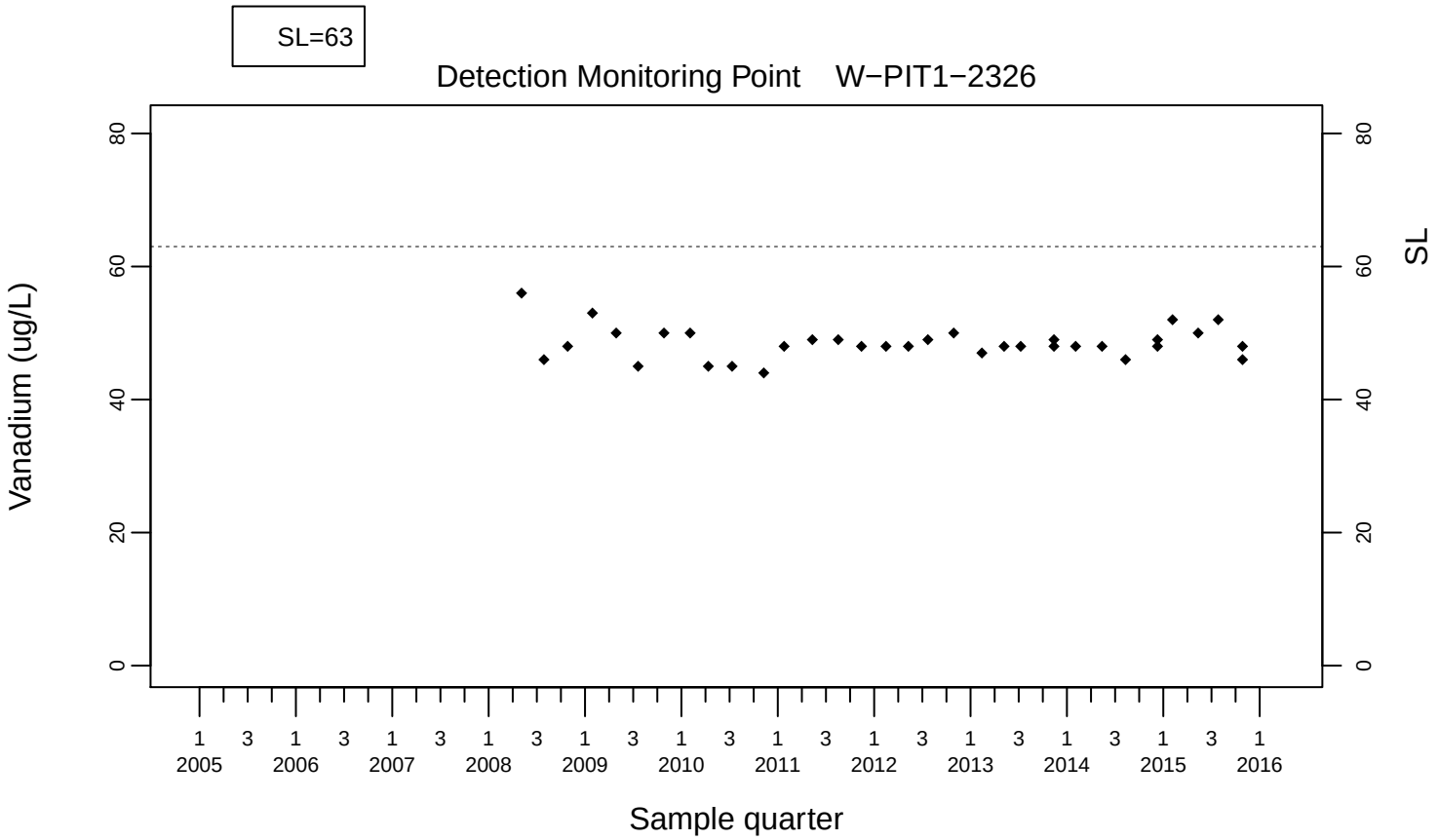

Pit 1 Area
Vanadium (ug/L)
SL=59
Above RL
Below RL
Detection Monitoring Point K1−02B
Vanadium (ug/L)
SL
0
20
40
60
80
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

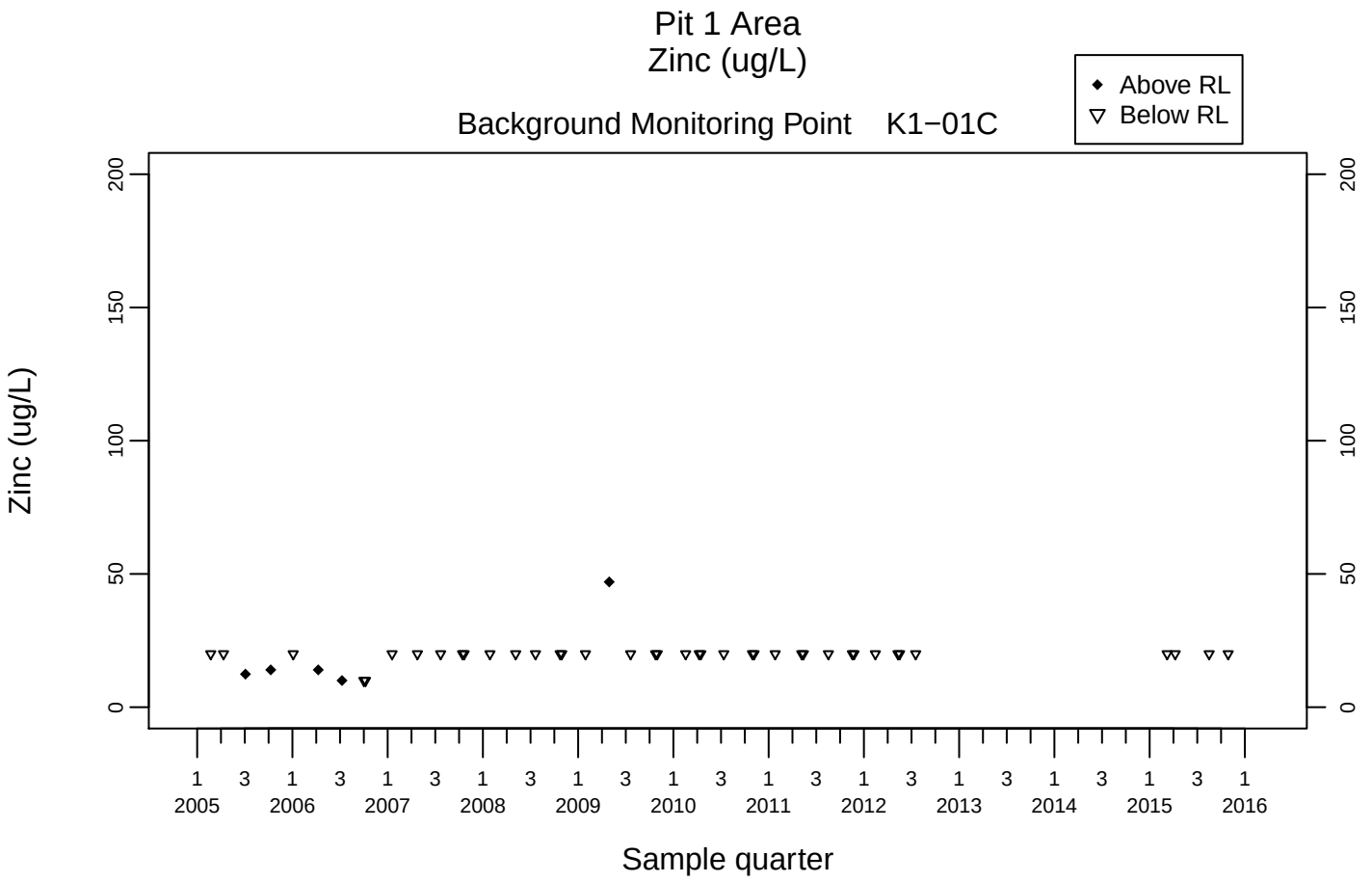

SL=46
Detection Monitoring Point K1−04
Vanadium (ug/L)
SL
0
20
40
60
80
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

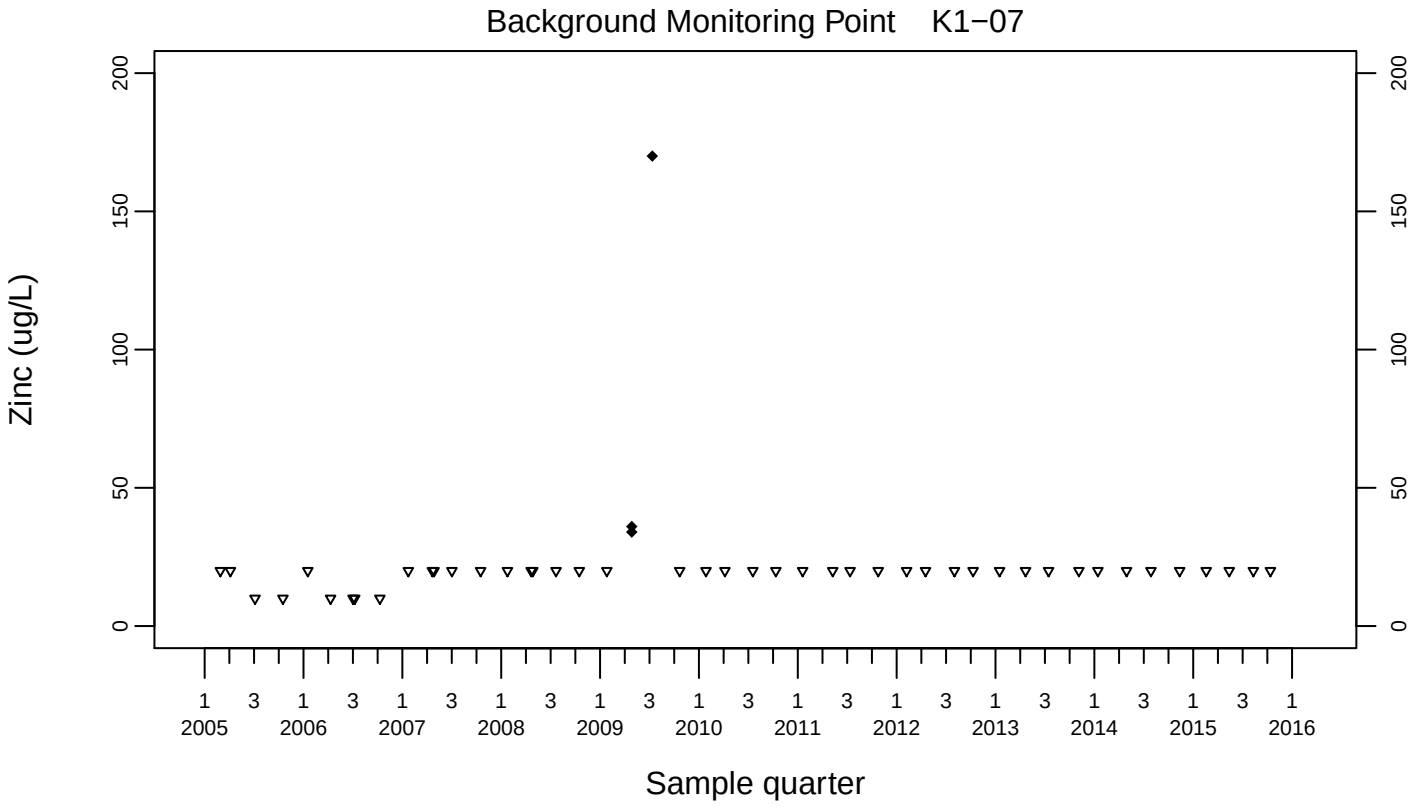

Pit 1 Area
Vanadium (ug/L)
SL=79
Above RL
Below RL
Detection Monitoring Point K1−05
Vanadium (ug/L)
SL
0
20
40
60
80
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

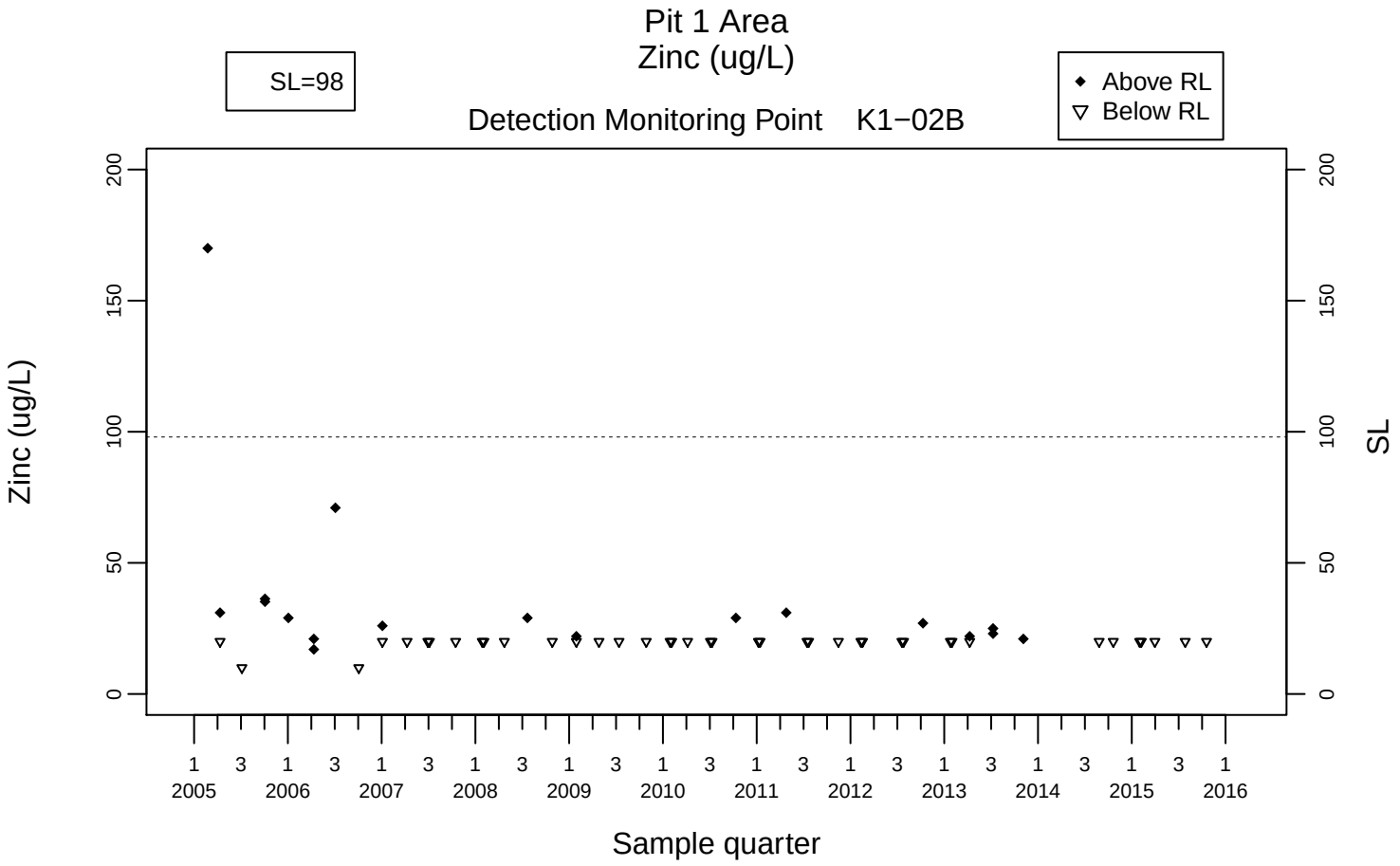

SL=78
Crossgradient Monitoring Point K1−08
Vanadium (ug/L)
SL
0
20
40
60
80
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

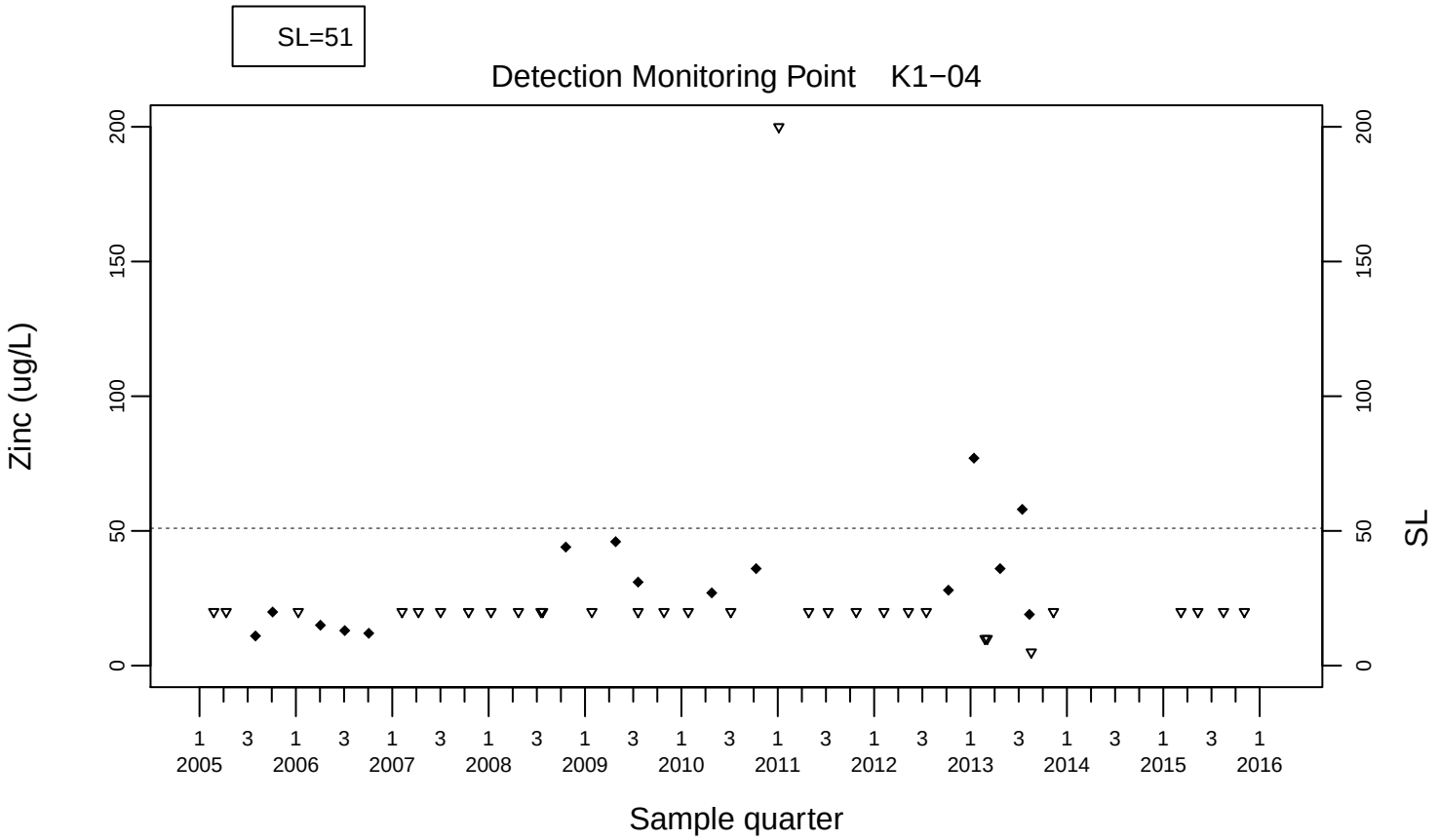

Pit 1 Area
Vanadium (ug/L)
SL=69
Above RL
Below RL
Crossgradient Monitoring Point K1−09
Vanadium (ug/L)
SL
0
20
40
60
80
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

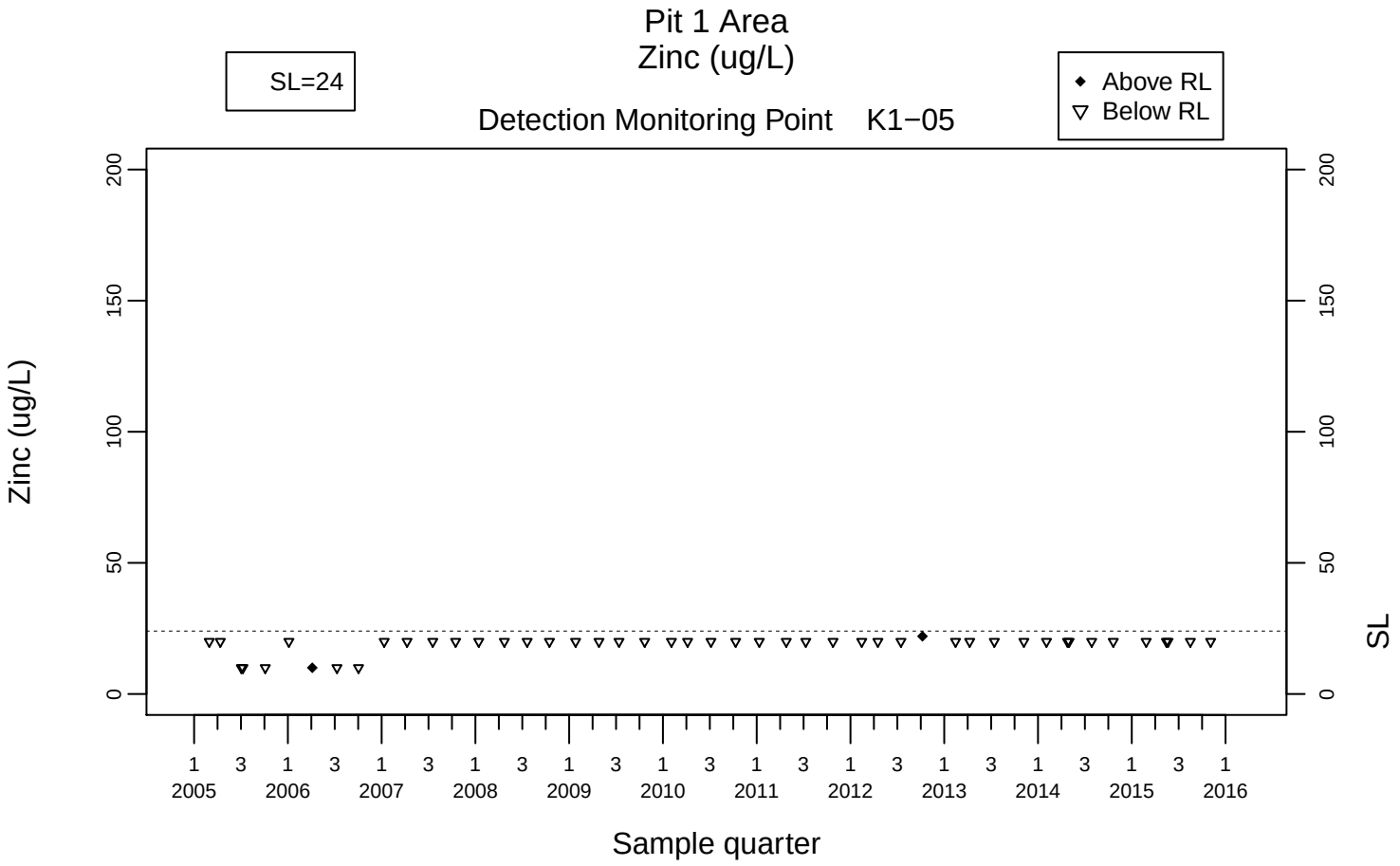

SL=63
Detection Monitoring Point W−PIT1−2326
Vanadium (ug/L)
SL
0
20
40
60
80
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

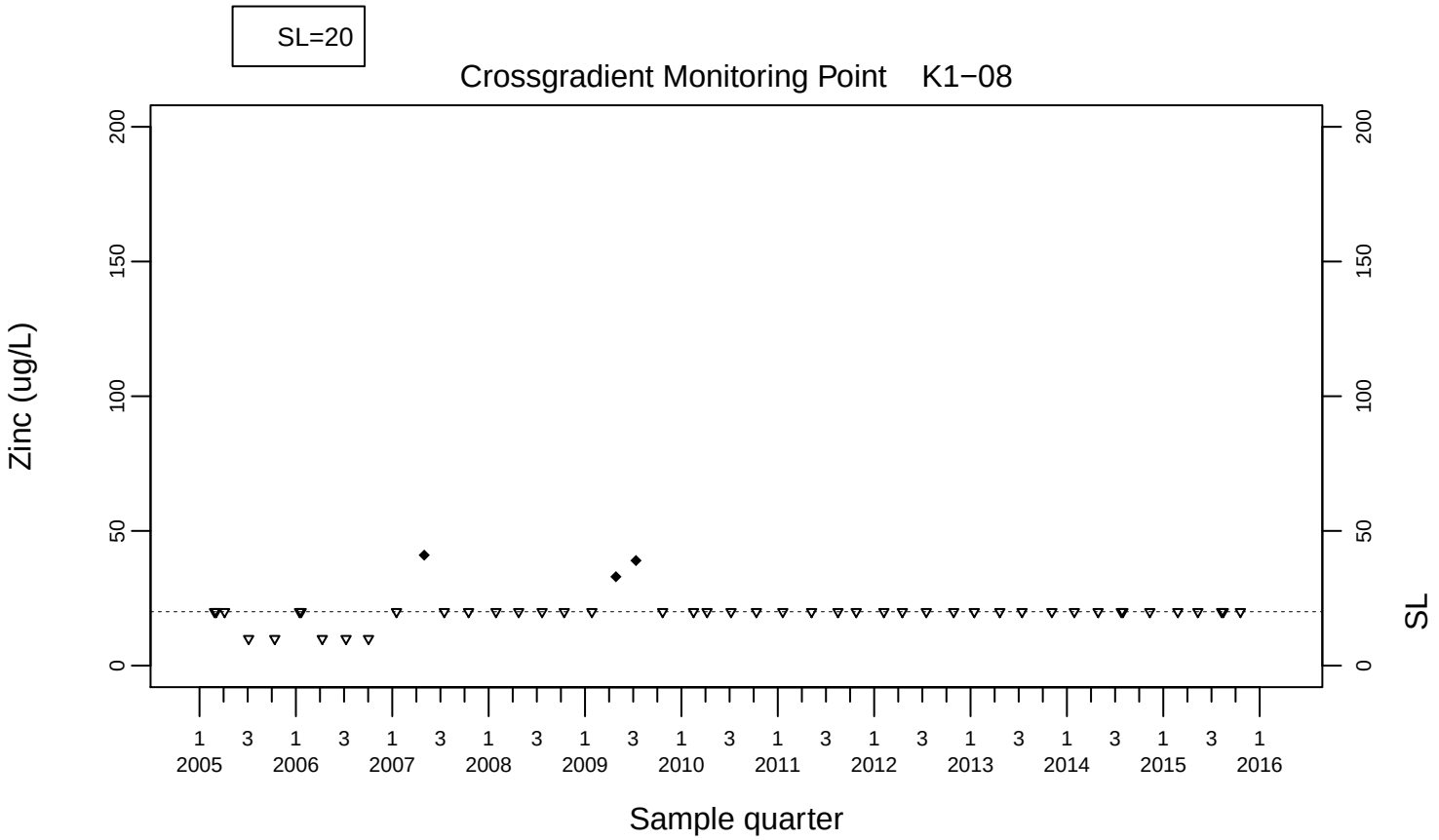

Pit 1 Area
Zinc (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Zinc (ug/L)
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

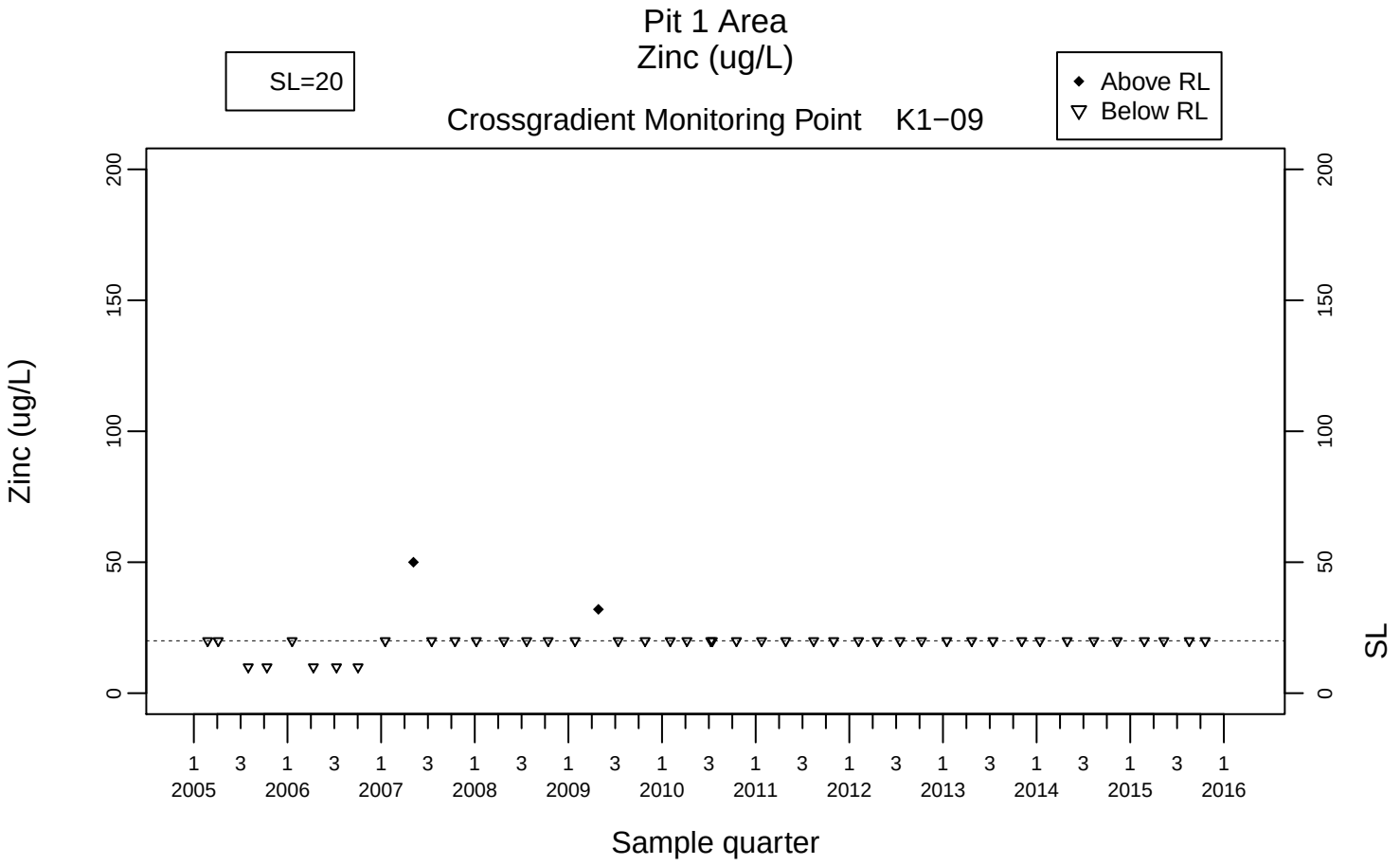

Background Monitoring Point K1−07
Zinc (ug/L)
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

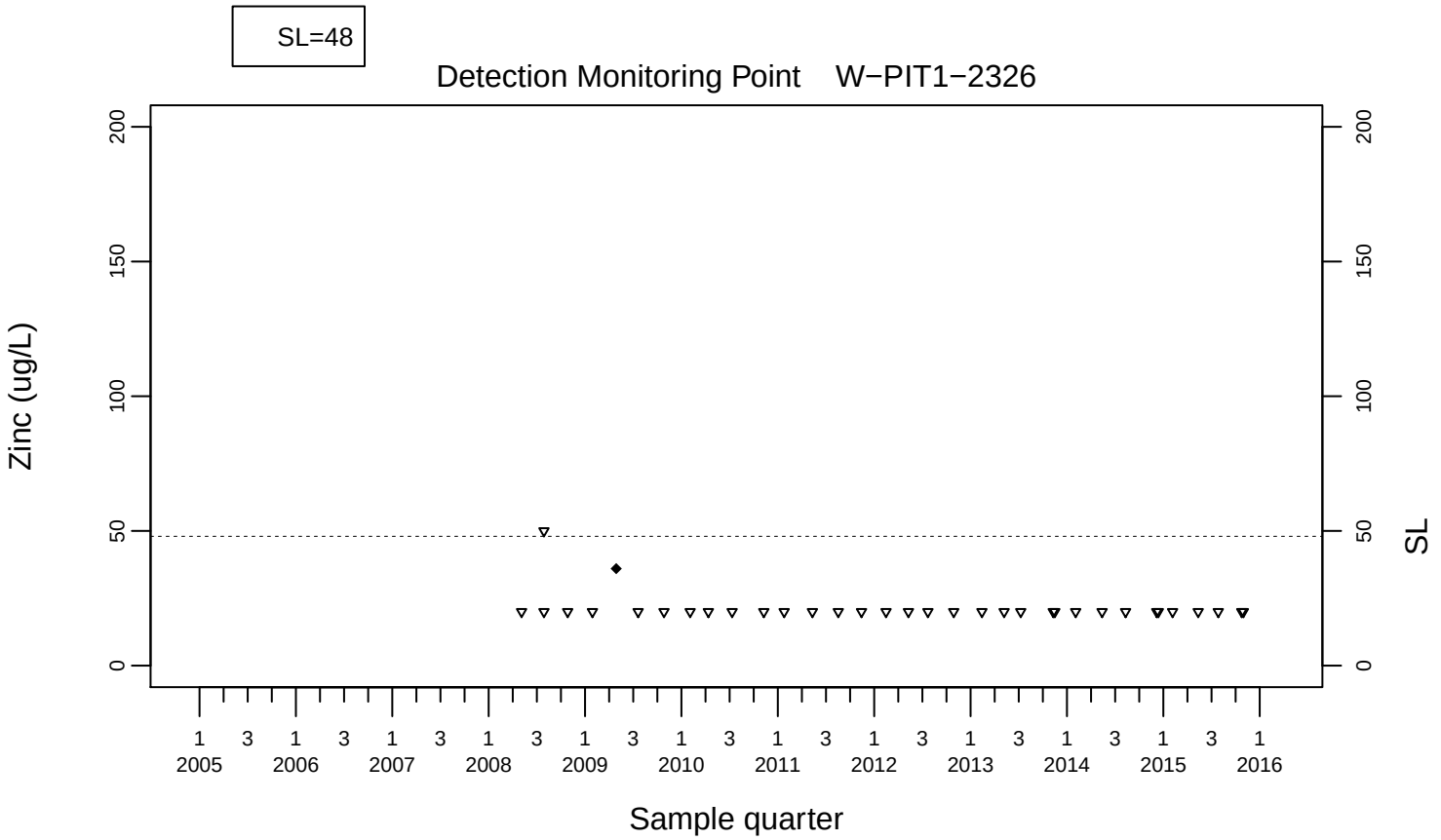

Pit 1 Area
Zinc (ug/L)
SL=98
Above RL
Below RL
Detection Monitoring Point K1−02B
Zinc (ug/L)
SL
Sample quarter
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

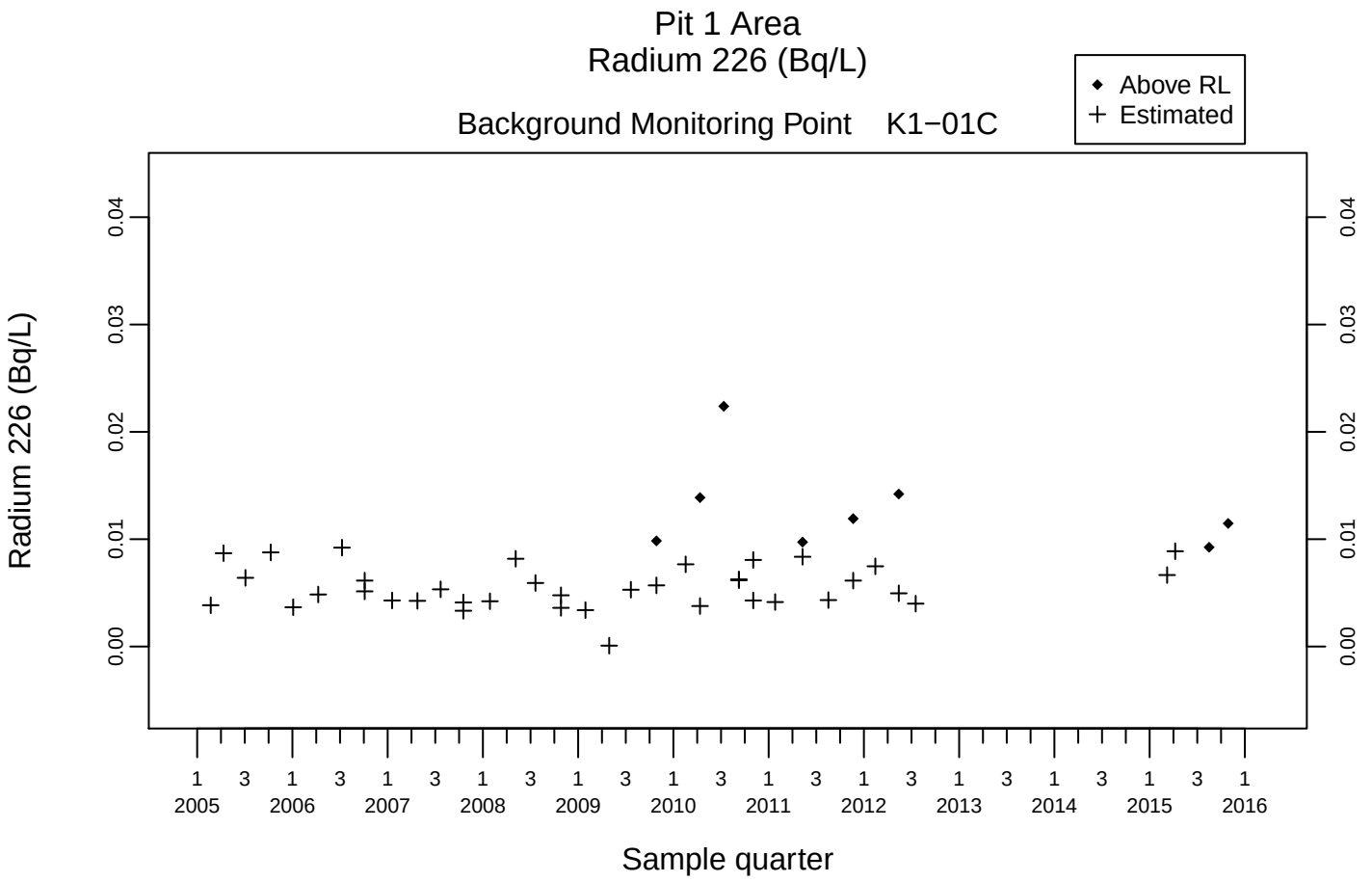

SL=51
Detection Monitoring Point K1−04
Zinc (ug/L)
SL
Sample quarter
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

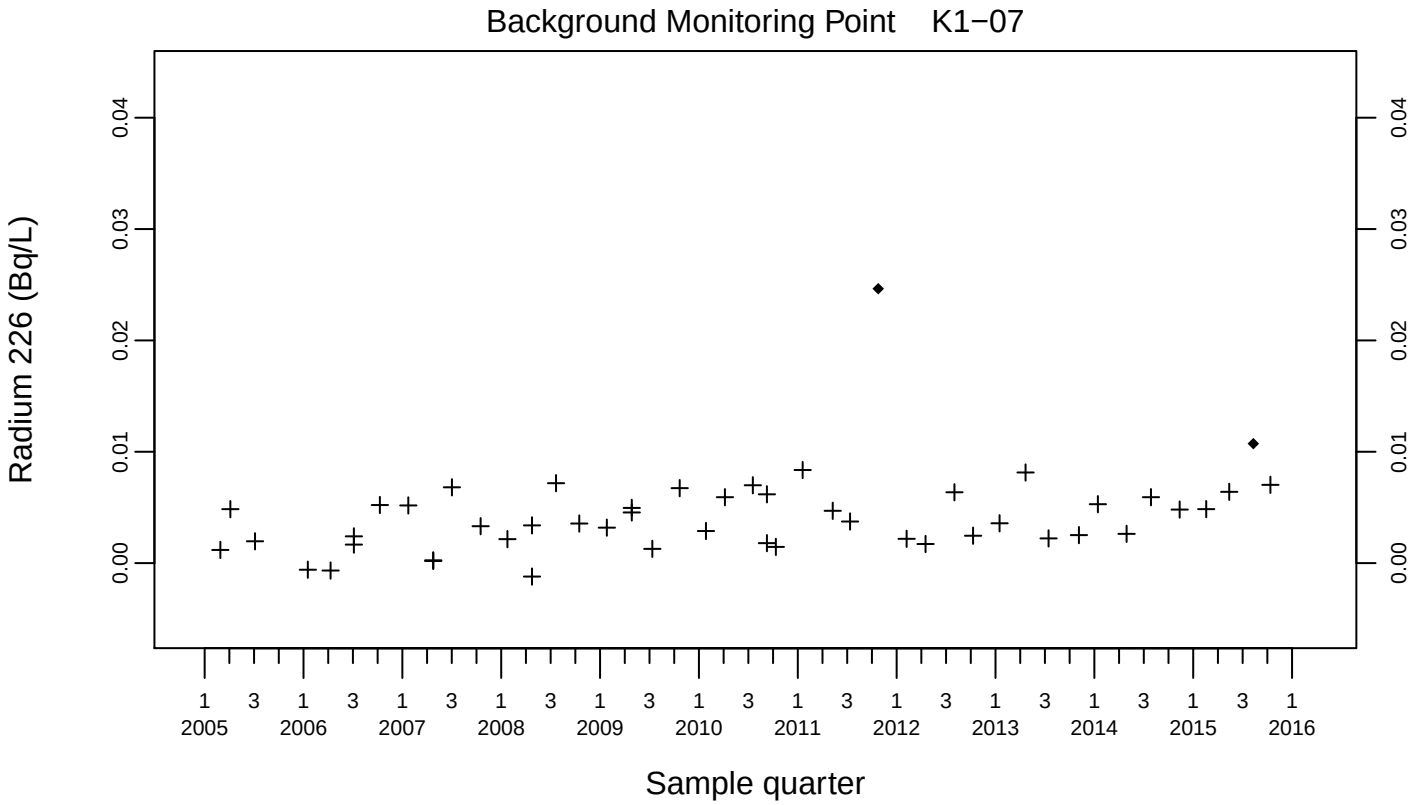

Pit 1 Area
Zinc (ug/L)
SL=24
Above RL
Below RL
Detection Monitoring Point K1−05
Zinc (ug/L)
SL
Sample quarter
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

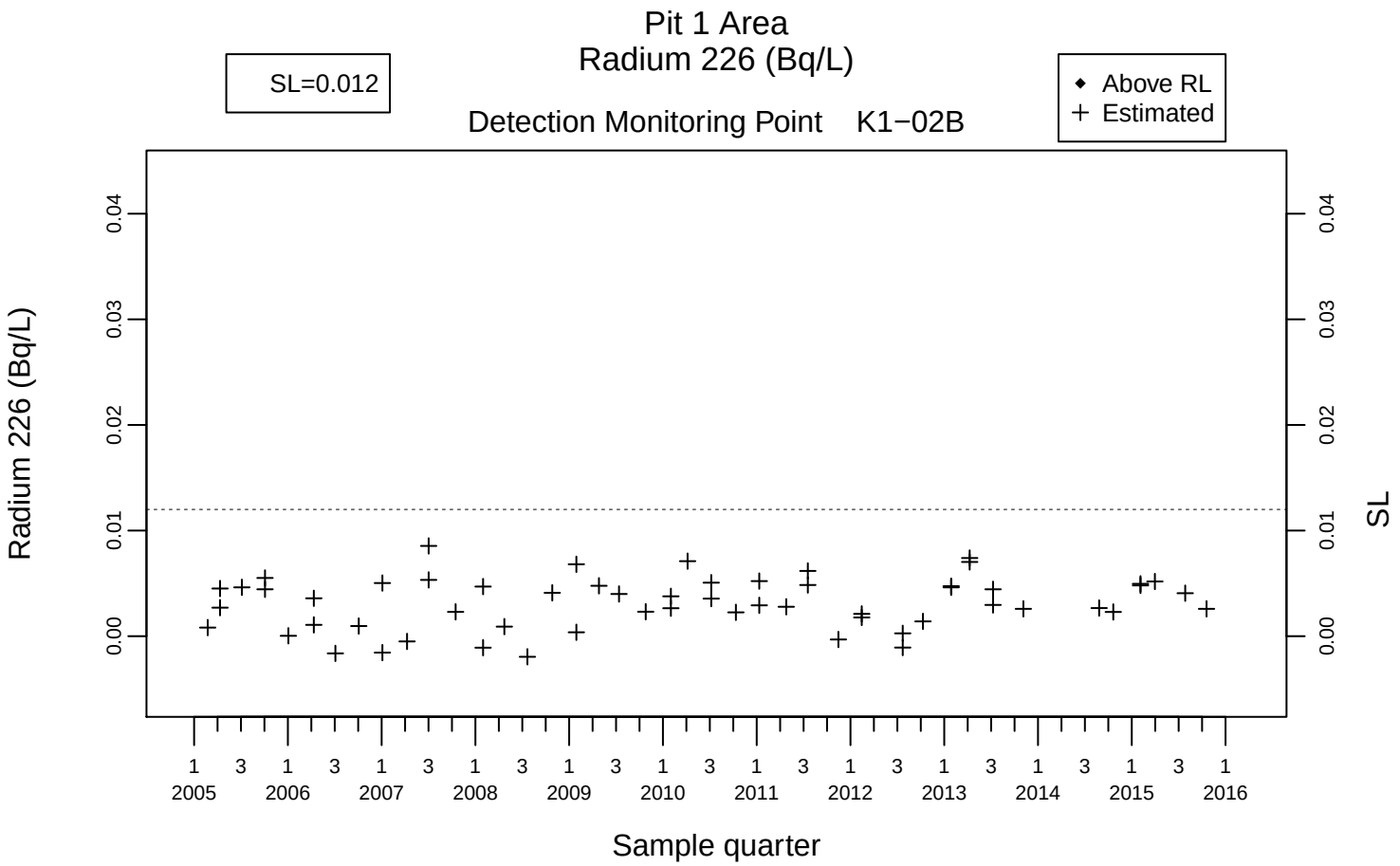

SL=20
Crossgradient Monitoring Point K1−08
Zinc (ug/L)
SL
Sample quarter
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

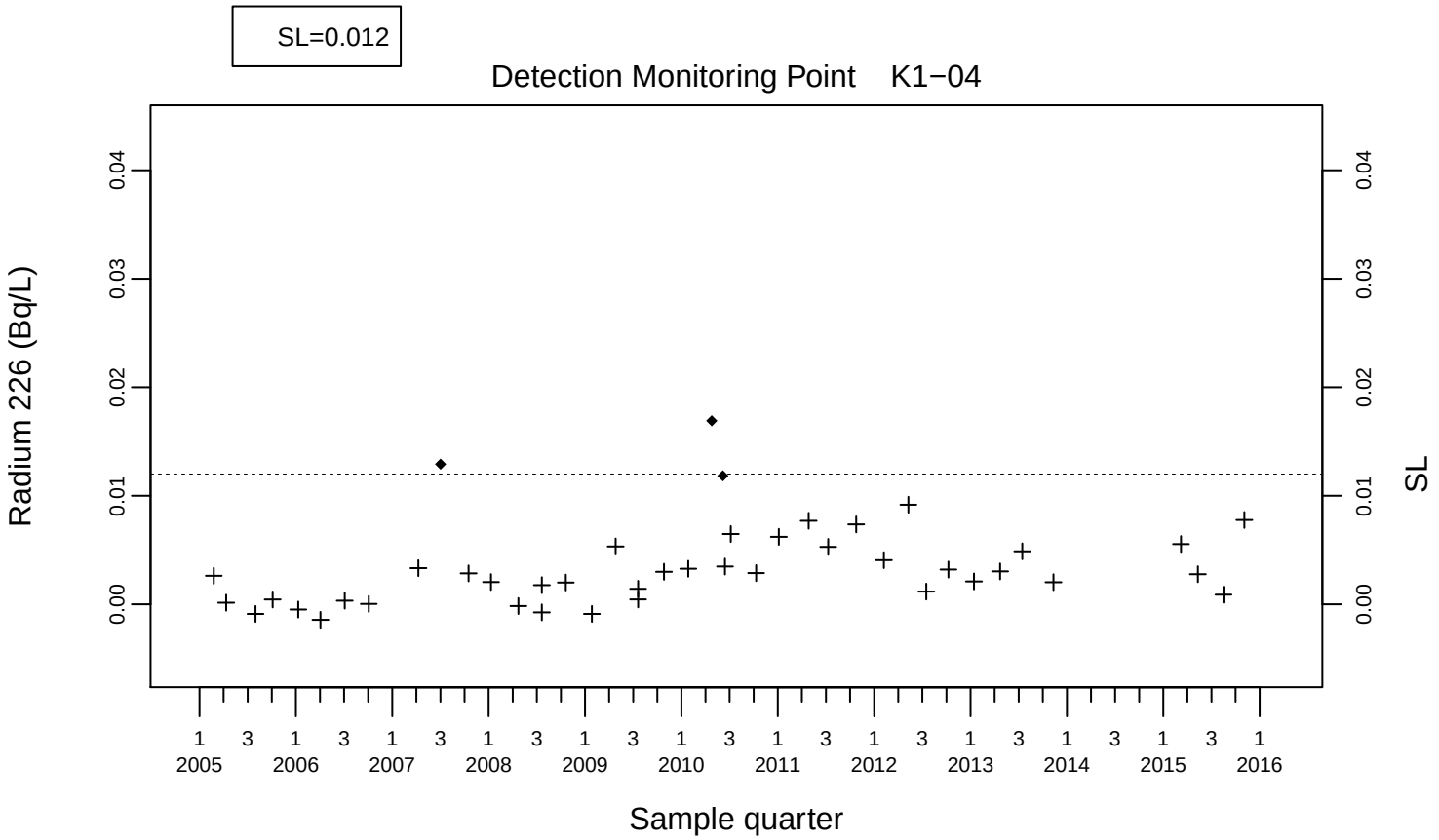

Pit 1 Area
Zinc (ug/L)
SL=20
Above RL
Below RL
Crossgradient Monitoring Point K1−09
Zinc (ug/L)
SL
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

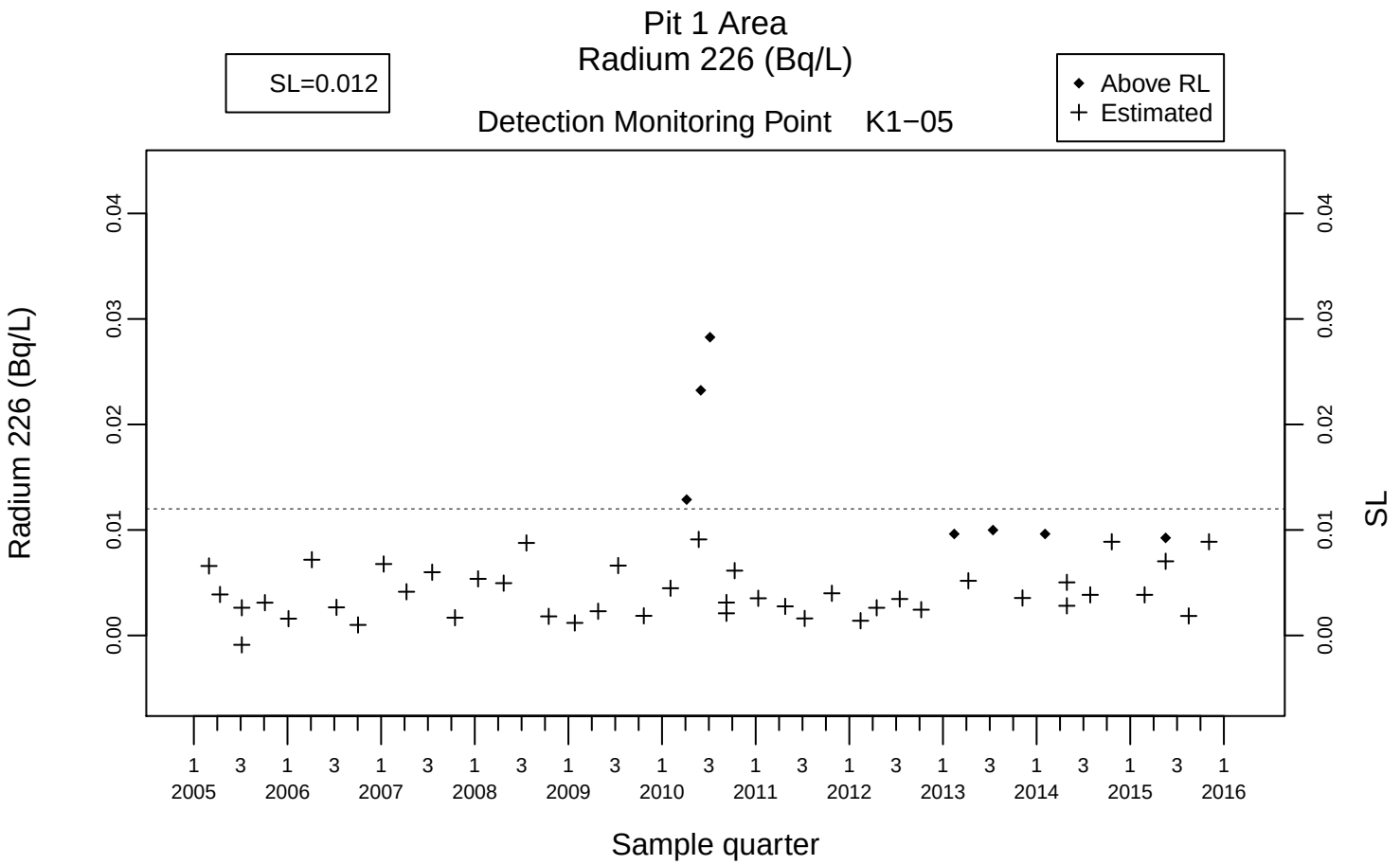

SL=48
Detection Monitoring Point W−PIT1−2326
Zinc (ug/L)
SL
0
50
100
150
200
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

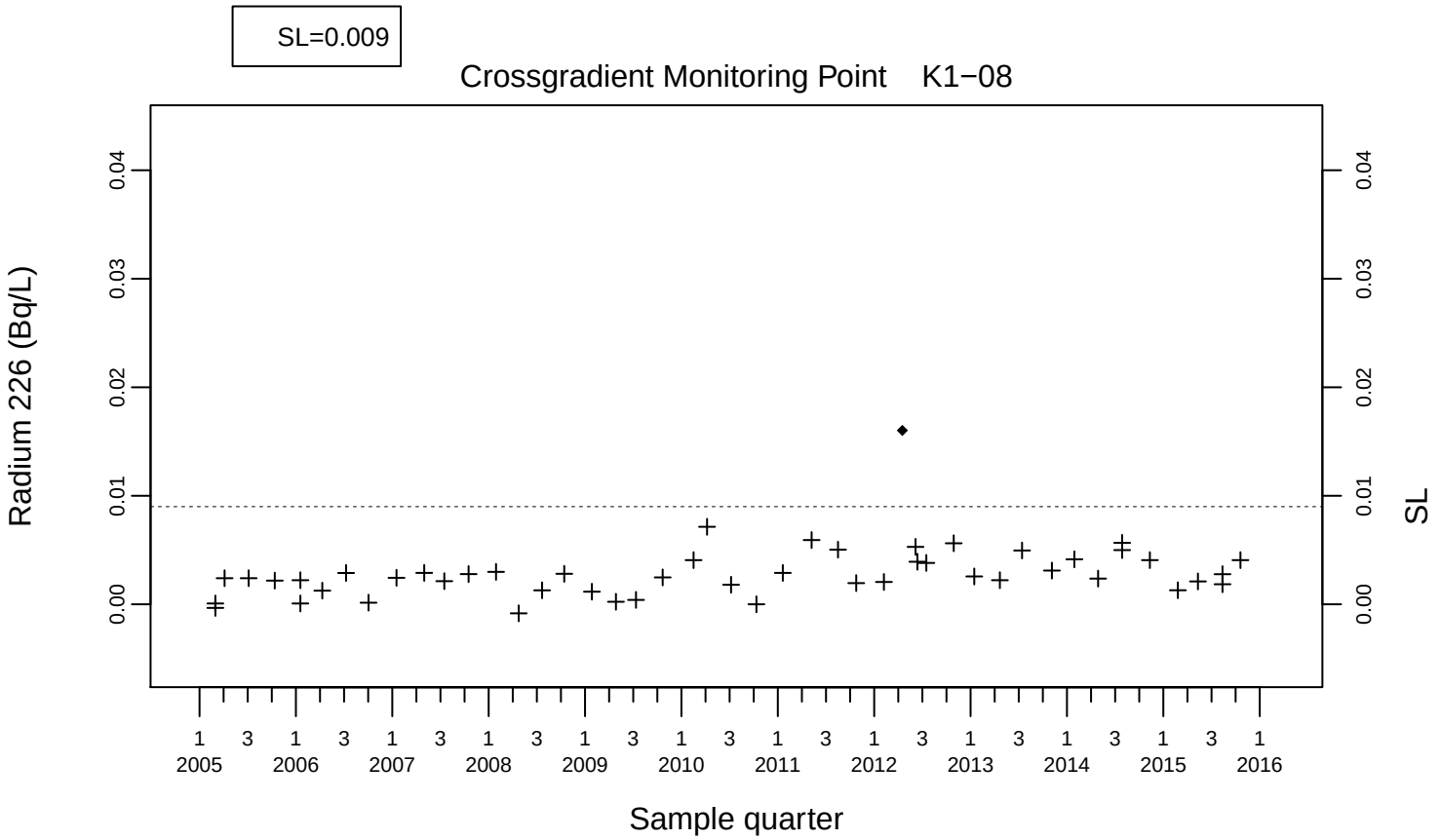

Pit 1 Area
Radium 226 (Bq/L)
Above RL
Estimated
Background Monitoring Point K1−01C
Radium 226 (Bq/L)
0.00
0.01
0.02
0.03
0.04
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

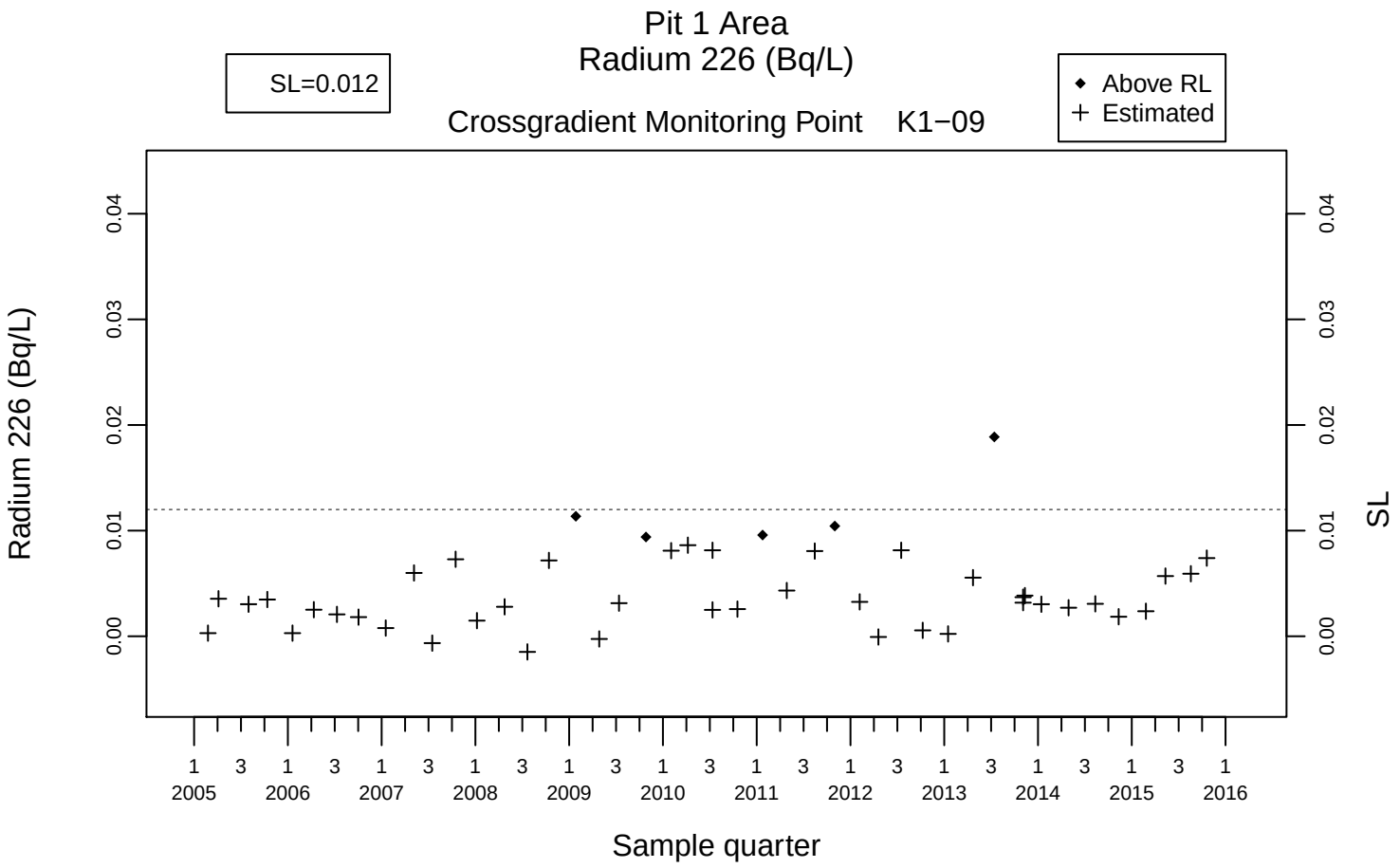

Background Monitoring Point K1−07
Radium 226 (Bq/L)
0.00
0.01
0.02
0.03
0.04
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

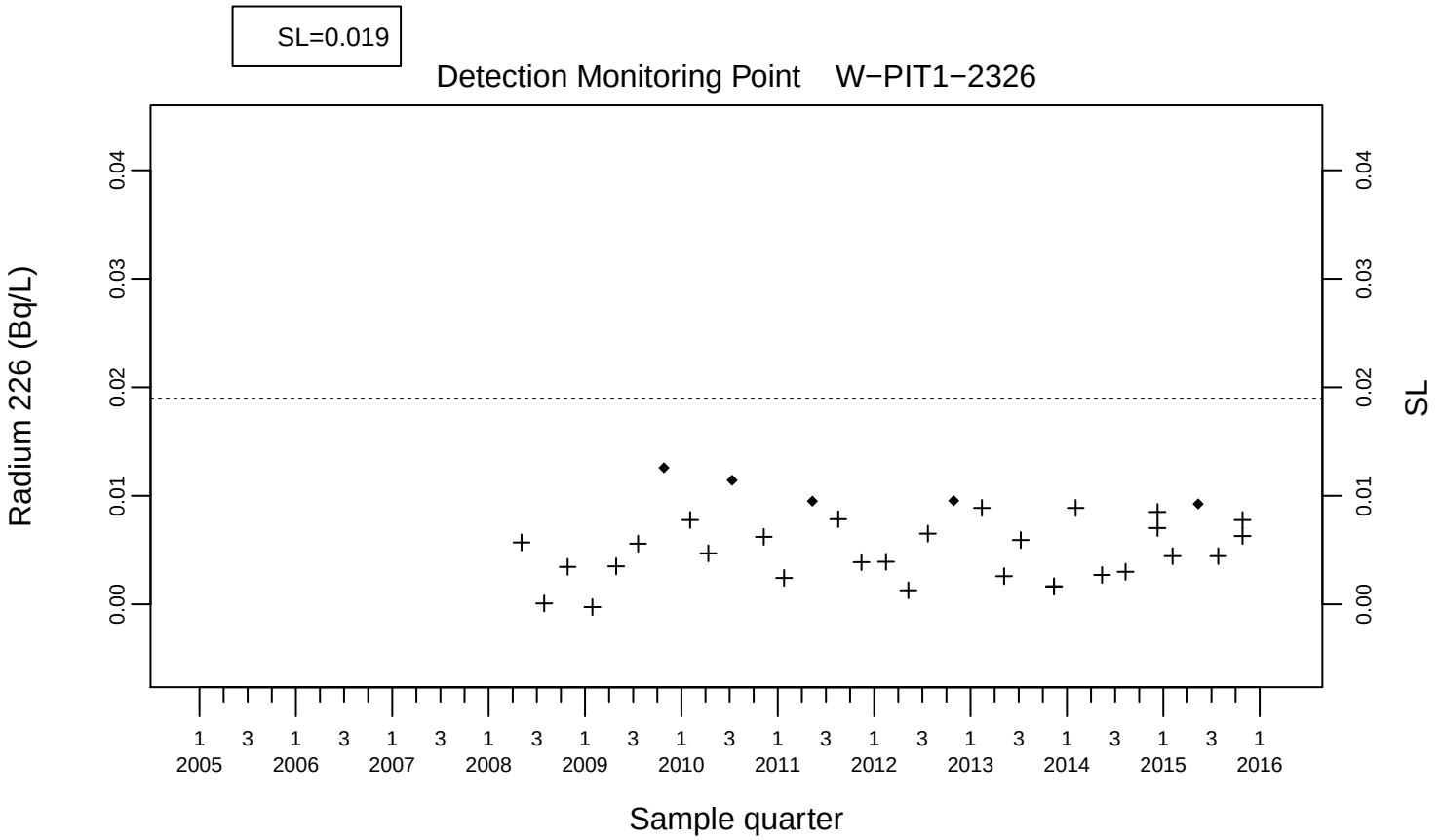

Pit 1 Area
Radium 226 (Bq/L)
SL=0.012
Above RL
Estimated
Detection Monitoring Point K1−02B
Radium 226 (Bq/L)
SL
0.00
0.01
0.02
0.03
0.04
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

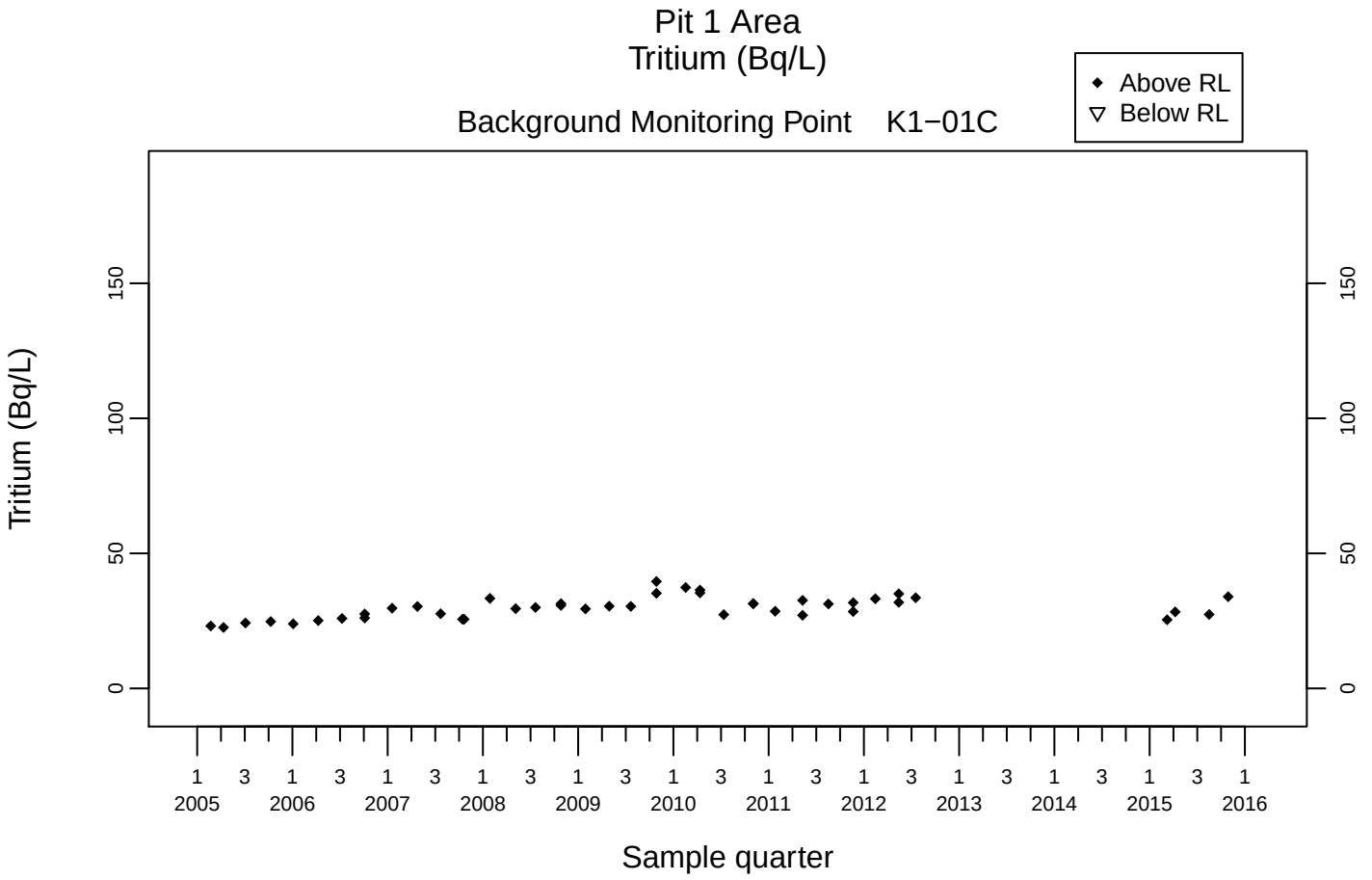

SL=0.012
Detection Monitoring Point K1−04
Radium 226 (Bq/L)
SL
0.00
0.01
0.02
0.03
0.04
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

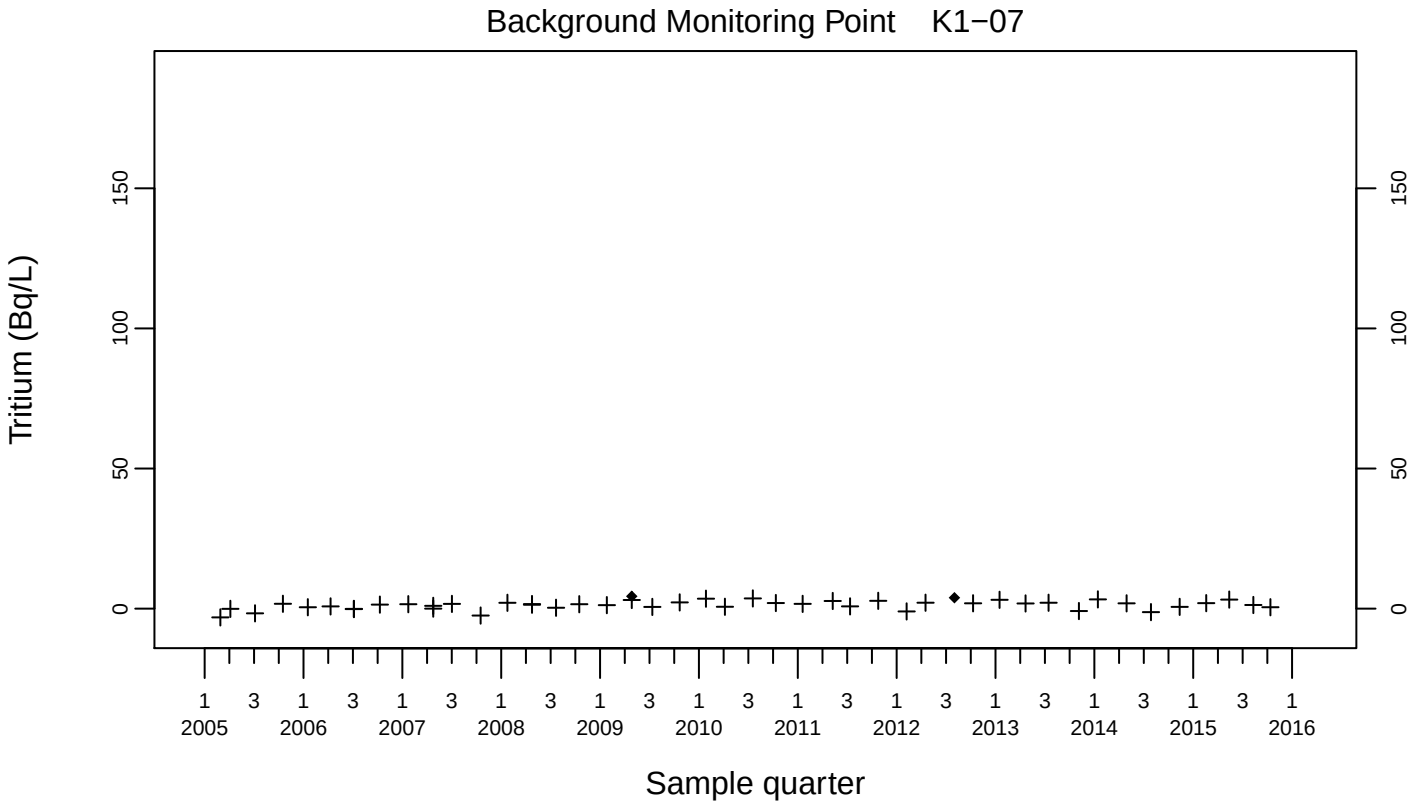

Pit 1 Area
Radium 226 (Bq/L)
SL=0.012
Above RL
Estimated
Detection Monitoring Point K1−05
Radium 226 (Bq/L)
SL
0.00
0.01
0.02
0.03
0.04
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

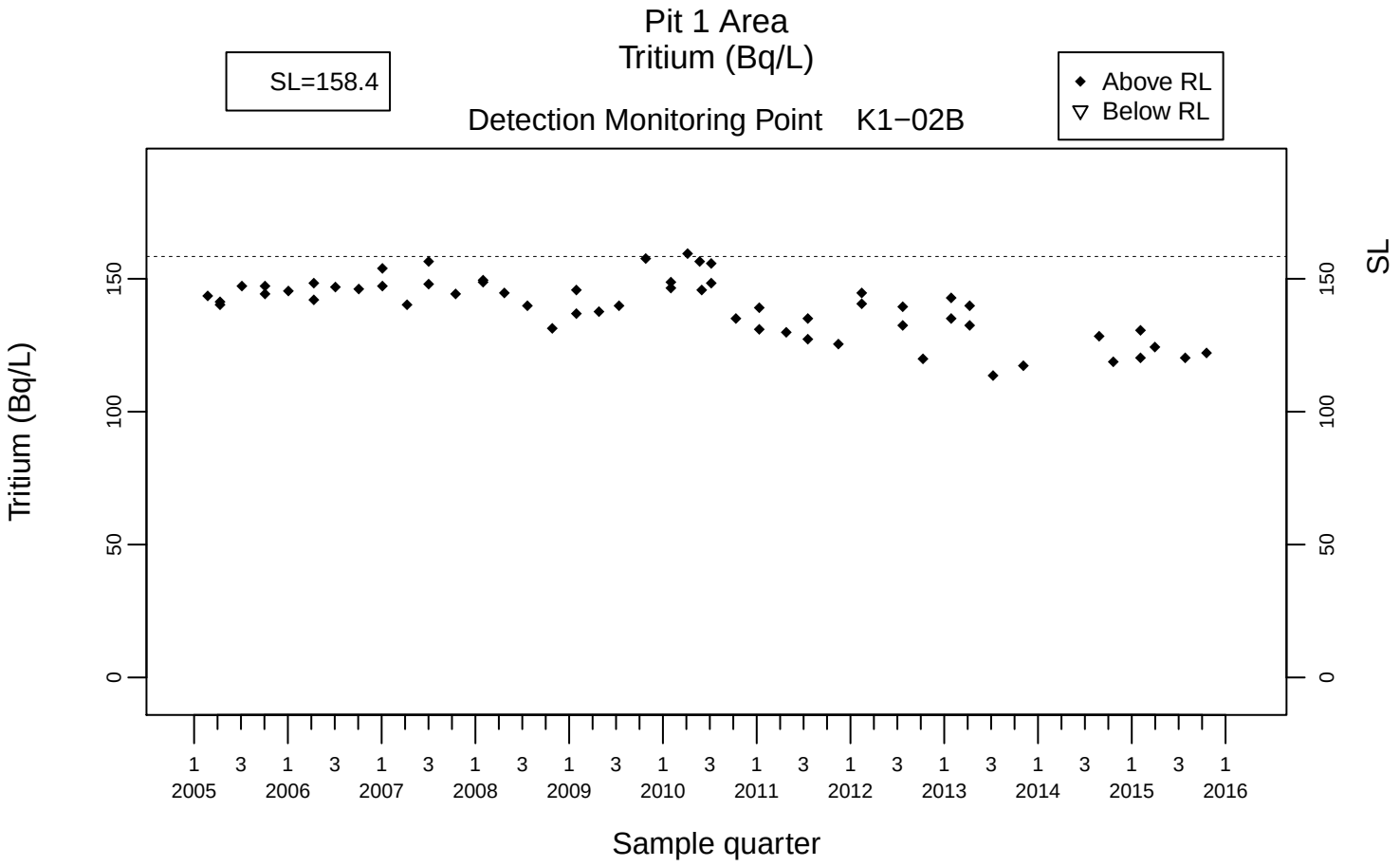

SL=0.009
Crossgradient Monitoring Point K1−08
Radium 226 (Bq/L)
SL
0.00
0.01
0.02
0.03
0.04
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

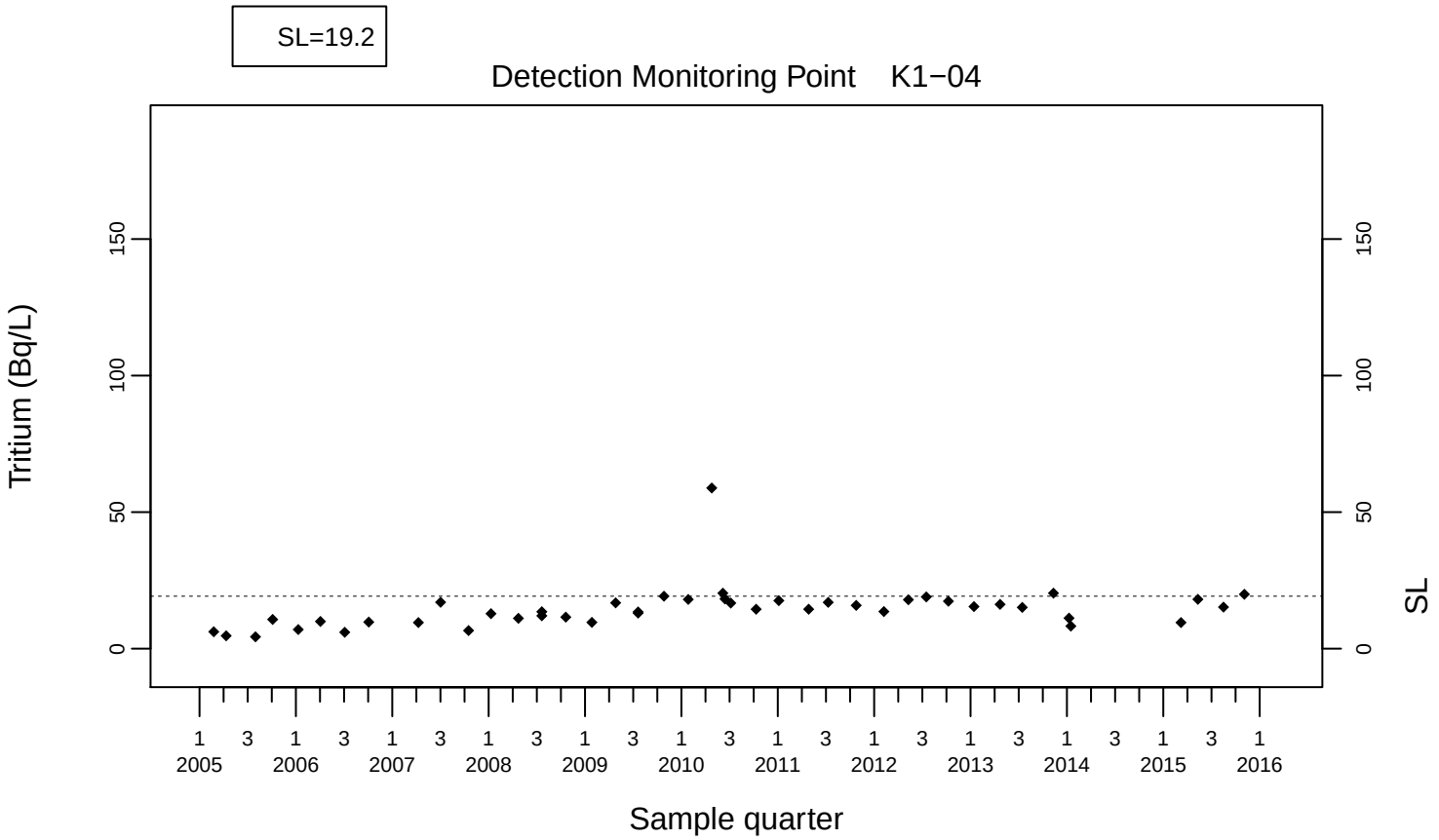

Pit 1 Area
Radium 226 (Bq/L)
SL=0.012
Crossgradient Monitoring Point K1−09
Above RL
Estimated
Radium 226 (Bq/L)
SL
0.00
0.01
0.02
0.03
0.04
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

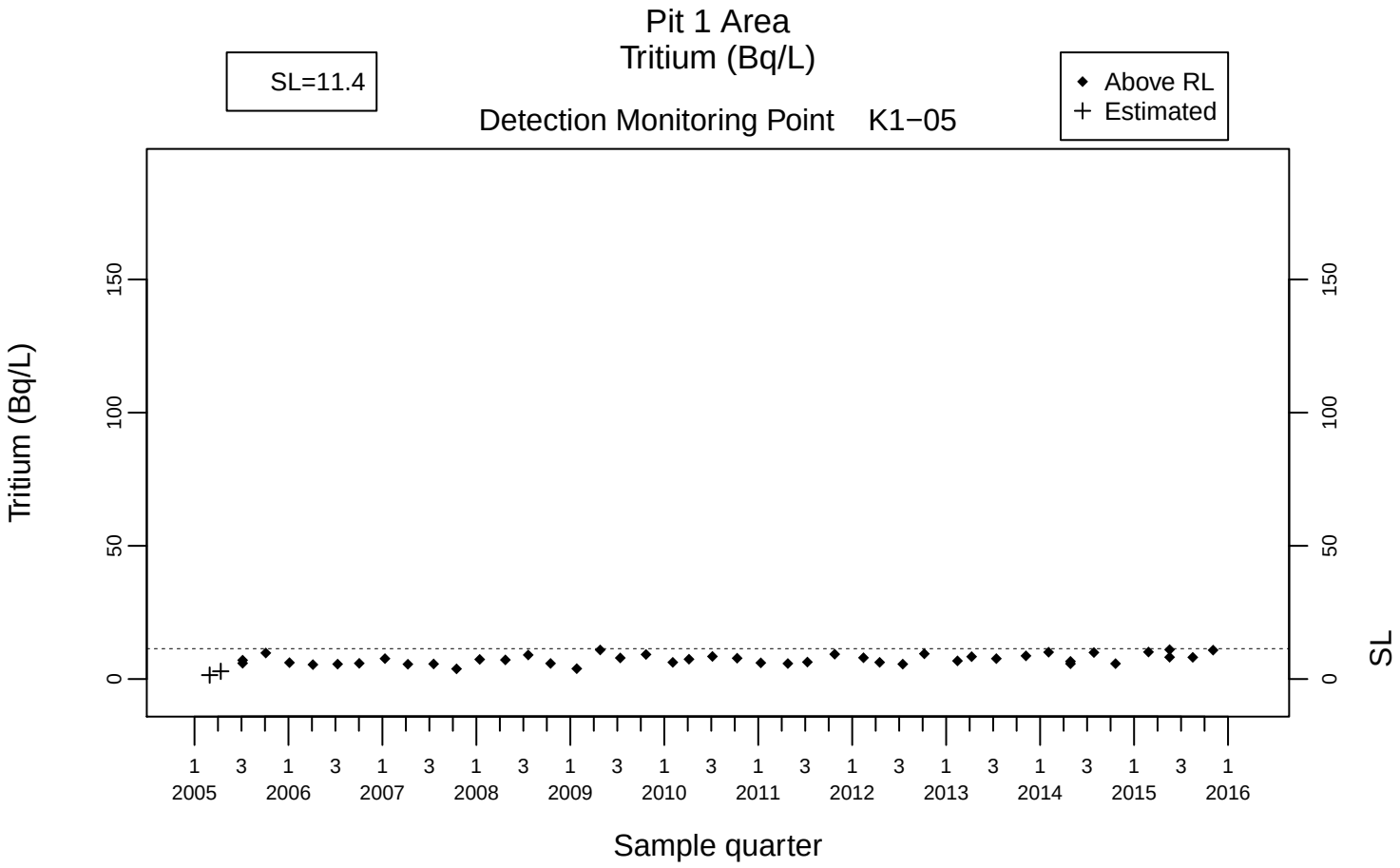

SL=0.019
Detection Monitoring Point W−PIT1−2326
Radium 226 (Bq/L)
SL
0.00
0.01
0.02
0.03
0.04
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

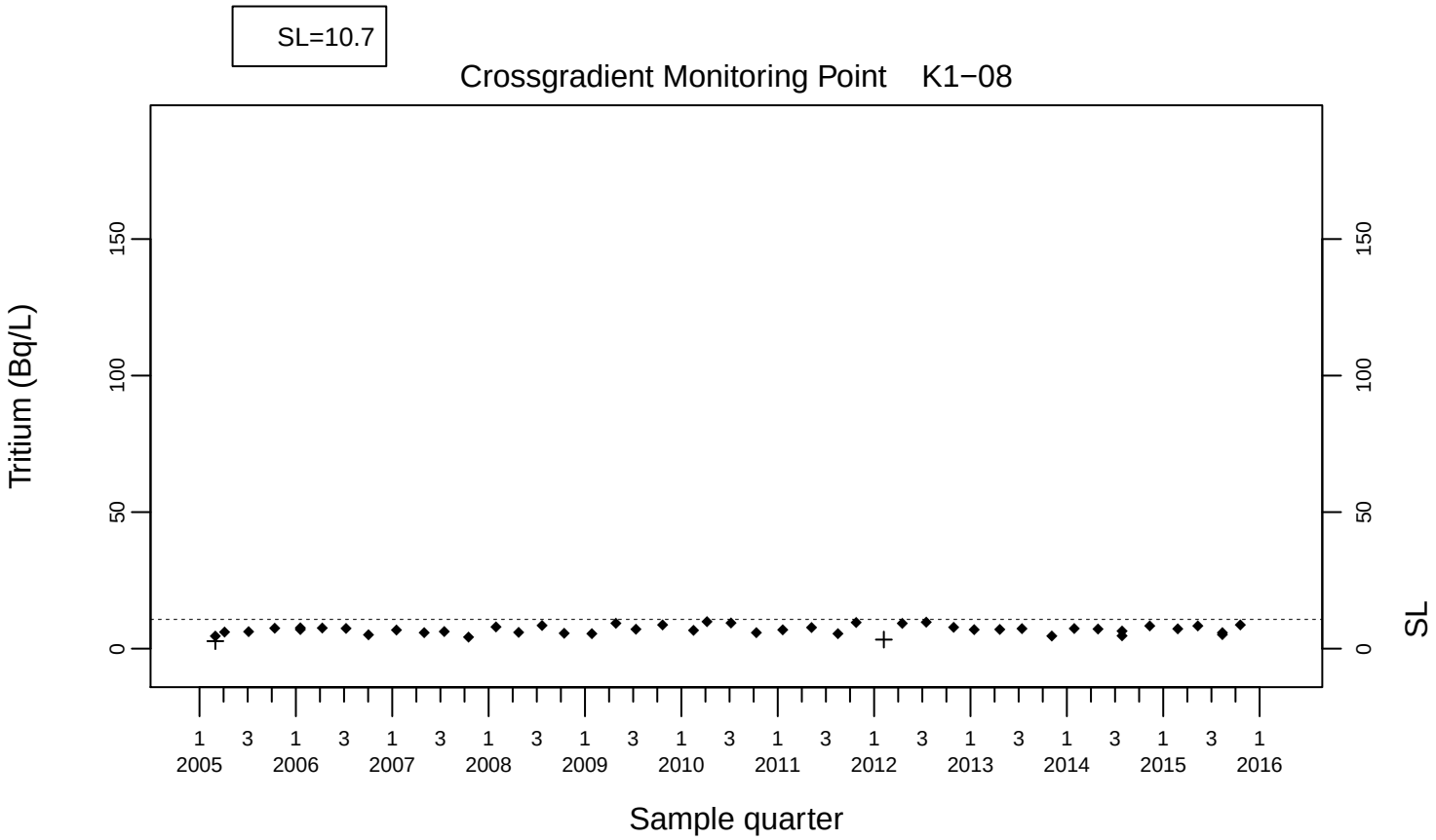

Pit 1 Area
Tritium (Bq/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Tritium (Bq/L)
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

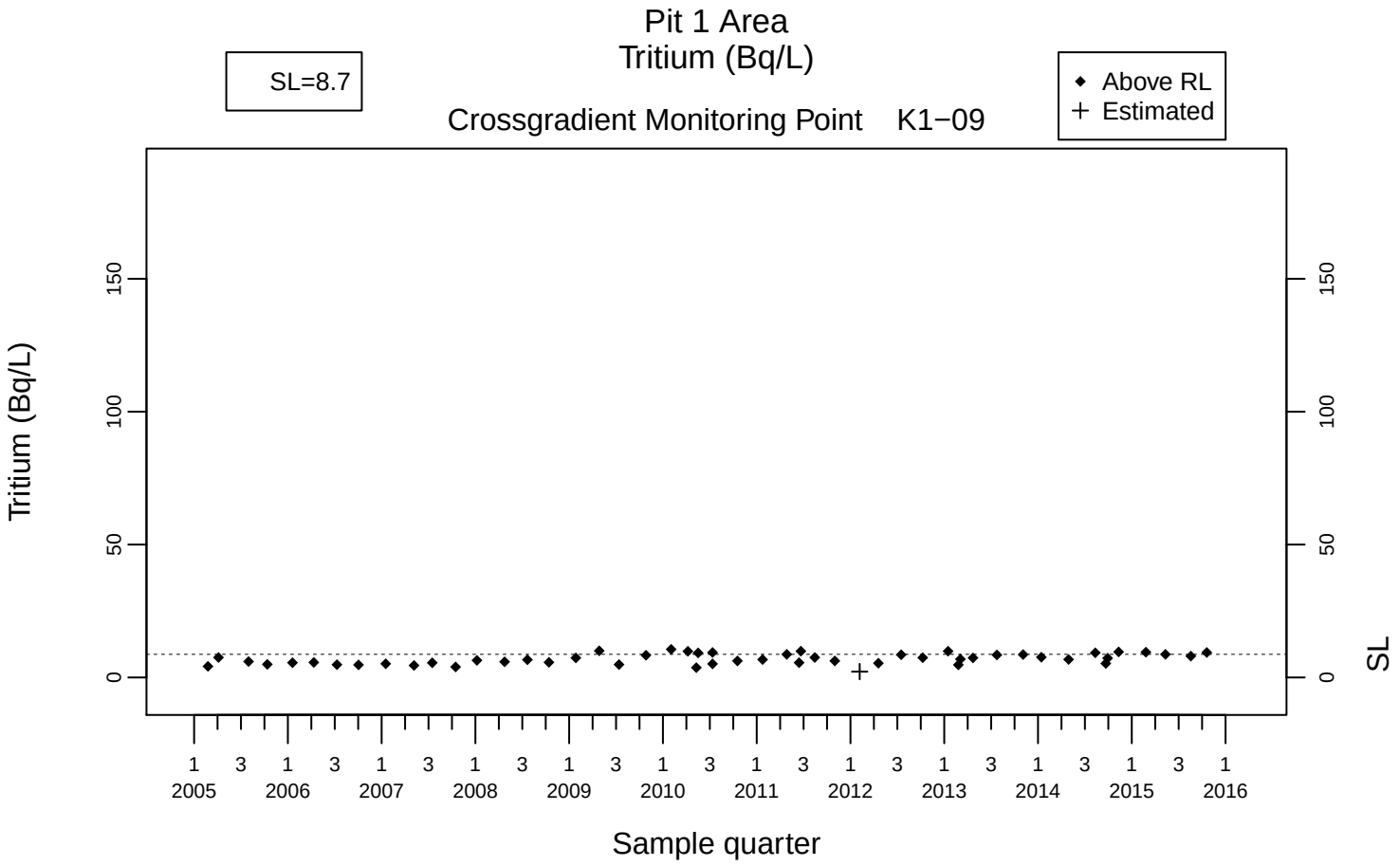

Background Monitoring Point K1−07
Tritium (Bq/L)
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

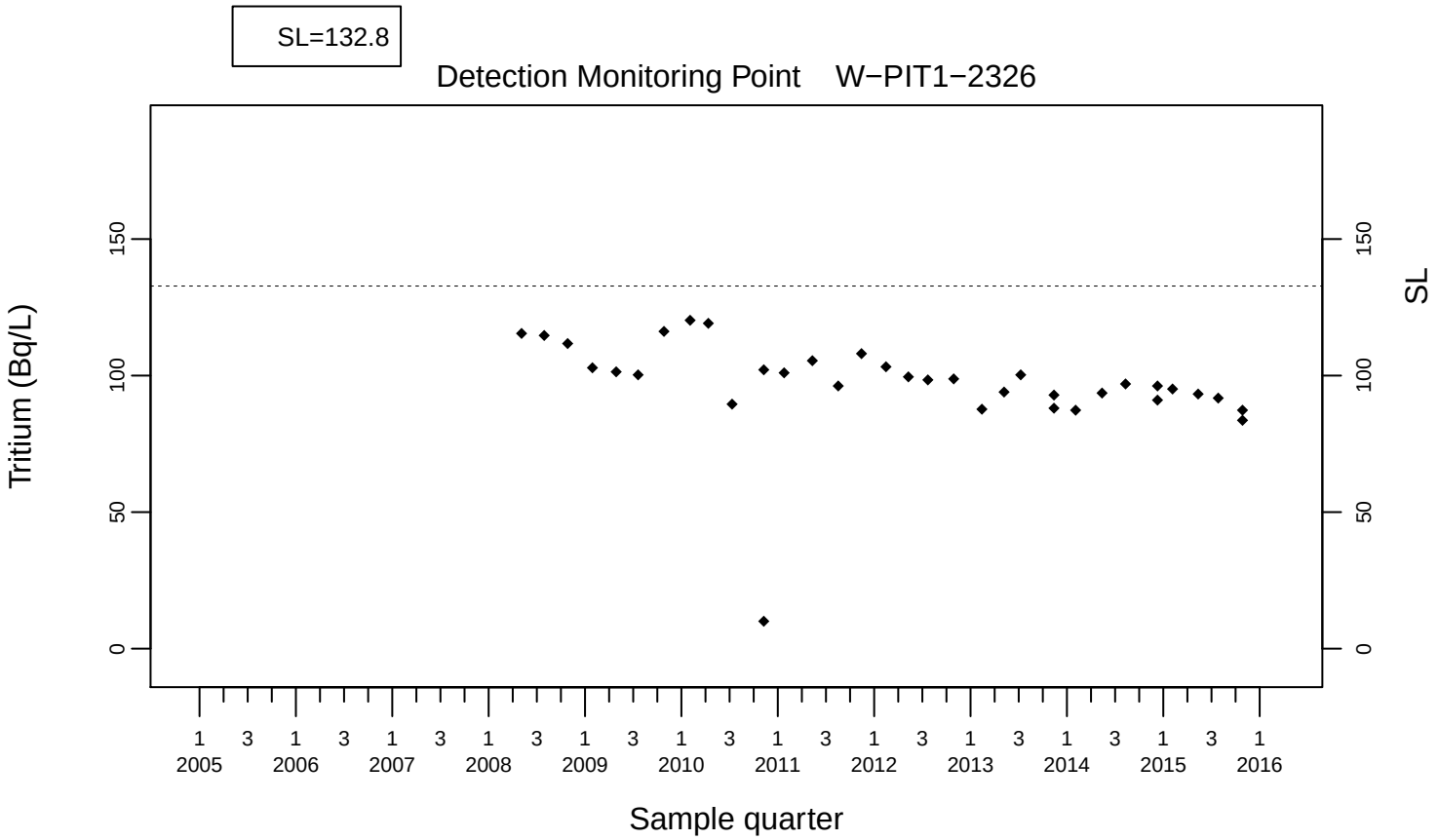

Pit 1 Area
Tritium (Bq/L)
SL=158.4
Above RL
Below RL
Detection Monitoring Point K1−02B
Tritium (Bq/L)
SL
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

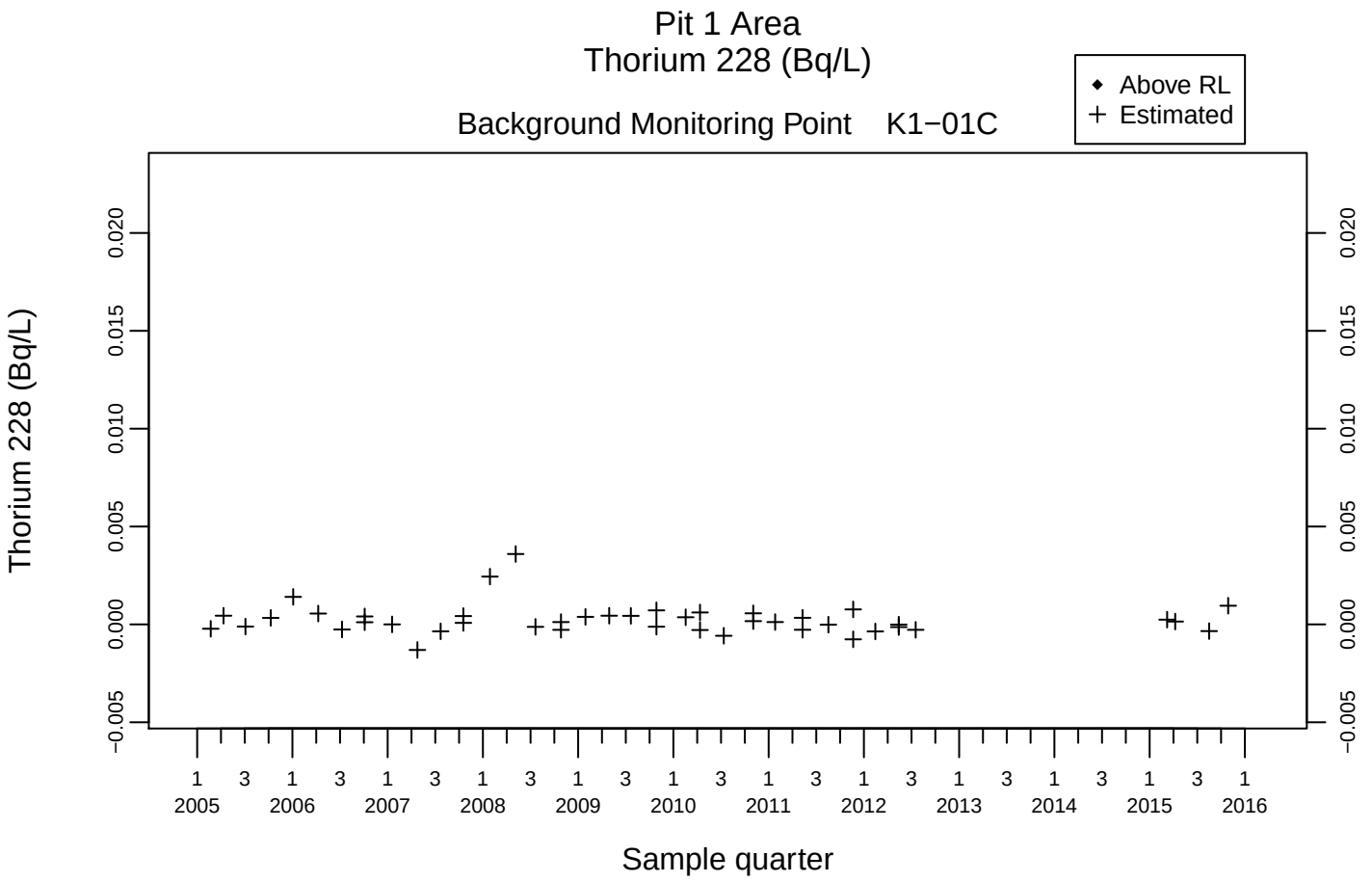

SL=19.2
Detection Monitoring Point K1−04
Tritium (Bq/L)
SL
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

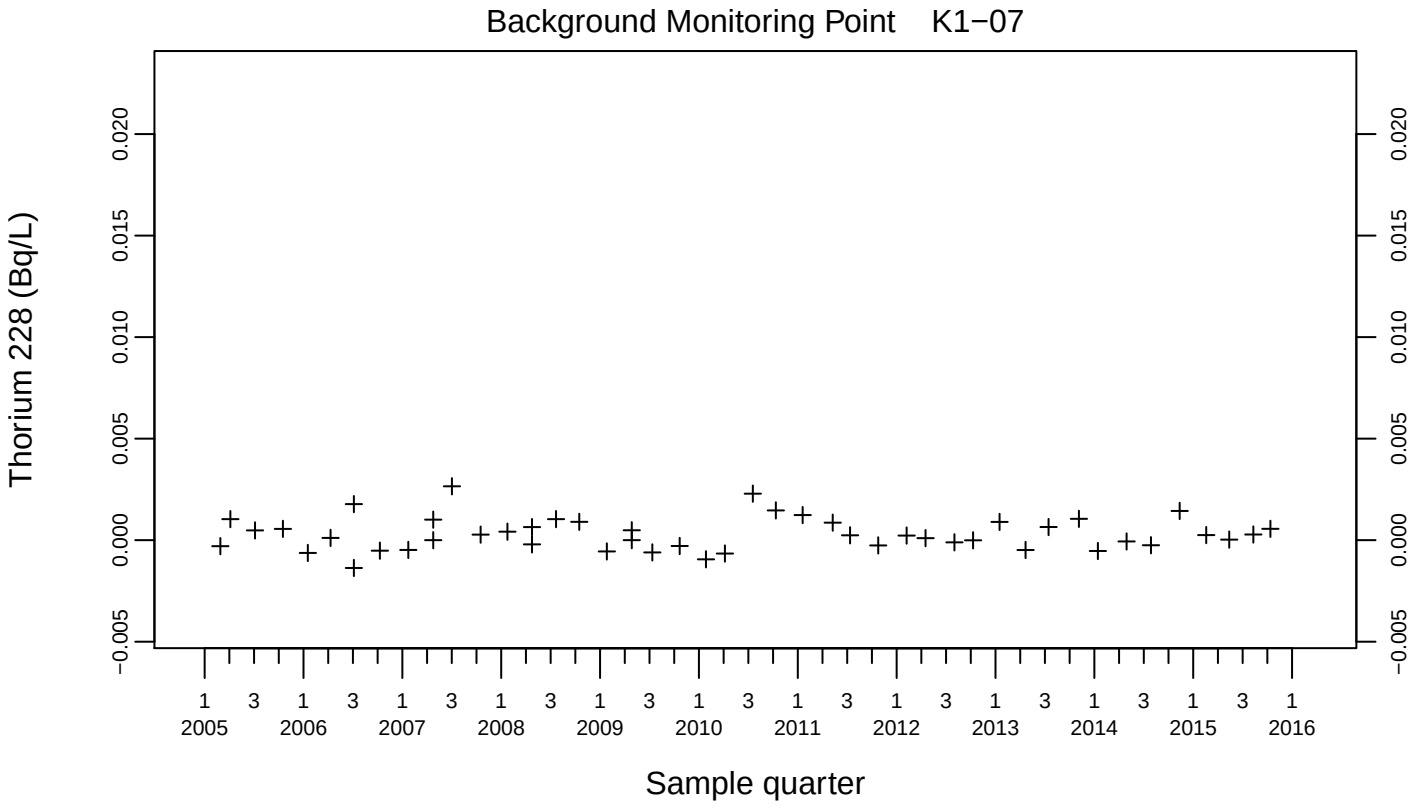

Pit 1 Area
Tritium (Bq/L)
SL=11.4
Above RL
Estimated
Detection Monitoring Point K1−05
Tritium (Bq/L)
0
50
100
150
SL
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

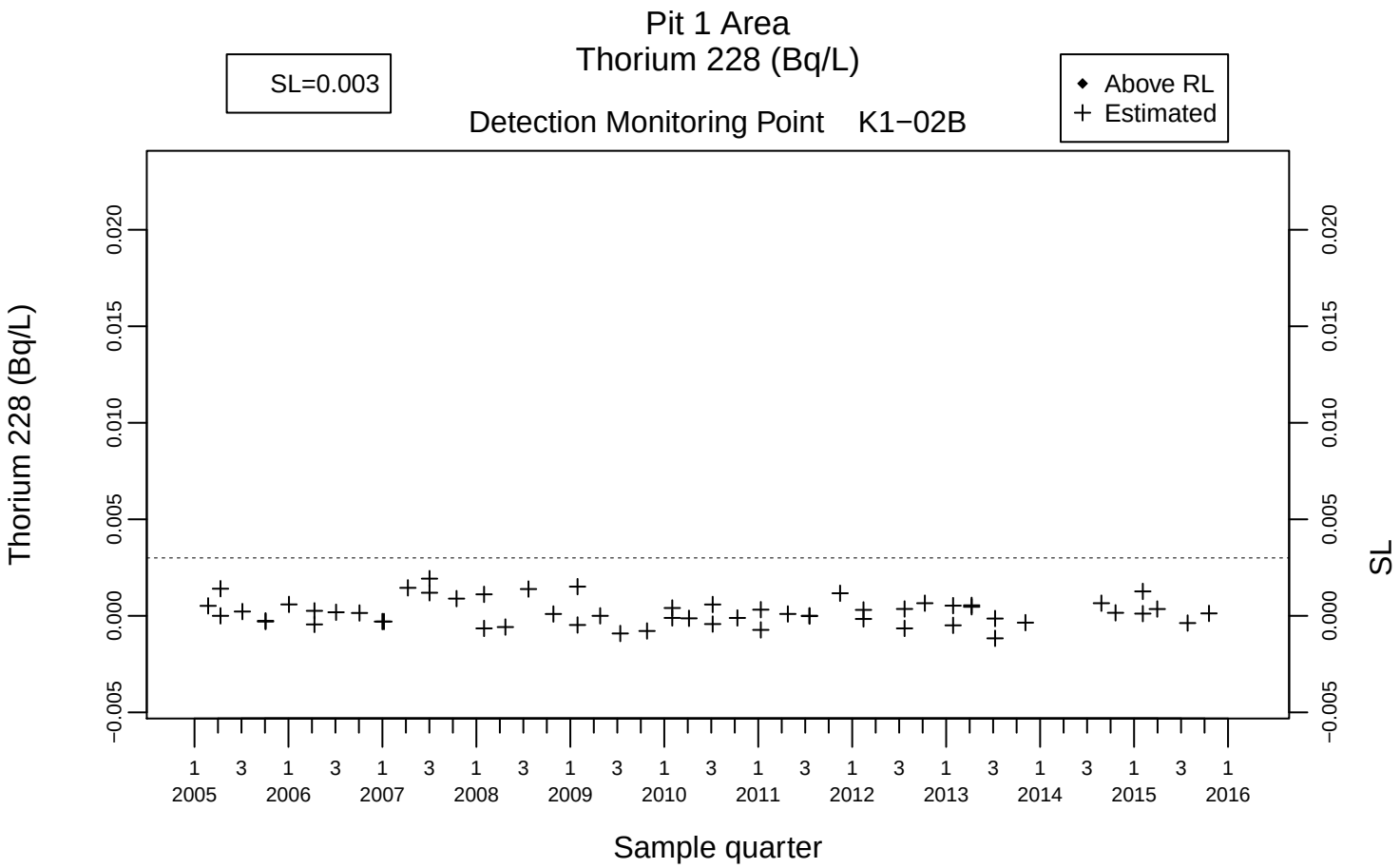

SL=10.7
Crossgradient Monitoring Point K1−08
Tritium (Bq/L)
0
50
100
150
SL
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

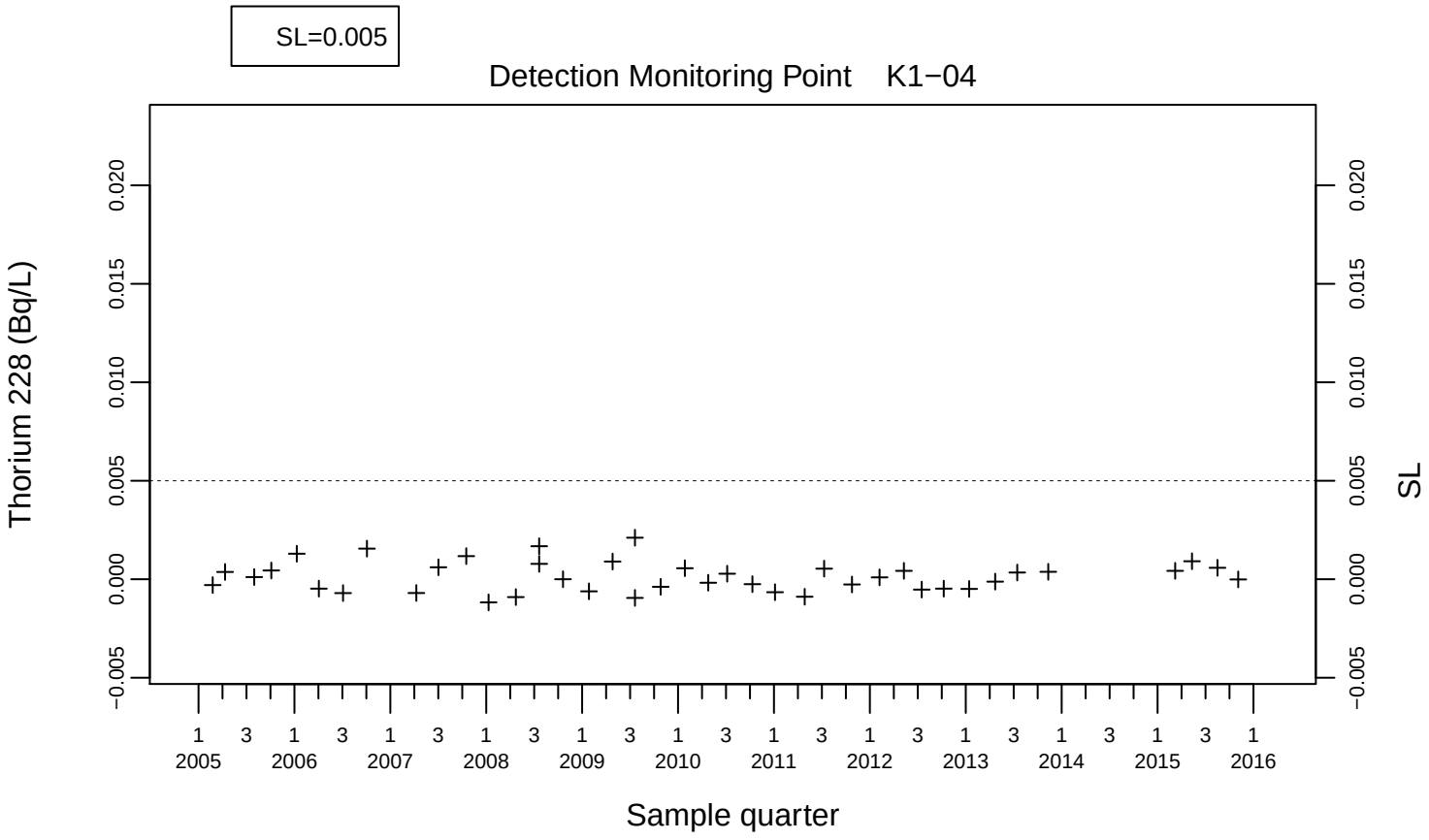

Pit 1 Area
Tritium (Bq/L)
SL=8.7
Above RL
Estimated
Crossgradient Monitoring Point K1−09
Tritium (Bq/L)
SL
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

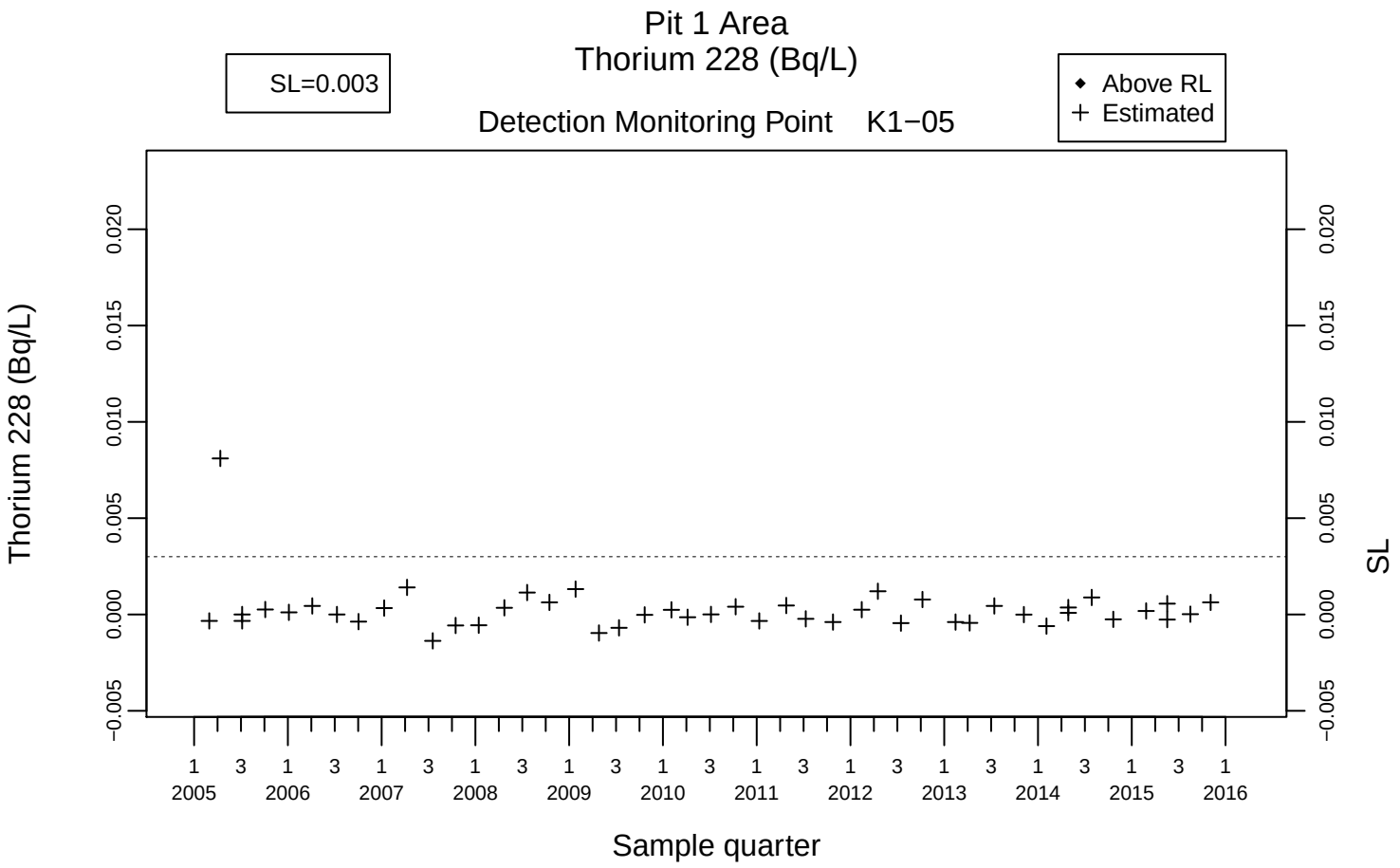

SL=132.8
Detection Monitoring Point W−PIT1−2326
Tritium (Bq/L)
SL
0
50
100
150
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

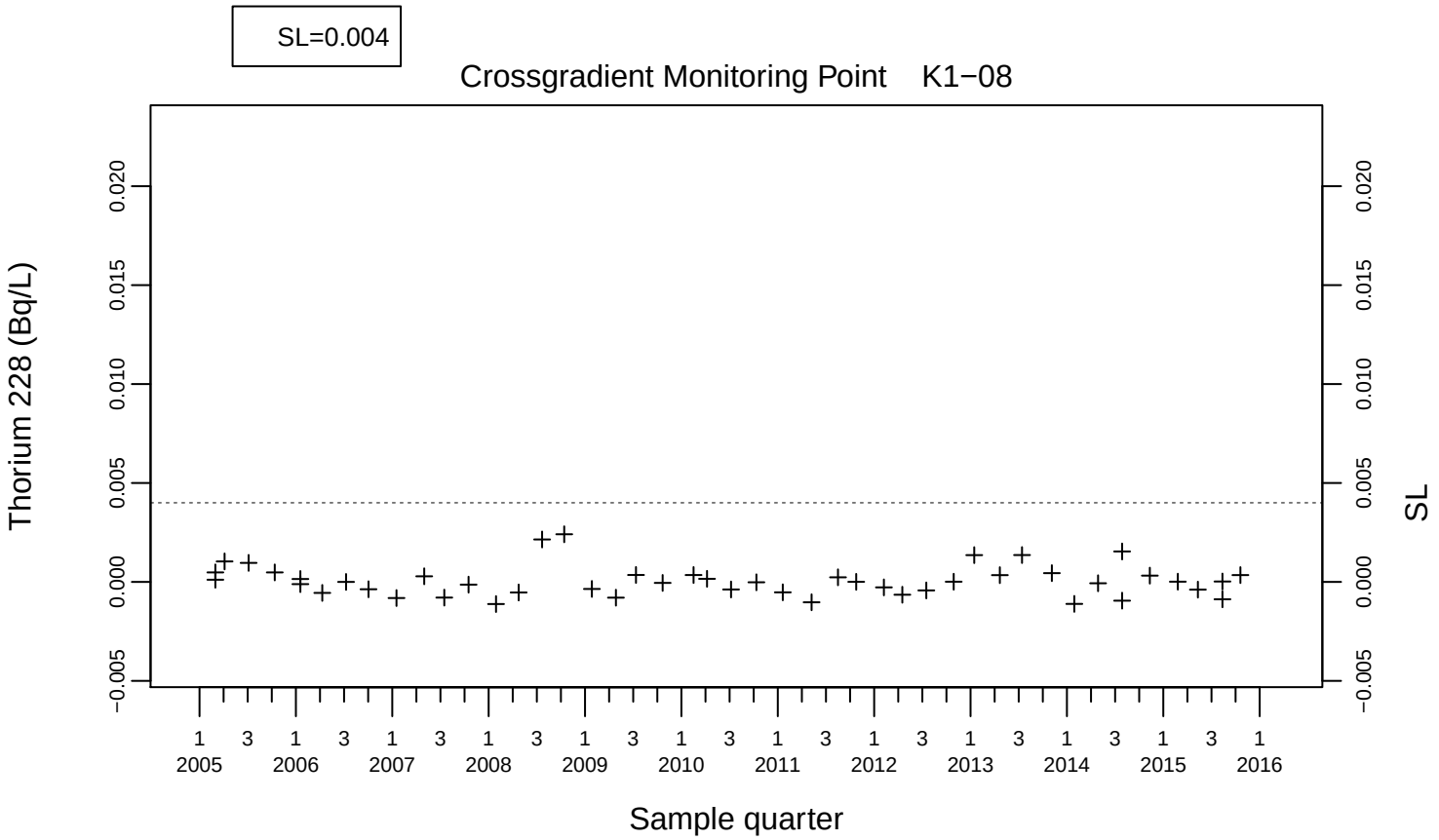

Pit 1 Area
Thorium 228 (Bq/L)
Above RL
Estimated
Background Monitoring Point K1−01C
Thorium 228 (Bq/L)
−0.005
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

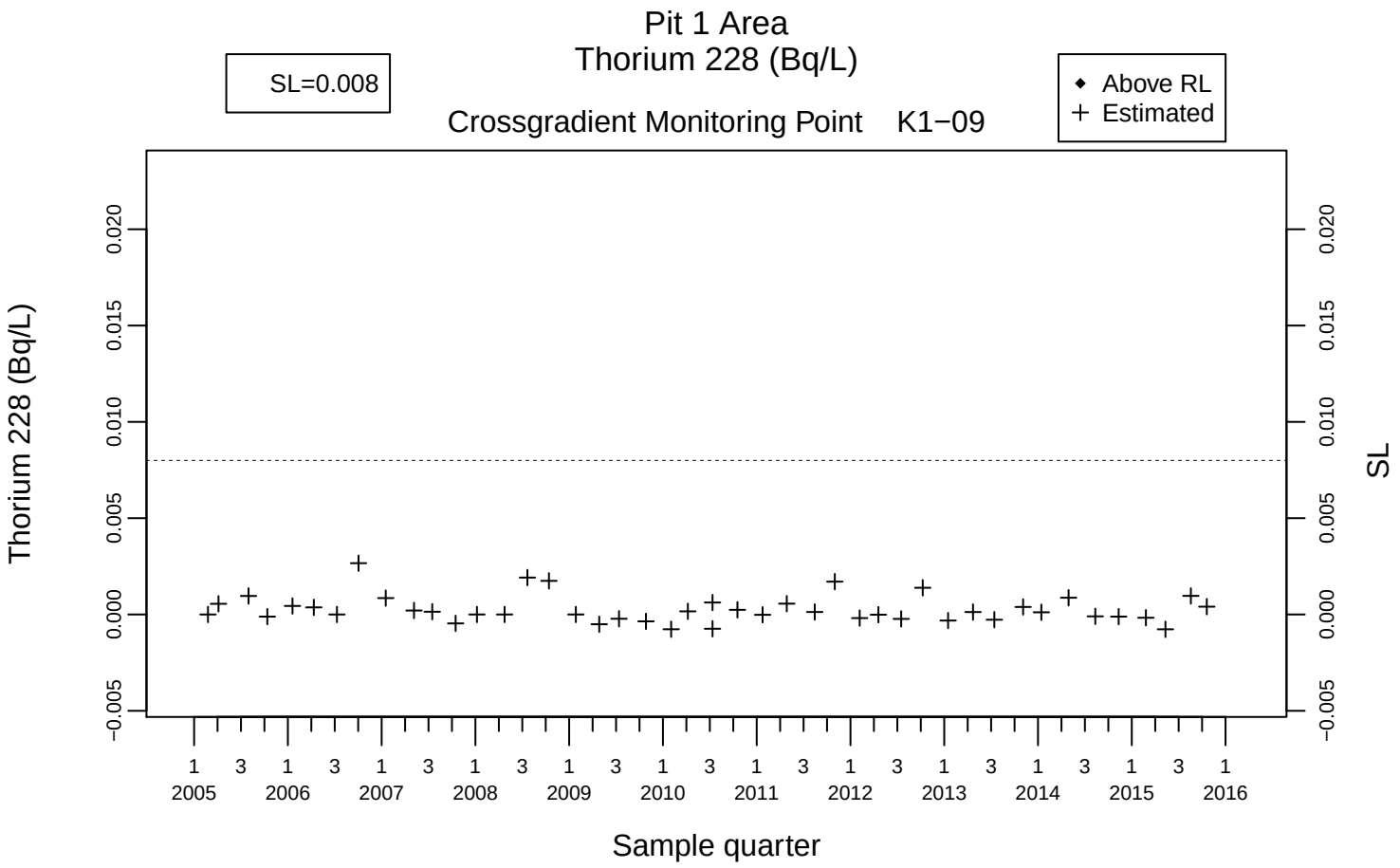

Background Monitoring Point K1−07
Thorium 228 (Bq/L)
−0.005
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

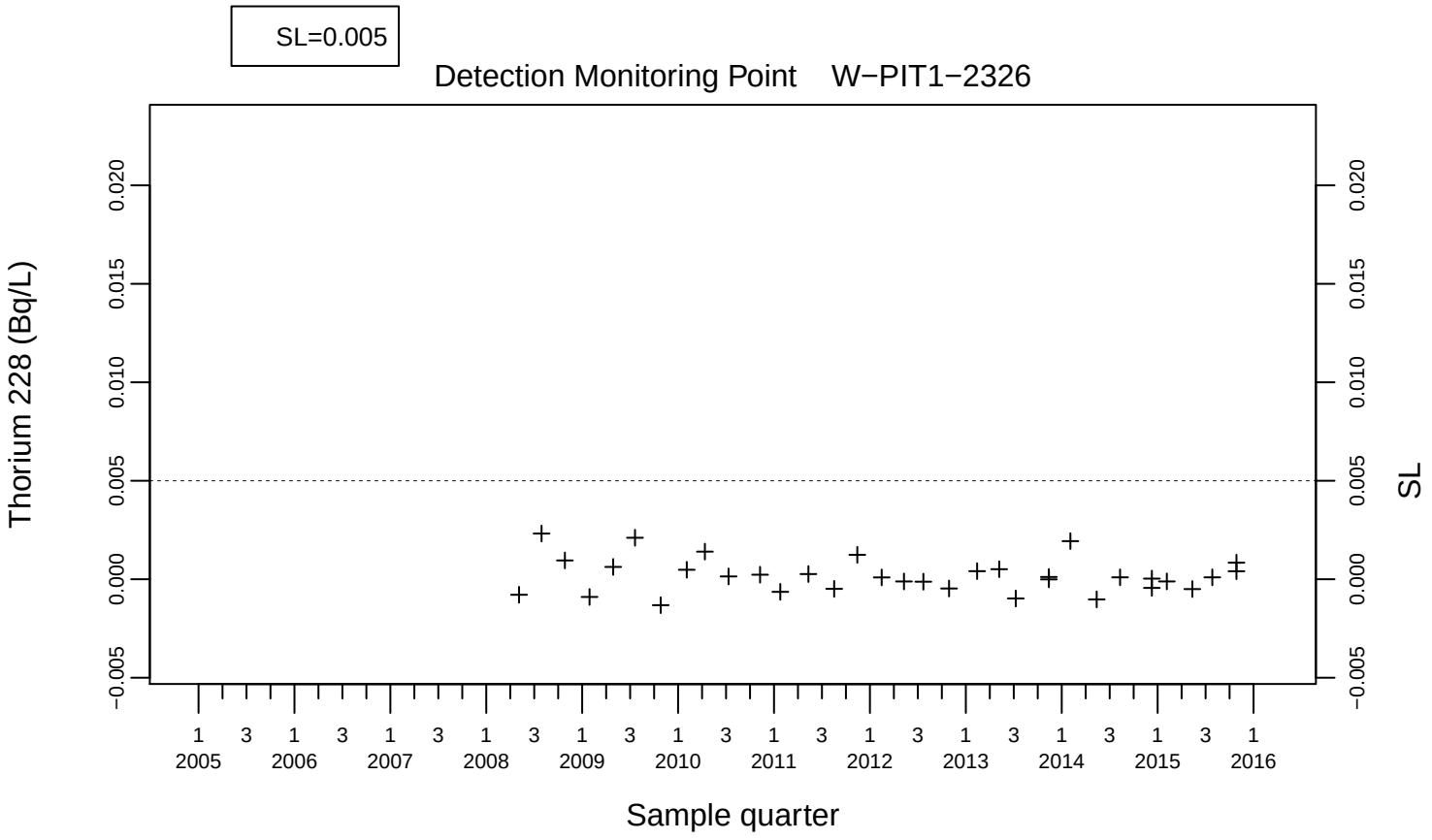

Pit 1 Area
Thorium 228 (Bq/L)
SL=0.003
Above RL
Estimated
Detection Monitoring Point K1−02B
Thorium 228 (Bq/L)
SL
0.020
0.015
0.010
0.005
0.000
−0.005
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

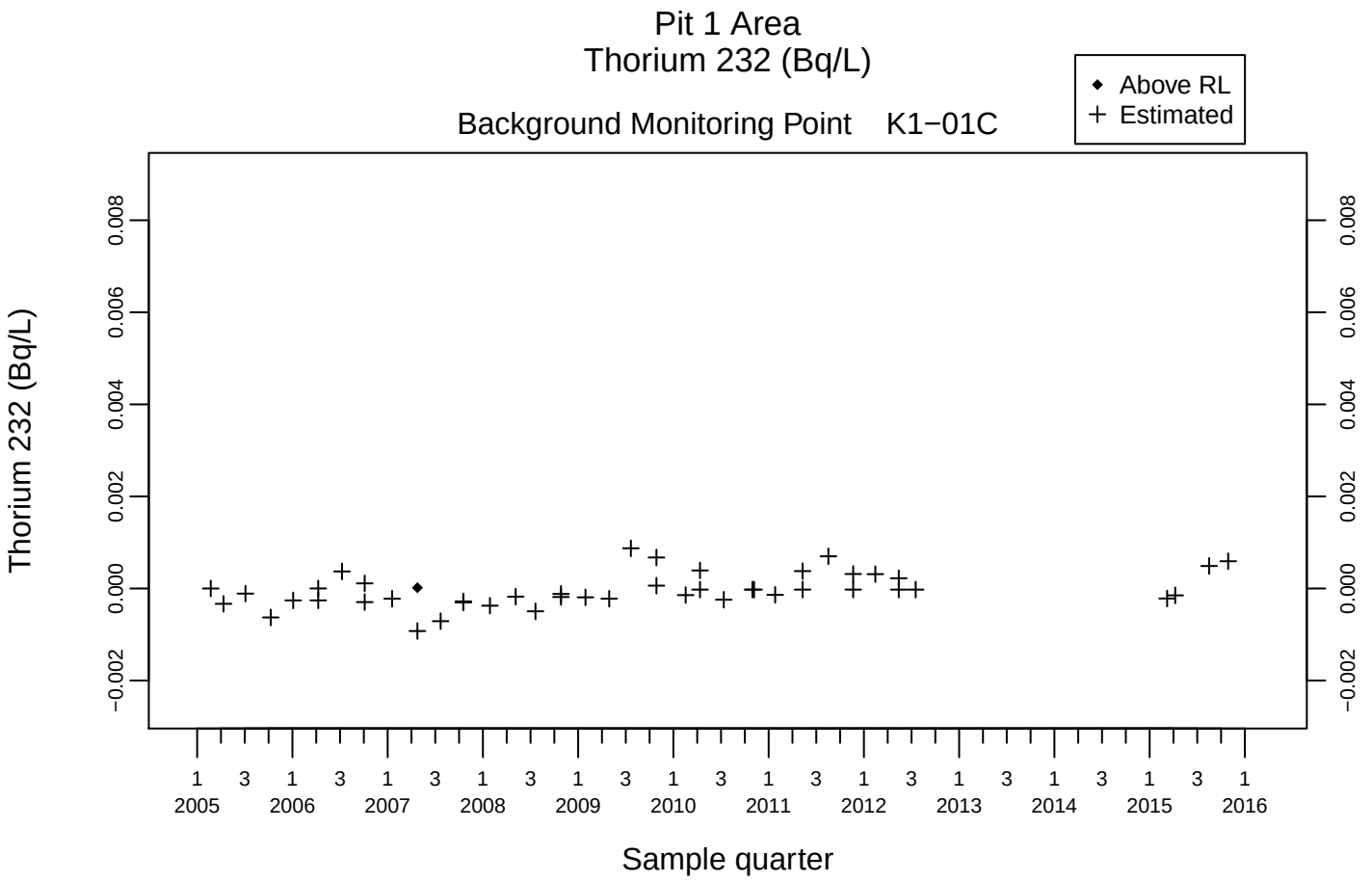

SL=0.005
Detection Monitoring Point K1−04
Thorium 228 (Bq/L)
SL
0.020
0.015
0.010
0.005
0.000
−0.005
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

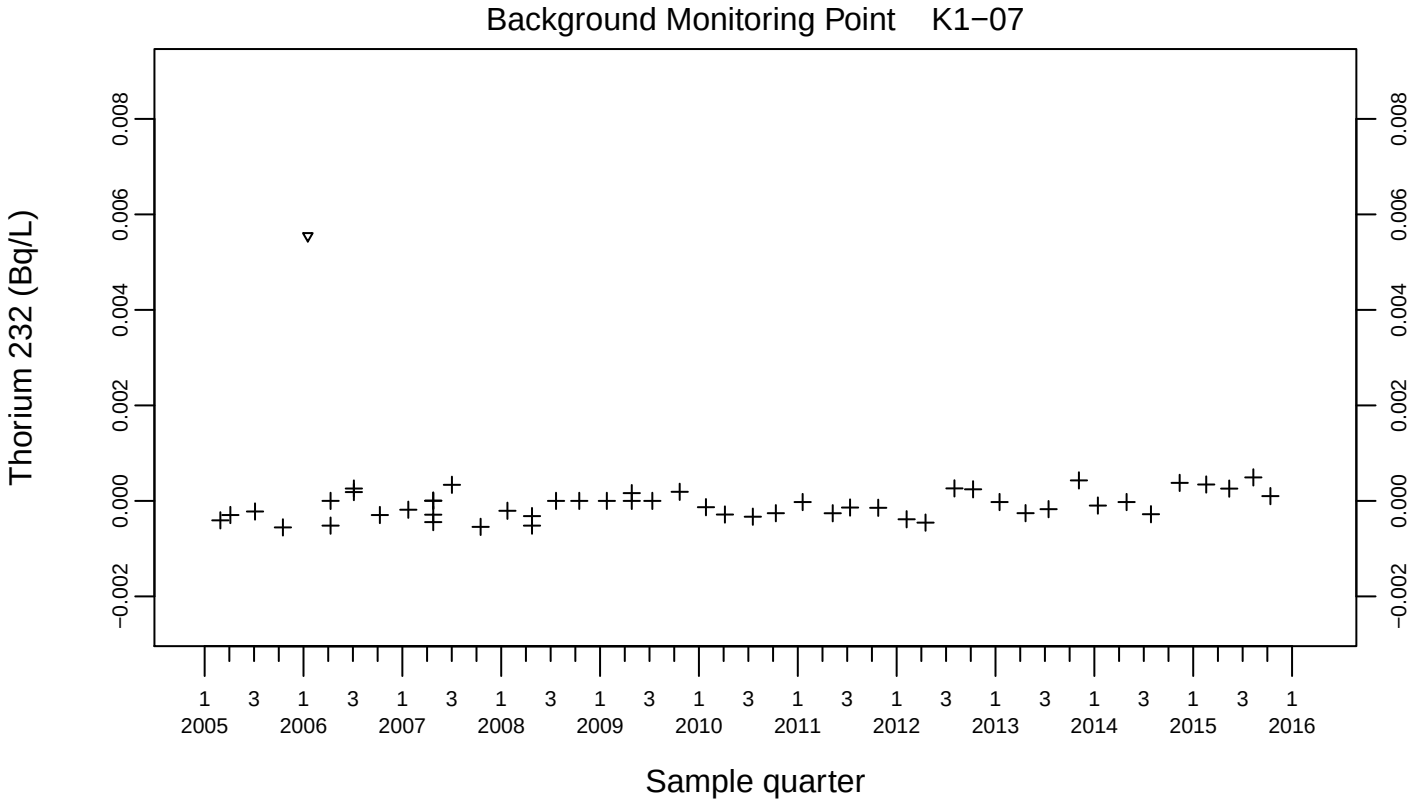

Pit 1 Area
Thorium 228 (Bq/L)
SL=0.003
Above RL
Estimated
Detection Monitoring Point K1−05
Thorium 228 (Bq/L)
SL
0.020
0.015
0.010
0.005
0.000
−0.005
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

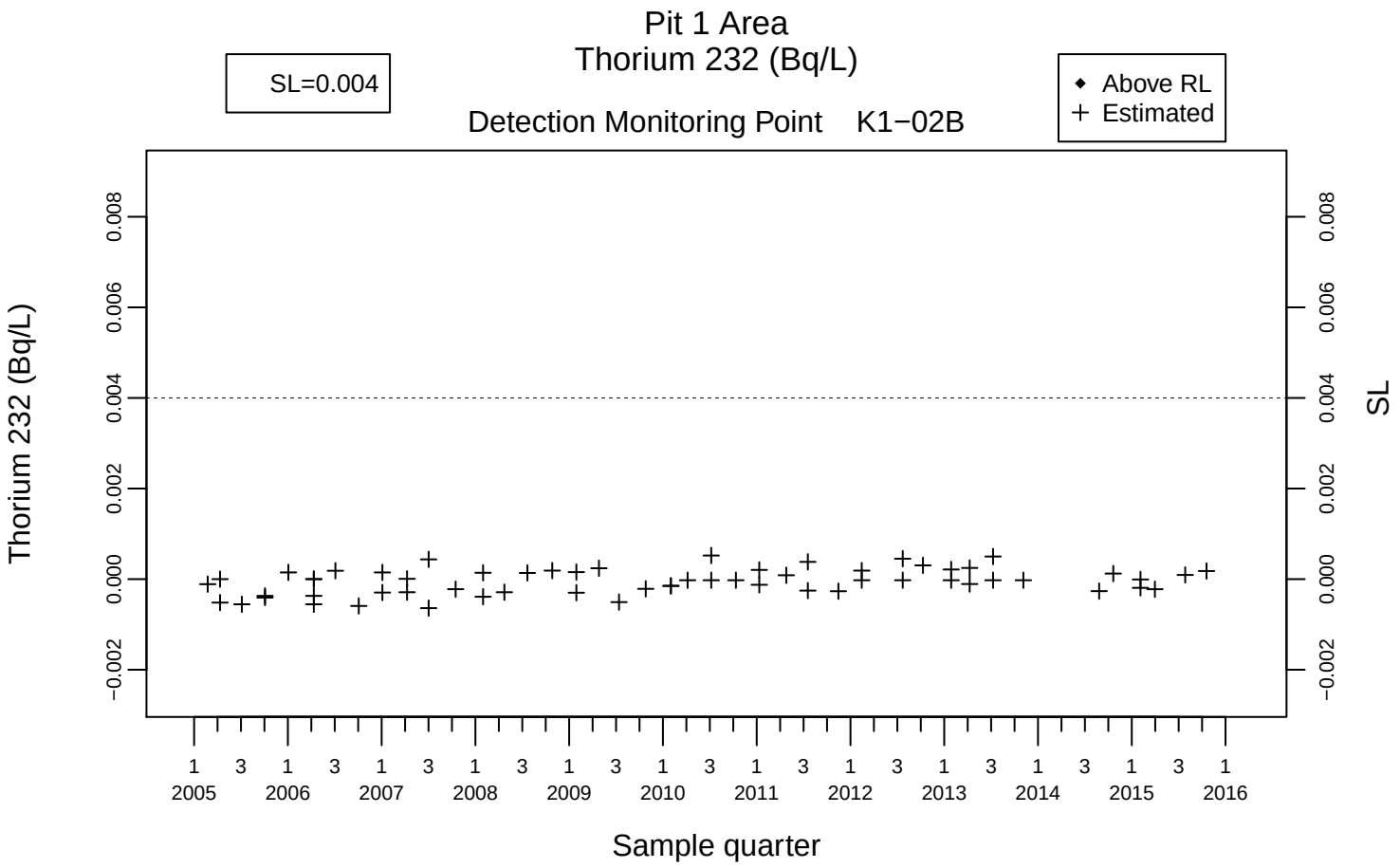

SL=0.004
Crossgradient Monitoring Point K1−08
Thorium 228 (Bq/L)
SL
0.020
0.015
0.010
0.005
0.000
−0.005
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

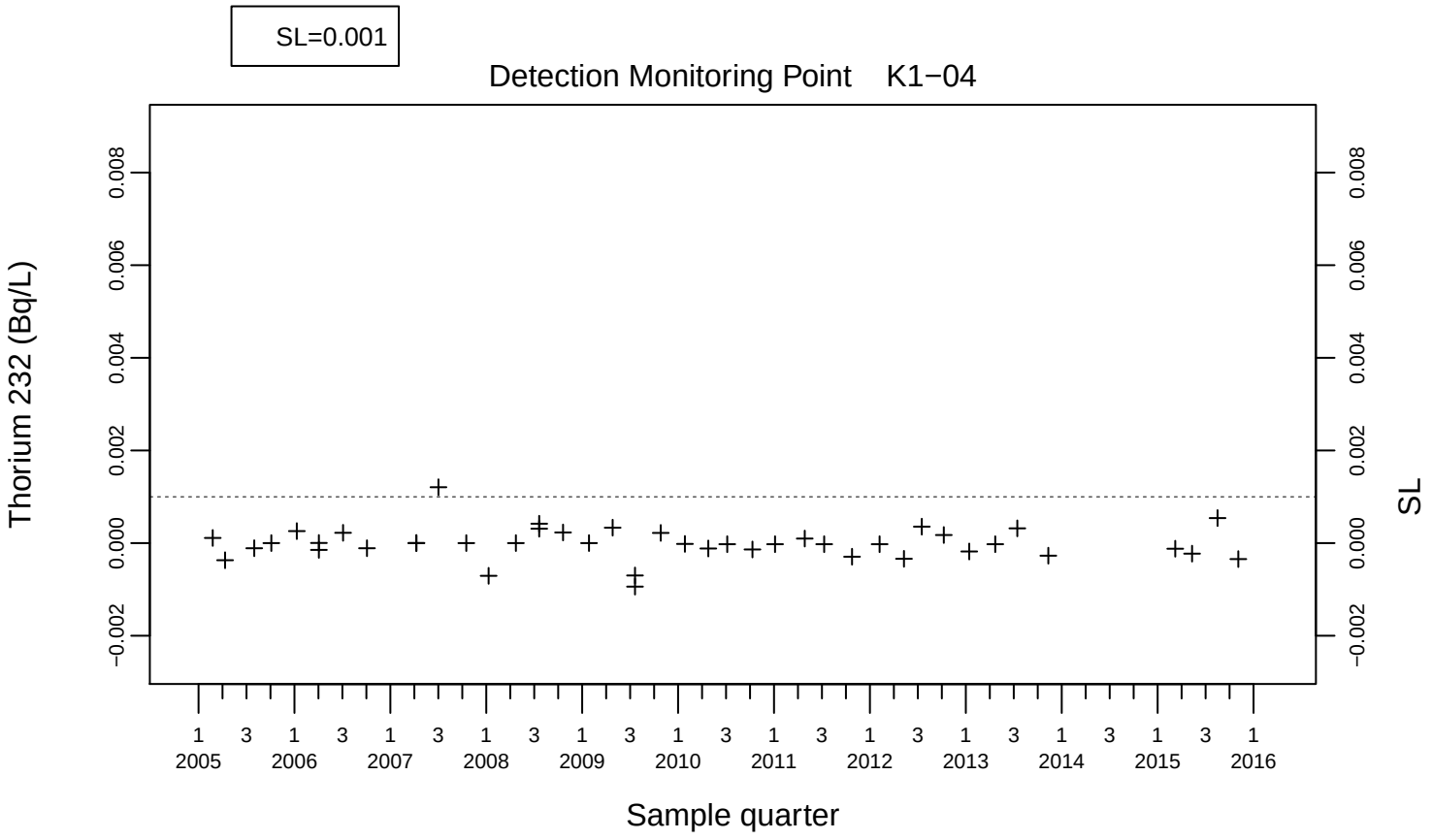

Pit 1 Area
Thorium 228 (Bq/L)
SL=0.008
Above RL
Estimated
Crossgradient Monitoring Point K1−09
Thorium 228 (Bq/L)
SL
0.020
0.015
0.010
0.005
0.000
−0.005
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

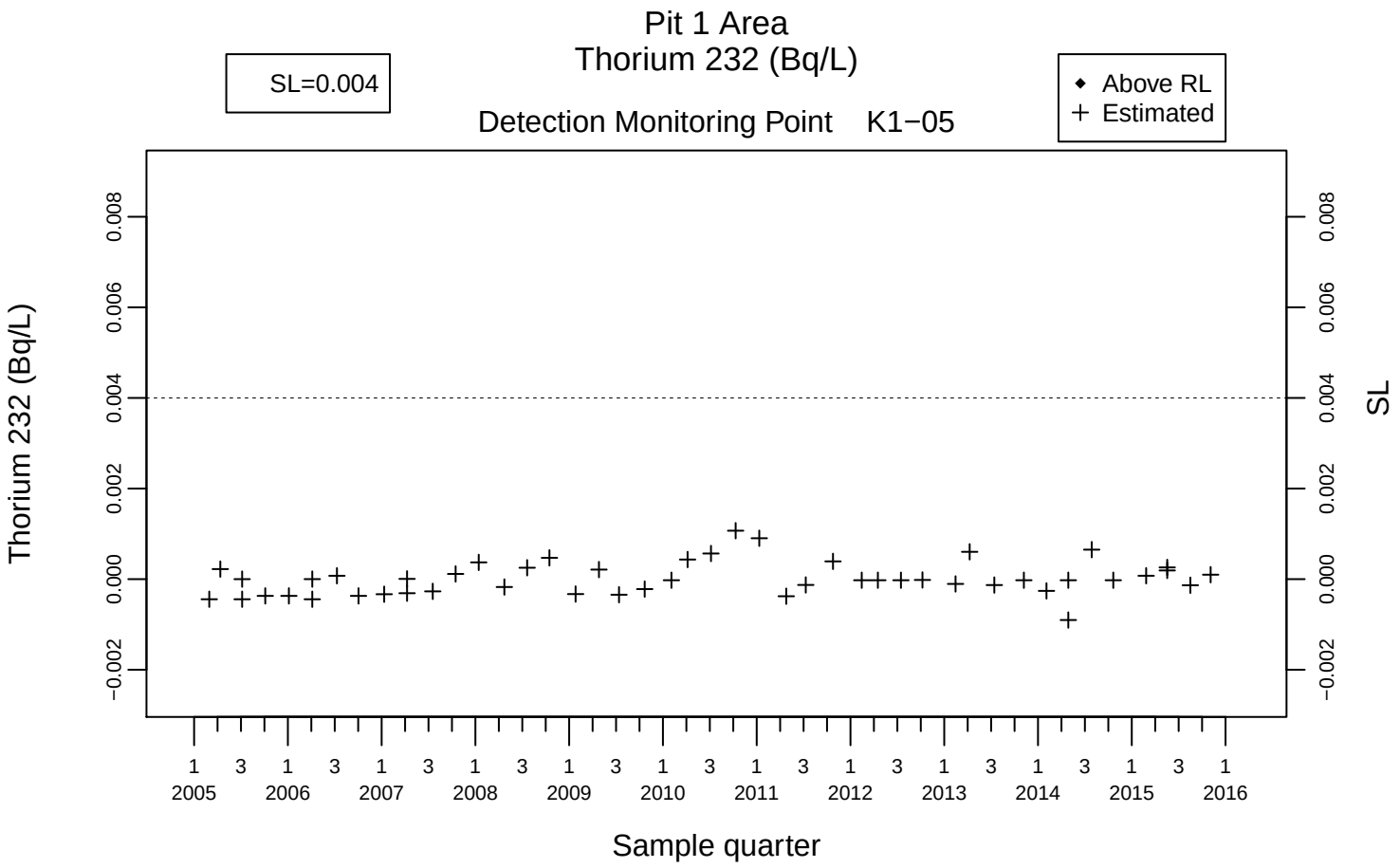

SL=0.005
Detection Monitoring Point W−PIT1−2326
Thorium 228 (Bq/L)
SL
0.020
0.015
0.010
0.005
0.000
−0.005
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

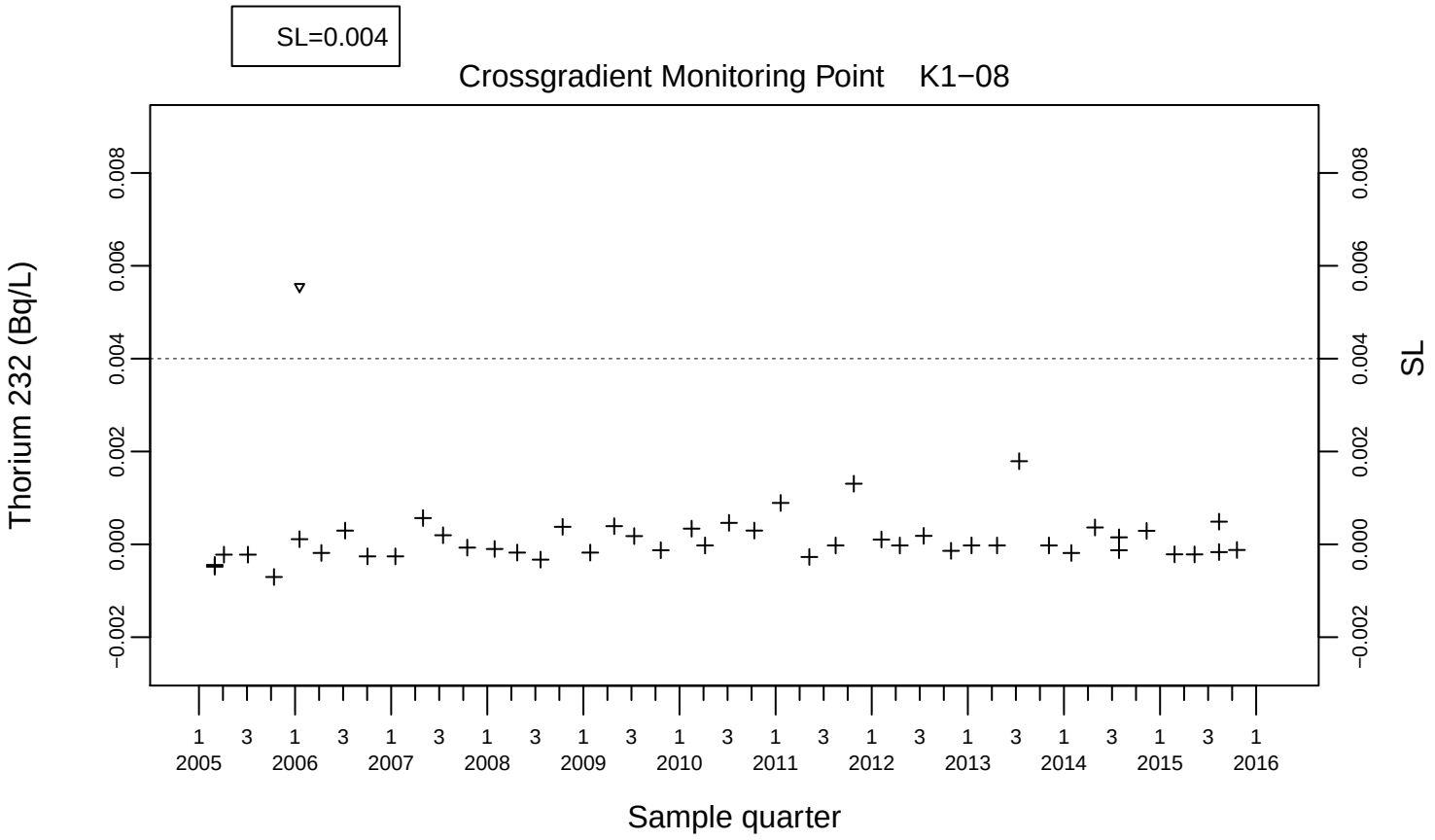

Pit 1 Area
Thorium 232 (Bq/L)
Above RL
Estimated
Background Monitoring Point K1−01C
Thorium 232 (Bq/L)
0.008
0.006
0.004
0.002
0.000
−0.002
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

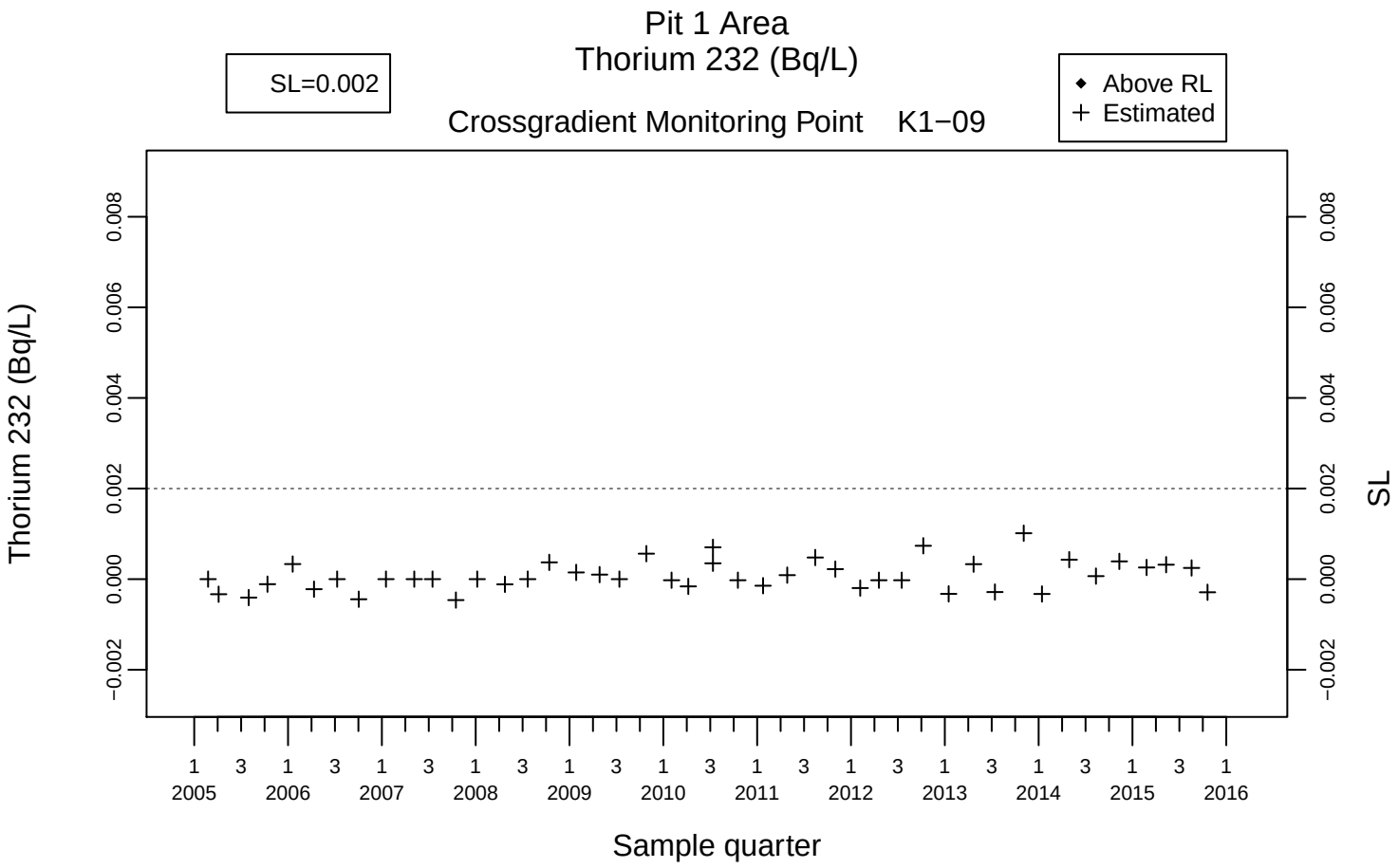

Background Monitoring Point K1−07
Thorium 232 (Bq/L)
0.008
0.006
0.004
0.002
0.000
−0.002
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

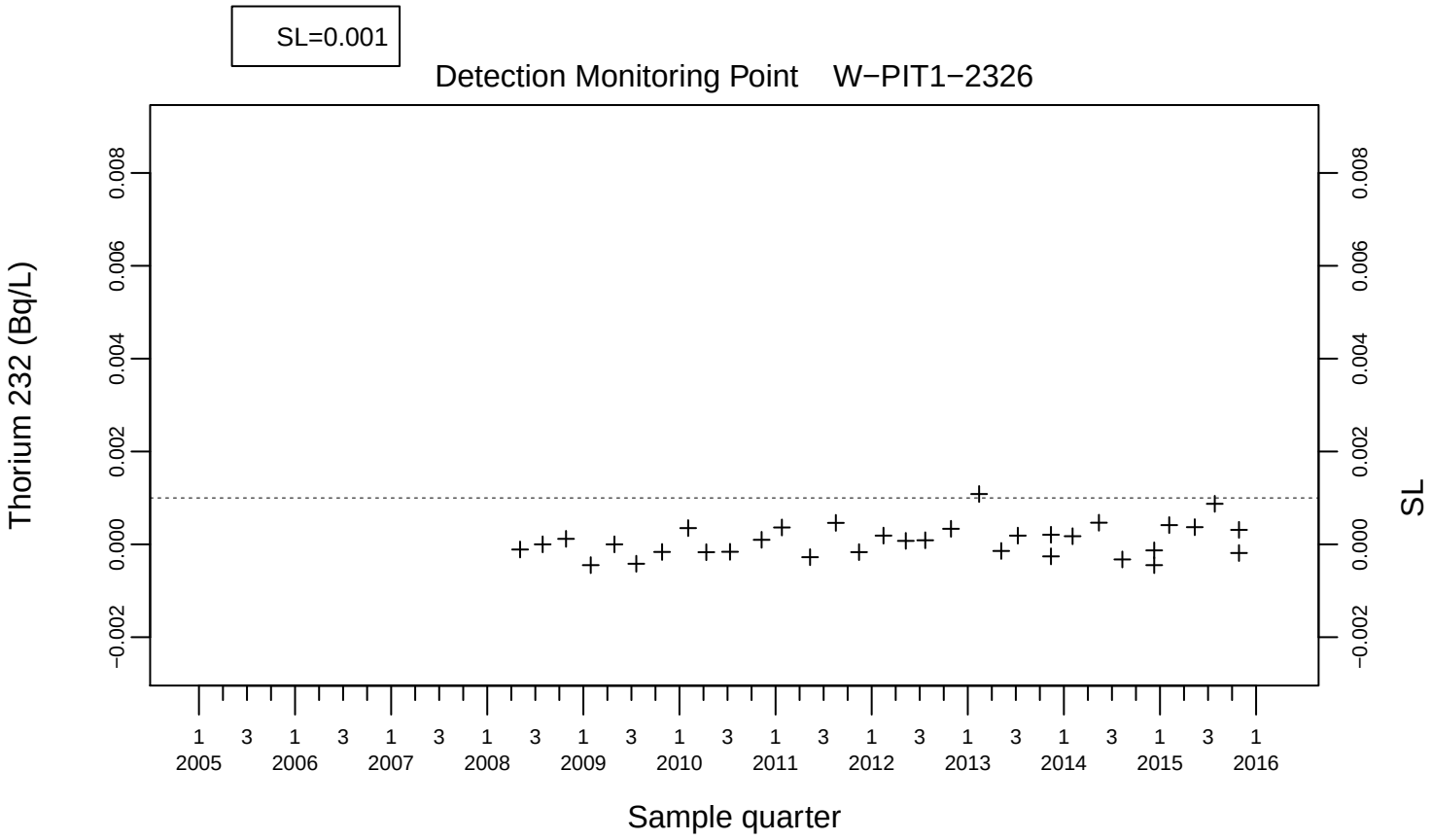

Pit 1 Area
Thorium 232 (Bq/L)
SL=0.004
Above RL
Estimated
Detection Monitoring Point K1−02B
Thorium 232 (Bq/L)
SL
0.008
0.006
0.004
0.002
0.000
−0.002
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

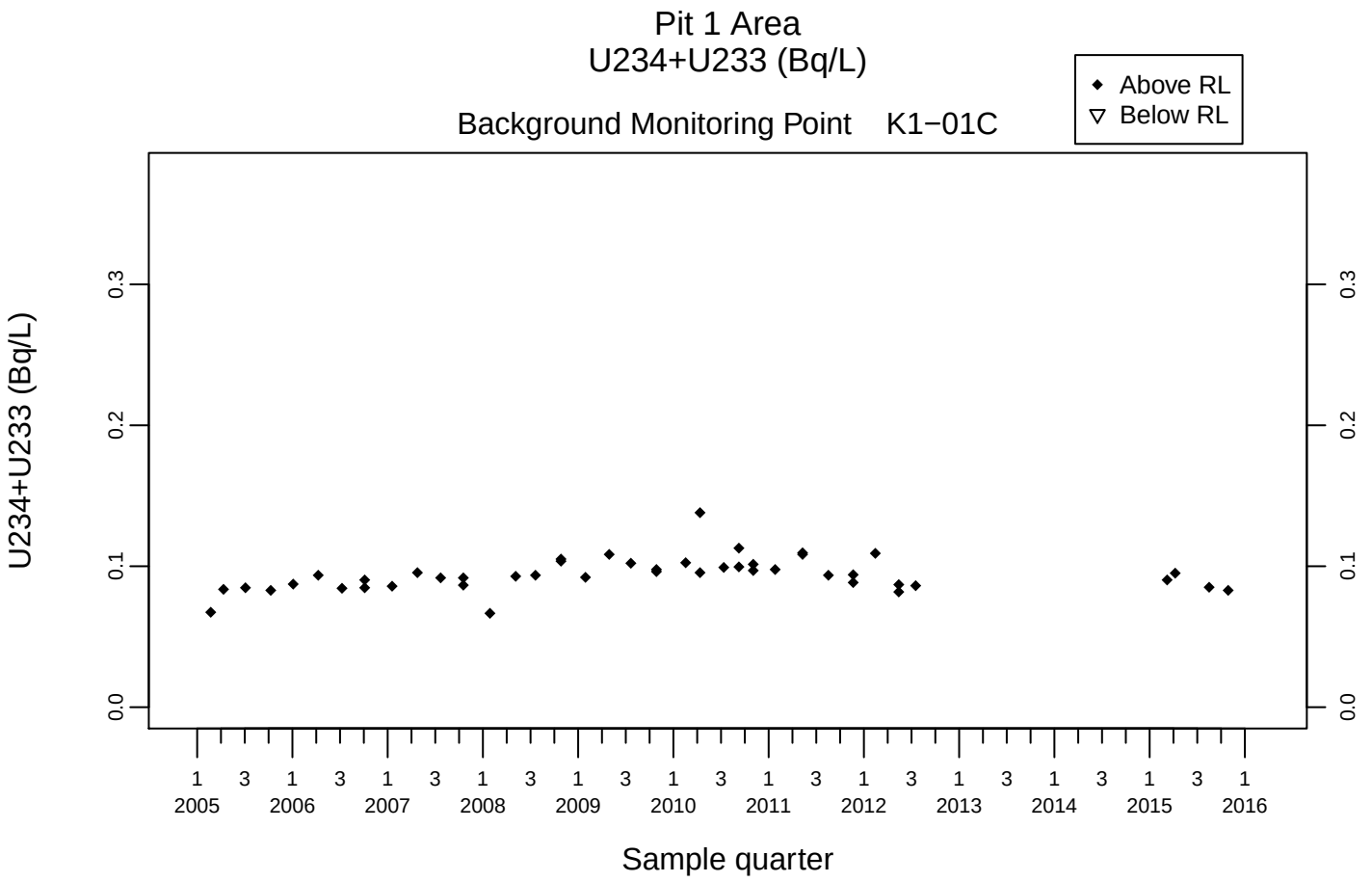

SL=0.001
Detection Monitoring Point K1−04
Thorium 232 (Bq/L)
SL
0.008
0.006
0.004
0.002
0.000
−0.002
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

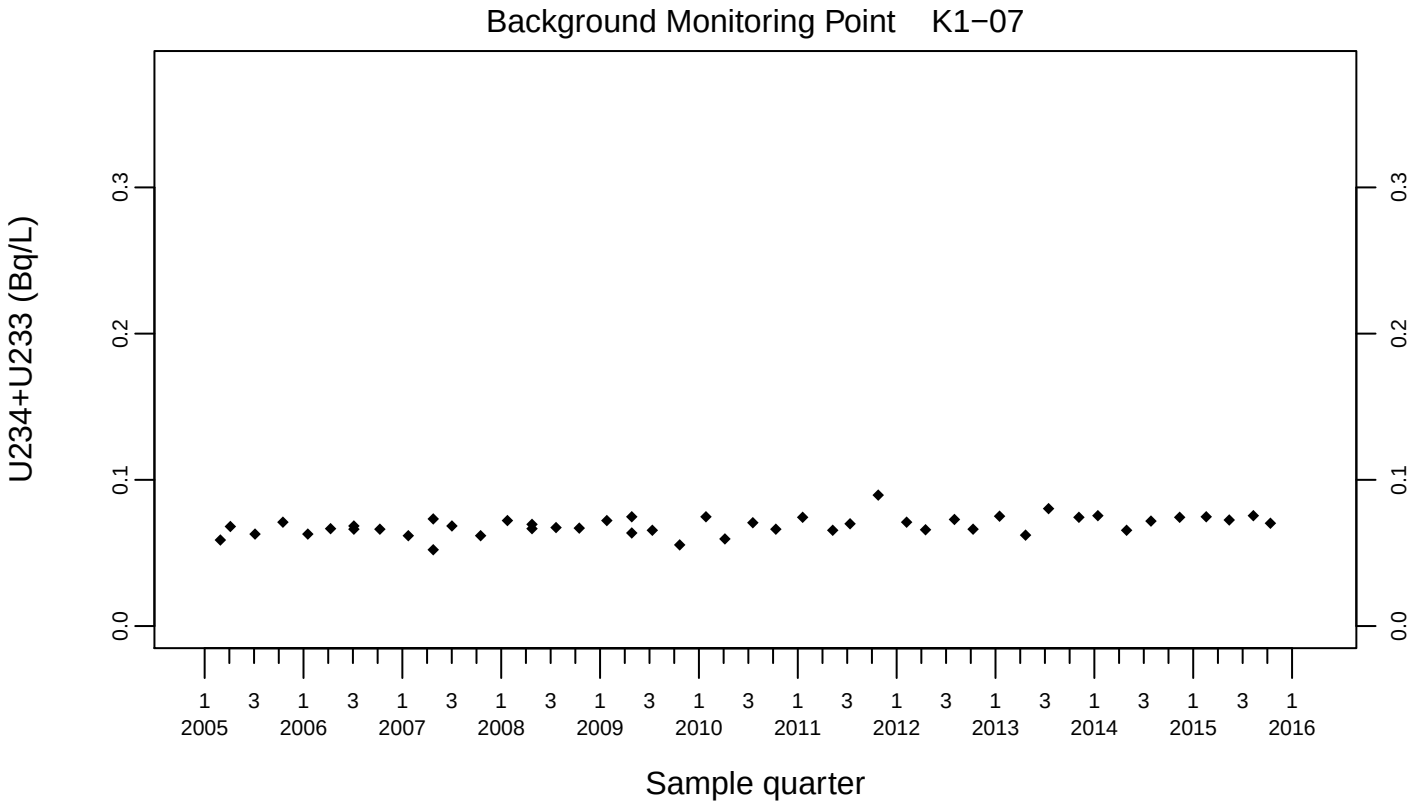

Pit 1 Area
Thorium 232 (Bq/L)
SL=0.004
Above RL
Estimated
Detection Monitoring Point K1−05
Thorium 232 (Bq/L)
SL
0.008
0.006
0.004
0.002
0.000
−0.002
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

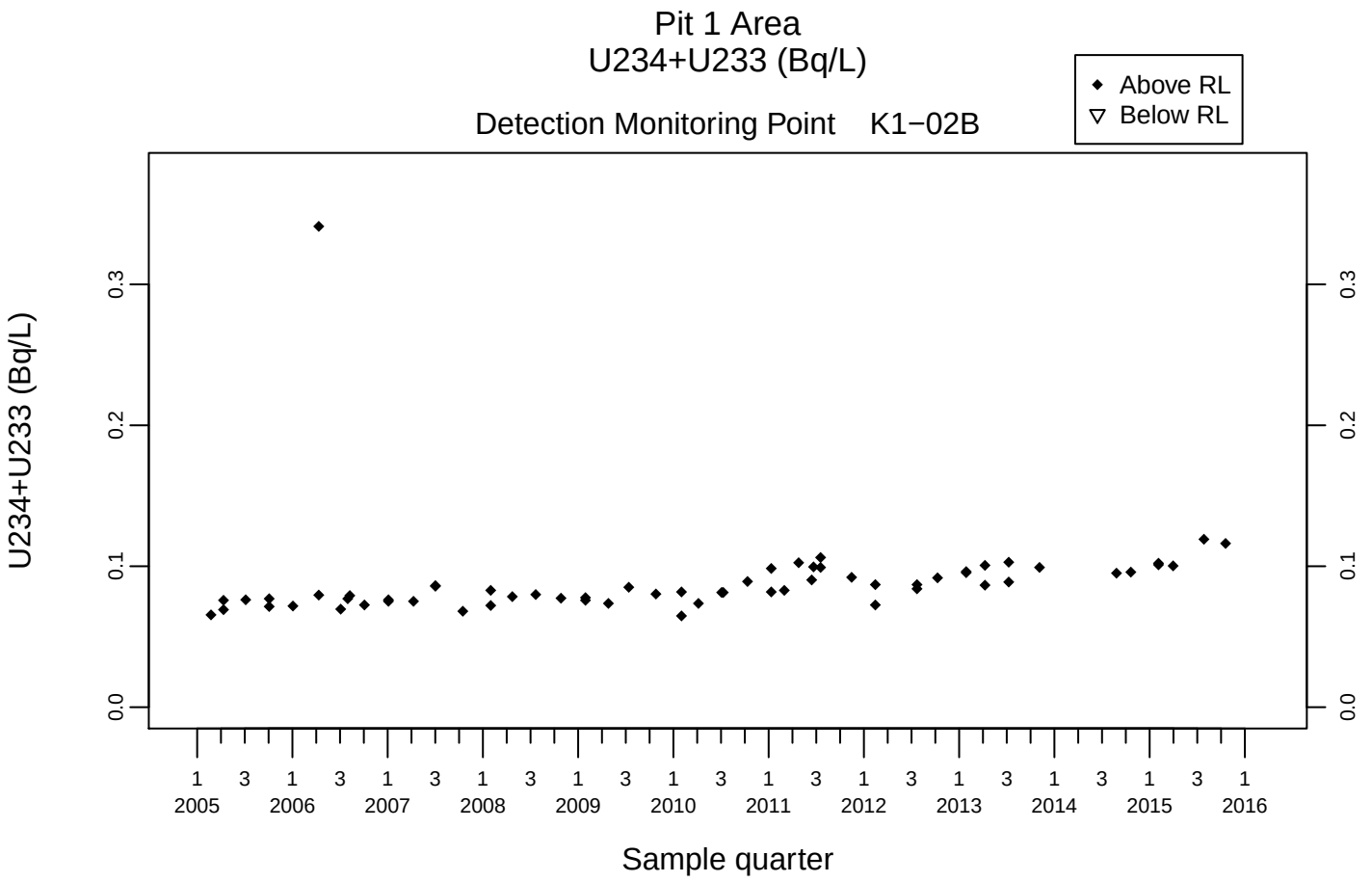

SL=0.004
Crossgradient Monitoring Point K1−08
Thorium 232 (Bq/L)
SL
0.008
0.006
0.004
0.002
0.000
−0.002
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

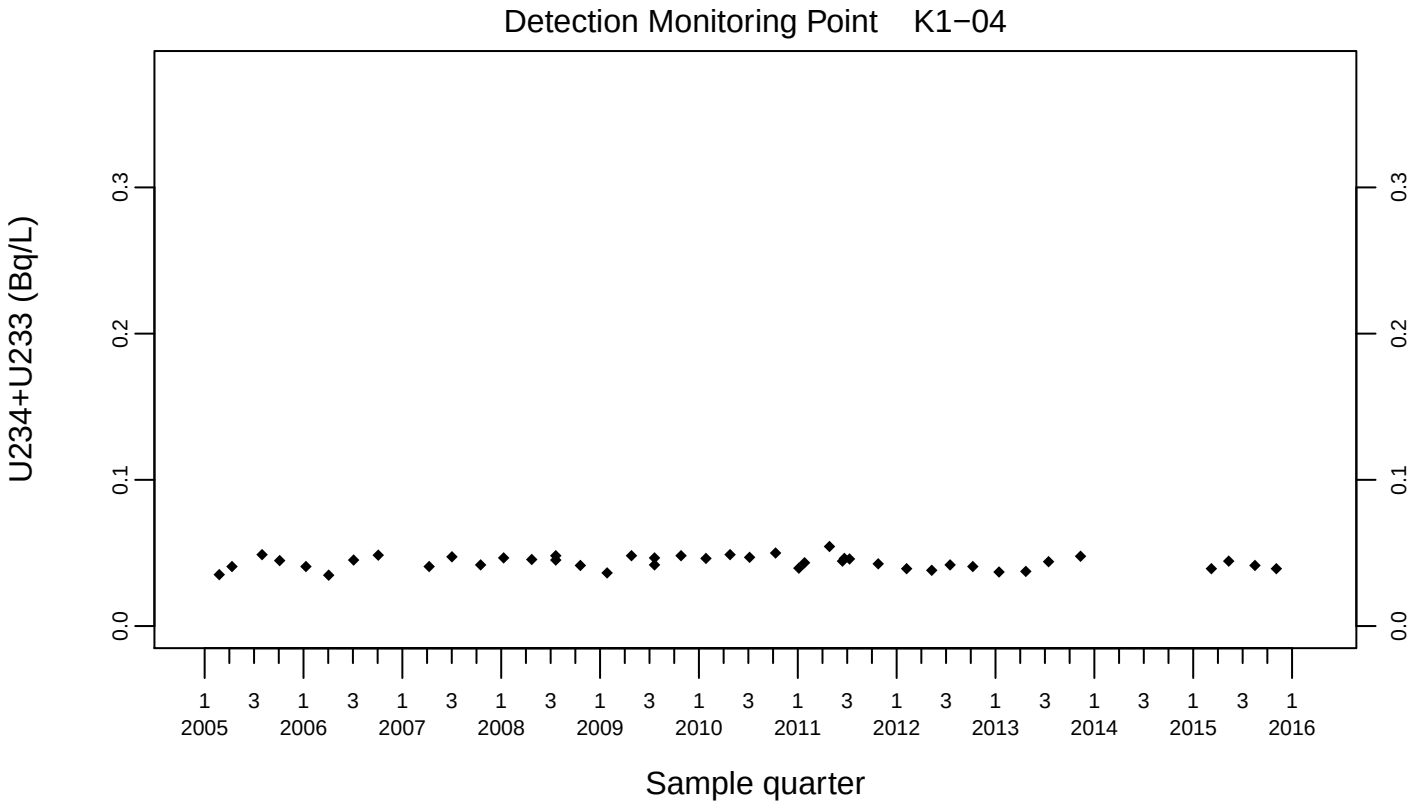

Pit 1 Area
Thorium 232 (Bq/L)
SL=0.002
Above RL
Estimated
Crossgradient Monitoring Point K1−09
Thorium 232 (Bq/L)
SL
0.008
0.006
0.004
0.002
0.000
−0.002
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

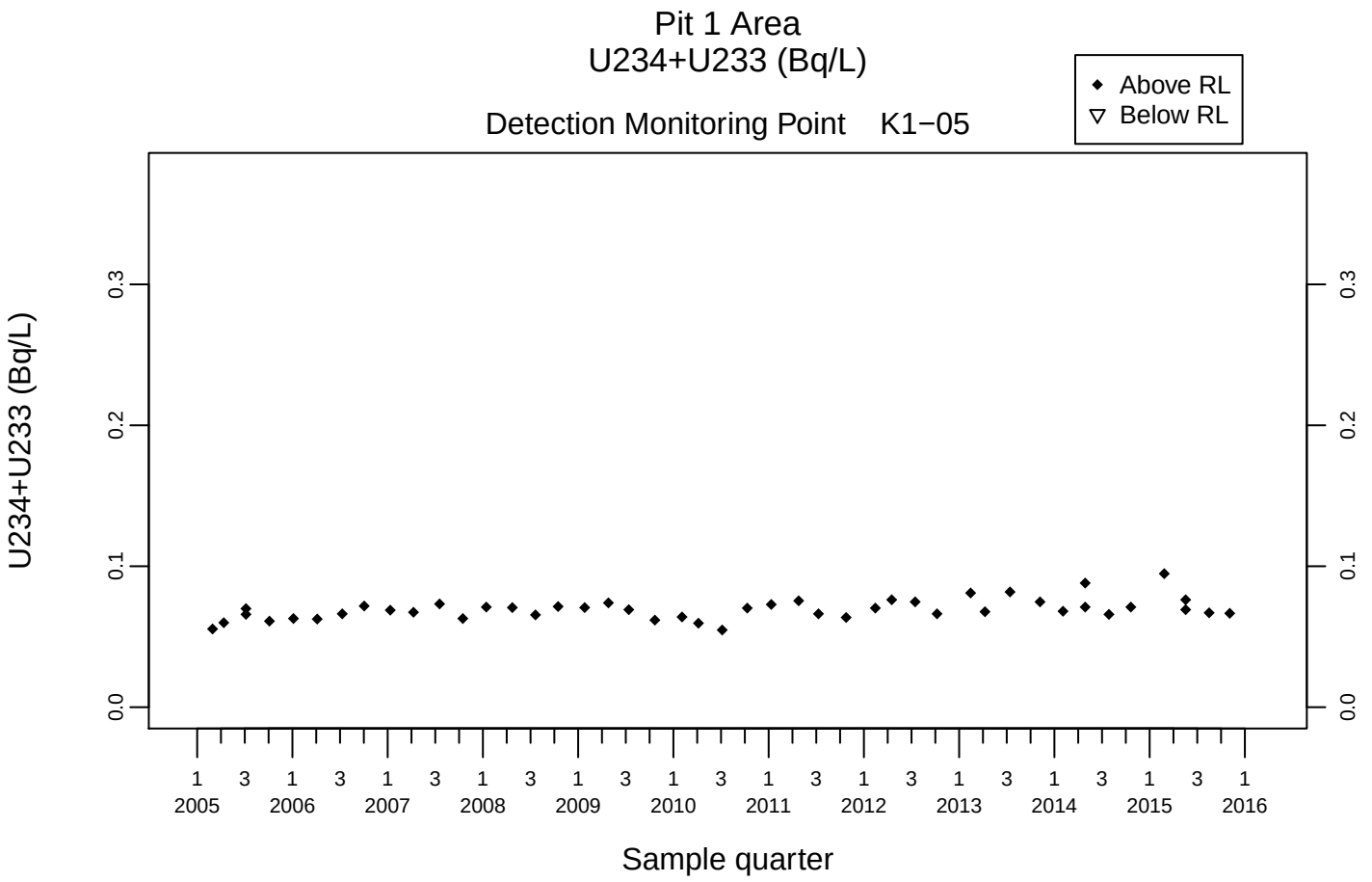

SL=0.001
Detection Monitoring Point W−PIT1−2326
Thorium 232 (Bq/L)
SL
0.008
0.006
0.004
0.002
0.000
−0.002
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

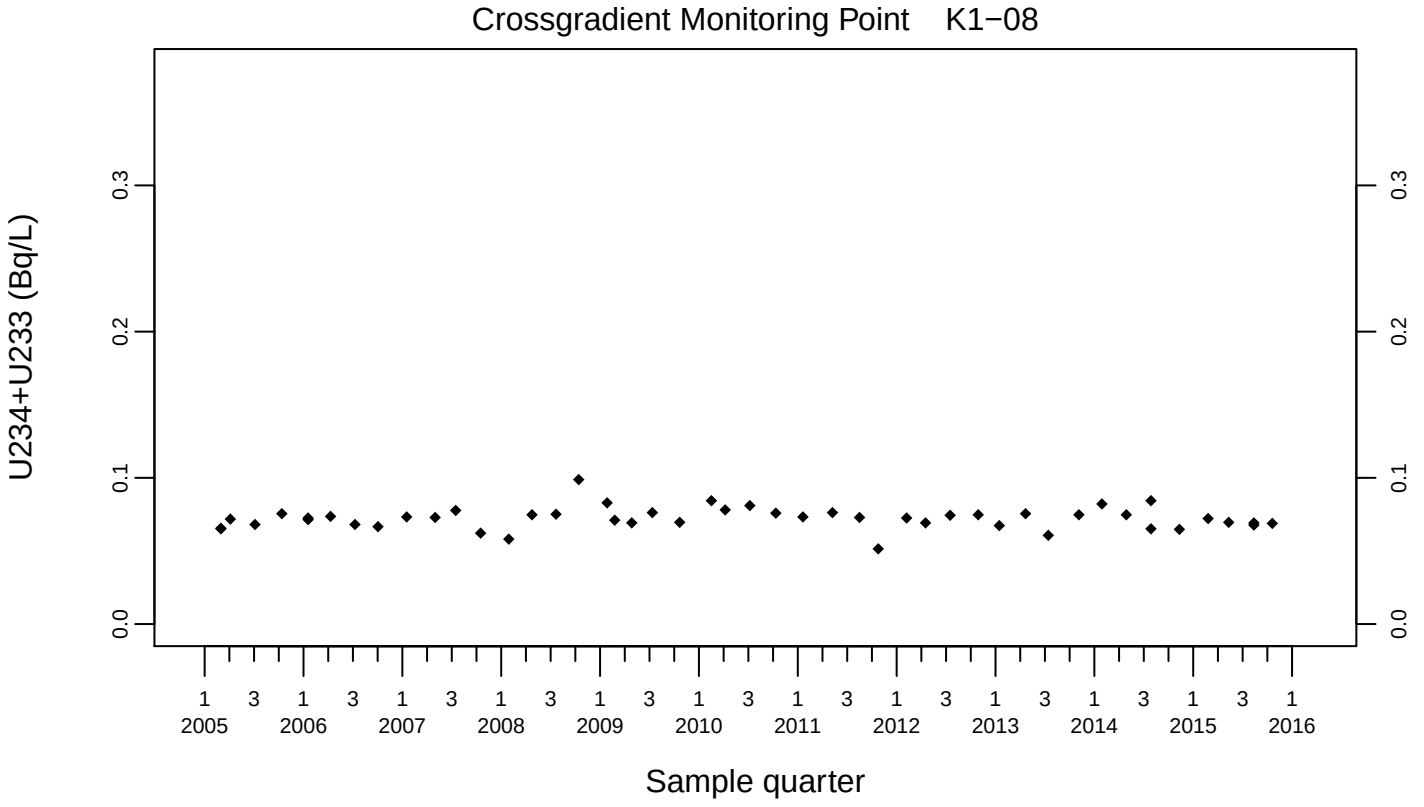

Pit 1 Area
U234+U233 (Bq/L)
Above RL
Below RL
Background Monitoring Point K1−01C
U234+U233 (Bq/L)
0.0
0.1
0.2
0.3
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

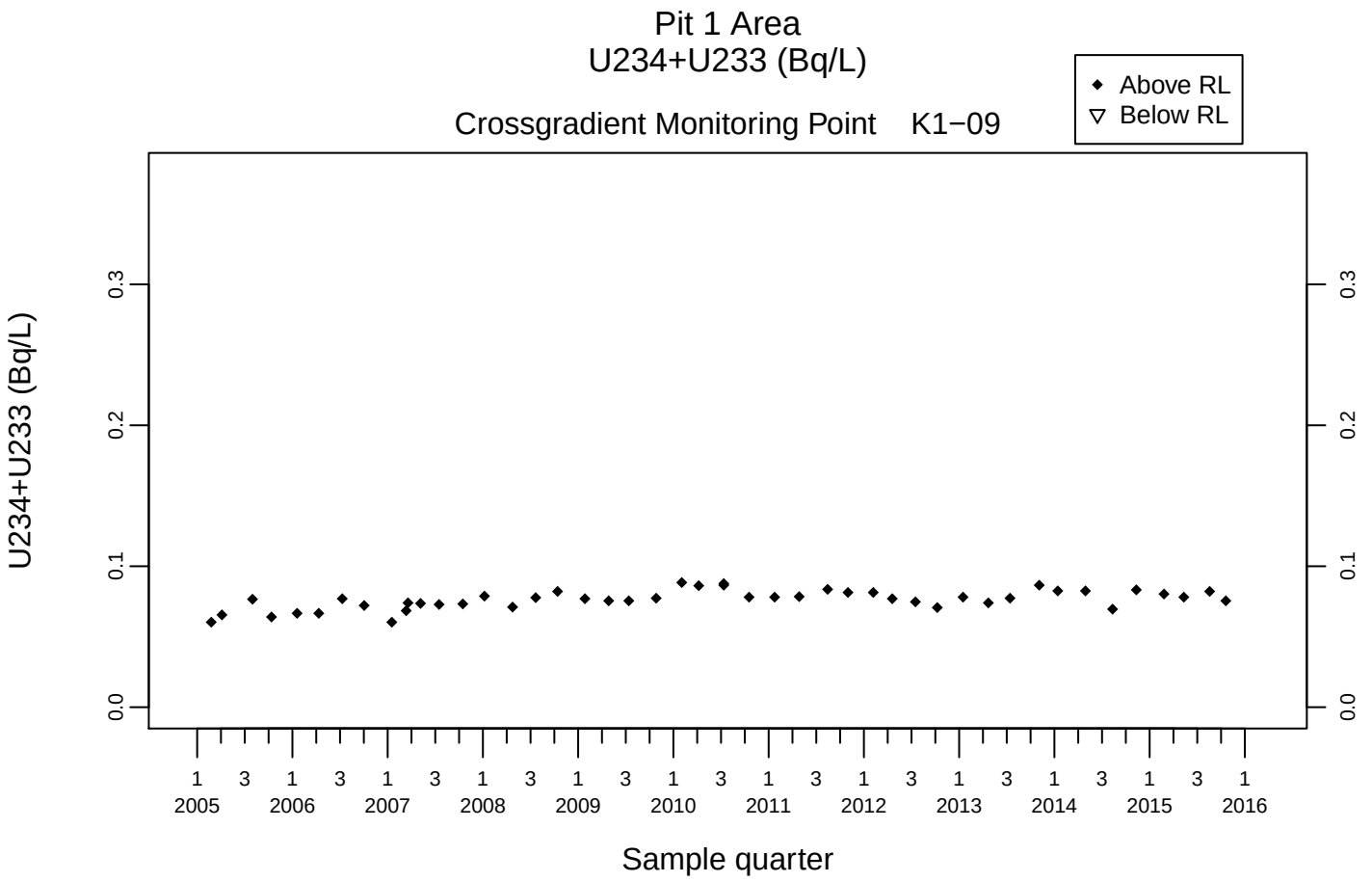

Background Monitoring Point K1−07
U234+U233 (Bq/L)
0.0
0.1
0.2
0.3
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

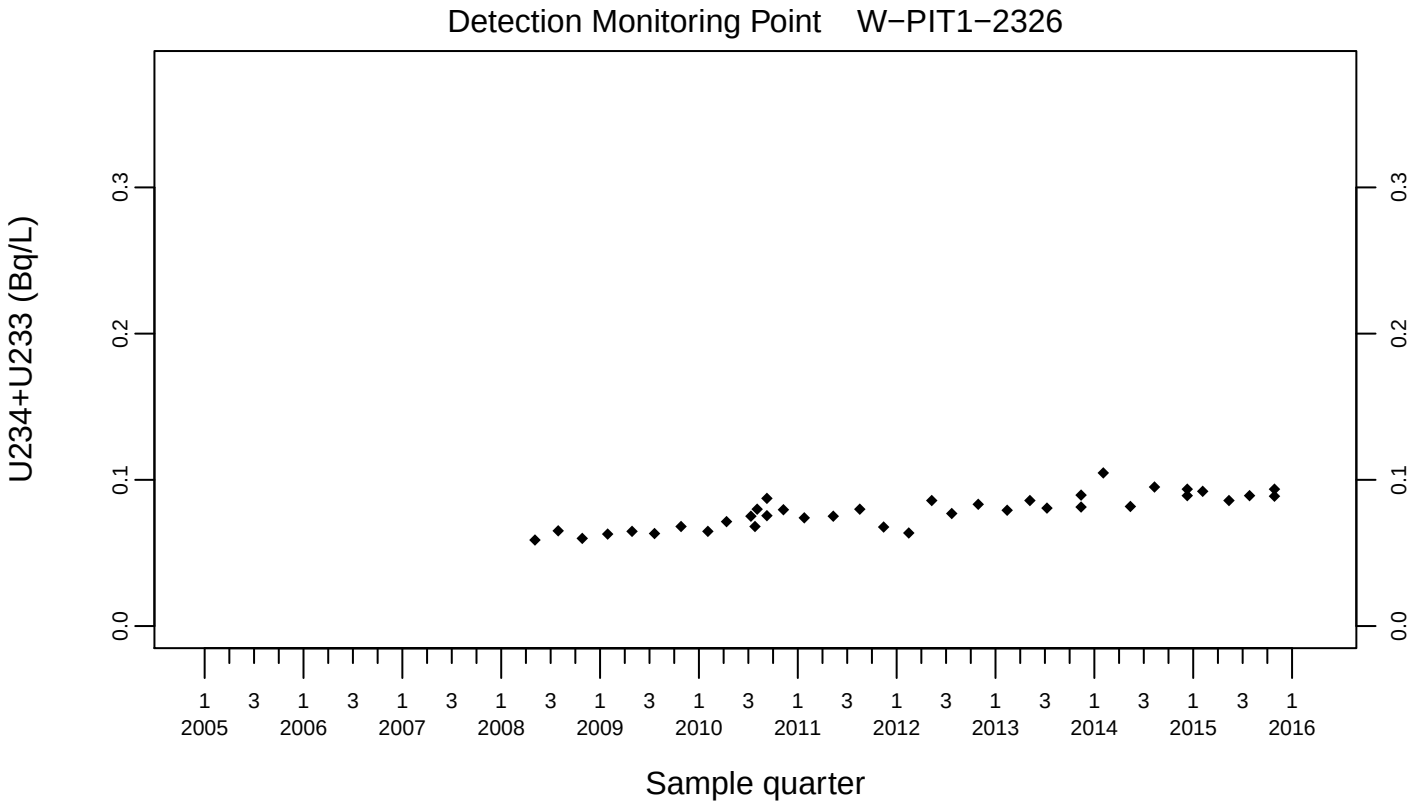

Pit 1 Area
U234+U233 (Bq/L)
Above RL
Below RL
Detection Monitoring Point K1−02B
U234+U233 (Bq/L)
0.0
0.1
0.2
0.3
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

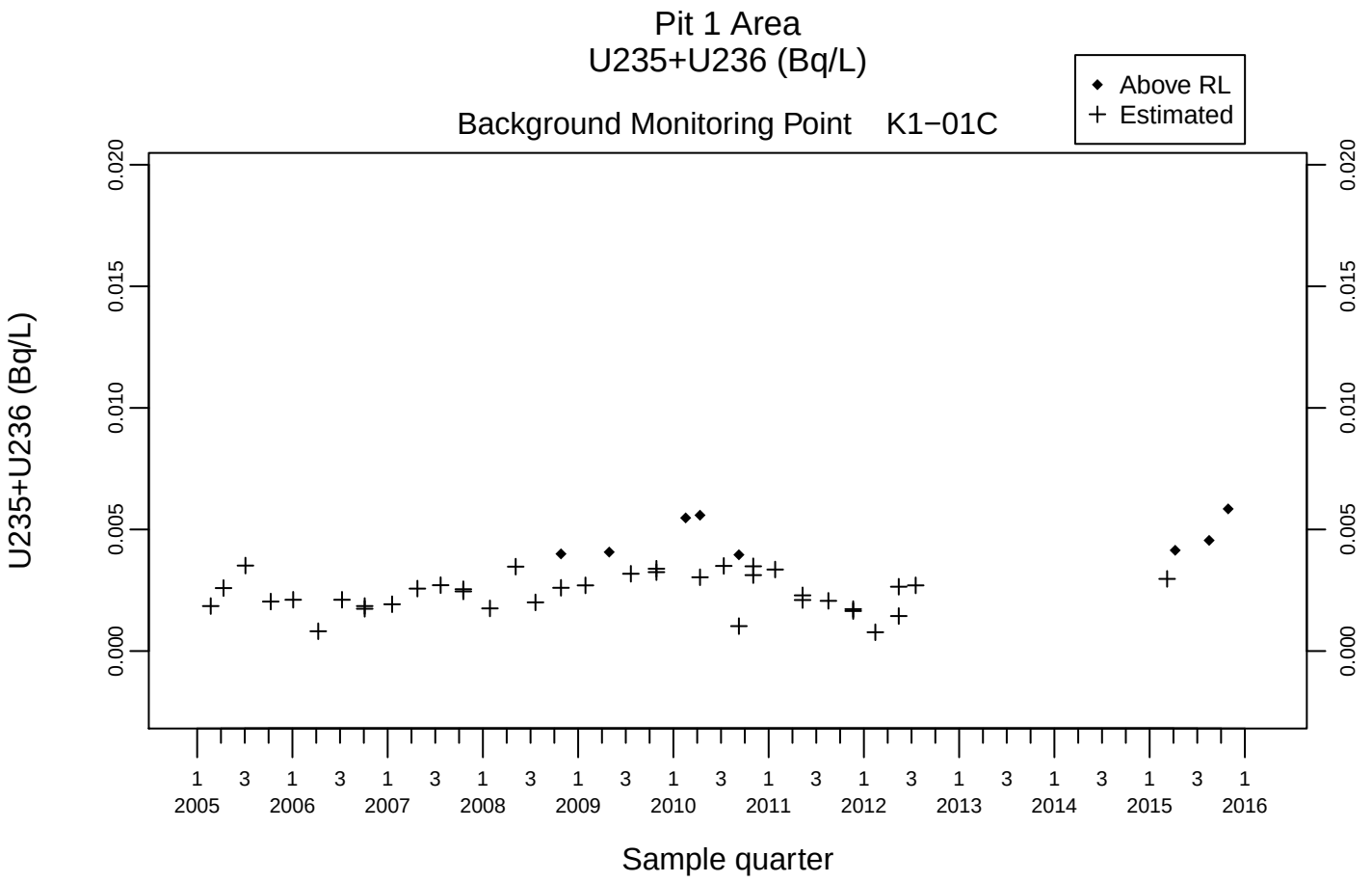

Detection Monitoring Point K1−04
U234+U233 (Bq/L)
0.0
0.1
0.2
0.3
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

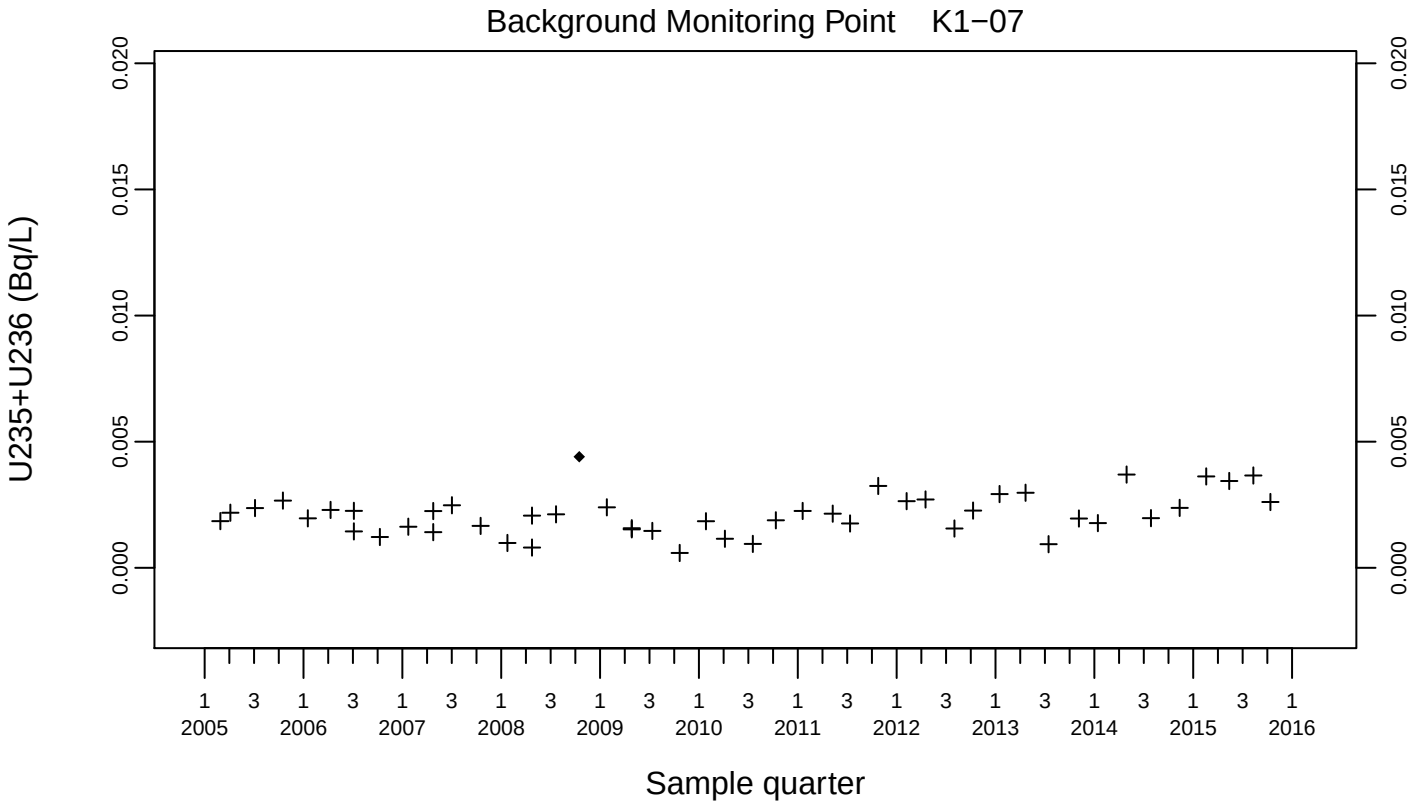

Pit 1 Area
U234+U233 (Bq/L)
Above RL
Below RL
Detection Monitoring Point K1−05
U234+U233 (Bq/L)
0.0
0.1
0.2
0.3
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

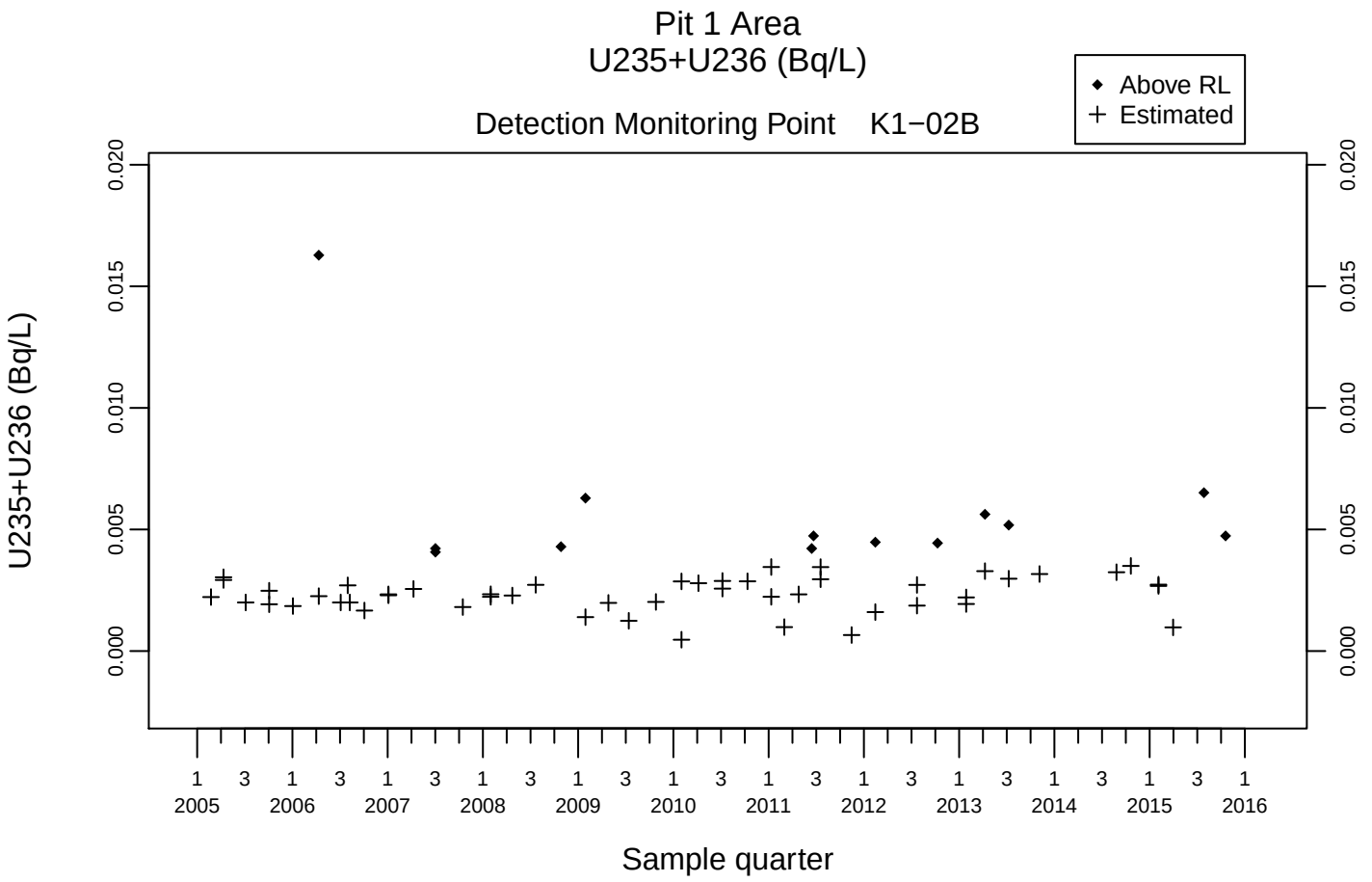

Crossgradient Monitoring Point K1−08
U234+U233 (Bq/L)
0.0
0.1
0.2
0.3
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

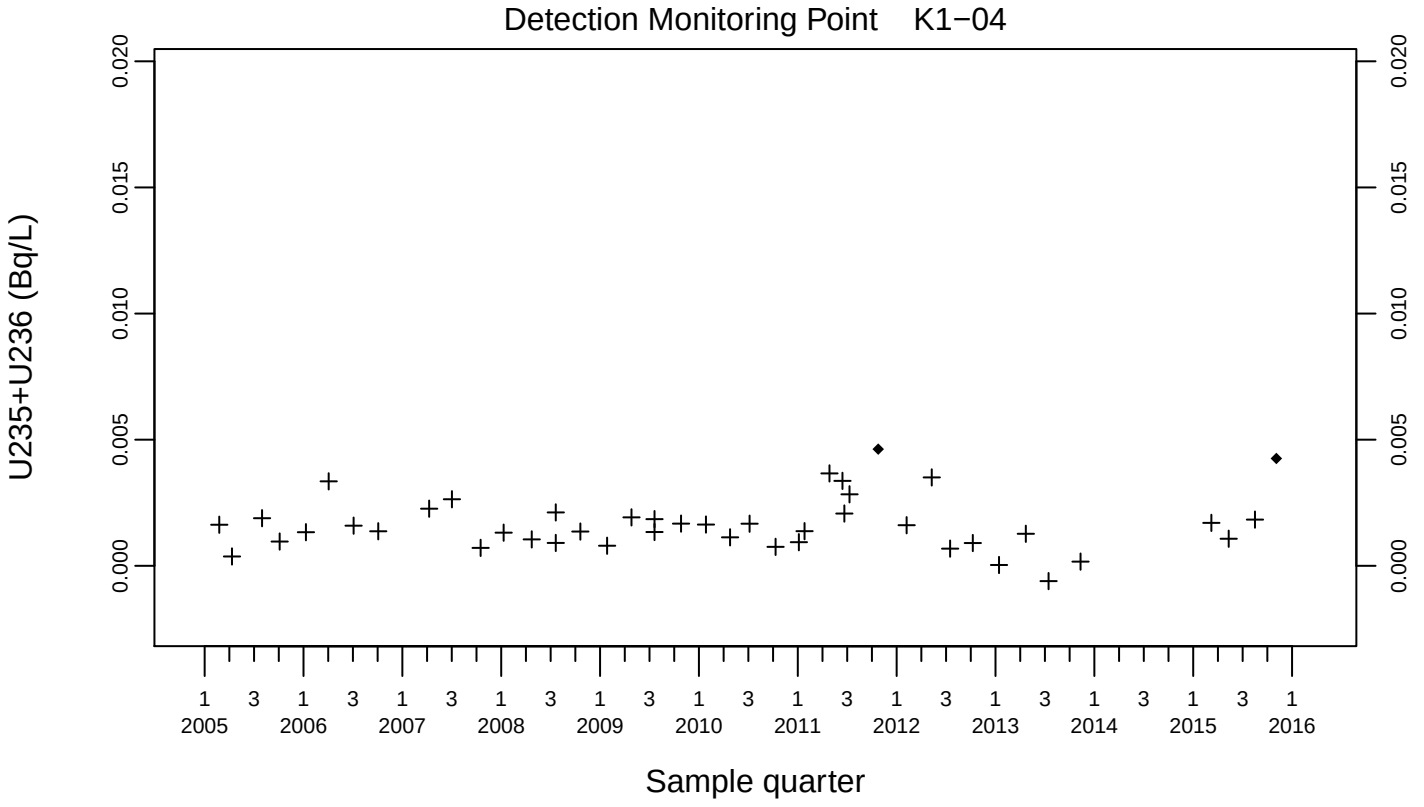

Pit 1 Area
U234+U233 (Bq/L)
Above RL
Below RL
Crossgradient Monitoring Point K1−09
U234+U233 (Bq/L)
0.0
0.1
0.2
0.3
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

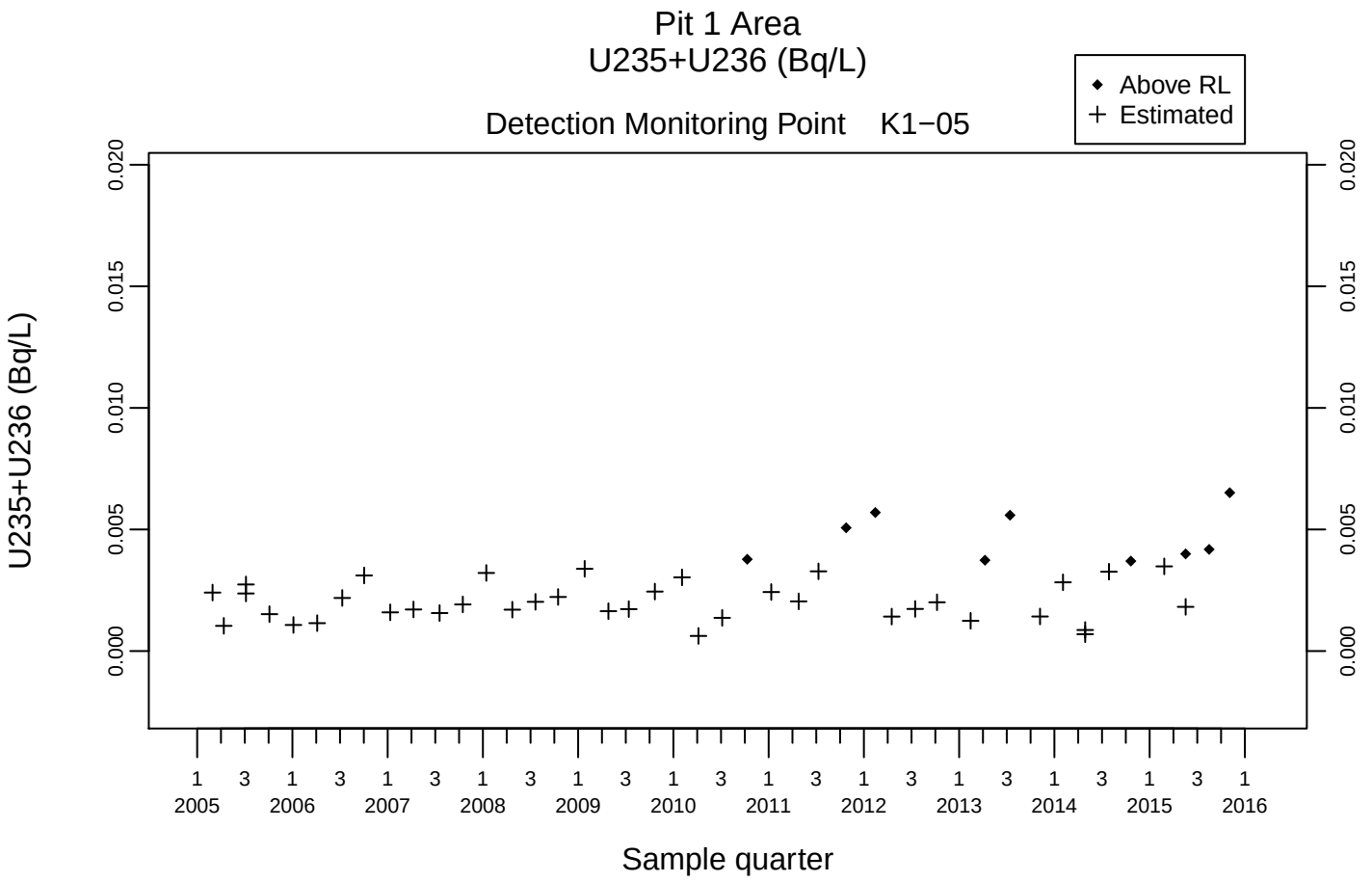

Detection Monitoring Point W−PIT1−2326
U234+U233 (Bq/L)
0.0
0.1
0.2
0.3
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

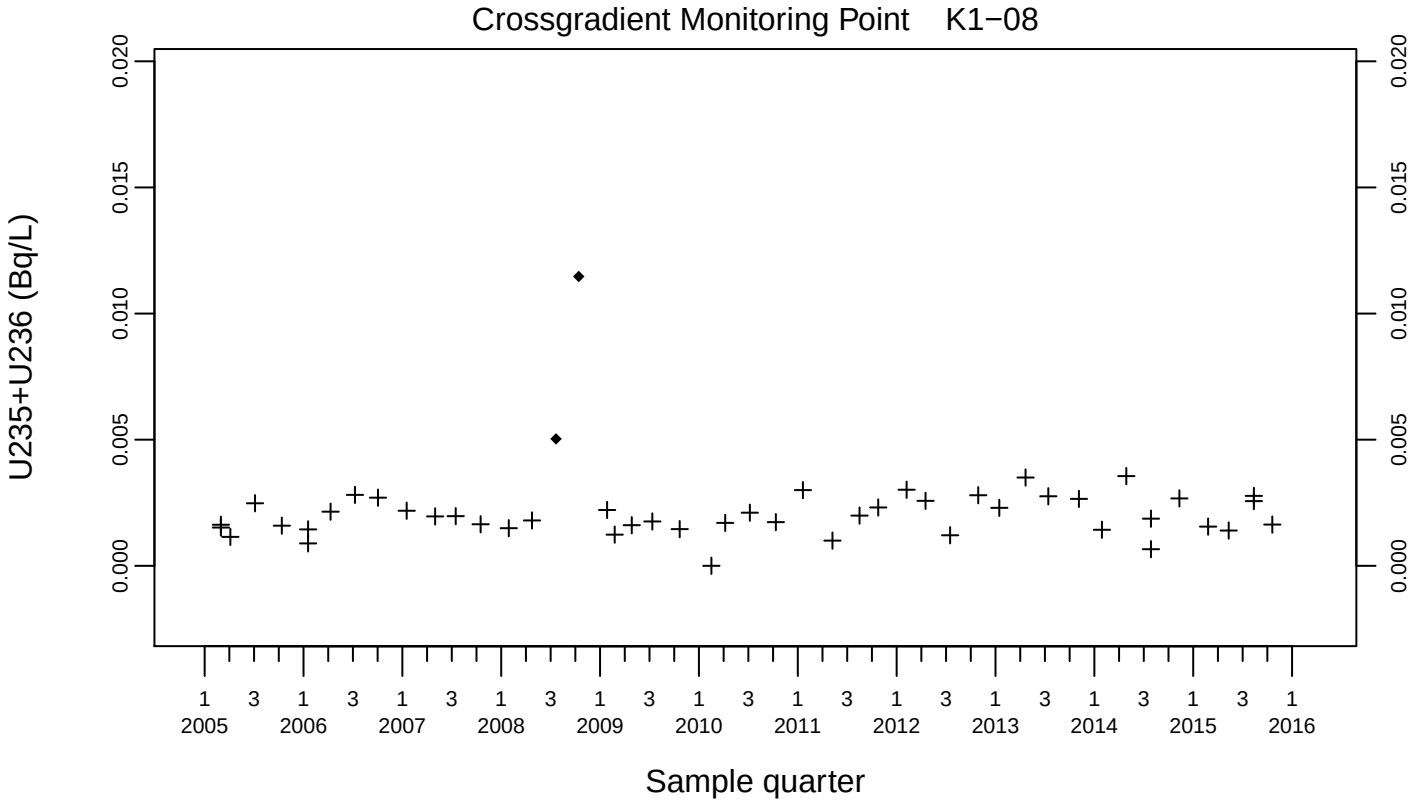

Pit 1 Area
U235+U236 (Bq/L)
Above RL
Estimated
Background Monitoring Point K1−01C
U235+U236 (Bq/L)
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

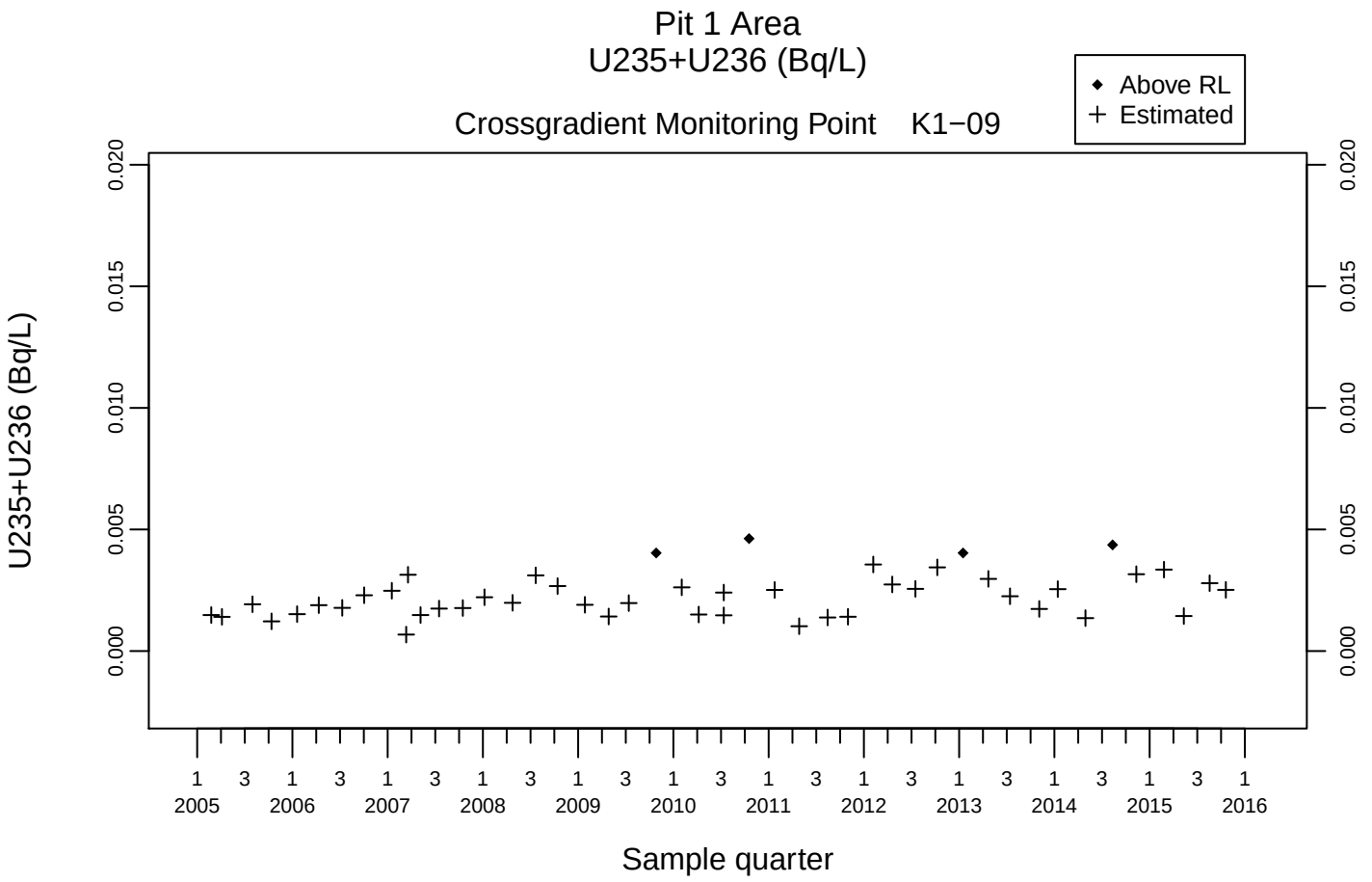

Background Monitoring Point K1−07
U235+U236 (Bq/L)
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

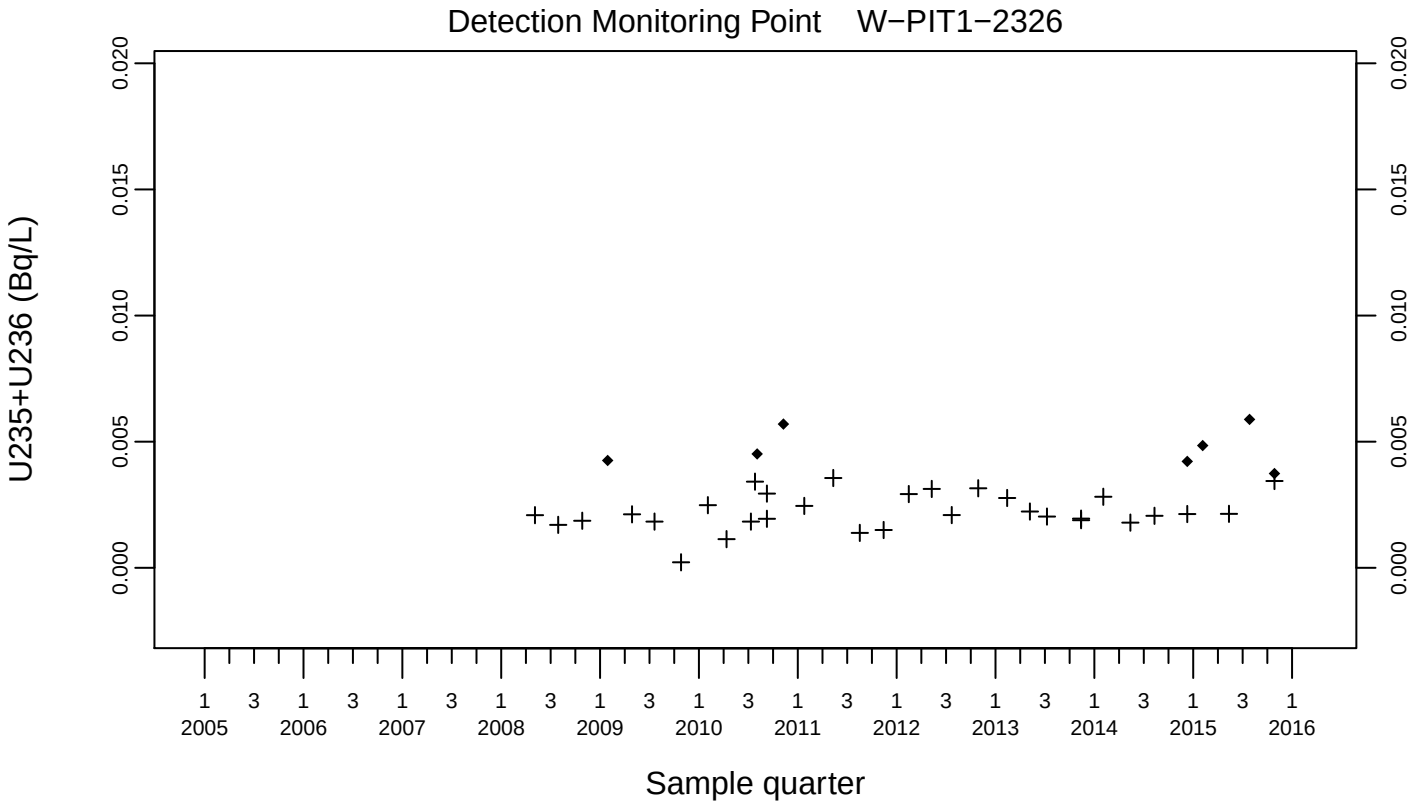

Pit 1 Area
U235+U236 (Bq/L)
Above RL
Estimated
Detection Monitoring Point K1−02B
U235+U236 (Bq/L)
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

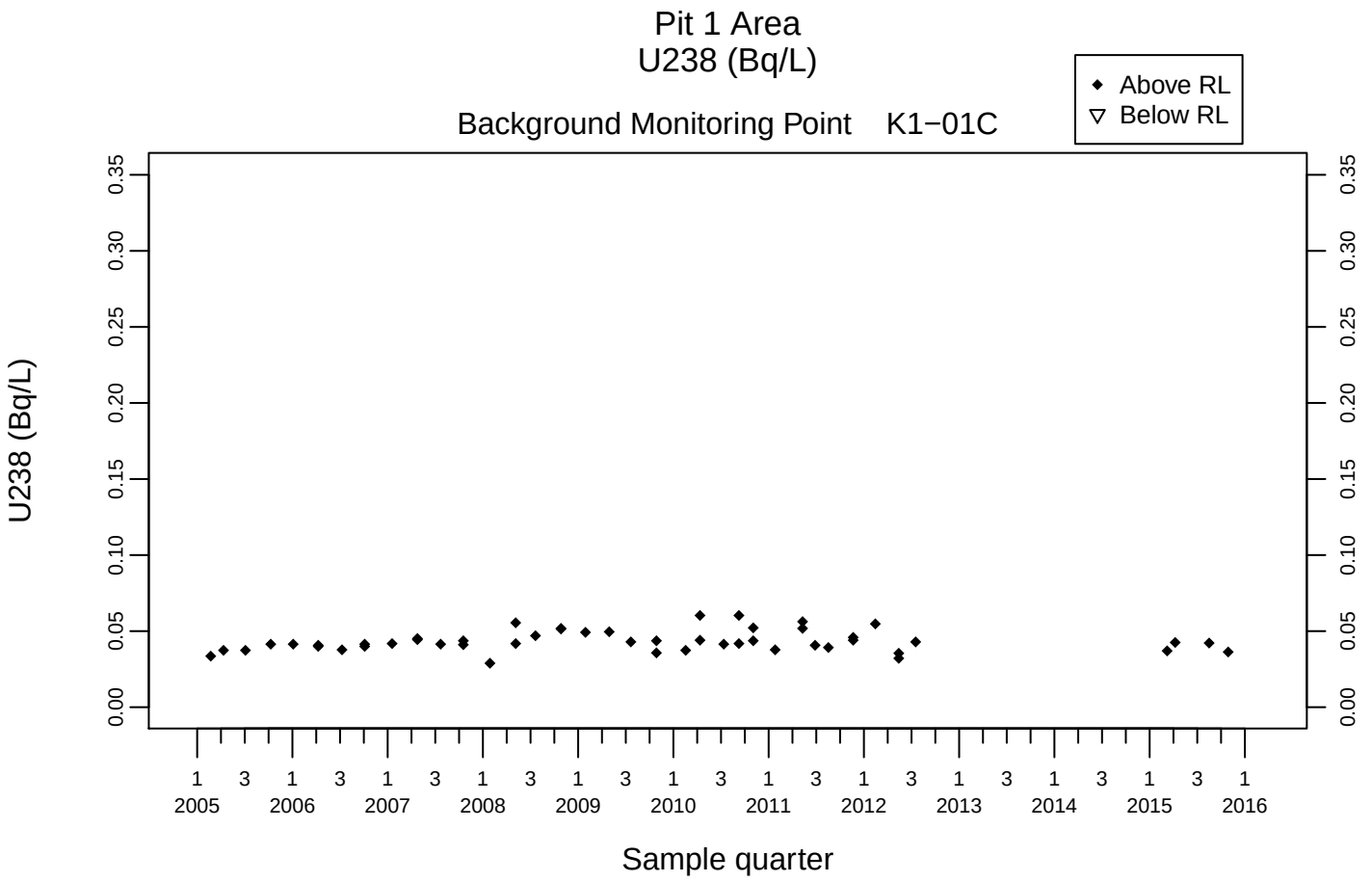

Detection Monitoring Point K1−04
U235+U236 (Bq/L)
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

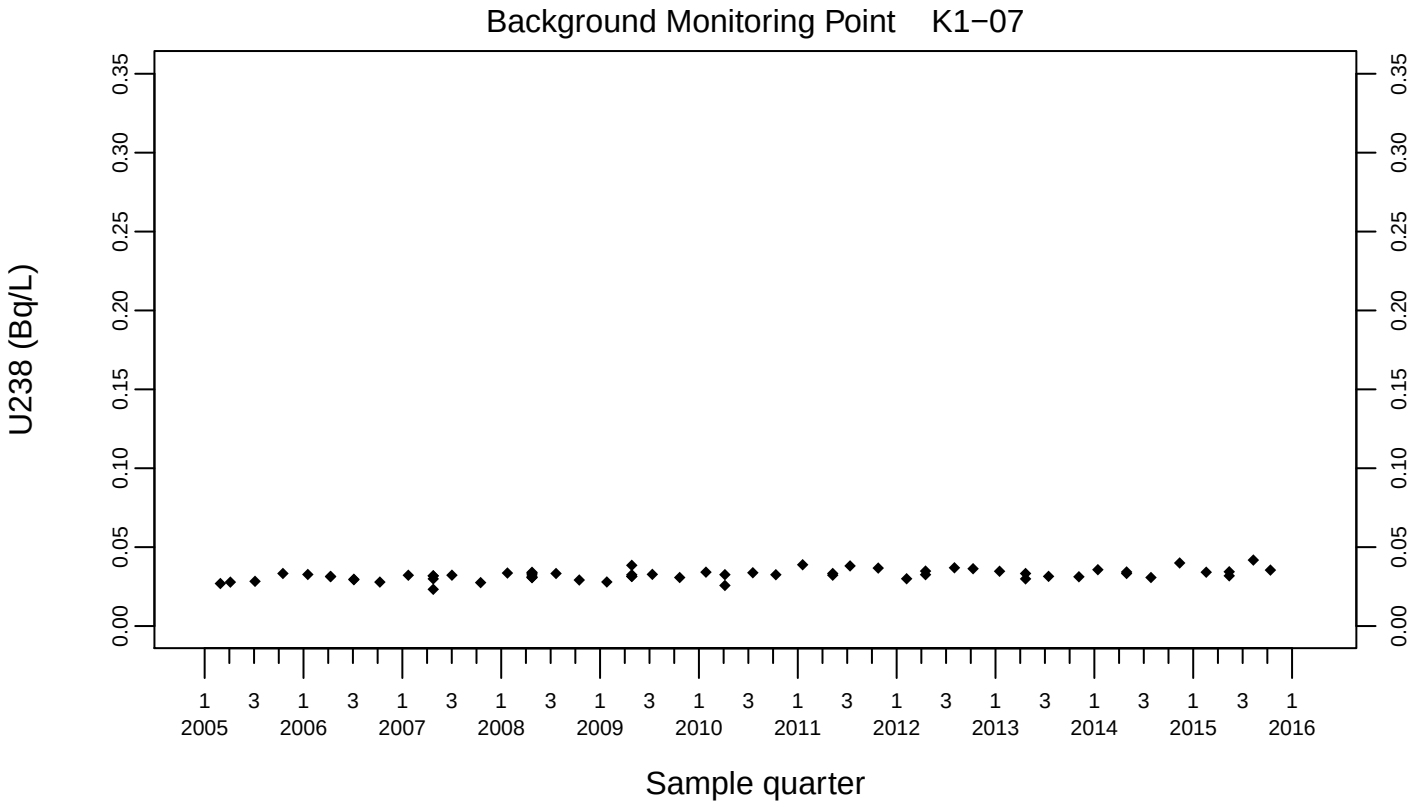

Pit 1 Area
U235+U236 (Bq/L)
Above RL
Estimated
Detection Monitoring Point K1−05
U235+U236 (Bq/L)
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

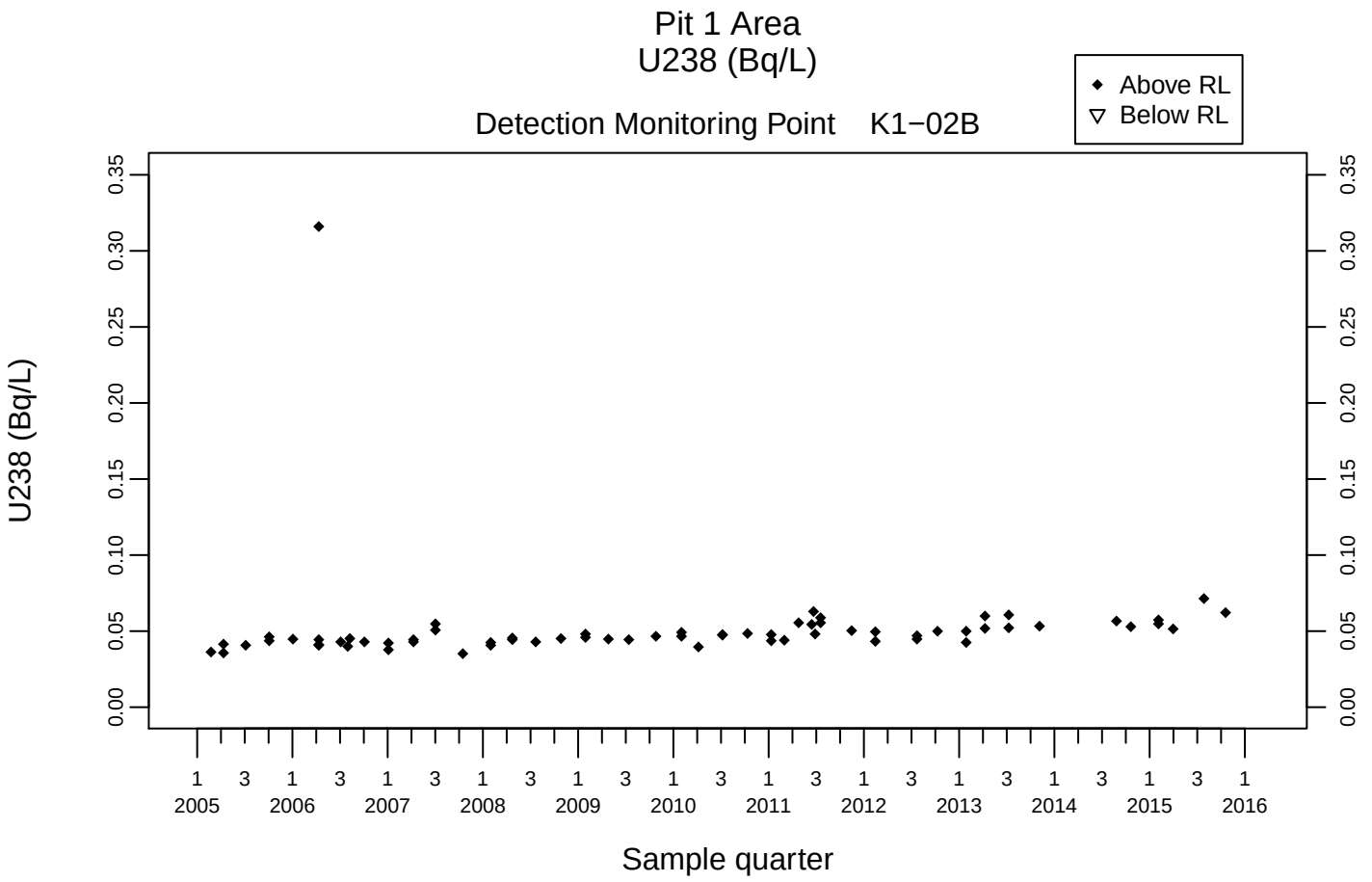

Crossgradient Monitoring Point K1−08
U235+U236 (Bq/L)
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

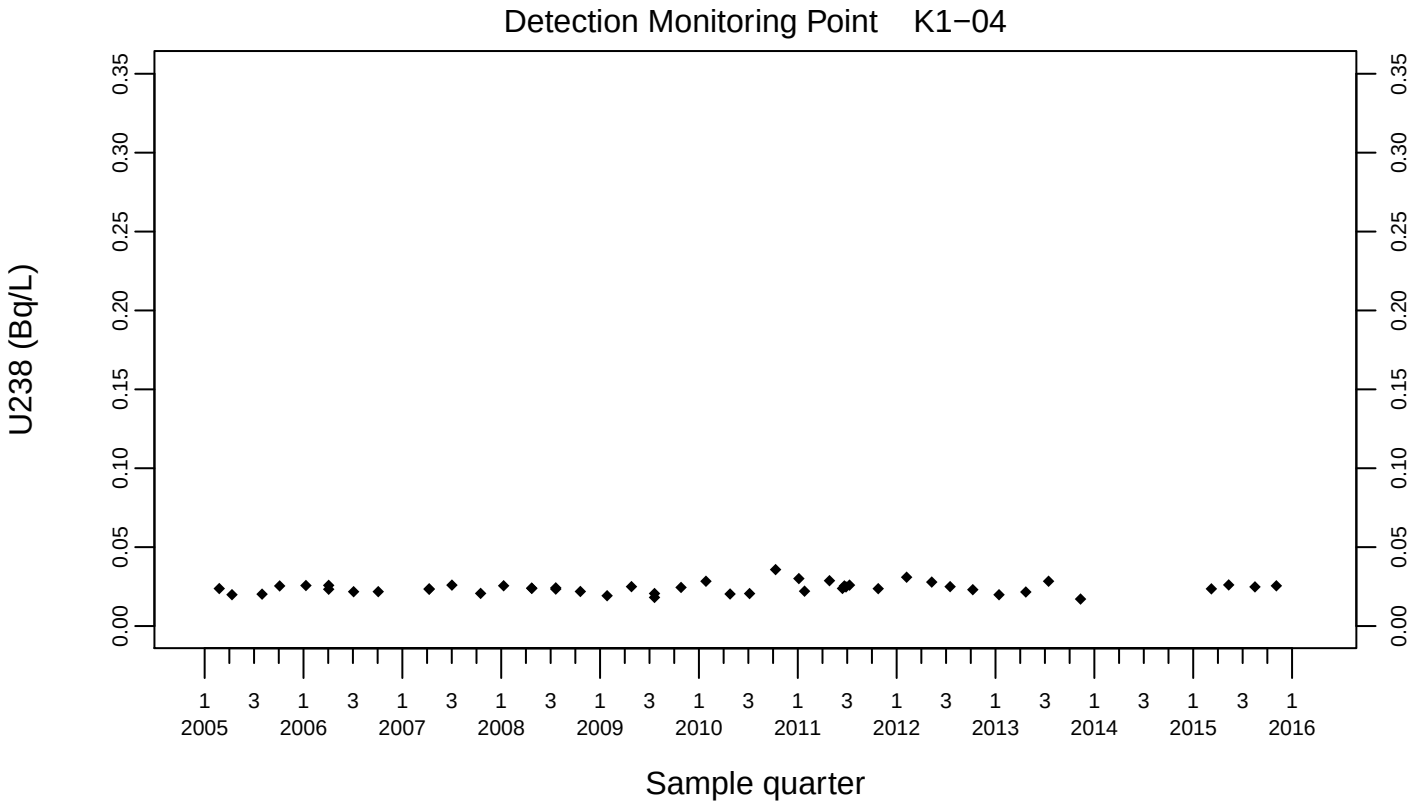

Pit 1 Area
U235+U236 (Bq/L)
Above RL
Estimated
Crossgradient Monitoring Point K1−09
U235+U236 (Bq/L)
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

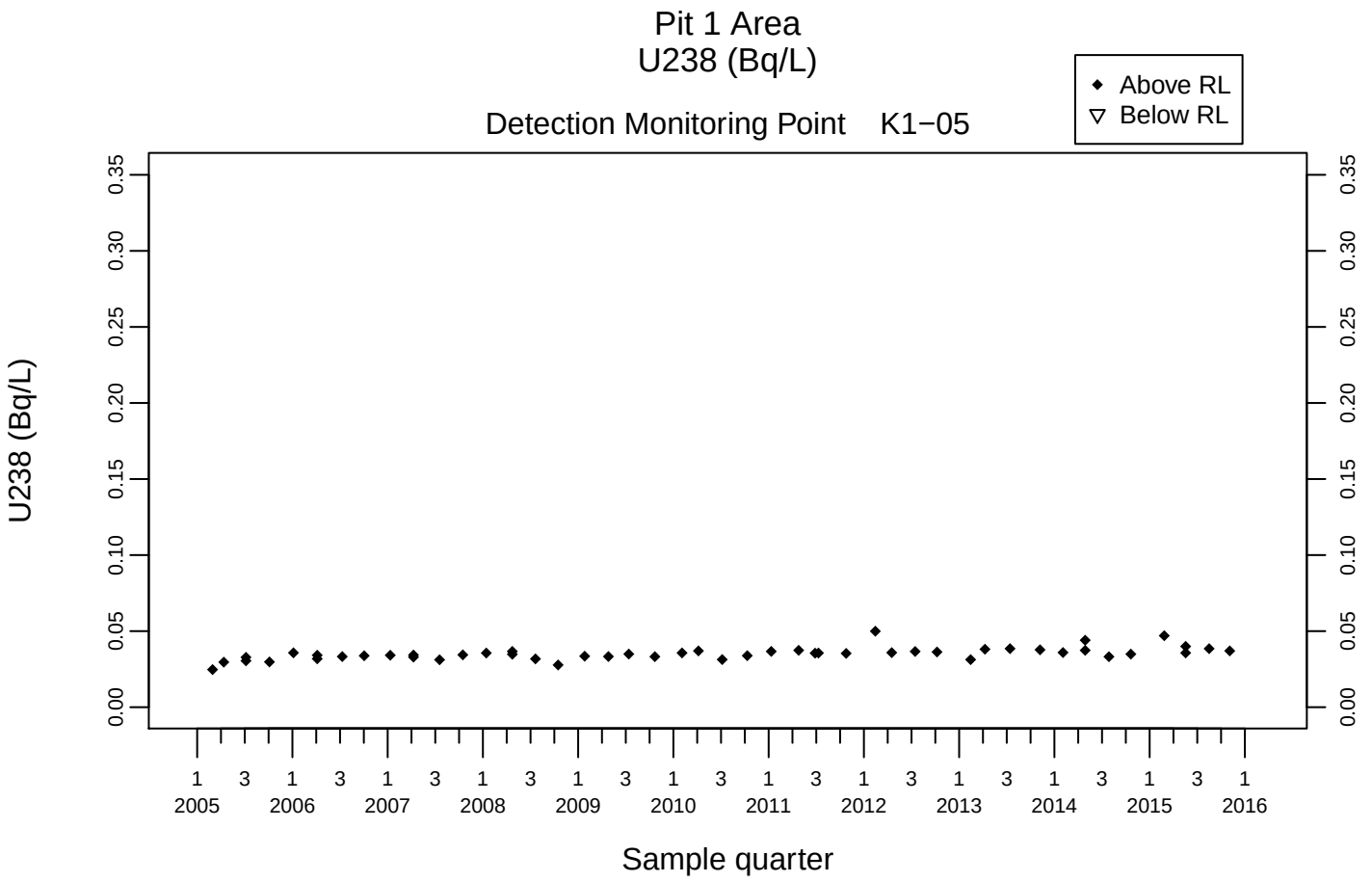

Detection Monitoring Point W−PIT1−2326
U235+U236 (Bq/L)
0.000
0.005
0.010
0.015
0.020
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

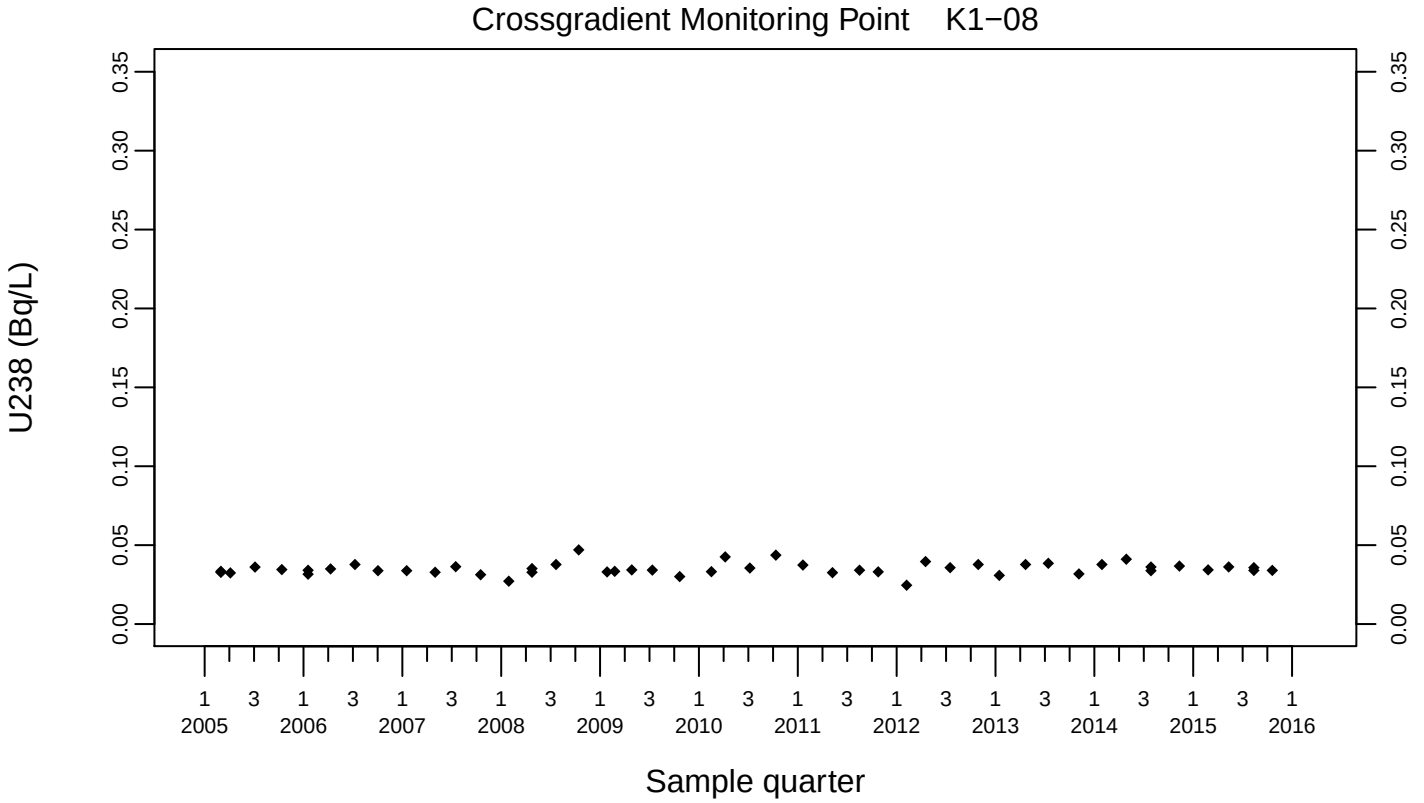

Pit 1 Area
U238 (Bq/L)
Above RL
Below RL
Background Monitoring Point K1−01C
U238 (Bq/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

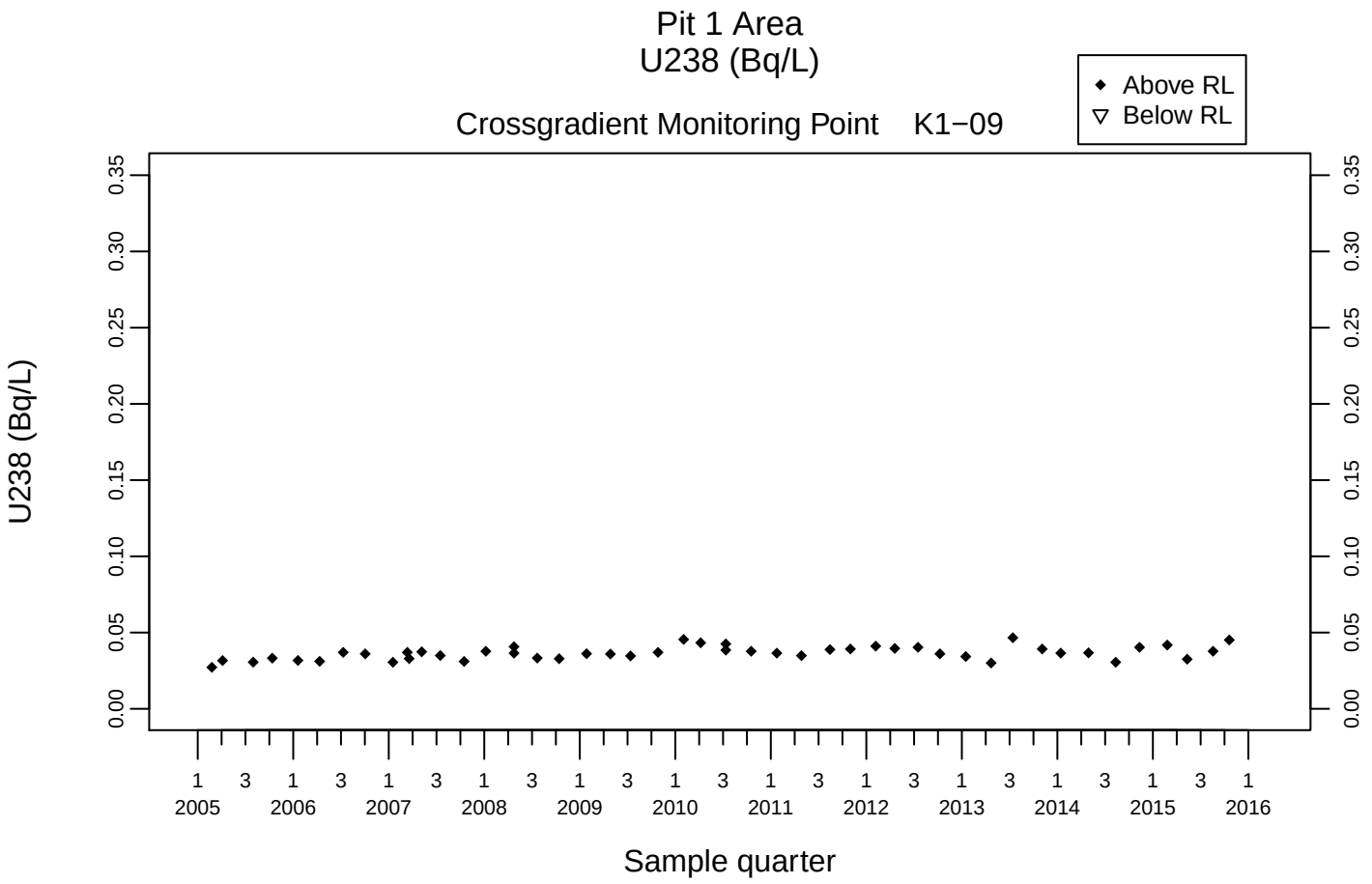

Background Monitoring Point K1−07
U238 (Bq/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

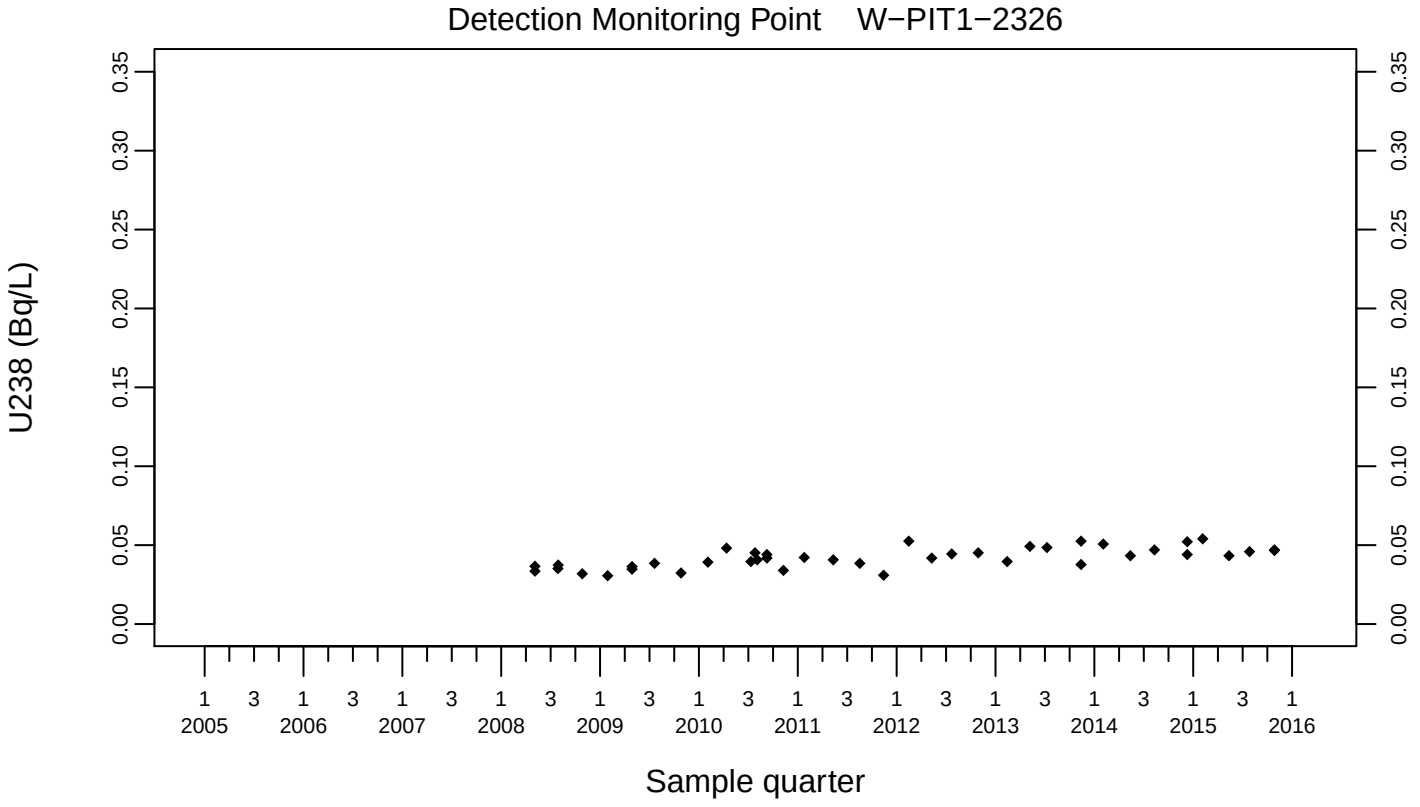

Pit 1 Area
U238 (Bq/L)
Detection Monitoring Point K1−02B
Above RL
Below RL
U238 (Bq/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

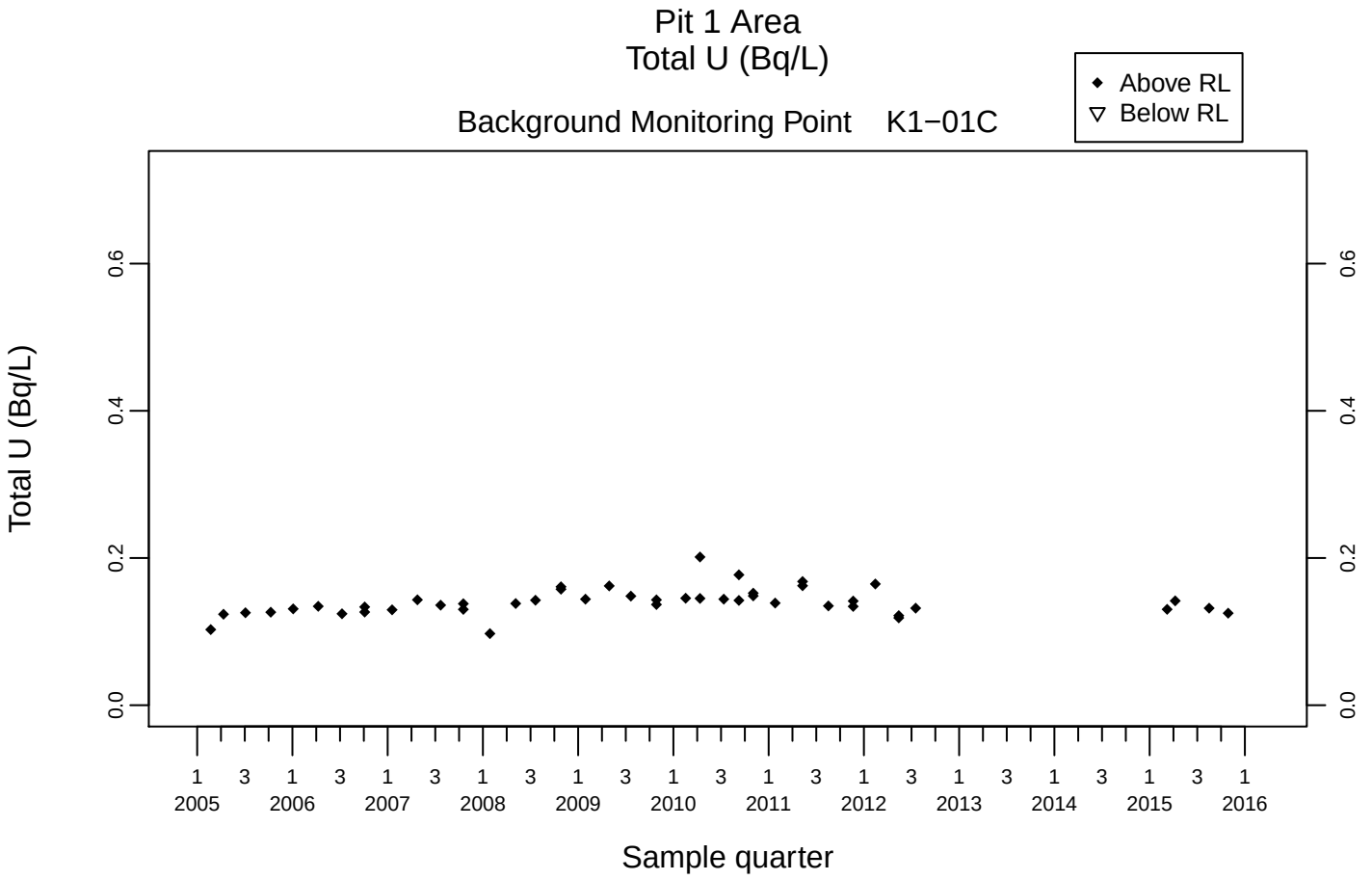

Detection Monitoring Point K1−04
U238 (Bq/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

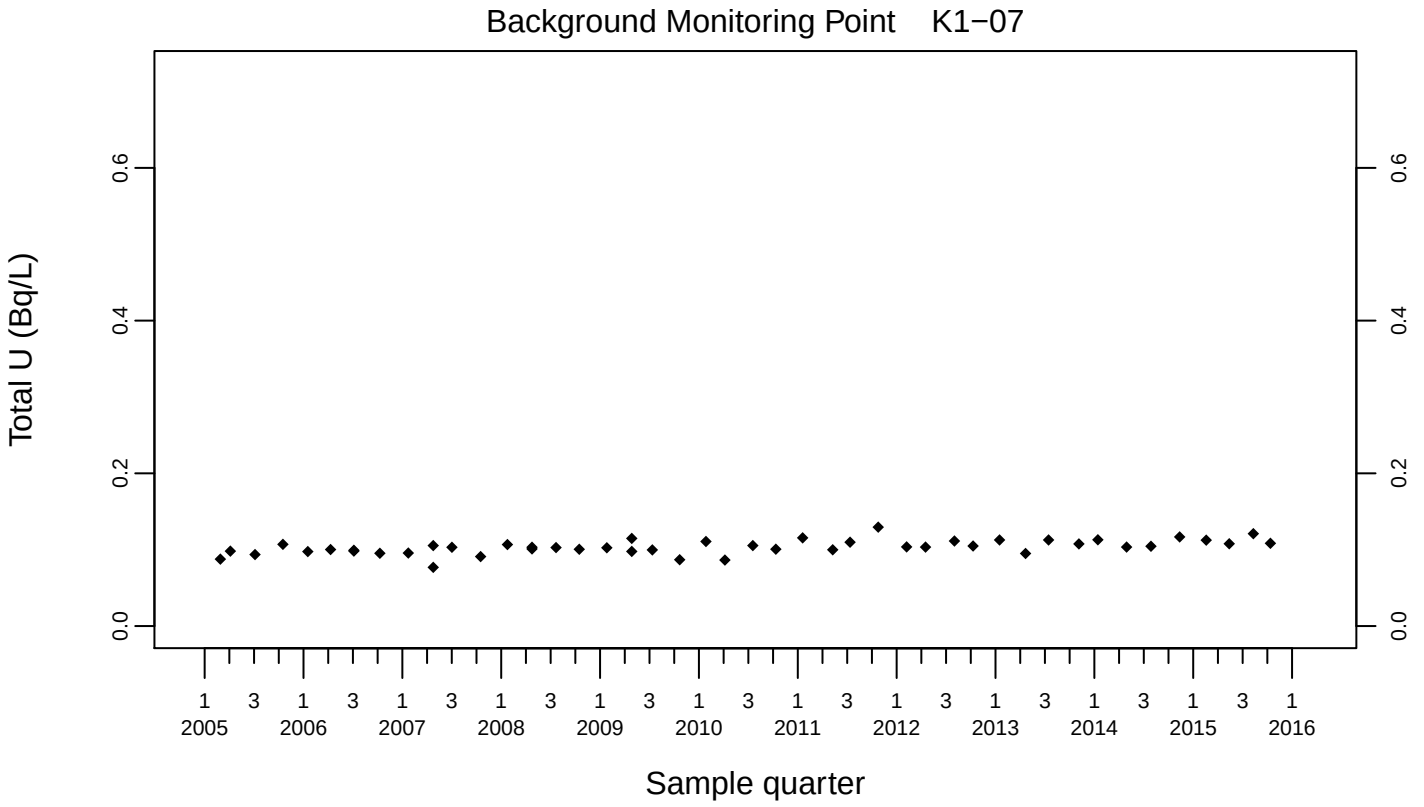

Pit 1 Area
U238 (Bq/L)
Above RL
Below RL
Detection Monitoring Point K1−05
U238 (Bq/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

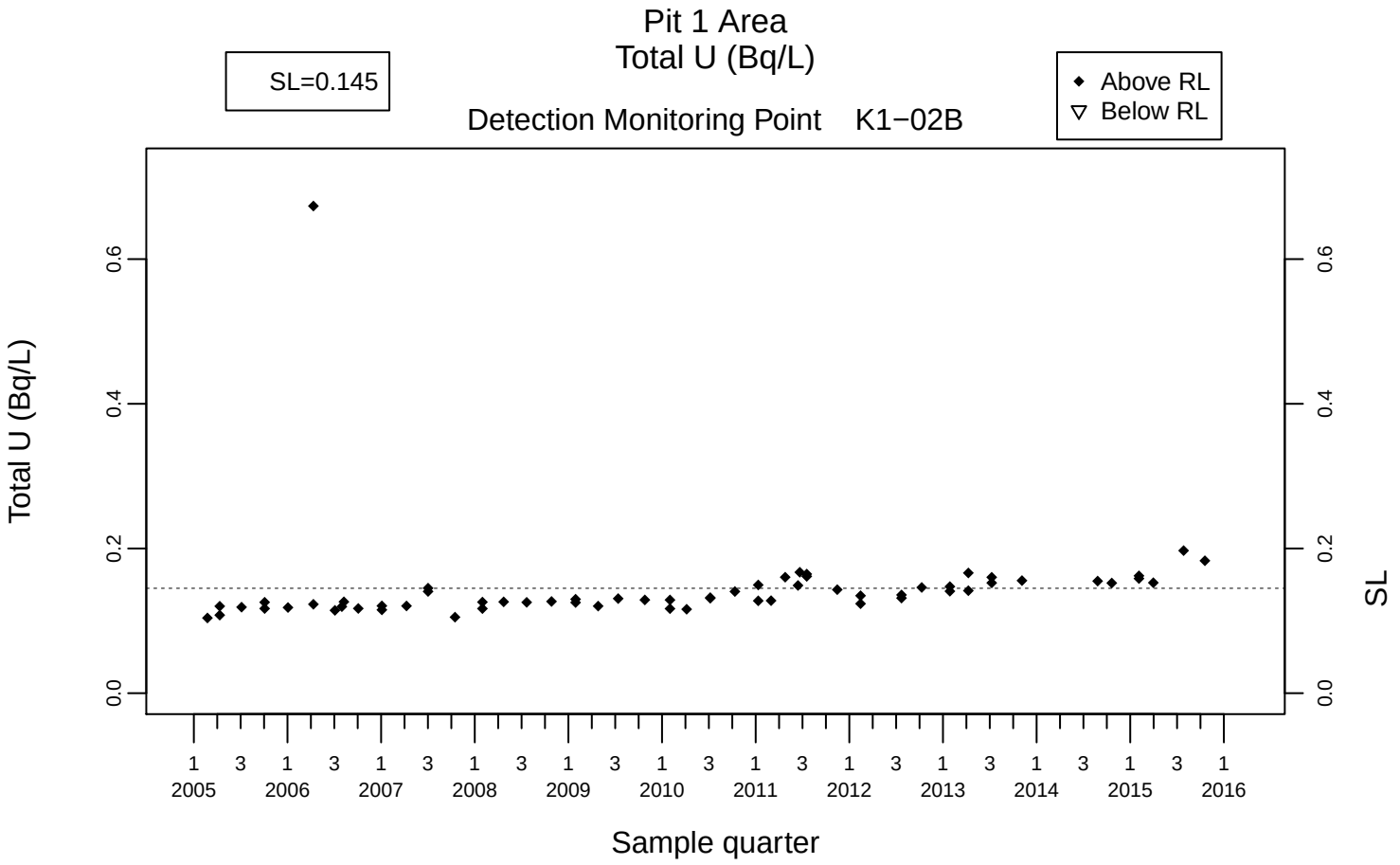

Crossgradient Monitoring Point K1−08
U238 (Bq/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

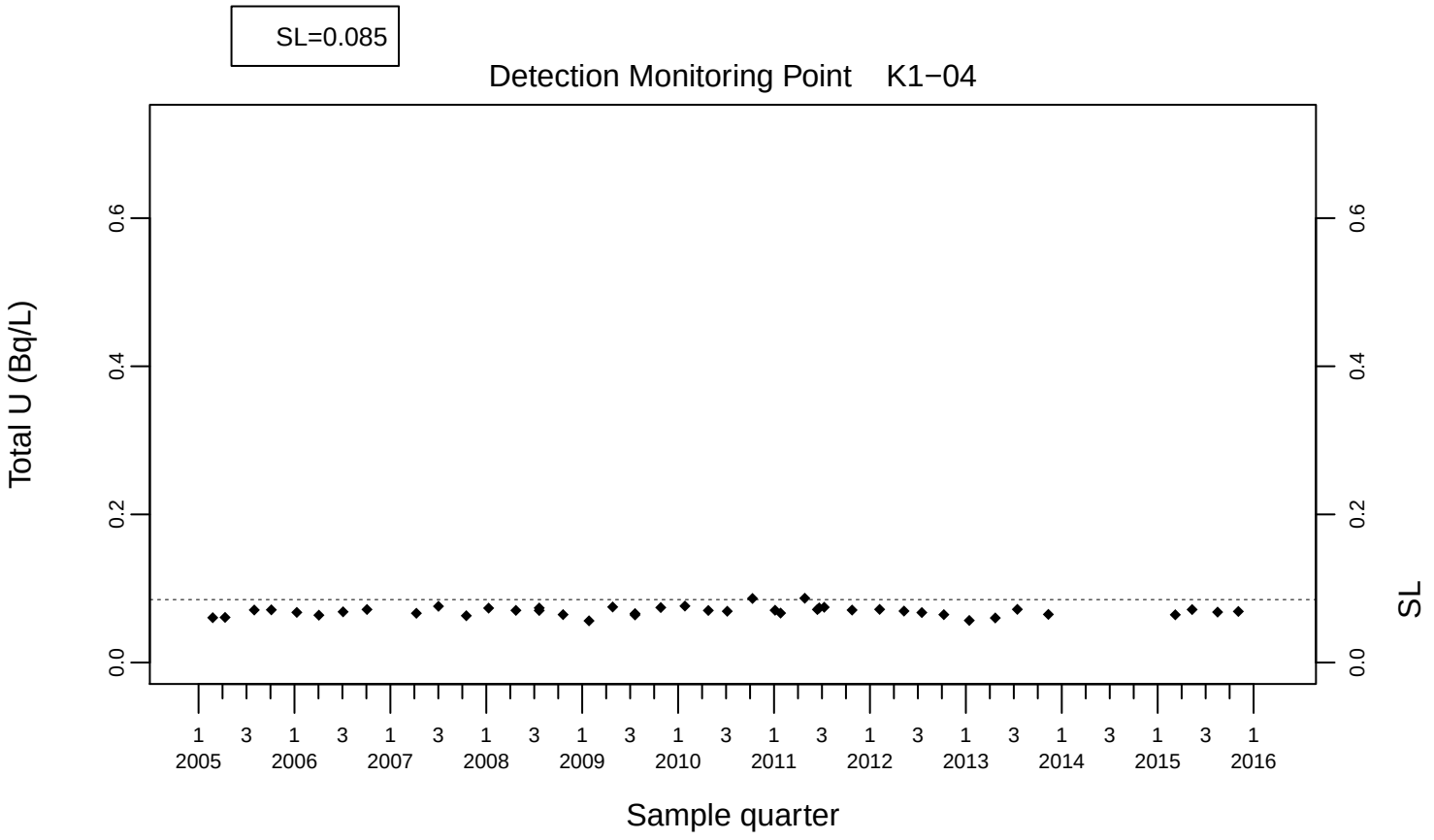

Pit 1 Area
U238 (Bq/L)
Above RL
Below RL
Crossgradient Monitoring Point K1−09
U238 (Bq/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

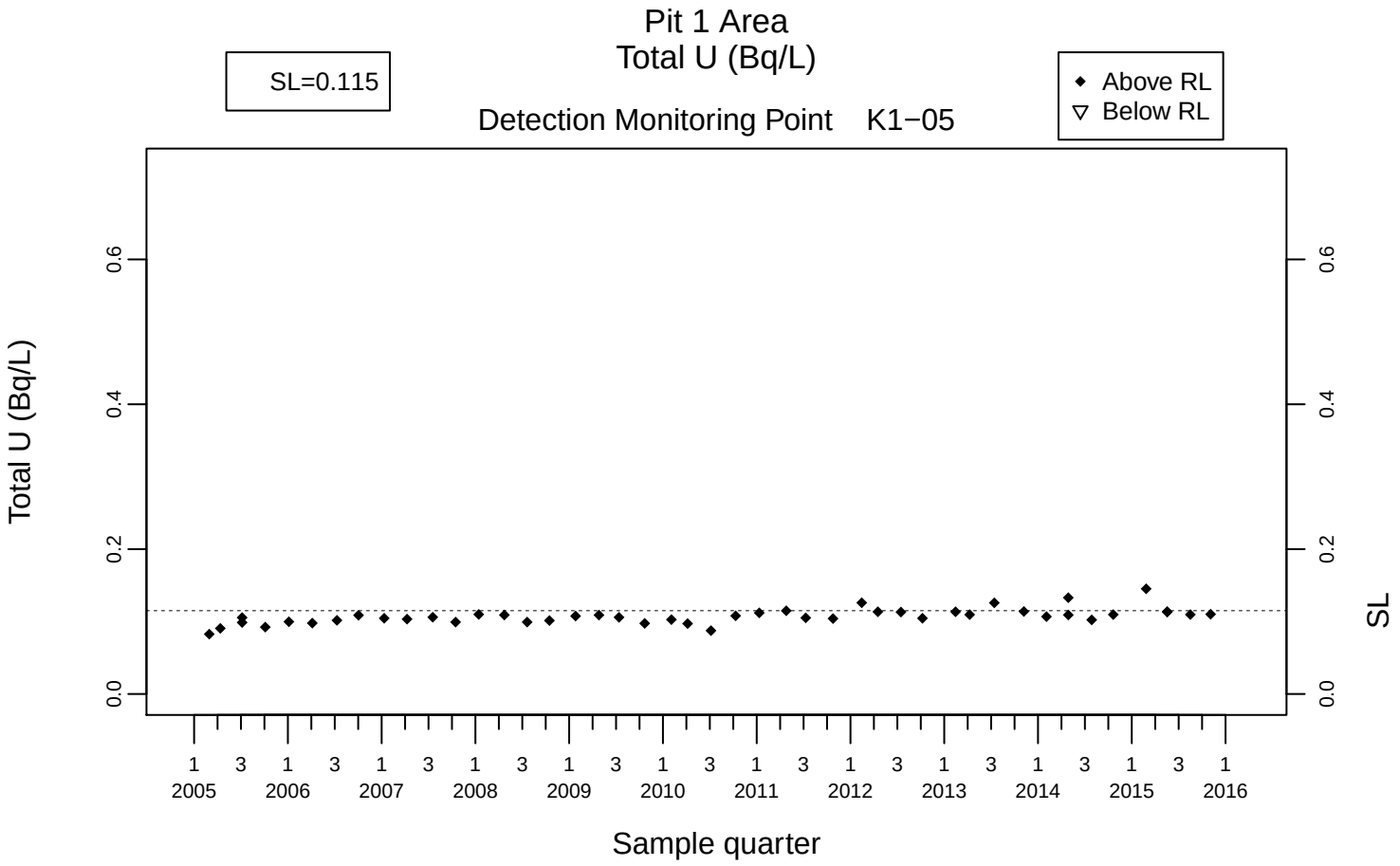

Detection Monitoring Point W−PIT1−2326
U238 (Bq/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

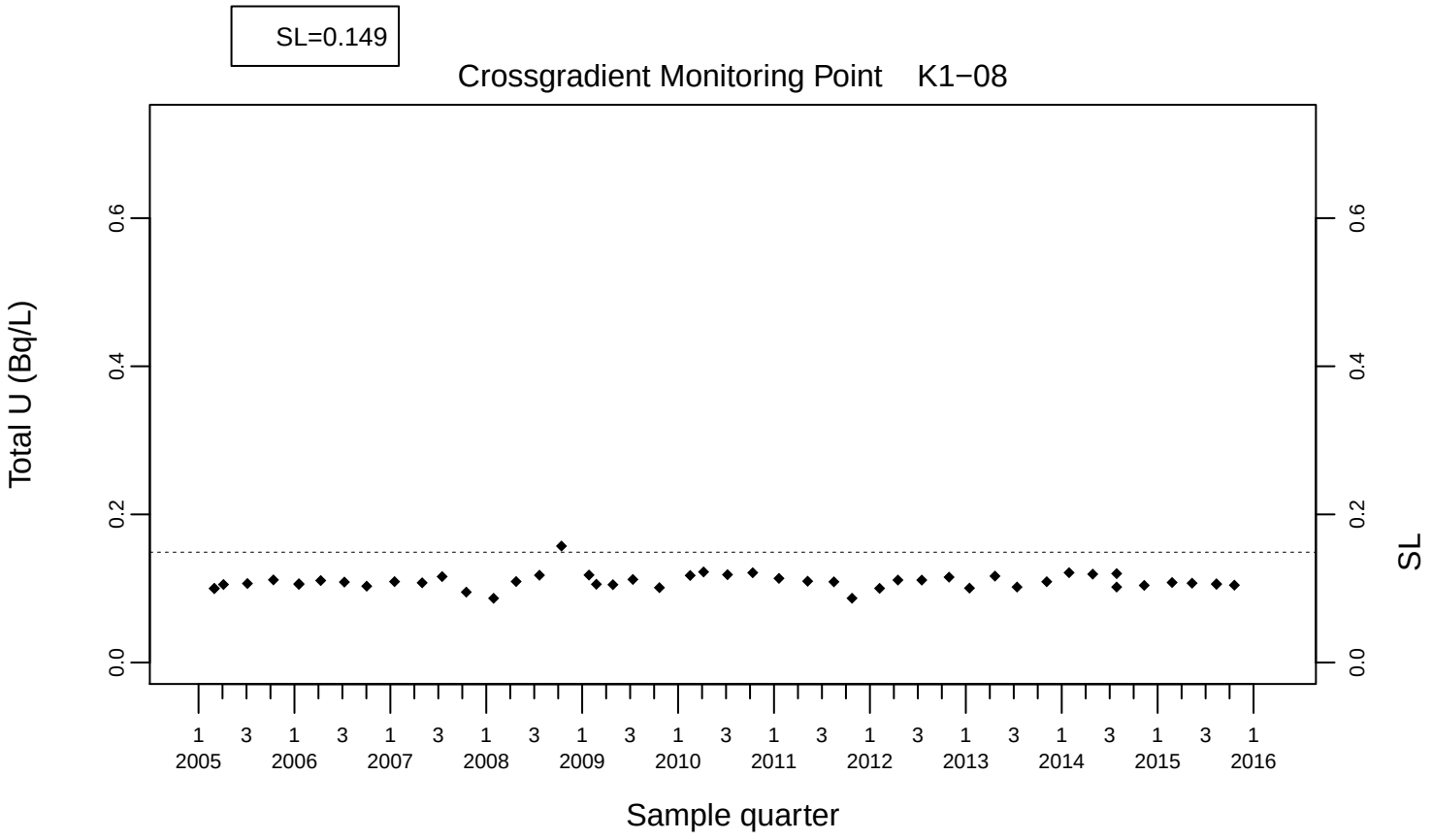

Pit 1 Area
Total U (Bq/L)
Above RL
Below RL
Background Monitoring Point K1−01C
Total U (Bq/L)
0.0
0.2
0.4
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

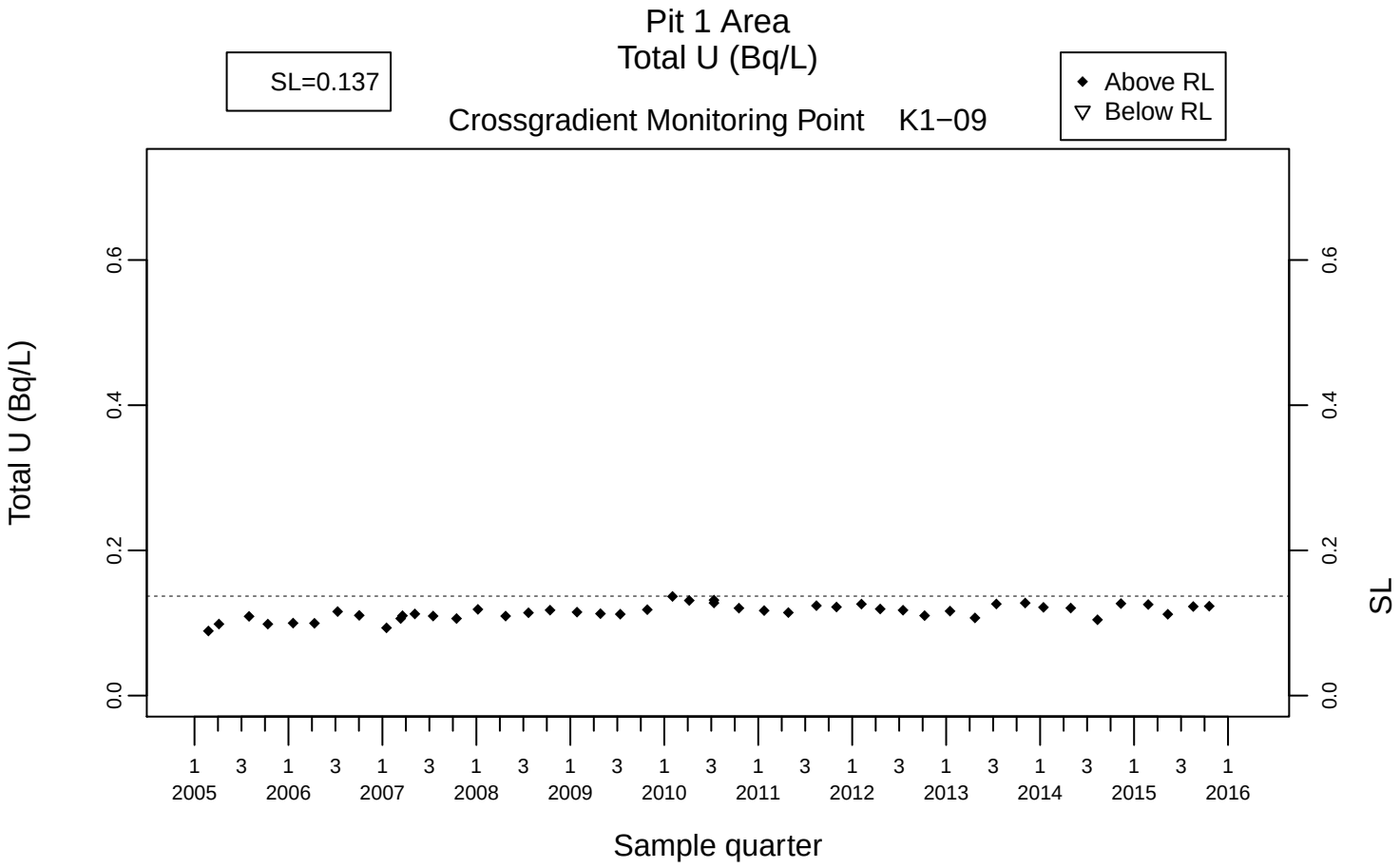

Background Monitoring Point K1−07
Total U (Bq/L)
0.0
0.2
0.4
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

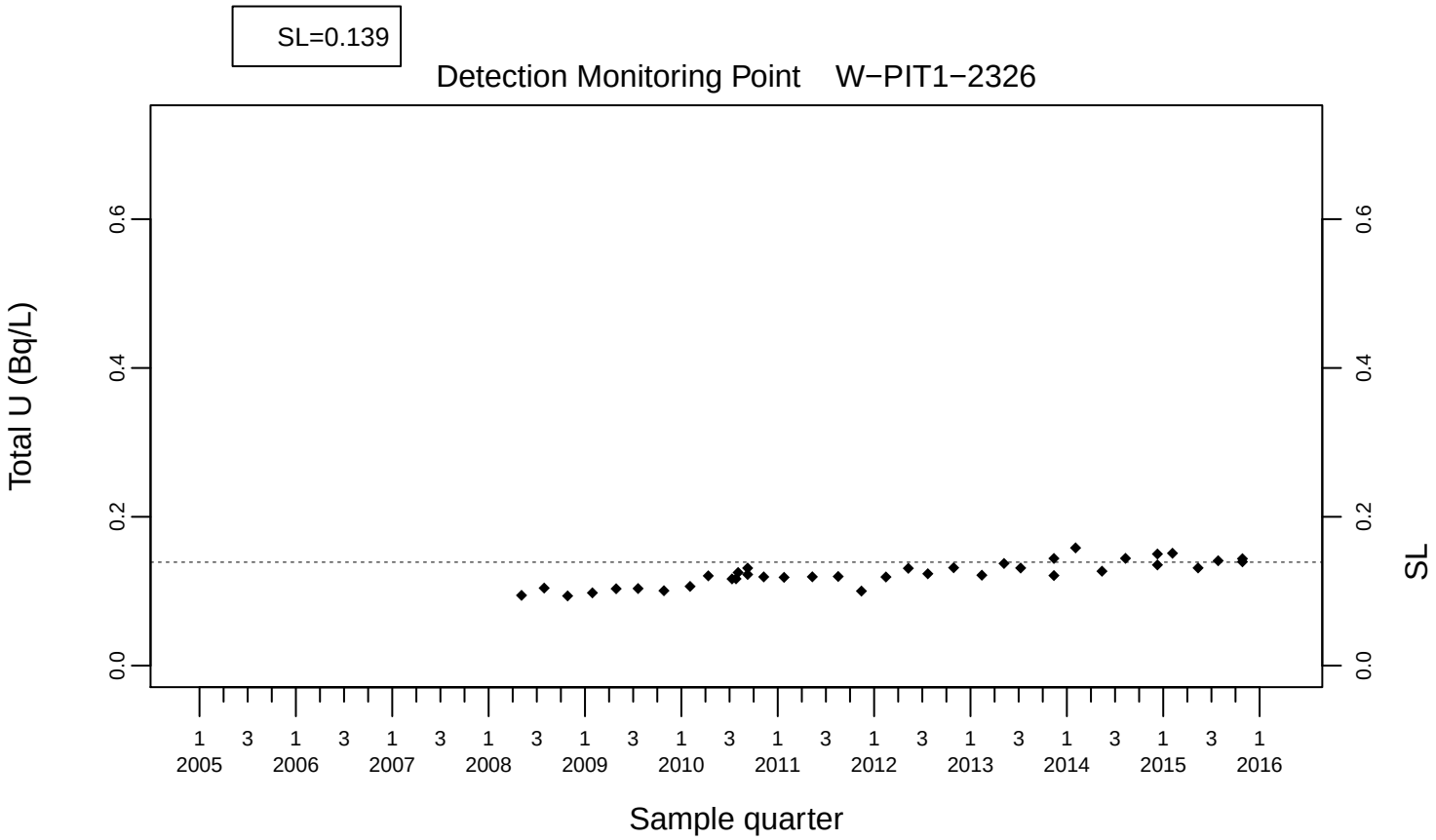

Pit 1 Area
Total U (Bq/L)
SL=0.145
Above RL
Below RL
Detection Monitoring Point K1−02B
Total U (Bq/L)
SL
0.0
0.2
0.4
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

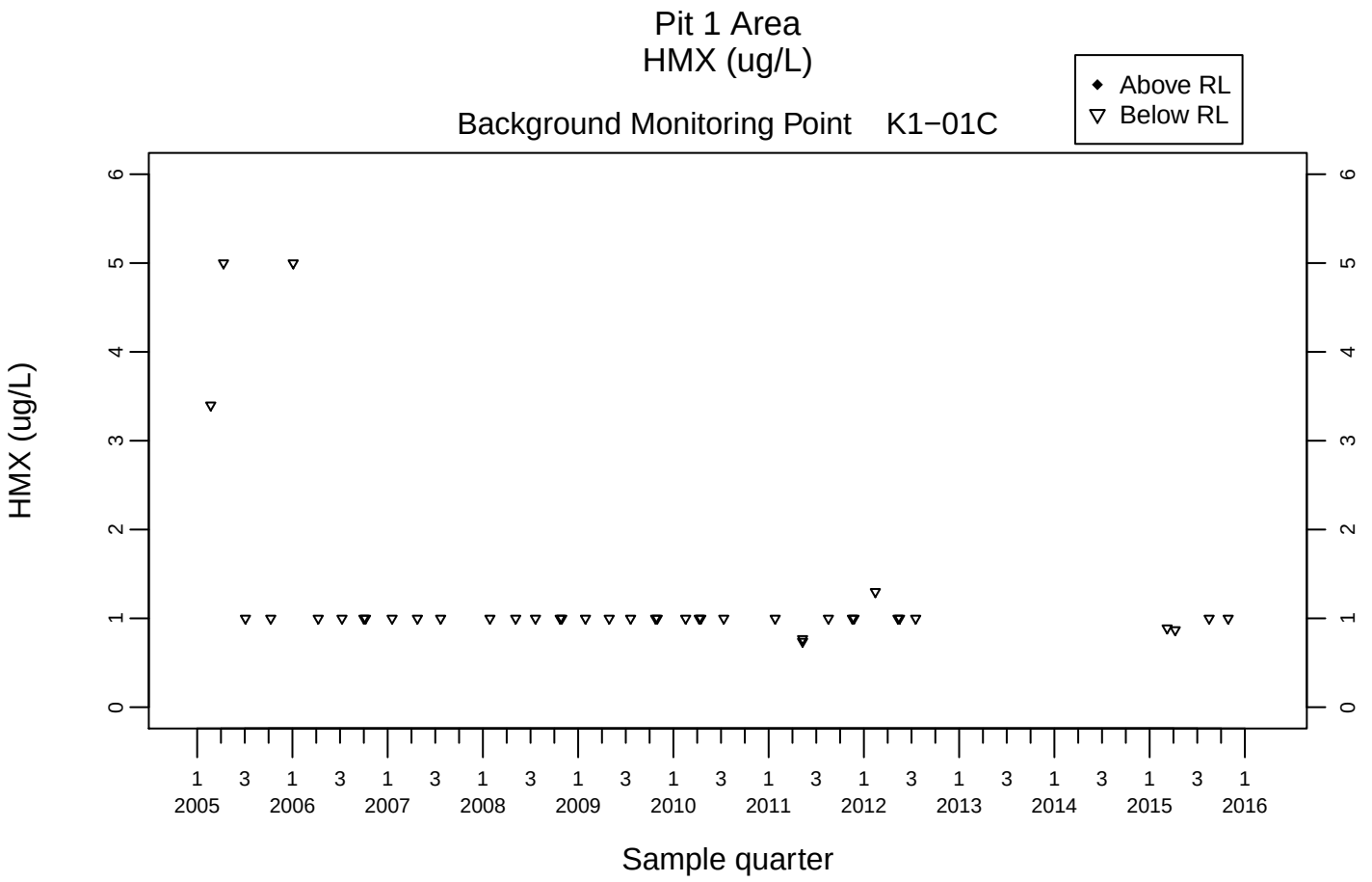

SL=0.085
Detection Monitoring Point K1−04
Total U (Bq/L)
SL
0.0
0.2
0.4
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

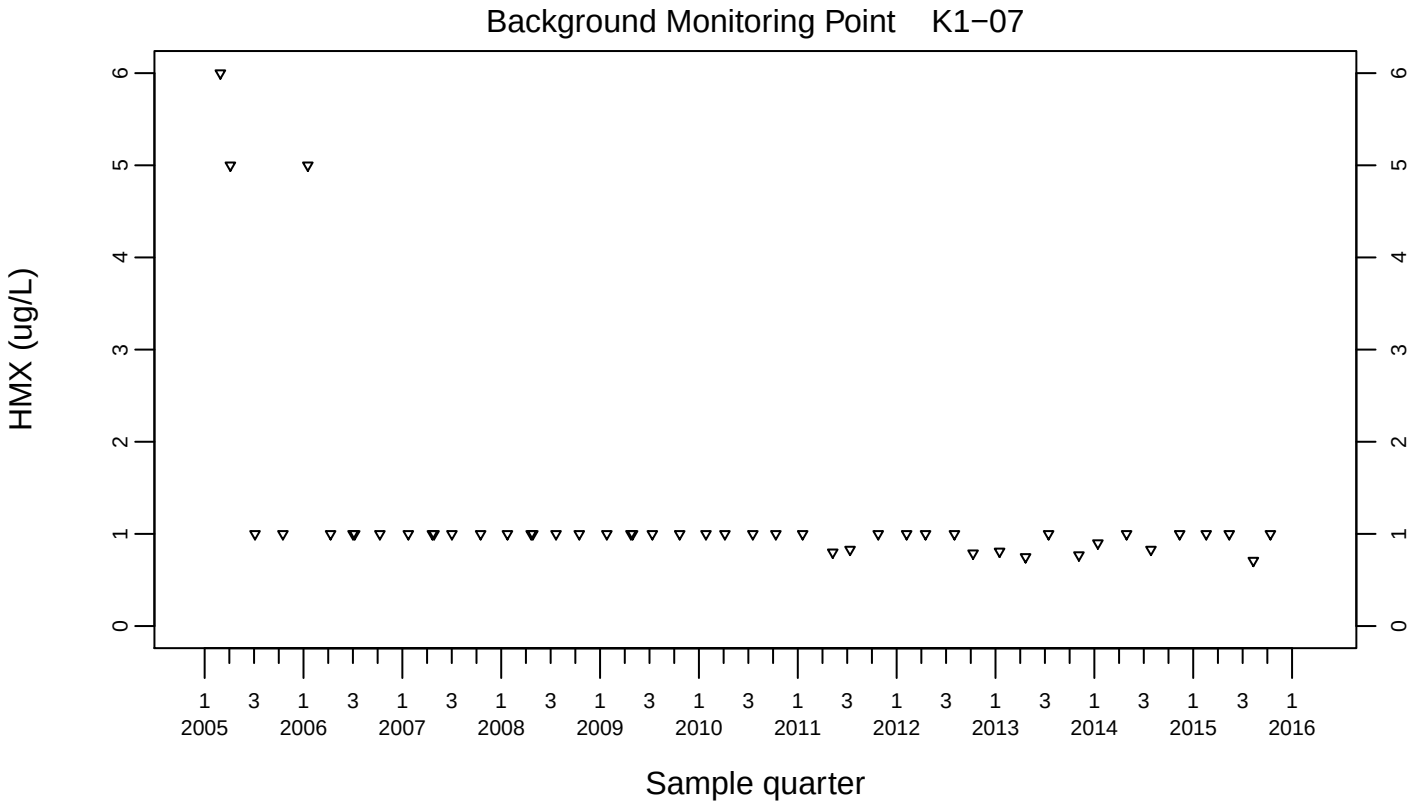

Pit 1 Area
Total U (Bq/L)
SL=0.115
Above RL
Below RL
Detection Monitoring Point K1−05
Total U (Bq/L)
SL
0.0
0.2
0.4
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

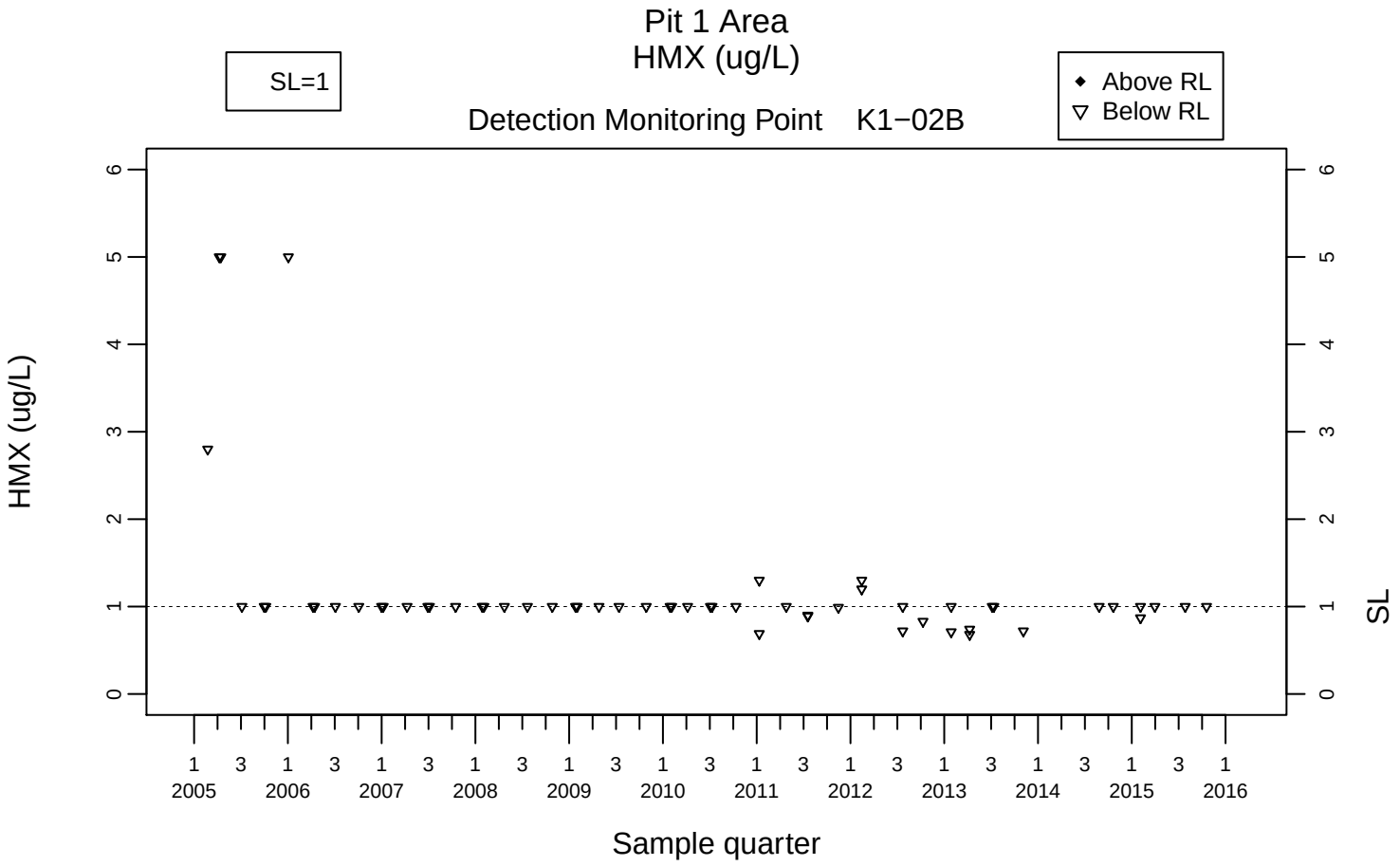

SL=0.149
Crossgradient Monitoring Point K1−08
Total U (Bq/L)
SL
0.0
0.2
0.4
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

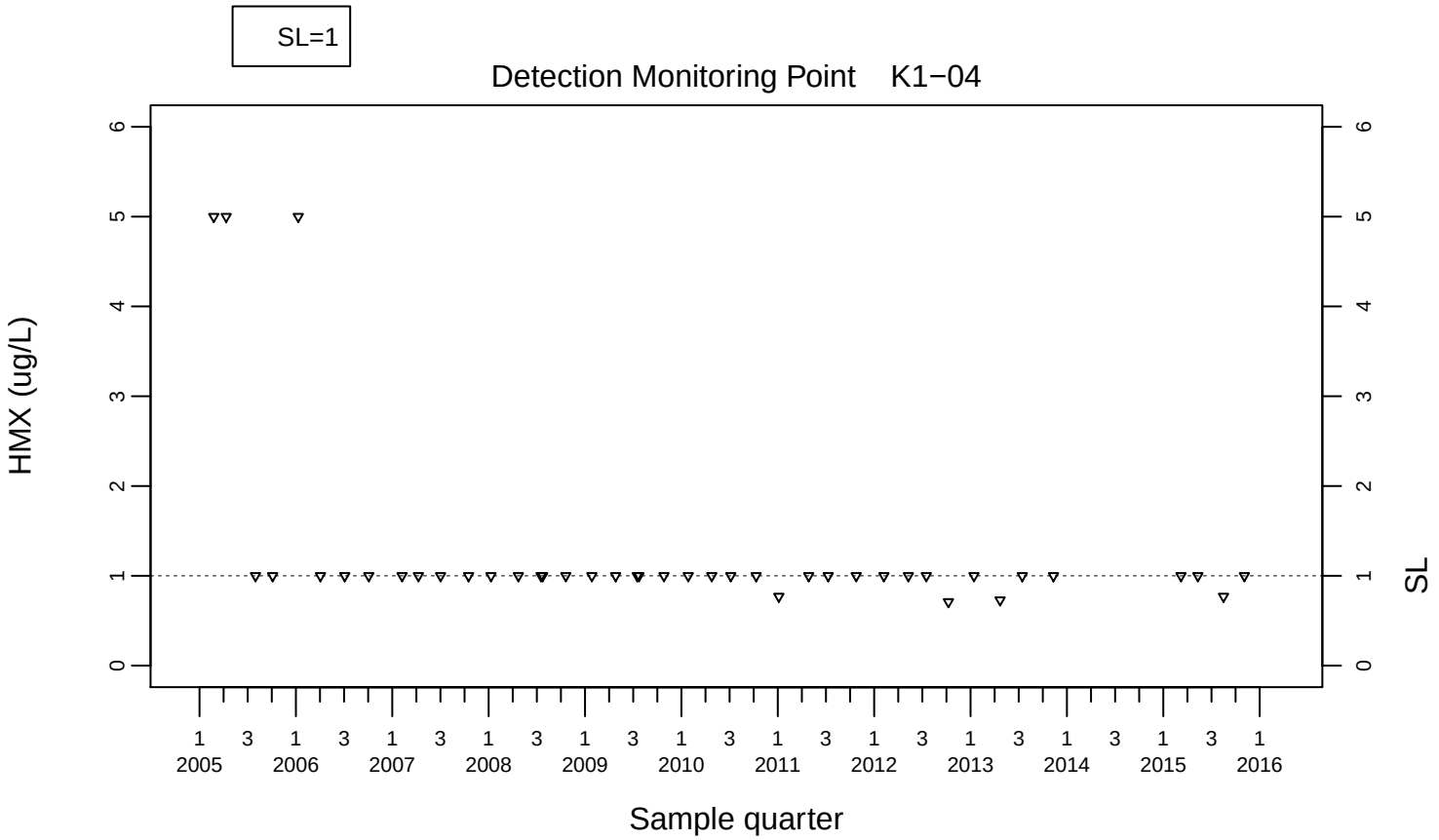

Pit 1 Area
Total U (Bq/L)
SL=0.137
Above RL
Below RL
Crossgradient Monitoring Point K1−09
Total U (Bq/L)
SL
0.0
0.2
0.4
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

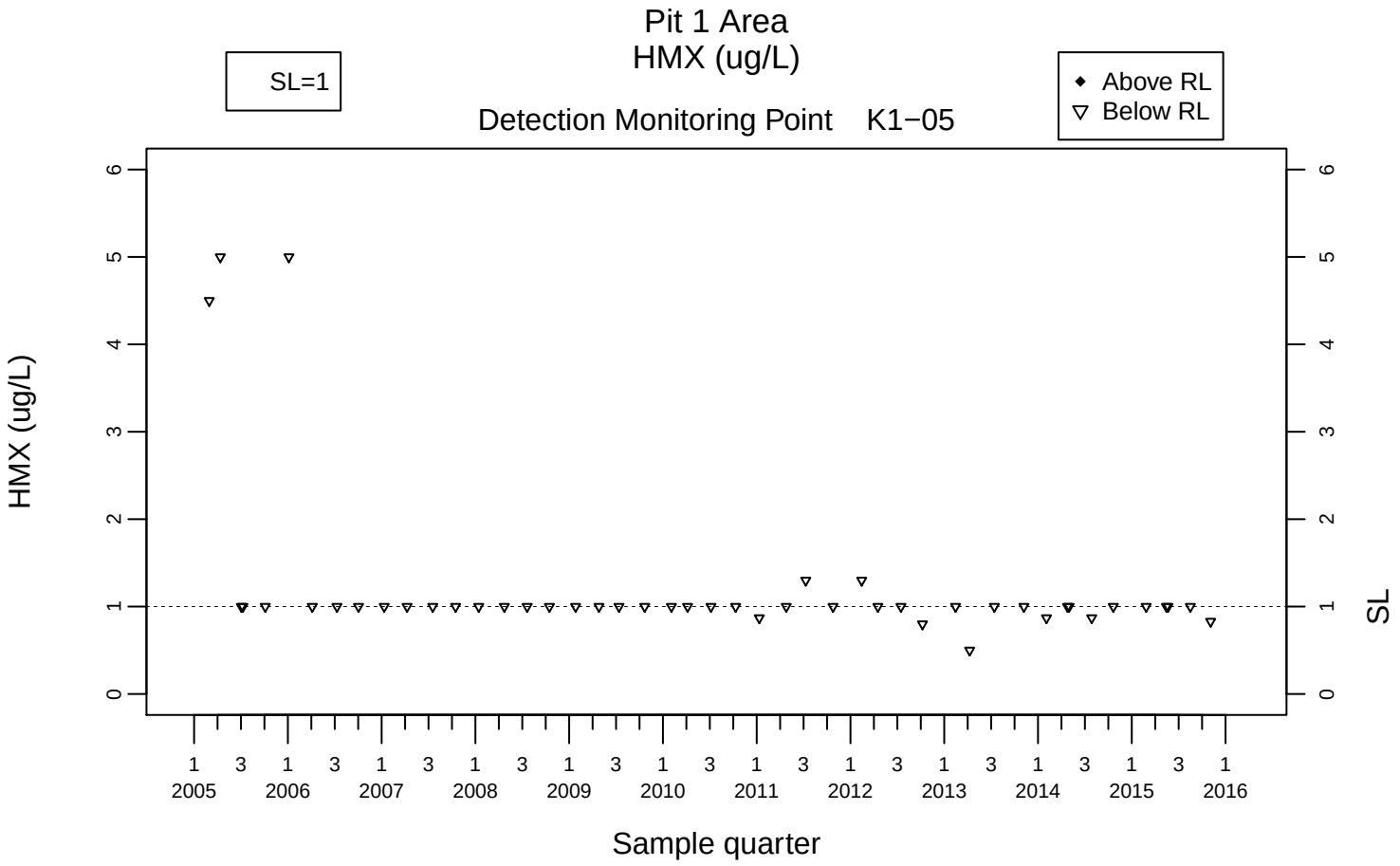

SL=0.139
Detection Monitoring Point W−PIT1−2326
Total U (Bq/L)
SL
0.0
0.2
0.4
0.6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

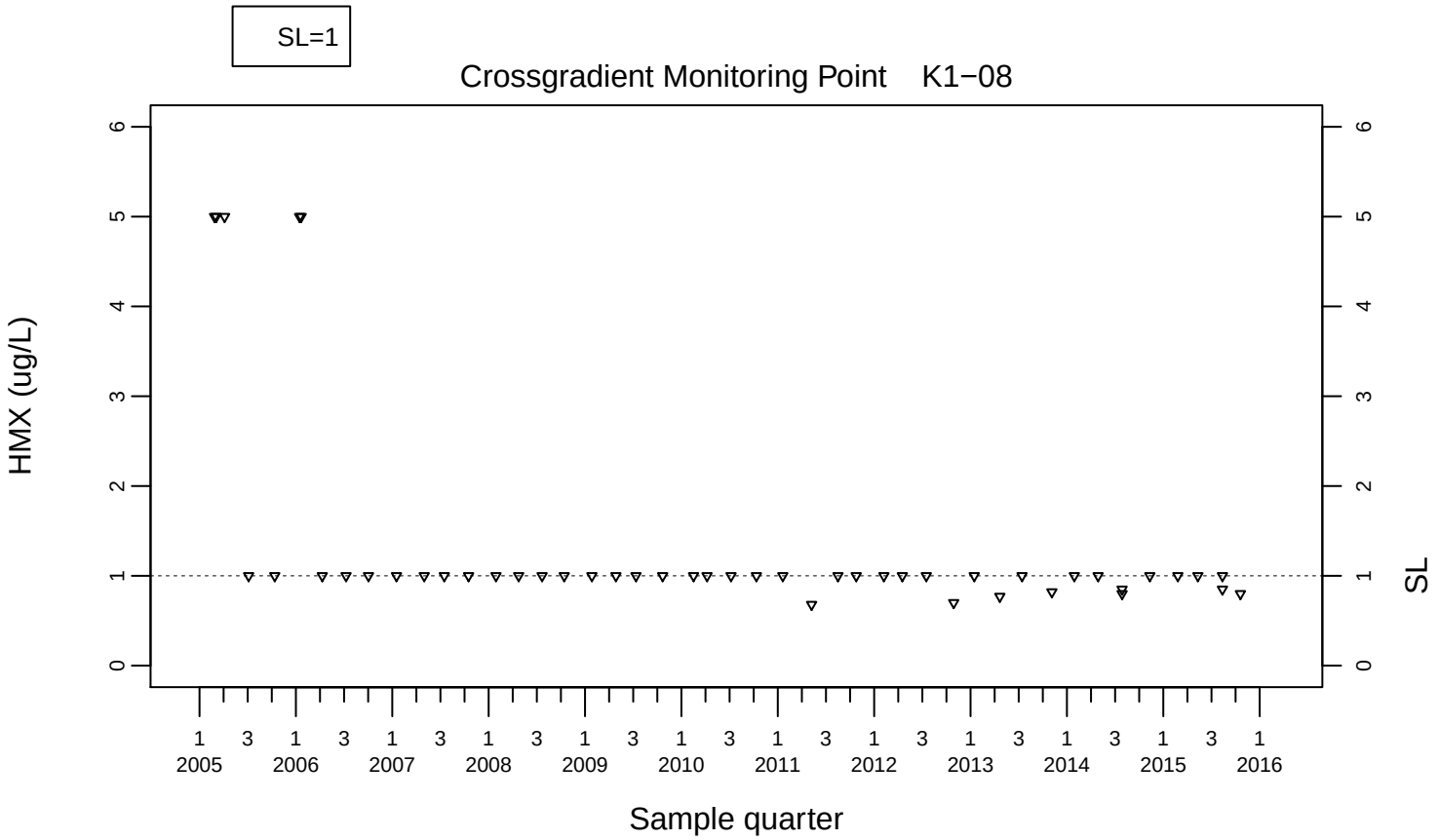

Pit 1 Area
HMX (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
HMX (ug/L)
0
1
2
3
4
5
6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

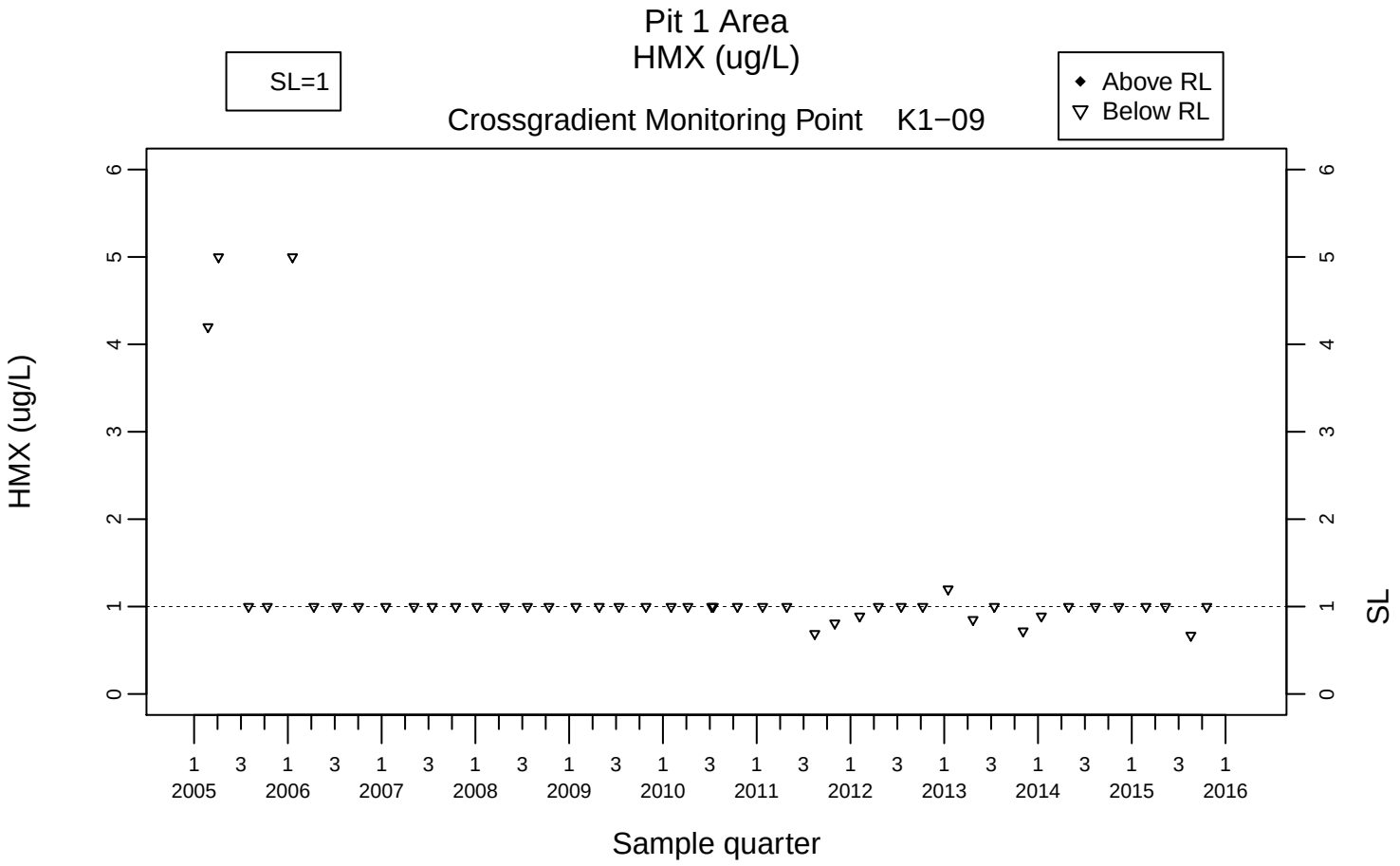

Background Monitoring Point K1−07
HMX (ug/L)
0
1
2
3
4
5
6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

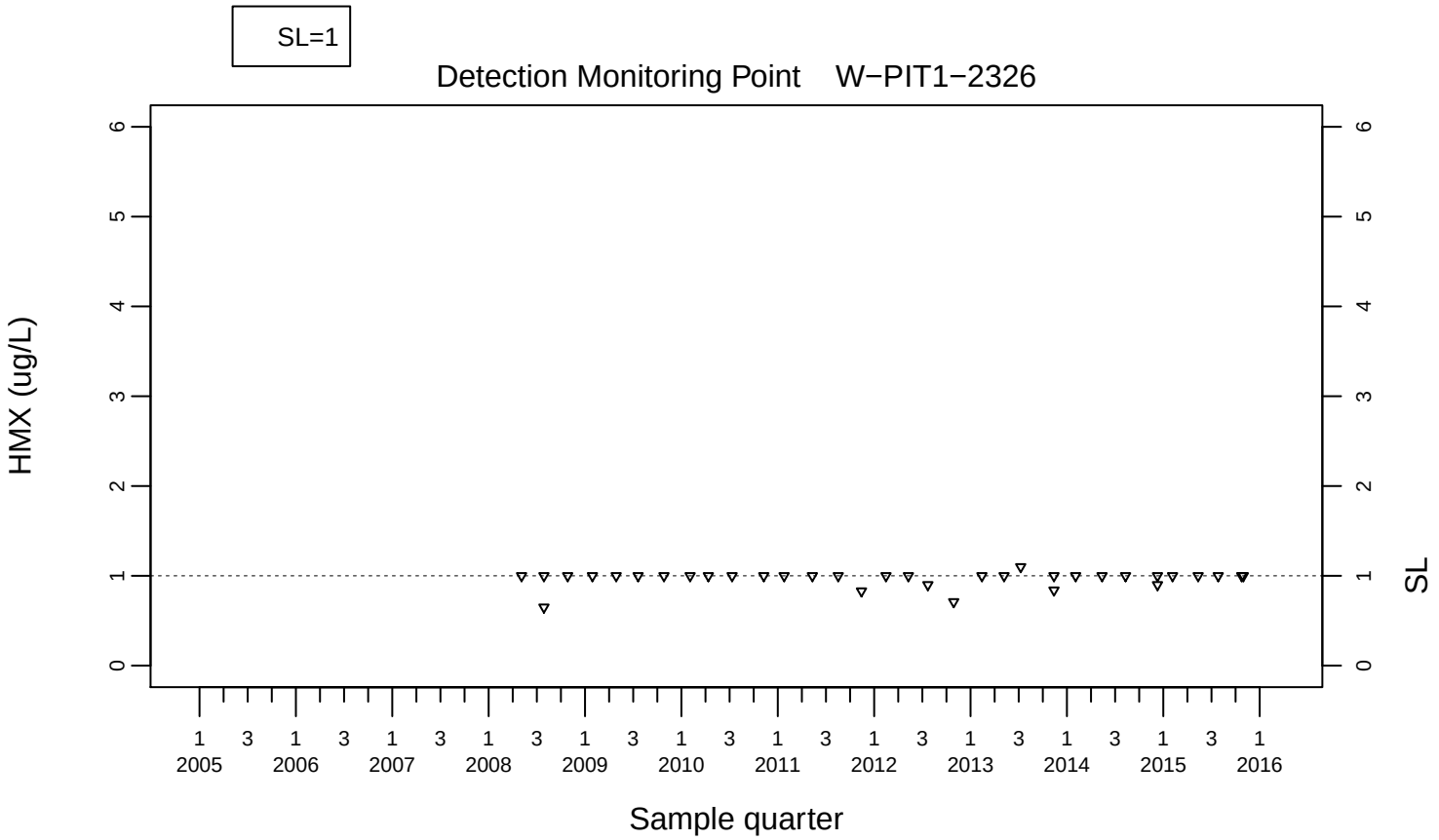

Pit 1 Area
HMX (ug/L)
SL=1
Above RL
Below RL
Detection Monitoring Point K1−02B
HMX (ug/L)
SL
Sample quarter
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

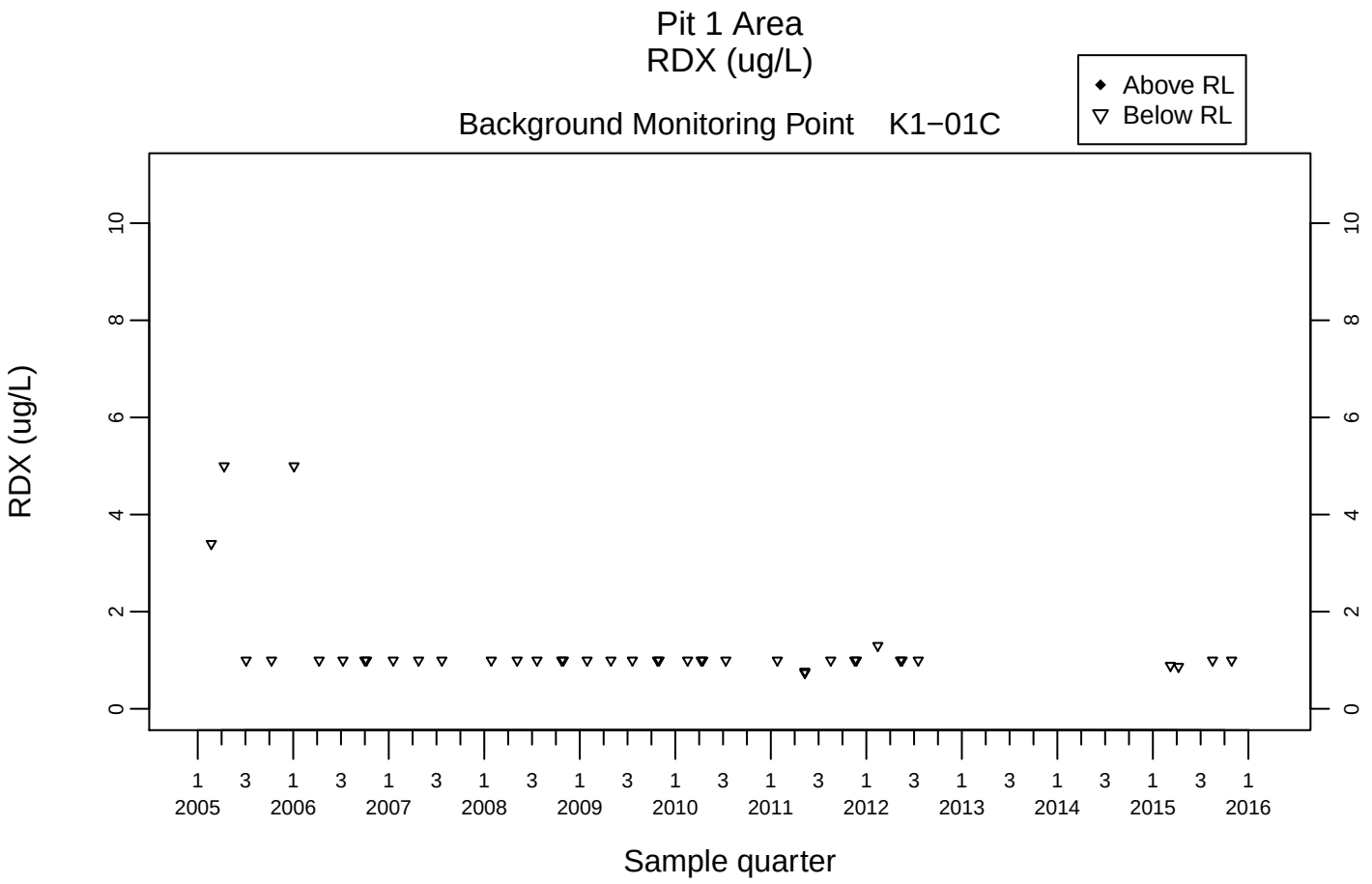

SL=1
Detection Monitoring Point K1−04
HMX (ug/L)
SL
Sample quarter
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

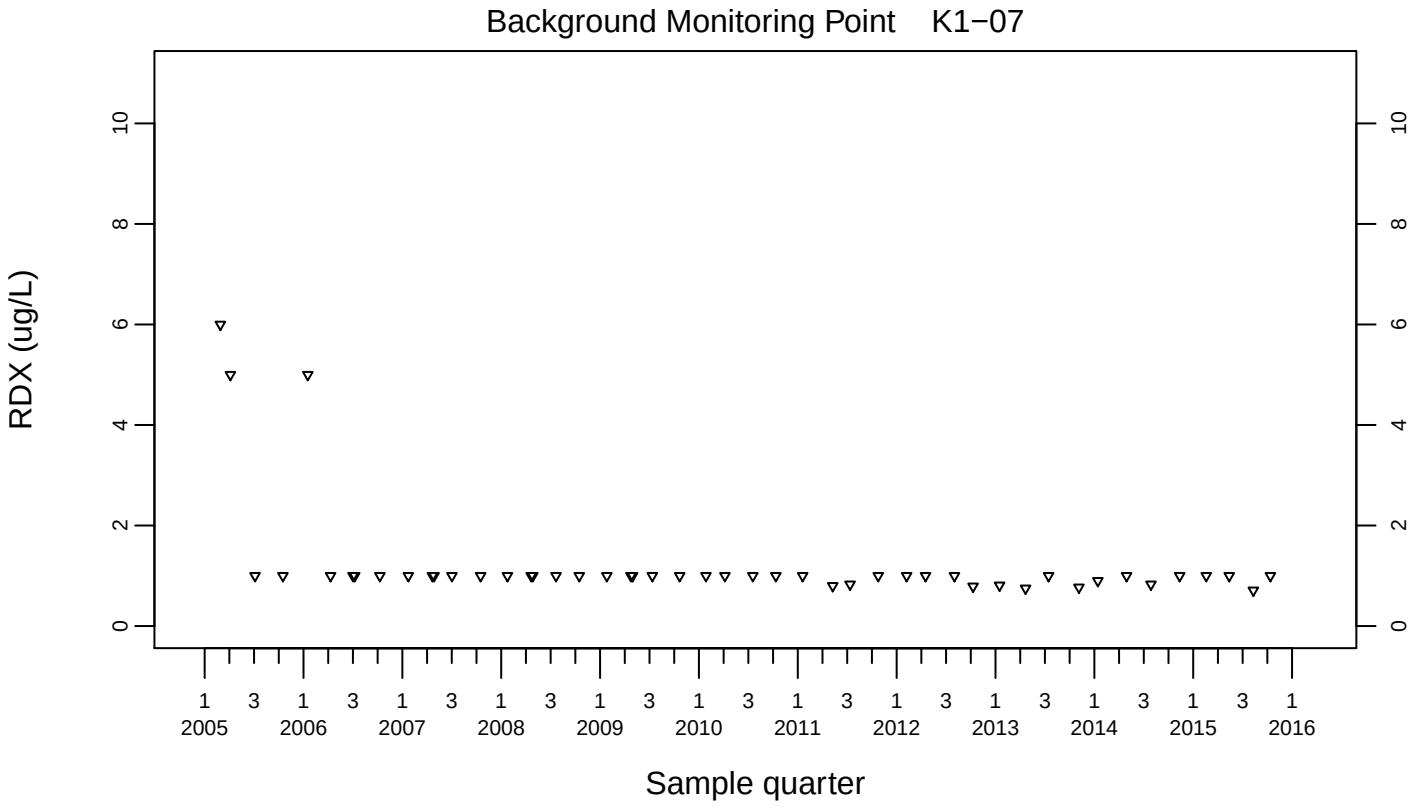

Pit 1 Area
HMX (ug/L)
SL=1
Above RL
Below RL
Detection Monitoring Point K1−05
HMX (ug/L)
SL
0
1
2
3
4
5
6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

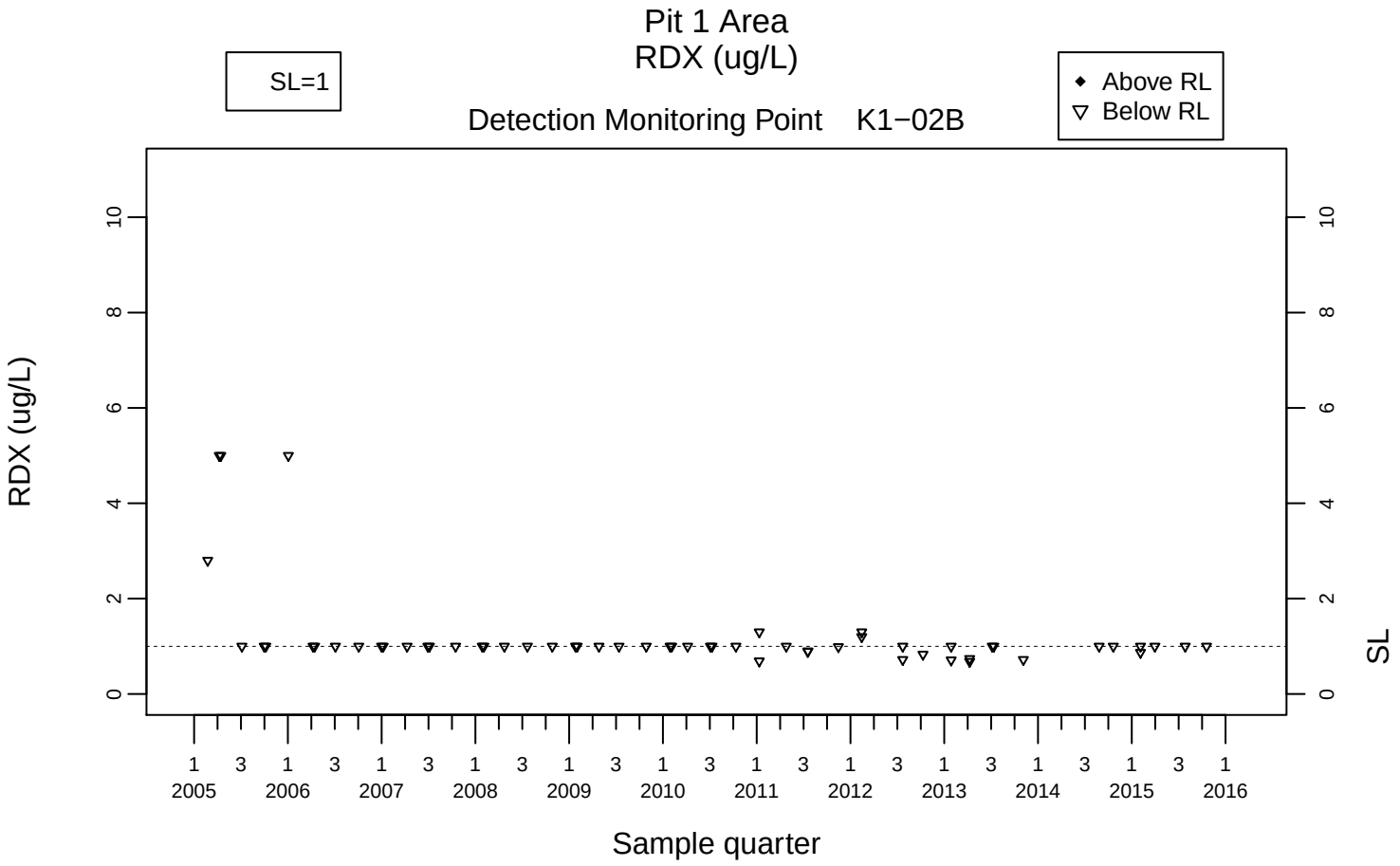

SL=1
Crossgradient Monitoring Point K1−08
HMX (ug/L)
SL
0
1
2
3
4
5
6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

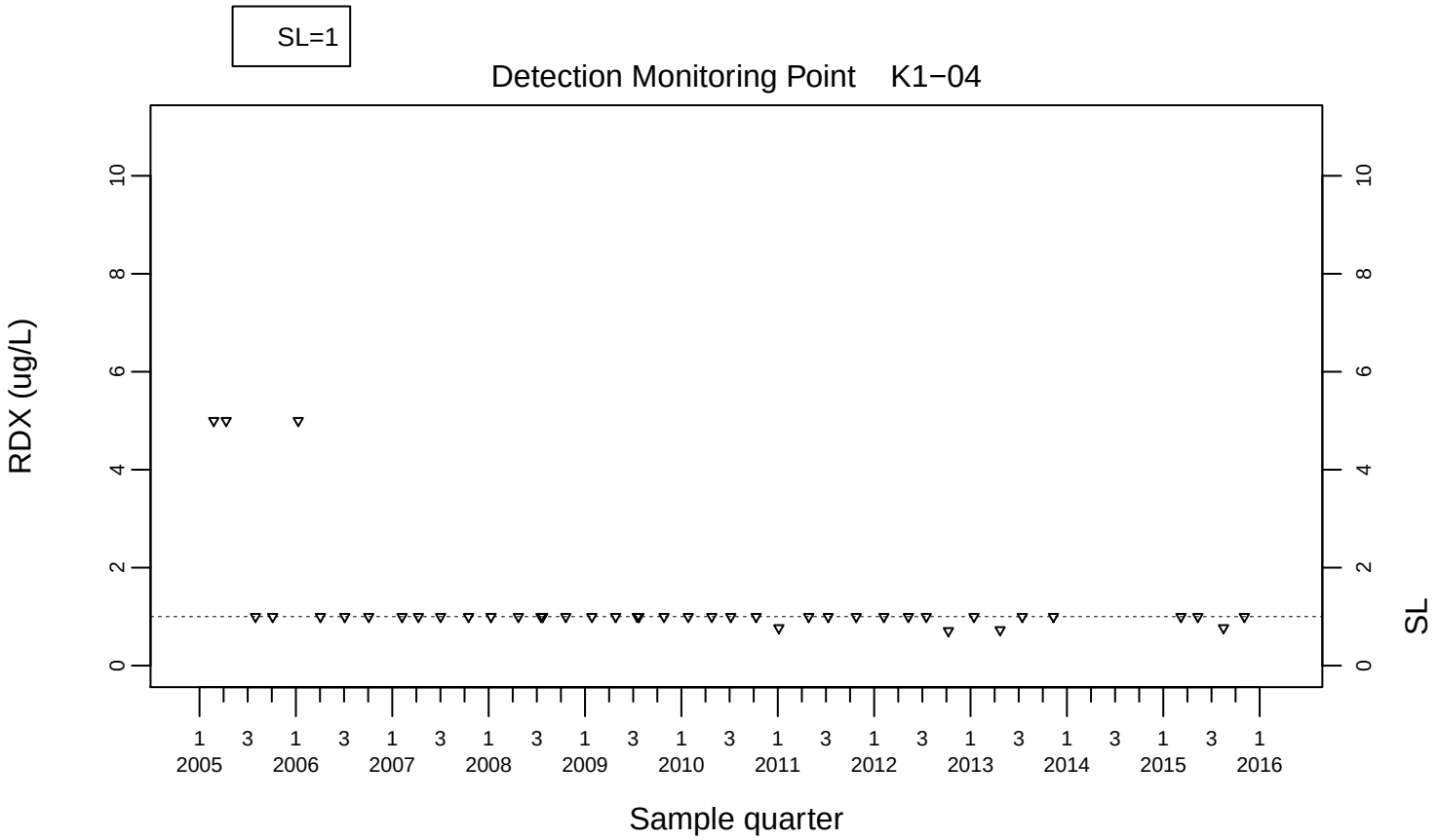

Pit 1 Area
HMX (ug/L)
SL=1
Above RL
Below RL
Crossgradient Monitoring Point K1−09
HMX (ug/L)
SL
0
1
2
3
4
5
6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

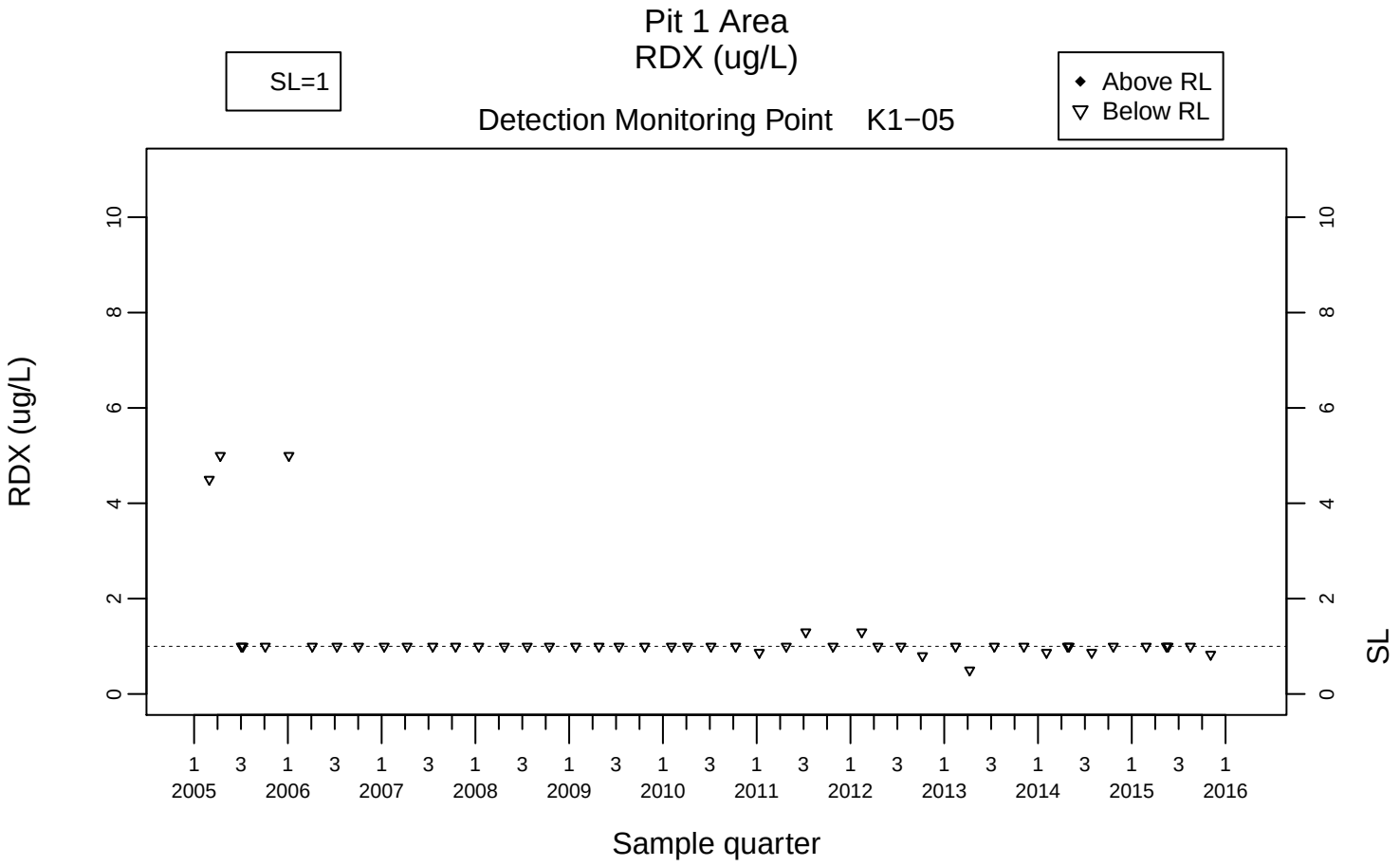

SL=1
Detection Monitoring Point W−PIT1−2326
HMX (ug/L)
SL
0
1
2
3
4
5
6
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

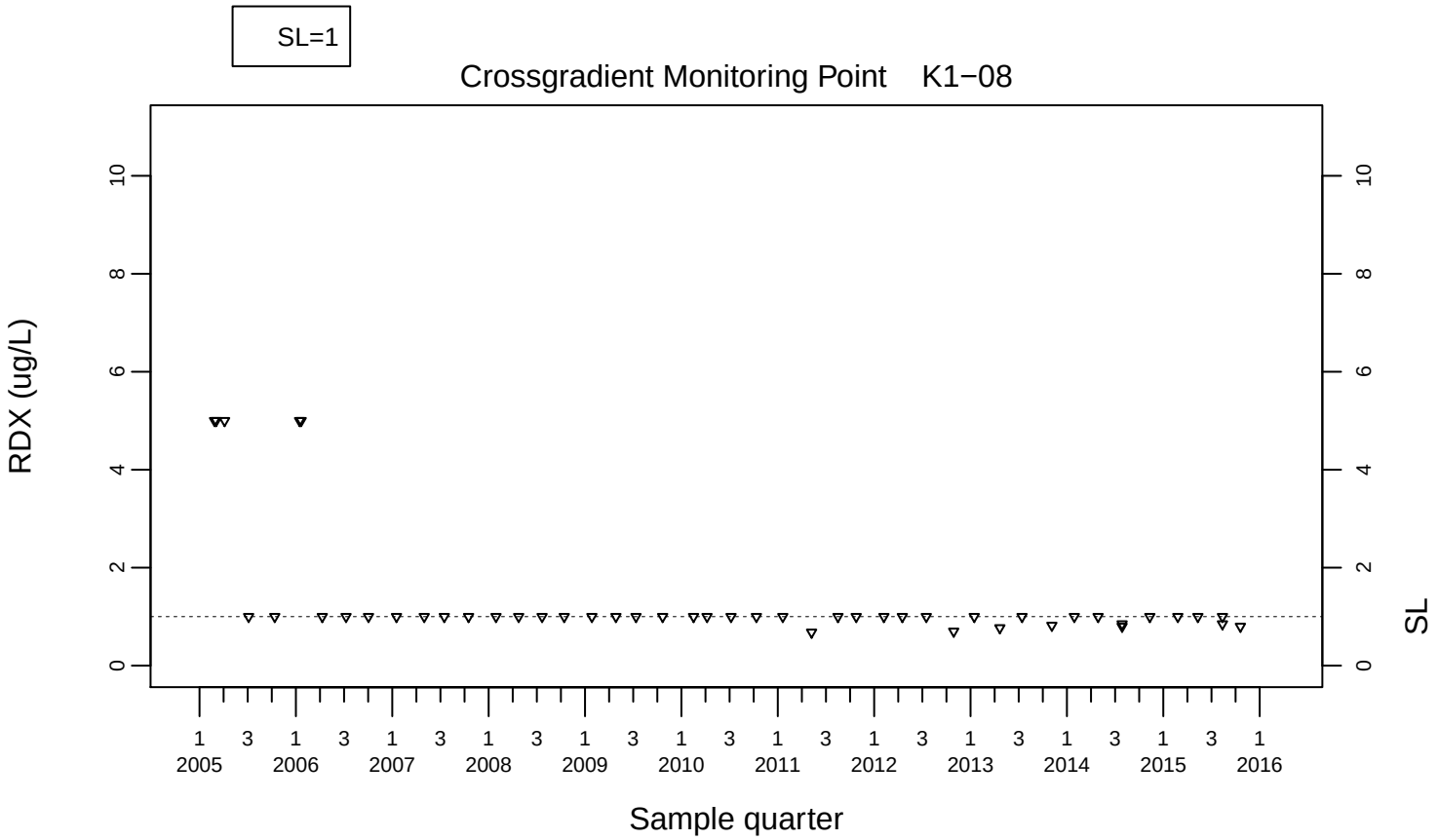

Pit 1 Area
RDX (ug/L)
Above RL
Below RL
Background Monitoring Point K1−01C
RDX (ug/L)
0
2
4
6
8
10
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

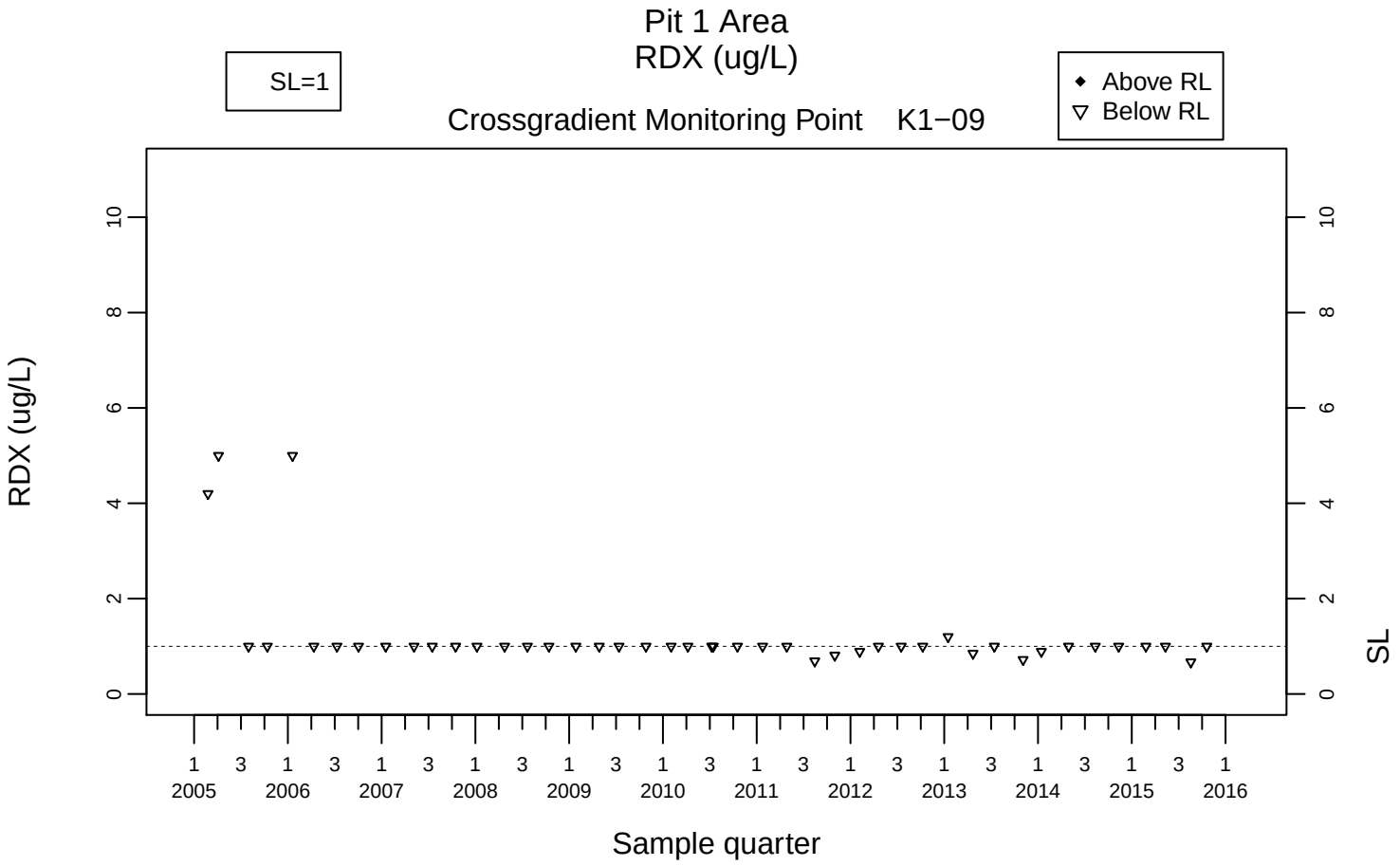

Background Monitoring Point K1−07
RDX (ug/L)
0
2
4
6
8
10
1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter

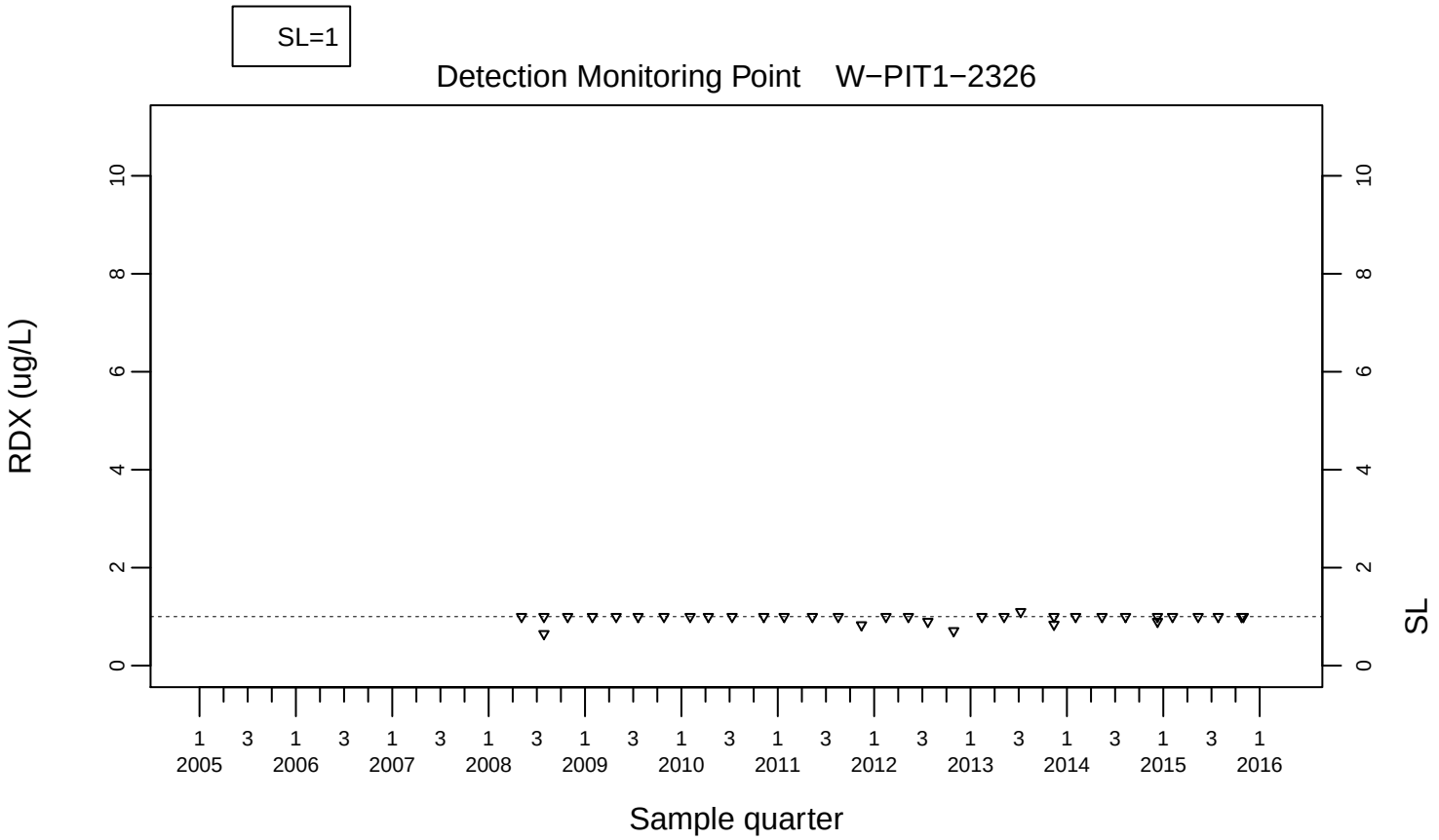

Pit 1 Area
RDX (ug/L)
SL=1
Above RL
Below RL
Detection Monitoring Point K1−02B
RDX (ug/L)
SL
Sample quarter
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016


SL=1
Detection Monitoring Point K1−04
RDX (ug/L)
SL
Sample quarter
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016


Pit 1 Area
RDX (ug/L)
SL=1
Above RL
Below RL
Detection Monitoring Point K1−05
RDX (ug/L)
SL
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
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter


SL=1
Crossgradient Monitoring Point K1−08
RDX (ug/L)
SL
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
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter


Pit 1 Area
RDX (ug/L)
SL=1
Above RL
Below RL
Crossgradient Monitoring Point K1−09
RDX (ug/L)
SL
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
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter


SL=1
Detection Monitoring Point W−PIT1−2326
RDX (ug/L)
SL
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
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Sample quarter