King County

Department of Natural Resources and Parks
Solid Waste Division

VASHON ISLAND CLOSED LANDFILL
2013 ANNUAL GROUNDWATER DATA
EVALUATION REPORT

April 2013

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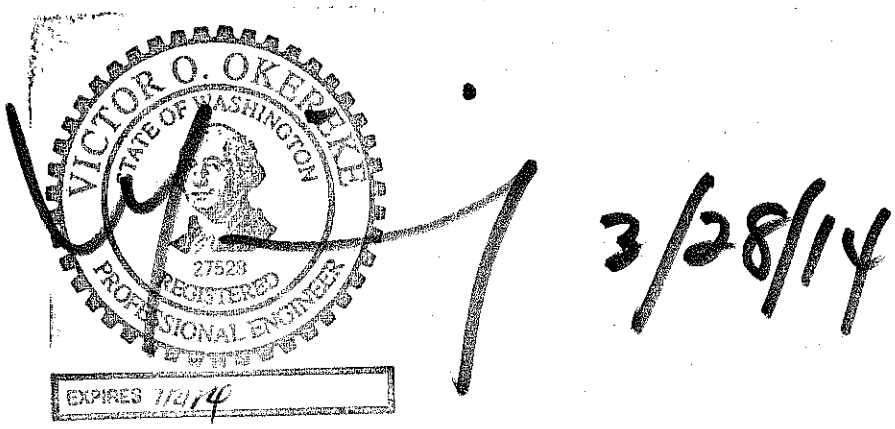
Vashon Island Closed Landfill 2013 Annual Groundwater Data Evaluation Report Certification

I certify in accordance with the requirements of Chapter 18.220 RCW, that the contents of this Groundwater Data Evaluation Report were prepared under my direction under a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Where applicable, some specific and related hydrogeologic portions have been duly certified by the responsible geologist or engineering geologists in accordance with Chapter 18.220.010 (12) RCW. Based on my inquiry of the person(s) directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.



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VASHON ISLAND CLOSED LANDFILL

2013ANNUAL GROUNDWATER DATA EVALUATION REPORT

Prepared By:

King County Department of Natural Resources & Parks
Solid Waste Division, Engineering Services Section

April 2014

TABLE OF CONTENTS

1. PURPOSE 1-1

2. INTRODUCTION 2-1

2.1. REGIONAL SETTING 2-1
2.2. BACKGROUND AND PREVIOUS INVESTIGATIONS 2-2
2.3. LANDFILL HISTORY AND SITE IMPROVEMENTS 2-3
2.4. SITE GEOLOGY AND HYDROGEOLOGY 2-6

3. EVALUATION METHODS 3-1

3.1. DATA QUALITY 3-1

4. RESULTS 4-1

4.1. GROUND WATER ELEVATIONS AND FLOW DIRECTION 4-1
4.1.1. Groundwater in Channel Cc1 4-1
4.1.2. Groundwater in Channel Cc2 4-2
4.1.3. Groundwater in Regional Aquifer & Channel Cc3 4-3
4.2. GROUND WATER QUALITY 4-3
4.2.1. Groundwater Within or Adjacent to Channel Cc1 4-4
4.2.2. Groundwater in Channel Cc2 4-7
4.2.3. Groundwater in Regional Aquifer & Channel Cc3 4-13
4.3. WEIR AND SURFACE WATER QUALITY 4-17
4.4. OFFSITE DOMESTIC WELL MONITORING 4-19

5. LANDFILL GAS 5-20

6. CONCLUSIONS AND RECOMMENDATIONS 6-20

6.1. CONCLUSIONS 6-20
6.2. RECOMMENDATIONS/PROPOSED ACTIONS 6-21

7. REFERENCES 7-1

LIST OF FIGURES

Figure 1	Vashon Island Closed Landfill Vicinity Map
Figure 2	Vashon Island Water Table
Figure 3	Site Map
Figure 4	Site Stratographic Cross Section Locations
Figure 5	Site Stratographic Cross Section A-A’
Figure 6	Site Stratographic Cross Section B-B’
Figure 7	Site Stratographic Cross Section C-C’
Figure 8	Site Stratographic Cross Section D-D’
Figure 9	Site Stratographic Cross Section E-E’
Figure 10	Water Level Elevations for Groundwater in or Adjacent to Channel Cc1
Figure 11	Water Level Elevations in Channel Cc2
Figure 12	Water Level Elevations Beneath Channels Cc2
Figure 13	Water Level Elevations Regional Aquifer & Cc3

LIST OF TABLES

Table 1-1	Regional and Vashon Island Landfill Hydrostratigraphy
Table 1-2	Vashon Island Landfill Groundwater Monitoring Well Completion Details
Table 1-3	2010 Site Maintenance Activities
Table 3-1	Statistical Summary for Groundwater
Table 3-2	Groundwater Trends in Individual Wells
Table 3-3	Statistical Summary for Hillside Weirs

LIST OF APPENDICES

Appendix A	Groundwater Quality Standards
Appendix B	Exceedance Reports Regulatory Standards Exceedance Reports & Prediction Limit Exceedance Reports Seeps Exceedance Reports for Surface Water Criteria Seeps Exceedance Reports for Groundwater Criteria 2011 & 2012 Calculated Prediction Limits
Appendix C	Time Concentration Plots for groundwater within or adjacent to Channel Cc1
Appendix D	Time Concentration Plots for groundwater in Channel Cc2
Appendix E	Time Concentration Plots for groundwater beneath Channel Cc2/ Cc3
Appendix F	Time Concentration Plots for Regional Aquifer & Channel Cc3
Appendix G	Groundwater Velocity Calculations and Potentiometric Maps
Appendix H	Monitoring Well Keys
Appendix I	Groundwater Chemistry Data
Appendix J	Ion Balance Calculations & Trilinear Diagrams
Appendix K	Gas Monitoring Data
Appendix L	Inspection Survey Reports
Appendix M	Vashon Annual Financial Summary

EXECUTIVE SUMMARY

This Report presents the results of statistical analyses on the ground water monitoring data collected at the Vashon Island Closed Landfill from 1986 through December 2013.

In August 1999, landfilling was discontinued at the Vashon Landfill and a temporary plastic cover was placed over the refuse mound. A transfer/recycling station was constructed in the summer of 1999 to receive the waste generated on the island.

The final cover placement occurred in fall 2001. The landfill closure area is approximately 34 acres. The basic components of the cover system, from the top down, include: vegetative layer, upper drainage layer, impervious layer consists of high density polyethylene (HDPE), and lower gravel drainage layer.

The recent data reflects the natural variability in water quality present in the Cc2 background well MW-20. The relatively low and stable concentrations detected in MW-20 indicate that groundwater quality in this well is not impacted by the landfill. Chemical data from MW-20 represents natural aquifer conditions in the vicinity of the landfill. Wells in the groundwater perched in channel Cc2 displaying impacts from landfill activities include MW-2, MW-21, MW-5D. Stronger reducing conditions are identified in wells MW-5D and MW-21 than in MW-2, consistent with historical conditions. Most volatile compounds indicate decreasing or stable levels. Patterns observed for VOCs in wells MW-2 and MW-5D also, the wells indicate the possibility of a different mechanism of transport than for other water quality parameters. The observations indicate landfill gas as the most probable source of these groundwater impacts.

We have continued to monitor the effectiveness of the landfill gas control system. There have been no methane detections at the compliance monitoring points since 2008.

A number of springs discharge on the hillslope on the Westside Highway SW. The water from these springs has been collected since 1991 at three weirs, SW-W1, SW-W2 and SW-W3. The only VOC detected with any frequency in the weirs is vinyl chloride. Vinyl chloride is rarely detected in SW-W1 and occasionally in SW-W2, but is routinely detected in SW-W3. A surface water site, SW-E was added to the sampling network in November of 2012 and results show that water quality is similar to SW-W1 with no volatile organic compound detections.

King County Solid Waste Division (KCSWD) currently monitors quarterly for groundwater, surface water and leachate at Vashon Island Closed Landfill, monthly for landfill gas and bi-annually for offsite wells. Since the landfill was closed and capped wells in the channel Cc2 have shown an overall reduction in volatile organic compounds. Wells screened in channel Cc3/regional aquifer do not show impacts attributed to landfill activities. KCSWD is currently reviewing the need for additional

monitoring wells and or improvements to the engineering control systems for the landfill.

The Financial Assurance information in this document (included in Appendix M) presents the authorized 2013-2014 budget for the Vashon Island Closed Landfill. The financial information is presented in a format which responds to regulatory request for financial assurance.

1. PURPOSE

The purpose of this report is to meet or exceed the regulatory requirements of the WAC 173-351, Criteria for Municipal Solid Waste Landfills..

2. INTRODUCTION

This is the 2013 Annual Groundwater Data Evaluation Report that presents the results of statistical analyses on the ground water monitoring data collected at the Vashon Island Closed Landfill from 1986 through December 2013. This annual report describes the hydrogeologic conditions at the landfill and presents the evaluations on the groundwater quality data collected from upgradient and downgradient monitoring wells and on the water quality from seeps on the hillside to the west of the landfill. The data in this report are presented in compliance with Washington Department of Ecology "Criteria for Municipal Solid Waste Landfills" (WAC 173-351-415), and the Code of the King County Board of Health "King County Solid Waste Regulations" (Title 10, Rules and Regulations No. 8).

To meet the annual reporting requirement of WAC 173-351, this annual report includes a discussion of maintenance activities at the site in 2013, surface water data, landfill gas data and leachate data.

This report also provides a brief description of the partial closure and site improvements that were completed in 1989 and mentions the site investigations conducted at the landfill in 1995 and 1999 and the final closure construction completed in 2002. Groundwater quality trends are discussed in context of these site improvements. This report also includes: a summary of previous site investigations; a description of the location, topography, and regional geology and groundwater hydrology of the landfill; a history of the landfill; evaluation methods; data quality; site hydrogeology; and results and discussion of groundwater flow and chemistry at the landfill. Planned future activities at the site are presented in Section 4.

2.1. REGIONAL SETTING

The Vashon Landfill includes a 24-acre mixed municipal refuse fill area, located on a 145-acre parcel in the west central portion of Vashon Island (Figure 1). Groundwater monitoring at the landfill has occurred at various sampling locations (Figure 3) since 1986. Most of the property exists in sparsely to unwooded, gently rolling terrain at elevations of 300 to 400 feet. The western portion of the property (west of Westside Highway SW) is undeveloped, forested land that slopes steeply towards Colvos Passage.

The Vashon Landfill site is within the Judd Creek drainage area with surface water draining towards the south. The undeveloped portion of the property west of Westside

Highway SW drains westward. Judd Creek discharges approximately three miles to the south east to Quartermaster Harbor. Judd Creek is one of Vashon Island's largest creeks. It flows through a drainage area of 3,149 acres with midsummer low flows of about 224 gpm (Carr, 1983).

Vashon Island hydrogeology has previously been characterized based on island well logs (Carr, 1983). The island is composed of glacially derived sediments that layered in three units. The most recent unit is glacial till which mantles the island with a thickness of 1 to greater than 50 feet. Beneath the till is a sand, and sand and gravel zone, which is 50 to 400 feet thick. In the landfill vicinity, this unit is estimated to be up to 300 feet thick. The deepest unit identified consists of silt and clay with sandy zones that extend to depths of about 600 feet below sea level.

The surface till has poor water-bearing characteristics and does not contain an aquifer. However, the till is important to island hydrology because groundwater recharge through the till is variable from location to location. The sand and gravel stratum contains the "Principal Aquifer" of the island, which services about 95 percent of island wells (Carr, 1983). In the landfill vicinity, the direction of regional groundwater flow within the Principal Aquifer is generally westward (Figure 2). Recharge of this Principal Aquifer occurs from infiltration of rainwater through the till. Island wide, the aquifer has generally good water quality, with local areas of elevated nitrate and iron levels. A "Deep Aquifer" exists about 100 to 300 feet below sea level, but is not penetrated by many wells, and none at the landfill site. See Table 1-1.

2.2. BACKGROUND AND PREVIOUS INVESTIGATIONS

Hydrogeology and water quality studies of the Vashon Landfill vicinity have been performed on behalf of the King County Solid Waste Division by R. W. Beck (1984), Harper-Owes (1986 and 1988), CH2M Hill (1995 and 1996), and Berryman & Henigar (2000). Central conclusions of the earlier reports were that groundwater beneath the landfill exists in two separate zones. The CH2M Hill report defined a third zone of groundwater. The 2000 report describes groundwater as occurring as both perched saturated zones and within a deeper, extensive saturated zone. This deeper zone is identified as the regional aquifer. The latest investigation included 3 additional groundwater wells in the regional aquifer, completed in 2003. The *Vashon Island Hydrogeologic Report Update* (Berryman & Henigar with UES) was finalized in December 2004. The 2004 Update identified geologic units beneath the landfill; identified as Units A through G. Table 1-1 in this report (Table 2-4 in the 2004 Update) describes the identified units. Unit C is a lacustrine silt incised by channel deposits. Three distinct channel deposits were identified and loosely correspond to zones identified in previous reports. Wells screened in channel Cc1, the uppermost channel, are described in previous reports as "screened above the lacustrine silt". Wells screened in channel Cc2, the middle channel, are described as "screened within the lacustrine silt." Wells in the lower channel, Cc3, are described as "screened below the

lacustrine silt". The regional aquifer is identified within the Unit D formation. The detailed description of the hydrogeology is found in the 2004 Hydrogeologic Update.

Channel Cc2 and the regional aquifer are the only water bearing units with sufficient information to produce potentiometric maps. Direction of groundwater flow within channel Cc2 was determined in the 2004 Update and subsequent quarterly potentiometric reports to be primarily westward. The direction of groundwater flow within the regional aquifer is indeterminate, with flow components potentially northward, westward and southward.

A steep slope drops down to the west of the landfill and cuts across a water-bearing silt/sand contact. As a result, some 400 to 500 feet to the west of the landfill, groundwater emerges and enters an unnamed creek before entering Puget Sound at Colvos Passage approximately 2/3 of a mile to the west. A hydrogeologic investigation of the hillslope was completed in 2011 that attempted to locate the outcroppings of the identified Unit C channels and provide water quality monitoring locations for the channels. The Vashon Landfill Western Hillslope Investigation Report presents the findings of this project.

The R. W. Beck (1984) and Harper-Owes (1986) reports indicated some evidence of leachate in the sand and gravel units beneath the till. Water quality conditions were re-evaluated in 1988 (letter report by Harper-Owes to Kevin Kiernan, King County Solid Waste Division) just prior to construction of the landfill closure and upgraded disposal area. Conclusions at that time were that the leachate was more dilute than typical of municipal landfills in the Pacific Northwest with no indication of elevated concentrations of organic compounds. Perimeter monitoring wells had some exceedances of primary and secondary drinking water criteria. The hillside weeps had only exceedances of secondary drinking water criteria.

2.3. LANDFILL HISTORY AND SITE IMPROVEMENTS

Solid waste disposal operations have been ongoing at the landfill since the early 1900s. Operation of the landfill was taken over by the Solid Waste Division by the late 1950's (R.W. Beck and Associates, 1983) and daily cover, record keeping, and other updated solid waste management practices were initiated. In 1983, the first four groundwater monitoring wells were installed at the landfill. Piezometers P-1 and P-2 (Figure 3), previously located in the fill area on the eastside, were abandoned in 1988 by overdrilling and then filling the borehole with bentonite in accordance with the Washington Administrative Code 173-160 as required at that time. An analysis of various leachate collection system alternatives was performed in order to meet King County Solid Waste Regulations (KCSWR - Regulation No. 8). The selected design consisted of installing an impermeable cap over the existing refuse area, a passive gas collection system under this cap, a leachate collection and conveyance system, an aerated pretreatment lagoon, storm water control facilities (ditches, culverts, and siltation and detention ponds), and a venting and treatment system of flares. A liner for

the future refuse area was installed. These improvements were completed in 1989. The northwest 2.3 acres of the landfill received final cover in 1988-1990. Two piezometers, MW-13 and MW-24 were installed in 1992. MW-13 is now being used as monitoring well. MW-24 is monitored for groundwater levels.

The existing groundwater monitoring network was supplemented by the installation of eight groundwater monitoring wells during the summer of 1995. Figure 3 shows the location of new monitoring wells 7, 8, 9, 10, 11, 12, 14, and 19. Eight gas probes were installed around the perimeter of the refuse area to determine if gas migration was occurring at the landfill in 1995. Other improvements to the gas collection system included converting the system from passive to active and the conveyance and treatment system change from flares to activated carbon in 1996.

A detailed discussion of the depths and locations of the monitoring wells and gas probes installed in 1995 is provided in the Groundwater Monitoring Well Construction Work Plan (CH2M Hill, 1995).

During fall 1998, two more wells MW-20 and MW-21 were installed to provide supplementary monitoring of an extensive sand bed in the lacustrine silt. The most recent interpretation of the site hydrogeology is presented in the Vashon Island Landfill Hydrogeologic Report (Berryman & Henigar et. al., 2000). This report addresses the requirements in Chapter 173-351-490 of the Washington Administrative Code.

In August 1999, landfilling was discontinued at the Vashon Landfill and a temporary plastic cover was placed over the refuse mound. A transfer/recycling station was completed in the summer of 1999 to receive the waste generated on the island.

Storm water facility improvements were constructed during the summer and fall of 1999, including a detention pond in the southeast corner and an underground drain system around the perimeter of the landfill.

The final cover placement occurred in fall 2001. The landfill closure area is approximately 34 acres. The basic components of the cover system, from the top down, include: vegetative layer, upper drainage layer, impervious layer consists of high density polyethelene (HDPE), and lower gravel drainage layer (Berryman & Henigar et. al, 1999).

MW-11 was damaged in February 2001 during the Nisqually earthquake. No more samples have been collected from this well since then. MW-11 was decommissioned and the replacement well, MW-29, was installed in the summer of 2003. Additionally, MW-6S & D were damaged in the earthquake and were decommissioned as part of the drilling operations in 2003.

Drilling operations in 2003 also included installing 3 additional monitoring wells (MW-26, MW-27 and MW-28) and one piezometer (MW-25) to expand the monitoring network for the regional aquifer. MW-28 has been dry since completion. The 2004 revision to the

2000 Hydrogeologic Report was finalized in December 2004, incorporating these new wells into the hydrogeologic interpretation of the site. Table 1-2 describes well details for all of the wells on the site.

Maintenance activities for the environmental control facilities are performed throughout the year. The Operations and Maintenance Plan was finalized at the end of 2005, which provides tables listing the specific O&M activities for each system. The new listings were incorporated into the SWD Operations tracking database in 2006. A summary of the maintenance activities completed in 2011 is included as Table 1-3.

In March 2006, three documents representing the environmental evaluation of the landfill site were submitted to Washington Department of Ecology (DOE) and to Seattle King County Department of Public Health (SKCDPH). The first report, “Environmental Evaluation”, provides evaluation of the landfill environmental control systems and their interaction with the hydrogeologic environment. The second document, “Potential Effects of Landfill Gas and Leachate on Vashon Landfill Groundwater and Springs”, addresses a chemistry based evaluation of the source of volatile organics seen in some of the wells. The third document, “VOC Sampling and Test Results”, reports the findings of the soil gas sampling performed at the site. In combination these documents address the requirements of Compliance Task 4 in the Vashon Closed Landfill Permit.

These reports provided recommendations for further actions. Some of these recommendations were completed in 2006. The task of the leachate lagoon liner testing was completed in 2007. The results were reported and concluded that the liner did not have any leaks.

Other recommendations in the reports require the procurement of consultant services, such as: Install wells as needed to better define Cc3 and extent of Cc2, evaluate and enhance the landfill gas extraction system and better define the geological contacts and springs on the West Hillslope (Table 5-1 Berryman & Henigar with UES, 2006). Some of these services are being performed by King County Water and Land Division (KCWLD). A consultant was hired to review all environmental investigations, monitoring and remediation performed at the landfill and to identify data gaps and identify enhancements to the existing engineering control systems.

As part of an ongoing investigation on the West Hillslope of the landfill, three shallow monitoring wells (MW-30, MW-31 and MW-32) were hand augured in December 2009. These three monitoring wells were sampled for one year and findings from this investigation are summarized in the Vashon Closed Landfill Western Hillslope Investigation March, 2011.

2.4. SITE GEOLOGY AND HYDROGEOLOGY

Surficial till, which corresponds to Vashon till, mantles the site. The weathered till has a thickness of 15-50 feet throughout most of the landfill site. No wells monitor the Vashon Till. The till is absent in southern portions of the site.

The outwash is underlain by a lacustrine silt layer that is interpreted to be laterally continuous beneath the site. This lacustrine silt is incised by fluvial sands and gravels. These sands and gravels are interpreted as channel deposits. Perched saturated zones identified beneath the Vashon Island Landfill site occur in channel deposits (Cc1 & Cc2) within the uppermost lacustrine silt (Unit C). Groundwater in the deeper saturated zone occurs in sands and gravels within the lowermost Unit C channel deposits (Cc3) and within Units D and F. This deeper saturated zone is apparently hydraulically continuous with the regional aquifer. Units D and F are generally separated by an aquitard (Unit E). However, this aquitard has likely been removed by erosion beneath at least some portions of the site (specifically, at MW-25 and MW-26, see Figure 7). A deeper aquitard, Unit G, was encountered in only one boring (MW-7, see Figures 6, 8, and 9). Due to its limited distribution, the hydrogeologic effect of the Unit G aquitard beneath the Vashon Island Landfill site is limited.

Groundwater perched in or adjacent to the upper Unit C channel deposits (Cc1) is evaluated using wells MW-1, MW-3, MW-4, MW-5S, MW-6S, MW-10, MW-13, and MW-24 (see Figures 6 through 9). All wells measure water levels within the Cc1 deposits, but not all wells produce sufficient water for sampling. Wells typically producing sufficient water include MW-10, MW-13, and periodically MW-1 and MW-3. Well MW-6S was also installed in these deposits; however, it was decommissioned after being damaged during the February 2001 Nisqually earthquake.

Wells MW-2, MW-5D, MW-9, MW-20, and MW-21 are completed within the middle channel deposits (Cc2) (see Figures 5 and 9). Well MW-6D was also installed in these deposits; however, it was decommissioned after being damaged during the February 2001 Nisqually earthquake. Wells MW-8 and MW-14 are installed in silty sands that are beneath the middle channel deposits and are laterally equivalent with and adjacent to the lower channel deposits (Cc3) (see Figures 5 and 9). Hydrographs for wells MW-8, MW-14, and wells completed within perched saturated zones within the middle channel deposits are shown in Figure 3-9. Groundwater in wells MW-8 and MW-14 does not appear hydraulically connected with groundwater within either the middle channel deposits (Cc2) or the lower channel deposits (Cc3).

Four borings (MW-7, MW-11, MW-12, and MW-19) were advanced to elevations between 8 and 40 feet to evaluate site stratigraphy at depth (CH2M HILL, 1996). These borings were completed as wells screened to intercept groundwater in Unit D (see Figures 5 through 9). Well MW-11 was decommissioned after being damaged during the February 2001 Nisqually earthquake.

Five additional borings were advanced into Unit D and completed as monitoring wells during 2003 (B&H and UES, 2003a and 2003b). Of these, wells MW-25, MW-26, MW-29 were installed to screen groundwater in Unit D. Well MW-27 is constructed to screen the lower Unit C channel deposits (Cc3); the base of the well screen also penetrates the upper few feet of underlying Unit D deposits. As is discussed in Section 3.2.3, groundwater in MW-27 is interpreted as being equivalent with groundwater in saturated Unit D soils and therefore with the regional aquifer. Well MW-28 was installed to screen the contact between Unit D and Unit E; the elevation of this contact exceeds the water table elevation in Unit D at this location (see Figure 6).

Geologic cross-sections of the landfill (Figures 4 to 9) show the relationship of the geologic units beneath the site and the identified water-bearing zones. Channel Cc2 and the regional aquifer are the only water bearing units with sufficient information to produce potentiometric maps. Direction of groundwater flow within channel Cc2 was determined in the 2004 Update and subsequent quarterly potentiometric reports to be primarily westward. The direction of groundwater flow within the regional aquifer is indeterminate, with flow components potentially northward, westward and southward.

3. Evaluation Methods

The site environmental evaluation was conducted in accordance with the Draft Data Evaluation Supplement to the Vashon Landfill Sampling and Analysis Plan. The evaluation tools include:

- Interwell Prediction Limits
- Intrawell Prediction Limits
- Mann Kendall Trend Test
- Time Concentration Plots
- Descriptive Statistics
- Exceedance Tables
- Trilinear Plots

The prediction limit exceedances, regulatory standard exceedances (Appendix B), ion balances and trilinear diagrams (Appendix J) are prepared for each quarterly report and compiled in this report. The data evaluated from wells screened within Cc3-Regional aquifer, will be calculated and compared to intrawell prediction limits and wells screened within channel Cc2 will be calculated and compared to interwell prediction limits (Appendix B).

The Mann Kendall trend test is recalculated based on the new data obtained in 2013. The trend test is evaluated for long term trends, including historical data up to the last eight samples, and for short term trends using the last eight samples. For wells with historical data beyond 50 samples, the most recent 50 samples are used in the long term trend test (Table 3-2). Wells with fewer than 20 samples and wells that have not produced sufficient water for eight samples in the last two years are compiled as a long term trend only.

Groundwater levels in individual wells have been plotted as a function of time. Changes in water levels before and after the 1989 closure are noted. Groundwater flow directions were estimated based on water elevations in monitoring wells screened in similar water-bearing zones. Upgradient and downgradient wells are determined by flow direction.

3.1. DATA QUALITY

Five analytical labs have performed laboratory services for water samples collected at the Vashon Landfill including Laucks from 1986 to March 1990, AmTest from March 1990 to April 1992, and Analytical Resources (ARI) from April 1992 to May 1995, Laucks again from May 1995 to April 2008 and Pace from April 2008 to March 2009 and the King County Environmental Laboratory from April 2009 to current. The State Manchester Laboratory accredited all five laboratories for the methods used at the time the samples were analyzed.

Contamination of blanks has important ramifications for data quality. However, some compounds have high blank contamination rates for compounds, such as methylene chloride. Although improvements have been made in reducing the rate of blank contamination in the lab, blank samples that have a longer residence time in the lab, such as volatile trip blanks and full set trip blanks, still show elevated rates. Since the common lab contaminants do not provide the only evidence of landfill impacts, other volatile compounds are used for this evaluation. Other compounds, such as, sulfate, zinc and iron have also been detected in blanks. These detections will be noted for the individual samples in which they have occurred. Some data, particularly concerning solvents, must be qualified based on blank contamination events and measures of precision and accuracy. All sample results qualified with a “B” have blank contamination associated with the analysis.

There are instances, particularly in the case of arsenic where the limit of detection, because of technological limitations, is above the State or Federal water quality levels. Because these concentrations are not quantifiable, they can be reported only qualitatively, as less than a reporting limit. Another issue involving limits arises when the limits of detection or analytical sensitivity changes over time. Especially noticeable for parameters such as chloride, where more recent samples show more fluctuations or definition on the graphs due to more significant figures (greater sensitivity) being reported. Other factors that may contribute to these changes may be due to dilution, or due to technical or contractual specifications such as technical advancements in instrumentation in the contractual laboratory industry. These changes must be kept in mind while reviewing data evaluation and conclusions.

4. RESULTS

4.1. GROUND WATER ELEVATIONS AND FLOW DIRECTION

The Vashon Island Landfill Hydrogeologic Report Update (Berryman & Henigar with UES) presents the latest interpretation of the hydrogeology and was completed in December 2004. Starting in the fourth quarter of 2004, the interpretation has been used in the preparation of potentiometric surface maps and calculations of groundwater velocities.

Monitoring well locations are shown on Figure 3. These monitoring wells penetrate three water-bearing zones. Cross-sections illustrating site statigraphy are presented in Figures 4 through 9.

The upper most unit over most of the property is till. This till unit is absent at the south end of the site. The upper most unit at the south end of the site consists of sands interbedded with silts. These sands interbedded with silt are directly beneath the till at the north end of the site. The silts act as partial aquitards as evidenced by different water levels in wells screened at different depths. Because of the presence of these silt barriers, groundwater has been subdivided for discussion purposes into 3 channels incised into the lacustrine silt and an extensive saturated zone. Groundwater in or adjacent to channel Cc1 is the perched saturated zone between the lacustrine silt (transitional beds) and the overlying advance outwash. Groundwater in channel Cc2 is the middle channel in Unit C and groundwater in channel Cc3 is the lowest channel. The regional aquifer is a saturated zone beneath the lacustrine silt.

The stratigraphy of the site identifies 7 geologic units, A through G. Unit A is the overlying Vashon till, B is outwash, C is lacustrine silt incised with channels of more permeable material and the regional aquifer is defined in Unit D. No wells are installed in the deeper units E through F; however some wells were overdrilled and provide information about these units. A thorough discussion of the site is in the Hydrogeologic Report Update. Wells are installed in 3 channels incised in Unit C and are identified as Channels Cc1, Cc2 and Cc3 in vertical descending order. Wells in Cc1 have previously been identified as “perched above the lacustrine silt” and well in Cc2 as within the lacustrine silt (MW-27). The well in Cc3 was not previously installed.

4.1.1. Groundwater in Channel Cc1

There are currently seven wells screened in or adjacent to Cc1 deposits: MW-1, MW-3, MW-4, MW-5S, MW-10, MW-13, and MW-24. Groundwater, when encountered in this zone, is encountered at elevations of 260 to 287 feet above mean sea level (MSL).

The saturated thickness of the channel Cc1 is generally less than 11 feet. The water levels in most of the wells (with the exception of MW-10 and MW-13) have declined to

the extent to make sample collection impracticable. There is an insufficient volume of water present to collect samples due to minimal recharge rates. The wells that have yielded sufficient groundwater for continuing analysis since 1993 are MW-10 and MW-13. In 1997, MW-4 started yielding sufficient groundwater for analysis again and stopped again in late 2000. In 2007, MW-4 again yielded sufficient groundwater for two samples. MW-3 yielded sufficient water for two samples in 2007 and MW-1 has not yielded sufficient water for sampling since 2002.

Water levels for most of the wells have fallen in elevation since 1991. The initial contributing factor was the periodic placement of temporary HDPE cover over the completed refuse fill area. This practice began in 1991. The final closure of the landfill in 2002 appears to have further reduced surface recharge to this sand zone.

Historically, water levels in the wells in the groundwater in and adjacent to channel Cc1 show a variation from less than one foot to almost five feet with no marked seasonality, with the exception of MW-4 (see Figure 10). MW-4 is screened across a silt contact and the well can act as a sump. The 2004 Update recommends not sampling the well unless the water levels rise above the silt contact. There was sufficient groundwater for two samples in 2007, but previously the water levels were not above the silt contact since November 2000. Water levels are measured and reported quarterly to confirm this.

Field permeability tests performed by Harper-Owes (1986) indicated that the average permeability of sand in channel Cc1 was approximately 4.3 feet per day (ft/day).

4.1.2. Groundwater in Channel Cc2

Monitoring wells MW-2, MW-20, MW-21, MW-5D, MW-6D, MW-14, MW-8, and MW-9 are screened at elevations between 200 and 234 feet MSL. MW-6D has been decommissioned.

Wells MW-9, MW-2, MW-20, MW-21, and MW-5D are completed in channel Cc2. Wells MW-14 and MW-8 are screened in silty sands beneath the Cc2 deposits and laterally equivalent with the Cc3 deposits. Groundwater levels in MW-8 and MW-14 do not appear to be hydraulically equivalent with groundwater within either Cc2 or Cc3. The water levels recorded for wells MW-14 and MW-8 suggest these wells are along flowpaths from Cc2 to Cc3.

Annual water level fluctuations in the wells MW-8 and MW-14 tended to be minor, with an annual range of about 1 foot. Water level fluctuations in MW-9 were about 1 foot. Annual water level fluctuations in MW-2, MW-20, MW-21, and MW-5D were less than 1 foot. See Figures 11 and 12. This low or lack of response to the annual cycle of wet and dry seasons can be explained by the landfill not being located in an area where significant recharge to the aquifer occurs (Carr, 1983). Relatively low permeability surficial deposits (till) and partial closures in 1989 and 1999 contribute to the lack of significant recharge.

The general flow direction in the continuous thin sand, where MW-20, MW-21, MW-2, and MW-5D are located, is to the west or southwest. The potentiometric maps submitted quarterly and included in Appendix G generally agree with the flow directions reported by Carr (1983, see Figure 2).

The perched zone monitored by MW-2, MW-20, MW-21, and MW-5D has a hydraulic gradient of 0.01 ft/ft. The hydraulic conductivity for this perched zone is estimated between 0.01 and 0.45 ft/day. The effective porosity ranges from 0.2 and 0.3. The estimated horizontal groundwater velocity for this zone in 2013 ranged from 0.0003 to 0.025 ft/day (see Appendix G). The calculated velocities are expected to be accurate only within one order of magnitude due to variability in permeability rates. Quarterly velocity calculations and potentiometric maps are attached in Appendix G.

4.1.3. Groundwater in Regional Aquifer & Channel Cc3

There are six wells screened within the regional aquifer (MW-12, MW-7, MW-19, MW-25, MW-26 and MW-29). MW-27, screened both in channel Cc3 and the regional, is included with the regional wells for the potentiometric mapping. Groundwater is encountered at elevations of 154 to 195 feet MSL (see Figure 13).

The general flow direction in the regional aquifer is radially away from MW-27. The water fluctuations for the regional wells are less than two feet and also without considerable seasonal trends, see Figure 13. This lack of response to the annual cycle of wet and dry seasons can be explained by the landfill not being located in an area where significant recharge to the aquifer occurs (Carr, 1983). Relatively low permeability surficial deposits (till) and site closures attributes to the lack of significant recharge. The potentiometric maps shown in Appendix G generally agree with the flow directions reported by Carr (1983, see Figure 2).

The groundwater velocity occurring in the regional aquifer in 2013 is between 0.37 and 28 ft/day, with a hydraulic gradient of 0.036 ft/ft and a hydraulic conductivity estimated between 3.0 and 28.0 ft/day. The estimated velocities are expected to be accurate only within one order of magnitude due to variability in permeability rates (see Appendix G).

4.2. GROUND WATER QUALITY

Results for the groundwater quality beneath the Vashon Landfill are presented according to two channels, Cc1 and Cc2; and the regional aquifer. MW-8 and MW-14 are discussed with the Channel Cc2 wells. MW-27, which is screened in both channel Cc3 and the regional aquifer, is discussed with the regional aquifer wells. Statistical summaries present data from two time periods, long and short. Emphasis is on the short term results, obtained from January 2012 to December 2013. All statistics and

trend information discussed in the text is for this period unless otherwise identified. Tables 3-1 and 3-2 provide statistics and trends respectively for both this recent period and the previous samples. During this recent sampling period, the number of samples is eight for all wells. The quantity of data available for certain wells is limited. These wells have limited data due to a short monitoring history, are seasonally dry, have low production or are slow to recover and did not yield adequate data for comprehensive analyses. Therefore only long term trend tests are available for these wells. Apparent trends in individual wells, long and short-term, are discussed where applicable. Hydraulically upgradient wells are presented first.

Due to the presence of volatile organic compounds in the downgradient wells within channel Cc2, MW-2, MW-21 and MW-5D were put into assessment monitoring. As the first step in assessment monitoring, these wells were tested with an expanded parameter list as defined by WAC 173-351 Appendix III. Results indicated that the single parameter detected in the downgradient wells not included in the lists defined by Appendix I and II was dichlorodifluoromethane. These test results led to an agreement that wells in assessment monitoring at the site should be tested for dichlorodifluoromethane in addition to the Appendix I and II lists. This addition was specifically required for MW-20, MW-2, MW-21, MW-5D, MW-4, MW-8 and MW-27. For site wide consistency, all wells on site are tested for Appendix I and II parameters and dichlorodifluoromethane. At the request of Ecology, wells MW-2, MW-5D, MW-20 and MW-21 were sampled again for Appendix III analytes. With the exception of dichlorodifluoromethane, there were no detections of Appendix III analytes.
It is also important to note that several compounds, in particular acetone and methylene chloride, have been frequently detected in blanks and field samples at similar concentrations. The likely source of these compounds is laboratory contamination.

The pH field data for the period between late 1993 and early 1996 may not be reliable because of inconsistent field instrumentation.

The summary statistics are presented in Table 3-1. A summary of long and short-term trend evaluations for individual wells is presented in Table 3-2. Exceedances of water quality standards, prediction limit exceedances, time-concentration plots, potentiometric maps, groundwater velocities, and raw analytical data are presented as appendices.

4.2.1. Groundwater Within or Adjacent to Channel Cc1

As described in Section 3.1.1, MW-10, MW-3, MW-4 and MW-13 are the only monitoring wells in the groundwater within or adjacent to channel Cc1 silt for which water quality samples were taken in the most recent period (January 2012 to December 2013). There was insufficient water to collect samples from MW-3 and MW-4 during this period.

For the Fourth Quarter 2013, due to scheduling errors, MW-10 was not sampled this quarter. Arsenic exceeded in MW-13 for the water quality standards and there were no

volatile organic compounds detected for the quarter. The trilinear diagram shows the sample is within the same calcium-magnesium-bicarbonate hydrochemical facie. During this quarter, the ionic balance for the MW-13 is within ten percent (see Appendix J), which is sufficient for characterization.

MW-10

MW-10 was installed with eight additional groundwater monitoring wells during the summer of 1995. MW-10 is located in the northwest corner of the site. It is screened between 252.34 and 262.34 feet MSL. MW-10 is northwest to the placement of the refuse. MW-10 monitors a perched system distinct from other wells above the lacustrine silt. Water quality in MW-10 is discussed below.

The pH (field) is neutral (median 7.3). Specific conductance (field), median 135.0 μmhos/cm and total dissolved solids (median 102.0 mg/L) levels are low and stable. Sulfate (median 9.4 mg/L), chloride (median 3.1 mg/L) and nitrate (median 0.40 mg/L) are low and stable. See time concentration plots and statistical summaries. During the recent period, no conventional parameters exceed the water quality standards.

Iron (two detections of 0.01 & 0.012 mg/L in the last 8 samples) is low and stable. Concentrations of common metals, calcium, and magnesium are low and stable and chloride shows a decreasing short term trend. There were no short term trends for this well. Arsenic exceeds the State Groundwater Quality Criteria in all eight samples. Arsenic is to some extent common, a naturally occurring element in groundwater throughout western Washington as identified by USGS and Washington State Department of Health.

No volatile organic compounds (VOC) have been detected in MW-10 since 2001.

In general, the water quality in this well is good with no indications of landfill impact.

MW-13

MW-13 is screened above the lacustrine silt in sandy soils. It was installed in 1992. It was placed on the quarterly monitoring schedule in June of 1994. MW-13 is located in the southeast portion of the site. It is screened between 261.07 and 266.07 feet. MSL.

The pH is neutral (median 7.2). Specific conductance (field) (median 185 μmhos/cm), total dissolved solids (median 128 mg/L), nitrate (median 0.08 mg/L), and sulfate (median 18.5 mg/L) are low and stable. See time concentration plots, and statistical summaries.

Manganese (only 2 detections in the last two years) is low and stable. Concentrations of common metals sodium, potassium and magnesium are low and stable. There was one short term statistically decreasing trend in this well for field specific conductance. Thallium and zinc are sporadically detected. Vanadium is detected regularly at low levels. Mercury has been detected twice and copper has been detected once in the entire monitoring history. Their use as indicators of landfill impacts is limited.

Arsenic exceeds the State Groundwater Quality Criteria of 0.05 μg/L in all eight recent samples. No other samples exceed State or Federal standards. Arsenic is to some extent common, a naturally occurring element in groundwater throughout western Washington.

No volatile organic compounds have been detected in this well since 1999.

In general, water in this well is of good quality with no indications of potential landfill impact.

MW-1, MW-3, MW-4

MW-3, and MW-4 did not produce sufficient water to provide a sample in 2012 and MW-1 has been damaged and is unusable. We are reviewing our monitoring network and will provide a summary of our evaluation in 2014. MW-4 is monitored quarterly for water levels and will be sampled if possible. MW-3 shows similar or decreased values compared to previous years when samples were collected. Available chemical data is shown on time concentration plots and in the descriptive statistics table. MW-4 was placed in assessment monitoring in 2003, but did not have sufficient water for sampling until 2007. There was insufficient water for sampling in 2013.

MW-24

MW-24 also monitors water in channel Cc1. Per Chapter 4 of the 2004 Hydrogeologic Update, MW-24 is screened within a silt and will not be monitored unless water levels rise above the silt sand contact, at 291.0 feet MSL. Water levels are measured quarterly at MW-24 and the elevation has remained below the specified elevation.

Groundwater Perched In and Adjacent to Channel Cc1 Summary

Water quality in MW-10 is good and is not considered impacted by landfilling activities. The absence of manganese in this well is notable. The conditions in this well in combination with low iron suggest a predominantly oxidizing environment.

MW-13 water quality is good and is not considered impacted by landfilling activities as well.

Reduced water volumes in the other shallow wells following installation of the cover at the site suggest the cover is adequately preventing recharge through the waste and is protecting the groundwater.

4.2.2. Groundwater in Channel Cc2

Wells MW-9, MW-2, MW-20, MW-21, and MW-5D monitor the groundwater perched within channel Cc2. MW-8 and MW-14 monitor water beneath channel Cc2 and laterally equivalent with channel Cc3.

Wells MW-2, MW-20, MW-21, and MW-5D are completed in continuous thin sand that correlates with the elevation and location of one of the seeps (seep 2 or SW-W2) on the west side of the landfill.

For the Fourth Quarter 2013, Wells MW-2, MW-5D and MW-21 exceeded the groundwater criteria for Manganese and vinyl chloride. Wells MW-5D and MW-21 exceeded for iron. Wells MW-2, MW-5D, MW-9, MW-20 and MW-21 exceeded the groundwater criteria for arsenic. MW-20 exceeded the groundwater criteria for manganese.

The trilinear diagram shows all of the samples to be within the same calcium-magnesium-bicarbonate hydrochemical facie, as they have been in past samples for these wells. MW-5D, MW-21 and MW-2 continue to be characterized by more dominant bicarbonate-carbonate characteristics. The cation/anion balance during this quarter, for the wells in this zone, is within ten percent except for MW-5D which is at 12.2% (see Appendix J). The metals analyses were all a bit higher than historic which raised the ionic balance to above 10%. The lab has been notified. The reported results are sufficient for characterization.

Interwell prediction limits for the Fourth Quarter 2013 are tabulated in Appendix B (Table 8). The prediction limits in Cc2 are compared to well MW-20 and are similar to historic values with MW-2, MW-5D and MW-21 exceeding the prediction limit for: specific conductance, alkalinity, calcium, magnesium, sodium, total dissolved solids and total solids. Well MW-5D exceeded for arsenic, iron, barium and manganese. Wells MW-2 and MW-9 exceeded the prediction limit for vanadium. Well MW-9 also exceeded the prediction limit for chloride and MW-9 and MW-21 for Nitrate.

<u>MW-20</u>

MW-20 is located in the southeast portion of the site. It was installed in October 1998. It is screened between 233.2 and 237.5 feet MSL in a continuous sand bed within the lacustrine silt. It is upgradient of the landfilled area and used to calculate prediction limits and for upgradient comparison to wells MW-2, MW-21 and MW-5D.

The field pH results show a higher pH (median 7.8). Measurements of specific conductance (median 175 μmhos/cm), chloride (median 3.2 mg/L), sulfate (median 17.4 mg/L) and total dissolved solids (median 132 mg/L) are stable. . Nitrate was only detected thrice in the last eight samples.

Iron (median 0.005 mg/L), with only one detection in the past eight samples, calcium (median 11.6 mg/L) and magnesium (median 9.9 mg/L) both exhibit short term stability. During the 2013 reporting period, arsenic levels exceed the State Groundwater Quality Criteria in four of four samples.

In 2013, there were no volatile organic compounds detected in MW-20.
Groundwater from this well is believed to represent natural conditions. This well is not impacted by landfilling activities.

MW-9

MW-9 is located in the northwest portion of the site. It was also installed as part of the addition of eight groundwater monitoring wells during the summer of 1995. It is screened between 223.64 and 233.64 ft. MSL in sand and gravel.

The pH conditions in this well are fairly neutral with a median of 7.3. The specific conductance (median 163 μmhos/cm) is stable. The measurement of total dissolved solids (median 124 mg/L) fluctuates in a narrow range and exhibits no evident trend. Nitrate (median 0.19 mg/L), chloride (median 4.3 mg/L), and sulfate (median 14.1 mg/L) appear to be stable in recent samples.

Iron levels are low and stable with no detections in the past 8 samples. Sodium (median 5.4 mg/L) levels are stable. Arsenic exceeds the State Groundwater Quality Criteria of 0.05 μg/L in the eight recent samples. Arsenic is to some extent common, a naturally occurring element in groundwater throughout western Washington.

In 2013, there were no volatile organic compounds detected in MW-9.

The general water characteristics in this well represent good quality with no indications of landfill impact.

MW-2, MW-21, and MW-5D

These three wells are located downgradient and in the southwest portion of the site. MW-2 is located easterly from the other two. Wells MW-2 and MW-5D have been monitored quarterly since September 1986. MW-21 was installed in fall 1998 and has been monitored continuously since then.

The screen elevations for these wells are: 227.58 ft. to 244.58 ft. MSL for MW-2; 228.86 ft. and 239.86 ft. MSL for MW-5D; and 233.7 ft. to 243.1 ft. MSL for MW-21.

The pH measurements from these wells show conditions close to neutrality. Median values for the three wells range from 6.8 to 7.0, are stable in all three wells. Several indicator parameters and metals in recent sampling events from wells MW-21, MW-2, and MW-5D are elevated relative to MW-20. Samples from MW-5D have the highest levels in the unit for iron (median 8.9 mg/L), manganese (0.597 mg/L), and sodium (13.5 mg/L). MW-2 has the highest levels for total dissolved solids (median 234 mg/L), specific conductance (median 345 μmhos/cm), calcium (23.7 mg/L), and magnesium (27.8 mg/L). MW-2 and MW-21 have iron and manganese levels that are lower by an order of magnitude or more, than MW-5D. Chloride levels in all three wells are at or near the level in the upgradient well MW-20.

The State and Federal groundwater quality criteria are exceeded consistently for iron and manganese in MW-5D and MW-21. All four wells, MW-2, MW-5D, MW-20 and MW-21 last year exceeded the criteria for manganese. All recent samples from wells MW-2, MW-5D, and MW-21 exceeded the State Ground Water Criterion for arsenic in 2013.

MW-5D and MW-21 showed no statistically significant short term trends for the past 8 samples. MW-2 showed a statistically significant decreasing short term trend for field specific conductance.
Groundwater sampling results from MW-2, MW-21, and MW-5D continue to show detections of volatile organic compounds (VOCs). The detections for the past eight samples indicate stable levels for VOCs with no short term trends. All of these compounds are present in landfill gas as well as leachate and their distribution between phases (partitioning) is regulated by physical properties (Henry's constant, solubility, vapor pressure) where these phases are in contact.

Most of these detected compounds are likely components of the waste stream; however others are almost certainly degradation products of tetrachloroethene and/or trichloroethene by the process of reductive dechlorination. The detected VOCs, wells, median values or recent detection frequency for the last eight samples are:

- Benzene in MW-5D (median 0.50 μg/L) in all eight samples;

- *Cis*-1,2 dichloroethene in MW-21 (8 out of 8 samples, median 1.12 μg/L), MW-5D (8 out of 8 samples, median 8.82 μg/L), and MW-2 (1 out of 8 samples, median 0.1 μg/L);
- *Trans*- 1,2 dichloroethene in MW-5D (8 out of 8 samples, median 0.330 μg/L);
- Vinyl chloride in MW-21 (median 0.132 μg/L), MW-5D (median 3.8 μg/L) and MW-2 (median 0.109 μg/L) in the last eight samples;
- Trichlorofluoromethane in MW-21 (8 out of 8 samples, median 0.74 μg/L), MW-2 (8 out of 8 samples, median 2.06 μg/L) and MW-5D (0 out of 8 samples);
- Dichlorodifluoromethane in MW-21 (8 out of 8 samples, median 2.2 μg/L), MW-2 (8 out of 8 samples, median 5.6 μg/L) and MW-5D (8 out of 8 samples, median 1.5 μg/L).

VOCs exceeding State Groundwater Quality Criteria in 2013 samples are:

- Vinyl chloride, all recent samples from MW-2, MW-5D, and MW-21.

Historically, MW-5D has displayed elevated concentrations of some indicator constituents, along with some exceedances. However, evaluation of recent data indicates in most cases short-term stability at considerably lower concentrations than historical data in this well. In 1992-1995, total dissolved solids, chloride, manganese, calcium, and magnesium levels went up while iron levels went down. In early 2002, manganese, total dissolved solids and chloride levels were slightly higher than previous quarters while iron levels were unusually low. Levels for total dissolved solids, chloride, manganese, calcium, and magnesium returned to previous levels and iron came back up. During 2001 – 2002 an event similar to the one observed between 1992 and 1995, might have occurred but to a much lesser extent.

The assessment monitoring program for Appendix III parameters detected dichlorodifluoromethane as the single Appendix III parameter not included on the Appendix I and II lists. This parameter is included in the current monitoring program for this site. At the request of Ecology, wells MW-2, MW-5D, MW-20 and MW-21 were sampled again for Appendix III analytes annual the past three years. With the exception of dichlorodifluoromethane, there continue to be no detections of Appendix III analytes.

There is an impact from landfill activities in wells MW-2, MW-5D, and MW-21. Closure activities have contributed to improvement of the water in MW-2, and MW-5D. MW-21 was installed following closure and exhibits similar characteristics to MW-2 and MW-5D. Improvement in water quality is characterized by decreases in specific conductance, chloride, nitrate and a reduction in the frequency and level of several VOCs.

The declines in concentration of general water quality indicators (specific conductance, dissolved solids, chlorides, metals, etc.) suggest that leachate impacts have been controlled as a result of closure activities. A different response for several volatile compounds strongly suggests that the source of these compounds has not been completely addressed by leachate control and most likely results from a landfill gas transport mechanism (although several show decreasing levels). The volatile compounds detected in groundwater are all present in significant amounts in landfill gas. Characterization of leachate indicates that the observed groundwater quality in impacted wells could not be achieved by leachate alone. Using the best available data, Vashon leachate does not contain adequate concentrations of VOCs or alkalinity to result in groundwater quality observed at MW-5D. Alkalinity and VOCs are two of the most likely contributions to groundwater by interaction with landfill gas.

Groundwater perched in Channel Cc2 Summary

The recent data reflects the natural variability in water quality present in MW-20. The relatively low and stable concentrations detected in MW-20 indicate that groundwater quality in this well is not impacted by the landfill. Chemical data from MW-20 represents natural aquifer conditions in the vicinity of the landfill.

Wells in the groundwater perched in channel Cc2 displaying impacts from landfill activities include MW-2, MW-21, MW-5D. Stronger reducing conditions are identified in wells MW-5D and MW-21 than in MW-2, consistent with historical conditions. Most volatile compounds indicate decreasing or stable levels.

Patterns observed for VOCs in wells MW-2 and MW-5D, and the fact that the wells were constructed with screened intervals extending above the saturated zone, indicate the possibility of a different mechanism of transport than for other water quality parameters. As discussed in the 1992 Annual Report, the observations indicate landfill gas as the most probable source of these groundwater impacts.

Further investigations were conducted in 2003. Gas samples were taken from the airspace above the water table. Samples of landfill gas from probes and the active gas collection system were also taken to provide a comparison to typical landfill gas generated at the Vashon Landfill. The results from this sampling event were submitted to agency in 2006.

Further evaluation of the site continued in 2004. An environmental evaluation technical memorandum was submitted to agency in 2006. The technical memorandum made recommendations for further investigation and actions on the site. These recommendations are discussed in Section 1.3. These wells will continue to be monitored for response to any activities undertaken at the site.

Wells MW-8 and MW-14 monitor the groundwater perched beneath channel Cc2.

Wells MW-8 and MW-14 are screened lower than MW-9. Water levels in these wells likely indicate vertical recharge to the underlying sand and gravel unit.

MW-14

MW-14 is located in the west portion of the site. MW-14 was installed as part of an addition of eight groundwater monitoring wells during the summer of 1995. It is screened below the lacustrine silt, between 202.62 and 212.62 ft. MSL.

MW-14 was not sampled in 2013 due to a stuck pump above the screen interval. SWD will attempt to remedy this in 2014 and if the pump is unable to be retrieved then a decision on this well will be made. The below information is unchanged from the 2012 annual report.

Water in MW-14 exhibits slightly alkaline conditions (pH median 7.8) fluctuating in a moderate range. Specific conductance (median 158 μmhos/cm), total dissolved solids (median 125 mg/L), sulfate (median 12.4 mg/L), and chloride (median 3.0 mg/L) exhibit small fluctuations and no trends with the exception of specific conductance which exhibits a decreasing short term trend.

Iron (only one detection in the past 8 samples), calcium (median 12.2 mg/L), magnesium (median 3.3 mg/L), Manganese (median 0.049 mg/L), potassium (median 2.53 mg/L), and sodium (median 5.93 mg/L) show no trend. Zinc is detected occasionally. These detections are near or at the limit of detection.

Sampling results in 2012 had no exceedances of the Secondary State and Federal Drinking Water Standards.

General characteristics show this well to be of good quality with no indications of landfill impact.

MW-8

MW-8 is located in the west portion of the site. It was also installed as part of the addition of eight groundwater monitoring wells during the summer of 1995. MW-8 is screened between 203.24 and 213.24 ft. MSL and is beneath the lacustrine silt. The screened interval in MW-8 has intersected the potentiometric surface in all depth to water measurements.

MW-8 has nearly neutral pH values (median 6.6) with little variability and no apparent trends. Specific conductance (median 150 μmhos/cm), total dissolved

solids (median 125 mg/L), nitrate (median 3.6 mg/L), sulfate (median 7.7 mg/L) and chloride (median 4.7 mg/L), these levels exhibit minor variability and no discernible trend.

Iron levels (no detections in the past 8 samples) are low and stable. Other metals detected are barium, copper, manganese, vanadium and zinc. These detections are near or at the laboratory minimum detectable level. Magnesium (median 9.0 mg/L), sodium (median 6.2 mg/L), and potassium (median 1.1 mg/L) exhibit no trend in recent samples. Unlike other monitoring wells, there are no exceedances for arsenic State Groundwater Quality Criteria.

No volatile organics were detected at MW-8 in 2013.

General characteristics show this well to be of good quality except for nitrate. The source of the nitrate is uncertain due to the lack of any other impact indicators. Water in MW-8 is of good quality with low level of impact related to nitrate.

Groundwater Perched Beneath Channel Cc2 Summary

MW-8 is constructed with the screened interval extending above the saturated zone. Except for sulfate, samples from this well show stable and decreasing trends.

Evaluations for MW-14 exhibit stable concentrations for constituents that are considered to represent naturally occurring spatial variation and show no indications of impacts from the landfill. Quarterly monitoring will continue for both wells.

4.2.3. Groundwater in Regional Aquifer & Channel Cc3

Wells MW-7, MW-11, MW-12, MW-19, MW-26 and MW-29 monitor the groundwater in the regional aquifer. MW-27 is screened both in Channel Cc3 and the regional aquifer.

Construction differences make determination of groundwater gradients and flow direction difficult in the area monitored by these wells. Average screened depth below the water table in the wells ranges from near zero in MW-11, MW-26 and MW-29 to more than 30 ft in MW-12 and MW-7. Since MW-27 is screened in channel Cc3 and the regional aquifer, this represents a piezometric high. These differences along with spatial variation over the site may well account for prediction limit exceedances using MW-7 as background data.

For the Fourth Quarter 2013, Arsenic exceeded in all wells, MW-29 exceeded for iron and wells MW-7, MW-19, MW-26 and MW-29 exceeded the groundwater criteria for

manganese and there was one volatile organic compounds detected for the quarter, acetone in MW-19. Acetone is a common lab contaminant and the lab has been notified of this result. The trilinear diagram shows all samples are within the same calcium-magnesium-bicarbonate hydrochemical facie. During this quarter, the ionic balances for the wells in this zone are within ten percent (see Appendix J), which is sufficient for characterization.

MW-7

MW-7 is located in the southeast portion of the site. Historically, MW-7 has been interpreted to represent upgradient conditions. The interpretation provided in the 2004 Hydrogeologic Update, redefines MW-7 as downgradient of the site. This well was installed as part of the addition of eight groundwater monitoring wells during the summer of 1995. The screened elevations for this well are between 141.09 and 151.09 ft. MSL.

The pH conditions in MW-7 are slightly alkaline with a median of 7.8. Specific conductance levels vary from 140 to 180 μmhos/cm (median 158 μmhos/cm). Ammonia (median 0.240 mg/L) is consistently detected in this well. Nitrate was only detected once in the last eight samples. .Alkalinity (median 74 mg/L), total dissolved solids (median 123 mg/L), chloride (median 3.0 mg/L), and sulfate (median 10.2 mg/L), are stable.

Iron only had no detections in the past eight samples and manganese (median 0.138 mg/L) display no significant trends. Manganese exceeds water quality standards in all four of the most recent samples. All samples exceed State Groundwater Quality Criteria for arsenic. Other metals detected occasionally in this period include selenium and zinc.

No volatile organic compounds were detected in 2013 at MW-7.

The results from MW-7 are considered to represent natural conditions and are not related to landfilling activities.

MW-11, MW-25 and MW-29

MW-11 was installed as part of the addition of eight groundwater monitoring wells during the summer of 1995. The screened elevations for these wells are between 152.28 and 162.28 ft. MSL. MW-11 was damaged during the Nisqually earthquake in February 2001. No more samples have been collected since then. The 2001 report contains the last assessment on well MW-11. The 2001 assessment indicated no impacts in this well from the landfill. MW-11 was decommissioned in 2003. MW-25 was installed to replace MW-11. However the screen failed during installation and the well cannot be developed. The well has been left in place for

use as a piezometer. MW-29 was subsequently installed in 2003 as the replacement well for MW-11. The screened elevations for MW-29 are between 155.00 and 169.80 ft. MSL.

The water pH for MW-29 is slightly alkaline (median 7.6). Specific conductance is low (median 220), total dissolved solids (median 156 mg/L), alkalinity (median 103 mg/L), chloride (median 3.7 mg/L), sulfate (median 16.5 mg/L), are stable.

Iron (median 0.75 mg/L) and manganese (median 0.091 mg/L) are stable. Arsenic, Iron and manganese exceed water quality standards in all 2013 samples. All samples exceed State Groundwater Quality Criteria for arsenic. Other metals detected occasionally in this period include selenium and zinc.

No volatile organic compounds were detected in 2013 at MW--29.

The results from MW-29 resemble the historic MW-11 data and are considered to represent natural conditions and are not related to landfilling activities.

MW-12, MW-19, MW-26, MW-27 and MW-28

MW-12 and MW-19 were both installed in the summer of 1995. MW-12 is located to the south of the site. The screened elevations for MW-25 are between 129.62 and 139.62 ft. MSL. MW-19 is located to the northwest of the site. The screened elevations for MW-19 are between 131.10 and 141.10 ft. MSL.

MW-26 and MW-27 were both installed in 2003. MW-26 is located in the northwest corner of the site and the screened elevations are between 141.02 and 155.12 ft. MSL. MW-27 is screened both in channel Cc3 and the regional aquifer. Water quality discussions for this well are included with the other regional wells. The screened elevations for MW-27 are between 180.07 and 194.27 ft. MSL.

MW-28 has been dry since installation. The screened elevations for MW-28 are between 159.51 and 173.91 ft. MSL.

The pH for the regional aquifer for monitoring wells MW-12 and MW-19 is slightly alkaline (medians 7.3 and 7.6). The pH for MW-27 is neutral (median 6.9) and for MW-26, more alkaline (median 8.1).

Some parameter levels for MW-19 are higher than in MW-7 indicated by prediction limit (PL) exceedances. Some frequent PL exceedances are for specific conductance, sulfate, chloride, magnesium, and manganese. Even though PL exceedances are noted, the highest concentrations of these parameters are low for groundwater in general and area groundwater specifically (see table on the next page). All parameters are currently stable with no short term statistical trends.

Manganese and arsenic concentrations in MW-19 exceed the water quality standard criteria in all four samples last year.

MW-12 and MW-27 historically are the only wells in this unit with infrequent detections of manganese, except for one detection in the entire monitoring history of MW-27 and two detections in MW-12 for the history of the well. MW-12 did not exhibit any short term trends. MW-27 which exhibited an increasing short term trend for total dissolved solids.

Trends for MW-26 and MW-29 are stable for the past 8 samples with no short term trends except in MW-26, which exhibited an increasing short term trend for total dissolved solids. Manganese concentrations in MW-29 and MW-26 exceed the water quality standard criteria in all samples in 2013. Arsenic concentrations in MW-7, MW-12, MW-19, MW-26 and MW-29 exceed the water quality standard criteria in all samples in 2013.

There were no volatile organic compound detections in 2013 with the exception of MW-19 as stated earlier.

In general, conditions in MW-12 appear to be at a higher redox potential than other wells in the regional aquifer. This environment is characterized by lower levels of iron and ammonia, absence of manganese, and higher levels of nitrate.

The redox conditions in the north portion of the site are more reducing, determined by lower levels of nitrate, and higher levels of iron, manganese and ammonia.

The following table presents a water quality comparison of background conditions and the regional aquifer characterized beneath the Vashon Landfill. VOCs are not summarized due to the absence of detections in these wells.

CONSTITUENT	**Area Background Range***	**Vashon Landfill Regional Aquifer Jan 2012- Dec 2013**
General Indicators		
pH	6.5 to 8.3	6.7 to 8.2
Conductivity (micromhos/cm)	80 to 545	130 to 245
Chloride	1.6 to 14	2.3 to 9.1
Sulfate	<0.50 to 41	8.3 to 18.1
Nitrate	<0.2 to 5.8	<0.01 to 4.0

Metals[a]		
Arsenic	<0.001 to 0.017	<0.001 to 0.0048
Iron	0.04 to 10	<0.005 to 0.77
Manganese	0.005 to 0.960	<0.001 to 0.599
Sodium	5.0 to 62	4.5 to 9.4

Notes: All values except pH and specific conductivity are reported in milligrams per liter (mg/L).
[a] = Total metals concentrations are reported for area background values.
*Background values are based on Carr (1983) and Vashon-Maury Island Groundwater Management Plan (1998)

Regional Aquifer Summary

Trend analyses for most wells in this unit show stable concentrations for many of the constituents in the short-term period. Exceptions include an increasing trend in total dissolved solids for MW-26 and MW-27. Conditions present in wells in the regional aquifer show no indication of impacts attributable to landfill activities at the Vashon Island site. The water quality in this unit is good and is believed to represent natural conditions.

Groundwater flow is not well defined in the regional aquifer in the area monitored by these wells. The additional wells installed in 2003 included MW-27, screened across the channel Cc3 – regional aquifer contact. This creates a potentiometric high. The extent of the influence of this radial flow is undetermined. Additional evaluations are scheduled to be completed in 2014 to evaluate this well.

4.3. WEIR and SURFACE WATER QUALITY

The weirs are located in the western ravine adjacent to the landfill (Figure 3). The elevations for the weirs are 239.33 ft for Weir 1; 224.78 ft for Weir 2; and 195.38 for Weir 3. The weir sampling locations SW-W1, SW-W2 and SW-W3 are located downstream of each weir. The elevations for the sampling locations are 230.59 ft for SW-W1; 189.89 ft for SW-W2; and 187.23 ft for SW-W3 (See Figure 3). The sampling stations consist of a v-notch weir.

Historically, the naming for these locations has on occasion been inadvertently switched. After a thorough review of the data, corrections have been made and the probable results from switching location names have been associated with the correct location name. However, single unusual results may be the result of the naming issues rather than true fluctuations in the data. As a result of this data issue, results reported previously may differ from the current conditions.

The weirs have been monitored since March 1991. Results for water from the weirs are presented in two periods similar to groundwater. Emphasis is on results obtained from the last eight samples, predominantly between 2012and 2013. The flow at SW-W1 was insufficient to collect any samples during dry periods so data is considered as a whole, rather than focusing on the last eight samples. Four samples were collected from each of the three weirs in 2013.

The specific conductance ranges between 70 and 860 μmhos/cm for SW-W1; 325 to 750 μmhos/cm for SW-W2; and 240 to 415 μmhos/cm for SW-W3. Chloride levels range from 3 to 15 mg/L for SW-W1; 14 to 25 mg/L for SW-W2; and 5 to 8 mg/L for SW-W3. In general for specific conductance and chloride, SW-W1 has the lowest levels while SW-W2 displays the highest levels, and SW-W3 is midrange but tends closer to SW-W1. The maximum levels for both constituents have decreased compared to historical values for all three locations and in general the variability has decreased, as shown by decreases in standard deviation for short and long term periods at SW-W2 and SW-W3.

The medians for calcium concentrations are 22 mg/L for SW-W1, 57 mg/L for SW-W2, and 22 mg/L for SW-W3. The medians for magnesium concentrations are 16 mg/L for SW-W1, 50 mg/L for SW-W2, and 19 for SW-W3. The medians for potassium concentrations are 1.3 mg/L for SW-W1, 3.3 mg/L for SW-W2, and 2.1 mg/L for SW-W3. The medians for sodium concentrations are 9 mg/L for SW-W1, 16 mg/L for SW-W2, and 9 mg/L for SW-W3. As with specific conductance and chloride, SW-W1 and SW-W3 have lower levels for calcium, magnesium, potassium, and sodium, while SW-W2 has the higher levels. The levels of these metals are stable relative to long term values at all three locations. All medians above are equal to or lower than last year's values.

The only volatile organic compound (VOC) detected with any frequency in the weirs is vinyl chloride. Vinyl chloride is rarely detected in SW-W1 and occasionally in SW-W2, but is routinely detected in SW-W3. The median in the recent samples for SW-W3 is 0.036 μg/L. SW-W2 had no vinyl chloride detections in the recent 8 samples.

Most of the exceedances of the Federal and State Surface Water Quality Standards are for metals. Historically the value of these exceedances in evaluating water impacts associated with municipal solid waste landfills is limited since the standards are based on dissolved metals and the weir results are based on total metals. In 2007, field procedures changed allowing samples collected to be field filtered and metals to be analyzed for both total and dissolved constituents. Dissolved metals were then compared to groundwater criteria and total metals were compared to surface water criteria. Because water collected at the weirs is truly surface water, having been exposed to atmospheric conditions, it will no longer be compared to groundwater standards starting in 2011. Iron is the only parameter to periodically exceed the surface water quality standard. All other exceedances are very inconsistent.

In November of 2011, a new surface water sampling location was established. SW-E is located approximately 1200 feet southwest of the weir locations on the east side of a culvert on Robinwood Road SW, approximately 200 feet south of the Robinwood Road SW-Sunset Road SW intersection (see Figure 1). For the first sample, we sampled for the same analytes as for the weirs but this analyte set will be paired down to a few analytes starting in the first quarter of 2013.

SW-E had a slightly alkaline pH of 10.18 and a specific conductivity of 130 umhos/cm and chloride is 6.17 mg/L. Specific conductivity and chloride are similar to weir SW-W1. For metals, calcium is 15.5 mg/L, sodium is 6.43 mg/L, magnesium is 13.5 mg/L and potassium is 1.91 mg/L. SW-E has lower metal values in all metals compared to SW-W1 with the exception of potassium which is only 0.5 mg/L higher.

SW-E had no volatile organic compound detections.

Weir and Surface Water Summary

Conditions in SW-W1 represent the lowest levels of impact while SW-W2 displays somewhat higher low levels. SW-W3 exhibits a midrange impact on the basis of conventional parameters and metals, but has frequent detections of vinyl chloride. Water quality monitoring will continue at the weirs to provide water quality data for surface water flow leaving the site. The water quality is compared to surface water standards. The new down-stream surface water station has water quality values similar or better than SW-W1.

4.4. OFFSITE DOMESTIC WELL MONITORING

In 2002, Department of Natural Resources and Parks (DNRP) conducted sampling on Vashon-Maury Island in 11 domestic wells located around the landfill. No evidence of contamination originating from the landfill was found. The data was presented in the 2002 Annual Report. Data are included with the onsite well data, in the pdf files.

In 2005 SWD agreed to monitor 3 of these 11 wells. The first round of these samples was collected in October 2005. One of the three wells is no longer sampled as access is no longer available. Starting in 2010, samples will be collected from both of the offsite wells bi-annually. There was only one sample collected from the third quarter in 2013 from the two off site wells. No evidence of contamination originating from the landfill was found. The results are included in the .pdf files, in Appendix I.

5. Landfill Gas

Landfill gas migration is monitored by a network of compliance probes installed around the perimeter of the landfill and ambient air stations around the property boundary. The monitoring network comprises of nine ambient air stations, three monitoring wells and twenty-six gas probes. Probes are monitored monthly. The results can be found in Appendix K. There were no detections in 2013. The effects of landfill gas on current groundwater conditions are being reviewed to determine whether data gaps exist in the current analysis. Conclusions from the landfill gas review are scheduled to be submitted to SWD in November 2014.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

Conditions at the Vashon Landfill have continued the historic trend with some volatiles showing decreasing trends. Therefore most of the conclusions drawn from the previous Annual Reports hold true for this report as well. The following conclusions reiterate some from the previous Annual Reports.

1. The groundwater generally moves westward in the middle channel of the lacustrine silt, now designated channel Cc2, within Unit C.
2. The flow direction within the regional aquifer is not well defined and potentiometric maps show the influence of well MW-27 being screened in both the lower channel of Unit C (Cc3) and in the regional aquifer (Unit D).
3. The wells in the regional aquifer showed low sensitivity to hydrologic activity, based on the observation of very small seasonal water level fluctuations, indicating limited groundwater recharge in the area of the landfill.
4. Landfilling impacts have been recognized in channel Cc2 at wells MW-5D, MW-21, and MW-2. Low levels of VOCs have been detected frequently in wells MW-2, MW-21, and MW-5D. Detections for most volatile compounds have declined significantly or are stable in the short term except for cis-1,2 dichloroethene (short term decrease in MW-5D), and dichlorodiflouromethane (short term decrease in MW-21 and in MW-2). Leachate is believed to have contributed to impacts in the past. Recent data, specifically levels of VOCs in MW-21, MW-2, and MW-5D, suggest possible historic contaminant transport from landfill gas.
5. Expanded Appendix III analyte testing the past three years shows no new detections.
6. The landfill closure has been effective in improving the water quality condition of impacted wells, based on reductions in specific conductance, total dissolved solids, chloride and several VOCs.
7. Results obtained from wells in the regional aquifer do not show impacts attributable to landfill activities. The data reflects the natural variations in water quality that exist around the site.

6.2. Recommendations/Proposed Actions

1. The existing monitoring network shall continue to be monitored as described in the 2004 Vashon Island Landfill Hydrogeologic Report Update and following protocols from the Vashon Island Landfill Sampling and Analysis Plan.
2. Evaluation of the operating efficiency of the landfill gas collection system and probe network will begin in 2013 and continue in 2014 to determine if improvements to the collection and treatment system are needed.
3. The need for additional groundwater monitoring wells will be evaluated and locations for any necessary well(s) will be identified in 2014.
4. Monitoring of the wells will continue for Appendix I and II parameters, with the addition of dichlorodifluoromethane.
5. The water bearing zone in channel Cc2 shall continue in assessment monitoring in accordance with WAC 173-351-430.
6. This report demonstrates the lack of detections in expanded Appendix III analytes, other than dichlorodifluoromethane, which we continue to sample for quarterly. Therefore we recommend no longer conducting an annual Appendix III sample for Cc2 Wells. A demonstration to this action will be submitted in 2014.
7. Surface Water sampling site SW-E will be sampled quarterly for turbidly, hardness, dissolved metals and vinyl chloride.

7. REFERENCES

Baedecker, M.J. and W. Back, 1979, *Modern Marine Sediments as a Natural Analog to the Chemically Stressed Environment of a Landfill.* Journal of Hydrology, 43:393-414.

R.W. Beck and Associates/ Sweet, Edwards & Associates. December 1984. *Groundwater Geology/ Quality Investigations for Rural Landfills in King County, Washington*, prepared for King County Solid Waste Division.

Berryman & Henigar, CH2Mhill, HWA Geosciences Inc. Udaloy Environmental Services, and HDR Engineering, Inc. December 1999. *Pre-design Engineering report for the Vashon Landfill Closure*, prepared for King County Department of Natural Resources, Solid Waste Division.

Berryman & Henigar, CH2Mhill, HWA Geosciences Inc. Udaloy Environmental Services, and HDR Engineering, Inc. November 2000. *Vashon Island Landfill Hydrogeologic Report*, prepared for King County Department of Natural Resources, Solid Waste Division.

Berryman & Henigar and Udaloy Environmental Services. December 2004. *Vashon Island Landfill Hydrogeologic Report Update*, prepared for King County Department of Natural Resources, Solid Waste Division.

J. R. Carr/ Associates. December 1, 1983. *Vashon/ Maury Island Water resources Study*, prepared for King County Department of Planning and Community Development.

CH2MHILL. March 1995. *Groundwater Monitoring Well Construction Work Plan*, prepared for King County Solid Waste Division.

CH2MHILL. December 1996. *Vashon Island Landfill Monitoring well Construction Report*, prepared for King County Solid Waste Division.

Challa, J.; D. Skoff; F.J. Quirus. 1997. Landfill Gas as Source of VOCs in Ground Water. Practice Periodical of Hazardous, Toxic and Radioactive Waste Management. Vol. 1, No. 2. ASCE

Fisher, S.R., and Potter, K.W., 1989, *Methods for Determining Compliance with Groundwater Quality Regulations at Waste Disposal Facilities, Final Report*, Wisconsin Department of Natural Resources.

Geraghty & Miller, Inc. Environmental Services. 1993. Vashon Groundwater Management Plan, Update Area Characterization and Data Analysis, Project. Prepared for Seattle-King County Department of Public Health.

Gibbons, Robert D.1994 *Statistical Methods for Groundwater Monitoring,* John Wiley and Sons, New York.

Golder Associates. 1986. *Geotechnical Memorandum #4, Subtask 1/Task 1B, Geotechnical Data Development Vashon Landfill Leachate Control*.

Harding Lawson Associates. August 8, 1991. *Vashon Landfill Groundwater Quality, Statistical Summary of Data Collection between 1986 and 1991*, prepared for King County Solid Waste Division, Seattle, Washington.

Harding Lawson Associates. June 30, 1993. *Vashon Landfill 1992 Annual Water Quality Report*, prepared for King County Solid Waste Division, Seattle, Washington.

Harper-Owes. 1986. *Vashon Island Leachate Control*, Technical Memorandum prepared for King County Solid Waste Division, Seattle, Washington.

Kerfoot, H.B. 1994. *Landfill Gas effects on Groundwater Samples at Municipal Solid Waste Facility*. Journal of Air & Waste Management Association. Vol. 44.

King County Solid Waste Division. July 9, 1994. *Vashon Island Landfill 1993 Annual Ground water Data Evaluation Report*.

King County Solid Waste Division. December 1995. *Vashon Island Landfill 1994 Annual Groundwater Data Evaluation Report*.

King County Solid Waste Division. November, 1996. *Vashon Island Landfill 1995 Annual Groundwater Data Evaluation Report*.

King County Solid Waste Division. April 2004. *Vashon Island Landfill 2003 Annual Groundwater Data Evaluation Report*.

King County Solid Waste Division. April 2005. *Vashon Island Landfill 2004 Annual Groundwater Data Evaluation Report*.

King County Solid Waste Division. April 2006. *Vashon Island Landfill 2005 Annual Groundwater Data Evaluation Report*.

King County Department of Natural Resources. April 2000. *Vashon Landfill Final Closure, Contract No. C03056C, Special Provisions*, prepared by Berryman & Henigar.

Nyer, E.K., M.E. Duffin. 1997. *The State of the Art of Bioremediation*. GWMR. Spring.

Prosser, R., A. Janechek. 1995. *Landfill Gas and Groundwater Contamination*. Proceedings of the October 1995 American Society of Civil Engineers Convention.

R. W. Beck and Associates, 1983. *King County Landfills Ground Water Monitoring Investigations, Task 11 Report*.

Rekow, K.H., and Chapra, S.C. 1983, *Engineering Approaches for Lake Management, Volume 1, Data Analysis and Empirical Modeling*, Boston, Butterworth, p. 340.

Smayda, T.J. and R.J. Owes. 1991. *Unlined Landfills in the Pacific Northwest: Leachate Composition and Groundwater Impacts, in Proceedings: Nonpoint Source. Pollution: The Unfinished Agenda for the Protection of our Water Quality*, Tacoma, WA.

Stumm, W. and J. J. Morgan. 1981. *Aquatic Chemistry: An introduction Emphasizing Chemical Equilibria in Natural Waters*. John Wiley &Sons.

Washington, J. W. 1996. *Gas Partitioning of Dissolved Volatile Organic Compounds in the Vadose Zone: Principles, Temperature Effects and Literature Review*. Groundwater. Vol. 34, No. 4.

Table 1-1
Vashon Island Landfill Annual Groundwater Evaluation Report

Table 1-1 Summary of Vashon Island Landfill Site Stratigraphic Units			
Formation[a]	**Depositional Facies**	**Sediment Type**	**Approximate Elevations and Locations Beneath Vashon Island Landfill Site**
Unit A: Vashon till (Qvt)	Beneath continental glacier	Dense to very dense yellow-gray to gra y fine sandy silt or silty gravel with trace cobbles and boulders.	Occurs as surficial deposit in all portions of the site except where absent by erosion. The base of the till varies from elevations of about 362 feet in the northwest to about 330 feet in the south. In general, till is absent below about 330 feet.
Unconformity			
Unit B: pre-Vashon proglacial sand (Qva)	Fluvial, possibly glaciolacustrine	Approximately 40- to 60-foot-thick deposit of clean fine sands with minor well-graded gravelly sand. Includes laterally equivalent slightly silty fine sands and minor fine sandy silt. Typically yellow brown to brown, loose, gravels (where present) typically fine and subangular to subrounded.	Occurs beneath entire site directly beneath till or as surficial unit in areas where till is absent by erosion. Basal contact elevation ranges from 304 to 289 feet.
Unconformity			
Unit C: pre-Vashon glaciolacustrine deposits (Qpff and Qpfc?)	Glaciolacustrine incised by sand- and gravel-filled channels; the channels may reflect periodic rapid draining of the lake.	Approximately 100- to 120-foot-thick sequence, predominantly laminated floodplain or lacustrine silts, includes laterally equivalent sand, gravelly sand, and sandy gravel channel deposits incised into the lacustrine silts. At least three significant and laterally extensive channel deposits are present within this unit.	Occurs beneath entire site at elevations of about 304 to about 181 feet. Where fully penetrated, the basal contact elevation ranges from 181 to 191 feet.
Unconformity			
Unit D: pre-Vashon fluvial deposits (Qpfc?)	Meandering river channel and flood plain.	Fluvial channel and silt or clay overbank deposits. The channel deposits are typically coarser-grained than those of Unit C.	Occurs beneath the entire site at elevations of about 125 to 191 feet. Gravelly sand channel deposits extend beneath the northern, central, and western portions of the site; soils east of this are significantly finer-grained. Where fully penetrated, the basal contact elevation ranges from 125 to 134 feet.

Table 1-1
Vashon Island Landfill Annual Groundwater Evaluation Report

Table 1-1 Summary of Vashon Island Landfill Site Stratigraphic Units			
Formation[a]	**Depositional Facies**	**Sediment Type**	**Approximate Elevations and Locations Beneath Vashon Island Landfill Site**
Disconformity with least 40 feet of erosional relief.			
Unit E: pre-Vashon glacial till/ glaciolacustrine deposits (Qpff and/or Qpfc?)	Glaciolacustrine overlying basal till	Silty gravel and laterally equivalent silt, clay, and slightly silty fine sand.	Occurs at elevations of 96 to 134 feet, apparently beneath most of the site (only six borings penetrate this deposit). Apparently absent due to erosion at MW-25. The silty gravel facies is the basal unit at MW-7, MW-11, and MW-28 and generally occurs at elevations between 106 and 134 feet.
Possible Unconformity			
Unit F: pre-Vashon fluvial deposits (Qpfc?)	Meandering river channel and flood plain	Sequence of aggrading channel and overbank deposits. Predominantly fine sands and silty sands with laterally equivalent fine to medium sand channel deposits. Sediments contain white pumice and woody debris.	Occurs at elevations below about 100 to 111 feet beneath all portions of the site.
Disconformity with at least 68 feet of erosional relief			
Unit G: pre-Vashon lacustrine deposits (Qcso?)	Lacustrine	More than 50-foot-thick deposit of firm, dark gray clay and clayey silt with trace of fine sand and trace fine gravel.	Identified in MW-7 at elevations of 19.6 to 76 feet, not fully penetrated.
[a] Assignments to classifications derived from Booth (1991) are queried where tentative.			

Table 1-2
Vashon Island Groundwater Monitoring Well Completion Details

Well Number	Date Completed	Installed By	Top of PVC Casing Elevation (feet)[a]	Well Casing and Screen	Well Dia. (inches)	Screen slot (inches)	Top of Screen Elevation[b]	Bottom of Screen Elevation[b]	Top of Seal Elevation[b]	Bottom of Seal Elevation[b]	Seal Type	Top of Sand Pack (feet elev.)[b]	Bottom of Sand Pack (feet elev.)[b]	Sand Type	Reference[c]
MW-1	9/8/1983	Sweet-Edwards	403.60	Sch 80 PVC	3	0.010	284.48	274.48	402.48	289.48	Bentonite	289.48	272.48	3/8 minus pea gravel	A
MW-2	9/9/1983	Sweet-Edwards	314.28	Sch 80 PVC	3	0.010	233.58	228.58	312.58	246.58	Bentonite	244.58	227.58	3/8 minus pea gravel	A
MW-3	9/12/1983	Sweet-Edwards	314.87	Sch 80 PVC	3	0.010	277.90	272.90	312.90	280.90	Bentonite	280.90	272.90	3/8 minus pea gravel	A
MW-4	9/14/1983	Sweet-Edwards	374.21	Sch 80 PVC	3	0.010	273.08	263.08	373.08	278.08	Bentonite	278.08	263.08	3/8 minus pea gravel	A
MW-5S	3/6/1986	Golder	356.63	Sch 40 PVC[b]	2	0.020	281.86	271.86	355.86	352.86	Bentonite	352.86	271.36	#8 Monteray & Gravel	B
MW-5D	3/6/1986	Golder	357.20	Sch 40 PVC[b]	2	0.020	240.86	229.86	255.36	249.86	Bentonite	253.86	229.86	#8 Monteray & Gravel	B
MW-6S[d]	3/19/1986	Golder	394.2	Sch 40 PVC[b]	2	0.020	287.42	277.42	392.42	389.42	Bentonite	389.42	276.42	#8 Aqua and Gravel	B
MW-6D[d]	3/19/1986	Golder	394.1	Sch 40 PVC[b]	2	0.020	241.92	231.92	256.42	250.42	Bentonite	244.42	231.42	#8 Aqua	B
MW-7	4/28/1995	CH2M HILL	373.25	Sch 40 PVC	2	0.010	151.09	141.09	371.09	154.09	Bentonite	154.09	139.09	#20 x 40	C
MW-8	6/30/1995	CH2M HILL	383.42	Sch 40 PVC	2	0.010	213.24	203.24	381.24	214.24	Bentonite	214.24	201.24	#20 x 40	C
MW-9	6/12/1995	CH2M HILL	402.57	Sch 40 PVC	2	0.010	233.64	223.64	400.64	236.64	Bentonite	236.64	220.64	#20 x 40	C
MW-10	7/1/1995	CH2M HILL	407.51	Sch 40 PVC	2	0.010	262.34	252.34	405.34	265.34	Bentonite	265.34	250.34	#20 x 40	C
MW-11[d]	5/15/1995	CH2M HILL	406.39	Sch 40 PVC	2	0.010	162.28	152.28	404.28	164.28	Bentonite	164.28	144.28	#20 x 40	C
MW-12	5/26/1995	CH2M HILL	312.39	Sch 40 PVC	2	0.010	139.62	129.62	310.12	143.12	Bentonite	143.12	124.12	#20 x 40	C
MW-13	4/22/1992	Terra	374.07	Sch 40 PVC	2	0.020	264.00	259.00	372.00	266.00	Bentonite	266.00	256.50	#8	D
MW-14	6/21/1995	CH2M HILL	375.68	Sch 40 PVC	2	0.020	212.62	202.62	373.62	219.62	Bentonite	219.62	201.62	#20 x 40	C
MW-19	6/12/1995	CH2M HILL	403.83	Sch 40 PVC	2	0.020	141.10	131.10	400.60	140.60	Bentonite	140.60	124.60	#20 x 40	C
MW-20	10/21/1998	UES	367.21	Sch 40 PVC	2	0.020	237.57	233.27	365.27	240.87	Bentonite	240.87	231.27	#20 x 40	E
MW-21	10/21/1998	UES	345.66	Sch 40 PVC	2	0.020	243.17	233.77	343.77	248.77	Bentonite	248.77	232.77	#20 x 40	E
MW-24	4/27/1992	Terra	373.93	Sch 40 PVC	2	0.020	291.50	281.50	372.00	295.00	Bentonite	295.00	282.00	#8	D
MW-25	8/11/2003	UES	399.22	Sch 40 PVC	2	0.020	148.78	134.68	397.28	152.28	Bentonite	152.28	130.28	#16 x 30	F
MW-26	8/6/2003	UES	403.40	Sch 40 PVC	2	0.020	155.12	141.02	401.22	158.92	Bentonite	158.92	137.52	#16 x 30	F
MW-27	8/15/2003	UES	383.06	Sch 40 PVC	2	0.020	194.27	180.07	380.77	197.27	Bentonite	197.27	177.27	#16 x 30	F
MW-28	8/29/2003	UES	395.59	Sch 40 PVC	2	0.020	173.91	159.51	393.51	177.01	Bentonite	177.01	157.71	#16 x 30	F
MW-29	8/29/2003	UES	410.57	Sch 40 PVC	2	0.020	169.80	155.00	408.00	172.00	Bentonite	172.00	147.00	#16 x 30	G
P-1S[d]	3/12/1986	Golder	No data	Sch 40 PVC	2	0.020	304.00	294.00	393.00	390.00	Bentonite	390.00	288.00	#8 Aqua and Gravel	B
P-1D[d]	3/12/1986	Golder	No data	Sch 40 PVC	2	0.020	278.50	268.50	288.00	283.00	Bentonite	283.00	268.00	#8 Aqua	B
P-1A[d]	3/25/1986	Golder	No data	Sch 40 PVC	2	0.020	280.02	270.02	354.02	286.02	Bentonite	286.02	269.02	#8 Monteray	B
P-1B[d]	3/29/1986	Golder	No data	Sch 40 PVC	2	0.020	299.08	289.08	380.08	304.08	Bentonite	304.08	289.08	10 x 20 silica	B
P-2[d]	3/19/1986	Golder	No data	Sch 40 PVC	2	0.020	273.73	258.73	283.73	278.73	Bentonite	278.73	256.73	#8 Aqua	B
P-2A[d]	3/24/1986	Golder	No data	Sch 40 PVC	2	0.020	293.60	281.60	348.60	306.60	Bentonite	306.60	280.10	#8 Aqua	B
P-4	2/29/1988	Golder	No data	Sch 80 PVC	1	0.020	374.90	372.90	407.40	376.90	Bentonite	376.90	371.90	#16 Monteray	H

[a] All survey data in feet are relative to site datum.
[b] Well installed as a dual-completion.
[c] A = R.W. Beck, 1984; B = Golder Associates, 1986; C = CH2M HILL, 1996; D = Terra Associates., 1992; E = B&H and UES, 1999b; F = B&H and UES, 2003b; G = B&H and UES, 2003a; H = Golder Associates, 1986.
[d] Well has been decommissioned.

Table 1-3 Vashon Landfill Signifigant Maintenance Activities Summary 2013

Maintenance Activity	Resolution
Grout Peeling at corregated pipe - vault connection in several vaults	Repairs scheduled in 2014
PS-2 Wet Well SCADA Upgrade	PS-2 Wet Well started an upgrade to the SCADA system in 2012 and will finish in 2014.
Fence Repairs	Fence Repairs are ongoing annually
West Hillslope Trail Maintenance	Trail Repairs are ongoing annually

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in or adjacent to Cc1							
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient							
Time Interval	Long	Long	Long	Short	Long	Short	Long
pH field, Standard Units							
No. of Analyses	17	22	67	8	73	8	36
No. of Detections	17	22	67	8	73	8	36
Minimum	6.4	5.6	6.8	7.2	6.7	7.0	6.1
Maximum	8.2	6.8	8.4	7.4	8.0	7.3	8.0
Mean	7.21	6.17	7.41	7.31	7.23	7.19	6.54
Standard Deviation	0.43	0.34	0.29	0.09	0.25	0.11	0.35
Median	7.2	6.2	7.4	7.3	7.2	7.2	6.4
Specific Conductance field, micromhos/cm							
No. of Analyses	18	22	67	8	72	8	36
No. of Detections	18	22	67	8	72	8	36
Minimum	155	86	100	120	130	150	190
Maximum	250	200	150	150	195	195	860
Mean	190.0	115.8	127.1	135.0	158.1	180.6	573.3
Standard Deviation	27.2	28.4	9.0	10.0	14.1	14.7	145.3
Median	185	100	130	135	158	185	553
Total Dissolved Solids							
No. of Analyses	19	16	65	8	76	8	33
No. of Detections	19	16	65	8	76	8	33
Minimum	77	8	46	95	68	108	29
Maximum	170	90	130	114	150	143	500
Mean	125.6	66.3	94.7	102.4	113.9	129.0	358.7
Standard Deviation	26.5	19.7	14.1	6.7	14.8	11.6	103.6
Median	123	71	95	102	110	128	360
Alkalinity, mg/L							
No. of Analyses	5	14	66	8	72	8	15
No. of Detections	5	14	66	8	72	8	15
Minimum	98	24	52	53	30	66	58
Maximum	120	41	70	59	80	77	320
Mean	109.60	31.36	56.39	57.05	62.54	73.49	225.80
Standard Deviation	10.53	4.36	2.98	2.15	8.05	3.45	81.91
Median	110.0	31.0	56.0	57.9	61.0	74.5	240.0
Ammonia-N, mg/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	4	9	9	0	11	0	19
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	0.1	0.7	0.1	ND	0.1	ND	0.3
Mean	0.02	0.15	0.01	0.01	0.01	0.01	0.06
Standard Deviation	0.02	0.22	0.01	ID	0.01	ID	0.08
Median	0.03	0.03	0.01	0.01	0.01	0.01	0.03

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in or adjacent to Cc1							
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient							
Time Interval	Long	Long	Long	Short	Long	Short	Long
Nitrate-N, mg/L							
No. of Analyses	29	21	66	8	77	8	48
No. of Detections	21	21	66	8	75	8	23
Minimum	ND	0.2	0.2	0.4	ND	0.1	ND
Maximum	0.3	4.3	0.8	0.4	0.3	0.1	6.3
Mean	0.16	1.46	0.37	0.40	0.10	0.08	1.12
Standard Deviation	0.09	0.99	0.10	0.02	0.05	0.02	1.90
Median	0.16	1.20	0.36	0.40	0.09	0.08	0.10
Sulfate, mg/L							
No. of Analyses	29	21	66	8	76	8	48
No. of Detections	29	21	66	8	76	8	48
Minimum	11.0	7.7	2.6	8.8	17.0	16.9	3.7
Maximum	21.0	19.0	11.0	10.3	26.8	18.7	46.0
Mean	16.91	11.80	9.63	9.45	19.68	18.05	17.74
Standard Deviation	2.08	3.36	1.01	0.49	1.64	0.74	9.69
Median	17.0	11.0	9.9	9.4	19.0	18.5	16.0
Chloride, mg/L							
No. of Analyses	29	21	66	8	77	8	48
No. of Detections	29	21	65	8	77	8	46
Minimum	1.3	1.1	ND	3.0	2.5	2.6	ND
Maximum	6.3	11.0	4.0	4.9	5.6	3.3	19.0
Mean	4.27	3.27	3.01	3.35	3.60	2.87	8.87
Standard Deviation	0.87	2.49	0.36	0.65	0.78	0.19	4.52
Median	4.2	2.2	3.0	3.1	3.2	2.8	7.0
Dissolved Arsenic, mg/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	25	1	65	8	76	8	6
Minimum	ND	ND	ND	0.0017	ND	0.0016	ND
Maximum	0.0070	0.0070	0.0020	0.0018	0.0030	0.0019	0.0060
Mean	0.0050	0.0012	0.0016	0.0017	0.0018	0.0017	0.0013
Standard Deviation	0.0013	ID	0.0004	0.0000	0.0004	0.0001	0.0012
Median	0.0050	0.0005	0.0017	0.0017	0.0020	0.0017	0.0005
Dissolved Iron, mg/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	14	18	54	2	55	0	40
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	0.32	8.60	0.30	0.01	0.49	ND	0.50
Mean	0.03	1.35	0.04	0.01	0.05	0.01	0.09
Standard Deviation	0.06	2.68	0.05	ID	0.08	ID	0.11
Median	0.02	0.05	0.03	0.01	0.03	0.01	0.06

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in or adjacent to Cc1							
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient							
Time Interval	Long	Long	Long	Short	Long	Short	Long
Dissolved Manganese, mg/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	6	17	7	2	48	2	42
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	0.058	2.700	0.003	0.002	0.027	0.001	0.970
Mean	0.01	0.46	0.00	0.00	0.00	0.00	0.18
Standard Deviation	0.01	0.96	0.00	ID	0.00	ID	0.22
Median	0.001	0.004	0.001	0.001	0.001	0.001	0.089
Dissolved Calcium, mg/L							
No. of Analyses	10	15	66	8	77	8	25
No. of Detections	10	15	66	8	77	8	25
Minimum	11.0	7.6	4.3	7.9	6.5	9.5	17.0
Maximum	14.0	11.0	13.0	10.2	11.2	11.5	73.6
Mean	12.24	9.44	8.86	8.81	9.25	10.16	53.43
Standard Deviation	1.16	0.96	1.12	0.76	0.91	0.63	16.72
Median	11.7	9.4	8.9	8.8	9.4	10.2	55.0
Dissolved Magnesium, mg/L							
No. of Analyses	10	15	66	8	77	8	25
No. of Detections	10	15	66	8	77	8	25
Minimum	10.7	1.8	4.2	7.3	7.7	11.0	8.6
Maximum	16.0	3.1	12.0	9.0	13.8	14.0	56.8
Mean	12.46	2.36	8.08	8.31	10.38	12.04	40.70
Standard Deviation	1.74	0.31	0.93	0.63	1.11	0.90	12.78
Median	11.8	2.3	8.0	8.4	10.0	11.9	42.0
Dissolved Sodium, mg/L							
No. of Analyses	10	15	66	8	77	8	25
No. of Detections	10	15	66	8	77	8	25
Minimum	7.3	3.7	2.3	4.0	4.9	5.6	5.4
Maximum	10.0	6.4	6.4	5.2	14.4	6.9	24.8
Mean	8.34	4.75	4.51	4.57	5.97	6.15	15.55
Standard Deviation	0.95	0.84	0.50	0.40	1.08	0.41	5.54
Median	8.0	4.6	4.5	4.6	5.8	6.1	14.0
Dissolved Potasium, mg/L							
No. of Analyses	10	15	66	8	77	8	25
No. of Detections	10	15	66	8	77	8	25
Minimum	2.2	2.5	0.7	1.2	1.1	1.6	0.9
Maximum	3.0	4.1	2.0	1.6	2.2	2.2	2.7
Mean	2.51	3.41	1.34	1.38	1.66	1.86	1.92
Standard Deviation	0.25	0.44	0.16	0.10	0.16	0.18	0.40
Median	2.4	3.5	1.3	1.4	1.6	1.8	2.0

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in or adjacent to Cc1							
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient							
Time Interval	Long	Long	Long	Short	Long	Short	Long
Benzene, ug/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	1	0	1	0	1	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	0.3	ND	0.3	ND	0.2	ND	ND
Mean	0.37	0.21	0.10	0.10	0.10	0.10	0.39
Standard Deviation	ID	ID	ID	ID	ID	ID	ID
Median	0.5	0.1	0.1	0.1	0.1	0.1	0.1
Chloroethane, ug/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	0	0	0	0	0	0	6
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	1.3
Mean	1.23	0.45	0.10	0.10	0.10	0.10	1.12
Standard Deviation	ID	ID	ID	ID	ID	ID	1.08
Median	1.5	0.1	0.1	0.1	0.1	0.1	1.0
Toluene, ug/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	2	0	1	0	1	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	0.5	ND	0.4	ND	0.8	ND	ND
Mean	0.99	0.31	0.10	0.10	0.11	0.10	0.72
Standard Deviation	ID	ID	ID	ID	ID	ID	ID
Median	0.5	0.1	0.1	0.1	0.1	0.1	0.1
Trichloroethene, ug/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	1	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	1.0	ND	ND	ND	ND	ND	ND
Mean	0.38	0.21	0.10	0.10	0.10	0.10	0.39
Standard Deviation	ID	ID	ID	ID	ID	ID	ID
Median	0.5	0.1	0.1	0.1	0.1	0.1	0.1
Vinyl Chloride, ug/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	0	0	1	0	3	0	23
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	0.0	ND	0.0	ND	19.0
Mean	0.55	0.18	0.01	0.01	0.02	0.01	3.74
Standard Deviation	ID	ID	ID	ID	0.02	ID	5.22
Median	0.5	0.0	0.0	0.0	0.0	0.0	1.0

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in or adjacent to Cc1							
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient							
Time Interval	Long	Long	Long	Short	Long	Short	Long
Total Xylenes, ug/L							
No. of Analyses	29	21	66	8	77	8	48
No. of Detections	0	0	0	0	1	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	0.5	ND	ND
Mean	0.40	0.29	0.20	0.10	0.20	0.10	0.54
Standard Deviation	ID	ID	ID	ID	ID	ID	ID
Median	0.5	0.2	0.2	0.1	0.2	0.1	0.2
cis-1,2-Dichloroethene, ug/L							
No. of Analyses	17	18	66	8	77	8	35
No. of Detections	0	0	0	0	1	0	14
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	0.8	ND	16.0
Mean	0.26	0.17	0.10	0.10	0.11	0.10	1.24
Standard Deviation	ID	ID	ID	ID	ID	ID	2.74
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.5
trans-1,2-Dichloroethene, ug/L							
No. of Analyses	21	20	66	8	77	8	40
No. of Detections	0	0	0	0	0	0	1
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	0.3
Mean	0.31	0.20	0.10	0.10	0.10	0.10	0.37
Standard Deviation	ID	ID	ID	ID	ID	ID	ID
Median	0.5	0.1	0.1	0.1	0.1	0.1	0.1
1,1 Dichloroethane, ug/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	0	0	0	0	0	0	17
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	1.0
Mean	0.37	0.21	0.10	0.10	0.10	0.10	0.54
Standard Deviation	ID	ID	ID	ID	ID	ID	0.69
Median	0.5	0.1	0.1	0.1	0.1	0.1	0.5
1,2-Dichloropropane, ug/L							
No. of Analyses	30	21	66	8	77	8	48
No. of Detections	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	ND
Mean	0.37	0.21	0.10	0.10	0.10	0.10	0.39
Standard Deviation	ID	ID	ID	ID	ID	ID	ID
Median	0.50	0.10	0.10	0.10	0.10	0.10	0.10

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in or adjacent to Cc1							
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient							
Time Interval	Long	Long	Long	Short	Long	Short	Long
Trichlorofluoromethane, ug/L							
No. of Analyses	10	15	66	8	77	8	26
No. of Detections	0	7	1	0	1	0	22
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	0.7	0.2	ND	1.0	ND	2.1
Mean	0.10	0.24	0.10	0.10	0.11	0.10	1.24
Standard Deviation	ID	0.20	ID	ID	ID	ID	0.95
Median	0.1	0.1	0.1	0.1	0.1	0.1	1.2
Dichlorodifluoromethane, ug/L							
No. of Analyses	5	14	66	8	72	8	16
No. of Detections	0	0	0	0	1	0	12
Minimum	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	1.5	ND	4.2
Mean	0.10	0.10	0.10	0.10	0.12	0.10	1.79
Standard Deviation	ID	ID	ID	ID	ID	ID	1.44
Median	0.1	0.1	0.1	0.1	0.1	0.1	1.6

NOTES:

ID	Insufficient Data. The number of detections is less than 3.
ND	Not Detected (at laboratory MDL).
mg/L	Milligram per liter.
ug/L	Microgram per liter.
Current	Reflects the most recent analysis data, up to eight analyses maximum.

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

	Groundwater in Channel Cc2													
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
pH field, Standard Units														
No. of Analyses	52	8	53	8	123	8	116	8	64	8	67	8	68	8
No. of Detections	52	8	53	8	123	8	116	8	64	8	67	8	68	8
Minimum	7.0	7.4	6.6	6.7	6.1	6.9	6.0	6.6	6.7	7.5	6.2	6.5	6.8	7.2
Maximum	8.6	8.1	7.3	7.1	7.8	7.1	8.0	6.9	8.5	7.8	8.0	6.8	8.0	175.0
Mean	7.96	7.86	6.84	6.89	6.87	6.99	6.69	6.78	7.71	7.71	6.90	6.62	7.41	83.63
Standard Deviation	0.33	0.22	0.16	0.11	0.25	0.06	0.29	0.10	0.31	0.12	0.34	0.10	0.21	82.21
Median	8.0	7.9	6.9	6.9	6.9	7.0	6.7	6.8	7.8	7.8	6.8	6.6	7.4	73.7
Specific Conductance field, micr														
No. of Analyses	53	8	53	8	122	8	115	8	64	8	67	8	68	8
No. of Detections	53	8	53	8	122	8	115	8	64	8	67	8	68	8
Minimum	150	140	250	200	230	330	110	170	140	150	130	130	110	7
Maximum	190	185	480	315	1024	360	1760	345	190	190	650	175	195	185
Mean	167.7	166.3	374.5	262.5	466.9	345.0	787.7	265.6	158.7	162.5	172.9	150.6	150.4	86.8
Standard Deviation	9.1	16.9	58.9	35.9	119.9	10.4	381.3	48.1	10.9	15.6	60.8	14.5	16.0	85.5
Median	170	175	380	255	458	345	600	270	160	158	165	150	150	79
Total Dissolved Solids														
No. of Analyses	52	8	52	8	115	8	114	8	63	8	67	8	67	8
No. of Detections	52	6	52	8	115	8	114	8	63	8	67	8	67	8
Minimum	50	ND	189	187	34	189	218	188	71	112	54	104	58	114
Maximum	160	142	307	209	480	240	900	215	150	127	150	127	160	140
Mean	116.8	131.3	246.2	199.4	283.8	226.0	492.3	206.0	115.5	123.0	114.7	119.9	107.3	124.8
Standard Deviation	17.4	7.2	27.7	7.8	64.6	17.7	193.6	8.9	16.3	4.7	17.6	9.2	18.2	9.4
Median	120	132	240	202	280	234	400	208	120	125	120	125	110	124
Alkalinity, mg/L														
No. of Analyses	53	8	52	8	68	8	69	8	63	8	67	8	67	8
No. of Detections	53	6	52	8	68	8	69	8	63	8	67	8	67	8
Minimum	59	ND	156	131	110	172	80	134	54	64	47	52	56	63
Maximum	80	73	290	166	500	198	724	165	84	76	78	56	100	74
Mean	71.58	71.25	217.8	147.8	234.9	185.4	321.3	149.1	71.8	72.7	61.6	53.9	65.5	68.9
Standard Deviation	3.08	2.48	37.5	11.4	54.3	7.9	111.5	10.4	3.9	3.7	5.2	1.7	6.3	4.0
Median	72.0	72.4	210	147	243	185	310	150	72	74	62	54	65	69
Ammonia-N, mg/L														
No. of Analyses	53	8	52	8	126	8	130	8	63	8	67	8	67	8
No. of Detections	21	8	22	6	15	0	106	7	11	0	7	0	10	1
Minimum	ND	0.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	0.1	0.0	0.1	0.0	0.0	ND	0.4	0.1	0.3	ND	0.4	ND	0.1	0.0
Mean	0.02	0.02	0.02	0.01	0.01	0.01	0.07	0.05	0.02	0.01	0.02	0.01	0.01	0.01
Standard Deviation	0.02	0.00	0.02	0.01	0.01	ID	0.07	0.02	0.03	ID	0.05	ID	0.01	ID
Median	0.02	0.02	0.02	0.01	0.01	0.01	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in Channel Cc2														
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Nitrate-N, mg/L														
No. of Analyses	53	8	52	8	126	8	130	8	63	8	67	8	68	8
No. of Detections	6	3	19	8	52	8	22	2	10	0	66	8	67	8
Minimum	ND	ND	ND	0.0	ND	0.0	ND	ND	ND	ND	ND	3.3	ND	0.1
Maximum	0.1	0.0	0.3	0.1	0.5	0.1	0.3	0.0	0.1	ND	8.1	4.1	1.6	0.2
Mean	0.02	0.01	0.06	0.07	0.08	0.04	0.05	0.01	0.02	0.01	3.97	3.66	0.24	0.18
Standard Deviation	0.02	0.01	0.07	0.03	0.10	0.03	0.06	ID	0.01	ID	1.02	0.25	0.27	0.02
Median	0.02	0.01	0.03	0.08	0.05	0.03	0.03	0.01	0.02	0.01	3.83	3.64	0.15	0.19
Sulfate, mg/L														
No. of Analyses	53	8	52	8	126	8	130	8	63	8	67	8	67	8
No. of Detections	53	6	52	8	126	8	98	8	63	8	67	8	67	8
Minimum	14.0	ND	10.0	15.0	1.5	15.9	ND	8.9	9.0	11.7	7.2	7.6	9.0	13.1
Maximum	18.0	17.8	19.0	18.2	18.8	18.3	81.8	10.1	13.0	13.0	11.0	8.6	18.0	15.1
Mean	15.67	17.18	13.23	16.39	11.68	16.98	5.12	9.53	11.12	12.48	8.78	7.91	12.72	13.94
Standard Deviation	1.13	0.66	2.72	1.15	2.22	0.80	7.45	0.45	0.98	0.39	0.73	0.38	1.40	0.63
Median	16.0	17.4	12.0	16.1	11.9	17.0	5.0	9.6	11.0	12.4	9.0	7.7	13.0	14.1
Chloride, mg/L														
No. of Analyses	53	8	52	8	126	8	130	8	63	8	67	8	67	8
No. of Detections	53	6	52	8	123	8	125	8	63	8	67	7	67	8
Minimum	3.0	ND	2.8	2.6	ND	3.0	ND	2.9	2.8	2.8	3.0	ND	3.0	3.8
Maximum	4.3	3.5	9.0	15.2	8.8	3.3	89.0	3.4	4.0	3.3	5.3	5.0	5.9	23.0
Mean	3.77	3.30	4.47	4.26	4.51	3.19	24.54	3.13	3.12	3.05	4.25	4.62	4.10	6.58
Standard Deviation	0.31	0.12	1.30	4.42	1.52	0.13	25.37	0.15	0.26	0.20	0.42	0.27	0.51	6.64
Median	3.9	3.2	4.0	2.7	4.1	3.3	8.0	3.1	3.0	3.0	4.0	4.7	4.0	4.3
Dissolved Arsenic, mg/L														
No. of Analyses	53	8	52	8	127	8	130	8	63	8	67	8	67	8
No. of Detections	52	6	50	6	77	6	129	8	63	8	1	0	66	8
Minimum	ND	ND	ND	ND	ND	ND	ND	0.0908	0.0020	0.0027	ND	ND	ND	0.0022
Maximum	0.0050	0.0016	0.0230	0.0016	0.0040	0.0012	0.3200	0.1100	0.0035	0.0031	0.0021	ND	0.0030	0.0027
Mean	0.0018	0.0015	0.0068	0.0010	0.0011	0.0009	0.1035	0.0981	0.0028	0.0029	0.0005	0.0005	0.0024	0.0024
Standard Deviation	0.0006	0.0001	0.0065	0.0004	0.0007	0.0003	0.0649	0.0071	0.0003	0.0001	ID	ID	0.0005	0.0001
Median	0.0018	0.0015	0.0045	0.0011	0.0010	0.0011	0.1100	0.0956	0.0030	0.0029	0.0005	0.0005	0.0024	0.0023
Dissolved Iron, mg/L														
No. of Analyses	53	8	52	8	127	8	129	8	63	8	67	8	67	8
No. of Detections	43	1	52	8	106	0	129	8	53	1	52	0	50	0
Minimum	ND	ND	0.4	0.1	ND	ND	1.5	7.9	ND	ND	ND	ND	ND	ND
Maximum	0.51	0.01	5.20	0.40	0.89	ND	59.00	9.51	0.23	0.01	0.17	ND	0.29	ND
Mean	0.07	0.01	2.03	0.26	0.08	0.01	22.15	8.85	0.05	0.01	0.04	0.01	0.04	0.01
Standard Deviation	0.08	ID	1.25	0.09	0.11	ID	12.00	0.65	0.05	ID	0.04	ID	0.06	ID
Median	0.06	0.01	1.75	0.24	0.05	0.01	19.00	8.90	0.04	0.01	0.03	0.01	0.03	0.01

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in Channel Cc2														
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Dissolved Manganese, mg/L														
No. of Analyses	53	8	51	8	127	8	129	8	63	8	67	8	67	8
No. of Detections	53	6	51	8	126	8	128	8	63	8	5	0	8	0
Minimum	0.053	ND	0.284	0.169	ND	0.081	ND	0.547	0.012	0.041	ND	ND	ND	ND
Maximum	0.317	0.281	1.600	0.477	0.590	0.110	11.500	0.682	0.061	0.059	0.003	ND	0.540	ND
Mean	0.17	0.261	0.65	0.28	0.13	0.10	2.66	0.61	0.05	0.05	0.00	0.00	0.01	0.00
Standard Deviation	0.07	0.012	0.34	0.10	0.08	0.01	2.68	0.05	0.01	0.01	0.00	ID	0.07	ID
Median	0.180	0.258	0.570	0.282	0.110	0.100	1.700	0.597	0.051	0.049	0.001	0.001	0.001	0.001
Dissolved Calcium, mg/L														
No. of Analyses	53	8	52	8	101	8	101	8	63	8	67	8	67	8
No. of Detections	53	6	52	8	101	8	101	8	63	8	67	8	67	8
Minimum	9.1	ND	18.0	19.9	4.3	20.3	23.8	19.6	9.1	10.9	9.8	9.7	5.1	10.9
Maximum	18.0	13.6	40.0	24.8	47.9	24.8	149.0	25.1	18.0	14.4	15.9	12.0	15.0	13.3
Mean	12.12	11.65	28.51	21.25	34.31	23.18	70.49	22.05	12.35	12.53	12.27	10.90	11.43	12.21
Standard Deviation	1.74	1.28	5.63	1.55	9.19	1.65	34.30	1.71	1.50	1.28	1.20	0.77	1.57	0.99
Median	12.0	11.6	28.4	20.9	35.0	23.7	57.0	22.3	12.0	12.2	12.0	11.0	11.9	12.6
Dissolved Magnesium, mg/L														
No. of Analyses	53	8	52	8	101	8	101	8	63	8	67	8	67	8
No. of Detections	53	6	52	8	101	8	101	8	63	8	67	8	67	8
Minimum	7.7	ND	17.0	18.0	3.9	24.0	17.6	13.8	6.8	7.6	7.1	7.4	6.6	8.6
Maximum	13.0	11.7	43.2	22.1	53.9	29.9	102.0	18.7	12.0	10.3	11.9	9.6	13.0	11.0
Mean	9.77	9.73	28.93	20.23	38.35	27.20	52.63	15.93	8.53	9.29	9.41	8.64	8.96	9.84
Standard Deviation	1.17	1.30	7.58	1.48	10.40	2.11	26.96	1.65	0.86	0.85	0.78	0.76	1.05	0.89
Median	9.5	9.9	27.0	20.3	37.0	27.8	40.0	15.4	8.4	9.3	9.4	9.0	8.9	10.0
Dissolved Sodium, mg/L														
No. of Analyses	53	8	52	8	101	8	102	8	63	8	67	8	67	8
No. of Detections	53	6	52	8	101	8	102	8	63	8	67	8	67	8
Minimum	4.2	ND	8.9	8.8	2.2	8.1	12.0	11.5	4.9	4.9	4.5	5.1	4.5	4.8
Maximum	8.0	6.5	13.0	11.0	14.0	9.8	27.1	15.8	7.3	6.6	7.3	6.6	6.1	6.2
Mean	6.29	5.65	10.43	9.87	10.76	8.98	17.23	13.58	5.63	5.94	6.14	5.98	5.16	5.45
Standard Deviation	0.85	0.68	0.97	0.86	1.77	0.51	3.70	1.28	0.46	0.55	0.48	0.55	0.37	0.48
Median	6.2	5.6	10.0	9.7	11.0	9.0	16.0	13.5	5.6	5.93	6.2	6.2	5.2	5.4
Dissolved Potasium, mg/L														
No. of Analyses	53	8	52	8	101	8	102	8	63	8	67	8	67	8
No. of Detections	53	7	52	8	101	8	102	8	63	8	67	8	67	8
Minimum	1.5	ND	1.8	2.1	0.6	1.9	2.3	2.2	2.0	2.4	0.9	0.9	1.2	1.8
Maximum	2.9	2.4	3.3	2.5	3.7	2.8	5.3	2.4	3.4	2.8	1.5	1.1	2.3	2.1
Mean	2.04	2.09	2.48	2.26	2.59	2.34	3.62	2.31	2.42	2.53	1.09	1.04	1.87	1.99
Standard Deviation	0.24	0.23	0.38	0.11	0.42	0.25	0.87	0.07	0.23	0.11	0.12	0.06	0.19	0.10
Median	2.0	2.1	2.4	2.3	2.6	2.3	3.5	2.3	2.4	2.53	1.1	1.1	1.9	2.0

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in Channel Cc2														
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Benzene, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	68	8
No. of Detections	0	0	3	0	0	0	101	8	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	0.4	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	0.3	ND	ND	ND	5.0	0.5	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.11	ND	0.21	0.10	1.20	0.48	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	0.03	ID	ID	ID	1.20	0.06	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	ND	0.1	0.1	0.69	0.50	0.1	0.1	0.1	0.1	0.1	0.1
Chloroethane, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	68	8
No. of Detections	0	0	0	0	27	0	9	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	1.2	ND	0.9	ND	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.76	0.10	0.53	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	0.91	ID	0.80	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Toluene, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	68	8
No. of Detections	1	0	0	0	2	0	49	0	0	0	1	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	0.2	ND	ND	ND	0.3	ND	2.9	ND	ND	ND	0.3	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.56	0.10	0.85	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	0.91	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Trichloroethene, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	68	8
No. of Detections	0	0	0	0	0	0	35	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.21	0.10	0.40	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	0.45	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Vinyl Chloride, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	68	8
No. of Detections	0	0	52	8	126	8	115	8	1	0	0	0	0	0
Minimum	ND	ND	0.1	0.1	ND	0.1	ND	2.9	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	1.0	0.2	40.0	0.1	38.0	4.8	0.0	ND	ND	ND	ND	ND
Mean	0.01	0.01	0.47	0.13	7.56	0.10	14.56	3.90	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation	ID	ID	0.17	0.03	8.59	0.03	8.85	0.64	ID	ID	ID	ID	ID	ID
Median	0.0	0.0	0.46	0.132	3.8	0.109	14.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in Channel Cc2														
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Total Xylenes, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	68	8
No. of Detections	0	0	0	0	0	0	19	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	2.3	ND	ND	ND	ND	ND	ND	ND
Mean	0.20	0.10	0.20	0.10	0.28	0.10	0.46	0.10	0.20	0.10	0.20	0.10	0.20	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	0.50	ID	ID	ID	ID	ID	ID	ID
Median	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
cis-1,2-Dichloroethene, ug/L														
No. of Analyses	53	8	52	8	111	8	114	8	63	8	67	8	68	8
No. of Detections	0	0	51	8	31	1	108	8	0	0	0	0	0	0
Minimum	ND	ND	ND	0.8	ND	ND	ND	7.6	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	8.7	1.4	0.6	0.2	22.0	9.8	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	2.78	1.11	0.18	0.11	10.66	8.74	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	2.43	0.16	0.14	ID	3.93	0.67	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	2.0	1.120	0.1	0.1	11.0	8.820	0.1	0.1	0.1	0.1	0.1	0.1
trans-1,2-Dichloroethene, ug/L														
No. of Analyses	53	8	52	8	114	8	117	8	63	8	67	8	68	8
No. of Detections	0	0	9	0	0	0	89	8	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	0.4	ND	ND	ND	0.9	0.4	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.14	0.10	0.15	0.10	0.42	0.32	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	0.09	ID	ID	ID	0.19	0.03	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.330	0.1	0.1	0.1	0.1	0.1	0.1
1,1 Dichloroethane, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	68	8
No. of Detections	0	0	0	0	8	0	78	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	0.3	ND	1.2	ND	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.21	0.10	0.47	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	0.18	ID	0.32	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.100	0.5	0.100	0.1	0.1	0.1	0.1	0.1	0.1
1,2-Dichloropropane, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	68	8
No. of Detections	0	0	0	0	0	0	70	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	2.8	ND	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.21	0.10	0.57	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	0.57	ID	ID	ID	ID	ID	ID	ID
Median	0.10	0.10	0.10	0.10	0.10	0.10	0.50	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

Groundwater in Channel Cc2														
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Trichlorofluoromethane, ug/L														
No. of Analyses	53	8	52	8	101	8	102	8	63	8	67	8	68	8
No. of Detections	0	0	49	8	97	8	21	0	0	0	20	0	0	0
Minimum	ND	ND	ND	0.6	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	9.0	1.0	23.0	2.5	1.5	ND	ND	ND	0.6	ND	ND	ND
Mean	0.10	0.10	3.05	0.77	7.87	2.07	0.22	0.10	0.10	0.10	0.18	0.10	0.10	0.10
Standard Deviation	ID	ID	2.48	0.16	5.56	0.30	0.27	ID	ID	ID	0.13	ID	ID	ID
Median	0.1	0.1	2.2	0.74	5.5	2.06	0.1	0.100	0.1	0.1	0.1	0.1	0.1	0.1
Dichlorodifluoromethane, ug/L														
No. of Analyses	53	8	51	8	67	8	68	8	63	8	67	8	68	8
No. of Detections	1	0	50	8	65	8	68	8	0	0	11	0	0	0
Minimum	ND	ND	ND	1.5	ND	3.6	0.6	1.2	ND	ND	ND	ND	ND	ND
Maximum	0.2	ND	20.0	3.3	45.0	9.3	10.0	2.2	ND	ND	0.6	ND	ND	ND
Mean	0.10	0.10	6.55	2.21	13.15	5.79	3.98	1.56	0.10	0.10	0.15	0.10	0.10	0.10
Standard Deviation	ID	ID	3.87	0.63	7.63	1.85	2.05	0.33	ID	ID	0.12	ID	ID	ID
Median	0.1	0.1	5.9	2.2	12.0	5.6	3.8	1.5	0.1	0.1	0.1	0.1	0.1	0.1

NOTES:

ID	Insufficient Data. The number of detections is less than 3.
ND	Not Detected (at laboratory MDL).
mg/L	Milligram per liter.
ug/L	Microgram per liter.
Current	Reflects the most recent analysis data, up to eight analyses maximum.

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

	Regional Aquifer / Channel Cc3												
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient			a										
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
pH field, Standard Units													
No. of Analyses	67	8	25	67	8	68	8	37	8	38	8	38	8
No. of Detections	67	8	25	67	8	68	8	37	8	38	8	38	8
Minimum	6.8	7.5	6.9	6.8	7.1	6.8	7.3	7.9	7.8	6.5	6.7	7.3	7.3
Maximum	8.4	7.9	8.4	8.4	7.5	8.5	7.7	8.6	8.2	7.2	7.1	7.8	7.7
Mean	7.72	7.72	7.52	7.52	7.32	7.69	7.52	8.19	8.07	6.87	6.86	7.58	7.55
Standard Deviation	0.31	0.16	0.36	0.26	0.16	0.26	0.14	0.17	0.15	0.13	0.15	0.14	0.13
Median	7.8	7.8	7.6	7.5	7.3	7.7	7.6	8.2	8.1	6.9	6.9	7.6	7.6
Specific Conductance field, micr													
No. of Analyses	67	8	25	67	7	68	8	37	8	38	8	38	8
No. of Detections	67	8	25	67	7	68	8	37	8	38	8	38	8
Minimum	100	140	153	115	130	100	140	150	150	145	150	165	190
Maximum	190	175	220	185	190	230	230	180	195	190	185	230	245
Mean	157.1	156.3	179.4	137.0	150.7	190.0	194.4	167.8	166.9	171.7	168.1	207.9	217.5
Standard Deviation	12.2	15.5	13.9	10.3	21.5	23.3	26.4	6.9	13.6	10.7	12.8	14.8	19.6
Median	160	158	180	135	145	190	195	170	163	170	170	210	220
Total Dissolved Solids													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Minimum	63	110	36	53	96	80	148	90	116	57	105	90	143
Maximum	160	137	130	150	124	170	163	450	147	140	143	170	165
Mean	110.9	123.4	113.1	97.4	111.0	127.4	155.0	132.1	134.6	114.8	126.8	138.3	153.8
Standard Deviation	15.5	8.3	18.8	15.9	9.4	19.8	5.6	56.7	11.6	17.9	11.4	15.2	8.5
Median	110	123	120	99	111	120	155	127	136	120	128	140	156
Alkalinity, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Minimum	58	68	74	30	58	64	90	69	68	57	58	88	96
Maximum	100	74	100	66	61	110	103	86	78	78	67	140	106
Mean	73.2	72.8	81.9	56.8	59.2	81.2	98.4	73.8	75.7	68.2	63.3	97.2	101.6
Standard Deviation	5.5	2.3	5.2	4.7	1.1	13.0	4.2	3.5	3.3	3.9	2.8	8.9	3.0
Median	72	74	83	57	59	80	100	73	77	69	63	96	103
Ammonia-N, mg/L													
No. of Analyses	66	8	24	66	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	20	5	1	52	8	38	8	6	0	3	0
Minimum	0.1	0.2	ND	ND	ND	ND	0.0	0.2	0.2	ND	ND	ND	ND
Maximum	0.3	0.3	0.1	0.1	0.0	0.2	0.1	0.3	0.3	0.5	ND	0.0	ND
Mean	0.19	0.25	0.03	0.01	0.01	0.05	0.04	0.22	0.24	0.03	0.01	0.01	0.01
Standard Deviation	0.05	0.03	0.03	0.01	ID	0.04	0.01	0.03	0.04	0.08	ID	0.01	ID
Median	0.18	0.24	0.02	0.01	0.01	0.04	0.04	0.22	0.23	0.02	0.01	0.02	0.01

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

	Regional Aquifer / Channel Cc3												
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient			a										
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Nitrate-N, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	28	1	6	67	8	25	6	12	8	37	8	1	0
Minimum	ND	ND	ND	0.6	0.7	ND	ND	ND	0.0	ND	2.2	ND	ND
Maximum	0.3	0.097	0.0	1.9	0.7	0.8	0.0	0.1	0.1	6.5	3.1	0.1	ND
Mean	0.03	0.017	0.01	0.74	0.72	0.03	0.02	0.03	0.03	3.13	2.71	0.02	0.01
Standard Deviation	0.04	ID	0.00	0.17	0.02	0.10	0.01	0.01	0.02	1.39	0.31	ID	ID
Median	0.02	0.01	0.01	0.74	0.72	0.02	0.01	0.03	0.03	3.13	2.80	0.03	0.01
Sulfate, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Minimum	8.7	9.7	13.0	9.0	10.0	12.0	16.2	11.0	11.9	7.8	8.3	15.0	16.0
Maximum	14.0	10.9	17.0	12.0	11.1	24.0	18.1	14.0	13.4	11.0	9.4	18.0	17.2
Mean	10.38	10.22	14.58	10.05	10.59	19.55	17.18	12.93	12.88	9.45	8.89	16.55	16.53
Standard Deviation	0.69	0.39	0.93	0.49	0.36	2.02	0.70	0.65	0.49	0.97	0.41	0.99	0.41
Median	10.0	10.2	14.5	10.0	10.7	19.0	17.1	13.0	13.0	9.3	8.9	17.0	16.5
Chloride, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Minimum	2.7	2.9	3.0	2.6	2.7	3.7	4.8	3.0	3.5	4.0	4.4	3.5	3.4
Maximum	5.0	3.6	6.0	5.0	4.1	6.7	37.6	7.0	9.1	5.6	6.1	5.6	4.0
Mean	3.16	3.11	3.63	3.05	3.13	5.23	9.14	3.94	4.35	4.73	4.97	4.02	3.69
Standard Deviation	0.35	0.22	0.69	0.38	0.41	0.63	11.50	0.61	1.93	0.48	0.53	0.33	0.23
Median	3.0	3.0	3.8	3.0	3.0	5.0	5.0	3.9	3.7	4.9	4.8	4.0	3.7
Dissolved Arsenic, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	2	0	38	8
Minimum	0.0021	0.0053	0.0030	0.0017	0.0020	0.0016	0.0013	0.0020	0.0030	ND	ND	0.0039	0.0042
Maximum	0.0220	0.0063	0.0070	0.0056	0.0022	0.0270	0.0016	0.0034	0.0033	0.0013	ND	0.0080	0.0048
Mean	0.0077	0.0058	0.0050	0.0021	0.0021	0.0046	0.0015	0.0028	0.0032	0.0005	0.0005	0.0049	0.0044
Standard Deviation	0.0035	0.0004	0.0011	0.0005	0.0001	0.0041	0.0001	0.0005	0.0001	ID	ID	0.0007	0.0002
Median	0.0070	0.0058	0.0050	0.0020	0.0021	0.0030	0.0015	0.0029	0.0032	0.0005	0.0005	0.0047	0.0044
Dissolved Iron, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	56	0	24	51	0	66	8	38	8	26	1	38	8
Minimum	ND	ND	0.1	ND	ND	ND	0.0	0.0	0.1	ND	ND	0.290	0.717
Maximum	0.22	ND	4.00	0.42	ND	0.19	0.04	0.23	0.14	0.30	0.01	0.88	0.77
Mean	0.05	0.01	0.35	0.05	0.01	0.06	0.03	0.10	0.10	0.05	0.01	0.63	0.75
Standard Deviation	0.04	ID	0.78	0.07	ID	0.04	0.01	0.04	0.03	0.05	ID	0.13	0.02
Median	0.05	0.01	0.20	0.03	0.01	0.06	0.03	0.10	0.09	0.04	0.01	0.68	0.75

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

	Regional Aquifer / Channel Cc3												
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient			a										
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Dissolved Manganese, mg/L													
No. of Analyses	66	8	24	67	8	66	8	38	8	38	8	38	8
No. of Detections	64	8	24	2	0	65	8	38	8	1	0	38	8
Minimum	ND	0.117	0.077	ND	ND	ND	0.428	0.042	0.052	ND	ND	0.068	0.074
Maximum	0.190	0.170	0.130	0.140	ND	1.350	0.599	0.080	0.085	0.002	ND	0.110	0.123
Mean	0.13	0.14	0.10	0.00	0.00	0.41	0.52	0.06	0.07	0.00	0.00	0.093	0.093
Standard Deviation	0.03	0.02	0.01	ID	ID	0.22	0.06	0.01	0.01	ID	ID	0.006	0.014
Median	0.140	0.138	0.094	0.001	0.001	0.430	0.509	0.064	0.062	0.001	0.001	0.093	0.091
Dissolved Calcium, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Minimum	9.2	11.0	12.0	7.7	8.7	9.2	13.4	11.2	14.3	11.0	10.1	13.6	16.5
Maximum	18.0	14.5	18.0	13.0	11.9	19.6	16.8	18.3	18.3	17.0	12.9	23.0	20.0
Mean	12.87	13.19	15.79	9.63	10.31	13.84	15.35	15.67	15.68	12.88	11.78	18.29	18.38
Standard Deviation	1.63	1.07	1.53	1.11	1.02	2.18	1.10	1.32	1.22	1.23	0.93	1.48	1.29
Median	13.0	13.2	16.0	9.4	10.4	14.0	15.4	15.9	15.7	13.0	12.2	18.0	18.6
Dissolved Magnesium, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Minimum	6.3	6.8	8.4	6.2	6.4	8.4	12.7	5.4	5.8	8.8	8.5	10.0	10.6
Maximum	11.0	9.0	11.0	9.5	9.0	16.9	17.1	7.9	7.0	13.0	10.2	15.0	14.3
Mean	8.00	8.25	9.92	7.50	8.24	12.30	14.29	6.51	6.50	10.42	9.67	12.54	12.94
Standard Deviation	0.74	0.76	0.62	0.70	0.87	1.99	1.54	0.59	0.42	0.97	0.55	1.29	1.13
Median	8.0	8.5	9.9	7.4	8.5	12.0	13.8	6.5	6.4	10.0	9.9	12.0	13.3
Dissolved Sodium, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Minimum	4.8	4.8	4.9	4.3	4.5	4.8	6.1	6.5	7.0	5.3	5.2	5.2	5.1
Maximum	7.5	6.1	7.0	10.0	5.9	7.5	7.3	9.2	9.4	7.4	6.6	7.3	6.7
Mean	5.92	5.76	5.90	5.42	5.32	6.24	6.57	7.90	8.55	6.15	6.02	6.03	6.05
Standard Deviation	0.58	0.49	0.52	1.05	0.45	0.59	0.45	0.73	0.78	0.54	0.42	0.51	0.51
Median	5.9	6.0	5.9	5.2	5.3	6.2	6.5	7.8	8.8	6.1	6.1	6.0	6.2
Dissolved Potasium, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	66	8	38	8	38	8	38	8
Minimum	1.6	2.4	1.7	1.4	1.6	ND	2.1	2.1	2.8	1.0	1.2	1.6	1.9
Maximum	3.6	3.0	2.6	2.3	1.9	3.3	2.6	3.3	3.1	1.5	1.5	2.5	2.2
Mean	2.51	2.60	2.08	1.71	1.74	2.40	2.43	2.79	2.99	1.26	1.28	1.99	2.11
Standard Deviation	0.30	0.20	0.21	0.19	0.10	0.27	0.18	0.25	0.10	0.12	0.10	0.19	0.13
Median	2.5	2.6	2.1	1.7	1.7	2.4	2.5	2.8	3.0	1.2	1.3	2.0	2.2

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

	Regional Aquifer / Channel Cc3												
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient			a										
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Benzene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chloroethane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Toluene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	1	0	0	1	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	0.2	ND	ND	0.9	ND	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Trichloroethene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	1	0	1	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	0.4	ND	0.3	ND	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Vinyl Chloride, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mean	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

	Regional Aquifer / Channel Cc3												
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient			a										
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Total Xylenes, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mean	0.20	0.10	0.20	0.20	0.10	0.20	0.10	0.20	0.10	0.20	0.10	0.20	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
cis-1,2-Dichloroethene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
trans-1,2-Dichloroethene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1,1 Dichloroethane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1,2-Dichloropropane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	0	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Table 3-1
Vashon Island Landfill
Summary of Statistical Analyses for Groundwater Well Samples
May 1987 through December 2013

	Regional Aquifer / Channel Cc3												
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient			a										
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Trichlorofluoromethane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	1	0	0	0	1	0	0	1	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	0.7	ND	ND	ND	0.2	ND	ND	0.2	ND	ND	ND
Mean	0.10	0.10	0.12	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Dichlorodifluoromethane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	2	0	0	0
Minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum	ND	ND	ND	ND	ND	ND	0.2	ND	ND	0.3	ND	ND	ND
Mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.10	0.10	0.10
Standard Deviation	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID
Median	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

NOTES:

ID	Insufficient Data. The number of detections is less than 3.
ND	Not Detected (at laboratory MDL).
mg/L	Milligram per liter.
ug/L	Microgram per liter.
Current	Reflects the most recent analysis data, up to eight analyses maximum.
a	(Decommisioned 2003)

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

	Groundwater in or Adjacent to Cc1						
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient Location							
Time Interval	Long	Long	Long	Short	Long	Short	Long
pH field, Standard Units							
No. of Analyses	17	22	67	8	73	8	36
No. of Detections	17	22	67	8	73	8	36
Trend	--	--	--	--	D	--	--
S - value	12.0	-51.0	-179.0	6.0	-316.0	-9.0	22.0
Probability	0.650	0.159	0.137	0.548	0.008	0.337	0.775
Significant	NO	NO	NO	NO	YES	NO	NO
Specific Conductance field, micromhos/cm							
No. of Analyses	18	22	67	8	72	8	36
No. of Detections	18	22	67	8	72	8	36
Trend	I	D	I	--	I	D	--
S - value	76.0	-113.0	257.0	-7.0	553.0	-18.0	-85.0
Probability	0.004	0.002	0.032	0.473	0.000	0.032	0.253
Significant	YES	YES	YES	NO	YES	YES	NO
Total Dissolved Solids							
No. of Analyses	19	16	65	8	76	8	45
No. of Detections	19	16	65	8	76	8	45
Trend	--	D	--	--	I	--	D
S - value	3.0	-45.0	197.0	4.0	419.0	-2.0	-269.0
Probability	0.944	0.048	0.101	0.720	0.000	0.904	0.000
Significant	NO	YES	NO	NO	YES	NO	YES
Alkalinity, mg/L							
No. of Analyses	5	14	66	8	72	8	43
No. of Detections	5	14	66	8	72	8	43
Trend	--	--	--	--	I	--	D
S - value	-1.0	-27.0	150.0	2.0	905.0	0.0	-63.0
Probability	1.000	0.155	0.213	0.904	0.000	1.000	0.002
Significant	NO	NO	NO	NO	YES	NO	YES
Ammonia-N, mg/L							
No. of Analyses	30	21	66	8	77	8	55
No. of Detections	4	9	9	0	11	0	10
Trend	--	D	--	--	--	--	--
S - value	-30.0	-71.0	60.0	0.0	-77.0	0.0	-133.0
Probability	0.605	0.035	0.622	--	0.525	--	0.241
Significant	NO	YES	NO	--	NO	--	NO
Nitrate-N, mg/L							
No. of Analyses	29	21	66	8	77	8	55
No. of Detections	21	21	66	8	75	8	23
Trend	--	--	--	--	--	--	I
S - value	-8.0	54.0	-170.0	-6.0	100.0	0.0	376.0
Probability	0.896	0.110	0.157	0.548	0.408	1.000	0.001
Significant	NO	NO	NO	NO	NO	NO	YES
Sulfate, mg/L							
No. of Analyses	29	21	66	8	76	8	55
No. of Detections	29	21	66	8	76	8	55
Trend	--	D	--	--	D	--	I
S - value	-57.0	-78.0	-95.0	-2.0	-385.0	2.0	416.0
Probability	0.294	0.020	0.432	0.904	0.001	0.904	0.000
Significant	NO	YES	NO	NO	YES	NO	YES

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

	Groundwater in or Adjacent to Cc1						
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient Location							
Time Interval	Long	Long	Long	Short	Long	Short	Long
Chloride, mg/L							
No. of Analyses	29	21	66	8	77	8	55
No. of Detections	29	21	65	8	77	8	55
Trend	--	D	I	--	D	--	--
S - value	95.0	-69.0	374.0	2.0	-288.0	5.0	102.0
Probability	0.078	0.040	0.002	0.904	0.016	0.634	0.369
Significant	NO	YES	YES	NO	YES	NO	NO
Dissolved Iron, mg/L							
No. of Analyses	30	21	66	8	77	8	55
No. of Detections	14	18	54	2	55	0	51
Trend	--	--	--	--	--	--	--
S - value	-96.0	-62.0	-77.0	0.0	2.0	0.0	176.0
Probability	0.090	0.065	0.525	--	0.993	--	0.120
Significant	NO	NO	NO	--	NO	--	NO
Dissolved Manganese, mg/L							
No. of Analyses	30	21	66	8	77	8	55
No. of Detections	6	17	7	2	48	2	51
Trend	D	D	--	--	D	--	I
S - value	-134.0	-104.0	123.0	0.0	-258.0	0.0	306.0
Probability	0.018	0.002	0.307	--	0.032	--	0.007
Significant	YES	YES	NO	--	YES	--	YES
Dissolved Calcium, mg/L							
No. of Analyses	10	15	66	8	77	8	44
No. of Detections	10	15	66	8	77	8	44
Trend	I	--	--	--	I	--	D
S - value	25.0	-13.0	92.0	4.0	521.0	-6.0	-191.0
Probability	0.032	0.553	0.447	0.720	0.000	0.548	0.000
Significant	YES	NO	NO	NO	YES	NO	YES
Dissolved Magnesium, mg/L							
No. of Analyses	10	15	66	8	77	8	44
No. of Detections	10	15	66	8	77	8	44
Trend	I	--	I	--	I	--	D
S - value	28.0	-5.0	245.0	4.0	532.0	-4.0	-170.0
Probability	0.016	0.843	0.041	0.720	0.000	0.720	0.000
Significant	YES	NO	YES	NO	YES	NO	YES
Dissolved Sodium, mg/L							
No. of Analyses	10	15	66	8	77	8	44
No. of Detections	10	15	66	8	77	8	44
Trend	--	--	--	--	--	--	D
S - value	18.0	-8.0	-55.0	4.0	165.0	-2.0	-181.0
Probability	0.128	0.729	0.651	0.720	0.170	0.904	0.000
Significant	NO	NO	NO	NO	NO	NO	YES
Dissolved Potassium, mg/L							
No. of Analyses	10	15	66	8	77	8	44
No. of Detections	10	15	66	8	77	8	44
Trend	--	D	--	--	--	--	D
S - value	20.0	-50.0	160.0	0.0	207.0	0.0	-194.0
Probability	0.089	0.015	0.184	1.000	0.085	1.000	0.000
Significant	NO	YES	NO	NO	NO	NO	YES

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

	Groundwater in or Adjacent to Cc1						
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient Location							
Time Interval	Long	Long	Long	Short	Long	Short	Long
Benzene, ug/L							
No. of Analyses	30	21	66	8	77	8	54
No. of Detections	1	0	1	0	1	0	0
Trend	--	--	--	--	--	--	--
S - value	-203.0	-72.0	0.0	0.0	0.0	0.0	-533.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
Vinyl chloride, ug/L							
No. of Analyses	30	21	66	8	77	8	54
No. of Detections	0	0	1	0	2	0	2
Trend	--	--	--	--	--	--	--
S - value	-134.0	-78.0	0.0	0.0	30.0	0.0	-386.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
cis 1,2-Dichloroethene, ug/L							
No. of Analyses	17	18	66	8	77	8	47
No. of Detections	0	0	0	0	1	0	0
Trend	--	--	--	--	--	--	--
S - value	-70.0	-27.0	0.0	0.0	0.0	0.0	167.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
trans 1,2-Dichloroethene, ug/L							
No. of Analyses	21	20	66	8	77	8	53
No. of Detections	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--
S - value	-77.0	-65.0	0.0	0.0	0.0	0.0	-319.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
1,1-Dichloroethane, ug/L							
No. of Analyses	30	21	66	8	77	8	54
No. of Detections	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--
S - value	-200.0	-72.0	0.0	0.0	0.0	0.0	-270.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
1,2-Dichloropropane, ug/L							
No. of Analyses	30	21	66	8	77	8	54
No. of Detections	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--
S - value	-200.0	-72.0	0.0	0.0	0.0	0.0	-533.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

	Groundwater in or Adjacent to Cc1						
Well Location	MW-1	MW-3	MW-10		MW-13		MW-4
Gradient Location							
Time Interval	Long	Long	Long	Short	Long	Short	Long
Chloroethane, ug/L							
No. of Analyses	30	21	66	8	77	8	54
No. of Detections	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--
S - value	-77.0	-61.0	0.0	0.0	0.0	0.0	-461.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
Toluene, ug/L							
No. of Analyses	30	21	66	8	77	8	54
No. of Detections	2	0	1	0	1	0	0
Trend	--	--	--	--	--	--	--
S - value	-88.0	-67.0	0.0	0.0	0.0	0.0	-421.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
Trichloroethene, ug/L							
No. of Analyses	30	21	66	8	77	8	54
No. of Detections	1	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--
S - value	-215.0	-72.0	0.0	0.0	0.0	0.0	-533.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
Total Xylenes, ug/L							
No. of Analyses	29	21	66	8	77	8	54
No. of Detections	0	0	0	0	1	0	0
Trend	--	--	--	--	--	--	--
S - value	-190.0	-72.0	-140.0	0.0	-183.0	0.0	-533.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--
Trichlorofluoromethane, ug/L							
No. of Analyses	10	15	66	8	77	8	44
No. of Detections	0	7	1	0	1	0	7
Trend	--	--	--	--	--	--	--
S - value	0.0	-1.0	0.0	0.0	0.0	0.0	-50.0
Probability	--	1.000	--	--	--	--	0.280
Significant	--	NO	--	--	--	--	NO
Dichlorodifluoromethane, ug/L							
No. of Analyses	5	14	66	8	72	8	43
No. of Detections	0	0	0	0	1	0	0
Trend	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	-61.0
Probability	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--

NOTES
Long Period of record excluding the last 8 sampling quarters.
The maximum No. of Analyses considered for the statistics are 40.
Short Results fron the most recent sampling quarters

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

	Groundwater in Cc2 and between Cc2 and Cc3													
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient Location	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
pH field, Standard Units														
No. of Analyses	52	8	53	8	123	8	116	8	21	8	67	8	68	8
No. of Detections	52	8	53	8	123	8	116	8	21	8	67	8	68	8
Trend	--	--	--	--	D	--	D	--	I	--	D	--	D	--
S - value	116.0	0.0	-161.0	-8.0	-474.0	3.0	-235.0	7.0	245.0	-8.0	-505.0	0.0	-418.0	7.0
Probability	0.336	1.000	0.181	0.398	0.000	0.812	0.044	0.473	0.041	0.398	0.000	1.000	0.000	0.473
Significant	NO	NO	NO	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Specific Conductance field, micromhos/cm														
No. of Analyses	53	8	53	8	122	8	115	8	21	8	67	8	68	8
No. of Detections	53	8	53	8	122	8	115	8	21	8	67	8	68	8
Trend	I	--	I	--	I	D	D	--	--	D	--	--	I	--
S - value	257.0	-6.0	306.0	-13.0	401.0	-20.0	-529.0	0.0	177.0	-17.0	-160.0	-10.0	425.0	-3.0
Probability	0.032	0.548	0.011	1.E-01	0.001	1.E-02	0.000	1.000	0.141	0.047	0.184	0.276	0.000	0.812
Significant	YES	NO	YES	NO	YES	YES	YES	NO	NO	YES	NO	NO	YES	NO
Total Dissolved Solids														
No. of Analyses	52	8	52	8	115	8	114	8	63	8	67	8	63	8
No. of Detections	52	6	52	8	115	8	114	8	63	8	67	8	63	8
Trend	--	--	I	--	I	--	D	--	I	--	--	--	--	--
S - value	221.0	0.0	312.0	4.0	621.0	4.0	-699.0	-2.0	247.0	-5.0	56.0	-1.0	169.0	-1.0
Probability	0.066	1.000	0.009	0.720	0.000	0.720	0.000	0.904	0.040	0.634	0.645	1.000	0.160	1.000
Significant	NO	NO	YES	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	NO
Alkalinity, mg/L														
No. of Analyses	53	8	52	8	68	8	69	8	63	8	67	8	63	8
No. of Detections	53	6	52	8	68	8	69	8	63	8	67	8	63	8
Trend	--	--	I	--	I	--	D	--	--	--	D	--	I	--
S - value	167.0	2.0	436.0	4.0	478.0	4.0	-797.0	-4.0	-45.0	3.0	-562.0	4.0	339.0	4.0
Probability	0.165	0.904	0.000	0.720	0.000	0.720	0.000	0.720	0.713	0.812	0.000	0.720	0.005	0.720
Significant	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO	YES	NO	YES	NO
Ammonia-N, mg/L														
No. of Analyses	53	8	52	8	126	8	130	8	63	8	67	8	63	8
No. of Detections	21	8	22	6	15	0	106	7	11	0	7	0	8	1
Trend	--	--	D	--	--	--	--	--	--	--	--	--	--	--
S - value	95.0	2.0	-371.0	0.0	13.0	0.0	58.0	-4.0	198.0	0.0	14.0	0.0	-111.0	0.0
Probability	0.432	0.904	0.002	1.000	0.920	--	0.634	0.720	0.099	--	0.913	--	0.358	--
Significant	NO	NO	YES	NO	NO	--	NO	NO	NO	--	NO	--	NO	--
Nitrate-N, mg/L														
No. of Analyses	53	8	52	8	126	8	130	8	63	8	67	8	64	8
No. of Detections	6	3	19	8	52	8	22	2	10	0	66	8	63	8
Trend	--	--	I	--	I	--	D	--	I	--	I	--	I	--
S - value	-1.0	1.0	499.0	6.0	774.0	6.0	-348.0	3.0	417.0	0.0	357.0	-6.0	324.0	4.0
Probability	1.000	--	0.000	0.548	0.000	0.548	0.004	--	0.001	--	0.003	0.548	0.007	0.720
Significant	NO	NO	YES	NO	YES	NO	YES	--	YES	--	YES	NO	YES	NO
Sulfate, mg/L														
No. of Analyses	53	8	52	8	126	8	130	8	63	8	67	8	63	8
No. of Detections	53	6	52	8	126	8	98	8	63	8	67	8	63	8
Trend	I	--	--	--	I	--	I	--	I	--	D	--	I	--
S - value	706.0	0.0	119.0	3.0	502.0	3.0	720.0	2.0	607.0	-12.0	-310.0	4.0	520.0	-1.0
Probability	0.000	1.000	0.309	0.812	0.000	0.812	0.000	0.904	0.000	0.178	0.010	0.720	0.000	1.000
Significant	YES	NO	NO	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

	Groundwater in Cc2 and between Cc2 and Cc3													
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient Location	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Chloride, mg/L														
No. of Analyses	53	8	52	8	126	8	130	8	63	8	67	8	63	8
No. of Detections	53	6	52	8	123	8	125	8	63	8	67	7	63	8
Trend	D	--	D	--	--	--	D	--	I	--	I	--	I	--
S - value	-569.0	2.0	-457.0	3.0	-16.0	3.0	-444.0	0.0	299.0	2.0	442.0	6.0	486.0	2.0
Probability	0.000	0.904	0.000	0.812	0.900	0.812	0.000	1.000	0.013	0.904	0.000	0.548	0.000	0.904
Significant	YES	NO	YES	NO	NO	NO	YES	NO	YES	NO	YES	NO	YES	NO
Dissolved Iron, mg/L														
No. of Analyses	53	8	52	8	127	8	129	8	63	8	67	8	63	8
No. of Detections	43	1	52	8	106	0	129	8	53	1	52	0	47	0
Trend	D	--	D	--	--	--	--	--	I	--	--	--	--	--
S - value	-272.0	-1.0	-672.0	2.0	-88.0	2.0	-144.0	0.0	381.0	0.0	-114.0	0.0	-44.0	0.0
Probability	0.023	--	0.000	0.904	0.467	--	0.232	1.000	0.001	--	0.345	--	0.719	--
Significant	YES	--	YES	NO	NO	--	NO	NO	YES	--	NO	--	NO	--
Dissolved Manganese, mg/L														
No. of Analyses	53	8	51	8	127	8	129	8	63	8	67	8	63	8
No. of Detections	53	6	51	8	126	8	128	8	63	8	5	0	8	0
Trend	D	--	D	--	I	--	D	--	--	--	--	--	--	--
S - value	-422.0	-4.0	-668.0	4.0	643.0	4.0	-587.0	4.0	162.0	2.0	10.0	0.0	64.0	0.0
Probability	0.000	0.720	0.000	0.720	0.000	0.720	0.000	0.720	0.178	0.904	0.940	--	0.598	--
Significant	YES	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	--	NO	--
Dissolved Calcium, mg/L														
No. of Analyses	53	8	52	8	101	8	101	8	63	8	67	8	63	8
No. of Detections	53	6	52	8	101	8	101	8	63	8	67	8	63	8
Trend	--	--	--	--	I	--	D	--	--	--	--	--	--	--
S - value	97.0	-2.0	187.0	0.0	376.0	0.0	-602.0	-2.0	-64.0	-1.0	-193.0	2.0	160.0	0.0
Probability	0.422	0.904	0.120	1.000	0.002	1.000	0.000	0.904	0.598	1.000	0.108	0.904	0.184	1.000
Significant	NO	NO	NO	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO
Dissolved Magnesium, mg/L														
No. of Analyses	53	8	52	8	101	8	101	8	63	8	67	8	63	8
No. of Detections	53	6	52	8	101	8	101	8	63	8	67	8	63	8
Trend	--	--	I	--	I	--	D	--	--	--	--	--	I	--
S - value	106.0	-2.0	431.0	0.0	576.0	0.0	-502.0	-4.0	140.0	-2.0	-127.0	0.0	454.0	2.0
Probability	0.380	0.904	0.000	1.000	0.000	1.000	0.000	0.720	0.245	0.904	0.292	1.000	0.000	0.904
Significant	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	NO	YES	NO
Dissolved Sodium, mg/L														
No. of Analyses	53	8	52	8	101	8	102	8	63	8	67	8	63	8
No. of Detections	53	6	52	8	101	8	102	8	63	8	67	8	63	8
Trend	I	--	I	--	I	--	--	--	--	--	--	--	I	--
S - value	309.0	-2.0	390.0	-1.0	384.0	-1.0	-17.0	-4.0	-203.0	-1.0	-67.0	2.0	371.0	2.0
Probability	0.010	0.904	0.001	1.000	0.001	1.000	0.894	0.720	0.091	1.000	0.581	0.904	0.002	0.904
Significant	YES	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	NO
Dissolved Potassium, mg/L														
No. of Analyses	53	8	52	8	101	8	102	8	63	8	67	8	63	8
No. of Detections	53	7	52	8	101	8	102	8	63	8	67	8	63	8
Trend	--	--	I	--	I	--	D	--	--	--	--	--	I	--
S - value	2.0	-2.0	402.0	4.0	335.0	4.0	-322.0	2.0	-169.0	6.0	-96.0	5.0	372.0	2.0
Probability	0.993	0.904	0.001	0.720	0.005	0.720	0.007	0.904	0.160	0.548	0.427	0.634	0.002	0.904
Significant	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	NO	YES	NO

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

	Groundwater in Cc2 and between Cc2 and Cc3													
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient Location	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Benzene, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	64	8
No. of Detections	0	0	3	0	0	0	101	8	0	0	0	0	0	0
Trend	--	--	--	--	--	--	D	--	--	--	--	--	--	--
S - value	0.0	0.0	-125.0	0.0	0.0	0.0	-651.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	0.000	1.000	--	--	--	--	--	--
Significant	--	--	NO	--	--	--	YES	NO	--	--	--	--	--	--
Vinyl chloride, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	64	8
No. of Detections	0	0	52	8	126	8	115	8	1	0	0	0	0	0
Trend	--	--	D	--	D	--	D	--	--	--	--	--	--	--
S - value	0.0	0.0	-512.0	2.0	-615.0	2.0	-806.0	-6.0	39.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	0.000	0.904	0.000	0.904	0.000	0.548	--	--	--	--	--	--
Significant	--	--	YES	NO	YES	NO	YES	NO	--	--	--	--	--	--
cis 1,2-Dichloroethene, ug/L														
No. of Analyses	53	8	52	8	111	8	114	8	63	8	67	8	64	8
No. of Detections	0	0	51	8	31	1	108	8	0	0	0	0	0	0
Trend	--	--	D	--	--	--	D	--	--	--	--	--	--	--
S - value	0.0	0.0	-756.0	0.0	-149.0	0.0	-305.0	-4.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	0.000	1.000	0.216	--	0.011	0.720	--	--	--	--	--	--
Significant	--	--	YES	NO	NO	--	YES	NO	--	--	--	--	--	--
trans 1,2-Dichloroethene, ug/L														
No. of Analyses	53	8	52	8	114	8	117	8	63	8	67	8	64	8
No. of Detections	0	0	9	0	0	0	89	8	0	0	0	0	0	0
Trend	--	--	D	--	--	--	D	--	--	--	--	--	--	--
S - value	0.0	0.0	-324.0	0.0	0.0	0.0	-246.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	0.007	--	--	--	0.040	1.000	--	--	--	--	--	--
Significant	--	--	YES	--	--	--	YES	NO	--	--	--	--	--	--
1,1-Dichloroethane, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	64	8
No. of Detections	0	0	0	0	8	0	78	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	D	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	-10.0	0.0	-445.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	0.940	--	0.000	--	--	--	--	--	--	--
Significant	--	--	--	--	NO	--	YES	--	--	--	--	--	--	--
1,2-Dichloropropane, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	64	8
No. of Detections	0	0	0	0	0	0	70	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	D	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	-333.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	0.005	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	YES	--	--	--	--	--	--	--

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

	Groundwater in Cc2 and between Cc2 and Cc3													
Well Location	MW-20		MW-21		MW-2		MW-5D		MW-14		MW-8		MW-9	
Gradient Location	Up		Down		Down		Down							
Time Interval	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Chloroethane, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	64	8
No. of Detections	0	0	0	0	27	0	9	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	-147.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	0.222	--	0.993	--	--	--	--	--	--	--
Significant	--	--	--	--	NO	--	NO	--	--	--	--	--	--	--
Toluene, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	64	8
No. of Detections	1	0	0	0	2	0	49	0	0	0	1	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	31.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	0.993	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	NO	--	--	--	--	--	--	--
Trichloroethene, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	64	8
No. of Detections	0	0	0	0	0	0	35	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	0.993	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	NO	--	--	--	--	--	--	--
Total Xylenes, ug/L														
No. of Analyses	53	8	52	8	138	8	131	8	63	8	67	8	64	8
No. of Detections	0	0	0	0	0	0	19	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	-183.0	0.0	-183.0	0.0	-183.0	0.0	-183.0	0.0	-183.0	0.0	-183.0	0.0	-183.0	0.0
Probability	--	--	--	--	--	--	0.128	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	NO	--	--	--	--	--	--	--
Trichlorofluoromethane, ug/L														
No. of Analyses	53	8	52	8	101	8	102	8	63	8	67	8	64	8
No. of Detections	0	0	49	8	97	8	21	0	0	0	20	0	0	0
Trend	--	--	I	--	I	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	438.0	0.0	287.0	0.0	-156.0	0.0	0.0	0.0	-229.0	0.0	0.0	0.0
Probability	--	--	0.000	1.000	0.017	1.000	0.195	--	--	--	0.056	--	--	--
Significant	--	--	YES	NO	YES	NO	NO	--	--	--	NO	--	--	--
Dichlorodifluoromethane, ug/L														
No. of Analyses	53	8	51	8	67	8	68	8	63	8	67	8	64	8
No. of Detections	1	0	50	8	65	8	68	8	0	0	11	0	0	0
Trend	--	--	--	--	D	--	D	--	--	--	--	--	--	--
S - value	-48.0	0.0	215.0	0.0	-320	0.0	-726.0	-2.0	0.0	0.0	-183.0	0.0	0.0	0.0
Probability	--	--	0.073	1.000	0.008	1.000	0.000	0.904	--	--	0.128	--	--	--
Significant	--	--	NO	NO	YES	NO	YES	NO	--	--	NO	--	--	--

NOTES

Gradient indicates location of monitoring AYell relative to the hydraulic gradient and the placement of soild AYaste

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

Groundwater in Cc3 and the Regional Aquifer													
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient Location	Up		Side	Side		Down		(Installed 2003)		(Installed 2003)		(Installed 2003)	
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
pH field, Standard Units													
No. of Analyses	67	8	25	67	8	68	8	38	8	38	8	38	8
No. of Detections	67	8	25	67	8	68	8	38	8	38	8	38	8
Trend	--	--	--	--	--	D	--	D	--	D	--	--	--
S - value	215.0	-6.0	-17.0	-58.0	-9.0	-279.0	-8.0	-238.0	1.0	-228.0	14.0	-88.0	-4.0
Probability	0.073	0.548	0.709	0.634	0.337	0.020	0.398	0.003	1.000	0.004	0.108	0.274	0.720
Significant	NO	NO	NO	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO
Specific Conductance field, micromhos/cm													
No. of Analyses	67	8	25	67	7	68	8	38	8	38	8	38	8
No. of Detections	67	8	25	67	7	68	8	38	8	38	8	38	8
Trend	--	--	--	--	--	I	--	--	--	D	--	I	--
S - value	172.0	-11.0	-16.0	138.0	-3.0	798.0	-12.0	47.0	0.0	-201.0	-2.0	178.0	-4.0
Probability	0.153	0.227	0.726	0.252	0.812	0.000	0.178	0.563	1.000	0.012	0.904	0.026	0.720
Significant	NO	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	YES	NO
Total Dissolved Solids													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Trend	--	--	I	--	--	I	--	--	I	--	I	I	--
S - value	201.0	4.0	99.0	93.0	2.0	442.0	4.0	144.0	20.0	156.0	17.0	288.0	4.0
Probability	0.094	0.720	0.015	0.442	0.904	0.000	0.720	0.072	0.014	0.051	0.047	0.000	0.720
Significant	NO	NO	YES	NO	NO	YES	NO	NO	YES	NO	YES	YES	NO
Alkalinity, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Trend	I	--	--	--	--	I	--	I	--	--	--	I	--
S - value	361.0	-4.0	8.0	-158.0	6.0	899.0	-3.0	176.0	-13.0	-59.0	-12.0	452.0	3.0
Probability	0.003	0.720	0.862	0.189	0.548	0.000	0.812	0.028	0.143	0.466	0.178	0.000	0.812
Significant	YES	NO	NO	NO	NO	YES	NO	YES	NO	NO	NO	YES	NO
Ammonia-N, mg/L													
No. of Analyses	66	8	24	66	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	20	5	1	52	8	38	8	6	0	6	0
Trend	I	--	D	--	--	--	--	--	--	D	--	--	--
S - value	580.0	2.0	-152.0	94.0	0.0	133.0	-6.0	34.0	-4.0	-261.0	0.0	-106.0	3.0
Probability	0.000	0.904	0.000	0.437	--	0.270	0.548	0.678	0.720	0.001	--	0.187	--
Significant	YES	NO	YES	NO	--	NO	NO	NO	NO	YES	--	NO	--
Nitrate-N, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	28	1	6	67	8	25	6	12	8	37	8	37	0
Trend	D	--	--	--	--	--	--	--	--	--	--	D	--
S - value	-322.0	0.0	-49.0	153.0	-2.0	75.0	5.0	90.0	-3.0	-30.0	-4.0	-237.0	2.0
Probability	0.007	--	0.234	0.204	0.904	0.536	0.634	0.263	0.812	0.605	0.720	0.003	--
Significant	YES	--	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	--
Sulfate, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Trend	--	--	--	--	--	D	--	I	--	--	--	I	--
S - value	-52.0	-6.0	-65.0	-50.0	4.0	-649.0	-2.0	181.0	-2.0	-65.0	-4.0	350.0	0.0
Probability	0.670	0.548	0.112	0.682	0.720	0.000	0.904	0.024	0.904	0.254	0.720	0.000	1.000
Significant	NO	NO	NO	NO	NO	YES	NO	YES	NO	NO	NO	YES	NO

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

Groundwater in Cc3 and the Regional Aquifer													
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient Location	Up		Side	Side		Down		(Installed 2003)		(Installed 2003)		(Installed 2003)	
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Chloride, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Trend	--	--	--	--	--	I	--	D	--	I	--	--	--
S - value	186.0	0.0	35.0	7.0	2.0	603.0	-2.0	-195.0	0.0	173.0	4.0	6.0	0.0
Probability	0.122	1.000	0.399	0.960	0.904	0.000	0.904	0.015	1.000	0.002	0.720	0.950	1.000
Significant	NO	NO	NO	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO
Dissolved Iron, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	56	0	24	51	0	66	8	38	8	26	1	26	8
Trend	--	--	--	--	--	I	--	--	--	--	--	I	--
S - value	-204.0	0.0	13.0	-41.0	0.0	466.0	-1.0	-215.0	2.0	-78.0	0.0	318.0	0.0
Probability	0.089	--	0.766	0.738	--	0.000	1.000	0.422	0.904	0.170	--	0.000	1.000
Significant	NO	--	NO	NO	--	YES	NO	NO	NO	NO	--	YES	NO
Dissolved Manganese, mg/L													
No. of Analyses	66	8	24	67	8	66	8	38	8	38	8	38	8
No. of Detections	64	8	24	2	0	65	8	38	8	1	0	1	8
Trend	--	--	D	--	--	I	--	D	--	--	--	--	--
S - value	-97.0	-2.0	-98.0	-13.0	0.0	683.0	0.0	-166.0	4.0	1.0	0.0	-57.0	4.0
Probability	0.422	0.904	0.016	--	--	0.000	1.000	0.038	0.720	--	--	--	0.720
Significant	NO	NO	YES	--	--	YES	NO	YES	NO	--	--	--	NO
Dissolved Calcium, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Trend	--	--	--	--	--	I	--	D	--	D	--	--	--
S - value	163.0	-6.0	-41.0	85.0	2.0	592.0	-2.0	-194.0	0.0	-284.0	0.0	91.0	-2.0
Probability	0.175	0.548	0.321	0.482	0.904	0.000	0.904	0.015	1.000	0.000	1.000	0.258	0.904
Significant	NO	NO	NO	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO
Dissolved Magnesium, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Trend	--	--	--	--	--	I	--	--	--	--	--	I	--
S - value	96.0	-2.0	23.0	156.0	2.0	630.0	-2.0	0.0	-3.0	-11.0	-2.0	250.0	-2.0
Probability	0.427	0.904	0.585	0.195	0.904	0.000	0.904	0.990	0.812	0.900	0.904	0.002	0.904
Significant	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	YES	NO
Dissolved Sodium, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Trend	--	--	--	--	--	I	--	--	--	--	--	--	--
S - value	-220.0	0.0	-78.0	-17.0	2.0	410.0	0.0	120.0	-2.0	-12.0	0.0	123.0	0.0
Probability	0.067	1.000	0.056	0.894	0.904	0.001	1.000	0.135	0.904	0.890	1.000	0.125	1.000
Significant	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO
Dissolved Potassium, mg/L													
No. of Analyses	66	8	24	67	8	67	8	38	8	38	8	38	8
No. of Detections	66	8	24	67	8	67	8	38	8	38	8	38	8
Trend	--	--	D	--	--	I	--	--	--	--	--	--	--
S - value	4.0	-4.0	-134.0	-139.0	2.0	292.0	0.0	41.0	2.0	80.0	-6.0	135.0	2.0
Probability	0.980	0.720	0.001	0.248	0.904	0.015	1.000	0.615	0.904	0.321	0.548	0.092	0.904
Significant	NO	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

Groundwater in Cc3 and the Regional Aquifer													
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient Location	Up		Side	Side		Down		(Installed 2003)		(Installed 2003)		(Installed 2003)	
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Benzene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
cis 1,2-Dichloroethene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
trans 1,2-Dichloroethene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 3-2
Vashon Island Landfill
Trends in Individual Wells
May 1987 through December 2013

Groundwater in Cc3 and the Regional Aquifer													
Well Location	MW-7		MW-11	MW-12		MW-19		MW-26		MW-27		MW-29	
Gradient Location	Up		Side	Side		Down		(Installed 2003)		(Installed 2003)		(Installed 2003)	
Time Interval	Long	Short	Long	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Chloroethane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	1	0	0	1	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	-9.0	0.0	0.0	41.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	1	0	1	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	-13.0	0.0	-21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes, ug/L													
No. of Analyses	66	8	24	68	8	66	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	0	0	0	0	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	-183.0	0.0	0.0	-183.0	0.0	-183.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	1	0	0	0	1	0	0	1	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	-19.0	0.0	0.0	0.0	0.0	0.0	0.0	-25.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane, ug/L													
No. of Analyses	66	8	24	68	8	67	8	38	8	38	8	38	8
No. of Detections	0	0	0	0	0	0	1	0	0	2	0	0	0
Trend	--	--	--	--	--	--	--	--	--	--	--	--	--
S - value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-53.0	0.0	0.0	0.0
Probability	--	--	--	--	--	--	--	--	--	--	--	--	--
Significant	--	--	--	--	--	--	--	--	--	--	--	--	--

NOTES

Table 3-3
Vashon Island Landfill
Summary of Statistical Analyses for Seeps
1991 through 2013

	West Hillside Seeps				
Monitoring Location	SW-W1	SW-W2		SW-W3	
Time Interval	Long	Long	Short	Long	Short
pH field, Standard Units					
No. of Analyses	57	78	7	82	7
No. of Detections	57	78	7	81	7
Minimum	6.5	6.9	7.9	ND	7.3
Maximum	8.4	8.5	8.9	10.7	9.0
Mean	7.5	7.9	8.3	7.8	8.1
Standard Deviation	0.4	0.4	0.3	0.6	0.5
Median	7.6	8.0	8.3	7.8	8.1
Specific Conductance field, micromhos/cm					
No. of Analyses	58	78	8	82	8
No. of Detections	58	78	8	82	8
Minimum	70	330	325	190	240
Maximum	860	1200	750	1034	415
Mean	352.8	792.6	638.8	498.1	336.9
Standard Deviation	173.2	184.6	136.7	165.9	62.2
Median	295	765	675	451	345
Chemical Oxygen Demand, mg/L					
No. of Analyses	59	82	8	82	8
No. of Detections	51	81	8	70	8
Minimum	ND	ND	11.0	ND	5.0
Maximum	100.0	130.0	82.5	160.0	83.9
Mean	20.13	21.32	26.50	17.78	25.28
Standard Deviation	20.30	19.28	23.12	22.16	24.83
Median	14.0	14.9	21.4	11.7	20.5
Alkalinity, mg/L					
No. of Analyses	31	41	8	40	8
No. of Detections	31	41	8	40	8
Minimum	69	323	222	131	96
Maximum	150	530	385	290	154
Mean	97.6	436.7	340.8	204.0	131.4
Standard Deviation	19.4	46.3	53.1	43.6	18.9
Median	93	440	364	195	138
Ammonia-N, mg/L					
No. of Analyses	59	83	8	83	8
No. of Detections	33	38	3	31	3
Minimum	ND	ND	ND	ND	ND
Maximum	0.14	45.00	0.01	0.20	0.02
Mean	0.026	0.560	0.010	0.018	0.010
Standard Deviation	0.028	4.937	0.003	0.027	0.005
Median	0.02	0.02	0.01	0.01	0.01
Nitrate-N, mg/L					
No. of Analyses	59	83	8	83	8
No. of Detections	51	54	8	74	8
Minimum	ND	ND	0.0968	ND	0.301
Maximum	3.68	9.00	0.40	1.40	0.78
Mean	1.304	0.225	0.216	0.300	0.512
Standard Deviation	1.046	0.983	0.100	0.265	0.156
Median	1.30	0.08	0.19	0.20	0.48
Sulfate, mg/L					
No. of Analyses	59	83	8	83	8
No. of Detections	58	83	8	83	8
Minimum	ND	5	7	6	8
Maximum	36	30	12	109	13
Mean	12.2	8.1	10.2	12.4	11.0
Standard Deviation	5.3	3.5	1.4	10.9	1.5
Median	11	7	10	11	11

Table 3-3
Vashon Island Landfill
Summary of Statistical Analyses for Seeps
1991 through 2013

	West Hillside Seeps				
Monitoring Location	SW-W1	SW-W2		SW-W3	
Time Interval	Long	Long	Short	Long	Short
Chloride, mg/L					
No. of Analyses	59	81	8	82	8
No. of Detections	59	79	8	80	8
Minimum	3	ND	14	ND	5
Maximum	15	79	25	48	8
Mean	5.9	34.5	21.6	13.2	7.3
Standard Deviation	2.0	11.0	3.4	6.4	1.0
Median	5	33	23	12	8
Dissolved Arsenic, mg/L					
No. of Analyses	59	82	8	82	8
No. of Detections	59	82	8	81	8
Minimum	0.002	0.002	0.002	ND	0.003
Maximum	0.083	0.017	0.012	0.052	0.017
Mean	0.0121	0.0047	0.0042	0.0059	0.0075
Standard Deviation	0.0126	0.0027	0.0034	0.0067	0.0058
Median	0.008	0.004	0.003	0.004	0.005
Dissolved Iron, mg/L					
No. of Analyses	59	82	8	82	8
No. of Detections	59	82	8	82	8
Minimum	0.7	0.4	1.1	0.5	0.7
Maximum	76.0	21.0	16.4	37.5	19.2
Mean	9.00	4.19	4.42	3.71	5.13
Standard Deviation	11.75	4.20	5.01	5.69	6.81
Median	4.9	2.8	3.0	2.0	1.9
Dissolved Manganese, mg/L					
No. of Analyses	59	81	8	81	8
No. of Detections	59	81	8	81	8
Minimum	0.40	0.33	0.27	0.25	0.32
Maximum	18.00	10.00	2.94	8.56	8.16
Mean	2.647	2.075	0.924	1.189	1.874
Standard Deviation	3.072	2.040	0.859	1.418	2.670
Median	1.50	1.20	0.80	0.78	0.74
Dissolved Calcium, mg/L					
No. of Analyses	54	76	8	76	8
No. of Detections	54	76	8	76	8
Minimum	13	27	36	23	17
Maximum	85	127	67	93	31
Mean	33.8	80.0	55.7	48.2	22.8
Standard Deviation	21.2	18.8	9.0	18.5	4.4
Median	22	79	57	44	22
Dissolved Magnesium, mg/L					
No. of Analyses	54	76	8	77	8
No. of Detections	54	76	8	77	8
Minimum	11	20	31	18	15
Maximum	55	104	60	89	25
Mean	21.4	69.0	48.4	37.3	19.1
Standard Deviation	10.7	17.5	9.7	14.4	3.3
Median	16	65	50	33	19
Dissolved Sodium, mg/L					
No. of Analyses	54	77	8	76	8
No. of Detections	54	77	8	76	8
Minimum	6	8	10	8	7
Maximum	17	25	18	19	10
Mean	9.4	16.4	15.0	12.1	8.5
Standard Deviation	3.2	2.5	2.3	2.9	1.1
Median	8	16	16	11	9

Table 3-3
Vashon Island Landfill
Summary of Statistical Analyses for Seeps
1991 through 2013

	West Hillside Seeps				
Monitoring Location	SW-W1	SW-W2		SW-W3	
Time Interval	Long	Long	Short	Long	Short
Dissolved Potasium, mg/L					
No. of Analyses	54	77	8	77	8
No. of Detections	54	77	8	77	8
Minimum	0.8	1.8	2.6	1.8	1.7
Maximum	2.8	5.6	3.5	17.0	2.6
Mean	1.42	3.54	3.16	2.81	2.10
Standard Deviation	0.45	0.57	0.34	1.72	0.27
Median	1.3	3.5	3.3	2.5	2.1
Vinyl Chloride, ug/L					
No. of Analyses	56	78	8	80	8
No. of Detections	7	1	0	53	7
Minimum	ND	ND	ND	ND	ND
Maximum	1.00	1.00	ND	1.00	0.05
Mean	0.08	ID	ID	0.09	0.03
Standard Deviation	0.23	ID	ID	0.18	0.01
Median	0.010	ID	ID	0.05	0.0358

NOTES:

ID	Insufficient Data. The number of detections is less than 3.
ND	Not Detected (at laboratory MDL).
mg/L	Milligram per liter.
ug/L	Microgram per liter.
Short	Reflects the most recent analysis data, up to eight analyses maximum.

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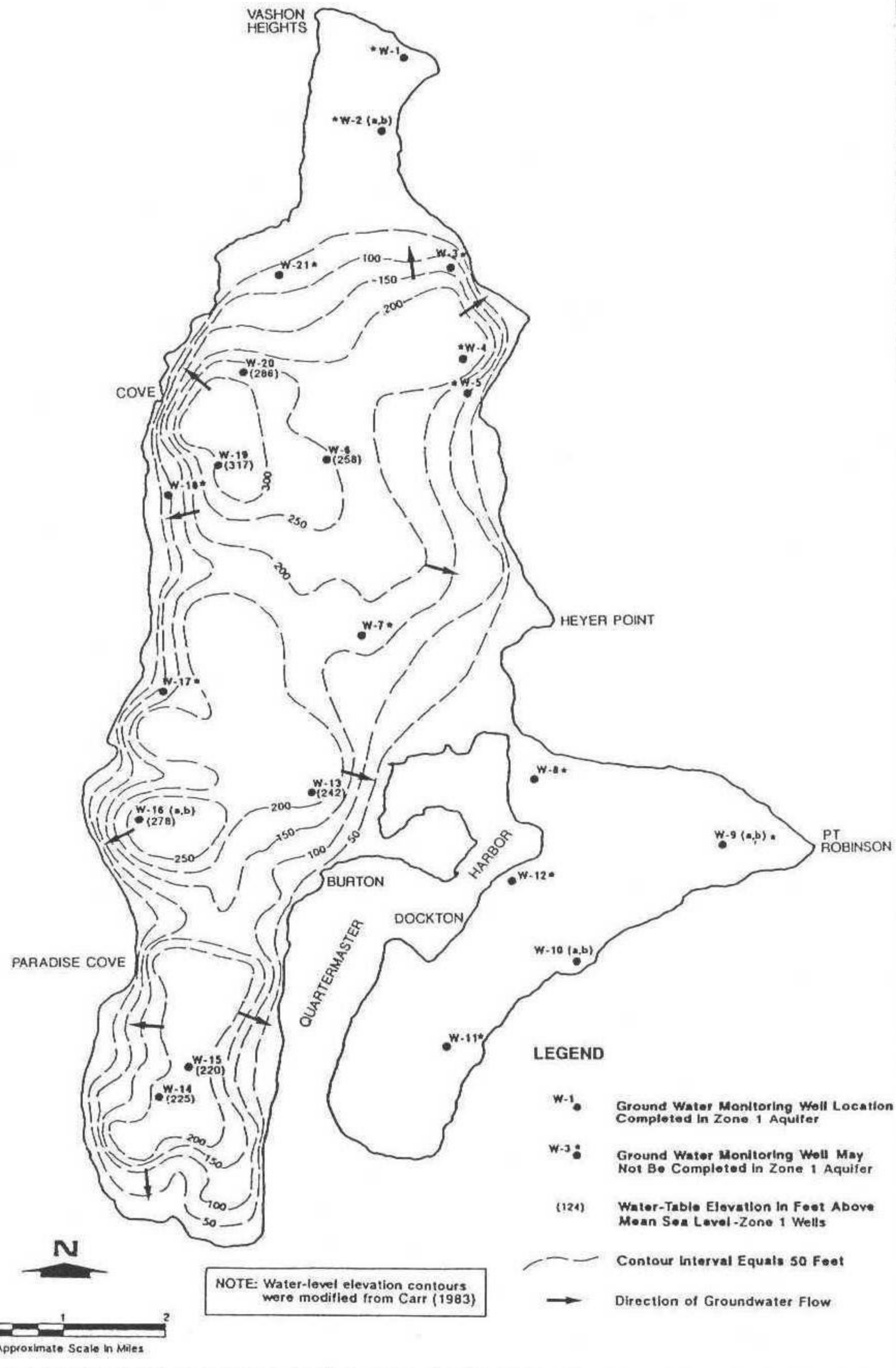


King County
Department of Natural Resources and Parks
Solid Waste Division

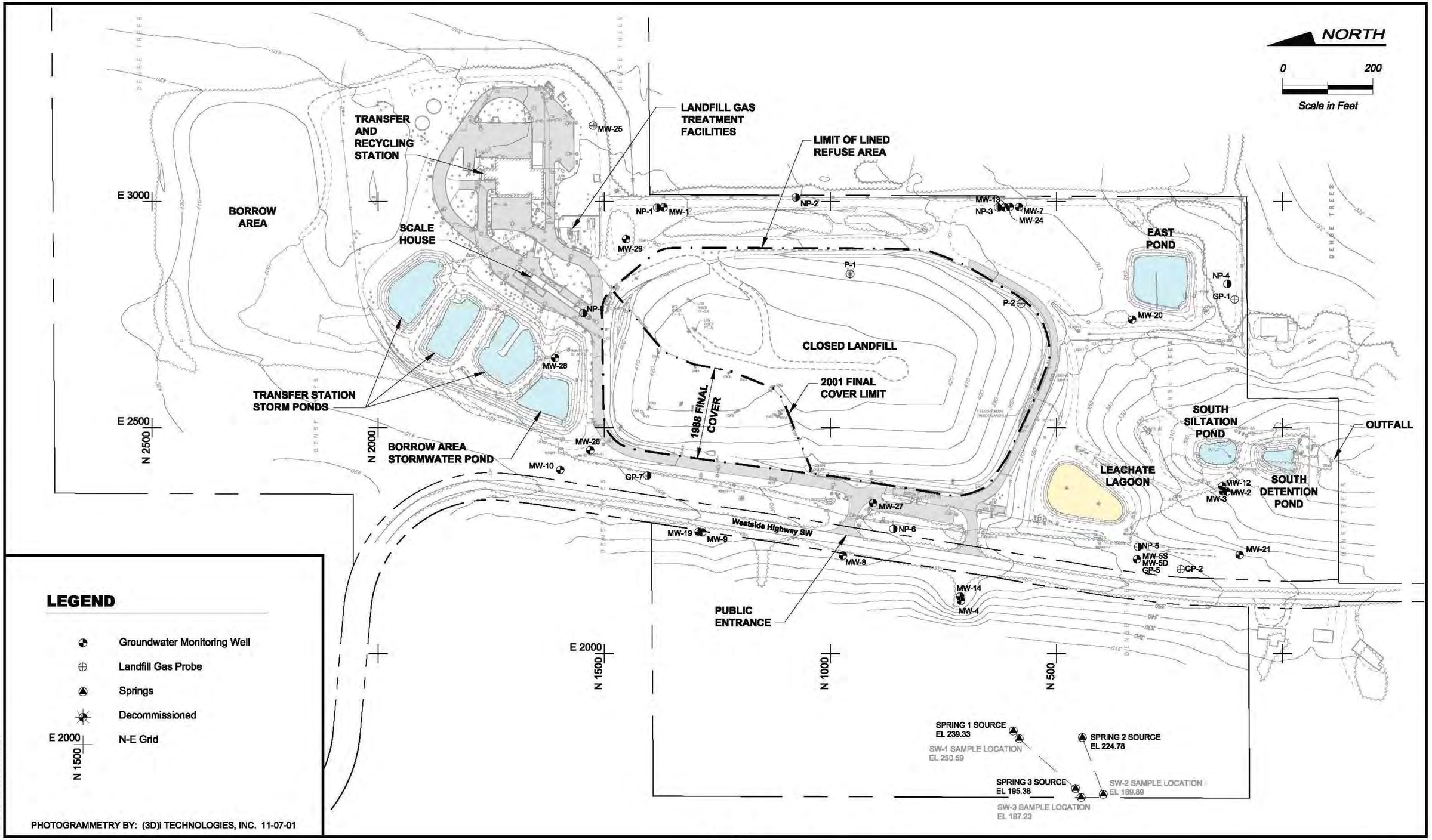
GENERALIZED WATER-TABLE ELEVATIONS FOR ZONE 1 AQUIFER
Source April 1991,
Vashon Groundwater Management Plan

FIGURE 2

Vashon Island Closed Landfill Vicinity Map

King County
Department of
Natural Resources and Parks
Solid Waste Division

Figure 1



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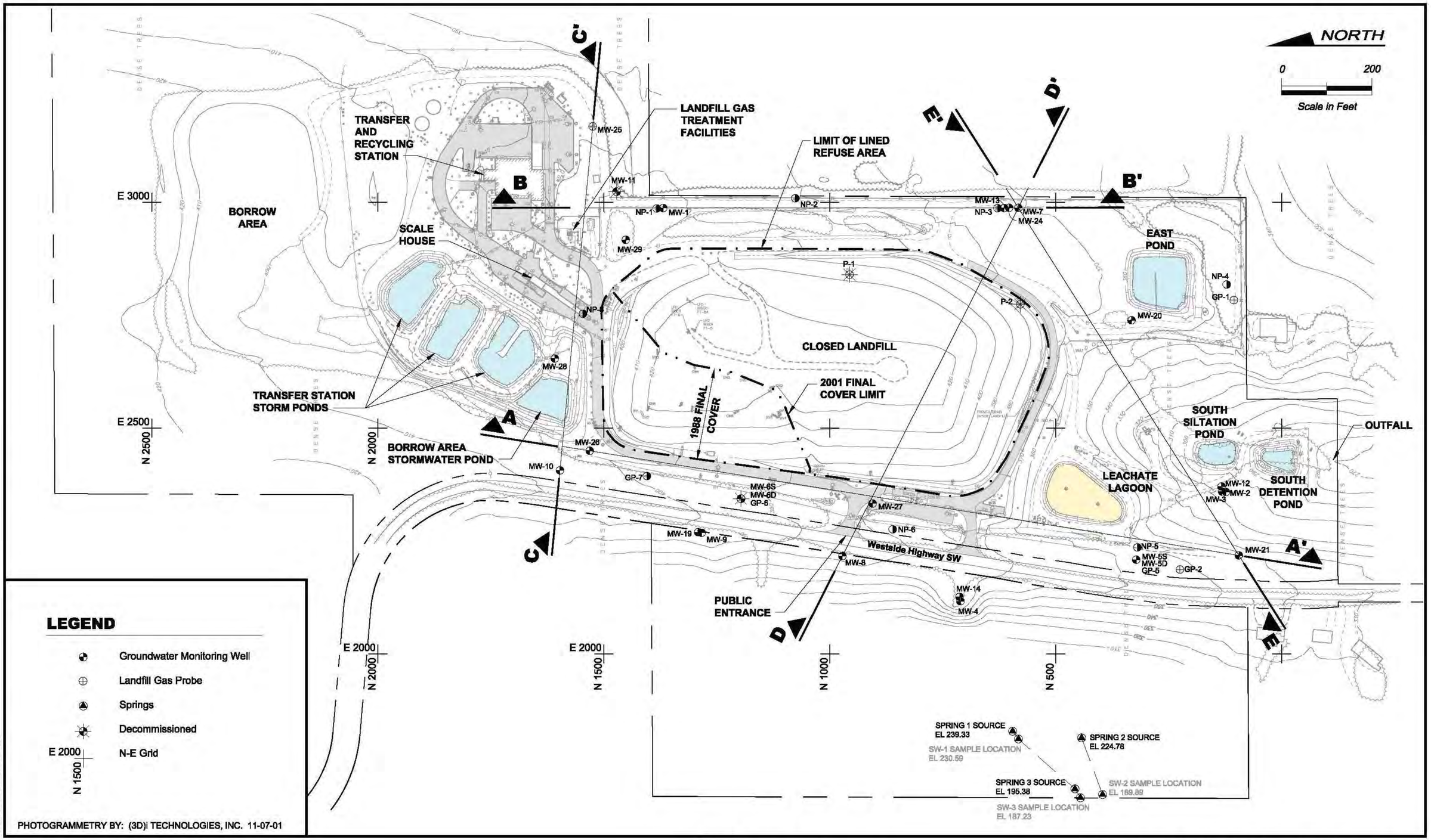
King County
Department of Natural Resources and Parks
Solid Waste Division

Site Map

Source December 2004,
Vashon Island Landfill Hydrogeologic Report Update

Prepared by Berryman & Henigar with UES

Figure 3



King County
Department of Natural Resources and Parks
Solid Waste Division

Hydrogeologic Cross Section Location Map

Source December 2004,
Vashon Island Landfill Hydrogeologic Report Update
Prepared by Berryman & Henigar with UES

Figure 4

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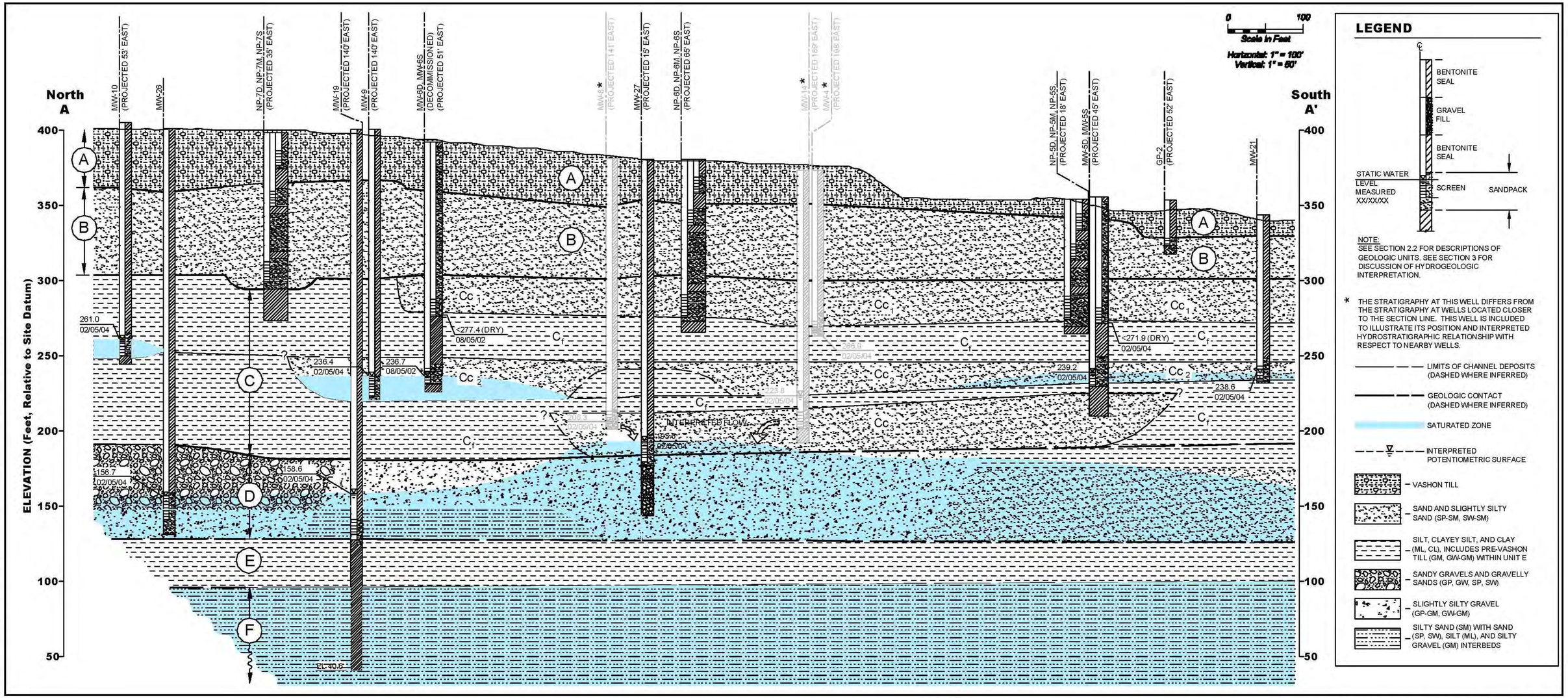

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King County
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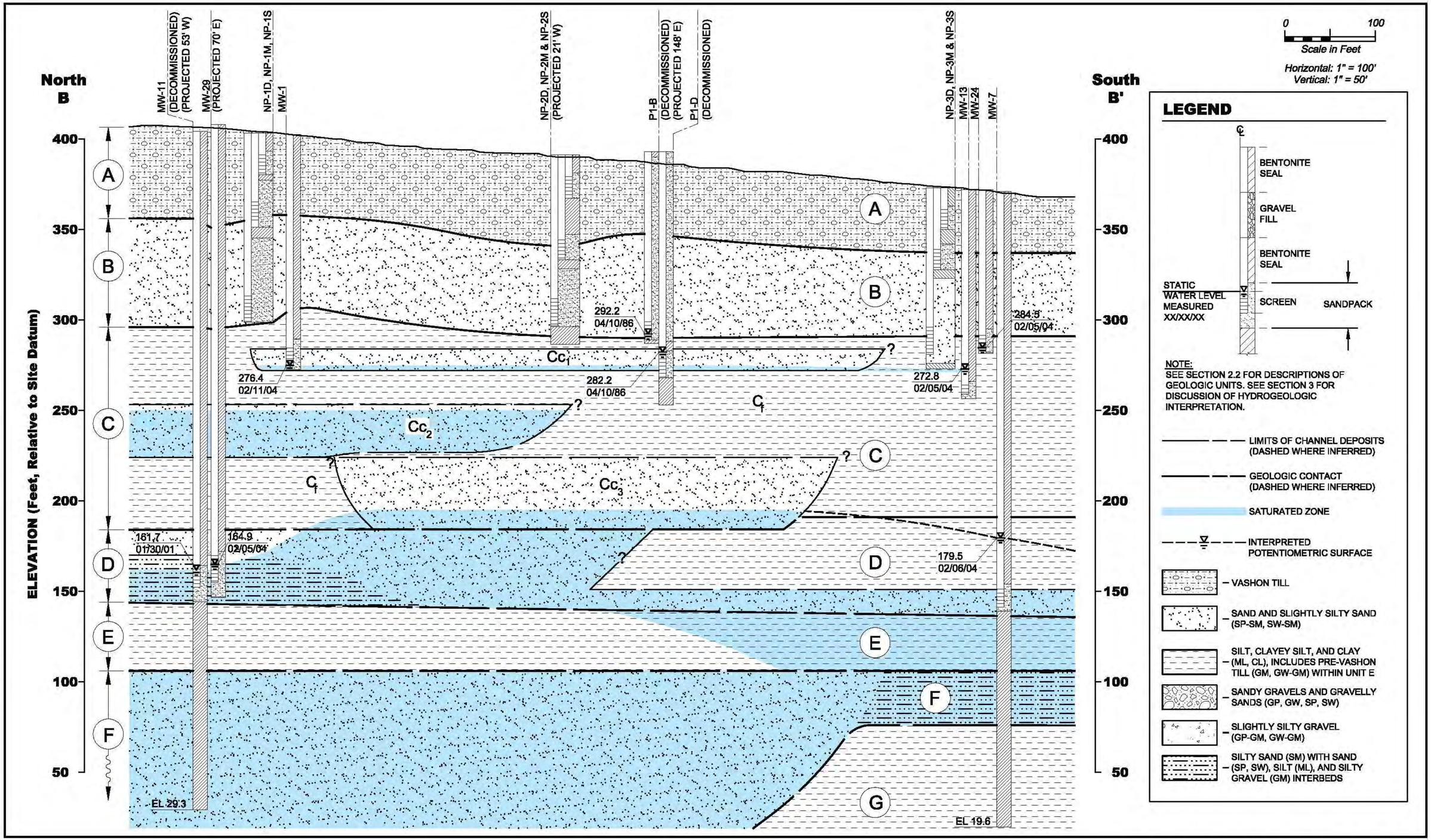
Solid Waste Division

Hydrogeologic Cross Section A-A'

Source December 2004,
Vashon Island Landfill Hydrogeologic Report Update

Prepared by Berryman & Henigar with UES

Figure 5



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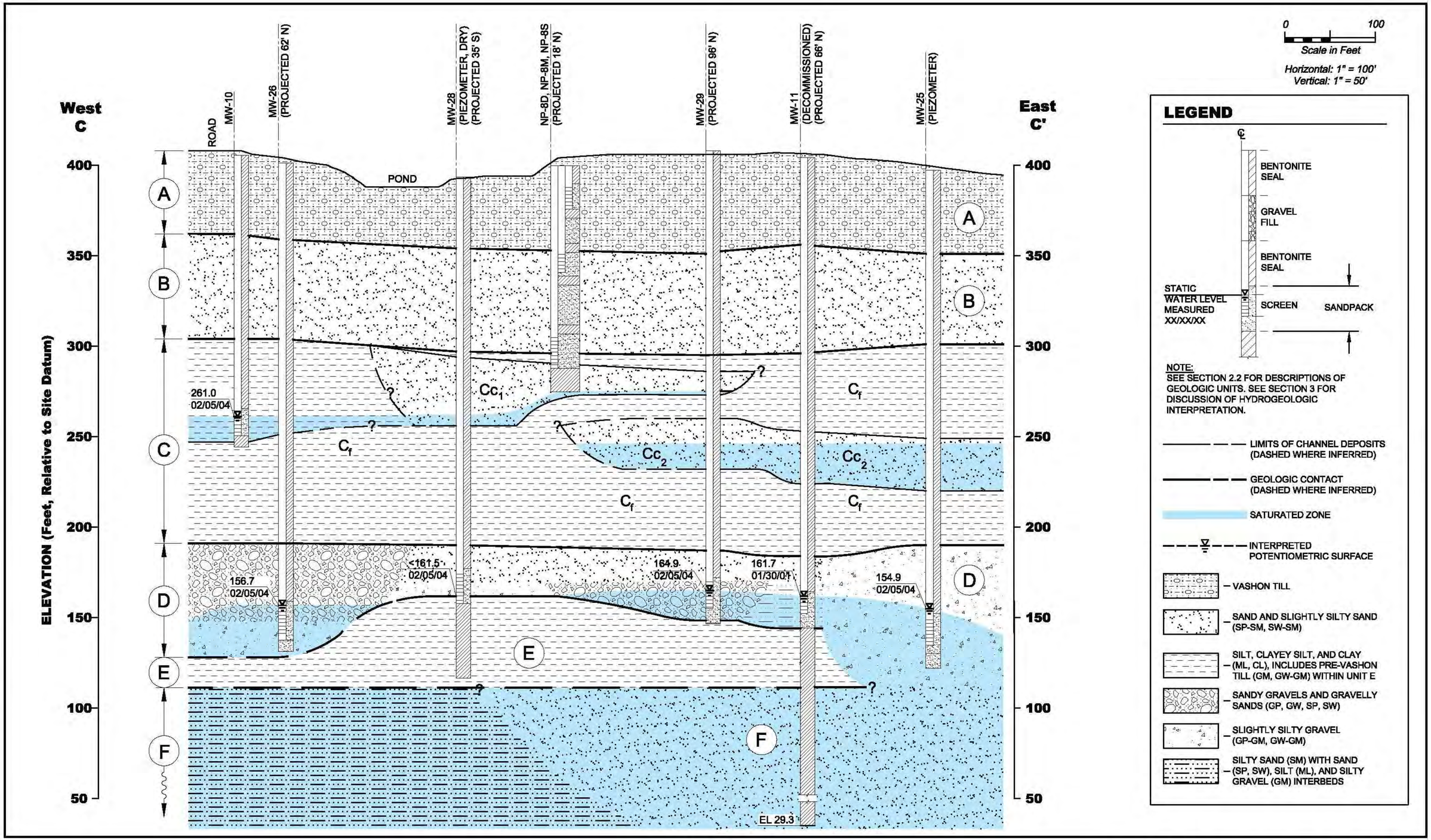
King County
Department of Natural Resources and Parks
Solid Waste Division

Hydrogeologic Cross Section B-B'

Source December 2004,
Vashon Island Landfill Hydrogeologic Report Update

Prepared by Berryman & Henigar with UES

Figure 6



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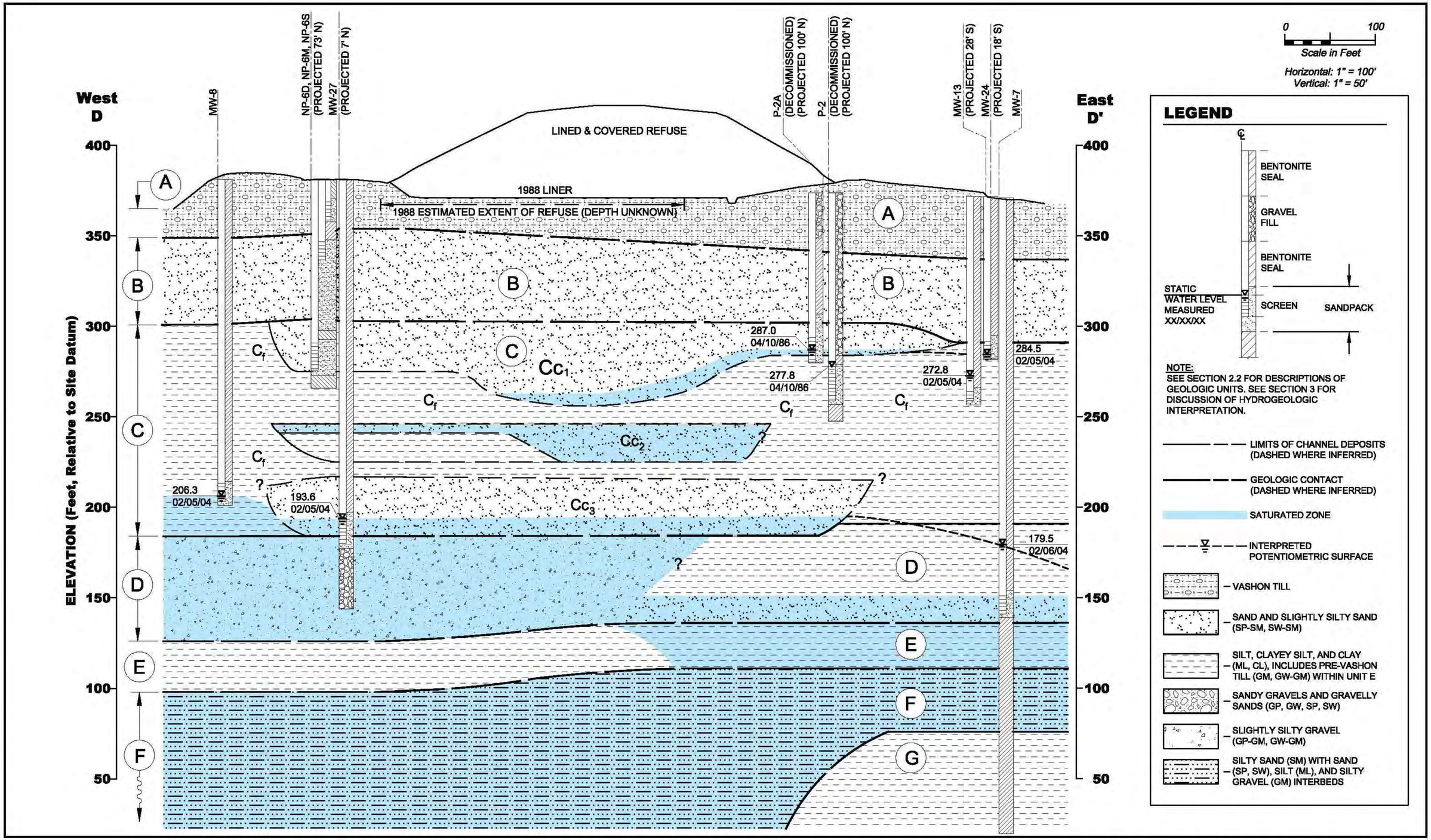
King County
Department of Natural Resources and Parks
Solid Waste Division

Hydrogeologic Cross Section C-C'

Source December 2004,
Vashon Island Landfill Hydrogeologic Report Update

Prepared by Berryman & Henigar with UES

Figure 7



King County
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Hydrogeologic Cross Section D-D'

Source December 2004,
Vashon Island Landfill Hydrogeologic Report Update

Prepared by Berryman & Henigar with UES

Figure 8

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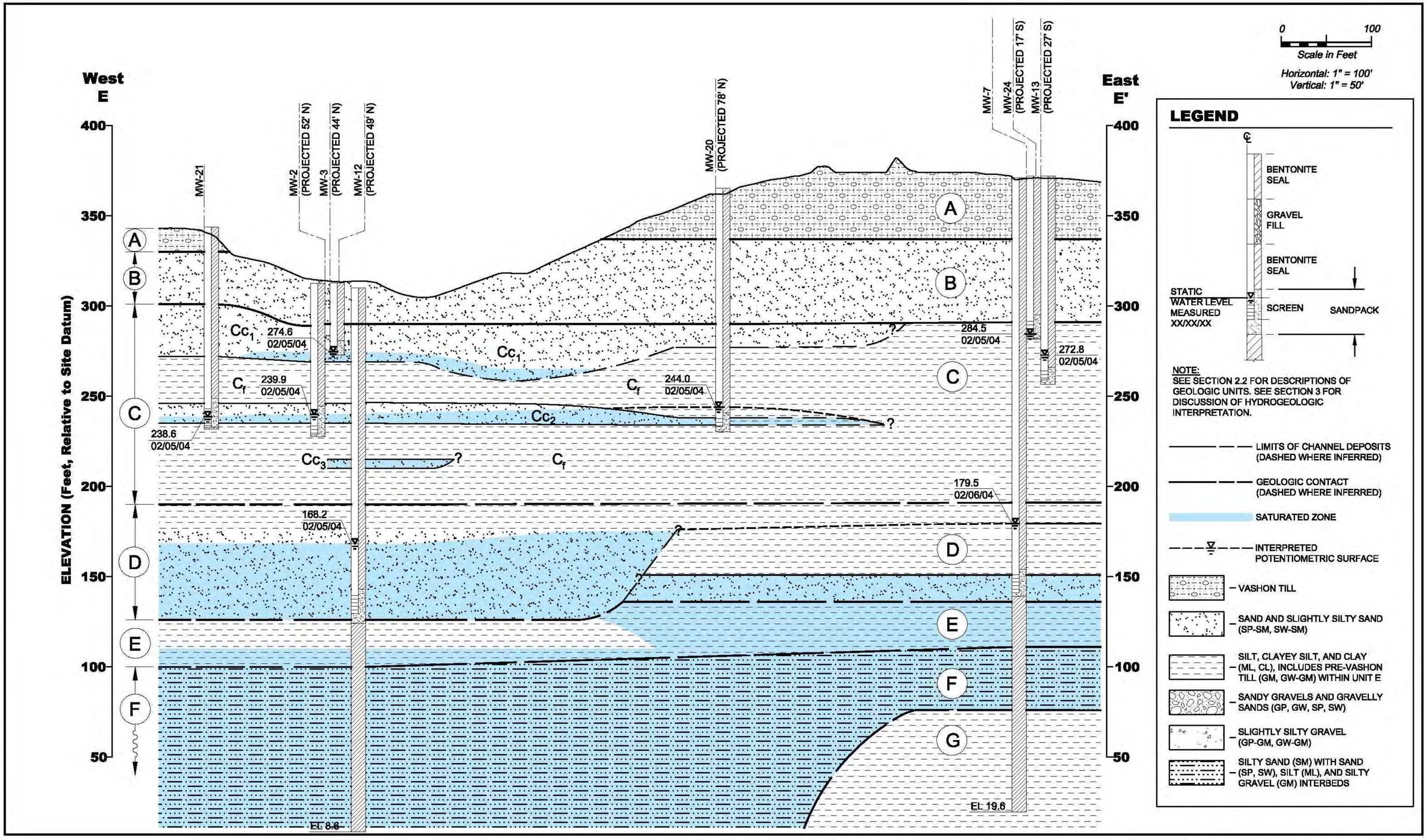

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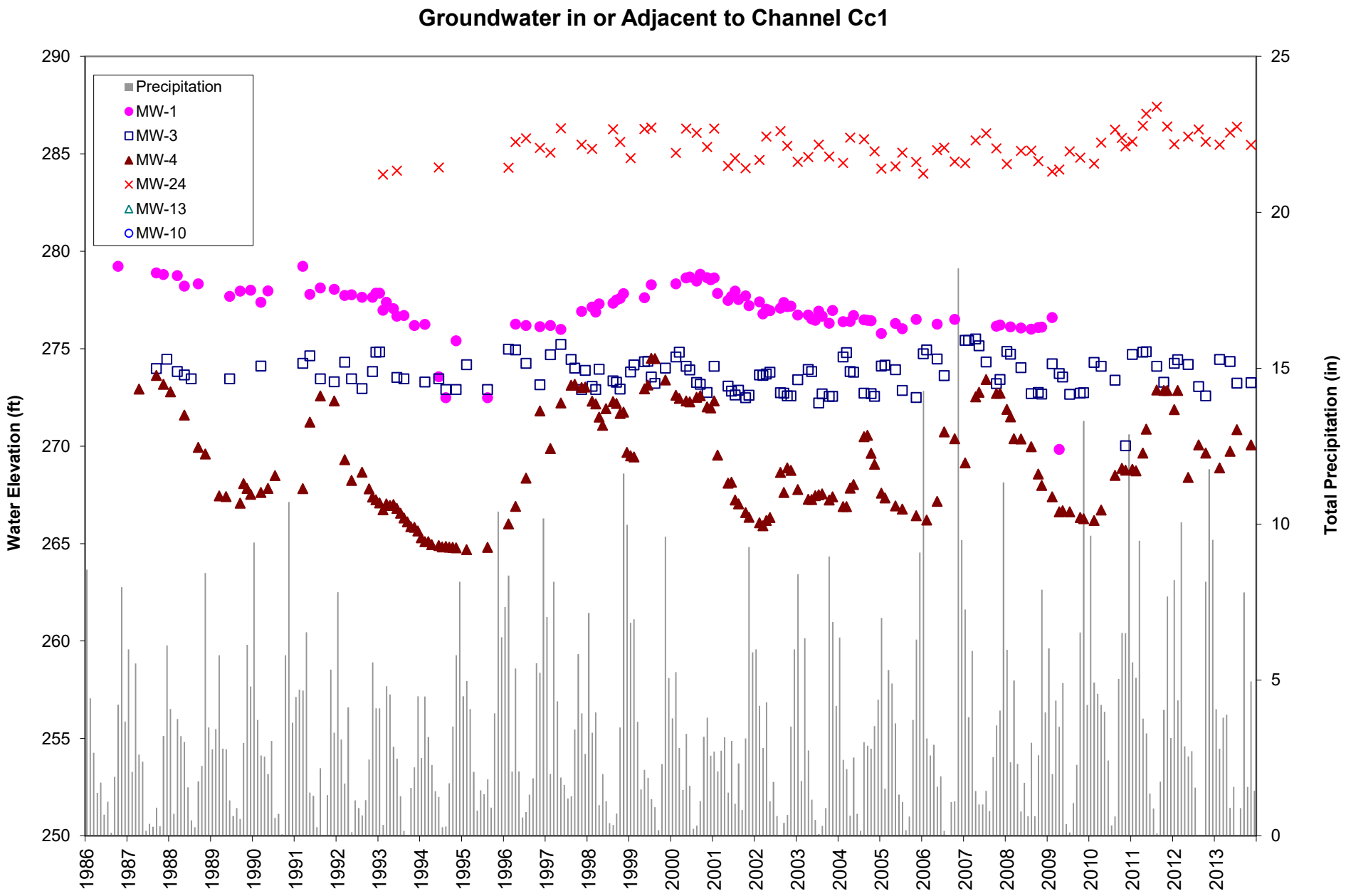
Solid Waste Division

Hydrogeologic Cross Section E-E'

Source December 2004,
Vashon Island Landfill Hydrogeologic Report Update

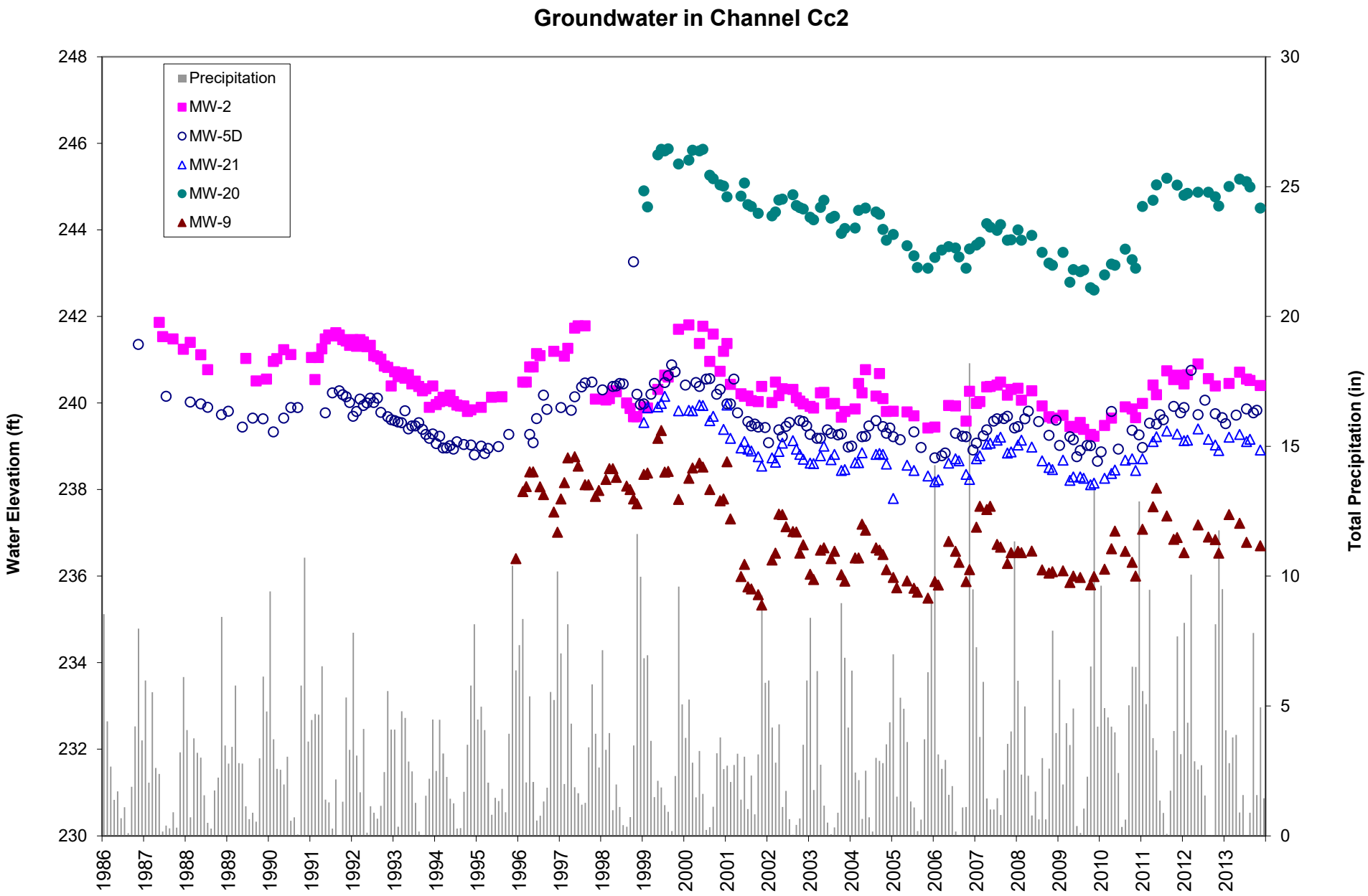
Prepared by Berryman & Henigar with UES

Figure 9



Precipitation Data Source:
Pre 2005: NOAA
Sea-Tac AP Station. Monthly Total Precipitation
2005: KC DNRP. WLRD, Rain Gage, Vashon Landfill

Figure 10



Precipitation Data Source:
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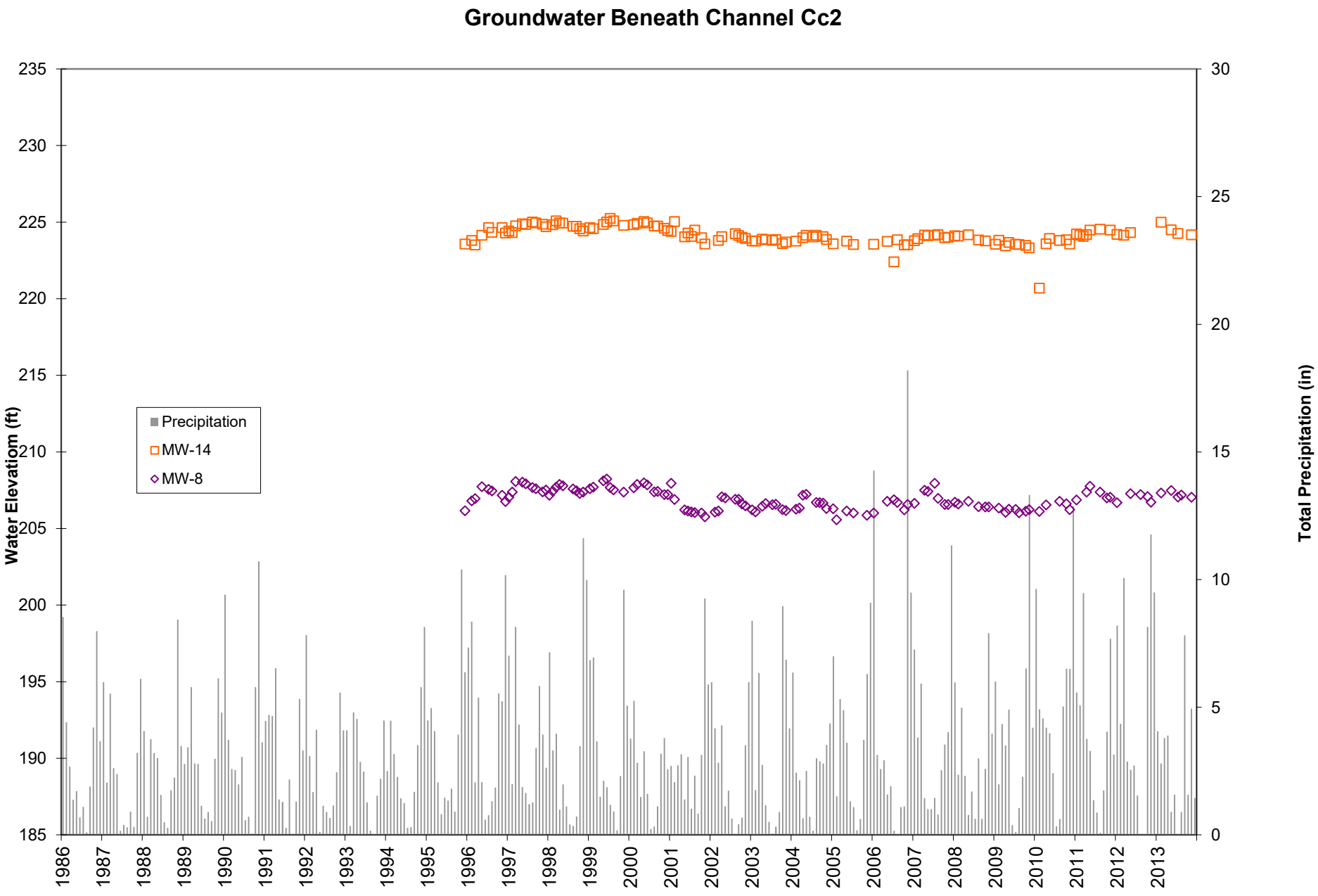
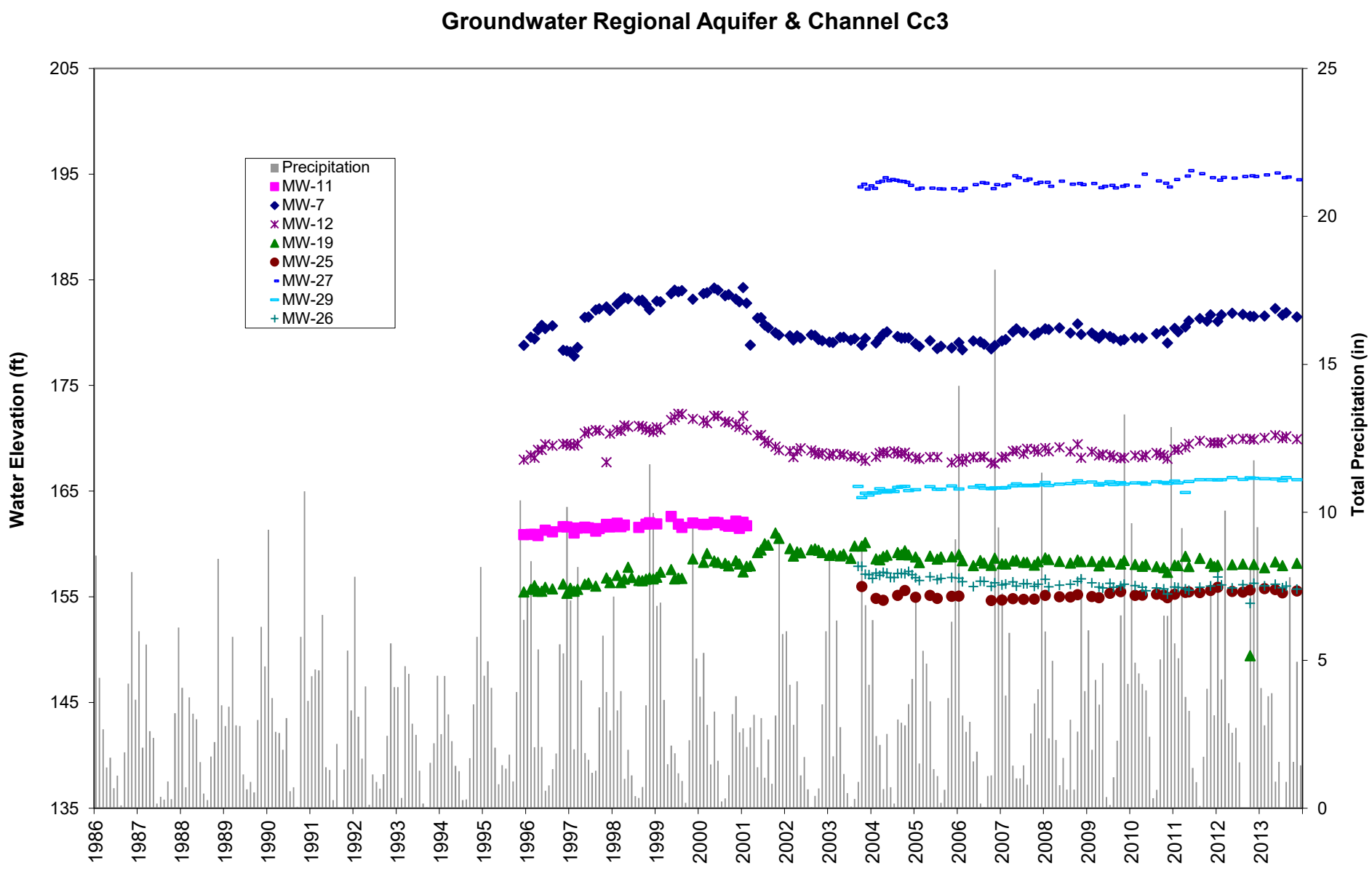
Sea-Tac AP Station. Monthly Total Precipitation
2005: KC DNRP. WLRD, Rain Gage, Vashon Landfill

Figure 11



Precipitation Data Source:
Pre 2005: NOAA
Sea-Tac AP Station. Monthly Total Precipitation
2005: KC DNRP. WLRD, Rain Gage, Vashon Landfill

Figure 12



Precipitation Data Source:
Pre 2005: NOAA
Sea-Tac AP Station. Monthly Total Precipitation
2005: KC DNRP. WLRD, Rain Gage, Vashon Landfill

Figure 13

Appendix A

Groundwater Quality Standards

Water Quality Standards

Analyte	CAS No.	Eff. Date	Federal Drinking Water Standards MCL		Ref.	Ground Water Quality Criteria Criterion*		Eff. Date	Ref.
Primary Standards									
A. Inorganics									
Antimony	7440-36-0	17-Jan-94	0.006	mg/L	FR v. 57 No.138	0.006	mg/L	17-Jan-94	WAC 173-200
Arsenic c	7440-38-2	23-Jan-06	0.01	mg/L	66 FR 28342	0.00005	mg/L	01-Dec-90	WAC 173-200
Asbestos	132207-33-1	30-Jul-92	7	mf/L	FR v. 56 No. 20	7	mf/L	30-Jul-92	WAC 173-200
Barium	7440-39-3	1-Jan-93	2.0	mg/L	FR v. 56 No. 126	1.0	mg/L	01-Dec-90	WAC 173-200
Beryllium	7440-41-7	17-Jan-94	0.004	mg/L	FR v. 57 No.138	0.004	mg/L	17-Jan-94	WAC 173-200
Cadmium	7440-43-9	30-Jul-92	0.005	mg/L	FR v. 56 No. 20	0.005	mg/L	01-Dec-90	WAC 173-200
Chromium	7440-47-3	30-Jul-92	0.1	mg/L	FR v. 56 No. 20	0.05	mg/L	01-Dec-90	WAC 173-200
Copper	7440-50-8	7-Dec-92	1.3**	mg/L	FR v. 57 No. 125	1.0	mg/L	01-Dec-90	WAC 173-200
Cyanide	57-12-5	17-Jan-94	0.2	mg/L	FR v. 57 No.138	0.2	mg/L	17-Jan-94	WAC 173-200
Fluoride	16984-48-8	2-Oct-87	4.0	mg/L	40 CFR 141	4.0	mg/L	01-Dec-90	WAC 173-200
Lead	7439-92-1	7-Dec-92	0.015**	mg/L	FR v. 57 No. 125	0.015	mg/L	01-Dec-90	WAC 173-200
Mercury	7439-97-6	2-Apr-86	0.002	mg/L	40 CFR 141	0.002	mg/L	01-Dec-90	WAC 173-200
Nickel	7440-02-0	17-Jan-94	0.1	mg/L	FR v. 57 No.138	0.1	mg/L	17-Jan-94	WAC 173-200
Nitrate	14797-55-8	2-Apr-86	10.0	mg/L	FR v. 56 No. 20	10.0	mg/L	01-Dec-90	WAC 173-200
Nitrate and Nitrite	14797-55-8+147	30-Jul-92	10.0	mg/L	FR v. 56 No. 20	10.0	mg/L	30-Jul-92	WAC 173-200
Nitrite	14797-65-0	30-Jul-92	1	mg/L	FR v. 56 No. 20	1.0	mg/L	30-Jul-92	WAC 173-200
Selenium	7782-49-2	30-Jul-92	0.05	mg/L	FR v. 56 No. 20	0.01	mg/L	01-Dec-90	WAC 173-200
Silver	7440-22-4		--			0.05	mg/L	01-Dec-90	WAC 173-200
Sodium	7440-23-5	20-Sep-04	20***	mg/L		20***	mg/L	03-Jul-04	WAC 246-290
Thallium	7440-28-0	17-Jan-94	0.002	mg/L	FR v. 57 No.138	0.002	mg/L	17-Jan-94	WAC 173-200
Total Coliforms		24-Dec-75	1/100	mL	40 CFR 141	1/100	mL	01-Dec-90	WAC 173-200
Turbidity		24-Dec-75	1	NTU	40 CFR 141	--	--	--	--
B. Organic Chemicals									
Alachlor	15972-60-8	30-Jul-92	2	ug/L	FR v. 56 No. 20	2	ug/L	30-Jul-92	WAC 173-200
Atrazine	1912-24-9	30-Jul-92	3	ug/L	FR v. 56 No. 20	3	ug/L	30-Jul-92	WAC 173-200
Benzene c	71-43-2	9-Jan-89	5	ug/L	40 CFR 141	1	ug/L	01-Dec-90	WAC 173-200
Bis(2-ethylhexyl)phthalate	117-81-7	17-Jan-94	6	ug/L	FR v. 57 No.138	6	ug/L	01-Dec-90	WAC 173-200
Bromodichloromethane c	75-27-4		--			0.3	ug/L	01-Dec-90	WAC 173-200
Bromoform c	75-25-2		--			5	ug/L	01-Dec-90	WAC 173-200
Carbofuran	1563-66-2	30-Jul-92	40	ug/L	FR v. 56 No. 20	40	ug/L	30-Jul-92	WAC 173-200
Carbon Tetrachloride c	56-23-5	9-Jan-89	5	ug/L	40 CFR 141	0.3	ug/L	01-Dec-90	WAC 173-200
Chlordane c	5103-71-9	30-Jul-92	2	ug/L	FR v. 56 No. 20	0.06	ug/L	01-Dec-90	WAC 173-200
Chlorobenzene	108-90-7	30-Jul-92	100	ug/L	FR v. 56 No. 20	100	ug/L	30-Jul-92	WAC 173-200
Chlorodibromomethane c	124-48-1		--			0.5	ug/L	01-Dec-90	WAC 173-200
Chloroform c	67-66-3		--			7	ug/L	01-Dec-90	WAC 173-200
2,4-D	94-75-7	30-Jul-92	70	ug/L	FR v. 56 No. 20	70	ug/L	01-Dec-90	WAC 173-200
Dalapon	75-99-0	17-Jan-94	200	ug/L	FR v. 57 No.138	200	ug/L	17-Jan-94	WAC 173-200
1,2-Dibromo-3-chloropropane	96-12-8	30-Jul-92	0.2	ug/L	FR v. 56 No. 20	0.2	ug/L	30-Jul-92	WAC 173-200
1,2-Dichlorobenzene	95-50-1	30-Jul-92	600	ug/L	FR v. 56 No. 20	600	ug/L	30-Jul-92	WAC 173-200
1,4-Dichlorobenzene c	106-46-7	9-Jan-89	75	ug/L	40 CFR 141	4	ug/L	01-Dec-90	WAC 173-200
1,1-Dichloroethane c	75-34-3		--			1	ug/L	01-Dec-90	WAC 173-200
1,2-Dichloroethane c	107-06-2	9-Jan-89	5	ug/L	40 CFR 141	0.5	ug/L	01-Dec-90	WAC 173-200
1,1-Dichloroethene	75-35-4	9-Jan-89	7	ug/L	40 CFR 141	7	ug/L	01-Dec-90	WAC 173-200
c-1,2-Dichloroethene	156-59-2	30-Jul-92	70	ug/L	FR v. 56 No. 20	70	ug/L	30-Jul-92	WAC 173-200
t-1,2-Dichloroethene	156-60-5	30-Jul-92	100	ug/L	FR v. 56 No. 20	100	ug/L	30-Jul-92	WAC 173-200
1,2-Dichloropropane c	78-87-5	30-Jul-92	5	ug/L	FR v. 56 No. 20	0.6	ug/L	01-Dec-90	WAC 173-200
1,3-Dichloropropene tot. c	542-75-6		--			0.2	ug/L	01-Dec-90	WAC 173-200
Di(ethylhexyl)adipate	103-23-1	17-Jan-94	400	ug/L	FR v. 57 No.138	400	ug/L	17-Jan-94	WAC 173-200
Dinoseb	88-85-7	17-Jan-94	7	ug/L	FR v. 57 No.138	7	ug/L	17-Jan-94	WAC 173-200
Diquat	231-36-7	17-Jan-94	20	ug/L	FR v. 57 No.138	20	ug/L	17-Jan-94	WAC 173-200
Endothall	145-73-3	17-Jan-94	100	ug/L	FR v. 57 No.138	100	ug/L	17-Jan-94	WAC 173-200
Endrin	72-20-8	17-Jan-94	2	ug/L	40 CFR 141	0.2	ug/L	01-Dec-90	WAC 173-200
Ethylbenzene	100-41-4	30-Jul-92	700	ug/L	FR v. 56 No. 20	700	ug/L	30-Jul-92	WAC 173-200
Ethylene dibromide c	106-93-4	30-Jul-92	0.05	ug/L	FR v. 56 No. 20	0.001	ug/L	01-Dec-90	WAC 173-200
Glyphosate	1071-83-6	17-Jan-94	70	ug/L	FR v. 57 No.138	70	ug/L	17-Jan-94	WAC 173-200
Heptachlor c	76-44-8	30-Jul-92	0.4	ug/L	FR v. 56 No. 20	0.02	ug/L	01-Dec-90	WAC 173-200
Heptachlor epoxide c	1024-57-3	30-Jul-92	0.2	ug/L	FR v. 56 No. 20	0.009	ug/L	01-Dec-90	WAC 173-200
Hexachlorobenzene	118-74-1	17-Jan-94	1	ug/L	FR v. 57 No.138	0.05	ug/L	01-Dec-90	WAC 173-200
Hexachlorocyclopentadiene (HEX)	77-47-4	17-Jan-94	50	ug/L	FR v. 57 No.138	50	ug/L	17-Jan-94	WAC 173-200
Lindane c	58-89-9	30-Jul-92	0.2	ug/L	FR v. 56 No. 20	0.06	ug/L	01-Dec-90	WAC 173-200

Water Quality Standards

Analyte	CAS No.	Eff. Date	Federal Drinking Water Standards MCL		Ref.	Ground Water Quality Criteria Criterion*		Eff. Date	Ref.
Methoxychlor	72-43-5	30-Jul-92	40	ug/L	FR v. 56 No. 20	40	ug/L	30-Jul-92	WAC 173-200
Methylene Chloride c	75-09-2	17-Jan-94	5	ug/L	FR v. 57 No.138	5	ug/L	17-Jan-94	WAC 173-200
Oxamyl (vydate)	23135-22-0	17-Jan-94	200	ug/L	FR v. 57 No.138	200	ug/L	17-Jan-94	WAC 173-200
PAHs [Benzo(a)pyrene]		17-Jan-94	0.2	ug/l	FR v. 57 No.138	0.01	ug/L	17-Jan-94	WAC 173-200
PCBs c	27323-18-8	30-Jul-92	0.5	ug/L	FR v. 56 No. 20	0.01	ug/L	01-Dec-90	WAC 173-200
Pentachlorophenol	87-86-5	1-Jan-93	1	ug/L	FR v. 56 No. 126	1	ug/L	01-Jan-93	WAC 173-200
Picloram	1918-02-1	17-Jan-94	500	ug/L	FR v. 57 No.138	500	ug/L	17-Jan-94	WAC 173-200
Simazine	122-34-9	17-Jan-94	4	ug/L	FR v. 57 No.138	4	ug/L	17-Jan-94	WAC 173-200
Styrene	100-42-5	30-Jul-92	100	ug/L	FR v. 56 No. 20	100	ug/L	30-Jul-92	WAC 173-200
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	17-Jan-94	3E-05	ug/L	FR v. 57 No.138	0.0000006	ug/L	01-Dec-90	WAC 173-200
Tetrachloroethylene c	127-18-4	30-Jul-92	5	ug/L	FR v. 56 No. 20	0.8	ug/L	30-Jul-92	WAC 173-200
Toluene	108-88-3	30-Jul-92	1000	ug/L	FR v. 56 No. 20	1000	ug/L	30-Jul-92	WAC 173-200
Total Trihalomethanes c	75-27-4, 75-25-2	29-Nov-79	100	ug/L	40 CFR 141	--	--	--	--
Toxaphene c	8001-35-2	30-Jul-92	3	ug/L	FR v. 56 No. 20	0.08	ug/L	01-Dec-90	WAC 173-200
2,4,5-TP	93-72-1	30-Jul-92	50	ug/L	FR v. 56 No. 20	100	ug/L	01-Dec-90	WAC 173-200
1,2,4-Trichlorobenzene	120-82-1	17-Jan-94	70	ug/L	FR v. 57 No.138	70	ug/L	17-Jan-94	WAC 173-200
1,1,1-Trichloroethane	71-55-6	9-Jan-89	200	ug/L	40 CFR 141	200	ug/L	01-Dec-90	WAC 173-200
1,1,2-Trichloroethane	79-00-5	17-Jan-94	5	ug/L	FR v. 57 No.138	5	ug/L	17-Jan-94	WAC 173-200
Trichloroethylene (TCE) c	79-01-6	9-Jan-89	5	ug/L	40 CFR 141	3	ug/L	01-Dec-90	WAC 173-200
Vinyl chloride c	75-01-4	9-Jan-89	2	ug/L	40 CFR 141	0.02	ug/L	01-Dec-90	WAC 173-200
Xylenes (total)	1330-20-7	30-Jul-92	10000	ug/L	FR v. 56 No. 20	10000	ug/L	30-Jul-92	WAC 173-200
C. Radionuclides and Radioactivity									
Radium 226 & Radium 228		9-Jul-76	5	pCi/L	FR v. 41 No. 133	5	pCi/L	01-Dec-90	WAC 173-200
Radium 226	13982-63-3		--			3	pCi/L	01-Dec-90	WAC 173-200
Radium 228	15262-20-1		--			5	pCi/L	01-Dec-90	WAC 173-200
Gross Alpha particle activity		9-Jul-76	15	pCi/L	FR v. 41 No. 133	15	pCi/L	01-Dec-90	WAC 173-200
Tritium	10028-17-8	9-Jul-76	20,000	pCi/L	FR v. 41 No. 133	20,000	pCi/L	01-Dec-90	WAC 173-200
Strontium	7440-24-6	9-Jul-76	8	pCi/L	FR v. 41 No. 133	8	pCi/L	01-Dec-90	WAC 173-200
Gross Beta particle activity		9-Jul-76	50	pCi/L	FR v. 41 No. 133	50	pCi/L	01-Dec-90	WAC 173-200
D. Additional Carcinogens Listed in Groundwater Criteria									
Acrylamide	79-06-1		--			0.02	ug/L	01-Dec-90	WAC 173-200
Acrylonitrile	107-13-1		--			0.07	ug/L	01-Dec-90	WAC 173-200
Aldrin	309-00-2		--			0.005	ug/L	01-Dec-90	WAC 173-200
Aniline	62-53-3		--			14	ug/L	01-Dec-90	WAC 173-200
Aramite	140-57-8		--			3	ug/L	01-Dec-90	WAC 173-200
Azobenzene	103-33-3		--			0.7	ug/L	01-Dec-90	WAC 173-200
Benzidine	92-87-5		--			0.0004	ug/L	01-Dec-90	WAC 173-200
Benzo(a)pyrene	50-32-8		--			0.008	ug/L	01-Dec-90	WAC 173-200
Benzotrichloride	98-07-7		--			0.007	ug/L	01-Dec-90	WAC 173-200
Benzyl chloride	100-44-7		--			0.5	ug/L	01-Dec-90	WAC 173-200
Bis(chloroethyl)ether	111-44-4		--			0.07	ug/L	01-Dec-90	WAC 173-200
Bis(chloromethyl)ether	542-88-1		--			0.0004	ug/L	01-Dec-90	WAC 173-200
Carbazole	86-74-8		--			5	ug/L	01-Dec-90	WAC 173-200
4-Chloro-2-methyl analine	95-69-2		--			0.1	ug/L	01-Dec-90	WAC 173-200
4-Chloro-2-methyl analine hydrochlo	3165-93-3		--			0.2	ug/L	01-Dec-90	WAC 173-200
o-Chloronitrobenzene	88-73-3		--			3	ug/L	01-Dec-90	WAC 173-200
p-Chloronitrobenzene	100-00-5		--			5	ug/L	01-Dec-90	WAC 173-200
Chlorthaloni	1897-45-6		--			30	ug/L	01-Dec-90	WAC 173-200
Diallate	2303-16-4		--			1	ug/L	01-Dec-90	WAC 173-200
DDT (includes DDE and DDD)	50-29-3, 72-55-9, 72-54-8		--			0.3	ug/L	01-Dec-90	WAC 173-200
1,2-Dibromomethane	106-93-4		--			0.001	ug/L	01-Dec-90	WAC 173-200
3,3'-Dichlorobenzidine	91-94-1		--			0.2	ug/L	01-Dec-90	WAC 173-200
Dichlorovos	62-73-7		--			0.3	ug/L	01-Dec-90	WAC 173-200
Dieldrin	60-57-1		--			0.005	ug/L	01-Dec-90	WAC 173-200
3,3'-Dimethoxybenzidine	119-90-4		--			6.0	ug/L	01-Dec-90	WAC 173-200
3,3-Dimethylbenzidine	119-93-7		--			0.007	ug/L	01-Dec-90	WAC 173-200
1,2-Dimethylhydrazine	540-73-8		--			60	ug/L	01-Dec-90	WAC 173-200
2,4-Dinitrotoluene	121-14-2		--			0.1	ug/L	01-Dec-90	WAC 173-200
2,6-Dinitrotoluene	606-20-2		--			0.1	ug/L	01-Dec-90	WAC 173-200
1,4-Dioxane	123-91-1		--			7	ug/L	01-Dec-90	WAC 173-200
1,2-Diphenylhydrazine	122-66-7		--			0.09	ug/L	01-Dec-90	WAC 173-200

Water Quality Standards

Analyte	CAS No.	Eff. Date	Federal Drinking Water Standards MCL		Ref.	Ground Water Quality Criteria Criterion*		Eff. Date	Ref.
Direct Black 38	1937-37-7		--			0.009	ug/L	01-Dec-90	WAC 173-200
Direct Blue 6	2602-46-2		--			0.009	ug/L	01-Dec-90	WAC 173-200
Direct Brown 95	16071-86-6		--			0.009	ug/L	01-Dec-90	WAC 173-200
Epichlorohydrin	106-89-8		--			8	ug/L	01-Dec-90	WAC 173-200
Ethyl acrylate	140-88-5		--			2	ug/L	01-Dec-90	WAC 173-200
Ethylene thiourea	96-45-7		--			2	ug/L	01-Dec-90	WAC 173-200
Folpet	133-07-3		--			20	ug/L	01-Dec-90	WAC 173-200
Furazolidone	67-45-8		--			0.02	ug/L	01-Dec-90	WAC 173-200
Furium	531-82-8		--			0.002	ug/L	01-Dec-90	WAC 173-200
Furmecyclox	60568-05-0		--			3	ug/L	01-Dec-90	WAC 173-200
Hexachlorocyclohexane (alpha)	319-84-6		--			0.001	ug/L	01-Dec-90	WAC 173-200
Hexachlorocyclohexane (technical)	608-73-1		--			0.05	ug/L	01-Dec-90	WAC 173-200
Hexachlorodibenzo-p-dioxin, mix	34465-46-8		--			0.00001	ug/L	01-Dec-90	WAC 173-200
Hydrazine/hydrazine sufate	302-01-2/10034-93-2		--			0.03	ug/L	01-Dec-90	WAC 173-200
2-Methoxy-5-nitroanaline	99-59-2		--			2.0	ug/L	01-Dec-90	WAC 173-200
2-Methylanaline	95-53-4		--			0.2	ug/L	01-Dec-90	WAC 173-200
2-Methylanaline hydrochloride	636-21-5		--			0.5	ug/L	01-Dec-90	WAC 173-200
4,4'-Methylene bis(N,N'-dimethyl) an	101-61-1		--			2.0	ug/L	01-Dec-90	WAC 173-200
Mirex	2385-85-5		--			0.05	ug/L	01-Dec-90	WAC 173-200
Nitrofurazone	59-87-0		--			0.06	ug/L	01-Dec-90	WAC 173-200
N-Nitrosodiethanolamine	1116-54-7		--			0.03	ug/L	01-Dec-90	WAC 173-200
N-Nitrosodiethylamine	55-18-5		--			0.0005	ug/L	01-Dec-90	WAC 173-200
N-Nitrosodimethylamine	62-75-9		--			0.002	ug/L	01-Dec-90	WAC 173-200
N-Nitrosodiphenylamine	86-30-6		--			17.0	ug/L	01-Dec-90	WAC 173-200
N-Nitroso-di-n-propylamine	621-64-7		--			0.01	ug/L	01-Dec-90	WAC 173-200
N-Nitrosopyrrolidine	930-55-2		--			0.04	ug/L	01-Dec-90	WAC 173-200
N-Nitroso-di-n-butylamine	924-16-3		--			0.02	ug/L	01-Dec-90	WAC 173-200
N-Nitroso-N-methylethylamine	10595-95-6		--			0.004	ug/L	01-Dec-90	WAC 173-200
PBBs	59536-65-1		--			0.01	ug/L	01-Dec-90	WAC 173-200
o-Phenylenediamine	95-54-5		--			0.005	ug/L	01-Dec-90	WAC 173-200
Propylene oxide	75-56-9]		--			0.01	ug/L	01-Dec-90	WAC 173-200
p,a,a,a-Tetrachlorotoluene	5216-25-1		--			0.004	ug/L	01-Dec-90	WAC 173-200
2,4-Toluenediamine	95-80-7		--			0.002	ug/L	01-Dec-90	WAC 173-200
o-Toluidine	95-53-4		--			0.2	ug/L	01-Dec-90	WAC 173-200
2,4,6-Trichlorophenol	88-06-2		--			4.0	ug/L	01-Dec-90	WAC 173-200
Trimethyl phosphate	512-56-1		--			2.0	ug/L	01-Dec-90	WAC 173-200
Secondary Standards									
Aluminum	7429-90-5	30-Jul-92	0.05-0.2	mg/L	FR v. 56 No. 20	0.05-0.2	mg/L	30-Jul-92	WAC 173-200
Copper	7440-50-8	7-Dec-92	1.0	mg/L	FR v. 57 No. 125	1.0	mg/L	01-Dec-90	WAC 173-200
Iron	7439-89-6	2-Apr-86	0.3	mg/L	40 CFR 143	0.3	mg/L	01-Dec-90	WAC 173-200
Manganese	7439-96-5	2-Apr-86	0.05	mg/L	40 CFR 143	0.05	mg/L	01-Dec-90	WAC 173-200
Color		2-Apr-86	15	units	40 CFR 143	15	units	01-Dec-90	WAC 173-200
pH	12408-02-5	2-Apr-86	6.5-8.5	units	40 CFR 143	6.5-8.5	units	01-Dec-90	WAC 173-200
Specific Conductivity			--			700	uS/cm		WAC 246-290
Total Dissolved Solids		2-Apr-86	500	mg/L	40 CFR 143	500	mg/L	01-Dec-90	WAC 173-200
Chloride	16887-00-6	2-Apr-86	250	mg/L	40 CFR 143	250	mg/L	01-Dec-90	WAC 173-200
Fluoride	16984-48-8	2-Apr-86	2.0	mg/L	40 CFR 143	p			
Silver	7440-22-4	30-Jul-92	0.1	mg/L	FR v. 56 No. 20	p			
Sulfate	14808-79-8	2-Apr-86	250	mg/L	40 CFR 143	250	mg/L	01-Dec-90	WAC 173-200
Surfactants		2-Apr-86	0.5	mg/L	40 CFR 143	0.5	mg/L	01-Dec-90	WAC 173-200
Corrosivity		2-Apr-86	non-corrosive		40 CFR 143	non-corrosive		01-Dec-90	WAC 173-200
Odor-Threshold		2-Apr-86	3	units	40 CFR 143	3	units	01-Dec-90	WAC 173-200
Zinc	7440-66-6	2-Apr-86	5.0	mg/L	40 CFR 143	5.0	mg/L	01-Dec-90	WAC 173-200

NOTES: pCi/L=picocuries per liter
mg/L=milligrams per liter
mf/L=million fibers per liter
p=Listed as a Primary Standard
--'=no standard established
i=listed individually as groundwater criteria
c=Listed as a carcinogen in the Ground Water Criteria
MCL=Maximum Contaminant Level
*=Criteria shall be the most stringent concentration of the Federal MCLG, MCL; or State MCL
MCLG= Maximum Contaminant Level Goal
**=treatment technique in lieu of an MCL
***= A Drinking Water Advisory, not an enforceable standard.
Ground Water Quality Criteria=Water Quality Standards for Ground Waters of the State of Washington

Compiled by KCSWD 1/12/94. Revised 10/5/09

Appendix B

Exceedance Reports

Table 3

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES
(January 1, 2013 to March 31, 2013)

Regional Aquifer & Channel Cc3

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Iron	(mg/L)	MW-29	02/20/13	0.773	F2, SGW2
Manganese	(mg/L)	MW-7	02/07/13	0.135	F2, SGW2
		MW-19	02/14/13	0.599	F2, SGW2
		MW-26	02/08/13	0.0574	F2, SGW2
		MW-29	02/20/13	0.123	F2, SGW2
Arsenic	(mg/L)	MW-7	02/07/13	0.00583	SGW1
		MW-19	02/14/13	0.00146	SGW1
		MW-26	02/08/13	0.0033	SGW1
		MW-29	02/20/13	0.00447	SGW1
		MW-12	02/20/13	0.00212	SGW1

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES
April 1, 2013 to June 30, 2013)

Regional Aquifer & Channel Cc3

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Iron	(mg/L)	MW-29	05/20/13	0.737	SGW2
Manganese	(mg/L)	MW-7	05/08/13	0.148	SGW2
		MW-19	05/07/13	0.491	SGW2
		MW-26	05/13/13	0.052	SGW2
		MW-29	05/20/13	0.0825	SGW2
Arsenic	(mg/L)	MW-7	05/08/13	0.0056	SGW1
		MW-19	05/07/13	0.00144	SGW1
		MW-26	05/13/13	0.00303	SGW1
		MW-29	05/20/13	0.00422	SGW1
		MW-12	05/09/13	0.0056	SGW1

Table 3

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES
(July 1, 2013 to September 30, 2013)

Regional Aquifer & Channel Cc3

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Iron	(mg/L)	MW-29	08/15/13	0.747	SGW2
Manganese	(mg/L)	MW-7	08/06/13	0.117	SGW2
		MW-19	07/30/13	0.472	SGW2
		MW-26	08/09/13	0.0846	SGW2
		MW-29	08/15/13	0.0916	SGW2
Arsenic	(mg/L)	MW-7	08/06/13	0.00617	SGW1
		MW-19	07/30/13	0.00136	SGW1
		MW-26	08/09/13	0.00333	SGW1
		MW-29	08/15/13	0.00431	SGW1
		MW-12	08/09/13	0.00211	SGW1

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES
(October 1, 2013 to December 31, 2013)

Regional Aquifer & Channel Cc3

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Iron	(mg/L)	MW-29	11/07/13	0.76	SGW2
Manganese	(mg/L)	MW-7	11/06/13	0.142	SGW2
		MW-19	11/04/13	0.51	SGW2
		MW-26	11/12/13	0.0516	SGW2
		MW-29	11/07/13	0.0871	SGW2
Arsenic	(mg/L)	MW-7	11/06/13	0.00553	SGW1
		MW-19	11/04/13	0.00132	SGW1
		MW-26	11/12/13	0.00325	SGW1
		MW-29	11/07/13	0.00451	SGW1
		MW-12	11/05/13	0.00203	SGW1

See Analytical Data Qualifier Page for Data Qualifier Information.

Table 4

VASHON LANDFILL GW SUMMARY OF PREDICTION LIMIT EXCEEDANCES

(January 1, 2013 to March 31, 2013)

Intrawell

Regional Aquifer & Channel Cc3

Parameter		Site ID	Sample Date	Sample Value	Limit Value
Ammonia	(mg/L)	MW-7	02/07/13	0.233	0.10
Manganese	(mg/L)	MW-29	02/20/13	0.123	0.11

VASHON LANDFILL GW SUMMARY OF PREDICTION LIMIT EXCEEDANCES

(April 1, 2013 to June 30, 2013)

Intrawell

Regional Aquifer & Channel Cc3

Parameter		Site ID	Sample Date	Sample Value	Limit Value
Ammonia	(mg/L)	MW-7	5/8/2013	0.258	0.10
Nitrate	(mg/L)	MW-26	5/13/2013	0.0866	0.11
Sulfate	(mg/L)	MW-12	5/9/2013	11.1	11.00

VASHON LANDFILL GW SUMMARY OF PREDICTION LIMIT EXCEEDANCES

(July 1, 2013 to September 30, 2013)

Intrawell

Regional Aquifer & Channel Cc3

Parameter		Site ID	Sample Date	Sample Value	Limit Value
Ammonia	(mg/L)	MW-7	8/6/2013	0.245	0.10
Manganese	(mg/L)	MW-26	8/9/2013	0.0846	0.08
Chloride	(mg/L)	MW-19	7/30/2013	37.6	6.7000
		MW-27	8/8/2013	6.1	5.6200
Total Organic Carbon	(mg/L)	MW-27	8/8/2013	1.29	1.1000

VASHON LANDFILL GW SUMMARY OF PREDICTION LIMIT EXCEEDANCES

(October 1, 2013 to December 31, 2013)

Intrawell

Regional Aquifer & Channel Cc3

Parameter		Site ID	Sample Date	Sample Value	Limit Value
Ammonia	(mg/L)	MW-7	11/6/2013	0.313	0.10

Table 5

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(January 1, 2013 to March 31, 2013)

Regional Aquifer & Channel Cc3

Component	Site ID	Date	ug/L
NO VOA DETECTIONS			

See Analytical Data Qualifier Page for Data Qualifier Information.

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(April 1, 2013 to June 30, 2013)

Regional Aquifer & Channel Cc3

Component	Site ID	Date	ug/L
Acetone	MW-29	5/20/2013	6.08

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(July 1, 2013 to September 30, 2013)

Regional Aquifer & Channel Cc3

Component	Site ID	Date	ug/L
Acetone	MW-26	8/9/2013	5.35

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(October 1, 2013 to December 31, 2013)

Regional Aquifer & Channel Cc3

Component	Site ID	Date	ug/L
Acetone	MW-19	11/4/2013	8.08 B

Table 7

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES

(January 1, 2013 to March 31, 2013)

Groundwater Within Channel Cc2

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	(mg/L)	MW-5D	2/4/2013	0.0949	F1, SGW1
		MW-2	2/11/2013	0.00103	SGW1
		MW-9	2/5/2013	0.00224	SGW1
		MW-20	2/13/2013	0.00156	SGW1
Iron	(mg/L)	MW-5D	2/4/2013	8.68	F2, SGW2
Manganese	(mg/L)	MW-2	2/11/2013	0.0974	F2, SGW2
		MW-5D	2/4/2013	0.547	F2, SGW2
		MW-20	2/13/2013	0.253	F2, SGW2
		MW-21	2/4/2013	0.335	F2, SGW2
Vinyl Chloride	(µg/L)	MW-2	2/11/2013	0.0574	SGW1
		MW-5D	2/4/2013	3.57	F1, SGW1
		MW-21	2/4/2013	0.0896	SGW1

Groundwater Below Cc2

Parameter	Site ID	Sample Date	Sample Value	Standard(s) Exceeded
There were no exceedances in Cc2 for this period.				

Table 7

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES

(April 1, 2013 to June 30, 2013)

Groundwater Within Channel Cc2

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	(mg/L)	MW-5D	5/6/2013	0.0951	SGW1
		MW-2	5/7/2013	0.00107	SGW1
		MW-9	5/8/2013	0.00228	SGW1
		MW-20	5/20/2013	0.00144	SGW1
		MW-21	5/6/2013	0.00108	SGW1
Iron	(mg/L)	MW-5D	5/6/2013	7.88	SGW2
Manganese	(mg/L)	MW-2	5/7/2013	0.109	SGW2
		MW-5D	5/6/2013	0.58	SGW2
		MW-20	5/20/2013	0.263	SGW2
		MW-21	5/6/2013	0.169	SGW2
Vinyl Chloride	(mg/L)	MW-2	5/7/2013	0.111	SGW1
		MW-5D	5/6/2013	2.94	SGW1
		MW-21	5/6/2013	0.1	SGW1

Groundwater Below Cc2

Parameter	Site ID	Sample Date	Sample Value	Standard(s) Exceeded
There were no exceedances in Cc2 for this period.				

Table 7

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES

(July 1, 2013 to September 30, 2013)

Groundwater Within Channel Cc2

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	(mg/L)	MW-2	08/05/13	0.00109	SGW1
		MW-5D	08/15/13	0.092	SGW1
		MW-9	07/30/13	0.00227	SGW1
		MW-20	08/07/13	0.00144	SGW1
Iron	(mg/L)	MW-5D	8/15/2013	8.03	SGW2
Manganese	(mg/L)	MW-2	8/5/2013	0.0807	SGW2
		MW-5D	8/15/2013	0.576	SGW2
		MW-20	8/7/2013	0.251	SGW2
		MW-21	8/9/2013	0.191	SGW2
Vinyl Chloride	(mg/L)	MW-2	8/5/2013	0.0643	SGW1
		MW-5D	8/15/2013	3.33	SGW1
		MW-21	8/9/2013	0.109	SGW1

Groundwater Below Cc2

Parameter	Site ID	Sample Date	Sample Value	Standard(s) Exceeded
There were no exceedances below Cc2 for this period.				

Table 7

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES

(October 1, 2013 to December 31, 2013)

Groundwater Within Channel Cc2

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	(mg/L)	MW-2	11/08/13	0.00104	SGW1
		MW-5D	11/06/13	0.0908	F1, SGW1
		MW-9	11/01/13	0.00234	SGW1
		MW-20	11/07/13	0.00148	SGW1
		MW-21	11/07/13	0.00102	SGW1
Iron	(mg/L)	MW-5D	11/6/2013	9.12	SGW2
		MW-21	11/7/2013	0.45	SGW2
Manganese	(mg/L)	MW-2	11/8/2013	0.11	SGW2
		MW-5D	11/6/2013	0.66	SGW2
		MW-20	11/7/2013	0.281	SGW2
		MW-21	11/7/2013	0.325	SGW2
Vinyl Chloride	(mg/L)	MW-2	11/8/2013	0.106	SGW1
		MW-5D	11/6/2013	4.79	F1, SGW1
		MW-21	11/7/2013	0.185	SGW1

Groundwater Below Cc2

Parameter	Site ID	Sample Date	Sample Value	Standard(s) Exceeded
There were no exceedances below Cc2 for this period.				

See Analytical Data Qualifier Page for Data Qualifier Information.

Table 8

VASHON LANDFILL GW SUMMARY OF PREDICTION LIMIT EXCEEDANCES

(January 1, 2013 to March 31, 2013)

Interwell

Groundwater Within Channel Cc2

Parameter		Site ID	Sample Date	Sample Value	Limit Value
Conductance	(umhos/cm)	MW-2	02/11/13	360	190
		MW-5D	02/04/13	270	190
		MW-21	02/04/13	250	190
Alkalinity	(mg/L)	MW-2	02/11/13	185	80
		MW-5D	02/04/13	157	80
		MW-21	02/04/13	145	80
Arsenic	(mg/L)	MW-5D	02/04/13	0.11	0.005
Barium	(mg/L)	MW-2	02/11/13	0.00961	0.0092
		MW-5D	02/04/13	0.0145	0.0092
Calcium	(mg/L)	MW-2	2/11/2013	23.7	17.05
		MW-5D	02/04/13	23	17.05
		MW-21	02/04/13	21.2	17.05
Iron	(mg/L)	MW-5D	02/04/13	9.51	0.51
Magnesium	(mg/L)	MW-2	2/11/2013	24.3	13
		MW-5D	02/04/13	18.7	13
		MW-21	02/04/13	22.1	13
Manganese	(mg/L)	MW-5D	02/04/13	0.577	0.32
		MW-20	02/13/13	0.319	0.32
Nitrate	(mg/L)	MW-9	02/05/13	0.143	0.11
Sodium	(mg/L)	MW-2	02/11/13	9.43	8.37
		MW-5D	02/04/13	15.8	8.37
		MW-21	02/04/13	11	8.37
Total Dissolved Solids	(mg/L)	MW-2	02/11/13	189	155
		MW-5D	02/04/13	201	155
		MW-21	02/04/13	187	155
Total Organic Carbon		MW-5D	02/04/13	2.94	1.6
		MW-21	02/04/13	1.93	1.6
Total Solids	(mg/L)	MW-2	02/11/13	213	159
		MW-5D	02/04/13	216	159
		MW-21	02/04/13	193	159
Vanadium	(mg/L)	MW-2	02/11/13	0.00378	0.002
		MW-9	02/05/13	0.00483	0.002

Table 8

VASHON LANDFILL GW SUMMARY OF PREDICTION LIMIT EXCEEDANCES

(April 1, 2013 to June 30, 2013)

Interwell

Groundwater Within Channel Cc2

Parameter		Site ID	Sample Date	Sample Value	Limit Value
Conductance	(umhos/cm)	MW-2	5/7/2013	350	194
		MW-21	5/6/2013	200	194
Alkalinity	(mg/L)	MW-2	5/7/2013	194	80
		MW-5D	5/6/2013	145	80
		MW-21	5/6/2013	142	80
Arsenic	(mg/L)	MW-5D	5/6/2013	0.0951	0.005
Barium	(mg/L)	MW-5D	5/6/2013	0.0145	0.0092
Calcium	(mg/L)	MW-2	5/7/2013	24.8	16.9448
		MW-5D	05/06/13	20.8	16.9448
		MW-21	5/6/2013	21	16.94
Chloride	(mg/L)	MW-9	5/8/2013	4.63	4.09
Iron	(mg/L)	MW-5D	5/6/2013	7.88	0.51
Magnesium	(mg/L)	MW-2	5/7/2013	27.7	13
		MW-5D	5/6/2013	14.8	13
		MW-21	5/6/2013	18.3	13
Manganese	(mg/L)	MW-5D	5/6/2013	0.58	0.32
Nitrate	(mg/L)	MW-9	05/08/13	0.223	0.11
Sodium	(mg/L)	MW-2	5/7/2013	9	8.44
		MW-5D	5/6/2013	13..4	8.44
		MW-21	05/06/13	10	8.44
Sulfate	(mg/L)	MW-2	5/7/2013	18.3	18
Total Dissolved Solids	(mg/L)	MW-2	05/07/13	240	154
		MW-5D	5/6/2013	208	154
		MW-21	5/6/2013	202	154
Total Organic Carbon		MW-5D	5/6/2013	2.31	1.6
Total Solids	(mg/L)	MW-2	5/7/2013	255	154
		MW-5D	05/06/13	219	154
		MW-21	05/06/13	212	154
Vanadium	(mg/L)	MW-2	5/7/2013	0.00396	0.002
		MW-9	5/8/2013	0.00467	0.002

Table 8

VASHON LANDFILL GW SUMMARY OF PREDICTION LIMIT EXCEEDANCES

(July 1, 2013 to September 30, 2013)

Interwell

Groundwater Within Channel Cc2

Parameter		Site ID	Sample Date	Sample Value	Limit Value
Conductance	(umhos/cm)	MW-2	8/5/2013	335	194
		MW-5D	8/15/2013	280	194
		MW-21	8/9/2013	250	194
Alkalinity	(mg/L)	MW-2	8/5/2013	198	80
		MW-5D	8/15/2013	145	80
		MW-21	8/9/2013	153	80
Arsenic	(mg/L)	MW-5D	8/9/2013	0.092	0.005
Barium	(mg/L)	MW-5D	8/9/2013	0.0116	0.0102
Calcium	(mg/L)	MW-2	08/05/13	24.8	16.9448
		MW-5D	8/15/2013	20.8	16.94
		MW-21	8/9/2013	21	16.94
Chloride	(mg/L)	MW-9	07/30/13	23	4.09
		MW-21	8/9/2013	15.2	4.09
Iron	(mg/L)	MW-5D	8/15/2013	8.03	0.51
Magnesium	(mg/L)	MW-2	8/5/2013	29.9	13
		MW-5D	8/15/2013	21.6	13
		MW-21	8/9/2013	18.3	13.00
Manganese	(mg/L)	MW-5D	8/15/2013	0.576	0.4013
Nitrate	(mg/L)	MW-9	7/30/2013	0.19	0.11
Potassium		MW-2	8/5/2013	2.82	2.715
Sodium	(mg/L)	MW-2	8/5/2013	9.76	8.44
		MW-5D	8/15/2013	13.7	8.44
		MW-21	8/9/2013	10.4	8.44
Sulfate	(mg/L)	MW-21	8/5/2013	18.2	18
Total Dissolved Solids	(mg/L)	MW-2	8/5/2013	239	154
		MW-5D	08/15/13	215	154
		MW-21	8/9/2013	204	154
Total Organic Carbon		MW-2	8/5/2013	1.82	1.6
		MW-5D	08/15/13	1.65	1.6
		MW-20	08/07/13	2.33	1.6
		MW-9	07/30/13	2.07	1.6
Total Solids	(mg/L)	MW-2	8/5/2013	244	154
		MW-5D	8/15/2013	223	154
		MW-21	8/9/2013	209	154
		MW-20	8/7/2013	157	154
Vanadium	(mg/L)	MW-2	8/5/2013	0.00468	0.002
		MW-9	7/30/2013	0.00439	0.002

Table 8

VASHON LANDFILL GW SUMMARY OF PREDICTION LIMIT EXCEEDANCES

(October 1, 2013 to December 31, 2013)

Interwell

Groundwater Within Channel Cc2

Parameter		Site ID	Sample Date	Sample Value	Limit Value
Conductance	(umhos/cm)	MW-2	11/8/2013	330	194
		MW-5D	11/6/2013	280	194
		MW-21	11/7/2013	250	194
Alkalinity			11/8/2013	172	80
	(mg/L)	MW-9	11/6/2013	134	80
			11/7/2013	131	80
Arsenic		MW-5D	11/6/2013	0.0908	0.005
Barium	(mg/L)	MW-5D	11/6/2013	0.0129	0.0102
Calcium	(mg/L)	MW-2	11/08/13	23.7	16.9448
		MW-5D	11/6/2013	25.1	16.94
		MW-21	11/7/2013	20.5	16.94
Chloride	(mg/L)	MW-9	11/01/13	4.57	4.09
Iron	(mg/L)	MW-5D	11/06/13	9.12	0.51
Magnesium	(mg/L)	MW-2	11/8/2013	28.4	13
		MW-5D	11/6/2013	17.8	13
		MW-21	11/7/2013	20.3	13
Manganese	(mg/L)	MW-5D	11/6/2013	0.66	0.401
Nitrate	(mg/L)	MW-21	11/7/2013	0.112	0.11
		MW-9	11/1/2013	0.195	0.11
Sodium	(mg/L)	MW-2	11/08/13	9.13	8.44
		MW-5D	11/6/2013	14.7	8.44
		MW-21	11/7/2013	9.41	8.44
Total Dissolved Solids	(mg/L)	MW-2	11/8/2013	234	154
		MW-5D	11/6/2013	208	154
		MW-21	11/7/2013	200	154
Total Solids	(mg/L)	MW-2	11/8/2013	241	154
		MW-5D	11/6/2013	215	154
		MW-21	11/07/13	204	154
Vanadium	(mg/L)	MW-2	11/8/2013	0.00375	0.002
		MW-9	11/1/2013	0.00455	0.002

Table 9

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(January 1, 2013 to March 31, 2013)

Groundwater Within & Below Channel Cc2

Parameter	Site ID	Date	ug/L
Vinyl Chloride	MW-2	02/11/13	0.0574
	MW-5D	02/04/13	3.57
	MW-21	02/04/13	0.0896

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(January 1, 2013 to March 31, 2013)

Detections in Blanks

Component	Site ID	Date	ug/L
Acetone	VTRP130213C	02/11/13	6.45

Table 9

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(April 1, 2013 to June 30, 2013)

Groundwater Within & Below Channel Cc2

Parameter	Site ID	Date	ug/L
Acetone	MW-8	05/07/13	4.79
	MW-20	05/20/13	4
Benzene	MW-5D	05/06/13	0.508
CIS, 1,2-Dichloroethene	MW-5D	05/06/13	7.6
	MW-21	05/06/13	1.11
Dichloroflouromethane	MW-2	05/07/13	5.66
	MW-5D	05/06/13	1.38
	MW-21	05/06/13	2.02
Trans-1,2-Dichloroethene	MW-5D	05/06/13	0.034
Trichloro-flouro-methane	MW-2	05/07/13	1.77
	MW-21	05/06/13	0.629
Vinyl Chloride	MW-2	05/07/13	0.111
	MW-5D	05/06/13	2.94
	MW-21	05/06/13	0.1

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(April 1, 2013 to June 30, 2013)

Detections in Blanks

Component	Site ID	Date	ug/L
Acetone	VTRP130508C	05/07/13	5.42

Table 9

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(July 1, 2013 to September 30, 2013)

Groundwater Within & Below Channel Cc2

Parameter	Site ID	Date	ug/L
Acetone	MW-5D	08/15/13	4.35
	MW-9	07/30/13	4.04
Benzene	MW-5D	08/15/13	0.523
CIS, 1,2-Dichloroethene	MW-2	08/05/13	0.21
	MW-5D	08/15/13	8.76
	MW-21	08/09/13	1.11
Dichloroflouromethane	MW-2	08/05/13	01/04/00
	MW-5D	08/15/13	1.19
	MW-21	08/09/13	1.57
Trans-1,2-Dichloroethene	MW-5D	08/15/13	0.35
Trichloro-flouro-methane	MW-2	08/05/13	1.87
	MW-21	08/09/13	0.566
Vinyl Chloride	MW-2	08/05/13	0.0643
	MW-5D	08/15/13	3.33
	MW-21	08/09/13	0.109

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(July 1, 2013 to September 30, 2013)

Detections in Blanks

Component	Site ID	Date	ug/L
Acetone	VTRP130710L	7/9/2013	5.31
	VTRP130808B	08/07/13	4.75
	VTRP130815C	08/14/13	4.9
Methlynene Chloride	VTRP130805C	08/02/13	0.046
	VTRP130806C	08/05/13	0.3
	VTRP130808B	08/07/13	0.442

Table 9

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(October 1, 2013 to December 31, 2013)

Groundwater Within & Below Channel Cc2

Parameter	Site ID	Date	ug/L
Benzene	MW-5D	11/06/13	0.531
CIS, 1,2-Dichloroethene	MW-5D	11/06/13	9.15
	MW-21	11/07/13	1.21
Dichloroflouromethane	MW-2	11/08/13	9.26
	MW-5D	11/06/13	1.94
	MW-21	11/07/13	3.32
Trans-1,2-Dichloroethene	MW-5D	11/06/13	0.33
Trichloro-flouro-methane	MW-2	11/08/13	2.32
	MW-21	11/07/13	0.972
Vinyl Chloride	MW-2	11/08/13	0.106
	MW-5D	11/06/13	4.79
	MW-21	11/07/13	0.185

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(October 1, 2013 to December 31, 2013)

Detections in Blanks

Component	Site ID	Date	ug/L
Methlynene Chloride	VTRP131104B	11/1/2013	0.22

Table 11

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES
(January 1, 2013 to March 31, 2013)

Groundwater Within & Adjacent to Channel Cc1

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	(mg/L)	MW-10	02/08/13	0.00172	SGW1
		MW-13	02/13/13	0.00172	SGW1

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES
April 1, 2013 to June 30, 2013)

Groundwater Within & Adjacent to Channel Cc1

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	(mg/L)	MW-10	05/08/13	0.0017	SGW1
		MW-13	05/09/13	0.00156	SGW1

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES
(July 1, 2013 to September 30, 2013)

Groundwater Within & Adjacent to Channel Cc1

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	(mg/L)	MW-10	08/08/13	0.00175	SGW1
		MW-13	08/05/13	0.00169	SGW1

VASHON LANDFILL GW SUMMARY OF EXCEEDANCES
(October 1, 2013 to December 31, 2013)

Groundwater Within & Adjacent to Channel Cc1

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	(mg/L)	MW-13	11/07/13	0.00175	SGW1

See Analytical Data Qualifier Page for Data Qualifier Information.

Table 12

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(January 1, 2013 to March 31, 2013)

Groundwater Within & Adjacent to Channel Cc1

Component	Site ID	Date	ug/L
No VOA Detections			

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(April 1, 2013 to June 30, 2013)

Groundwater Within & Adjacent to Channel Cc1

Component	Site ID	Date	ug/L
No VOA Detections			

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(July 1, 2013 to September 30, 2013)

Groundwater Within & Adjacent to Channel Cc1

Component	Site ID	Date	ug/L
Acetone	MW-10	8/3/2012	4.24 L

VASHON LANDFILL GW VOLATILE ORGANIC COMPOUND DETECTIONS
(October 1, 2013 to December 31, 2013)

Groundwater Within & Adjacent to Channel Cc1

Component	Site ID	Date	ug/L
NO VOA DETECTIONS			

Table 13

VASHON ISLAND LANDFILL SEEPS/SURFACE WATER

January 1, 2013 to March 31, 2013)

SUMMARY OF SURFACE WATER QUALITY CRITERIA EXCEEDANCES

Parameter		Site ID	Sample Date	Sample Value	Reg. Limit	Standard(s) Exceeded
Turbidity	Ntu	SW-W2	03/26/13	6.2	1	FA, FC, SSWC
		SW-W3	03/26/13	10.4	1	FA, FC, SSWC
		SW-E	03/27/13	6.4	1	FA, FC, SSWC
Iron, total	mg/L	SW-W1	03/26/13	1.47	0.3	FC
		SW-W2	03/26/13	1.49	0.3	FC
		SW-W3	03/26/13	1.35	0.3	FC
pH	std.Units	SW-E	03/27/13	6.42	6.5 - 8.5	FC, SSWC

FC Federal Chronic Surface Water Criteria

FA Federal Acute Surface Water Criteria

SSWC State ChronicSurface Water Criteria

SSWA State Acute Surface Water Criteria

* Total Metals

See Analytical Data Qualifier Page for Data Qualifier Information

SUMMARY OF GROUNDWATER QUALITY CRITERIA EXCEEDANCES IN SEEPS

January 1, 2013 to March 31, 2013)

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	mg/l	SW-W1	3/26/2013	0.00205	SGW1
		SW-W2	3/26/2013	0.00128	SGW1
		SW-W3	3/26/2013	0.00225	SGW1
		SW-E	3/27/2013	0.00169	SGW1
Manganese	mg/l	SW-W1	3/26/2013	0.194	F2, SGW2
		SW-W3	3/26/2013	0.23	F2, SGW2
Sodium	mg/l	SW-W2	3/26/2013	15.7	F1, SGW1

F1 Primary Federal Drinking Water Quality Standard

F2 Secondary Federal Drinking Water Quality Standard

SGW State of Washington Ground Water Quality Standard

See Analytical Data Qualifier Page for Data Qualifier Information

Table 13

VASHON ISLAND LANDFILL SEEPS/SURFACE WATER

(April 1, 2013 to June 30, 2013)

SUMMARY OF SURFACE WATER QUALITY CRITERIA EXCEEDANCES

Parameter		Site ID	Sample Date	Sample Value	Reg. Limit	Standard(s) Exceeded
Ammonia	mg/L	SW-W1	6/12/2013	0.013	0.0085	FC, SSWC
		SW-WE	5/2/2013	0.013	0.0064	FC, SSWC
Iron	mg/L	SW-W1	06/12/13	2.97	1	FC, SSWC
Turbidity	mg/L	SW-W2	6/12/2013	21	5	FA, FC, SSWC
		SW-W3	6/12/2013	11.9	5	FA, FC, SSWC
		SW-WE	5/2/2013	7.96	5	FA, FC, SSWC

FC Federal Chronic Surface Water Criteria

FA Federal Acute Surface Water Criteria

SSWC State ChronicSurface Water Criteria

SSWA State Acute Surface Water Criteria

* Total Metals

See Analytical Data Qualifier Page for Data Qualifier Information

SUMMARY OF GROUNDWATER QUALITY CRITERIA EXCEEDANCES IN SEEPS

(April 1, 2013 to June 30, 2013)

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	mg/l	SW-W1	6/12/2013	0.00227	SGW1
		SW-W2	6/12/2013	0.0015	SGW1
		SW-W3	6/12/2013	0.00271	SGW1
		SW-WE	5/2/2013	0.00179	SGW1
Manganese	mg/l	SW-W1	6/12/2013	0.275	F2, SGW2
		SW-W3	6/12/2013	0.262	F2, SGW2
Sodium	mg/l	SW-W2	6/12/2013	16.4	F1, SGW1

F1 Primary Federal Drinking Water Quality Standard

F2 Secondary Federal Drinking Water Quality Standard

SGW State of Washington Ground Water Quality Standard

See Analytical Data Qualifier Page for Data Qualifier Information

Table 13

VASHON ISLAND LANDFILL SEEPS/SURFACE WATER

(July 1, 2013 to September 30, 2013)

SUMMARY OF SURFACE WATER QUALITY CRITERIA EXCEEDANCES

Parameter		Site ID	Sample Date	Sample Value	Reg. Limit	Standard(s) Exceeded
Ammonia	mg/L	SW-W1	09/18/13	0.0266	0.0057	FC, SSWC
Iron	mg/L	SW-W1	09/18/13	2.95	1	FC, SSWC
		SW-W2	09/18/13	2.64	1	FC, SSWC
Turbidity	mg/L	SW-W1	09/18/13	6.2	5	FA, FC, SSWC
		SW-W2	09/18/13	10.9	5	FA, FC, SSWC
		SW-W3	9/18/2013	5.6	5	FA, FC, SSWC
		SW-E	8/12/2013	7.46	5	FA, FC, SSWC
Dissolved Oxygen	mg/L	SW-W1	9/18/2013	7.65	8	SSWC

FC Federal Chronic Surface Water Criteria

FA Federal Acute Surface Water Criteria

SSWC State ChronicSurface Water Criteria

SSWA State Acute Surface Water Criteria

* Total Metals

See Analytical Data Qualifier Page for Data Qualifier Information

SUMMARY OF GROUNDWATER QUALITY CRITERIA EXCEEDANCES IN SEEPS

(July 1, 2013 to September 30, 2013)

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	mg/l	SW-E	8/30/2013	0.0022	SGW1

F1 Primary Federal Drinking Water Quality Standard

F2 Secondary Federal Drinking Water Quality Standard

SGW State of Washington Ground Water Quality Standard

See Analytical Data Qualifier Page for Data Qualifier Information

Table 13

VASHON ISLAND LANDFILL SEEPS/SURFACE WATER

(October 1, 2013 to December 31, 2013)

SUMMARY OF SURFACE WATER QUALITY CRITERIA EXCEEDANCES

Parameter		Site ID	Sample Date	Sample Value	Reg. Limit	Standard(s) Exceeded
Ammonia	mg/L	SW-W1	12/11/13	0.022	0.0057	FC, SSWC
		SW-W3	12/11/13	0.015	0.0057	FC, SSWC
Iron	mg/L	SW-W1	12/11/13	4.47	1	FC
		SW-W2	12/11/2013	1.5	1	FC
		SW-W3	12/11/2013	1.22	1	FC
Turbidity	mg/L	SW-W1	12/11/2013	9.2	5	FC

FC Federal Chronic Surface Water Criteria

FA Federal Acute Surface Water Criteria

SSWC State ChronicSurface Water Criteria

SSWA State Acute Surface Water Criteria

* Total Metals

See Analytical Data Qualifier Page for Data Qualifier Information

SUMMARY OF GROUNDWATER QUALITY CRITERIA EXCEEDANCES IN SEEPS

(October 1, 2013 to December 31, 2013)

Parameter		Site ID	Sample Date	Sample Value	Standard(s) Exceeded
Arsenic	mg/l	SW-W1	12/11/2013	0.00252	SGW1
		SW-W2	12/11/2013	0.00105	SGW1
		SW-W3	12/11/2013	0.0023	SGW1
		SW-E	12/19/2013	0.00182	SGW1
Iron	mg/L	SW-W1	12/11/2013	0.289	F2, SGW2
Maganese	mg/l	SW-W1	12/11/2013	0.403	F2, SGW2
		SW-W3	12/11/2013	0.301	F2, SGW2
Sodium	mg/l	SW-W2	12/11/2013	15.7	F1, SGW1

F1 Primary Federal Drinking Water Quality Standard

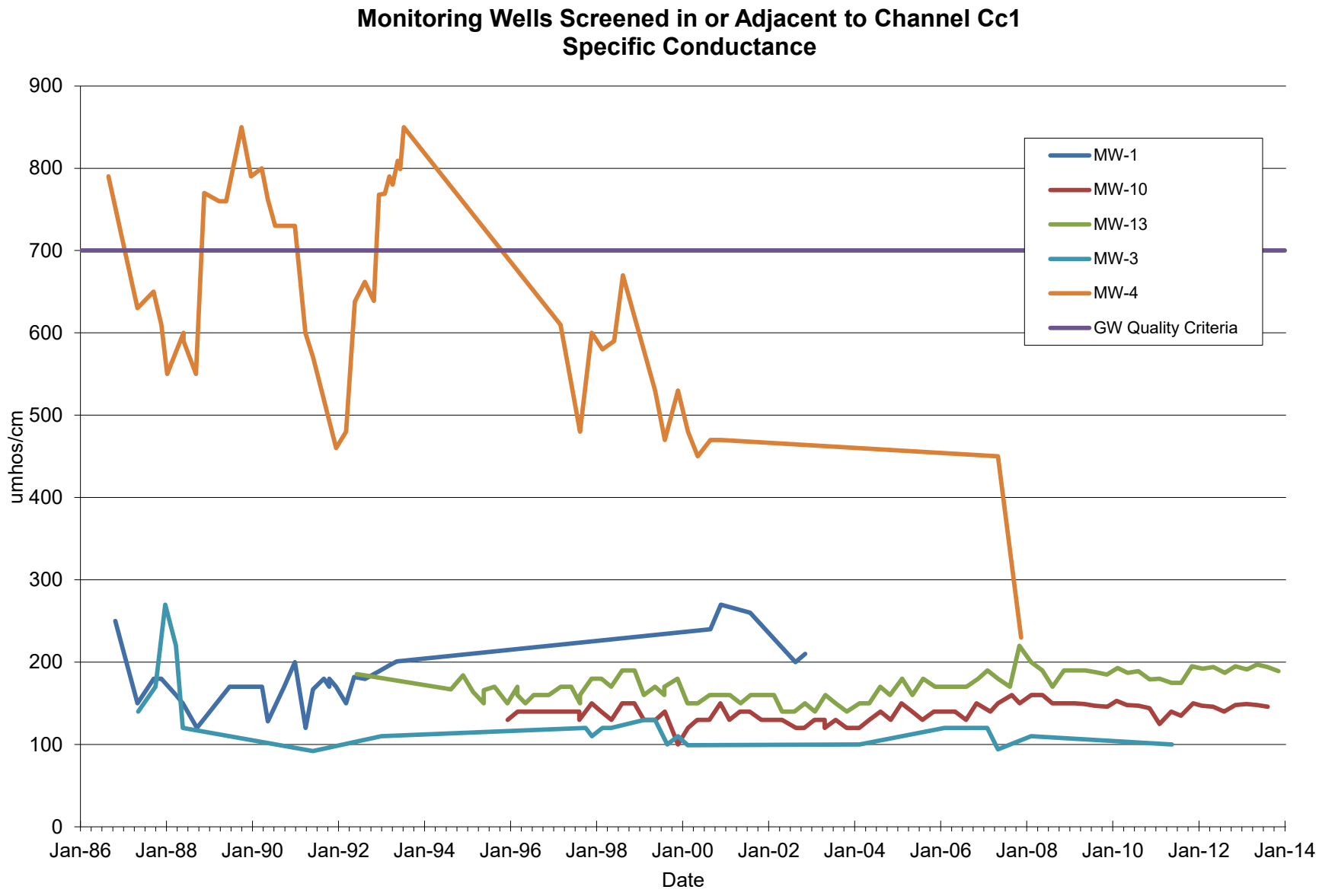
F2 Secondary Federal Drinking Water Quality Standard

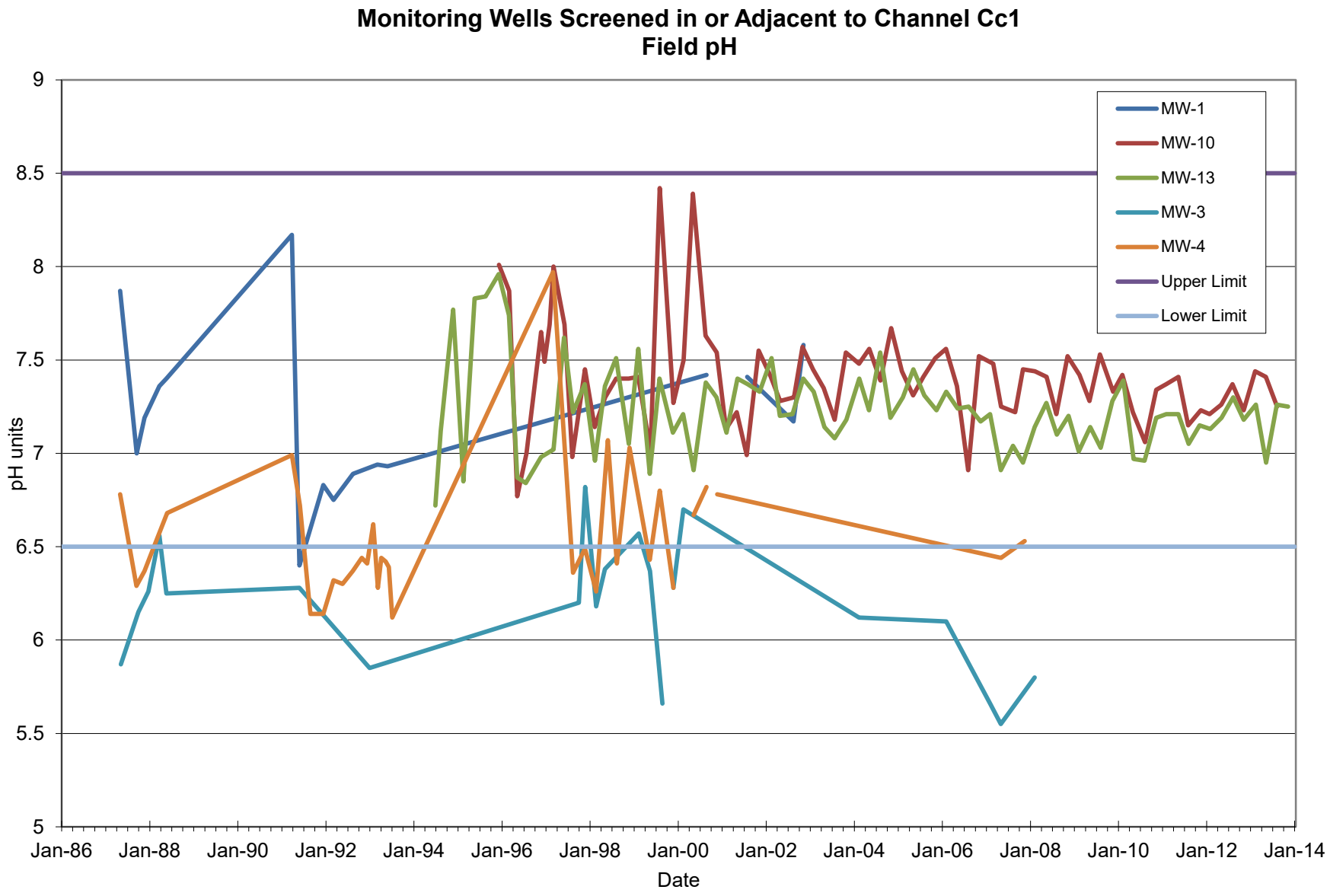
SGW State of Washington Ground Water Quality Standard

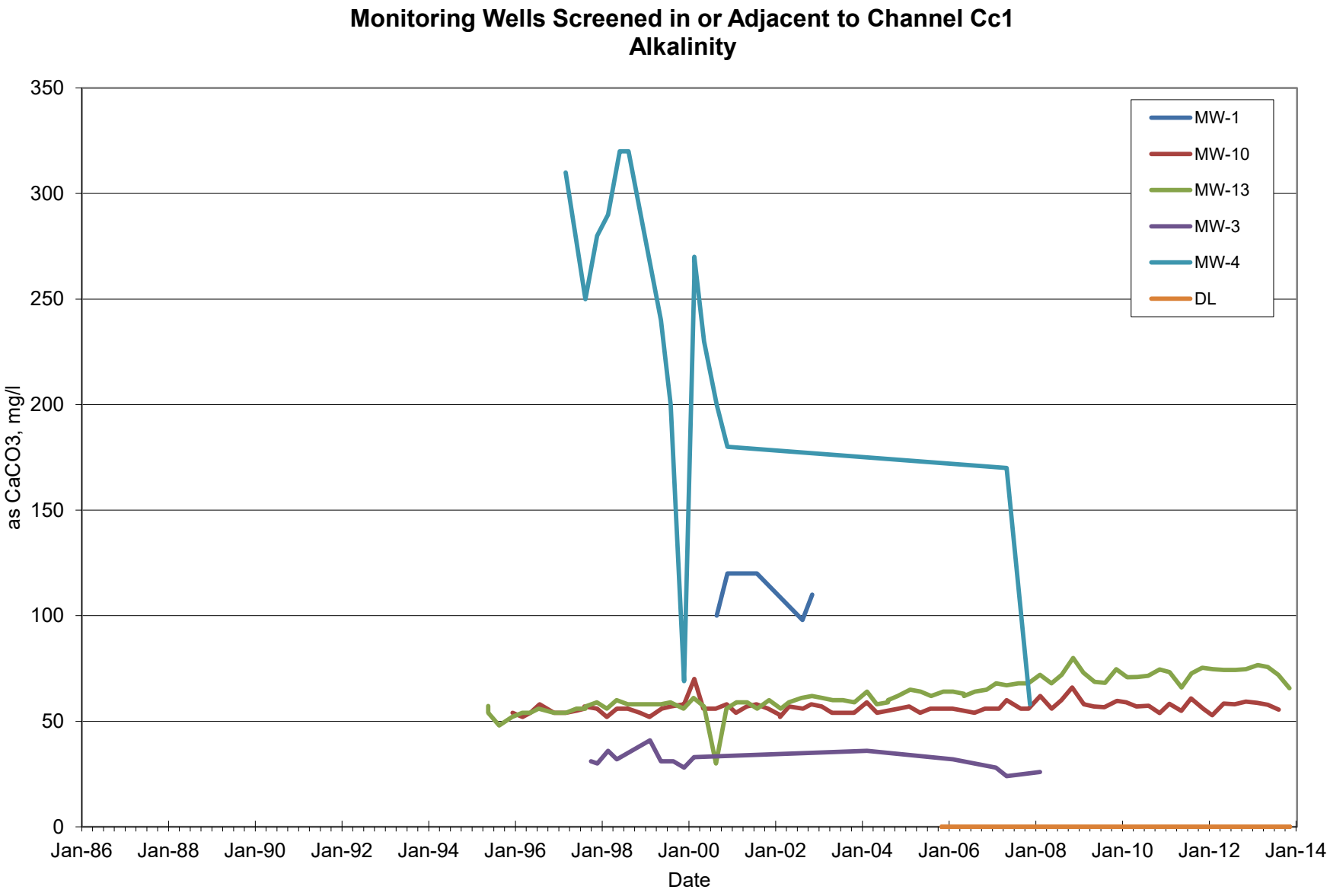
See Analytical Data Qualifier Page for Data Qualifier Information

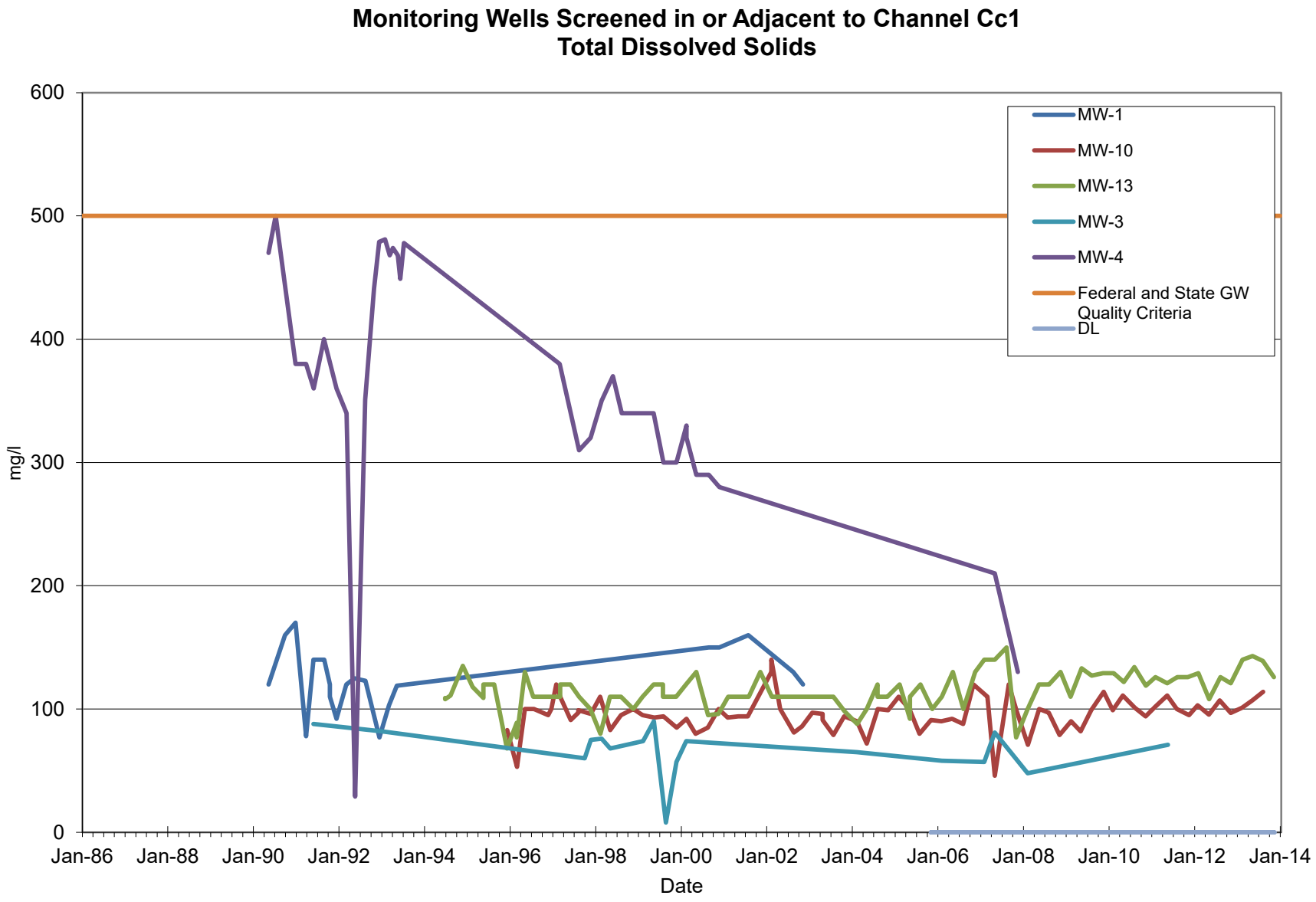
Appendix C

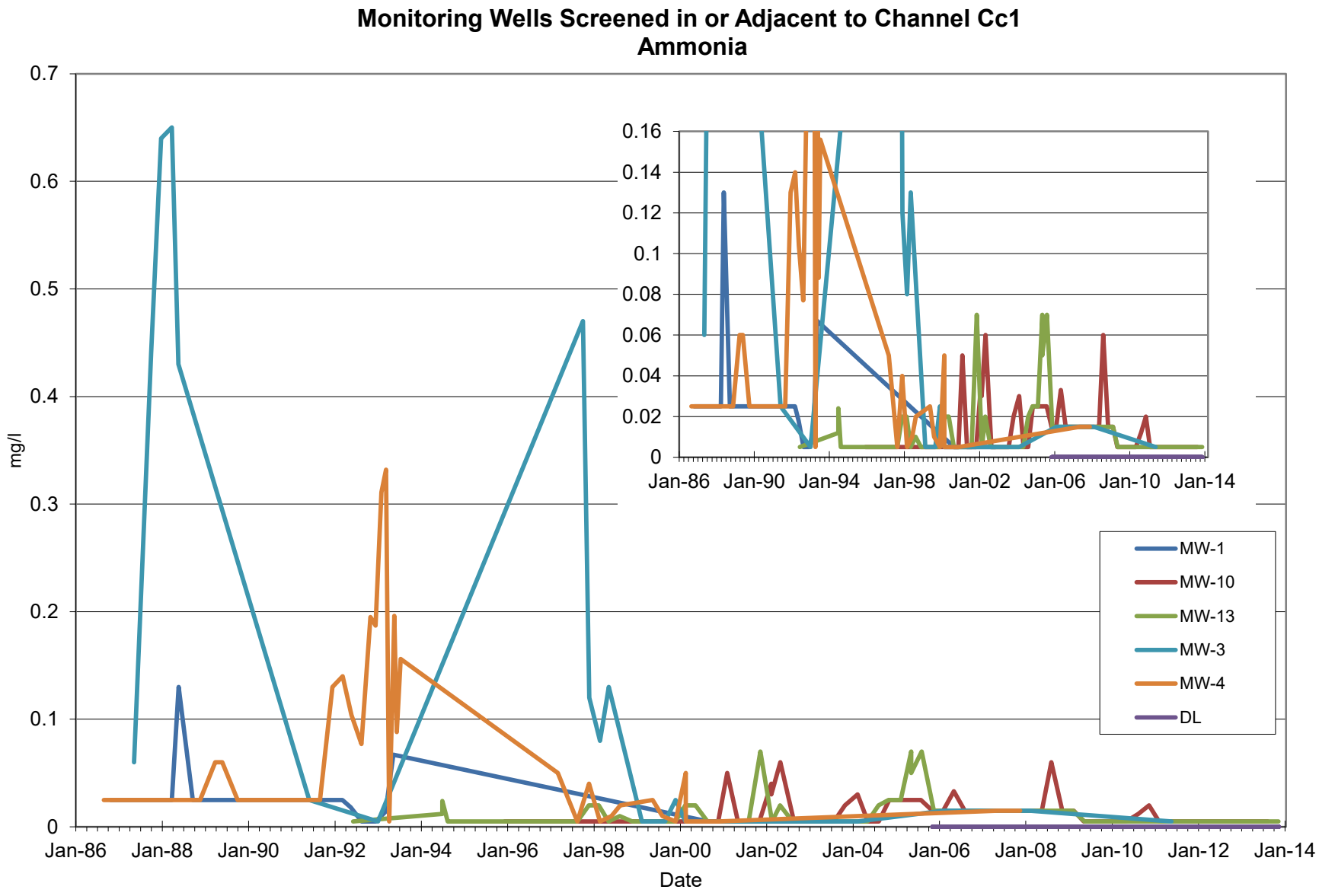
Time Concentration Plots for Groundwater in and Adjacent to Channel Cc1

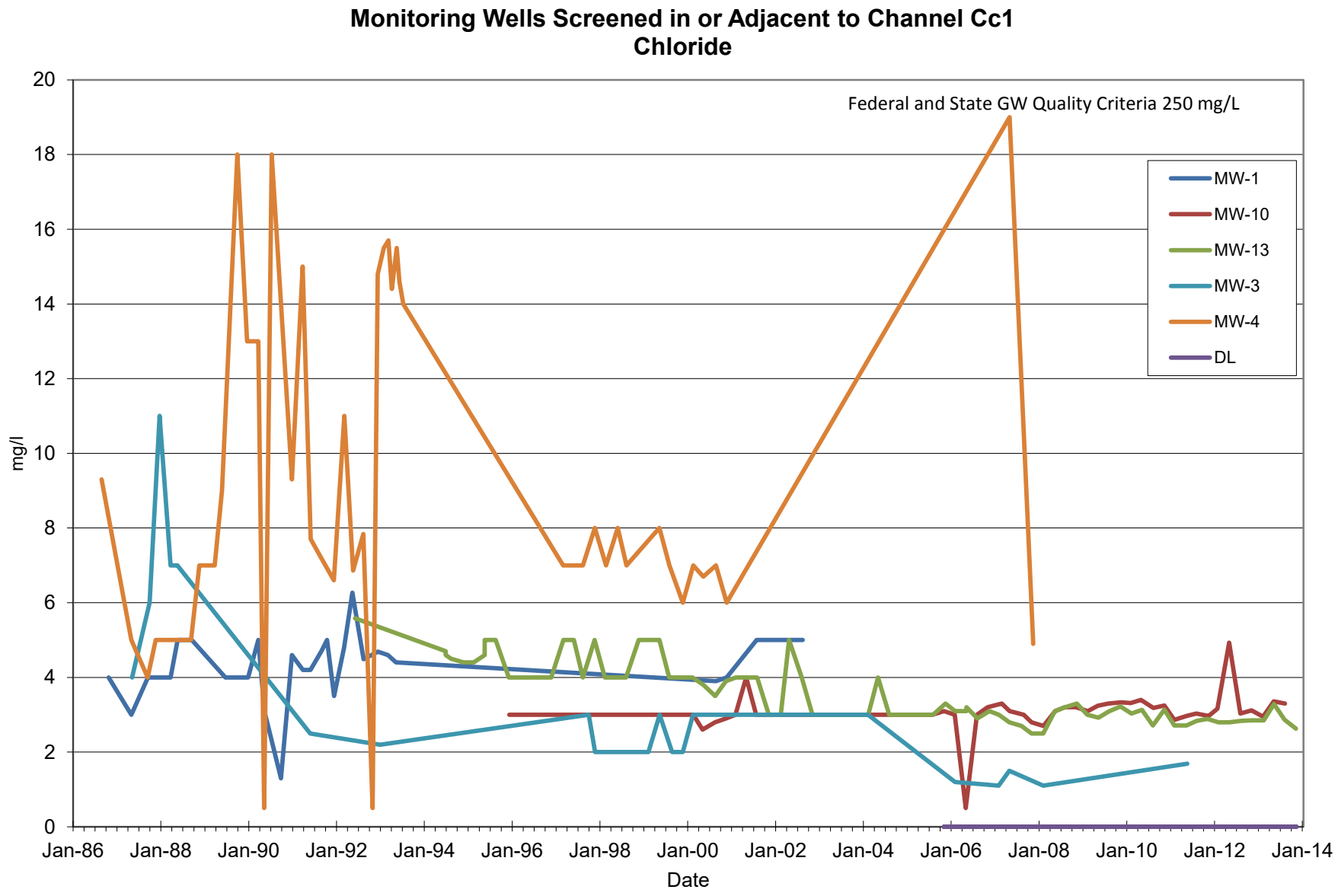

Monitoring Wells Screened in or Adjacent to Channel Cc1
Specific Conductance
umhos/cm
900
800
700
600
500
400
300
200
100
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
GW Quality Criteria

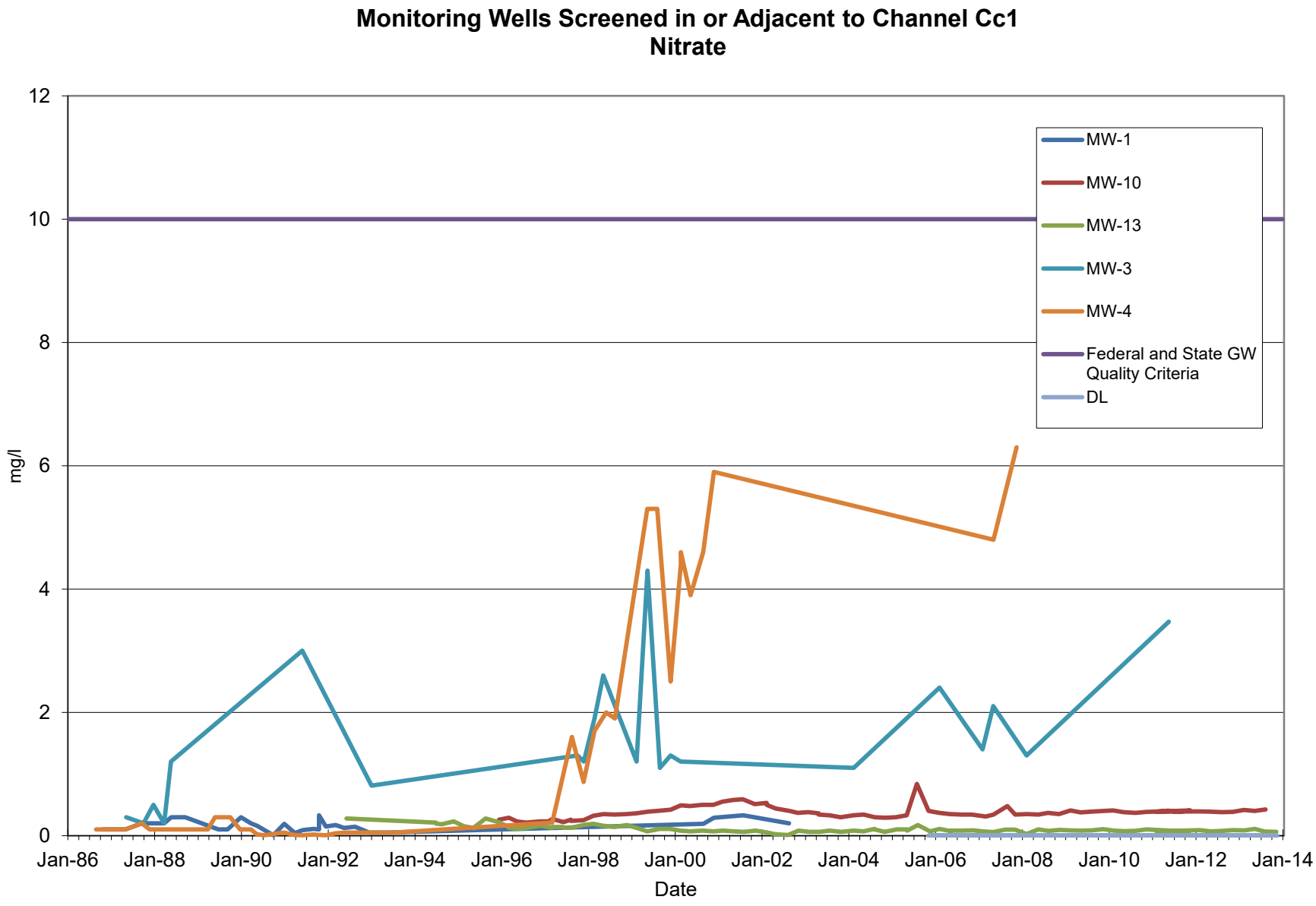

Monitoring Wells Screened in or Adjacent to Channel Cc1
Field pH
pH units
9
8.5
8
7.5
7
6.5
6
5.5
5
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
Upper Limit
Lower Limit

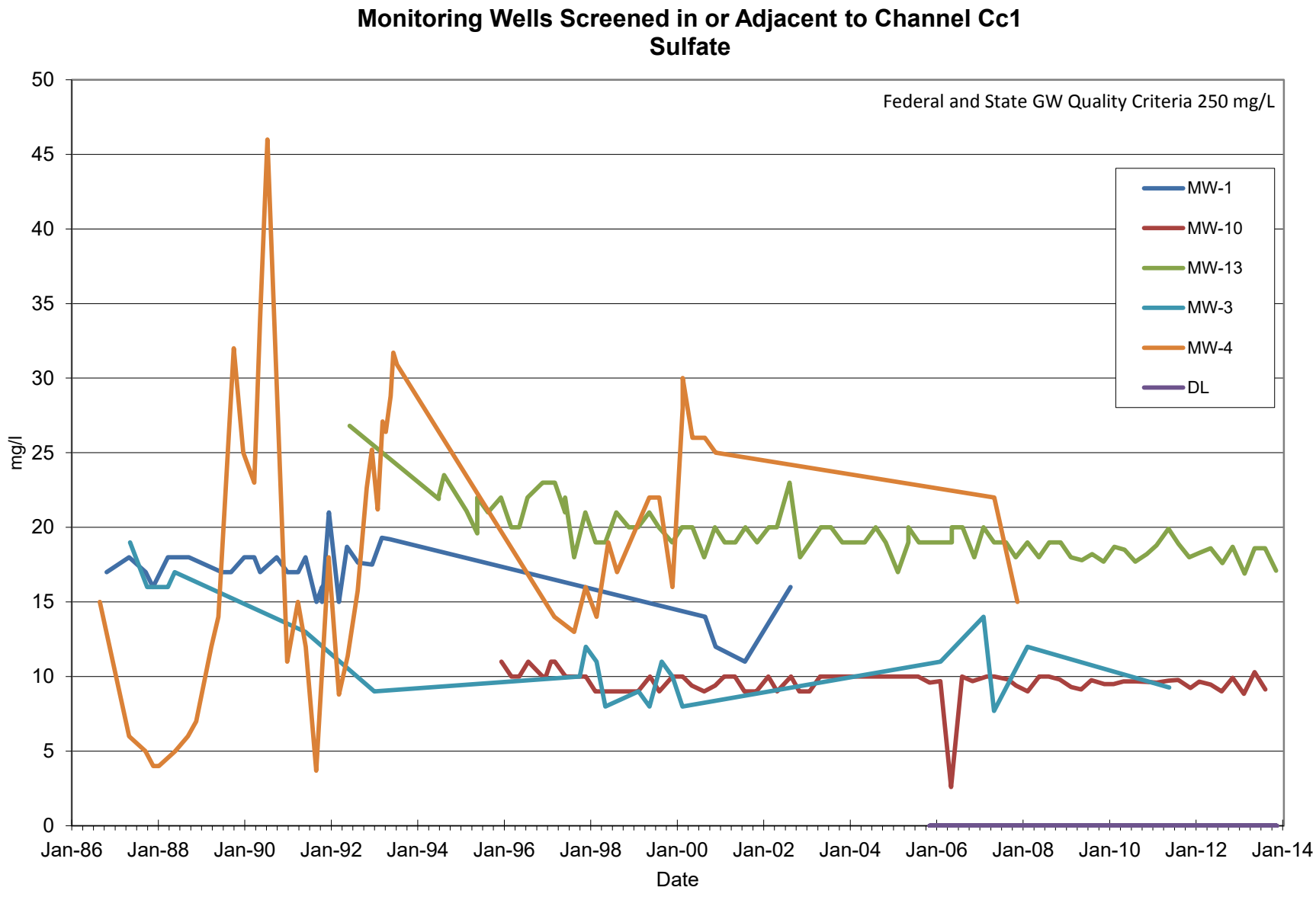

Monitoring Wells Screened in or Adjacent to Channel Cc1
Alkalinity
350
300
250
200
150
100
50
0
as CaCO3, mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

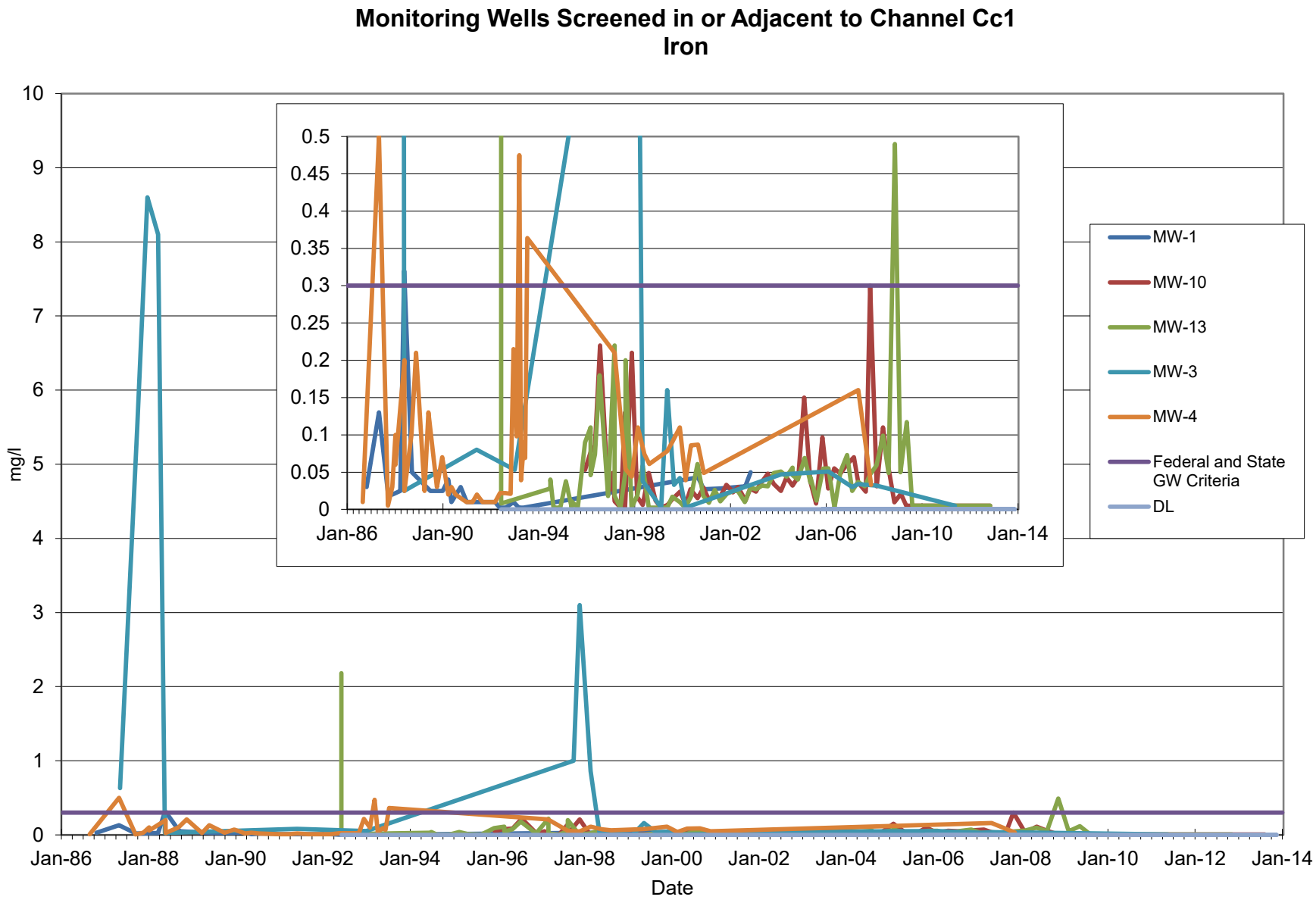

Monitoring Wells Screened in or Adjacent to Channel Cc1
Total Dissolved Solids
600
500
400
300
200
100
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
Federal and State GW Quality Criteria
DL

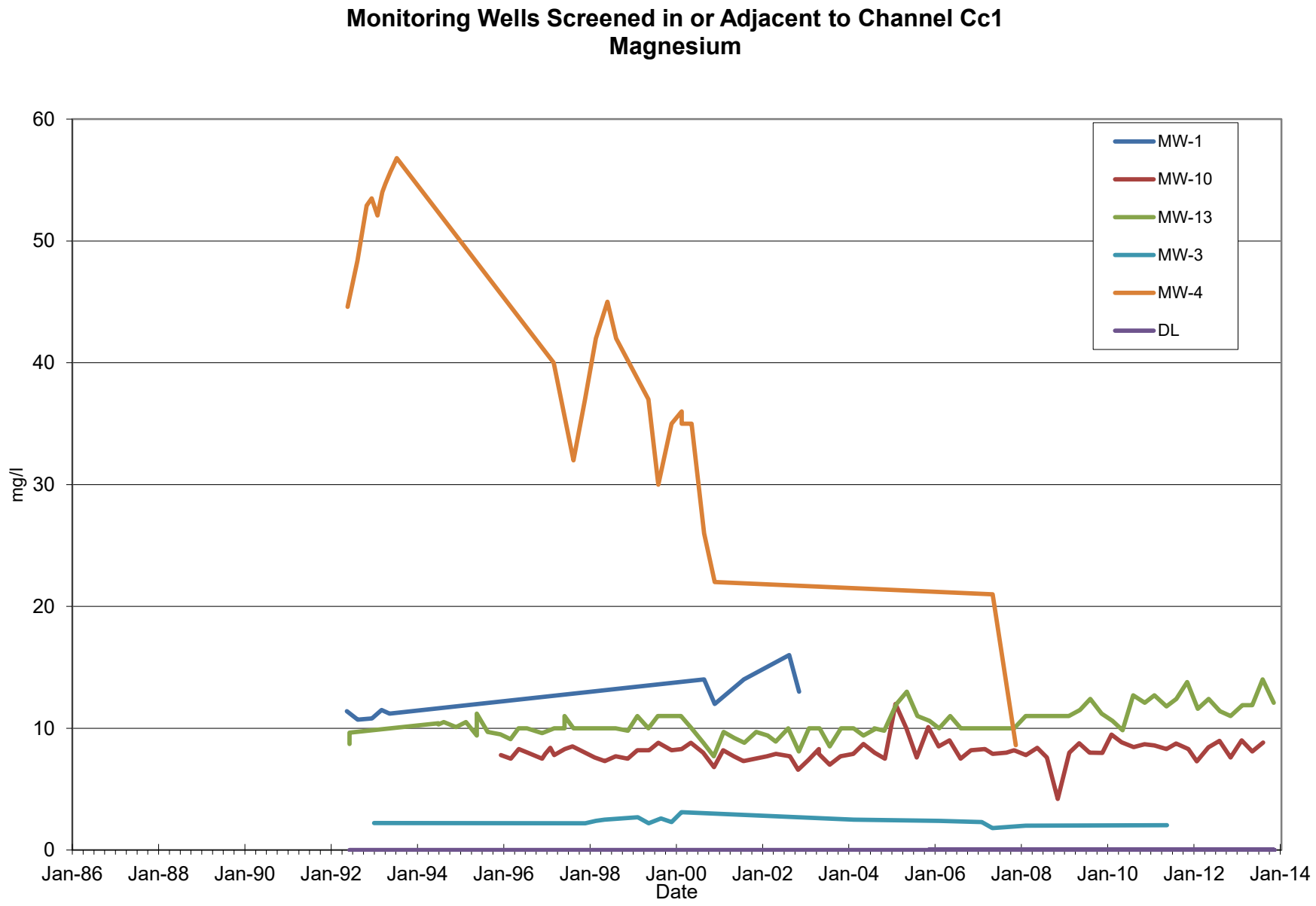

Monitoring Wells Screened in or Adjacent to Channel Cc1
Ammonia
mg/l
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Jan-86
Jan-90
Jan-94
Jan-98
Jan-02
Jan-06
Jan-10
Jan-14
MW-1
MW-10
MW-13
MW-3
MW-4
DL

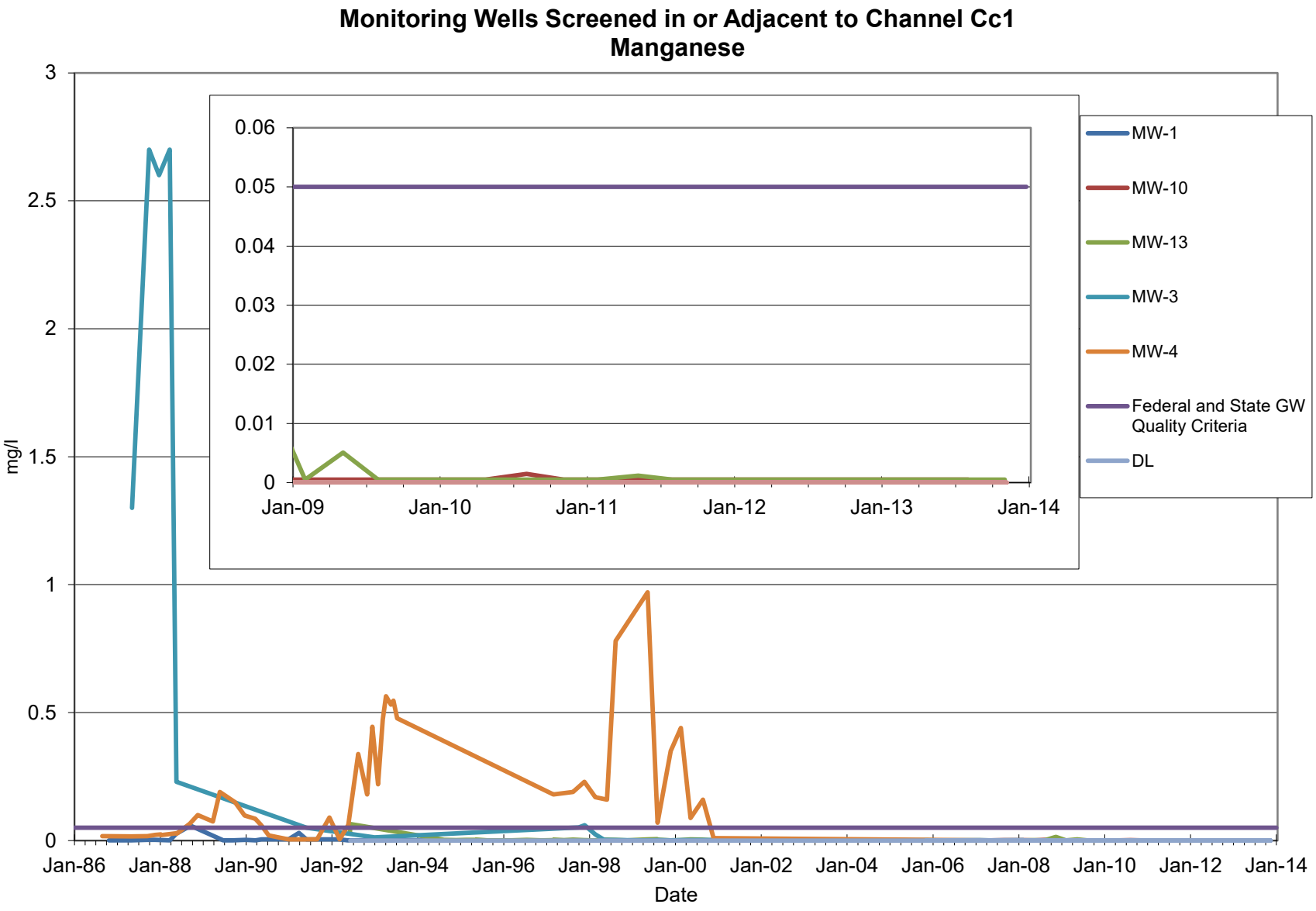

Monitoring Wells Screened in or Adjacent to Channel Cc1
Chloride
Federal and State GW Quality Criteria 250 mg/L
MW-1
MW-10
MW-13
MW-3
MW-4
DL
mg/l
0
2
4
6
8
10
12
14
16
18
20
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

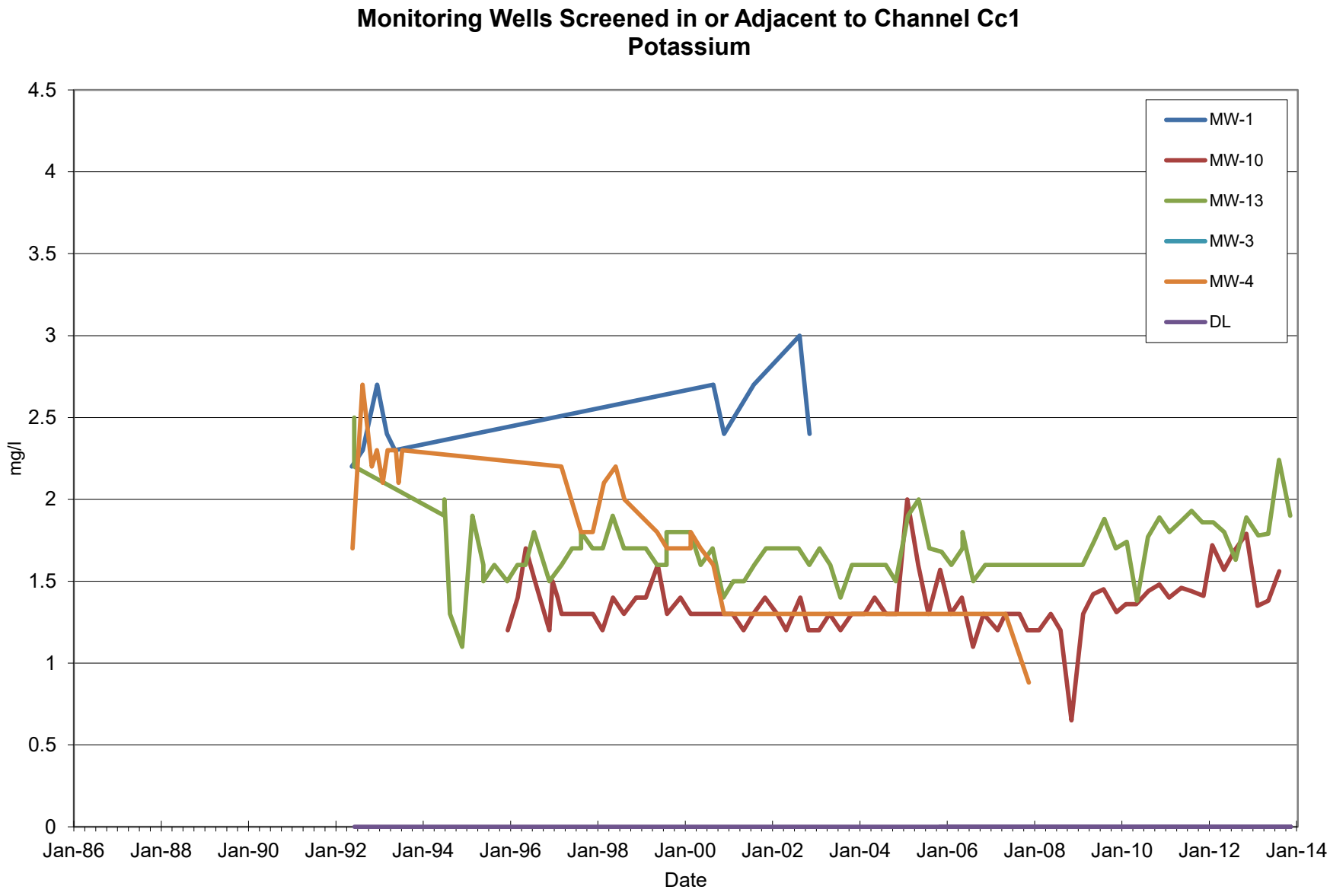

Monitoring Wells Screened in or Adjacent to Channel Cc1
Nitrate
12
10
8
6
4
2
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
Federal and State GW Quality Criteria
DL

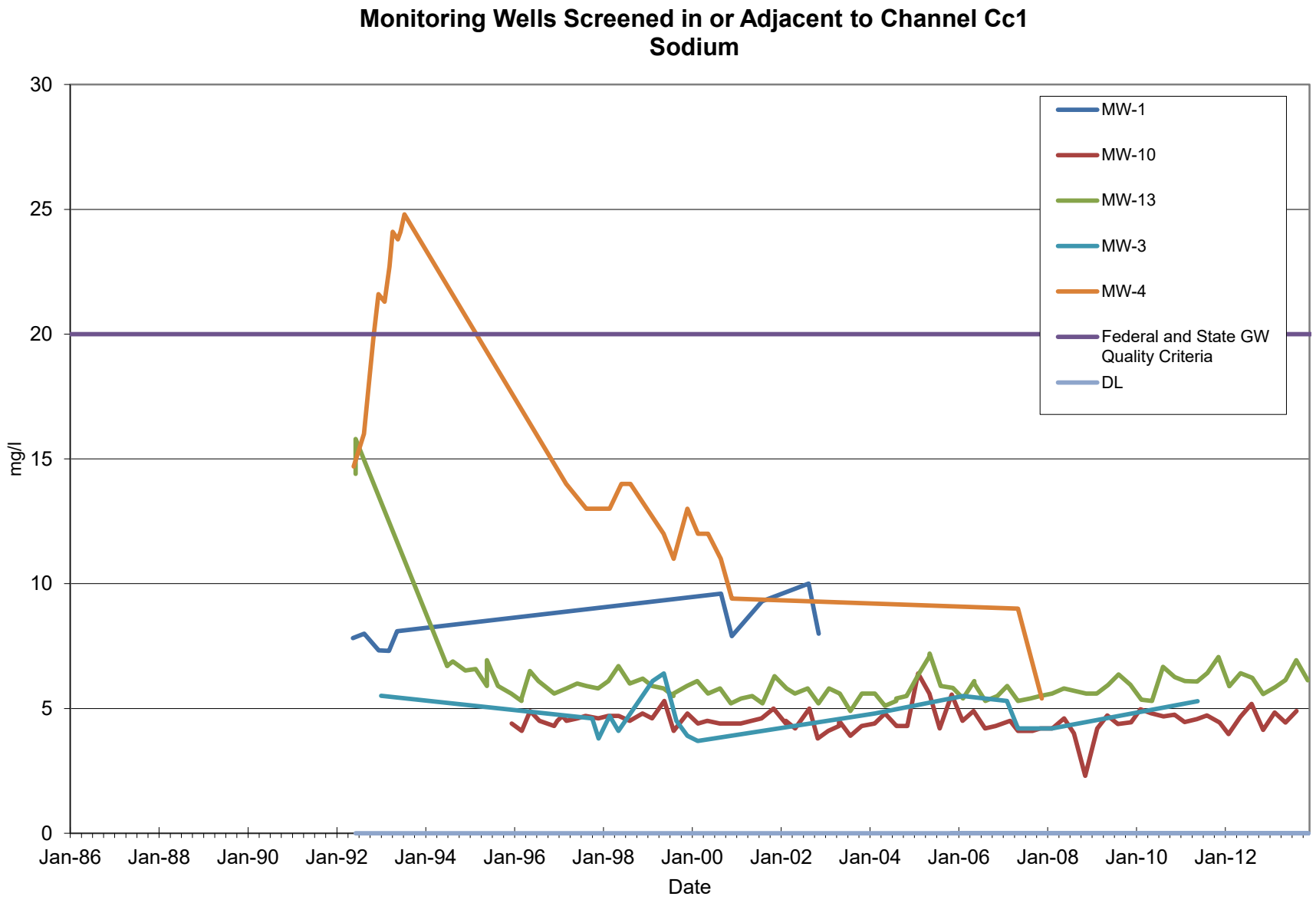

Monitoring Wells Screened in or Adjacent to Channel Cc1
Sulfate
Federal and State GW Quality Criteria 250 mg/L
MW-1
MW-10
MW-13
MW-3
MW-4
DL
mg/l
50
45
40
35
30
25
20
15
10
5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

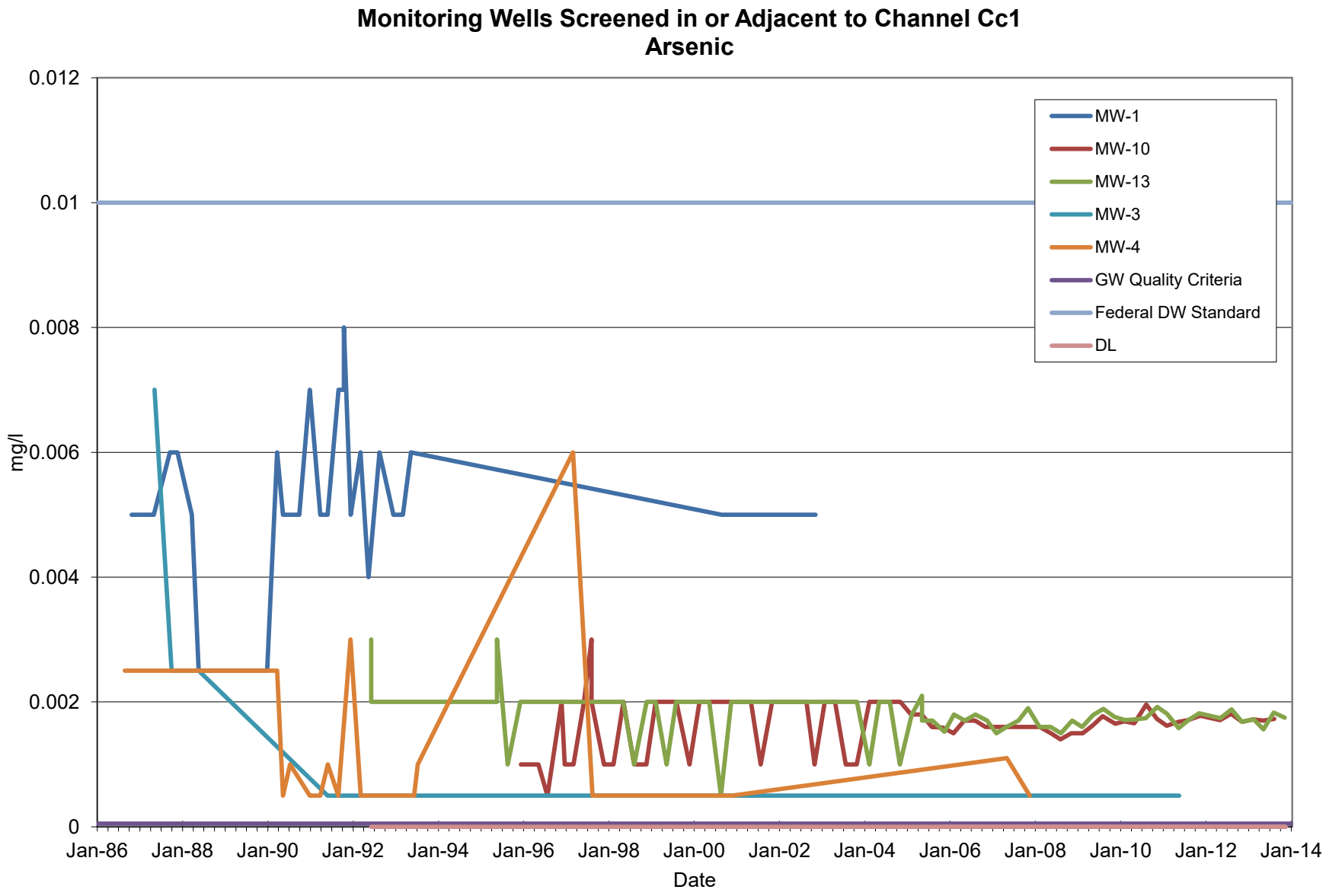

Monitoring Wells Screened in or Adjacent to Channel Cc1
Iron
mg/l
Date
10
9
8
7
6
5
4
3
2
1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
MW-1
MW-10
MW-13
MW-3
MW-4
Federal and State GW Criteria
DL

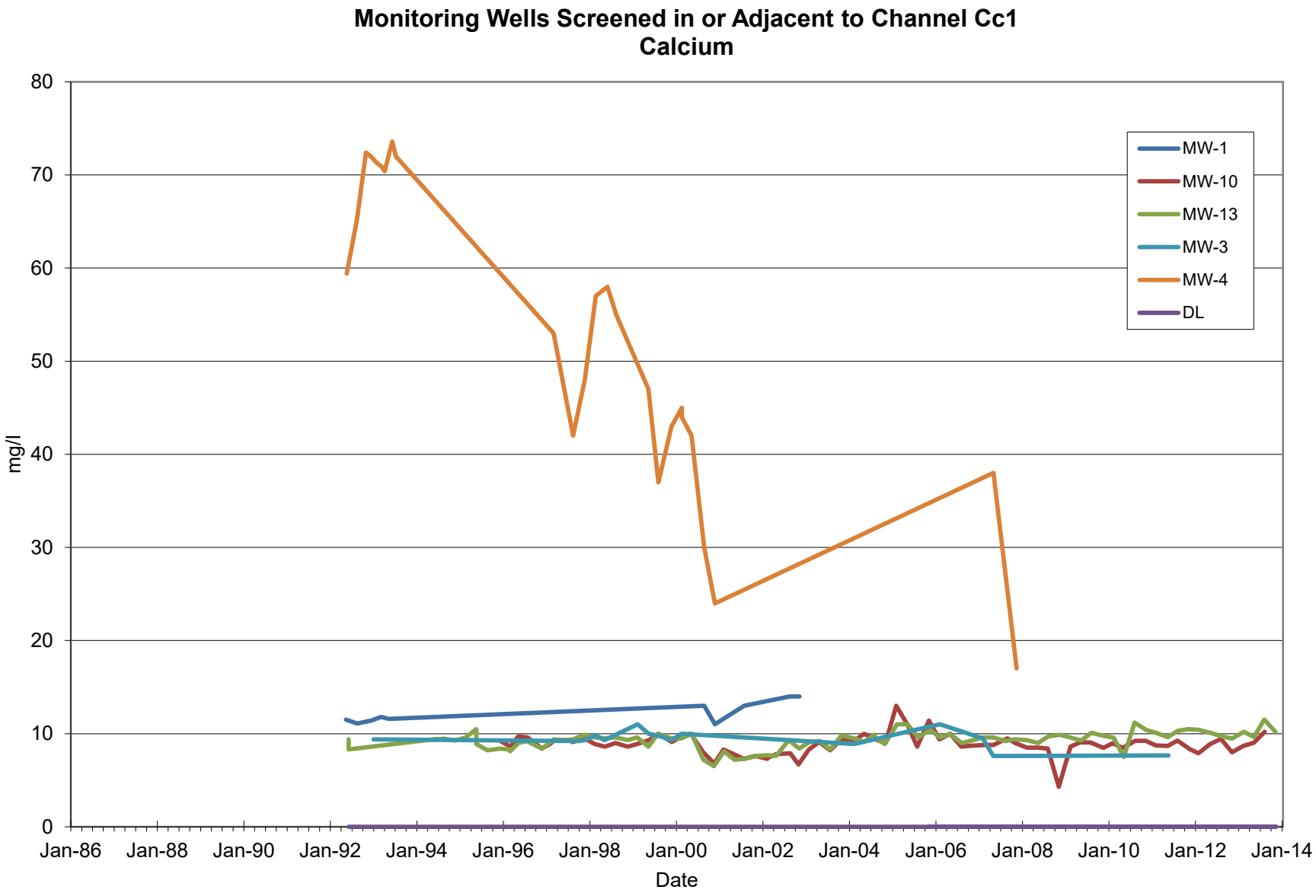

Monitoring Wells Screened in or Adjacent to Channel Cc1
Magnesium
mg/l
60
50
40
30
20
10
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

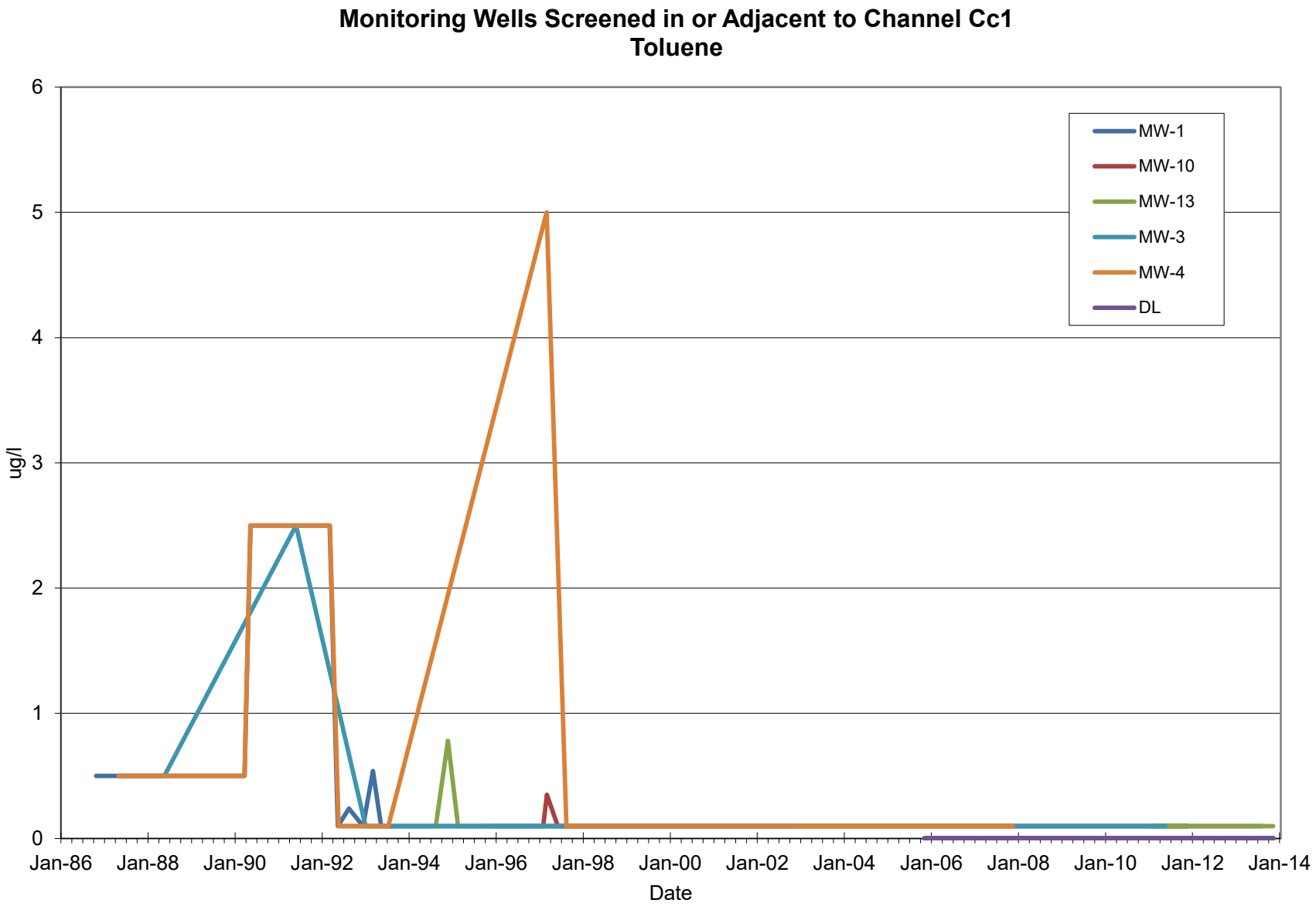

Monitoring Wells Screened in or Adjacent to Channel Cc1
Manganese
mg/l
3
2.5
2
1.5
1
0.5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
0.06
0.05
0.04
0.03
0.02
0.01
0
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
MW-1
MW-10
MW-13
MW-3
MW-4
Federal and State GW Quality Criteria
DL

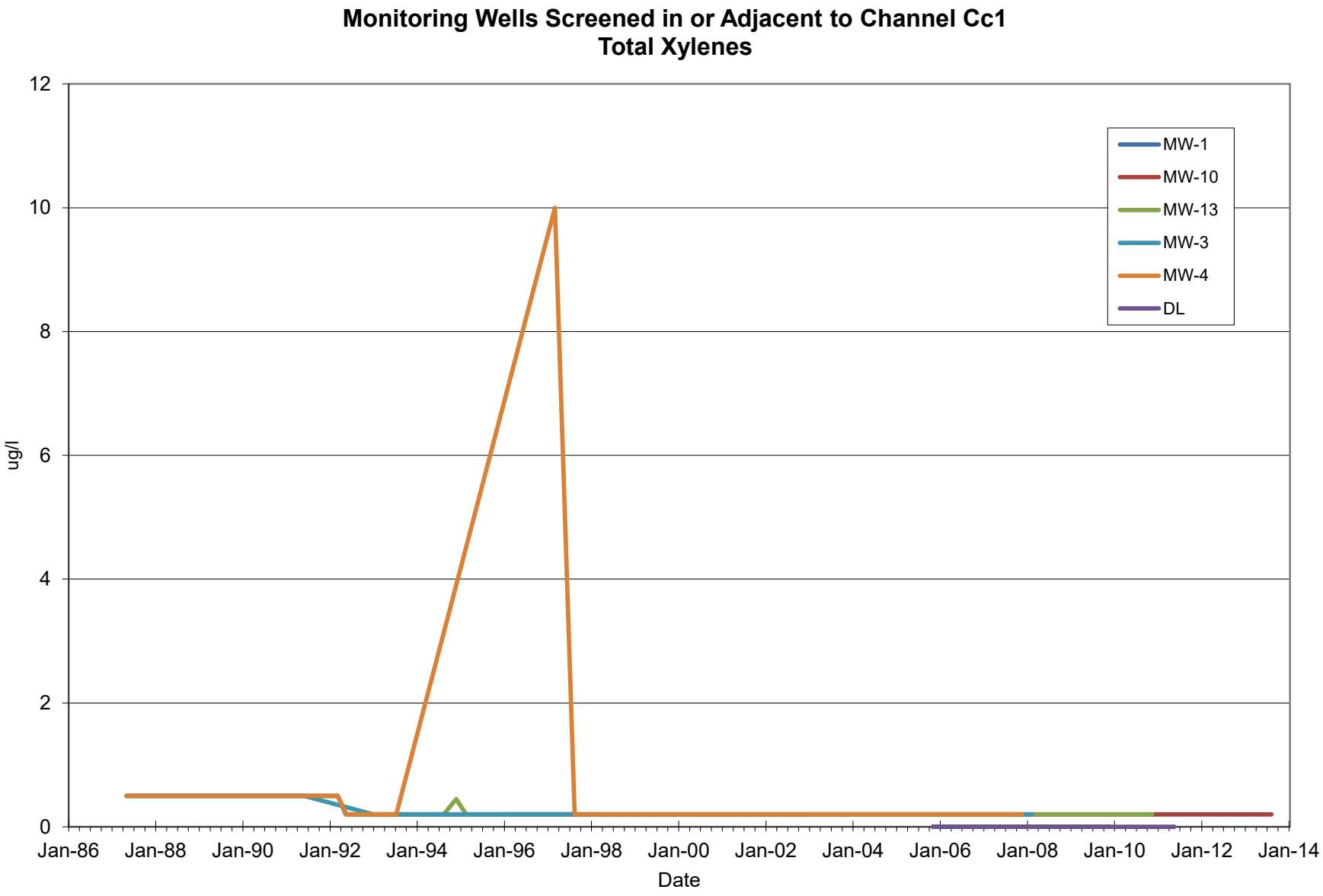

Monitoring Wells Screened in or Adjacent to Channel Cc1
Potassium
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

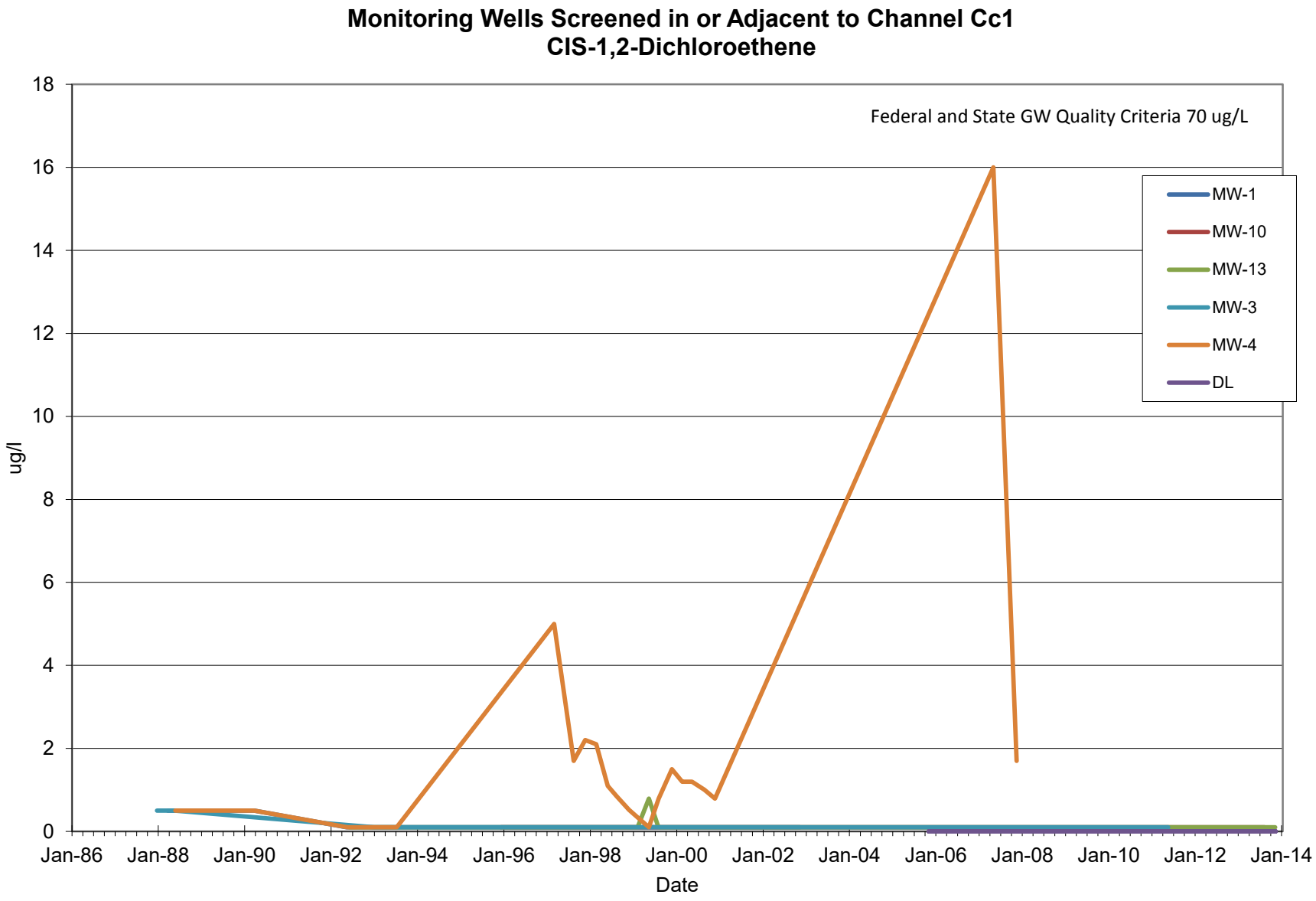

Monitoring Wells Screened in or Adjacent to Channel Cc1
Sodium
30
25
20
15
10
5
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Date
MW-1
MW-10
MW-13
MW-3
MW-4
Federal and State GW Quality Criteria
DL

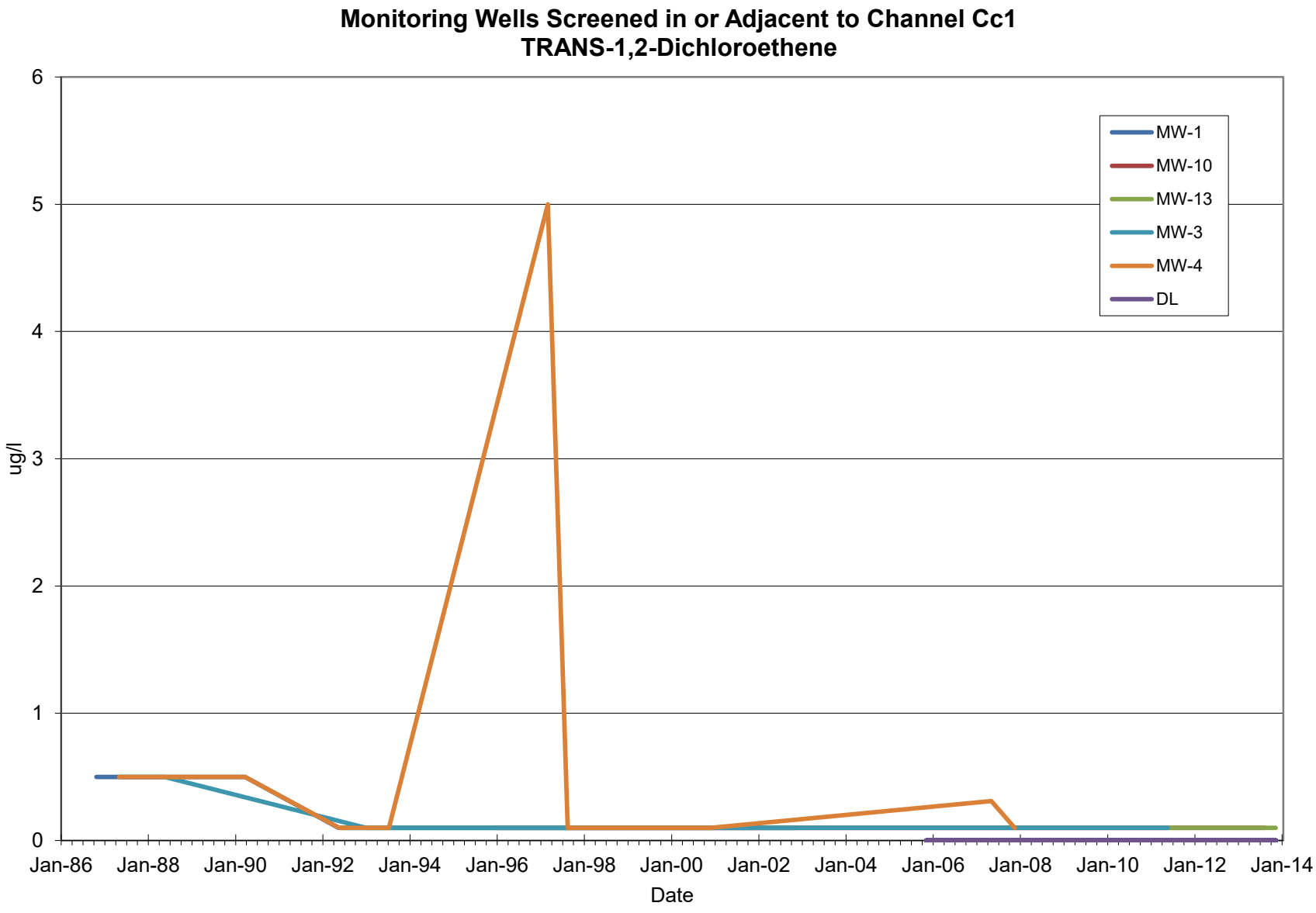

Monitoring Wells Screened in or Adjacent to Channel Cc1
Arsenic
0.012
0.01
0.008
0.006
0.004
0.002
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
GW Quality Criteria
Federal DW Standard
DL

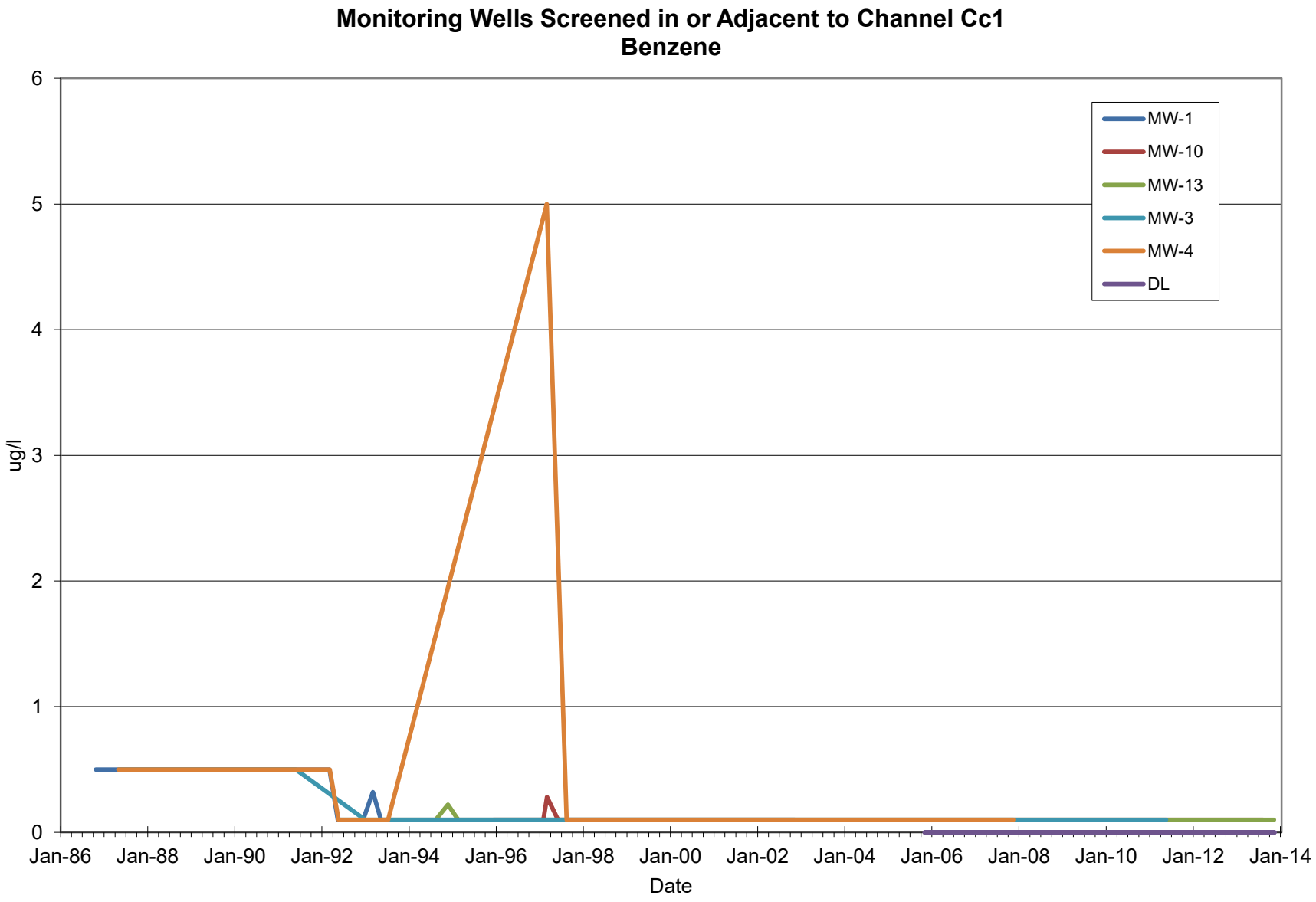

Monitoring Wells Screened in or Adjacent to Channel Cc1
Calcium
80
70
60
50
40
30
20
10
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

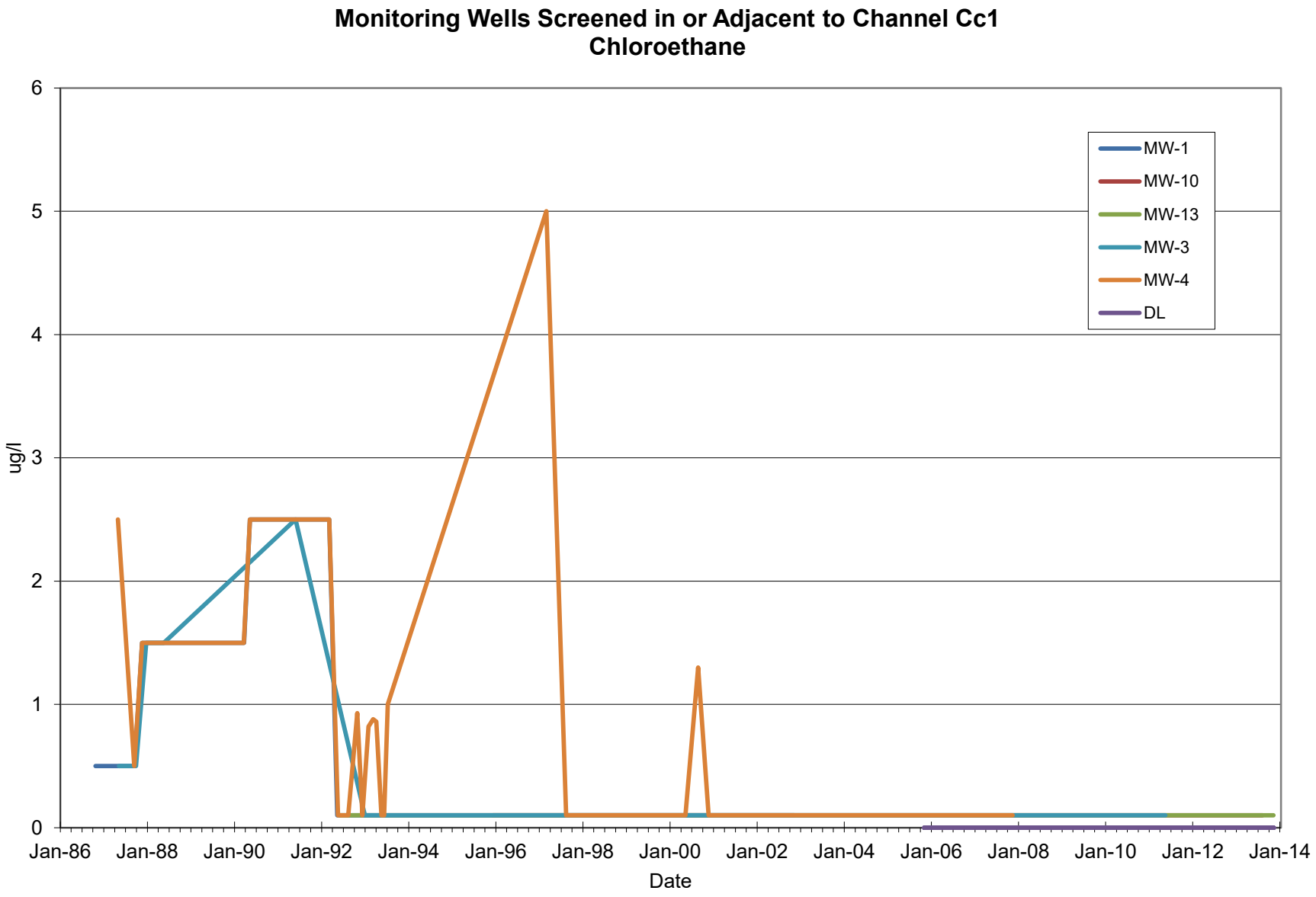

Monitoring Wells Screened in or Adjacent to Channel Cc1
Toluene
ug/l
0
1
2
3
4
5
6
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

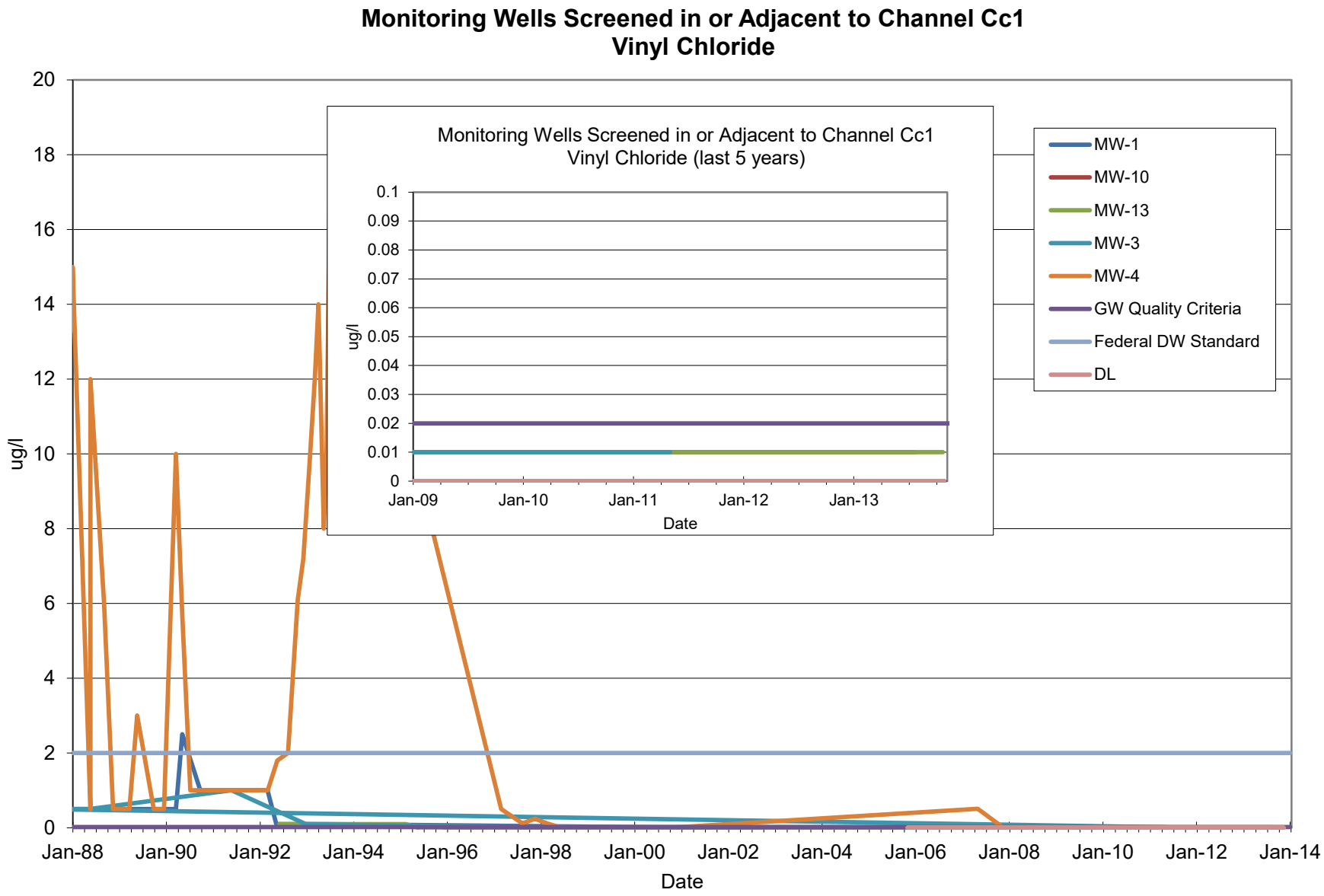

Monitoring Wells Screened in or Adjacent to Channel Cc1
Total Xylenes
ug/l
12
10
8
6
4
2
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

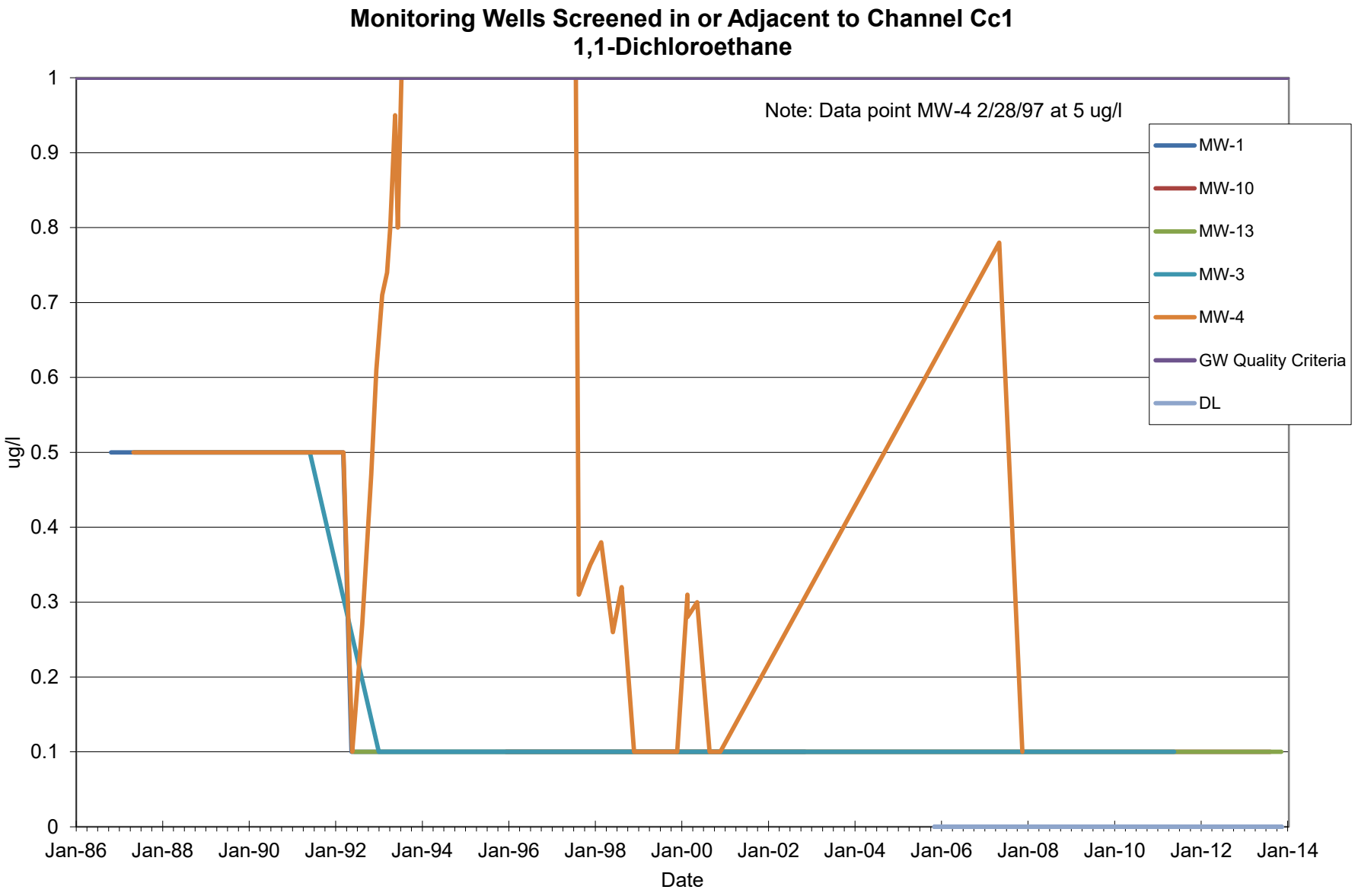

Monitoring Wells Screened in or Adjacent to Channel Cc1
CIS-1,2-Dichloroethene
Federal and State GW Quality Criteria 70 ug/L
MW-1
MW-10
MW-13
MW-3
MW-4
DL
ug/l
0
2
4
6
8
10
12
14
16
18
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

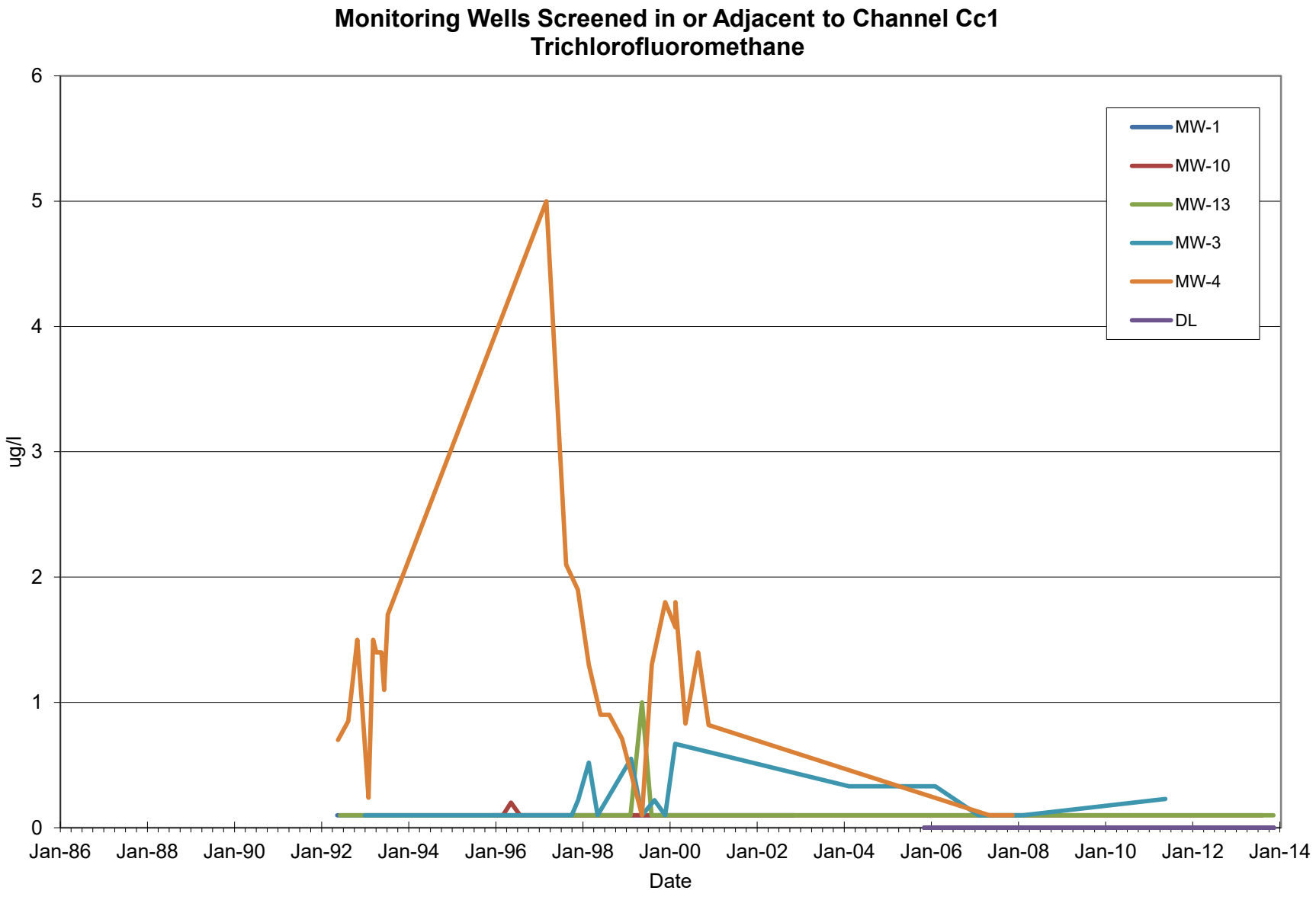

Monitoring Wells Screened in or Adjacent to Channel Cc1
TRANS-1,2-Dichloroethene
ug/l
0
1
2
3
4
5
6
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

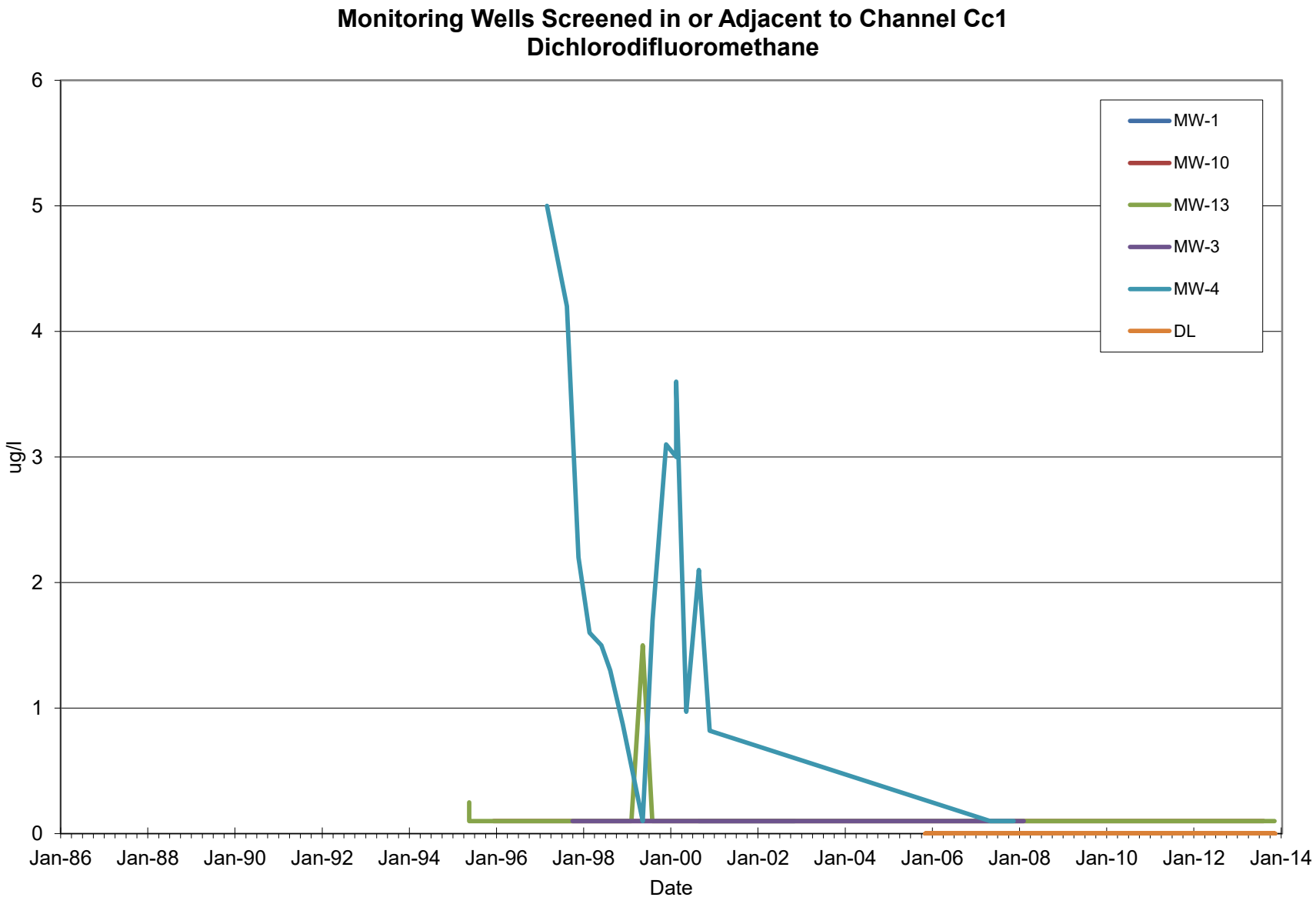

Monitoring Wells Screened in or Adjacent to Channel Cc1
Benzene
ug/l
6
5
4
3
2
1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

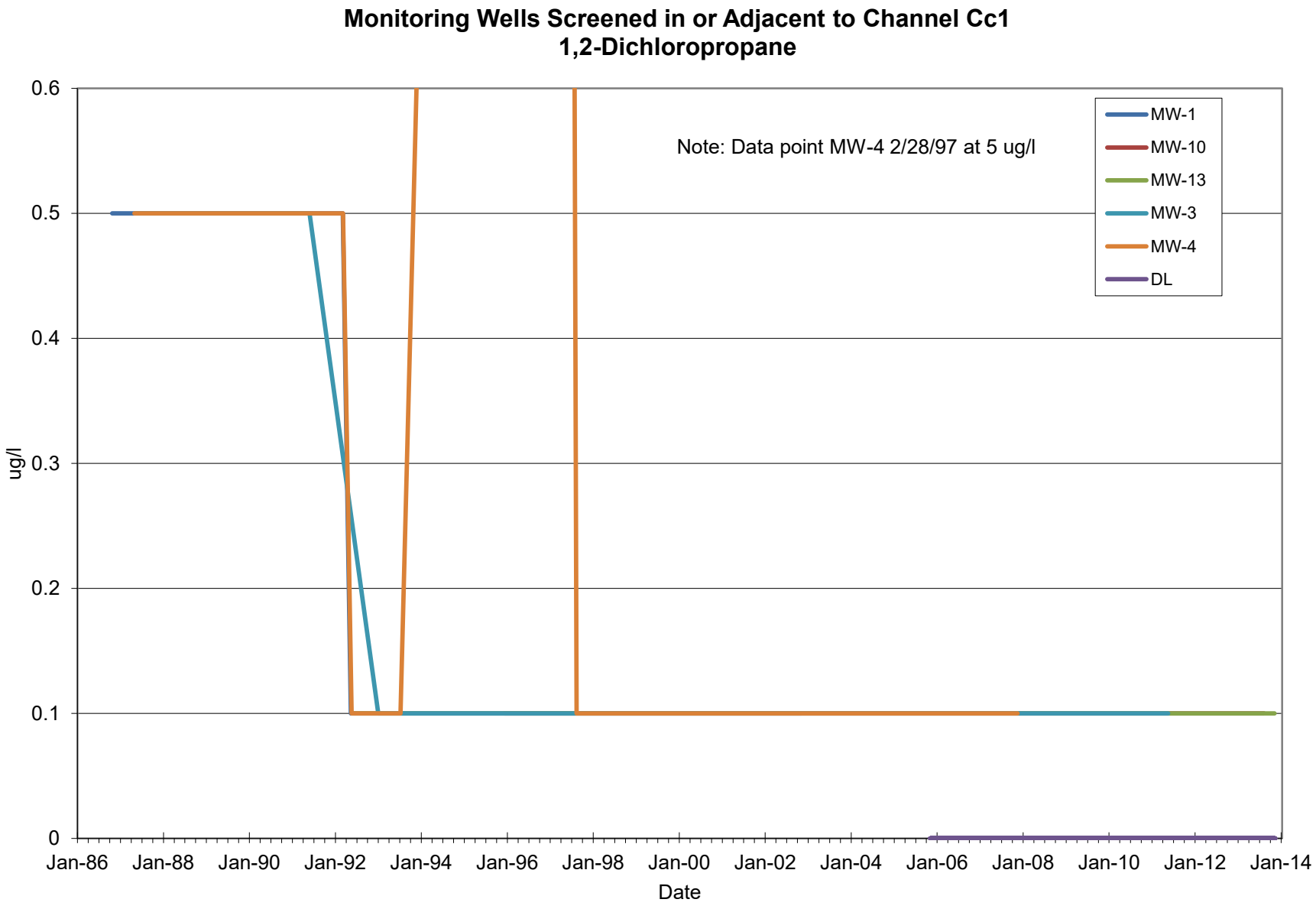

Monitoring Wells Screened in or Adjacent to Channel Cc1
Chloroethane
ug/l
0
1
2
3
4
5
6
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

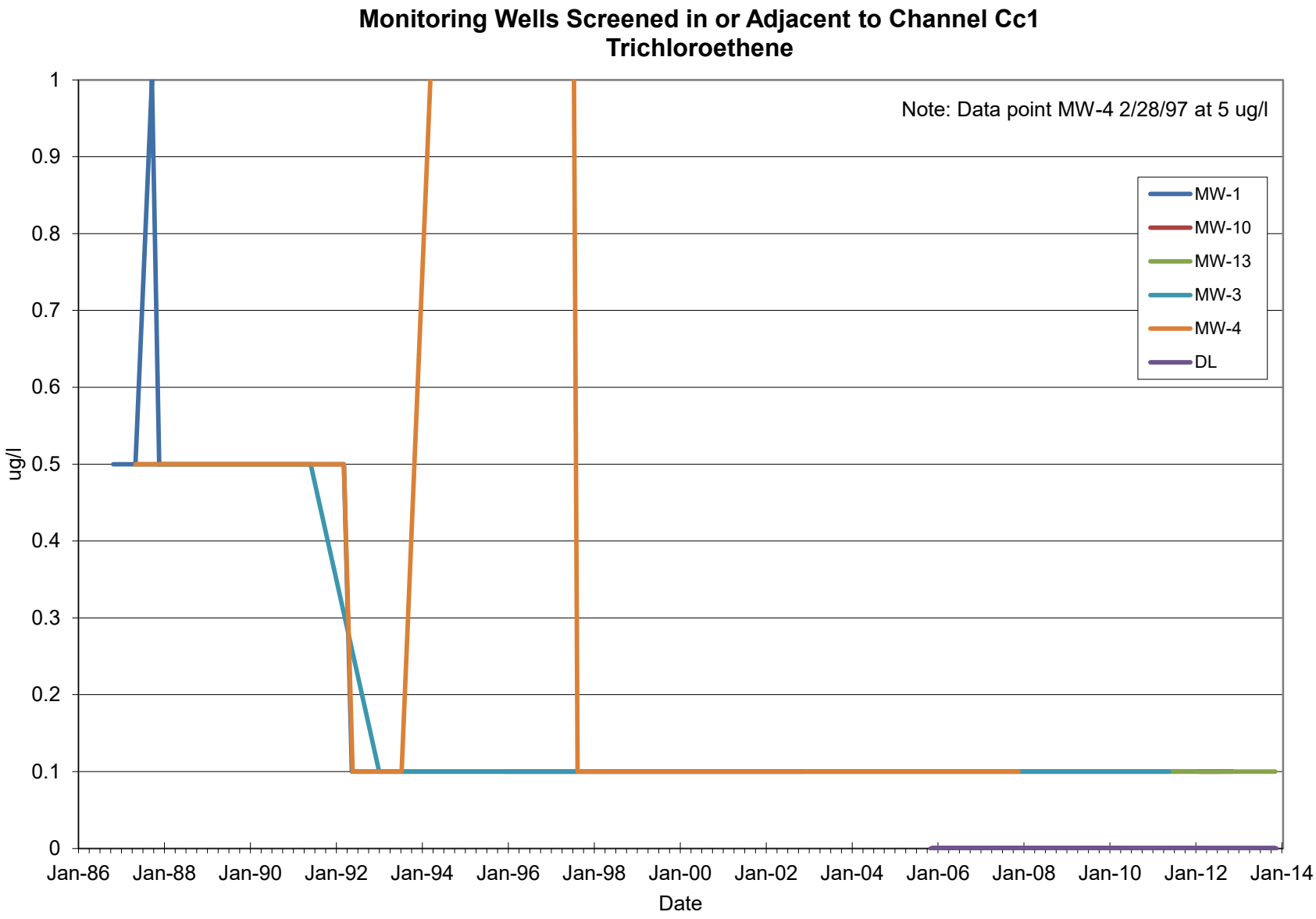

Monitoring Wells Screened in or Adjacent to Channel Cc1
Vinyl Chloride
ug/l
Date
MW-1
MW-10
MW-13
MW-3
MW-4
GW Quality Criteria
Federal DW Standard
DL
Monitoring Wells Screened in or Adjacent to Channel Cc1
Vinyl Chloride (last 5 years)
ug/l
Date


Monitoring Wells Screened in or Adjacent to Channel Cc1
1,1-Dichloroethane
Note: Data point MW-4 2/28/97 at 5 ug/l
MW-1
MW-10
MW-13
MW-3
MW-4
GW Quality Criteria
DL
ug/l
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date


Monitoring Wells Screened in or Adjacent to Channel Cc1
Trichlorofluoromethane
ug/l
0
1
2
3
4
5
6
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

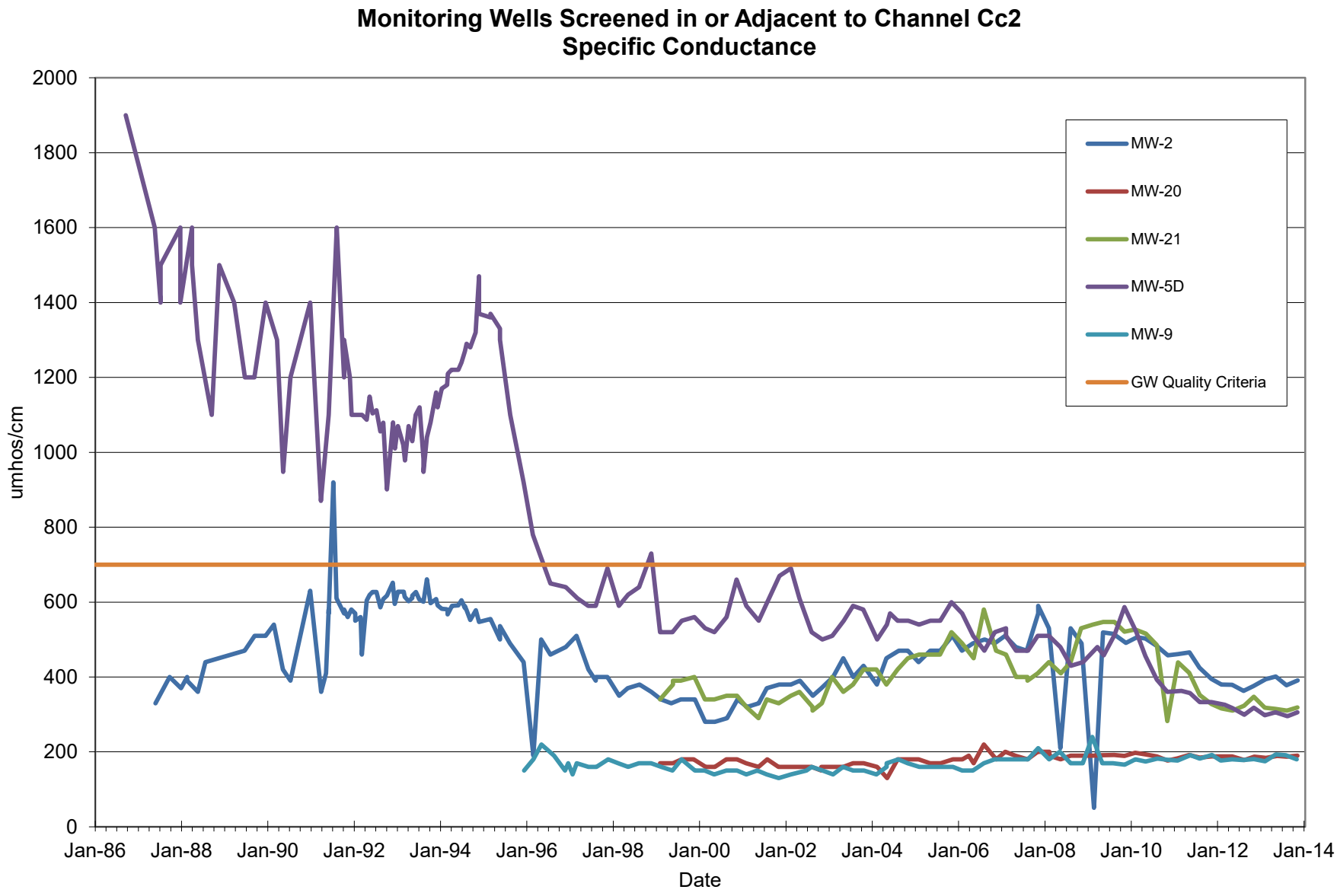

Monitoring Wells Screened in or Adjacent to Channel Cc1
Dichlorodifluoromethane
ug/l
0
1
2
3
4
5
6
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-1
MW-10
MW-13
MW-3
MW-4
DL

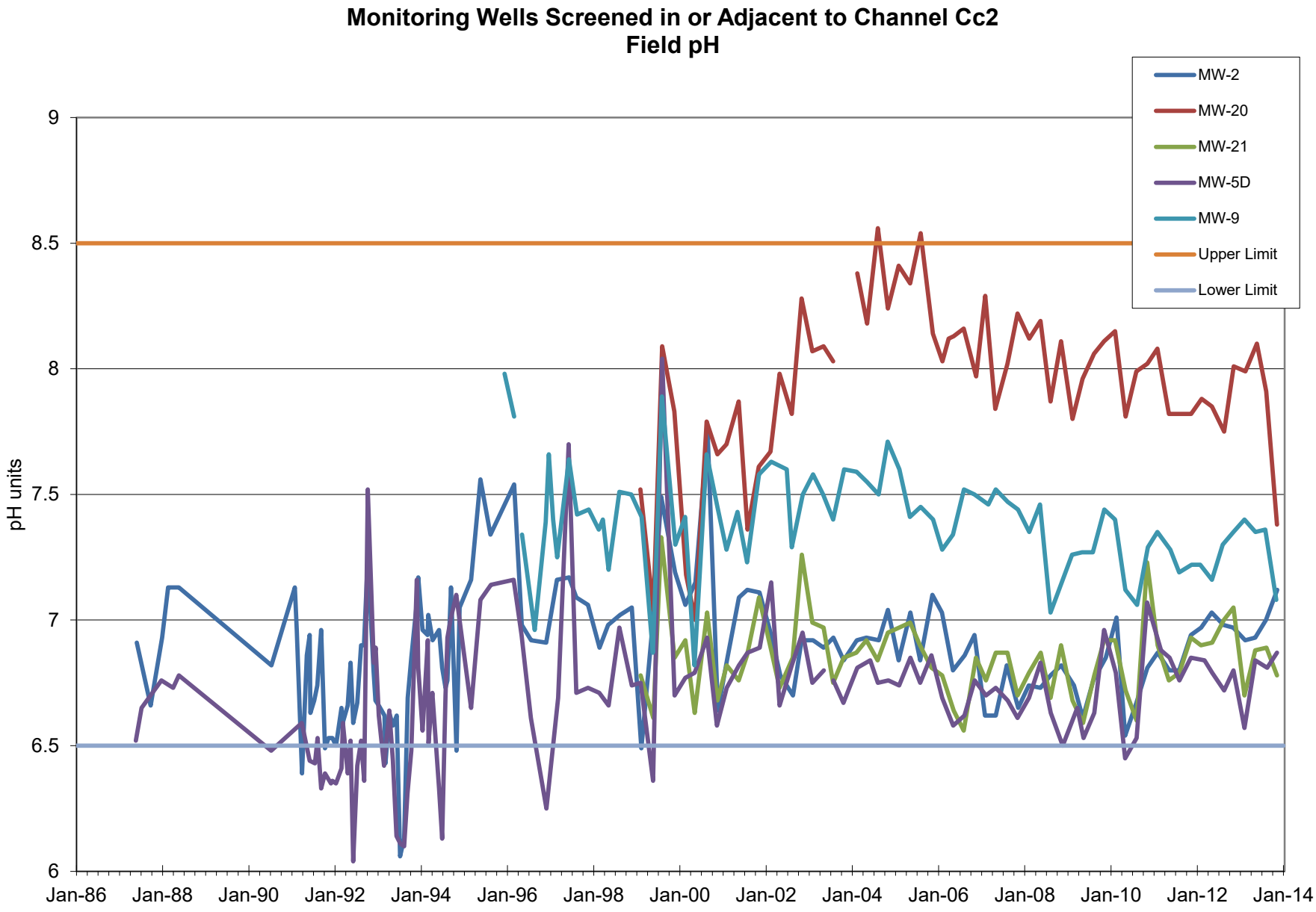

Monitoring Wells Screened in or Adjacent to Channel Cc1
1,2-Dichloropropane
Note: Data point MW-4 2/28/97 at 5 ug/l
MW-1
MW-10
MW-13
MW-3
MW-4
DL
ug/l
0.6
0.5
0.4
0.3
0.2
0.1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

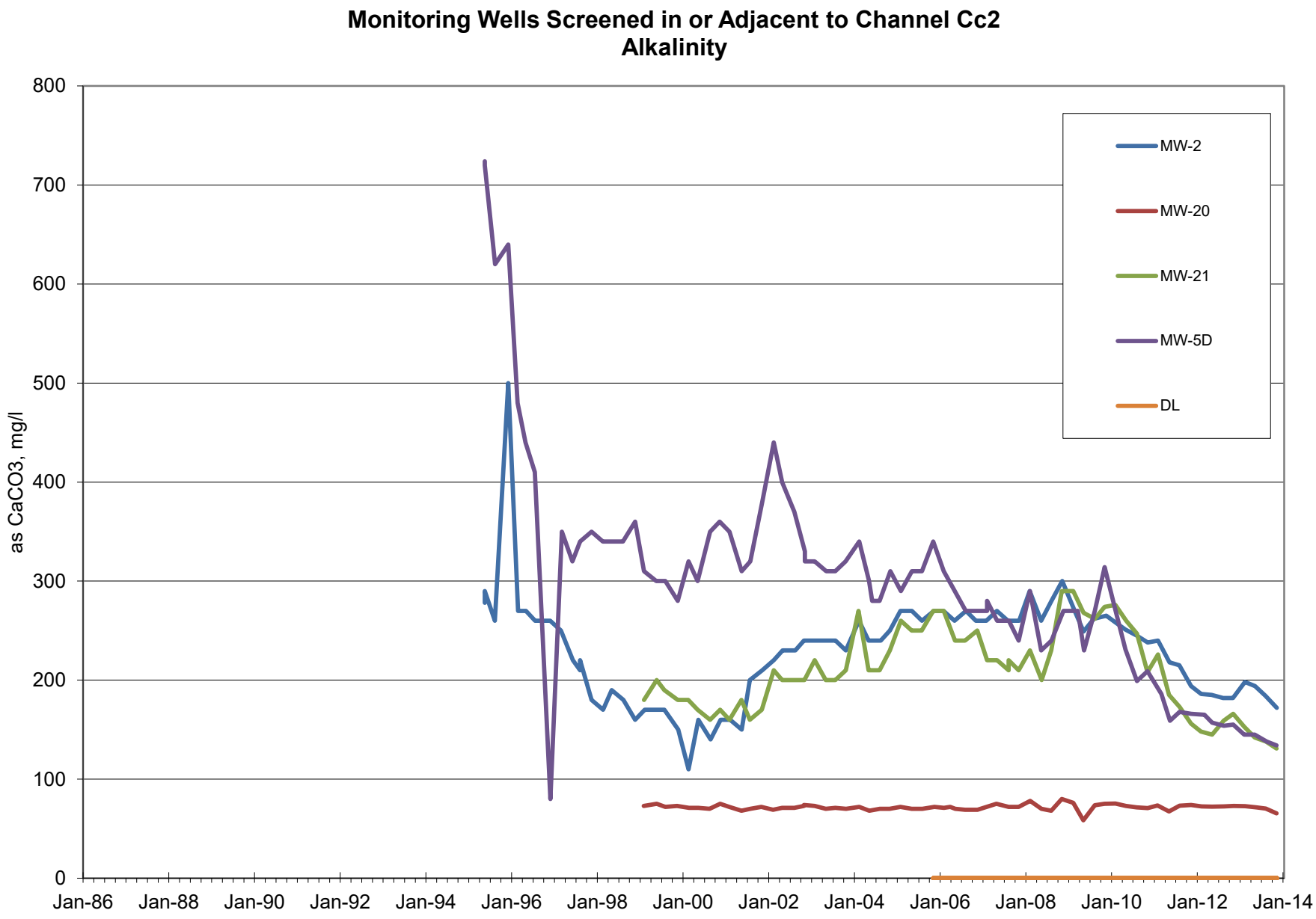

Monitoring Wells Screened in or Adjacent to Channel Cc1
Trichloroethene
Note: Data point MW-4 2/28/97 at 5 ug/l
MW-1
MW-10
MW-13
MW-3
MW-4
DL
ug/l
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

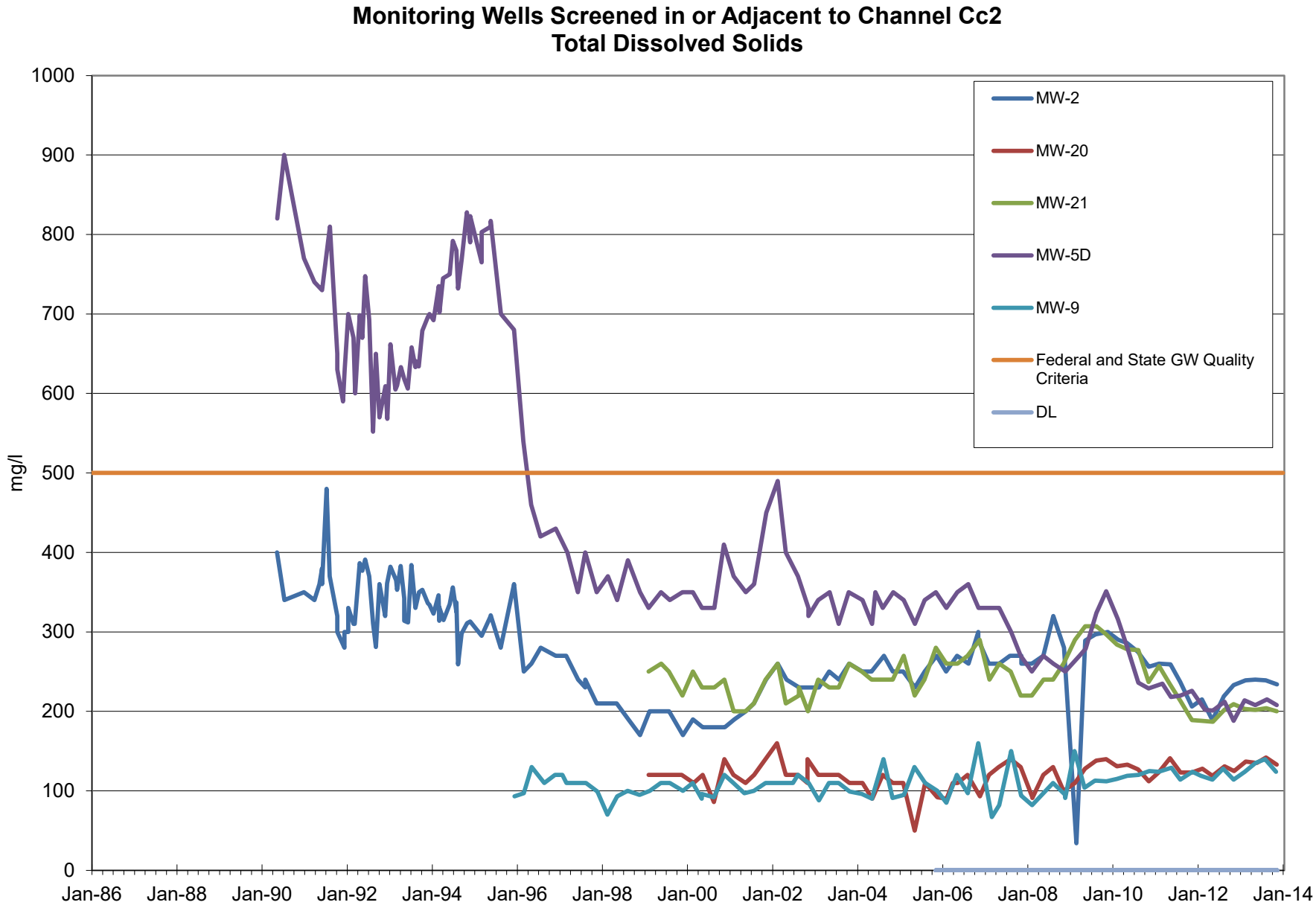
Appendix D

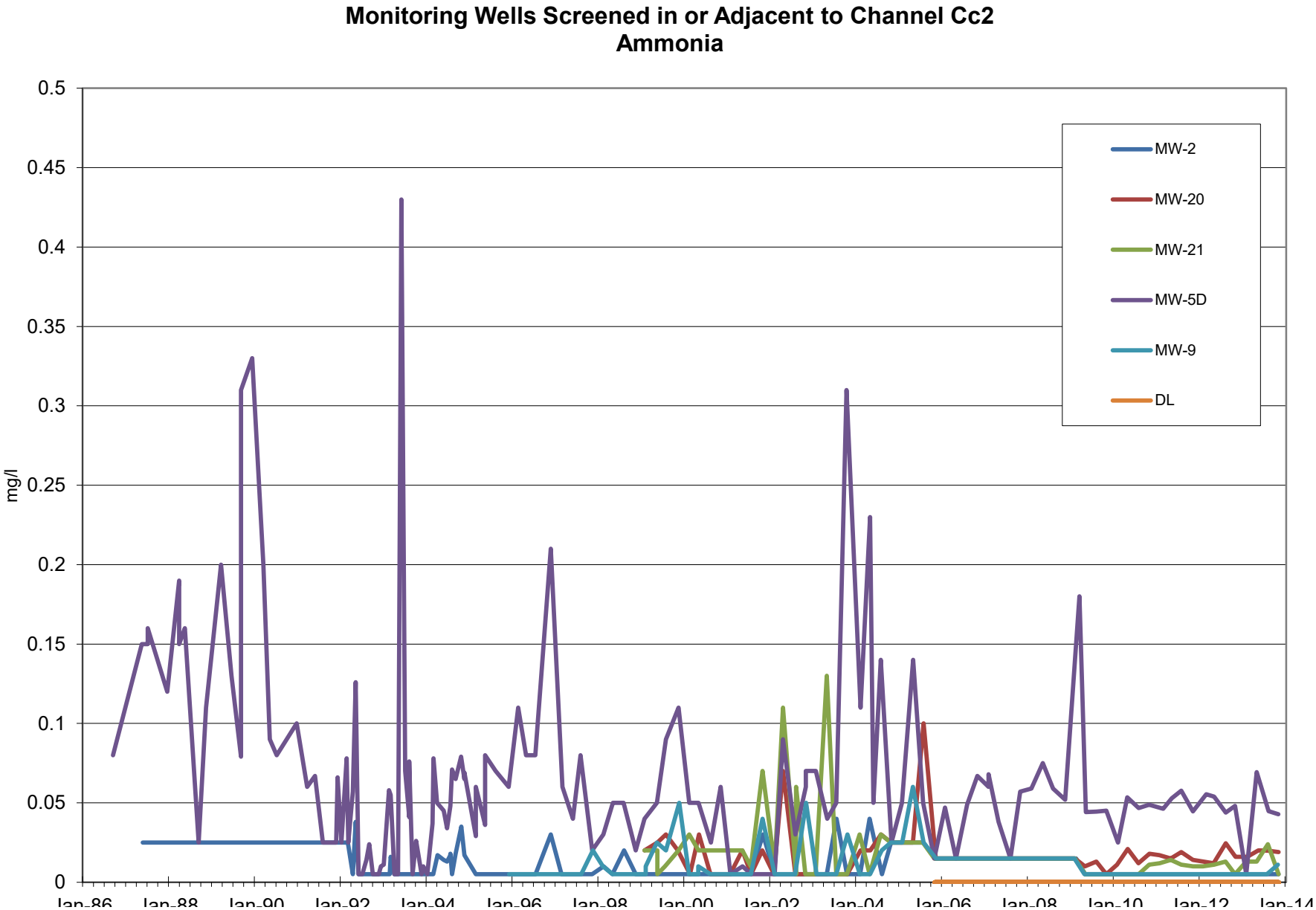
Time Concentration Plots for
Groundwater in Channel Cc2

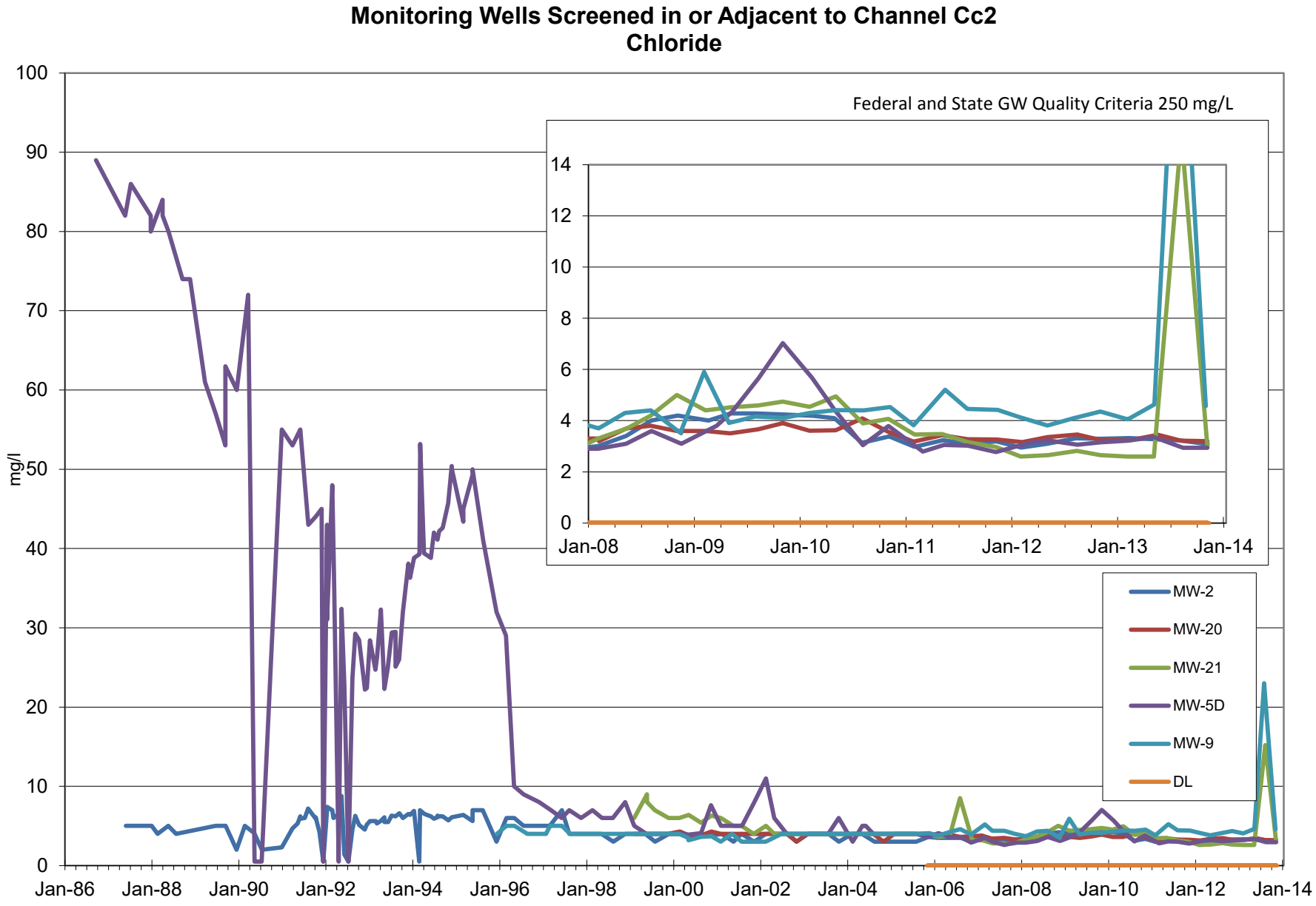

Monitoring Wells Screened in or Adjacent to Channel Cc2
Specific Conductance
umhos/cm
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-2
MW-20
MW-21
MW-5D
MW-9
GW Quality Criteria

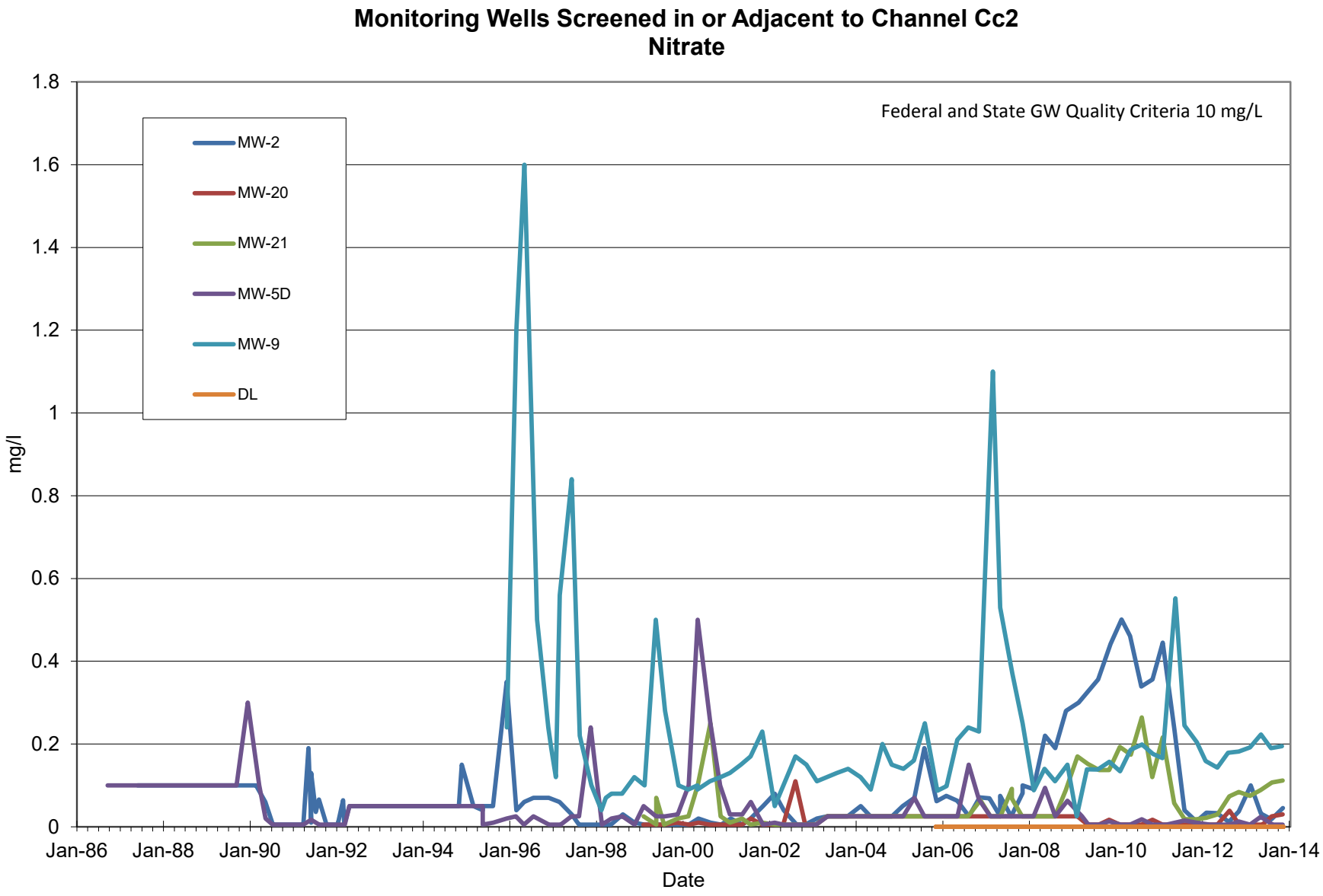

Monitoring Wells Screened in or Adjacent to Channel Cc2
Field pH
MW-2
MW-20
MW-21
MW-5D
MW-9
Upper Limit
Lower Limit
pH units
9
8.5
8
7.5
7
6.5
6
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14

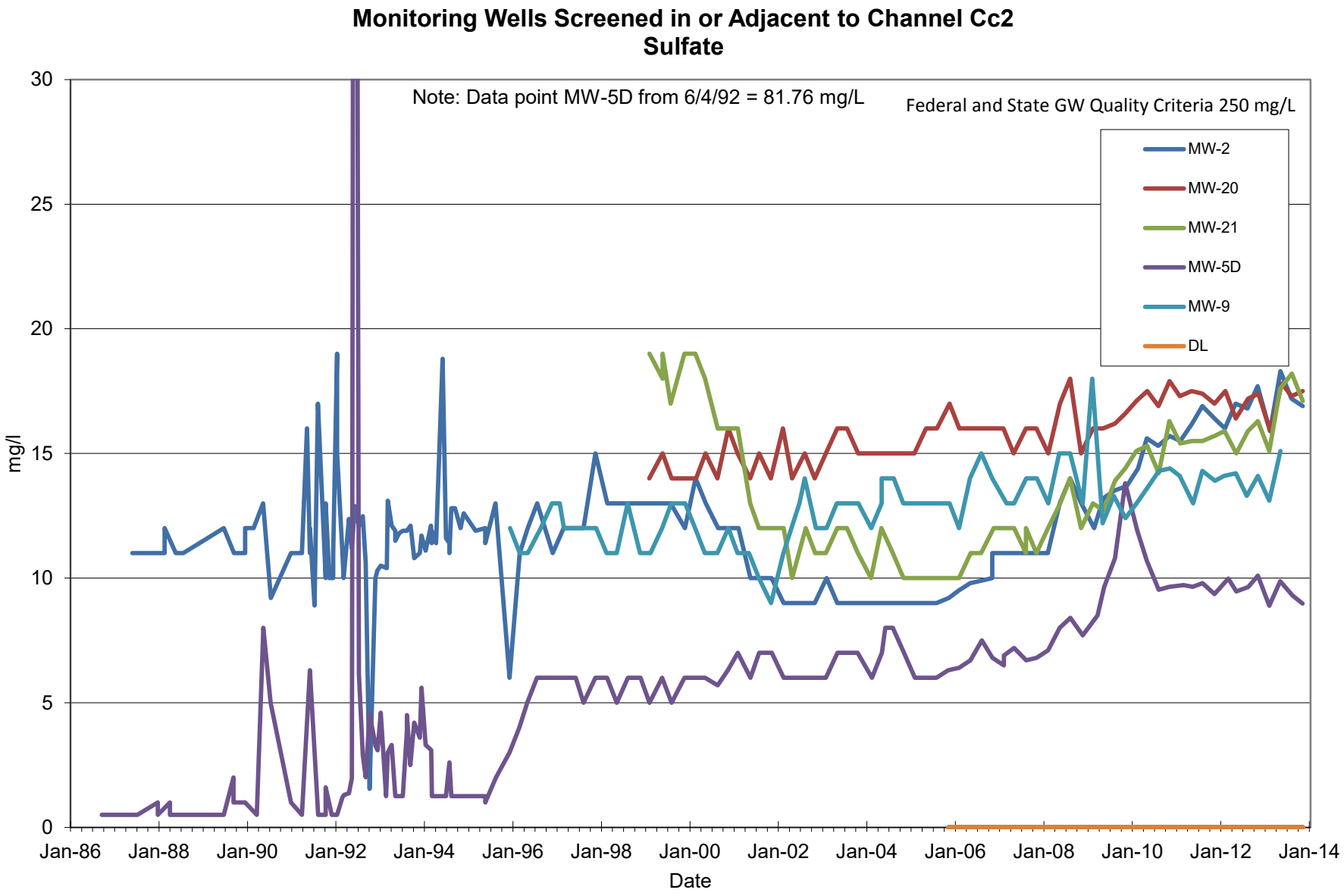

Monitoring Wells Screened in or Adjacent to Channel Cc2
Alkalinity
as CaCO3, mg/l
800
700
600
500
400
300
200
100
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
DL

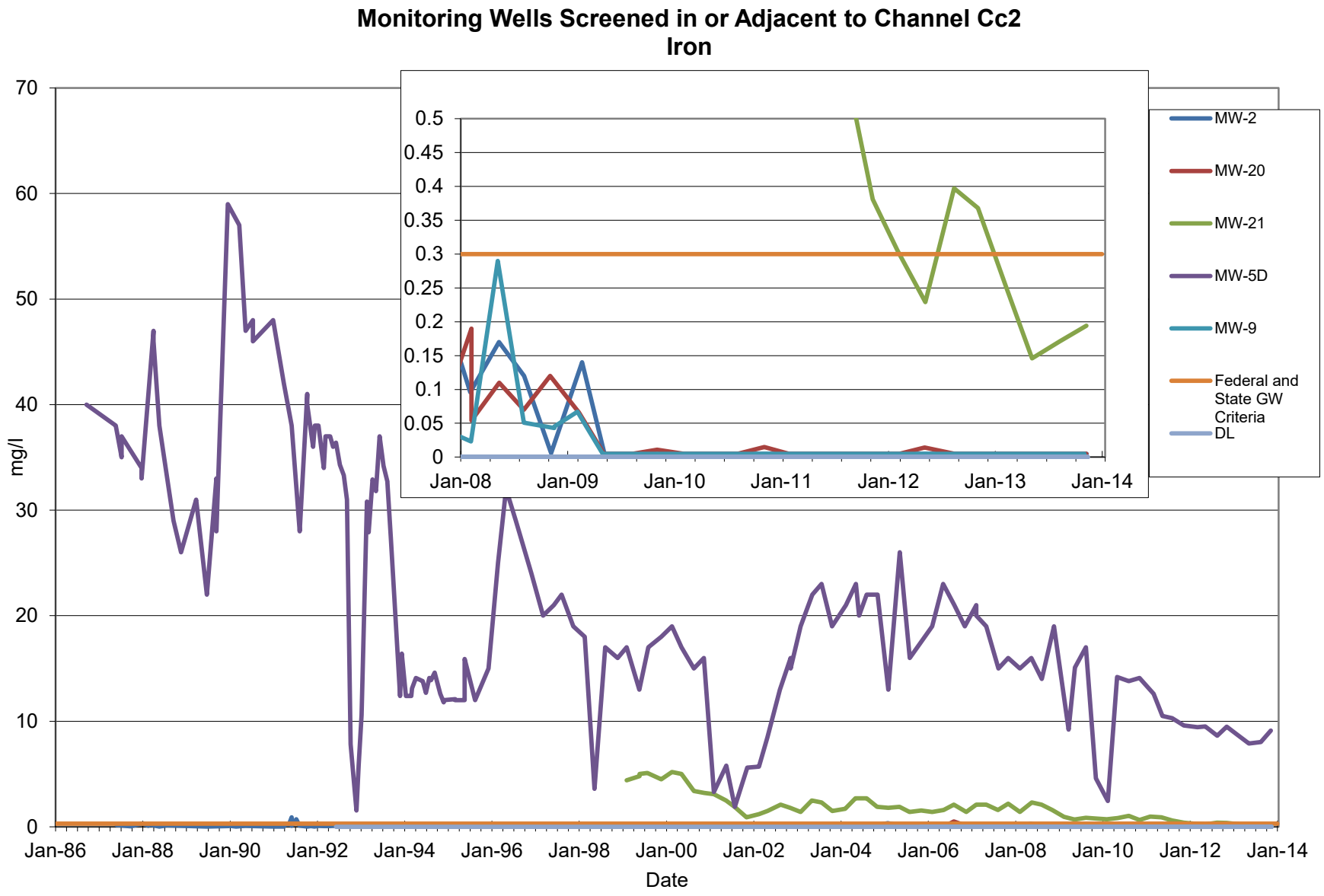

Monitoring Wells Screened in or Adjacent to Channel Cc2
Total Dissolved Solids
mg/l
1000
900
800
700
600
500
400
300
200
100
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
Federal and State GW Quality Criteria
DL

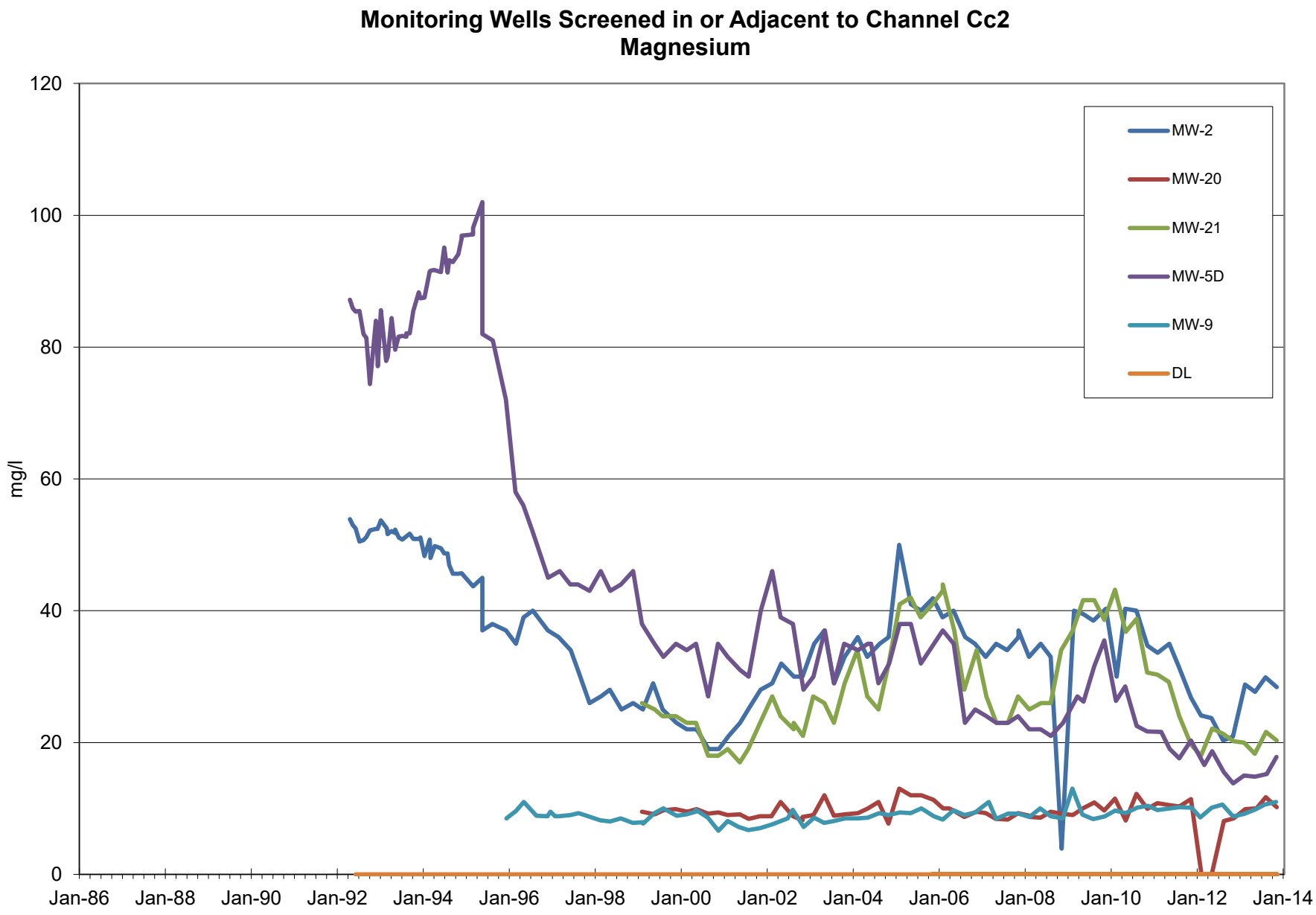

Monitoring Wells Screened in or Adjacent to Channel Cc2
Ammonia
mg/l
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

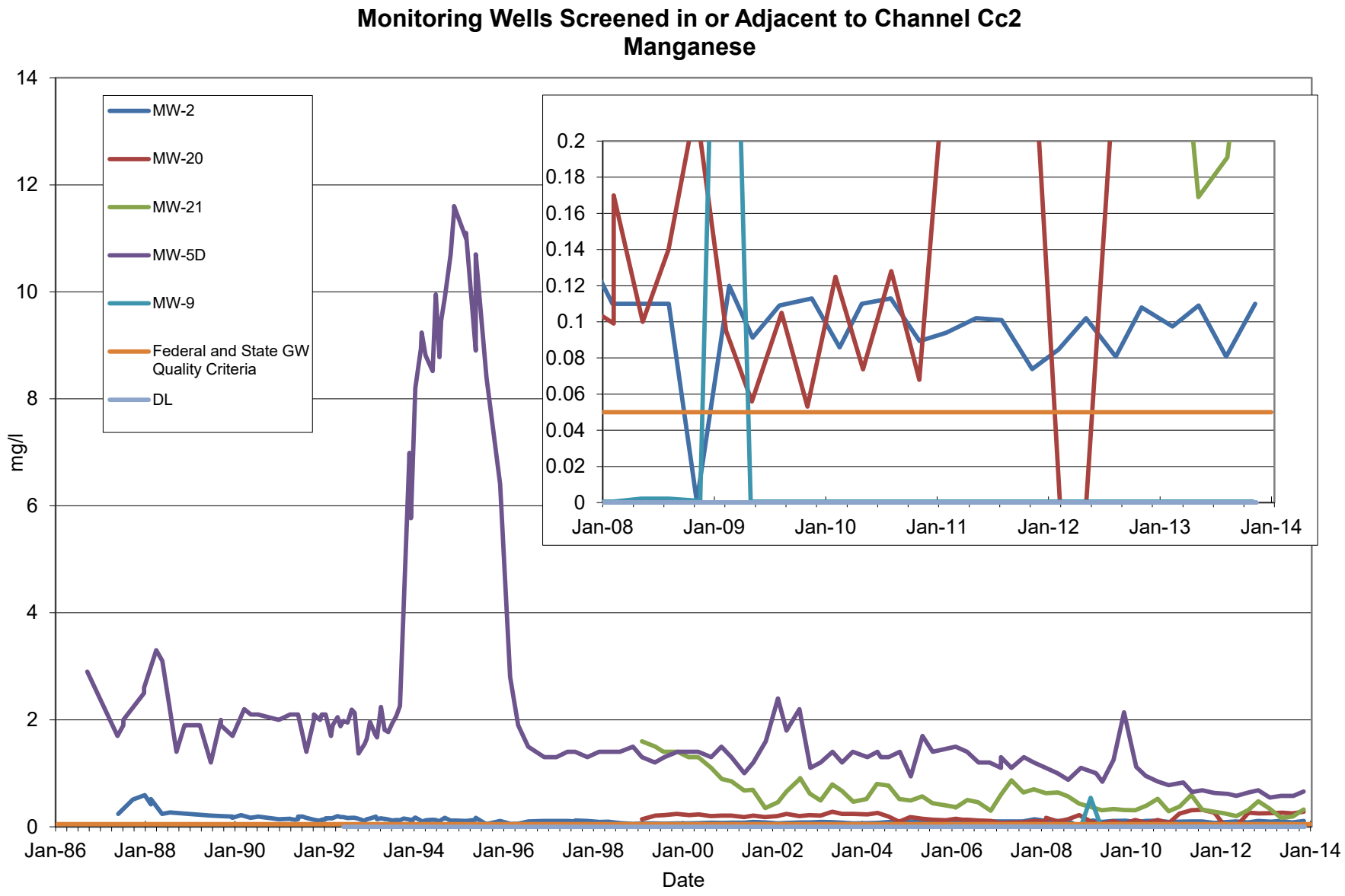

Monitoring Wells Screened in or Adjacent to Channel Cc2
Chloride
Federal and State GW Quality Criteria 250 mg/L
mg/l
100
90
80
70
60
50
40
30
20
10
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
14
12
10
8
6
4
2
0
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

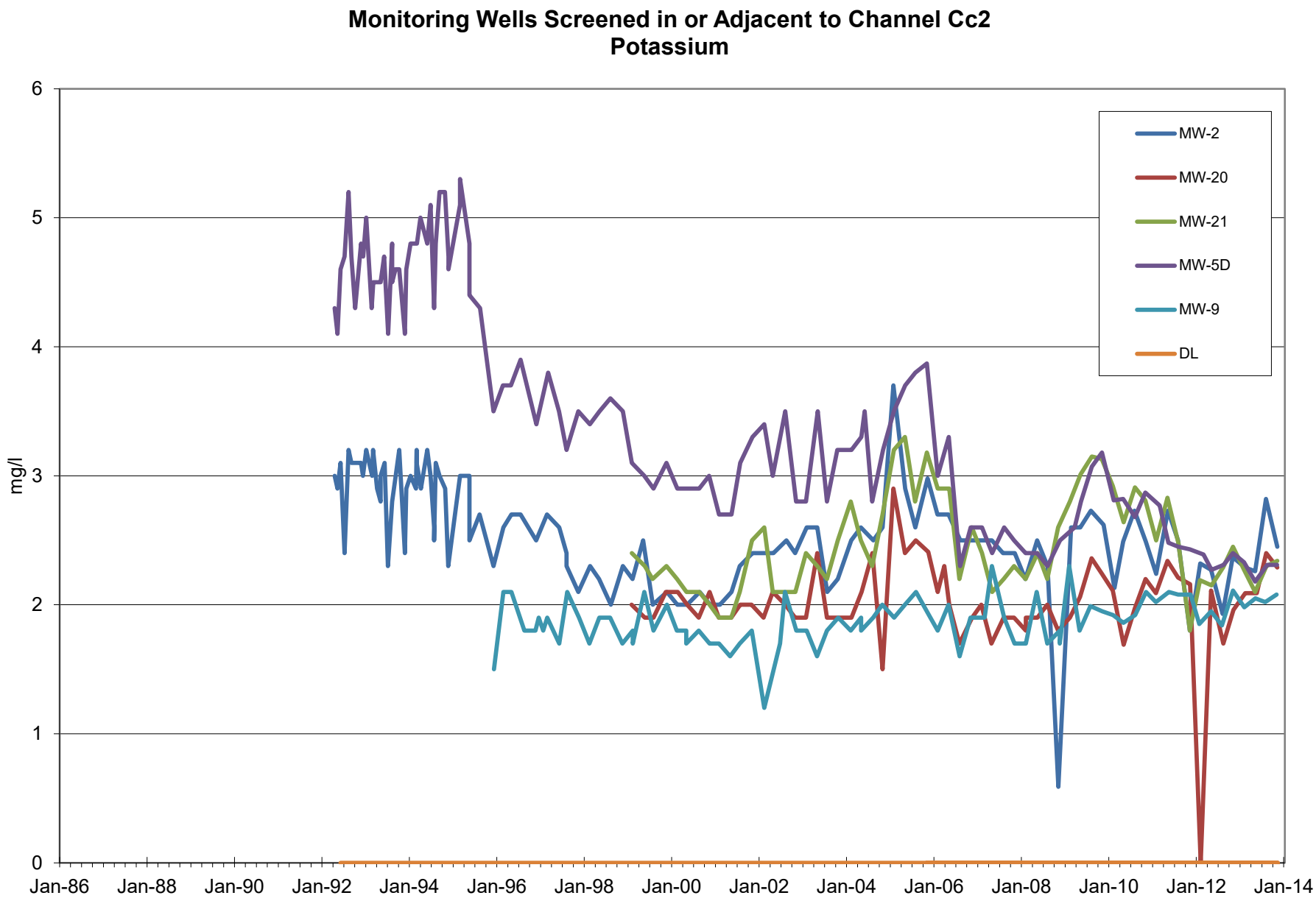

Monitoring Wells Screened in or Adjacent to Channel Cc2
Nitrate
Federal and State GW Quality Criteria 10 mg/L
MW-2
MW-20
MW-21
MW-5D
MW-9
DL
mg/l
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

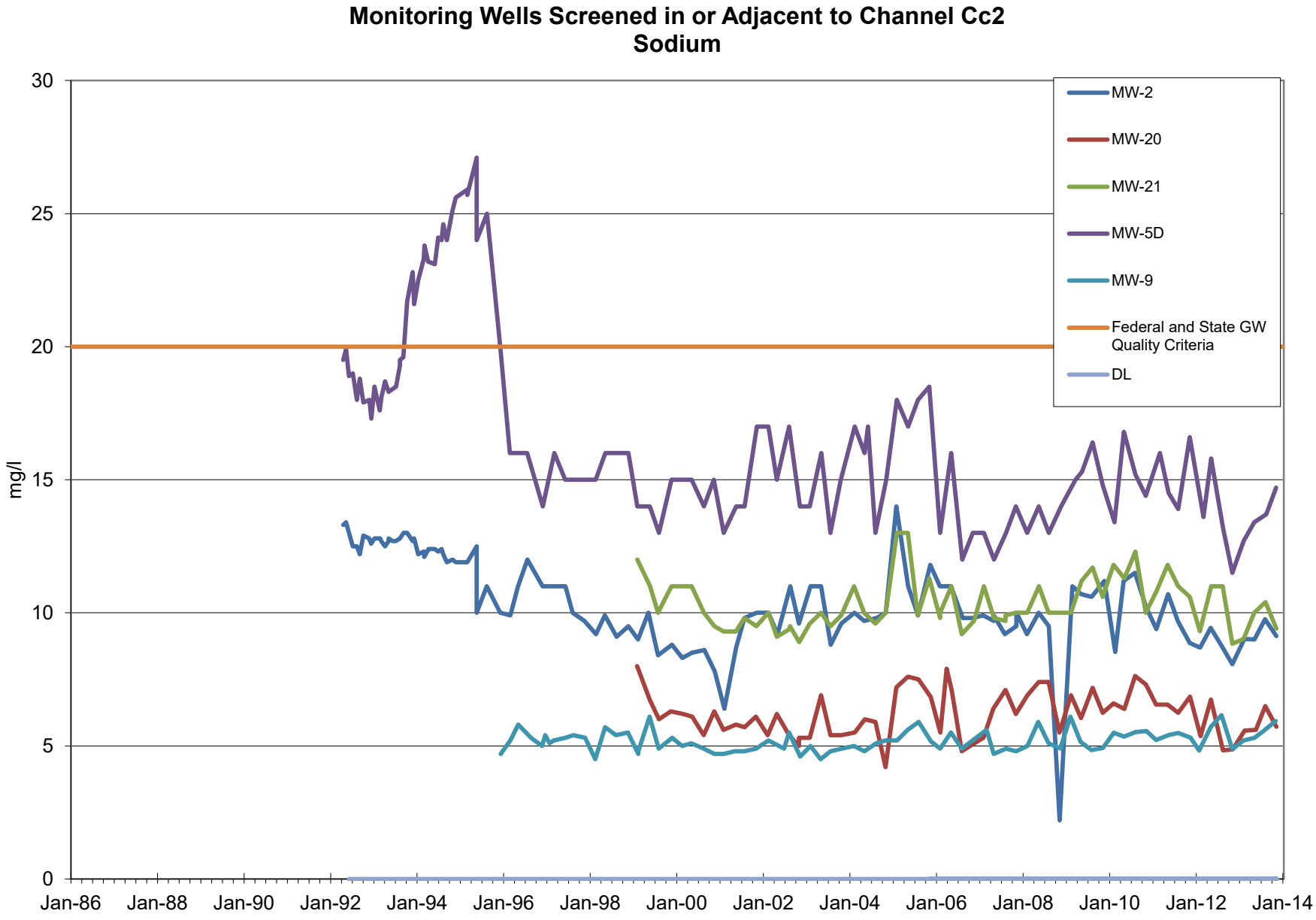

Monitoring Wells Screened in or Adjacent to Channel Cc2
Sulfate
Note: Data point MW-5D from 6/4/92 = 81.76 mg/L
Federal and State GW Quality Criteria 250 mg/L
MW-2
MW-20
MW-21
MW-5D
MW-9
DL
mg/l
30
25
20
15
10
5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

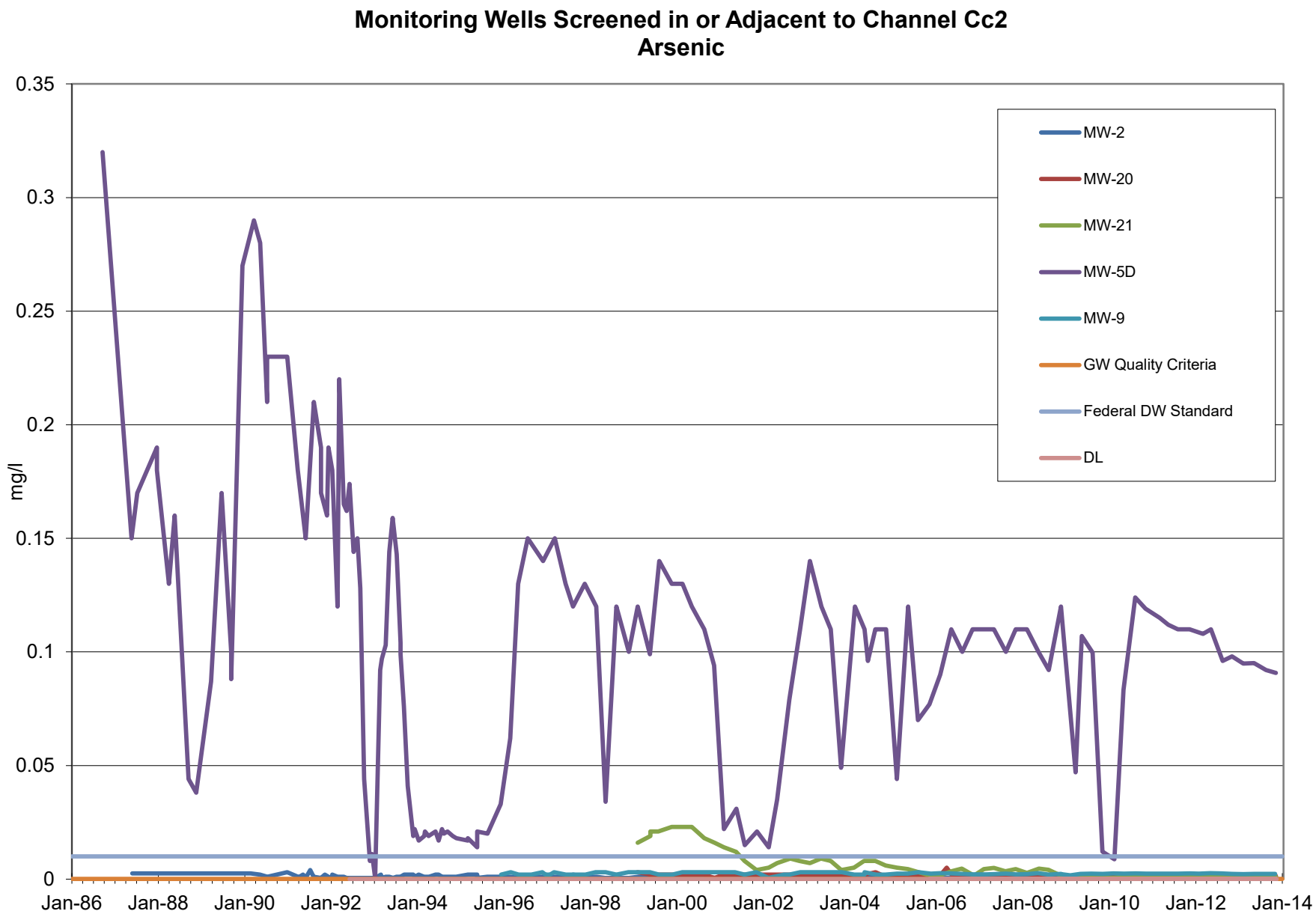

Monitoring Wells Screened in or Adjacent to Channel Cc2
Iron
mg/l
Date
70
60
50
40
30
20
10
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
Federal and State GW Criteria
DL

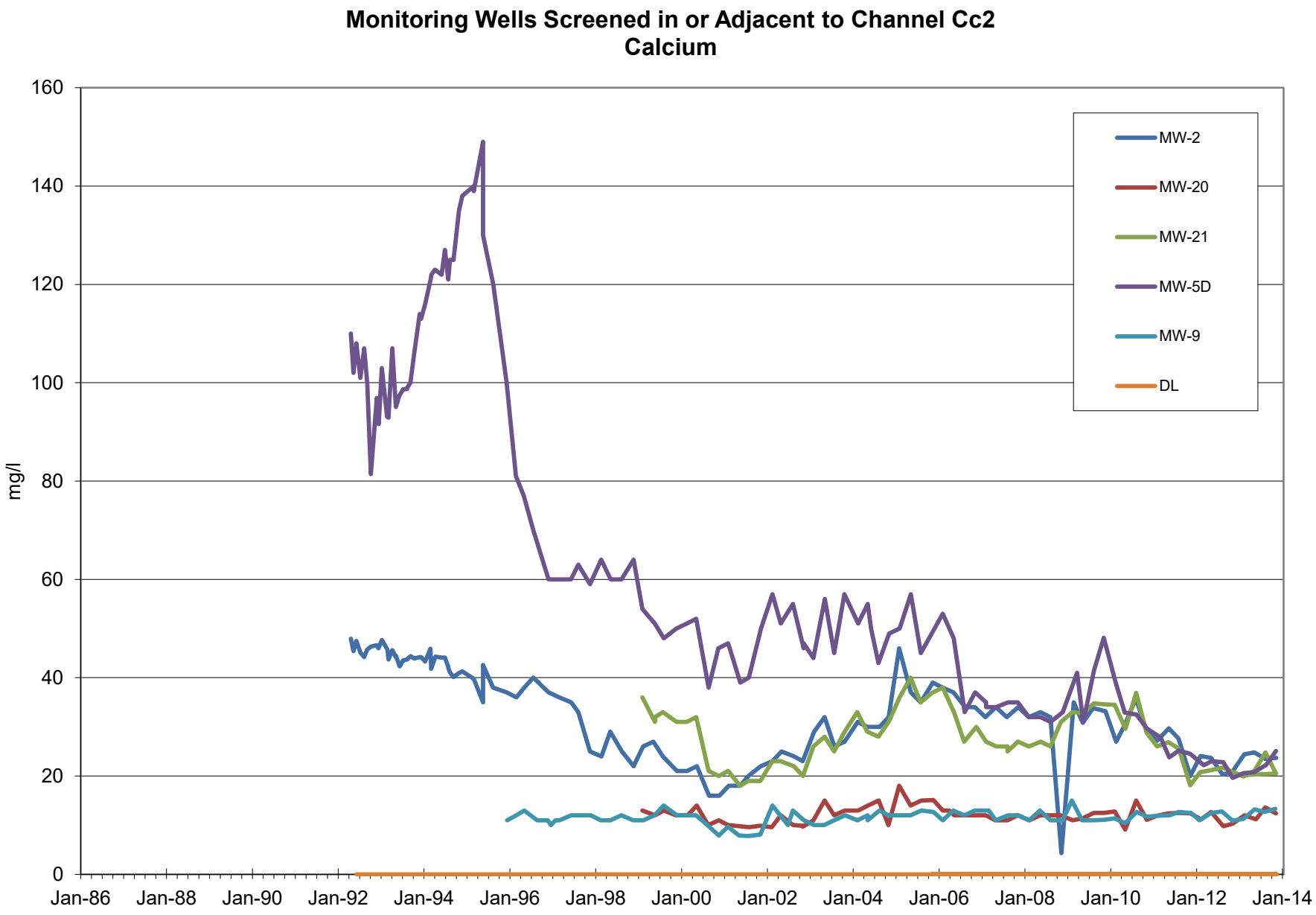

Monitoring Wells Screened in or Adjacent to Channel Cc2
Magnesium
mg/l
120
100
80
60
40
20
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

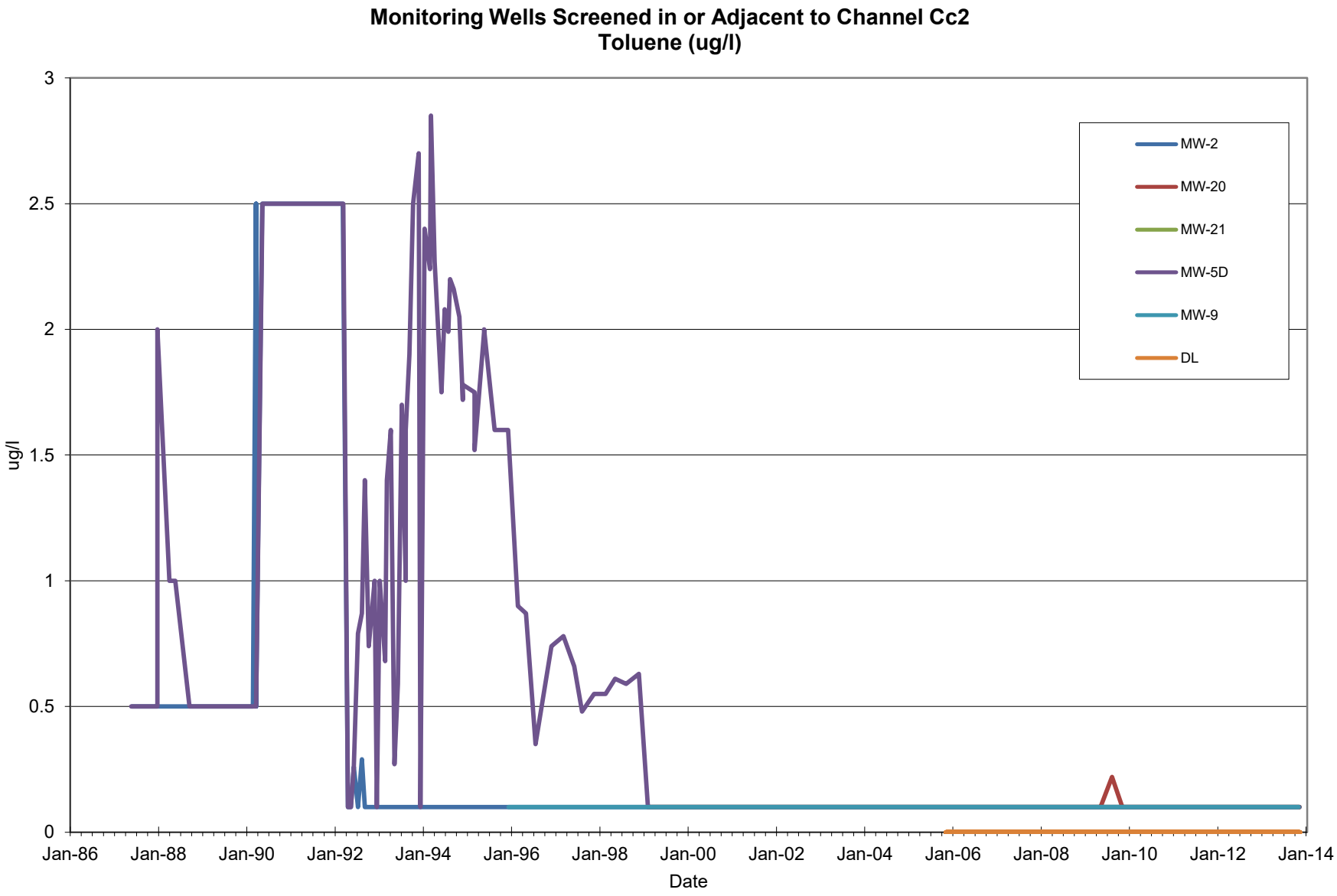

Monitoring Wells Screened in or Adjacent to Channel Cc2
Manganese
MW-2
MW-20
MW-21
MW-5D
MW-9
Federal and State GW Quality Criteria
DL
mg/l
Date
14
12
10
8
6
4
2
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14

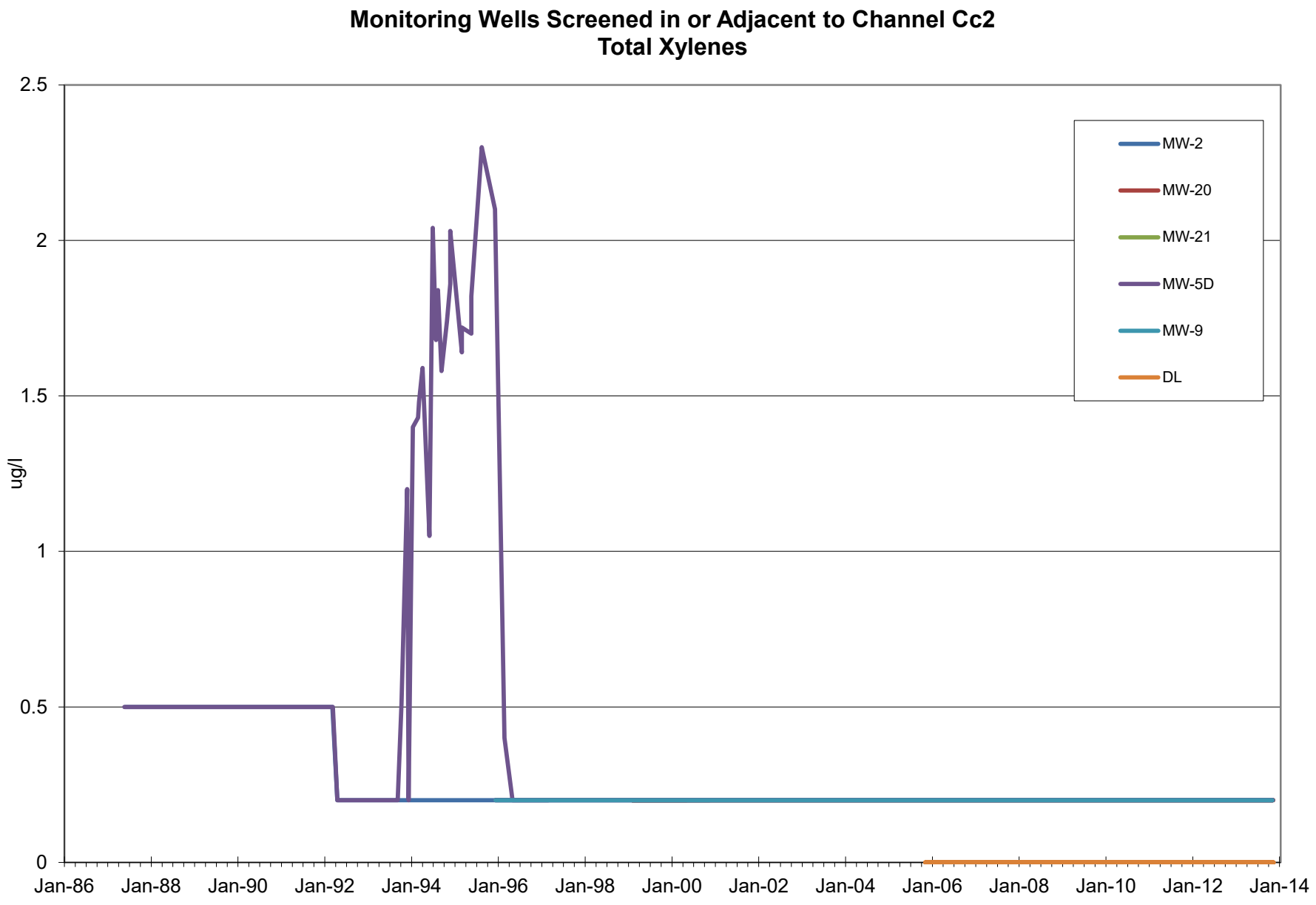

Monitoring Wells Screened in or Adjacent to Channel Cc2
Potassium
mg/l
6
5
4
3
2
1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

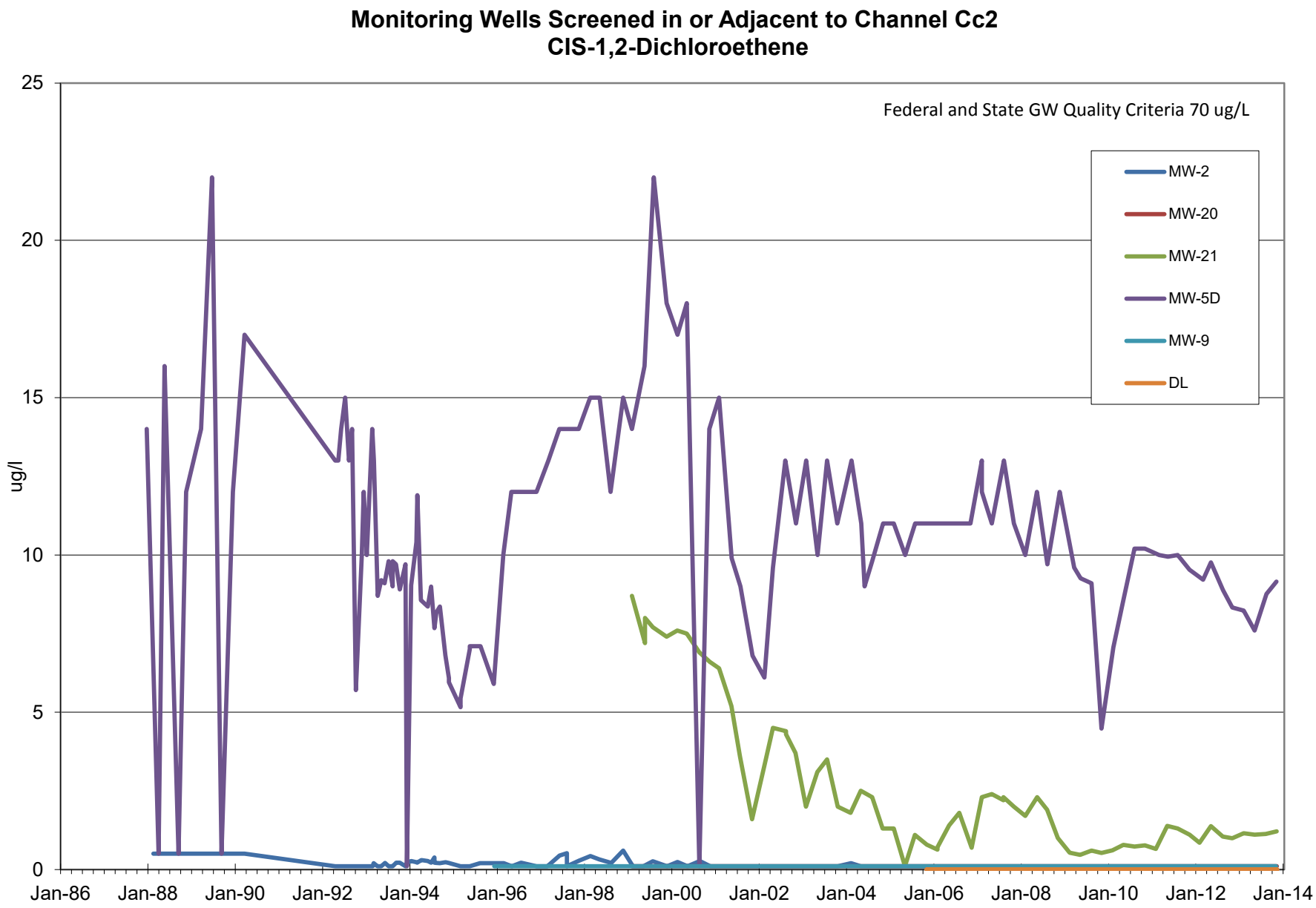

Monitoring Wells Screened in or Adjacent to Channel Cc2
Sodium
mg/l
30
25
20
15
10
5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
Federal and State GW Quality Criteria
DL

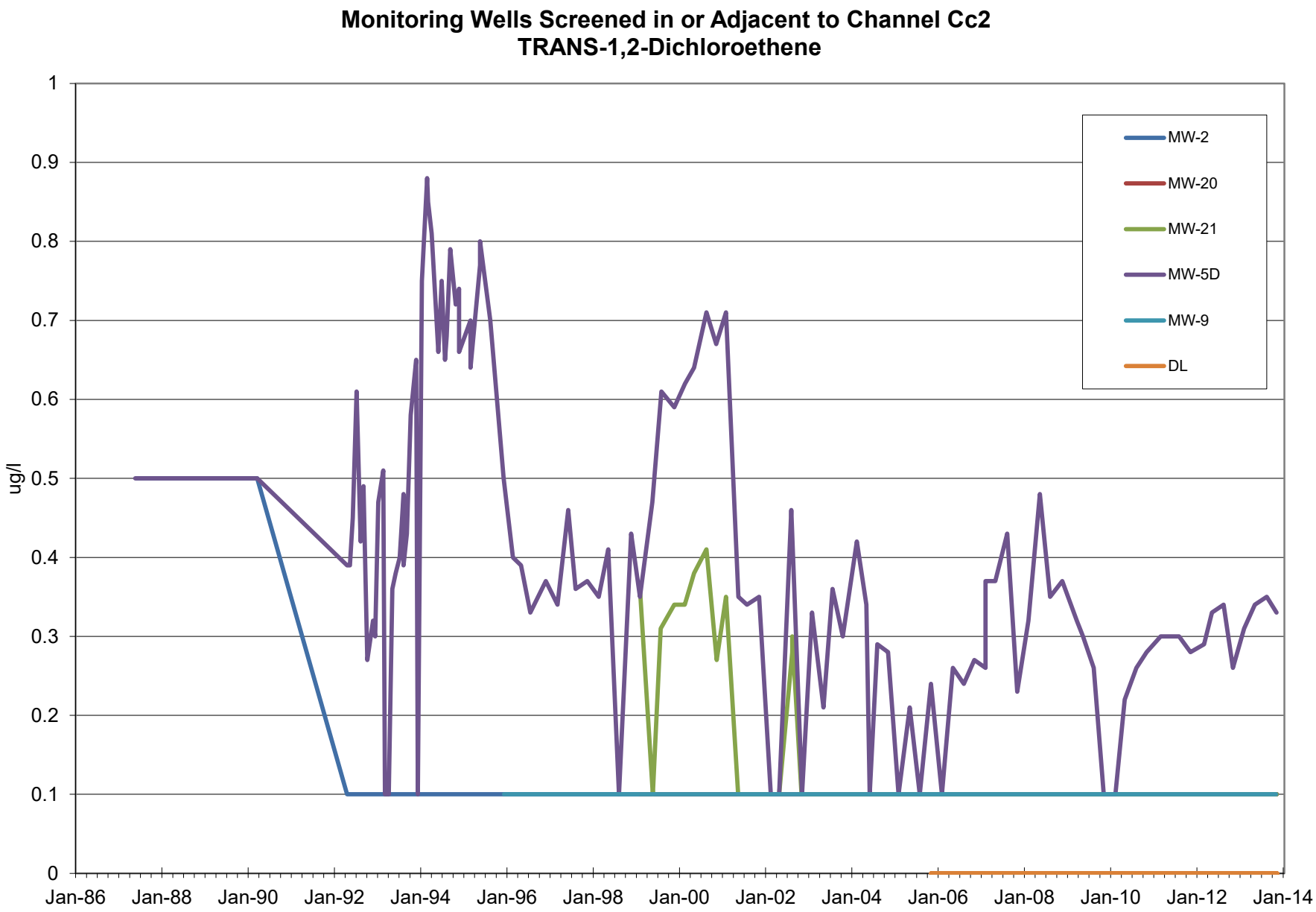

Monitoring Wells Screened in or Adjacent to Channel Cc2
Arsenic
mg/l
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
GW Quality Criteria
Federal DW Standard
DL

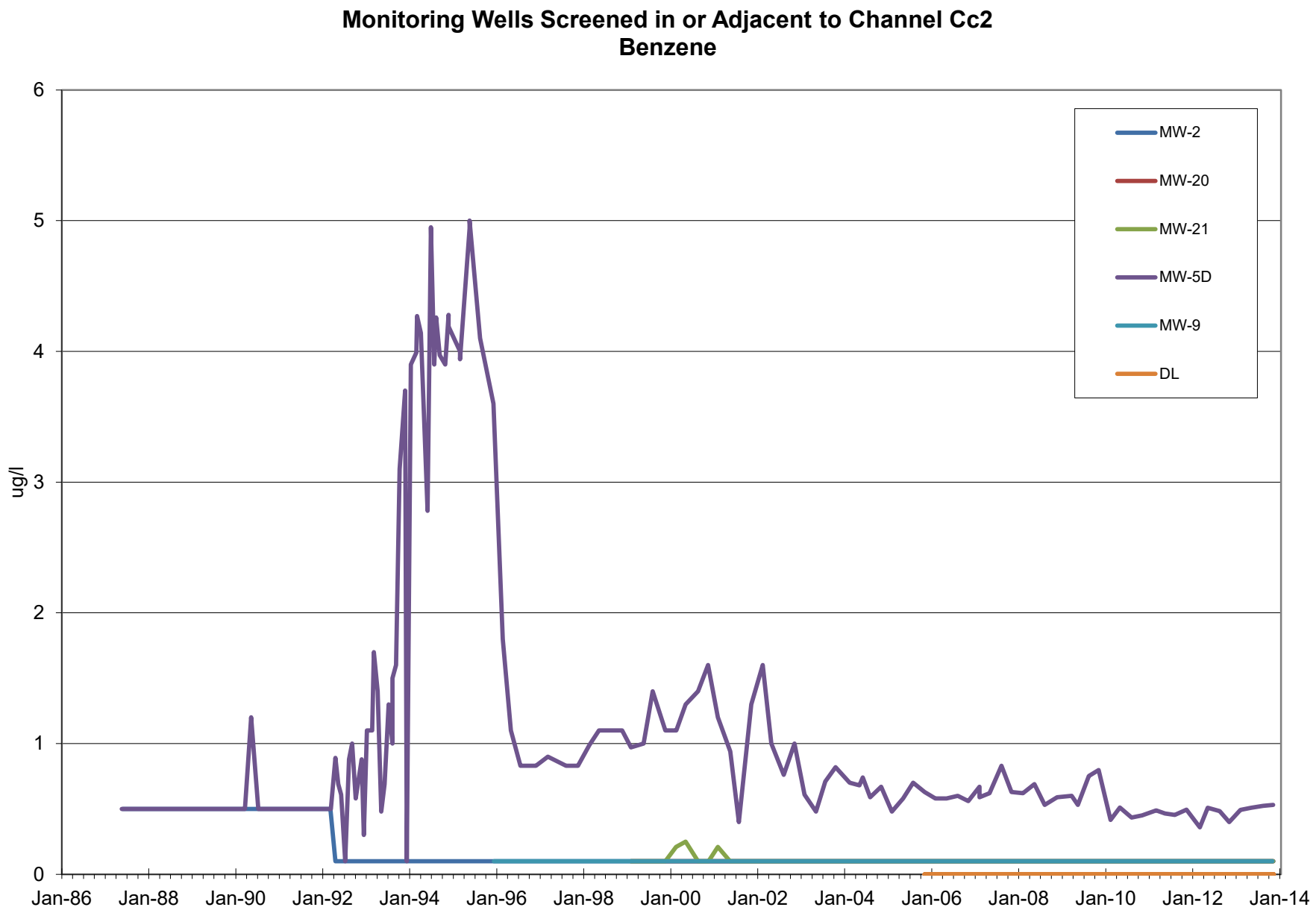

Monitoring Wells Screened in or Adjacent to Channel Cc2
Calcium
mg/l
160
140
120
100
80
60
40
20
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

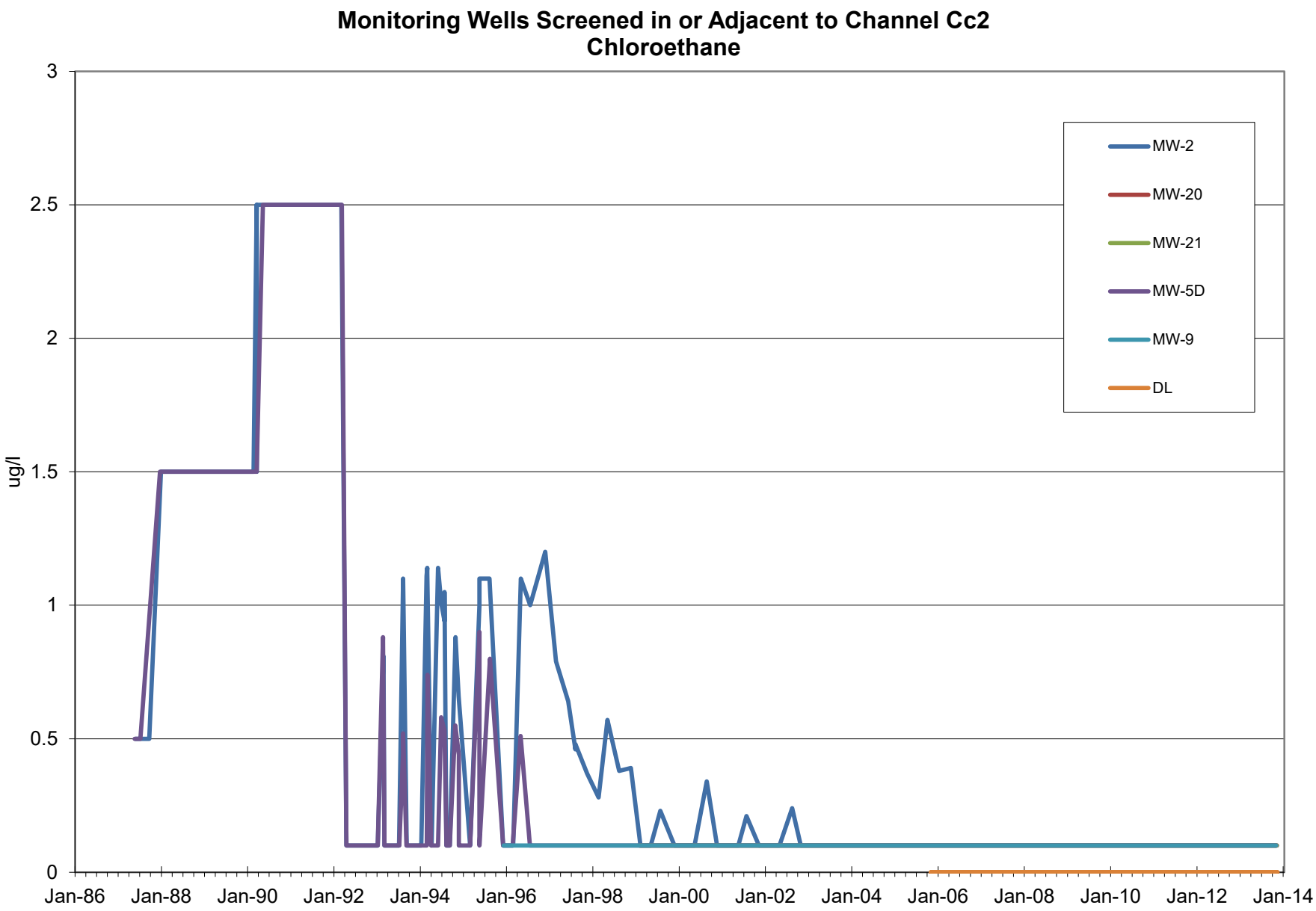

Monitoring Wells Screened in or Adjacent to Channel Cc2
Toluene (ug/l)
ug/l
3
2.5
2
1.5
1
0.5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

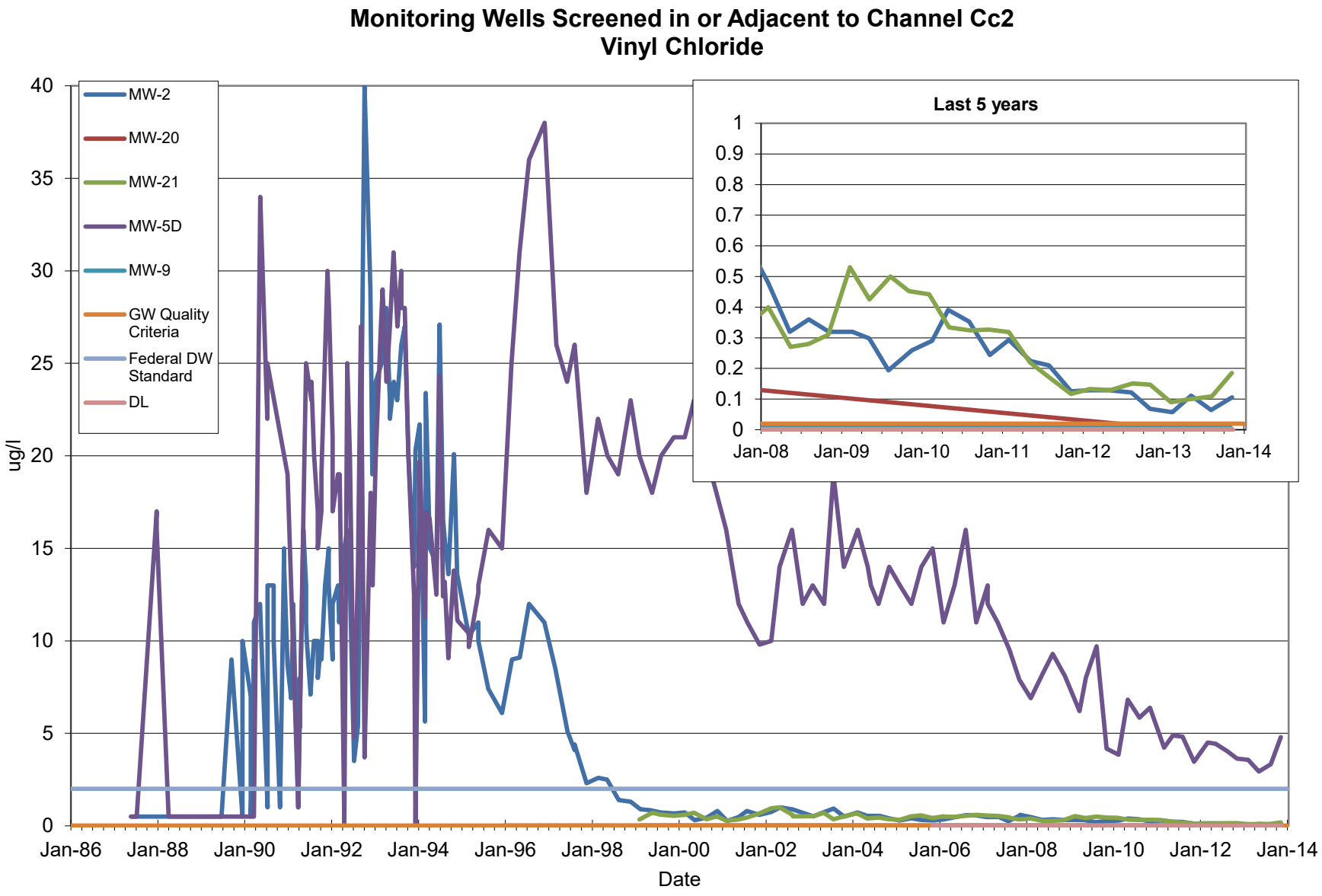

Monitoring Wells Screened in or Adjacent to Channel Cc2
Total Xylenes
ug/l
2.5
2
1.5
1
0.5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

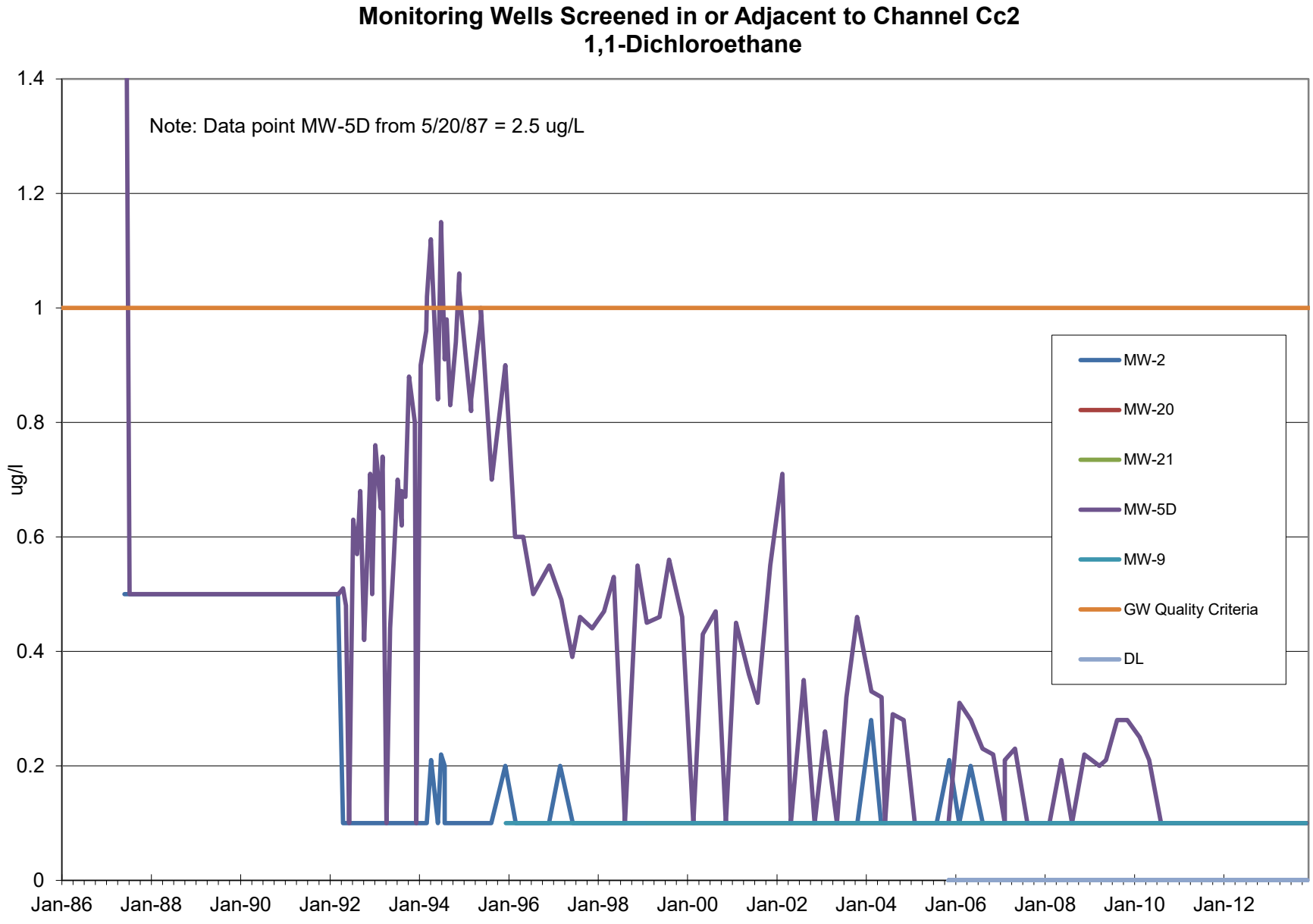

Monitoring Wells Screened in or Adjacent to Channel Cc2
CIS-1,2-Dichloroethene
Federal and State GW Quality Criteria 70 ug/L
MW-2
MW-20
MW-21
MW-5D
MW-9
DL
ug/l
25
20
15
10
5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14

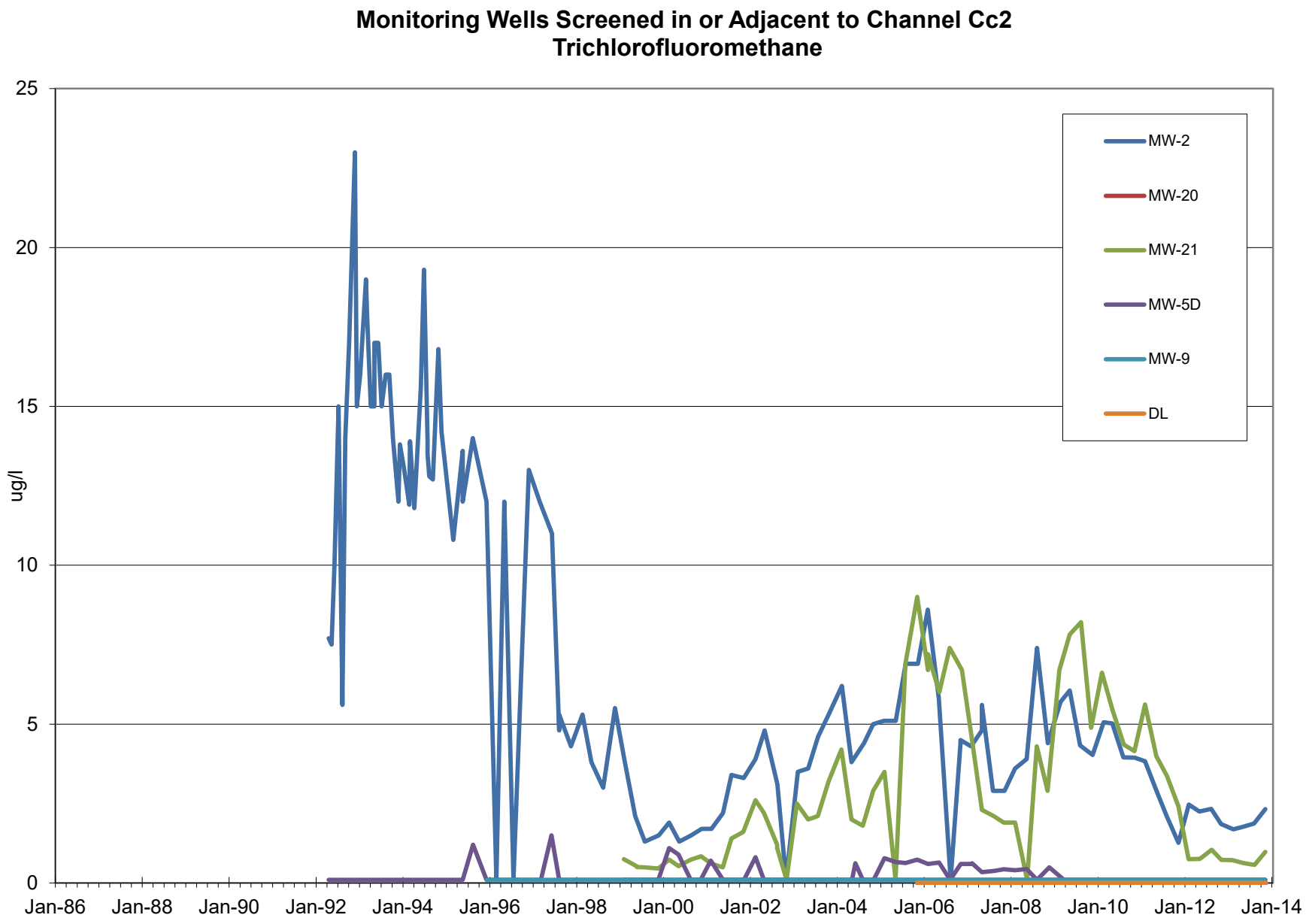

Monitoring Wells Screened in or Adjacent to Channel Cc2
TRANS-1,2-Dichloroethene
ug/l
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

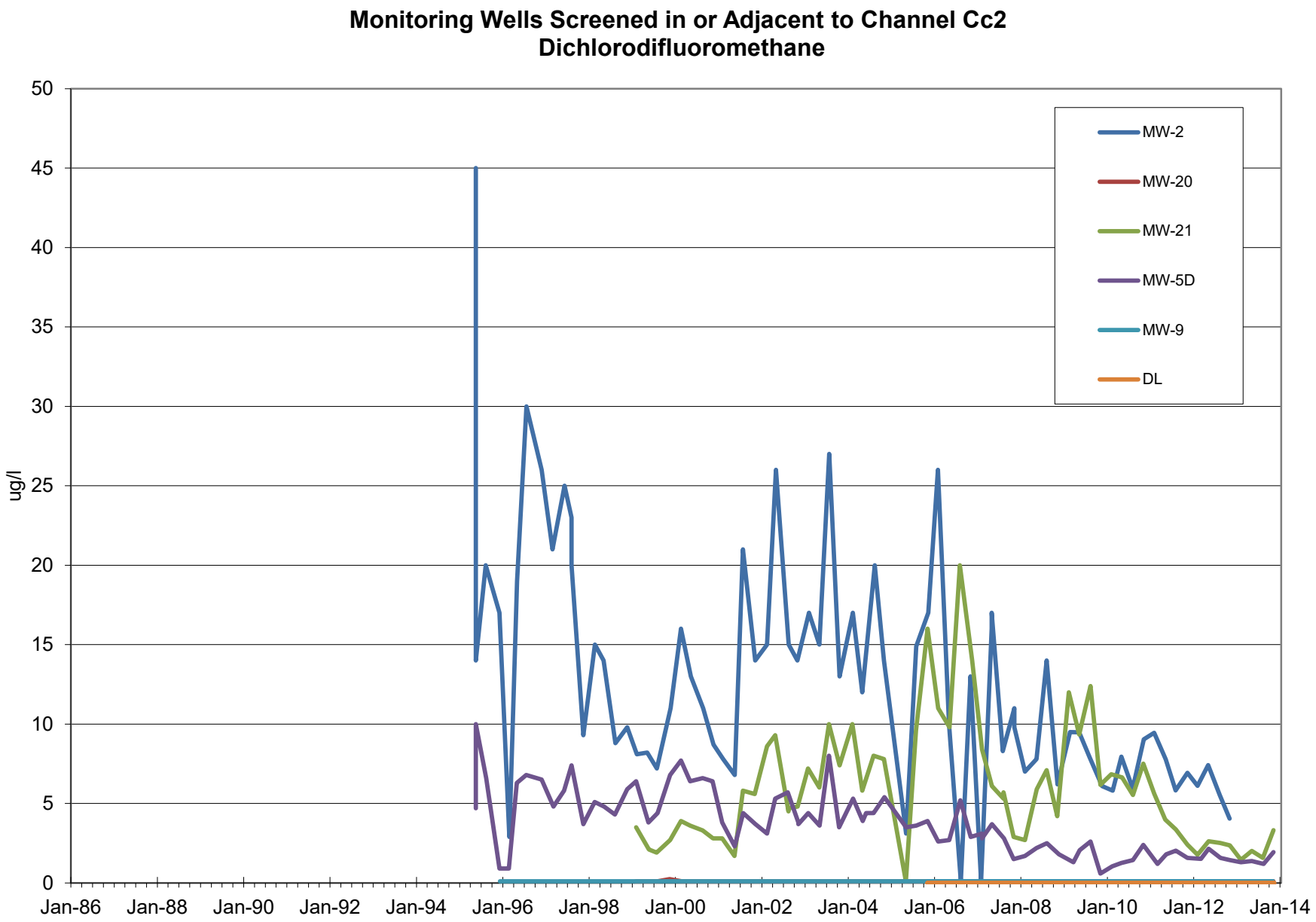

Monitoring Wells Screened in or Adjacent to Channel Cc2
Benzene
ug/l
0
1
2
3
4
5
6
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

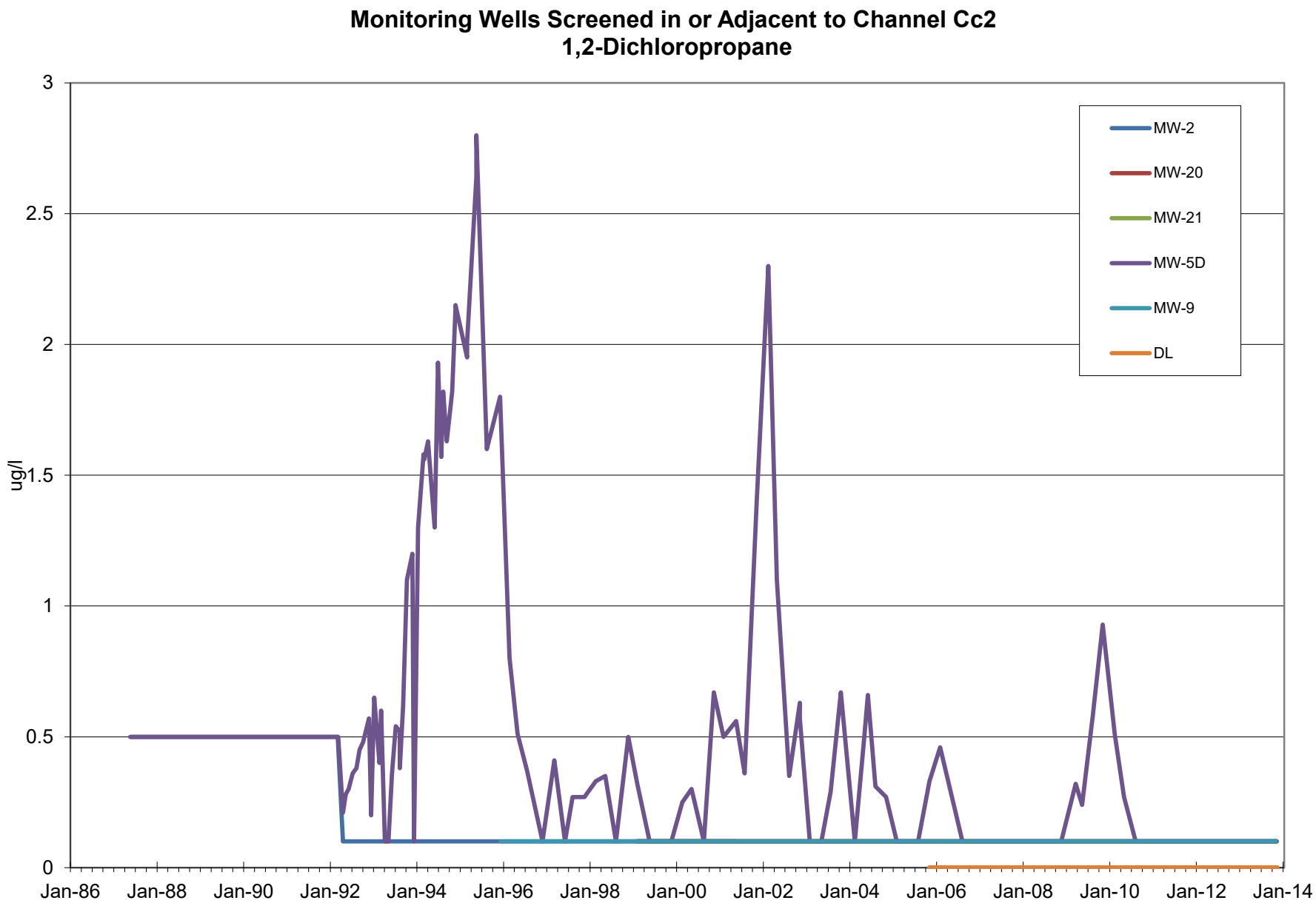

Monitoring Wells Screened in or Adjacent to Channel Cc2
Chloroethane
ug/l
3
2.5
2
1.5
1
0.5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

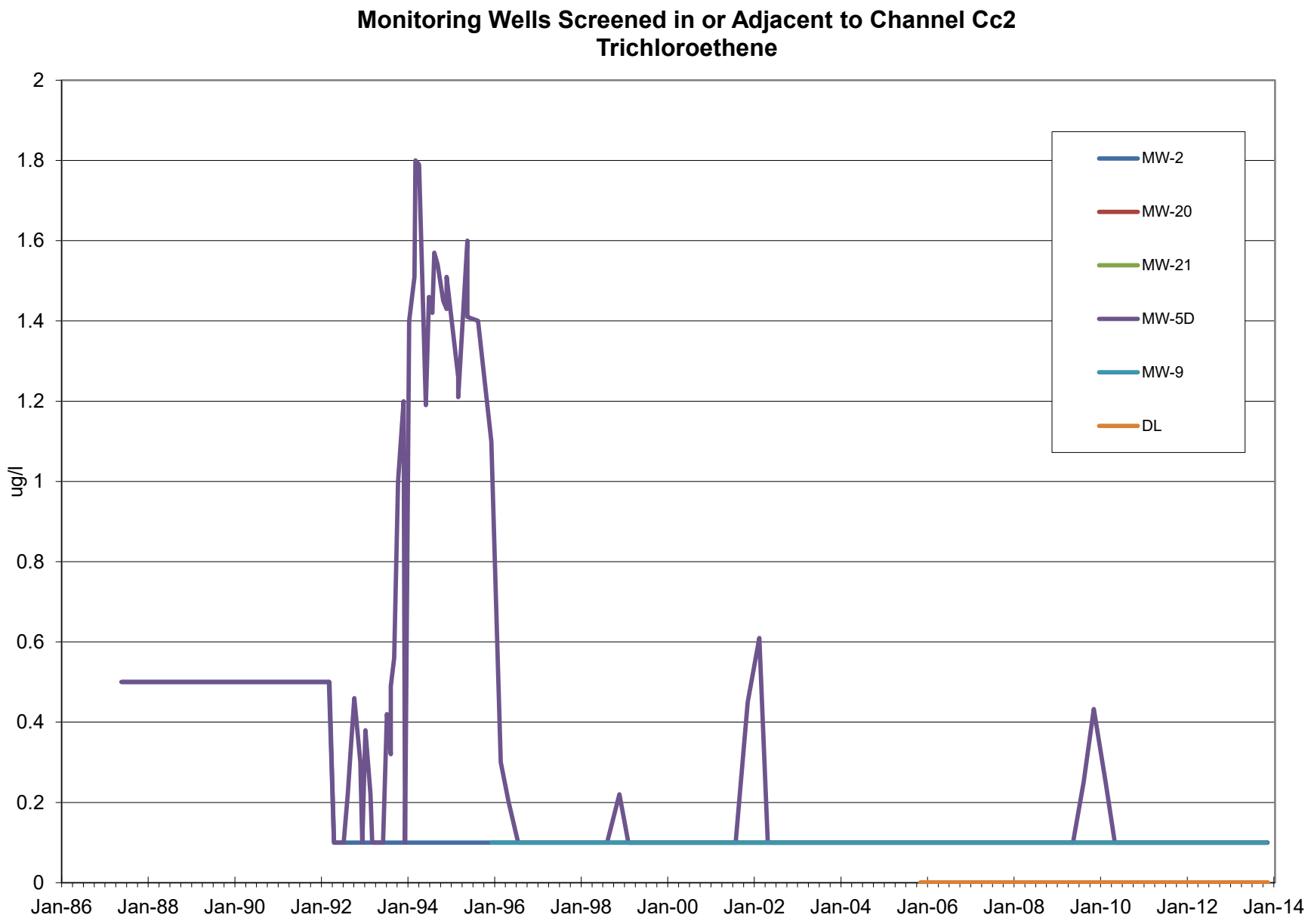

Monitoring Wells Screened in or Adjacent to Channel Cc2
Vinyl Chloride
MW-2
MW-20
MW-21
MW-5D
MW-9
GW Quality Criteria
Federal DW Standard
DL
ug/l
Date
Last 5 years


Monitoring Wells Screened in or Adjacent to Channel Cc2
1,1-Dichloroethane
Note: Data point MW-5D from 5/20/87 = 2.5 ug/L
ug/l
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
MW-2
MW-20
MW-21
MW-5D
MW-9
GW Quality Criteria
DL


Monitoring Wells Screened in or Adjacent to Channel Cc2
Trichlorofluoromethane
ug/l
25
20
15
10
5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

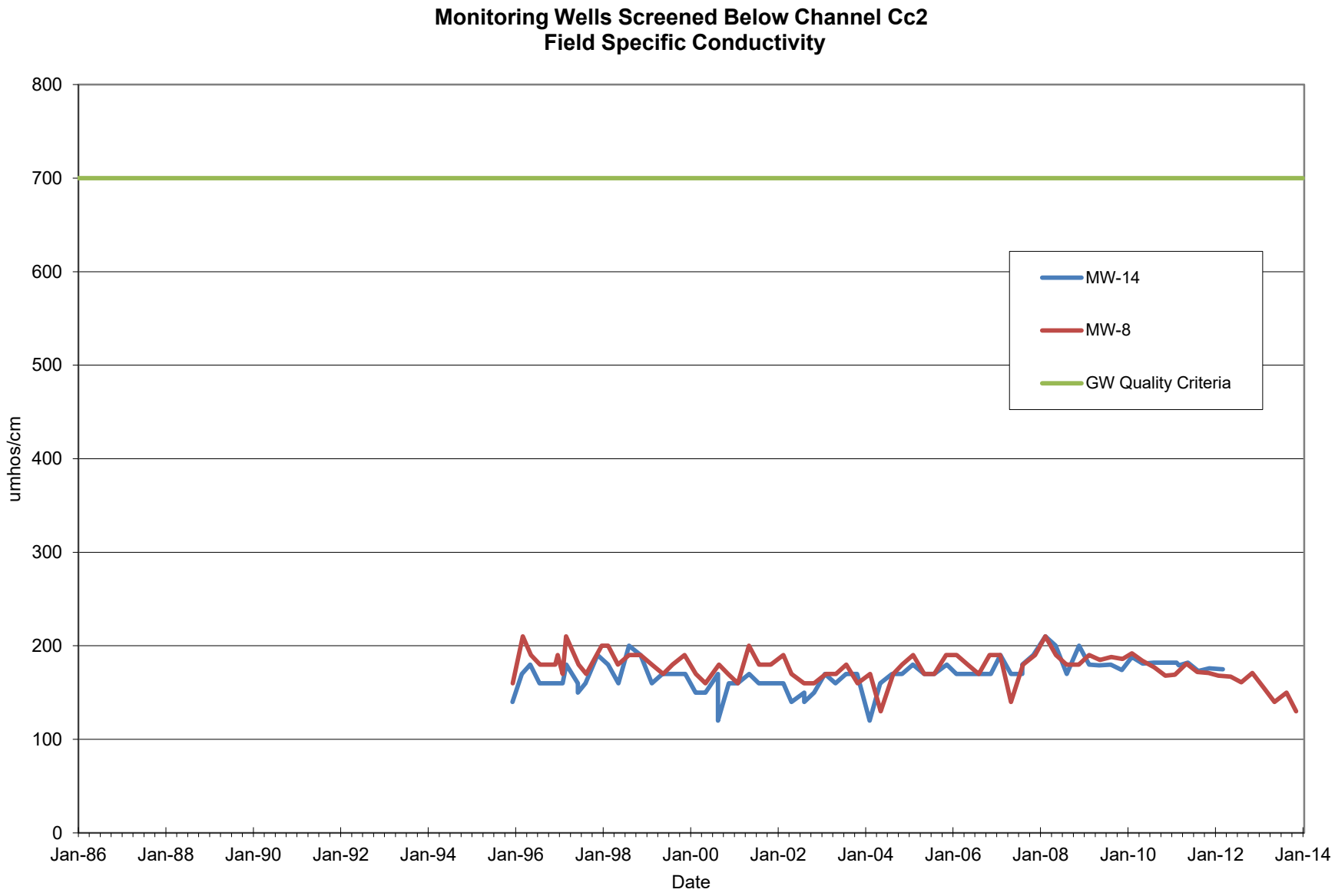

Monitoring Wells Screened in or Adjacent to Channel Cc2
Dichlorodifluoromethane
ug/l
50
45
40
35
30
25
20
15
10
5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

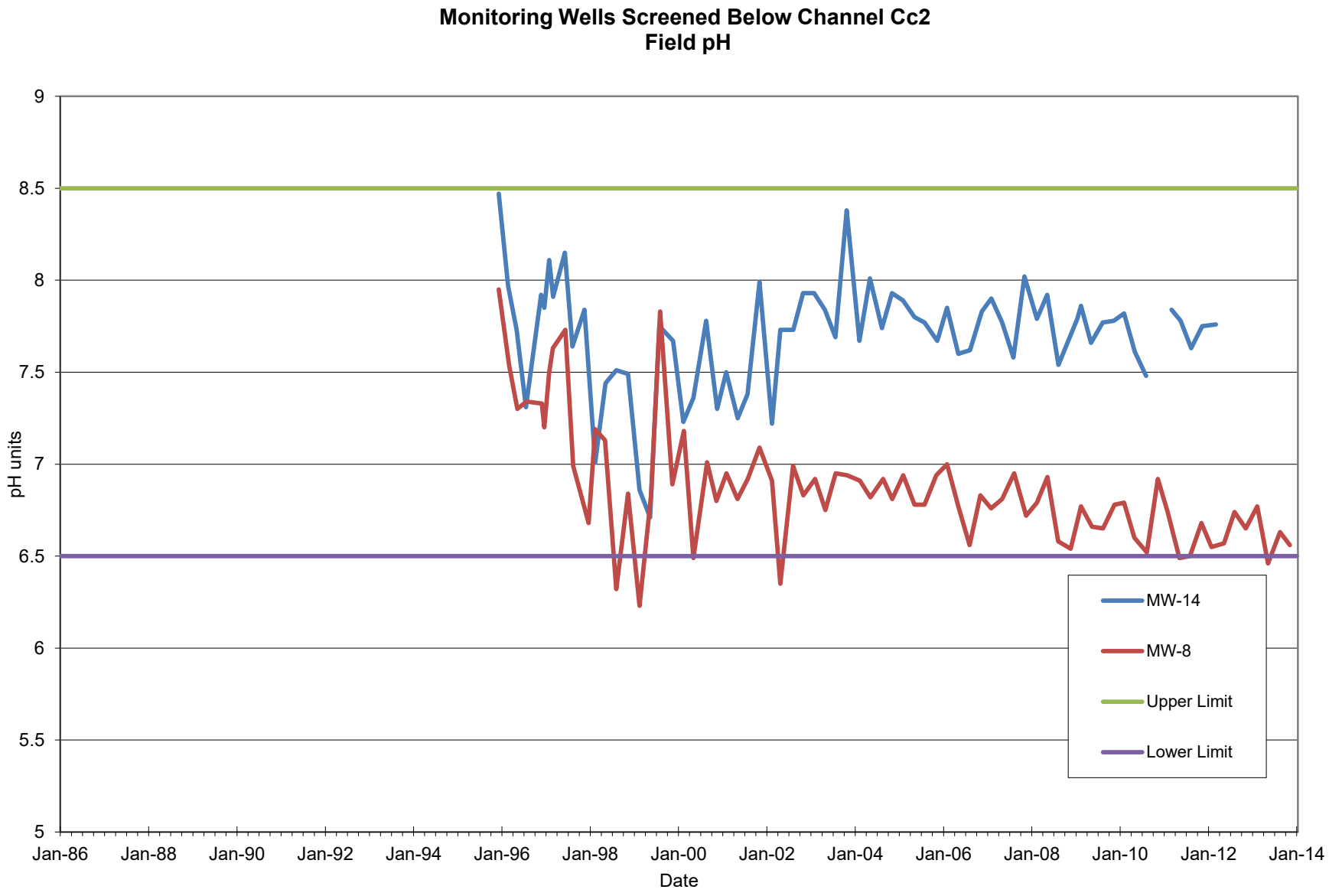

Monitoring Wells Screened in or Adjacent to Channel Cc2
1,2-Dichloropropane
ug/l
3
2.5
2
1.5
1
0.5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

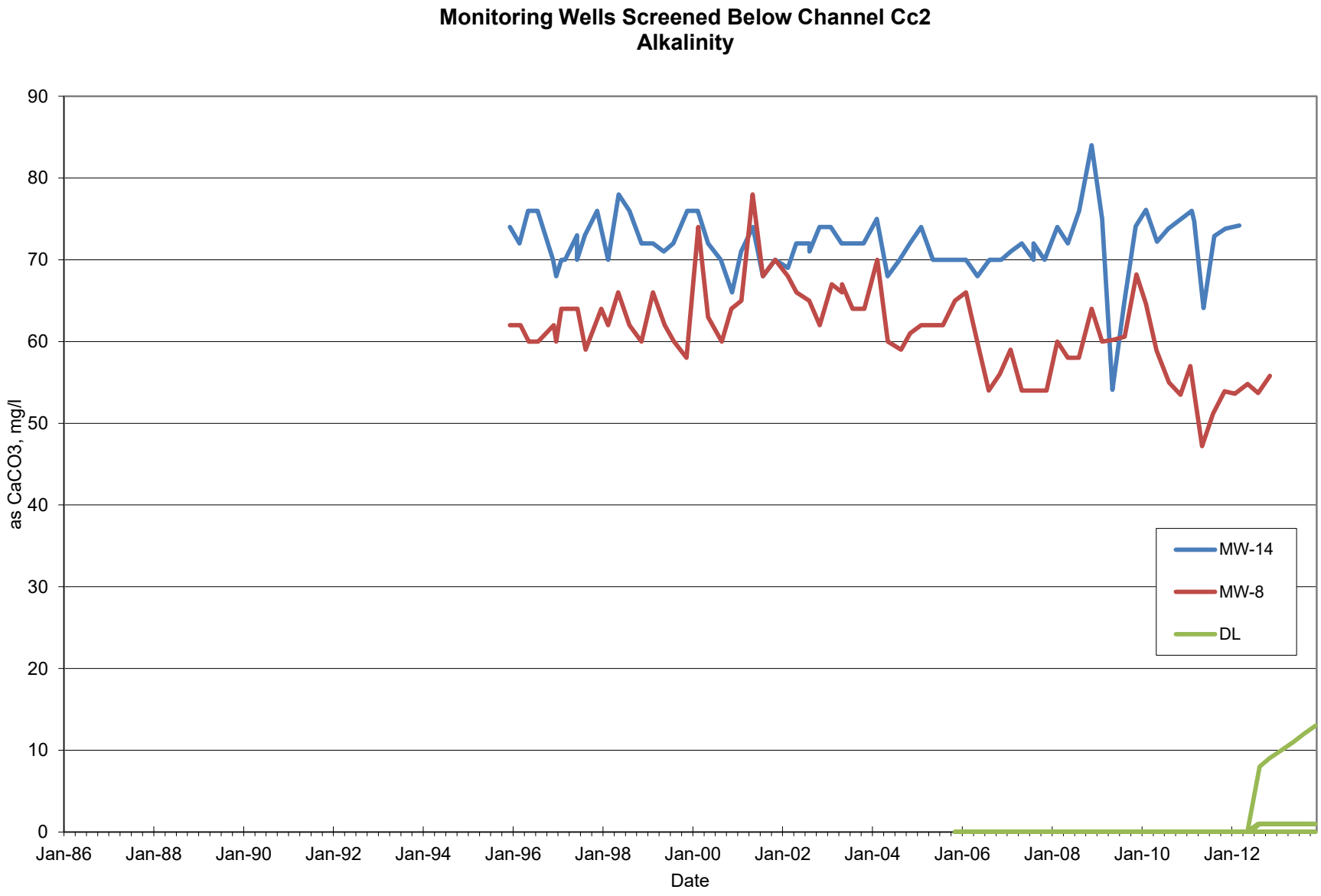

Monitoring Wells Screened in or Adjacent to Channel Cc2
Trichloroethene
ug/l
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
MW-2
MW-20
MW-21
MW-5D
MW-9
DL

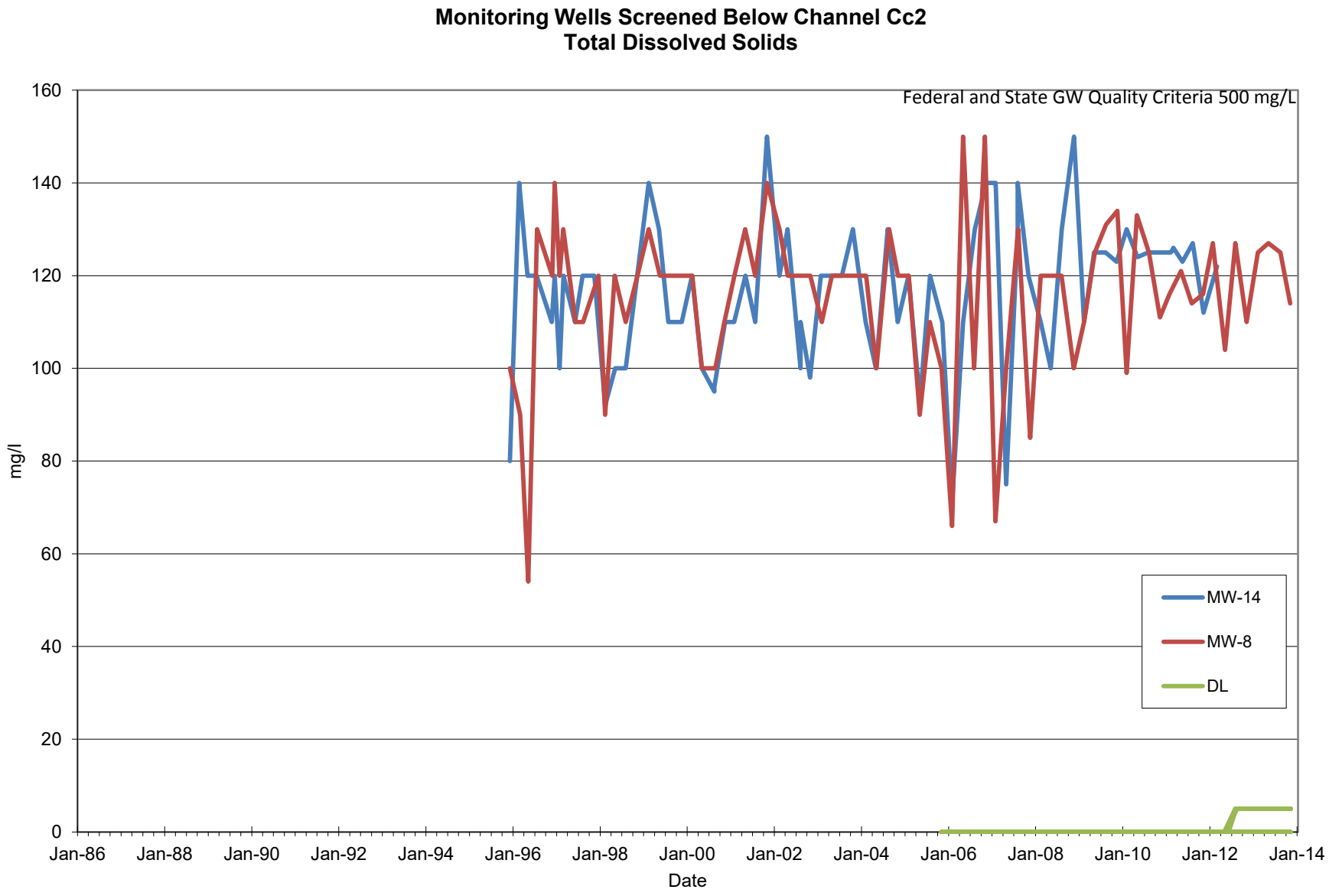
Appendix E

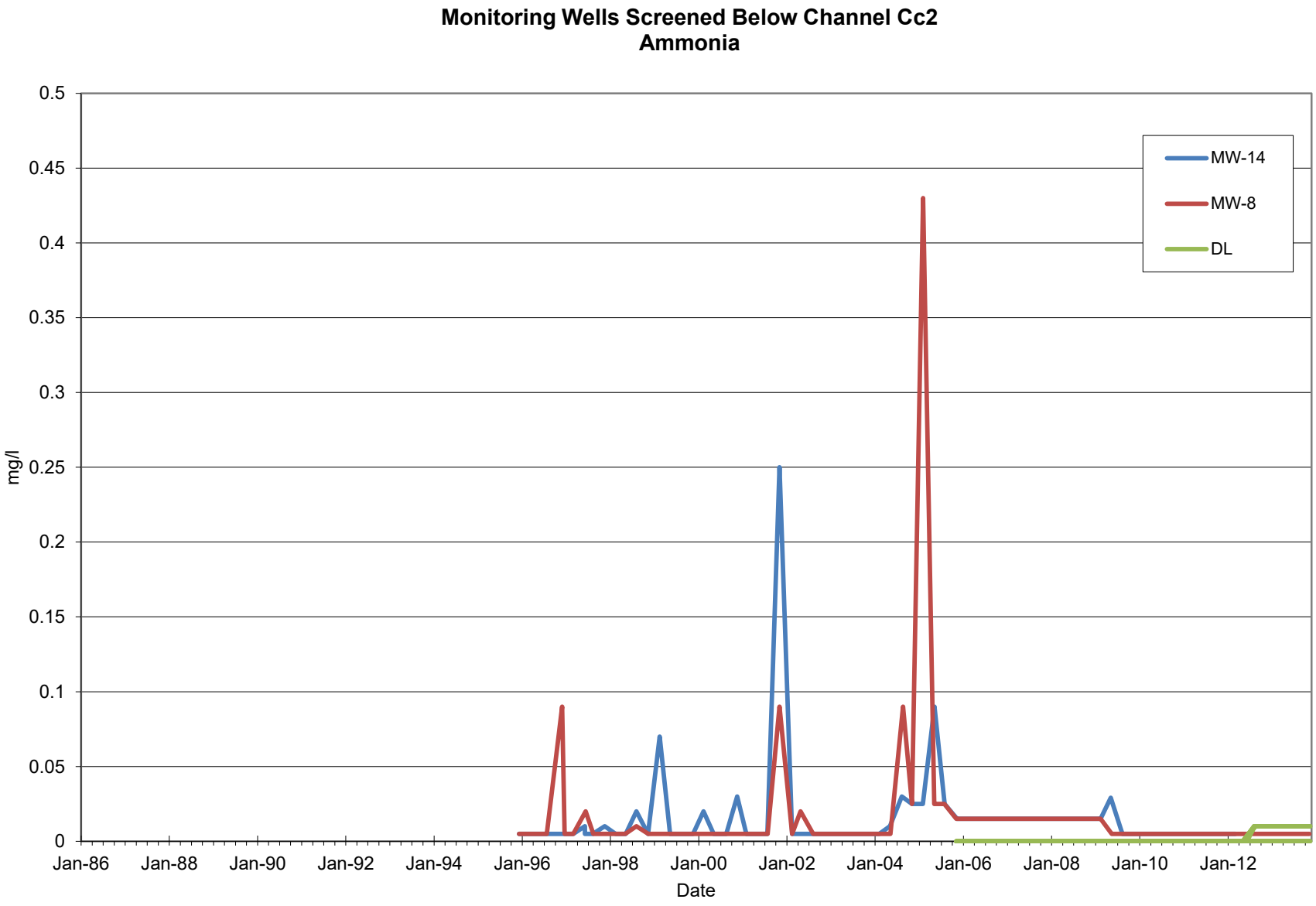
Time Concentration Plots for Groundwater beneath Channel Cc2

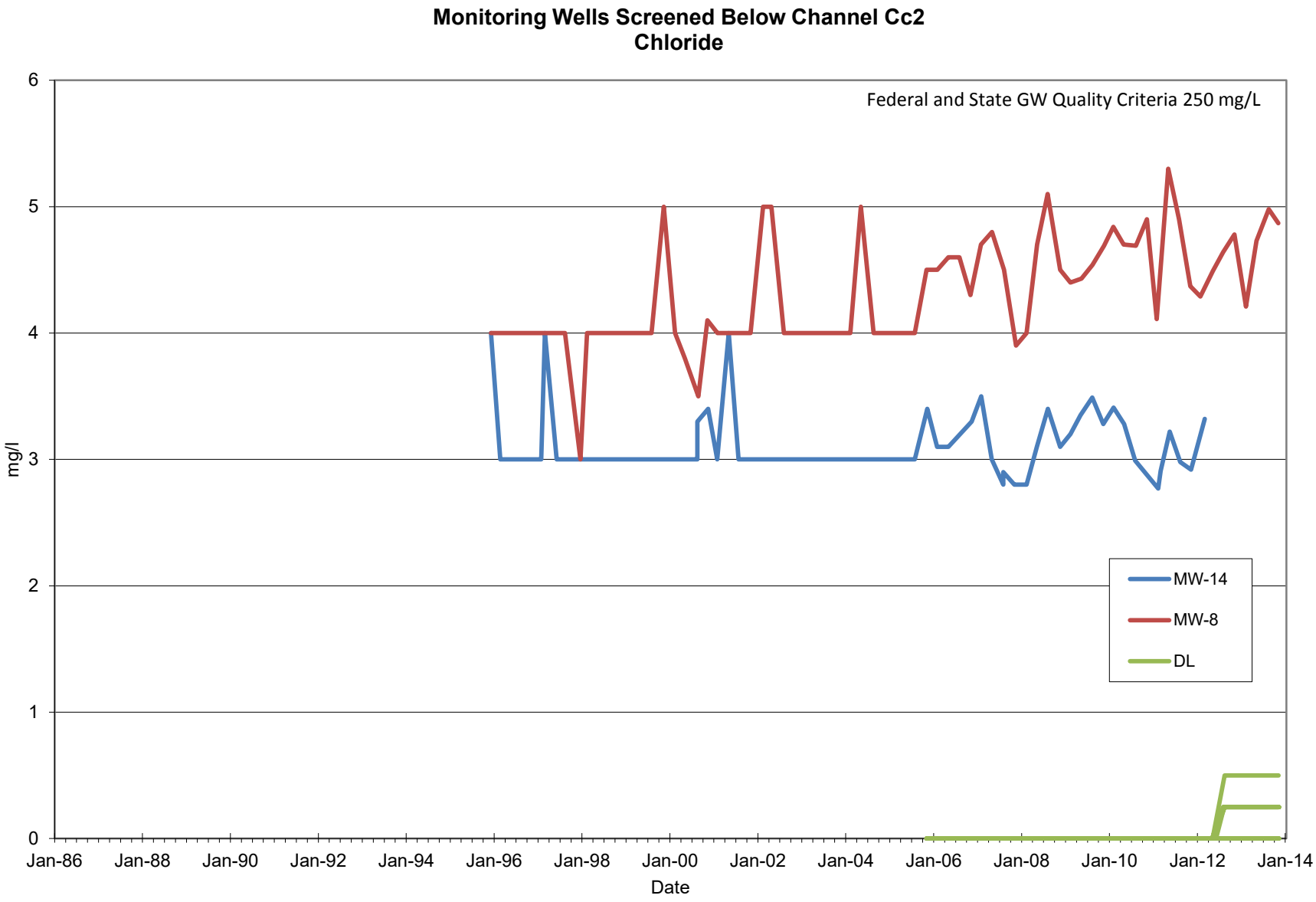

Monitoring Wells Screened Below Channel Cc2
Field Specific Conductivity
800
700
600
500
400
300
200
100
0
umhos/cm
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
GW Quality Criteria

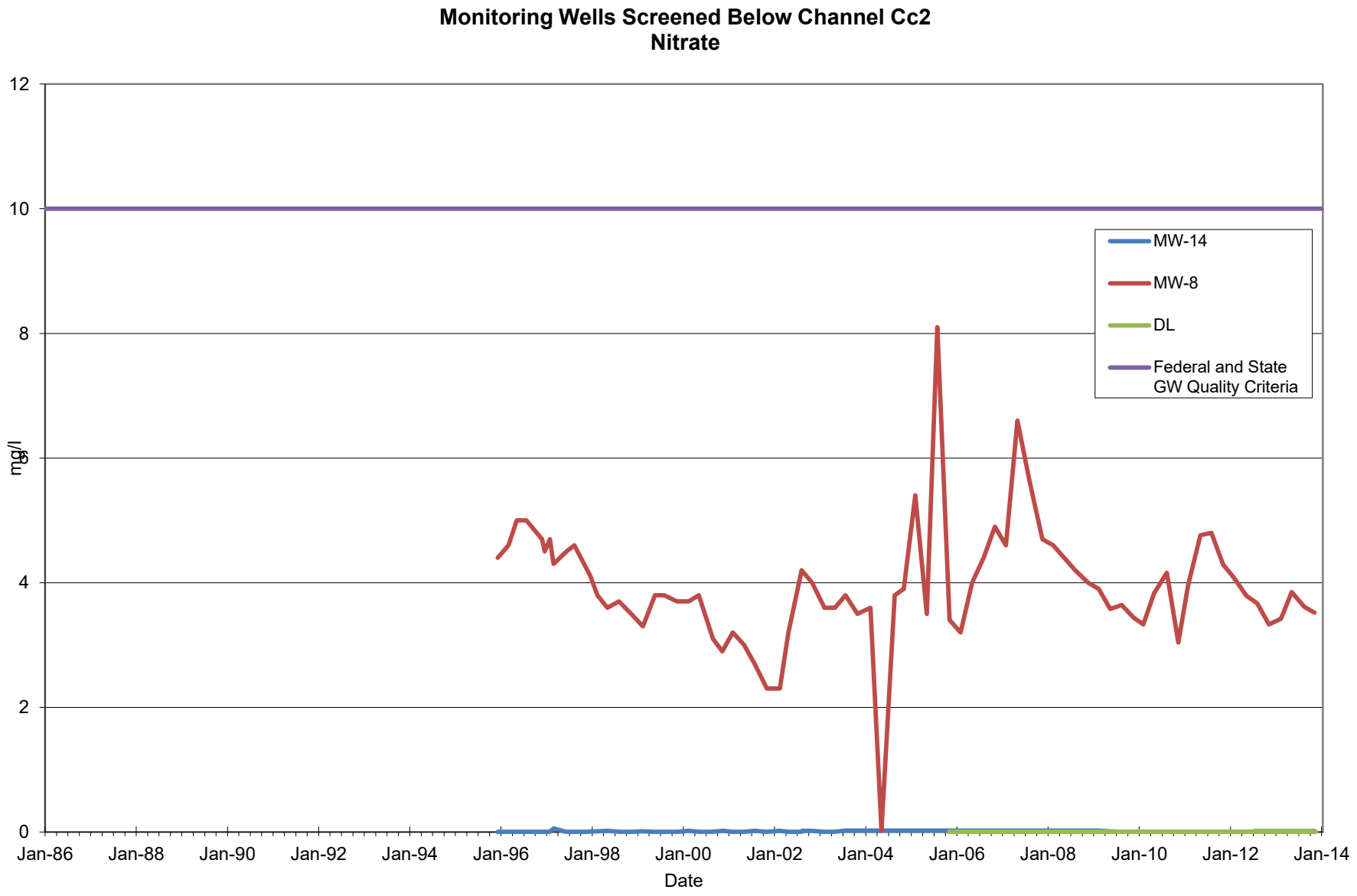

Monitoring Wells Screened Below Channel Cc2
Field pH
9
8.5
8
7.5
7
6.5
6
5.5
5
pH units
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
Upper Limit
Lower Limit

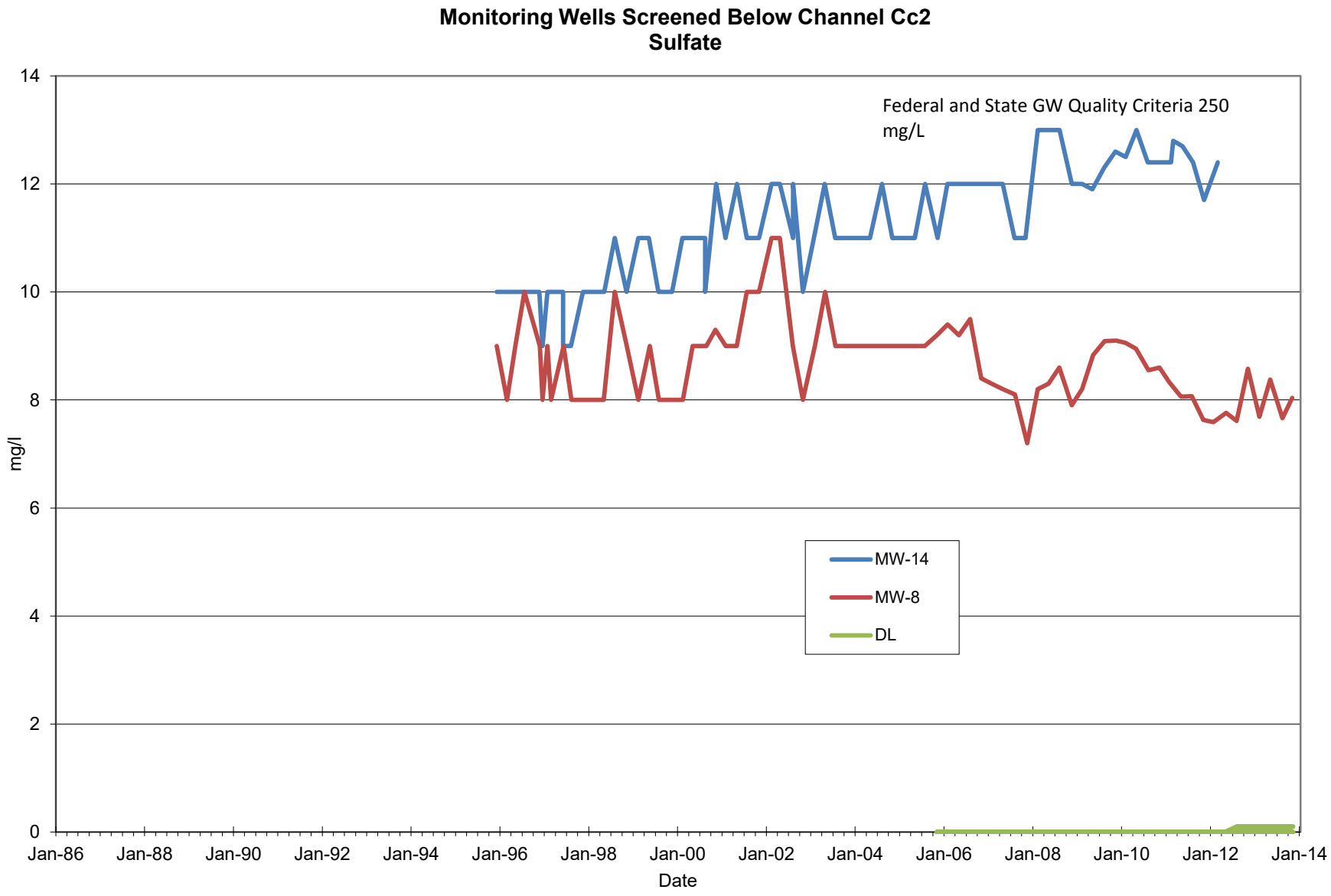

Monitoring Wells Screened Below Channel Cc2
Alkalinity
90
80
70
60
50
40
30
20
10
0
as CaCO3, mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Date
MW-14
MW-8
DL

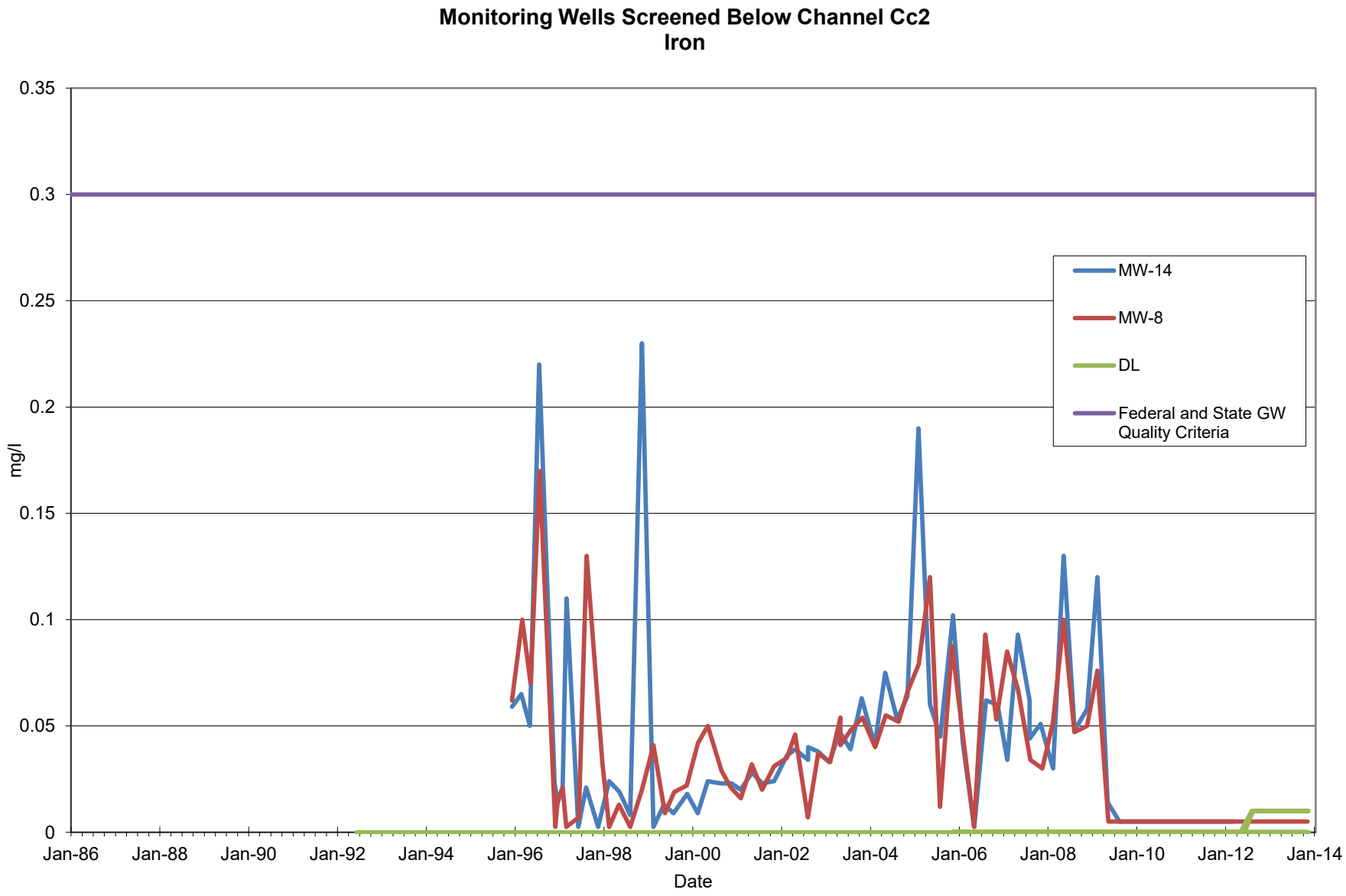

Monitoring Wells Screened Below Channel Cc2
Total Dissolved Solids
Federal and State GW Quality Criteria 500 mg/L
mg/l
160
140
120
100
80
60
40
20
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL

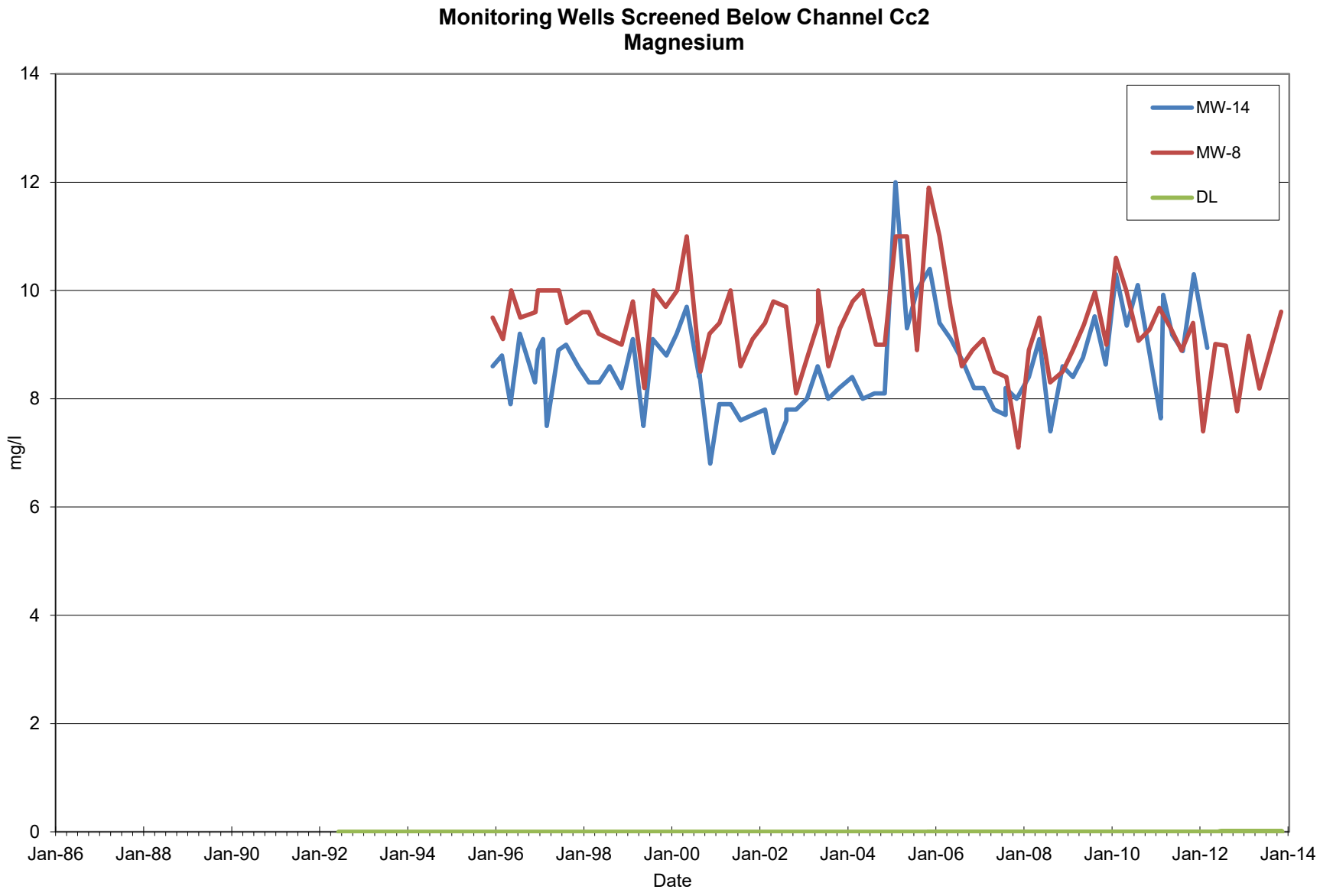

Monitoring Wells Screened Below Channel Cc2
Ammonia
mg/l
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Date
MW-14
MW-8
DL

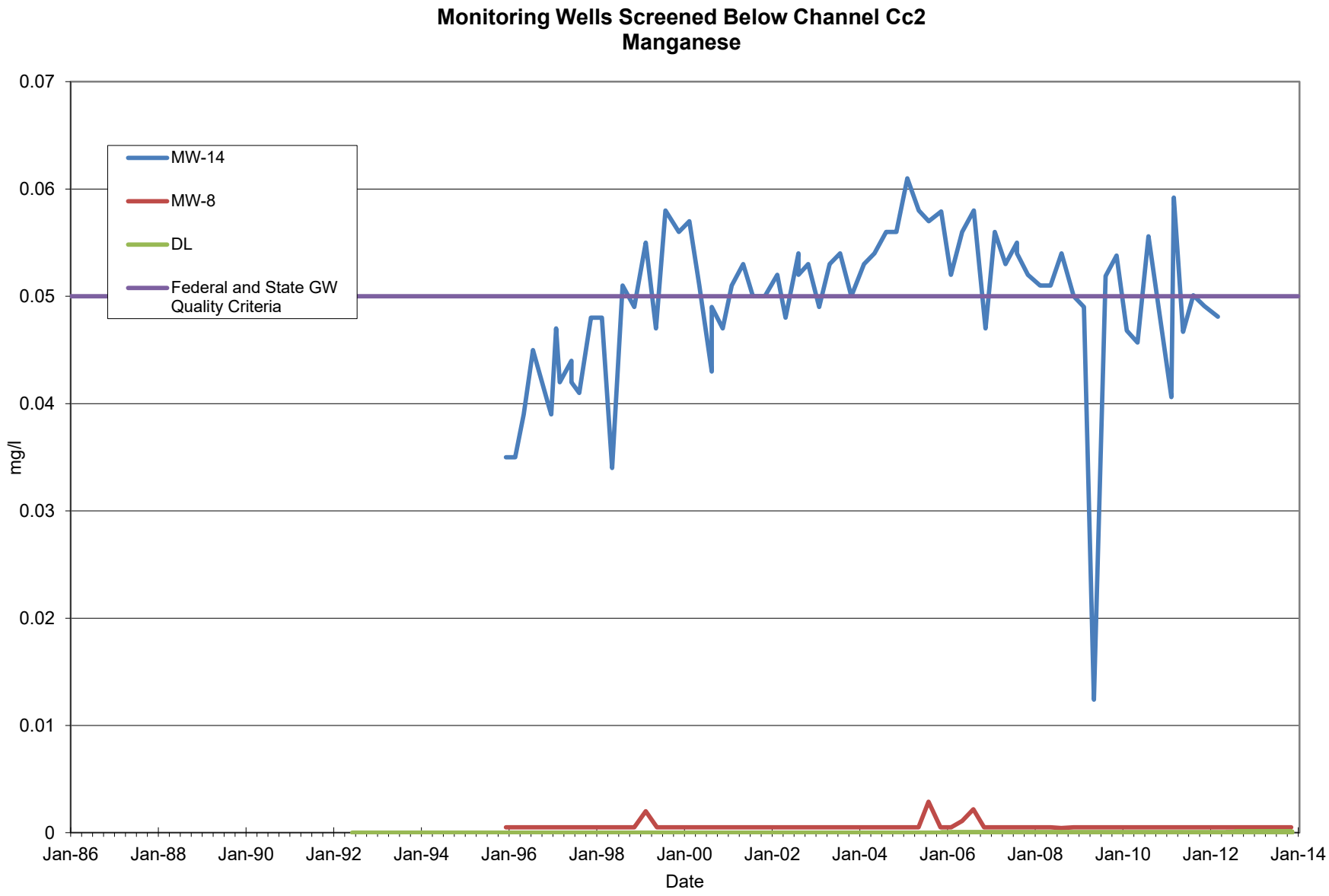

Monitoring Wells Screened Below Channel Cc2
Chloride
Federal and State GW Quality Criteria 250 mg/L
mg/l
6
5
4
3
2
1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL

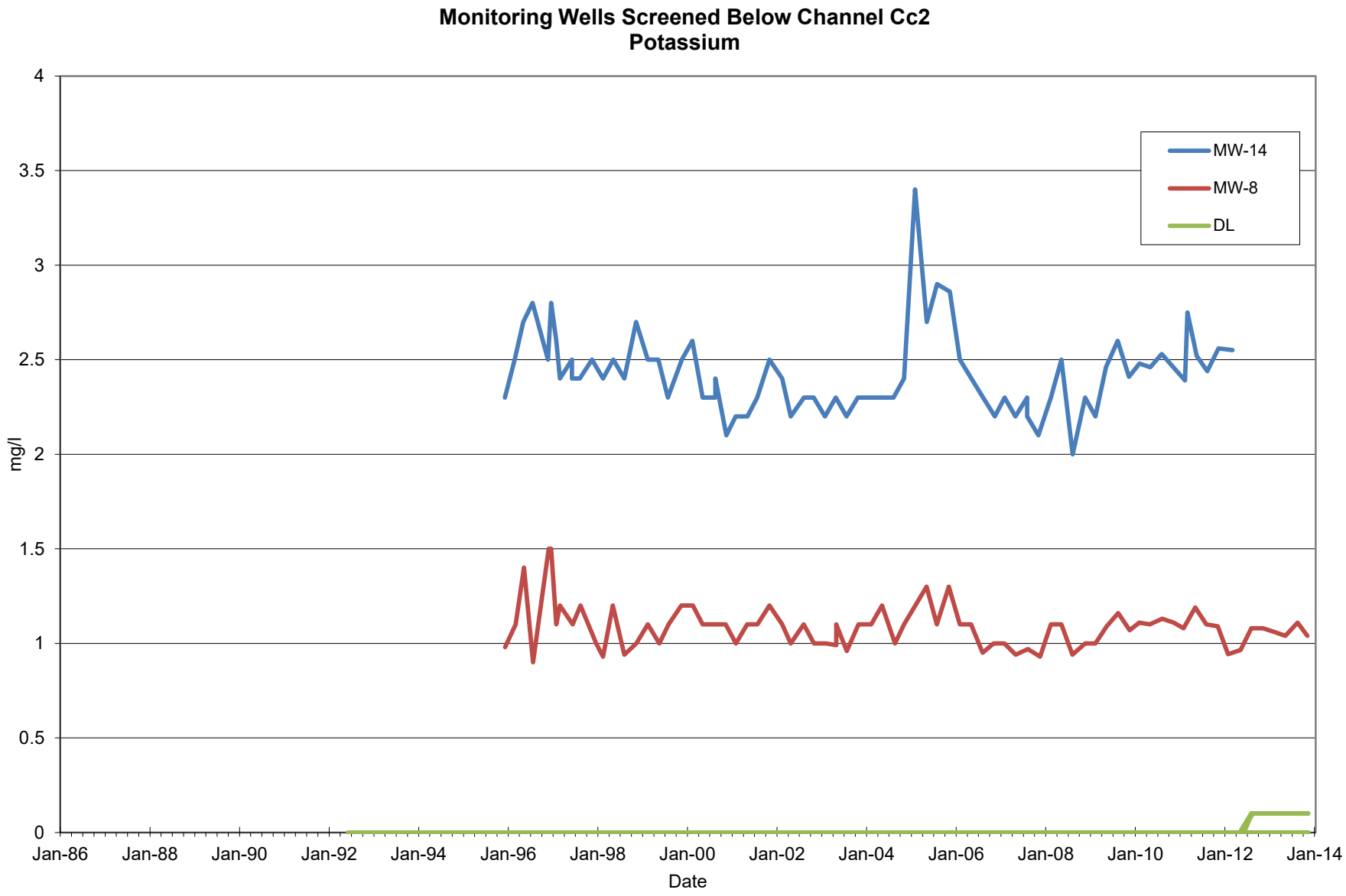

Monitoring Wells Screened Below Channel Cc2
Nitrate
12
10
8
6
4
2
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL
Federal and State GW Quality Criteria

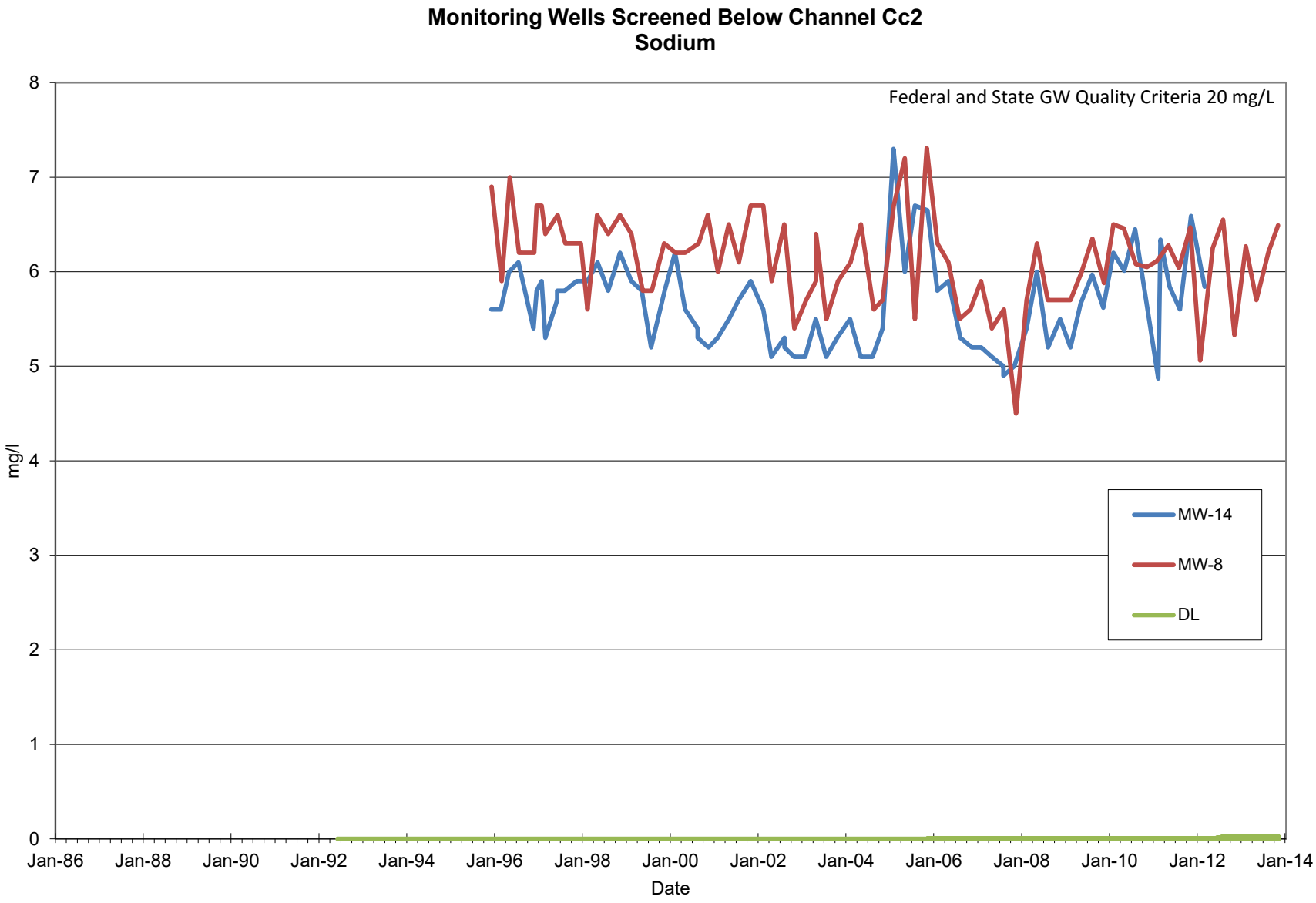

Monitoring Wells Screened Below Channel Cc2
Sulfate
Federal and State GW Quality Criteria 250 mg/L
MW-14
MW-8
DL
mg/l
Date
0
2
4
6
8
10
12
14
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14

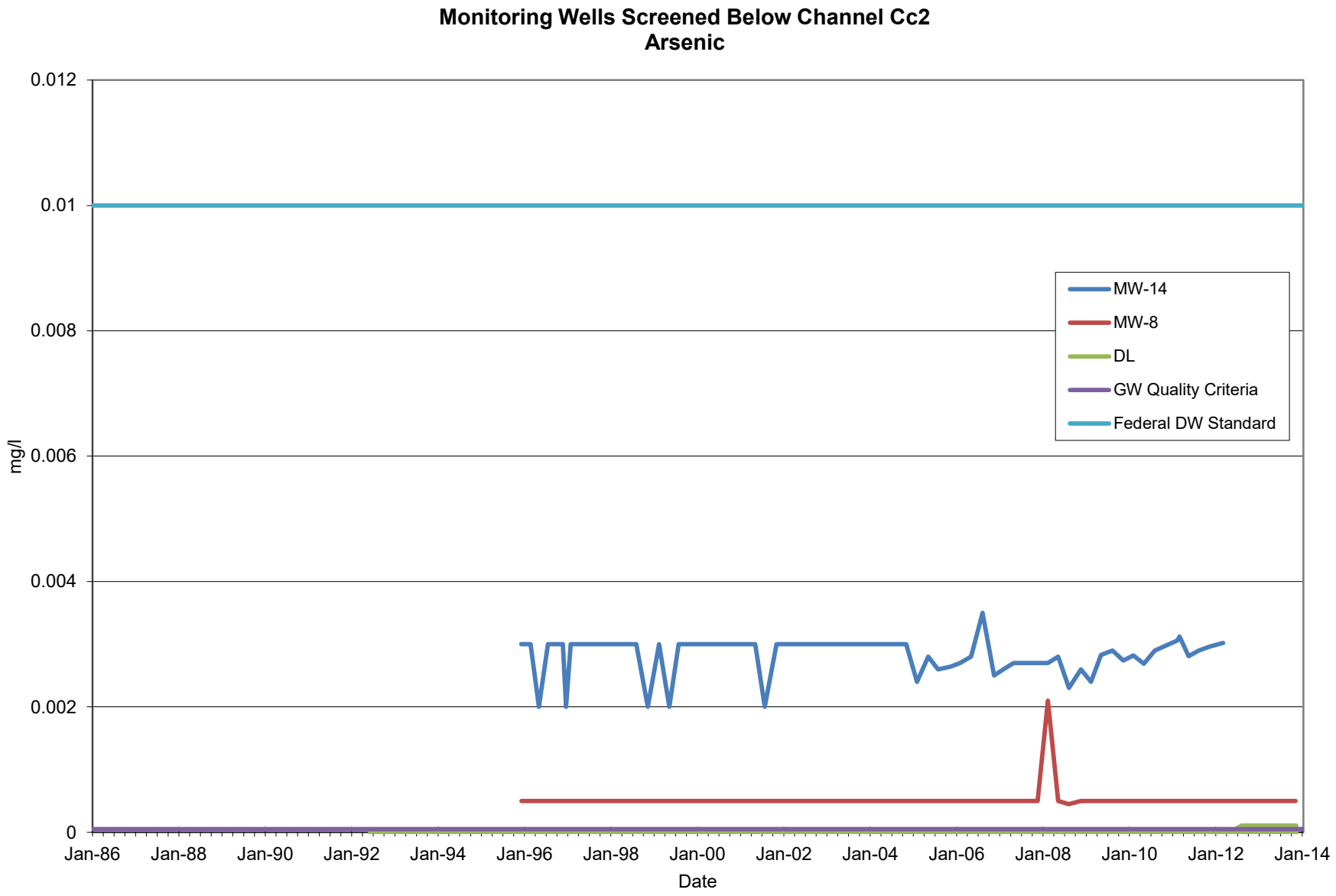

Monitoring Wells Screened Below Channel Cc2
Iron
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL
Federal and State GW Quality Criteria

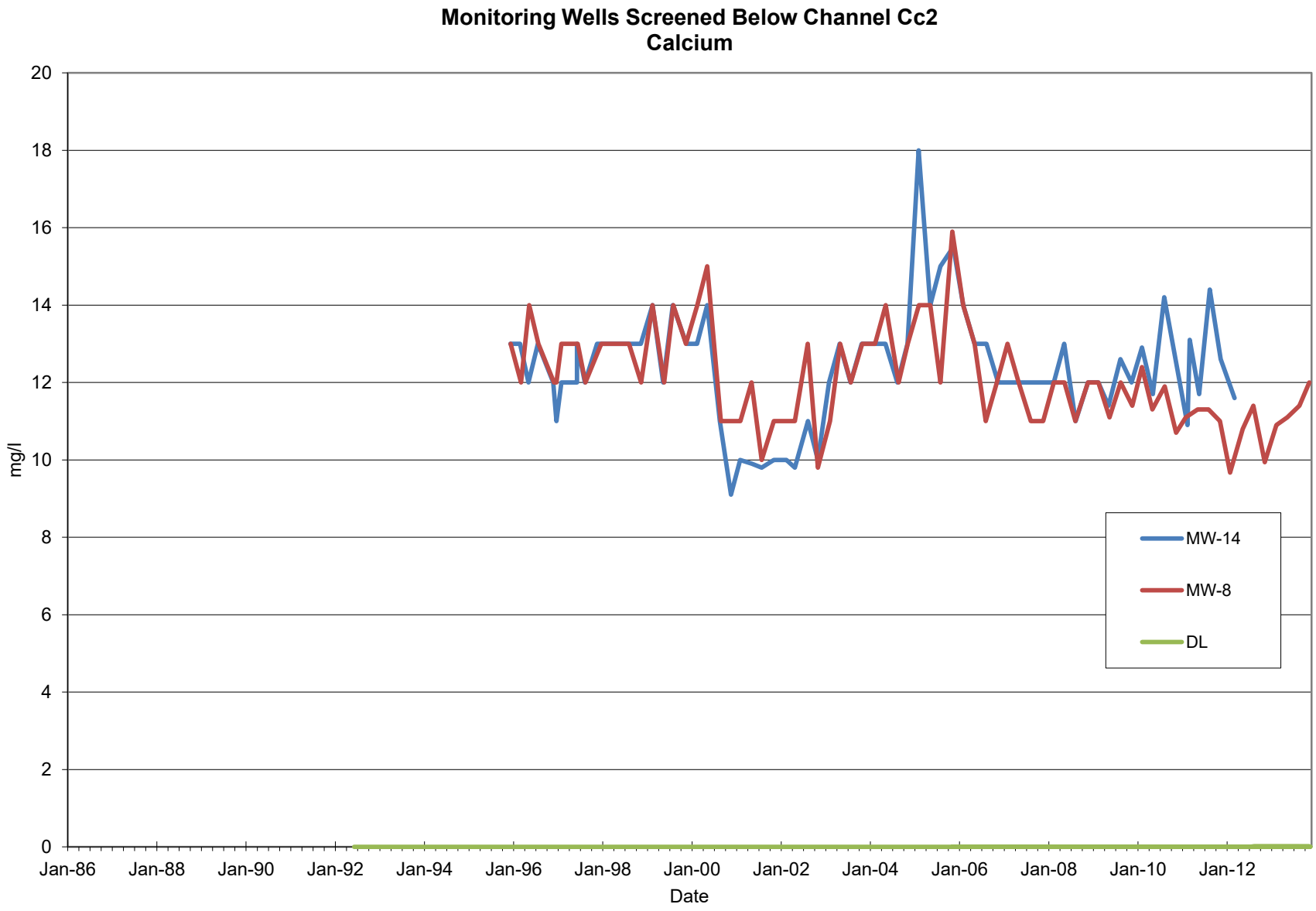

Monitoring Wells Screened Below Channel Cc2
Magnesium
MW-14
MW-8
DL
mg/l
0
2
4
6
8
10
12
14
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

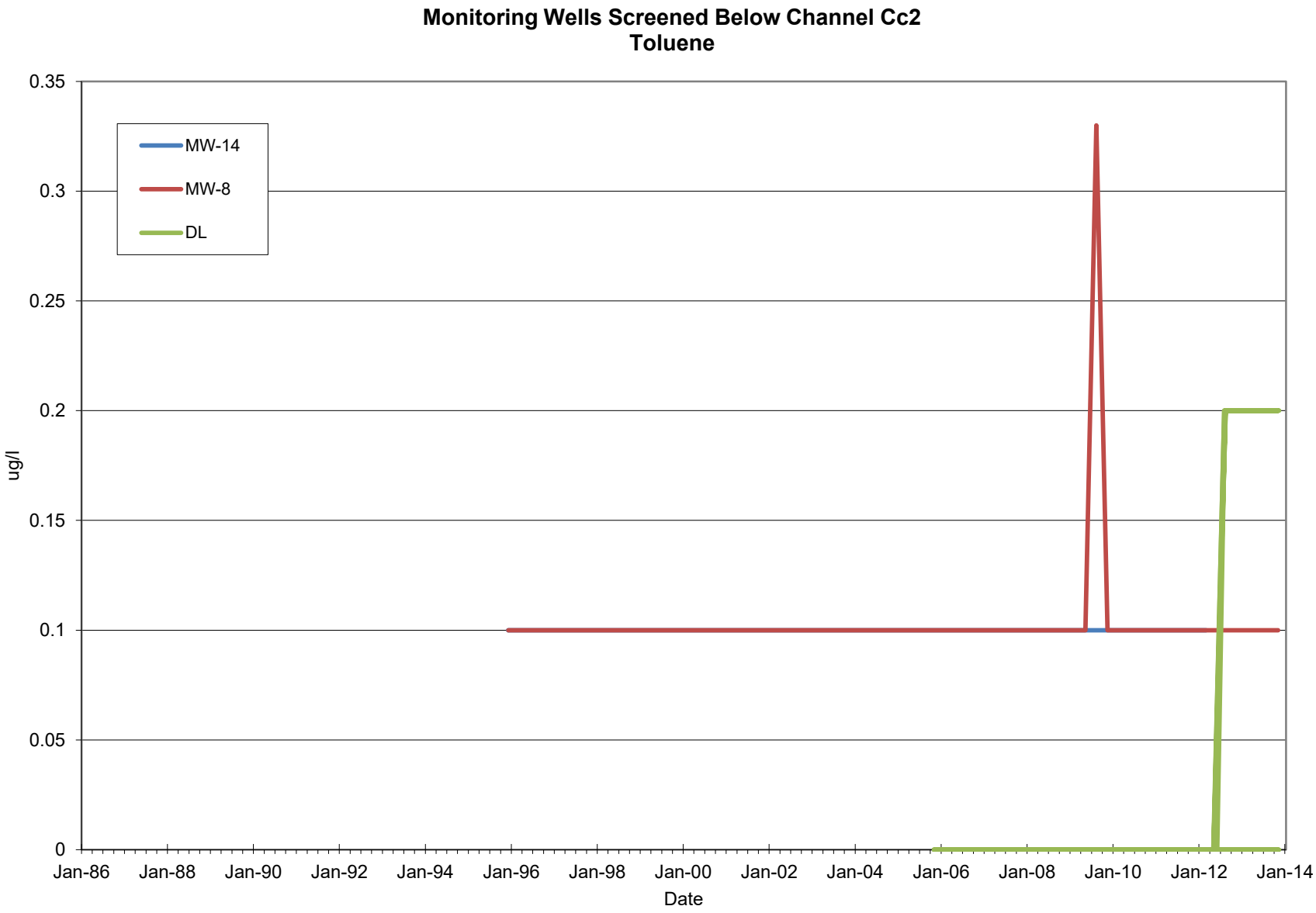

Monitoring Wells Screened Below Channel Cc2
Manganese
MW-14
MW-8
DL
Federal and State GW Quality Criteria
mg/l
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

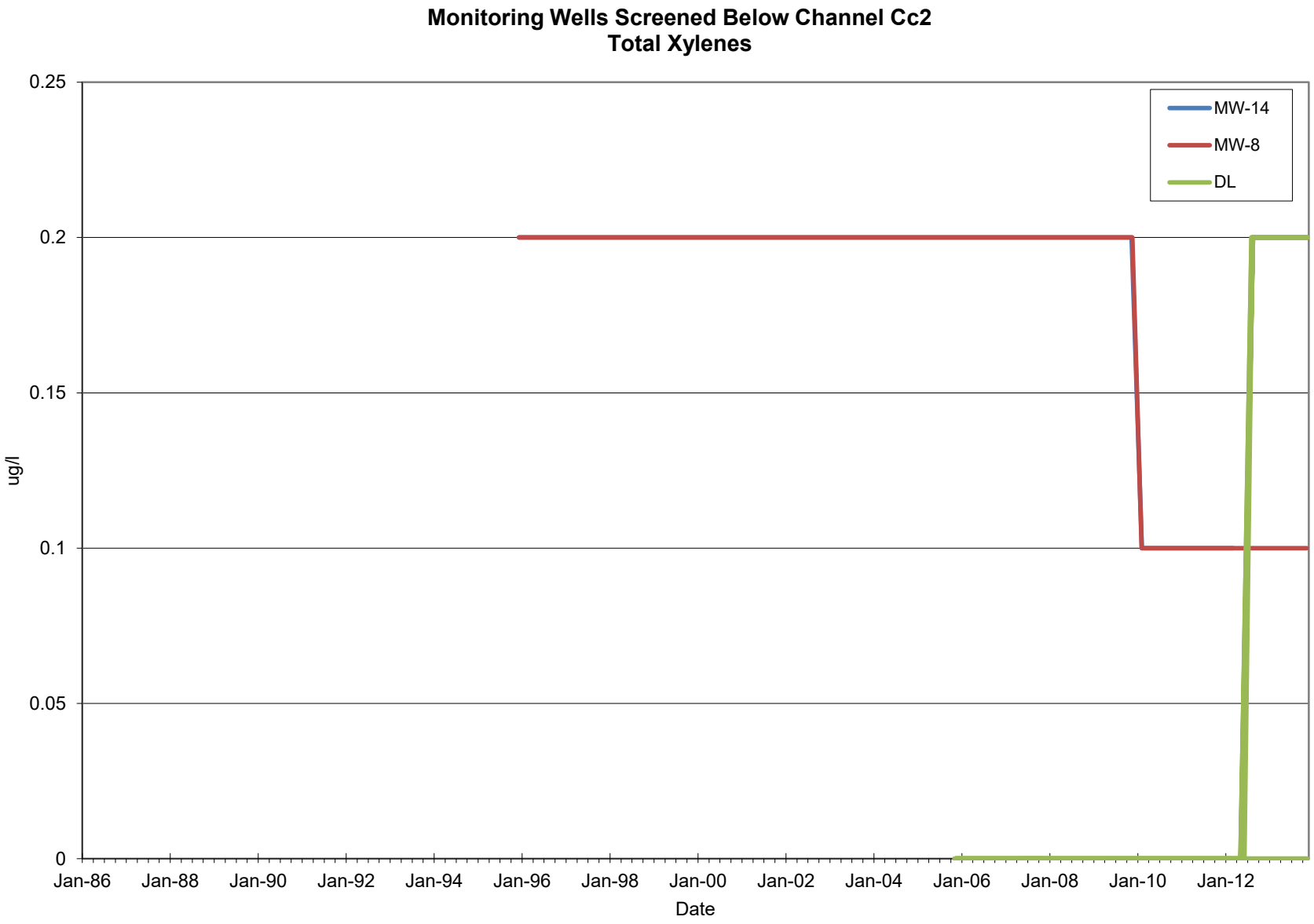

Monitoring Wells Screened Below Channel Cc2
Potassium
MW-14
MW-8
DL
mg/l
4
3.5
3
2.5
2
1.5
1
0.5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

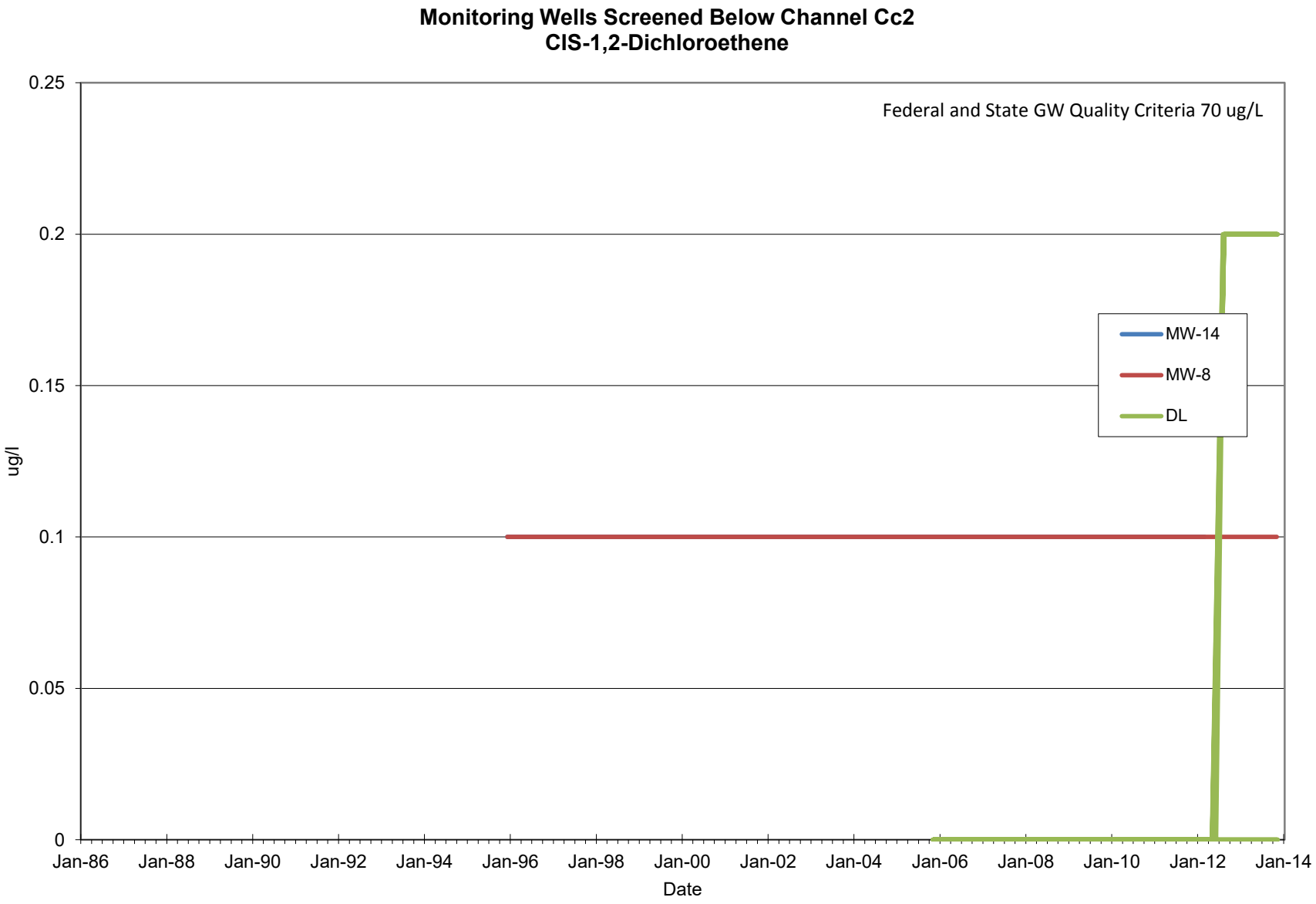

Monitoring Wells Screened Below Channel Cc2
Sodium
Federal and State GW Quality Criteria 20 mg/L
mg/l
8
7
6
5
4
3
2
1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL


Monitoring Wells Screened Below Channel Cc2
Arsenic
0.012
0.01
0.008
0.006
0.004
0.002
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL
GW Quality Criteria
Federal DW Standard

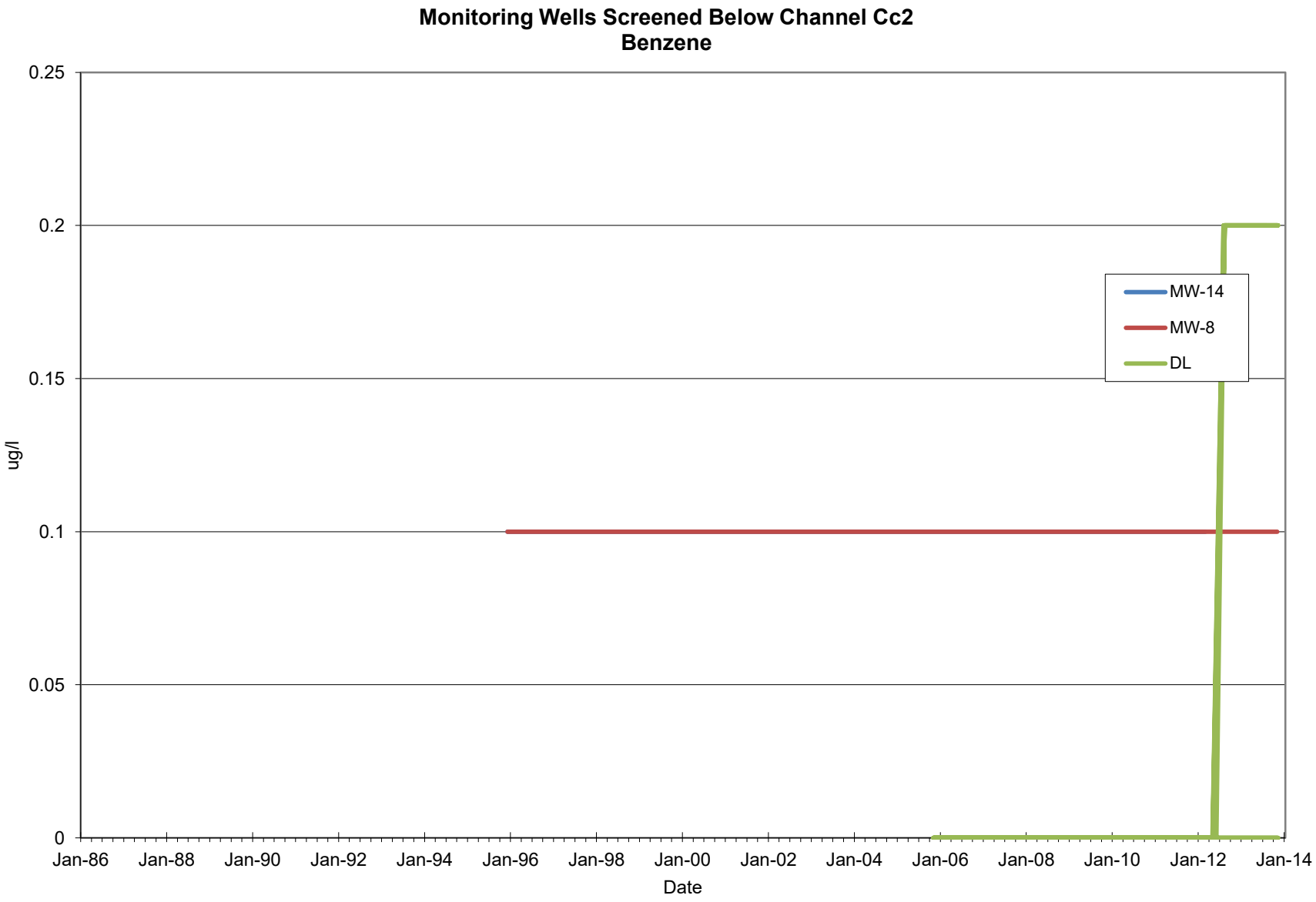

Monitoring Wells Screened Below Channel Cc2
Calcium
mg/l
20
18
16
14
12
10
8
6
4
2
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Date
MW-14
MW-8
DL

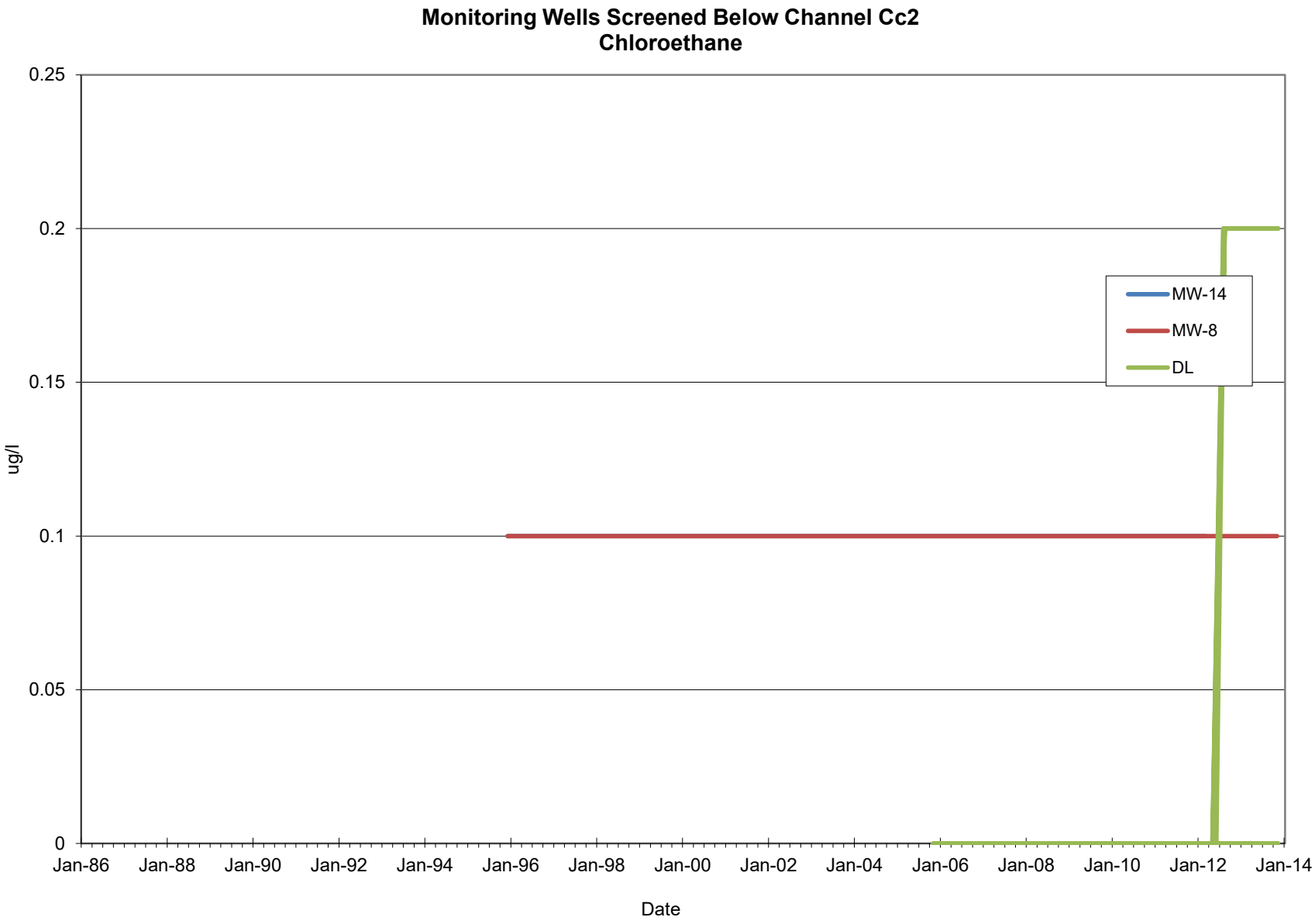

Monitoring Wells Screened Below Channel Cc2
Toluene
MW-14
MW-8
DL
ug/l
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

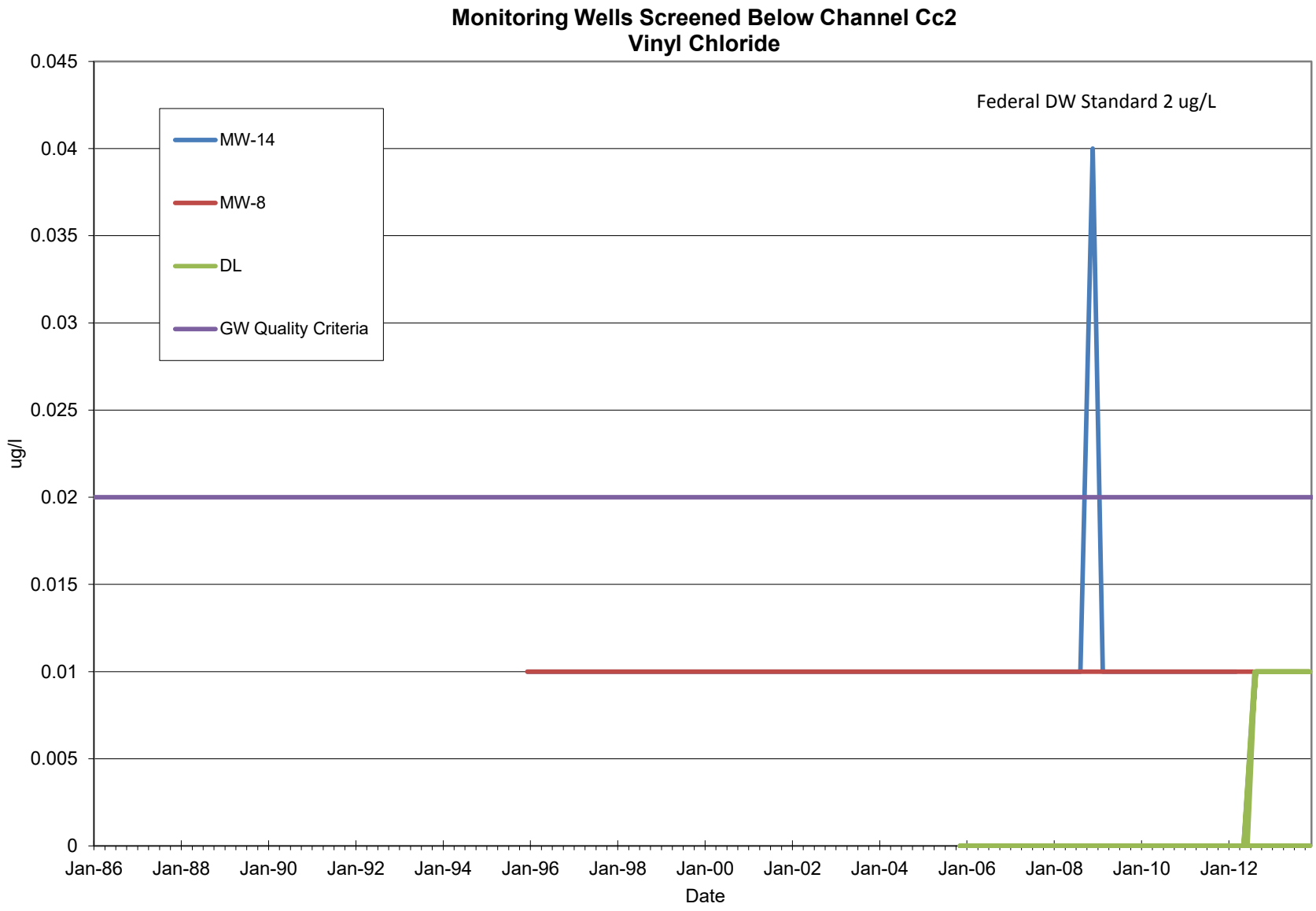

Monitoring Wells Screened Below Channel Cc2
Total Xylenes
0.25
0.2
0.15
0.1
0.05
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Date
MW-14
MW-8
DL

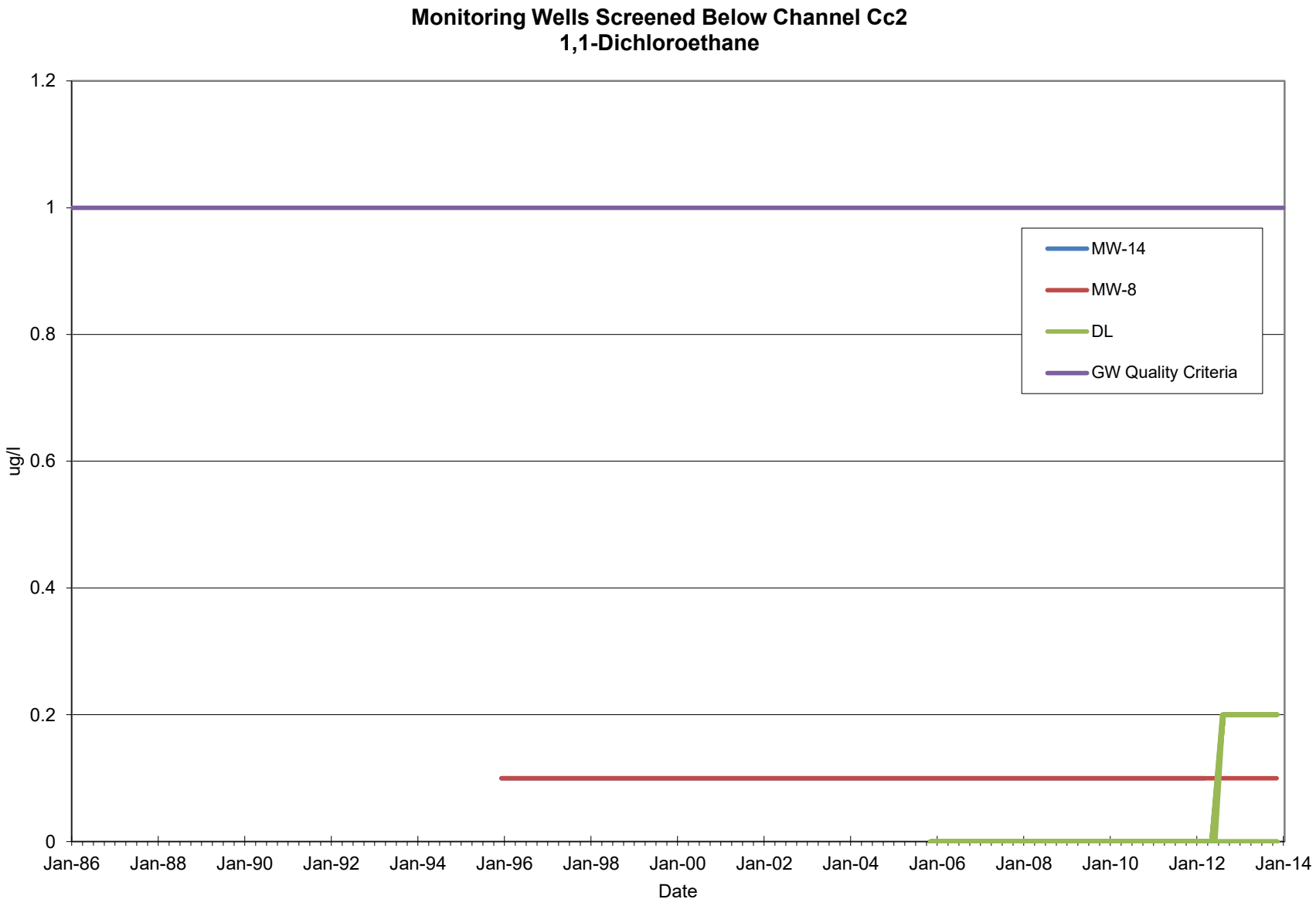

Monitoring Wells Screened Below Channel Cc2
CIS-1,2-Dichloroethene
Federal and State GW Quality Criteria 70 ug/L
MW-14
MW-8
DL
ug/l
0.25
0.2
0.15
0.1
0.05
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

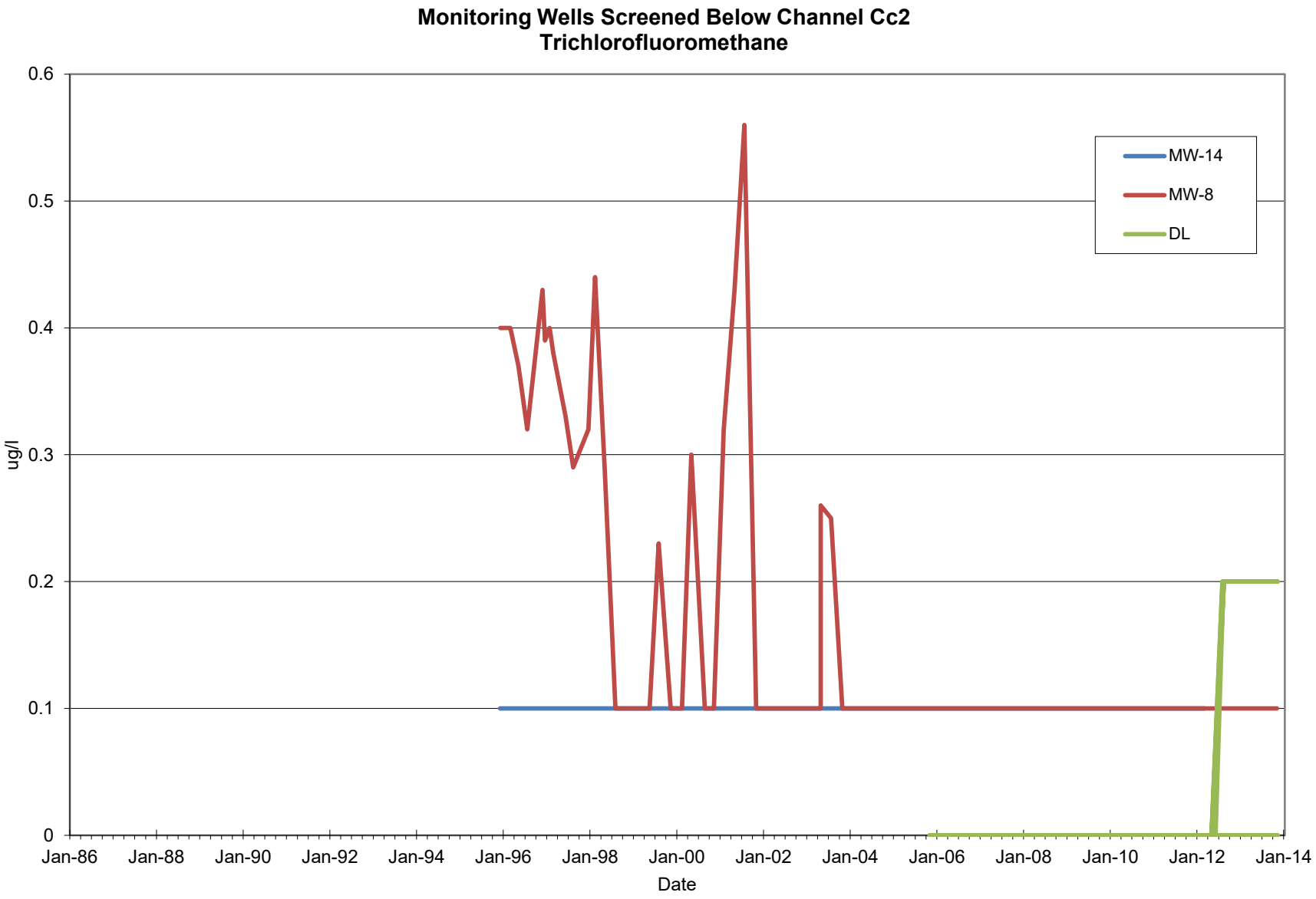
Monitoring Wells Screened Below Channel Cc2
TRANS-1,2-Dichloroethene
0.25
0.2
0.15
0.1
0.05
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL

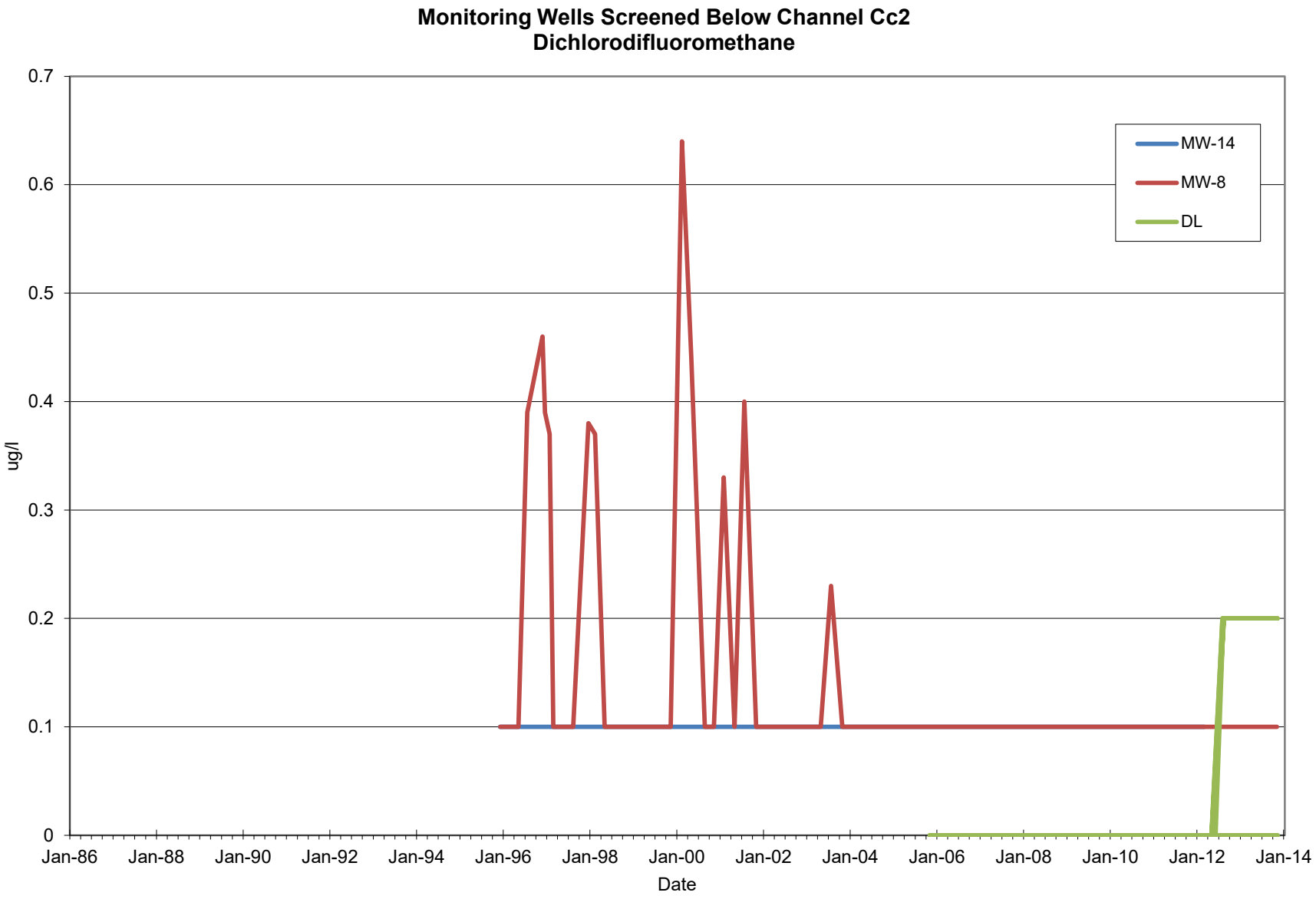

Monitoring Wells Screened Below Channel Cc2
Benzene
0.25
0.2
0.15
0.1
0.05
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL

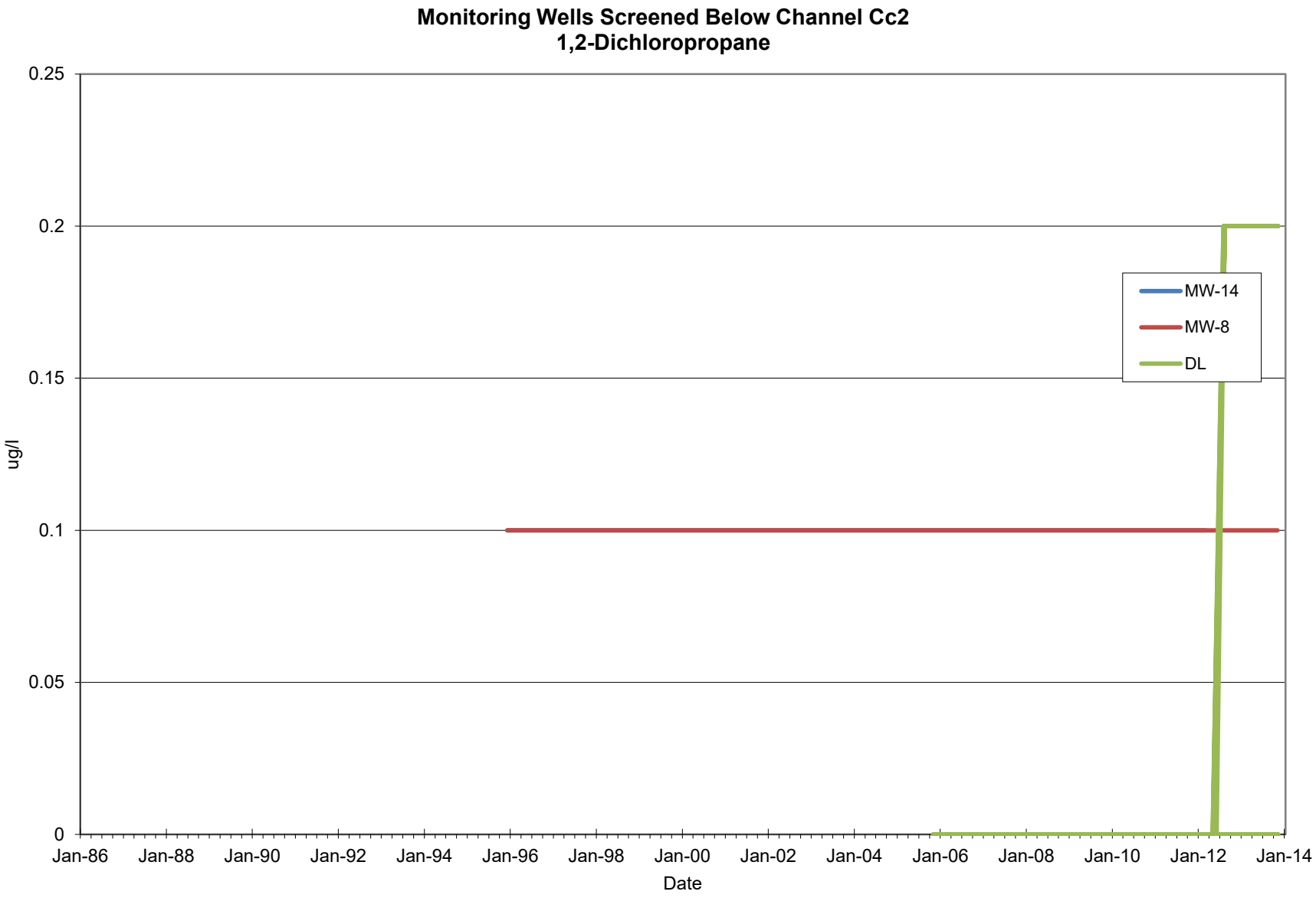

Monitoring Wells Screened Below Channel Cc2
Chloroethane
0.25
0.2
0.15
0.1
0.05
0
ug/l
MW-14
MW-8
DL
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

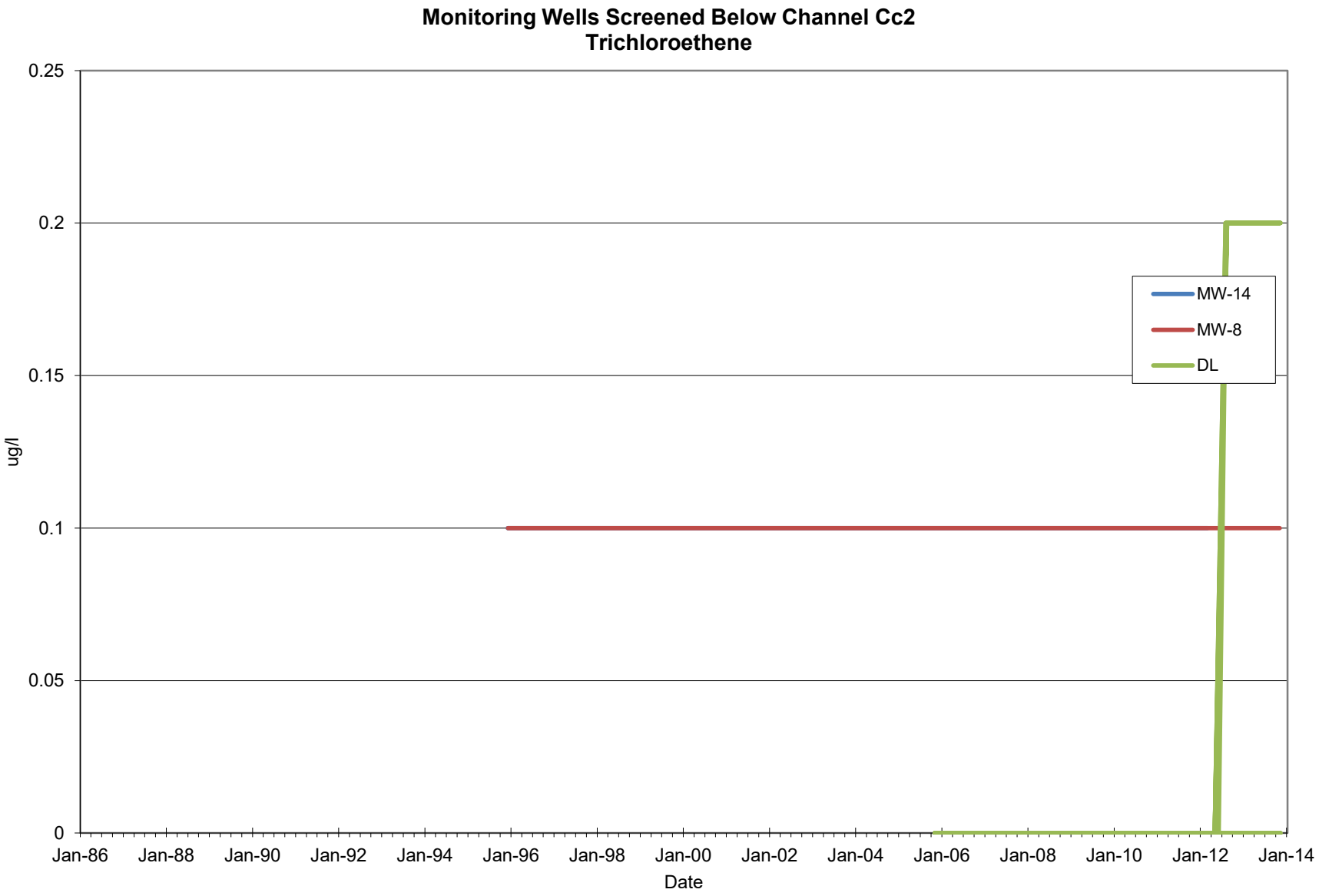

Monitoring Wells Screened Below Channel Cc2
Vinyl Chloride
Federal DW Standard 2 ug/L
MW-14
MW-8
DL
GW Quality Criteria
ug/l
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Date


Monitoring Wells Screened Below Channel Cc2
1,1-Dichloroethane
1.2
1
0.8
0.6
0.4
0.2
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL
GW Quality Criteria


Monitoring Wells Screened Below Channel Cc2
Trichlorofluoromethane
0.6
0.5
0.4
0.3
0.2
0.1
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL

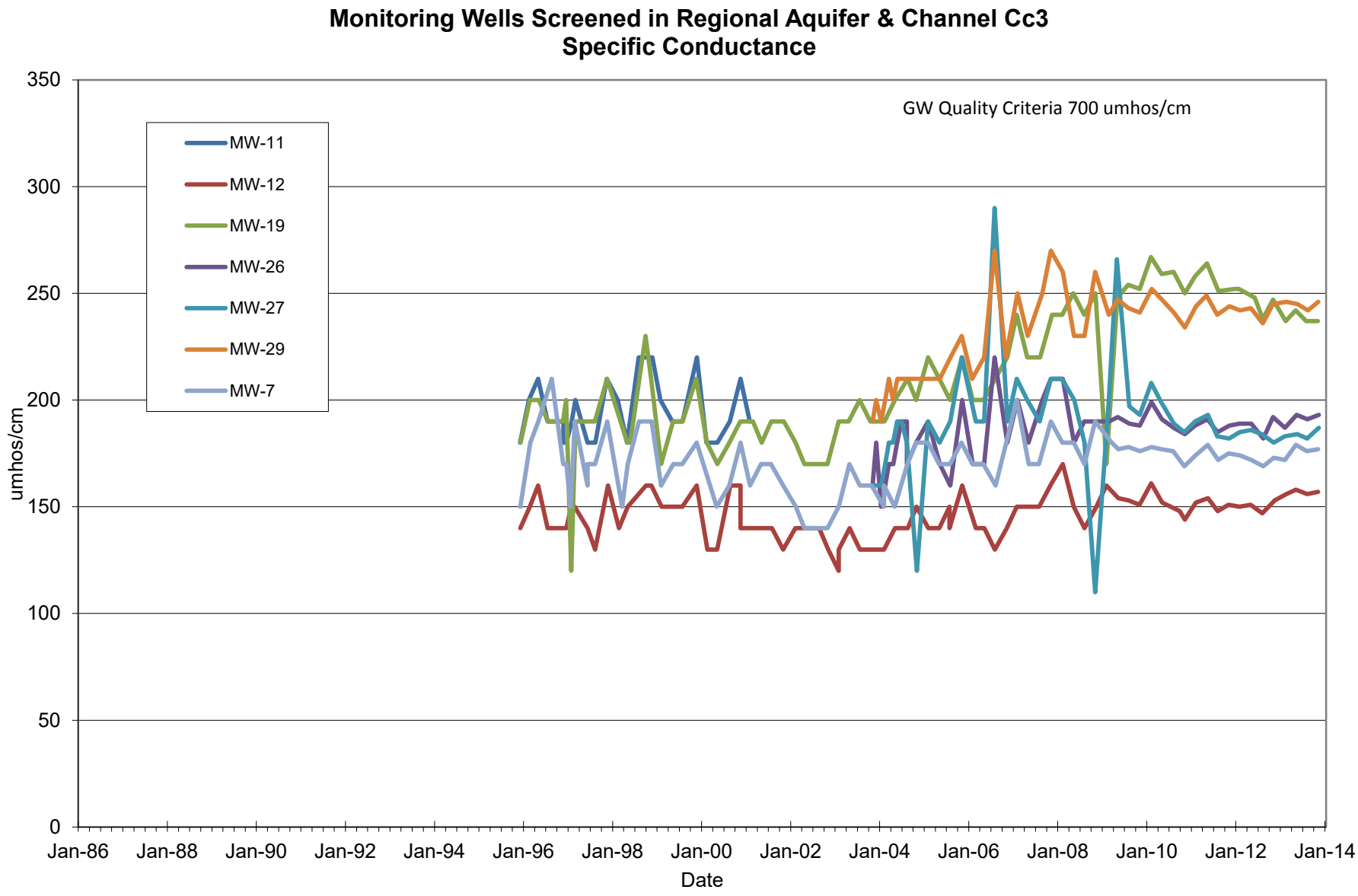

Monitoring Wells Screened Below Channel Cc2
Dichlorodifluoromethane
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL

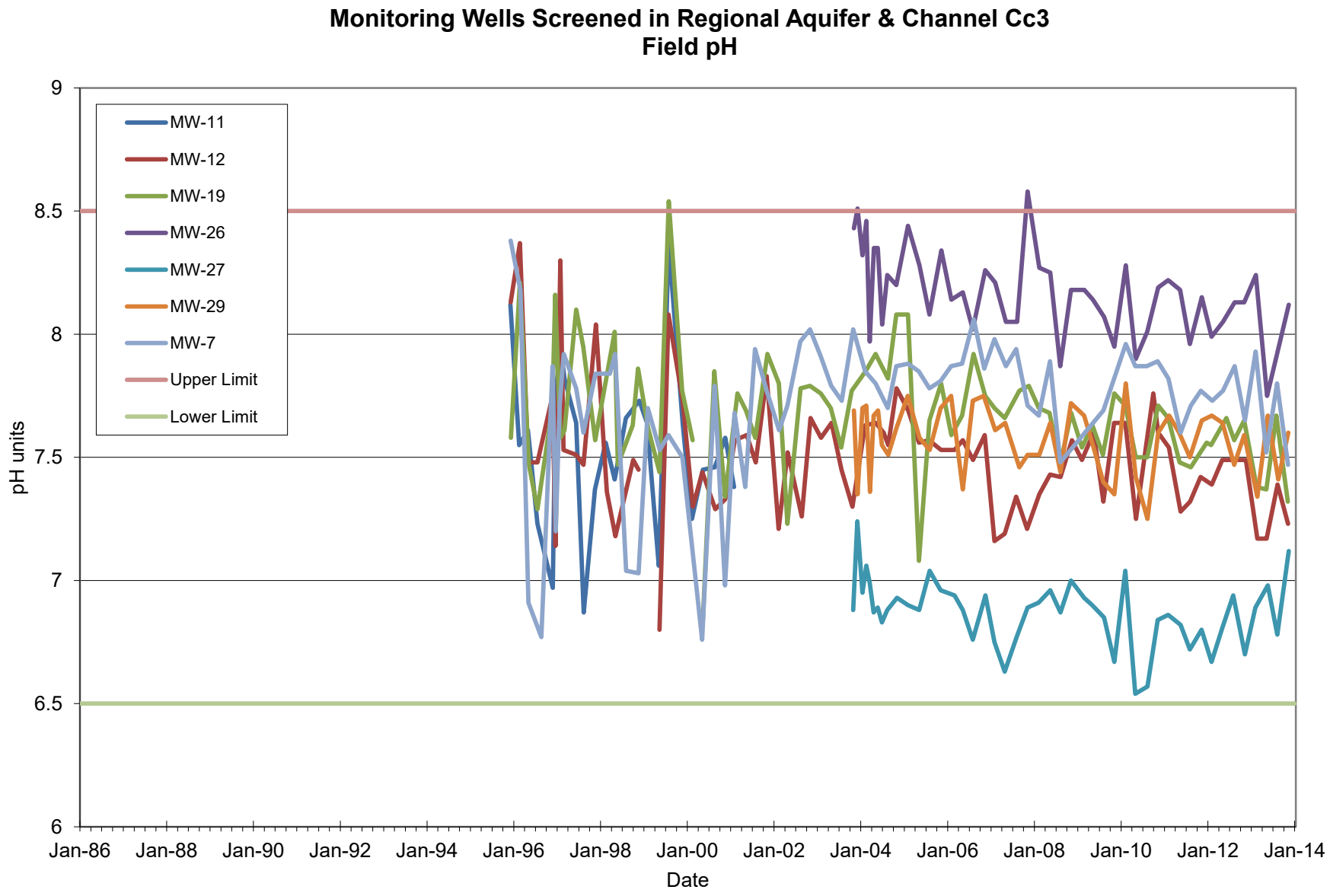

Monitoring Wells Screened Below Channel Cc2
1,2-Dichloropropane
0.25
0.2
0.15
0.1
0.05
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL

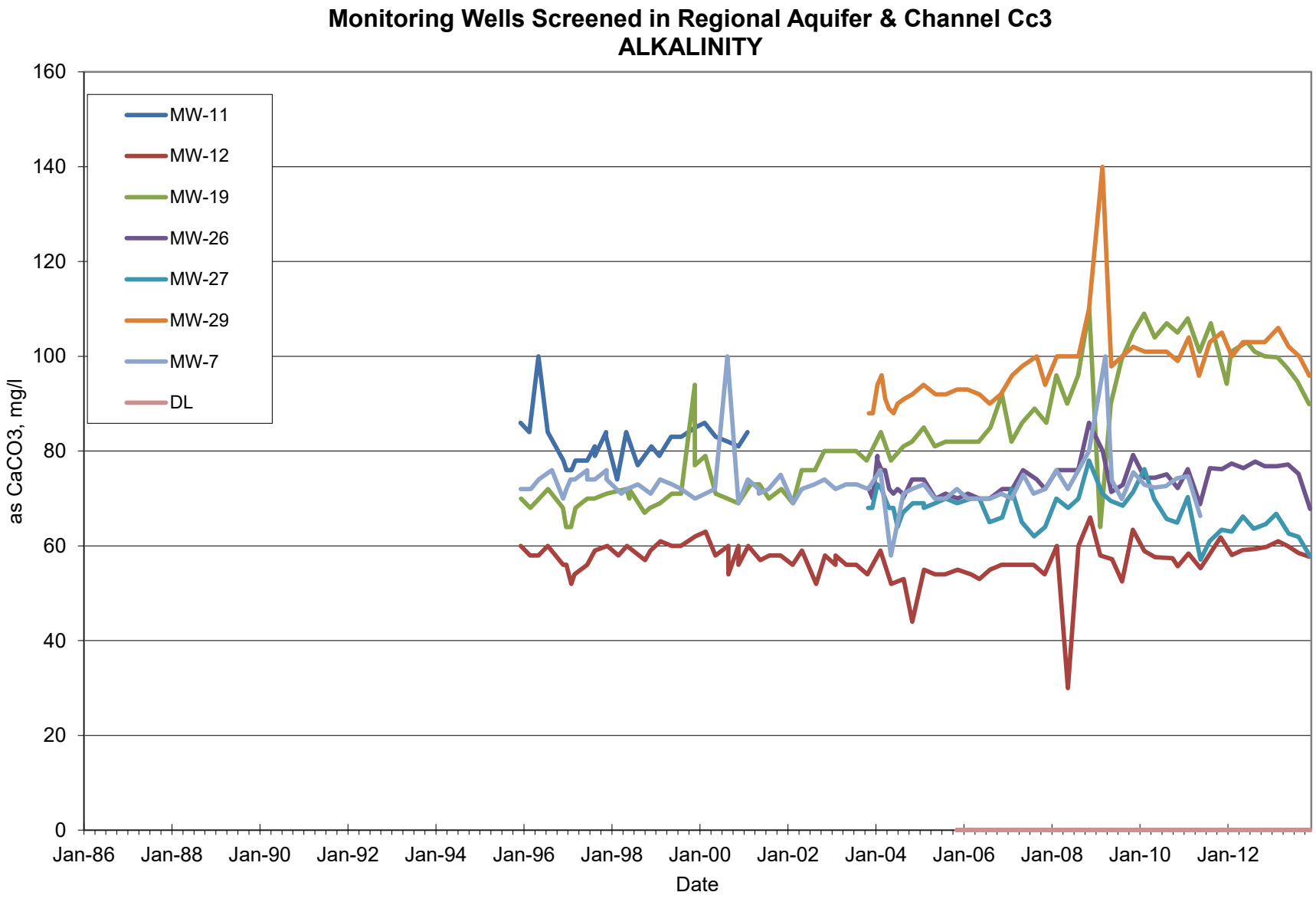

Monitoring Wells Screened Below Channel Cc2
Trichloroethene
0.25
0.2
0.15
0.1
0.05
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-14
MW-8
DL

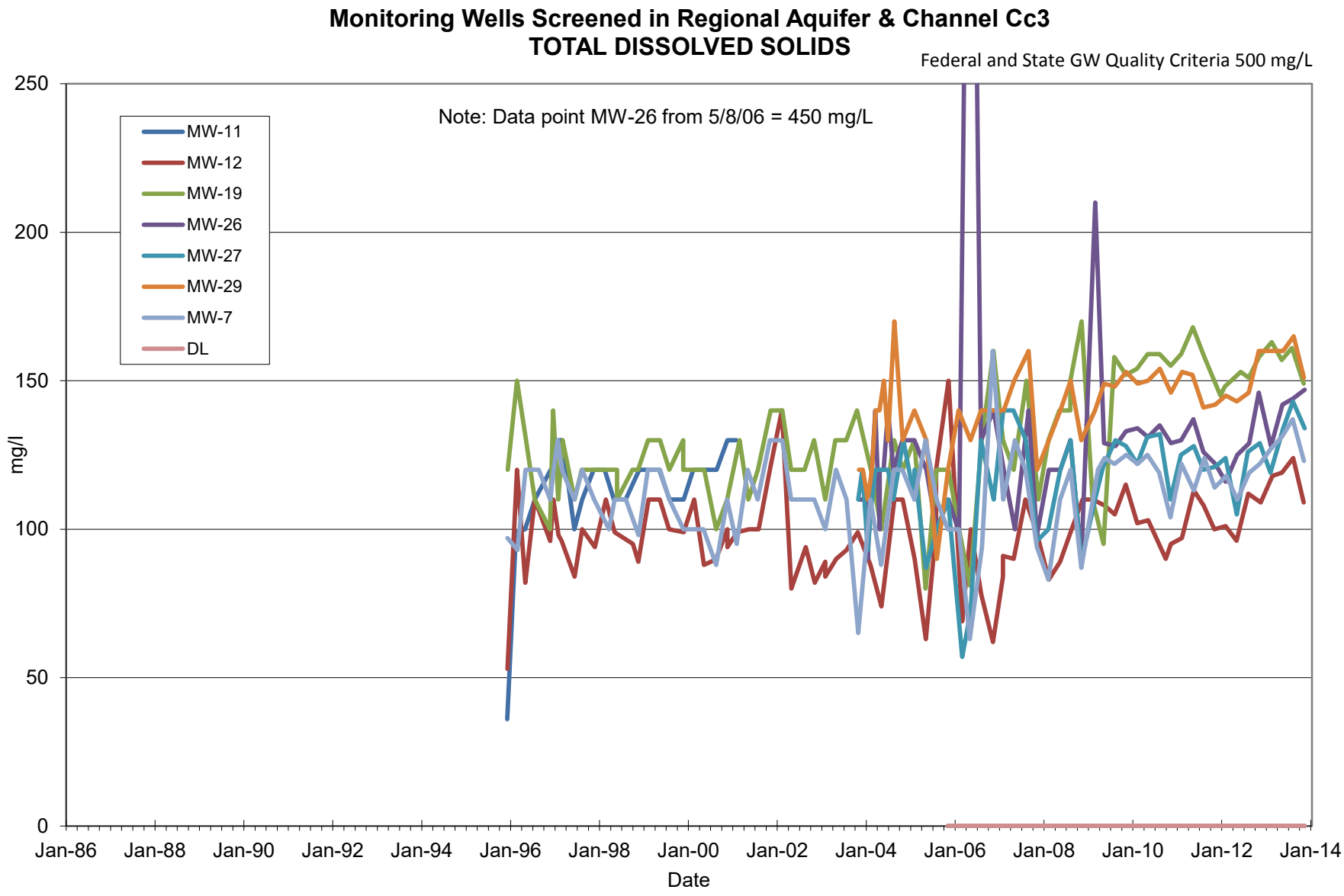
Appendix F

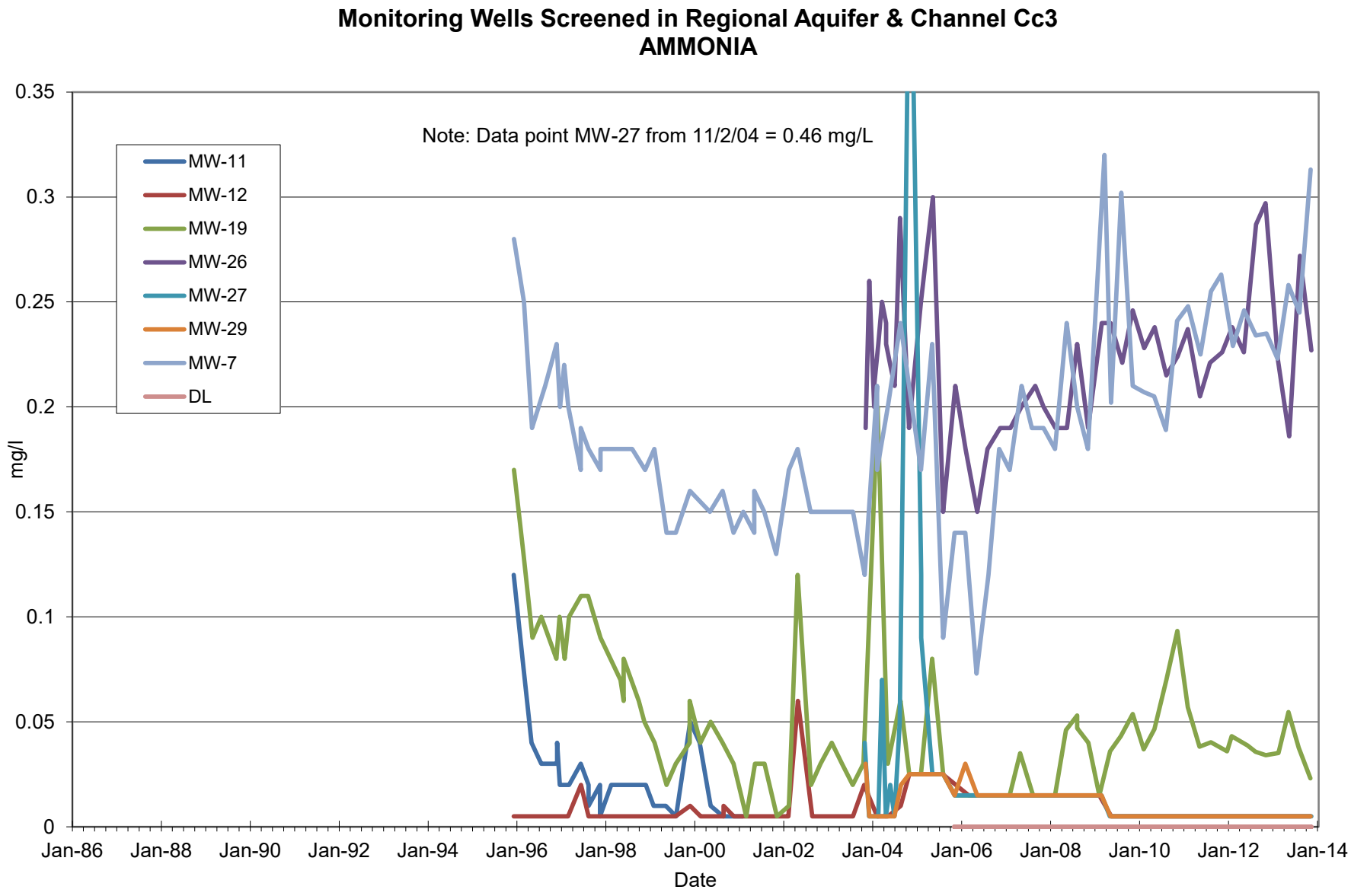
Time Concentration Plots for Regional Aquifer and Channel Cc3

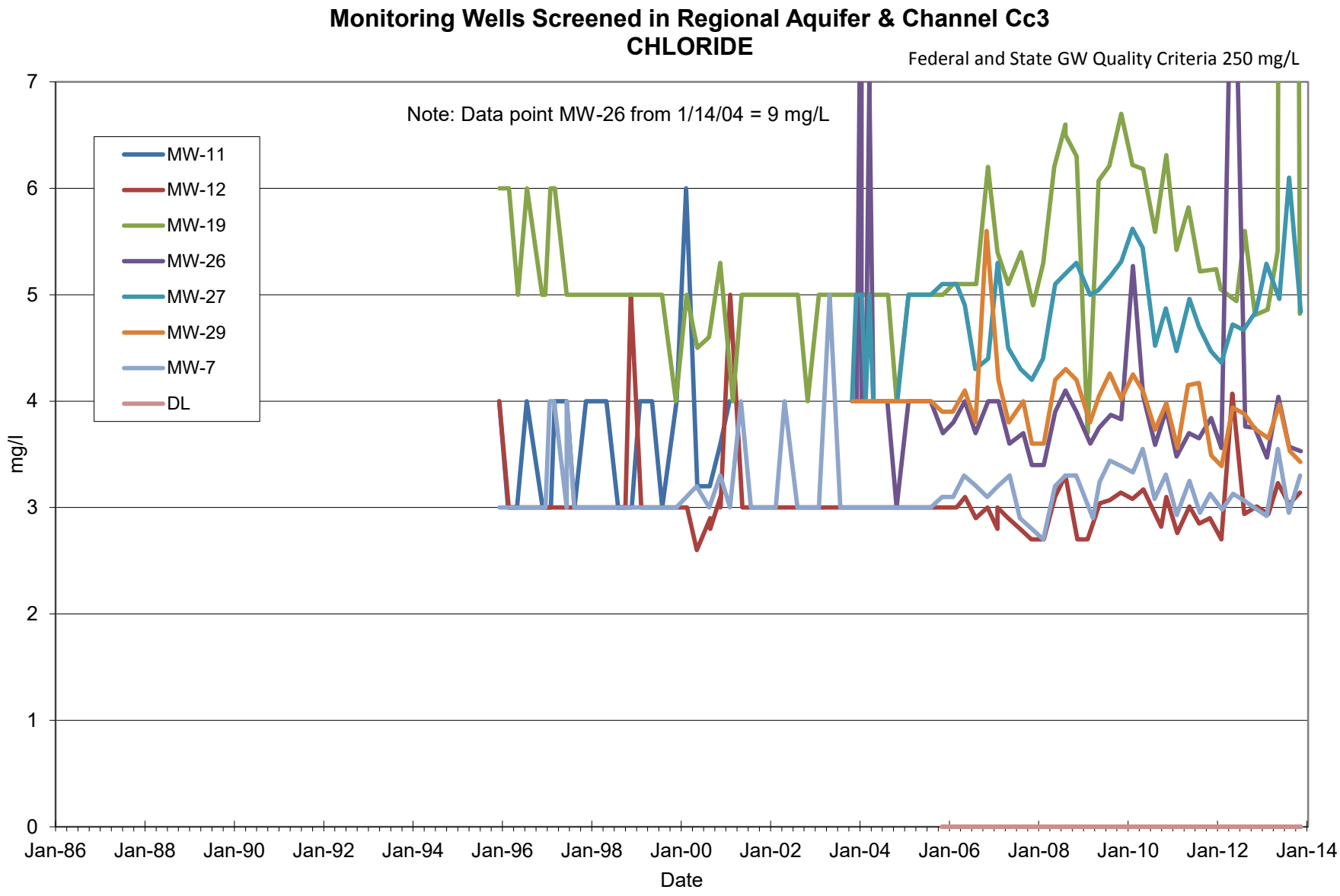

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
Specific Conductance
GW Quality Criteria 700 umhos/cm
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
umhos/cm
350
300
250
200
150
100
50
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

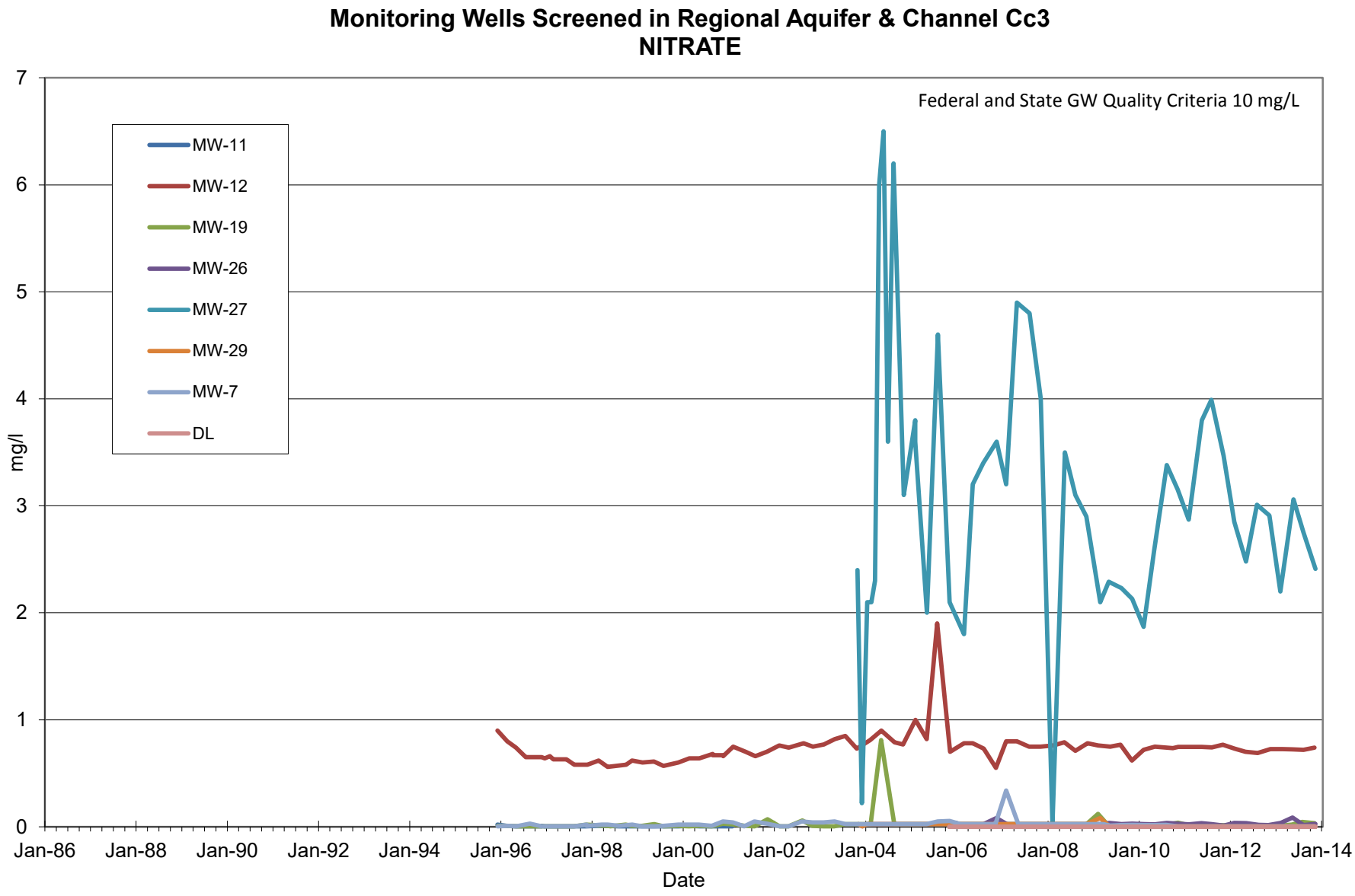

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
Field pH
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
Upper Limit
Lower Limit
pH units
9
8.5
8
7.5
7
6.5
6
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

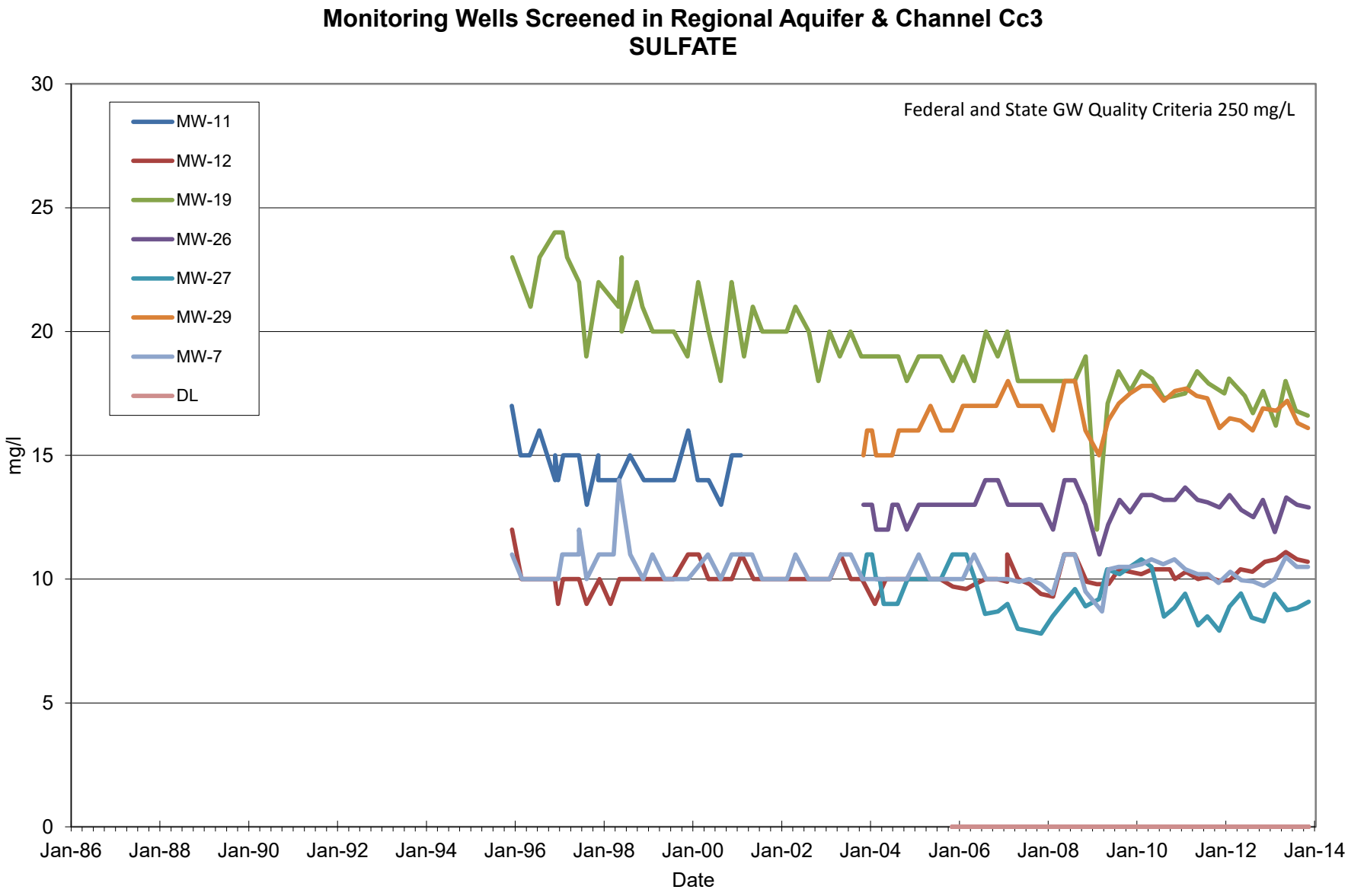

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
ALKALINITY
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
as CaCO3, mg/l
160
140
120
100
80
60
40
20
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Date

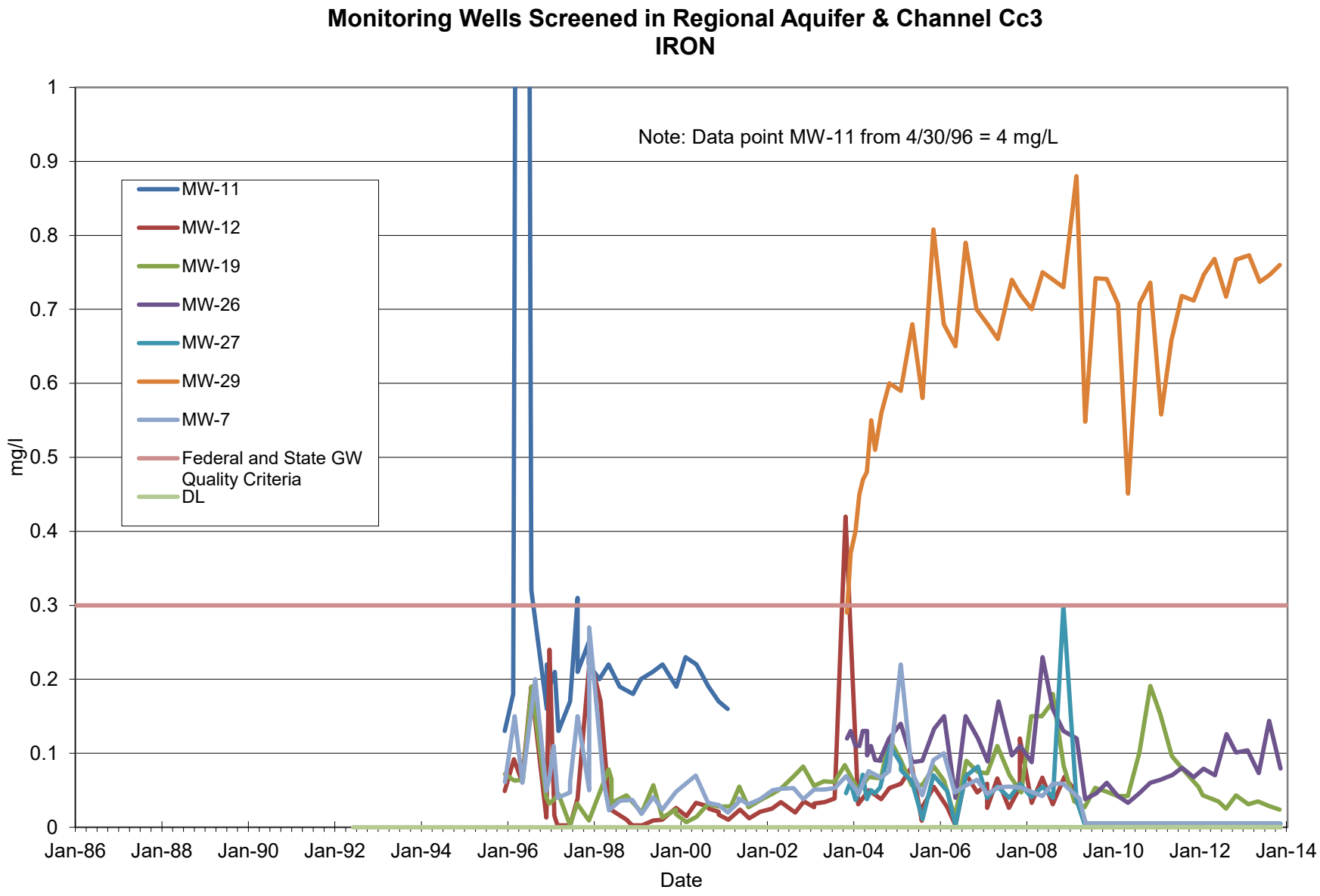

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
TOTAL DISSOLVED SOLIDS
Federal and State GW Quality Criteria 500 mg/L
Note: Data point MW-26 from 5/8/06 = 450 mg/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
250
200
150
100
50
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

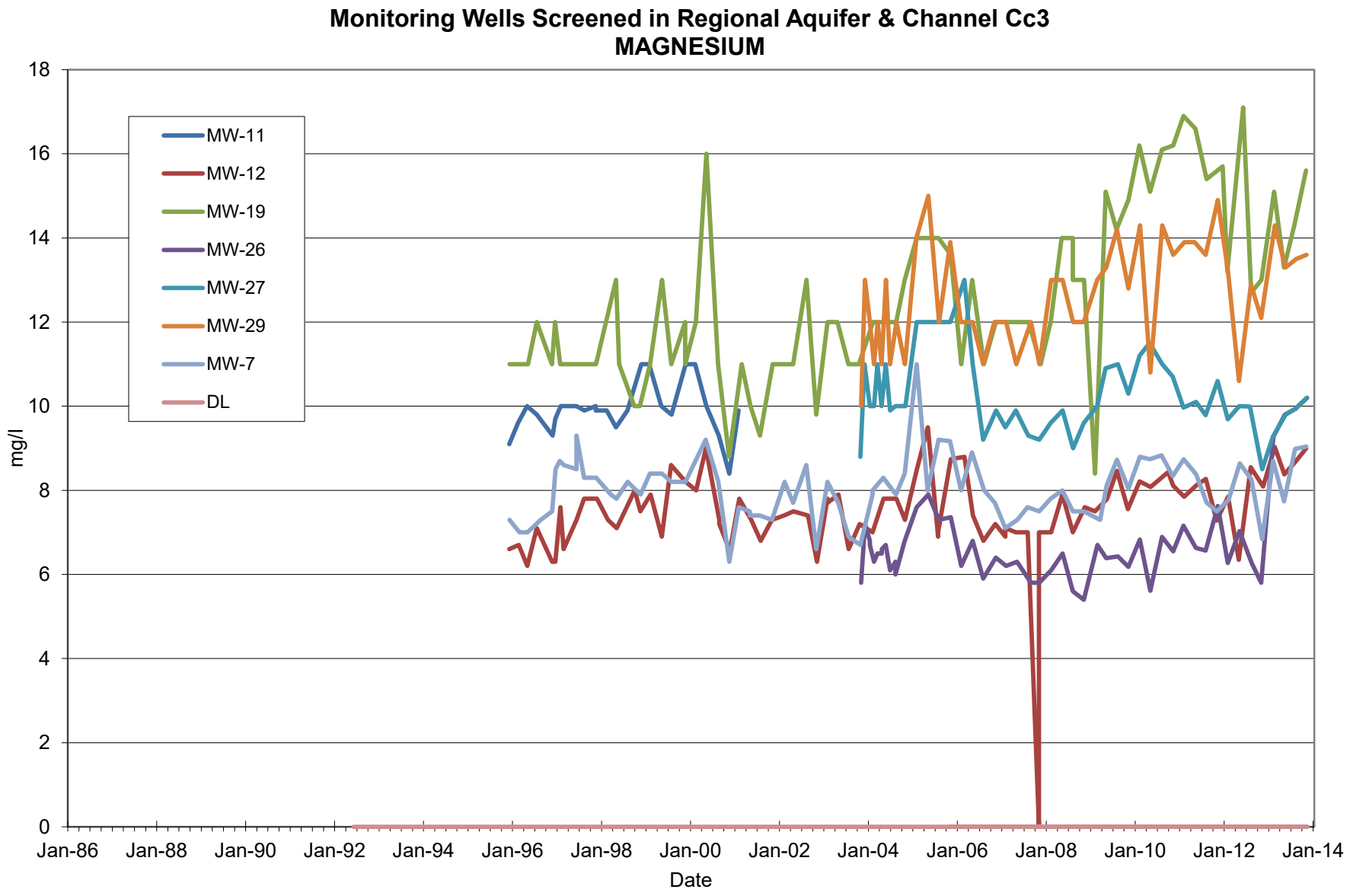

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
AMMONIA
Note: Data point MW-27 from 11/2/04 = 0.46 mg/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

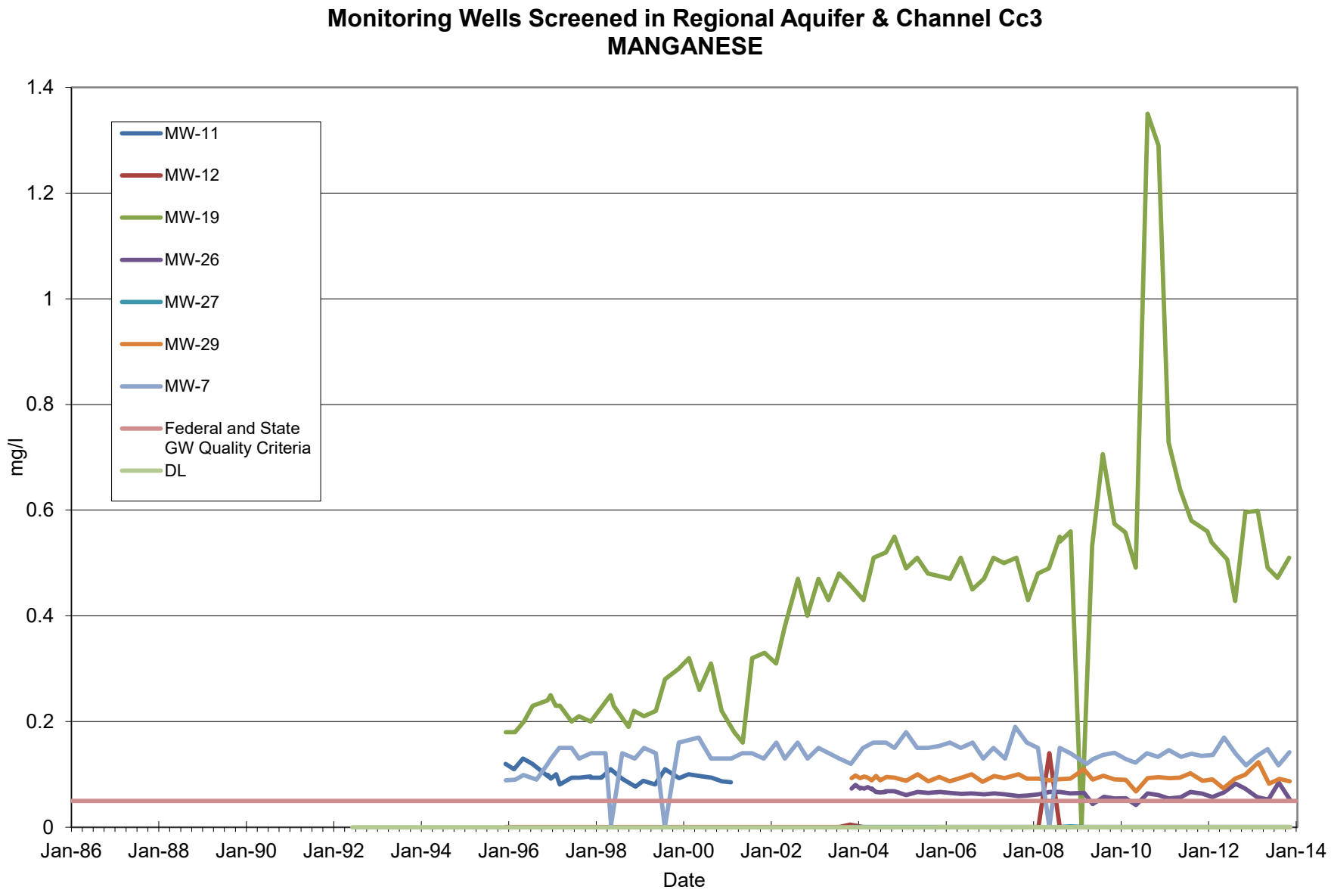

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
CHLORIDE
Federal and State GW Quality Criteria 250 mg/L
Note: Data point MW-26 from 1/14/04 = 9 mg/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
0
1
2
3
4
5
6
7
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

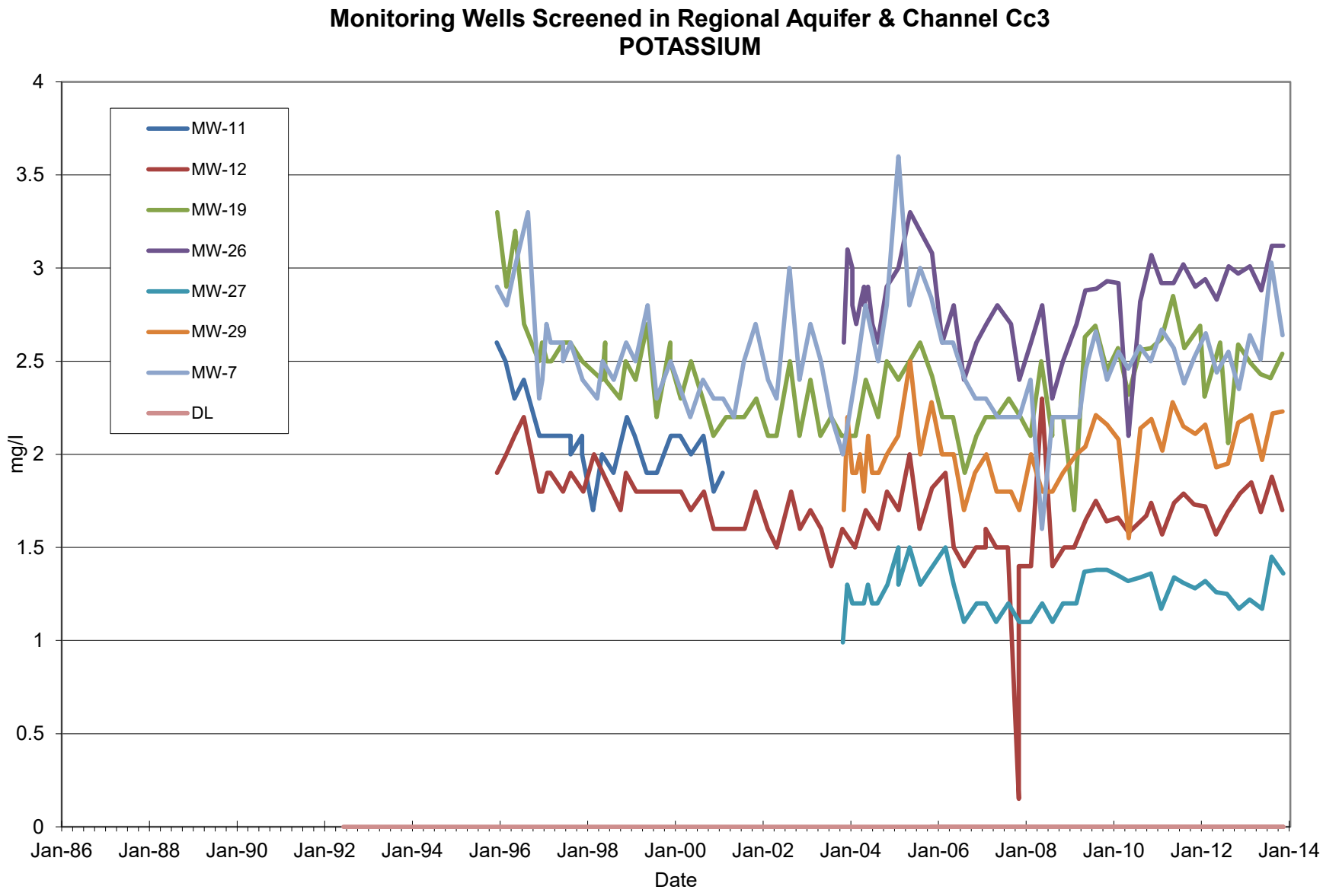

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
NITRATE
Federal and State GW Quality Criteria 10 mg/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
0
1
2
3
4
5
6
7
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

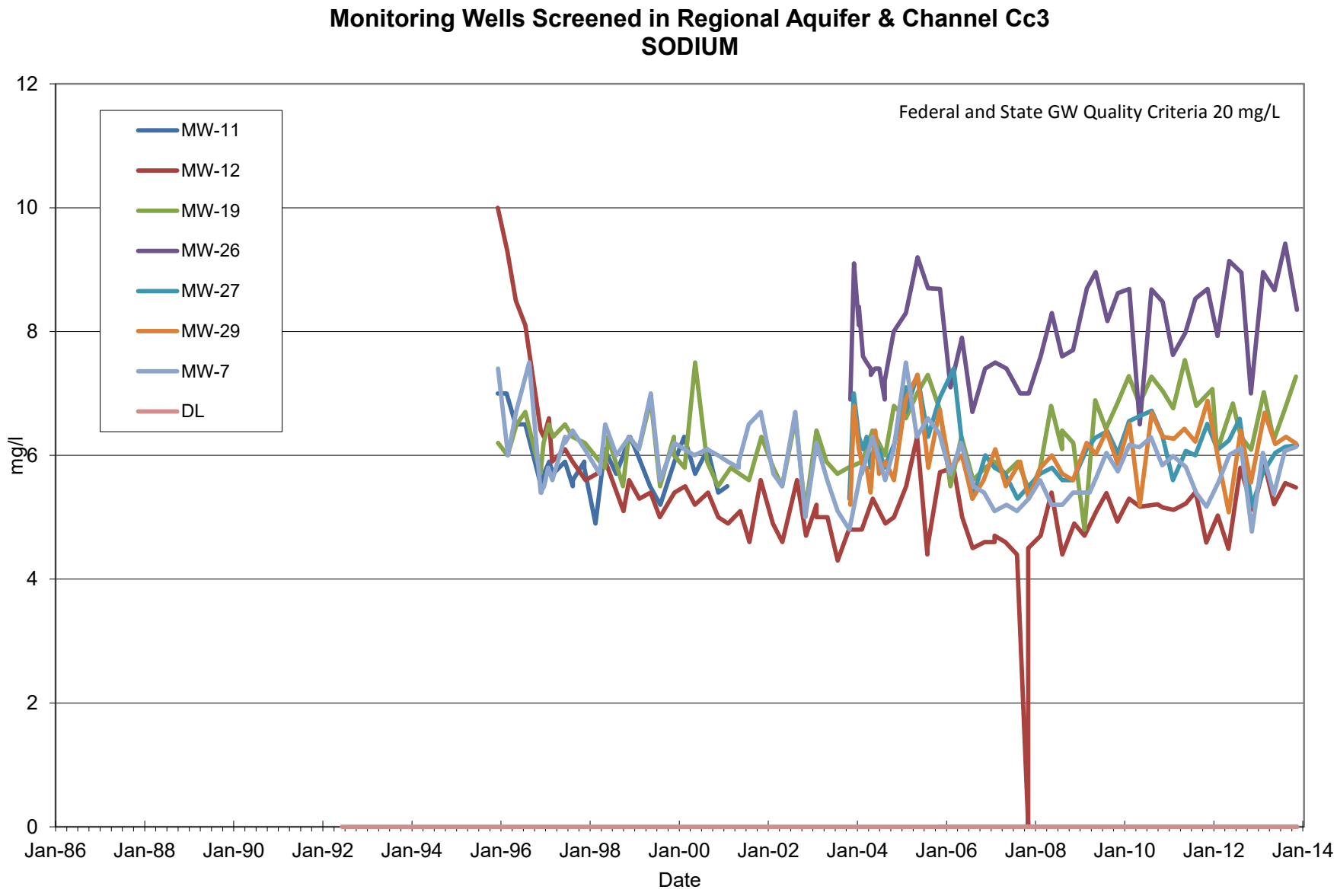

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
SULFATE
Federal and State GW Quality Criteria 250 mg/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
30
25
20
15
10
5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

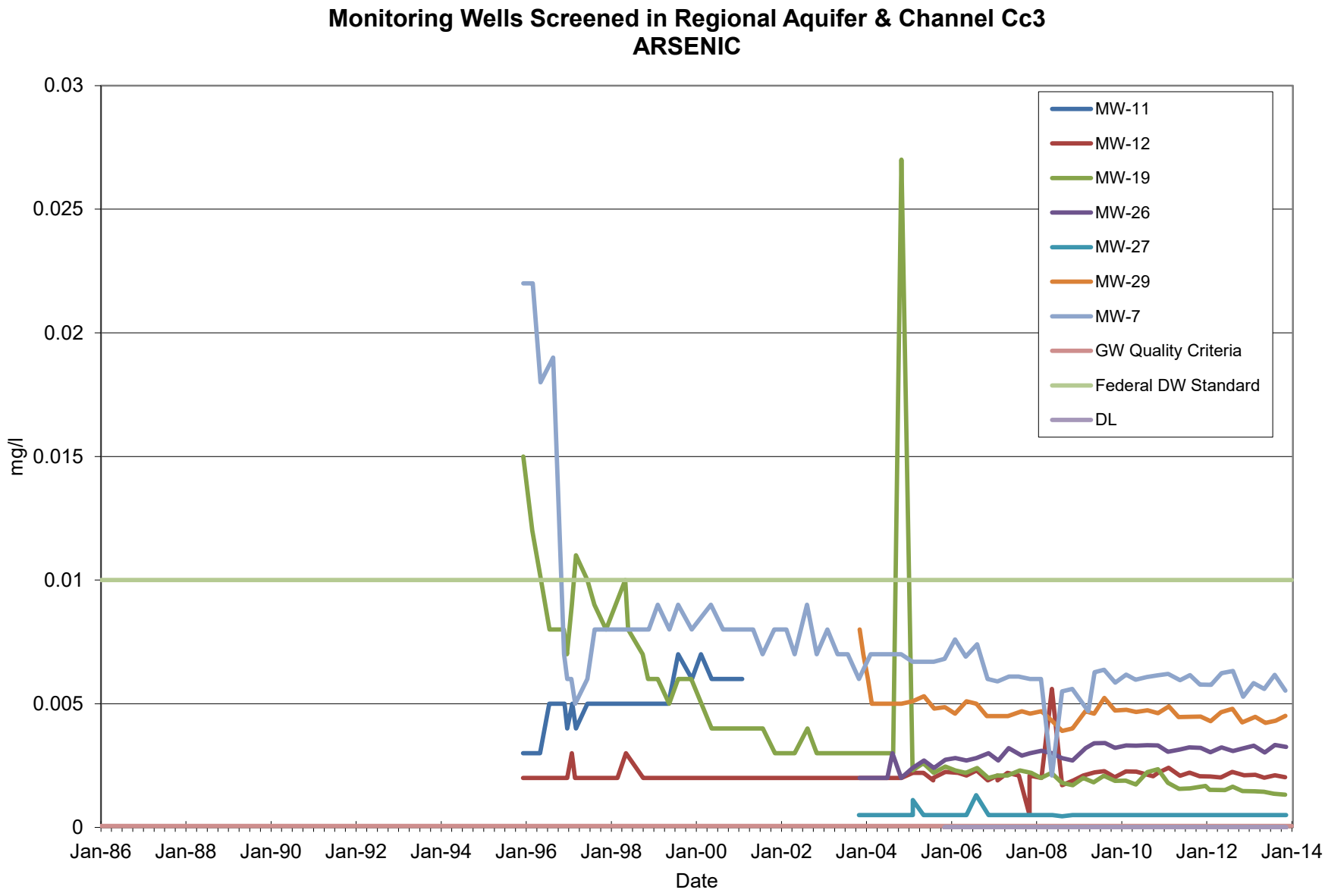

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
IRON
Note: Data point MW-11 from 4/30/96 = 4 mg/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
Federal and State GW Quality Criteria
DL
mg/l
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

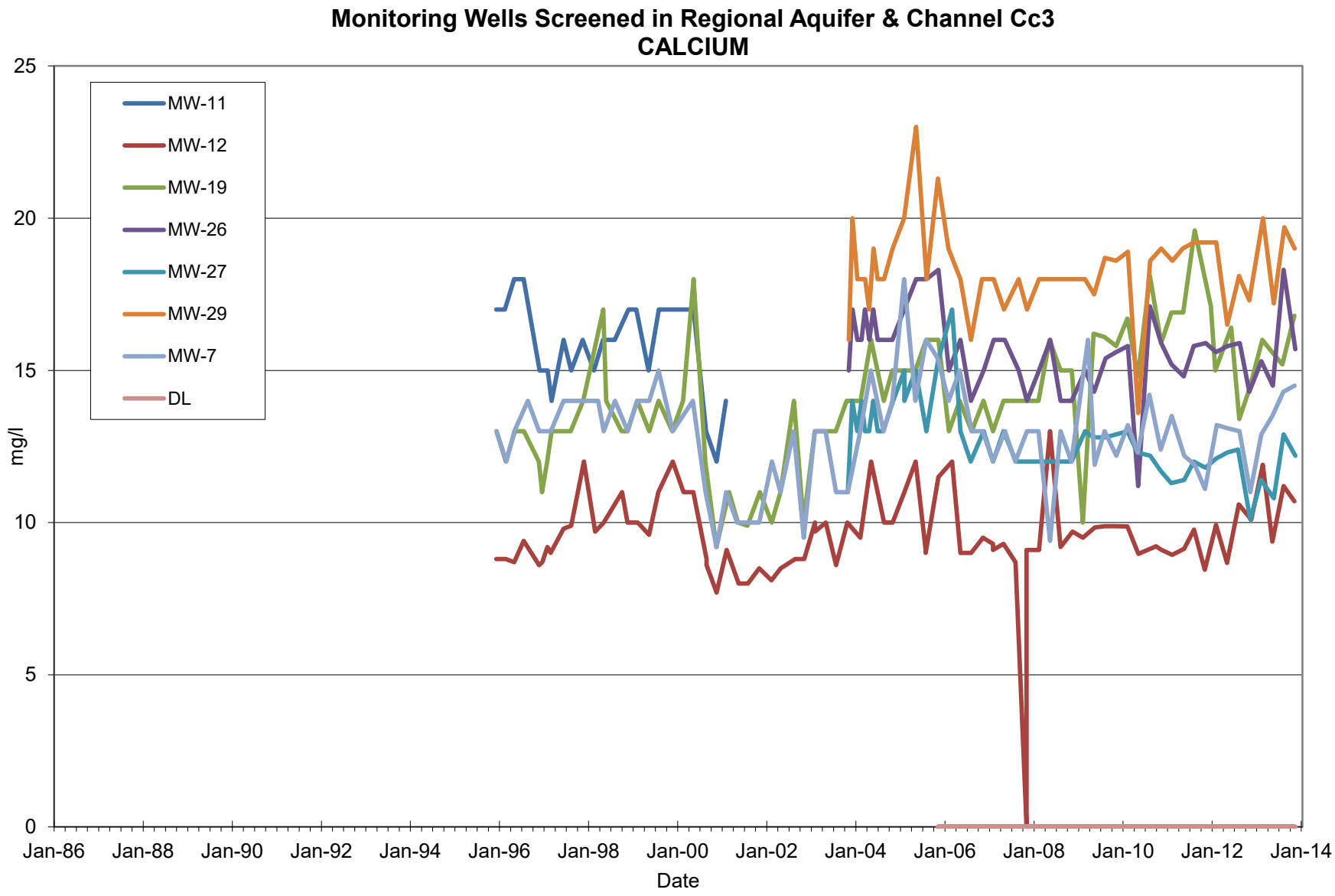

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
MAGNESIUM
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
0
2
4
6
8
10
12
14
16
18
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

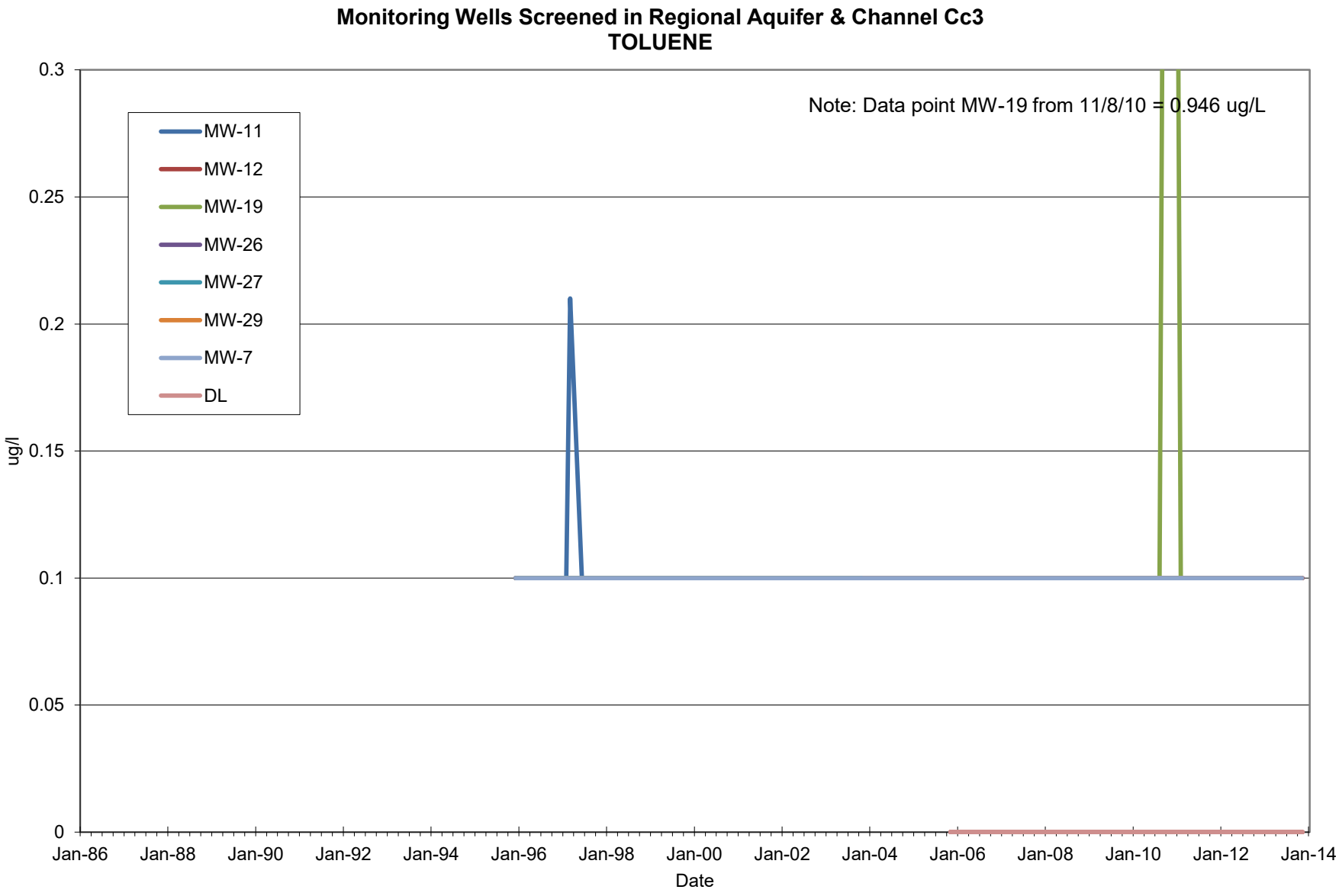

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
MANGANESE
1.4
1.2
1
0.8
0.6
0.4
0.2
0
mg/l
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
Federal and State GW Quality Criteria
DL
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

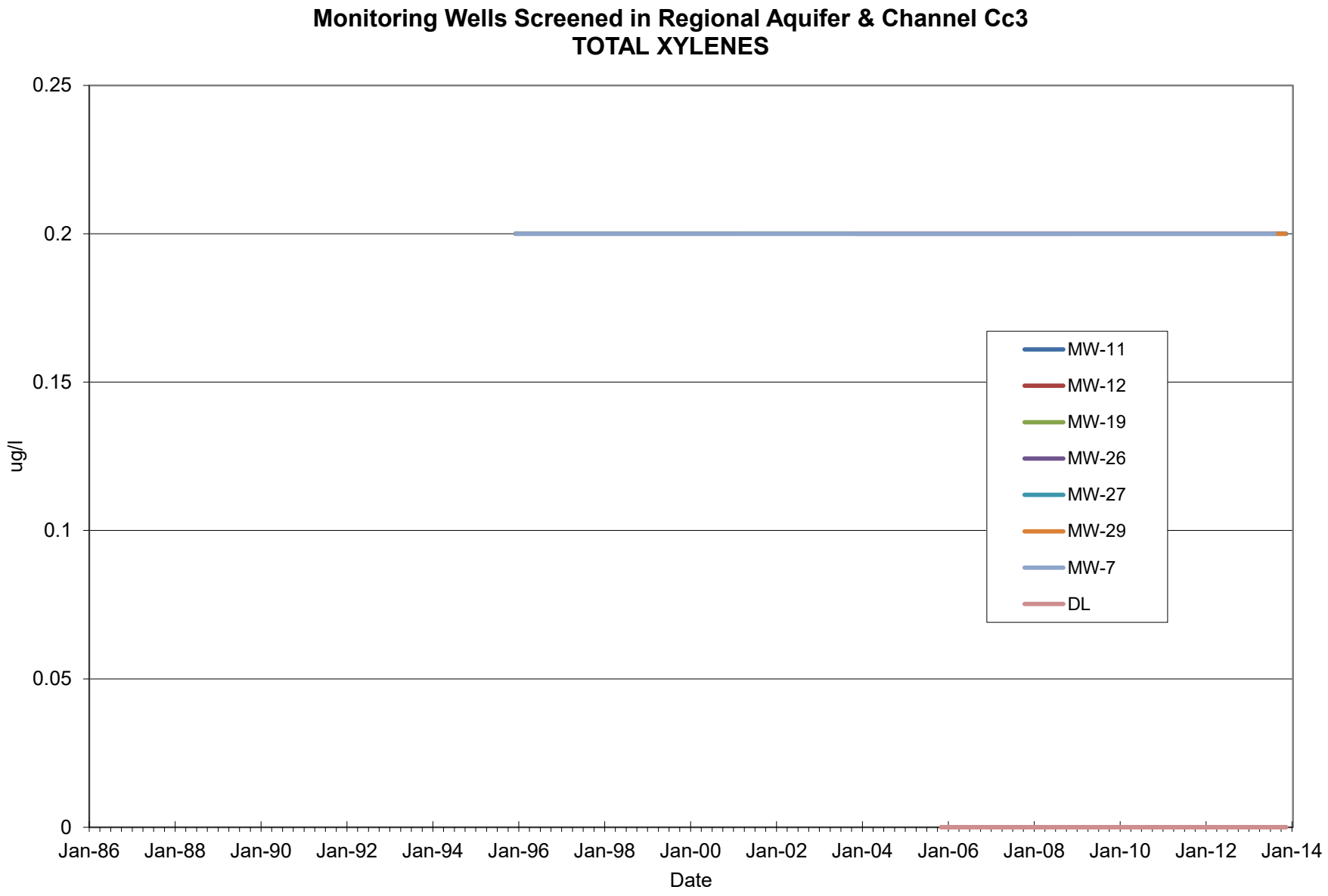

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
POTASSIUM
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
4
3.5
3
2.5
2
1.5
1
0.5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

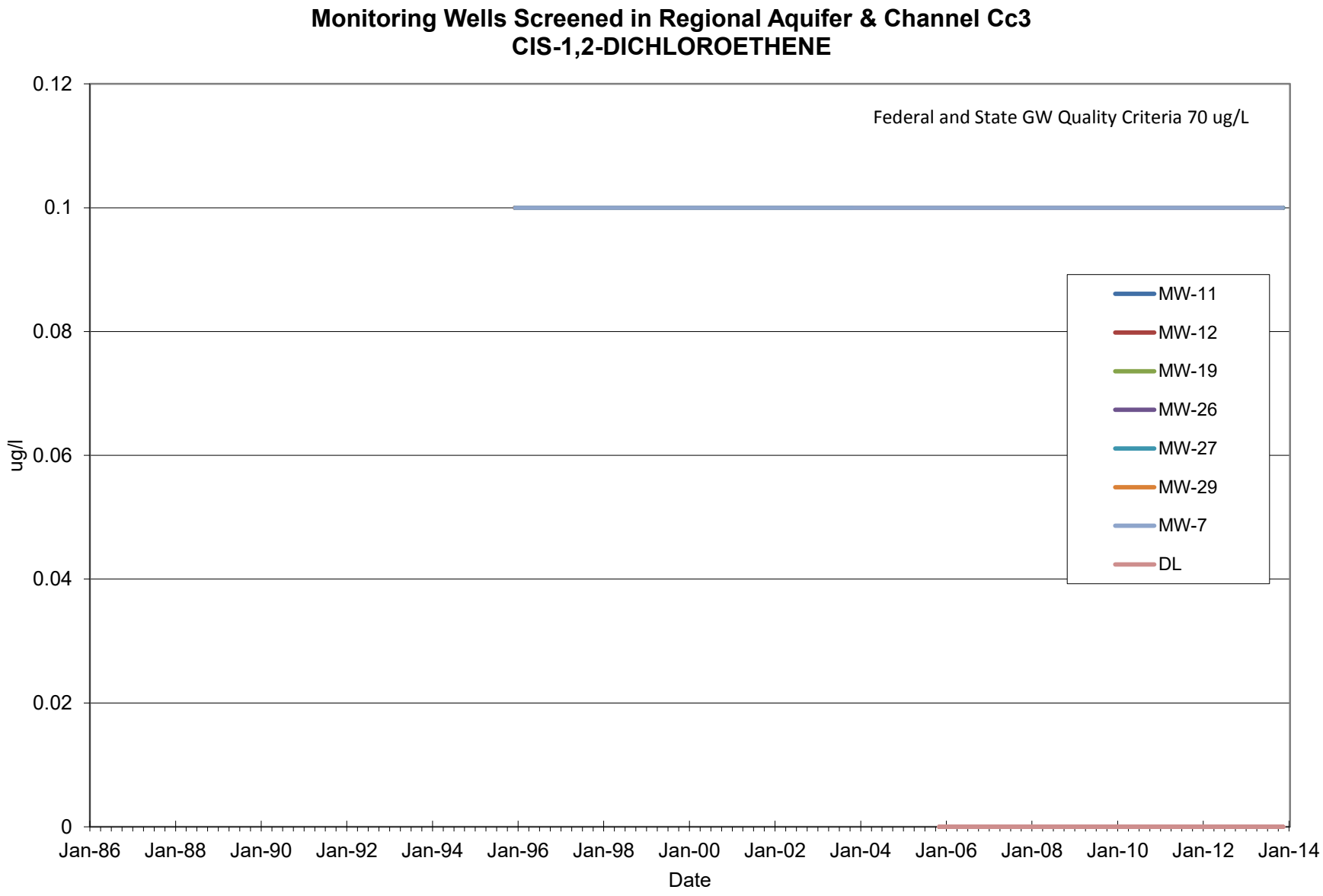

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
SODIUM
Federal and State GW Quality Criteria 20 mg/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
0
2
4
6
8
10
12
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

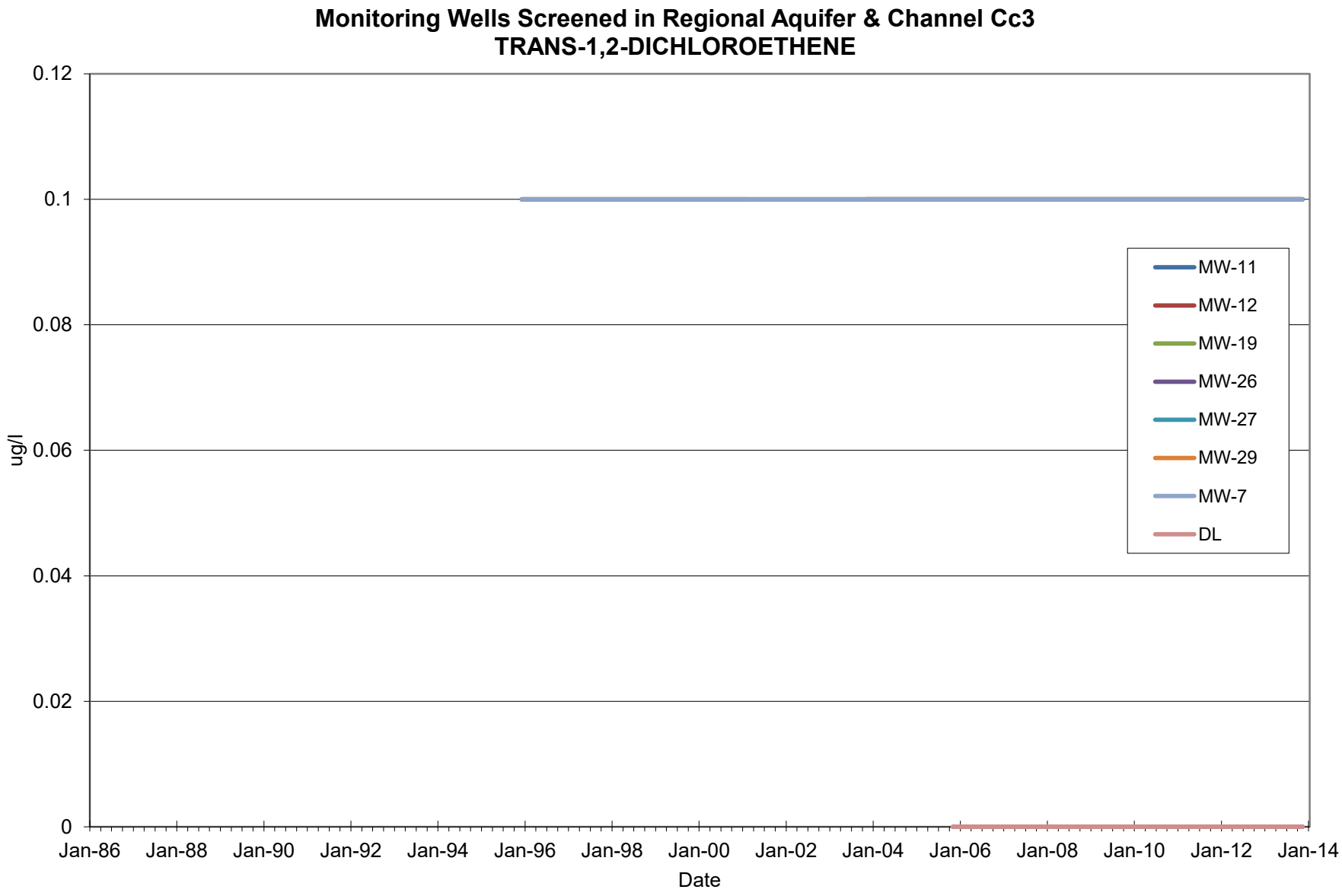

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
ARSENIC
0.03
0.025
0.02
0.015
0.01
0.005
0
mg/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
GW Quality Criteria
Federal DW Standard
DL

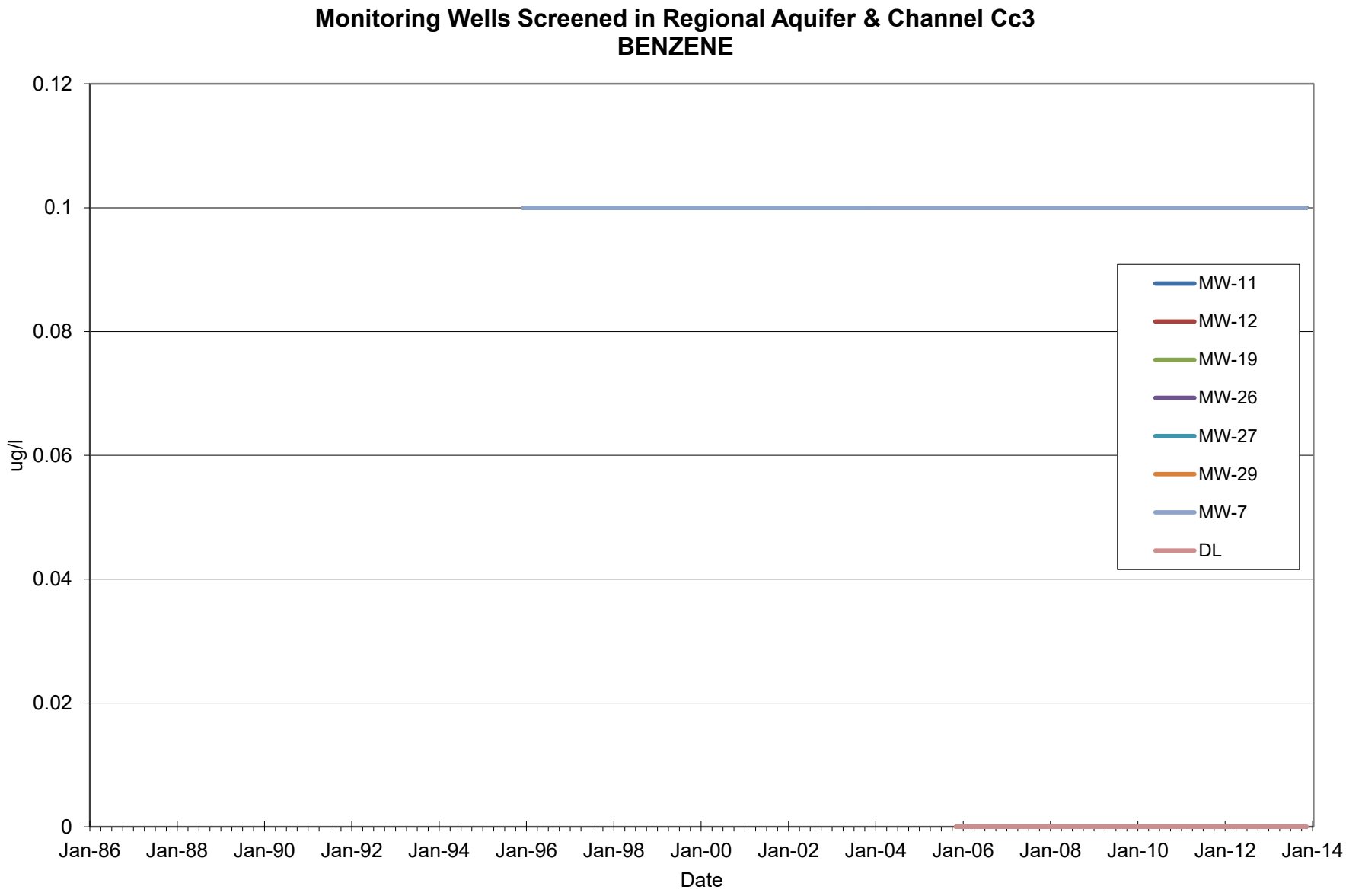

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
CALCIUM
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
mg/l
25
20
15
10
5
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

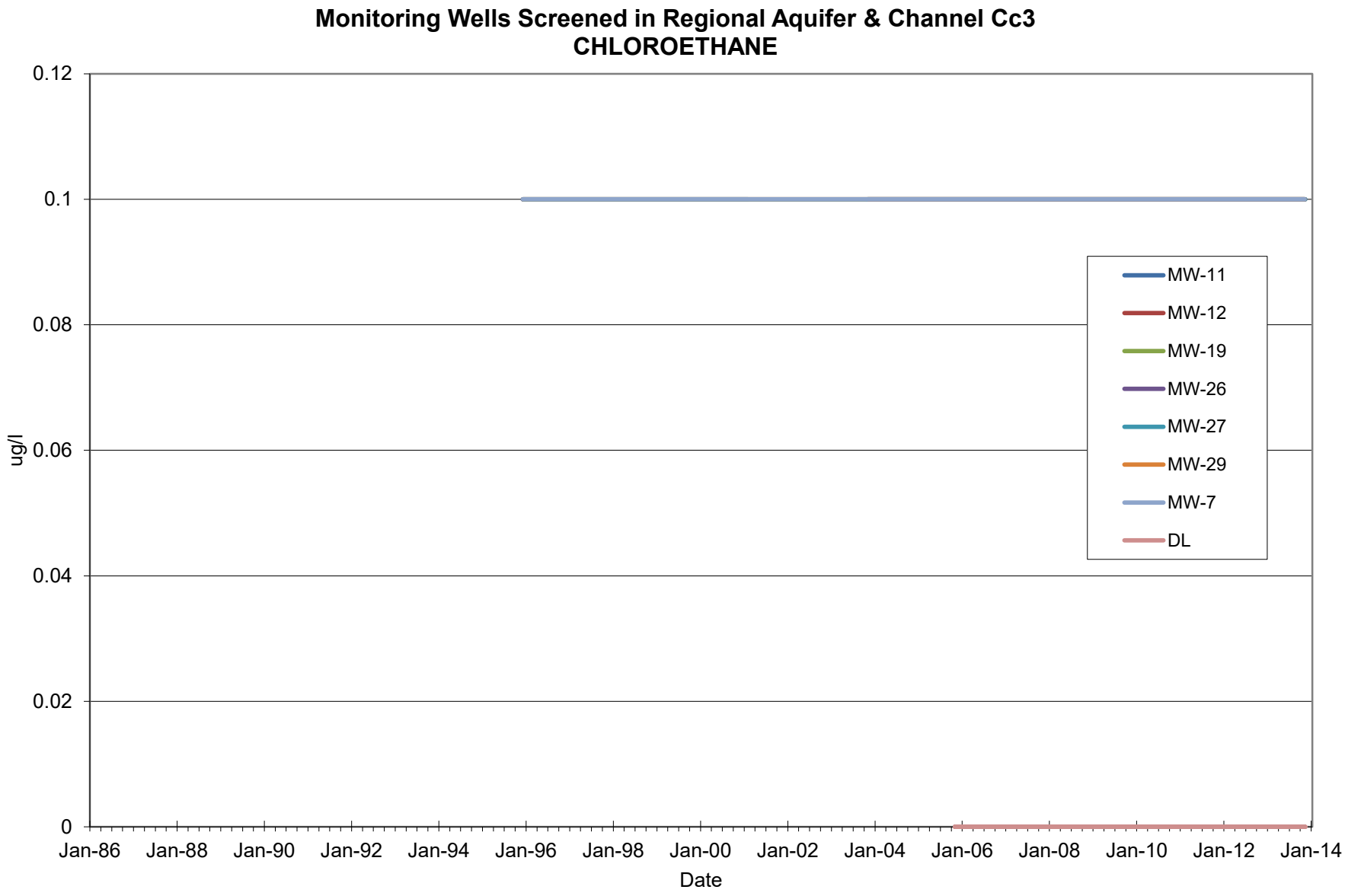

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
TOLUENE
Note: Data point MW-19 from 11/8/10 = 0.946 ug/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL
ug/l
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date

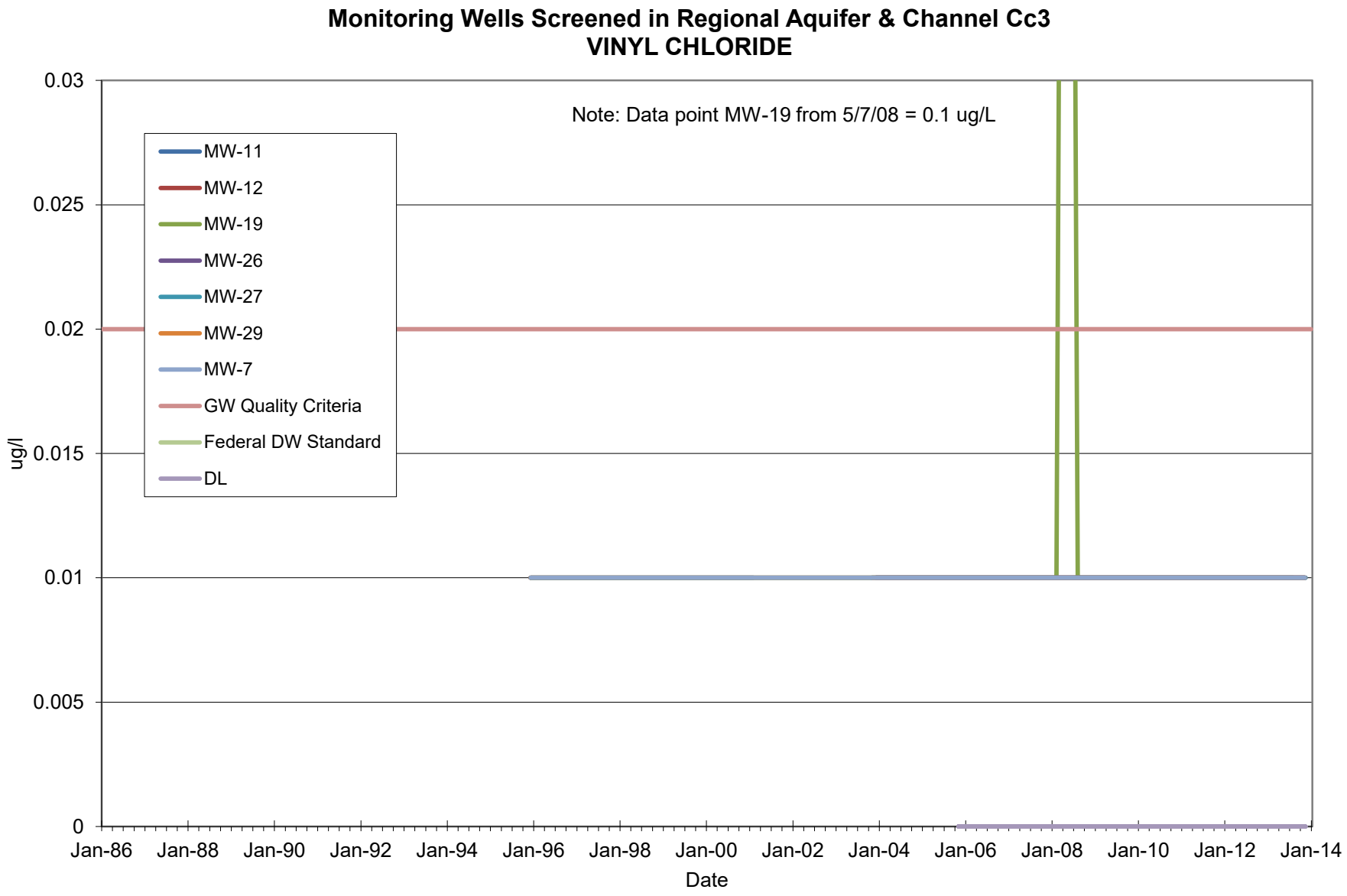

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
TOTAL XYLENES
0.25
0.2
0.15
0.1
0.05
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL

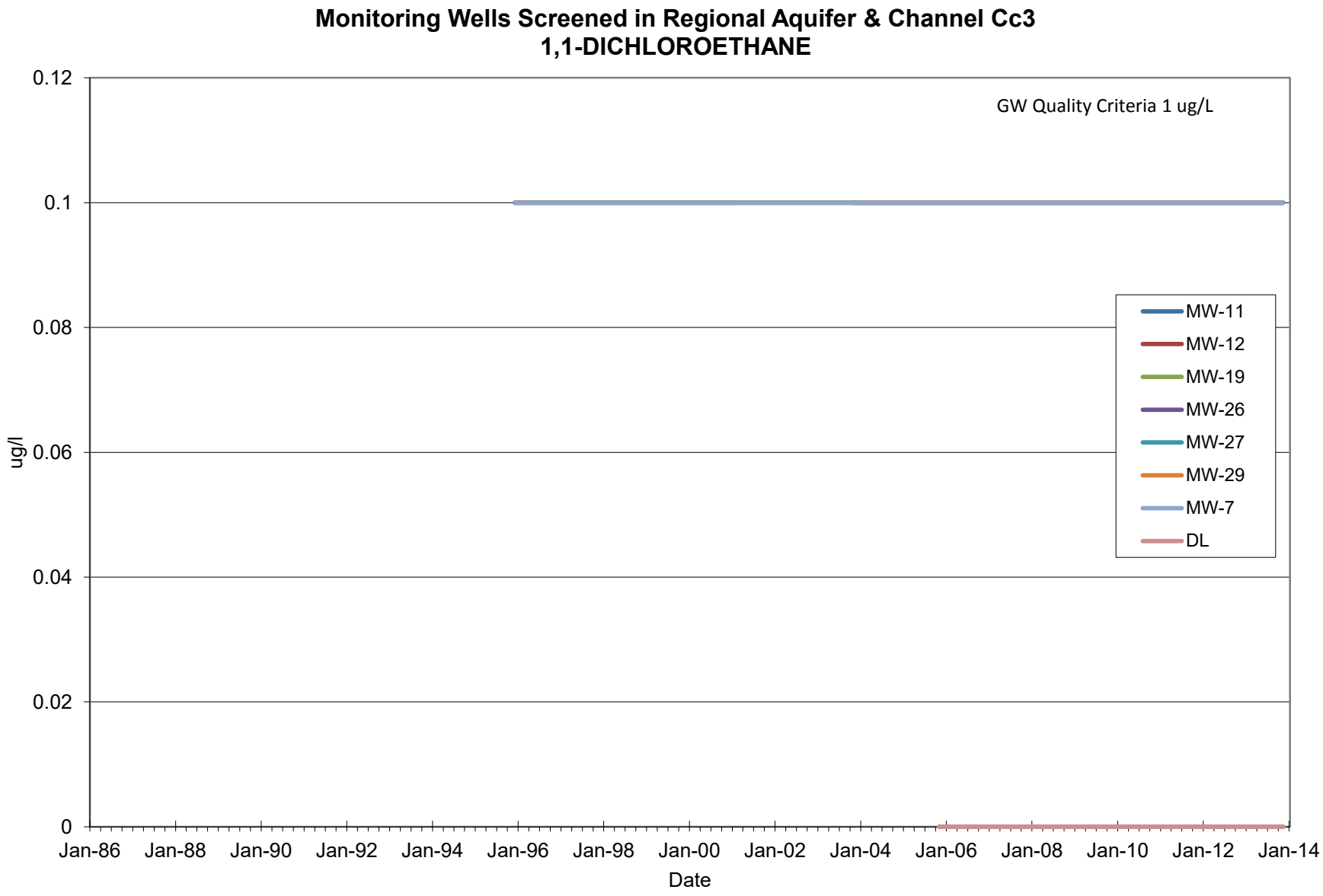

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
CIS-1,2-DICHLOROETHENE
Federal and State GW Quality Criteria 70 ug/L
ug/l
0.12
0.1
0.08
0.06
0.04
0.02
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL

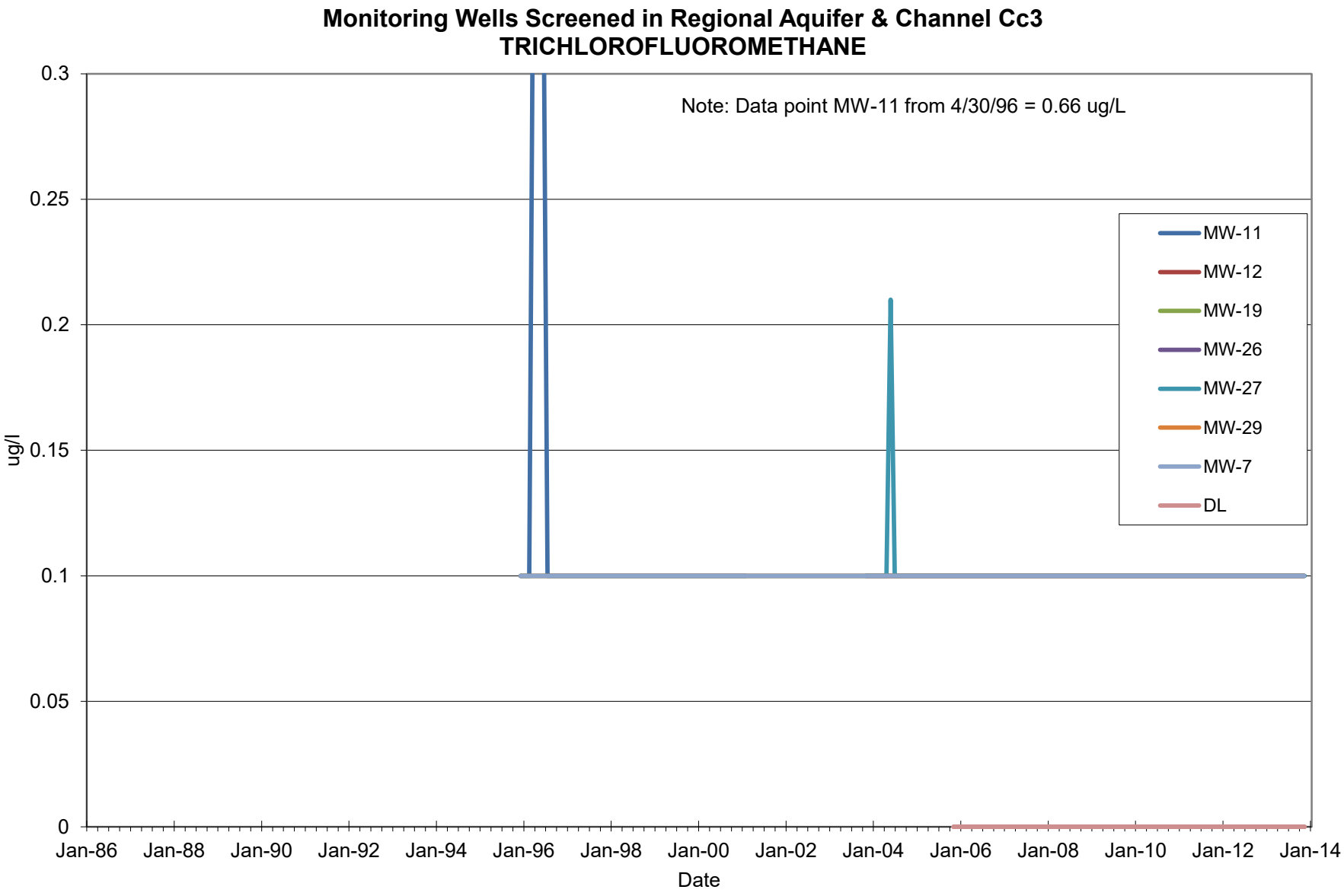

Monitoring Wells Screened in Regional Aquifer & Channel Cc3
TRANS-1,2-DICHLOROETHENE
0.12
0.1
0.08
0.06
0.04
0.02
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL


Monitoring Wells Screened in Regional Aquifer & Channel Cc3
BENZENE
0.12
0.1
0.08
0.06
0.04
0.02
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL


Monitoring Wells Screened in Regional Aquifer & Channel Cc3
CHLOROETHANE
0.12
0.1
0.08
0.06
0.04
0.02
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL


Monitoring Wells Screened in Regional Aquifer & Channel Cc3
VINYL CHLORIDE
Note: Data point MW-19 from 5/7/08 = 0.1 ug/L
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
GW Quality Criteria
Federal DW Standard
DL
ug/l
0.03
0.025
0.02
0.015
0.01
0.005
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date


Monitoring Wells Screened in Regional Aquifer & Channel Cc3
1,1-DICHLOROETHANE
GW Quality Criteria 1 ug/L
0.12
0.1
0.08
0.06
0.04
0.02
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL


Monitoring Wells Screened in Regional Aquifer & Channel Cc3
TRICHLOROFLUOROMETHANE
Note: Data point MW-11 from 4/30/96 = 0.66 ug/L
ug/l
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
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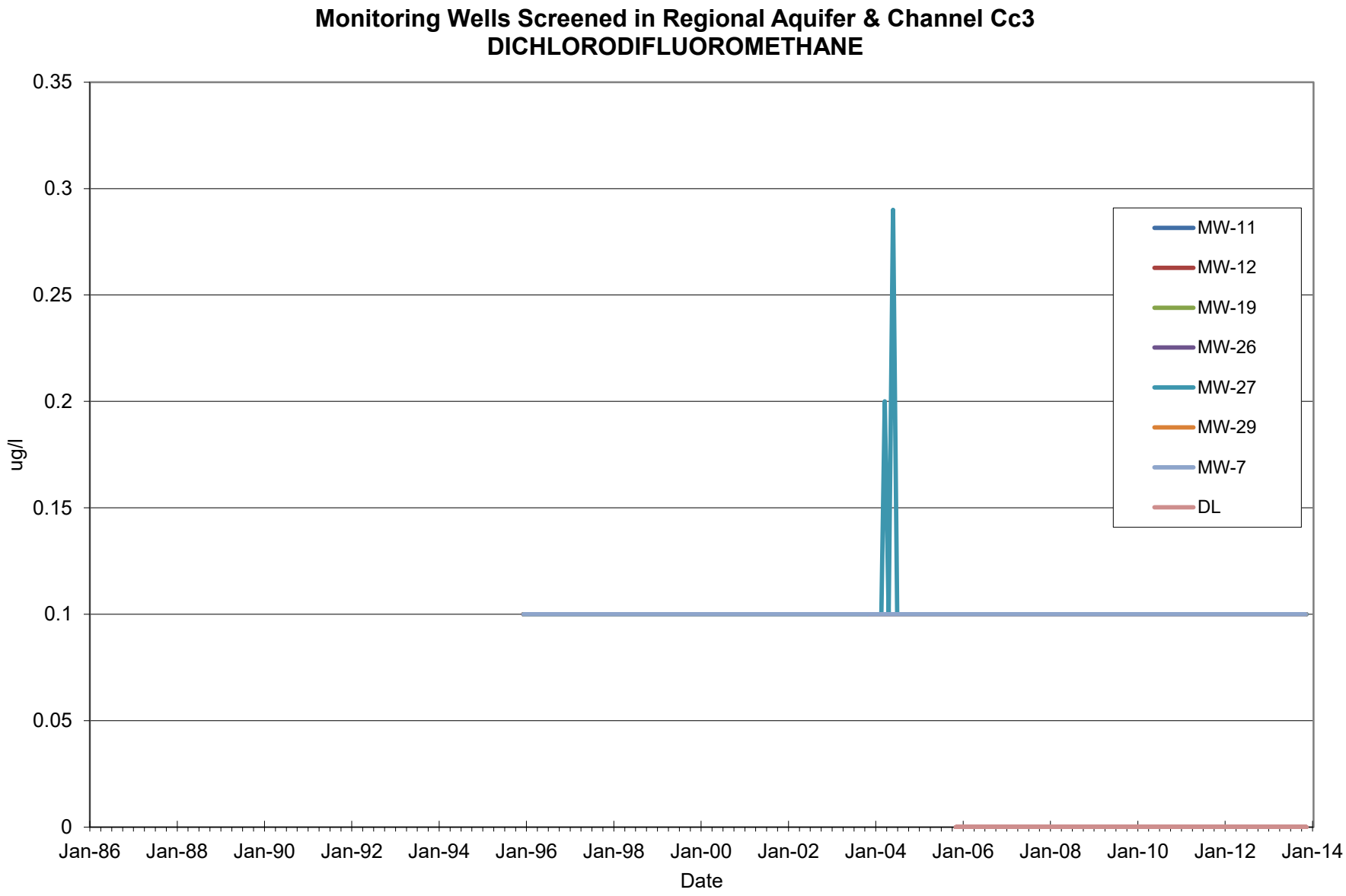
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL


Monitoring Wells Screened in Regional Aquifer & Channel Cc3
DICHLORODIFLUOROMETHANE
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
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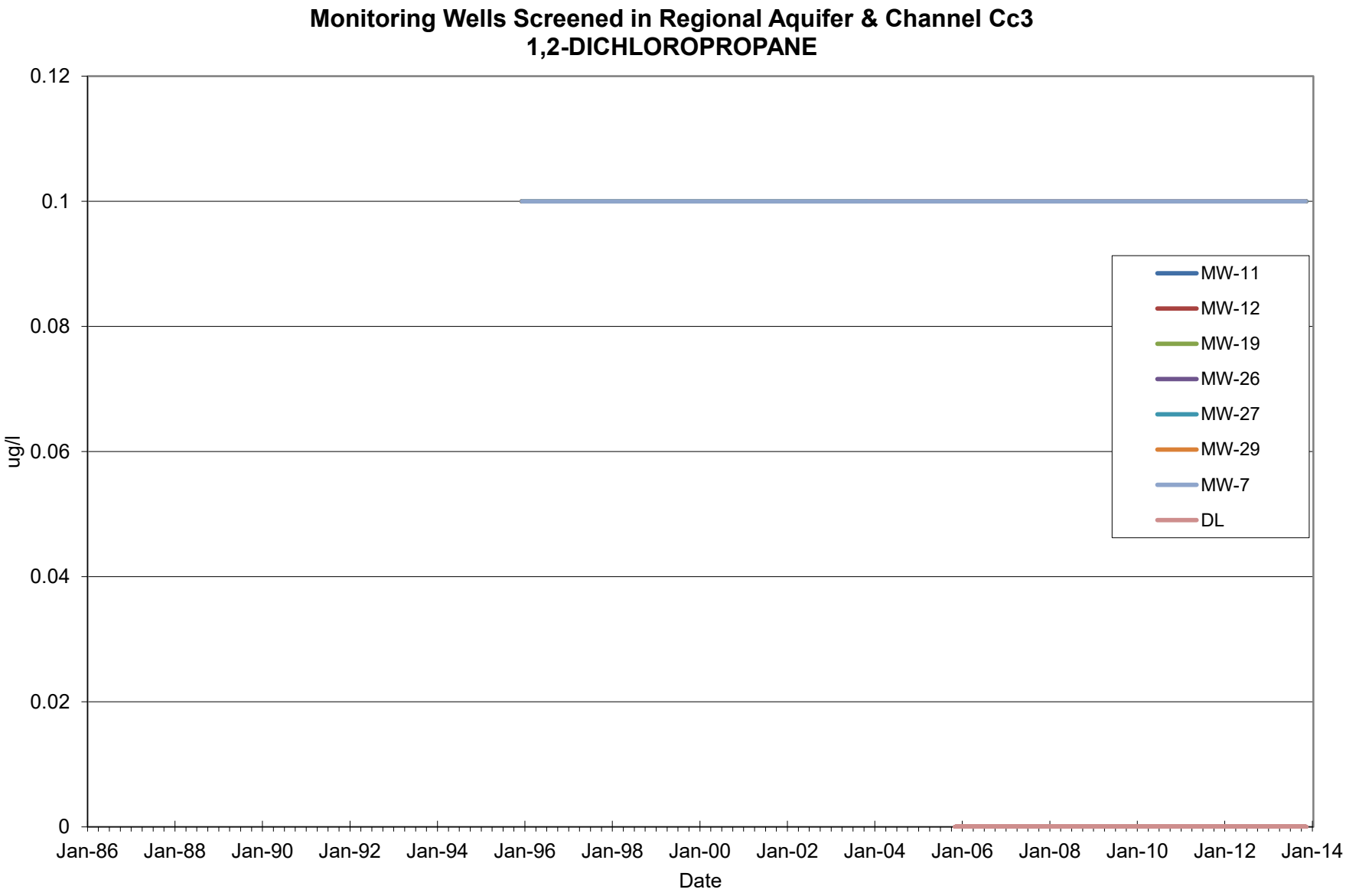
MW-27
MW-29
MW-7
DL


Monitoring Wells Screened in Regional Aquifer & Channel Cc3
1,2-DICHLOROPROPANE
0.12
0.1
0.08
0.06
0.04
0.02
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
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Jan-14
Date
MW-11
MW-12
MW-19
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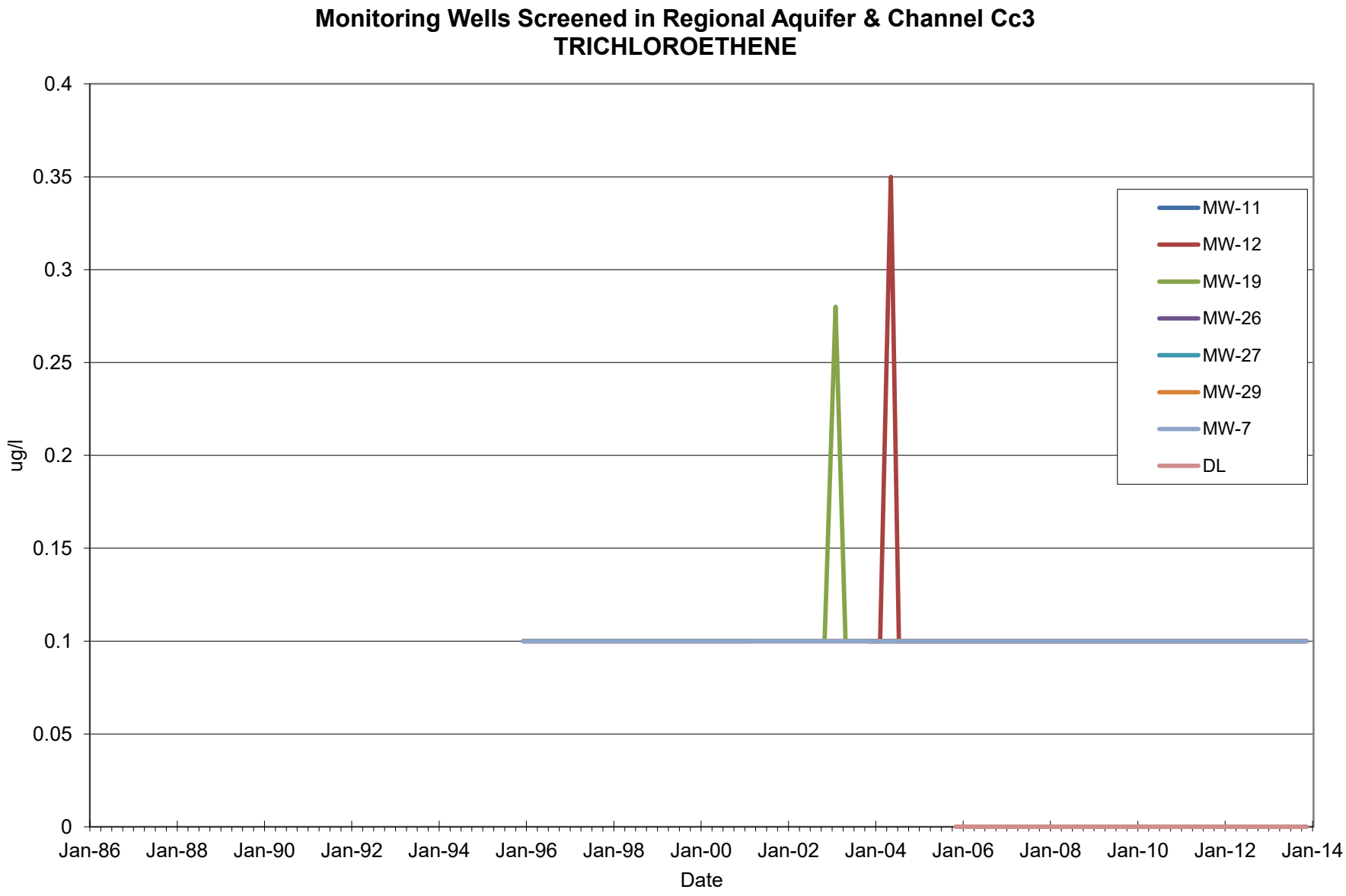
MW-27
MW-29
MW-7
DL


Monitoring Wells Screened in Regional Aquifer & Channel Cc3
TRICHLOROETHENE
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
ug/l
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Date
MW-11
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
DL

Appendix G

Groundwater Velocity Calculations and Potentiometric Maps

King County

Department of Natural Resources and Parks
Water and Land Resources Division
Science and Technical Support Section
King Street Center, KSC-NR-0600
201 South Jackson Street, Suite 600
Seattle, WA 98104
206.477.4800 Fax 206.296.0192

Memorandum

To: Dan Swope
King County Solid Waste Division

From: Sevin Bilir
King County Water & Land Resources Division

Re: **Potentiometric Groundwater Surface Mapping & Groundwater Velocity Calculations**
Fourth Quarter 2013 Results
Vashon Island Landfill, King County, Washington
Project No. 1033601- Task 29.14.137.45

Date: January 29, 2014

King County Water & Land Resources Division (KCWLRD) submits this letter report on groundwater conditions during the fourth quarter of 2013 for the Cc2 perched zone and the regional aquifer beneath the Vashon Island Landfill (landfill), in accordance with the *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations* (KCWLRD, 2013). King County Solid Waste Division (KCSWD) personnel measured groundwater elevations at the landfill on November 1 and 6, 2013. These measurements were received by KCWLRD on January 6, 2014 and were used to:

1. Evaluate the potentiometric groundwater surface elevation for the Cc2 perched zone and the regional aquifer;
2. Determine the groundwater flow direction and horizontal gradient for the Cc2 perched zone and the regional aquifer; and
3. Calculate the groundwater velocity of the Cc2 perched zone and the regional aquifer.

There have been no significant changes in the interpreted groundwater conditions since the report submitted for the third quarter of the 2013 monitoring event.

Groundwater Elevation Data

KCSWD attempted groundwater level measurements at 22 monitoring wells during the fourth quarter of 2013. These wells were completed in the Cc2 perched zone, regional aquifer, and in other zones as referred to in *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004). Table 1 lists the well identifications, locations, well details, measured groundwater levels and calculated groundwater elevations for the Cc2 perched zone, regional aquifer, and wells in other perched zones.

Cc2 Perched Zone

Three separate perching zones are identified in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004) within the Unit C deposits. Only the southern portion of the of the Cc2 middle channel deposit perched zone was identified as laterally extensive. Groundwater in this perched zone is measured by wells MW-2, MW-5D, MW-9, MW-20, and MW-21. Monitoring well MW-9 is hydraulically separated from the rest of the wells in the Cc2 perched zone, as described in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004). Figure 1 shows well locations, groundwater elevations, groundwater potentiometric surface contours, and interpreted groundwater flow direction in the Cc2 perched zone for the November 1 and 6, 2013 measurement event.

Regional Aquifer

Wells MW-7, MW-12, MW-19, MW-25, MW-26, MW-27, MW-28 and MW-29 are reported to be in screened in or in hydraulic communication with the regional aquifer (B&H/UES, 2004). The regional aquifer includes the deepest channel deposit in Unit C (designated Cc3), and water-bearing Units D and F. Units D and F are separated by Unit E which is a semi-continuous, variably saturated aquitard (B&H/UES, 2004).

Wells MW-7, MW-12 and MW-19 measured water levels at least 15 feet above the top of the screen and may be influenced by vertical gradients in the regional aquifer. Well MW-27, completed in Unit Cc3, is identified in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004) to be measuring a groundwater mound in the regional aquifer water table. The mounding phenomenon is reported as likely due to local recharge from perched zones above.

The water level in monitoring well MW-28 was reported as “dry”. MW-28 is completed in the regional aquifer and has historically been dry. This well was not used for this analysis.

Figure 2 shows well locations, groundwater elevations, groundwater potentiometric surface contours, and interpreted groundwater flow direction in the regional aquifer for the November 1 and 6, 2013 measurement event.

Direction of Groundwater Flow

Figures 1 and 2 shows groundwater potentiometric surface contours and interpreted groundwater flow directions in the Cc2 perched zone and regional aquifer, respectively, based on the November 1 and 6, 2013 measurements. Groundwater elevations indicate that groundwater in the southern Cc2 perched zone generally flowed southwest (Figure 1). Based on the current limited understanding of the regional aquifer, groundwater in the regional aquifer generally flowed radially away from MW-27 (Figure 2). Flow from MW-27 westward cannot be confirmed because there are no wells completed in the regional aquifer to the west of MW-27.

Groundwater Parameters

Horizontal groundwater velocity was calculated using the following formula:

where: $$v = \frac{1}{n_{eff}} K \frac{\Delta H}{\Delta L}$$

v = Groundwater velocity [L/t]
n_{eff} = Effective porosity [dimensionless]
K = Hydraulic conductivity [L/t]
$\frac{\Delta H}{\Delta L}$ = Hydraulic gradient [L/L]

Horizontal groundwater velocity was calculated for the Cc2 perched zone and regional aquifer below the landfill. The hydraulic conductivity and effective porosity values were based on the ranges referred to in the *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation - Vashon Island Landfill* (Aspect, 2010). The hydraulic gradient was determined from the potentiometric surface maps (Figures 1 and 2). The hydraulic gradients were approximately 0.010 and 0.037 feet per foot within the Cc2 perched zone and Cc3 regional aquifer, respectively.

Table 2 presents a summary of the groundwater parameters used to calculate a groundwater velocity from the fourth quarter 2013 data. On November 1 and 6, 2013, average horizontal groundwater velocity within the Cc2 perched zone was 0.002 feet per day and the average groundwater velocity in the regional aquifer was 1.3 feet per day.

References

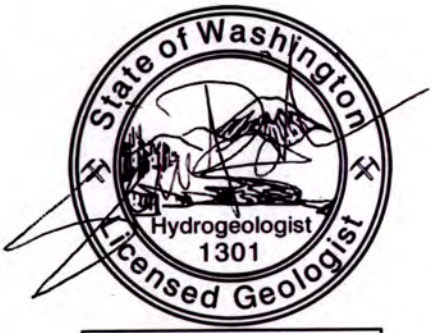
Aspect Consulting (Aspect). 2010. *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation – Vashon Island Landfill*. Unpublished. January 10.

Berryman & Henigar in association with Udaloy Environmental Services (B&H/UES). 2004. *Vashon Island Landfill Hydrogeologic Report Update*. December.

King County Water & Land Resources Division (KCWLRD). 2013. *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations*. Unpublished.

Thank you for the opportunity to provide hydrogeologic services to the KCSWD. Please contact me if you have any questions.

Sincerely,



Sevin Bilir

Sevin Bilir, WA LHG
Environmental Scientist III
King County Water & Land Resources Division

Attachments

Table 1: Groundwater Elevations – Fourth Quarter 2013
Table 2: Groundwater Parameters – Fourth Quarter 2013
Figure 1: Groundwater Potentiometric Surface Map – Fourth Quarter 2013 - Cc2 Perched Zone
Figure 2: Groundwater Potentiometric Surface Map – Fourth Quarter 2013 - Regional Aquifer

Table 1: Groundwater Elevations – Fourth Quarter 2013

Vashon Island Landfill

King County, Washington

	Well Identification	Easting	Northing	Top of Casing Elevation (feet MSL)	Top of Screen Elevation (feet)	Screen Length	Bottom of Screen Elevation (feet)	November 1 and 6, 2013 Measured Depth to Water (feet)	November 1 and 6, 2013 Groundwater Elevations (feet MSL)
Wells Completed in Cc2 Perched Zone	MW-2	1227788.52	162365.3	314.28	233.58	5.00	228.58	73.88	240.4
	MW-5D	1227642.9	162566.95	357.2	240.86	11.00	229.86	117.5	239.7
	MW-9	1227723.22	163526.88	402.57	233.64	10.00	223.64	165.87	236.7
	MW-20	1228173	162566.16	367.21	237.57	4.30	233.27	122.71	244.5
	MW-21	1227647.37	162339.91	345.66	243.17	9.40	233.77	106.75	238.91
Wells Completed in Cc3 Regional Aquifer	MW-7	1228427.31	162811.01	373.25	151.09	10.00	141.09	191.78	181.47
	MW-12	1227800.7	162374.89	312.39	139.62	10.00	129.62	142.47	169.92
	MW-19	1227724.63	163534.76	403.83	141.10	10.00	131.10	245.94	157.89
	MW-25	1228627.702	163748.5939	399.22	148.78	14.10	134.68	243.67	155.55
	MW-26	1227909.874	163770.4284	403.4	155.12	14.10	141.02	247.68	155.72
	MW-27	1227779.749	163147.519	383.06	194.27	14.20	180.07	188.61	194.45
	MW-28	1228115.81	163843.5839	395.59	173.91	14.40	159.51	Dry	Dry
	MW-29	1228375.064	163680.914	410.57	169.80	14.80	155.00	244.5	166.07
Wells Completed in Other Perched Zones	MW-1	1228443.72	163596.5	403.6	284.48	10.00	274.48	NM	MN
	MW-3	1227789.56	162373.91	314.87	277.90	5.00	272.90	41.62	273.25
	MW-4	1227559.38	162957.79	374.21	273.08	10.00	263.08	104.15	270.06
	MW-5S	1227642.9	162566.95	356.63	281.86	10.00	271.86	Dry	Dry
	MW-8	1227664.94	163216.78	383.42	213.24	10.00	203.24	176.39	207.03
	MW-10	1227868.03	163837.42	407.51	262.34	10.00	252.34	144.87	262.64
	MW-13	1228427.45	162842.29	374.07	264.00	5.00	259.00	100.12	273.95
	MW-14	1227569.04	162959.54	375.68	212.62	10.00	202.62	151.52	224.16
	MW-24	1228427.78	162831.38	373.93	291.50	10.00	281.50	88.48	285.45

Notes:

1. Water level measurements made by KCSWD personnel.
2. Northing & Easting coordinates are Washington North State Plane Coordinates in WGS84
3. Elevations reported in feet above Mean Sea Level based on the National Geodetic Vertical Datum, 1929.
4. NM, not measured due to broken well or broken pump.
5. DRY, no water detected or water depth measured below base of screen.

Table 2: Groundwater Parameters – Fourth Quarter 2013

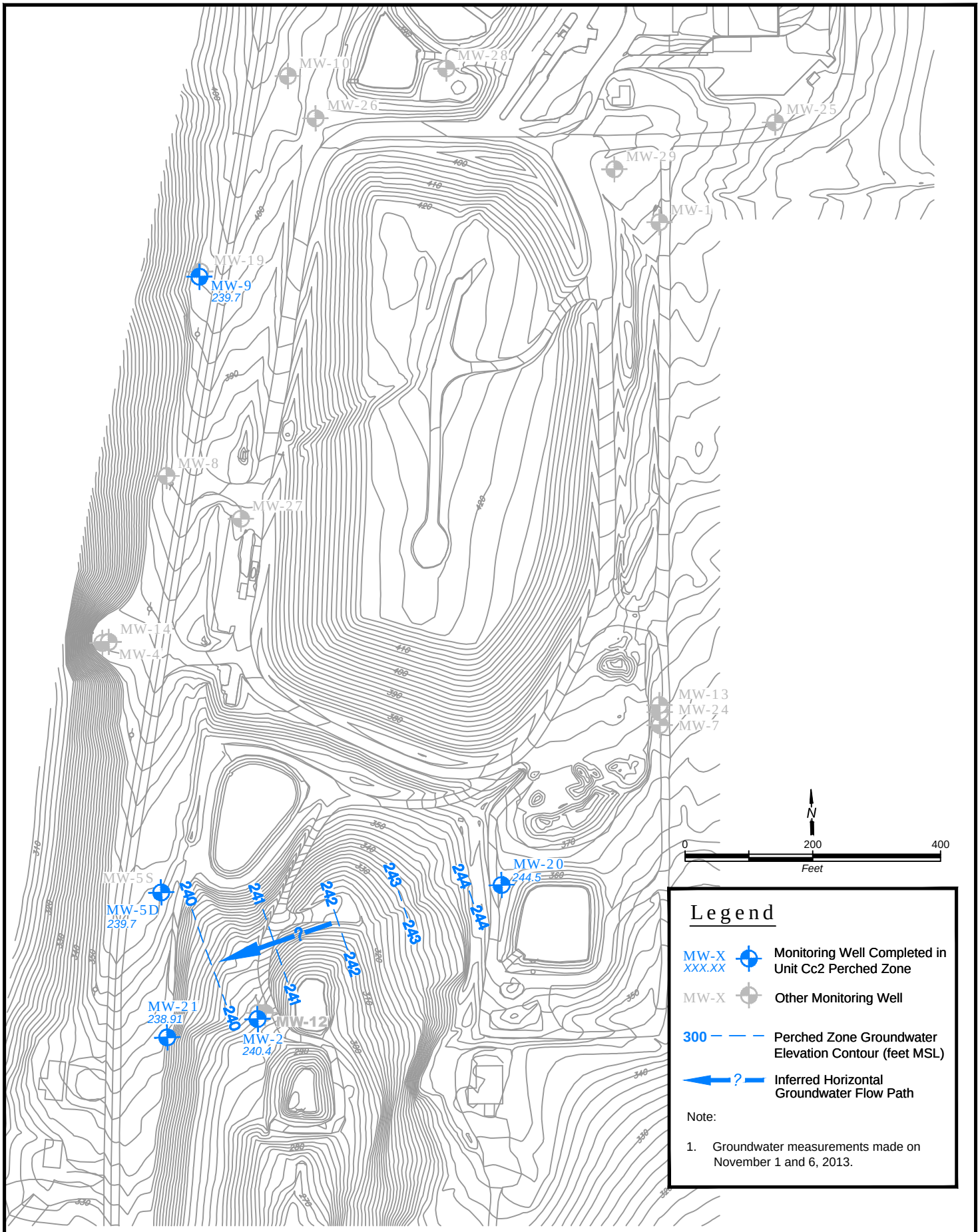
Vashon Island Landfill

King County, Washington

Water Bearing Zone Beneath the Landfill	Horizontal Hydraulic Conductivity (*K*)			Horizontal Hydraulic Gradient (DH/DL)	Effective Porosity (n_{eff})	Horizontal Groundwater Velocity (*v*)	General Groundwater Flow Direction
	Range	(cm/s)	(ft/d)	(ft/ft)		(ft/d)	
Southern Cc2 Perched Zone	Low	1.90E-06	0.01	0.010	30%	0.0003	Southwest
	High	1.60E-04	0.45	0.010	20%	0.023	
	Average	1.70E-05	0.05	0.010	25%	0.002	
Cc3 Regional Aquifer	Low	1.00E-03	3	0.037	30%	0.37	Radially away from MW-27
	High	1.00E-02	28	0.037	20%	5.2	
	Average	3.20E-03	9	0.037	25%	1.3	

Notes

1. Horizontal hydraulic conductivity values and effective porosity values from *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation – Vashon Island Landfill (Aspect, 2010)*
2. Average hydraulic conductivity values are the geometric mean of the high and low values.
3. Horizontal hydraulic gradients based on average of gradients calculated between monitoring well with highest groundwater elevation and other monitoring wells shown on Figures 1 and 2.



King County

Groundwater Potentiometric Surface Map

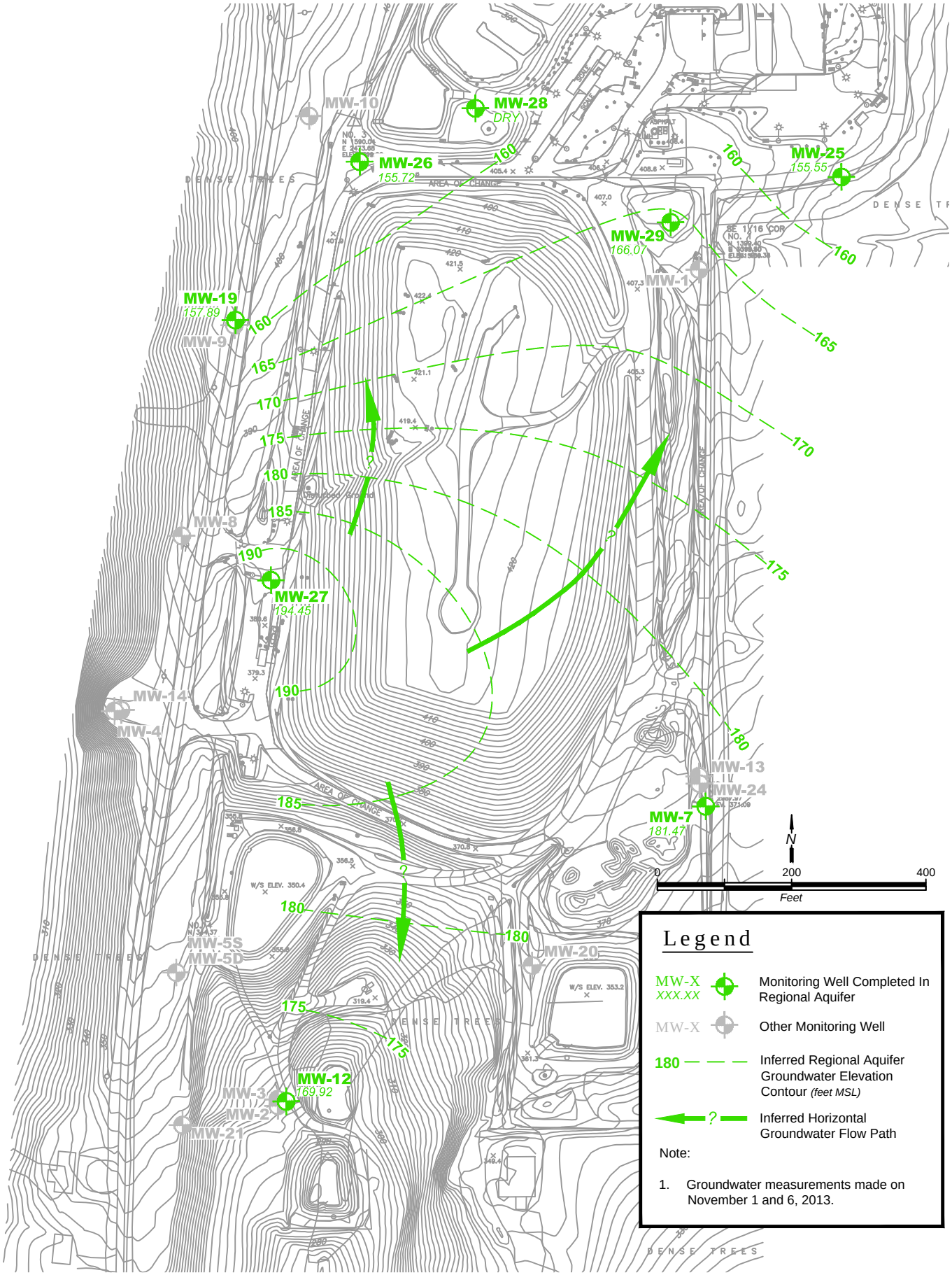
Fourth Quarter 2013 - Cc2 Perched Zone

Vashon Island Landfill

King County, Washington

DATE: January 2014	PROJECT NO. 1033601
DESIGNED BY: SB	
DRAWN BY: LT	FIGURE NO. 1
REVISED BY: SB	

Vashon_4Q2013_rcc2perched.dwg



King County

Groundwater Potentiometric Surface Map

Fourth Quarter 2013 - Regional Aquifer

Vashon Island Landfill

King County, Washington

DATE: January 2014	PROJECT NO. 1033601
DESIGNED BY: SB	
DRAWN BY: LT	FIGURE NO. 2
REVISED BY: SB	

Vashon_4Q2013_regional.dwg

King County

Department of Natural Resources and Parks
Water and Land Resources Division
Science and Technical Support Section
King Street Center, KSC-NR-0600
201 South Jackson Street, Suite 600
Seattle, WA 98104
206.477.4800 Fax 206.296.0192

Memorandum

To: Dan Swope
King County Solid Waste Division

From: Sevin Bilir
King County Water & Land Resources Division

Re: **Potentiometric Groundwater Surface Mapping & Groundwater Velocity Calculations**
Third Quarter 2013 Results
Vashon Island Landfill, King County, Washington
Project No. 1033601- Task 29.14.137.45

Date: December 6, 2013

King County Water & Land Resources Division (KCWLRD) submits this letter report on groundwater conditions during the third quarter of 2013 for the Cc2 perched zone and the regional aquifer beneath the Vashon Island Landfill (landfill), in accordance with the *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations* (KCWLRD, 2013). King County Solid Waste Division (KCSWD) personnel measured groundwater elevations at the landfill on July 26, 2013. These measurements were received by KCWLRD on November 18, 2013 and were used to:

1. Evaluate the potentiometric groundwater surface elevation for the Cc2 perched zone and the regional aquifer;
2. Determine the groundwater flow direction and horizontal gradient for the Cc2 perched zone and the regional aquifer; and
3. Calculate the groundwater velocity of the Cc2 perched zone and the regional aquifer.

There have been no significant changes in the interpreted groundwater conditions since the report submitted for the second quarter of the 2013 monitoring event.

Groundwater Elevation Data

KCSWD attempted groundwater level measurements at 21 monitoring wells during the third quarter of 2013. These wells were completed in the Cc2 perched zone, regional aquifer, and in other zones as referred to in *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004). Table 1 lists the well identifications, locations, well details, measured groundwater levels and calculated groundwater elevations for the Cc2 perched zone, regional aquifer, and wells in other perched zones.

Cc2 Perched Zone

Three separate perching zones are identified in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004) within the Unit C deposits. Only the southern portion of the of the Cc2 middle channel deposit perched zone was identified as laterally extensive. Groundwater in this perched zone is measured by wells MW-2, MW-5D, MW-9, MW-20, and MW-21. Monitoring well MW-9 is hydraulically separated from the rest of the wells in the Cc2 perched zone, as described in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004). Figure 1 shows well locations, groundwater elevations, groundwater potentiometric surface contours, and interpreted groundwater flow direction in the Cc2 perched zone for the July 26, 2013 measurement event.

Regional Aquifer

Wells MW-7, MW-12, MW-19, MW-25, MW-26, MW-27, MW-28 and MW-29 are reported to be in screened in or in hydraulic communication with the regional aquifer (B&H/UES, 2004). The regional aquifer includes the deepest channel deposit in Unit C (designated Cc3), and water-bearing Units D and F. Units D and F are separated by Unit E which is a semi-continuous, variably saturated aquitard (B&H/UES, 2004).

Wells MW-7, MW-12 and MW-19 measured water levels at least 15 feet above the top of the screen and may be influenced by vertical gradients in the regional aquifer. Well MW-27, completed in Unit Cc3, is identified in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004) to be measuring a groundwater mound in the regional aquifer water table. The mounding phenomenon is reported as likely due to local recharge from perched zones above.

The water level in monitoring well MW-28 was reported as “dry”. MW-28 is completed in the regional aquifer and has historically been dry. This well was not used for this analysis.

Figure 2 shows well locations, groundwater elevations, groundwater potentiometric surface contours, and interpreted groundwater flow direction in the regional aquifer for the July 26, 2013 measurement event.

Direction of Groundwater Flow

Figures 1 and 2 shows groundwater potentiometric surface contours and interpreted groundwater flow directions in the Cc2 perched zone and regional aquifer, respectively, based on the July 26, 2013 measurements. Groundwater elevations indicate that groundwater in the southern Cc2 perched zone generally flowed southwest (Figure 1). Based on the current limited understanding of the regional aquifer, groundwater in the regional aquifer generally flowed radially away from MW-27 (Figure 2). Flow from MW-27 westward cannot be confirmed because there are no wells completed in the regional aquifer to the west of MW-27.

Groundwater Parameters

Horizontal groundwater velocity was calculated using the following formula:

where: $$v = \frac{1}{n_{eff}} K \frac{\Delta H}{\Delta L}$$

v = Groundwater velocity [L/t]
n_{eff} = Effective porosity [dimensionless]
K = Hydraulic conductivity [L/t]
$\frac{\Delta H}{\Delta L}$ = Hydraulic gradient [L/L]

Horizontal groundwater velocity was calculated for the Cc2 perched zone and regional aquifer below the landfill. The hydraulic conductivity and effective porosity values were based on the ranges referred to in the *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation - Vashon Island Landfill* (Aspect, 2010). The hydraulic gradient was determined from the potentiometric surface maps (Figures 1 and 2). The hydraulic gradients were approximately 0.008 and 0.035 feet per foot within the Cc2 perched zone and Cc3 regional aquifer, respectively.

Table 2 presents a summary of the groundwater parameters used to calculate a groundwater velocity from the third quarter 2013 data. On July 26, 2013, average horizontal groundwater velocity within the Cc2 perched zone was 0.002 feet per day and the average groundwater velocity in the regional aquifer was 1.3 feet per day.

References

Aspect Consulting (Aspect). 2010. *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation – Vashon Island Landfill.* Unpublished. January 10.

Berryman & Henigar in association with Udaloy Environmental Services (B&H/UES). 2004. *Vashon Island Landfill Hydrogeologic Report Update*. December.

King County Water & Land Resources Division (KCWLRD). 2013. *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations*. Unpublished.

Thank you for the opportunity to provide hydrogeologic services to the KCSWD. Please contact me if you have any questions.

Sincerely,

Sevin Bilir, WA LHG
Environmental Scientist III
King County Water & Land Resources Division

Attachments

Table 1: Groundwater Elevations – Third Quarter 2013
Table 2: Groundwater Parameters – Third Quarter 2013
Figure 1: Groundwater Potentiometric Surface Map – Third Quarter 2013 - Cc2 Perched Zone
Figure 2: Groundwater Potentiometric Surface Map – Third Quarter 2013 - Regional Aquifer

Table 1: Groundwater Elevations – Third Quarter 2013

Vashon Island Landfill

King County, Washington

	Well Identification	Easting	Northing	Top of Casing Elevation (feet MSL)	Top of Screen Elevation (feet)	Screen Length	Bottom of Screen Elevation (feet)	July 26, 2013 Measured Depth to Water (feet)	July 26, 2013 Groundwater Elevations (feet MSL)
Wells Completed in Cc2 Perched Zone	MW-2	1227788.52	162365.3	314.28	233.58	5.00	228.58	73.73	240.55
	MW-5D	1227642.9	162566.95	357.2	240.86	11.00	229.86	117.43	239.77
	MW-9	1227723.22	163526.88	402.57	233.64	10.00	223.64	165.79	236.78
	MW-20	1228173	162566.16	367.21	237.57	4.30	233.27	122.1	245.11
	MW-21	1227647.37	162339.91	345.66	243.17	9.40	233.77	106.55	239.11
Wells Completed in Cc3 Regional Aquifer	MW-7	1228427.31	162811.01	373.25	151.09	10.00	141.09	191.6	181.65
	MW-12	1227800.7	162374.89	312.39	139.62	10.00	129.62	142.38	170.01
	MW-19	1227724.63	163534.76	403.83	141.10	10.00	131.10	245.89	157.94
	MW-25	1228627.702	163748.5939	399.22	148.78	14.10	134.68	243.85	155.37
	MW-26	1227909.874	163770.4284	403.4	155.12	14.10	141.02	247.55	155.85
	MW-27	1227779.749	163147.519	383.06	194.27	14.20	180.07	188.4	194.66
	MW-28	1228115.81	163843.5839	395.59	173.91	14.40	159.51	Dry	Dry
	MW-29	1228375.064	163680.914	410.57	169.80	14.80	155.00	244.58	165.99
Wells Completed in Other Perched Zones	MW-1	1228443.72	163596.5	403.6	284.48	10.00	274.48	NM	NM
	MW-3	1227789.56	162373.91	314.87	277.90	5.00	272.90	41.64	273.23
	MW-4	1227559.38	162957.79	374.21	273.08	10.00	263.08	103.37	270.84
	MW-5S	1227642.9	162566.95	356.63	281.86	10.00	271.86	Dry	Dry
	MW-8	1227664.94	163216.78	383.42	213.24	10.00	203.24	176.37	207.05
	MW-10	1227868.03	163837.42	407.51	262.34	10.00	252.34	145.07	262.44
	MW-13	1228427.45	162842.29	374.07	264.00	5.00	259.00	99.63	274.44
	MW-14	1227569.04	162959.54	375.68	212.62	10.00	202.62	151.43	224.25
	MW-24	1228427.78	162831.38	373.93	291.50	10.00	281.50	87.54	286.39

Notes:

1. Water level measurements made by KCSWD personnel.
2. Northing & Easting coordinates are Washington North State Plane Coordinates in WGS84
3. Elevations reported in feet above Mean Sea Level based on the National Geodetic Vertical Datum, 1929.
4. NM, not measured due to broken well or broken pump.
5. DRY, no water detected or water depth measured below base of screen.

Table 2: Groundwater Parameters – Third Quarter 2013

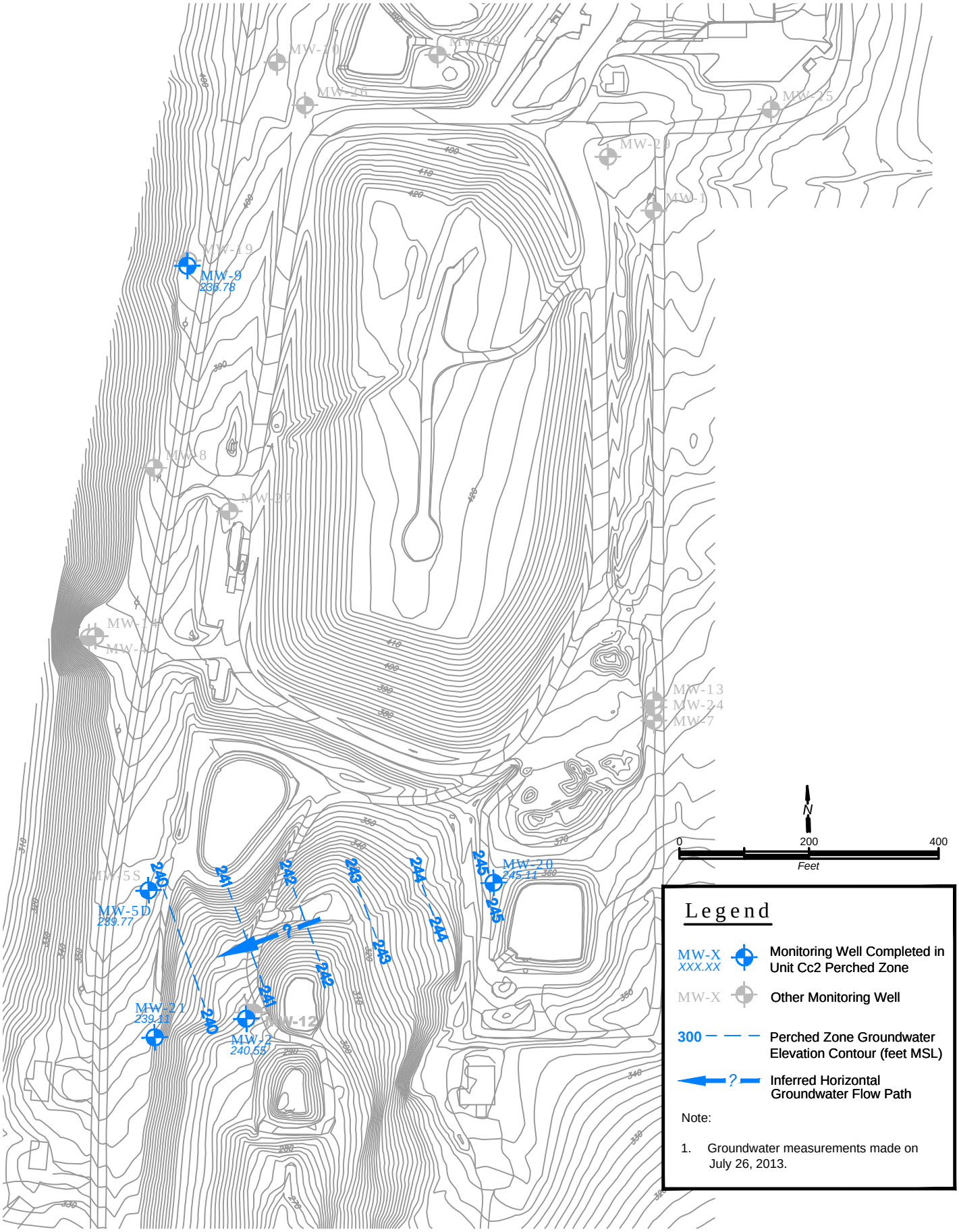
Vashon Island Landfill

King County, Washington

Water Bearing Zone Beneath the Landfill	Horizontal Hydraulic Conductivity (*K*)			Horizontal Hydraulic Gradient (DH/DL)	Effective Porosity (n_{eff})	Horizontal Groundwater Velocity (*v*)	General Groundwater Flow Direction
	Range	(cm/s)	(ft/d)	(ft/ft)		(ft/d)	
Southern Cc2 Perched Zone	Low	1.90E-06	0.01	0.008	30%	0.0003	Southwest
	High	1.60E-04	0.45	0.008	20%	0.019	
	Average	1.70E-05	0.05	0.008	25%	0.002	
Cc3 Regional Aquifer	Low	1.00E-03	3	0.035	30%	0.35	Radially away from MW-27
	High	1.00E-02	28	0.035	20%	4.9	
	Average	3.20E-03	9	0.035	25%	1.3	

Notes

1. Horizontal hydraulic conductivity values and effective porosity values from *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation – Vashon Island Landfill (Aspect, 2010)*
2. Average hydraulic conductivity values are the geometric mean of the high and low values.
3. Horizontal hydraulic gradients based on average of gradients calculated between monitoring well with highest groundwater elevation and other monitoring wells shown on Figures 1 and 2.



King County

Groundwater Potentiometric Surface Map

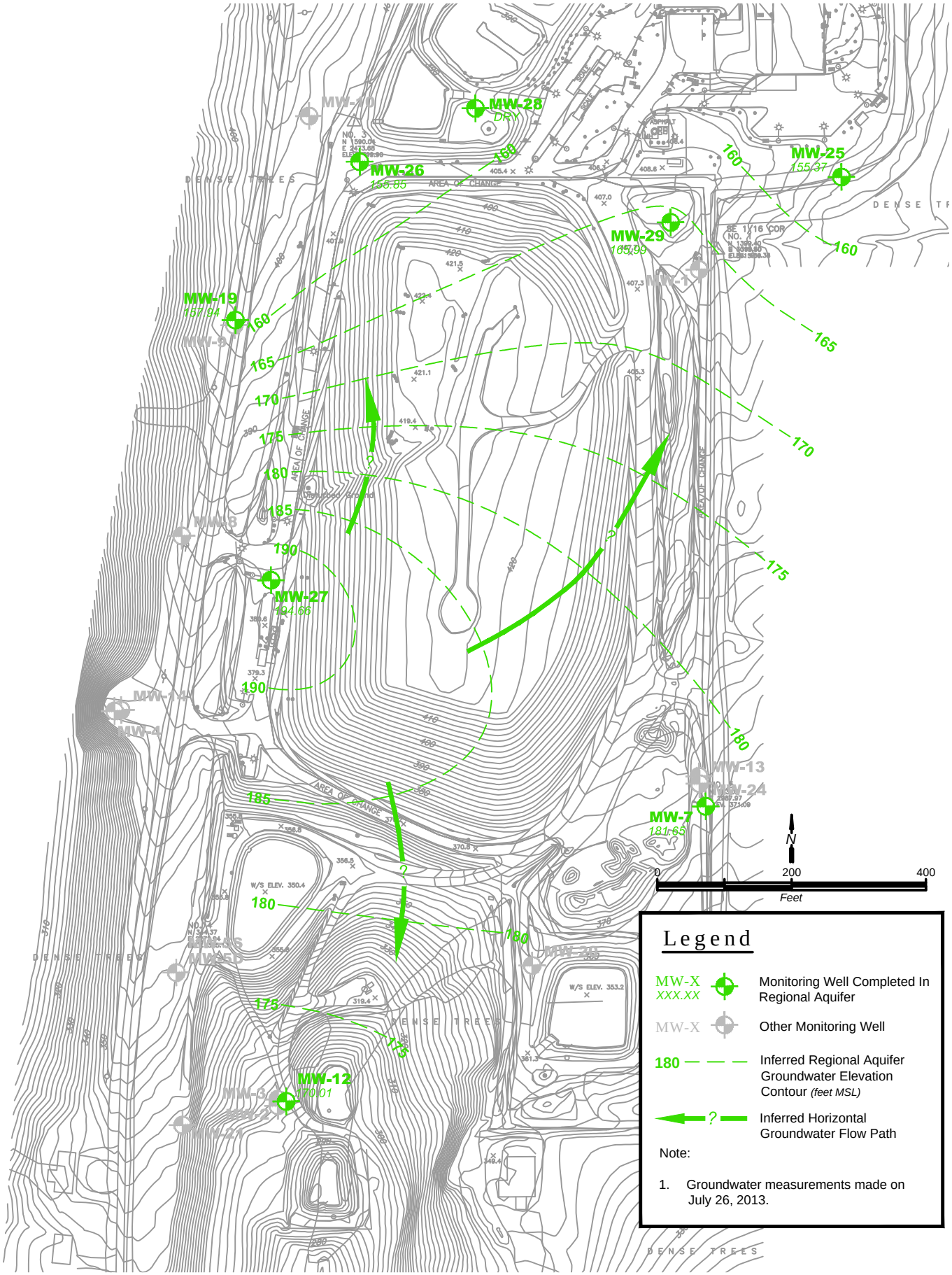
Third Quarter 2013 - Cc2 Perched Zone

Vashon Island Landfill

King County, Washington

DATE: December 2013	PROJECT NO. 1033601
DESIGNED BY: SB	
DRAWN BY: KK	FIGURE NO. 1
REVISED BY: SB	

Vashon_3Q2013_rcc2perched.dwg



Legend

MW-X XXX.XX	Monitoring Well Completed In Regional Aquifer
MW-X	Other Monitoring Well
180	Inferred Regional Aquifer Groundwater Elevation Contour *(feet MSL)*
?	Inferred Horizontal Groundwater Flow Path

Note:

1. Groundwater measurements made on July 26, 2013.

King County

Groundwater Potentiometric Surface Map

Third Quarter 2013 - Regional Aquifer

Vashon Island Landfill

King County, Washington

DATE: December 2013	PROJECT NO. 1033601
DESIGNED BY: SB	
DRAWN BY: KK	FIGURE NO. 2
REVISED BY: SB	

Vashon_3Q2013_regional.dwg

King County

Water and Land Resources Division
Department of Natural Resources and Parks
King Street Center
201 South Jackson Street, Suite 600
Seattle, WA 98104-3855
206.296.6519 Fax 206.296.0192

Memorandum

To: Dan Swope
King County Solid Waste Division

From: Sevin Bilir
King County Water & Land Resources Division

Re: **Potentiometric Groundwater Surface Mapping & Groundwater Velocity Calculations**
Second Quarter 2013 Results
Vashon Island Landfill, King County, Washington
Project No. 1033601- Task 29.14.137.45

Date: July 15, 2013

King County Water & Land Resources Division (KCWLRD) submits this letter report on groundwater conditions during the second quarter of 2013 for the Cc2 perched zone and the regional aquifer beneath the Vashon Island Landfill (landfill), in accordance with the *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations* (KCWLRD, 2013). King County Solid Waste Division (KCSWD) personnel measured groundwater elevations at the landfill on May 6, 2013. These measurements were received by KCWLRD on June 24, 2013 and were used to:

1. Evaluate the potentiometric groundwater surface elevation for the Cc2 perched zone and the regional aquifer;
2. Determine the groundwater flow direction and horizontal gradient for the Cc2 perched zone and the regional aquifer; and
3. Calculate the groundwater velocity of the Cc2 perched zone and the regional aquifer.

There have been no significant changes in the interpreted groundwater conditions since the report submitted for the first quarter of the 2013 monitoring event.

Groundwater Elevation Data

KCSWD attempted groundwater level measurements at 21 monitoring wells during the second quarter of 2013. These wells were completed in the Cc2 perched zone, regional aquifer, and in other zones as referred to in *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004). Table 1 lists the well identifications, locations, well details, measured groundwater levels and calculated groundwater elevations for the Cc2 perched zone, regional aquifer, and wells in other perched zones.

Cc2 Perched Zone

Three separate perching zones are identified in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004) within the Unit C deposits. Only the southern portion of the of the Cc2 middle channel deposit perched zone was identified as laterally extensive. Groundwater in this perched zone is measured by wells MW-2, MW-5D, MW-9, MW-20, and MW-21. Monitoring well MW-9 is hydraulically separated from the rest of the wells in the Cc2 perched zone, as described in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004). Figure 1 shows well locations, groundwater elevations, groundwater potentiometric surface contours, and interpreted groundwater flow direction in the Cc2 perched zone for the May 6, 2013 measurement event.

Regional Aquifer

Wells MW-7, MW-12, MW-19, MW-25, MW-26, MW-27, MW-28 and MW-29 are reported to be in screened in or in hydraulic communication with the regional aquifer (B&H/UES, 2004). The regional aquifer includes the deepest channel deposit in Unit C (designated Cc3), and water-bearing Units D and F. Units D and F are separated by Unit E which is a semi-continuous, variably saturated aquitard (B&H/UES, 2004).

Wells MW-7, MW-12 and MW-19 measured water levels at least 15 feet above the top of the screen and may be influenced by vertical gradients in the regional aquifer. Well MW-27, completed in Unit Cc3, is identified in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004) to be measuring a groundwater mound in the regional aquifer water table. The mounding phenomenon is reported as likely due to local recharge from perched zones above.

The water level in monitoring well MW-28 was reported as “dry”. MW-28 is completed in the regional aquifer and has historically been dry. This well was not used for this analysis.

Figure 2 shows well locations, groundwater elevations, groundwater potentiometric surface contours, and interpreted groundwater flow direction in the regional aquifer for the May 6, 2013 measurement event.

Direction of Groundwater Flow

Figures 1 and 2 shows groundwater potentiometric surface contours and interpreted groundwater flow directions in the Cc2 perched zone and regional aquifer, respectively, based on the May 6, 2013 measurements. Groundwater elevations indicate that groundwater in the southern Cc2 perched zone generally flowed southwest (Figure 1). Based on the current limited understanding of the regional aquifer, groundwater in the regional aquifer generally flowed radially away from MW-27 (Figure 2). Flow from MW-27 westward cannot be confirmed because there are no wells completed in the regional aquifer to the west of MW-27.

Groundwater Parameters

Horizontal groundwater velocity was calculated using the following formula:

where: $$v = \frac{1}{n_{eff}} K \frac{\Delta H}{\Delta L}$$

v = Groundwater velocity [L/t]
n_{eff} = Effective porosity [dimensionless]
K = Hydraulic conductivity [L/t]
$\frac{\Delta H}{\Delta L}$ = Hydraulic gradient [L/L]

Horizontal groundwater velocity was calculated for the Cc2 perched zone and regional aquifer below the landfill. The hydraulic conductivity and effective porosity values were based on the ranges referred to in the *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation - Vashon Island Landfill* (Aspect, 2010). The hydraulic gradient was determined from the potentiometric surface maps (Figures 1 and 2). The hydraulic gradients were approximately 0.011 and 0.034 ft/ft within the Cc2 perched zone and Cc3 regional aquifer, respectively.

Table 2 presents a summary of the groundwater parameters used to calculate a groundwater velocity from the second quarter 2013 data. On May 6, 2013, average horizontal groundwater velocity within the Cc2 perched zone was 0.002 feet per day (ft/d) and the average groundwater velocity in the regional aquifer was 1.2 ft/d.

References

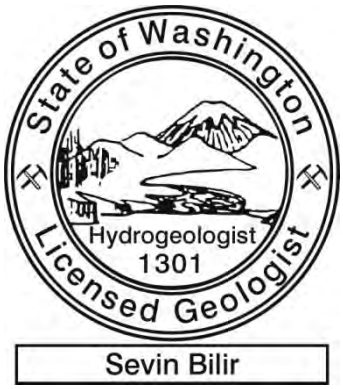
Aspect Consulting (Aspect). 2010. *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation – Vashon Island Landfill*. Unpublished. January 10.

Berryman & Henigar in association with Udaloy Environmental Services (B&H/UES). 2004. *Vashon Island Landfill Hydrogeologic Report Update*. December.

King County Water & Land Resources Division (KCWLRD). 2013. *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations*. Unpublished.

Thank you for the opportunity to provide hydrogeologic services to the KCSWD. Please contact me if you have any questions.

Sincerely,



Sevin Bilir, WA LHG
Environmental Scientist III
King County Water & Land Resources Division

<u>Attachments</u>

Table 1: Groundwater Elevations – Second Quarter 2013
Table 2: Groundwater Parameters – Second Quarter 2013
Figure 1: Groundwater Potentiometric Surface Map – Second Quarter 2013 - Cc2 Perched Zone
Figure 2: Groundwater Potentiometric Surface Map – Second Quarter 2013 - Regional Aquifer

Table 1: Groundwater Elevations – Second Quarter 2013

Vashon Island Landfill

King County, Washington

	Well Identification	Easting	Northing	Top of Casing Elevation (feet MSL)	Top of Screen Elevation (feet)	Screen Length	Bottom of Screen Elevation (feet)	May 6, 2013 Measured Depth to Water (feet)	May 6, 2013 Groundwater Elevations (feet MSL)
Wells Completed in Cc2 Perched Zone	MW-2	1227788.52	162365.3	314.28	233.58	5.00	228.58	73.57	240.71
	MW-5D	1227642.9	162566.95	357.2	240.86	11.00	229.86	117.34	239.86
	MW-9	1227723.22	163526.88	402.57	233.64	10.00	223.64	165.35	237.22
	MW-20	1228173	162566.16	367.21	237.57	4.30	233.27	122.04	245.17
	MW-21	1227647.37	162339.91	345.66	243.17	9.40	233.77	106.39	239.27
Wells Completed in Cc3 Regional Aquifer	MW-7	1228427.31	162811.01	373.25	151.09	10.00	141.09	190.98	182.27
	MW-12	1227800.7	162374.89	312.39	139.62	10.00	129.62	142.1	170.29
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	MW-14	1227569.04	162959.54	375.68	212.62	10.00	202.62	151.19	224.49
	MW-24	1228427.78	162831.38	373.93	291.50	10.00	281.50	87.85	286.08

Notes:

1. Water level measurements made by KCSWD personnel.
2. Northing & Easting coordinates are Washington North State Plane Coordinates in WGS84
3. Elevations reported in feet above Mean Sea Level based on the National Geodetic Vertical Datum, 1929.
4. NM, not measured due to broken well or broken pump.
5. DRY, no water detected or water depth measured below base of screen.

Table 2: Groundwater Parameters – Second Quarter 2013

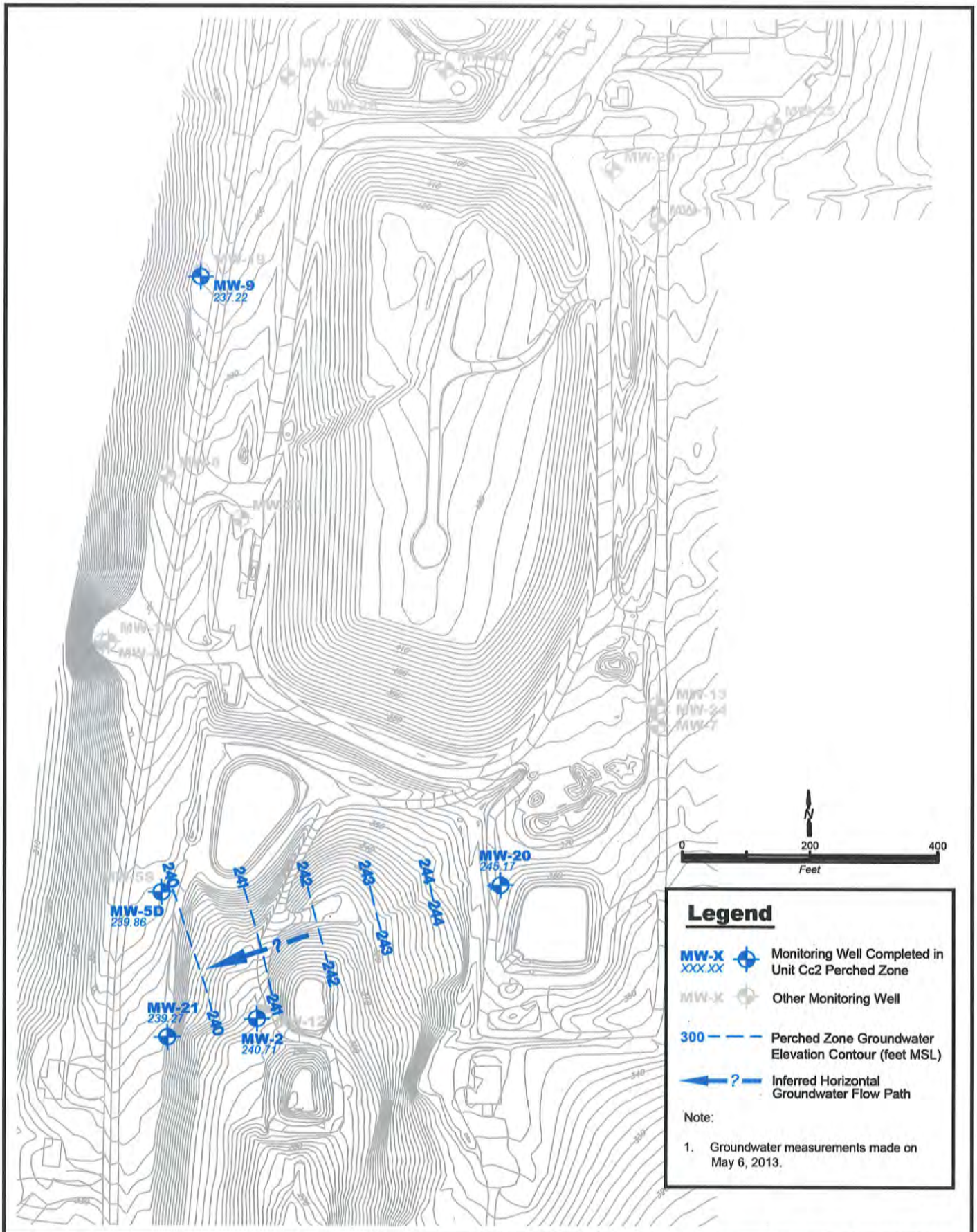
Vashon Island Landfill

King County, Washington

Water Bearing Zone Beneath the Landfill	Horizontal Hydraulic Conductivity (*K*)			Horizontal Hydraulic Gradient (DH/DL)	Effective Porosity (n_{eff})	Horizontal Groundwater Velocity (*v*)	General Groundwater Flow Direction
	Range	(cm/s)	(ft/d)	(ft/ft)		(ft/d)	
Southern Cc2 Perched Zone	Low	1.90E-06	0.01	0.011	30%	0.0004	Southwest
	High	1.60E-04	0.45	0.011	20%	0.025	
	Average	1.70E-05	0.05	0.011	25%	0.002	
Cc3 Regional Aquifer	Low	1.00E-03	3	0.034	30%	0.34	Radially away from MW-27
	High	1.00E-02	28	0.034	20%	4.8	
	Average	3.20E-03	9	0.034	25%	1.2	

Notes

1. Horizontal hydraulic conductivity values and effective porosity values from *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation – Vashon Island Landfill (Aspect, 2010)*
2. Average hydraulic conductivity values are the geometric mean of the high and low values.
3. Horizontal hydraulic gradients based on average of gradients calculated between monitoring well with highest groundwater elevati and other monitoring wells shown on Figures 1 and 2.



King County

Groundwater Potentiometric Surface Map
Second Quarter 2013 - Cc2 Perched Zone

Vashon Island Landfill

King County, Washington

DATE: July 2013	PROJECT NO. 1033601
DESIGNED BY: SB	
DRAWN BY: KK	FIGURE NO. 1
REVISED BY: SB	

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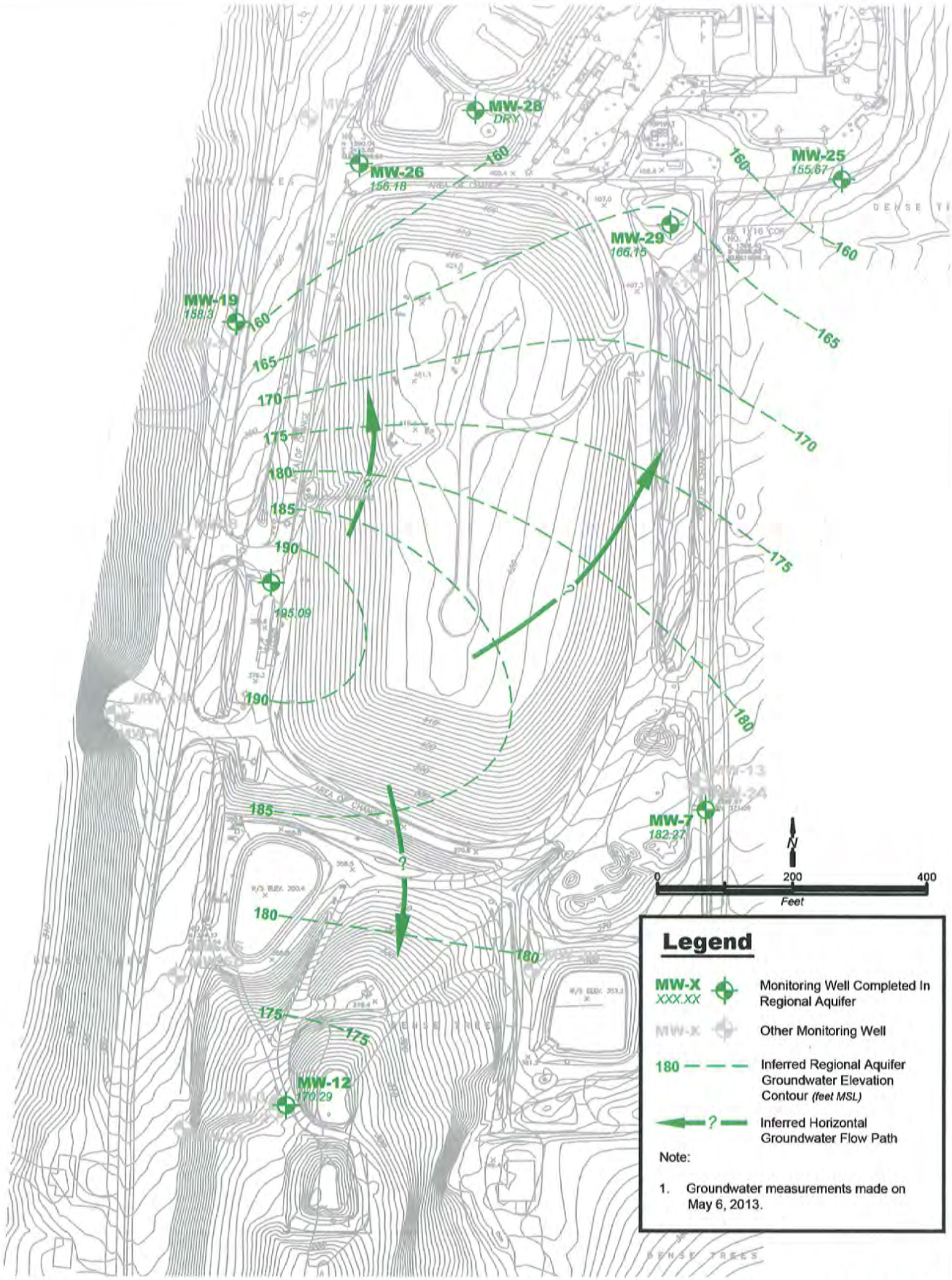


King County

Groundwater Potentiometric Surface Map
Second Quarter 2013 - Regional Aquifer
Vashon Island Landfill
King County, Washington

DATE: July 2013	PROJECT NO.
DESIGNED BY: SB	1033601
DRAWN BY: KK	FIGURE NO.
REVISED BY: SB	2

Vashon_2Q2013_regional.dwg

King County

Water and Land Resources Division
Department of Natural Resources and Parks
King Street Center
201 South Jackson Street, Suite 600
Seattle, WA 98104-3855
206.296.6519 Fax 206.296.0192

Memorandum

To: Dan Swope
King County Solid Waste Division

From: Sevin Bilir
King County Water & Land Resources Division

Re: **Potentiometric Groundwater Surface Mapping & Groundwater Velocity Calculations**
First Quarter 2013 Results
Vashon Island Landfill, King County, Washington
Project No. 1033601- Task 29.14.137.45

Date: April 16, 2013

King County Water & Land Resources Division (KCWLRD) submits this letter report on groundwater conditions during the first quarter of 2013 for the Cc2 perched zone and the regional aquifer beneath the Vashon Island Landfill (landfill), in accordance with the *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations* (KCWLRD, 2013). King County Solid Waste Division (KCSWD) personnel measured groundwater elevations at the landfill on February 4, 2013. These measurements were received by KCWLRD on April 8, 2013 and were used to:

1. Evaluate the potentiometric groundwater surface elevation for the Cc2 perched zone and the regional aquifer;
2. Determine the groundwater flow direction and horizontal gradient for the Cc2 perched zone and the regional aquifer; and
3. Calculate the groundwater velocity of the Cc2 perched zone and the regional aquifer.

There have been no significant changes in the interpreted groundwater conditions since the report submitted for the fourth quarter of the 2012 monitoring event.

Groundwater Elevation Data

KCSWD attempted groundwater level measurements at 21 monitoring wells during the first quarter of 2013. These wells were completed in the Cc2 perched zone, regional aquifer, and in other zones as referred to in *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004). Table 1 lists the well identifications, locations, well details, measured groundwater levels and calculated groundwater elevations for the Cc2 perched zone, regional aquifer, and wells in other perched zones.

Cc2 Perched Zone

Three separate perching zones are identified in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004) within the Unit C deposits. Only the southern portion of the of the Cc2 middle channel deposit perched zone was identified as laterally extensive. Groundwater in this perched zone is measured by wells MW-2, MW-5D, MW-9, MW-20, and MW-21. Monitoring well MW-9 is hydraulically separated from the rest of the wells in the Cc2 perched zone, as described in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004). Figure 1 shows well locations, groundwater elevations, groundwater potentiometric surface contours, and interpreted groundwater flow direction in the Cc2 perched zone for the February 4, 2013 measurement event.

Regional Aquifer

Wells MW-7, MW-12, MW-19, MW-25, MW-26, MW-27, MW-28 and MW-29 are reported to be in screened in or in hydraulic communication with the regional aquifer (B&H/UES, 2004). The regional aquifer includes the deepest channel deposit in Unit C (designated Cc3), and water-bearing Units D and F. Units D and F are separated by Unit E which is a semi-continuous, variably saturated aquitard (B&H/UES, 2004).

Wells MW-7, MW-12 and MW-19 measured water levels at least 15 feet above the top of the screen and may be influenced by vertical gradients in the regional aquifer. Well MW-27, completed in Unit Cc3, is identified in the *Vashon Island Landfill Hydrogeologic Report Update* (B&H/UES, 2004) to be measuring a groundwater mound in the regional aquifer water table. The mounding phenomenon is reported as likely due to local recharge from perched zones above.

The water level in monitoring well MW-28 was reported as “dry”. MW-28 is completed in the regional aquifer and has historically been dry. This well was not used for this analysis.

Figure 2 shows well locations, groundwater elevations, groundwater potentiometric surface contours, and interpreted groundwater flow direction in the regional aquifer for the February 4, 2013 measurement event.

Direction of Groundwater Flow

Figures 1 and 2 shows groundwater potentiometric surface contours and interpreted groundwater flow directions in the Cc2 perched zone and regional aquifer, respectively, based on the February 4, 2013 measurements. Groundwater elevations indicate that groundwater in the southern Cc2 perched zone generally flowed southwest (Figure 1). Based on the current limited understanding of the regional aquifer, groundwater in the regional aquifer generally flowed radially away from MW-27 (Figure 2). Flow from MW-27 westward cannot be confirmed because there are no wells completed in the regional aquifer to the west of MW-27.

Groundwater Parameters

Horizontal groundwater velocity was calculated using the following formula:

where: $$v = \frac{1}{n_{eff}} K \frac{\Delta H}{\Delta L}$$

v = Groundwater velocity [L/t]
n_{eff} = Effective porosity [dimensionless]
K = Hydraulic conductivity [L/t]
$\frac{\Delta H}{\Delta L}$ = Hydraulic gradient [L/L]

Horizontal groundwater velocity was calculated for the Cc2 perched zone and regional aquifer below the landfill. The hydraulic conductivity and effective porosity values were based on the ranges referred to in the *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation - Vashon Island Landfill* (Aspect, 2010). The hydraulic gradient was determined from the potentiometric surface maps (Figures 1 and 2). The hydraulic gradients were approximately 0.01 and 0.036 ft/ft within the Cc2 perched zone and Cc3 regional aquifer, respectively.

Table 2 presents a summary of the groundwater parameters used to calculate a groundwater velocity from the first quarter 2013 data. On February 4, 2013, average horizontal groundwater velocity within the Cc2 perched zone was 0.002 feet per day (ft/d) and the average groundwater velocity in the regional aquifer was 1.3 ft/d.

References

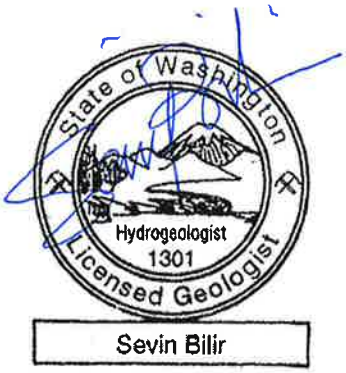
Aspect Consulting (Aspect). 2010. *Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation – Vashon Island Landfill.* Unpublished. January 10.

Berryman & Henigar in association with Udaloy Environmental Services (B&H/UES). 2004. *Vashon Island Landfill Hydrogeologic Report Update*. December.

King County Water & Land Resources Division (KCWLRD). 2013. *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations*. Unpublished.

Thank you for the opportunity to provide hydrogeologic services to the KCSWD. Please contact me if you have any questions.

Sincerely,



Sevin Bilir, WA LHG
Environmental Scientist III
King County Water & Land Resources Division

Attachments

Table 1: Groundwater Elevations – First Quarter 2013
Table 2: Groundwater Parameters – First Quarter 2013
Figure 1: Groundwater Potentiometric Surface Map – First Quarter 2013 - Cc2 Perched Zone
Figure 2: Groundwater Potentiometric Surface Map – First Quarter 2013 - Regional Aquifer

Table 1: Groundwater Elevations – First Quarter 2013

Vashon Island Landfill

King County, Washington

	Well Identification	Easting	Northing	Top of Casing Elevation (feet MSL)	Top of Screen Elevation (feet)	Bottom of Screen Elevation (feet)	February 4, 2013 Measured Depth to Water (feet)	February 4, 2013 Groundwater Elevations (feet MSL)
Wells Completed in Cc2 Perched Zone	MW-2	1227788.52	162365.3	314.28	233.58	228.58	73.83	240.45
	MW-5D	1227642.9	162566.95	357.2	240.86	229.86	117.48	239.72
	MW-9	1227723.22	163526.88	402.57	233.64	223.64	165.15	237.42
	MW-20	1228173	162566.16	367.21	237.57	233.27	122.21	245
	MW-21	1227647.37	162339.91	345.66	243.17	233.77	106.45	239.21
Wells Completed in Cc3 Regional Aquifer	MW-7	1228427.31	162811.01	373.25	151.09	141.09	191.68	181.57
	MW-12	1227800.7	162374.89	312.39	139.62	129.62	142.47	169.92
	MW-19	1227724.63	163534.76	403.83	141.10	131.10	245.68	158.15
	MW-25	1228627.702	163748.5939	399.22	148.78	134.68	243.45	155.77
	MW-26	1227909.874	163770.4284	403.4	155.12	141.02	247.36	156.04
	MW-27	1227779.749	163147.519	383.06	194.27	180.07	188.15	194.91
	MW-28	1228115.81	163843.5839	395.59	173.91	159.51	DRY	DRY
	MW-29	1228375.064	163680.914	410.57	169.80	155.00	244.4	166.17
Wells Completed in Other Perched Zones	MW-1	1228443.72	163596.5	403.6	284.48	274.48	NM	NM
	MW-3	1227789.56	162373.91	314.87	277.90	272.90	40.43	274.44
	MW-4	1227559.38	162957.79	374.21	273.08	263.08	105.33	268.88
	MW-5S	1227642.9	162566.95	356.63	281.86	271.86	DRY	DRY
	MW-8	1227664.94	163216.78	383.42	213.24	203.24	176.11	207.31
	MW-10	1227868.03	163837.42	407.51	262.34	252.34	144.9	262.61
	MW-13	1228427.45	162842.29	374.07	264.00	259.00	99.15	274.92
	MW-14	1227569.04	162959.54	375.68	212.62	202.62	150.69	224.99
	MW-24	1228427.78	162831.38	373.93	291.50	281.50	88.47	285.46

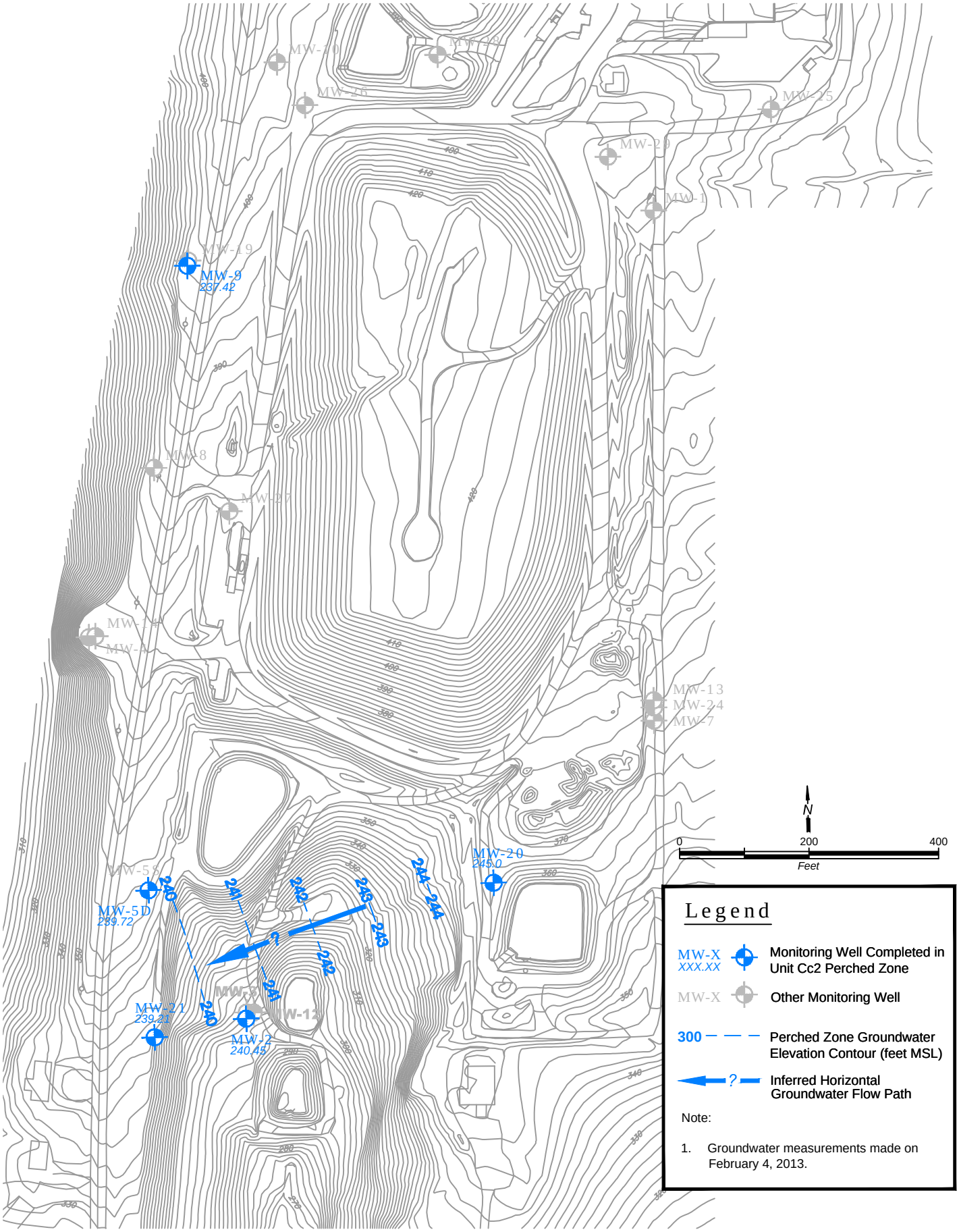
Notes:

1. Water level measurements made by KCSWD personnel.
2. Northing & Easting coordinates are Washington North State Plane Coordinates in WGS84
3. Elevations reported in feet above Mean Sea Level based on the National Geodetic Vertical Datum, 1929.
4. NM, not measured due to broken well or broken pump.
5. DRY, no water detected or water depth measured below base of screen.

Table 2: Groundwater Parameters – First Quarter 2013
Vashon Island Landfill
King County, Washington

Water Bearing Zone Beneath the Landfill	Horizontal Hydraulic Conductivity (*K*) Range	(cm/s)	(ft/d)	Horizontal Hydraulic Gradient (DH/DL) (ft/ft)	Effective Porosity (n_{eff})	Horizontal Groundwater Velocity (*v*) (ft/d)	General Groundwater Flow Direction
Southern Cc2 Perched Zone	Low	1.90E-06	0.01	0.010	30%	0.0003	Southwest
	High	1.60E-04	0.45	0.010	20%	0.023	
	Average	1.70E-05	0.05	0.010	25%	0.002	
Cc3 Regional Aquifer	Low	1.00E-03	3	0.036	30%	0.36	Radially away from MW-27
	High	1.00E-02	28	0.036	20%	5.0	
	Average	3.20E-03	9	0.036	25%	1.3	

Notes
1. Horizontal hydraulic conductivity values and effective porosity values from
Potentiometric Groundwater Surface Mapping and Groundwater Velocity Calculation – Vashon Island Landfill (Aspect, 2010)
2. Average hydraulic conductivity values are the geometric mean of the high and low values.
3. Horizontal hydraulic gradients based on average of gradients calculated between monitoring well with highest groundwater elevation and other monitoring wells shown on Figures 1 and 2.



King County

Groundwater Potentiometric Surface Map

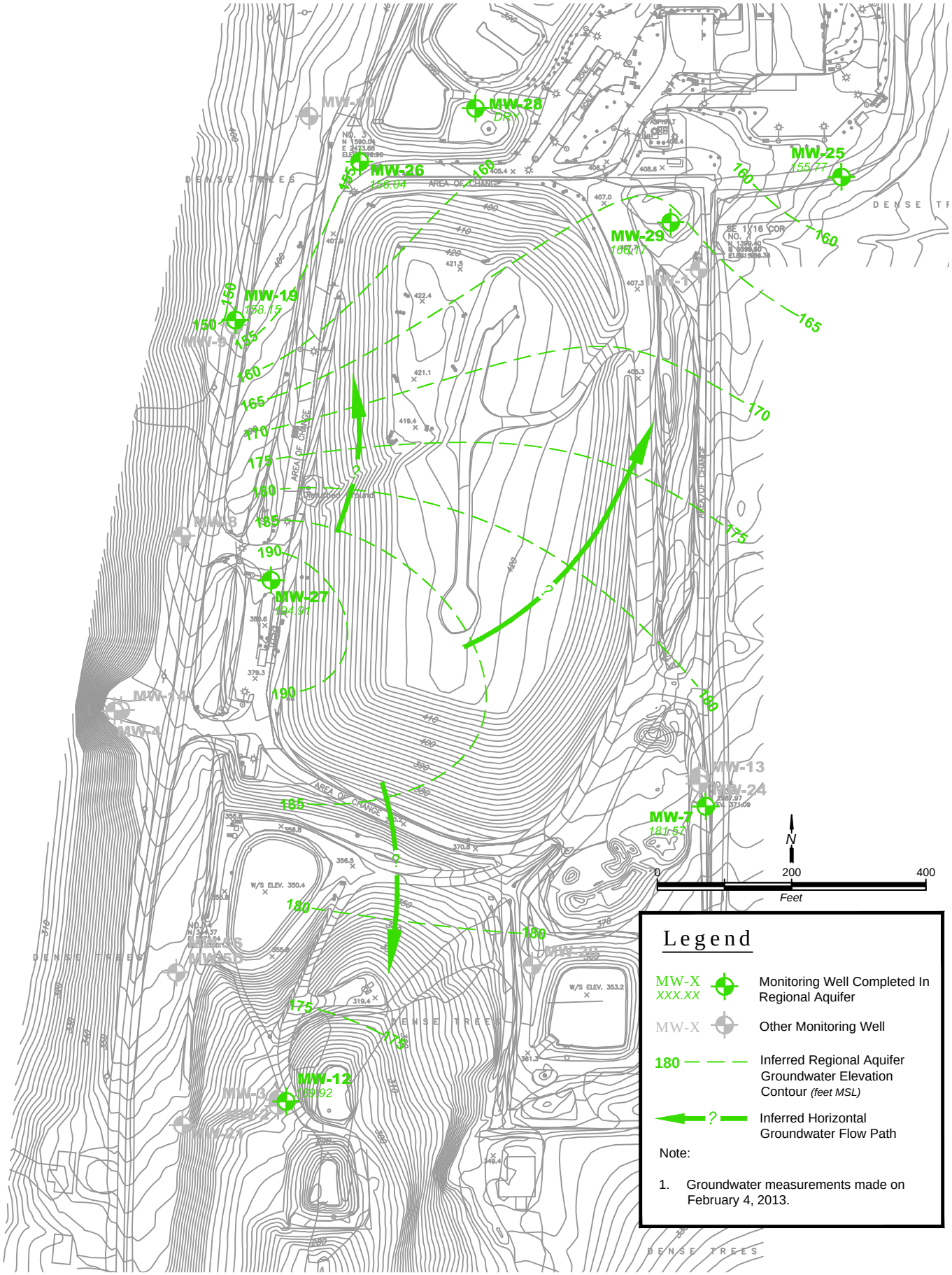
First Quarter 2013 - Cc2 Perched Zone

Vashon Island Landfill

King County, Washington

DATE: April 2013	PROJECT NO. 1033601
DESIGNED BY: SB	
DRAWN BY: LT	FIGURE NO. 1
REVISED BY: SB	

Vashon_1Q2013_rcc2perched.dwg



Legend

MW-X XXX.XX — Monitoring Well Completed In Regional Aquifer

MW-X — Other Monitoring Well

180 — Inferred Regional Aquifer Groundwater Elevation Contour *(feet MSL)*

? — Inferred Horizontal Groundwater Flow Path

Note:

1. Groundwater measurements made on February 4, 2013.

King County

Groundwater Potentiometric Surface Map

First Quarter 2013 - Regional Aquifer

Vashon Island Landfill

King County, Washington

DATE: April 2013	PROJECT NO. 1033601
DESIGNED BY: SB	
DRAWN BY: LL	FIGURE NO. 2
REVISED BY: SB	

Vashon_1Q2013_regional.dwg

Appendix H

Monitoring Well Keys

VASHON MONITORING WELLS RENAMING SCHEME

New Name	Old Names		
MW-1	MW-1	MW-1A	
MW-2	MW-2	MW-2B	
MW-3	MW-3	MW-3A	
MW-4	MW-4	MW-4A	
MW-5S	MW-5S	MW-5A	
MW-5D	MW-5D	MW-5B	
MW-6S	MW-6S	MW-6A	Decommissioned
MW-6D	MW-6D	MW-6B	Decommissioned
MW-7	MW-7C		
MW-8	MW-8B		
MW-9	MW-9B		
MW-10	MW-10A	MW-10B	
MW-11	MW-1C		Decommissioned
MW-12	MW-2C		
MW-13	MW-P3		
MW-14	MW-4B		
MW-19	MW-9C		
MW-24	MW-P4		
MW-20			
MW-21			
MW-25			
MW-26			
MW-27			
MW-28			
MW-29			

Appendix I

Groundwater Chemistry Data

Vashon Island Closed Landfill

Environmental Data

The Vashon Island Closed Landfill Groundwater Monitoring Data are available as Portable Document Format (PDF) files. To view PDF files you must have Adobe® Acrobat® Reader® software. With the Adobe® Acrobat® Reader® software**,** you can review and print PDF files across a broad range of hardware and operating systems.

Filename	Description
GWConv.pdf	This file contains qualified data for Groundwater Conventional Parameters, such as pH, specific conductance, nitrate, chloride, etc…
GWMetalsRads_(Dissolved).pdf	This file contains qualified data for Groundwater Dissolved Metal Parameters such as arsenic, iron, manganese, radium 226/228 etc…
GWTotal_Metals.pdf	This file contains qualified data for Groundwater Total Metal Parameters
GWVoas.pdf	This file contains qualified data for Groundwater Volatile Organic Compound Parameters, such as dichloroethane, methylene chloride, vinyl chloride, total xylenes, etc…
GWPestherb.pdf	This file contains qualified data for Groundwater Pesticide and Herbicide Parameters such as aroclor, endrin, 4,4'-DDT, toxaphene, etc…
GWField.pdf	This file contains qualified data for Groundwater Field Parameters such as pH, specific conductance, temperature, etc…
GWWaterLevels.pdf	This file contains Groundwater Levels
SWConv.pdf	This file contains qualified data for Surface Water Conventional Parameters, such as pH, specific conductance, nitrate, chloride, etc…
SWMetals.pdf	This file contains qualified data for Surface Water Metal Parameters such as arsenic, iron, manganese, radium 226/228 etc…

SWVoas.pdf	This file contains qualified data for Surface Water Volatile Organic Compound Parameters, such as dichloroethane, methylene chloride, vinyl chloride, total xylenes, etc…
SWPestherb.pdf	This file contains qualified data for Surface Water Pesticide and Herbicide Parameters such as aroclor, endrin, 4,4’-DDT, toxaphene, etc…
SWField.pdf	This file contains qualified data for Surface Water Field Parameters such as pH, specific conductance, temperature, etc…
LSConv.pdf	This file contains qualified data for Leachate Conventional Parameters, such as pH, specific conductance, nitrate, chloride, FOGs, etc…
LSMetals.pdf	This file contains qualified data for total and dissolved metals as well as radioactive parameters measured for in Leachate
LSVoas.pdf	This file contains qualified data for Leachate Volatile Organic Compound Parameters, such as dichloroethane, methylene chloride, vinyl chloride, total xylenes, etc…
LSPestherb.pdf	This file contains qualified data for Leachate Pesticide and Herbicide Parameters such as aroclor, endrin, 4,4’-DDT, toxaphene, etc…
LSField.pdf	This file contains qualified data for Leachate Field Parameters such as pH, specific conductance, temperature, etc…

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	ALKALINITY, TOTAL (AS CACO3)	AMMONIA AS N	CHLORIDE	NITRATE	SPECIFIC CONDUCTANCE	SULFATE	TOTAL DISSOLVED SOLIDS	TOTAL ORGANIC CARBON	TOTAL SOLIDS	TOTAL SUSPENDED SOLIDS
			mg/l	mg/l	mg/l	mg/l	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l
MW-2	2/11/2013	WV2-130211-	198	< 0.01 U	3.32	0.1	394	15.9	239	< 1 U	243	< 1 U
MW-5D	2/4/2013	WV5D130204-	145	< 0.01 U	3.22	< 0.01 U	298	8.89	214	1.67	221	11.9
MW-7	2/7/2013	WV7-130207-	74.4	0.223	2.92	< 0.01 U	172	10	127	< 1 U	123	< 1 U
MW-8	2/8/2013	WV8-130208-	56.3	< 0.01 U	4.21	3.42	167	7.69	125	< 1 U	127	< 1 U
MW-9	2/5/2013	WV9-130205-	69.5	< 0.01 U	4.05	0.192	175	13.1	124	< 1 U	132	< 1 U
MW-10	2/8/2013	WV10130208-	58.7	< 0.01 U	2.95	0.415	149	8.84	101	< 1 U	107	< 1 U
MW-12	2/20/2013	WV12130220-	61	< 0.01 U	2.94	0.727	156	10.8	118	< 1 U	121	< 1 U
MW-13	2/13/2013	WV13130213-	76.6	< 0.01 U	2.85	0.0867	191	16.9	140	< 1 U	143	< 1 U
MW-19	2/14/2013	WV19130214-	99.8	0.0352	4.86	0.011 T	237	16.2	163	< 1 U	173	< 1 U
MW-20	2/13/2013	WV20130213-	72.7	0.016 T	3.24	< 0.01 U	184	15.9	137	< 1 U	139	2.9
MW-21	2/4/2013	WV21130204-	153	0.013 T	2.6	0.075	318	15.1	203	< 1 U	210	1.2 T
MW-26	2/8/2013	WV26130208-	76.8	0.223	3.47	0.037 T	187	11.9	128	< 1 U	140	< 1 U
MW-27	2/5/2013	WV27130205-	66.8	< 0.01 U	5.29	2.2	183	9.4	119	< 1 U	129	< 1 U
MW-29	2/20/2013	WV29130220-	106	< 0.01 U	3.65	< 0.01 U	246	16.8	160	< 1 U	181	15.8

King County Solid Waste Division
Environmental Field Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	pH (Field) (std. Units)	Conductance (Field) (μmhos/cm)	Temperature (°C)	Depth to Water (feet)	Ground-Water Elevation (feet above msl)
MW-10						144.9	262.61
MW-10	2/8/2013	WV10130208-	7.44	135	10	145.18	262.33
MW-12						142.47	169.92
MW-12	2/20/2013	WV12130220-	7.17	140	9.2	142.35	170.04
MW-13						99.15	274.92
MW-13	2/13/2013	WV13130213-	7.26	180	10.5	99.92	274.15
MW-14						150.69	224.99
MW-19						245.68	158.15
MW-19	2/14/2013	WV19130214-	7.38	210	9.5	246.08	157.75
MW-2						73.83	240.45
MW-2	2/11/2013	WV2-130211-	6.92	340	10	73.8	240.48
MW-20						122.21	245
MW-20	2/13/2013	WV20130213-	7.99	175	10.6	123.23	243.98
MW-21						106.45	239.21
MW-21	2/4/2013	WV21130204-	6.7	260	9.3	106.45	239.21
MW-24					10.1	88.47	285.46
MW-25					10.9	243.45	155.77
MW-26					9.8	247.36	156.04
MW-26	2/8/2013	WV26130208-	8.24	175	10.3	247.53	155.87
MW-27						188.15	194.91
MW-27	2/5/2013	WV27130205-	6.89	170	10.9	187.92	195.14
MW-29						244.4	166.17
MW-29	2/20/2013	WV29130220-	7.34	200	10.1	244.38	166.19
MW-3						40.43	274.44
MW-4						105.33	268.88
MW-5D						117.48	239.72
MW-5D	2/4/2013	WV5D130204-	6.57	270	10.3	117.49	239.71
MW-7						191.68	181.57
MW-7	2/7/2013	WV7-130207-	7.93	165		191.37	181.88
MW-8						176.11	207.31
MW-8	2/8/2013	WV8-130208-	6.77	155		176.23	207.19
MW-9						165.15	237.42
MW-9	2/5/2013	WV9-130205-	7.4	165		160	237.57

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Antimony, dissolved	Arsenic, dissolved	Barium, dissolved	Beryllium, dissolved	Cadmium, dissolved	Calcium, dissolved	Chromium, dissolved	Cobalt, dissolved	Copper, dissolved	Iron, dissolved	Lead, dissolved	Magnesium, dissolved	Manganese, dissolved
MW-2	2/11/2013	WV2-130211-	< 0.001 U	0.00103	0.00976	< 0.001 U	< 0.002 U	24.4	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	28.8	0.0974
MW-5D	2/4/2013	WV5D130204-	< 0.001 U	0.0949	0.0121	< 0.001 U	< 0.002 U	20.6	< 0.005 U	< 0.003 U	< 0.002 U	8.68	< 0.001 U	15	0.547
MW-7	2/7/2013	WV7-130207-	< 0.001 U	0.00583	0.0113	< 0.001 U	< 0.002 U	12.9	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	8.7	0.135
MW-8	2/8/2013	WV8-130208-	< 0.001 U	< 0.001 U	0.00361	< 0.001 U	< 0.002 U	10.9	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	9.16	< 0.001 U
MW-9	2/5/2013	WV9-130205-	< 0.001 U	0.00224	0.00332	< 0.001 U	< 0.002 U	11.3	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	9.19	< 0.001 U
MW-10	2/8/2013	WV10130208-	< 0.001 U	0.00172	0.00335	< 0.001 U	< 0.002 U	8.69	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	9	< 0.001 U
MW-12	2/20/2013	WV12130220-	< 0.001 U	0.00212	0.00441	< 0.001 DU	< 0.002 U	11.9	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	9.03 D	< 0.001 DU
MW-13	2/13/2013	WV13130213-	< 0.001 U	0.00172	0.00558	< 0.001 U	< 0.002 U	10.2	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	11.9	0.00112
MW-19	2/14/2013	WV19130214-	< 0.001 U	0.00146	0.0175	< 0.001 U	< 0.002 U	16	< 0.005 U	< 0.003 U	< 0.002 U	0.031 T	< 0.001 U	15.1	0.599 D
MW-20	2/13/2013	WV20130213-	< 0.001 U	0.00156	0.00305	< 0.001 U	< 0.002 U	12	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	9.88	0.253
MW-21	2/4/2013	WV21130204-	< 0.001 U	< 0.001 U	0.00895	< 0.001 U	< 0.002 U	19.9	< 0.005 U	< 0.003 U	< 0.002 U	0.254	< 0.001 U	20	0.335
MW-26	2/8/2013	WV26130208-	< 0.001 U	0.0033	0.00976	< 0.001 U	< 0.002 U	15.3	< 0.005 U	< 0.003 U	< 0.002 U	0.104	< 0.001 U	6.98	0.0574
MW-27	2/5/2013	WV27130205-	< 0.001 U	< 0.001 U	0.00373	< 0.001 U	< 0.002 U	11.4	< 0.005 U	< 0.003 U	< 0.002 U	< 0.01 U	< 0.001 U	9.27	< 0.001 U
MW-29	2/20/2013	WV29130220-	< 0.001 U	0.00447	0.0104	< 0.001 DU	< 0.002 U	20	< 0.005 U	< 0.003 U	< 0.002 U	0.773	< 0.001 U	14.3 D	0.123 D

Site	Date	Sample ID	Mercury, dissolved	Nickel, dissolved	Potassium, dissolved	Selenium, dissolved	Silver, dissolved	Sodium, dissolved	Thallium, dissolved	Vanadium, dissolved	Zinc, dissolved
MW-2	2/11/2013	WV2-130211-	< 0.0001 U	< 0.01 U	2.29	< 0.001 U	< 0.003 U	9.02	< 0.001 U	0.00391	< 0.004 U
MW-5D	2/4/2013	WV5D130204-	< 0.0001 U	< 0.01 U	2.33	< 0.001 U	< 0.003 U	12.7 D	< 0.001 U	< 0.002 U	< 0.004 U
MW-7	2/7/2013	WV7-130207-	< 0.0001 U	< 0.01 U	2.64	< 0.001 U	< 0.003 U	6.04	< 0.001 U	< 0.002 U	< 0.004 U
MW-8	2/8/2013	WV8-130208-	< 0.0001 U	< 0.01 U	1.06	< 0.001 U	< 0.003 U	6.27	< 0.001 U	0.00236	< 0.004 U
MW-9	2/5/2013	WV9-130205-	< 0.0001 U	< 0.01 U	1.98	< 0.001 U	< 0.003 U	5.2 D	< 0.001 U	0.00447	< 0.004 U
MW-10	2/8/2013	WV10130208-	< 0.0001 U	< 0.01 U	1.35	< 0.001 U	< 0.003 U	4.84	< 0.001 U	0.00404	< 0.004 DU
MW-12	2/20/2013	WV12130220-	< 0.0001 U	< 0.01 U	1.85	< 0.001 U	< 0.003 U	5.85 D	< 0.001 U	0.00514	< 0.004 U
MW-13	2/13/2013	WV13130213-	< 0.0001 U	< 0.01 U	1.78	< 0.001 U	< 0.003 U	5.85	< 0.001 U	0.00475	< 0.004 U
MW-19	2/14/2013	WV19130214-	< 0.0001 U	< 0.01 U	2.49	< 0.001 U	< 0.003 U	7.02	< 0.001 U	< 0.002 U	< 0.004 U
MW-20	2/13/2013	WV20130213-	< 0.0001 U	< 0.01 U	2.09	< 0.001 U	< 0.003 U	5.57	< 0.001 U	< 0.002 U	< 0.004 U
MW-21	2/4/2013	WV21130204-	< 0.0001 U	< 0.01 U	2.27	< 0.001 U	< 0.003 U	9.02 D	< 0.001 U	< 0.002 U	< 0.004 U
MW-26	2/8/2013	WV26130208-	< 0.0001 U	< 0.01 U	3.01	< 0.001 U	< 0.003 U	8.96	< 0.001 U	< 0.002 U	< 0.004 DU
MW-27	2/5/2013	WV27130205-	< 0.0001 U	< 0.01 U	1.22	< 0.001 U	< 0.003 U	5.71 D	< 0.001 U	0.00262	< 0.004 U
MW-29	2/20/2013	WV29130220-	< 0.0001 U	< 0.01 U	2.21	< 0.001 U	< 0.003 U	6.69 D	< 0.001 U	< 0.002 U	< 0.004 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,1,1,2-TETRA-CHLORO-ETHANE 630-20-6 (µg/L)	1,1,1-TRI-CHLORO-ETHANE 71-55-6 (µg/L)	1,1,2,2-TETRA-CHLORO-ETHANE 79-34-5 (µg/L)	1,1,2-TRICHLORO-ETHANE 79-00-5 (µg/L)	1,1-DICHLORO ETHANE 75-34-3 (µg/L)	1,1-DICHLORO ETHENE 75-35-4 (µg/L)	1,2,3-TRICHLORO-PROPANE 96-18-4 (µg/L)	1,2-DIBROMO-3-CHLORO-PROPANE 96-12-8 (µg/L)	1,2-DIBROMO-ETHANE 106-93-4 (µg/L)	1,2-DICHLORO BENZENE 95-50-1 (µg/L)	1,2-DICHLORO-ETHANE 107-06-2 (µg/L)	1,2-DICHLORO PROPANE 78-87-5 (µg/L)
MW-2	2/11/2013	WV2-130211-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	2/4/2013	WV5D130204-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	2/7/2013	WV7-130207-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	2/8/2013	WV8-130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	2/5/2013	WV9-130205-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	2/8/2013	WV10130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	2/20/2013	WV12130220-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	2/13/2013	WV13130213-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	2/14/2013	WV19130214-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	2/13/2013	WV20130213-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	2/4/2013	WV21130204-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	2/8/2013	WV26130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	2/5/2013	WV27130205-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	2/20/2013	WV29130220-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/9/2013	VTRP130109T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/31/2013	VTRP130204B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/31/2013	VTRP130205C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/5/2013	VTRP130207L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/5/2013	VTRP130208C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/6/2013	VTRP130207C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/11/2013	VTRP130213C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/13/2013	VTRP130214B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/18/2013	VTRP130211C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/19/2013	VTRP130220B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,4-DICHLORO BENZENE	2-BUTANONE	2-HEXANONE	4-METHYL-2-PENTANONE	ACETONE	ACRYLO-NITRILE	BENZENE	BROMO-CHLORO-METHANE	BROMO-DICHLORO-METHANE	BROMOFORM	BROMO-METHANE	CARBON DISULFIDE
			106-46-7 (µg/L)	78-93-3 (µg/L)	591-78-6 (µg/L)	108-10-1 (µg/L)	67-64-1 (µg/L)	107-13-1 (µg/L)	71-43-2 (µg/L)	74-97-5 (µg/L)	75-27-4 (µg/L)	75-25-2 (µg/L)	74-83-9 (µg/L)	75-15-0 (µg/L)
MW-2	2/11/2013	WV2-130211-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	2/4/2013	WV5D130204-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	0.492	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	2/7/2013	WV7-130207-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	2/8/2013	WV8-130208-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	2/5/2013	WV9-130205-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	2/8/2013	WV10130208-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	2/20/2013	WV12130220-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	2/13/2013	WV13130213-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	2/14/2013	WV19130214-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	2/13/2013	WV20130213-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	2/4/2013	WV21130204-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	2/8/2013	WV26130208-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	2/5/2013	WV27130205-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	2/20/2013	WV29130220-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/9/2013	VTRP130109T	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/31/2013	VTRP130204B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/31/2013	VTRP130205C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/5/2013	VTRP130207L	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/5/2013	VTRP130208C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/6/2013	VTRP130207C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/11/2013	VTRP130213C	< 0.2 U	< 4 U	< 4 U	< 4 U	6.45	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/13/2013	VTRP130214B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/18/2013	VTRP130211C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/19/2013	VTRP130220B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	CARBON TETRA-CHLORIDE	CHLORO-BENZENE	CHLORO-DIBROMO-METHANE	CHLORO-ETHANE	CHLORO-FORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	CIS-1,3-DICHLORO PROPENE	DIBROMO METHANE	DICHLORO DIFLUORO METHANE	ETHYL-BENZENE	M & P XYLENE	METHYL IODIDE
			56-23-5 (µg/L)	108-90-7 (µg/L)	124-48-1 (µg/L)	75-00-3 (µg/L)	67-66-3 (µg/L)	74-87-3 (µg/L)	156-59-2 (µg/L)	10061-01-5 (µg/L)	74-95-3 (µg/L)	75-71-8 (µg/L)	100-41-4 (µg/L)	MPX (µg/L)	74-88-4 (µg/L)
MW-2	2/11/2013	WV2-130211-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	3.61	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	2/4/2013	WV5D130204-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	8.23	< 0.2 U	< 0.2 U	1.3	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	2/7/2013	WV7-130207-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	2/8/2013	WV8-130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	2/5/2013	WV9-130205-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	2/8/2013	WV10130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	2/20/2013	WV12130220-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	2/13/2013	WV13130213-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	2/14/2013	WV19130214-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	2/13/2013	WV20130213-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	2/4/2013	WV21130204-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	1.15	< 0.2 U	< 0.2 U	1.45	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	2/8/2013	WV26130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	2/5/2013	WV27130205-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	2/20/2013	WV29130220-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/9/2013	VTRP130109T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/31/2013	VTRP130204B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	1/31/2013	VTRP130205C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/5/2013	VTRP130207L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/5/2013	VTRP130208C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/6/2013	VTRP130207C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/11/2013	VTRP130213C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/13/2013	VTRP130214B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/18/2013	VTRP130211C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	2/19/2013	VTRP130220B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	METHYLENE CHLORIDE	O-XYLENE	STYRENE	TETRA-CHLORO-ETHENE	TOLUENE	TRANS-1,2-DICHLOROETHENE	TRANS-1,3-DICHLORO-PROPENE	TRANS-1,4-DICHLORO-2-BUTENE	TRICHLORO-ETHENE	TRICHLORO-FLUORO-METHANE	VINYL ACETATE	VINYL CHLORIDE
			75-09-2 (µg/L)	95-47-6 (µg/L)	100-42-5 (µg/L)	127-18-4 (µg/L)	108-88-3 (µg/L)	156-60-5 (µg/L)	10061-02-6 (µg/L)	110-57-6 (µg/L)	79-01-6 (µg/L)	75-69-4 (µg/L)	108-05-4 (µg/L)	75-01-4 (µg/L)
MW-2	2/11/2013	WV2-130211-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	1.69	< 0.2 U	0.0574
MW-5D	2/4/2013	WV5D130204-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.31 T	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	3.57
MW-7	2/7/2013	WV7-130207-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-8	2/8/2013	WV8-130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-9	2/5/2013	WV9-130205-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-10	2/8/2013	WV10130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-12	2/20/2013	WV12130220-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-13	2/13/2013	WV13130213-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-19	2/14/2013	WV19130214-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-20	2/13/2013	WV20130213-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-21	2/4/2013	WV21130204-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	0.719	< 0.2 U	0.0896
MW-26	2/8/2013	WV26130208-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-27	2/5/2013	WV27130205-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-29	2/20/2013	WV29130220-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	1/9/2013	VTRP130109T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	1/31/2013	VTRP130204B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	1/31/2013	VTRP130205C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	2/5/2013	VTRP130207L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	2/5/2013	VTRP130208C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	2/6/2013	VTRP130207C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	2/11/2013	VTRP130213C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	2/13/2013	VTRP130214B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	2/18/2013	VTRP130211C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	2/19/2013	VTRP130220B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID
MW-2	2/11/2013	WV2-130211-
MW-5D	2/4/2013	WV5D130204-
MW-7	2/7/2013	WV7-130207-
MW-8	2/8/2013	WV8-130208-
MW-9	2/5/2013	WV9-130205-
MW-10	2/8/2013	WV10130208-
MW-12	2/20/2013	WV12130220-
MW-13	2/13/2013	WV13130213-
MW-19	2/14/2013	WV19130214-
MW-20	2/13/2013	WV20130213-
MW-21	2/4/2013	WV21130204-
MW-26	2/8/2013	WV26130208-
MW-27	2/5/2013	WV27130205-
MW-29	2/20/2013	WV29130220-
VOA TRIP BLANK	1/9/2013	VTRP130109T
VOA TRIP BLANK	1/31/2013	VTRP130204B
VOA TRIP BLANK	1/31/2013	VTRP130205C
VOA TRIP BLANK	2/5/2013	VTRP130207L
VOA TRIP BLANK	2/5/2013	VTRP130208C
VOA TRIP BLANK	2/6/2013	VTRP130207C
VOA TRIP BLANK	2/11/2013	VTRP130213C
VOA TRIP BLANK	2/13/2013	VTRP130214B
VOA TRIP BLANK	2/18/2013	VTRP130211C
VOA TRIP BLANK	2/19/2013	VTRP130220B

King County Solid Waste Division
Environmental Monitoring Data
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Vashon Landfill --- Groundwater Analysis Data
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Site	Date	Sample ID
MW-2	2/11/2013	WV2-130211-
MW-5D	2/4/2013	WV5D130204-
MW-7	2/7/2013	WV7-130207-
MW-8	2/8/2013	WV8-130208-
MW-9	2/5/2013	WV9-130205-
MW-10	2/8/2013	WV10130208-
MW-12	2/20/2013	WV12130220-
MW-13	2/13/2013	WV13130213-
MW-19	2/14/2013	WV19130214-
MW-20	2/13/2013	WV20130213-
MW-21	2/4/2013	WV21130204-
MW-26	2/8/2013	WV26130208-
MW-27	2/5/2013	WV27130205-
MW-29	2/20/2013	WV29130220-
VOA TRIP BLANK	1/9/2013	VTRP130109T
VOA TRIP BLANK	1/31/2013	VTRP130204B
VOA TRIP BLANK	1/31/2013	VTRP130205C
VOA TRIP BLANK	2/5/2013	VTRP130207L
VOA TRIP BLANK	2/5/2013	VTRP130208C
VOA TRIP BLANK	2/6/2013	VTRP130207C
VOA TRIP BLANK	2/11/2013	VTRP130213C
VOA TRIP BLANK	2/13/2013	VTRP130214B
VOA TRIP BLANK	2/18/2013	VTRP130211C
VOA TRIP BLANK	2/19/2013	VTRP130220B

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	ALKALINITY, TOTAL (AS CACO3) (mg/l)	AMMONIA AS N (mg/l)	BIOLOGICAL OXYGEN DEMAND (mg/l)	CHEMICAL OXYGEN DEMAND (mg/l)	CHLORIDE (mg/l)	COLIFORMS, FECAL (cfu/100ml)	COLIFORMS, TOTAL (cfu/100ml)	CYANIDE (mg/l)	FLUORIDE (mg/l)
LS-B	1/9/13	LVB-130109M	99.6	< 0.01 U	< 2 U	28.4	209	< 1 U	20	< 0.02 U	0.13 T
LS-B	2/7/13	LVB-130207M	127	0.0697	< 2 U	46.3	324	< 1 U	< 1 U	< 0.02 U	0.17 T
LS-B	3/5/13	LVB-130305-	130	< 0.01 U	2.9	38.1	328	< 1 U	5	< 0.02 U	< 0.1 U
LS-BE	3/5/13	LVBE130305-	57.7	0.232	3.02 L	18 T	6.64	2	29	< 0.02 U	< 0.1 U
LS-CT	3/5/13	LVCT130305-	195	< 0.01 U	< 2 U	7 T	16.6			< 0.02 U	0.1 T
LS-LVPS-2	3/5/13	LVPS2130305	49.1	0.513	< 2 U	6.7 T	1	< 1 U	< 1 U	< 0.02 U	0.13 T
LS-PA-D	3/5/13	LVPA130305D	93.2	< 0.01 U	4.16	43.5	17.6	7	52	< 0.02 U	0.13 T
LS-PA-S	3/5/13	LVPA130305S	93.3	< 0.01 U	4.67	45.5	17.2	7	34	< 0.02 U	< 0.1 U
LS-PN-D	3/5/13	LVPN130305D	93.8	< 0.01 U	5.39 L	44.2	17.4	6	50	< 0.02 U	< 0.1 U
LS-PN-S	3/5/13	LVPN130305S	93	< 0.01 U	4.1	43.3	17.5	9	44	< 0.02 U	0.18 T

Site	Date	Sample ID	NITRATE + NITRITE AS N (mg/l)	PHOSPHORUS, SOLUBLE REACTIVE (umhos/cm)	SPECIFIC CONDUCTANCE (mg/l)	SULFATE (mg/l)	SULFIDE, TOTAL (mg/l)	TOTAL FATS, OILS & GREASE (mg/l)	TOTAL KJELDAHL NITROGEN (mg/l)	TOTAL ORGANIC CARBON (mg/l)	TOTAL ORGANIC HALIDES (mg/l)
LS-B	1/9/13	LVB-130109M	44.1	0.0264	1890	336	< 0.01 U	< 2 U	0.668	11.7	
LS-B	2/7/13	LVB-130207M	66.2	0.021 T	2600	526	< 0.01 U	< 2 U	1.3	16.1	
LS-B	3/5/13	LVB-130305-	71.5	0.017 T	2670	531	< 0.01 U	4.9 BT	1.15	14.5	
LS-BE	3/5/13	LVBE130305-	3.57	0.432	238	28.7	0.022 T	3.3 BT	1.38	6.22	
LS-CT	3/5/13	LVCT130305-	0.205	0.12	542	60.3	< 0.01 U		0.481		
LS-LVPS-2	3/5/13	LVPS2130305	0.672	< 0.01 U	116	3.25	< 0.01 U	2.2 BT	0.735	3.4	
LS-PA-D	3/5/13	LVPA130305D	1.61	< 0.01 U	329	33.5	< 0.01 U	2.1 BT	2.09	10.4	
LS-PA-S	3/5/13	LVPA130305S	1.62	< 0.01 U	327	34.4	< 0.01 U	2.6 BT	2.17	12.2	
LS-PN-D	3/5/13	LVPN130305D	1.64	< 0.01 U	327	33.3	< 0.01 U	2.2 BT	2.07	16.9	
LS-PN-S	3/5/13	LVPN130305S	1.61	< 0.01 U	327	33.5	< 0.01 U	2 BT	1.91	18.2	

Site	Date	Sample ID	TOTAL SUSPENDED SOLIDS (mg/l)	TOTAL VOLATILE SOLIDS (mg/l)	VOLATILE SUSPENDED SOLIDS (mg/l)
LS-B	1/9/13	LVB-130109M	1.2	334	1
LS-B	2/7/13	LVB-130207M	< 1 U	630	1.4 T
LS-B	3/5/13	LVB-130305-	< 1 U	696	< 1 U
LS-BE	3/5/13	LVBE130305-	1.8	59.4	1.6
LS-CT	3/5/13	LVCT130305-	1.5	69.6	< 1 U
LS-LVPS-2	3/5/13	LVPS2130305	9.4	33.1	8
LS-PA-D	3/5/13	LVPA130305D	57	81	32
LS-PA-S	3/5/13	LVPA130305S	78	95.6	52
LS-PN-D	3/5/13	LVPN130305D	66	93.7	32
LS-PN-S	3/5/13	LVPN130305S	42	77.4	19

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Leachate Field Data
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Site	Date	Sample ID	pH (Field) (std. Units)	Temperature (°C)	Conductance (Field) (μmho/cm)
LS-B	1/9/2013	LVB-130109M	7.28	13.5	1400
LS-B	2/7/2013	LVB-130207M	7.19	11.4	2350
LS-B	3/5/2013	LVB-130305-	7.31	10.5	1600
LS-BE	3/5/2013	LVBE130305-	7	8.5	190
LS-CT	3/5/2013	LVCT130305-	7.03	12.6	370
LS-LVPS-2	3/5/2013	LVPS2130305	6.26	9.8	115
LS-LVT	3/12/2013	LVT-130312P	8.22	9.8	290
LS-PA-D	3/5/2013	LVPA130305D	7.36	7.3	230
LS-PA-S	3/5/2013	LVPA130305S	8.28	7.8	285
LS-PN-D	03/05/13	LVPN130305D	7.74	6.9	280
LS-PN-S	3/5/2013	LVPN130305S	7.55	7.9	285

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from Jaunuary 1, 2013 to March 31, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Aluminum, dissolved (mg/L)	Aluminum, total (mg/L)	Antimony, dissolved (mg/L)	Antimony, total (mg/L)	Arsenic, dissolved (mg/L)	Arsenic, total (mg/L)	Barium, dissolved (mg/L)	Barium, total (mg/L)	Beryllium, dissolved (mg/L)	Beryllium, total (mg/L)	Cadmium, dissolved (mg/L)	Cadmium, total (mg/L)
LS-B	1/9/2013	LVB-130109M	< 0.02 U	< 0.02 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0283	0.0385	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-B	2/7/2013	LVB-130207M	< 0.02 U	< 0.02 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0456	0.0544	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-B	3/5/2013	LVB-130305-	< 0.02 U	< 0.02 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0506	0.0521	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-BE	3/5/2013	LVBE130305-	< 0.02 U	0.13 T	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00862	0.00968	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-CT	3/5/2013	LVCT130305-	< 0.02 U	< 0.02 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0182	0.0185	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-LVPS-2	3/5/2013	LVPS2130305	0.963	1.67	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0203	0.0245	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-PA-D	3/5/2013	LVPA130305D	< 0.02 U	1.33	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00765	0.0206	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-PA-S	3/5/2013	LVPA130305S	< 0.02 U	1.53	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00786	0.0223	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-PN-D	3/5/2013	LVPN130305D	< 0.02 U	1.43	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00793	0.0214	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-PN-S	3/5/2013	LVPN130305S	< 0.02 U	1.19	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00771	0.0187	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U

Site	Date	Sample ID	Calcium, dissolved (mg/L)	Calcium, total (mg/L)	Chromium, dissolved (mg/L)	Chromium, total (mg/L)	Cobalt, dissolved (mg/L)	Cobalt, total (mg/L)	Copper, dissolved (mg/L)	Copper, total (mg/L)	Iron, dissolved (mg/L)	Iron, total (mg/L)	Lead, dissolved (mg/L)	Lead, total (mg/L)
LS-B	1/9/2013	LVB-130109M	94.8	121	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.0044 T	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U
LS-B	2/7/2013	LVB-130207M	157	182	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	0.005 T	0.0056 T	0.22 T	< 0.01 U	< 0.001 U	< 0.001 U
LS-B	3/5/2013	LVB-130305-	177	179	< 0.005 U	< 0.005 U	< 0.003 U	0.0033 T	0.0052 T	0.005 T	< 0.01 U	0.051 T	< 0.001 U	< 0.001 U
LS-BE	3/5/2013	LVBE130305-	28.8	28.7	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.0054 T	0.07 T	0.24 T	< 0.001 U	< 0.001 U
LS-CT	3/5/2013	LVCT130305-	79.1	80	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U
LS-LVPS-2	3/5/2013	LVPS2130305	11.4	11.7	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.0055 T	1.81	2.46	< 0.001 U	< 0.001 U
LS-PA-D	3/5/2013	LVPA130305D	35.6	39.8	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.0095 T	< 0.01 U	2.96	< 0.001 U	< 0.001 U
LS-PA-S	3/5/2013	LVPA130305S	35.9	40.1	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.012 T	< 0.01 U	3.3	< 0.001 U	< 0.001 U
LS-PN-D	3/5/2013	LVPN130305D	35.4	40.1	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.011 T	< 0.01 U	3.18	< 0.001 U	< 0.001 U
LS-PN-S	3/5/2013	LVPN130305S	35.6	38.1	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.0093 T	< 0.01 U	2.57	< 0.001 U	< 0.001 U

Site	Date	Sample ID	Magnesium, dissolved (mg/L)	Magnesium, total (mg/L)	Manganese, dissolved (mg/L)	Manganese, total (mg/L)	Mercury, dissolved (mg/L)	Mercury, total (mg/L)	Nickel, dissolved (mg/L)	Nickel, total (mg/L)	Potassium, dissolved (mg/L)	Potassium, total (mg/L)	Selenium, dissolved (mg/L)	Selenium, total (mg/L)
LS-B	1/9/2013	LVB-130109M	54.7	70.6	0.0057 T	0.0439	< 0.0001 U	< 0.0001 U	0.0255	0.0356	15.4	20.5	< 0.001 U	< 0.001 U
LS-B	2/7/2013	LVB-130207M	92.1	107	0.0205	< 0.001 U	< 0.0001 U	< 0.0001 U	0.0456	0.0535	26.8	28.5	< 0.001 U	< 0.001 U
LS-B	3/5/2013	LVB-130305-	106	107	< 0.001 U	0.0023 T	< 0.0001 U	< 0.0001 U	0.0512	0.0523	30.8	30.1	< 0.001 U	< 0.001 U
LS-BE	3/5/2013	LVBE130305-	3.3	3.35	< 0.001 U	0.0027 T	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	5.33	5.32	< 0.001 U	< 0.001 U
LS-CT	3/5/2013	LVCT130305-	10.9	11.1	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	10.6	10.6	< 0.001 U	< 0.001 U
LS-LVPS-2	3/5/2013	LVPS2130305	4.12	4.34	0.0822	0.0876	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.48	1.53	< 0.001 U	< 0.001 U
LS-PA-D	3/5/2013	LVPA130305D	8.34	9.17	< 0.001 U	0.5	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.15	3.36	< 0.001 U	< 0.001 U
LS-PA-S	3/5/2013	LVPA130305S	8.41	9.11	< 0.001 U	0.562	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.19	3.47	< 0.001 U	< 0.001 U
LS-PN-D	3/5/2013	LVPN130305D	8.31	9.12	< 0.001 U	0.545	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.13	3.35	< 0.001 U	< 0.001 U
LS-PN-S	3/5/2013	LVPN130305S	8.28	8.85	< 0.001 U	0.421	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.13	3.35	< 0.001 U	< 0.001 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from Jaunuary 1, 2013 to March 31, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Silver, dissolved (mg/L)	Silver, total (mg/L)	Sodium, dissolved (mg/L)	Sodium, total (mg/L)	Thallium, dissolved (mg/L)	Thallium, total (mg/L)	Tin, dissolved (mg/L)	Tin, total (mg/L)	Vanadium, dissolved (mg/L)	Vanadium, total (mg/L)	Zinc, dissolved (mg/L)	Zinc, total (mg/L)
LS-B	1/9/2013	LVB-130109M	< 0.003 U	< 0.003 U	108	142	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	0.012 T	0.0285
LS-B	2/7/2013	LVB-130207M	< 0.003 U	< 0.003 U	185	217	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	0.022 T	0.019 T
LS-B	3/5/2013	LVB-130305-	< 0.003 U	< 0.003 U	211	212	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	0.021 T	0.049
LS-BE	3/5/2013	LVBE130305-	< 0.003 U	< 0.003 U	7.63	7.64	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	0.019 T	0.022 T
LS-CT	3/5/2013	LVCT130305-	< 0.003 U	< 0.003 U	10.2	10.3	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
LS-LVPS-2	3/5/2013	LVPS2130305	< 0.003 U	< 0.003 U	3.01	3.09	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	0.0079 T	0.017 T
LS-PA-D	3/5/2013	LVPA130305D	< 0.003 U	< 0.003 U	12.8	13.4	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.0396
LS-PA-S	3/5/2013	LVPA130305S	< 0.003 U	< 0.003 U	12.8	13.1	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	0.013 T	0.0438
LS-PN-D	3/5/2013	LVPN130305D	< 0.003 U	< 0.003 U	12.7	13.2	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.0439
LS-PN-S	3/5/2013	LVPN130305S	< 0.003 U	< 0.003 U	12.7	13	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.0339

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	2,4,5-T	2,4,5-TP SILVEX	2,4-D	4,4'DDD	4,4'DDE	4,4'DDT	ALDRIN	ALPHA BHC	ALPHA CHLORDANE	AROCLOR 1016	AROCLOR 1221
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	1/9/2013	LVB-130109M	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-B	2/7/2013	LVB-130207M	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-B	3/5/2013	LVB-130305-	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-BE	3/5/2013	LVBE130305-	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U		
LS-LVPS-	3/5/2013	LVPS2130305	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PA-D	3/5/2013	LVPA130305D	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PA-S	3/5/2013	LVPA130305S	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PN-D	3/5/2013	LVPN130305D	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PN-S	3/5/2013	LVPN130305S	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U

Site	Date	Sample ID	AROCLOR 1232	AROCLOR 1242	AROCLOR 1248	AROCLOR 1254	AROCLOR 1260	BETA BHC	DELTA BHC	DIELDRIN	DINOSEB	ENDOSULFAN I	ENDOSULFAN II
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	1/9/2013	LVB-130109M	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 GU	< 0.1 U	< 0.1 U
LS-B	2/7/2013	LVB-130207M	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 GU	< 0.1 U	< 0.1 U
LS-B	3/5/2013	LVB-130305-	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-BE	3/5/2013	LVBE130305-						< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-LVPS-	3/5/2013	LVPS2130305	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PA-D	3/5/2013	LVPA130305D	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PA-S	3/5/2013	LVPA130305S	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PN-D	3/5/2013	LVPN130305D	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PN-S	3/5/2013	LVPN130305S	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U

Site	Date	Sample ID	ENDOSULFAN SULFATE	ENDRIN	ENDRIN ALDEHYDE	HEPTACHLOR	HEPTACHLOR EPOXIDE	ISODRIN	LINDANE(GAMMA BHC)	METHOXYCHLOR	TOXAPHENE
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	1/9/2013	LVB-130109M	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-B	2/7/2013	LVB-130207M	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-B	3/5/2013	LVB-130305-	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-BE	3/5/2013	LVBE130305-	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-LVPS-	03/05/13	LVPS2130305	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PA-D	03/05/13	LVPA130305D	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PA-S	03/05/13	LVPA130305S	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PN-D	03/05/13	LVPN130305D	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PN-S	03/05/13	LVPN130305S	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	1,1,1,2-TETRACHLOROETHANE ug/l N	1,1,1-TRICHLOROETHANE ug/l N	1,1,2,2-TETRACHLOROETHANE ug/l N	1,1,2-TRICHLOROETHANE ug/l N	1,1-DICHLOROETHANE ug/l N	1,1-DICHLOROETHENE ug/l N	1,1-DICHLOROPROPENE ug/l N	1,2,3-TRICHLOROPROPANE ug/l N	1,2-DIBROMO-3-CHLOROPROPANE ug/l N	1,2-DIBROMOETHANE ug/l N	1,2-DICHLOROBENZENE ug/l N	1,2-DICHLOROETHANE ug/l N	1,2-DICHLOROPROPANE ug/l N
LS-B	01/09/13	LVB-130109M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-B	02/07/13	LVB-130207M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-LVPS-2	03/05/13	LVPS2130305	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PA-D	03/05/13	LVPA130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PA-S	03/05/13	LVPA130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PN-D	03/05/13	LVPN130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PN-S	03/05/13	LVPN130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	01/09/13	VTRP130109T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	01/31/13	VTRP130204B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	01/31/13	VTRP130205C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	02/05/13	VTRP130207L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	02/05/13	VTRP130208C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	02/06/13	VTRP130207C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	02/11/13	VTRP130213C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	02/13/13	VTRP130214B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	02/18/13	VTRP130211C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	02/19/13	VTRP130220B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	03/04/13	VTRP130305B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	03/25/13	VTRP130326-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	03/26/13	VTRP130327B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	02/05/13	WV9-130205F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	2/20/2013	WV12130220F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	1,3-DICHLORO-BENZENE 541-73-1 (µg/L)	1,3-DICHLORO-PROPANE 142-28-9 (µg/L)	1,4-DICHLORO-BENZENE 106-46-7 (µg/L)	2,2-DICHLORO-PROPANE 594-20-7 (µg/L)	2-BUTANONE 78-93-3 (µg/L)	2-HEXANONE 591-78-6 (µg/L)	2-METHYL-1-PROPANOL 78-83-1 (µg/L)	3-CHLORO-PROPENE 107-05-1 (µg/L)	4-METHYL-2-PENTANONE 108-10-1 (µg/L)	ACETONE 67-64-1 (µg/L)	ACETONITRILE 75-05-8 (µg/L)	ACROLEIN 107-02-8 (µg/L)	ACRYLO-NITRILE 107-13-1 (µg/L)
LS-B	01/09/13	LVB-130109M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-B	02/07/13	LVB-130207M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-LVPS-2	03/05/13	LVPS2130305	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-PA-D	03/05/13	LVPA130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-PA-S	03/05/13	LVPA130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-PN-D	03/05/13	LVPN130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-PN-S	03/05/13	LVPN130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	4.26	< 100 U	< 10 U	< 0.07 U
VOA TRIP BLANK	01/09/13	VTRP130109T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
VOA TRIP BLANK	01/31/13	VTRP130204B			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
VOA TRIP BLANK	01/31/13	VTRP130205C			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
VOA TRIP BLANK	02/05/13	VTRP130207L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
VOA TRIP BLANK	02/05/13	VTRP130208C			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
VOA TRIP BLANK	02/06/13	VTRP130207C			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
VOA TRIP BLANK	02/11/13	VTRP130213C			< 0.2 U		< 4 U	< 4 U			< 4 U	6.45			< 0.07 U
VOA TRIP BLANK	02/13/13	VTRP130214B			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
VOA TRIP BLANK	2/18/2013	VTRP130211C			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
VOA TRIP BLANK	2/19/2013	VTRP130220B			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
VOA TRIP BLANK	3/4/2013	VTRP130305B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
VOA TRIP BLANK	3/25/2013	VTRP130326-			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
VOA TRIP BLANK	3/26/2013	VTRP130327B			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
FIELD BLANK	2/5/2013	WV9-130205F			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U
FIELD BLANK	2/20/2013	WV12130220F			< 0.2 U		< 4 U	< 4 U			< 4 U	< 4 U			< 0.07 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	BENZENE 71-43-2 (µg/L)	BROMO-CHLORO-METHANE 74-97-5 (µg/L)	BROMO-DICHLORO-METHANE 75-27-4 (µg/L)	BROMOFORM 75-25-2 (µg/L)	BROMO-METHANE 74-83-9 (µg/L)	CARBON DISULFIDE 75-15-0 (µg/L)	CARBON TETRA-CHLORIDE 56-23-5 (µg/L)	CHLORO-BENZENE 108-90-7 (µg/L)	CHLORO-DIBROMO-METHANE 124-48-1 (µg/L)	CHLORO-ETHANE 75-00-3 (µg/L)	CHLOROFORM 67-66-3 (µg/L)	CHLORO-METHANE 74-87-3 (µg/L)	CHLOROPRENE 126-99-8 (µg/L)
LS-B	01/09/13	LVB-130109M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-B	02/07/13	LVB-130207M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-LVPS-2	03/05/13	LVPS2130305	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PA-D	03/05/13	LVPA130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PA-S	03/05/13	LVPA130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PN-D	03/05/13	LVPN130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PN-S	03/05/13	LVPN130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
VOA TRIP BLANK	01/09/13	VTRP130109T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
VOA TRIP BLANK	01/31/13	VTRP130204B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	1/31/2013	VTRP130205C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	2/5/2013	VTRP130207L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
VOA TRIP BLANK	2/5/2013	VTRP130208C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	2/6/2013	VTRP130207C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	2/11/2013	VTRP130213C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	2/13/2013	VTRP130214B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	2/18/2013	VTRP130211C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	2/19/2013	VTRP130220B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	3/4/2013	VTRP130305B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
VOA TRIP BLANK	3/25/2013	VTRP130326-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
VOA TRIP BLANK	3/26/2013	VTRP130327B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	
FIELD BLANK	2/5/2013	WV9-130205F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.55	< 0.2 U	
FIELD BLANK	2/20/2013	WV12130220F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.445	< 0.2 U	

Site	Date	Sample ID	CIS-1,2-DICHLORO-ETHENE 156-59-2 (µg/L)	CIS-1,3-DICHLORO-PROPENE 10061-01-5 (µg/L)	DIBROMO-METHANE 74-95-3 (µg/L)	DICHLORO-DIFLUORO-METHANE 75-71-8 (µg/L)	ETHYL-BENZENE 100-41-4 (µg/L)	M & P XYLENE MPX (µg/L)	METHYL IODIDE 74-88-4 (µg/L)	METHYL METHA-CRYLATE 80-62-6 (µg/L)	METHYL-ACRYLO-NITRILE 126-98-7 (µg/L)	METHYLENE CHLORIDE 75-09-2 (µg/L)	O-XYLENE 95-47-6 (µg/L)	PROPRIO-NITRILE 107-12-0 (µg/L)	STYRENE 100-42-5 (µg/L)
LS-B	01/09/13	LVB-130109M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-B	02/07/13	LVB-130207M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-LVPS-2	03/05/13	LVPS2130305	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PA-D	03/05/13	LVPA130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PA-S	03/05/13	LVPA130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PN-D	03/05/13	LVPN130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PN-S	03/05/13	LVPN130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
VOA TRIP BLANK	01/09/13	VTRP130109T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
VOA TRIP BLANK	01/31/13	VTRP130204B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	01/31/13	VTRP130205C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	02/05/13	VTRP130207L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
VOA TRIP BLANK	02/05/13	VTRP130208C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	02/06/13	VTRP130207C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	02/11/13	VTRP130213C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	02/13/13	VTRP130214B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	02/18/13	VTRP130211C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	2/19/2013	VTRP130220B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	3/4/2013	VTRP130305B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
VOA TRIP BLANK	3/25/2013	VTRP130326-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
VOA TRIP BLANK	3/26/2013	VTRP130327B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
FIELD BLANK	2/5/2013	WV9-130205F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U
FIELD BLANK	2/20/2013	WV12130220F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U			< 0.2 U	< 0.2 U		< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	TETRA-CHLORO-ETHENE 127-18-4 (µg/L)	TOLUENE 108-88-3 (µg/L)	TRANS-1,2-DICHLORO-ETHENE 156-60-5 (µg/L)	TRANS-1,3-DICHLORO-PROPENE 10061-02-6 (µg/L)	TRANS-1,4-DICHLORO-2-BUTENE 110-57-6 (µg/L)	TRICHLORO-ETHENE 79-01-6 (µg/L)	TRICHLORO-FLUORO-METHANE 75-69-4 (µg/L)	VINYL ACETATE 108-05-4 (µg/L)	VINYL CHLORIDE 75-01-4 (µg/L)
LS-B	01/09/13	LVB-130109M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-B	02/07/13	LVB-130207M	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-LVPS-2	03/05/13	LVPS2130305	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	0.23 T	< 0.2 U	< 0.02 U
LS-PA-D	03/05/13	LVPA130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-PA-S	03/05/13	LVPA130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-PN-D	03/05/13	LVPN130305D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-PN-S	03/05/13	LVPN130305S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	01/09/13	VTRP130109T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	01/31/13	VTRP130204B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	01/31/13	VTRP130205C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	02/05/13	VTRP130207L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	02/05/13	VTRP130208C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	02/06/13	VTRP130207C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	02/11/13	VTRP130213C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	02/13/13	VTRP130214B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	02/18/13	VTRP130211C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	02/19/13	VTRP130220B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	03/04/13	VTRP130305B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	03/25/13	VTRP130326-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	03/26/13	VTRP130327B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
FIELD BLANK	02/05/13	WV9-130205F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
FIELD BLANK	02/20/13	WV12130220F	< 0.2 U	0.3 T	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	ALKALINITY, TOTAL (as CaCO3)	AMMONIA as N	BIOLOGICAL OXYGEN DEMAND	CHEMICAL OXYGEN DEMAND	CHLORIDE	COLIFORMS, FECAL	COLIFORMS, TOTAL	CYANIDE	FLUORIDE	HARDNESS
			mg/l	mg/l	mg/l	mg/l	mg/l	cfu/100ml	cfu/100ml	mg/l	mg/l	mg/l
SW-W1	3/26/2013	SVW1130326Q	75.4	< 0.01 U	< 2 U	15 T	4.56	< 1 U	50	< 0.02 U	0.107	86
SW-W2	3/26/2013	SVW2130326Q	333	< 0.01 U	< 2 U	23.1	22.3	3	30	< 0.02 U	< 0.1 U	339
SW-W3	3/26/2013	SVW3130326Q	121	< 0.01 U	< 2 U	20.6	7.39	< 1 U	500	< 0.02 U	0.107	125
SW-E	3/27/2013	SVE-130327Q	79.9	< 0.01 U	< 2 U	17 T	5.85	2	540	< 0.02 U	0.105	90
FIELD BLANK	2/5/2013	WV9-130205F	< 1 U	< 0.01 U			< 0.1 U					
FIELD BLANK	2/20/2013	WV12130220F	< 1 U	< 0.01 U			< 0.1 U					

Site	Date	Sample ID	NITRATE	NITRATE + NITRITE as N	PHOSPHORUS, SOLUBLE REACTIVE	SPECIFIC CONDUCTANCE	SULFATE	TOTAL DISSOLVED SOLIDS	TOTAL KJELDAHL NITROGEN	TOTAL ORGANIC CARBON	TOTAL ORGANIC HALIDES (TOX)	TOTAL SOLIDS
			mg/l	mg/l	mg/l	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
SW-W1	3/26/13	SVW1130326Q	2.76	2.76	0.0318	216	9.81	154	0.368	3.45		172
SW-W2	3/26/13	SVW2130326Q	0.285	0.285	0.011 T	697	11.4	419	0.246	5.37		461
SW-W3	3/26/13	SVW3130326Q	0.634	0.634	0.045	302	11.6	196	0.255	4.27		232
SW-E	3/27/13	SVE-130327Q	1.02	1.02	0.0455	220	9.89	151	0.214	4.03		173
FIELD BLANK	2/5/13	WV9-130205F	0.0892			3.5 T	< 0.1 U	< 5 U		< 1 U		< 5 U
FIELD BLANK	2/20/13	WV12130220F	0.0914			3.4 T	< 0.1 U	< 5 U		< 1 U		< 5 U

Site	Date	Sample ID	TOTAL SUSPENDED SOLIDS	TURBIDITY
			mg/l	ntu
SW-W1	3/26/13	SVW1130326Q	11.2	5
SW-W2	3/26/13	SVW2130326Q	14	7.19
SW-W3	3/26/13	SVW3130326Q	26	10.6
SW-E	3/27/13	SVE-130327Q	16.4	8.55
FIELD BLANK	2/5/13	WV9-130205F	< 1 U	
FIELD BLANK	2/20/13	WV12130220F	< 1 U	

King County Solid Waste Division
Environmental Monitoring Data
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Vashon Landfill --- Surface Water Field Data
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Site	Date	Sample ID	pH (Field) (std. Units)	Conductance (Field) (mmho/cm)	DO (Field) (mg/L)	Temperature (Field) (oC)	Turbidity (Field) (NTU)
SW-W1	3/26/2013	SVW1130326Q	7.5	285	9	9.5	4.14
SW-W2	3/26/2013	SVW2130326Q	8.17	670	12.11	8.9	6.2
SW-W3	3/26/2013	SVW3130326Q	7.74	305	11.5	9.3	10.4
SW-E	3/27/2013	SVE-130327Q	6.42	170	11.6	8.7	6.4

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Vashon Landfill --- Surface Water Analysis Data
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Site	Date	Sample ID	Aluminum, dissolved (mg/L)	Aluminum, total (mg/L)	Antimony, dissolved (mg/L)	Antimony, total (mg/L)	Arsenic, dissolved (mg/L)	Arsenic, total (mg/L)	Barium, dissolved (mg/L)	Barium, total (mg/L)	Beryllium, dissolved (mg/L)	Beryllium, total (mg/L)	Cadmium, dissolved (mg/L)	Cadmium, total (mg/L)
SW-W1	3/26/2013	SVW1130326Q	< 0.02 U	0.158	< 0.001 U	< 0.001 U	0.00205	0.00337	< 0.001 U	0.00379	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
SW-W2	3/26/2013	SVW2130326Q	< 0.02 U	0.12	< 0.001 U	< 0.001 U	0.00128	0.00229	0.00314	0.00764	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
SW-W3	3/26/2013	SVW3130326Q	< 0.02 U	0.331	< 0.001 U	< 0.001 U	0.00225	0.00387	0.00349	0.00876	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
SW-E	3/27/2013	SVE-130327Q	0.0218	0.266	< 0.001 U	< 0.001 U	0.00169	0.00196	0.00532	0.00728	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U

Site	Date	Sample ID	Calcium, dissolved (mg/L)	Calcium, total (mg/L)	Chromium, dissolved (mg/L)	Chromium, total (mg/L)	Cobalt, dissolved (mg/L)	Cobalt, total (mg/L)	Copper, dissolved (mg/L)	Copper, total (mg/L)	Iron, dissolved (mg/L)	Iron, total (mg/L)	Lead, dissolved (mg/L)	Lead, total (mg/L)
SW-W1	3/26/2013	SVW1130326Q	13.9	18	< 0.005 U	0.0145	< 0.003 U	0.015	< 0.002 U	0.0106	0.134	37.1	< 0.001 U	0.00604
SW-W2	3/26/2013	SVW2130326Q	48.9	52.8 D	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.036 T	1.1	< 0.001 U	< 0.001 U
SW-W3	3/26/2013	SVW3130326Q	18.8	18.3	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.111	0.663	< 0.001 U	< 0.001 U
SW-E	3/27/2013	SVE-130327Q	7.78	8.51	< 0.005 U	0.0116	< 0.003 U	< 0.003 U	< 0.002 U	0.0082	0.183	5.43	< 0.001 U	0.00358

Site	Date	Sample ID	Magnesium, dissolved (mg/L)	Magnesium, total (mg/L)	Manganese, dissolved (mg/L)	Manganese, total (mg/L)	Mercury, dissolved (mg/L)	Mercury, total (mg/L)	Nickel, dissolved (mg/L)	Nickel, total (mg/L)	Potassium, dissolved (mg/L)	Potassium, total (mg/L)	Selenium, dissolved (mg/L)	Selenium, total (mg/L)
SW-W1	3/26/2013	SVW1130326Q	12.2	12.5	0.194	0.492		< 0.0001 U	< 0.01 U	< 0.01 U	1.16	1.09	< 0.001 U	< 0.001 U
SW-W2	3/26/2013	SVW2130326Q	48.8	48	0.0259	0.349		< 0.0001 U	< 0.01 U	< 0.01 U	3.5	3.36	< 0.001 U	< 0.001 U
SW-W3	3/26/2013	SVW3130326Q	18.1	17.8	0.23	0.562 D		< 0.0001 U	< 0.01 U	< 0.01 U	2.1	2.09	< 0.001 U	< 0.001 U
SW-E	3/27/2013	SVE-130327Q	12.8	13.2	0.0103	0.0571		< 0.0001 U	< 0.01 U	< 0.01 U	2	1.98	< 0.001 U	< 0.001 U

Site	Date	Sample ID	Silver, dissolved (mg/L)	Silver, total (mg/L)	Sodium, dissolved (mg/L)	Sodium, total (mg/L)	Thallium, dissolved (mg/L)	Thallium, total (mg/L)	Tin, dissolved (mg/L)	Tin, total (mg/L)	Vanadium, dissolved (mg/L)	Vanadium, total (mg/L)	Zinc, dissolved (mg/L)	Zinc, total (mg/L)
SW-W1	3/26/2013	SVW1130326Q	< 0.003 U	< 0.003 U	6.73	6.93	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
SW-W2	3/26/2013	SVW2130326Q	< 0.003 U	< 0.003 U	15.7	15.4	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
SW-W3	3/26/2013	SVW3130326Q	< 0.003 U	< 0.003 U	8.46	8.21	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	0.0021	< 0.004 U	< 0.004 U
SW-E	3/27/2013	SVE-130327Q	< 0.003 U	< 0.003 U	6.65	6.6	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	0.0027	0.00346	< 0.004 U	< 0.004 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2010 to December 31, 2010
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	2,4,5-T 93-76-5 (µg/L)	2,4,5-TP 93-76-5 (µg/L)	2,4-D 94-75-7 (µg/L)	Dinoseb 88-85-7 (µg/L)	Endrin 72-20-8 (µg/L)	Lindane 58-89-9 (µg/L)	Methoxy-chlor 72-43-5 (µg/L)	Toxaphene 8001-35-2 (µg/L)
SW-W1	3/26/2013	SVW1130326Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U
SW-W2	3/26/2013	SVW2130326Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U
SW-W3	3/26/2013	SVW3130326Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from January 1, 2013 to March 31, 2013
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,1,1,2-TETRA-CHLORO-630-20-6 (µg/L)	1,1,1-TRI-CHLORO-ETHANE 71-55-6 (µg/L)	1,1,2,2-TETRA-CHLORO-ETHANE 79-34-5 (µg/L)	1,1,2-TRI-CHLORO-ETHANE 79-00-5 (µg/L)	1,1-DICHLORO-ETHANE 75-34-3 (µg/L)	1,1-DICHLORO-ETHENE 75-35-4 (µg/L)	1,2,3-TRI-CHLORO-PROPANE 96-18-4 (µg/L)	1,2-DIBROMO-3-CHLORO-PROPANE 96-12-8 (µg/L)	1,2-DIBROMO-ETHANE 106-93-4 (µg/L)	1,2-DICHLORO-BENZENE 95-50-1 (µg/L)	1,2-DICHLORO-ETHANE 107-06-2 (µg/L)	1,2-DICHLORO-PROPANE 78-87-5 (µg/L)	1,4-DICHLORO-BENZENE 106-46-7 (µg/L)
SW-W1	3/26/2013	SVW1130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	3/26/2013	SVW2130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	3/26/2013	SVW3130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	3/27/13	SVE-130327Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	3/25/13	VTRP130326-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	3/26/13	VTRP130327B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	2-BUTANONE 78-93-3 (mg/L)	2-HEXANONE 591-78-6 (mg/L)	4-METHYL-2-PENTANONE 108-10-1 (mg/L)	ACETONE 67-64-1 (mg/L)	ACRYLO-NITRILE 107-13-1 (mg/L)	BENZENE 71-43-2 (mg/L)	BROMO-CHLORO-74-97-5 (mg/L)	BROMO-DICHLORO-75-27-4 (mg/L)	BROMOFORM 75-25-2 (mg/L)	BROMO-METHANE 74-83-9 (mg/L)	CARBON DISULFIDE 75-15-0 (mg/L)	CARBON TETRA-56-23-5 (mg/L)	CHLORO-BENZENE 108-90-7 (mg/L)
SW-W1	3/26/2013	SVW1130326Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	3/26/2013	SVW2130326Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	3/26/2013	SVW3130326Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	3/27/2013	SVE-130327Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	3/25/2013	VTRP130326-	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	3/26/2013	VTRP130327B	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	CHLORO-DIBROMO-METHANE 124-48-1 (mg/L)	CHLORO-ETHANE 75-00-3 (mg/L)	CHLOROFORM 67-66-3 (mg/L)	CHLORO-METHANE 74-87-3 (mg/L)	CIS-1,2-DICHLORO-ETHENE 156-59-2 (mg/L)	CIS-1,3-DICHLORO-PROPENE 10061-01-5 (mg/L)	DIBROMO-METHANE 74-95-3 (mg/L)	DICHLORO-DIFLUORO-METHANE 75-71-8 (mg/L)	ETHYL-BENZENE 100-41-4 (mg/L)	M & P XYLENE MPX (mg/L)	METHYL IODIDE 74-88-4 (mg/L)	METHYLENE CHLORIDE 75-09-2 (mg/L)	O-XYLENE 95-47-6 (mg/L)
SW-W1	3/26/2013	SVW1130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	3/26/2013	SVW2130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	3/26/2013	SVW3130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	3/27/2013	SVE-130327Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	3/25/2013	VTRP130326-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	3/26/2013	VTRP130327B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	STYRENE 100-42-5 (mg/L)	TETRA-CHLORO-ETHENE 127-18-4 (mg/L)	TOLUENE 108-88-3 (mg/L)	TRANS-1,2-DICHLORO-ETHENE 156-60-5 (mg/L)	TRANS-1,3-DICHLORO-PROPENE 10061-02-6 (mg/L)	TRANS-1,4-DICHLORO-2-BUTENE 110-57-6 (mg/L)	TRICHLORO-ETHENE 79-01-6 (mg/L)	TRICHLORO-FLUORO-METHANE 75-69-4 (mg/L)	VINYL ACETATE 108-05-4 (mg/L)	VINYL CHLORIDE 75-01-4 (mg/L)
SW-W1	3/26/2013	SVW1130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W2	3/26/2013	SVW2130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W3	3/26/2013	SVW3130326Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	0.0328
SW-E	3/27/2013	SVE-130327Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	3/25/2013	VTRP130326-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	3/26/2013	VTRP130327B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	ALKALINITY, TOTAL (AS CACO3) mg/l	AMMONIA AS N mg/l	CHLORIDE mg/l	NITRATE mg/l	SPECIFIC CONDUCTANCE umhos/cm	SULFATE mg/l	TOTAL DISSOLVED mg/l	TOTAL ORGANIC mg/l	TOTAL SOLIDS mg/l	TOTAL SUSPENDED mg/l
MW-2	5/7/2013	WV2-130507-	194	< 0.01 U	3.27	0.032 T	401	18.3	240	< 1 U	255	< 1 U
MW-5D	5/6/2013	WV5D130506-	145	0.0693	3.36	0.024 T	306	9.87	208	2.31	219	9.5
MW-7	5/8/2013	WV7-130508-	74	0.258	3.55	< 0.01 U	179	10.9	131	< 1 U	136	< 1 U
MW-8	5/7/2013	WV8-130507-	53.1	< 0.01 U	4.73	3.85	171	8.38	127	< 1 U	136	< 1 U
MW-9	5/8/2013	WV9-130508-	73.9	< 0.01 U	4.63	0.223	193	15.1	135	< 1 U	142	1.6
MW-10	5/8/2013	WV10130508-	57.8	< 0.01 U	3.36	0.4	148	10.3	107	< 1 U	113	< 1 U
MW-12	5/9/2013	WV12130509-	60	< 0.01 U	3.23	0.723	158	11.1	119	< 1 U	110 H	< 1 U
MW-13	5/9/2013	WV13130509-	75.7	< 0.01 U	3.29	0.109	197	18.6	143	< 1 U	138 H	2.1
MW-19	5/7/2013	WV19130507-	97.5	0.0546	5.41	0.021 T	242	18	157	< 1 U	164	< 1 U
MW-21	5/6/2013	WV21130506-	142	0.013 T	2.6	0.0887	315	17.6	202	1.47	212	< 1 U
MW-26	5/13/2013	WV26130513-	77.2	0.186	4.04	0.0866	193	13.3	142	< 1 U	136 H	1 T
FIELD BLANK	5/8/13	WV7-130508F	1.2 T	< 0.01 U	< 0.1 U	0.105	3.7 T	< 0.1 U	< 5 U	< 1 U	< 5 U	< 1 U

King County Solid Waste Division
Environmental Field Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	pH (Field) (std. Units)	Conductance (Field) (µmhos/cm)	Temperature (°C)	Depth to Water (feet)	Ground-Water Elevation (feet above msl)
MW-10	5/8/2013	WV10130508-	7.41	135	10	145	262.51
MW-10	5/6/2013	WV10130508-				144.78	262.73
MW-12	5/9/2013	WV12130509-	7.17	130	9.4	142.34	170.05
MW-12	5/6/2013					142.1	170.29
MW-13	5/9/2013	WV13130509-	6.95	150	10.3	99.75	274.32
MW-13	5/6/2013					99.34	274.73
MW-14	5/6/2013					151.19	224.49
MW-19	5/7/2013	WV19130507-	7.37	140	9.9	245.71	158.12
MW-19	5/7/2013	WV19130507-				245.53	158.3
MW-2	5/7/2013	WV2-130507-	6.93	350	10.1	73.61	240.67
MW-2	5/6/2013	WV2-130507-				73.57	240.71
MW-20	5/20/2013	WV20130520-	8.1	175	10.6	122.12	245.09
MW-20	5/6/2013	WV20130520-				122.04	245.17
MW-21	5/2/2013	SVE-130502Q	7.57	160			
MW-21	5/6/2013	WV21130506-	6.88	200	10	106.39	239.27
MW-24	5/6/2013					87.85	286.08
MW-25	5/6/2013					243.55	155.67
MW-26	5/13/2013	WV26130513-	7.75	150	10.6	247.34	156.06
MW-26	5/6/2013					247.22	156.18
MW-27	5/20/2013	WV27130520-	6.98	155	11.1	188.16	194.9
MW-27	5/6/2013	WV27130520-				187.97	195.09
MW-29	5/20/2013	WV29130520-	7.67	220	10.3	244.47	166.1
MW-29	5/6/2013	WV29130520-				244.42	166.15
MW-3	5/6/2013					40.53	274.34
MW-4	5/6/2013					104.47	269.74
MW-5D	5/6/2013	WV5D130506-	6.58	170	10.9	117.34	239.86
MW-7	5/8/2013	WV7-130508-	7.52	140	10.3	191.4	181.85
MW-7	5/6/2013					190.98	182.27
MW-8	5/7/2013	WV8-130507-	6.46	140	10.2	176.15	207.27
MW-8	5/6/2013	WV8-130507-				175.95	207.47
MW-9	5/8/2013	WV9-130508-	7.35	175	10.5	165.45	237.12
MW-9	5/6/2013	WV9-130508-				165.35	237.22
FIELD BLAN	5/8/2013	WV7-130508F	7.54	5.8	16.8		

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Antimony, dissolved	Antimony, total	Arsenic, dissolved	Arsenic, total	Barium, dissolved	Barium, total	Beryllium, dissolved	Beryllium, total	Cadmium, dissolved	Cadmium, total	Calcium, dissolved	Calcium, total
MW-2	5/7/2013	WV2-130507-	< 0.001 U	< 0.001 U	0.00107	< 0.001 U	0.00984	0.00974	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	24.8	24.4
MW-5D	5/6/2013	WV5D130506-	< 0.001 U	< 0.001 U	0.0951	0.0851	0.0121	0.0118	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	20.8	20.5
MW-7	5/8/2013	WV7-130508-	< 0.001 U	< 0.001 U	0.0056	0.00541	0.0115	0.0114	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	13.5	13
MW-8	5/7/2013	WV8-130507-	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0036	0.00353	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	11.1	10.9
MW-9	5/8/2013	WV9-130508-	< 0.001 U	< 0.001 U	0.00228	0.00223	0.00381	0.00398	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	13.2	12.7
MW-10	5/8/2013	WV10130508-	< 0.001 U	< 0.001 U	0.0017	0.00167	0.00333	0.0034	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	9.02	8.91
MW-12	5/9/2013	WV12130509-	< 0.001 U	< 0.001 U	0.00201	0.00197	0.00379	0.0041	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	9.37	9.98
MW-13	5/9/2013	WV13130509-	< 0.001 U	< 0.001 U	0.00156	0.00159	0.00516	0.00605	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	9.65	10.5
MW-19	5/7/2013	WV19130507-	< 0.001 U	< 0.001 U	0.00144	0.0015	0.0175	0.0177	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	15.6	15.2
MW-20	5/20/2013	WV20130520-	< 0.001 U	< 0.001 U	0.00144	0.00135	0.00339	0.00361	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	11.2	11.5
MW-21	5/6/2013	WV21130506-	< 0.001 U	< 0.001 U	0.00108	0.0011	0.00832	0.00818	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	21	20.2
MW-26	5/13/2013	WV26130513-	< 0.001 U	< 0.001 U	0.00303	0.00311	0.00881	0.00988	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	14.5	15.3
MW-27	5/20/2013	WV27130520-	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00349	0.00365	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	10.8	11.1
MW-29	5/20/2013	WV29130520-	< 0.001 U	< 0.001 U	0.00422	0.0068	0.00904	0.0107	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	17.2	18.1
MW-29	5/20/2013	WV29130520D	< 0.001 U	< 0.001 U	0.00432	0.00611	0.00915	0.0101	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	17.6	17.4
FIELD BLANK	5/8/2013	WV7-130508F	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U

Site	Date	Sample ID	Chromium, dissolved	Chromium, total	Cobalt, dissolved	Cobalt, total	Copper, dissolved	Copper, total	Iron, dissolved	Iron, total	Lead, dissolved	Lead, total	Magnesium, dissolved	Magnesium, total
MW-2	5/7/2013	WV2-130507-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	27.7	29.4
MW-5D	5/6/2013	WV5D130506-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	7.88	8.16	< 0.001 U	< 0.001 U	14.8	16
MW-7	5/8/2013	WV7-130508-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	7.74	8.53
MW-8	5/7/2013	WV8-130507-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	8.19	8.86
MW-9	5/8/2013	WV9-130508-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.0609	< 0.001 U	< 0.001 U	9.84	10.9
MW-10	5/8/2013	WV10130508-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.01 T	< 0.001 U	< 0.001 U	8.09	8.85
MW-12	5/9/2013	WV12130509-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	8.38	8.69
MW-13	5/9/2013	WV13130509-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.049 T	< 0.001 U	< 0.001 U	11.9	12.8
MW-19	5/7/2013	WV19130507-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.035 T	0.103	< 0.001 U	< 0.001 U	13.3	14.7
MW-20	5/20/2013	WV20130520-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.016 T	< 0.001 U	< 0.001 U	9.99	8.69
MW-21	5/6/2013	WV21130506-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.146	0.231	< 0.001 U	< 0.001 U	18.3	19.5
MW-26	5/13/2013	WV26130513-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.0732	0.216	< 0.001 U	< 0.001 U	6.51	6.92
MW-27	5/20/2013	WV27130520-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.016 T	< 0.001 U	< 0.001 U	9.8	8.58
MW-29	5/20/2013	WV29130520-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.737	1.7	< 0.001 U	< 0.001 U	13.3	11.9
MW-29	5/20/2013	WV29130520D	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.767	1.46	< 0.001 U	< 0.001 U	13.4	11.4
FIELD BLANK	5/8/2013	WV7-130508F	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	< 0.015 U	< 0.015 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Manganese, dissolved	Manganese, total	Mercury, dissolved	Mercury, total	Nickel, dissolved	Nickel, total	Potassium, dissolved	Potassium, total	Selenium, dissolved	Selenium, total	Silver, dissolved	Silver, total
MW-2	5/7/2013	WV2-130507-	0.109	0.116	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.26	2.47	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-5D	5/6/2013	WV5D130506-	0.58	0.609	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.18	2.33	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-7	5/8/2013	WV7-130508-	0.148	0.167	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.51	2.67	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-8	5/7/2013	WV8-130507-	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.04	1.14	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-9	5/8/2013	WV9-130508-	< 0.001 U	0.00579	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.05	2.2	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-10	5/8/2013	WV10130508-	< 0.001 U	0.00135	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.38	1.47	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-12	5/9/2013	WV12130509-	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.69	1.79	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-13	5/9/2013	WV13130509-	0.00133	0.00506	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.79	1.93	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-19	5/7/2013	WV19130507-	0.491	0.542	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.43	2.58	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-20	5/20/2013	WV20130520-	0.263	0.274	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.09	2.05	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-21	5/6/2013	WV21130506-	0.169	0.168	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.1	2.25	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-26	5/13/2013	WV26130513-	0.052	0.0657	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.88	3.04	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-27	5/20/2013	WV27130520-	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.17	1.22	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-29	5/20/2013	WV29130520-	0.0825	0.0919	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.97	2.02	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-29	5/20/2013	WV29130520D	0.0844	0.0883	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.05	1.96	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
FIELD BLANK	5/8/2013	WV7-130508F	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	< 0.3 U	< 0.3 U	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U

Site	Date	Sample ID	Sodium, dissolved	Sodium, total	Thallium, dissolved	Thallium, total	Vanadium, dissolved	Vanadium, total	Zinc, dissolved	Zinc, total
MW-2	5/7/2013	WV2-130507-	9	9.33	< 0.001 U	< 0.001 U	0.00396	0.00398	< 0.004 U	< 0.004 U
MW-5D	5/6/2013	WV5D130506-	13.4	14.2	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-7	5/8/2013	WV7-130508-	5.37	5.61	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-8	5/7/2013	WV8-130507-	5.7	5.98	< 0.001 U	< 0.001 U	0.00226	0.00235	< 0.004 U	< 0.004 U
MW-9	5/8/2013	WV9-130508-	5.3	5.45	< 0.001 U	< 0.001 U	0.00467	0.00465	< 0.004 U	0.00489
MW-10	5/8/2013	WV10130508-	4.44	4.73	< 0.001 U	< 0.001 U	0.0041	0.00413	< 0.004 U	< 0.004 U
MW-12	5/9/2013	WV12130509-	5.21	5.23	< 0.001 U	< 0.001 U	0.00454	0.00485	< 0.004 U	< 0.004 U
MW-13	5/9/2013	WV13130509-	6.14	6.19	< 0.001 U	< 0.001 U	0.00441	0.00485	< 0.004 U	< 0.004 U
MW-19	5/7/2013	WV19130507-	6.25	6.48	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-20	5/20/2013	WV20130520-	5.6	4.85	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-21	5/6/2013	WV21130506-	10	10.5	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-26	5/13/2013	WV26130513-	8.67	8.65	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	0.0048
MW-27	5/20/2013	WV27130520-	6.04	5.29	< 0.001 U	< 0.001 U	0.00247	0.00252	< 0.004 U	< 0.004 U
MW-29	5/20/2013	WV29130520-	6.18	5.33	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-29	5/20/2013	WV29130520D	6.13	5.2	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
FIELD BLANK	5/8/2013	WV7-130508F	0.487	0.518	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
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Site	Date	Sample ID	1,1,1,2-TETRA-CHLORO-ETHANE 630-20-6 (µg/L)	1,1,1-TRI-CHLORO-ETHANE 71-55-6 (µg/L)	1,1,2,2-TETRA-CHLORO-ETHANE 79-34-5 (µg/L)	1,1,2-TRICHLORO-ETHANE 79-00-5 (µg/L)	1,1-DICHLORO ETHANE 75-34-3 (µg/L)	1,1-DICHLORO ETHENE 75-35-4 (µg/L)	1,2,3-TRICHLORO-PROPANE 96-18-4 (µg/L)	1,2-DIBROMO-3-CHLORO-PROPANE 96-12-8 (µg/L)	1,2-DIBROMO-ETHANE 106-93-4 (µg/L)	1,2-DICHLORO BENZENE 95-50-1 (µg/L)	1,2-DICHLORO-ETHANE 107-06-2 (µg/L)	1,2-DICHLORO PROPANE 78-87-5 (µg/L)
MW-2	5/7/2013	WV2-130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	5/6/2013	WV5D130506-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	5/8/2013	WV7-130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	5/7/2013	WV8-130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	5/8/2013	WV9-130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	5/8/2013	WV10130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	5/9/2013	WV12130509-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	5/9/2013	WV13130509-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	5/7/2013	WV19130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	5/20/2013	WV20130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	5/6/2013	WV21130506-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	5/13/2013	WV26130513-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	5/20/2013	WV27130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	5/20/2013	WV29130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	5/20/2013	WV29130520D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	4/1/2013	VTRP130402B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	4/30/2013	VTRP130507C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/1/2013	VTRP130502B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/2/2013	VTRP130506B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/6/2013	VTRP130507B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/7/2013	VTRP130508B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/7/2013	VTRP130508C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/8/2013	VTRP130509B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/9/2013	VTRP130513B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/15/2013	VTRP130520C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
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Site	Date	Sample ID	1,4-DICHLORO BENZENE	2-BUTANONE	2-HEXANONE	4-METHYL-2-PENTANONE	ACETONE	ACRYLO-NITRILE	BENZENE	BROMO-CHLORO-METHANE	BROMO-DICHLORO-METHANE	BROMOFORM	BROMO-METHANE	CARBON DISULFIDE
			106-46-7 (µg/L)	78-93-3 (µg/L)	591-78-6 (µg/L)	108-10-1 (µg/L)	67-64-1 (µg/L)	107-13-1 (µg/L)	71-43-2 (µg/L)	74-97-5 (µg/L)	75-27-4 (µg/L)	75-25-2 (µg/L)	74-83-9 (µg/L)	75-15-0 (µg/L)
MW-2	5/7/2013	WV2-130507-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	5/6/2013	WV5D130506-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	0.508	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	5/8/2013	WV7-130508-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	5/7/2013	WV8-130507-	< 0.2 U	< 4 U	< 4 U	< 4 U	4.79	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	5/8/2013	WV9-130508-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	5/8/2013	WV10130508-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	5/9/2013	WV12130509-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	5/9/2013	WV13130509-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	5/7/2013	WV19130507-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	5/20/2013	WV20130520-	< 0.2 U	< 4 U	< 4 U	< 4 U	4 T	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	5/6/2013	WV21130506-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	5/13/2013	WV26130513-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	5/20/2013	WV27130520-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	5/20/2013	WV29130520-	< 0.2 U	< 4 U	< 4 U	< 4 U	6.08	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	5/20/2013	WV29130520D	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	4/1/2013	VTRP130402B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	4/30/2013	VTRP130507C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/1/2013	VTRP130502B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/2/2013	VTRP130506B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/6/2013	VTRP130507B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/7/2013	VTRP130508B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/7/2013	VTRP130508C	< 0.2 U	< 4 U	< 4 U	< 4 U	5.42	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/8/2013	VTRP130509B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/9/2013	VTRP130513B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/15/2013	VTRP130520C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Groundwater Analysis Data
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Site	Date	Sample ID	CARBON TETRA-CHLORIDE	CHLORO-BENZENE	CHLORO-DIBROMO-METHANE	CHLORO-ETHANE	CHLORO-FORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	CIS-1,3-DICHLORO PROPENE	DIBROMO METHANE	DICHLORO DIFLUORO METHANE	ETHYL-BENZENE	M & P XYLENE	METHYL IODIDE
			56-23-5 (µg/L)	108-90-7 (µg/L)	124-48-1 (µg/L)	75-00-3 (µg/L)	67-66-3 (µg/L)	74-87-3 (µg/L)	156-59-2 (µg/L)	10061-01-5 (µg/L)	74-95-3 (µg/L)	75-71-8 (µg/L)	100-41-4 (µg/L)	MPX (µg/L)	74-88-4 (µg/L)
MW-2	5/7/2013	WV2-130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	5.66	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	5/6/2013	WV5D130506-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	7.6	< 0.2 U	< 0.2 U	1.38	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	5/8/2013	WV7-130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	5/7/2013	WV8-130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	5/8/2013	WV9-130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	5/8/2013	WV10130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	5/9/2013	WV12130509-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	5/9/2013	WV13130509-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	5/7/2013	WV19130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	5/20/2013	WV20130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	5/6/2013	WV21130506-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	1.11	< 0.2 U	< 0.2 U	2.02	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	5/13/2013	WV26130513-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	5/20/2013	WV27130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	5/20/2013	WV29130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	5/20/2013	WV29130520D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	4/1/2013	VTRP130402B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	4/30/2013	VTRP130507C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/1/2013	VTRP130502B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/2/2013	VTRP130506B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/6/2013	VTRP130507B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/7/2013	VTRP130508B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/7/2013	VTRP130508C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/8/2013	VTRP130509B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/9/2013	VTRP130513B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/15/2013	VTRP130520C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Groundwater Analysis Data
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Site	Date	Sample ID	METHYLENE CHLORIDE	O-XYLENE	STYRENE	TETRA-CHLORO-ETHENE	TOLUENE	TRANS-1,2-DICHLOROETHENE	TRANS-1,3-DICHLORO-PROPENE	TRANS-1,4-DICHLORO-2-BUTENE	TRICHLORO-ETHENE	TRICHLORO-FLUORO-METHANE	VINYL ACETATE	VINYL CHLORIDE
			75-09-2 (µg/L)	95-47-6 (µg/L)	100-42-5 (µg/L)	127-18-4 (µg/L)	108-88-3 (µg/L)	156-60-5 (µg/L)	10061-02-6 (µg/L)	110-57-6 (µg/L)	79-01-6 (µg/L)	75-69-4 (µg/L)	108-05-4 (µg/L)	75-01-4 (µg/L)
MW-2	5/7/2013	WV2-130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	1.77	< 0.2 U	0.111
MW-5D	5/6/2013	WV5D130506-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.34 T	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	2.94
MW-7	5/8/2013	WV7-130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-8	5/7/2013	WV8-130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-9	5/8/2013	WV9-130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-10	5/8/2013	WV10130508-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-12	5/9/2013	WV12130509-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-13	5/9/2013	WV13130509-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-19	5/7/2013	WV19130507-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-20	5/20/2013	WV20130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-21	5/6/2013	WV21130506-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	0.629	< 0.2 U	0.1
MW-26	5/13/2013	WV26130513-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-27	5/20/2013	WV27130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-29	5/20/2013	WV29130520-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-29	5/20/2013	WV29130520D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	4/1/2013	VTRP130402B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	4/30/2013	VTRP130507C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/1/2013	VTRP130502B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/2/2013	VTRP130506B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/6/2013	VTRP130507B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/7/2013	VTRP130508B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/7/2013	VTRP130508C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/8/2013	VTRP130509B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/9/2013	VTRP130513B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/15/2013	VTRP130520C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	ALKALINITY, TOTAL (AS CACO3) (mg/l)	AMMONIA AS N (mg/l)	BIOLOGICAL OXYGEN DEMAND (mg/l)	CHEMICAL OXYGEN DEMAND (mg/l)	CHLORIDE (mg/l)	COLIFORMS, FECAL (cfu/100ml)	COLIFORMS, TOTAL (cfu/100ml)	CYANIDE (mg/l)	FLUORIDE (mg/l)
LS-P2	4/2/13	LVP2130402-	47.6	0.757	< 2 U	12 T	1.24	< 1 U	< 1 CU	< 0.02 U	< 0.1 U
LS-B	4/2/13	LVB-130402-	286	< 0.01 U	< 2 U	52.2	384	< 1 U	< 1 U	< 0.02 U	0.14 T
LS-BE	4/2/13	LVBE130402-	49.1	< 0.01 U	< 2 U	20 T	2.93			< 0.02 U	< 0.1 U
LS-CT	4/2/13	LVCT130402-	129	< 0.01 U		30.5	12.7			< 0.02 U	0.11 T
LS-PA-D	4/2/13	LVPA130402D	90.6	< 0.01 U	6.84	53.7	16.8	1	< 1 CU	< 0.02 U	< 0.1 U
LS-PA-S	4/2/13	LVPA130402S	96.5	< 0.01 U	7	53.1	17.2	1	< 1 CU	< 0.02 U	0.11 T
LS-PN-D	4/2/13	LVPN130402D	88.9	< 0.01 U	6.51	48.6	17	< 1 U	9	< 0.02 U	0.18 T
LS-PN-S	4/2/13	LVPN130402S	95.9	< 0.01 U	6.68	52.1	17.1	1	2 C	< 0.02 U	< 0.1 U

Site	Date	Sample ID	NITRATE + NITRITE AS N (mg/l)	PHOSPHORUS, SOLUBLE REACTIVE (mg/l)	SPECIFIC CONDUCTANCE (umhos/cm)	SULFATE (mg/l)	SULFIDE, TOTAL (mg/l)	TOTAL FATS, OILS & GREASE (mg/l)	TOTAL KJELDAHL NITROGEN (mg/l)	TOTAL ORGANIC CARBON (mg/l)	TOTAL ORGANIC HALIDES (mg/l)
LS-P2	4/2/13	LVP2130402-	0.812	< 0.01 U	122	3.35	< 0.01 U	< 2 U	1.08	4.9 T	
LS-B	4/2/13	LVB-130402-	86	0.021 T	3410	630	0.011 T	< 2 U	1.55	20.6	
LS-BE	4/2/13	LVBE130402-	5.3	0.474	198	15.3	< 0.01 U	< 2 U	0.685	8.72	
LS-CT	4/2/13	LVCT130402-	0.183	0.0382	471	78.6	< 0.01 U		0.721	9.4 T	
LS-PA-D	4/2/13	LVPA130402D	0.841	< 0.01 U	322	32	< 0.01 U	< 2 U	2.39	19.5	
LS-PA-S	4/2/13	LVPA130402S	0.846	< 0.01 U	324	32.7	< 0.01 U	< 2 U	2.4	9.95	
LS-PN-D	4/2/13	LVPN130402D	0.841	< 0.01 U	321	31.7	< 0.01 U	< 2 U	2.28	11.7	
LS-PN-S	4/2/13	LVPN130402S	0.843	< 0.01 U	323	31.9	< 0.01 U	< 2 U	2.37	11.2	

Site	Date	Sample ID	TOTAL SUSPENDED SOLIDS (mg/l)	TOTAL VOLATILE SOLIDS (mg/l)	VOLATILE SUSPENDED SOLIDS (mg/l)
LS-P2	4/2/13	LVP2130402-	< 1 U	40.5	< 1 U
LS-B	4/2/13	LVB-130402-	12.2	862	3.8
LS-BE	4/2/13	LVBE130402-	< 1 U	60.8	< 1 U
LS-CT	4/2/13	LVCT130402-	8	59	3.6
LS-PA-D	4/2/13	LVPA130402D	75.5	79.4	36.5
LS-PA-S	4/2/13	LVPA130402S	68	77.1	28
LS-PN-D	4/2/13	LVPN130402D	61	69.9	29
LS-PN-S	4/2/13	LVPN130402S	63	80.2	21

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Leachate Field Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	pH (Field) (std. Units)	Temperature (°C)	Conductance (Field) (μmho/cm)
LS-B	4/2/2013	LVB-130402-	7.53	10.3	5100
LS-BE	4/2/2013	LVBE130402-	7.68	10.4	1300
LS-CT	4/2/2013	LVCT130402-	7.59	13.5	3350
LS-LVPS-2	4/2/2013	LVPS2130402-	6.38	10.5	115
LS-LVT	6/14/2013	LVT-130614P	8.16	15.6	320
LS-PA-D	4/2/2013	LVPA130402D	8.37	12.8	280
LS-PA-S	4/2/2013	LVPA130402S	8.43	11.2	280
LS-PN-D	4/2/2013	LVPN130402D	8.27	11	280
LS-PN-S	4/2/2013	LVPN130402S	8.34	10.7	275

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Aluminum, dissolved (mg/L)	Aluminum, total (mg/L)	Antimony, dissolved (mg/L)	Antimony, total (mg/L)	Arsenic, dissolved (mg/L)	Arsenic, total (mg/L)	Barium, dissolved (mg/L)	Barium, total (mg/L)	Beryllium, dissolved (mg/L)	Beryllium, total (mg/L)	Cadmium, dissolved (mg/L)	Cadmium, total (mg/L)
LS-B	4/2/2013	LVB-130402-	< 0.02 U	0.23 T	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0858	0.0807	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-BE	4/2/2013	LVBE130402-	< 0.02 U	< 0.02 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00741	0.0077	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-CT	4/2/2013	LVCT130402-	< 0.02 U	0.24 T	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0229	0.0264	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-LVT	6/14/2013	LVT-130614P						< 0.001 U						< 0.002 U
LS-PA-D	4/2/2013	LVPA130402D	< 0.02 U	1.21	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00804	0.0209	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-PA-S	4/2/2013	LVPA130402S	< 0.02 U	1.39	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00821	0.0227	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-PN-D	4/2/2013	LVPN130402D	< 0.02 U	1.09	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00831	0.0195	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-PN-S	4/2/2013	LVPN130402S	< 0.02 U	1.16	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00855	0.02	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
LS-P2	4/2/2013	LVP2130402-	< 0.02 U	2.02	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0184	0.0326	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U

Site	Date	Sample ID	Calcium, dissolved (mg/L)	Calcium, total (mg/L)	Chromium, dissolved (mg/L)	Chromium, total (mg/L)	Cobalt, dissolved (mg/L)	Cobalt, total (mg/L)	Copper, dissolved (mg/L)	Copper, total (mg/L)	Iron, dissolved (mg/L)	Iron, total (mg/L)	Lead, dissolved (mg/L)	Lead, total (mg/L)
LS-B	4/2/2013	LVB-130402-	244	226	< 0.005 U	0.0079 T	0.0045 T	0.0034 T	0.0047 T	0.0072 T	< 0.01 U	0.534	< 0.001 U	< 0.001 U
LS-BE	4/2/2013	LVBE130402-	23.6	23.3	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	0.0061 T	0.0063 T	< 0.01 U	0.11 T	< 0.001 U	< 0.001 U
LS-CT	4/2/2013	LVCT130402-	68.2	70.1	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.754	< 0.001 U	< 0.001 U
LS-LVT	6/14/2013	LVT-130614P				0.011 T				0.0306				< 0.001 U
LS-PA-D	4/2/2013	LVPA130402D	35.2	39.8	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.011 T	< 0.01 U	2.78	< 0.001 U	< 0.001 U
LS-PA-S	4/2/2013	LVPA130402S	36.1	40.6	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.011 T	< 0.01 U	3.11	< 0.001 U	< 0.001 U
LS-PN-D	4/2/2013	LVPN130402D	35.7	39.4	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.011 T	< 0.01 U	2.45	< 0.001 U	< 0.001 U
LS-PN-S	4/2/2013	LVPN130402S	36.4	38.9	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.0095 T	< 0.01 U	2.56	< 0.001 U	< 0.001 U
LS-P2	4/2/2013	LVP2130402-	12.1	12.2	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	0.0051 T	0.0082 T	< 0.01 U	1.64	< 0.001 U	< 0.001 U

Site	Date	Sample ID	Magnesium, dissolved (mg/L)	Magnesium, total (mg/L)	Manganese, dissolved (mg/L)	Manganese, total (mg/L)	Mercury, dissolved (mg/L)	Mercury, total (mg/L)	Nickel, dissolved (mg/L)	Nickel, total (mg/L)	Potassium, dissolved (mg/L)	Potassium, total (mg/L)	Selenium, dissolved (mg/L)	Selenium, total (mg/L)
LS-B	4/2/2013	LVB-130402-	149	137	0.0036 T	0.0398	< 0.0001 U	< 0.0001 U	0.0706	0.0669	36.7	33.8	< 0.001 U	< 0.001 U
LS-BE	4/2/2013	LVBE130402-	4.12	4.12	0.0042 T	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.57	3.45	< 0.001 U	< 0.001 U
LS-CT	4/2/2013	LVCT130402-	8.68	9	0.073	0.0869	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	9.03	8.82	< 0.001 U	< 0.001 U
LS-LVT	6/14/2013	LVT-130614P								0.013 T				
LS-PA-D	4/2/2013	LVPA130402D	8.33	9.07	< 0.001 U	0.556	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.15	3.54	< 0.001 U	< 0.001 U
LS-PA-S	4/2/2013	LVPA130402S	8.46	9.17	< 0.001 U	0.613	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.23	3.58	< 0.001 U	< 0.001 U
LS-PN-D	4/2/2013	LVPN130402D	8.4	9.12	< 0.001 U	0.47	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.24	3.52	< 0.001 U	< 0.001 U
LS-PN-S	4/2/2013	LVPN130402S	8.5	8.98	0.0039 T	0.49	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.22	3.49	< 0.001 U	< 0.001 U
LS-P2	4/2/2013	LVP2130402-	3.86	4.22	0.0703	0.0846	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.97	2.14	< 0.001 U	< 0.001 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Silver, dissolved (mg/L)	Silver, total (mg/L)	Sodium, dissolved (mg/L)	Sodium, total (mg/L)	Thallium, dissolved (mg/L)	Thallium, total (mg/L)	Tin, dissolved (mg/L)	Tin, total (mg/L)	Vanadium, dissolved (mg/L)	Vanadium, total (mg/L)	Zinc, dissolved (mg/L)	Zinc, total (mg/L)
LS-B	4/2/2013	LVB-130402-	< 0.003 U	< 0.003 U	271	252	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	0.0352	0.111
LS-BE	4/2/2013	LVBE130402-	< 0.003 U	< 0.003 U	5.34	5.45	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	0.013 T	0.0257
LS-CT	4/2/2013	LVCT130402-	< 0.003 U	< 0.003 U	8.25	8.6	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.011 T
LS-LVT	6/14/2013	LVT-130614P		< 0.003 U										0.142
LS-PA-D	4/2/2013	LVPA130402D	< 0.003 U	< 0.003 U	12.9	13.3	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.038
LS-PA-S	4/2/2013	LVPA130402S	< 0.003 U	< 0.003 U	13.2	13.6	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.0419
LS-PN-D	4/2/2013	LVPN130402D	< 0.003 U	< 0.003 U	12.9	13.5	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.0325
LS-PN-S	4/2/2013	LVPN130402S	< 0.003 U	< 0.003 U	13.3	13.3	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.0355
LS-P2	4/2/2013	LVP2130402-	< 0.003 U	< 0.003 U	3.52	3.67	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	0.01 T

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	2,4,5-T	2,4,5-TP SILVEX	2,4-D	4,4'DDD	4,4'DDE	4,4'DDT	ALDRIN	ALPHA BHC	ALPHA CHLORDANE	AROCLOR 1016	AROCLOR 1221
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-P2	4/2/2013	LVP2130402-	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-B	4/2/2013	LVB-130402-	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U		
LS-BE	4/2/2013	LVBE130402-	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PA-D	4/2/2013	LVPA130402D	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PA-S	4/2/2013	LVPA130402S	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PN-D	4/2/2013	LVPN130402D	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PN-S	4/2/2013	LVPN130402S	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U

Site	Date	Sample ID	AROCLOR 1232	AROCLOR 1242	AROCLOR 1248	AROCLOR 1254	AROCLOR 1260	BETA BHC	DELTA BHC	DIELDRIN	DINOSEB	ENDOSULFAN I	ENDOSULFAN II
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-P2	4/2/2013	LVP2130402-	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-B	4/2/2013	LVB-130402-						< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-BE	4/2/2013	LVBE130402-	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PA-D	4/2/2013	LVPA130402D	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PA-S	4/2/2013	LVPA130402S	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PN-D	4/2/2013	LVPN130402D	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PN-S	4/2/2013	LVPN130402S	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U

Site	Date	Sample ID	ENDOSULFAN SULFATE	ENDRIN	ENDRIN ALDEHYDE	HEPTACHLOR	HEPTACHLOR EPOXIDE	ISODRIN	LINDANE(GAMMA BHC)	METHOXYCHLOR	TOXAPHENE
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-P2	4/2/2013	LVP2130402-	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-B	4/2/2013	LVB-130402-	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-BE	4/2/2013	LVBE130402-	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PA-D	4/2/2013	LVPA130402D	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PA-S	4/2/2013	LVPA130402S	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PN-D	4/2/2013	LVPN130402D	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PN-S	4/2/2013	LVPN130402S	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,1,1,2-TETRACHLOROETHANE ug/l N	1,1,1-TRICHLOROETHANE ug/l N	1,1,2,2-TETRACHLOROETHANE ug/l N	1,1,2-TRICHLOROETHANE ug/l N	1,1-DICHLOROETHANE ug/l N	1,1-DICHLOROETHENE ug/l N	1,1-DICHLOROPROPENE ug/l N	1,2,3-TRICHLOROPROPANE ug/l N	1,2-DIBROMO-3-CHLOROPROPANE ug/l N	1,2-DIBROMOETHANE ug/l N	1,2-DICHLOROBENZENE ug/l N	1,2-DICHLOROETHANE ug/l N	1,2-DICHLOROPROPANE ug/l N
LS-P2	04/02/13	LVP2130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-B	04/02/13	LVB-130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-BE	04/02/13	LVBE130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-CT	04/02/13	LVCT130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PA-D	04/02/13	LVPA130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PA-S	04/02/13	LVPA130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PN-D	04/02/13	LVPN130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PN-S	04/02/13	LVPN130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	04/01/13	VTRP130402B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	04/01/13	VTRP130402C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	1,3-DICHLORO-BENZENE 541-73-1 (µg/L)	1,3-DICHLORO-PROPANE 142-28-9 (µg/L)	1,4-DICHLORO-BENZENE 106-46-7 (µg/L)	2,2-DICHLORO-PROPANE 594-20-7 (µg/L)	2-BUTANONE 78-93-3 (µg/L)	2-HEXANONE 591-78-6 (µg/L)	2-METHYL-1-PROPANOL 78-83-1 (µg/L)	3-CHLORO-PROPENE 107-05-1 (µg/L)	4-METHYL-2-PENTANONE 108-10-1 (µg/L)	ACETONE 67-64-1 (µg/L)	ACETONITRILE 75-05-8 (µg/L)	ACROLEIN 107-02-8 (µg/L)	ACRYLO-NITRILE 107-13-1 (µg/L)
LS-P2	04/02/13	LVP2130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-B	04/02/13	LVB-130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-BE	04/02/13	LVBE130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-CT	04/02/13	LVCT130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	4.08	< 100 U	< 10 U	< 0.07 U
LS-PA-D	04/02/13	LVPA130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-PA-S	04/02/13	LVPA130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	4.01	< 100 U	< 10 U	< 0.07 U
LS-PN-D	04/02/13	LVPN130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-PN-S	04/02/13	LVPN130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
VOA TRIP BLANK	04/01/13	VTRP130402B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
VOA TRIP BLANK	04/01/13	VTRP130402C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U

Site	Date	Sample ID	BENZENE 71-43-2 (µg/L)	BROMO-CHLORO-METHANE 74-97-5 (µg/L)	BROMO-DICHLORO-METHANE 75-27-4 (µg/L)	BROMOFORM 75-25-2 (µg/L)	BROMO-METHANE 74-83-9 (µg/L)	CARBON DISULFIDE 75-15-0 (µg/L)	CARBON TETRA-CHLORIDE 56-23-5 (µg/L)	CHLORO-BENZENE 108-90-7 (µg/L)	CHLORO-DIBROMO-METHANE 124-48-1 (µg/L)	CHLORO-ETHANE 75-00-3 (µg/L)	CHLOROFORM 67-66-3 (µg/L)	CHLORO-METHANE 74-87-3 (µg/L)	CHLOROPRENE 126-99-8 (µg/L)
LS-P2	04/02/13	LVP2130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-B	04/02/13	LVB-130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.21 T	< 20 U
LS-BE	04/02/13	LVBE130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-CT	04/02/13	LVCT130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PA-D	04/02/13	LVPA130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PA-S	04/02/13	LVPA130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PN-D	04/02/13	LVPN130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PN-S	04/02/13	LVPN130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
VOA TRIP BLANK	04/01/13	VTRP130402B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
VOA TRIP BLANK	4/1/2013	VTRP130402C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	CIS-1,2-DICHLORO-ETHENE 156-59-2 (µg/L)	CIS-1,3-DICHLORO-PROPENE 10061-01-5 (µg/L)	DIBROMO-METHANE 74-95-3 (µg/L)	DICHLORO-DIFLUORO-METHANE 75-71-8 (µg/L)	ETHYL-BENZENE 100-41-4 (µg/L)	M & P XYLENE MPX (µg/L)	METHYL IODIDE 74-88-4 (µg/L)	METHYL METHA-CRYLATE 80-62-6 (µg/L)	METHYL-ACRYLO-NITRILE 126-98-7 (µg/L)	METHYLENE CHLORIDE 75-09-2 (µg/L)	O-XYLENE 95-47-6 (µg/L)	PROPRIO-NITRILE 107-12-0 (µg/L)	STYRENE 100-42-5 (µg/L)
LS-P2	04/02/13	LVP2130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-B	04/02/13	LVB-130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-BE	04/02/13	LVBE130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-CT	04/02/13	LVCT130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PA-D	04/02/13	LVPA130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PA-S	04/02/13	LVPA130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PN-D	04/02/13	LVPN130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PN-S	04/02/13	LVPN130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
VOA TRIP BLANK	04/01/13	VTRP130402B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
VOA TRIP BLANK	04/01/13	VTRP130402C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	0.28 T	< 0.2 U	< 60 U	< 0.2 U

Site	Date	Sample ID	TETRA-CHLORO-ETHENE 127-18-4 (µg/L)	TOLUENE 108-88-3 (µg/L)	TRANS-1,2-DICHLORO-ETHENE 156-60-5 (µg/L)	TRANS-1,3-DICHLORO-PROPENE 10061-02-6 (µg/L)	TRANS-1,4-DICHLORO-2-BUTENE 110-57-6 (µg/L)	TRICHLORO-ETHENE 79-01-6 (µg/L)	TRICHLORO-FLUORO-METHANE 75-69-4 (µg/L)	VINYL ACETATE 108-05-4 (µg/L)	VINYL CHLORIDE 75-01-4 (µg/L)
LS-P2	04/02/13	LVP2130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-B	04/02/13	LVB-130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-BE	04/02/13	LVBE130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-CT	04/02/13	LVCT130402-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-PA-D	04/02/13	LVPA130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-PA-S	04/02/13	LVPA130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-PN-D	04/02/13	LVPN130402D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-PN-S	04/02/13	LVPN130402S	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	04/01/13	VTRP130402B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	04/01/13	VTRP130402C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Surface Water Analysis Data
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Site	Date	Sample ID	ALKALINITY, TOTAL (as CaCO3)	AMMONIA as N	BIOLOGICAL OXYGEN DEMAND	CHEMICAL OXYGEN DEMAND	CHLORIDE	COLIFORMS, FECAL	COLIFORMS, TOTAL	CYANIDE	FLUORIDE	HARDNESS
			mg/l	mg/l	mg/l	mg/l	mg/l	cfu/100ml	cfu/100ml	mg/l	mg/l	mg/l
SW-E	5/2/2013	SVE-130502Q	91.8	0.013 T	< 2 U	15 T	5.6	15	100	< 0.02 U	< 0.1 U	95.8
SW-W1	6/12/2013	SVW1130612Q	89.3	0.013 T	< 2 U	17 T	5.1	< 1 U	5	< 0.02 U	< 0.1 U	89.3
SW-W2	6/12/2013	SVW2130612Q	371	0.01 T	< 2 U	21	22.6	17	28	< 0.02 U	< 0.1 U	352
SW-W3	6/12/2013	SVW3130612Q	140	0.011 T	< 2 U	22.2	7.77	1	3	< 0.02 U	< 0.1 U	138
FIELD BLANK	5/8/2013	WV7-130508F	1.2 T	< 0.01 U			< 0.1 U					

Site	Date	Sample ID	NITRATE	NITRATE + NITRITE as N	PHOSPHORUS, SOLUBLE REACTIVE	SPECIFIC CONDUCTANCE	SULFATE	TOTAL DISSOLVED SOLIDS	TOTAL KJELDAHL NITROGEN	TOTAL ORGANIC CARBON	TOTAL ORGANIC HALIDES (TOX)	TOTAL SOLIDS
			mg/l	mg/l	mg/l	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
SW-E	5/2/13	SVE-130502Q	0.96	0.96	0.0454	225	10	150	0.289	5.78		178
SW-W1	6/12/13	SVW1130612Q	1.82	1.82	0.0387	227	10.2	167	0.396	5.24		206
SW-W2	6/12/13	SVW2130612Q	0.178	0.178	0.017 T	737	9.91	446	0.337	6.83		498
SW-W3	6/12/13	SVW3130612Q	0.503	0.503	0.0653	323	11.4	207	0.371	6.31		267
FIELD BLANK	5/8/13	WV7-130508F	0.105			3.7 T	< 0.1 U	< 5 U		< 1 U		< 5 U

Site	Date	Sample ID	TOTAL SUSPENDED SOLIDS	TURBIDITY
			mg/l	ntu
SW-E	5/2/13	SVE-130502Q	14.6	8.91
SW-W1	6/12/13	SVW1130612Q	25	10.2
SW-W2	6/12/13	SVW2130612Q	35	23.4
SW-W3	6/12/13	SVW3130612Q	35.5	17.7
FIELD BLANK	5/8/13	WV7-130508F	< 1 U	

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Surface Water Field Data
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Site	Date	Sample ID	pH (Field) (std. Units)	Conductance (Field) (mmho/cm)	DO (Field) (mg/L)	Temperature (Field) (oC)	Turbidity (Field) (NTU)
SW-W1	6/12/2013	SVW1130612Q	7.33	225		12.2	11.7
SW-W2	6/12/2013	SVW2130612Q	8.36	715		11.8	21
SW-W3	6/12/2013	SVW3130612Q	8.47	355		11.8	11.9
SW-E	5/2/2013	SVE-130502Q	7.57	160	12.18		7.16

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Surface Water Analysis Data
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Site	Date	Sample ID	Aluminum, dissolved (mg/L)	Aluminum, total (mg/L)	Antimony, dissolved (mg/L)	Antimony, total (mg/L)	Arsenic, dissolved (mg/L)	Arsenic, total (mg/L)	Barium, dissolved (mg/L)	Barium, total (mg/L)	Beryllium, dissolved (mg/L)	Beryllium, total (mg/L)	Cadmium, dissolved (mg/L)	Cadmium, total (mg/L)
SW-W1	6/12/2013	SVW1130612Q	< 0.02 U	0.266	< 0.001 U	< 0.001 U	0.00227	0.00566	< 0.001 U	0.00603	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
SW-W2	6/12/2013	SVW2130612Q	< 0.02 U	0.199	< 0.001 U	< 0.001 U	0.0015	0.00422	0.00332	0.0152	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
SW-W3	6/12/2013	SVW3130612Q	< 0.02 U	0.544	< 0.001 U	< 0.001 U	0.00271	0.00544	0.00304	0.0126	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
SW-E	5/2/2013	SVE-130502Q	< 0.02 U	0.3	< 0.001 U	< 0.001 U	0.00179	0.00212	0.00525	0.00754	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U

Site	Date	Sample ID	Calcium, dissolved (mg/L)	Calcium, total (mg/L)	Chromium, dissolved (mg/L)	Chromium, total (mg/L)	Cobalt, dissolved (mg/L)	Cobalt, total (mg/L)	Copper, dissolved (mg/L)	Copper, total (mg/L)	Iron, dissolved (mg/L)	Iron, total (mg/L)	Lead, dissolved (mg/L)	Lead, total (mg/L)
SW-W1	6/12/2013	SVW1130612Q	16	14.4	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.184	2.97	< 0.001 U	< 0.001 U
SW-W2	6/12/2013	SVW2130612Q	56.4 D	55.9	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.046 T	4.32	< 0.001 U	< 0.001 U
SW-W3	6/12/2013	SVW3130612Q	25.2	22.5	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.0573	2.46	< 0.001 U	0.0012
SW-E	5/2/2013	SVE-130502Q	15.3	15.3	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.048 T	0.532	< 0.001 U	< 0.001 U

Site	Date	Sample ID	Magnesium, dissolved (mg/L)	Magnesium, total (mg/L)	Manganese, dissolved (mg/L)	Manganese, total (mg/L)	Mercury, dissolved (mg/L)	Mercury, total (mg/L)	Nickel, dissolved (mg/L)	Nickel, total (mg/L)	Potassium, dissolved (mg/L)	Potassium, total (mg/L)	Selenium, dissolved (mg/L)	Selenium, total (mg/L)
SW-W1	6/12/2013	SVW1130612Q	12.7	12.9	0.275	0.85		< 0.0001 U	< 0.01 U	< 0.01 U	1.09	1.01	< 0.001 U	< 0.001 U
SW-W2	6/12/2013	SVW2130612Q	51.4	51.6	0.038	0.878		< 0.0001 U	< 0.01 U	< 0.01 U	3.23	3.07	< 0.001 U	< 0.001 U
SW-W3	6/12/2013	SVW3130612Q	19.3	19.9	0.262	0.87		< 0.0001 U	< 0.01 U	< 0.01 U	2.11	2.02	< 0.001 U	< 0.001 U
SW-E	5/2/2013	SVE-130502Q	12.4	14	0.0114	0.0693		< 0.0001 U	< 0.01 U	< 0.01 U	1.93	1.89	< 0.001 U	< 0.001 U

Site	Date	Sample ID	Silver, dissolved (mg/L)	Silver, total (mg/L)	Sodium, dissolved (mg/L)	Sodium, total (mg/L)	Thallium, dissolved (mg/L)	Thallium, total (mg/L)	Tin, dissolved (mg/L)	Tin, total (mg/L)	Vanadium, dissolved (mg/L)	Vanadium, total (mg/L)	Zinc, dissolved (mg/L)	Zinc, total (mg/L)
SW-W1	6/12/2013	SVW1130612Q	< 0.003 U	< 0.003 U	6.88	6.92	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
SW-W2	6/12/2013	SVW2130612Q	< 0.003 DU	< 0.003 U	16.4	16	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
SW-W3	6/12/2013	SVW3130612Q	< 0.003 DU	< 0.003 U	8.96	9	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	0.00283	< 0.004 U	0.00627
SW-E	5/2/2013	SVE-130502Q	< 0.003 U	< 0.003 U	6.22	6.93	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	0.00257	0.0036	< 0.004 U	< 0.004 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	2,4,5-T 93-76-5 (µg/L)	2,4,5-TP 93-76-5 (µg/L)	2,4-D 94-75-7 (µg/L)	Dinoseb 88-85-7 (µg/L)	Endrin 72-20-8 (µg/L)	Lindane 58-89-9 (µg/L)	Methoxy-chlor 72-43-5 (µg/L)	Toxaphene 8001-35-2 (µg/L)
SW-W1	6/12/2013	SVW1130612Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U
SW-W2	6/12/2013	SVW2130612Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U
SW-W3	6/12/2013	SVW3130612Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U
SW-E	5/2/2013	SVE-130502Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from April 1, 2013 to June 30, 2013
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,1,1,2-TETRA-CHLORO-630-20-6 (µg/L)	1,1,1-TRI-CHLORO-ETHANE 71-55-6 (µg/L)	1,1,2,2-TETRA-CHLORO-ETHANE 79-34-5 (µg/L)	1,1,2-TRI-CHLORO-ETHANE 79-00-5 (µg/L)	1,1-DICHLORO-ETHANE 75-34-3 (µg/L)	1,1-DICHLORO-ETHENE 75-35-4 (µg/L)	1,2,3-TRI-CHLORO-PROPANE 96-18-4 (µg/L)	1,2-DIBROMO-3-CHLORO-PROPANE 96-12-8 (µg/L)	1,2-DIBROMO-ETHANE 106-93-4 (µg/L)	1,2-DICHLORO-BENZENE 95-50-1 (µg/L)	1,2-DICHLORO-ETHANE 107-06-2 (µg/L)	1,2-DICHLORO-PROPANE 78-87-5 (µg/L)	1,4-DICHLORO-BENZENE 106-46-7 (µg/L)
SW-W1	6/12/2013	SVW1130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	6/12/2013	SVW2130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	6/12/2013	SVW3130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	5/2/13	SVE-130502Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	5/8/13	WV7-130508F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/1/13	VTRP130502B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	6/11/13	VTRP130612-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	2-BUTANONE 78-93-3 (mg/L)	2-HEXANONE 591-78-6 (mg/L)	4-METHYL-2-PENTANONE 108-10-1 (mg/L)	ACETONE 67-64-1 (mg/L)	ACRYLO-NITRILE 107-13-1 (mg/L)	BENZENE 71-43-2 (mg/L)	BROMO-CHLORO-DICHLORO- 74-97-5 (mg/L)	BROMO-DICHLORO- 75-27-4 (mg/L)	BROMOFORM 75-25-2 (mg/L)	BROMO-METHANE 74-83-9 (mg/L)	CARBON DISULFIDE 75-15-0 (mg/L)	CARBON TETRA- 56-23-5 (mg/L)	CHLORO-BENZENE 108-90-7 (mg/L)
SW-W1	6/12/2013	SVW1130612Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	6/12/2013	SVW2130612Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	6/12/2013	SVW3130612Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	5/2/2013	SVE-130502Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	5/8/2013	WV7-130508F	< 4 U	< 4 U	< 4 U	5.3	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/1/2013	VTRP130502B	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	6/11/2013	VTRP130612-	< 4 U	< 4 U	< 4 U	4.79	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	CHLORO-DIBROMO-METHANE 124-48-1 (mg/L)	CHLORO-ETHANE 75-00-3 (mg/L)	CHLOROFORM 67-66-3 (mg/L)	CHLORO-METHANE 74-87-3 (mg/L)	CIS-1,2-DICHLORO-ETHENE 156-59-2 (mg/L)	CIS-1,3-DICHLORO-PROPENE 10061-01-5 (mg/L)	DIBROMO-METHANE 74-95-3 (mg/L)	DICHLORO-DIFLUORO-METHANE 75-71-8 (mg/L)	ETHYL-BENZENE 100-41-4 (mg/L)	M & P XYLENE MPX (mg/L)	METHYL IODIDE 74-88-4 (mg/L)	METHYLENE CHLORIDE 75-09-2 (mg/L)	O-XYLENE 95-47-6 (mg/L)
SW-W1	6/12/2013	SVW1130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	6/12/2013	SVW2130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	6/12/2013	SVW3130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	5/2/2013	SVE-130502Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	5/8/2013	WV7-130508F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	5/1/2013	VTRP130502B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	6/11/2013	VTRP130612-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	STYRENE 100-42-5 (mg/L)	TETRA-CHLORO-ETHENE 127-18-4 (mg/L)	TOLUENE 108-88-3 (mg/L)	TRANS-1,2-DICHLORO-ETHENE 156-60-5 (mg/L)	TRANS-1,3-DICHLORO-PROPENE 10061-02-6 (mg/L)	TRANS-1,4-DICHLORO-2-BUTENE 110-57-6 (mg/L)	TRICHLORO-ETHENE 79-01-6 (mg/L)	TRICHLORO-FLUORO-METHANE 75-69-4 (mg/L)	VINYL ACETATE 108-05-4 (mg/L)	VINYL CHLORIDE 75-01-4 (mg/L)
SW-W1	6/12/2013	SVW1130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W2	6/12/2013	SVW2130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W3	6/12/2013	SVW3130612Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	0.0296
SW-E	5/2/2013	SVE-130502Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
FIELD BLANK	5/8/2013	WV7-130508F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	5/1/2013	VTRP130502B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	6/11/13	VTRP130612-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	ALKALINITY, TOTAL (AS CACO3) mg/l	AMMONIA AS N mg/l	CHLORIDE mg/l	NITRATE mg/l	SPECIFIC CONDUCTANCE umhos/cm	SULFATE mg/l	TOTAL DISSOLVED mg/l	TOTAL ORGANIC mg/l	TOTAL SOLIDS mg/l	TOTAL SUSPENDED mg/l
MW-2	8/5/2013	WV2-130805-	184	< 0.01 U	3.23	0.018 T	378	17.2	239	1.82	244	< 1 U
MW-5D	8/15/2013	WV5D130815-	138	0.0447	2.94	< 0.01 U	295	9.3	215	1.65	223	2.9
MW-7	8/6/2013	WV7-130806-	71.6	0.245	2.95	< 0.01 U	176	10.5	137	1.11	134	< 1 U
MW-8	8/16/2013	WV8-130816-	52	< 0.01 U	4.98	3.61	167	7.66	125	< 1 U	125	< 1 U
MW-9	7/30/2013	WV9-130730-	72.1	< 0.01 U	23	0.19	191	14.1	140	2.07	146	< 1 U
MW-10	8/8/2013	WV10130808-	55.5	< 0.01 U	3.3	0.424	146	9.14	114	1.73	111	< 1 U
MW-12	8/9/2013	WV12130809-	58.5	< 0.01 U	3.03	0.719	156	10.8	124	< 1 U	121	< 1 U
MW-13	8/5/2013	WV13130805-	72	< 0.01 U	2.87	0.066	194	18.6	139	1.67	154	14.5
MW-19	7/30/2013	WV19130730-	94.7	0.0377	37.6	0.0463	237	16.8	161	2.39	165	< 1 U
MW-20	8/7/2013	WV20130807-	70.2	0.0199	3.22	0.025 T	187	17.3	142	2.33	157	6.15
MW-20	8/7/2013	WV20130807D	70.6	0.0184	3.29	0.038 T	189	17.8	145	1.62	141	1.4
MW-21	8/9/2013	WV21130809-	138	0.024	15.2	0.107	310	18.2	204	< 1 U	209	< 1 U
MW-26	8/9/2013	WV26130809-	75.2	0.272	3.57	0.015 T	191	13	144	< 1 U	143	< 1 U
MW-27	8/8/13	WV27130808-	61.9	< 0.01 U	6.1	2.75	182	8.83	143	1.29	146	< 1 HU
MW-29	8/15/13	WV29130815-	100	< 0.01 U	3.53	< 0.01 U	242	16.3	165	< 1 U	171	1.7
FIELD BLANK	7/30/13	WV9-130730F	< 1 U	< 0.01 U	< 0.1 U	0.077	3.2 T	< 0.1 U	< 5 U	1.37	< 5 U	< 1 U
PRIVATE WELLS												
DW-85	9/27/2013	WV85130927-	67.4	0.277	2.96	0.005	152	2.53	114	0.5	115	0.5
DW-PA	9/27/2013	WVPA130927-	67.3	0.005	5.69	1.06	192	12.1	132	0.5	143	0.5

King County Solid Waste Division
Environmental Field Data
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Vashon Landfill --- Groundwater Analysis Data
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Site	Date	Sample ID	pH (Field) (std. Units)	Conductance (Field) (μmhos/cm)	Temperature (°C)	Depth to Water (feet)	Ground-Water Elevation (feet above msl)
MW-10	8/8/2013	WV10130808-	7.25	130	10.1	145	262.51
MW-10	7/26/2013					145.07	262.44
MW-12	8/9/2013	WV12130809-	7.39	145	10.4	142.22	170.17
MW-12	7/26/2013					142.38	170.01
MW-13	8/5/2013	WV13130805-	7.26	180	11.1	99.45	274.62
MW-13	7/26/2013					99.63	274.44
MW-14	7/26/2013					151.43	224.25
MW-19	7/30/2013	WV19130730-	7.67	190	10.2	245.9	157.93
MW-19	7/26/2013					245.89	157.94
MW-2	8/5/2013	WV2-130805-	7	335	10.7	74.55	240.52
MW-2	7/26/2013					73.73	240.55
MW-20	8/7/2013	WV20130807-	7.91	175	12.5	122.22	244.9
MW-20	7/26/2013					122.1	245.11
MW-21	8/9/2013	WV21130809-	6.89	250	10.2	106.5	239.16
MW-21	7/26/2013					106.55	239.11
MW-24	7/26/2013					87.54	286.39
MW-25	7/26/2013					243.85	155.37
MW-26	8/9/2013	WV26130809-	7.97	170	10.3	247.38	156.02
MW-26	7/26/2013					247.55	155.85
MW-27	8/8/2013	WV27130808-	6.78	170	11.6	188.34	194.72
MW-27	7/26/2013					188.4	194.66
MW-29	8/15/2013	WV29130815-	7.41	225	11.6	244.29	166.28
MW-29	7/26/2013					244.58	165.99
MW-3	7/26/2013					41.64	273.23
MW-30	9/18/2013					6.16	229.56
MW-31	9/18/2013					8.12	197.52
MW-32	9/18/2013					21.6	233.12
MW-4	7/26/2013					103.37	270.84
MW-5D	8/15/2013	WV5D130815-	6.81	280	11.6	117.37	239.83
MW-5D	7/26/2013					117.43	239.77
MW-5S	7/26/2013					83.74	272.89
MW-7	8/6/2013	WV7-130806-	7.8	165	11.6	191.37	181.88
MW-7	7/26/2013					191.6	181.65
MW-8	8/16/2013	WV8-130816-	6.63	150	11	176.24	207.18
MW-8	7/26/2013					176.37	207.05
MW-9	7/30/2013	WV9-130730-	7.36	160	10.3	165.84	236.73
MW-9	7/26/2013					165.79	236.78
FIELD BLAN	7/30/2013	WV9-130730F	6.71	15	18		
DW-85	9/27/2013	WV85130927-	8.01	125	10.8		
DW-PA	9/27/2013	WVPA130927-	7.32	160	11.7		

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Groundwater Analysis Data
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Site	Date	Sample ID	Antimony, dissolved	Antimony, total	Arsenic, dissolved	Arsenic, total	Barium, dissolved	Barium, total	Beryllium, dissolved	Beryllium, total	Cadmium, dissolved	Cadmium, total	Calcium, dissolved	Calcium, total
MW-2	8/5/2013	WV2-130805-	< 0.001 U	< 0.001 U	0.00109	< 0.001 U	0.00847	0.00948	< 0.001 DU	< 0.001 U	< 0.002 U	< 0.002 U	23.5	24.3
MW-5D	8/15/2013	WV5D130815-	< 0.001 U	< 0.001 U	0.092	0.0796	0.0116	0.012	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	22.3	20.8
MW-7	8/6/2013	WV7-130806-	< 0.001 U	< 0.001 U	0.00617	0.00592	0.0102	0.0116 D	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	14.3	15.6 D
MW-8	8/16/2013	WV8-130816-	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00341	0.00358	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	11.4	10.8
MW-9	7/30/2013	WV9-130730-	< 0.001 U	< 0.001 U	0.00227	0.00223	0.00355	0.00386	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	12.7	13.3
MW-10	8/8/2013	WV10130808-	< 0.001 U	< 0.001 U	0.00173	0.00175	0.00312	0.00325 D	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	10.2	10.6 D
MW-12	8/9/2013	WV12130809-	< 0.001 U	< 0.001 U	0.00211	0.00194	0.00401	0.0042 D	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	11.2	11.4 D
MW-13	8/5/2013	WV13130805-	< 0.001 U	< 0.001 U	0.00183	0.00169	0.00525	0.00718	< 0.001 DU	< 0.001 U	< 0.002 U	< 0.002 U	11.5	11
MW-19	7/30/2013	WV19130730-	< 0.001 U	< 0.001 U	0.00136	0.00141	0.0167	0.0176	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	15.2	15.7
MW-20	8/7/2013	WV20130807-	< 0.001 U	< 0.001 U	0.00144	0.00161	0.00377	0.0274 D	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	13.6	14 D
MW-20	8/7/2013	WV20130807D	< 0.001 U	< 0.001 U	0.00148	0.00142	0.00376	0.00539 D	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	13.4	14.2 D
MW-21	8/9/2013	WV21130809-	< 0.001 U	< 0.001 U	< 0.001 U	0.00153	0.00807	0.00821 D	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	24.8	24.9 D
MW-26	8/9/2013	WV26130809-	< 0.001 U	< 0.001 U	0.00333	0.00318	0.00995	0.0109 D	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	18.3	18 D
MW-27	8/8/2013	WV27130808-	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00357	0.00382 D	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	12.9	13 D
MW-29	8/15/2013	WV29130815-	< 0.001 U	< 0.001 U	0.00431	0.0053	0.00944	0.0106	< 0.001 DU	< 0.001 DU	< 0.002 U	< 0.002 U	19.7	19.3
FIELD BLANK	7/30/2013	WV9-130730F	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U
DW-85	9/27/2013	WV85130927-	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.01	0.00972	< 0.001 DU	< 0.001 U	< 0.002 U	< 0.002 U	12.3	13.3
DW-PA	9/27/2013	WVPA130927-	< 0.001 U	< 0.001 U	0.00149	0.00147	0.00411	0.00399	< 0.001 DU	< 0.001 U	< 0.002 U	< 0.002 U	11.6	12.9

Site	Date	Sample ID	Chromium, dissolved	Chromium, total	Cobalt, dissolved	Cobalt, total	Copper, dissolved	Copper, total	Iron, dissolved	Iron, total	Lead, dissolved	Lead, total	Magnesium, dissolved	Magnesium, total
MW-2	8/5/2013	WV2-130805-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.021 T	< 0.001 U	< 0.001 U	29.9	29.1
MW-5D	8/15/2013	WV5D130815-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 DU	< 0.002 U	< 0.002 U	8.03	7.77	< 0.001 U	< 0.001 U	15.2	15.8
MW-7	8/6/2013	WV7-130806-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 DU	< 0.002 U	< 0.002 U	< 0.01 U	0.012 T	< 0.001 U	< 0.001 U	8.98	8.96 D
MW-8	8/16/2013	WV8-130816-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	8.97	8.97
MW-9	7/30/2013	WV9-130730-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.023 T	< 0.001 U	< 0.001 U	10.6	11.3
MW-10	8/8/2013	WV10130808-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 DU	< 0.002 U	< 0.002 U	0.012 T	0.015 T	< 0.001 U	< 0.001 U	8.82	9.5 D
MW-12	8/9/2013	WV12130809-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 DU	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	8.68	9.22 D
MW-13	8/5/2013	WV13130805-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.168	< 0.001 U	< 0.001 U	14	13.2
MW-19	7/30/2013	WV19130730-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.029 T	0.0646	< 0.001 U	< 0.001 U	14.3	15.1
MW-20	8/7/2013	WV20130807-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 DU	< 0.002 U	0.0027	< 0.01 U	0.582	< 0.001 U	< 0.001 U	11.7	11.3 D
MW-20	8/7/2013	WV20130807D	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 DU	< 0.002 U	< 0.002 U	< 0.01 U	0.069	< 0.001 U	< 0.001 U	11.4	11 D
MW-21	8/9/2013	WV21130809-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 DU	< 0.002 U	< 0.002 U	0.171	0.442	< 0.001 U	< 0.001 U	21.6	21.4 D
MW-26	8/9/2013	WV26130809-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 DU	< 0.002 U	< 0.002 U	0.144	0.293	< 0.001 U	< 0.001 U	6.78	7.08 D
MW-27	8/8/2013	WV27130808-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 DU	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	9.94	10.5 D
MW-29	8/15/2013	WV29130815-	< 0.005 U	< 0.005 U	< 0.003 DU	< 0.003 U	< 0.002 U	< 0.002 U	0.747	1.28	< 0.001 U	< 0.001 U	13.5	14
FIELD BLANK	7/30/2013	WV9-130730F	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	< 0.015 U	< 0.015 U
DW-85	9/27/2013	WV85130927-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 DU	< 0.002 U	0.0602	0.0666	< 0.001 U	< 0.001 U	5.91	5.99
DW-PA	9/27/2013	WVPA130927-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	0.0132 D	0.0484	< 0.01 U	< 0.01 U	< 0.001 U	0.00193	9.85	10.8

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Manganese, dissolved	Manganese, total	Mercury, dissolved	Mercury, total	Nickel, dissolved	Nickel, total	Potassium, dissolved	Potassium, total	Selenium, dissolved	Selenium, total	Silver, dissolved	Silver, total
MW-2	8/5/2013	WV2-130805-	0.0807 D	0.101	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.82	2.33	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-5D	8/15/2013	WV5D130815-	0.576	0.592	< 0.0001 U	< 0.0001 U	< 0.01 DU	< 0.01 DU	2.31	2.17	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-7	8/6/2013	WV7-130806-	0.117 D	0.197 D	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.03	2.46	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-8	8/16/2013	WV8-130816-	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 DU	< 0.01 U	1.11	1.02	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-9	7/30/2013	WV9-130730-	< 0.001 U	0.00114	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.02	2.16	< 0.001 U	< 0.001 U	< 0.003 DU	< 0.003 U
MW-10	8/8/2013	WV10130808-	0.00199	0.00191 D	< 0.0001 U	< 0.0001 U	< 0.01 DU	< 0.01 U	1.56	1.53	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-12	8/9/2013	WV12130809-	< 0.001 U	< 0.001 DU	< 0.0001 U	< 0.0001 U	< 0.01 DU	< 0.01 U	1.88	1.72	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-13	8/5/2013	WV13130805-	< 0.001 DU	0.00823	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.24	1.95	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-19	7/30/2013	WV19130730-	0.472	0.54 D	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.41	2.55	< 0.001 U	< 0.001 U	< 0.003 DU	< 0.003 U
MW-20	8/7/2013	WV20130807-	0.251 D	2.92 D	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.4	2.2	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-20	8/7/2013	WV20130807D	0.255 D	0.474 D	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.4	2.25	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-21	8/9/2013	WV21130809-	0.191	0.182 D	< 0.0001 U	< 0.0001 U	< 0.01 DU	< 0.01 U	2.3	2.34	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-26	8/9/2013	WV26130809-	0.0846	0.0816 D	< 0.0001 U	< 0.0001 U	< 0.01 DU	< 0.01 U	3.12	2.76	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-27	8/8/2013	WV27130808-	< 0.001 U	< 0.001 DU	< 0.0001 U	< 0.0001 U	< 0.01 DU	< 0.01 U	1.45	1.26	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-29	8/15/2013	WV29130815-	0.0916	0.0982	< 0.0001 U	< 0.0001 U	< 0.01 DU	< 0.01 U	2.22	2.11	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
FIELD BLANK	7/30/2013	WV9-130730F	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	< 0.3 U	< 0.3 U	< 0.001 U	< 0.001 U	< 0.003 DU	< 0.003 U
DW-85	9/27/2013	WV85130927-	0.0542	0.0467	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.89	2.6	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
DW-PA	9/27/2013	WVPA130927-	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.77	1.53	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U

Site	Date	Sample ID	Sodium, dissolved	Sodium, total	Thallium, dissolved	Thallium, total	Vanadium, dissolved	Vanadium, total	Zinc, dissolved	Zinc, total
MW-2	8/5/2013	WV2-130805-	9.76	9.86	< 0.001 U	< 0.001 U	0.00468	0.00404	< 0.004 U	< 0.004 U
MW-5D	8/15/2013	WV5D130815-	13.7	14.4	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-7	8/6/2013	WV7-130806-	6.07	6.3 D	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-8	8/16/2013	WV8-130816-	6.21	6.28	< 0.001 U	< 0.001 DU	0.00229	0.00222	< 0.004 U	< 0.004 U
MW-9	7/30/2013	WV9-130730-	5.58	5.94	< 0.001 U	< 0.001 U	0.00439	0.0047	< 0.004 U	< 0.004 U
MW-10	8/8/2013	WV10130808-	4.9	5.24 D	< 0.001 U	< 0.001 U	0.00418	0.00404	< 0.004 U	< 0.004 U
MW-12	8/9/2013	WV12130809-	5.55	6.04 D	< 0.001 U	< 0.001 U	0.00491	0.00461	< 0.004 U	< 0.004 U
MW-13	8/5/2013	WV13130805-	6.93	6.7	< 0.001 U	< 0.001 U	0.0054	0.00525	< 0.004 U	< 0.004 U
MW-19	7/30/2013	WV19130730-	6.71	7.08	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 DU	< 0.004 U	< 0.004 U
MW-20	8/7/2013	WV20130807-	6.5	6.49 D	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	0.00576
MW-20	8/7/2013	WV20130807D	6.4	6.49 D	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	0.00715
MW-21	8/9/2013	WV21130809-	10.4	11.5 D	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-26	8/9/2013	WV26130809-	9.42	10.1 D	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-27	8/8/2013	WV27130808-	6.14	6.72 D	< 0.001 U	< 0.001 U	0.00275	0.00254	< 0.004 U	< 0.004 U
MW-29	8/15/2013	WV29130815-	6.3	6.46	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
FIELD BLANK	7/30/2013	WV9-130730F	0.378	0.38	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 DU	< 0.004 U	< 0.004 U
DW-85	9/27/2013	WV85130927-	5.44 D	5.65	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
DW-PA	9/27/2013	WVPA130927-	6.23 D	6.29	< 0.001 U	< 0.001 U	0.0031	0.00307	0.00478	0.00625

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,1,1,2-TETRA-CHLORO-ETHANE 630-20-6 (µg/L)	1,1,1-TRI-CHLORO-ETHANE 71-55-6 (µg/L)	1,1,2,2-TETRA-CHLORO-ETHANE 79-34-5 (µg/L)	1,1,2-TRICHLORO-ETHANE 79-00-5 (µg/L)	1,1-DICHLORO ETHANE 75-34-3 (µg/L)	1,1-DICHLORO ETHENE 75-35-4 (µg/L)	1,2,3-TRICHLORO-PROPANE 96-18-4 (µg/L)	1,2-DIBROMO-3-CHLORO-PROPANE 96-12-8 (µg/L)	1,2-DIBROMO-ETHANE 106-93-4 (µg/L)	1,2-DICHLORO BENZENE 95-50-1 (µg/L)	1,2-DICHLORO-ETHANE 107-06-2 (µg/L)	1,2-DICHLORO PROPANE 78-87-5 (µg/L)
MW-2	8/5/2013	WV2-130805-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	8/15/2013	WV5D130815-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	8/6/2013	WV7-130806-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	8/16/2013	WV8-130816-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	7/30/2013	WV9-130730-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	8/8/2013	WV10130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	8/9/2013	WV12130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	8/5/2013	WV13130805-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	7/30/2013	WV19130730-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	8/7/2013	WV20130807-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	8/7/2013	WV20130807D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	8/9/2013	WV21130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	8/9/2013	WV26130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	8/8/2013	WV27130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	8/15/2013	WV29130815-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	7/30/2013	WV9-130730F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/9/2013	VTRP130710L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/29/2013	VTRP130730B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/2/2013	VTRP130805C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/5/2013	VTRP130806C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/6/2013	VTRP130807C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/7/2013	VTRP130808B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/7/2013	VTRP130809C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/8/2013	VTRP130809B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/9/2013	VTRP130812B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/14/2013	VTRP130815C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/15/2013	VTRP130816C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
DW-85	9/27/2013	WV85130927-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U
DW-PA	9/27/2013	WVPA130927-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U		< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
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Site	Date	Sample ID	1,4-DICHLORO BENZENE	2-BUTANONE	2-HEXANONE	4-METHYL-2-PENTANONE	ACETONE	ACRYLO-NITRILE	BENZENE	BROMO-CHLORO-METHANE	BROMO-DICHLORO-METHANE	BROMOFORM	BROMO-METHANE	CARBON DISULFIDE
			106-46-7 (µg/L)	78-93-3 (µg/L)	591-78-6 (µg/L)	108-10-1 (µg/L)	67-64-1 (µg/L)	107-13-1 (µg/L)	71-43-2 (µg/L)	74-97-5 (µg/L)	75-27-4 (µg/L)	75-25-2 (µg/L)	74-83-9 (µg/L)	75-15-0 (µg/L)
MW-2	8/5/2013	WV2-130805-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	8/15/2013	WV5D130815-	< 0.2 U	< 4 U	< 4 U	< 4 U	4.35	< 0.07 U	0.523	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	8/6/2013	WV7-130806-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	8/16/2013	WV8-130816-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	7/30/2013	WV9-130730-	< 0.2 U	< 4 U	< 4 U	< 4 U	4.04	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	8/8/2013	WV10130808-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	8/9/2013	WV12130809-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	8/5/2013	WV13130805-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	7/30/2013	WV19130730-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	8/7/2013	WV20130807-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	8/7/2013	WV20130807D	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	8/9/2013	WV21130809-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	8/9/2013	WV26130809-	< 0.2 U	< 4 U	< 4 U	< 4 U	5.35	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	8/8/2013	WV27130808-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	8/15/2013	WV29130815-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	7/30/2013	WV9-130730F	< 0.2 U	< 4 U	< 4 U	< 4 U	6.25	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/9/2013	VTRP130710L	< 0.2 U	< 4 U	< 4 U	< 4 U	5.31	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/29/2013	VTRP130730B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/2/2013	VTRP130805C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/5/2013	VTRP130806C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/6/2013	VTRP130807C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/7/2013	VTRP130808B	< 0.2 U	< 4 U	< 4 U	< 4 U	4.75	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/7/2013	VTRP130809C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/8/2013	VTRP130809B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/9/2013	VTRP130812B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/14/2013	VTRP130815C	< 0.2 U	< 4 U	< 4 U	< 4 U	4.9	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/15/2013	VTRP130816C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
DW-85	9/27/2013	WV85130927-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
DW-PA	9/27/2013	WVPA130927-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	CARBON TETRA-CHLORIDE	CHLORO-BENZENE	CHLORO-DIBROMO-METHANE	CHLORO-ETHANE	CHLORO-FORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	CIS-1,3-DICHLORO PROPENE	DIBROMO METHANE	DICHLORO DIFLUORO METHANE	ETHYL-BENZENE	M & P XYLENE	METHYL IODIDE
			56-23-5 (µg/L)	108-90-7 (µg/L)	124-48-1 (µg/L)	75-00-3 (µg/L)	67-66-3 (µg/L)	74-87-3 (µg/L)	156-59-2 (µg/L)	10061-01-5 (µg/L)	74-95-3 (µg/L)	75-71-8 (µg/L)	100-41-4 (µg/L)	MPX (µg/L)	74-88-4 (µg/L)
MW-2	8/5/2013	WV2-130805-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.21 T	< 0.2 U	< 0.2 U	4.71	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	8/15/2013	WV5D130815-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	8.76	< 0.2 U	< 0.2 U	1.19	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	8/6/2013	WV7-130806-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	8/16/2013	WV8-130816-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	7/30/2013	WV9-130730-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	8/8/2013	WV10130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	8/9/2013	WV12130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	8/5/2013	WV13130805-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	7/30/2013	WV19130730-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	8/7/2013	WV20130807-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	8/7/2013	WV20130807D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	8/9/2013	WV21130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	1.13	< 0.2 U	< 0.2 U	1.57	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	8/9/2013	WV26130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	8/8/2013	WV27130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	8/15/2013	WV29130815-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	7/30/2013	WV9-130730F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/9/2013	VTRP130710L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/29/2013	VTRP130730B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/2/2013	VTRP130805C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/5/2013	VTRP130806C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/6/2013	VTRP130807C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/7/2013	VTRP130808B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/7/2013	VTRP130809C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/8/2013	VTRP130809B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/9/2013	VTRP130812B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/14/2013	VTRP130815C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/15/2013	VTRP130816C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
DW-85	9/27/2013	WV85130927-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
DW-PA	9/27/2013	WVPA130927-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	METHYLENE CHLORIDE	O-XYLENE	STYRENE	TETRA-CHLORO-ETHENE	TOLUENE	TRANS-1,2-DICHLOROETHENE	TRANS-1,3-DICHLORO-PROPENE	TRANS-1,4-DICHLORO-2-BUTENE	TRICHLORO-ETHENE	TRICHLORO-FLUORO-METHANE	VINYL ACETATE	VINYL CHLORIDE
			75-09-2 (µg/L)	95-47-6 (µg/L)	100-42-5 (µg/L)	127-18-4 (µg/L)	108-88-3 (µg/L)	156-60-5 (µg/L)	10061-02-6 (µg/L)	110-57-6 (µg/L)	79-01-6 (µg/L)	75-69-4 (µg/L)	108-05-4 (µg/L)	75-01-4 (µg/L)
MW-2	8/5/2013	WV2-130805-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	1.87	< 0.2 U	0.0643
MW-5D	8/15/2013	WV5D130815-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.35 T	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	3.33
MW-7	8/6/2013	WV7-130806-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-8	8/16/2013	WV8-130816-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-9	7/30/2013	WV9-130730-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-10	8/8/2013	WV10130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-12	8/9/2013	WV12130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-13	8/5/2013	WV13130805-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-19	7/30/2013	WV19130730-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-20	8/7/2013	WV20130807-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-20	8/7/2013	WV20130807D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-21	8/9/2013	WV21130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	0.566	< 0.2 U	0.109
MW-26	8/9/2013	WV26130809-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-27	8/8/2013	WV27130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-29	8/15/2013	WV29130815-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
FIELD BLANK	7/30/2013	WV9-130730F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	7/9/2013	VTRP130710L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	7/29/2013	VTRP130730B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/2/2013	VTRP130805C	0.406	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/5/2013	VTRP130806C	0.3 T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/6/2013	VTRP130807C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/7/2013	VTRP130808B	0.442	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/7/2013	VTRP130809C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/8/2013	VTRP130809B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/9/2013	VTRP130812B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/14/2013	VTRP130815C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/15/2013	VTRP130816C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
DW-85	9/27/2013	WV85130927-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
DW-PA	9/27/2013	WVPA130927-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	ALKALINITY, TOTAL (AS CACO3) (mg/l)	AMMONIA AS N (mg/l)	BIOLOGICAL OXYGEN DEMAND (mg/l)	CHEMICAL OXYGEN DEMAND (mg/l)	CHLORIDE (mg/l)	COLIFORMS, FECAL (cfu/100ml)	COLIFORMS, TOTAL (cfu/100ml)	CYANIDE (mg/l)	FLUORIDE (mg/l)
LS-B	7/10/13	LVB-130710Q	131	< 0.01 U	13.3	74	460	< 1 U	2300	< 0.02 U	0.16 T
LS-PS1	7/10/13	LVP-130710Q	108	0.0911	< 2 U	12 T	28.9	4	< 1 CU	< 0.02 U	0.11 T

Site	Date	Sample ID	NITRATE + NITRITE AS N (mg/l)	PHOSPHORUS, SOLUBLE REACTIVE (umhos/cm)	SPECIFIC CONDUCTANCE (mg/l)	SULFATE (mg/l)	SULFIDE, TOTAL (mg/l)	TOTAL FATS, OILS & GREASE (mg/l)	TOTAL KJELDAHL NITROGEN (mg/l)	TOTAL ORGANIC CARBON (mg/l)	TOTAL ORGANIC HALIDES (mg/l)
LS-B	7/10/13	LVB-130710Q	96.5	0.0392	3720	782	0.017 T	2 T	1.49	28	
LS-PS1	7/10/13	LVP-130710Q	0.031 T	< 0.01 U	372	38.8	< 0.01 U	< 2 U	0.525	4.78	

Site	Date	Sample ID	TOTAL SUSPENDED SOLIDS (mg/l)	TOTAL VOLATILE SOLIDS (mg/l)	VOLATILE SUSPENDED SOLIDS (mg/l)
LS-B	7/10/13	LVB-130710Q	2.2	915	1.4 T
LS-PS1	7/10/13	LVP-130710Q	4.6	52	3.2

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Leachate Field Data
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Site	Date	Sample ID	pH (Field) (std. Units)	Temperature (°C)	Conductance (Field) (μmho/cm)
LS-B	7/10/2013	LVB-130710Q	7.7	15.8	2700
LS-PS1	7/10/2013	LVP-130710Q	7.35	15.9	300

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	Aluminum, total (mg/L)	Antimony, total (mg/L)	Arsenic, total (mg/L)	Barium, total (mg/L)	Beryllium, total (mg/L)	Cadmium, total (mg/L)	Calcium, total (mg/L)	Chromium, total (mg/L)	Cobalt, total (mg/L)	Copper, total (mg/L)	Iron, total (mg/L)
LS-B	7/10/2013	LVB-130710Q	< 0.02 U	< 0.001 U	< 0.001 U	0.0723	< 0.001 U	< 0.002 U	254	< 0.005 U	0.0049 T	0.0069 T	< 0.01 U
LS-PS1	7/10/2013	LVP-130710Q	< 0.02 U	< 0.001 U	< 0.001 U	0.0223	< 0.001 U	< 0.002 U	39.3	< 0.005 U	< 0.003 U	< 0.002 U	0.318

Site	Date	Sample ID	Lead, total (mg/L)	Magnesium, total (mg/L)	Manganese, total (mg/L)	Mercury, total (mg/L)	Nickel, total (mg/L)	Potassium, total (mg/L)	Selenium, total (mg/L)	Silver, total (mg/L)	Sodium, total (mg/L)	Thallium, total (mg/L)	Tin, total (mg/L)
LS-B	7/10/2013	LVB-130710Q	< 0.001 U	154	< 0.001 U	< 0.0001 U	0.0735	44.3	< 0.001 U	< 0.003 U	318	< 0.001 U	< 0.01 U
LS-PS1	7/10/2013	LVP-130710Q	< 0.001 U	10.7	0.387	< 0.0001 U	< 0.01 U	3.61	< 0.001 U	< 0.003 U	16.6	< 0.001 U	< 0.01 U

Site	Date	Sample ID	Vanadium, total (mg/L)	Zinc, total (mg/L)
LS-B	7/10/2013	LVB-130710Q	< 0.002 U	0.0418
LS-PS1	7/10/2013	LVP-130710Q	< 0.002 U	0.0051 T

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	2,4,5-T	2,4,5-TP SILVEX	2,4-D	4,4'DDD	4,4'DDE	4,4'DDT	ALDRIN	ALPHA BHC	ALPHA CHLORDANE	AROCLOR 1016	AROCLOR 1221
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	7/10/2013	LVB-130710Q	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PS1	7/10/2013	LVP-130710Q	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U

Site	Date	Sample ID	AROCLOR 1232	AROCLOR 1242	AROCLOR 1248	AROCLOR 1254	AROCLOR 1260	BETA BHC	DELTA BHC	DIELDRIN	DINOSEB	ENDOSULFAN I	ENDOSULFAN II
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	7/10/2013	LVB-130710Q	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U
LS-PS1	7/10/2013	LVP-130710Q	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 U	< 0.1 U	< 0.1 U

Site	Date	Sample ID	ENDOSULFAN SULFATE	ENDRIN	ENDRIN ALDEHYDE	HEPTACHLOR	HEPTACHLOR EPOXIDE	ISODRIN	LINDANE(GAMMA BHC)	METHOXYCHLOR	TOXAPHENE
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	7/10/2013	LVB-130710Q	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PS1	7/10/2013	LVP-130710Q	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	1,1,1,2-TETRACHLOROETHANE ug/l N	1,1,1-TRICHLOROETHANE ug/l N	1,1,2,2-TETRACHLOROETHANE ug/l N	1,1,2-TRICHLOROETHANE ug/l N	1,1-DICHLOROETHANE ug/l N	1,1-DICHLOROETHENE ug/l N	1,1-DICHLOROPROPENE ug/l N	1,2,3-TRICHLOROPROPANE ug/l N	1,2-DIBROMO-3-CHLOROPROPANE ug/l N	1,2-DIBROMOETHANE ug/l N	1,2-DICHLOROBENZENE ug/l N	1,2-DICHLOROETHANE ug/l N	1,2-DICHLOROPROPANE ug/l N
LS-B	07/10/13	LVB-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PS1	07/10/13	LVP-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	07/09/13	VTRP130710L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	1,3-DICHLORO-BENZENE 541-73-1 (µg/L)	1,3-DICHLORO-PROPANE 142-28-9 (µg/L)	1,4-DICHLORO-BENZENE 106-46-7 (µg/L)	2,2-DICHLORO-PROPANE 594-20-7 (µg/L)	2-BUTANONE 78-93-3 (µg/L)	2-HEXANONE 591-78-6 (µg/L)	2-METHYL-1-PROPANOL 78-83-1 (µg/L)	3-CHLORO-PROPENE 107-05-1 (µg/L)	4-METHYL-2-PENTANONE 108-10-1 (µg/L)	ACETONE 67-64-1 (µg/L)	ACETONITRILE 75-05-8 (µg/L)	ACROLEIN 107-02-8 (µg/L)	ACRYLO-NITRILE 107-13-1 (µg/L)
LS-P2	07/10/13	LVB-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-B	07/10/13	LVP-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-BE	07/09/13	VTRP130710L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	5.31	< 100 U	< 10 U	< 0.07 U

Site	Date	Sample ID	BENZENE 71-43-2 (µg/L)	BROMO-CHLORO-METHANE 74-97-5 (µg/L)	BROMO-DICHLORO-METHANE 75-27-4 (µg/L)	BROMOFORM 75-25-2 (µg/L)	BROMO-METHANE 74-83-9 (µg/L)	CARBON DISULFIDE 75-15-0 (µg/L)	CARBON TETRA-CHLORIDE 56-23-5 (µg/L)	CHLORO-BENZENE 108-90-7 (µg/L)	CHLORO-DIBROMO-METHANE 124-48-1 (µg/L)	CHLORO-ETHANE 75-00-3 (µg/L)	CHLOROFORM 67-66-3 (µg/L)	CHLORO-METHANE 74-87-3 (µg/L)	CHLOROPRENE 126-99-8 (µg/L)
LS-P2	07/10/13	LVB-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	4.37	< 0.2 U	< 0.2 U	< 20 U
LS-B	07/10/13	LVP-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-BE	07/09/13	VTRP130710L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U

Site	Date	Sample ID	CIS-1,2-DICHLORO-ETHENE 156-59-2 (µg/L)	CIS-1,3-DICHLORO-PROPENE 10061-01-5 (µg/L)	DIBROMO-METHANE 74-95-3 (µg/L)	DICHLORO-DIFLUORO-METHANE 75-71-8 (µg/L)	ETHYL-BENZENE 100-41-4 (µg/L)	M & P XYLENE MPX (µg/L)	METHYL IODIDE 74-88-4 (µg/L)	METHYL METHA-CRYLATE 80-62-6 (µg/L)	METHYL-ACRYLO-NITRILE 126-98-7 (µg/L)	METHYLENE CHLORIDE 75-09-2 (µg/L)	O-XYLENE 95-47-6 (µg/L)	PROPRIO-NITRILE 107-12-0 (µg/L)	STYRENE 100-42-5 (µg/L)
LS-P2	07/10/13	LVB-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-B	07/10/13	LVP-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-BE	07/09/13	VTRP130710L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U

Site	Date	Sample ID	TETRA-CHLORO-ETHENE 127-18-4 (µg/L)	TOLUENE 108-88-3 (µg/L)	TRANS-1,2-DICHLORO-ETHENE 156-60-5 (µg/L)	TRANS-1,3-DICHLORO-PROPENE 10061-02-6 (µg/L)	TRANS-1,4-DICHLORO-2-BUTENE 110-57-6 (µg/L)	TRICHLORO-ETHENE 79-01-6 (µg/L)	TRICHLORO-FLUORO-METHANE 75-69-4 (µg/L)	VINYL ACETATE 108-05-4 (µg/L)	VINYL CHLORIDE 75-01-4 (µg/L)
LS-P2	07/10/13	LVB-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	0.17 T
LS-B	07/10/13	LVP-130710Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-BE	07/09/13	VTRP130710L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Surface Water Analysis Data
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Site	Date	Sample ID	ALKALINITY, TOTAL (as CaCO3)	AMMONIA as N	BIOLOGICAL OXYGEN DEMAND	CHEMICAL OXYGEN DEMAND	CHLORIDE	COLIFORMS, FECAL	COLIFORMS, TOTAL	CYANIDE	FLUORIDE	HARDNESS
			mg/l	mg/l	mg/l	mg/l	mg/l	cfu/100ml	cfu/100ml	mg/l	mg/l	mg/l
SW-E	8/12/2013	SVE-130812Q	96.7	< 0.01 U	< 2 U	10 T	5.96	13	210	< 0.02 U	< 0.1 U	101
SW-W1	9/18/2013	SVW1130918Q	93.3	0.0266	< 2 U	9.5 T	4.96	3	20	< 0.02 U	< 0.1 U	94.4
SW-W2	9/18/2013	SVW2130918Q	370	< 0.01 U	< 2 U	21.8	24.2	5	20	< 0.02 U	< 0.1 U	342
SW-W3	9/18/2013	SVW3130918Q	145	< 0.01 U	< 2 U	< 5 U	8.14	3 C	40	< 0.02 U	0.114	138
FIELD BLANK	7/30/2013	WV9-130730F	< 1 U	< 0.01 U			< 0.1 U					

Site	Date	Sample ID	NITRATE	NITRATE + NITRITE as N	PHOSPHORUS, SOLUBLE REACTIVE	SPECIFIC CONDUCTANCE	SULFATE	TOTAL DISSOLVED SOLIDS	TOTAL KJELDAHL NITROGEN	TOTAL ORGANIC CARBON	TOTAL ORGANIC HALIDES (TOX)	TOTAL SOLIDS
			mg/l	mg/l	mg/l	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
SW-E		SVE-130502Q	0.96	0.96	0.0454	225	10	150	0.289	5.78		178
SW-W1	9/18/13	SVW1130918Q	1.06	1.06	< 0.01 U	229	10.8	171	0.408	3.31		191
SW-W2	9/18/13	SVW2130918Q	0.114	0.114	< 0.01 U	719	9.89	470	0.3	5.97		507
SW-W3	9/18/13	SVW3130918Q	0.359	0.359	< 0.01 U	325	11.4	225	< 0.1 U	4.34		246
FIELD BLANK	7/30/13	WV9-130730F	0.077			3.2 T	< 0.1 U	< 5 U		1.37		< 5 U

Site	Date	Sample ID	TOTAL SUSPENDED SOLIDS	TURBIDITY
			mg/l	ntu
SW-E		SVE-130502Q		
SW-W1	9/18/13	SVW1130918Q	18	10.1
SW-W2	9/18/13	SVW2130918Q	15.6	13.7
SW-W3	9/18/13	SVW3130918Q	22.8	6.09
FIELD BLANK	7/30/13	WV9-130730F	< 1 U	

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Surface Water Field Data
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Site	Date	Sample ID	pH (Field) (std. Units)	Conductance (Field) (mmho/cm)	DO (Field) (mg/L)	Temperature (Field) (oC)	Turbidity (Field) (NTU)
SW-W1	9/18/2013	SVW1130918Q	7.1	240	7.65	14	6.2
SW-W2	9/18/2013	SVW2130918Q	7.93	750	10.05	13.3	10.9
SW-W3	9/18/2013	SVW3130918Q	8.07	335	9.39	13.1	5.6
SW-E	8/12/2013	SVE-130812Q	7.85	370	10.85	13.1	7.46

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Surface Water Analysis Data
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Site	Date	Sample ID	Aluminum, dissolved (mg/L)	Aluminum, total (mg/L)	Antimony, dissolved (mg/L)	Antimony, total (mg/L)	Arsenic, dissolved (mg/L)	Arsenic, total (mg/L)	Barium, dissolved (mg/L)	Barium, total (mg/L)	Beryllium, dissolved (mg/L)	Beryllium, total (mg/L)	Cadmium, dissolved (mg/L)	Cadmium, total (mg/L)
SW-W1	9/18/2013	SVW1130918Q	< 0.02 U	0.263	< 0.001 U	< 0.001 U	0.00392	0.00845	0.00105	0.00596	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
SW-W2	9/18/2013	SVW2130918Q	< 0.02 U	0.15	< 0.001 U	< 0.001 U	0.00177	0.00333	0.0035	0.0111	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U
SW-W3	9/18/2013	SVW3130918Q	< 0.02 U	0.181	< 0.001 U	< 0.001 U	0.00301	0.00433	0.0032	0.00728	< 0.001 DU	< 0.001 U	< 0.002 U	< 0.002 U
SW-E	8/12/2013	SVE-130812Q	< 0.02 U	0.385	< 0.001 U	< 0.001 U	0.00222	0.00238	0.00518	0.00885	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U

Site	Date	Sample ID	Calcium, dissolved (mg/L)	Calcium, total (mg/L)	Chromium, dissolved (mg/L)	Chromium, total (mg/L)	Cobalt, dissolved (mg/L)	Cobalt, total (mg/L)	Copper, dissolved (mg/L)	Copper, total (mg/L)	Iron, dissolved (mg/L)	Iron, total (mg/L)	Lead, dissolved (mg/L)	Lead, total (mg/L)
SW-W1	9/18/2013	SVW1130918Q	15.2	16.4	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.378	2.95	< 0.001 U	< 0.001 U
SW-W2	9/18/2013	SVW2130918Q	54.2	57.8	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.0555	2.64	< 0.001 U	< 0.001 U
SW-W3	9/18/2013	SVW3130918Q	22.2	24.3	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 DL	< 0.002 U	0.041 T	0.892	< 0.001 U	< 0.001 U
SW-E	8/12/2013	SVE-130812Q	16.4	16.2	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.0513	0.709	< 0.001 U	< 0.001 U

Site	Date	Sample ID	Magnesium, dissolved (mg/L)	Magnesium, total (mg/L)	Manganese, dissolved (mg/L)	Manganese, total (mg/L)	Mercury, dissolved (mg/L)	Mercury, total (mg/L)	Nickel, dissolved (mg/L)	Nickel, total (mg/L)	Potassium, dissolved (mg/L)	Potassium, total (mg/L)	Selenium, dissolved (mg/L)	Selenium, total (mg/L)
SW-W1	9/18/2013	SVW1130918Q	12.3	12.9	0.546	1.31		< 0.0001 U	< 0.01 U	< 0.01 U	1.16	1.24	< 0.001 U	< 0.001 U
SW-W2	9/18/2013	SVW2130918Q	46.8	47.9	0.0666	0.717		< 0.0001 U	< 0.01 U	< 0.01 U	3.34	3.47	< 0.001 U	< 0.001 U
SW-W3	9/18/2013	SVW3130918Q	18.3	18.8	0.257	0.599		< 0.0001 U	< 0.01 U	< 0.01 U	2.59	2.4	< 0.001 U	< 0.001 U
SW-E	8/12/2013	SVE-130812Q	15.8	14.8	0.0134	0.106		< 0.0001 U	< 0.01 U	< 0.01 U	2.03	1.95	< 0.001 U	< 0.001 U

Site	Date	Sample ID	Silver, dissolved (mg/L)	Silver, total (mg/L)	Sodium, dissolved (mg/L)	Sodium, total (mg/L)	Thallium, dissolved (mg/L)	Thallium, total (mg/L)	Tin, dissolved (mg/L)	Tin, total (mg/L)	Vanadium, dissolved (mg/L)	Vanadium, total (mg/L)	Zinc, dissolved (mg/L)	Zinc, total (mg/L)
SW-W1	9/18/2013	SVW1130918Q	< 0.003 U	< 0.003 U	6.7	6.88	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
SW-W2	9/18/2013	SVW2130918Q	< 0.003 U	< 0.003 U	14.7	14.8	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
SW-W3	9/18/2013	SVW3130918Q	< 0.003 U	< 0.003 U	8.94 D	8.61	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
SW-E	8/12/2013	SVE-130812Q	< 0.003 U	< 0.003 U	7.54	7.19	< 0.001 U	< 0.001 DU	< 0.01 U	< 0.01 U	0.0029	0.00419	< 0.004 U	< 0.004 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Leachate Field Data
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Site	Date	Sample ID	pH (Field) (std. Units)	Temperature (°C)	Conductance (Field) (μmho/cm)
LS-B	7/10/2013	LVB-130710Q	7.7	15.8	2700
LS-PS1	7/10/2013	LVP-130710Q	7.35	15.9	300

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from July 1, 2013 to Sept. 30, 2013
Vashon Landfill --- Surface Water Analysis Data
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Site	Date	Sample ID	1,1,1,2-TETRA-CHLORO-630-20-6 (µg/L)	1,1,1-TRI-CHLORO-ETHANE 71-55-6 (µg/L)	1,1,2,2-TETRA-CHLORO-ETHANE 79-34-5 (µg/L)	1,1,2-TRI-CHLORO-ETHANE 79-00-5 (µg/L)	1,1-DICHLORO-ETHANE 75-34-3 (µg/L)	1,1-DICHLORO-ETHENE 75-35-4 (µg/L)	1,2,3-TRI-CHLORO-PROPANE 96-18-4 (µg/L)	1,2-DIBROMO-3-CHLORO-PROPANE 96-12-8 (µg/L)	1,2-DIBROMO-ETHANE 106-93-4 (µg/L)	1,2-DICHLORO-BENZENE 95-50-1 (µg/L)	1,2-DICHLORO-ETHANE 107-06-2 (µg/L)	1,2-DICHLORO-PROPANE 78-87-5 (µg/L)	1,4-DICHLORO-BENZENE 106-46-7 (µg/L)
SW-E	8/12/2013	SVE-130812Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W1	9/18/2013	SVW1130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	9/18/2013	SVW2130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	9/18/13	SVW3130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	7/30/13	WV9-130730F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/29/13	VTRP130730B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/2/13	VTRP130805C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/9/13	VTRP130812B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	9/17/13	VTRP130918-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	2-BUTANONE 78-93-3 (mg/L)	2-HEXANONE 591-78-6 (mg/L)	4-METHYL-2-PENTANONE 108-10-1 (mg/L)	ACETONE 67-64-1 (mg/L)	ACRYLO-NITRILE 107-13-1 (mg/L)	BENZENE 71-43-2 (mg/L)	BROMO-CHLORO-74-97-5 (mg/L)	BROMO-DICHLORO-75-27-4 (mg/L)	BROMOFORM 75-25-2 (mg/L)	BROMO-METHANE 74-83-9 (mg/L)	CARBON DISULFIDE 75-15-0 (mg/L)	CARBON TETRA-56-23-5 (mg/L)	CHLORO-BENZENE 108-90-7 (mg/L)
SW-E	8/12/2013	SVE-130812Q	< 4 U	< 4 U	< 4 U	4.26	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W1	9/18/2013	SVW1130918Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	9/18/2013	SVW2130918Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	9/18/2013	SVW3130918Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	7/30/2013	WV9-130730F	< 4 U	< 4 U	< 4 U	6.25	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/29/2013	VTRP130730B	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/2/2013	VTRP130805C	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/9/2013	VTRP130812B	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	9/17/2013	VTRP130918-	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	CHLORO-DIBROMO-METHANE 124-48-1 (mg/L)	CHLORO-ETHANE 75-00-3 (mg/L)	CHLOROFORM 67-66-3 (mg/L)	CHLORO-METHANE 74-87-3 (mg/L)	CIS-1,2-DICHLORO-ETHENE 156-59-2 (mg/L)	CIS-1,3-DICHLORO-PROPENE 10061-01-5 (mg/L)	DIBROMO-METHANE 74-95-3 (mg/L)	DICHLORO-DIFLUORO-METHANE 75-71-8 (mg/L)	ETHYL-BENZENE 100-41-4 (mg/L)	M & P XYLENE MPX (mg/L)	METHYL IODIDE 74-88-4 (mg/L)	METHYLENE CHLORIDE 75-09-2 (mg/L)	O-XYLENE 95-47-6 (mg/L)
SW-E	8/12/2013	SVE-130812Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W1	9/18/2013	SVW1130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	9/18/2013	SVW2130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	9/18/2013	SVW3130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
FIELD BLANK	7/30/2013	WV9-130730F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	7/29/2013	VTRP130730B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	8/2/2013	VTRP130805C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.406	< 0.2 U
VOA TRIP BLANK	8/9/2013	VTRP130812B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	9/17/2013	VTRP130918-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	STYRENE 100-42-5 (mg/L)	TETRA-CHLORO-ETHENE 127-18-4 (mg/L)	TOLUENE 108-88-3 (mg/L)	TRANS-1,2-DICHLORO-ETHENE 156-60-5 (mg/L)	TRANS-1,3-DICHLORO-PROPENE 10061-02-6 (mg/L)	TRANS-1,4-DICHLORO-2-BUTENE 110-57-6 (mg/L)	TRICHLORO-ETHENE 79-01-6 (mg/L)	TRICHLORO-FLUORO-METHANE 75-69-4 (mg/L)	VINYL ACETATE 108-05-4 (mg/L)	VINYL CHLORIDE 75-01-4 (mg/L)
SW-E	8/12/2013	SVE-130812Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W1	9/18/2013	SVW1130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W2	9/18/2013	SVW2130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W3	9/18/2013	SVW3130918Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	0.0295
FIELD BLANK	7/30/2013	WV9-130730F	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	7/29/2013	VTRP130730B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/2/2013	VTRP130805C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	8/9/13	VTRP130812B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	9/17/13	VTRP130918-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Field Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	pH (Field) (std. Units)	Conductance (Field) (μmhos/cm)	Temperature (°C)	Depth to Water (feet)	Ground-Water Elevation (feet above msl)
MW-2	11/1/2013					73.88	240.4
MW-2	11/8/2013	WV2-131108-	7.12	330	10.1	74.05	240.23
MW-3	11/1/2013					41.62	273.25
MW-4	11/1/2013					104.15	270.06
MW-5D	11/1/2013					117.5	239.7
MW-5D	11/6/2013	WV5D131106-	6.87	280	10.5	117.66	239.54
MW-7	11/1/2013					191.78	181.47
MW-7	11/6/2013	WV7-131106-	7.47	140	10.3	191.98	181.27
MW-8	11/1/2013					176.39	207.03
MW-8	11/4/2013	WV8-131104-	6.56	130	10	176.44	206.98
MW-9	11/1/2013	WV9-131101-	7.08	140	9.9	165.87	236.7
MW-10	11/1/2013					144.87	262.64
MW-12	11/1/2013					142.47	169.92
MW-12	11/5/2013	WV12131105-	7.23	130	9.4	142.51	169.88
MW-13	11/6/2013	WV13131107-				100.12	273.95
MW-13	11/7/2013	WV13131107-	7.25	170	10.6	99.51	247.56
MW-14	11/6/2013					151.52	224.16
MW-19	11/4/2013	WV19131104-				245.65	158.18
MW-19	11/6/2013	WV19131104-	7.32	185	9.9	245.94	157.89
MW-20	11/6/2013					122.71	244.5
MW-20	11/7/2013	WV21131107-	7.38	150	10.5	122.15	245.06
MW-21	11/6/2013					106.75	238.91
MW-21	11/7/2013	WV21131107-	6.78	250	9.5	106.45	239.21
MW-24	11/6/2013					88.48	285.45
MW-25	11/6/2013					243.67	155.55
MW-26	11/6/2013					247.55	155.72
MW-26	11/12/2013	WV26131112-	8.12	170	10.8	247.45	155.59
MW-27	11/6/2013					188.61	194.45
MW-27	11/12/2013	WV27131112-	7.12	170	11.1	188.58	194.48
MW-28	11/6/2013					236.77	158.82
MW-29	11/6/2013					244.5	166.07
MW-29	11/7/2013	WV29131107-	7.6	220	10.9	243.22	167.35

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	ALKALINITY, TOTAL (AS CACO3) mg/l	AMMONIA AS N mg/l	CHLORIDE mg/l	NITRATE mg/l	SPECIFIC CONDUCTANCE umhos/cm	SULFATE mg/l	TOTAL DISSOLVED mg/l	TOTAL ORGANIC mg/l	TOTAL SOLIDS mg/l	TOTAL SUSPENDED mg/l
MW-2	11/8/2013	WV2-131108-	172	< 0.01 U	3.08	0.0451	391	16.9	234	< 1 U	241	< 1 U
MW-5D	11/6/2013	WV5D131106-	134	0.0428	2.94	< 0.01 U	306	8.98	208	1.55	215	4.1
MW-7	11/6/2013	WV7-131106-	67.5	0.313	3.3	0.097 T	177	10.5	123	< 1 U	128	< 1 U
MW-8	11/4/2013	WV8-131104-	51.5	< 0.01 U	4.87	3.52	170	8.04	114	< 1 U	121	< 1 U
MW-9	11/1/2013	WV9-131101-	62.9	0.0111	4.57	0.195	180	13.5	124	< 1 U	125	< 1 U
MW-12	11/5/2013	WV12131105-	57.7	0.036 T	3.14	0.74	157	10.7	109	< 1 U	111	< 1 U
MW-13	11/7/2013	WV13131107-	65.6	< 0.01 U	2.63	0.0614	189	17.1	126	< 1 U	146	10.8
MW-19	11/4/2013	WV19131104-	89.9	0.0231	4.82	0.033 T	237	16.6	149	< 1 U	150	< 1 U
MW-20	11/7/2013	WV20131107-	65.5	0.019	3.2	0.03 T	190	17.5	133	< 1 U	138	< 1 U
MW-20	11/7/2013	WV20131107D	66.1	0.0221	3.13	0.0431	189	17.1	132	< 1 U	136	< 1 U
MW-21	11/7/2013	WV21131107-	131	< 0.01 U	2.95	0.112	319	17.1	200	< 1 U	204	1
MW-26	11/12/2013	WV26131112-	67.8	0.227	3.53	0.027 T	193	12.9	147	< 1 U	147	< 1 U
MW-27	11/12/2013	WV27131112-	57.8	< 0.01 U	4.84	2.41	187	9.09	134	< 1 U	142	< 1 U
MW-29	11/7/2013	WV29131107-	95.9	< 0.01 U	3.43	< 0.01 U	246	16.1	151	< 1 U	159	3.7
MW-29	11/7/2013	WV29131107D	94.4	< 0.01 U	3.29	< 0.01 U	245	16.4	153	< 1 U	161	3.1

PRIVATE WELLS
DW-85
DW-PA

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Antimony, dissolved	Antimony, total	Arsenic, dissolved	Arsenic, total	Barium, dissolved	Barium, total	Beryllium, dissolved	Beryllium, total	Cadmium, dissolved	Cadmium, total	Calcium, dissolved	Calcium, total
MW-2	11/8/2013	WV2-131108-	< 0.001 U	< 0.001 U	0.00104	< 0.001 U	0.00879	0.00902	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	23.7	27.1
MW-5D	11/6/2013	WV5D131106-	< 0.001 U	< 0.001 U	0.0908	0.0884	0.0129	0.0129	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	25.1	23.6
MW-7	11/6/2013	WV7-131106-	< 0.001 U	< 0.001 U	0.00553	0.00531	0.011	0.0125	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	14.5	14.4
MW-8	11/4/2013	WV8-131104-	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00338	0.00354	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	12	11.6
MW-9	11/1/2013	WV9-131101-	< 0.001 U	< 0.001 U	0.00234	0.0022	0.00335	0.00351	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	13.3	13.1
MW-12	11/5/2013	WV12131105-	< 0.001 U	< 0.001 U	0.00203	0.00198	0.00396	0.0042	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	10.7	11
MW-13	11/7/2013	WV13131107-	< 0.001 U	< 0.001 U	0.00175	0.00168	0.00529	0.00721	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	10.2	11.5
MW-19	11/4/2013	WV19131104-	< 0.001 U	< 0.001 U	0.00132	0.00131	0.0164	0.017	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	16.8	16.4
MW-20	11/7/2013	WV20131107-	< 0.001 U	< 0.001 U	0.00148	0.00134	0.00322	0.00439	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	12.4	14.4
MW-20	11/7/2013	WV20131107D	< 0.001 U	< 0.001 U	0.00151	0.00144	0.00327	0.00439	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	12.4	14
MW-21	11/7/2013	WV21131107-	< 0.001 U	< 0.001 U	0.00102	0.00131	0.0082	0.00851	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	20.5	23.5
MW-26	11/12/2013	WV26131112-	< 0.001 U	< 0.001 U	0.00325	0.003	0.00961	0.0102	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	15.7	18.4
MW-27	11/12/2013	WV27131112-	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.00373	0.0038	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	12.2	13.6
MW-29	11/7/2013	WV29131107-	< 0.001 U	< 0.001 U	0.00451	0.00534	0.00934	0.0106	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	19	20.5
MW-29	11/7/2013	WV29131107D	< 0.001 U	< 0.001 U	0.00448	0.0051	0.00934	0.0105	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 U	18.9	20.4

Site	Date	Sample ID	Chromium, dissolved	Chromium, total	Cobalt, dissolved	Cobalt, total	Copper, dissolved	Copper, total	Iron, dissolved	Iron, total	Lead, dissolved	Lead, total	Magnesium, dissolved	Magnesium, total
MW-2	11/8/2013	WV2-131108-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.011 T	< 0.001 U	< 0.001 U	28.4	31.8
MW-5D	11/6/2013	WV5D131106-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.00263	9.12	8.79	< 0.001 U	< 0.001 U	17.8	17.1
MW-7	11/6/2013	WV7-131106-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.04 T	< 0.001 U	< 0.001 U	9.04	9.09
MW-8	11/4/2013	WV8-131104-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.012 T	< 0.001 U	< 0.001 U	9.61	9.41
MW-9	11/1/2013	WV9-131101-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.017 T	< 0.001 U	< 0.001 U	11	10.9
MW-12	11/5/2013	WV12131105-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	0.00476	< 0.01 U	< 0.01 U	< 0.001 U	< 0.001 U	9	9.34
MW-13	11/7/2013	WV13131107-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.212	< 0.001 U	< 0.001 U	12.1	13.6
MW-19	11/4/2013	WV19131104-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.024 T	0.0607	< 0.001 U	< 0.001 U	15.6	15.3
MW-20	11/7/2013	WV20131107-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.023 T	< 0.001 U	< 0.001 U	10.2	11.6
MW-20	11/7/2013	WV20131107D	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	< 0.01 U	0.019 T	< 0.001 U	< 0.001 U	10.3	11.9
MW-21	11/7/2013	WV21131107-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.194	0.45	< 0.001 U	< 0.001 U	20.3	22.8
MW-26	11/12/2013	WV26131112-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.0794	0.173	< 0.001 U	< 0.001 U	6.35	7.4
MW-27	11/12/2013	WV27131112-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.01 T	0.01 T	< 0.001 U	< 0.001 U	10.2	11.3
MW-29	11/7/2013	WV29131107-	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.76	1.24	< 0.001 U	< 0.001 U	13.6	14.8
MW-29	11/7/2013	WV29131107D	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 U	< 0.002 U	< 0.002 U	0.739	1.14	< 0.001 U	< 0.001 U	13.5	14.8

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Manganese, dissolved	Manganese, total	Mercury, dissolved	Mercury, total	Nickel, dissolved	Nickel, total	Potassium, dissolved	Potassium, total	Selenium, dissolved	Selenium, total	Silver, dissolved	Silver, total
MW-2	11/8/2013	WV2-131108-	0.11	0.117 D	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.45	2.58	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-5D	11/6/2013	WV5D131106-	0.66	0.541	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.31	2.3	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-7	11/6/2013	WV7-131106-	0.142	0.205	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.64	2.62	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-8	11/4/2013	WV8-131104-	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.04	1.11	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-9	11/1/2013	WV9-131101-	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.08	2.04	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-12	11/5/2013	WV12131105-	< 0.001 U	< 0.001 U	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.7	1.76	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-13	11/7/2013	WV13131107-	< 0.001 U	0.00743	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.9	1.9	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-19	11/4/2013	WV19131104-	0.51	0.453	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.54	2.5	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-20	11/7/2013	WV20131107-	0.281	0.352 D	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.29	2.47	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-20	11/7/2013	WV20131107D	0.287	0.331	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.29	2.29	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-21	11/7/2013	WV21131107-	0.325	0.357 D	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.34	2.48	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-26	11/12/2013	WV26131112-	0.0516	0.0563 D	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	3.12	3.32	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-27	11/12/2013	WV27131112-	< 0.001 U	< 0.001 DU	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	1.36	1.45	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-29	11/7/2013	WV29131107-	0.0871	0.0865	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.23	2.14	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U
MW-29	11/7/2013	WV29131107D	0.0888	0.0857	< 0.0001 U	< 0.0001 U	< 0.01 U	< 0.01 U	2.21	2.14	< 0.001 U	< 0.001 U	< 0.003 U	< 0.003 U

Site	Date	Sample ID	Sodium, dissolved	Sodium, total	Thallium, dissolved	Thallium, total	Vanadium, dissolved	Vanadium, total	Zinc, dissolved	Zinc, total
MW-2	11/8/2013	WV2-131108-	9.13	10.3	< 0.001 U	< 0.001 U	0.00375	0.00382	< 0.004 U	< 0.004 U
MW-5D	11/6/2013	WV5D131106-	14.7	15	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-7	11/6/2013	WV7-131106-	6.14	6.32	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-8	11/4/2013	WV8-131104-	6.49	6.46	< 0.001 U	< 0.001 U	0.00226	0.00238	< 0.004 U	< 0.004 U
MW-9	11/1/2013	WV9-131101-	5.94	6.05	< 0.001 U	< 0.001 U	0.00455	0.00484	< 0.004 U	< 0.004 U
MW-12	11/5/2013	WV12131105-	5.48	5.92	< 0.001 U	< 0.001 U	0.00466	0.00491	< 0.004 U	0.00471
MW-13	11/7/2013	WV13131107-	6.13	7.02	< 0.001 U	< 0.001 U	0.00463	0.0057	< 0.004 U	< 0.004 U
MW-19	11/4/2013	WV19131104-	7.27	7.31	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-20	11/7/2013	WV20131107-	5.72	6.73	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	0.00524
MW-20	11/7/2013	WV20131107D	5.73	6.8	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-21	11/7/2013	WV21131107-	9.41	10.9	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-26	11/12/2013	WV26131112-	8.35	9.82	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-27	11/12/2013	WV27131112-	6.16	6.87	< 0.001 U	< 0.001 U	0.00244	0.00252	< 0.004 U	< 0.004 U
MW-29	11/7/2013	WV29131107-	6.19	6.79	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U
MW-29	11/7/2013	WV29131107D	6.17	6.77	< 0.001 U	< 0.001 U	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,1,1,2-TETRA-CHLORO-ETHANE 630-20-6 (µg/L)	1,1,1-TRI-CHLORO-ETHANE 71-55-6 (µg/L)	1,1,2,2-TETRA-CHLORO-ETHANE 79-34-5 (µg/L)	1,1,2-TRICHLORO-ETHANE 79-00-5 (µg/L)	1,1-DICHLORO ETHANE 75-34-3 (µg/L)	1,1-DICHLORO ETHENE 75-35-4 (µg/L)	1,2,3-TRICHLORO-PROPANE 96-18-4 (µg/L)	1,2-DIBROMO-3-CHLORO-PROPANE 96-12-8 (µg/L)	1,2-DIBROMO-ETHANE 106-93-4 (µg/L)	1,2-DICHLORO BENZENE 95-50-1 (µg/L)	1,2-DICHLORO-ETHANE 107-06-2 (µg/L)	1,2-DICHLORO PROPANE 78-87-5 (µg/L)
MW-2	11/8/2013	WV2-131108-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	11/6/2013	WV5D131106-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	11/6/2013	WV7-131106-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	11/4/2013	WV8-131104-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	11/1/2013	WV9-131101-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	8/8/2013	WV10130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	11/5/2013	WV12131105-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	11/7/2013	WV13131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	11/4/2013	WV19131104-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	11/7/2013	WV20131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	11/7/2013	WV20131107D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	11/7/2013	WV21131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	11/12/2013	WV26131112-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	11/12/2013	WV27131112-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	11/7/2013	WV29131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	11/7/2013	WV29131107D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/1/2013	VTRP131104B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/6/2013	VTRP131107B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/6/2013	VTRP131107C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/7/2013	VTRP131108C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/8/2013	VTRP131112C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,4-DICHLORO BENZENE	2-BUTANONE	2-HEXANONE	4-METHYL-2-PENTANONE	ACETONE	ACRYLO-NITRILE	BENZENE	BROMO-CHLORO-METHANE	BROMO-DICHLORO-METHANE	BROMOFORM	BROMO-METHANE	CARBON DISULFIDE
			106-46-7 (µg/L)	78-93-3 (µg/L)	591-78-6 (µg/L)	108-10-1 (µg/L)	67-64-1 (µg/L)	107-13-1 (µg/L)	71-43-2 (µg/L)	74-97-5 (µg/L)	75-27-4 (µg/L)	75-25-2 (µg/L)	74-83-9 (µg/L)	75-15-0 (µg/L)
MW-2	11/8/2013	WV2-131108-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	11/6/2013	WV5D131106-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	0.531	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	11/6/2013	WV7-131106-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	11/4/2013	WV8-131104-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	11/1/2013	WV9-131101-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	8/8/2013	WV10130808-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	11/5/2013	WV12131105-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	11/7/2013	WV13131107-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	11/4/2013	WV19131104-	< 0.2 U	< 4 U	< 4 U	< 4 U	8.08 B	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	11/7/2013	WV20131107-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	11/7/2013	WV20131107D	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	11/7/2013	WV21131107-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	11/12/2013	WV26131112-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	11/12/2013	WV27131112-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	11/7/2013	WV29131107-	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	11/7/2013	WV29131107D	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/1/2013	VTRP131104B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/6/2013	VTRP131107B	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/6/2013	VTRP131107C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/7/2013	VTRP131108C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/8/2013	VTRP131112C	< 0.2 U	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	CARBON TETRA-CHLORIDE	CHLORO-BENZENE	CHLORO-DIBROMO-METHANE	CHLORO-ETHANE	CHLORO-FORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	CIS-1,3-DICHLORO PROPENE	DIBROMO METHANE	DICHLORO DIFLUORO METHANE	ETHYL-BENZENE	M & P XYLENE	METHYL IODIDE
			56-23-5 (µg/L)	108-90-7 (µg/L)	124-48-1 (µg/L)	75-00-3 (µg/L)	67-66-3 (µg/L)	74-87-3 (µg/L)	156-59-2 (µg/L)	10061-01-5 (µg/L)	74-95-3 (µg/L)	75-71-8 (µg/L)	100-41-4 (µg/L)	MPX (µg/L)	74-88-4 (µg/L)
MW-2	11/8/2013	WV2-131108-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	9.26	< 0.2 U	< 0.2 U	< 0.2 U
MW-5D	11/6/2013	WV5D131106-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	9.15	< 0.2 U	< 0.2 U	1.94	< 0.2 U	< 0.2 U	< 0.2 U
MW-7	11/6/2013	WV7-131106-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-8	11/4/2013	WV8-131104-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-9	11/1/2013	WV9-131101-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-10	8/8/2013	WV10130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-12	11/5/2013	WV12131105-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-13	11/7/2013	WV13131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-19	11/4/2013	WV19131104-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	11/7/2013	WV20131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-20	11/7/2013	WV20131107D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-21	11/7/2013	WV21131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	1.21	< 0.2 U	< 0.2 U	3.32	< 0.2 U	< 0.2 U	< 0.2 U
MW-26	11/12/2013	WV26131112-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-27	11/12/2013	WV27131112-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	11/7/2013	WV29131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
MW-29	11/7/2013	WV29131107D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/1/2013	VTRP131104B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/6/2013	VTRP131107B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/6/2013	VTRP131107C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/7/2013	VTRP131108C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/8/2013	VTRP131112C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Groundwater Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	METHYLENE CHLORIDE	O-XYLENE	STYRENE	TETRA-CHLORO-ETHENE	TOLUENE	TRANS-1,2-DICHLOROETHENE	TRANS-1,3-DICHLORO-PROPENE	TRANS-1,4-DICHLORO-2-BUTENE	TRICHLORO-ETHENE	TRICHLORO-FLUORO-METHANE	VINYL ACETATE	VINYL CHLORIDE
			75-09-2 (µg/L)	95-47-6 (µg/L)	100-42-5 (µg/L)	127-18-4 (µg/L)	108-88-3 (µg/L)	156-60-5 (µg/L)	10061-02-6 (µg/L)	110-57-6 (µg/L)	79-01-6 (µg/L)	75-69-4 (µg/L)	108-05-4 (µg/L)	75-01-4 (µg/L)
MW-2	11/8/2013	WV2-131108-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	2.32	< 0.2 U	0.106
MW-5D	11/6/2013	WV5D131106-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.33 T	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	4.79
MW-7	11/6/2013	WV7-131106-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-8	11/4/2013	WV8-131104-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-9	11/1/2013	WV9-131101-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-10	8/8/2013	WV10130808-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-12	11/5/2013	WV12131105-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-13	11/7/2013	WV13131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-19	11/4/2013	WV19131104-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-20	11/7/2013	WV20131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-20	11/7/2013	WV20131107D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-21	11/7/2013	WV21131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	0.972	< 0.2 U	0.185
MW-26	11/12/2013	WV26131112-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-27	11/12/2013	WV27131112-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-29	11/7/2013	WV29131107-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
MW-29	11/7/2013	WV29131107D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	11/1/2013	VTRP131104B	0.22 T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	11/6/2013	VTRP131107B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	11/6/2013	VTRP131107C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	11/7/2013	VTRP131108C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	11/8/2013	VTRP131112C	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Surface Water Field Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	pH (Field) (std. Units)	Conductance (Field) (mmho/cm)	DO (Field) (mg/L)	Temperature (Field) (oC)	Turbidity (Field) (NTU)
SW-W1	12/11/2013	SVW1131211Q		235	9.27	3.5	9.2
SW-W2	12/11/2013	SVW2131211Q	8.3	665	11.81	3.9	4.2
SW-W3	12/11/2013	SVW3131211Q	7.29	415	11.37	5.4	3.6
SW-E	12/19/2013	SVE-131219Q	7.22	180	13.03	5.8	4.26

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	ALKALINITY, TOTAL (as CaCO3)	AMMONIA as N	BIOLOGICAL OXYGEN DEMAND	CHEMICAL OXYGEN DEMAND	CHLORIDE	COLIFORMS, FECAL	COLIFORMS, TOTAL	CYANIDE	FLUORIDE	HARDNESS
			mg/l	mg/l	mg/l	mg/l	mg/l	cfu/100ml	cfu/100ml	mg/l	mg/l	mg/l
SW-W1	12/11/2013	SVW1131211Q	85	0.022 T	< 2 U	14 T	5.55	< 1 U	3	< 0.02 U	< 0.1 U	98.9
SW-W2	12/11/2013	SVW2131211Q	357	< 0.01 U	< 2 U	11 T	22.7	6	6	< 0.02 U	< 0.1 U	370
SW-W3	12/11/2013	SVW3131211Q	136	0.015 T	< 2 U	7.3 T	8.12	< 1 U	< 1 U	< 0.02 U	0.107	148
SW-W3	12/11/2013	SVW3131211D	136	< 0.01 U	< 2 U	8.1 T	8.32	< 1 U	< 1 U	< 0.02 U	< 0.1 U	151
SW-E	12/19/2013	SVE-131219Q	93.6	< 0.01 U	< 2 U	9.1 T	6.17	4	2	< 0.02 U	< 0.1 U	94.5

Site	Date	Sample ID	NITRATE	NITRATE + NITRITE as N	PHOSPHORUS, SOLUBLE REACTIVE	SPECIFIC CONDUCTANCE	SULFATE	TOTAL DISSOLVED SOLIDS	TOTAL KJELDAHL NITROGEN	TOTAL ORGANIC CARBON	TOTAL ORGANIC HALIDES (TOX)	TOTAL SOLIDS
			mg/l	mg/l	mg/l	umhos/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
SW-W1	12/11/13	SVW1131211Q	1.76	1.76	0.0447	223	11.4	153	0.285	3.43		173
SW-W2	12/11/13	SVW2131211Q	0.17 T	0.17 T	0.0174	701	12.4	420	0.13 T	4.51		458
SW-W3	12/11/13	SVW3131211Q	0.463	0.463	0.0608	312	12.5	200	< 0.1 U	3.34		223
SW-W3	12/11/13	SVW3131211D	0.469	0.469	0.0526	312	12.4	204	< 0.1 U	3.41		238
SW-E	12/19/13	SVE-131219Q	0.823	0.823	0.0424	229	10.9	158	0.14 T	2.43		175

Site	Date	Sample ID	TOTAL SUSPENDED SOLIDS	TURBIDITY
			mg/l	ntu
SW-W1	12/11/13	SVW1131211Q	12.1	5.07
SW-W2	12/11/13	SVW2131211Q	13.4	8.58
SW-W3	12/11/13	SVW3131211Q	14.6	6.9
SW-W3	12/11/13	SVW3131211D	18	42.7
SW-E	12/19/13	SVE-131219Q	7.4	3.57

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from JOctober 1, 2013 to December 31, 2013
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	Aluminum, dissolved (mg/L)	Aluminum, total (mg/L)	Antimony, dissolved (mg/L)	Antimony, total (mg/L)	Arsenic, dissolved (mg/L)	Arsenic, total (mg/L)	Barium, dissolved (mg/L)	Barium, total (mg/L)	Beryllium, dissolved (mg/L)	Beryllium, total (mg/L)	Cadmium, dissolved (mg/L)	Cadmium, total (mg/L)
SW-W1	12/11/2013	SVW1131211Q	< 0.02 U	0.467	< 0.001 U	< 0.001 DU	0.00252	0.00781	< 0.001 U	0.00811 D	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 DU
SW-W2	12/11/2013	SVW2131211Q	< 0.02 U	0.101	< 0.001 U	< 0.001 DU	0.00105	0.00195	0.00299	0.00709 D	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 DU
SW-W3	12/11/2013	SVW3131211Q	< 0.02 U	0.299	< 0.001 U	< 0.001 DU	0.0023	0.00377	0.00379	0.00796 D	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 DU
SW-W3	12/11/2013	SVW3131211D	< 0.02 U	1.49	< 0.001 U	< 0.001 DU	0.00241	0.00516	0.00394	0.0179 D	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 DU
SW-E	12/19/2013	SVE-131219Q	< 0.02 U	0.177	< 0.001 U	< 0.001 DU	0.00182	0.00179	0.00495	0.00617 D	< 0.001 U	< 0.001 DU	< 0.002 U	< 0.002 DU

Site	Date	Sample ID	Calcium, dissolved (mg/L)	Calcium, total (mg/L)	Chromium, dissolved (mg/L)	Chromium, total (mg/L)	Cobalt, dissolved (mg/L)	Cobalt, total (mg/L)	Copper, dissolved (mg/L)	Copper, total (mg/L)	Iron, dissolved (mg/L)	Iron, total (mg/L)	Lead, dissolved (mg/L)	Lead, total (mg/L)
SW-W1	12/11/2013	SVW1131211Q	15.3	16.9	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 DU	< 0.002 U	< 0.002 DU	0.289	4.47	< 0.001 U	0.00114
SW-W2	12/11/2013	SVW2131211Q	57.2	62.8	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 DU	< 0.002 U	< 0.002 DU	0.025 T	1.5	< 0.001 U	< 0.001 U
SW-W3	12/11/2013	SVW3131211Q	23	25.8	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 DU	< 0.002 U	< 0.002 DU	0.034 T	1.22	< 0.001 U	< 0.001 U
SW-W3	12/11/2013	SVW3131211D	23.3	25.5	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 DU	< 0.002 U	0.002 DT	0.036 T	3.3	< 0.001 U	0.00103
SW-E	12/19/2013	SVE-131219Q	15.3	15.5	< 0.005 U	< 0.005 U	< 0.003 U	< 0.003 DU	< 0.002 U	< 0.002 DU	0.047 T	0.333	< 0.001 U	< 0.001 U

Site	Date	Sample ID	Magnesium, dissolved (mg/L)	Magnesium, total (mg/L)	Manganese, dissolved (mg/L)	Manganese, total (mg/L)	Mercury, dissolved (mg/L)	Mercury, total (mg/L)	Nickel, dissolved (mg/L)	Nickel, total (mg/L)	Potassium, dissolved (mg/L)	Potassium, total (mg/L)	Selenium, dissolved (mg/L)	Selenium, total (mg/L)
SW-W1	12/11/2013	SVW1131211Q	13.3	13.8	0.403 D	1.36		< 0.0001 U	< 0.01 U	< 0.01 U	1.2	1.08	< 0.001 U	< 0.001 DU
SW-W2	12/11/2013	SVW2131211Q	49.1	51.7	0.0328 D	0.384		< 0.0001 U	< 0.01 U	< 0.01 U	3.42	3.31	< 0.001 U	< 0.001 DU
SW-W3	12/11/2013	SVW3131211Q	19.4	20.3	0.301 D	0.607		< 0.0001 U	< 0.01 U	< 0.01 U	2.18	2.08	< 0.001 U	< 0.001 DU
SW-W3	12/11/2013	SVW3131211D	19.8	21.3	0.306 D	1.12		< 0.0001 U	< 0.01 U	< 0.01 U	2.22	2.1	< 0.001 U	< 0.001 DU
SW-E	12/19/2013	SVE-131219Q	15.4	13.5	0.00935	0.0331		< 0.0001 U	< 0.01 U	< 0.01 U	2.03	1.91	< 0.001 U	< 0.001 DU

Site	Date	Sample ID	Silver, dissolved (mg/L)	Silver, total (mg/L)	Sodium, dissolved (mg/L)	Sodium, total (mg/L)	Thallium, dissolved (mg/L)	Thallium, total (mg/L)	Tin, dissolved (mg/L)	Tin, total (mg/L)	Vanadium, dissolved (mg/L)	Vanadium, total (mg/L)	Zinc, dissolved (mg/L)	Zinc, total (mg/L)
SW-W1	12/11/2013	SVW1131211Q	< 0.003 U	< 0.003 DU	7.11	7.17	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 DU	< 0.002 U	0.00257	< 0.004 U	< 0.004 DU
SW-W2	12/11/2013	SVW2131211Q	< 0.003 U	< 0.003 DU	15.7	16.5	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 DU	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 DU
SW-W3	12/11/2013	SVW3131211Q	< 0.003 U	< 0.003 DU	8.92	9.2	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 DU	< 0.002 U	< 0.002 U	< 0.004 U	< 0.004 DU
SW-W3	12/11/2013	SVW3131211D	< 0.003 U	< 0.003 DU	9.09	9.58	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 DU	< 0.002 U	0.00442	< 0.004 U	0.00455 D
SW-E	12/19/2013	SVE-131219Q	< 0.003 U	< 0.003 DU	6.81	6.43	< 0.001 U	< 0.001 U	< 0.01 U	< 0.01 DU	0.0021	0.00275	< 0.004 U	< 0.004 DU

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	1,1,1,2-TETRA-CHLORO- 630-20-6 (µg/L)	1,1,1-TRI-CHLORO-ETHANE 71-55-6 (µg/L)	1,1,2,2-TETRA-CHLORO-ETHANE 79-34-5 (µg/L)	1,1,2-TRI-CHLORO-ETHANE 79-00-5 (µg/L)	1,1-DICHLORO-ETHANE 75-34-3 (µg/L)	1,1-DICHLORO-ETHENE 75-35-4 (µg/L)	1,2,3-TRI-CHLORO-PROPANE 96-18-4 (µg/L)	1,2-DIBROMO-3-CHLORO-PROPANE 96-12-8 (µg/L)	1,2-DIBROMO-ETHANE 106-93-4 (µg/L)	1,2-DICHLORO-BENZENE 95-50-1 (µg/L)	1,2-DICHLORO-ETHANE 107-06-2 (µg/L)	1,2-DICHLORO-PROPANE 78-87-5 (µg/L)	1,4-DICHLORO-BENZENE 106-46-7 (µg/L)
SW-W1	12/11/2013	SVW1131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	12/11/2013	SVW2131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	12/11/2013	SVW3131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	12/11/13	SVW3131211D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	12/19/13	SVE-131219Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	12/18/13	VTRP131219B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	12/10/13	VTRP131211-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	2-BUTANONE 78-93-3 (mg/L)	2-HEXANONE 591-78-6 (mg/L)	4-METHYL-2-PENTANONE 108-10-1 (mg/L)	ACETONE 67-64-1 (mg/L)	ACRYLO-NITRILE 107-13-1 (mg/L)	BENZENE 71-43-2 (mg/L)	BROMO-CHLORO- 74-97-5 (mg/L)	BROMO-DICHLORO- 75-27-4 (mg/L)	BROMOFORM 75-25-2 (mg/L)	BROMO-METHANE 74-83-9 (mg/L)	CARBON DISULFIDE 75-15-0 (mg/L)	CARBON TETRA- 56-23-5 (mg/L)	CHLORO-BENZENE 108-90-7 (mg/L)
SW-W1	12/11/2013	SVW1131211Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	12/11/2013	SVW2131211Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	12/11/2013	SVW3131211Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	12/11/2013	SVW3131211D	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	12/19/2013	SVE-131219Q	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	12/18/2013	VTRP131219B	< 4 U	< 4 U	< 4 U	4.18	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	12/10/2013	VTRP131211-	< 4 U	< 4 U	< 4 U	< 4 U	< 0.07 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	CHLORO-DIBROMO-METHANE 124-48-1 (mg/L)	CHLORO-ETHANE 75-00-3 (mg/L)	CHLOROFORM 67-66-3 (mg/L)	CHLORO-METHANE 74-87-3 (mg/L)	CIS-1,2-DICHLORO-ETHENE 156-59-2 (mg/L)	CIS-1,3-DICHLORO-PROPENE 10061-01-5 (mg/L)	DIBROMO-METHANE 74-95-3 (mg/L)	DICHLORO-DIFLUORO-METHANE 75-71-8 (mg/L)	ETHYL-BENZENE 100-41-4 (mg/L)	M & P XYLENE MPX (mg/L)	METHYL IODIDE 74-88-4 (mg/L)	METHYLENE CHLORIDE 75-09-2 (mg/L)	O-XYLENE 95-47-6 (mg/L)
SW-W1	12/11/2013	SVW1131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W2	12/11/2013	SVW2131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 GU	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	12/11/2013	SVW3131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-W3	12/11/2013	SVW3131211D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
SW-E	12/19/2013	SVE-131219Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	12/18/2013	VTRP131219B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	12/10/2013	VTRP131211-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	STYRENE 100-42-5 (mg/L)	TETRA-CHLORO-ETHENE 127-18-4 (mg/L)	TOLUENE 108-88-3 (mg/L)	TRANS-1,2-DICHLORO-ETHENE 156-60-5 (mg/L)	TRANS-1,3-DICHLORO-PROPENE 10061-02-6 (mg/L)	TRANS-1,4-DICHLORO-2-BUTENE 110-57-6 (mg/L)	TRICHLORO-ETHENE 79-01-6 (mg/L)	TRICHLORO-FLUORO-METHANE 75-69-4 (mg/L)	VINYL ACETATE 108-05-4 (mg/L)	VINYL CHLORIDE 75-01-4 (mg/L)
SW-W1	12/11/2013	SVW1131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W2	12/11/2013	SVW2131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
SW-W3	12/11/2013	SVW3131211Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	0.0387
SW-W3	12/11/2013	SVW3131211D	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	0.0392
SW-E	12/19/2013	SVE-131219Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	12/18/2013	VTRP131219B	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	12/10/2013	VTRP131211-	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Surface Water Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	2,4,5-T 93-76-5 (µg/L)	2,4,5-TP 93-76-5 (µg/L)	2,4-D 94-75-7 (µg/L)	Dinoseb 88-85-7 (µg/L)	Endrin 72-20-8 (µg/L)	Lindane 58-89-9 (µg/L)	Methoxy-chlor 72-43-5 (µg/L)	Toxaphene 8001-35-2 (µg/L)
SW-W1	12/11/2013	SVW1131211Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U
SW-W2	12/11/2013	SVW2131211Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U
SW-W3	12/11/2013	SVW3131211Q	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U
SW-W3	12/11/2013	SVW3131211D	< 2 U	< 1 U	< 5 U	< 1 U	< 0.1 U	< 0.025 U	< 2 U	< 2.5 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Leachate Field Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	pH (Field) (std. Units)	Temperature (°C)	Conductance (Field) (μmho/cm)
LS-B	11/13/2013	LVB-131113Q	7.93	14.7	2350
LS-LVT	12/18/2013	LVT-131218D	7.28	6.4	350
LS-LVT	12/18/2013	LVT-131218P	7.28	6.4	350
LS-PS1	11/13/2013	LVP-131113Q	7.54	10.9	130

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	ALKALINITY, TOTAL (AS CACO3) (mg/l)	AMMONIA AS N (mg/l)	BIOLOGICAL OXYGEN DEMAND (mg/l)	CHEMICAL OXYGEN DEMAND (mg/l)	CHLORIDE (mg/l)	COLIFORMS, FECAL (cfu/100ml)	COLIFORMS, TOTAL (cfu/100ml)	CYANIDE (mg/l)	FLUORIDE (mg/l)
LS-B	11/13/13	LVB-131113Q	99.9	< 0.01 U	6.73	44	373	< 1 U	1	< 0.02 U	0.16 T
LS-PS1	11/13/13	LVP-131113Q	29.7	0.031 T	< 2 U	11 T	7.58	< 1 U	26	< 0.02 U	< 0.1 U

Site	Date	Sample ID	NITRATE + NITRITE AS N (mg/l)	PHOSPHORUS, SOLUBLE REACTIVE (umhos/cm)	SPECIFIC CONDUCTANCE (mg/l)	SULFATE (mg/l)	SULFIDE, TOTAL (mg/l)	TOTAL FATS, OILS & GREASE (mg/l)	TOTAL KJELDAHL NITROGEN (mg/l)	TOTAL ORGANIC CARBON (mg/l)	TOTAL ORGANIC HALIDES (mg/l)
LS-B	11/13/13	LVB-131113Q	82	0.021	3000	620	< 0.01 U	2.2 BT	1.08	18.3	
LS-PS1	11/13/13	LVP-131113Q	0.327	0.0206	209	20.1	< 0.01 U	2 BT	0.58	5.93	

Site	Date	Sample ID	TOTAL SUSPENDED SOLIDS (mg/l)	TOTAL VOLATILE SOLIDS (mg/l)	VOLATILE SUSPENDED SOLIDS (mg/l)
LS-B	11/13/13	LVB-131113Q	1 T	621	1.2 T
LS-PS1	11/13/13	LVP-131113Q	4.4	38.6	2.6

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	Aluminum, total (mg/L)	Antimony, total (mg/L)	Arsenic, total (mg/L)	Barium, total (mg/L)	Beryllium, total (mg/L)	Cadmium, total (mg/L)	Calcium, total (mg/L)	Chromium, total (mg/L)	Cobalt, total (mg/L)	Copper, total (mg/L)	Iron, total (mg/L)
LS-B	11/13/2013	LVB-131113Q	< 0.02 U	< 0.001 U	< 0.001 U	0.051	< 0.001 U	< 0.002 U	191	< 0.005 U	< 0.003 U	0.0054 T	0.09 T
LS-PS1	11/13/2013	LVP-131113Q	0.666	< 0.001 U	< 0.001 U	0.0117	< 0.001 U	< 0.002 U	16	< 0.005 U	< 0.003 U	0.008 T	0.542
LS-LVT	12/18/2013	LVT-131218D			< 0.001 U			< 0.002 U		< 0.005 U		< 0.002 U	
LS-LVT	12/18/2013	LVT-131218P			< 0.001 U			< 0.002 U		< 0.005 U		< 0.002 U	

Site	Date	Sample ID	Lead, total (mg/L)	Magnesium, total (mg/L)	Manganese, total (mg/L)	Mercury, total (mg/L)	Nickel, total (mg/L)	Potassium, total (mg/L)	Selenium, total (mg/L)	Silver, total (mg/L)	Sodium, total (mg/L)	Thallium, total (mg/L)	Tin, total (mg/L)
LS-B	11/13/2013	LVB-131113Q	< 0.001 U	115	0.0203	< 0.0001 U	0.053	38.1	< 0.001 U	< 0.003 U	248	< 0.001 U	< 0.01 U
LS-PS1	11/13/2013	LVP-131113Q	< 0.001 U	4.4	0.034	< 0.0001 U	< 0.01 U	2.28	< 0.001 U	< 0.003 U	7.22	< 0.001 U	< 0.01 U
LS-LVT	12/18/2013	LVT-131218D	< 0.001 U				< 0.01 U			< 0.003 U			
LS-LVT	12/18/2013	LVT-131218P	< 0.001 U				< 0.01 U			< 0.003 U			

Site	Date	Sample ID	Vanadium, total (mg/L)	Zinc, total (mg/L)
LS-B	11/13/2013	LVB-131113Q	< 0.002 U	0.02 T
LS-PS1	11/13/2013	LVP-131113Q	< 0.002 U	0.019 T
LS-LVT	12/18/2013	LVT-131218D		0.0079 T
LS-LVT	12/18/13	LVT-131218P		0.0081 T

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Leachate Analysis Data
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Site	Date	Sample ID	1,1,1,2-TETRACHLOROETHANE ug/l N	1,1,1-TRICHLOROETHANE ug/l N	1,1,2,2-TETRACHLOROETHANE ug/l N	1,1,2-TRICHLOROETHANE ug/l N	1,1-DICHLOROETHANE ug/l N	1,1-DICHLOROETHENE ug/l N	1,1-DICHLOROPROPENE ug/l N	1,2,3-TRICHLOROPROPANE ug/l N	1,2-DIBROMO-3-CHLOROPROPANE ug/l N	1,2-DIBROMOETHANE ug/l N	1,2-DICHLOROBENZENE ug/l N	1,2-DICHLOROETHANE ug/l N	1,2-DICHLOROPROPANE ug/l N
LS-B	11/13/13	LVB-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
LS-PS1	11/13/13	LVP-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
VOA TRIP BLANK	11/13/13	VTRP131113T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 1 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Site	Date	Sample ID	1,3-DICHLORO-BENZENE 541-73-1 (µg/L)	1,3-DICHLORO-PROPANE 142-28-9 (µg/L)	1,4-DICHLORO-BENZENE 106-46-7 (µg/L)	2,2-DICHLORO-PROPANE 594-20-7 (µg/L)	2-BUTANONE 78-93-3 (µg/L)	2-HEXANONE 591-78-6 (µg/L)	2-METHYL-1-PROPANOL 78-83-1 (µg/L)	3-CHLORO-PROPENE 107-05-1 (µg/L)	4-METHYL-2-PENTANONE 108-10-1 (µg/L)	ACETONE 67-64-1 (µg/L)	ACETONITRILE 75-05-8 (µg/L)	ACROLEIN 107-02-8 (µg/L)	ACRYLO-NITRILE 107-13-1 (µg/L)
LS-B	11/13/13	LVB-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
LS-PS1	11/13/13	LVP-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U
VOA TRIP BLANK	11/13/13	VTRP131113T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 4 U	< 4 U	< 100 U	< 10 U	< 4 U	< 4 U	< 100 U	< 10 U	< 0.07 U

Site	Date	Sample ID	BENZENE 71-43-2 (µg/L)	BROMO-CHLORO-METHANE 74-97-5 (µg/L)	BROMO-DICHLORO-METHANE 75-27-4 (µg/L)	BROMOFORM 75-25-2 (µg/L)	BROMO-METHANE 74-83-9 (µg/L)	CARBON DISULFIDE 75-15-0 (µg/L)	CARBON TETRA-CHLORIDE 56-23-5 (µg/L)	CHLORO-BENZENE 108-90-7 (µg/L)	CHLORO-DIBROMO-METHANE 124-48-1 (µg/L)	CHLORO-ETHANE 75-00-3 (µg/L)	CHLOROFORM 67-66-3 (µg/L)	CHLORO-METHANE 74-87-3 (µg/L)	CHLOROPRENE 126-99-8 (µg/L)
LS-B	11/13/13	LVB-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
LS-PS1	11/13/13	LVP-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U
VOA TRIP BLANK	11/13/13	VTRP131113T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 20 U

Site	Date	Sample ID	CIS-1,2-DICHLORO-ETHENE 156-59-2 (µg/L)	CIS-1,3-DICHLORO-PROPENE 10061-01-5 (µg/L)	DIBROMO-METHANE 74-95-3 (µg/L)	DICHLORO-DIFLUORO-METHANE 75-71-8 (µg/L)	ETHYL-BENZENE 100-41-4 (µg/L)	M & P XYLENE MPX (µg/L)	METHYL IODIDE 74-88-4 (µg/L)	METHYL METHA-CRYLATE 80-62-6 (µg/L)	METHYL-ACRYLO-NITRILE 126-98-7 (µg/L)	METHYLENE CHLORIDE 75-09-2 (µg/L)	O-XYLENE 95-47-6 (µg/L)	PROPRIO-NITRILE 107-12-0 (µg/L)	STYRENE 100-42-5 (µg/L)
LS-B	11/13/13	LVB-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U
LS-PS1	11/13/13	LVP-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	6.12	< 60 U	< 0.2 U
VOA TRIP BLANK	11/13/13	VTRP131113T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 2 U	< 5 U	< 0.2 U	< 0.2 U	< 60 U	< 0.2 U

Site	Date	Sample ID	TETRA-CHLORO-ETHENE 127-18-4 (µg/L)	TOLUENE 108-88-3 (µg/L)	TRANS-1,2-DICHLORO-ETHENE 156-60-5 (µg/L)	TRANS-1,3-DICHLORO-PROPENE 10061-02-6 (µg/L)	TRANS-1,4-DICHLORO-2-BUTENE 110-57-6 (µg/L)	TRICHLORO-ETHENE 79-01-6 (µg/L)	TRICHLORO-FLUORO-METHANE 75-69-4 (µg/L)	VINYL ACETATE 108-05-4 (µg/L)	VINYL CHLORIDE 75-01-4 (µg/L)
LS-B	11/13/13	LVB-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
LS-PS1	11/13/13	LVP-131113Q	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U
VOA TRIP BLANK	11/13/13	VTRP131113T	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 100 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.02 U

King County Solid Waste Division
Environmental Monitoring Data
Data Collected from October 1, 2013 to December 31, 2013
Vashon Landfill --- Leachate Analysis Data
Contact Person: Sendy Jimenez (206) 296-4411

Site	Date	Sample ID	2,4,5-T	2,4,5-TP SILVEX	2,4-D	4,4'DDD	4,4'DDE	4,4'DDT	ALDRIN	ALPHA BHC	ALPHA CHLORDANE	AROCLOR 1016	AROCLOR 1221
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	11/13/2013	LVB-131113Q	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U
LS-PS1	11/13/2013	LVP-131113Q	< 2 U	< 1 U	< 5 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.01 U	< 0.01 U

Site	Date	Sample ID	AROCLOR 1232	AROCLOR 1242	AROCLOR 1248	AROCLOR 1254	AROCLOR 1260	BETA BHC	DELTA BHC	DIELDRIN	DINOSEB	ENDOSULFAN I	ENDOSULFAN II
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	11/13/2013	LVB-131113Q	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 DHU	< 0.1 U	< 0.1 U
LS-PS1	11/13/2013	LVP-131113Q	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.025 U	< 0.1 U	< 0.1 U	< 1 DHU	< 0.1 U	< 0.1 U

Site	Date	Sample ID	ENDOSULFAN SULFATE	ENDRIN	ENDRIN ALDEHYDE	HEPTACHLOR	HEPTACHLOR EPOXIDE	ISODRIN	LINDANE(GAMMA BHC)	METHOXYCHLOR	TOXAPHENE
			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
LS-B	11/13/2013	LVB-131113Q	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U
LS-PS1	11/13/2013	LVP-131113Q	< 0.5 U	< 0.1 U	< 0.2 U	< 0.025 U	< 0.025 U	< 10 U	< 0.025 U	< 2 U	< 2.5 U

Appendix J

Ion Balance Calculations and Trilinear Diagrams

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 10

Groundwater Within or Adjacent to Channel Cc1

Site ID			**MW-10**			**MW-13**		
Date			1/0/1900			11/7/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			0.0			7.3		
Conductance			0			170		
TDSobs			0			126		
Calcium	40.1	2	0.0	0	#DIV/0!	10.2	0.509	28.0
Magnesium	24.3	2	0.0	0	#DIV/0!	12.1	0.9957	54.7
Potassium	39.1	1	0.0	0	#DIV/0!	1.9	0.0486	2.7
Sodium	23.0	1	0.0	0	#DIV/0!	6.1	0.2666	14.6
Iron	55.8	2	0.000	0	#DIV/0!	0.005	0.0002	0.01
Manganese	54.9	2	0.000	0	#DIV/0!	0.001	2E-05	0.00
Ammonia-N	14.0	1	0.000	0	#DIV/0!	0.005	0.0004	0.02
Total Cations (meq/L)				**0.0**			**1.8**	
Anions								
Alkalinity, Total			0			65.6		
Carbonate	60.0	2	0	0	#DIV/0!	0.07	0.0023	0.1
Bicarbonate	61.0	1	0.00	0	#DIV/0!	79.89	1.3095	75.0
Chloride	35.5	1	0.0	0	#DIV/0!	2.6	0.0742	4.2
Nitrate-N	14.0	1	0.000	0	#DIV/0!	0.061	0.0044	0.251
Sulfate	96.1	2	0.0	0	#DIV/0!	17.1	0.356	20.4
Total Anions (meq/L)				**0.0**			**1.7**	
Total Ions (meq/L)				**0.0**			**3.6**	
Cation/Anion Ratio				**#DIV/0!**			**1.04**	
Percent Difference				**#DIV/0!**			**2.1**	
TRILINEAR DIAGRAM DATA								
sum (Ca, Mg, Na+K)				0.00			1.82	
Calcium					#DIV/0!			27.97
Magnesium					#DIV/0!			54.71
Sodium + Potassium					#DIV/0!			17.32
sum (SO_4, Cl, HCO_3+CO_3)				0.00			1.74	
Sulfate					#DIV/0!			20.438
Chloride					#DIV/0!			4.258
Bicarbonate + Carbonate					#DIV/0!			75.303

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 6

Groundwater Within and BelowChannel Cc2

Site ID			**MW-2**			**MW-20**			**MW-21**			**MW-5D**			**MW-8**			**MW-9**		
Date			11/8/2013			11/7/2013			11/7/2013			11/6/2013			11/4/2013			11/1/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			7.1			7.4			6.8			6.9			6.6			7.1		
Conductance			330			150			250			280			130			140		
TDSobs			234			133			200			208			114			124		
Calcium	40.1	2	23.7	1.1826	29.7	12.4	0.6188	34.8	20.5	1.023	32.2	25.1	1.2525	33.2	12.0	0.5988	35.2	13.3	0.6637	35.3
Magnesium	24.3	2	28.4	2.337	58.7	10.2	0.8393	47.2	20.3	1.6704	52.5	17.8	1.4647	38.9	9.6	0.7908	46.5	11.0	0.9052	48.1
Potassium	39.1	1	2.5	0.0627	1.6	2.3	0.0586	3.3	2.3	0.0598	1.9	2.3	0.0591	1.6	1.0	0.0266	1.6	2.1	0.0532	2.8
Sodium	23.0	1	9.1	0.3971	10.0	5.7	0.2488	14.0	9.4	0.4093	12.9	14.7	0.6394	17.0	6.5	0.2823	16.6	5.9	0.2584	13.7
Iron	55.8	2	0.005	0.0002	0.00	0.005	0.0002	0.01	0.194	0.0069	0.22	9.120	0.3266	8.66	0.005	0.0002	0.01	0.005	0.0002	0.01
Manganese	54.9	2	0.110	0.004	0.10	0.281	0.0102	0.58	0.325	0.0118	0.37	0.660	0.024	0.64	0.001	2E-05	0.00	0.001	2E-05	0.00
Ammonia-N	14.0	1	0.005	0.0004	0.01	0.019	0.0014	0.08	0.005	0.0004	0.01	0.043	0.0031	0.08	0.005	0.0004	0.02	0.011	0.0008	0.04
Total Cations (meq/L)				**4.0**			**1.8**			**3.2**			**3.8**			**1.7**			**1.9**	
Anions																				
Alkalinity, Total			172			65.5			131			134			51.5			62.9		
Carbonate	60.0	2	0.1362	0.0045	0.1	0.0943	0.0031	0.2	0.0474	0.0016	0.1	0.0597	0.002	0.1	0.0112	0.0004	0.0	0.0454	0.0015	0.1
Bicarbonate	61.0	1	209.56	3.4349	88.5	79.72	1.3067	74.0	159.72	2.618	85.4	163.36	2.6776	90.8	62.81	1.0295	64.9	76.65	1.2563	74.7
Chloride	35.5	1	3.1	0.0869	2.2	3.2	0.0903	5.1	3.0	0.0832	2.7	2.9	0.0829	2.8	4.9	0.1374	8.7	4.6	0.1289	7.7
Nitrate-N	14.0	1	0.045	0.0032	0.083	0.030	0.0021	0.121	0.112	0.008	0.261	0.005	0.0004	0.012	3.520	0.2513	15.846	0.195	0.0139	0.828
Sulfate	96.1	2	16.9	0.3519	9.1	17.5	0.3644	20.6	17.1	0.356	11.6	9.0	0.187	6.3	8.0	0.1674	10.6	13.5	0.2811	16.7
Total Anions (meq/L)				**3.9**			**1.8**			**3.1**			**2.9**			**1.6**			**1.7**	
Total Ions (meq/L)				**7.9**			**3.5**			**6.2**			**6.7**			**3.3**			**3.6**	
Cation/Anion Ratio				**1.03**			**1.01**			**1.04**			**1.28**			**1.07**			**1.12**	
Percent Difference				**1.3**			**0.3**			**1.8**			**12.2**			**3.4**			**5.6**	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				3.98			1.77			3.16			3.42			1.70			1.88	
Calcium					29.72			35.05			32.35			36.67			35.26			35.29
Magnesium					58.73			47.54			52.82			42.88			46.56			48.14
Sodium + Potassium					11.55			17.41			14.83			20.45			18.19			16.57
sum (SO_4, Cl, HCO_3+CO_3)				3.88			1.76			3.06			2.95			1.33			1.67	
Sulfate					9.073			20.651			11.640			6.339			12.543			16.853
Chloride					2.240			5.116			2.720			2.812			10.293			7.729
Bicarbonate + Carbonate					88.687			74.234			85.640			90.849			77.165			75.418

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 2

Regional Aquifer & Channel Cc3

Site ID			**MW-12**			**MW-19**			**MW-26**			**MW-27**			**MW-29**			**MW-7**		
Date			11/5/2013			11/4/2013			11/12/2013			11/12/2013			11/7/2013			11/6/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			7.2			7.3			8.1			7.1			7.6			7.5		
Conductance			130			185			170			170			220			140		
TDSobs			109			149			147			134			151			123		
Calcium	40.1	2	10.7	0.5339	34.2	16.8	0.8383	33.2	15.7	0.7834	44.3	12.2	0.6088	34.8	19.0	0.9481	39.1	14.5	0.7236	39.5
Magnesium	24.3	2	9.0	0.7406	47.5	15.6	1.2837	50.9	6.4	0.5225	29.5	10.2	0.8393	47.9	13.6	1.1191	46.2	9.0	0.7439	40.7
Potassium	39.1	1	1.7	0.0435	2.8	2.5	0.065	2.6	3.1	0.0798	4.5	1.4	0.0348	2.0	2.2	0.057	2.4	2.6	0.0675	3.7
Sodium	23.0	1	5.5	0.2384	15.3	7.3	0.3162	12.5	8.4	0.3632	20.5	6.2	0.2679	15.3	6.2	0.2693	11.1	6.1	0.2671	14.6
Iron	55.8	2	0.005	0.0002	0.01	0.024	0.0009	0.03	0.079	0.0028	0.16	0.010	0.0004	0.02	0.760	0.0272	1.12	0.005	0.0002	0.01
Manganese	54.9	2	0.001	2E-05	0.00	0.510	0.0186	0.74	0.052	0.0019	0.11	0.001	2E-05	0.00	0.087	0.0032	0.13	0.142	0.0052	0.28
Ammonia-N	14.0	1	0.036	0.0026	0.16	0.023	0.0016	0.07	0.227	0.0162	0.92	0.005	0.0004	0.02	0.005	0.0004	0.01	0.313	0.0223	1.22
Total Cations (meq/L)				**1.6**			**2.5**			**1.8**			**1.8**			**2.4**			**1.8**	
Anions																				
Alkalinity, Total			57.7			89.9			67.8			57.8			95.9			67.5		
Carbonate	60.0	2	0.0588	0.002	0.1	0.1127	0.0038	0.2	0.5305	0.0177	1.0	0.0458	0.0015	0.1	0.2287	0.0076	0.3	0.1195	0.004	0.2
Bicarbonate	61.0	1	70.27	1.1519	75.9	109.45	1.794	78.6	81.64	1.3381	77.5	70.42	1.1543	69.8	116.53	1.9101	81.3	82.11	1.3458	80.7
Chloride	35.5	1	3.1	0.0886	5.8	4.8	0.136	6.0	3.5	0.0996	5.8	4.8	0.1365	8.3	3.4	0.0967	4.1	3.3	0.0931	5.6
Nitrate-N	14.0	1	0.740	0.0528	3.480	0.033	0.0024	0.103	0.027	0.0019	0.112	2.410	0.1721	10.405	0.005	0.0004	0.015	0.097	0.0069	0.415
Sulfate	96.1	2	10.7	0.2228	14.7	16.6	0.3456	15.1	12.9	0.2686	15.6	9.1	0.1893	11.4	16.1	0.3352	14.3	10.5	0.2186	13.1
Total Anions (meq/L)				**1.5**			**2.3**			**1.7**			**1.7**			**2.4**			**1.7**	
Total Ions (meq/L)				**3.1**			**4.8**			**3.5**			**3.4**			**4.8**			**3.5**	
Cation/Anion Ratio				**1.03**			**1.11**			**1.03**			**1.06**			**1.03**			**1.10**	
Percent Difference				**1.3**			**5.0**			**1.3**			**2.9**			**1.6**			**4.6**	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				1.56			2.50			1.75			1.75			2.39			1.80	
Calcium					34.31			33.49			44.79			34.77			39.61			40.15
Magnesium					47.58			51.28			29.88			47.94			46.76			41.28
Sodium + Potassium					18.11			15.23			25.33			17.29			13.63			18.57
sum (SO_4, Cl, HCO_3+CO_3)				1.47			2.28			1.72			1.48			2.35			1.66	
Sulfate					15.205			15.164			15.580			12.774			14.266			13.158
Chloride					6.045			5.965			5.776			9.214			4.117			5.602
Bicarbonate + Carbonate					78.750			78.872			78.645			78.012			81.616			81.240

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 10

Groundwater Within or Adjacent to Channel Cc1

Site ID			**MW-10**			**MW-13**		
Date			8/8/2013			8/5/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			6.9			6.8		
Conductance			200			155		
TDSobs			114			139		
Calcium	40.1	2	10.2	0.509	34.2	11.5	0.5739	27.5
Magnesium	24.3	2	8.8	0.7258	48.8	14.0	1.152	55.2
Potassium	39.1	1	1.6	0.0399	2.7	2.2	0.0573	2.7
Sodium	23.0	1	4.9	0.2131	14.3	6.9	0.3014	14.5
Iron	55.8	2	0.012	0.0004	0.03	0.005	0.0002	0.01
Manganese	54.9	2	0.002	7E-05	0.00	0.001	2E-05	0.00
Ammonia-N	14.0	1	0.005	0.0004	0.02	0.005	0.0004	0.02
Total Cations (meq/L)				**1.5**			**2.1**	
Anions								
Alkalinity, Total			55.5			72		
Carbonate	60.0	2	0.025	0.0008	0.1	0.0255	0.0008	0.0
Bicarbonate	61.0	1	67.66	1.109	77.9	87.79	1.4389	75.2
Chloride	35.5	1	3.3	0.0931	6.5	2.9	0.081	4.2
Nitrate-N	14.0	1	0.424	0.0303	2.127	0.066	0.0047	0.246
Sulfate	96.1	2	9.1	0.1903	13.4	18.6	0.3873	20.2
Total Anions (meq/L)				**1.4**			**1.9**	
Total Ions (meq/L)				**2.9**			**4.0**	
Cation/Anion Ratio				**1.05**			**1.09**	
Percent Difference				**2.2**			**4.3**	
TRILINEAR DIAGRAM DATA								
sum (Ca, Mg, Na+K)				1.49			2.08	
Calcium					34.21			27.53
Magnesium					48.78			55.26
Sodium + Potassium					17.01			17.21
sum (SO_4, Cl, HCO_3+CO_3)				1.39			1.91	
Sulfate					13.659			20.297
Chloride					6.681			4.243
Bicarbonate + Carbonate					79.660			75.460

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 6

Groundwater Within and BelowChannel Cc2

Site ID			**MW-2**			**MW-20**			**MW-21**			**MW-5D**			**MW-8**			**MW-9**		
Date			8/5/2013			8/7/2013			8/9/2013			8/15/2013			8/16/2013			7/30/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			7.4			7.2			6.9			7.0			6.9			8.1		
Conductance			335			175			250			280			350			160		
TDSobs			239			142			204			215			125			140		
Calcium	40.1	2	23.5	1.1727	28.4	13.6	0.6786	34.0	24.8	1.2375	34.9	22.3	1.1128	33.4	11.4	0.5689	35.4	12.7	0.6337	35.2
Magnesium	24.3	2	29.9	2.4604	59.5	11.7	0.9628	48.2	21.6	1.7774	50.2	15.2	1.2508	37.6	9.0	0.7381	46.0	10.6	0.8722	48.4
Potassium	39.1	1	2.8	0.0721	1.7	2.4	0.0614	3.1	2.3	0.0588	1.7	2.3	0.0591	1.8	1.1	0.0284	1.8	2.0	0.0517	2.9
Sodium	23.0	1	9.8	0.4245	10.3	6.5	0.2827	14.2	10.4	0.4524	12.8	13.7	0.5959	17.9	6.2	0.2701	16.8	5.6	0.2427	13.5
Iron	55.8	2	0.005	0.0002	0.00	0.005	0.0002	0.01	0.171	0.0061	0.17	8.030	0.2876	8.64	0.005	0.0002	0.01	0.005	0.0002	0.01
Manganese	54.9	2	0.081	0.0029	0.07	0.251	0.0091	0.46	0.191	0.007	0.20	0.576	0.021	0.63	0.001	2E-05	0.00	0.001	2E-05	0.00
Ammonia-N	14.0	1	0.005	0.0004	0.01	0.020	0.0014	0.07	0.024	0.0017	0.05	0.045	0.0032	0.10	0.005	0.0004	0.02	0.005	0.0004	0.02
Total Cations (meq/L)				**4.1**			**2.0**			**3.5**			**3.3**			**1.6**			**1.8**	
Anions																				
Alkalinity, Total			184			70.2			138			138			52			72.1		
Carbonate	60.0	2	0.3039	0.0101	0.2	0.0624	0.0021	0.1	0.0644	0.0021	0.1	0.0739	0.0025	0.1	0.0266	0.0009	0.1	0.5391	0.018	0.7
Bicarbonate	61.0	1	223.86	3.6693	88.8	85.52	1.4017	75.5	168.23	2.7574	77.1	168.21	2.7571	90.8	63.39	1.039	65.0	86.87	1.4238	59.4
Chloride	35.5	1	3.2	0.0911	2.2	3.2	0.0908	4.9	15.2	0.4287	12.0	2.9	0.0829	2.7	5.0	0.1405	8.8	23.0	0.6487	27.1
Nitrate-N	14.0	1	0.018	0.0013	0.031	0.025	0.0018	0.096	0.107	0.0076	0.214	0.005	0.0004	0.012	3.610	0.2577	16.133	0.190	0.0136	0.566
Sulfate	96.1	2	17.2	0.3581	8.7	17.3	0.3602	19.4	18.2	0.3789	10.6	9.3	0.1936	6.4	7.7	0.1595	10.0	14.1	0.2936	12.2
Total Anions (meq/L)				**4.1**			**1.9**			**3.6**			**3.0**			**1.6**			**2.4**	
Total Ions (meq/L)				**8.3**			**3.9**			**7.1**			**6.4**			**3.2**			**4.2**	
Cation/Anion Ratio				**1.00**			**1.08**			**0.99**			**1.10**			**1.01**			**0.75**	
Percent Difference				**0.0**			**3.6**			**-0.5**			**4.6**			**0.3**			**-14.2**	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				4.13			1.99			3.53			3.02			1.61			1.80	
Calcium					28.40			34.18			35.10			36.86			35.43			35.20
Magnesium					59.58			48.49			50.41			41.44			45.97			48.45
Sodium + Potassium					12.03			17.33			14.50			21.70			18.59			16.35
sum (SO_4, Cl, HCO_3+CO_3)				4.13			1.85			3.57			3.04			1.34			2.38	
Sulfate					8.674			19.420			10.623			6.378			11.904			12.314
Chloride					2.207			4.897			12.019			2.731			10.484			27.211
Bicarbonate + Carbonate					89.119			75.684			77.359			90.891			77.612			60.475

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 2

Regional Aquifer & Channel Cc3

Site ID			**MW-12**			**MW-19**			**MW-26**			**MW-27**			**MW-29**			**MW-7**		
Date			8/9/2013			7/30/2013			8/9/2013			8/8/2013			8/15/2013			8/6/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			6.6			7.4			8.0			6.8			7.4			7.8		
Conductance			145			190			170			170			225			165		
TDSobs			124			161			144			143			165			137		
Calcium	40.1	2	11.2	0.5589	35.8	15.2	0.7585	32.8	18.3	0.9132	45.9	12.9	0.6437	36.4	19.7	0.983	40.0	14.3	0.7136	39.3
Magnesium	24.3	2	8.7	0.7143	45.7	14.3	1.1767	50.9	6.8	0.5579	28.1	9.9	0.8179	46.3	13.5	1.1109	45.2	9.0	0.7389	40.7
Potassium	39.1	1	1.9	0.0481	3.1	2.4	0.0616	2.7	3.1	0.0798	4.0	1.5	0.0371	2.1	2.2	0.0568	2.3	3.0	0.0775	4.3
Sodium	23.0	1	5.6	0.2414	15.4	6.7	0.2919	12.6	9.4	0.4097	20.6	6.1	0.2671	15.1	6.3	0.274	11.2	6.1	0.264	14.5
Iron	55.8	2	0.005	0.0002	0.01	0.029	0.001	0.04	0.144	0.0052	0.26	0.005	0.0002	0.01	0.747	0.0268	1.09	0.005	0.0002	0.01
Manganese	54.9	2	0.001	2E-05	0.00	0.472	0.0172	0.74	0.085	0.0031	0.15	0.001	2E-05	0.00	0.092	0.0033	0.14	0.117	0.0043	0.23
Ammonia-N	14.0	1	0.005	0.0004	0.02	0.038	0.0027	0.12	0.272	0.0194	0.98	0.005	0.0004	0.02	0.005	0.0004	0.01	0.245	0.0175	0.96
Total Cations (meq/L)				**1.6**			**2.3**			**2.0**			**1.8**			**2.5**			**1.8**	
Anions																				
Alkalinity, Total			58.5			94.7			75.2			61.9			100			71.6		
Carbonate	60.0	2	0.0134	0.0004	0.0	0.1272	0.0042	0.1	0.4182	0.0139	0.7	0.0224	0.0007	0.0	0.1542	0.0051	0.2	0.27	0.009	0.5
Bicarbonate	61.0	1	71.34	1.1694	76.4	115.28	1.8895	57.1	90.89	1.4898	79.4	75.47	1.2371	69.1	121.69	1.9946	81.8	86.80	1.4228	82.1
Chloride	35.5	1	3.0	0.0855	5.6	37.6	1.0606	32.1	3.6	0.1007	5.4	6.1	0.1721	9.6	3.5	0.0996	4.1	3.0	0.0832	4.8
Nitrate-N	14.0	1	0.719	0.0513	3.352	0.046	0.0033	0.100	0.015	0.0011	0.057	2.750	0.1963	10.968	0.005	0.0004	0.015	0.005	0.0004	0.021
Sulfate	96.1	2	10.8	0.2249	14.7	16.8	0.3498	10.6	13.0	0.2707	14.4	8.8	0.1838	10.3	16.3	0.3394	13.9	10.5	0.2186	12.6
Total Anions (meq/L)				**1.5**			**3.3**			**1.9**			**1.8**			**2.4**			**1.7**	
Total Ions (meq/L)				**3.1**			**5.6**			**3.9**			**3.6**			**4.9**			**3.5**	
Cation/Anion Ratio				**1.02**			**0.70**			**1.06**			**0.99**			**1.01**			**1.05**	
Percent Difference				**1.0**			**-17.8**			**2.9**			**-0.7**			**0.3**			**2.3**	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				1.56			2.29			1.96			1.77			2.42			1.79	
Calcium					35.77			33.14			46.58			36.45			40.54			39.77
Magnesium					45.71			51.41			28.46			46.32			45.81			41.19
Sodium + Potassium					18.53			15.45			24.97			17.23			13.64			19.04
sum (SO_4, Cl, HCO_3+CO_3)				1.48			3.30			1.88			1.59			2.44			1.73	
Sulfate					15.192			10.587			14.435			11.536			13.917			12.611
Chloride					5.774			32.099			5.370			10.796			4.083			4.800
Bicarbonate + Carbonate					79.034			57.315			80.195			77.668			82.000			82.590

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 14

Private Wells

Site ID			**DW-85**			**DW-PA**		
Date			9/27/2013			9/27/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			8.0			7.3		
Conductance			125			160		
TDSobs			114			132		
Calcium	40.1	2	12.3	0.6138	42.8	11.6	0.5788	33.9
Magnesium	24.3	2	5.9	0.4863	33.9	9.9	0.8105	47.5
Potassium	39.1	1	2.9	0.0739	5.2	1.8	0.0453	2.7
Sodium	23.0	1	5.4	0.2366	16.5	6.2	0.271	15.9
Iron	55.8	2	0.067	0.0024	0.17	0.005	0.0002	0.01
Manganese	54.9	2	0.054	0.002	0.14	0.001	2E-05	0.00
Ammonia-N	14.0	1	0.277	0.0198	1.38	0.005	0.0004	0.02
Total Cations (meq/L)				**1.4**			**1.7**	
Anions								
Alkalinity, Total			67.4			67.3		
Carbonate	60.0	2	0.4106	0.0137	0.9	0.0844	0.0028	0.2
Bicarbonate	61.0	1	81.39	1.3341	89.9	81.93	1.343	73.2
Chloride	35.5	1	3.0	0.0835	5.6	5.7	0.1605	8.8
Nitrate-N	14.0	1	0.005	0.0004	0.024	1.060	0.0757	4.127
Sulfate	96.1	2	2.5	0.0527	3.5	12.1	0.2519	13.7
Total Anions (meq/L)				**1.5**			**1.8**	
Total Ions (meq/L)				**2.9**			**3.5**	
Cation/Anion Ratio				**0.97**			**0.93**	
Percent Difference				**-1.7**			**-3.6**	
TRILINEAR DIAGRAM DATA								
sum (Ca, Mg, Na+K)				1.41			1.71	
Calcium					43.51			33.94
Magnesium					34.48			47.52
Sodium + Potassium					22.01			18.54
sum (SO_4, Cl, HCO_3+CO_3)				1.48			1.76	
Sulfate					3.550			14.329
Chloride					5.626			9.128
Bicarbonate + Carbonate					90.824			76.543

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 10

Groundwater Within or Adjacent to Channel Cc1

Site ID			**MW-10**			**MW-13**		
Date			5/8/2013			5/9/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			7.4			7.0		
Conductance			135			150		
TDSobs			107			143		
Calcium	40.1	2	9.0	0.4501	33.5	9.7	0.4815	27.1
Magnesium	24.3	2	8.1	0.6657	49.5	11.9	0.9792	55.2
Potassium	39.1	1	1.4	0.0353	2.6	1.8	0.0458	2.6
Sodium	23.0	1	4.4	0.1931	14.4	6.1	0.2671	15.1
Iron	55.8	2	0.001	2E-05	0.00	0.001	2E-05	0.00
Manganese	54.9	2	0.001	2E-05	0.00	0.001	5E-05	0.00
Ammonia-N	14.0	1	0.005	0.0004	0.03	0.005	0.0004	0.02
Total Cations (meq/L)				**1.3**			**1.8**	
Anions								
Alkalinity, Total			57.8			75.7		
Carbonate	60.0	2	0.089	0.003	0.2	0.0405	0.0014	0.1
Bicarbonate	61.0	1	70.33	1.1529	77.2	92.27	1.5124	75.6
Chloride	35.5	1	3.4	0.0948	6.3	3.3	0.0928	4.6
Nitrate-N	14.0	1	0.400	0.0286	1.912	0.109	0.0078	0.389
Sulfate	96.1	2	10.3	0.2145	14.4	18.6	0.3873	19.3
Total Anions (meq/L)				**1.5**			**2.0**	
Total Ions (meq/L)				**2.8**			**3.8**	
Cation/Anion Ratio				**0.90**			**0.89**	
Percent Difference				**-5.2**			**-6.0**	
TRILINEAR DIAGRAM DATA								
sum (Ca, Mg, Na+K)				1.34			1.77	
Calcium					33.48			27.15
Magnesium					49.52			55.21
Sodium + Potassium					16.99			17.64
sum (SO_4, Cl, HCO_3+CO_3)				1.47			1.99	
Sulfate					14.638			19.423
Chloride					6.469			4.654
Bicarbonate + Carbonate					78.893			75.922

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 6

Groundwater Within and BelowChannel Cc2

Site ID			**MW-2**			**MW-20**			**MW-21**			**MW-5D**			**MW-8**			**MW-9**		
Date			5/7/2013			5/20/2013			5/6/2013			5/6/2013			5/7/2013			5/8/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			6.9			8.1			6.9			6.6			6.8			7.4		
Conductance			350			175			200			170			155			175		
TDSobs			240			135			202			208			127			135		
Calcium	40.1	2	24.8	1.2375	31.2	11.2	0.5589	33.1	21.0	1.0479	34.3	20.8	1.0379	32.4	11.1	0.5539	36.9	13.2	0.6587	37.6
Magnesium	24.3	2	27.7	2.2794	57.4	10.0	0.8221	48.7	18.3	1.5059	49.3	14.8	1.2179	38.0	8.2	0.6739	44.8	9.8	0.8097	46.2
Potassium	39.1	1	2.3	0.0578	1.5	2.1	0.0535	3.2	2.1	0.0537	1.8	2.2	0.0558	1.7	1.0	0.0266	1.8	2.1	0.0524	3.0
Sodium	23.0	1	9.0	0.3915	9.9	5.6	0.2436	14.4	10.0	0.435	14.2	13.4	0.5829	18.2	5.7	0.2479	16.5	5.3	0.2305	13.2
Iron	55.8	2	0.001	2E-05	0.00	0.001	2E-05	0.00	0.146	0.0052	0.17	7.880	0.2822	8.81	0.001	2E-05	0.00	0.001	2E-05	0.00
Manganese	54.9	2	0.109	0.004	0.10	0.263	0.0096	0.57	0.169	0.0062	0.20	0.580	0.0211	0.66	0.001	2E-05	0.00	0.001	2E-05	0.00
Ammonia-N	14.0	1	0.005	0.0004	0.01	0.020	0.0014	0.08	0.013	0.0009	0.03	0.069	0.0049	0.15	0.005	0.0004	0.02	0.005	0.0004	0.02
Total Cations (meq/L)				**4.0**			**1.7**			**3.1**			**3.2**			**1.5**			**1.8**	
Anions																				
Alkalinity, Total			194			71.5			142			145			53.1			73.9		
Carbonate	60.0	2	0.0992	0.0033	0.1	0.5346	0.0178	0.9	0.0647	0.0022	0.1	0.0331	0.0011	0.0	0.0188	0.0006	0.0	0.0993	0.0033	0.2
Bicarbonate	61.0	1	236.48	3.8761	89.0	86.14	1.412	74.4	173.11	2.8374	86.4	176.83	2.8985	90.5	64.74	1.0612	64.5	89.96	1.4745	76.1
Chloride	35.5	1	3.3	0.0922	2.1	3.5	0.0973	5.1	2.6	0.0733	2.2	3.4	0.0948	3.0	4.7	0.1334	8.1	4.6	0.1306	6.7
Nitrate-N	14.0	1	0.032	0.0023	0.052	0.005	0.0004	0.019	0.089	0.0063	0.193	0.024	0.0017	0.054	3.850	0.2749	16.713	0.223	0.0159	0.821
Sulfate	96.1	2	18.3	0.381	8.7	17.8	0.3706	19.5	17.6	0.3664	11.2	9.9	0.2055	6.4	8.4	0.1745	10.6	15.1	0.3144	16.2
Total Anions (meq/L)				**4.4**			**1.9**			**3.3**			**3.2**			**1.6**			**1.9**	
Total Ions (meq/L)				**8.3**			**3.6**			**6.3**			**6.4**			**3.1**			**3.7**	
Cation/Anion Ratio				**0.91**			**0.89**			**0.93**			**1.00**			**0.91**			**0.90**	
Percent Difference				**-4.6**			**-5.8**			**-3.6**			**0.0**			**-4.5**			**-5.1**	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				3.97			1.68			3.04			2.89			1.50			1.75	
Calcium					31.20			33.31			34.44			35.86			36.87			37.61
Magnesium					57.47			48.99			49.50			42.08			44.86			46.23
Sodium + Potassium					11.33			17.70			16.06			22.06			18.27			16.16
sum (SO_4, Cl, HCO_3+CO_3)				4.35			1.90			3.28			3.20			1.37			1.92	
Sulfate					8.754			19.529			11.174			6.422			12.738			16.351
Chloride					2.119			5.128			2.236			2.962			9.740			6.792
Bicarbonate + Carbonate					89.127			75.343			86.589			90.616			77.522			76.857

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 2

Regional Aquifer & Channel Cc3

Site ID			**MW-12**			**MW-19**			**MW-26**			**MW-27**			**MW-29**			**MW-7**		
Date			5/9/2013			5/7/2013			5/13/2013			5/20/2013			5/20/2013			5/8/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			7.2			7.4			7.8			7.0			7.7			7.5		
Conductance			130			140			150			155			220			140		
TDSobs			119			157			142			134			160			131		
Calcium	40.1	2	9.4	0.4676	32.8	15.6	0.7784	34.9	14.5	0.7236	41.9	10.8	0.5389	32.9	17.2	0.8583	37.3	13.5	0.6737	41.3
Magnesium	24.3	2	8.4	0.6896	48.3	13.3	1.0944	49.1	6.5	0.5357	31.0	9.8	0.8064	49.2	13.3	1.0944	47.5	7.7	0.6369	39.0
Potassium	39.1	1	1.7	0.0432	3.0	2.4	0.0622	2.8	2.9	0.0737	4.3	1.2	0.0299	1.8	2.0	0.0504	2.2	2.5	0.0642	3.9
Sodium	23.0	1	5.2	0.2266	15.9	6.3	0.2719	12.2	8.7	0.3771	21.8	6.0	0.2627	16.0	6.2	0.2688	11.7	5.4	0.2336	14.3
Iron	55.8	2	0.001	2E-05	0.00	0.035	0.0013	0.06	0.073	0.0026	0.15	0.001	2E-05	0.00	0.737	0.0264	1.15	0.001	2E-05	0.00
Manganese	54.9	2	0.001	2E-05	0.00	0.491	0.0179	0.80	0.052	0.0019	0.11	0.001	2E-05	0.00	0.083	0.003	0.13	0.148	0.0054	0.33
Ammonia-N	14.0	1	0.005	0.0004	0.03	0.055	0.0039	0.17	0.186	0.0133	0.77	0.005	0.0004	0.02	0.005	0.0004	0.02	0.258	0.0184	1.13
Total Cations (meq/L)				**1.4**			**2.2**			**1.7**			**1.6**			**2.3**			**1.6**	
Anions																				
Alkalinity, Total			60			97.5			77.2			62.6			102			74		
Carbonate	60.0	2	0.0533	0.0018	0.1	0.1371	0.0046	0.2	0.2596	0.0087	0.4	0.0359	0.0012	0.1	0.2856	0.0095	0.4	0.1469	0.0049	0.3
Bicarbonate	61.0	1	73.09	1.198	76.1	118.67	1.9451	78.5	93.66	1.5351	79.1	76.30	1.2506	69.8	123.86	2.0302	80.9	89.98	1.4749	81.6
Chloride	35.5	1	3.2	0.0911	5.8	5.4	0.1526	6.2	4.0	0.114	5.9	5.0	0.1399	7.8	4.0	0.112	4.5	3.6	0.1001	5.5
Nitrate-N	14.0	1	0.723	0.0516	3.280	0.021	0.0015	0.060	0.087	0.0062	0.319	3.060	0.2185	12.190	0.005	0.0004	0.014	0.005	0.0004	0.020
Sulfate	96.1	2	11.1	0.2311	14.7	18.0	0.3748	15.1	13.3	0.2769	14.3	8.7	0.182	10.2	17.2	0.3581	14.3	10.9	0.2269	12.6
Total Anions (meq/L)				**1.6**			**2.5**			**1.9**			**1.8**			**2.5**			**1.8**	
Total Ions (meq/L)				**3.0**			**4.7**			**3.7**			**3.4**			**4.8**			**3.4**	
Cation/Anion Ratio				**0.91**			**0.90**			**0.89**			**0.91**			**0.92**			**0.90**	
Percent Difference				**-4.9**			**-5.3**			**-5.8**			**-4.5**			**-4.3**			**-5.1**	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				1.43			2.21			1.71			1.64			2.27			1.61	
Calcium					32.77			35.27			42.31			32.90			37.78			41.89
Magnesium					48.32			49.59			31.33			49.23			48.17			39.60
Sodium + Potassium					18.91			15.13			26.36			17.87			14.05			18.51
sum (SO_4, Cl, HCO_3+CO_3)				1.52			2.48			1.93			1.57			2.51			1.81	
Sulfate					15.184			15.130			14.314			11.564			14.269			12.560
Chloride					5.986			6.160			5.890			8.890			4.462			5.542
Bicarbonate + Carbonate					78.830			78.710			79.796			79.546			81.269			81.898

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 10

Groundwater Within or Adjacent to Channel Cc1

Site ID			**MW-10**			**MW-13**		
Date			2/8/2013			2/13/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			7.4			7.3		
Conductance			135			180		
TDSobs			101			140		
Calcium	40.1	2	8.7	0.4336	30.5	10.2	0.509	28.5
Magnesium	24.3	2	9.0	0.7406	52.2	11.9	0.9792	54.7
Potassium	39.1	1	1.4	0.0345	2.4	1.8	0.0455	2.5
Sodium	23.0	1	4.8	0.2105	14.8	5.9	0.2545	14.2
Iron	55.8	2	0.005	0.0002	0.01	0.005	0.0002	0.01
Manganese	54.9	2	0.001	2E-05	0.00	0.001	4E-05	0.00
Ammonia-N	14.0	1	0.005	0.0004	0.03	0.005	0.0004	0.02
Total Cations (meq/L)				**1.4**			**1.8**	
Anions								
Alkalinity, Total			58.7			76.6		
Carbonate	60.0	2	0.097	0.0032	0.2	0.0837	0.0028	0.1
Bicarbonate	61.0	1	71.42	1.1706	79.6	93.28	1.529	77.6
Chloride	35.5	1	3.0	0.0832	5.7	2.9	0.0804	4.1
Nitrate-N	14.0	1	0.415	0.0296	2.015	0.087	0.0062	0.314
Sulfate	96.1	2	8.8	0.1841	12.5	16.9	0.3519	17.9
Total Anions (meq/L)				**1.5**			**2.0**	
Total Ions (meq/L)				**2.9**			**3.8**	
Cation/Anion Ratio				**0.97**			**0.91**	
Percent Difference				**-1.8**			**-4.8**	
TRILINEAR DIAGRAM DATA								
sum (Ca, Mg, Na+K)				1.42			1.79	
Calcium					30.55			28.46
Magnesium					52.18			54.76
Sodium + Potassium					17.27			16.78
sum (SO_4, Cl, HCO_3+CO_3)				1.44			1.96	
Sulfate					12.772			17.916
Chloride					5.774			4.093
Bicarbonate + Carbonate					81.454			77.991

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 6

Groundwater Within and BelowChannel Cc2

Site ID			**MW-2**			**MW-20**			**MW-21**			**MW-5D**			**MW-8**			**MW-9**		
Date			2/11/2013			2/13/2013			2/4/2013			2/4/2013			2/8/2013			2/5/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			6.9			8.0			6.7			6.6			6.8			7.4		
Conductance			340			175			260			270			155			165		
TDSobs			239			137			203			214			125			124		
Calcium	40.1	2	24.4	1.2176	30.1	12.0	0.5988	34.9	19.9	0.993	31.9	20.6	1.0279	32.1	10.9	0.5439	34.0	11.3	0.5639	35.3
Magnesium	24.3	2	28.8	2.3699	58.6	9.9	0.813	47.3	20.0	1.6458	52.9	15.0	1.2343	38.5	9.2	0.7538	47.2	9.2	0.7562	47.3
Potassium	39.1	1	2.3	0.0586	1.4	2.1	0.0535	3.1	2.3	0.0581	1.9	2.3	0.0596	1.9	1.1	0.0271	1.7	2.0	0.0506	3.2
Sodium	23.0	1	9.0	0.3923	9.7	5.6	0.2423	14.1	9.0	0.3923	12.6	12.7	0.5524	17.2	6.3	0.2727	17.1	5.2	0.2262	14.2
Iron	55.8	2	0.005	0.0002	0.00	0.005	0.0002	0.01	0.254	0.0091	0.29	8.680	0.3108	9.70	0.005	0.0002	0.01	0.005	0.0002	0.01
Manganese	54.9	2	0.097	0.0035	0.09	0.253	0.0092	0.54	0.335	0.0122	0.39	0.547	0.0199	0.62	0.001	2E-05	0.00	0.001	2E-05	0.00
Ammonia-N	14.0	1	0.005	0.0004	0.01	0.016	0.0011	0.07	0.013	0.0009	0.03	0.005	0.0004	0.01	0.005	0.0004	0.02	0.005	0.0004	0.02
Total Cations (meq/L)				**4.0**			**1.7**			**3.1**			**3.2**			**1.6**			**1.6**	
Anions																				
Alkalinity, Total			198			72.7			153			145			56.3			69.5		
Carbonate	60.0	2	0.099	0.0033	0.1	0.4231	0.0141	0.8	0.0461	0.0015	0.0	0.0324	0.0011	0.0	0.0199	0.0007	0.0	0.1047	0.0035	0.2
Bicarbonate	61.0	1	241.36	3.9561	90.1	87.83	1.4397	76.7	186.57	3.058	88.6	176.83	2.8985	91.3	68.65	1.1252	68.2	84.58	1.3863	77.4
Chloride	35.5	1	3.3	0.0936	2.1	3.2	0.0914	4.9	2.6	0.0733	2.1	3.2	0.0908	2.9	4.2	0.1187	7.2	4.1	0.1142	6.4
Nitrate-N	14.0	1	0.100	0.0071	0.163	0.005	0.0004	0.019	0.075	0.0054	0.155	0.005	0.0004	0.011	3.420	0.2442	14.808	0.192	0.0137	0.766
Sulfate	96.1	2	15.9	0.3311	7.5	15.9	0.3311	17.6	15.1	0.3144	9.1	8.9	0.1851	5.8	7.7	0.1601	9.7	13.1	0.2728	15.2
Total Anions (meq/L)				**4.4**			**1.9**			**3.5**			**3.2**			**1.6**			**1.8**	
Total Ions (meq/L)				**8.4**			**3.6**			**6.6**			**6.4**			**3.2**			**3.4**	
Cation/Anion Ratio				**0.92**			**0.92**			**0.90**			**1.01**			**0.97**			**0.89**	
Percent Difference				**-4.1**			**-4.4**			**-5.2**			**0.5**			**-1.6**			**-5.7**	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				4.04			1.71			3.09			2.87			1.60			1.60	
Calcium					30.15			35.07			32.14			35.76			34.05			35.31
Magnesium					58.68			47.61			53.27			42.94			47.18			47.35
Sodium + Potassium					11.17			17.32			14.58			21.29			18.77			17.34
sum (SO_4, Cl, HCO_3+CO_3)				4.38			1.88			3.45			3.18			1.40			1.78	
Sulfate					7.551			17.645			9.120			5.829			11.398			15.351
Chloride					2.136			4.871			2.127			2.860			8.454			6.429
Bicarbonate + Carbonate					90.313			77.485			88.753			91.311			80.148			78.220

Ion Balance Calculations
Trilinear Data
Vashon Island Landfill Groundwater

Table 2

Regional Aquifer & Channel Cc3

Site ID			**MW-12**			**MW-19**			**MW-26**			**MW-27**			**MW-29**			**MW-7**		
Date			2/20/2013			2/14/2013			2/8/2013			2/5/2013			2/20/2013			2/7/2013		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
pH			7.2			7.4			8.2			6.9			7.3			7.9		
Conductance			140			210			175			170			200			165		
TDSobs			118			163			128			119			160			127		
Calcium	40.1	2	11.9	0.5938	36.2	16.0	0.7984	32.8	15.3	0.7635	41.8	11.4	0.5689	35.3	20.0	0.998	39.1	12.9	0.6437	37.6
Magnesium	24.3	2	9.0	0.7431	45.3	15.1	1.2425	51.0	7.0	0.5744	31.4	9.3	0.7628	47.3	14.3	1.1767	46.1	8.7	0.7159	41.8
Potassium	39.1	1	1.9	0.0473	2.9	2.5	0.0637	2.6	3.0	0.077	4.2	1.2	0.0312	1.9	2.2	0.0565	2.2	2.6	0.0675	3.9
Sodium	23.0	1	5.9	0.2545	15.5	7.0	0.3054	12.5	9.0	0.3897	21.3	5.7	0.2484	15.4	6.7	0.291	11.4	6.0	0.2627	15.4
Iron	55.8	2	0.005	0.0002	0.01	0.031	0.0011	0.05	0.104	0.0037	0.20	0.005	0.0002	0.01	0.773	0.0277	1.08	0.005	0.0002	0.01
Manganese	54.9	2	0.001	2E-05	0.00	0.599	0.0218	0.90	0.057	0.0021	0.11	0.001	2E-05	0.00	0.123	0.0045	0.18	0.135	0.0049	0.29
Ammonia-N	14.0	1	0.005	0.0004	0.02	0.035	0.0025	0.10	0.223	0.0159	0.87	0.005	0.0004	0.02	0.005	0.0004	0.01	0.223	0.0159	0.93
Total Cations (meq/L)				**1.6**			**2.4**			**1.8**			**1.6**			**2.6**			**1.7**	
Anions																				
Alkalinity, Total			61			99.8			76.8			66.8			106			74.4		
Carbonate	60.0	2	0.0542	0.0018	0.1	0.1436	0.0048	0.2	0.7889	0.0263	1.4	0.0312	0.001	0.1	0.1392	0.0046	0.2	0.3776	0.0126	0.7
Bicarbonate	61.0	1	74.31	1.218	77.1	121.46	1.9909	80.6	92.09	1.5095	80.1	81.43	1.3348	72.6	129.04	2.115	82.2	90.00	1.4752	82.9
Chloride	35.5	1	2.9	0.0829	5.3	4.9	0.1371	5.5	3.5	0.0979	5.2	5.3	0.1492	8.1	3.7	0.103	4.0	2.9	0.0824	4.6
Nitrate-N	14.0	1	0.727	0.0519	3.286	0.011	0.0008	0.032	0.037	0.0026	0.140	2.200	0.1571	8.546	0.005	0.0004	0.014	0.005	0.0004	0.020
Sulfate	96.1	2	10.8	0.2249	14.2	16.2	0.3373	13.7	11.9	0.2478	13.2	9.4	0.1957	10.6	16.8	0.3498	13.6	10.0	0.2082	11.7
Total Anions (meq/L)				**1.6**			**2.5**			**1.9**			**1.8**			**2.6**			**1.8**	
Total Ions (meq/L)				**3.2**			**4.9**			**3.7**			**3.4**			**5.1**			**3.5**	
Cation/Anion Ratio				**1.04**			**0.99**			**0.97**			**0.88**			**0.99**			**0.96**	
Percent Difference				**1.9**			**-0.7**			**-1.6**			**-6.6**			**-0.4**			**-1.9**	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				1.64			2.41			1.80			1.61			2.52			1.69	
Calcium					36.24			33.13			42.31			35.31			39.57			38.09
Magnesium					45.35			51.56			31.83			47.34			46.65			42.36
Sodium + Potassium					18.42			15.31			25.86			17.35			13.78			19.54
sum (SO_4, Cl, HCO_3+CO_3)				1.53			2.47			1.88			1.68			2.57			1.78	
Sulfate					14.720			13.655			13.169			11.645			13.598			11.708
Chloride					5.429			5.550			5.202			8.878			4.002			4.631
Bicarbonate + Carbonate					79.851			80.795			81.629			79.477			82.400			83.661

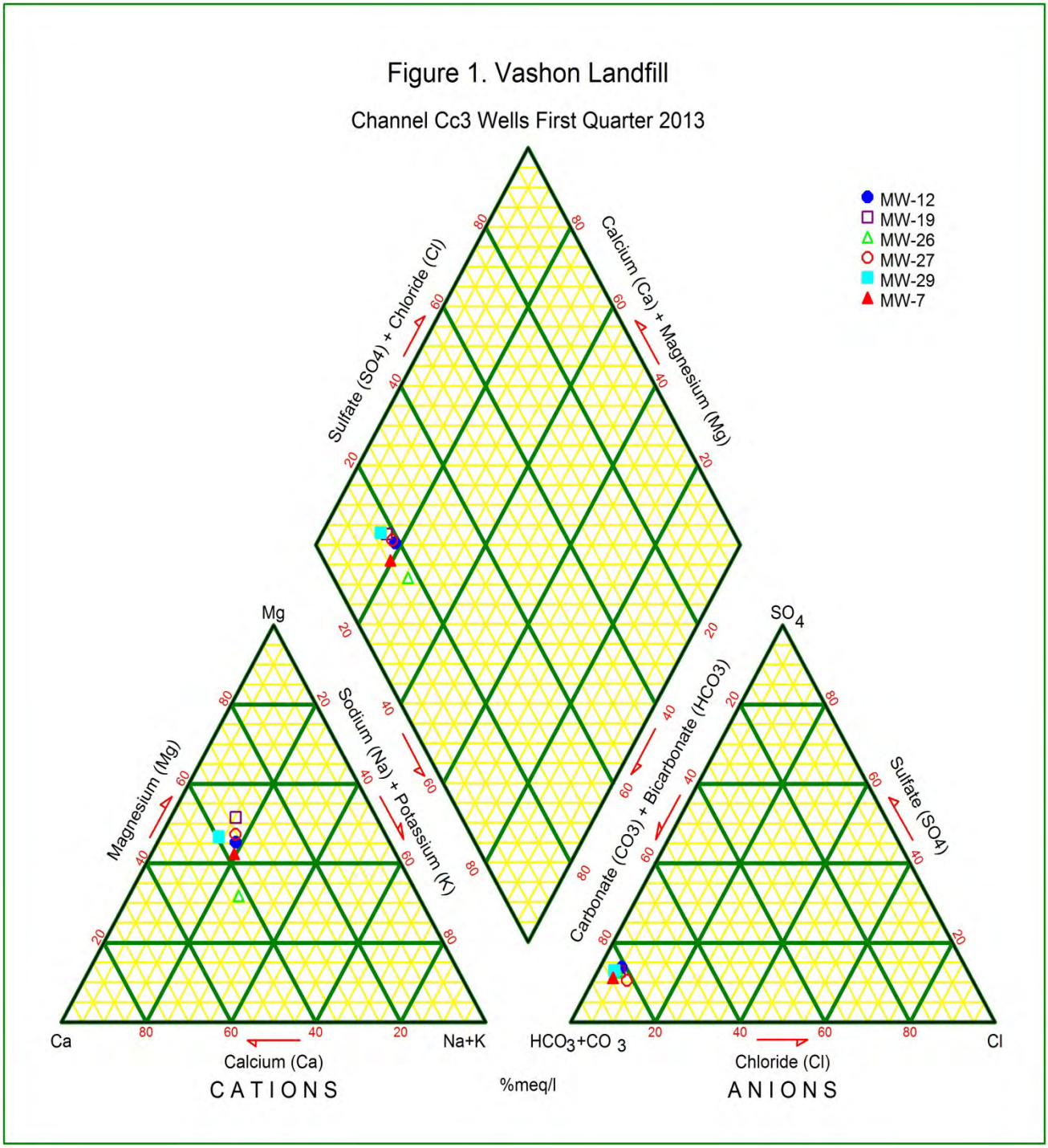


Figure 1. Vashon Landfill
Channel Cc3 Wells First Quarter 2013
MW-12
MW-19
MW-26
MW-27
MW-29
MW-7
Sulfate (SO4) + Chloride (Cl)
Calcium (Ca) + Magnesium (Mg)
Sodium (Na) + Potassium (K)
Carbonate (CO3) + Bicarbonate (HCO3)
Mg
Magnesium (Mg)
Ca
Na+K
Calcium (Ca)
CATIONS
SO4
Sulfate (SO4)
HCO3+CO 3
Cl
Chloride (Cl)
ANIONS
%meq/l

Figure 1. Vashon Landfill

Channel Cc3 Wells Second Quarter 2013

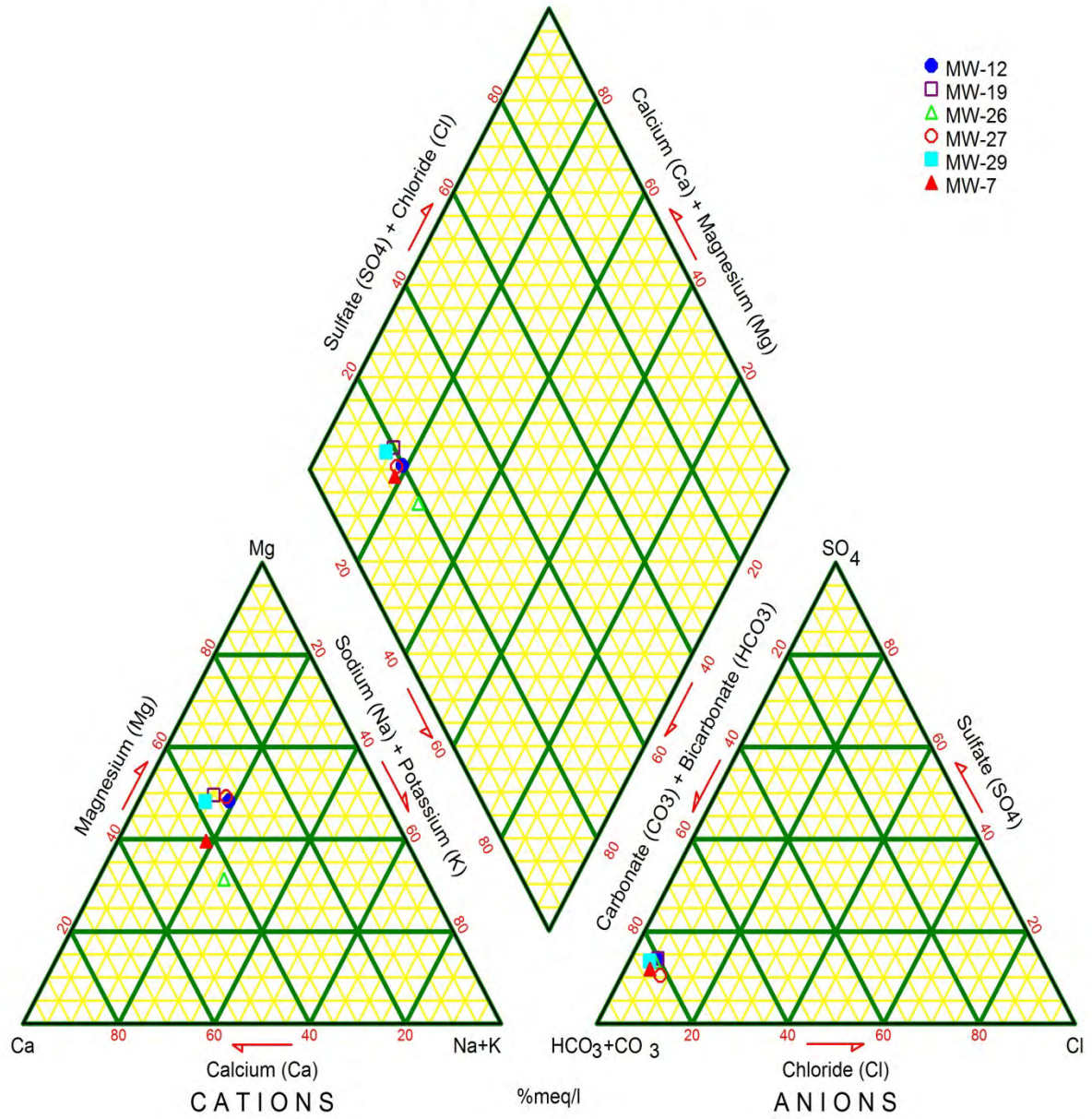


Figure 1. Vashon Landfill

Channel Cc3 Wells Third Quarter 2013

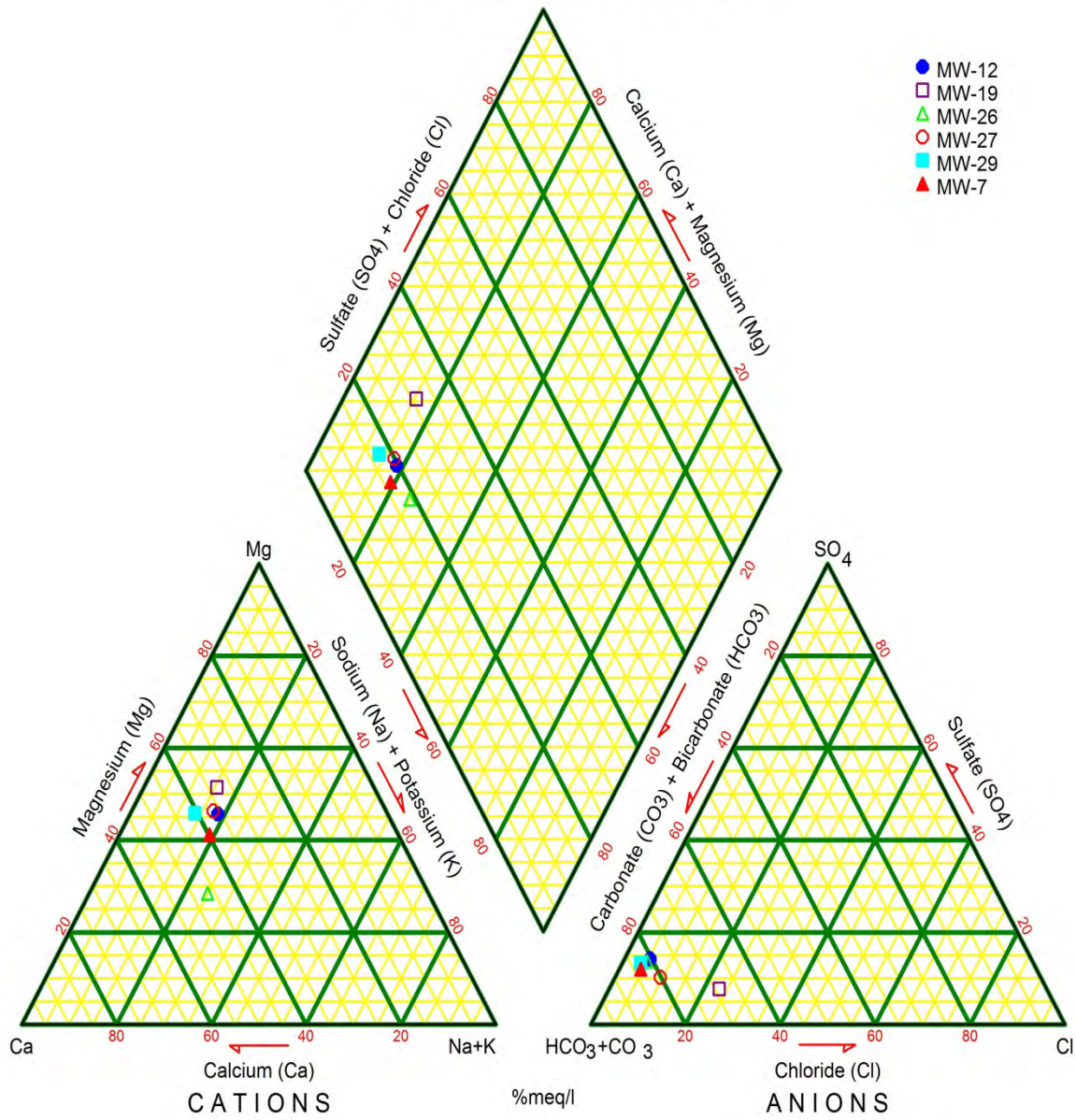


Figure 1. Vashon Landfill

Channel Cc3 Wells Fourth Quarter 2013

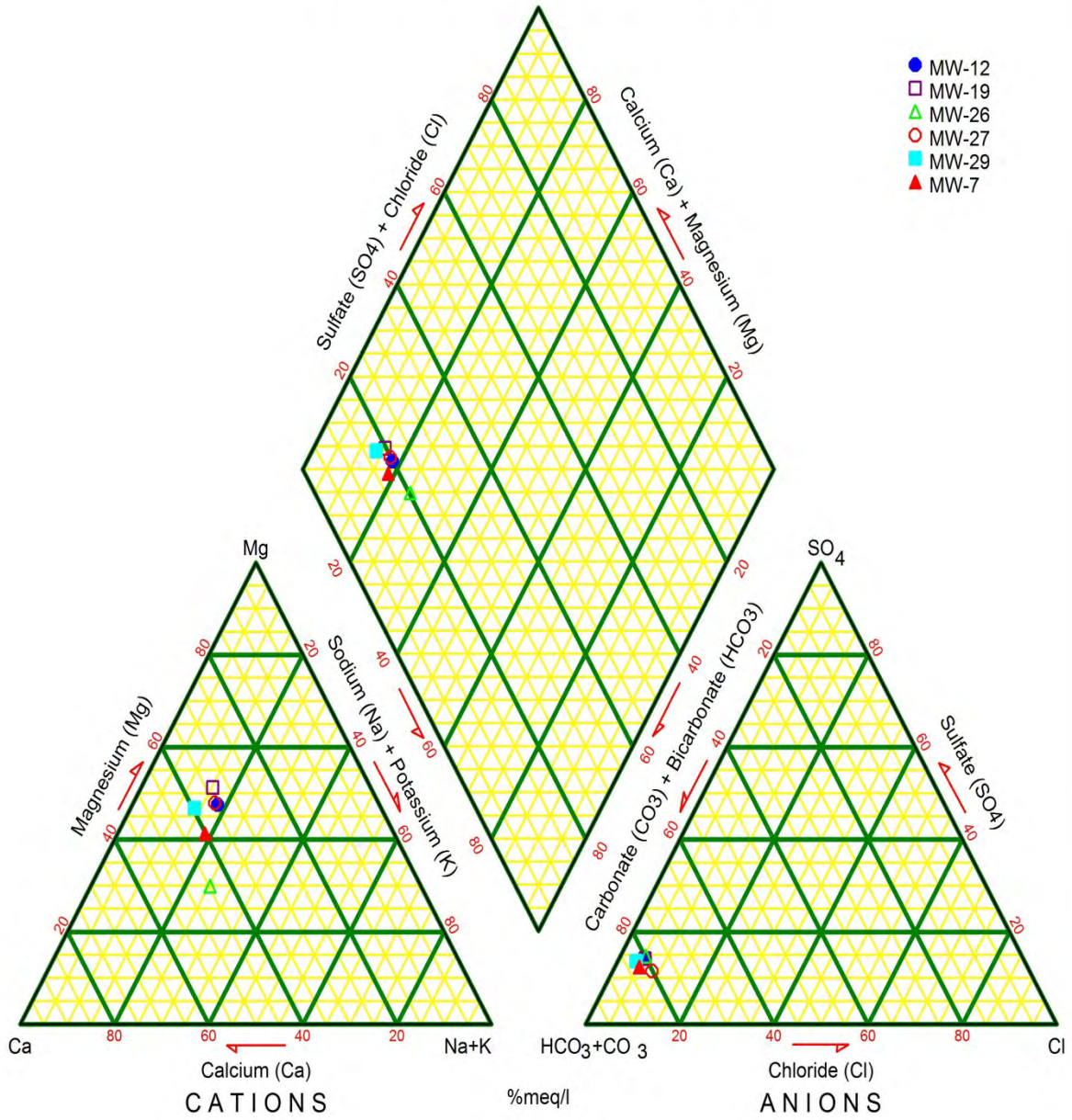


Figure 2. Vashon Landfill

Channel Cc2 Wells First Quarter 2013

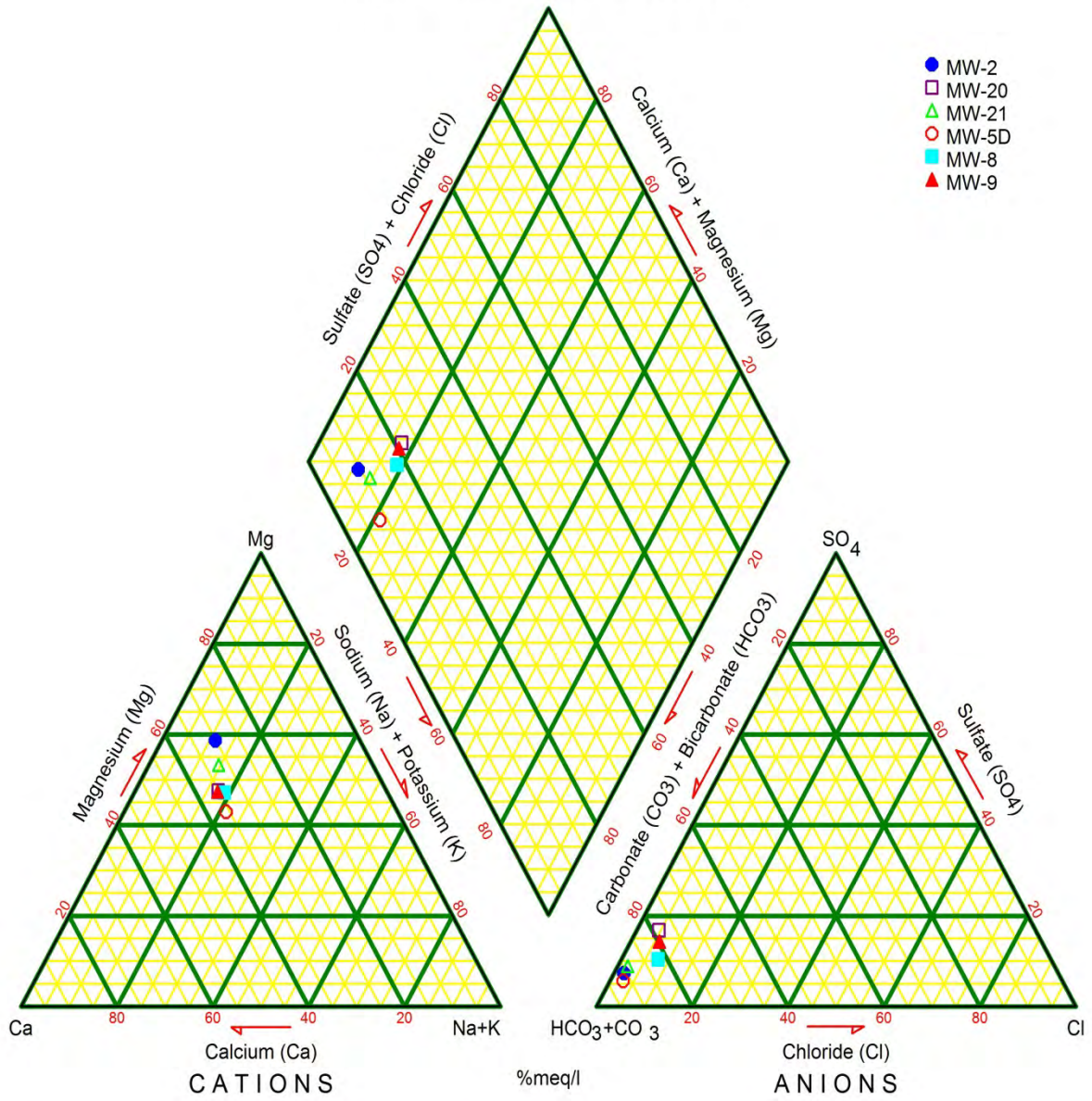


Figure 2. Vashon Landfill

Channel Cc2 Wells Second Quarter 2013

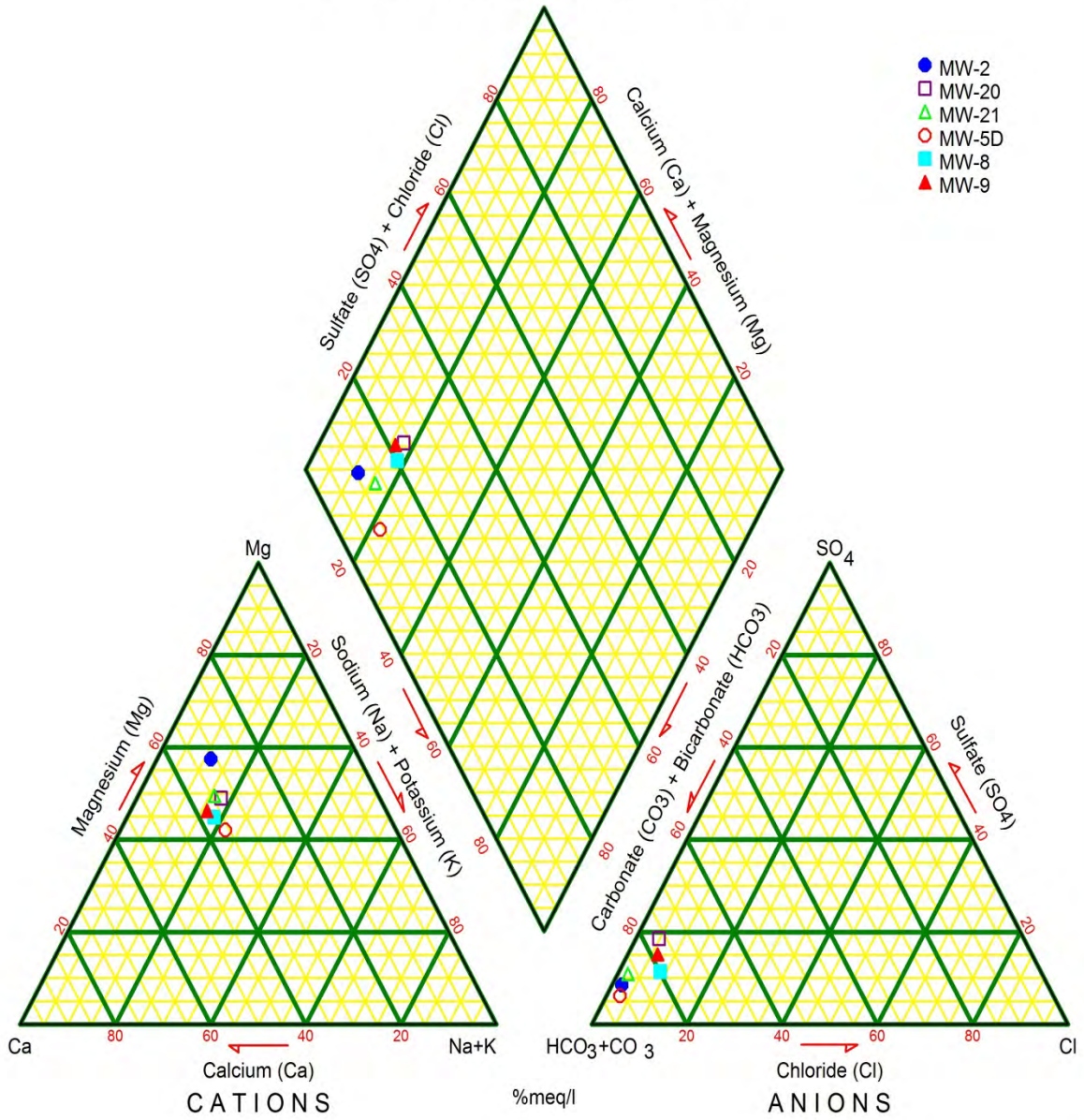


Figure 2. Vashon Landfill

Channel Cc2 Wells Third Quarter 2013

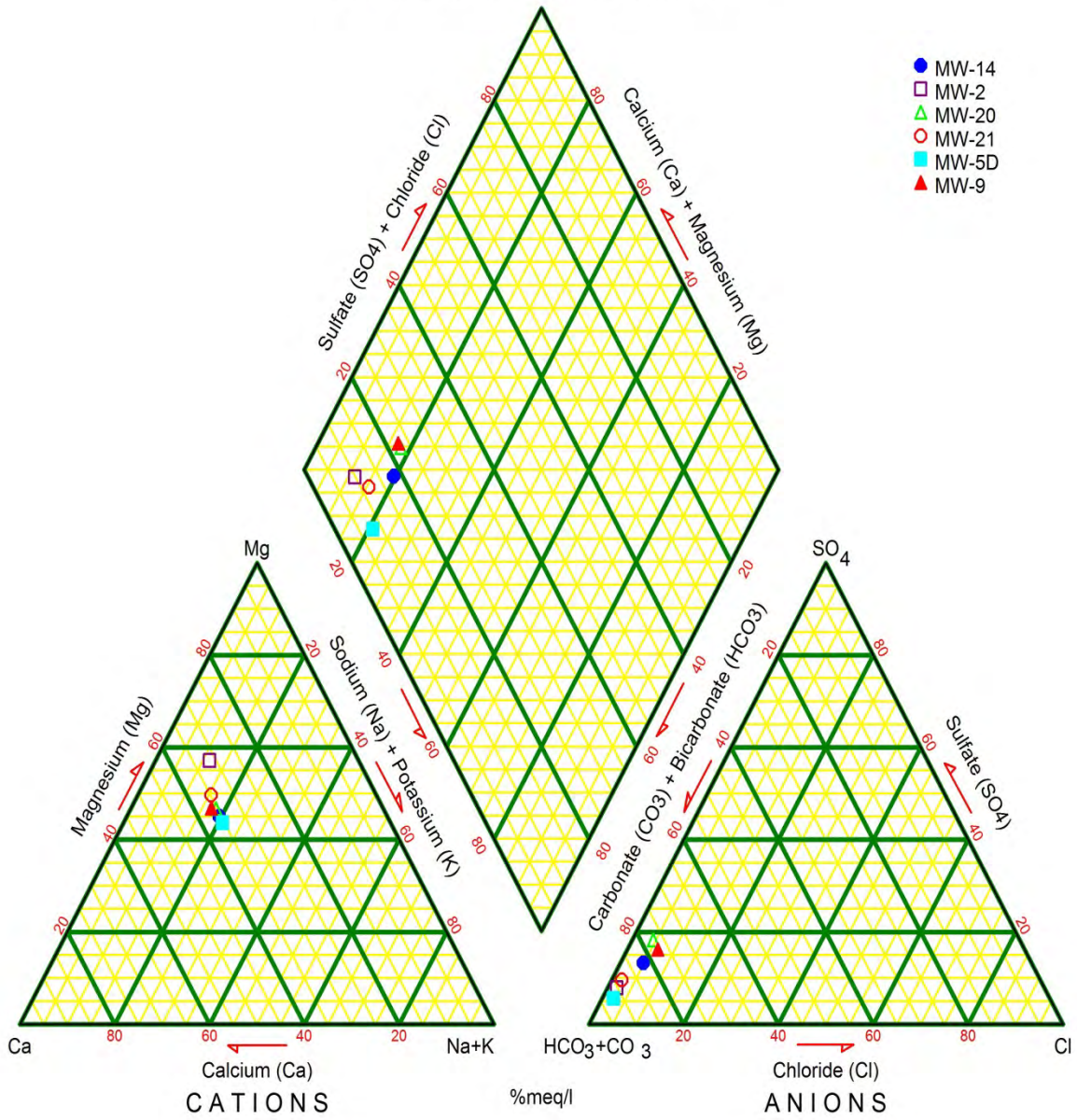


Figure 2. Vashon Landfill

Channel Cc2 Wells Fourth Quarter 2013

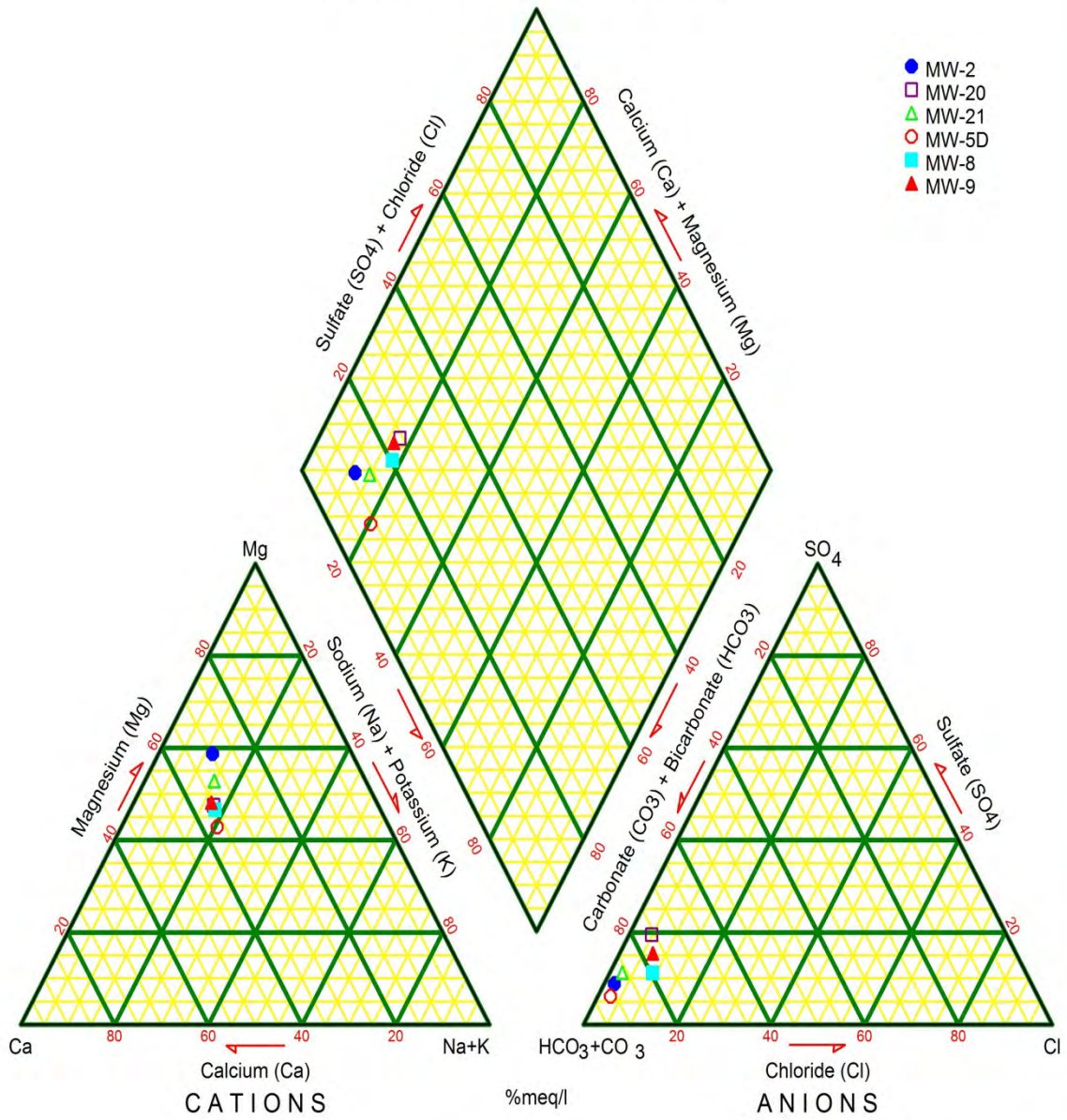


Figure 3. Vashon Landfill

Channel Cc1 Wells First Quarter 2013

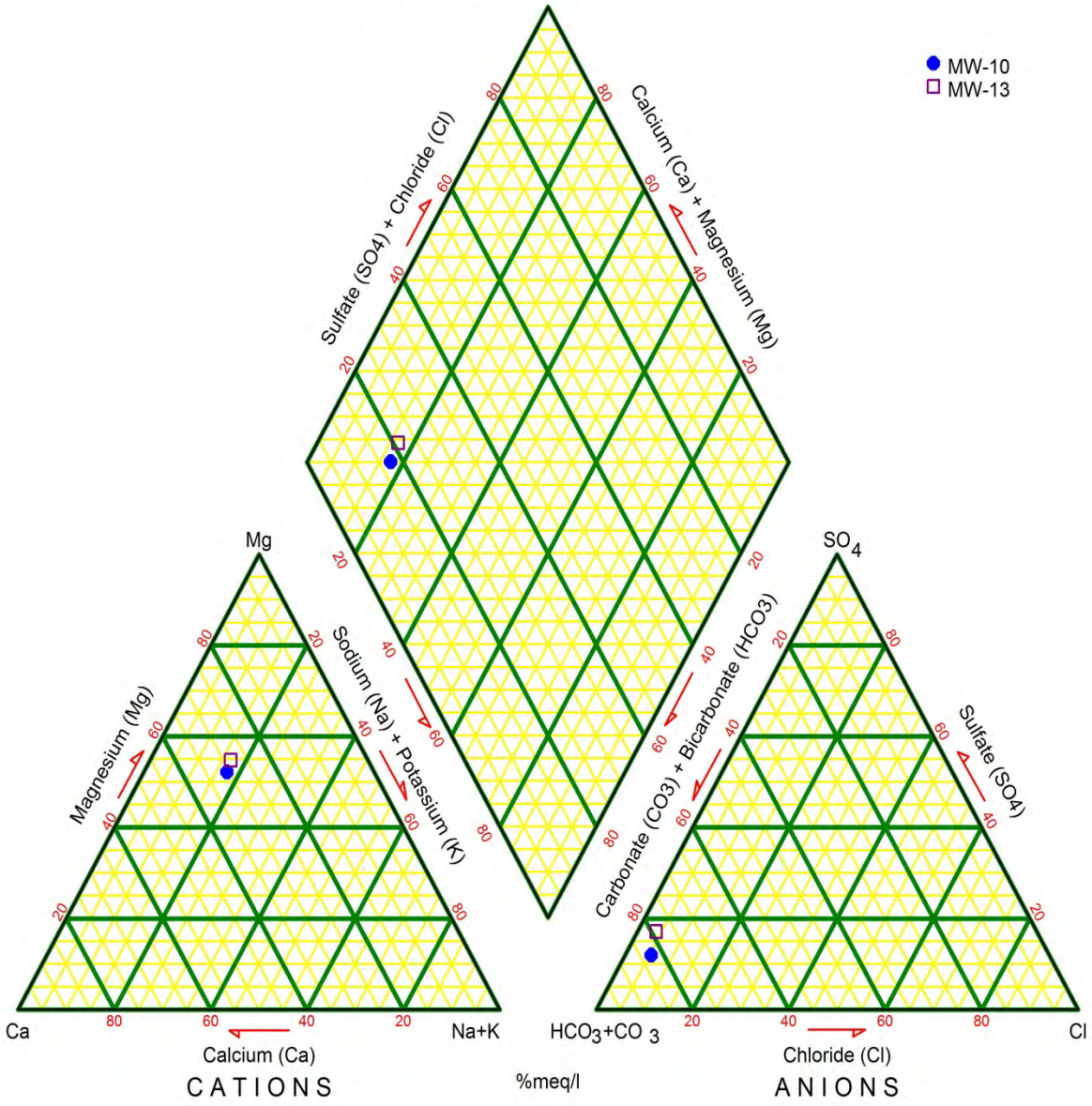


Figure 3. Vashon Landfill

Channel Cc1 Wells Second Quarter 2013

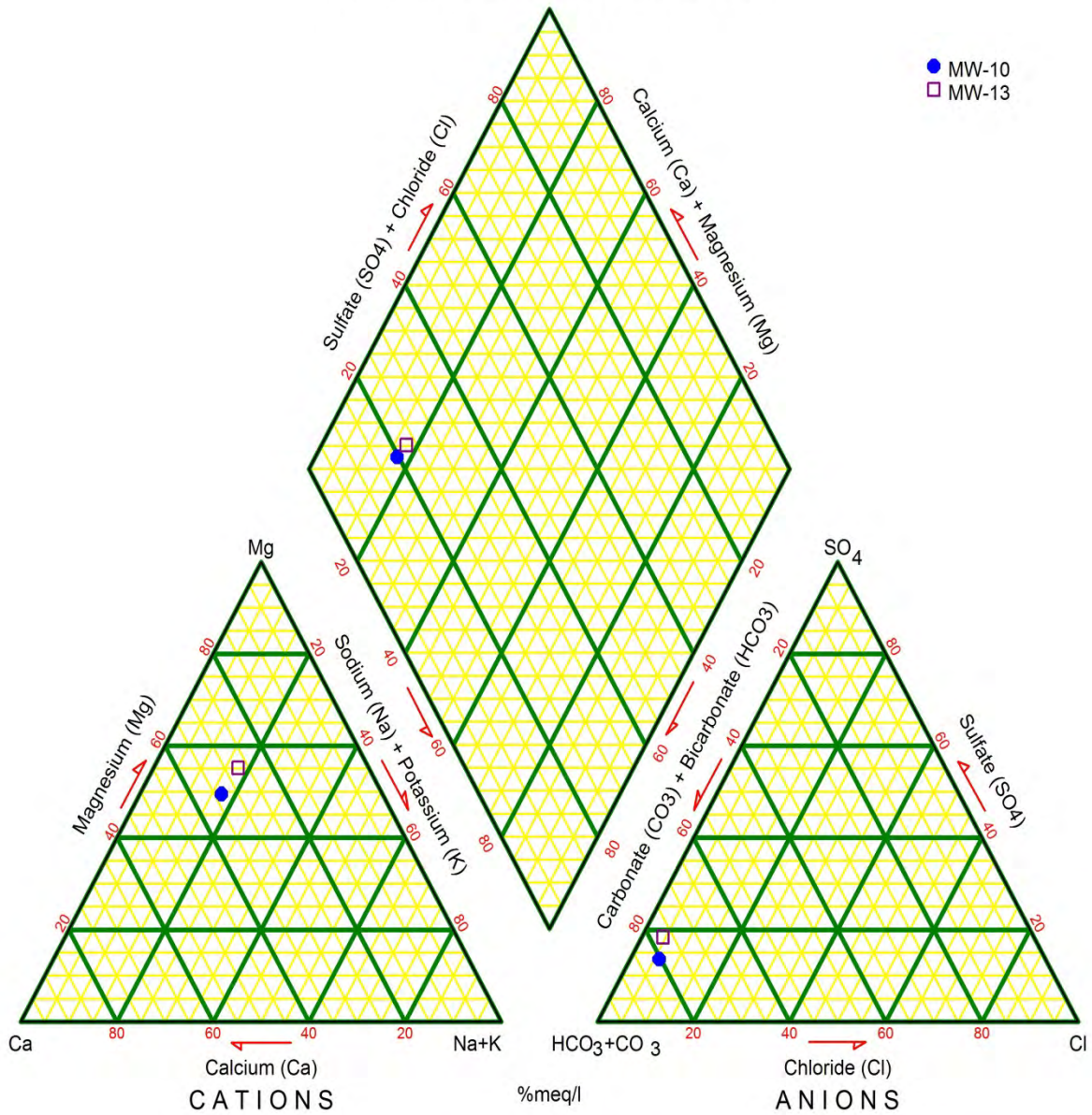


Figure 3. Vashon Landfill

Channel Cc1 Wells Third Quarter 2013

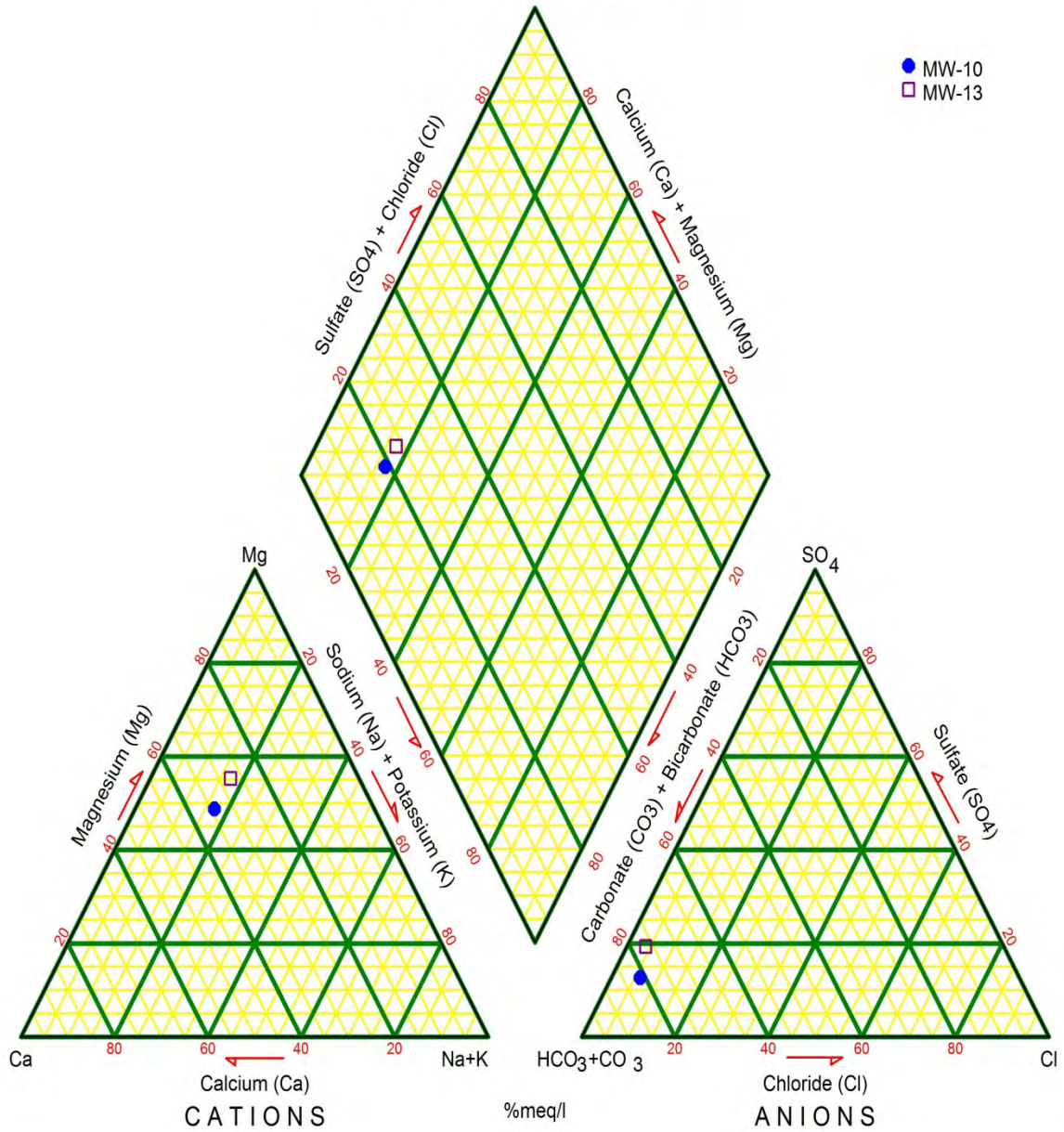


Figure 3. Vashon Landfill

Channel Cc1 Wells Fourth Quarter 2013

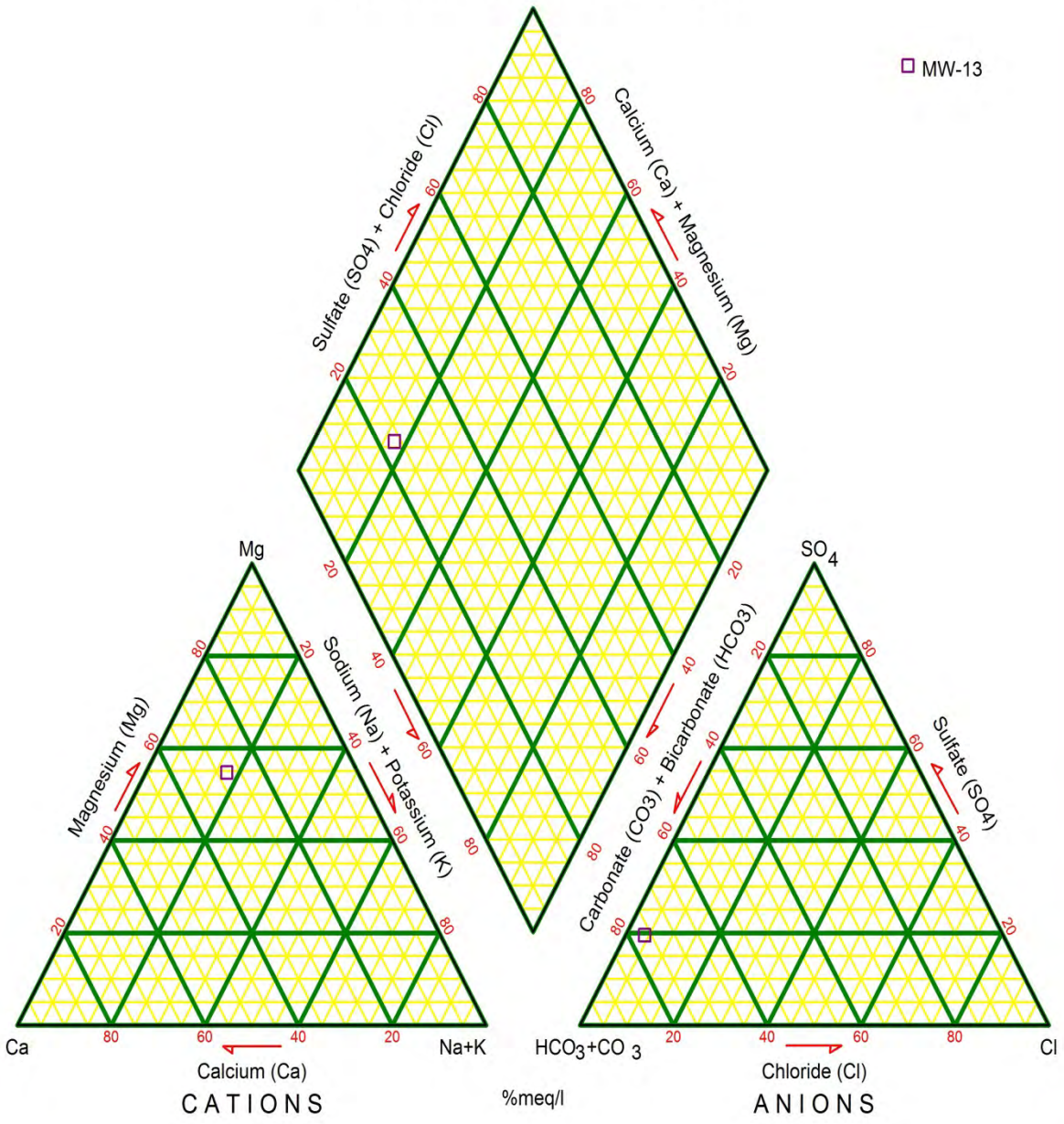
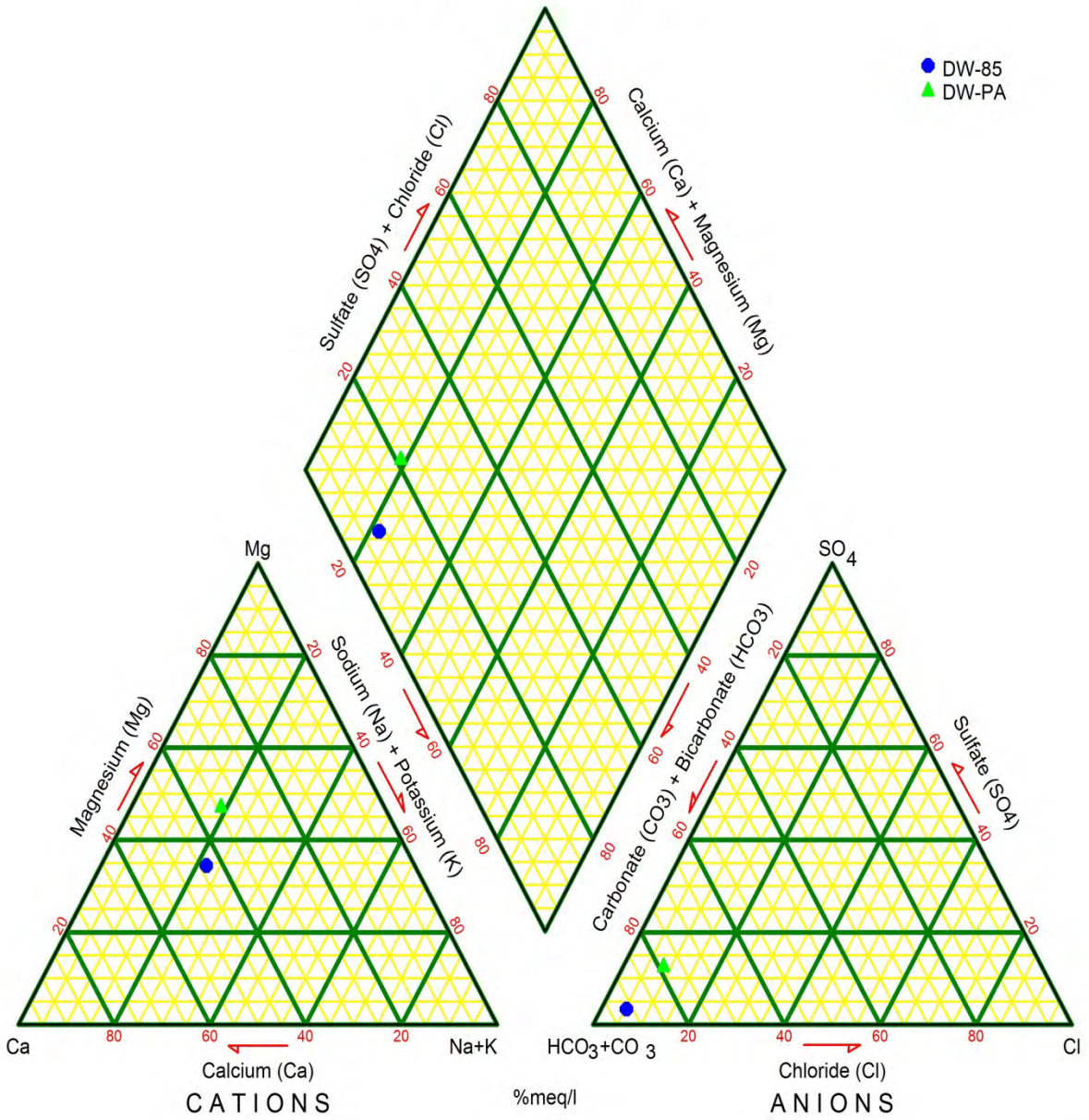


Figure 5. Vashon Landfill

Private Wells Third Quarter 2013



Appendix K

Gas Monitoring Data

King County Solid Waste Division

Environmental Monitoring Data

Data Collected January 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
AM-1	1/4/2013 11:04	0.0		0.1	20.7	0
AM-2	1/4/2013 12:53	0.0		0.1	20.4	0
AM-3	1/4/2013 10:48	0.0		0.1	20.8	0
AM-4	1/4/2013 11:31	0.0		0.1	20.3	0
AM-5	1/4/2013 11:34	0.0		0.1	20.4	0
AM-6	1/4/2013 11:37	0.0		0.1	20.5	0
AM-7	1/4/2013 12:42	0.0		0.1	20.2	0
AM-8	1/4/2013 11:19	0.0		0.1	20.6	0
AM-CB	1/4/2013 10:56	0.0		0.1	20.7	0
GP-1	1/4/2013 11:58	0.0		0.2	20.1	-0.41
GP-2	1/4/2013 12:44	0.0		1.7	18	0.12
MW-5	1/4/2013 11:44	0.0		3.0	17.8	0
MW-13	1/4/2013 12:09	0.0		0.3	20.2	0.05
MW-24	1/4/2013 12:11	0.0		1.8	16.8	-0.98
NP-1D	1/4/2013 12:18	0.0		0.1	20.4	-1.08
NP-1I	1/4/2013 12:16	0.0		0.1	20.3	0.04
NP-1S	1/4/2013 12:15	0.0		1.1	19.0	-0.67
NP-2D	1/4/2013 11:29	0.0		0.1	20.4	-1.31
NP-2I	1/4/2013 11:27	0.0		0.4	18.1	-1.33
NP-2S	1/4/2013 11:26	0.0		0.9	19.4	0.07
NP-3D	1/4/2013 12:07	0.0		2.5	15.4	-1.03
NP-3I	1/4/2013 12:06	0.0		3.0	16.7	-1.03
NP-3S	1/4/2013 12:04	0.0		0.6	20.1	-2.58
NP-4D	1/4/2013 11:56	0.0		1.7	15.5	-0.99
NP-4I	1/4/2013 11:55	0.0		2.0	17.7	-0.53
NP-4S	1/4/2013 11:53	0.0		2.8	17.8	5.47
NP-5D	1/4/2013 11:49	0.0		3.4	15.8	-0.11
NP-5I	1/4/2013 11:47	0.0		2.6	17.7	0
NP-5S	1/4/2013 11:46	0.0		2.5	17.5	0.06
NP-6D	1/4/2013 12:50	0.0		0.2	20.3	-0.34
NP-6I	1/4/2013 12:49	0.0		0.3	20.2	-0.01
NP-6S	1/4/2013 12:47	0.0		3.8	16.3	0.03
NP-7D	1/4/2013 12:38	0.0		3.0	16.4	-0.1
NP-7I	1/4/2013 12:37	0.0		0.2	20.2	-0.81
NP-7S	1/4/2013 12:35	0.0		0.1	20.2	-0.72
NP-8D	1/4/2013 10:54	0.0		0.3	20.3	-1.43
NP-8I	1/4/2013 10:52	0.0		1.6	17.2	-1.47
NP-8S	1/4/2013 10:51	0.0		0.1	20.7	-0.17

King County Solid Waste Division

Environmental Monitoring Data

Data Collected February 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
Coeast	2/4/2013 10:41	0		0.1	21	-0.06
AM-1	2/4/2013 10:56	0.0		0.5	20.5	0.47
AM-1	2/4/2013 10:58	0.0		2.8	17.9	0.53
AM-2	2/4/2013 11:00	0.0		2.4	17.8	0.55
AM-2	2/4/2013 11:46	0.0		1.9	18.1	0.14
MW-5	2/4/2013 10:52	0.0		3.2	17.2	0.05
MW-5	2/4/2013 11:03	0.0		1.7	16.0	0.97
MW-13	2/4/2013 11:08	0.0		0.1	21.0	0.09
MW-24	2/4/2013 11:06	0.0		1.3	18.3	0.92
NP-1D	2/4/2013 11:28	0.0		0.0	21.0	1.25
NP-1I	2/4/2013 11:26	0.0		0.2	20.2	0.11
NP-1S	2/4/2013 11:24	0.0		0.6	20.4	0.95
NP-2D	2/4/2013 11:21	0.0		0.5	18.6	1.03
NP-2I	2/4/2013 11:19	0.0		0.4	18.6	0.91
NP-2S	2/4/2013 11:17	0.0		0.5	20.5	0.11
NP-3D	2/4/2013 11:14	0.0		2.1	16.9	0.91
NP-3I	2/4/2013 11:12	0.0		3.0	17.0	0.9
NP-3S	2/4/2013 11:10	0.0		2.0	17.0	0.11
NP-5D	2/4/2013 10:50	0.0		3.4	16.2	0.15
NP-5I	2/4/2013 10:47	0.0		2.9	18.0	0.08
NP-5S	2/4/2013 10:45	0.0		2.4	16.9	0
NP-6D	2/4/2013 11:43	0.0		0.2	20.9	0.44
NP-6I	2/4/2013 11:42	0.0		0.2	20.9	0.06
NP-6S	2/4/2013 11:40	0.0		4.0	15.3	0
NP-7D	2/4/2013 11:37	0.0		2.6	16.9	0
NP-7I	2/4/2013 11:35	0.0		0.3	20.5	0.3
NP-7S	2/4/2013 11:33	0.0		0.0	20.9	0.7
NP-8D	2/4/2013 10:39	0.0		0.4	19.9	1.06
NP-8I	2/4/2013 10:37	0.0		2.5	16.1	0.98
NP-8S	2/4/2013 10:35	0.0		4.9	7.3	0.06

King County Solid Waste Division

Environmental Monitoring Data

Data Collected March 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
Coeast	3/8/2013 12:02	0.0		0	20.7	-0.05
AM-1	3/8/2013 11:28	0.0		0.1	20.9	-0.66
AM-2	3/8/2013 12:25	0.0		1.7	18.2	0.04
AM-5	3/8/2013 11:23	0.0		0.1	20.9	-0.04
MW-13	3/8/2013 11:46	0.0		0.1	20.8	0.08
MW-24	3/8/2013 11:38	0.0		1.7	17.4	-1.44
NP-1D	3/8/2013 11:52	0.0		0.1	21.0	-1.75
NP-1I	3/8/2013 11:51	0.0		0.1	20.8	0.03
NP-1S	3/8/2013 11:49	0.0		0.8	19.8	0.08
NP-2D	3/8/2013 11:59	0.0		0.0	20.7	-1.64
NP-2I	3/8/2013 11:57	0.0		0.3	19.3	-1.58
NP-2S	3/8/2013 11:56	0.0		0.2	20.7	0.09
NP-3D	3/8/2013 11:43	0.0		1.9	17.4	-1.43
NP-3I	3/8/2013 11:41	0.0		3.0	16.8	-1.43
NP-3S	3/8/2013 11:40	0.0		1.8	17.6	-0.06
NP-4D	3/8/2013 11:33	0.0		1.7	15.8	-1.32
NP-4I	3/8/2013 11:31	0.0		2.5	17.4	-0.78
NP-4S	3/8/2013 11:30	0.0		3.0	16.6	-0.53
NP-5D	3/8/2013 11:21	0.0		3.5	15.8	-0.25
NP-5I	3/8/2013 11:20	0.0		2.8	17.8	-0.11
NP-5S	3/8/2013 11:18	0.0		2.5	16.9	-0.04
NP-6D	3/8/2013 12:22	0.0		0.1	20.7	-0.48
NP-6I	3/8/2013 12:20	0.0		0.2	20.6	-0.23
NP-6S	3/8/2013 12:18	0.0		3.3	13.7	0
NP-7D	3/8/2013 12:15	0.0		2.4	16.8	0.02
NP-7I	3/8/2013 12:13	0.0		0.2	20.5	-1.07
NP-7S	3/8/2013 12:11	0.0		0.1	20.7	-1.03
NP-8D	3/8/2013 12:07	0.0		0.1	20.8	-1.59
NP-8I	3/8/2013 12:06	0.0		3.0	15.1	-1.57
NP-8S	3/8/2013 12:04	0.0		6.7	1.0	-0.4

King County Solid Waste Division

Environmental Monitoring Data

Data Collected April 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
AM-1	4/8/2013 12:04	0.0		0.1	21.0	0
AM-2	4/8/2013 11:41	0.0		0.1	21.0	0
AM-3	4/8/2013 11:31	0.0		0.1	21.0	0
AM-4	4/8/2013 11:16	0.0		0.1	21.0	0
AM-5	4/8/2013 11:03	0.0		0.1	21.0	0
AM-6	4/8/2013 10:51	0.0		0.1	21.0	0
AM-7	4/8/2013 11:46	0.0		0.1	21.0	0
AM-8	4/8/2013 12:18	0.0		0.1	21.0	0
AM-CB	4/8/2013 11:34	0.0		0.1	21.0	0
GP-1	4/8/2013 11:01	0.0		0.1	21.0	-0.41
GP-2	4/8/2013 11:48	0.0		1.2	19.5	0.12
MW-5	4/8/2013 10:46	0.0		0.3	20.9	0
MW-13	4/8/2013 11:08	0.0		0.1	21.0	0.05
MW-24	4/8/2013 11:07	0.0		2.0	17.4	-0.98
NP-1D	4/8/2013 11:29	0.0		0.1	21.0	-1.08
NP-1I	4/8/2013 11:27	0.0		0.1	20.9	0.04
NP-1S	4/8/2013 11:25	0.0		0.7	20.5	-0.67
NP-2D	4/8/2013 11:21	0.0		0.3	20.0	-1.31
NP-2I	4/8/2013 11:20	0.0		0.3	20.1	-1.33
NP-2S	4/8/2013 11:19	0.0		0.2	21.0	0.07
NP-3D	4/8/2013 11:14	0.0		2.2	17.3	-1.03
NP-3I	4/8/2013 11:12	0.0		3.2	17.0	-1.03
NP-3S	4/8/2013 11:10	0.0		1.9	17.9	-2.58
NP-4D	4/8/2013 10:59	0.0		1.9	15.8	-0.99
NP-4I	4/8/2013 10:58	0.0		2.4	18.0	-0.53
NP-4S	4/8/2013 10:56	0.0		3.1	17.1	5.47
NP-5D	4/8/2013 10:44	0.0		3.7	16.0	-0.11
NP-5I	4/8/2013 10:42	0.0		3.0	18.0	0
NP-5S	4/8/2013 10:40	0.0		3.5	15.8	0.06
NP-6D	4/8/2013 11:58	0.0		0.2	21.0	-0.34
NP-6I	4/8/2013 11:57	0.0		0.2	21.0	-0.01
NP-6S	4/8/2013 11:55	0.0		3.5	13.5	0.03
NP-7D	4/8/2013 12:11	0.0		2.6	16.2	-0.1
NP-7I	4/8/2013 12:10	0.0		0.2	21.0	-0.81
NP-7S	4/8/2013 12:08	0.0		0.1	21.0	-0.72
NP-8D	4/8/2013 11:39	0.0		0.4	19.4	-1.43
NP-8I	4/8/2013 11:37	0.0		3.4	15.2	-1.47
NP-8S	4/8/2013 11:36	0.0		5.6	9.6	-0.17

King County Solid Waste Division

Environmental Monitoring Data

Data Collected May 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
Coeast	5/8/2013 10:46	0		0.1	21	-0.5
AM-1	5/8/2013 11:09	0.0		0.1	20.6	-1
AM-1	5/8/2013 11:52	0.0		1.7	17.8	-0.17
AM-2	5/8/2013 11:01	0.0		0.0	20.8	-0.13
AM-2	5/8/2013 11:24	0.0		0.1	20.7	0.08
MW-5	5/8/2013 11:22	0.0		0.1	20.7	-1.58
MW-5	5/8/2013 11:47	0.0		0.0	20.6	-2.05
MW-13	5/8/2013 11:45	0.0		0.1	20.3	-0.11
MW-24	5/8/2013 11:44	0.0		1.3	17.9	12.43
NP-1D	5/8/2013 11:40	0.0		0.0	20.6	-2.06
NP-1I	5/8/2013 11:38	0.0		0.1	19.8	-1.99
NP-1S	5/8/2013 11:37	0.0		0.1	20.6	0.01
NP-2D	5/8/2013 11:20	0.0		1.9	16.9	-1.9
NP-2I	5/8/2013 11:19	0.0		3.0	16.6	-1.9
NP-2S	5/8/2013 11:18	0.0		1.7	17.3	-0.28
NP-3D	5/8/2013 11:14	0.0		1.6	15.6	-1.87
NP-3I	5/8/2013 11:13	0.0		0.9	19.4	-1.15
NP-3S	5/8/2013 11:11	0.0		2.8	16.5	-1.14
NP-5D	5/8/2013 11:05	0.0		3.2	16.0	-0.48
NP-5I	5/8/2013 11:04	0.0		2.6	18.0	-0.29
NP-5S	5/8/2013 11:02	0.0		2.5	16.9	-0.13
NP-6D	5/8/2013 11:59	0.0		0.1	20.7	-0.96
NP-6I	5/8/2013 11:57	0.0		0.1	20.5	-0.38
NP-6S	5/8/2013 11:56	0.0		3.3	12.9	-0.01
NP-7D	5/8/2013 12:05	0.0		1.9	15.9	-0.05
NP-7I	5/8/2013 12:03	0.0		0.2	20.5	-1.38
NP-7S	5/8/2013 12:02	0.0		0.1	20.7	-1.41
NP-8D	5/8/2013 10:52	0.0		0.0	20.9	-1.86
NP-8I	5/8/2013 10:50	0.0		0.1	20.7	-1.8
NP-8S	5/8/2013 10:49	0.0		0.1	20.7	-0.13

King County Solid Waste Division

Environmental Monitoring Data

Data Collected June 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
Coeast	6/3/2013 10:50	0.0		0.1	21	-0.45
AM-1	6/3/2013 11:03	0.0		0.2	20.7	-0.29
AM-2	6/3/2013 11:56	0.0		1.7	17.8	-0.04
AM-5	6/3/2013 11:37	0.0		0.0	20.8	-0.01
MW-13	6/3/2013 11:14	0.0		0.1	20.8	0.07
MW-24	6/3/2013 11:12	0.0		1.0	19.0	-0.59
NP-1D	6/3/2013 11:33	0.0		0.0	20.7	-0.68
NP-1I	6/3/2013 11:31	0.0		0.1	20.2	-0.04
NP-1S	6/3/2013 11:29	0.0		1.4	17.7	-2.23
NP-2D	6/3/2013 11:27	0.0		0.1	20.8	-0.65
NP-2I	6/3/2013 11:25	0.0		0.2	20.0	-0.65
NP-2S	6/3/2013 11:23	0.0		0.3	20.3	0.01
NP-3D	6/3/2013 11:20	0.0		2.1	17.1	-0.56
NP-3I	6/3/2013 11:18	0.0		3.2	16.7	-0.57
NP-3S	6/3/2013 11:17	0.0		1.9	17.6	-0.01
NP-4D	6/3/2013 11:09	0.0		1.6	15.7	-0.48
NP-4I	6/3/2013 11:07	0.0		1.4	19.1	-0.32
NP-4S	6/3/2013 11:06	0.0		3.0	16.6	-0.11
NP-5D	6/3/2013 10:58	0.0		3.1	16.5	-0.14
NP-5I	6/3/2013 10:57	0.0		2.7	18.2	-0.05
NP-5S	6/3/2013 10:55	0.0		3.0	16.8	0
NP-6D	6/3/2013 11:53	0.0		0.1	20.8	-0.35
NP-6I	6/3/2013 11:51	0.0		0.1	20.6	-0.19
NP-6S	6/3/2013 11:50	0.0		4.1	13.3	-0.01
NP-7D	6/3/2013 11:47	0.0		2.2	15.8	-0.03
NP-7I	6/3/2013 11:45	0.0		0.2	20.6	-0.67
NP-7S	6/3/2013 11:43	0.0		0.1	20.8	-0.51
NP-8D	6/3/2013 10:48	0.0		0.2	21.0	-0.69
NP-8I	6/3/2013 10:46	0.0		3.2	15.3	-0.7
NP-8S	6/3/2013 10:44	0.0		6.0	3.4	-0.06

King County Solid Waste Division

Environmental Monitoring Data

Data Collected Ju;yl 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
AM-1	7/2/2013 13:27	0.0		0.0	21.0	0
AM-2	7/2/2013 10:57	0.0		0.1	21.0	0
AM-3	7/2/2013 11:06	0.0		0	21.0	0
AM-4	7/2/2013 11:26	0.0		0	21.0	0
AM-5	7/2/2013 11:45	0.0		0	21.0	0
AM-6	7/2/2013 12:28	0.0		0	21.0	0
AM-7	7/2/2013 13:19	0.0		0	21.0	0
AM-8	7/2/2013 13:33	0.0		0	21.0	0
AM-CB	7/2/2013 10:58	0.0		0.1	21.0	0
GP-1	7/2/2013 11:53	0.0		0	21.0	-0.56
GP-2	7/2/2013 13:21	0.0		1.4	18.9	0
MW-5	7/2/2013 12:39	0.0		0.0	21.0	-0.06
MW-13	7/2/2013 11:41	0.0		0.1	21.0	0.09
MW-24	7/2/2013 11:43	0.0		0.0	21.0	-1.01
NP-1D	7/2/2013 11:14	0.0		0.0	21.0	-1.68
NP-1I	7/2/2013 11:12	0.0		0.1	21.0	-0.14
NP-1S	7/2/2013 11:10	0.0		1.9	17.1	-0.12
NP-2D	7/2/2013 11:21	0.0		0.1	21.0	-1.57
NP-2I	7/2/2013 11:19	0.0		0.2	20.5	-1.54
NP-2S	7/2/2013 11:17	0.0		0.2	21.0	0.03
NP-3D	7/2/2013 11:39	0.0		2.0	17.6	-1.25
NP-3I	7/2/2013 11:37	0.0		2.9	17.2	-1.22
NP-3S	7/2/2013 11:35	0.0		1.7	18.2	-0.01
NP-4D	7/2/2013 11:51	0.0		1.4	16.2	-1.17
NP-4I	7/2/2013 11:49	0.0		1.3	19.3	-0.66
NP-4S	7/2/2013 11:47	0.0		2.7	17.6	-0.23
NP-5D	7/2/2013 12:36	0.0		2.9	17.0	-0.19
NP-5I	7/2/2013 12:35	0.0		2.4	19.0	-0.13
NP-5S	7/2/2013 12:33	0.0		2.9	17.6	-0.05
NP-6D	7/2/2013 12:59	0.0		0.1	21.0	-0.55
NP-6I	7/2/2013 12:57	0.0		0.1	21.0	-0.27
NP-6S	7/2/2013 12:56	0.0		4.4	15.0	-0.03
NP-7D	7/2/2013 12:52	0.0		2.1	16.6	-0.04
NP-7I	7/2/2013 12:50	0.0		0.2	21.0	-1.03
NP-7S	7/2/2013 12:48	0.0		0.1	21.0	-0.98
NP-8D	7/2/2013 11:04	0.0		0.0	21.0	-1.55
NP-8I	7/2/2013 11:02	0.0		0.0	21.0	-1.5
NP-8S	7/2/2013 11:00	0.0		0.1	21.0	-0.07

King County Solid Waste Division

Environmental Monitoring Data

Data Collected August 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
Coeast	8/6/2013 13:30	0.0		0	20.3	-0.3
AM-1	8/6/2013 12:55	0.0		0.3	20.4	0.01
AM-2	8/6/2013 13:41	0.0		1.3	17.4	0.09
AM-5	8/6/2013 12:45	0.0		0.7	20.3	0.02
MW-13	8/6/2013 13:08	0.0		0.0	20.3	0.08
MW-24	8/6/2013 13:05	0.0		0.4	20.3	-0.06
NP-1D	8/6/2013 13:27	0.0		0.0	20.3	0.07
NP-1I	8/6/2013 13:25	0.0		0.0	19.8	0.04
NP-1S	8/6/2013 13:24	0.0		1.9	16.2	0.04
NP-2D	8/6/2013 13:20	0.0		0.0	20.2	0.3
NP-2I	8/6/2013 13:19	0.0		0.1	19.6	-0.02
NP-2S	8/6/2013 13:17	0.0		1.0	18.5	-0.24
NP-3D	8/6/2013 13:13	0.0		1.9	17.1	-0.06
NP-3I	8/6/2013 13:12	0.0		2.7	16.4	-0.07
NP-3S	8/6/2013 13:10	0.0		1.8	17.4	0.17
NP-4D	8/6/2013 13:01	0.0		1.4	15.8	-0.04
NP-4I	8/6/2013 12:59	0.0		1.3	18.6	0.02
NP-4S	8/6/2013 12:58	0.0		2.9	17.5	0.2
NP-5D	8/6/2013 12:51	0.0		2.8	16.6	0.11
NP-5I	8/6/2013 12:49	0.0		2.4	18.3	0.05
NP-5S	8/6/2013 12:48	0.0		3.2	17.1	0.18
NP-6D	8/6/2013 13:48	0.0		0.0	20.4	0.15
NP-6I	8/6/2013 13:47	0.0		0.1	20.2	0.06
NP-6S	8/6/2013 13:45	0.0		4.6	15.3	0.05
NP-7D	8/6/2013 13:55	0.0		2.1	16.0	0.06
NP-7I	8/6/2013 13:54	0.0		0.1	20.2	-0.07
NP-7S	8/6/2013 13:52	0.0		0.0	20.4	0.16
NP-8D	8/6/2013 13:36	0.0		0.6	15.1	0.12
NP-8I	8/6/2013 13:34	0.0		0.3	19.4	0.07
NP-8S	8/6/2013 13:32	0.0		2.8	13.0	0.04

King County Solid Waste Division

Environmental Monitoring Data

Data Collected Sept. 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
Coeast	9/4/2013 11:07	0.0		0	19.7	-0.31
AM-1	9/4/2013 11:26	0.0		0.0	19.7	-0.43
AM-2	9/4/2013 12:01	0.0		1.6	17.4	-0.01
MW-5	9/4/2013 11:17	0.0		0.0	19.7	-0.05
MW-13	9/4/2013 11:37	0.0		0.1	19.2	0.11
MW-24	9/4/2013 11:35	0.0		0.1	19.8	-0.85
NP-1D	9/4/2013 11:57	0.0		0.0	19.7	-1.19
NP-1I	9/4/2013 11:55	0.0		0.0	19.6	-0.86
NP-1S	9/4/2013 11:54	0.0		2.4	15.8	-0.01
NP-2D	9/4/2013 11:48	0.0		0.0	19.7	-1.06
NP-2I	9/4/2013 11:47	0.0		0.1	18.9	-1.06
NP-2S	9/4/2013 11:45	0.0		1.0	18.4	-0.02
NP-3D	9/4/2013 11:42	0.0		2.5	16.8	-0.83
NP-3I	9/4/2013 11:41	0.0		3.0	15.9	-0.83
NP-3S	9/4/2013 11:39	0.0		2.0	17.4	-0.03
NP-4D	9/4/2013 11:32	0.0		1.7	15.0	-0.8
NP-4I	9/4/2013 11:30	0.0		1.4	17.9	-0.48
NP-4S	9/4/2013 11:28	0.0		3.1	17.1	-0.21
NP-5D	9/4/2013 11:22	0.0		3.1	15.5	-0.26
NP-5I	9/4/2013 11:20	0.0		2.6	17.2	-0.13
NP-5S	9/4/2013 11:19	0.0		3.3	16.7	-0.05
NP-6D	9/4/2013 12:07	0.0		0.1	19.8	-0.42
NP-6I	9/4/2013 12:06	0.0		0.1	19.7	-0.19
NP-6S	9/4/2013 12:04	0.0		5.1	15.8	-0.03
NP-7D	9/4/2013 12:14	0.0		2.6	16.3	-0.01
NP-7I	9/4/2013 12:12	0.0		0.2	19.6	-0.8
NP-7S	9/4/2013 12:10	0.0		0.0	19.8	-0.76
NP-8D	9/4/2013 11:12	0.0		0.0	19.8	-1.06
NP-8I	9/4/2013 11:11	0.0		0.0	19.8	-1.09
NP-8S	9/4/2013 11:09	0.0		0.0	19.8	-0.08

King County Solid Waste Division

Environmental Monitoring Data

Data Collected October 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
AM-1	10/8/2013 11:47	0.0		0.1	21.0	0
AM-2	10/8/2013 10:06	0.0		0.1	20.8	0
AM-3	10/8/2013 10:03	0.0		0.1	21.3	0
AM-4	10/8/2013 11:09	0.0		0.1	20.9	0
AM-5	10/8/2013 10:58	0.0		0.1	20.8	0
AM-6	10/8/2013 10:47	0.0		0.1	20.7	0
AM-7	10/8/2013 11:32	0.0		0	21.0	0
AM-8	10/8/2013 11:53	0.0		0	21.0	0
AM-CB	10/8/2013 10:34	0.0		0.1	20.6	0
GP-1	10/8/2013 10:50	0.0		1.4	18.8	0.06
GP-2	10/8/2013 11:34	0.0		1.6	18.5	-0.17
MW-5	10/8/2013 10:44	0.0		1.6	18.6	0
MW-13	10/8/2013 11:02	0.0		0.0	20.9	0
MW-24	10/8/2013 11:00	0.0		1.2	18.4	0.15
NP-1D	10/8/2013 11:21	0.0		0.1	21.0	0.3
NP-1I	10/8/2013 11:19	0.0		0.4	19.9	0.21
NP-1S	10/8/2013 11:18	0.0		2.4	17.0	-0.08
NP-2D	10/8/2013 11:15	0.0		0.5	18.9	0.18
NP-2I	10/8/2013 11:13	0.0		0.1	20.3	0.14
NP-2S	10/8/2013 11:11	0.0		1.0	19.6	-0.05
NP-3D	10/8/2013 11:07	0.0		2.2	17.3	0.12
NP-3I	10/8/2013 11:05	0.0		3.0	16.7	0.11
NP-3S	10/8/2013 11:04	0.0		1.9	18.0	0
NP-4D	10/8/2013 10:56	0.0		1.6	15.8	0.17
NP-4I	10/8/2013 10:54	0.0		1.3	18.9	0.07
NP-4S	10/8/2013 10:52	0.0		2.8	18.1	0.01
NP-5D	10/8/2013 10:42	0.0		3.0	16.3	0.09
NP-5I	10/8/2013 10:40	0.0		2.5	17.9	0.02
NP-5S	10/8/2013 10:38	0.0		3.3	17.0	0
NP-6D	10/8/2013 11:29	0.0		0.1	21.0	-0.13
NP-6I	10/8/2013 11:27	0.0		0.2	20.9	-0.19
NP-6S	10/8/2013 11:25	0.0		5.0	16.9	-0.01
NP-7D	10/8/2013 11:41	0.0		2.8	17.8	-0.08
NP-7I	10/8/2013 11:39	0.0		0.2	20.9	-0.33
NP-7S	10/8/2013 11:38	0.0		0.1	21.0	-0.04
NP-8D	10/8/2013 10:32	0.0		0.2	20.3	0.56
NP-8I	10/8/2013 10:30	0.0		2.7	15.3	0.48
NP-8S	10/8/2013 10:08	0.0		5.0	8.6	0.1

King County Solid Waste Division

Environmental Monitoring Data

Data Collected November 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
Coeast	11/1/2013 11:42	0.0		0	20.9	-0.33
AM-1	11/1/2013 11:38	0.0		0.1	20.8	0.1
AM-2	11/1/2013 12:28	0.0		1.7	18.1	0.23
AM-5	11/1/2013 11:15	0.0		1.6	19.2	0.09
MW-13	11/1/2013 12:00	0.0		0.1	20.7	0.08
MW-24	11/1/2013 12:01	0.0		1.5	17.6	-0.07
NP-1D	11/1/2013 12:13	0.0		0.0	20.8	-0.69
NP-1I	11/1/2013 12:11	0.0		0.1	20.8	-0.84
NP-1S	11/1/2013 12:10	0.0		2.4	17.0	0.11
NP-2D	11/1/2013 11:55	0.0		0.1	20.8	-0.51
NP-2I	11/1/2013 11:54	0.0		0.2	20.1	-0.51
NP-2S	11/1/2013 11:52	0.0		1.0	19.7	0.09
NP-3D	11/1/2013 12:06	0.0		2.0	17.7	-0.09
NP-3I	11/1/2013 12:05	0.0		3.0	16.8	-0.07
NP-3S	11/1/2013 12:03	0.0		1.8	18.1	0.04
NP-4D	11/1/2013 11:35	0.0		1.6	15.9	-0.08
NP-4I	11/1/2013 11:33	0.0		1.3	19.0	0.04
NP-4S	11/1/2013 11:32	0.0		2.7	18.1	0.04
NP-5D	11/1/2013 11:20	0.0		3.0	16.6	0.27
NP-5I	11/1/2013 11:19	0.0		2.6	18.0	0.14
NP-5S	11/1/2013 11:17	0.0		3.4	16.7	0.04
NP-6D	11/1/2013 12:21	0.0		0.3	20.7	0.27
NP-6I	11/1/2013 12:19	0.0		0.2	20.7	0.03
NP-6S	11/1/2013 12:17	0.0		4.9	16.1	0.01
NP-7D	11/1/2013 12:36	0.0		2.6	18.0	0.07
NP-7I	11/1/2013 12:34	0.0		0.2	20.9	-0.18
NP-7S	11/1/2013 12:33	0.0		0.1	21.0	-0.02
NP-8D	11/1/2013 11:47	0.0		0.5	17.3	-0.72
NP-8I	11/1/2013 11:46	0.0		2.7	15.6	-0.69
NP-8S	11/1/2013 11:44	0.0		10.3	0.8	-0.02

King County Solid Waste Division

Environmental Monitoring Data

Data Collected December 2013

Vashon Landfill--Gas Testing Results

Sample Location	Sample Date/Time	CH4		CO2	Vol O2	Relative Pressure
		%Vol	%LEL	%Vol	%Vol	in. H2O
Coeast	12/11/2013 12:56	0.0		0.1	21	-0.15
AM-1	12/11/2013 12:18	0.0		0.3	20.9	0.57
AM-2	12/11/2013 13:10	0.0		2.1	18.2	0.31
MW-5	12/11/2013 12:05	0.0		3.2	17.5	0.14
MW-13	12/11/2013 12:31	0.0		0.2	21.0	0.01
MW-24	12/11/2013 12:29	0.0		1.8	17.3	1.07
NP-1D	12/11/2013 12:53	0.0		0.1	21.0	1.31
NP-1I	12/11/2013 12:52	0.0		0.1	21.0	1.39
NP-1S	12/11/2013 12:50	0.0		2.6	17.2	0.4
NP-2D	12/11/2013 12:45	0.0		0.1	21.0	1.27
NP-2I	12/11/2013 12:43	0.0		0.2	20.9	1.17
NP-2S	12/11/2013 12:41	0.0		1.6	19.0	0.3
NP-3D	12/11/2013 12:37	0.0		2.2	18.0	1.1
NP-3I	12/11/2013 12:35	0.0		3.1	17.4	1.08
NP-3S	12/11/2013 12:33	0.0		2.2	18.4	0.05
NP-4D	12/11/2013 12:24	0.0		1.7	16.2	1.12
NP-4I	12/11/2013 12:22	0.0		1.1	19.9	0.68
NP-4S	12/11/2013 12:21	0.0		2.3	19.0	0.41
NP-5D	12/11/2013 12:11	0.0		3.0	17.2	0.44
NP-5I	12/11/2013 12:09	0.0		2.6	18.6	0.28
NP-5S	12/11/2013 12:07	0.0		3.7	17.0	0.12
NP-6D	12/11/2013 13:18	0.0		0.2	21.0	0.86
NP-6I	12/11/2013 13:16	0.0		0.2	21.0	0.24
NP-6S	12/11/2013 13:15	0.0		5.0	16.5	0.19
NP-7D	12/11/2013 13:26	0.0		2.7	18.3	0
NP-7I	12/11/2013 13:24	0.0		0.2	21.0	0.55
NP-7S	12/11/2013 13:22	0.0		0.1	21.0	1.08
NP-8D	12/11/2013 13:03	0.0		0.8	15.5	1.27
NP-8I	12/11/2013 13:01	0.0		11.8	0.0	0.21
NP-8S	12/11/2013 13:00	0.0		3.1	15.3	1.08

Appendix L
Inspection Survey Reports

Public Health
Seattle & King County

PUBLIC HEALTH - SEATTLE & KING COUNTY	PURPOSE OF VISIT:
Downtown Office 401 - 5th Ave., Ste 1100 Seattle, WA 98104 206-263-9566	Routine Inspection/Field Review of a Closed Landfill sites establishment (PE=1002)
ESTABLISHMENT INFORMATION:	**INSPECTION INFORMATION:**
VASHON LANDFILL VASHON LANDFILL 18900 SW WESTSIDE HWY SW VASHON ISLAND, WA 98070 206-296-4385	**Date of Inspection:** Monday, June 24, 2013 **Time In:** 10:52 am **Time Out:** 11:55 am
Program Record: PR0015723	**Inspector:** Edward Davis **Result: UNSATISFACTORY**

VIOLATIONS OBSERVED (if any)

0146 - Gas management systems

0146 Gas management systems
Observed a number of unlocked well casings housing gas probes (i.e. NP-2, NP-3, NP-4, NP-5, NP- 7)
WAC 173-351-200(4)(b)(1)/ WAC 173-160-420(11)(a)

Correction Schedule: within 30 work days of the date of inspection

0161 - Public protected, fencing, access, hazard exposure

0161 General Standards - Public protected, fencing access restricted
The north gate (i.e. located west of the Borrow Area Stormwater Pond and approximately 68 feet north of MW26), is not secured with a locking device to limit access to the site as required. WAC 173-351-200 (6) - Access requirements
Correction Schedule: within 30 work days of the date of this inspection

OVERALL INSPECTION COMMENTS:

Advise that medium range plans be made to make corrections/repairs at west fence in the portion located approximately 23 feet south of NP-7.

It appears that seasonal mowing has begun above the landfilled areas. Advise that aggressive mowing be activated to keep pace with rapid seasonal growth associated with summer.

Ed Davis 6/24/13

PIC Phone #: 206-296-4424 **Email:**

Public Health
Seattle & King County

PUBLIC HEALTH - SEATTLE & KING COUNTY Downtown Office 401 - 5th Ave., Ste 1100 Seattle, WA 98104 206-263-9566	PURPOSE OF VISIT: Routine Inspection/Field Review of a Closed Landfill sites establishment (PE=1002)
ESTABLISHMENT INFORMATION: **VASHON LANDFILL** VASHON LANDFILL 18900 SW WESTSIDE HWY SW VASHON ISLAND, WA 98070 206-296-4385 **Program Record:** PR0015723	**INSPECTION INFORMATION:** **Date of Inspection:** Wednesday, August 28, 2013 **Time In:** 1:33 pm **Time Out:** 2:02 pm **Inspector:** Edward Davis **Result: UNSATISFACTORY**

VIOLATIONS OBSERVED (if any)

0161 - Public protected, fencing, access, hazard exposure

The north gate (i.e. located west of the Borrow Area Stormwater Pond and approximately 68 feet north of MW26), is not secured with a locking device/method to limit access to the site. (See Note #1 in overall inspection comments below)
WAC 173-351-200 (6) - Access requirements

OVERALL INSPECTION COMMENTS:

Note #1 - Correspondence from K.C.S.W.D. dated August 5, 2013 indicates that a Solid Waste Division lock would be installed on the gate by August 9, 2013.
The casing housing gas probe GP1 is not equipped with a locking device.
WAC 173-351-200(4)(b)(1) / WAC 173-160-420(11)(a)
This was previously observed during an inspection on July 29, 2013

Public Health advises that plans be made for eventual repair to portions of the west perimeter fence (located approximately 23 feet south of NP-7)

Ed Davis 8/28/13

PIC Phone #: 206-296-4424 **Email:**

Public Health
Seattle & King County

PUBLIC HEALTH - SEATTLE & KING COUNTY Downtown Office 401 - 5th Ave., Ste 1100 Seattle, WA 98104 206-263-9566	PURPOSE OF VISIT: Routine Inspection/Field Review of a Closed Landfill sites establishment (PE=1002)
ESTABLISHMENT INFORMATION: **VASHON LANDFILL** VASHON LANDFILL 18900 SW WESTSIDE HWY SW VASHON ISLAND, WA 98070 206-296-4385 **Program Record:** PR0015723	**INSPECTION INFORMATION:** **Date of Inspection:** Friday, September 20, 2013 **Time In:** 12:34 pm **Time Out:** 1:06 pm **Inspector:** Edward Davis **Result: UNSATISFACTORY**

VIOLATIONS OBSERVED (if any)

0161 - Public protected, fencing, access, hazard exposure

The north gate (i.e. located west of the Borrow Area Stormwater Pond and approximately 68 feet north of MW26), is not secured with a locking device/method to limit access to the site.
WAC 173-351-200 (6) – Access requirements
See Advisory Note Below

OVERALL INSPECTION COMMENTS:

Satisfactory corrections made since the previous inspection on 8/28/13 include:

1. Adequately securing the casing housing gas probe GP1, with a locking device on at the lid
2. Adequate repair of a portion of west perimeter fence approximately 23 feet south of NP-7

Damage to the west perimeter fence (west of and proximal to the Leachate Lagoon – i.e. about 40 to 60 feet north of NP) is evident and likely due to animal entry. scheduling future repair of this section of fence.

NOTE: With respect to the above violation, KCSWD may want to consider locking this gate in a similar manner used at the gate in the vicinity of NP-2.

Ed Davis 9/20/13

PIC Phone #: 206-296-4424 **Email:** Anne.Holmes@kingcounty.gov

Appendix M

Vashon Annual Financial Summary