Pare Project No. 94139.01

2019 ANNUAL GROUNDWATER MONITORING REPORT FOR THE TOWN OF TIVERTON MUNICIPAL SOLID WASTE LANDFILL TIVERTON, RHODE ISLAND

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CELEBRATING 50 YEARS

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1.0 INTRODUCTION

1.1 Overview

The Tiverton Municipal Sanitary Waste Landfill, also known as the Tiverton Town Landfill #2 (Landfill), has been operating at its present location off Main Road (Route 77) for over sixty years. Operations and monitoring are performed in accordance with the "Draft Operation Plan for the Town of Tiverton Solid Waste Landfill" and the "Draft Groundwater Monitoring Plan for the Town of Tiverton Solid Waste Landfill", both dated September 2017, and pending final DEM approval.

1.2 Purpose and Scope

This Report is intended to summarize the previous three (3) quarterly groundwater monitoring rounds at the Landfill for Year 2019, including identification of potential changes or patterns in the quality of groundwater in the immediate vicinity of the Landfill and any proposed revisions to the Groundwater Monitoring Plan. Note that the September 2019 monitoring round was not performed due to the Eastern Equine Encephalitis (EEE) outbreak in southeastern New England at the time. Per the request of the DEM, surface water monitoring was incorporated into the Town's existing regular quarterly monitoring program. The June 2019 monitoring round marked the first time that surface water monitoring was performed as part of this expanded scope. This Report will also serve as the December 2019 Quarterly Monitoring Report. Specifically, the following sections of this Report provide a discussion of general information pertaining to the Landfill, areas and quantities of landfilling during the Report period, the Landfill geologic and hydrogeologic setting, the groundwater and surface water monitoring program, water quality test results, evaluation of results, summaries and tables, conclusions, and recommendations.

2.0 SITE DESCRIPTION

2.1 General

The Tiverton Landfill is located off of Main Road (Route 77) in Tiverton, Rhode Island. A Site Location Map of the vicinity is presented as Appendix A. The Landfill property encompasses approximately 125 acres, of which approximately 33 acres are permitted for solid waste landfilling activities. The remainder of the property is used for the collection and transfer of recyclables, records and equipment maintenance, runoff control, and a wooded buffer. Also located within the property boundaries is a public recreation area situated approximately one-quarter (¼) mile west of the active landfill, adjacent to Main Road. Landfill features are identified on Appendix B – Landfill Existing Site Plan.

The Town of Tiverton has been operating the Landfill for over 60 years. The Landfill was opened in 1952 and was originally used as an unregulated open burning dump. In 1977, the State instituted regulation of the Landfill by issuing the Town a permit to operate. In 1982, the State implemented the solid waste operating guidelines entitled, "Rules and Regulations of Solid Waste Management Facilities" and the Town received an Administrative Order to comply with Rule 10.12. As a result of this Order, the Town established a two hundred foot (200') buffer within the property boundary where no future landfilling could occur.

Prior to the 1982 guidelines, some landfilling occurred in what is now delineated as the southern buffer. In 1987, the Town purchased 6.3 acres along the southern property line from the abutting landowners. With this purchase, the Town was able to create a new buffer from where prior landfilling occurred in the southern section of the Landfill. Due to the swampy area in the southeastern corner of the Landfill, the Town increased the eastern buffer from 200 feet to 350 feet in June of 1993. In addition, a test pit evaluation program, performed by Pare in July 2005, indicated that historical trash filling in the northeast corner of the landform had occurred beyond what was believed to be the northern and eastern limits of the landfill, approximately 100 feet into the 200-foot buffer from the northern property line and approximately 80 feet into the 350-foot buffer from the eastern property line. The property to the north of the Site is conservation land, referred to as the Pardon Gray Preserve. The property to the east of the Site is a Town-owned right-of-way. The revised limits of historical trash filling were brought to the RIDEM's attention in the 2005 Operating License Renewal documents. The limits of historical trash filling, as they are known to date, are shown on the attached Existing Site Plan.

In 2019, the Town landfilled municipal solid waste (MSW), and non-salvageable bulky waste. Recyclables, tires, and salvageable bulky wastes (i.e., white goods and scrap metal) are collected at the Landfill and transported by commercial haulers to appropriate facilities for reuse. A 2006 Town-wide Solid Waste Ordinance places restrictions on the amount of C&D debris that is accepted by the Town, and prohibits landfilling of solid waste generated by commercial users. In May 2011, the Town implemented a Pay-As-You-Throw (PAYT) program to reduce the amount of solid waste entering the Landfill. It appears as though the PAYT program has reduced the volume of trash coming to the Landfill based on the last several years of landfilling estimates.

The volume of waste generated and landfilled by the Town is evaluated semi-annually, after the completion of each height survey and review of the Town annual recycling records. Landfill height surveys are typically performed in January and July each year. Based on Town records, approximately 2,031 tons of materials were recycled during Year 2019.

In Year 2012, the Town consolidated their source-segregated recyclables into a "single stream" to be direct-hauled to the Rhode Island Resource Recovery Corporation (RIRRC). In 2019, this "single stream" consisted of paper, bottles, cans and rigid plastic for the year. Due to this change, Pare is unable to provide a break-down of the exact tonnage of recycled materials.

2.2 Semi-Annual Landfill Height Survey

Pare personnel visited the Landfill on July 5, 2019 and January 14, 2020 to perform semi-annual Landfill height surveys. The purpose of the height surveys is to document the area of the active portion of the Landfill that was filled during the previous year and to quantify the volume of trash disposed. The height surveys are also performed to ensure that the Town does not exceed the vertical limit permitted by the RIDEM. The results of both surveys are depicted on the 2019 End of Year Height Survey Plan in Appendix C. The approximate areas of the Landfill that were filled during 2019 are depicted on this Plan.

Based on the semi-annual height survey data, it is estimated that the Town landfilled approximately 14,250 cubic yards (cy) of municipal solid waste since the previous End-of-Year Landfill Height Survey performed in January 2019, including Daily Cover material. Assuming a compacted waste density of approximately 1,000 lbs./cy and a waste to cover density ration of 80 percent, this represents a waste landfilling rate of approximately 5,700 tons of municipal solid waste for Year 2019. The landfilling rate for 2019 is consistent with the 2018 rate. The Landfill staff indicated the volume of

daily cover material during landfilling operations increased in 2018, which may account for the increase in the landfilling rate compared to previous years.

As of the 2016 End of Year height survey, the Town has finished utilizing all available space in the area north of the landfill access road in the portion of the landfill known as the "hole to the north". Landfilling has since transitioned back to the southern half of the landfill. In 2018, the Town completed the southern-most cell and has commenced filling the eastern end of the access road. The access road is the final portion of the landfill to be filled prior to permanent closure, consistent with the *Landfill Closure Final Grade Plan*, provided with the 2017 license application.

As of the 2019 End of Year height survey, the elevation of the Landfill, north of the access road, ranged from elevation 100.0 ± to 141.0 ± feet MSL (NGVD 29). The southern half of the Landfill remains the highest area of the Landfill, with elevations ranging from 146 to 158 feet. The permitted maximum height of the Landfill is 160 feet. The overall height of the landfill has not increased significantly in 2019 because the Town focused their filling on areas that were generally low, leaving the higher areas of the landfill relatively untouched.

3.0 SITE GEOLOGIC/HYDROGEOLOGIC SETTING

3.1 Regional Setting

The Landfill is located within the Narragansett till of eastern Rhode Island. The area is marked by low drumlinoid hills smoothed by glacial action. Glacial till deposits consist of an unsorted mixture of clay to boulder sized particles. The Narragansett till is generally dark gray to olive colored and is compact with a fine textured matrix. The till particles are derived from nearby sedimentary rocks: shale, sandstone, and conglomerate (Rector, 1981). As the Landfill is near the edge of the Narragansett till plain, the till may contain material derived from granite rocks (Rector, 1981, pp. 99 and 89).

Stratified outwash and fluvial deposits overlie some parts of the glacial till. These deposits are widespread throughout the state and are the result of meltwater from the retreating glacier of approximately 10,000 years ago. These meltwater deposits contain sand, gravel and silt forming kames, eskers, terraces and outwash plains, many of which have been commercially exploited (Rector, 1981).

The soils beneath and surrounding the Landfill tend to have moderate to moderately rapid permeability near the surface and slow to very slow permeability in the substratum due to the clay content of the underlying till from which the soils are derived. The United States Department of Agriculture, Soil Conservation Service (SCS) maps soils adjacent to the Landfill as the Newport Silt Loam and the Newport Very Stony Silt Loam, (Rector, 1981). Other SCS classified soils adjacent to the Landfill include the Stissing Silt Loam and the Quonset Gravelly Sandy Loam.

Pollock (1964) mapped the bedrock beneath the Landfill as Bulgarmarsh Granite. This unit is described as a pink to gray, coarse-grained quartz-feldspar-muscovite-chlorite granite that is generally foliated. A north-south trending unconformable contact with younger Pennsylvanian age sedimentary rocks lies approximately 500 feet west of the limit of the permitted Landfill. A northeast-southwest trending contact with the Pre-Cambrian Mica-Chlorite Schist unit lies approximately 1,500 feet to the southeast of the Landfill. Mapped outcrops of the Bulgarmarsh Granite are present at High Rock (Appendix A) approximately 600 feet east of the Landfill.

3.2 Site-Specific Geology

Information on Site-specific characteristics of the geologic deposits beneath the Landfill area was obtained by reviewing historical logs of borings previously drilled by others at ten locations in August 1981, September 1994, September 1996 and September 2001. Five (5) of the borings were former groundwater monitoring well locations (OW-1A, OW-2, OW-3, OW-5, and OW-9). Per the approval of the RIDEM, these groundwater monitoring wells, with the exception of OW-9, have been abandoned and replaced with new groundwater monitoring wells. As indicated on the logs the borings were advanced to final depths of between 11 and 27 feet.

The materials logged during these boring programs are consistent with the regional geology described above. Soils were reported to consist of fine to coarse sand with silt, fine to medium gravel and cobbles. A boulder was encountered in the boring for OW-5. Gray-brown till was encountered in the boring for OW-3. All borings encountered refusal at depths between 11 and 27 feet below grade. The boring log for OW-3 identified granite at a depth of 16 feet. It is unclear if the other borings encountered bedrock or boulders in till at the depth of refusal. The average thickness of the overburden is reported to be 20 feet in the Tiverton area (NUS, 1990).

New monitoring wells OW-12, OW-13, and OW-14 were installed in August 2006. Another new monitoring well, OW-15, was installed in August 2007. These new wells were added to the monitoring program to replace compliance wells OW-1A, OW-2, OW-3, and OW-5 when it was discovered that these wells were drilled within the footprint of the landfill. As indicated in the logs, which are provided in Pare's original well completion letters prepared for their installation, the borings were advanced to final depths ranging from approximately 10 to 16 feet.

The materials logged during these boring programs are consistent with the regional geology described above. Soils were reported to consist of silty sand with trace gravel, silty sand with trace organics, silty sand with gravel, and sandy soil. Bedrock was encountered at a depth of 10 feet in the boring for OW-14. Borings for OW-12, OW-13, and OW-15 did not encounter refusal.

The new bedrock monitoring well OW-16 was installed in October 2017. This well was installed in the vicinity of overburden well OW-7. These wells are downgradient of groundwater flow, giving a depiction of the groundwater quality migrating offsite. The top of granite bedrock was encountered at 10.5 feet below the ground surface, with groundwater first being observed at 17 feet below the ground surface. The total depth of the well is 42 feet.

The new background well OW-17 was installed in June 2019. This well was installed in the northern portion of the landfill, roughly evenly spaced between OW-9 and OW-12. In addition, OW-17 is located such that it will not have to be relocated once the future stormwater controls are constructed around the site as part of the proposed landfill closure activities. The top of granite bedrock was encountered at 10.5 feet below the ground surface, with groundwater first being observed at 17 feet below the ground surface. The total depth of the well is 42 feet.

3.3 Hydrogeology

During the last year, the depth of the groundwater table at the Site ranged from 2.3 to 13.7 feet below grade based on recorded groundwater elevations from sampling rounds conducted from March 2019 to December 2019. Based on the groundwater elevations and topographic information on the USGS Topographic Map - Tiverton, Rhode Island (dated 1949, photo revised 1970 and 1975), the inferred direction of shallow groundwater flow from the eastern portion (i.e., Landfill portion) of the Site is generally to the west toward the stream and wetland complex (refer to Appendix B). However, shallow groundwater flow from the extreme eastern end of the Site may be northeasterly and southeasterly toward the wetland and stream systems identified as Cedar Swamp Brook and Borden Brook. Actual flow directions may be somewhat impacted by Landfill operations at the eastern end of the Site.

Based on groundwater elevation data collected at the Site, the direction of shallow groundwater flow from the recreational field area (i.e. western end) of the Site appears to be easterly, toward the stream and wetland complex. Data is not available to evaluate groundwater flow patterns in bedrock underlying the Site. Groundwater elevation data collected from the background well and compliance wells for the 2019 quarterly monitoring periods are presented in Table 3A.

It should be noted that the RIDEM Rules and Regulations for Groundwater Quality classify groundwater beneath and in the immediate vicinity of the licensed Landfill portion of the Site as GC and GB. Groundwater classified as GC is defined by the RIDEM as, "…those areas which, because of present or past land use or hydrogeologic conditions, the Director has determined to be more suitable for certain waste disposal practices than for development as a drinking water supply." Specifically, groundwater beneath disposal sites, such as the Tiverton Landfill, is classified as GC. Groundwater classified as GB is defined by the RIDEM, "…as those groundwater resources designated by the Director which may not be suitable for public or private drinking water use without treatment due to known or presumed degradation."

3.4 Surface Water Drainage

Based upon topographic information obtained from the USGS Topographic Map, Tiverton, Rhode Island, 1949 as depicted on Appendix A and topographic contours depicted on the Landfill Existing Site Plan, the direction of surface water drainage from the eastern (i.e., Landfill portion) end of the Site and from the western end of the Site (recreation field area) is generally toward the on-Site wetland complex. This wetland complex is part of the southerly flowing Quaker Creek. Regionally, Quaker Creek flows south-southwest, discharges into Nonquit Pond, and ultimately to the Sakonnet River. However, runoff from the extreme northeastern corner of the Site appears to be northeasterly toward the wetland and stream systems identified as Cedar Swamp Brook and Borden Brook. These water bodies flow south and southwest, and merge with Quaker Creek to the south of the Site.

TABLE 3A

2019 GROUNDWATER ELEVATIONS

2019 ANNUAL GROUNDWATER MONITORING REPORT
TIVERTON MUNICIPAL SANITARY WASTE LANDFILL
TIVERTON, RHODE ISLAND

WELL	REFERENCE		2019 GROUNDWATER ELEVATIONS					
			3/28/2019		6/27/2019		12/23/2019	
	TOP OF PVC PIPE (ft-MSL)	APPROX. GROUND SURFACE (ft-MSL)	DEPTH TO WATER* (feet)	GROUND-WATER ELEVATION (ft-MSL)	DEPTH TO WATER* (feet)	GROUND-WATER ELEVATION (ft-MSL)	DEPTH TO WATER* (feet)	GROUND-WATER ELEVATION (ft-MSL)
OW-12	63.28	60.5	2.3	60.98	3.5	59.78	2.8	60.48
OW-13	50.14	46	3.8	46.34	4.0	46.14	4.1	46.04
OW-14	85.63	83.5	3.6	82.03	6.5	79.13	5.3	80.33
OW-15	77.07	74.5	7.0	70.07	7.2	69.87	7.1	69.97
OW-9	128.65	126.5	12.5	116.15	13.7	114.95	13.7	114.95

*Measured from top of PVC pipe

4.0 WATER QUALITY MONITORING PROGRAM

4.1 General

The Groundwater Monitoring Program for the Landfill consists of quarterly monitoring at seven (7) groundwater wells, designated OW-7, OW-9, OW-12, OW-13, OW-14, OW-15, and OW-16; the locations of these wells are shown on Appendix B, Landfill Existing Site Plan. The year 2018 was the first monitoring year in which OW-7 and OW-16 were included in the quarterly monitoring program. Monitoring wells OW-7 and OW-16 were first sampled at the request of the RIDEM in November 2017 and have since been incorporated into the regular quarterly monitoring program. The June 2019 monitoring round marked the first monitoring round in which OW-12 was re-designated as a background well. Monitoring well completion details, including well depths, diameters and screened intervals are summarized on Table 4A, which follows this page. Sampling of the monitoring wells during the 2019 reporting period was performed by Pare personnel on March 28th, June 27th, and December 23rd.

Based on the inferred direction of shallow groundwater flow beneath the Landfill portion of the Site, the monitoring wells are classified in the following categories:

- Background Well – OW-9 and OW-12
- Compliance Wells – OW-7, , OW-13, OW-14, OW-15, and OW-16

The Surface Water Monitoring Program for the landfill consists of quarterly monitoring at three (3) surface water locations, designated SW-1, SW-2, and SW-3; the locations of these surface water locations are also shown on Appendix B. The June 2019 monitoring round marked the first monitoring round in which surface water sampling was included in the quarterly monitoring program. Sampling of the surface water locations during the 2019 reporting period was performed by Pare personnel on June 27th and December 23rd.

4.2 Sampling Procedures

Prior to the May 2002 monitoring round, the Town received verbal approval from the RIDEM to modify the approved groundwater purging and sampling method. Previously, a bailer method of purging and sampling was employed during monitoring events. Subsequent to approval by the RIDEM, the bailer method of purging and sampling was replaced by a low-flow purging and sampling technique that uses a variable speed peristaltic pump, fitted with Teflon-lined silicon tubing attached

to polyethylene down-well tubing. Low-flow purging reduces the rate at which groundwater is evacuated from the monitoring well, as compared to conventional bailer methods. The use of low-flow purging has been shown to reduce colloid mobilization, thereby reducing the turbidity of samples. Lower turbidity means a reduction in colloid-transported contaminants such as metals, which can sorb to the colloid surface. In addition, this technique reduces the likelihood of purging a well dry before sampling. Finally, low-flow purging reduces the cascading effect that can occur as a well recharges, thereby reducing the volatilization of VOCs before sampling by conventional bailer methods.

The well purging and sampling procedure was further modified in 2005 to reduce the volume of water purged prior to collecting a sample. Previously, a minimum of three well volumes was purged from each well prior to sampling. Presently, the volume of water evacuated during purging is based on the stabilization of water quality field parameters, consisting of specific conductivity, pH, and temperature, in accordance with published EPA guidance on low-flow groundwater purging and sampling (Porfert and Sotolongo, 1996, rev. 2010). Each well is purged until water quality parameters have stabilized for three successive measurements. Stabilization is achieved when pH readings are within 0.1± pH unit, specific conductivity is within 3%±, and temperature is within 3%±. The stabilization of field parameters typically indicates that the stagnant water in the well has been sufficiently evacuated and that samples collected are representative of the groundwater aquifer. Regardless of the field parameters, no less than one well volume is purged from each well, to further ensure the stagnant water has been evacuated from the well. This procedure improves efficiency while ensuring that the samples are collected from the aquifer and not stagnant water inside the well.

The well sampling procedure was modified again in 2017 to reduce the turbidity in samples collected. The procedure was updated to include a 10-15 minute period for suspended solids to settle, before the sample is decanted and then stored in laboratory glassware with preservative. Additionally, during the March 2017 monitoring round, accumulated sediment in the wells at the Landfill was removed prior to sampling.

Similar to the well sampling procedure modified in 2017, the surface water sampling procedure includes a 15 minute period for suspended solids to settle out. This procedure is in response to historic high turbidity observed in surface water samples. Once the settling period is over, samples are decanted to appropriate laboratory supplied glassware and preserved as necessary.

TABLE 4A

SUMMARY OF WELL COMPLETION DETAILS

2019 ANNUAL GROUNDWATER MONITORING REPORT
TIVERTON MUNICIPAL SANITARY WASTE LANDFILL
TIVERTON, RHODE ISLAND

WELL I.D.	ELEVATION		WELL DIAMETER (inches)	TOTAL DEPTH OF WELL FROM TOP OF PVC PIPE (feet)	DEPTH TO TOP OF SCREEN (feet)	MONITORED ZONE	
	APPROX. TOP OF STEEL CASING (ft-MSL)	APPROX. GROUND SURFACE (ft-MSL)				SCREEN LENGTH (feet)	DATE INSTALLED OR REPAIRED
OW-9	129.1	125.5	2	14.2	5	8	9/19/96
OW-12	63.78	60.5	2	16.0	3	10	8/23/06
OW-13* (Repair)	49.39	46	2	14.4	4.5	8	6/26/09
OW-14	86.13	83.5	2	8.0	3	6	8/22/06
OW-15	76	74.5	2	8.5	3.5	10	8/21/07

Source: Groundwater Monitoring Plan for the Town of Tiverton Solid Waste Landfill. January 2003. Prepared by Pare Corporation.
* Well construction details after steel casing and PVC pipe for monitoring well OW-13 were slightly lowered by Town personnel in June 2009. Ground surface around well remained at original elevation.

4.3 Analytical Parameters

The Appendix A (Detection Monitoring) parameters, as defined in Regulation No. 2 of the Rules and Regulations for Solid Waste Management Facilities (Solid Waste Regulations) plus mercury and tin, were analyzed during the March, June, and December monitoring rounds. The Appendix A parameters consist of metals and volatile organic compounds (VOCs), as listed in Table 4B. Mercury and tin, though not included in Appendix A of the Solid Waste Regulations, have historically been included for analysis. These parameters are routinely monitored at the background well and compliance wells each quarter.

Assessment Monitoring parameters (Appendix B of Regulation No. 2 of the Solid Waste Regulations) are a comprehensive list of parameters that include semi-volatile organic compounds, herbicides, pesticides, PCB's, sulfate, phenols and cyanide that are in addition to the standard parameters for Detection Monitoring. Assessment monitoring is performed based on statistical analysis of data collected from detection monitoring, as described in subsequent sections of this document.

The parameters sampled as part of the regular quarterly surface water monitoring program include the abovementioned parameters which have been historically included in the groundwater monitoring program, and those parameters that were recently detected at elevated concentrations in the most recent stormwater runoff sampling at the site. These parameters include: Appendix A metals, mercury, tin, iron, ammonia, TKN, total nitrogen, total phosphorus, and hardness. In addition, field screening is performed at each surface water location to determine temperature, pH, and specific conductivity.

TABLE 4B

ANALYTICAL PARAMETERS
(DETECTION MONITORING)

2019 ANNUAL GROUNDWATER MONITORING REPORT
TIVERTON MUNICIPAL SANITARY WASTE LANDFILL
TIVERTON, RHODE ISLAND

Field Parameters
Depth to Water
pH
Specific Conductance
Temperature

Inorganic Constituents
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Nickel
Selenium
Silver
Tin
Thallium
Vanadium
Zinc

Organic Constituents
Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform
Carbon disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Dibromochloro-methane
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
o-Dichlorobenzene
p-Dichlorobenzene
Trans-1, 4-Dichloro-2butene
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
Cis-1, 2-Dichloroethylene
Trans, -1,2- Dichloroethylene
1,2-Dichloropropane
Cis-1,3-Dichloropropene
Trans-1,3-Dichloropropene
Ethylbenzene
2-Hexanone
Methyl bromide
Methyl chloride
Methylene bromide
Methylene chloride
Methyl ethyl ketone
Methyl iodide
4-Methyl-2-pentanone
Methyl-*tert* Butyl Ether (MTBE)
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichlorofluoro-methane
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

4.4 Statistical Analysis

Since the March 1999 monitoring round, the Tolerance Interval (TI) method has been employed per mandate of the RIDEM to compare inorganic analytic results from the background well with the results from the compliance wells. The TI method is one of several statistical methods identified in the January 1997 "Solid Waste Regulations" and has been approved for use at the Landfill by the RIDEM, per the RIDEM's letter of June 10, 1999.

The intent of the TI method is to evaluate if there exists a statistically evident exceedance of an Appendix A parameter over background concentrations. If a contaminant is reported in groundwater sampled from a compliance well at a concentration that statistically exceeds that of the background concentration, it suggests that the presence of that contaminant is, at least in part, derived from landfilling activities. To perform the TI evaluation, Tolerance Limits (TLs) are constructed for each inorganic parameter from a minimum of eight (8) of the most recent monitoring rounds from the background well OW-9 (refer to Appendix I – Tolerance Limit Calculation).

The Appendix A volatile organic compounds (VOCs) do not occur naturally, and therefore, are not anticipated to be present in the background well results data. For this reason, the TI method for the evaluation of the Compliance Well Appendix A VOC results is considered inappropriate. Previously, the approach for determining exceedances for VOCs in the Compliance Well results data was through comparison of the results data to the National Primary Drinking Water Standards (NPDWS) maximum contaminant levels[1] (MCL), where published. Other cited human health thresholds were used for comparison where MCLs have not been established.

As discussed in the May 2006 "Groundwater Monitoring Plan", Pare has added the Shewhart-CUSUM Method as a supplemental statistical analysis method in addition to the TI Method. The purpose of the Shewhart-CUSUM Method is to evaluate contaminant trends in groundwater over a long period of time. In order to conduct the first round of the statistical analysis for compliance wells OW-12, OW-13, OW-14, and OW-15, Pare constructed Control Charts for each target constituent at each monitoring well, as outlined in the USEPA documents entitled "*Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Interim Final Guidance, April 1989*" and "*Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Addendum To Interim Final Guidance, July, 1992*". The Control Charts are based on the mean and standard deviation of the first eight (8) reported

[1]Maximum Contaminant Level (MCL), defined as the highest level of a contaminant that is allowed in drinking water.

concentrations of the target constituent since the installation of the wells in August 2006, which is referred to as the baseline data (Standardized Mean). Pare has compiled enough data to construct the CUSUM baseline and to evaluate groundwater trends at the background well and at OW-12, OW-13, OW-14, and OW-15.

With the addition of the CUSUM statistical analysis, the triggering mechanism for Assessment Monitoring has been revised. In accordance with the May 2006 Groundwater Monitoring Plan, Assessment Monitoring is triggered if:

1. An inorganic parameter exceeds the upper Tolerance Limit in two consecutive rounds and that parameter exceeds one of the two Shewhart-CUSUM control limits in the latter monitoring round; or
2. An organic parameter exceeds one of the two Shewhart-CUSUM control limits.

4.5 Assessment Monitoring

Pare did not perform Assessment Monitoring at any of the compliance wells during the 2019 period. OW-14 was sampled for sulfides in the March 2019 round, as recommended by the previous annual report, and sulfides were not detected in the sample collected. This marked the second consecutive round in which sulfides were not detected at OW-14, therefore, sulfides monitoring was discontinued for subsequent rounds.

Barium at OW-13 exceeded both of its Shewhart-CUSUM control limits, and a Shewhart-CUSUM exceedance this round, and has exceeded its Tolerance Limit for two consecutive rounds, which would trigger Assessment Monitoring. Barium is consistently detected in all the groundwater monitoring wells on-site at concentrations consistent with the recent detection at OW-13. As such, it does not, in Pare's opinion, appear as though this recent detection is a significant change in groundwater quality beneath the landfill, and therefore, Pare does not recommend Assessment Monitoring in March 2020.

4.6 Laboratory Analytical Methods

Groundwater samples are transported to New England Testing Laboratory, Inc. of West Warwick, Rhode Island for chemical analyses. All samples are handled, stored, and manifested in accordance with the Groundwater Monitoring Plan for the Tiverton Landfill. The 2019 Detection Monitoring program was conducted for the parameters listed on Table 4B by the following methods:

- Volatile Organic Compounds (VOCs) — Method 8260 B
- Total Metals
  - Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, Sn, V, Zn — Method 6010 B
    Tl
    Sn
    Method 7870 NE
  - Hg — Method 7470 A

The analytical methods for Appendix B parameters are provided below:

- Detection Monitoring (Appendix A) parameters, listed in Table 4B
- Semi-Volatile Organic Compounds (SVOCs) — Method 8270 C
- Polychlorinated Biphenyls (PCBs) — Method 8082
- Herbicides — Method 8151A
- Pesticides — Method 8081 A
- Cyanide — Method 335.5
- Phenols — Method 420.1
- Sulfate — Method 375.4

5.0 GROUNDWATER QUALITY

5.1 Groundwater Results Data

The complete text of the March 2019 and June 2019 quarterly monitoring reports, as previously presented to the RIDEM, are provided for reference in Appendix K of this Report. As stated in Section 1.2, this Report serves as the December 2019 Quarterly Monitoring Report in addition to summarizing groundwater quality observed throughout the year.

A tabular summary of the laboratory analytical results data for this Report period, by sample location, is provided on Tables 5A through 5H, which includes March 2019, June 2019, and December 2019 quarterly monitoring data. A new bedrock well was installed south of the Landfill on October 5, 2017, after two days of drilling. All values that are highlighted in gray represent statistically evident exceedances of Appendix A inorganic compounds relative to their Tolerance Limits. During the 2019 monitoring period, there were twenty-seven (27) reported TL exceedances for Appendix A metals. Analytical results for each well are further summarized in this section.

Note that groundwater was not detected at OW-7 or OW-16 in the December 2019 as the two wells were frozen at the time of sampling. Groundwater was collected in every monitoring round at the other monitoring wells.

OW-9

Analytical results data from this well (i.e., background well) indicate consistent detection (i.e., at least two out of three monitoring rounds) of nine (9) target metals: arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, nickel, and zinc. Antimony, silver, and vanadium were also reported above their respective method detection limits in at least one monitoring round throughout the year. No (0) metals were reported above their respective MCLs during the 2019 monitoring period.

No (0) VOCs were reported above their respective detection limits at OW-9 in the 2019 monitoring year. Refer to Table 5A for a yearly summary of detections at OW-9.

OW-7

Sampling could not be performed at OW-7 during the December 2019 monitoring round due to OW-7 being frozen at the time. Analytical results data for OW-7 indicate consistent detection for the two

monitoring rounds in which samples could be collected of eleven (11) target metals: antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel, vanadium and zinc. Silver was also reported above its method detection limit at in at least one sampling round throughout the year. No (0) metals were reported above their respective MCLs during the 2019 monitoring period.

The analytical results also indicate consistent detection of one (1) VOC: MTBE. None of the reported VOC concentrations exceeded their cited human health threshold values. Refer to Table 5B for a yearly summary of detections at OW-7.

OW-12

Analytical results data for OW-12 (i.e., background well) indicate consistent detection of six (6) target metals: barium, cadmium, chromium, cobalt, lead, and nickel. Silver and zinc were also reported above their respective method detection limits at various times in at least one sampling round throughout the year. No (0) metals were reported above their respective MCLs during the 2019 monitoring period.

No (0) VOCs were reported above their respective detection limits at OW-12 in the 2019 monitoring year. Refer to Table 5C for a yearly summary of detections at OW-12.

OW-13

Analytical results data for OW-13 indicate consistent detection of nine (9) target metals throughout the year: arsenic barium, cadmium, chromium, cobalt, copper, lead, nickel, and zinc. One (1) metal; arsenic; was reported above its MCL on one (1) occasion at OW-13 during the 2019 monitoring period.

The analytical results also indicate consistent detection of two (2) VOCs: chlorobenzene and MTBE. In addition, acetone and 1,4-dichlorobenzene were reported above their respective method detection limits at various times in at least one sampling round throughout the year. None of the reported VOC concentrations exceeded their cited human health threshold values. Refer to Table 5D for a yearly summary of detections at OW-13.

OW-14

Analytical results data for OW-14 indicate consistent detection of nine (9) target metals: antimony, arsenic, barium, chromium, cobalt, lead, nickel, vanadium and zinc. Cadmium, copper, and silver

were also reported above their respective method detection limits in at least one monitoring round throughout the year. No (0) metals were reported above their respective MCLs during the 2019 monitoring period.

The analytical results also indicate consistent detection of four (4) VOCs: benzene, chlorobenzene, and 1,4 dichlorobenzene, and MTBE. Acetone was also reported above its method detection limit at in at least one sampling round throughout the year. No target VOCs were reported above their respective human health threshold values at OW-14. Refer to Table 5E for a yearly summary of detections at OW-14.

OW-15

Analytical results data for OW-15 indicate consistent detection of eight (8) target metals: arsenic, barium, chromium, cobalt, lead, nickel, vanadium, and zinc. Copper and silver were also reported above their respective method detection limits in at least one monitoring round throughout the year. One (1) metal, arsenic, were reported above their MCLs for a total of three (3) exceedances at OW-15 during the 2019 monitoring period.

The analytical results indicate consistent detection of four (4) VOCs: benzene, chlorobenzene, 1,4-dichlorobenzene, and MTBE. Acetone was also reported above its method detection limit at in at least one sampling round throughout the year. None of the reported concentrations exceeded their cited human health threshold values. Refer to Table 5F for a yearly summary of detections at OW-15.

OW-16

Sampling could not be performed at OW-16 during the December 2019 monitoring round due to OW-16 being frozen at the time. Analytical results data for OW-16 indicate consistent detection for the two monitoring rounds in which samples could be collected of six (6) target metals: barium, beryllium, cadmium, cobalt, nickel, and zinc. Silver was also reported above its method detection limit at in at least one sampling round throughout the year. No (0) metals were reported above their respective MCLs during the 2019 monitoring period.

The analytical results also indicate consistent detection of one (1) VOC: MTBE. None of the reported VOC concentrations exceeded their cited human health threshold values. Refer to Table 5G for a yearly summary of detections at OW-16.

5.2 Groundwater Concentration Trends

This section provides a discussion of recent and historical groundwater concentration trends of monitoring parameters in the Background Well and Compliance Wells at the Landfill.

5.2.1 Appendix A Metals

Historical concentrations of detected Appendix A metals, since the inception of low-flow purging and sampling in May 2002, are presented graphically on the plots provided in Appendix F of this Report. During the 2019 monitoring period, there were twenty-seven (27) reported TL exceedances for Appendix A metals. Although this number of exceedances is lower than recent years, it should be noted that the September 2019 monitoring round was not completed due to concerns about Eastern Equine Encephalitis in the area. The TL exceedances indicate statistically elevated concentrations of target metals in the compliance wells over the background well. This is represented on the attached charts that show the results of monitoring of Appendix A parameters at each well since the inception of low flow purging and sampling.

5.2.2 Appendix A VOCs

As discussed in Section 5.1, several VOCs were reported in groundwater from the compliance wells in 2019. Each detected VOC concentration across the landfill was below its cited human health threshold value. All reported VOC compounds and ranges of reported concentrations in groundwater from the compliance wells for this reporting period are generally consistent with historical data.

5.2.3 CUSUM Analysis

The Shewhart-CUSUM statistical analysis is used to evaluate whether Assessment Monitoring should be performed at a well if a statistical deterioration in groundwater quality is suspected. The results of the CUSUM analysis for 2019 generally confirm Pare's opinion that there exists consistent low-level impact to groundwater beneath and downgradient of the Landfill as a result of landfilling activities. The following are results of the CUSUM analysis reported for 2019 at the background well and the compliance wells.

OW-9

No (0) CUSUM or standardized mean values crossed their thresholds at OW-9 in the 2019 monitoring period.

OW-12

Barium crossed its standardized mean thresholds in all three monitoring rounds in the 2019 monitoring period. Barium has been in exceedance of its CUSUM threshold since the December 2013 monitoring round. No (0) metals aside from barium exceeded both their CUSUM and standardized mean thresholds in the 2019 monitoring period. Despite these CUSUM threshold exceedances, Assessment monitoring was not performed at OW-12 in 2019 because these constituents did not exceed their TLs.

OW-13

In the March 2019 and December 2019 monitoring rounds, barium crossed both its CUSUM and standardized mean value thresholds. No (0) metals exceeded their CUSUM or standardized mean thresholds at OW-13 during the June 2019 round.

OW-14

No (0) CUSUM or standardized mean values crossed their thresholds at OW-14 in the 2019 monitoring period.

OW-15

In the June 2019 monitoring round, MTBE crossed both its CUSUM and standardized mean threshold values. No (0) metals exceeded their CUSUM or standardized mean thresholds at OW-15in the 2019 monitoring period.

5.2.4 Summary of Assessment Monitoring

The need for Assessment Monitoring will be evaluated and coordinated with the RIDEM if the following conditions are met:

1. An inorganic parameter exceeds the upper Tolerance Limit in two consecutive rounds and that parameter exceeds one of the two Shewhart-CUSUM control limits in the latter monitoring round; or

2. An organic parameter exceeds one of the two Shewhart-CUSUM control limits. Analytical data will continue to be compared to US EPA Maximum Contaminant Levels (MCLs) or other health-based criteria for parameters that do not have MCLs assigned each monitoring round.

Pare did not perform Assessment Monitoring at any of the compliance wells during the 2019 period.

OW-14 was sampled for sulfides in the March 2019 round, as recommended by the previous annual report, and sulfides were not detected in the sample collected. This marked the second consecutive round in which sulfides were not detected at OW-14, therefore, sulfides monitoring was discontinued for subsequent rounds.

Barium at OW-13 exceeded both of its Shewhart-CUSUM control limits, and a Shewhart-CUSUM exceedance this round, and has exceeded its Tolerance Limit for two consecutive rounds, which would trigger Assessment Monitoring. Barium is consistently detected in all the groundwater monitoring wells on-site at concentrations consistent with the recent detection at OW-13. As such, it does not, in Pare's opinion, appear as though this recent detection is a significant change in groundwater quality beneath the landfill, and therefore, Pare does not recommend Assessment Monitoring in March 2020.

Although the CUSUM values have increased for a number of parameters, the concentrations of those parameters remain consistently below their human health thresholds. The Shewhart-CUSUM is an analysis utilized to evaluate trends in a data set, specifically measuring the impact of a deviation from the baseline data referenced above. When a parameter has historically been "non-detect", any detection of that parameter can result in a significant, albeit somewhat misleading, jump in CUSUM values. Any reported concentration above a parameter's detection limit is interpreted as a relatively large deviation from the artificially low baseline data, thereby causing a significant artificial increase in CUSUM values. It should also be noted that because of the nature of the CUSUM analysis, a greater spread in data (i.e., a greater difference in reported concentrations quarter over quarter) can cause an increase in CUSUM values.

MTBE Concentration Comparative Analysis

MTBE is given special attention based on past historical data and a generally increasing trend in reported concentrations at the Landfill. During the 2019 monitoring period, the CUSUM value for MTBE was above its threshold at OW13, OW-14, and OW-15. Reported MTBE concentrations at OW-15 have generally risen since September 2006, ranging from 0.0036 mg/L to 0.0122 mg/L, as depicted in the attached figure titled *Reported Concentrations of MTBE* in Appendix J of this Report. The figure compares the recent increases in reported MTBE concentrations at OW-15 to historical concentrations and drinking water advisories. The reported concentration of MTBE at OW-13 and OW-14 has varied significantly since 2006; however, over that period there does not appear to be a significant upward trend in MTBE concentrations. The CUSUM evaluation suggests that there is an upward trend in data; however, the average concentration has risen less than 0.001 mg/L over the last 13 years at OW-13 and OW-14.

Although MTBE has been consistently reported at OW-13, OW-14, and OW-15, MTBE has never been reported above its odor threshold (0.020 mg/L) or its taste threshold (0.040 mg/L) at the Landfill. The US EPA has not established a human health advisory concentration for MTBE. Because the elevated concentrations of MTBE has caused Assessment Monitoring to be triggered at OW-13, OW-14, and OW-15 at various times over the past five years, and no Appendix B parameters have been reported to a significant degree in any of the samples collected as a result, it is Pare's opinion that the mechanism that triggered Appendix B monitoring is an indication of a minor change in MTBE concentration in groundwater beneath the Landfill and not a deterioration in groundwater quality to a degree that suggests the presence of Appendix B parameters in higher-than-usual concentrations.

Future Assessment Monitoring

Pare did not perform Assessment Monitoring at any of the compliance wells during the 2019 period. OW-14 was sampled for sulfides in the March 2019 round, as recommended by the previous annual report, and sulfides were not detected in the sample collected. This marked the second consecutive round in which sulfides were not detected at OW-14, therefore, sulfides monitoring was discontinued for subsequent rounds.

At OW-13, barium exceeded both of its Shewhart-CUSUM control limits, and a Shewhart-CUSUM exceedance this round, and has exceeded its Tolerance Limit for two consecutive rounds, which would trigger Assessment Monitoring. Barium is consistently detected in all the groundwater monitoring wells on-site at concentrations consistent with the recent detection at OW-13. As such, it does not, in Pare's opinion, appear as though this recent detection is a significant change in groundwater quality beneath the landfill, and therefore, Pare does not recommend Assessment Monitoring in March 2020.

5.3 Surface Water Results Data

As previously mentioned, the complete text of the June 2019 quarterly monitoring report, as previously presented to the RIDEM, is provided for reference in Appendix K of this Report. As stated in Section 1.2, this Report serves as the December 2019 Quarterly Monitoring Report in addition to summarizing surface water quality observed throughout the year.

A tabular summary of the laboratory analytical results data for this Report period, by sample location, is provided on Tables 5A through 5H, which includes June 2019 and December 2019 quarterly monitoring data. Analytical results for each well are further summarized in this section.

SW-1

Eight (8) target metals were detected in the surface water sample collected at SW-1. One (1) metal, iron (0.647 mg/L), exceeded is human health threshold (0.3 mg/L). No (0) metals exceeded their aquatic life thresholds. Additionally, total nitrogen and TKN were detected in the samples collected at SW-1; however, they did not exceed their given threshold values, or no threshold values have been established for those parameters.

SW-2

Nine (9) target metals were detected in the surface water sample collected at SW-2. Two (2) metals, lead (0.0006 mg/L) and iron (0.661 mg/L); were detected above their given thresholds. Lead was detected above its chronic aquatic life threshold (0.00029 mg/L), and iron exceeded its human health threshold (0.3 mg/L). Additionally, ammonia, total nitrogen, and TKN were detected in the samples collected at SW-2; however, they did not exceed their given threshold values, or no threshold values have been established for those parameters.

SW-3

Eleven (11) target metals were detected in the surface water sample collected at SW-3. One (1) metal, iron (0.788 mg/L), was detected above its human health threshold (0.3 mg/L). No (0) metals exceeded their aquatic life thresholds. Additionally, total nitrogen and TKN were detected in the samples collected at SW-3; however, they did not exceed their given threshold values, or no threshold values have been established for those parameters.

TABLE 5A
2019 SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

MONITORING WELL OW-9

Concentration (Expressed in the same units as Threshold Value)

Parameter	Threshold Value		DEC '19	SEP '19	JUN '19	MAR '19
Antimony	0.006	mg/l[1]	ND	NT	ND	0.0001
Arsenic	0.010	mg/l[1]	0.0001	NT	ND	0.0001
Barium	2	mg/l[1]	0.011	NT	0.0060	0.0060
Beryllium	0.004	mg/l[1]	ND	NT	0.0001	0.0003
Cadmium	0.005	mg/l[1]	0.0002	NT	0.0001	0.0001
Chromium	0.1	mg/l[1]	0.002	NT	0.002	0.0019
Cobalt	0.73	mg/l[5]	0.0004	NT	ND	0.0003
Copper	1.3	mg/l[1]	ND	NT	ND	ND
Lead	0.015	mg/l[1]	0.0031	NT	0.000	0.0007
Mercury	0.002	mg/l[2]	ND	NT	ND	ND
Nickel	0.1	mg/l[1]	0.001	NT	ND	0.0010
Selenium	0.05	mg/l[2,3]	ND	NT	ND	ND
Silver	0.1	mg/l[1]	ND	NT	ND	0.0005
Thallium	0.002	mg/l[5]	ND	NT	ND	ND
Tin	22	mg/l[5]	ND	NT	ND	ND
Vanadium	0.26	mg/l[2,3]	0.0005	NT	ND	ND
Zinc	2 - 5	mg/l[1]	0.001	NT	0.0030	0.0030
Acetone	5500	µg/L[5]	ND	NT	ND	ND
Acrylonitrile	0.039	µg/L[5]	ND	NT	ND	ND
Benzene	5	µg/L[1]	ND	NT	ND	ND
Bromochloromethane	90	µg/L[2]	ND	NT	ND	ND
Bromodichloromethane (THM)	80	µg/L[1]	ND	NT	ND	ND
Bromoform	80	µg/L[1]	ND	NT	ND	ND
Carbon disulfide	1000	µg/L[5]	ND	NT	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	NT	ND	ND
Chlorobenzene	100	µg/L[1]	ND	NT	ND	ND
Chloroethane	4.6	µg/L[5]	ND	NT	ND	ND
Chloroform (THM)	80	µg/L[1]	ND	NT	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	NT	ND	ND
1,2-Dibromo-3-chloropropane (DB(	0.2	µg/L[1]	ND	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	NT	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	NT	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	ND	NT	ND	ND
trans-1,4-Dichloro-2-butene		µg/L	ND	NT	ND	ND
1,1 -Dichloroethane	5	µg/L	ND	NT	ND	ND
1,2-Dichloroethane	5	µg/L[1]	ND	NT	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	NT	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	NT	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	NT	ND	ND
1,2-Dichloropropane	5	µg/L[1]	ND	NT	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	NT	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	NT	ND	ND
Ethylbenzene	700	µg/L[1]	ND	NT	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	ND	NT	ND	ND
Bromomethane	10	µg/L[2]	ND	NT	ND	ND
Chloromethane	30	µg/L[2]	ND	NT	ND	ND
Dibromomethane	61	µg/L[5]	ND	NT	ND	ND
Methylene chloride	5	µg/L[1]	ND	NT	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	ND	NT	ND	ND
Methyl iodide		µg/L	ND	NT	ND	ND
4-Methyl-2-pentanone		µg/L	ND	NT	ND	ND
Styrene	100	µg/L[1]	ND	NT	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[2]	ND	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[2]	ND	NT	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	NT	ND	ND
Toluene	1000	µg/L[1]	ND	NT	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	NT	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	NT	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	NT	ND	ND
Trichloroflouromethane	2000	µg/L[2]	ND	NT	ND	ND
1,2,3-Trichloropropane	40	µg/L[2]	ND	NT	ND	ND
Vinyl acetate	410	µg/L[5]	ND	NT	ND	ND
Vinyl chloride	2	µg/L[1]	ND	NT	ND	ND
Xylenes	10000	µg/L[1]	ND	NT	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	ND	NT	ND	ND

Note: Analytical data reported since commencement of low flow purging and sampling.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 5B
2019 SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

MONITORING WELL OW-7

Concentration (Expressed in the same units as Threshold Value)

Parameter	Threshold Value		DEC '19	SEP '19	JUN '19	MAR '19
Antimony	0.006	mg/l[1]	NT	NT	0.0002	0.0002
Arsenic	0.010	mg/l[1]	NT	NT	0.0001	0.0002
Barium	2	mg/l[1]	NT	NT	0.0270	0.0340
Beryllium	0.004	mg/l[1]	NT	NT	ND	ND
Cadmium	0.005	mg/l[1]	NT	NT	0.0005	0.0007
Chromium	0.1	mg/l[1]	NT	NT	0.001	0.0011
Cobalt	0.73	mg/l[5]	NT	NT	0.0078	0.0090
Copper	1.3	mg/l[1]	NT	NT	0.0020	0.0020
Lead	0.015	mg/l[1]	NT	NT	0.001	0.0013
Mercury	0.002	mg/l[2]	NT	NT	0.0090	0.0110
Nickel	0.1	mg/l[1]	NT	NT	ND	ND
Selenium	0.05	mg/l[2,3]	NT	NT	ND	0.0002
Silver	0.1	mg/l[1]	NT	NT	ND	ND
Thallium	0.002	mg/l[5]	NT	NT	ND	ND
Tin	22	mg/l[5]	NT	NT	0.0009	0.0013
Vanadium	0.26	mg/l[2,3]	NT	NT	0.0070	0.0060
Zinc	2 - 5	mg/l[1]	NT	NT	0.0140	0.0180
Acetone	5500	µg/L[5]	NT	NT	ND	ND
Acrylonitrile	0.039	µg/L[5]	NT	NT	ND	ND
Benzene	5	µg/L[1]	NT	NT	ND	ND
Bromochloromethane	90	µg/L[2]	NT	NT	ND	ND
Bromodichloromethane (THM)	80	µg/L[1]	NT	NT	ND	ND
Bromoform	80	µg/L[1]	NT	NT	ND	ND
Carbon disulfide	1000	µg/L[5]	NT	NT	ND	ND
Carbon tetrachloride	5	µg/L[1]	NT	NT	ND	ND
Chlorobenzene	100	µg/L[1]	NT	NT	ND	ND
Chloroethane	4.6	µg/L[5]	NT	NT	ND	ND
Chloroform (THM)	80	µg/L[1]	NT	NT	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	NT	NT	ND	ND
1,2-Dibromo-3-chloropropane (DB(	0.2	µg/L[1]	NT	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	NT	NT	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	NT	NT	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	NT	NT	ND	ND
trans-1,4-Dichloro-2-butene		µg/L	NT	NT	ND	ND
1,1 -Dichloroethane	5	µg/L	NT	NT	ND	ND
1,2-Dichloroethane	5	µg/L[1]	NT	NT	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	NT	NT	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	NT	NT	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	NT	NT	ND	ND
1,2-Dichloropropane	5	µg/L[1]	NT	NT	ND	ND
cis-1,3-Dichloropropene		µg/L	NT	NT	ND	ND
trans-1,3-Dichloropropene		µg/L	NT	NT	ND	ND
Ethylbenzene	700	µg/L[1]	NT	NT	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	NT	NT	ND	ND
Bromomethane	10	µg/L[2]	NT	NT	ND	ND
Chloromethane	30	µg/L[2]	NT	NT	ND	ND
Dibromomethane	61	µg/L[5]	NT	NT	ND	ND
Methylene chloride	5	µg/L[1]	NT	NT	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	NT	NT	ND	ND
Methyl iodide		µg/L	NT	NT	ND	ND
4-Methyl-2-pentanone		µg/L	NT	NT	ND	ND
Styrene	100	µg/L[1]	NT	NT	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[2]	NT	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[2]	NT	NT	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	NT	NT	ND	ND
Toluene	1000	µg/L[1]	NT	NT	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	NT	NT	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	NT	NT	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	NT	NT	ND	ND
Trichloroflouromethane	2000	µg/L[2]	NT	NT	ND	ND
1,2,3-Trichloropropane	40	µg/L[2]	NT	NT	ND	ND
Vinyl acetate	410	µg/L[5]	NT	NT	ND	ND
Vinyl chloride	2	µg/L[1]	NT	NT	ND	ND
Xylenes	10000	µg/L[1]	NT	NT	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	NT	NT	3.01	4.00

Note: Analytical data reported since commencement of low flow purging and sampling.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 5C
2019 SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

MONITORING WELL OW-12

Concentration (Expressed in Same units as Threshold Value)

Parameter	Threshold Value	DEC '19	SEP '19	JUN '19	MAR '19
Antimony	0.006 mg/L[1]	ND	NT	ND	ND
Arsenic	0.010 mg/L[1]	ND	NT	ND	ND
Barium	2 mg/L[1]	0.023	NT	0.02	0.0200
Beryllium	0.004 mg/L[1]	ND	NT	ND	ND
Cadmium	0.005 mg/L[1]	0.0004	NT	0.0004	ND
Chromium	0.1 mg/L[1]	0.0001	NT	ND	ND
Cobalt	0.73 mg/L[5]	0.001	NT	0.0005	ND
Copper	1.3 mg/L[1]	ND	NT	ND	0.0090
Lead	0.015 mg/L[1]	0.0003	NT	ND	ND
Mercury	0.002 mg/L[1]	ND	NT	ND	ND
Nickel	0.1 mg/L[2]	0.01	NT	0.01	0.0240
Selenium	0.05 mg/L[1]	ND	NT	ND	ND
Silver	0.1 mg/L[2,3]	ND	NT	0.003	ND
Thallium	0.002 mg/L[1]	ND	NT	ND	ND
Tin	22 mg/L[5]	ND	NT	ND	ND
Vanadium	0.26 mg/L[5]	ND	NT	ND	ND
Zinc	2 - 5 mg/L[2,3]	ND	NT	ND	0.0070
Acetone	610 µg/L[5]	ND	NT	ND	ND
Acrylonitrile	0.039 µg/L[5]	ND	NT	ND	ND
Benzene	5 µg/L[1]	ND	NT	ND	ND
Bromochloromethane	80 µg/L[2]	ND	NT	ND	ND
Bromodichloromethane (THM)	90 µg/L[1]	ND	NT	ND	ND
Bromoform	80 µg/L[1]	ND	NT	ND	ND
Carbon disulfide	1000 µg/L[5]	ND	NT	ND	ND
Carbon tetrachloride	5 µg/L[1]	ND	NT	ND	ND
Chlorobenzene	100 µg/L[1]	ND	NT	ND	ND
Chloroethane	4.6 µg/L[5]	ND	NT	ND	ND
Chloroform	80 µg/L[1]	ND	NT	ND	ND
Chlorodibromomethane (THM)	80 µg/L[1]	ND	NT	ND	ND
1,2-Dibromo-3-chloropropane (DBC	0.2 µg/L[1]	ND	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05 µg/L[1]	ND	NT	ND	ND
1,2-Dichlorobenzene	600 µg/L[1]	ND	NT	ND	ND
1,4-Dichlorobenzene	75 µg/L[1]	ND	NT	ND	ND
trans-1,4-Dichloro-2-butene	µg/L	ND	NT	ND	ND
1,1 -Dichloroethane	5 µg/L	ND	NT	ND	ND
1,2-Dichloroethane	µg/L	ND	NT	ND	ND
1,1-Dichloroethylene	7 µg/L[1]	ND	NT	ND	ND
cis-1,2-Dichloroethene	70 µg/L[1]	ND	NT	ND	ND
trans-1,2-Dichloroethene	100 µg/L[1]	ND	NT	ND	ND
1,2-Dichloropropane	5 µg/L[1]	ND	NT	ND	ND
cis-1,3-Dichloropropene	µg/L	ND	NT	ND	ND
trans-1,3-Dichloropropene	µg/L	ND	NT	ND	ND
Ethylbenzene	700 µg/L[1]	ND	NT	ND	ND
Methyl butyl ketone(2-Hexanone)	160 µg/L[5]	ND	NT	ND	ND
Bromomethane	10 µg/L[2]	ND	NT	ND	ND
Chloromethane	30 µg/L[2]	ND	NT	ND	ND
Dibromomethane	61 µg/L[5]	ND	NT	ND	ND
Methylene chloride	5 µg/L[1]	ND	NT	ND	ND
Methyl ethyl ketone(2-Butanone)	4000 µg/L[2]	ND	NT	ND	ND
Methyl iodide	µg/L	ND	NT	ND	ND
4-Methyl-2-pentanone	µg/L	ND	NT	ND	ND
Styrene	100 µg/L[1]	ND	NT	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L[2]	ND	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L[2]	ND	NT	ND	ND
Tetrachloroethylene(PCE)	5 µg/L[1]	ND	NT	ND	ND
Toluene	1000 µg/L[1]	ND	NT	ND	ND
1,1,1-Trichloroethane	200 µg/L[1]	ND	NT	ND	ND
1,1,2-Trichloroethane	5 µg/L[1]	ND	NT	ND	ND
Trichloroethylene(TCE)	5 µg/L[1]	ND	NT	ND	ND
Trichloroflouromethane	2000 µg/L[2]	ND	NT	ND	ND
1,2,3-Trichloropropane	40 µg/L[2]	ND	NT	ND	ND
Vinyl acetate	410 µg/L[5]	ND	NT	ND	ND
Vinyl chloride	2 µg/L[1]	ND	NT	ND	ND
Xylenes	10000 µg/L[1]	ND	NT	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L[4]	ND	NT	ND	ND

Note: Analytical data reported since commencement of low flow purging and sampling.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significa higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

Note: Dichlorodifluoromethane is not an Appendix A VOC but was reported by the laboratory and has been included in this table.

TABLE 5D
2019 SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

MONITORING WELL OW-13

Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value	DEC '19	SEP '19	JUN '19	MAR '19
Antimony	0.006 mg/L[1]	ND	NT	ND	ND
Arsenic	0.010 mg/L[1]	0.0104	NT	0.01	0.0081
Barium	2 mg/L[1]	0.1220	NT	0.096	0.1180
Beryllium	0.004 mg/L[1]	ND	NT	ND	ND
Cadmium	0.005 mg/L[1]	0.0008	NT	0.0007	0.0004
Chromium	0.1 mg/L[1]	0.0004	NT	0.0007	0.0004
Cobalt	0.73 mg/L[5]	0.0105	NT	0.0111	0.0112
Copper	1.3 mg/L[1]	0.004	NT	0.003	0.004
Lead	0.015 mg/L[1]	0.0007	NT	0.0005	0.0008
Mercury	0.002 mg/L[1]	ND	NT	ND	ND
Nickel	0.1 mg/L[2]	0.0100	NT	0.011	0.011
Selenium	0.05 mg/L[1]	ND	NT	ND	ND
Silver	0.1 mg/L[2,3]	ND	NT	ND	ND
Thallium	0.002 mg/L[1]	ND	NT	ND	ND
Tin	22 mg/L[5]	ND	NT	ND	ND
Vanadium	0.26 mg/L[5]	ND	NT	ND	ND
Zinc	2 - 5 mg/L[2,3]	0.009	NT	0.007	0.005
Acetone	610 µg/L[5]	ND	NT	16.88	ND
Acrylonitrile	0.039 µg/L[5]	ND	NT	ND	ND
Benzene	5 µg/L[1]	ND	NT	ND	ND
Bromochloromethane	80 µg/L[2]	ND	NT	ND	ND
Bromodichloromethane (THM)	90 µg/L[1]	ND	NT	ND	ND
Bromoform	80 µg/L[1]	ND	NT	ND	ND
Carbon disulfide	1000 µg/L[5]	ND	NT	ND	ND
Carbon tetrachloride	5 µg/L[1]	ND	NT	ND	ND
Chlorobenzene	100 µg/L[1]	5.31	NT	4.1	5.9
Chloroethane	4.6 µg/L[5]	ND	NT	ND	ND
Chloroform	80 µg/L[1]	ND	NT	ND	ND
Chlorodibromomethane (THM)	80 µg/L[1]	ND	NT	ND	ND
1,2-Dibromo-3-chloropropane (DB	0.2 µg/L[1]	ND	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05 µg/L[1]	ND	NT	ND	ND
1,2-Dichlorobenzene	600 µg/L[1]	ND	NT	ND	ND
1,4-Dichlorobenzene	75 µg/L[1]	1.13	NT	ND	ND
trans-1,4-Dichloro-2-butene	µg/L	ND	NT	ND	ND
1,1 -Dichloroethane	5 µg/L	ND	NT	ND	ND
1,2-Dichloroethane	µg/L	ND	NT	ND	ND
1,1-Dichloroethylene	7 µg/L[1]	ND	NT	ND	ND
cis-1,2-Dichloroethene	70 µg/L[1]	ND	NT	ND	ND
trans-1,2-Dichloroethene	100 µg/L[1]	ND	NT	ND	ND
1,2-Dichloropropane	5 µg/L[1]	ND	NT	ND	ND
cis-1,3-Dichloropropene	µg/L	ND	NT	ND	ND
trans-1,3-Dichloropropene	µg/L	ND	NT	ND	ND
Ethylbenzene	700 µg/L[1]	ND	NT	ND	ND
Methyl butyl ketone(2-Hexanone)	160 µg/L[5]	ND	NT	ND	ND
Bromomethane	10 µg/L[2]	ND	NT	ND	ND
Chloromethane	30 µg/L[2]	ND	NT	ND	ND
Dibromomethane	61 µg/L[5]	ND	NT	ND	ND
Methylene chloride	5 µg/L[1]	ND	NT	ND	ND
Methyl ethyl ketone(2-Butanone)	4000 µg/L[2]	ND	NT	ND	ND
Methyl iodide	µg/L	ND	NT	ND	ND
4-Methyl-2-pentanone	µg/L	ND	NT	ND	ND
Styrene	100 µg/L[1]	ND	NT	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L[2]	ND	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L[2]	ND	NT	ND	ND
Tetrachloroethylene(PCE)	5 µg/L[1]	ND	NT	ND	ND
Toluene	1000 µg/L[1]	ND	NT	ND	ND
1,1,1-Trichloroethane	200 µg/L[1]	ND	NT	ND	ND
1,1,2-Trichloroethane	5 µg/L[1]	ND	NT	ND	ND
Trichloroethylene(TCE)	5 µg/L[1]	ND	NT	ND	ND
Trichloroflouromethane	2000 µg/L[2]	ND	NT	ND	ND
1,2,3-Trichloropropane	40 µg/L[2]	ND	NT	ND	ND
Vinyl acetate	410 µg/L[5]	ND	NT	ND	ND
Vinyl chloride	2 µg/L[1]	ND	NT	ND	ND
Xylenes	10000 µg/L[1]	ND	NT	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L[4]	3.35	NT	3.3	3.4

Note: Analytical data reported since commencement of low flow purging and smapling.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher tl previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

Note: Dichlorodifluoromethane is not an Appendix A VOC but was reported by the laboratory and has been included in this table.

TABLE 5E
2019 SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

MONITORING WELL OW-14

Concentration (Expressed in the same units as Threshold Value)

Parameter	Threshold Value		DEC '19	SEP '19	JUN '19	MAR '19
Antimony	0.006	mg/L[1]	0.0002	NT	0.0001	0.0001
Arsenic	0.010	mg/L[1]	0.0004	NT	0.0036	0.0018
Barium	2	mg/L[1]	0.168	NT	0.199	0.2020
Beryllium	0.004	mg/L[1]	ND	NT	ND	ND
Cadmium	0.005	mg/L[1]	0.0002	NT	ND	ND
Chromium	0.1	mg/L[1]	0.0003	NT	0.0006	0.0007
Cobalt	0.73	mg/L[5]	0.004	NT	0.0058	0.0059
Copper	1.3	mg/L[1]	0.002	NT	ND	ND
Lead	0.015	mg/L[1]	0.001	NT	0.0002	0.0010
Mercury	0.002	mg/L[1]	ND	NT	ND	ND
Nickel	0.1	mg/L[2]	0.007	NT	0.011	0.0110
Selenium	0.05	mg/L[1]	ND	NT	ND	ND
Silver	0.1	mg/L[2,3]	ND	NT	ND	0.0002
Thallium	0.002	mg/L[1]	ND	NT	ND	ND
Tin	22	mg/L[5]	ND	NT	ND	ND
Vanadium	0.26	mg/L[5]	ND	NT	0.0006	0.0007
Zinc	2 - 5	mg/L[2,3]	0.004	NT	0.005	0.0040
Acetone	610	µg/L[5]	ND	NT	20.96	ND
Acrylonitrile	0.039	µg/L[5]	ND	NT	ND	ND
Benzene	5	µg/L[1]	1.56	NT	2.24	2.1
Bromochloromethane	80	µg/L[2]	ND	NT	ND	ND
Bromodichloromethane (THM)	90	µg/L[1]	ND	NT	ND	ND
Bromoform	80	µg/L[1]	ND	NT	ND	ND
Carbon disulfide	1000	µg/L[5]	ND	NT	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	NT	ND	ND
Chlorobenzene	100	µg/L[1]	8.85	NT	10.74	10.8
Chloroethane	4.6	µg/L[5]	ND	NT	ND	ND
Chloroform	80	µg/L[1]	ND	NT	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	NT	ND	ND
1,2-Dibromo-3-chloropropane (DB(	0.2	µg/L[1]	ND	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	NT	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	NT	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	2.02	NT	2.04	2.1
trans-1,4-Dichloro-2-butene		µg/L	ND	NT	ND	ND
1,1 -Dichloroethane	5	µg/L	ND	NT	ND	ND
1,2-Dichloroethane		µg/L	ND	NT	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	NT	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	NT	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	NT	ND	ND
1,2-Dichloropropane	5	µg/L[1]	ND	NT	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	NT	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	NT	ND	ND
Ethylbenzene	700	µg/L[1]	ND	NT	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	ND	NT	ND	ND
Bromomethane	10	µg/L[2]	ND	NT	ND	ND
Chloromethane	30	µg/L[2]	ND	NT	ND	ND
Dibromomethane	61	µg/L[5]	ND	NT	ND	ND
Methylene chloride	5	µg/L[1]	ND	NT	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	ND	NT	ND	ND
Methyl iodide		µg/L	ND	NT	ND	ND
4-Methyl-2-pentanone		µg/L	ND	NT	ND	ND
Styrene	100	µg/L[1]	ND	NT	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[2]	ND	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[2]	ND	NT	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	NT	ND	ND
Toluene	1000	µg/L[1]	ND	NT	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	NT	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	NT	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	NT	ND	ND
Trichloroflouromethane	2000	µg/L[2]	ND	NT	ND	ND
1,2,3-Trichloropropane	40	µg/L[2]	ND	NT	ND	ND
Vinyl acetate	410	µg/L[5]	ND	NT	ND	ND
Vinyl chloride	2	µg/L[1]	ND	NT	ND	ND
Xylenes	10000	µg/L[1]	ND	NT	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	5.4	NT	5.07	5.0

Note: Analytical data reported since commencement of low flow purging and smapling.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significa higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 5F
2019 SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

MONITORING WELL OW-15

Concentration (Expressed in the same units as Threshold Value)

Parameter	Threshold Value		DEC '19	SEP '19	JUN '19	MAR '19
Antimony	0.006	mg/L[1]	ND	NT	ND	ND
Arsenic	0.010	mg/L[1]	0.0150	NT	0.02	0.0352
Barium	2	mg/L[1]	0.151	NT	0.148	0.158
Beryllium	0.004	mg/L[1]	ND	NT	ND	ND
Cadmium	0.005	mg/L[1]	ND	NT	ND	ND
Chromium	0.1	mg/L[1]	0.0010	NT	0.0009	0.0007
Cobalt	0.73	mg/L[5]	0.0066	NT	0.0124	0.0126
Copper	1.3	mg/L[1]	0.0030	NT	ND	ND
Lead	0.015	mg/L[1]	0.0003	NT	0.0003	0.0003
Mercury	0.002	mg/L[1]	ND	NT	ND	ND
Nickel	0.1	mg/L[2]	0.016	NT	0.025	0.025
Selenium	0.05	mg/L[1]	ND	NT	ND	ND
Silver	0.1	mg/L[2,3]	ND	NT	ND	0.0001
Thallium	0.002	mg/L[1]	ND	NT	ND	ND
Tin	22	mg/L[5]	ND	NT	ND	ND
Vanadium	0.26	mg/L[5]	0.0006	NT	0.0007	0.0010
Zinc	2 - 5	mg/L[2,3]	0.0100	NT	0.0040	0.0030
Acetone	610	µg/L[5]	ND	NT	19.19	ND
Acrylonitrile	0.039	µg/L[5]	ND	NT	ND	ND
Benzene	5	µg/L[1]	1.9	NT	1.94	1.5
Bromochloromethane	80	µg/L[2]	ND	NT	ND	ND
Bromodichloromethane (THM)	90	µg/L[1]	ND	NT	ND	ND
Bromoform	80	µg/L[1]	ND	NT	ND	ND
Carbon disulfide	1000	µg/L[5]	ND	NT	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	NT	ND	ND
Chlorobenzene	100	µg/L[1]	16.99	NT	14.4	13.2
Chloroethane	4.6	µg/L[5]	ND	NT	ND	ND
Chloroform	80	µg/L[1]	ND	NT	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	NT	ND	ND
1,2-Dibromo-3-chloropropane (DB(	0.2	µg/L[1]	ND	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	NT	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	NT	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	2.69	NT	2.64	2.1
trans-1,4-Dichloro-2-butene		µg/L	ND	NT	ND	ND
1,1 -Dichloroethane	5	µg/L	ND	NT	ND	ND
1,2-Dichloroethane		µg/L	ND	NT	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	NT	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	NT	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	NT	ND	ND
1,2-Dichloropropane	5	µg/L[1]	ND	NT	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	NT	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	NT	ND	ND
Ethylbenzene	700	µg/L[1]	ND	NT	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	ND	NT	ND	ND
Bromomethane	10	µg/L[2]	ND	NT	ND	ND
Chloromethane	30	µg/L[2]	ND	NT	ND	ND
Dibromomethane	61	µg/L[5]	ND	NT	ND	ND
Methylene chloride	5	µg/L[1]	ND	NT	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	ND	NT	ND	ND
Methyl iodide		µg/L	ND	NT	ND	ND
4-Methyl-2-pentanone		µg/L	ND	NT	ND	ND
Styrene	100	µg/L[1]	ND	NT	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[2]	ND	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[2]	ND	NT	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	NT	ND	ND
Toluene	1000	µg/L[1]	ND	NT	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	NT	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	NT	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	NT	ND	ND
Trichloroflouromethane	2000	µg/L[2]	ND	NT	ND	ND
1,2,3-Trichloropropane	40	µg/L[2]	ND	NT	ND	ND
Vinyl acetate	410	µg/L[5]	ND	NT	ND	ND
Vinyl chloride	2	µg/L[1]	ND	NT	ND	ND
Xylenes	10000	µg/L[1]	ND	NT	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	3.67	NT	9.38	7.5

Note: Analytical data reported since commencement of low flow purging and smapling.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 5G
2019 SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A- CONSTITUENTS FOR DETECTION MONITORING

MONITORING WELL OW-16

Concentration (Expressed in the same units as Threshold Value)

Parameter	Threshold Value		DEC '19	SEP '19	JUN '19	MAR '19
Antimony	0.006	mg/l[1]	NT	NT	ND	ND
Arsenic	0.010	mg/l[1]	NT	NT	ND	ND
Barium	2	mg/l[1]	NT	NT	0.008	0.0140
Beryllium	0.004	mg/l[1]	NT	NT	0.0002	0.0001
Cadmium	0.005	mg/l[1]	NT	NT	0.0002	0.0003
Chromium	0.1	mg/l[1]	NT	NT	ND	ND
Cobalt	0.73	mg/l[5]	NT	NT	0.0009	0.0008
Copper	1.3	mg/l[1]	NT	NT	ND	ND
Lead	0.015	mg/l[1]	NT	NT	ND	ND
Mercury	0.002	mg/l[2]	NT	NT	ND	ND
Nickel	0.1	mg/l[1]	NT	NT	0.002	0.0020
Selenium	0.05	mg/l[2,3]	NT	NT	ND	ND
Silver	0.1	mg/l[1]	NT	NT	ND	0.0001
Thallium	0.002	mg/l[5]	NT	NT	ND	ND
Tin	22	mg/l[5]	NT	NT	ND	ND
Vanadium	0.26	mg/l[2,3]	NT	NT	ND	ND
Zinc	2 - 5	mg/l[1]	NT	NT	0.004	0.004
Acetone	5500	µg/L[5]	NT	NT	ND	ND
Acrylonitrile	0.039	µg/L[5]	NT	NT	ND	ND
Benzene	5	µg/L[1]	NT	NT	ND	ND
Bromochloromethane	90	µg/L[2]	NT	NT	ND	ND
Bromodichloromethane (THM)	80	µg/L[1]	NT	NT	ND	ND
Bromoform	80	µg/L[1]	NT	NT	ND	ND
Carbon disulfide	1000	µg/L[5]	NT	NT	ND	ND
Carbon tetrachloride	5	µg/L[1]	NT	NT	ND	ND
Chlorobenzene	100	µg/L[1]	NT	NT	ND	ND
Chloroethane	4.6	µg/L[5]	NT	NT	ND	ND
Chloroform (THM)	80	µg/L[1]	NT	NT	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	NT	NT	ND	ND
1,2-Dibromo-3-chloropropane (DB(	0.2	µg/L[1]	NT	NT	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	NT	NT	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	NT	NT	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	NT	NT	ND	ND
trans-1,4-Dichloro-2-butene		µg/L	NT	NT	ND	ND
1,1 -Dichloroethane	5	µg/L	NT	NT	ND	ND
1,2-Dichloroethane	5	µg/L[1]	NT	NT	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	NT	NT	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	NT	NT	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	NT	NT	ND	ND
1,2-Dichloropropane	5	µg/L[1]	NT	NT	ND	ND
cis-1,3-Dichloropropene		µg/L	NT	NT	ND	ND
trans-1,3-Dichloropropene		µg/L	NT	NT	ND	ND
Ethylbenzene	700	µg/L[1]	NT	NT	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	NT	NT	ND	ND
Bromomethane	10	µg/L[2]	NT	NT	ND	ND
Chloromethane	30	µg/L[2]	NT	NT	ND	ND
Dibromomethane	61	µg/L[5]	NT	NT	ND	ND
Methylene chloride	5	µg/L[1]	NT	NT	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	NT	NT	ND	ND
Methyl iodide		µg/L	NT	NT	ND	ND
4-Methyl-2-pentanone		µg/L	NT	NT	ND	ND
Styrene	100	µg/L[1]	NT	NT	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[2]	NT	NT	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[2]	NT	NT	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	NT	NT	ND	ND
Toluene	1000	µg/L[1]	NT	NT	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	NT	NT	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	NT	NT	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	NT	NT	ND	ND
Trichloroflouromethane	2000	µg/L[2]	NT	NT	ND	ND
1,2,3-Trichloropropane	40	µg/L[2]	NT	NT	ND	ND
Vinyl acetate	410	µg/L[5]	NT	NT	ND	ND
Vinyl chloride	2	µg/L[1]	NT	NT	ND	ND
Xylenes	10000	µg/L[1]	NT	NT	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	NT	NT	4.9	4.67

Note: Analytical data reported since commencement of low flow purging and sampling.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 5H
SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON
DEC 2019 - SAMPLE ROUND
Concentration (units as specified for Threshold Value)

		OW-9 Tolerance Limit * TL=AVG+K*S		Threshold Value	Background Well	Compliance wells				
	Parameter				OW-9	OW-7	OW-12	OW-13	OW-14	OW-15	OW-16
METALS	Antimony	0.0290	mg/L	0.006 mg/L[1]	ND	NT	ND	ND	0.0002	ND	NT
	Arsenic	0.0030	mg/L	0.010 mg/L[1]	0.0001	NT	ND	0.0104	0.0004	0.0150	NT
	Barium	0.0572	mg/L	2 mg/L[1]	0.011	NT	0.023	0.122	0.168	0.151	NT
	Beryllium	0.0003	mg/L	0.004 mg/L[1]	ND	NT	ND	ND	ND	ND	NT
	Cadmium	0.4511	mg/L	0.005 mg/L[1]	0.0002	NT	0.0004	0.0008	0.0002	ND	NT
	Chromium	0.0384	mg/L	0.1 mg/L[1]	0.0020	NT	0.0001	0.0004	0.0003	0.0010	NT
	Cobalt	0.0041	mg/L	0.73 mg/L[5]	0.0004	NT	0.001	0.0105	0.0036	0.0066	NT
	Copper	0.0080	mg/L	1.3 mg/L[1]	ND	NT	ND	0.004	0.002	0.003	NT
	Lead	0.2246	mg/L	0.015 mg/L[1]	0.0031	NT	0.0003	0.0007	0.0014	0.0003	NT
	Mercury	0.0001	mg/L	0.002 mg/L[1]	ND	NT	ND	ND	ND	ND	NT
	Nickel	0.0297	mg/L	0.1 mg/L[4]	0.001	NT	0.010	0.010	0.007	0.016	NT
	Selenium	0.0010	mg/L	0.05 mg/L[1]	ND	NT	ND	ND	ND	ND	NT
	Silver	0.0005	mg/L	0.1 mg/L[2,3]	ND	NT	ND	ND	ND	ND	NT
	Thallium	0.0001	mg/L	0.002 mg/L[1]	ND	NT	ND	ND	ND	ND	NT
	Tin	0.0025	mg/L	22 mg/L[5]	ND	NT	ND	ND	ND	ND	NT
	Vanadium	0.0080	mg/L	0.26 mg/L[5]	0.0005	NT	ND	ND	ND	0.0006	NT
	Zinc	13.7198	mg/L	2 - 5 mg/L[4,3]	0.001	NT	ND	0.009	0.004	0.010	NT
VOC'S	Acetone			610 µg/L[5]							
	Acrylonitrile			0.039 µg/L[5]							
	Benzene			5 µg/L[1]							
	Bromochloromethane			80 µg/L[4]							
	Bromodichloromethane (THM)			90 µg/L[1]							
	Bromoform			80 µg/L[1]							
	Carbon disulfide			1000 µg/L[5]							
	Carbon tetrachloride			5 µg/L[1]							
	Chlorobenzene			100 µg/L[1]							
	Chloroethane			4.6 µg/L[5]							
	Chloroform			80 µg/L[1]							
	Chlorodibromomethane (THM)			80 µg/L[1]							
	1,2-Dibromo-3-chloropropane (DBCP)			0.2 µg/L[1]							
	1,2-Dibromoethane (EDB)			0.05 µg/L[1]							
	1,2-Dichlorobenzene			600 µg/L[1]							
	1,4-Dichlorobenzene			75 µg/L[1]							
	trans-1,4-Dichloro-2-butene			µg/L							
	1,1 -Dichloroethane			5 µg/L							
	1,2-Dichloroethane			5 µg/L[1]							
	1,1-Dichloroethylene			7 µg/L[1]							
	cis-1,2-Dichloroethene			70 µg/L[1]							
	trans-1,2-Dichloroethene			100 µg/L[1]							
	1,2-Dichloropropane			5 µg/L[1]							
	cis-1,3-Dichloropropene			µg/L							
	trans-1,3-Dichloropropene			µg/L							
	Ethylbenzene			700 µg/L[1]							
	Methyl butyl ketone(2-Hexanone)			160 µg/L[5]							
	Bromomethane			10 µg/L[4]							
	Chloromethane			30 µg/L[4]							
	Dibromomethane			61 µg/L[5]							
	Methylene chloride			5 µg/L[1]							
	Methyl ethyl ketone(2-Butanone)			4000 µg/L[4]							
	Methyl iodide			µg/L							
	4-Methyl-2-pentanone			µg/L							
	Styrene			100 µg/L[1]							
	1,1,1,2-Tetrachloroethane			70 µg/L[4]							
	1,1,2,2-Tetrachloroethane			0.3 µg/L[4]							
	Tetrachloroethylene(PCE)			5 µg/L[1]							
	Toluene			1000 µg/L[1]							
	1,1,1-Trichloroethane			200 µg/L[1]							
	1,1,2-Trichloroethane			5 µg/L[1]							
	Trichloroethylene(TCE)			5 µg/L[1]							
	Trichlorofluoromethane			2000 µg/L[4]							
	1,2,3-Trichloropropane			40 µg/L[4]							
	Vinyl acetate			410 µg/L[5]							
	Vinyl chloride			2 µg/L[1]							
	Xylenes			10000 µg/L[1]							
	Methyl tert-butyl ether (MTBE)			20 - 40 µg/L[6]							

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

" " = Exceedance of TL
ND = Not Detected

* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

6.0 CONCLUSIONS

The groundwater monitoring data obtained for the Landfill during this reporting period reflects generally consistent trends in the number and concentrations of target parameters detected relative to historical data. Recent and historical data still suggest a generally consistent low-level impact[2] to groundwater beneath and downgradient from the Landfill.

Compliance Monitoring

In 2019, there were a total of twenty-seven (27) exceedances of Tolerance Limit (TL) thresholds at the compliance wells at the Landfill. Although this number of exceedances is lower than recent years, it should be noted that the September 2019 monitoring round was not completed due to safety concerns. A total of one (1) Appendix A metal; zinc, exceeded its CUSUM thresholds during the 2019 monitoring period. A total of one (1) Appendix A VOC, MTBE, exceeded its CUSUM thresholds during the 2019 monitoring period.

Assessment Monitoring

In 2019 Pare performed Assessment Monitoring at the following times and locations:

- OW-14 in March 2019, originally triggered by a detection of the Appendix B parameter sulfides during the December 2017 monitoring round.

Pare did not perform Assessment Monitoring at any of the compliance wells during the 2019 period. OW-14 was sampled for sulfides in the March 2019 round, as recommended by the previous annual report, and sulfides were not detected in the sample collected. This marked the second consecutive round in which sulfides were not detected at OW-14, therefore, sulfides monitoring was discontinued for subsequent rounds.

Barium at OW-13 exceeded both of its Shewhart-CUSUM control limits, and a Shewhart-CUSUM exceedance this round, and has exceeded its Tolerance Limit for two consecutive rounds, which would trigger Assessment Monitoring. Barium is consistently detected in all the groundwater monitoring

[2] The analytical data compiled from the routine quarterly groundwater monitoring represent low-level impacts in comparison to water quality thresholds published in the US EPA 2012 Edition of the Drinking Water Standards and Health Advisories.

wells on-site at concentrations consistent with the recent detection at OW-13. As such, it does not, in Pare's opinion, appear as though this recent detection is a significant change in groundwater quality beneath the landfill, and therefore, Pare does not recommend Assessment Monitoring in March 2020.

Shewhart-CUSUM Analysis

During the March 2019 and December 2019 monitoring rounds, barium exceeded both of its Shewhart-CUSUM thresholds at OW-12 and OW-13. Barium also exceeded both of its Shewhart-CUSUM thresholds at OW-12 in the June 2019 monitoring round. Additionally in the June 2019 monitoring round, MTBE exceeded its thresholds.

Barium at OW-12 has exceeded both of its Shewhart-CUSUM thresholds in each monitoring round since June 2014. Despite this, barium has not triggered Assessment Monitoring parameters at OW-12. Pare will continue to monitor barium trends at the Landfill in future monitoring rounds.

The Shewhart-CUSUM analysis provides a method for discerning trends in reported landfill concentrations over an extended period of time. The analysis compares recently reported concentrations to those reported during the first two years of monitoring at the sampling locations. Since Pare implemented the Shewhart-CUSUM control charts, several organic parameters have exhibited a gradual increase in CUSUM values over time. In most cases, specifically at OW-15, these increases in CUSUM values are consistent with a general rise in reported concentrations (i.e., a divergence from the baseline data in the CUSUM analysis) since September 2006. As an example, the trend and reported concentrations of MTBE are shown in the *Reported Concentrations of MTBE* figure. Although the reported concentrations for MTBE are generally rising at OW-15, it remains significantly below its established drinking water advisories.

7.0 RECOMMENDATIONS

The groundwater monitoring program, as currently constituted, appears to be generally adequate for the purposes of evaluating groundwater impact from the Landfill. The statistical analyses employed to review groundwater impacts appear to be sufficiently useful at distinguishing between background concentrations and landfill-derived contaminants, as well as increasing contaminant trends at individual wells.

The purpose of the TI evaluation is to determine if a contaminant reported in a groundwater sample collected from a compliance well statistically exceeds that of the background concentration. This statistical exceedance would suggest that the contaminant is, at least in part, derived from landfilling activities. June 2019 monitoring round marked the first monitoring round in which OW-12 was re-designated as a background well. Per its new designation as a background well, the TI evaluation should be performed against OW-12, as well as OW-9. This update to the TI evaluation should be performed beginning in the March 2020 monitoring round, and subsequent monitoring rounds.

New background well OW-17 was installed in June 2019. This well should be included groundwater monitoring program beginning in the March 2020 monitoring round. Similar to OW-12, this well should be included in the TI evaluation once it has completed a minimum of eight (8) monitoring rounds. It is anticipated that OW-17 will be included as a background well in the TI evaluation beginning in the March 2022 monitoring round.

8.0 REFERENCES

State of Rhode Island and Providence Plantations, Department of Environmental Management, Office of Waste Management, Rules and Regulations for Composting Facilities and Solid Waste Management Facilities. Regulation DEM-OWM-SWO1-97.

NUS Corporation, 1990, Final Screening Site Inspection, Tiverton Town Landfill #2, Tiverton, Rhode Island.

Pollock, S.J., 1964, Bedrock Geology of the Tiverton Quadrangle, Rhode Island Massachusetts: Geological Survey Bulletin 1158-D.

Rector, D. D., 1981, Soil Survey of Rhode Island: U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the Rhode Island Agricultural Experiment Station.

U.S. EPA, 1996 (Revised 2010), Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, EQASOP-GW 001

U.S. EPA, 1989, Statistical Analysis of Ground-Water Monitoring Data at RCRA (Resource Conservation and Recovery Act) Facilities, Interim Final Guidance, EPA/530/SW-89/026.

United States Geological Survey (USGS), 1949 (Photo revised 1970 and 1975), Tiverton Quadrangle Topographic Map.

APPENDIX A

Site Location Map

N
W E
S

GRAPHIC SCALE

2000 0 1000 2000 4000

(IN FEET)

1 inch = 2000ft.

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PROJECT NO. 94139.24

DATE: JANUARY 2019

APPENDIX A

SITE LOCATION MAP

TIVERTON MUNICIPAL SANITARY LANDFILL

TIVERTON RHODE ISLAND

APPENDIX B

Landfill Existing Site Plan

BLOCK 119 CARD 2 N/F TOWN OF TIVERTON (PARDON GRAY PRESERVE) (SEE PLAN PREPARED FOR THE CITY OF NEWPORT DATED 12/15/99 BY CIVIL ENGINEERING CONCEPTS, INC. ON FILE WITH TIVERTON LAND EVIDENCE RECORDS)

BLOCK 119 CARD 2A
N/F TOWN OF TIVERTON

WELL #11

SW-2
AT DOWNSTREAM
SIDE OF CULVERT

WELL #5 ABANDONED

OW-12

GARAGE

OW-17

WELL
4
(ASSUMED)

WELL #9

200' LANDFILL BUFFER

BENCHMARK

CELL TOWER

ADULTERATED
WOOD (C+D)

COVER MATERIAL
STOCKPILE

(E) U/G ELECTRICAL
& TELCO ACCESS
ROAD CROSSING (TYP.)

SHELL ROAD

WOOD CHIPS

MATTRESSES
& BOX SPRINGS

RIGID PLASTICS

METALS

TRASH

TIRES

RECYCLABLES

CLEAN WOOD

LEAF & YARD WASTE

350' LANDFILL BUFFER

NARRAGANSETT ELECTRIC COMPANY EASEMENT
(80' WIDE)

(E) TELCO & (E) ELECTRIC
HANDHOLE LOCATION (TYP.)

PK 3

ACCESS ROAD

IRON ROD

WHITE GOODS PAD

CONEX BOX OFFICE

RECREATION
FIELD WELL

WELL #6

WELL #2 ABANDONED

SW-1
DOWNSTREAM
INVERT 12"
CIP

WELL #1A ABANDONED

OW-13

(E) VERIZON TELCO (FIBER)
(2) 4" CONDUIT DROPS

(E) VERIZON TELCO (FIBER) OHW &
(E) U/G ELEC CONDUIT

PK 2

OW-15

SW-3
(APPROXIMATE
LOCATION)

DOWNSTREAM 24"
RCP CULVERT

UPSTREAM END
24" RCP CULVERT

WELL #3 ABANDONED

OW-14

WELL #10

CEMETERY

MAIN ROAD
(SEE STATE HIGHWAY PLAT #163)

ACTIVE FILLING AREA
FROM JANUARY 2017
TO NOVEMBER 30 2020

WELL #8

EIGHT ROD WAY
(NOT CONSTRUCTED)
(SEE PLAN BOOK 1 PAGE 15)

OW-16

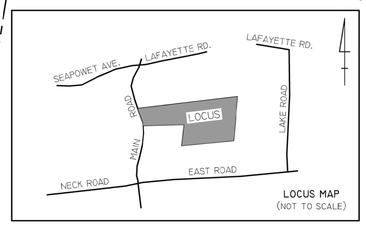
OW-7

350' LANDFILL BUFFER

BLOCK 119 CARD 3A
N/F CLINTON G. & MARION B. SMITH
BOOK 355 PAGE 53
(SEE PLAN BOOK 17 PAGE 91
& PLAN BOOK 18 PAGE 94)

BLOCK 119 CARD 4
N/F RIVERVIEW FARMS, INC.

BLOCK 119 CARD 6
N/F ARTHUR & JACQUELINE SMITH



LOCUS MAP
(NOT TO SCALE)

LEGEND

EXISTING MINOR CONTOUR
EXISTING MAJOR CONTOUR
PROPOSED MINOR CONTOUR
PROPOSED MAJOR CONTOUR
HORIZONTAL & VERTICAL POINT
STONEWALL
FENCE
CURB
PAVED
UNPAVED
BUILDING
LEDGE
ROCKS
PILES
COURTS/FIELDS
WALKS
TRAILER
TREES/BUSHES
BRUSH/SCATTERED TREES
HEDGE ROW
WATER
TALL GRASS
SWAMP
CB
MANHOLE
HYDRANT
UTILITY POLES
LIGHT POLES
POLE
LIMIT OF HISTORICAL TRASH FILLING
EASEMENT
MONITORING WELL
CONTROL POINT
STAKE = LIMIT OF BURIED SOLID WASTE
WETLAND
50' PERIMETER WETLAND

TABLE OF ELEVATIONS*
(SEE NOTES 1 & 2)

OBJECT	ELEVATION
WELL # 4	125.87
WELL # 6	43.38
WELL # 7	66.24
WELL # 8	109.12
WELL # 9	128.65
WELL # 10	65.62
WELL # 11	63.03
WELL # 12	63.28
WELL # 13	50.14
WELL # 14	85.63
WELL # 15	77.07
WELL # 16	
WELL # 17	
PK NAIL # 2	57.49
PK NAIL # 3	84.11
BENCHMARK	137.94

* ALL WELL ELEVATIONS ARE TO THE TOP OF THE PVC TUBE INSIDE THE WELL CASING.

DATUM = NGVD 29

BASE SURVEY PREPARED BY AEROTECH CORP. ON MAY 13, 2016,
UPDATED BY PARE ON FEBRUARY 9, 2018.

0' 100' 200' 300'
1" = 100'

DATE	BY	DESCRIPTION	REV#

PROJ. MGR.: TPT
DESIGNED: BMB
DRAWN: TCJ
CHECKED: TPT
SCALE: 1"=100'
DATE: MARCH 2020

TIVERTON LANDFILL
EXISTING SITE PLAN

TIVERTON RHODE ISLAND

PROJECT NO.
94139.01/025

FIGURE NO.
EXC-1

SHEET 1 OF 1

APPENDIX C

2019 End of Year Height Survey Plan

-12

U/G ELECTRICAL
TELCO ACCESS
CROSSING (TYP.)

SHELL ROAD

ACTIVE FILLING AREA
FROM JULY 2018 TO
JANUARY 2019

WOOD CHIPS

MATTRESSES
& BOX SPRINGS

RIGID PLASTICS

METALS

TRASH

TIRES

RECYCLAB
L

WHITE GOODS PAD

IRON ROD

CONEX BOX OFFICE

FORMERLY ACTIVE
FILLING AREA UP
TO JULY 2018

-CO & (E) ELECTRIC
LE LOCATION (TYP.)

PK 3

(E) VERIZON TELCO (FIBER)
(2) 4" CONDUIT DROPS
(E) VERIZON TELCO (FIBER) OHW &
(E) U/G ELEC CONDUIT

VDONED

OW-15

13

PK 2

AREA SUBJECT TO
STORM FLOWAGE

PARE
PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

TIVERTON LANDFILL
SEMI-ANNUAL HEIGHT SURVEY PLAN

TIVERTON RHODE ISLAND

0.5" 0 1.0"
BAR SCALE

REVISIONS:

PROJECT NO.:	94139.24
DATE:	JANUARY 2019
SCALE:	1"=40'
DESIGNED BY:	TCJ/KNT
CHECKED BY:	TPT
DRAWN BY:	TCJ/KNT
APPROVED BY:	TPT

DRAWING TITLE:
JANUARY 2019
SEMI-ANNUAL
HEIGHT SURVEY PLAN

DRAWING NO.:
C-1

SHEET NO. 1 OF 1

APPENDIX D

December Laboratory Analytical Data Report

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 9L24015
Client Project: 94139 - Tiverton Landfill

Report Date: 02-January-2020

Prepared for:

Travis Johnson
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
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Samples Submitted :

The samples listed below were submitted to New England Testing Laboratory on 12/24/19. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 9L24015. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
9L24015-01	OW-9	Water	12/23/2019	12/24/2019
9L24015-02	OW-12	Water	12/23/2019	12/24/2019
9L24015-03	OW-13	Water	12/23/2019	12/24/2019
9L24015-04	OW-14	Water	12/23/2019	12/24/2019
9L24015-05	OW-15	Water	12/23/2019	12/24/2019

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

OW-12 (Lab Number: 9L24015-02)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-13 (Lab Number: 9L24015-03)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-14 (Lab Number: 9L24015-04)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8

Request for Analysis (continued)

OW-14 (Lab Number: 9L24015-04) (continued)

Analysis	Method
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-15 (Lab Number: 9L24015-05)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

Request for Analysis (continued)

OW-9 (Lab Number: 9L24015-01)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

Method References

Methods for the Determination of Metals in Environmental Samples EPA-600/R-94/111, USEPA, 1994

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

Case Narrative

CASE NARRATIVE:

Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

Results: Total Metals

Sample: OW-9

Lab Number: 9L24015-01 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Antimony	ND		0.0001	mg/L	12/26/19	12/30/19
Arsenic	**0.0001**		0.0001	mg/L	12/26/19	12/30/19
Barium	**0.011**		0.001	mg/l	12/26/19	12/30/19
Beryllium	ND		0.0001	mg/L	12/26/19	12/30/19
Cadmium	**0.0002**		0.0001	mg/L	12/26/19	12/30/19
Chromium	**0.0020**		0.0001	mg/L	12/26/19	12/30/19
Cobalt	**0.0004**		0.0001	mg/L	12/26/19	12/30/19
Copper	ND		0.001	mg/l	12/26/19	12/30/19
Mercury	ND		0.0002	mg/L	12/26/19	12/26/19
Nickel	**0.001**		0.001	mg/l	12/26/19	12/30/19
Selenium	ND		0.005	mg/L	12/26/19	12/30/19
Silver	ND		0.0001	mg/L	12/26/19	12/30/19
Thallium	ND		0.0001	mg/L	12/26/19	12/30/19
Tin	ND		0.005	mg/l	12/26/19	12/30/19
Vanadium	**0.0005**		0.0005	mg/L	12/26/19	12/30/19
Zinc	**0.001**		0.001	mg/l	12/26/19	12/30/19
Lead	**0.0031**		0.0001	mg/L	12/26/19	12/30/19

Results: Total Metals

Sample: OW-12

Lab Number: 9L24015-02 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Antimony	ND		0.0001	mg/L	12/26/19	12/30/19
Arsenic	ND		0.0001	mg/L	12/26/19	12/30/19
Barium	**0.023**		0.001	mg/l	12/26/19	12/30/19
Beryllium	ND		0.0001	mg/L	12/26/19	12/30/19
Cadmium	**0.0004**		0.0001	mg/L	12/26/19	12/30/19
Chromium	**0.0001**		0.0001	mg/L	12/26/19	12/30/19
Cobalt	**0.0010**		0.0001	mg/L	12/26/19	12/30/19
Copper	ND		0.001	mg/l	12/26/19	12/30/19
Mercury	ND		0.0002	mg/L	12/26/19	12/26/19
Nickel	**0.010**		0.001	mg/l	12/26/19	12/30/19
Selenium	ND		0.005	mg/L	12/26/19	12/30/19
Silver	ND		0.0001	mg/L	12/26/19	12/30/19
Thallium	ND		0.0001	mg/L	12/26/19	12/30/19
Tin	ND		0.005	mg/l	12/26/19	12/30/19
Vanadium	ND		0.0005	mg/L	12/26/19	12/30/19
Zinc	ND		0.001	mg/l	12/26/19	12/30/19
Lead	**0.0003**		0.0001	mg/L	12/26/19	12/30/19

Results: Total Metals

Sample: OW-13

Lab Number: 9L24015-03 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Antimony	ND		0.0001	mg/L	12/26/19	12/30/19
Arsenic	**0.0104**		0.0001	mg/L	12/26/19	12/30/19
Barium	**0.122**		0.001	mg/l	12/26/19	12/30/19
Beryllium	ND		0.0001	mg/L	12/26/19	12/30/19
Cadmium	**0.0008**		0.0001	mg/L	12/26/19	12/30/19
Chromium	**0.0004**		0.0001	mg/L	12/26/19	12/30/19
Cobalt	**0.0105**		0.0001	mg/L	12/26/19	12/30/19
Copper	**0.004**		0.001	mg/l	12/26/19	12/30/19
Mercury	ND		0.0002	mg/L	12/26/19	12/26/19
Nickel	**0.010**		0.001	mg/l	12/26/19	12/30/19
Selenium	ND		0.005	mg/L	12/26/19	12/30/19
Silver	ND		0.0001	mg/L	12/26/19	12/30/19
Thallium	ND		0.0001	mg/L	12/26/19	12/30/19
Tin	ND		0.005	mg/l	12/26/19	12/30/19
Vanadium	ND		0.0005	mg/L	12/26/19	12/30/19
Zinc	**0.009**		0.001	mg/l	12/26/19	12/30/19
Lead	**0.0007**		0.0001	mg/L	12/26/19	12/30/19

Results: Total Metals

Sample: OW-14

Lab Number: 9L24015-04 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Antimony	**0.0002**		0.0001	mg/L	12/26/19	12/30/19
Arsenic	**0.0004**		0.0001	mg/L	12/26/19	12/30/19
Barium	**0.168**		0.001	mg/l	12/26/19	12/30/19
Beryllium	ND		0.0001	mg/L	12/26/19	12/30/19
Cadmium	**0.0002**		0.0001	mg/L	12/26/19	12/30/19
Chromium	**0.0003**		0.0001	mg/L	12/26/19	12/30/19
Cobalt	**0.0036**		0.0001	mg/L	12/26/19	12/30/19
Copper	**0.002**		0.001	mg/l	12/26/19	12/30/19
Mercury	ND		0.0002	mg/L	12/26/19	12/26/19
Nickel	**0.007**		0.001	mg/l	12/26/19	12/30/19
Selenium	ND		0.005	mg/L	12/26/19	12/30/19
Silver	ND		0.0001	mg/L	12/26/19	12/30/19
Thallium	ND		0.0001	mg/L	12/26/19	12/30/19
Tin	ND		0.005	mg/l	12/26/19	12/30/19
Vanadium	ND		0.0005	mg/L	12/26/19	12/30/19
Zinc	**0.004**		0.001	mg/l	12/26/19	12/30/19
Lead	**0.0014**		0.0001	mg/L	12/26/19	12/30/19

Results: Total Metals

Sample: OW-15

Lab Number: 9L24015-05 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Antimony	ND		0.0001	mg/L	12/26/19	12/30/19
Arsenic	**0.0150**		0.0001	mg/L	12/26/19	12/30/19
Barium	**0.151**		0.001	mg/l	12/26/19	12/30/19
Beryllium	ND		0.0001	mg/L	12/26/19	12/30/19
Cadmium	ND		0.0001	mg/L	12/26/19	12/30/19
Chromium	**0.0010**		0.0001	mg/L	12/26/19	12/30/19
Cobalt	**0.0066**		0.0001	mg/L	12/26/19	12/30/19
Copper	**0.003**		0.001	mg/l	12/26/19	12/30/19
Mercury	ND		0.0002	mg/L	12/26/19	12/26/19
Nickel	**0.016**		0.001	mg/l	12/26/19	12/30/19
Selenium	ND		0.005	mg/L	12/26/19	12/30/19
Silver	ND		0.0001	mg/L	12/26/19	12/30/19
Thallium	ND		0.0001	mg/L	12/26/19	12/30/19
Tin	ND		0.005	mg/l	12/26/19	12/30/19
Vanadium	**0.0006**		0.0005	mg/L	12/26/19	12/30/19
Zinc	**0.010**		0.001	mg/l	12/26/19	12/30/19
Lead	**0.0003**		0.0001	mg/L	12/26/19	12/30/19

Sample: OW-9 Case Number: 9L24015

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-9 Case Number: 9L24015
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	101	70-130
1,2-Dichloroethane d4	98	70-130
4 BFB	95	70-130

ND = Not Detected

Sample: OW-12 Case Number: 9L24015

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-12 Case Number: 9L24015
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	100	70-130
1,2-Dichloroethane d4	98	70-130
4 BFB	96	70-130

ND = Not Detected

Sample: OW-13 Case Number: 9L24015

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	5.31	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-13 Case Number: 9L24015
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	1.13	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.35	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	101	70-130
1,2-Dichloroethane d4	102	70-130
4 BFB	93	70-130

ND = Not Detected

Sample: OW-14 Case Number: 9L24015

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	1.56	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	8.85	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-14 Case Number: 9L24015
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	2.02	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	5.4	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	99	70-130
1,2-Dichloroethane d4	101	70-130
4 BFB	93	70-130

ND = Not Detected

Sample: OW-15 Case Number: 9L24015

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	1.9	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	16.99	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-15 Case Number: 9L24015
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	2.69	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.67	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	102	70-130
1,2-Dichloroethane d4	101	70-130
4 BFB	94	70-130

ND = Not Detected

Quality Control

Total Metals

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9L1069 - Metals Digestion Waters										
Blank (B9L1069-BLK1)					Prepared: 12/26/19 Analyzed: 12/30/19					
Cobalt	ND		0.0001	mg/L						
Selenium	ND		0.005	mg/L						
Nickel	ND		0.001	mg/l						
Copper	ND		0.001	mg/l						
Tin	ND		0.005	mg/l						
Chromium	ND		0.0001	mg/L						
Antimony	ND		0.0001	mg/L						
Vanadium	ND		0.0005	mg/L						
Thallium	ND		0.0001	mg/L						
Cadmium	ND		0.0001	mg/L						
Beryllium	ND		0.0001	mg/L						
Zinc	ND		0.001	mg/l						
Barium	ND		0.001	mg/l						
Arsenic	ND		0.0001	mg/L						
Silver	ND		0.0001	mg/L						
Lead	ND		0.0001	mg/L						
LCS (B9L1069-BS2)					Prepared: 12/26/19 Analyzed: 12/30/19					
Zinc	0.181		0.001	mg/l	0.200		90.4	85-115		
Tin	0.020		0.005	mg/l	0.0200		101	85-115		
Silver	0.0200		0.0001	mg/L	0.0200		100	85-115		
Selenium	0.017		0.005	mg/L	0.0200		85.2	85-115		
Vanadium	0.0204		0.0005	mg/L	0.0200		102	85-115		
Barium	0.205		0.001	mg/l	0.200		102	85-115		
Nickel	0.205		0.001	mg/l	0.200		102	85-115		
Copper	0.226		0.001	mg/l	0.200		113	85-115		
Thallium	0.0202		0.0001	mg/L	0.0200		101	85-115		
Chromium	0.0206		0.0001	mg/L	0.0200		103	85-115		
Antimony	0.0193		0.0001	mg/L	0.0200		96.4	85-115		
Cobalt	0.0203		0.0001	mg/L	0.0200		102	85-115		
Cadmium	0.0189		0.0001	mg/L	0.0200		94.7	85-115		
Beryllium	0.0195		0.0001	mg/L	0.0200		97.3	85-115		
Arsenic	0.0189		0.0001	mg/L	0.0200		94.5	85-115		
Lead	0.0203		0.0001	mg/L	0.0200		102	85-115		

Quality Control
(Continued)

Total Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9L1130 - Metals Cold-Vapor Mercury										
Blank (B9L1130-BLK1)					Prepared & Analyzed: 12/26/19					
Mercury	ND		0.0002	mg/L						
LCS (B9L1130-BS1)					Prepared & Analyzed: 12/26/19					
Mercury	0.0010		0.0002	mg/L	0.00100		102	85-115		

Quality Control
(Continued)

Volatile Organic Compounds

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B0A0013 - Purge-Trap										
Blank (B0A0013-BLK1)					Prepared & Analyzed: 12/31/19					
Acetone	ND		10	ug/l						
Benzene	ND		1	ug/l						
Bromobenzene	ND		1	ug/l						
Bromochloromethane	ND		1	ug/l						
Bromodichloromethane	ND		1	ug/l						
Bromoform	ND		1	ug/l						
Bromomethane	ND		1	ug/l						
2-Butanone	ND		5	ug/l						
tert-Butyl alcohol	ND		5	ug/l						
sec-Butylbenzene	ND		1	ug/l						
n-Butylbenzene	ND		1	ug/l						
tert-Butylbenzene	ND		1	ug/l						
Methyl t-butyl ether (MTBE)	ND		1	ug/l						
Carbon Disulfide	ND		1	ug/l						
Carbon Tetrachloride	ND		1	ug/l						
Chlorobenzene	ND		1	ug/l						
Chloroethane	ND		1	ug/l						
Chloroform	ND		1	ug/l						
Chloromethane	ND		1	ug/l						
4-Chlorotoluene	ND		1	ug/l						
2-Chlorotoluene	ND		1	ug/l						
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	ug/l						
Dibromochloromethane	ND		1	ug/l						
1,2-Dibromoethane (EDB)	ND		1	ug/l						
Dibromomethane	ND		1	ug/l						
1,2-Dichlorobenzene	ND		1	ug/l						
1,3-Dichlorobenzene	ND		1	ug/l						
1,4-Dichlorobenzene	ND		1	ug/l						
1,1-Dichloroethane	ND		1	ug/l						
1,2-Dichloroethane	ND		1	ug/l						
trans-1,2-Dichloroethene	ND		1	ug/l						
cis-1,2-Dichloroethene	ND		1	ug/l						
1,1-Dichloroethene	ND		1	ug/l						
1,2-Dichloropropane	ND		1	ug/l						
2,2-Dichloropropane	ND		1	ug/l						
cis-1,3-Dichloropropene	ND		1	ug/l						
trans-1,3-Dichloropropene	ND		1	ug/l						
1,1-Dichloropropene	ND		1	ug/l						
1,3-Dichloropropene (cis + trans)	ND		2	ug/l						
Diethyl ether	ND		5	ug/l						
1,4-Dioxane	ND		500	ug/l						
Ethylbenzene	ND		1	ug/l						
Hexachlorobutadiene	ND		1	ug/l						
2-Hexanone	ND		5	ug/l						
Isopropylbenzene	ND		1	ug/l						
p-Isopropyltoluene	ND		1	ug/l						
Methylene Chloride	ND		1	ug/l						
4-Methyl-2-pentanone	ND		5	ug/l						
Naphthalene	ND		1	ug/l						
n-Propylbenzene	ND		1	ug/l						
Styrene	ND		1	ug/l						
1,1,1,2-Tetrachloroethane	ND		1	ug/l						
Tetrachloroethene	ND		1	ug/l						
Tetrahydrofuran	ND		5	ug/l						

Volatile Organic Compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B0A0013 - Purge-Trap (Continued)										
Blank (B0A0013-BLK1)					Prepared & Analyzed: 12/31/19					
Toluene	ND		1	ug/l						
1,2,4-Trichlorobenzene	ND		1	ug/l						
1,2,3-Trichlorobenzene	ND		1	ug/l						
1,1,2-Trichloroethane	ND		1	ug/l						
1,1,1-Trichloroethane	ND		1	ug/l						
Trichloroethene	ND		1	ug/l						
1,2,3-Trichloropropane	ND		1	ug/l						
1,3,5-Trimethylbenzene	ND		1	ug/l						
1,2,4-Trimethylbenzene	ND		1	ug/l						
Vinyl Chloride	ND		1	ug/l						
o-Xylene	ND		1	ug/l						
m&p-Xylene	ND		2	ug/l						
Total xylenes	ND		2	ug/l						
1,1,2,2-Tetrachloroethane	ND		1	ug/l						
tert-Amyl methyl ether	ND		1	ug/l						
1,3-Dichloropropane	ND		1	ug/l						
Ethyl tert-butyl ether	ND		1	ug/l						
Diisopropyl ether	ND		1	ug/l						
Trichlorofluoromethane	ND		1	ug/l						
Dichlorodifluoromethane	ND		1	ug/l						
Surrogate: 4-Bromofluorobenzene			*48.6*	ug/l	*50.0*		*97.2*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4			*48.0*	ug/l	*50.0*		*96.0*	*70-130*		
Surrogate: Toluene-d8			*49.1*	ug/l	*50.0*		*98.2*	*70-130*		
LCS (B0A0013-BS1)					Prepared & Analyzed: 12/31/19					
Acetone	32			ug/l	50.0		63.5	70-130		
Benzene	52			ug/l	50.0		104	70-130		
Bromobenzene	56			ug/l	50.0		111	70-130		
Bromochloromethane	53			ug/l	50.0		107	70-130		
Bromodichloromethane	53			ug/l	50.0		107	70-130		
Bromoform	52			ug/l	50.0		104	70-130		
Bromomethane	47			ug/l	50.0		93.4	70-130		
2-Butanone	41			ug/l	50.0		82.0	70-130		
tert-Butyl alcohol	44			ug/l	50.0		88.3	70-130		
sec-Butylbenzene	51			ug/l	50.0		103	70-130		
n-Butylbenzene	57			ug/l	50.0		114	70-130		
tert-Butylbenzene	54			ug/l	50.0		107	70-130		
Methyl t-butyl ether (MTBE)	48			ug/l	50.0		95.4	70-130		
Carbon Disulfide	47			ug/l	50.0		94.1	70-130		
Carbon Tetrachloride	56			ug/l	50.0		112	70-130		
Chlorobenzene	52			ug/l	50.0		104	70-130		
Chloroethane	45			ug/l	50.0		90.1	70-130		
Chloroform	52			ug/l	50.0		103	70-130		
Chloromethane	42			ug/l	50.0		84.6	70-130		
4-Chlorotoluene	52			ug/l	50.0		105	70-130		
2-Chlorotoluene	54			ug/l	50.0		108	70-130		
1,2-Dibromo-3-chloropropane (DBCP)	43			ug/l	50.0		85.3	70-130		
Dibromochloromethane	55			ug/l	50.0		111	70-130		
1,2-Dibromoethane (EDB)	54			ug/l	50.0		108	70-130		
Dibromomethane	52			ug/l	50.0		104	70-130		
1,2-Dichlorobenzene	55			ug/l	50.0		109	70-130		
1,3-Dichlorobenzene	54			ug/l	50.0		109	70-130		
1,4-Dichlorobenzene	52			ug/l	50.0		105	70-130		
1,1-Dichloroethane	49			ug/l	50.0		98.9	70-130		

Volatile Organic Compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B0A0013 - Purge-Trap (Continued)										
LCS (B0A0013-BS1)					Prepared & Analyzed: 12/31/19					
1,2-Dichloroethane	50			ug/l	50.0		100	70-130		
trans-1,2-Dichloroethene	52			ug/l	50.0		104	70-130		
cis-1,2-Dichloroethene	50			ug/l	50.0		101	70-130		
1,1-Dichloroethene	49			ug/l	50.0		97.1	70-130		
1,2-Dichloropropane	50			ug/l	50.0		99.5	70-130		
2,2-Dichloropropane	54			ug/l	50.0		108	70-130		
cis-1,3-Dichloropropene	51			ug/l	50.0		101	70-130		
trans-1,3-Dichloropropene	54			ug/l	50.0		107	70-130		
1,1-Dichloropropene	59			ug/l	50.0		117	70-130		
Diethyl ether	46			ug/l	50.0		92.2	70-130		
1,4-Dioxane	172			ug/l	250		68.9	70-130		
Ethylbenzene	53			ug/l	50.0		106	70-130		
Hexachlorobutadiene	54			ug/l	50.0		109	70-130		
2-Hexanone	40			ug/l	50.0		80.5	70-130		
Isopropylbenzene	53			ug/l	50.0		106	70-130		
p-Isopropyltoluene	52			ug/l	50.0		104	70-130		
Methylene Chloride	60			ug/l	50.0		119	70-130		
4-Methyl-2-pentanone	42			ug/l	50.0		83.5	70-130		
Naphthalene	43			ug/l	50.0		86.6	70-130		
n-Propylbenzene	54			ug/l	50.0		107	70-130		
Styrene	53			ug/l	50.0		106	70-130		
1,1,1,2-Tetrachloroethane	54			ug/l	50.0		107	70-130		
Tetrachloroethene	58			ug/l	50.0		115	70-130		
Tetrahydrofuran	43			ug/l	50.0		85.6	70-130		
Toluene	54			ug/l	50.0		109	70-130		
1,2,4-Trichlorobenzene	50			ug/l	50.0		99.2	70-130		
1,2,3-Trichlorobenzene	42			ug/l	50.0		83.8	70-130		
1,1,2-Trichloroethane	50			ug/l	50.0		100	70-130		
1,1,1-Trichloroethane	52			ug/l	50.0		105	70-130		
Trichloroethene	52			ug/l	50.0		104	70-130		
1,2,3-Trichloropropane	49			ug/l	50.0		97.6	70-130		
1,3,5-Trimethylbenzene	52			ug/l	50.0		104	70-130		
1,2,4-Trimethylbenzene	52			ug/l	50.0		104	70-130		
Vinyl Chloride	43			ug/l	50.0		86.6	70-130		
o-Xylene	55			ug/l	50.0		110	70-130		
m&p-Xylene	114			ug/l	100		114	70-130		
1,1,2,2-Tetrachloroethane	50			ug/l	50.0		99.4	70-130		
tert-Amyl methyl ether	51			ug/l	50.0		102	70-130		
1,3-Dichloropropane	50			ug/l	50.0		101	70-130		
Ethyl tert-butyl ether	48			ug/l	50.0		96.7	70-130		
Diisopropyl ether	45			ug/l	50.0		90.1	70-130		
Trichlorofluoromethane	51			ug/l	50.0		101	70-130		
Dichlorodifluoromethane	39			ug/l	50.0		77.6	70-130		
Surrogate: 4-Bromofluorobenzene			*49.6*	ug/l	*50.0*		*99.2*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4			*46.0*	ug/l	*50.0*		*92.0*	*70-130*		
Surrogate: Toluene-d8			*49.5*	ug/l	*50.0*		*99.1*	*70-130*		

Notes and Definitions

Item	Definition
Wet	Sample results reported on a wet weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.

NEW ENGLAND TESTING LABORATORY, INC.
59 Greenhill Street
West Warwick, RI 02893
1-888-863-8522

9L2 4015>

CHAIN OF CUSTODY RECORD

PROJ. NO. 94139.24

PROJECT NAME/LOCATION: TIVERTON LANDFILL MONITORING

CLIENT: PARE CORP

REPORT TO: fjohnson@parecorp.com

INVOICE TO: ACCOUNTING

DATE	TIME	COMP	GRAB	SAMPLE I.D.	AQUEOUS	SOIL	OTHER	NO. OF CONTAINERS	PRESERVATIVE	TESTS** App A Metals, Hg, Sn	TESTS** App A VOCs	REMARKS
12/23			X	~~OW-7~~	X			3	HCl, HNO3	X	X	No samples received (tw)
				OW-9								
				OW-12								
				OW-13								
				OW-14								
				OW-15								
				~~OW-16~~								NO samples received (tw)

Sampled by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	12/24 9:15		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	12/24 9:13		
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time
			12/24 9:13

Laboratory Remarks:
Temp. received: 5
Cooled ☐

Special Instructions:
List Specific Detection Limit Requirements:

Turnaround (Business Days) Std

**Netlab subcontracts the following tests: Radiologicals, Radon, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates, CT ETPH

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 9L24018
Client Project: 94139.01 - Tiverton Landfill Surface Water

Report Date: 03-January-2020

Prepared for:

Travis Johnson
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com

Samples Submitted :

The samples listed below were submitted to New England Testing Laboratory on 12/24/19. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 9L24018. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
9L24018-01	SW-1	Water	12/23/2019	12/24/2019
9L24018-02	SW-2	Water	12/23/2019	12/24/2019
9L24018-03	SW-3	Water	12/23/2019	12/24/2019

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

SW-1 (Lab Number: 9L24018-01)

Analysis	Method
Ammonia	SM4500-NH3-D (11)
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B (11)
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Iron	EPA 6010C
Lead	EPA 200.8
Magnesium	SM3120-B (11)
Mercury	EPA 7470A
Nickel	EPA 200.8
Nitrate and Nitrite as N	4500-N03-E
Nitrate as N	4500-N03-E
Nitrite as N	SM4500-N02-B (11)
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D (11)
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E (11)
Vanadium	EPA 200.8
Zinc	EPA 200.8

SW-2 (Lab Number: 9L24018-02)

Analysis	Method
Ammonia	SM4500-NH3-D (11)
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B (11)
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Iron	EPA 6010C
Lead	EPA 200.8
Magnesium	SM3120-B (11)
Mercury	EPA 7470A
Nickel	EPA 200.8

Request for Analysis (continued)

SW-2 (Lab Number: 9L24018-02) (continued)

Analysis	Method
Nitrate and Nitrite as N	4500-N03-E
Nitrate as N	4500-N03-E
Nitrite as N	SM4500-N02-B (11)
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D (11)
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E (11)
Vanadium	EPA 200.8
Zinc	EPA 200.8

SW-3 (Lab Number: 9L24018-03)

Analysis	Method
Ammonia	SM4500-NH3-D (11)
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B (11)
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Iron	EPA 6010C
Lead	EPA 200.8
Magnesium	SM3120-B (11)
Mercury	EPA 7470A
Nickel	EPA 200.8
Nitrate and Nitrite as N	4500-N03-E
Nitrate as N	4500-N03-E
Nitrite as N	SM4500-N02-B (11)
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D (11)
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E (11)
Vanadium	EPA 200.8
Zinc	EPA 200.8

Method References

Methods for the Determination of Metals in Environmental Samples EPA-600/R-94/111, USEPA, 1994

Standard Methods for the Examination of Water and Wastewater, 20th Edition, APHA/ AWWA-WPCF, 1998

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

Soil Survey Laboratory Methods Manual, USDA/NCRS, 2014

Case Narrative

Sample Receipt:

The samples associated with this work order were received in appropriately cooled and preserved containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Exceptions: None

Analysis:

All samples were prepared and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control requirements and allowances. Results for all soil samples, unless otherwise indicated, are reported on a dry weight basis.

Exceptions: None

Results: General Chemistry

Sample: SW-1

Lab Number: 9L24018-01 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Ammonia	**0.2**		0.1	mg/L	12/26/19	12/26/19
Kjeldahl Nitrogen	**1.1**		0.5	mg/L	01/02/20	01/02/20
Nitrate as N	**0.0510**		0.0370	mg/L	12/26/19	12/26/19
Nitrate and Nitrite as N	**0.05**		0.03	mg/L	12/24/19	12/24/19
Nitrite as N	ND		0.007	mg/L	12/26/19 10:40	12/26/19 10:40
Total Phosphorous	ND		0.02	mg/L	12/30/19	12/30/19
Total Nitrogen	**1.15**		0.500	mg/L	01/03/20	01/03/20

Results: General Chemistry

Sample: SW-2

Lab Number: 9L24018-02 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Ammonia	ND		0.1	mg/L	12/26/19	12/26/19
Kjeldahl Nitrogen	**1.1**		0.5	mg/L	01/02/20	01/02/20
Nitrate as N	**0.534**		0.0370	mg/L	12/26/19	12/26/19
Nitrate and Nitrite as N	**0.53**		0.03	mg/L	12/24/19	12/24/19
Nitrite as N	ND		0.007	mg/L	12/26/19 10:40	12/26/19 10:40
Total Phosphorous	ND		0.10	mg/L	12/30/19	12/30/19
Total Nitrogen	**1.63**		0.500	mg/L	01/03/20	01/03/20

Results: General Chemistry

Sample: SW-3

Lab Number: 9L24018-03 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Ammonia	ND		0.1	mg/L	12/26/19	12/26/19
Kjeldahl Nitrogen	**0.4**		0.1	mg/L	12/30/19	12/30/19
Nitrate as N	**0.132**		0.0370	mg/L	12/26/19	12/26/19
Nitrate and Nitrite as N	**0.13**		0.03	mg/L	12/24/19	12/24/19
Nitrite as N	ND		0.007	mg/L	12/26/19 10:40	12/26/19 10:40
Total Phosphorous	ND		0.10	mg/L	12/31/19	12/31/19
Total Nitrogen	**0.530**		0.100	mg/L	01/03/20	01/03/20

Results: Total Metals

Sample: SW-1

Lab Number: 9L24018-01 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Total Hardness	**109**		0.624	mg/L	12/26/19	12/27/19
Antimony	ND		0.0001	mg/L	12/26/19	12/30/19
Arsenic	**0.0002**		0.0001	mg/L	12/26/19	12/30/19
Barium	**0.019**		0.001	mg/l	12/26/19	12/30/19
Beryllium	ND		0.0001	mg/L	12/26/19	12/30/19
Cadmium	ND		0.0001	mg/L	12/26/19	12/30/19
Calcium	**35.4**		0.25	mg/L	12/26/19	12/27/19
Chromium	**0.0004**		0.0001	mg/L	12/26/19	12/30/19
Cobalt	**0.0002**		0.0001	mg/L	12/26/19	12/30/19
Copper	ND		0.001	mg/l	12/26/19	12/30/19
Iron	**0.647**		0.001	mg/l	12/26/19	12/30/19
Iron	**0.45**		0.25	mg/L	12/26/19	12/27/19
Magnesium	**4.93**		0.25	mg/L	12/26/19	12/27/19
Mercury	ND		0.0002	mg/L	12/26/19	12/26/19
Nickel	**0.003**		0.001	mg/l	12/26/19	12/30/19
Selenium	ND		0.005	mg/L	12/26/19	12/30/19
Silver	ND		0.0001	mg/L	12/26/19	12/30/19
Thallium	ND		0.0001	mg/L	12/26/19	12/30/19
Tin	ND		0.005	mg/l	12/26/19	12/30/19
Vanadium	ND		0.0005	mg/L	12/26/19	12/30/19
Zinc	**0.005**		0.001	mg/l	12/26/19	12/30/19
Lead	**0.0003**		0.0001	mg/L	12/26/19	12/30/19

Results: Total Metals

Sample: SW-2

Lab Number: 9L24018-02 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Total Hardness	**14.2**		0.125	mg/L	12/26/19	12/27/19
Antimony	ND		0.0001	mg/L	12/26/19	12/30/19
Arsenic	**0.0002**		0.0001	mg/L	12/26/19	12/30/19
Barium	**0.006**		0.001	mg/l	12/26/19	12/30/19
Beryllium	ND		0.0001	mg/L	12/26/19	12/30/19
Cadmium	ND		0.0001	mg/L	12/26/19	12/30/19
Calcium	**3.34**		0.05	mg/L	12/26/19	12/27/19
Chromium	**0.0006**		0.0001	mg/L	12/26/19	12/30/19
Cobalt	**0.0005**		0.0001	mg/L	12/26/19	12/30/19
Copper	ND		0.001	mg/l	12/26/19	12/30/19
Iron	**0.661**		0.001	mg/l	12/26/19	12/30/19
Iron	**0.67**		0.05	mg/L	12/26/19	12/27/19
Magnesium	**1.42**		0.05	mg/L	12/26/19	12/27/19
Mercury	ND		0.0002	mg/L	12/26/19	12/26/19
Nickel	**0.001**		0.001	mg/l	12/26/19	12/30/19
Selenium	ND		0.005	mg/L	12/26/19	12/30/19
Silver	ND		0.0001	mg/L	12/26/19	12/30/19
Thallium	ND		0.0001	mg/L	12/26/19	12/30/19
Tin	ND		0.005	mg/l	12/26/19	12/30/19
Vanadium	**0.0007**		0.0005	mg/L	12/26/19	12/30/19
Zinc	**0.005**		0.001	mg/l	12/26/19	12/30/19
Lead	**0.0006**		0.0001	mg/L	12/26/19	12/30/19

Results: Total Metals

Sample: SW-3

Lab Number: 9L24018-03 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Total Hardness	**22.8**		0.125	mg/L	12/26/19	12/27/19
Antimony	ND		0.0001	mg/L	12/26/19	12/30/19
Arsenic	**0.0002**		0.0001	mg/L	12/26/19	12/30/19
Barium	**0.007**		0.001	mg/l	12/26/19	12/30/19
Beryllium	ND		0.0001	mg/L	12/26/19	12/30/19
Cadmium	ND		0.0001	mg/L	12/26/19	12/30/19
Calcium	**5.54**		0.05	mg/L	12/26/19	12/27/19
Chromium	**0.0005**		0.0001	mg/L	12/26/19	12/30/19
Cobalt	**0.0004**		0.0001	mg/L	12/26/19	12/30/19
Copper	**0.002**		0.001	mg/l	12/26/19	12/30/19
Iron	**0.788**		0.001	mg/l	12/26/19	12/30/19
Iron	**0.85**		0.05	mg/L	12/26/19	12/27/19
Magnesium	**2.18**		0.05	mg/L	12/26/19	12/27/19
Mercury	**0.0003**		0.0002	mg/L	12/26/19	12/26/19
Nickel	**0.001**		0.001	mg/l	12/26/19	12/30/19
Selenium	ND		0.005	mg/L	12/26/19	12/30/19
Silver	ND		0.0001	mg/L	12/26/19	12/30/19
Thallium	ND		0.0001	mg/L	12/26/19	12/30/19
Tin	ND		0.005	mg/l	12/26/19	12/30/19
Vanadium	**0.0005**		0.0005	mg/L	12/26/19	12/30/19
Zinc	**0.007**		0.001	mg/l	12/26/19	12/30/19
Lead	**0.0003**		0.0001	mg/L	12/26/19	12/30/19

Quality Control

General Chemistry

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B0A0073 - TKN										
Blank (B0A0073-BLK1)					Prepared & Analyzed: 01/02/20					
Kjeldahl Nitrogen	ND		0.1	mg/L						
Blank (B0A0073-BLK2)					Prepared & Analyzed: 01/02/20					
Kjeldahl Nitrogen	ND		0.1	mg/L						
Batch: B9L1024 - General Chemistry										
Blank (B9L1024-BLK1)					Prepared & Analyzed: 12/24/19					
Nitrate and Nitrite as N	ND		0.03	mg/L						
Blank (B9L1024-BLK2)					Prepared & Analyzed: 12/24/19					
Nitrate and Nitrite as N	ND		0.03	mg/L						
Blank (B9L1024-BLK3)					Prepared & Analyzed: 12/24/19					
Nitrate and Nitrite as N	ND		0.03	mg/L						
LCS (B9L1024-BS1)					Prepared & Analyzed: 12/24/19					
Nitrate and Nitrite as N	0.78		0.03	mg/L	0.800		97.9	90-110		
LCS (B9L1024-BS2)					Prepared & Analyzed: 12/24/19					
Nitrate and Nitrite as N	0.76		0.03	mg/L	0.800		95.0	90-110		
LCS (B9L1024-BS3)					Prepared & Analyzed: 12/24/19					
Nitrate and Nitrite as N	0.79		0.03	mg/L	0.800		99.2	90-110		
Duplicate (B9L1024-DUP1)		**Source: 9L23042-01**			Prepared & Analyzed: 12/24/19					
Nitrate and Nitrite as N	0.26		0.03	mg/L		0.25			5.53	200

Quality Control
(Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9L1024 - General Chemistry (Continued)										
Matrix Spike (B9L1024-MS1)		**Source: 9L23042-01**			Prepared & Analyzed: 12/24/19					
Nitrate and Nitrite as N	1.11		0.03	mg/L	0.800	0.25	108	80-120		
Batch: B9L1104 - Nitrite										
Blank (B9L1104-BLK1)					Prepared & Analyzed: 12/26/19					
Nitrite as N	ND		0.007	mg/L						
Blank (B9L1104-BLK2)					Prepared & Analyzed: 12/26/19					
Nitrite as N	ND		0.007	mg/L						
LCS (B9L1104-BS1)					Prepared & Analyzed: 12/26/19					
Nitrite as N	0.110		0.007	mg/L	0.100		110	90-110		
LCS (B9L1104-BS2)					Prepared & Analyzed: 12/26/19					
Nitrite as N	0.098		0.007	mg/L	0.100		98.0	90-110		
Duplicate (B9L1104-DUP1)		**Source: 9L24018-01**			Prepared & Analyzed: 12/26/19					
Nitrite as N	ND		0.007	mg/L		ND				20
Matrix Spike (B9L1104-MS1)		**Source: 9L24018-01**			Prepared & Analyzed: 12/26/19					
Nitrite as N	0.093		0.007	mg/L	0.100	ND	93.0	80-120		
Batch: B9L1118 - Ammonia										
Blank (B9L1118-BLK1)					Prepared & Analyzed: 12/26/19					
Ammonia	ND		0.1	mg/L						

Quality Control
(Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9L1118 - Ammonia (Continued)										
Blank (B9L1118-BLK2)					Prepared & Analyzed: 12/26/19					
Ammonia	ND		0.1	mg/L						
LCS (B9L1118-BS1)					Prepared & Analyzed: 12/26/19					
Ammonia	1.0		0.1	mg/L	1.00		103	90-110		
LCS (B9L1118-BS2)					Prepared & Analyzed: 12/26/19					
Ammonia	1.0		0.1	mg/L	1.00		99.8	90-110		
Duplicate (B9L1118-DUP1)		**Source: 9L24017-02**			Prepared & Analyzed: 12/26/19					
Ammonia	0.1		0.1	mg/L		0.1			5.24	20
Matrix Spike (B9L1118-MS1)		**Source: 9L24017-02**			Prepared & Analyzed: 12/26/19					
Ammonia	1.2		0.1	mg/L	1.00	0.1	110	80-120		
Batch: B9L1208 - Total phosphate										
Blank (B9L1208-BLK1)					Prepared & Analyzed: 12/30/19					
Total Phosphorous	ND		0.02	mg/L						
Blank (B9L1208-BLK2)					Prepared & Analyzed: 12/30/19					
Total Phosphorous	ND		0.02	mg/L						
LCS (B9L1208-BS1)					Prepared & Analyzed: 12/30/19					
Total Phosphorous	1.02		0.02	mg/L	1.00		102	90-110		
LCS (B9L1208-BS2)					Prepared & Analyzed: 12/30/19					
Total Phosphorous	1.03		0.02	mg/L	1.00		103	90-110		

Quality Control
(Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9L1208 - Total phosphate (Continued)										
Duplicate (B9L1208-DUP1)		**Source: 9L24014-02**			Prepared & Analyzed: 12/30/19					
Total Phosphorous	0.92		0.02	mg/L		0.88			4.88	20
Matrix Spike (B9L1208-MS1)		**Source: 9L24014-02**			Prepared & Analyzed: 12/30/19					
Total Phosphorous	1.62		0.02	mg/L	1.00	0.88	74.5	80-120		
Batch: B9L1252 - TKN										
Blank (B9L1252-BLK1)					Prepared & Analyzed: 12/30/19					
Kjeldahl Nitrogen	ND		0.1	mg/L						
Blank (B9L1252-BLK2)					Prepared & Analyzed: 12/30/19					
Kjeldahl Nitrogen	ND		0.1	mg/L						
Batch: B9L1269 - Total phosphate										
Blank (B9L1269-BLK1)					Prepared & Analyzed: 12/31/19					
Total Phosphorous	ND		0.02	mg/L						
Blank (B9L1269-BLK2)					Prepared & Analyzed: 12/31/19					
Total Phosphorous	ND		0.02	mg/L						
LCS (B9L1269-BS1)					Prepared & Analyzed: 12/31/19					
Total Phosphorous	1.06		0.02	mg/L	1.00		106	90-110		
LCS (B9L1269-BS2)					Prepared & Analyzed: 12/31/19					
Total Phosphorous	1.06		0.02	mg/L	1.00		106	90-110		

Quality Control
(Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9L1269 - Total phosphate (Continued)										
Duplicate (B9L1269-DUP1)			**Source: 9L24018-03**		Prepared & Analyzed: 12/31/19					
Total Phosphorous	ND		0.10	mg/L		ND				20
Matrix Spike (B9L1269-MS1)			**Source: 9L24018-03**		Prepared & Analyzed: 12/31/19					
Total Phosphorous	1.08		0.10	mg/L	1.00	ND	108	80-120		

Quality Control
(Continued)

Total Metals

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9L1069 - Metals Digestion Waters										
Blank (B9L1069-BLK1)					Prepared: 12/26/19 Analyzed: 12/30/19					
Chromium	ND		0.0001	mg/L						
Cobalt	ND		0.0001	mg/L						
Cadmium	ND		0.0001	mg/L						
Beryllium	ND		0.0001	mg/L						
Arsenic	ND		0.0001	mg/L						
Copper	ND		0.001	mg/l						
Silver	ND		0.0001	mg/L						
Magnesium	ND		0.05	mg/L						
Calcium	ND		0.05	mg/L						
Selenium	ND		0.005	mg/L						
Barium	ND		0.001	mg/l						
Tin	ND		0.005	mg/l						
Iron	ND		0.05	mg/L						
Zinc	ND		0.001	mg/l						
Nickel	ND		0.001	mg/l						
Vanadium	ND		0.0005	mg/L						
Thallium	ND		0.0001	mg/L						
Iron	ND		0.001	mg/l						
Antimony	ND		0.0001	mg/L						
Lead	ND		0.0001	mg/L						
LCS (B9L1069-BS1)					Prepared: 12/26/19 Analyzed: 12/27/19					
Iron	10.3		0.05	mg/L	10.0		103	85-115		
Calcium	11.0		0.05	mg/L	10.0		110	85-115		
Magnesium	10.2		0.05	mg/L	10.0		102	85-115		
LCS (B9L1069-BS2)					Prepared: 12/26/19 Analyzed: 12/30/19					
Cobalt	0.0203		0.0001	mg/L	0.0200		102	85-115		
Vanadium	0.0204		0.0005	mg/L	0.0200		102	85-115		
Thallium	0.0202		0.0001	mg/L	0.0200		101	85-115		
Copper	0.226		0.001	mg/l	0.200		113	85-115		
Iron	0.223		0.001	mg/l	0.200		111	85-115		
Silver	0.0200		0.0001	mg/L	0.0200		100	85-115		
Chromium	0.0206		0.0001	mg/L	0.0200		103	85-115		
Barium	0.205		0.001	mg/l	0.200		102	85-115		
Nickel	0.205		0.001	mg/l	0.200		102	85-115		
Cadmium	0.0189		0.0001	mg/L	0.0200		94.7	85-115		
Tin	0.020		0.005	mg/l	0.0200		101	85-115		
Antimony	0.0193		0.0001	mg/L	0.0200		96.4	85-115		
Beryllium	0.0195		0.0001	mg/L	0.0200		97.3	85-115		
Selenium	0.017		0.005	mg/L	0.0200		85.2	85-115		
Arsenic	0.0189		0.0001	mg/L	0.0200		94.5	85-115		
Zinc	0.181		0.001	mg/l	0.200		90.4	85-115		
Lead	0.0203		0.0001	mg/L	0.0200		102	85-115		

Quality Control
(Continued)

Total Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9L1073 - Metals Digestion Waters										
Blank (B9L1073-BLK1)					Prepared: 12/26/19 Analyzed: 12/30/19					
Copper	ND		0.001	mg/l						
LCS (B9L1073-BS1)					Prepared: 12/26/19 Analyzed: 12/30/19					
Copper	0.226		0.001	mg/l	0.200		113	85-115		
Batch: B9L1130 - Metals Cold-Vapor Mercury										
Blank (B9L1130-BLK1)					Prepared & Analyzed: 12/26/19					
Mercury	ND		0.0002	mg/L						
LCS (B9L1130-BS1)					Prepared & Analyzed: 12/26/19					
Mercury	0.0010		0.0002	mg/L	0.00100		102	85-115		

Notes and Definitions

Item	Definition
Wet	Sample results reported on a wet weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.

9L2 4018P

INC.

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME/LOCATION
94139.01	TIVERTON ALTERNATE MONITORING

CLIENT: PARE CORP.
REPORT TO: hjohnson@parecorp.com
INVOICE TO: ACCOUNTING

DATE	TIME	COMP	GRAB	SAMPLE I.D.	AQUEOUS	SOIL	OTHER	NO. OF CONTAINERS	PRESERVATIVE	TESTS**	REMARKS
12/23			x	SW-1	x			3	HCl, Non, H_2SO_4	App A Metals, Hg, Sn, Total Fe; TKN, Total N; Ammonia; Phosphorus; Hardness	
			|	SW-2	|			|			
			|	SW-3	|			|			

Sampled by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Laboratory Remarks:
	12/24 9:15			Temp. received: 3
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Cooled ☐
	12/24 9:15			
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Special Instructions: List Specific Detection Limit Requirements:
			12/24/19 9:15	Turnaround (Business Days) STD

**Netlab subcontracts the following tests: Radiologicals, Radon, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates, CT ETPH

APPENDIX E

December Field Sampling Data Sheets

FIELD SAMPLING DATA SHEET

PROJECT NAME: TIVERTON LANDFILL
PARE PROJECT NO.: 94139.24
DATE: 12/23/2019
WEATHER: Sunny 50s

WELL ID: OW-9
DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	15.9	feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	0.5	gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump		ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	13.7	feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing		DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.24	pH UNITS	6.24	pH UNITS
SPEC. COND:	0.081	mS/cm	0.086	mS/cm
TEMPERATURE:	10.4	^{o}C	10.4	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.
Samples were collected at 3:00 PM.
Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	12/23/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 50s

WELL ID: OW-12 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	16.1 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	2.0 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	2.8 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.33	pH UNITS	6.33	pH UNITS
SPEC. COND:	0.369	mS/cm	0.385	mS/cm
TEMPERATURE:	10.7	^{o}C	10.6	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 2:00 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	12/23/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 50s

WELL ID: OW-7 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	N/a feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	N/a gallons	PURGE RATE (GPM):	N/a
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	N/a

WATER LEVEL DATA

DEPTH:	0.00 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	N/a	pH UNITS	N/a	pH UNITS
SPEC. COND:	N/a	mS/cm	N/a	mS/cm
TEMPERATURE:	N/a	^{o}C	N/a	^{o}C

NOTES:

Samples were unable to be collected due to the well being frozen.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	12/23/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 50s

WELL ID: OW-13 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	14.5 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.70 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	4.1 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.61	pH UNITS	6.62	pH UNITS
SPEC. COND:	0.996	mS/cm	1.033	mS/cm
TEMPERATURE:	9.6	^{o}C	9.7	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 4:00 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	12/23/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 50s

WELL ID: OW-14 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	10.7 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	0.8 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	5.3 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.42	pH UNITS	6.43	pH UNITS
SPEC. COND:	1.305	mS/cm	1.29	mS/cm
TEMPERATURE:	9.4	^{o}C	9.3	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of supernatant sampled after a 15-minute decanting period.

Samples were collected at 11:00 AM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	12/23/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 50s

WELL ID: OW-15 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	16.9 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.7 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	7.1 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.66	pH UNITS	6.66	pH UNITS
SPEC. COND:	1.095	mS/cm	1.111	mS/cm
TEMPERATURE:	11.3	^{o}C	11.4	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 10:00 AM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	12/23/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 50s

WELL ID: OW-16 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	N/a	feet	MEASURE POINT:	Top of Casing	
PURGE VOLUME (GAL):	N/a	gallons	PURGE RATE (GPM):	N/a	
PURGER TYPE:	Peristaltic pump		ELAPSED TIME (MIN):	N/a	

WATER LEVEL DATA

DEPTH:	0.00	feet	ELEVATION:	See Site Plan	
MEASURE POINT:	Top of Casing		DEVICE:	Water Level Indicator	

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	N/a	pH UNITS	N/a	pH UNITS
SPEC. COND:	N/a	mS/cm	N/a	mS/cm
TEMPERATURE:	N/a	^{o}C	N/a	^{o}C

NOTES:

Samples were unable to be collected due to the well being frozen.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	12/23/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 50s

FIELD TESTING RESULTS:

SURFACE WATER LOCATION: SW-1

READING 1

pH:	6.60	pH UNITS
SPEC. COND:	0.405	mS/cm
TEMPERATURE:	2.8	^{o}C

SURFACE WATER LOCATION: SW-2

READING 1

pH:	5.04	pH UNITS
SPEC. COND:	0.224	mS/cm
TEMPERATURE:	4.8	^{o}C

SURFACE WATER LOCATION: SW-3

READING 1

pH:	7.26	pH UNITS
SPEC. COND:	0.188	mS/cm
TEMPERATURE:	1.7	^{o}C

NOTES:

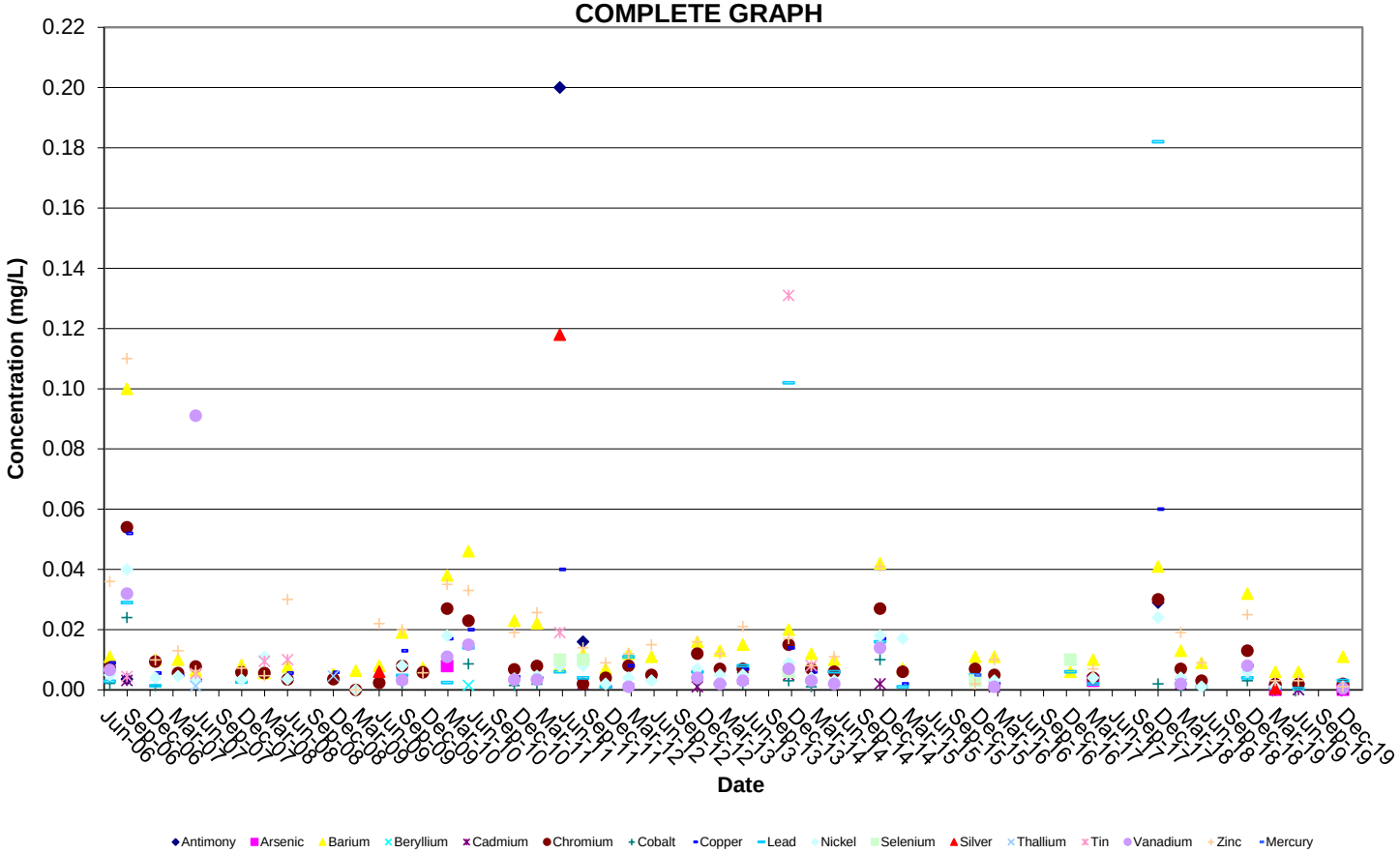
All surface water samples were clear with a brownish tinge.

APPENDIX F

Historical Data Summary Plots

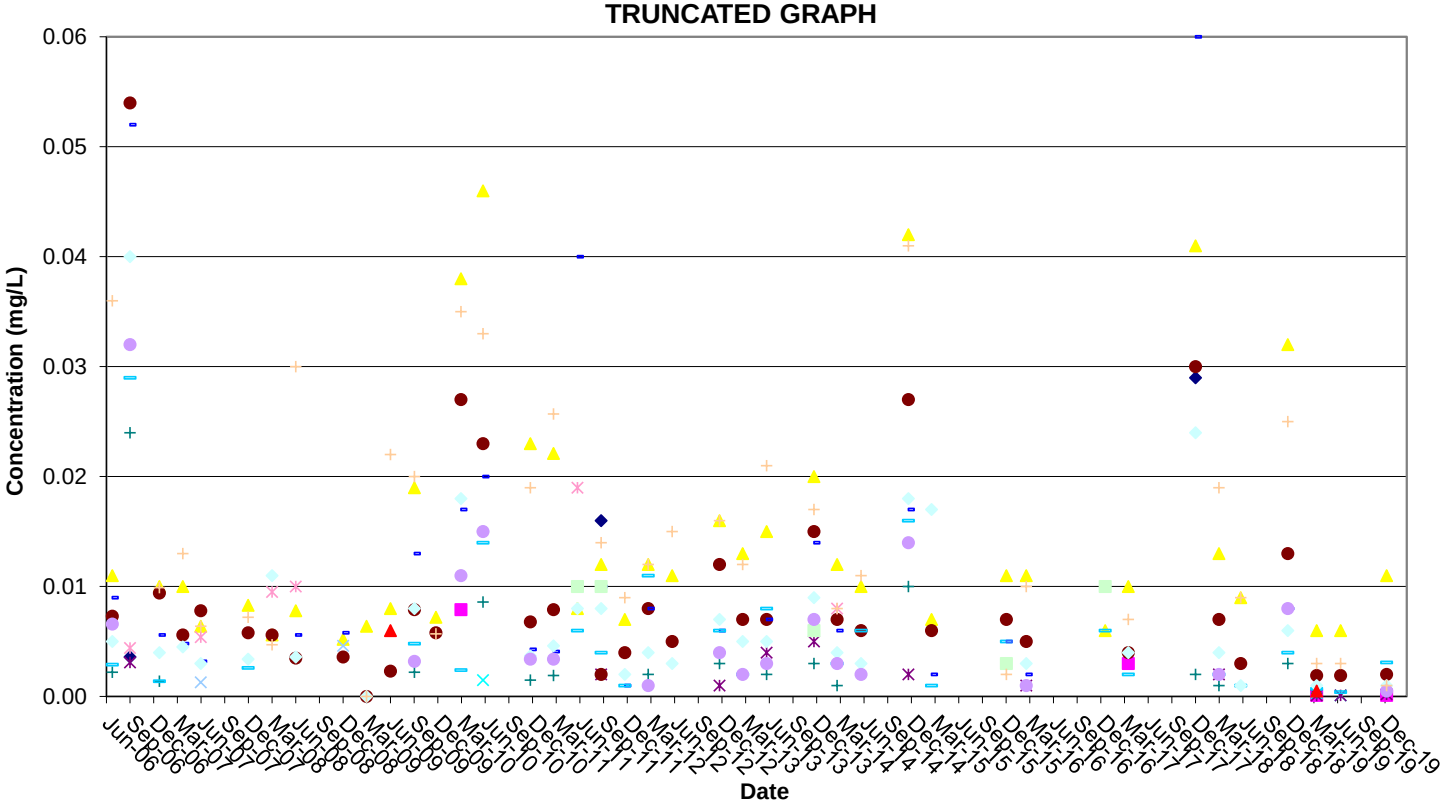
Detected Appendix A Metals in OW-9
Tiverton Landfill

COMPLETE GRAPH



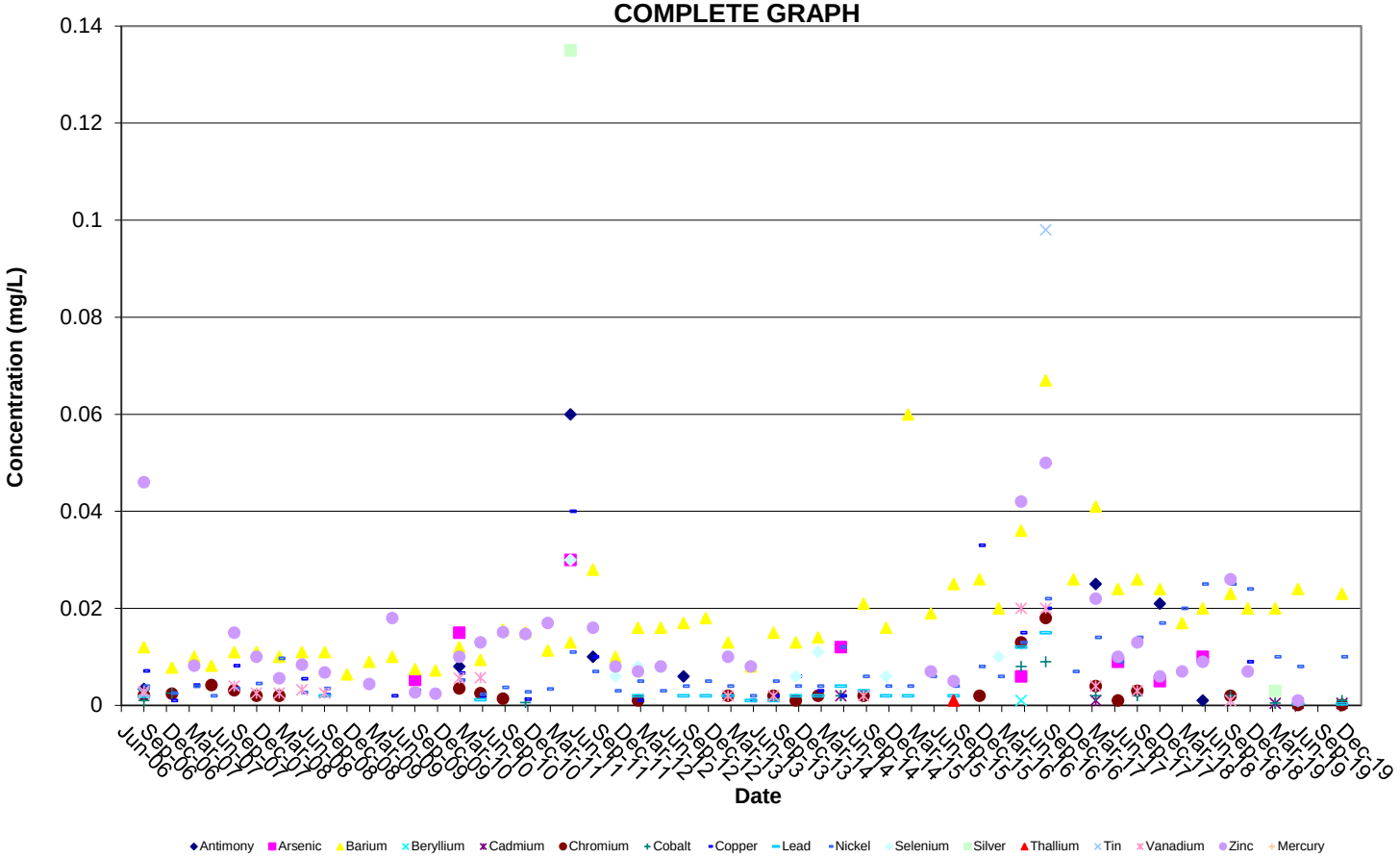
Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Lead Nickel Selenium Silver Thallium Tin Vanadium Zinc Mercury

TRUNCATED GRAPH

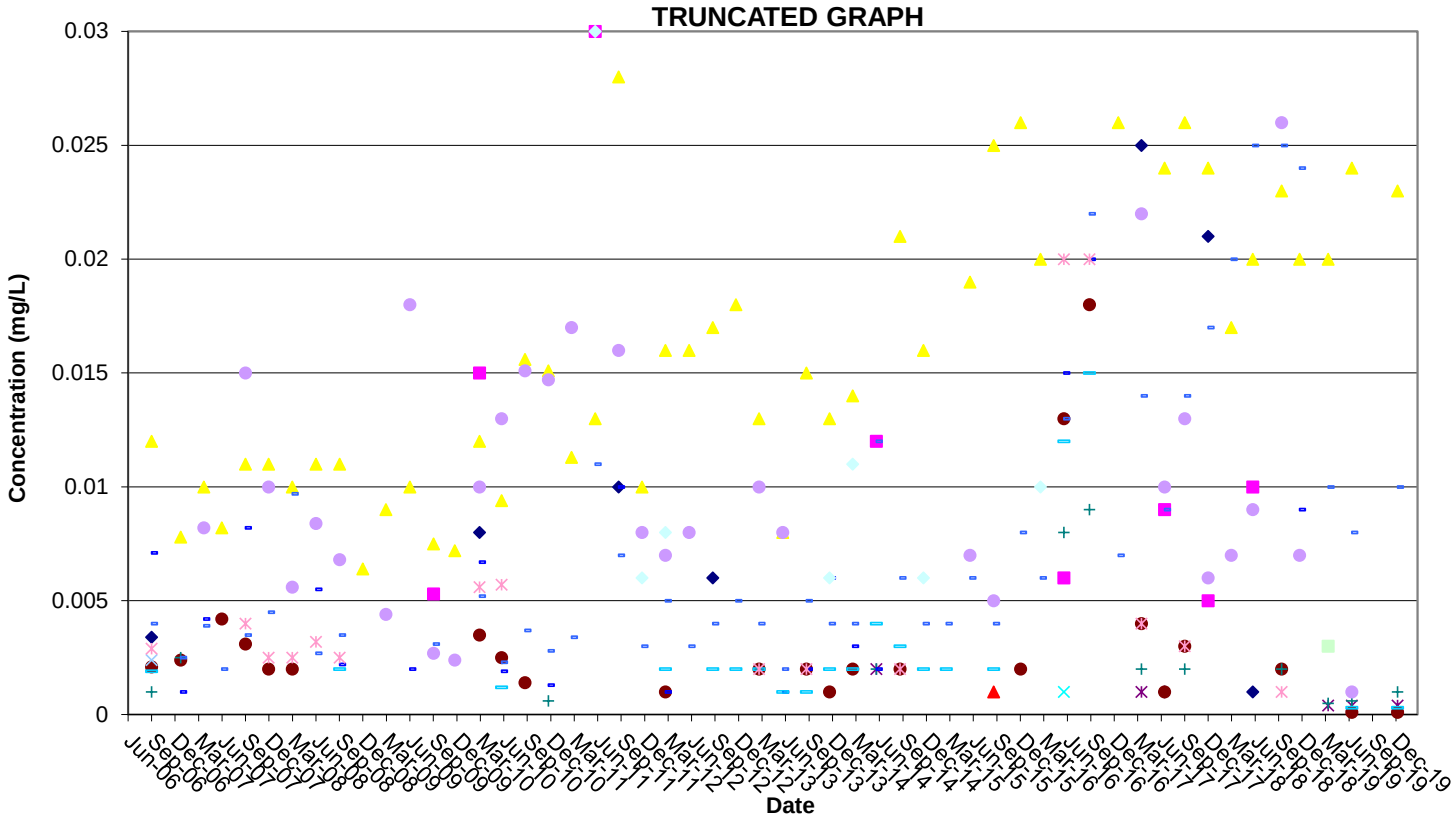


Detected Appendix A Metals in OW-12
Tiverton Landfill

COMPLETE GRAPH

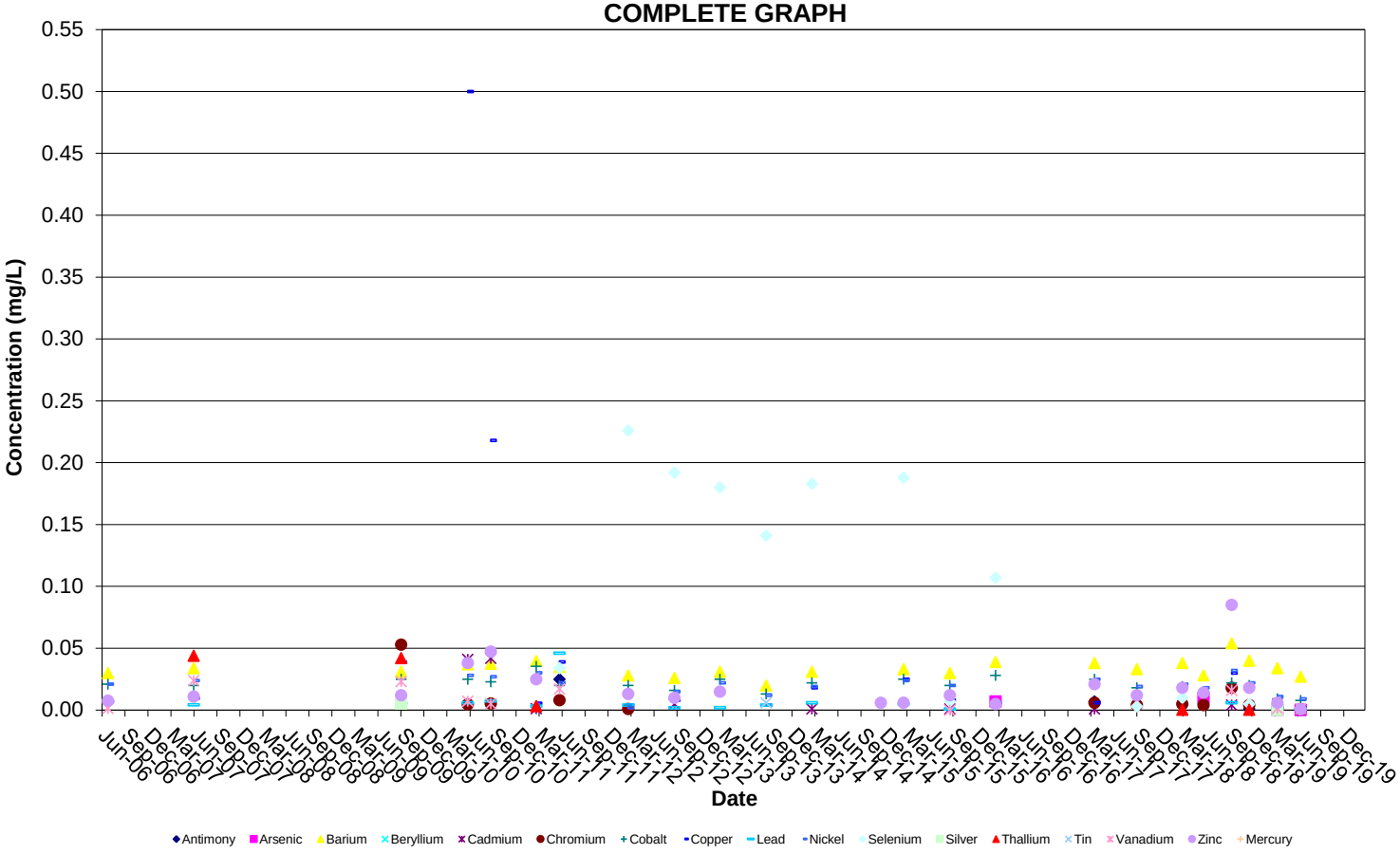


TRUNCATED GRAPH



Detected Appendix A Metals in OW-7
Tiverton Landfill

COMPLETE GRAPH



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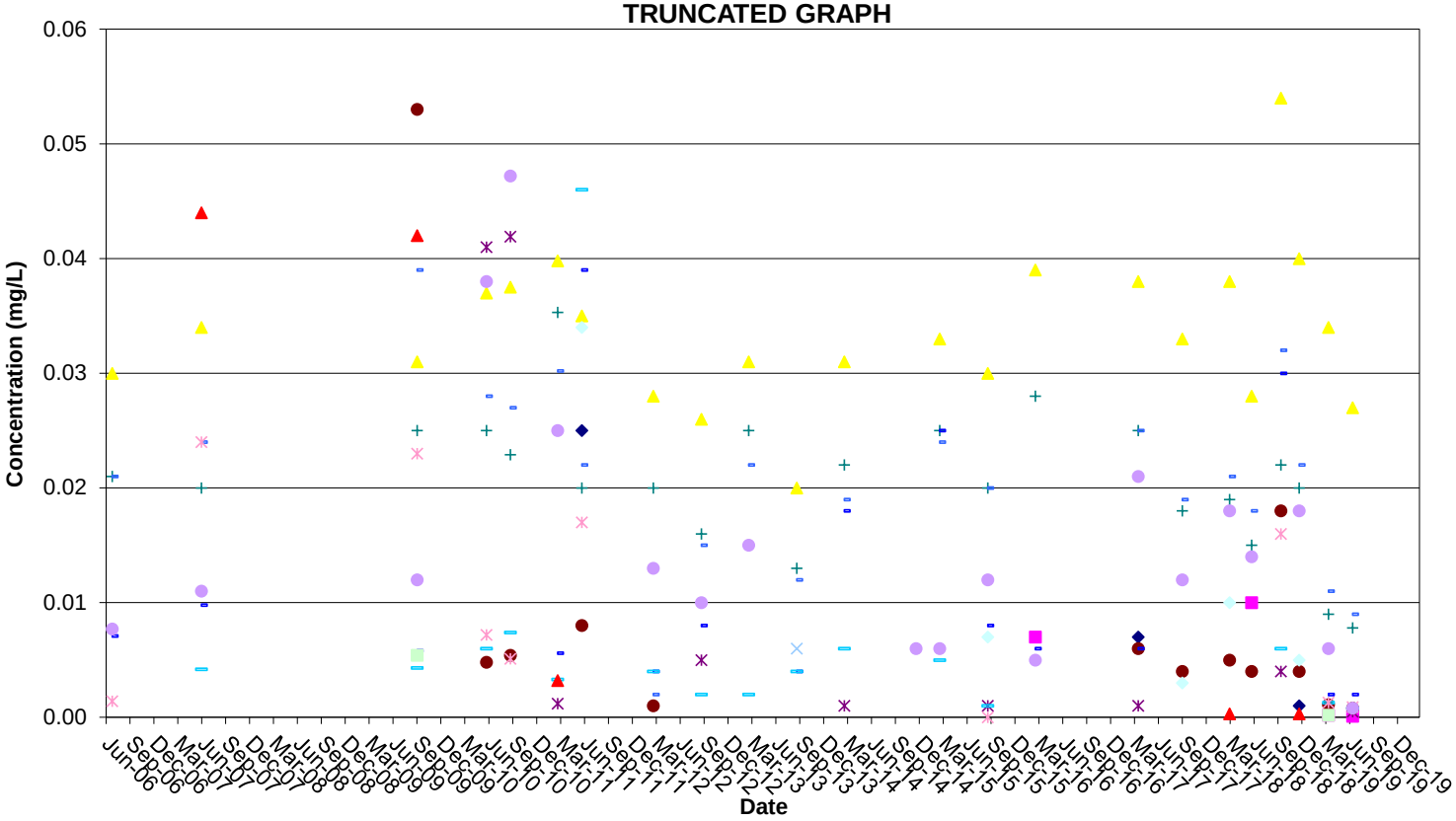
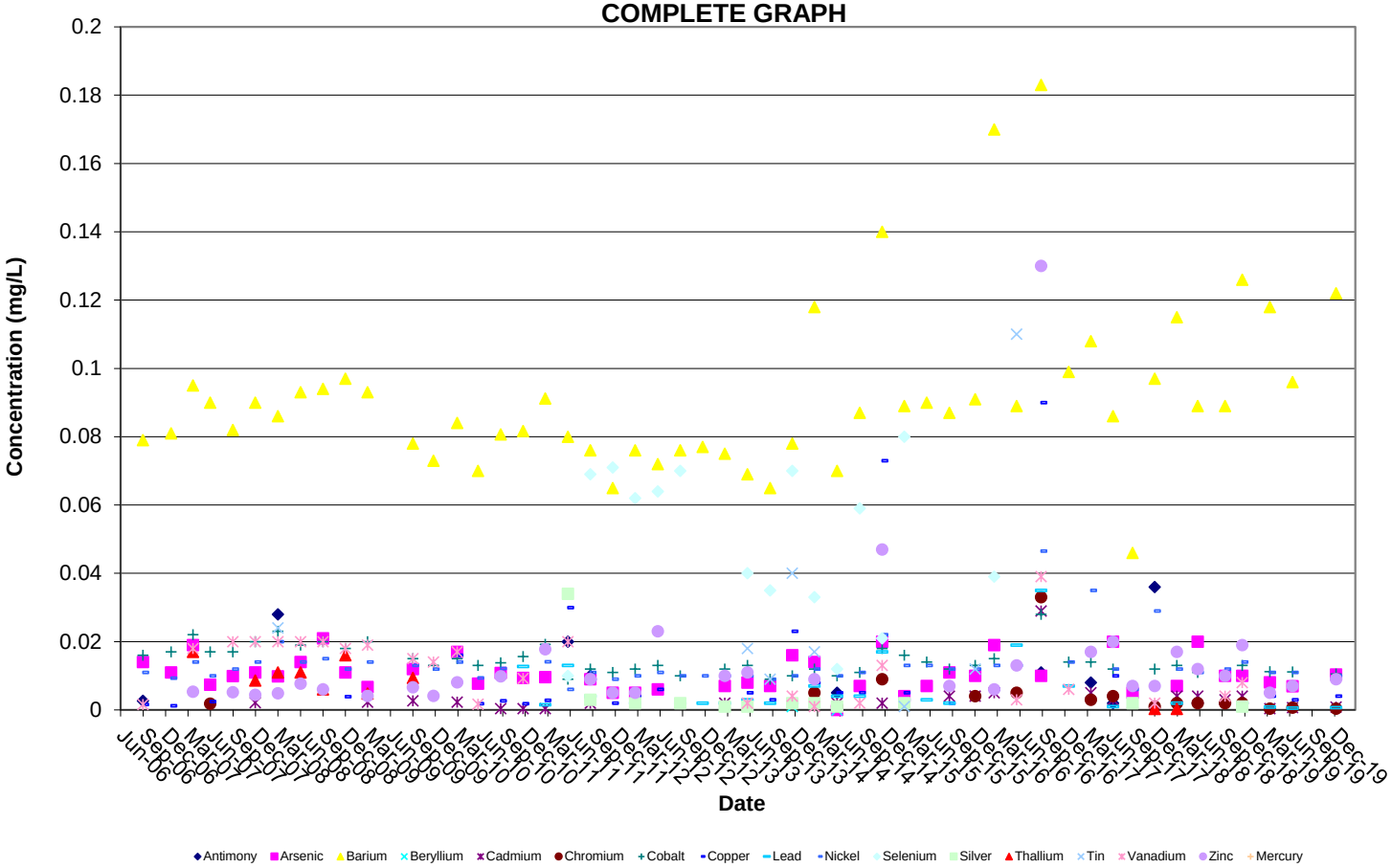


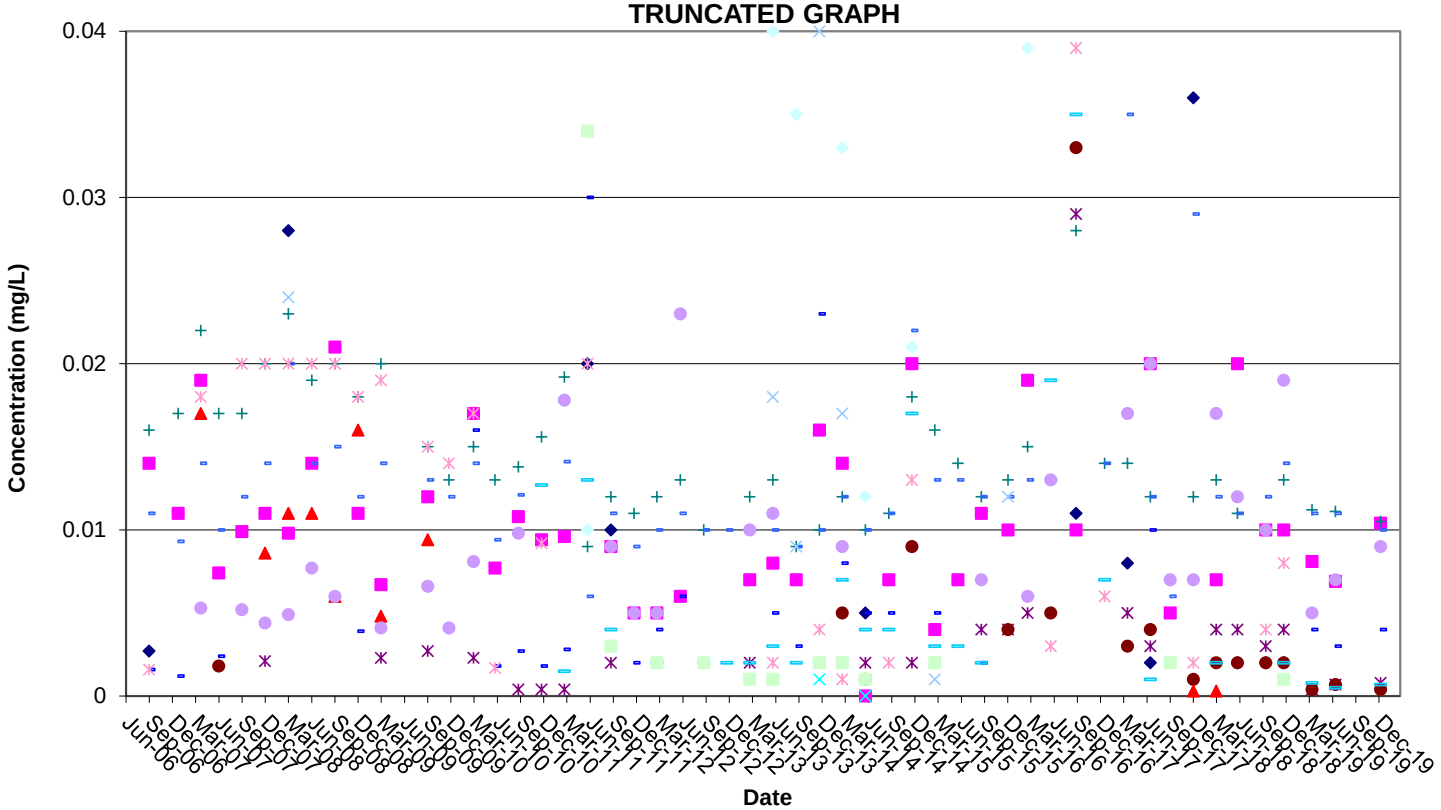
Detected Appendix A Metals in OW-13
Tiverton Landfill

COMPLETE GRAPH



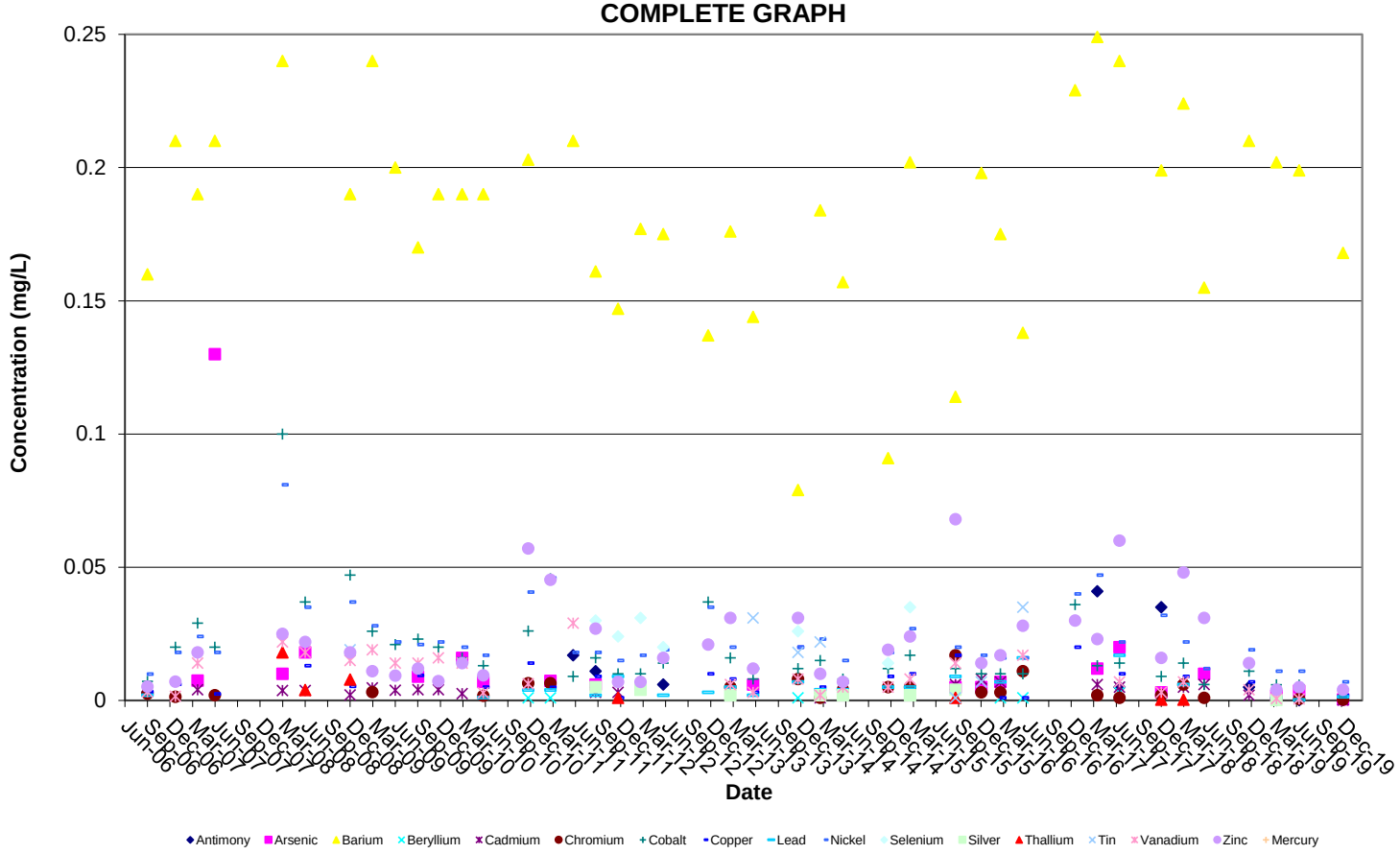
◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt -Copper -Lead -Nickel ·Selenium ·Silver ▲Thallium ×Tin ×Vanadium ●Zinc ·Mercury

TRUNCATED GRAPH



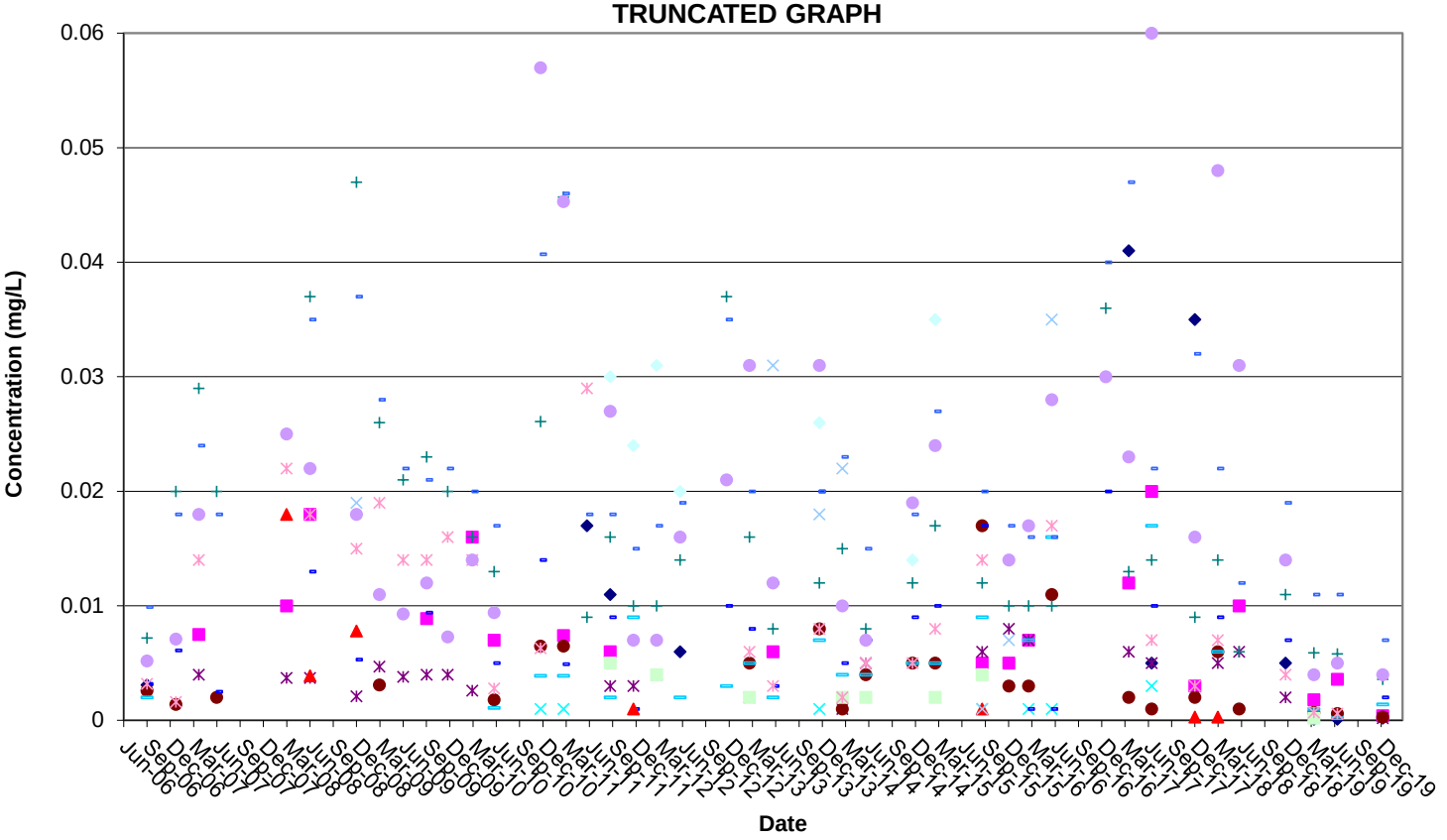
Detected Appendix A Metals in OW-14
Tiverton Landfill

COMPLETE GRAPH



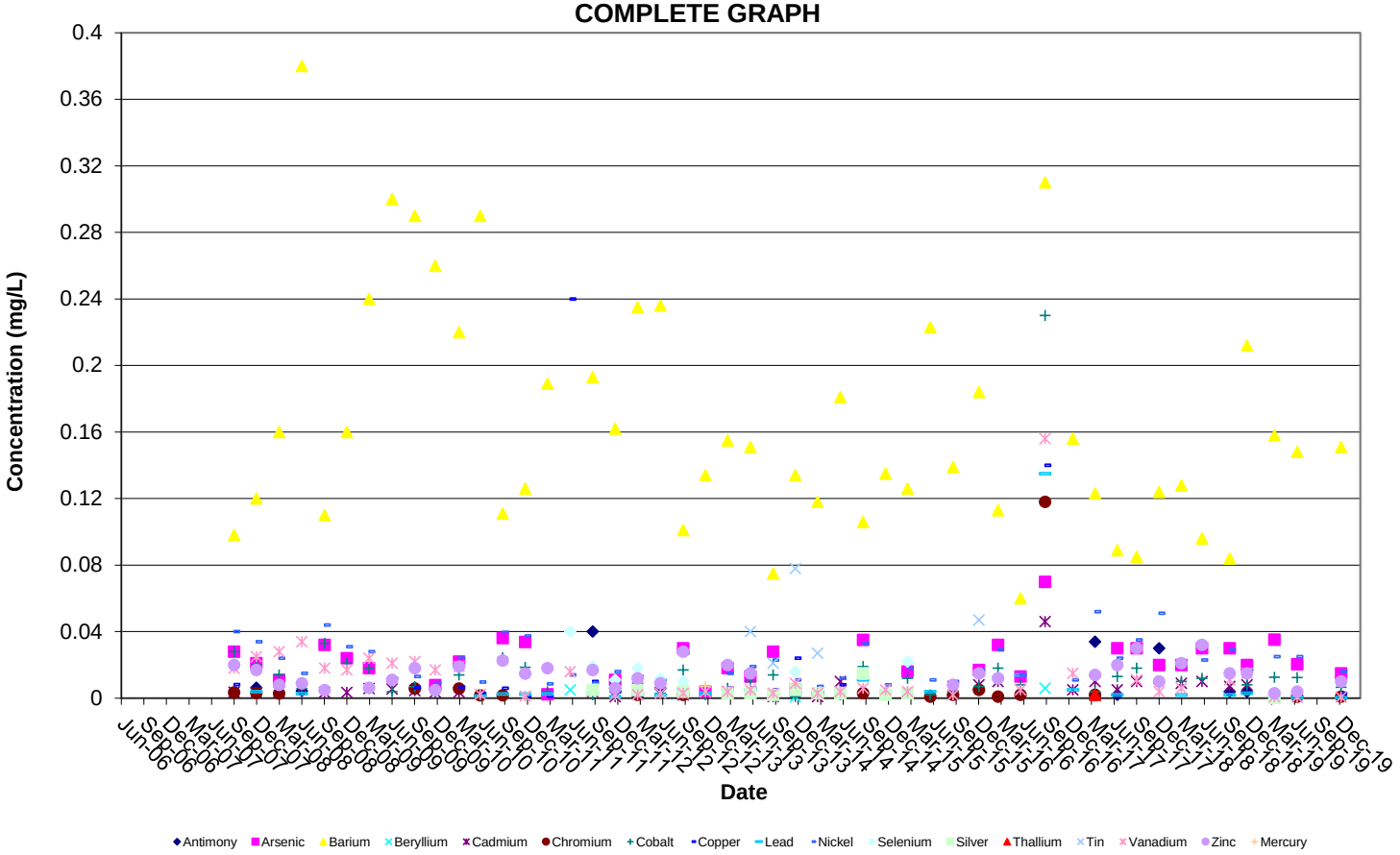
◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt ●Copper ▬Lead ●Nickel ◇Selenium ▬Silver ▲Thallium ×Tin ×Vanadium ●Zinc +Mercury

TRUNCATED GRAPH

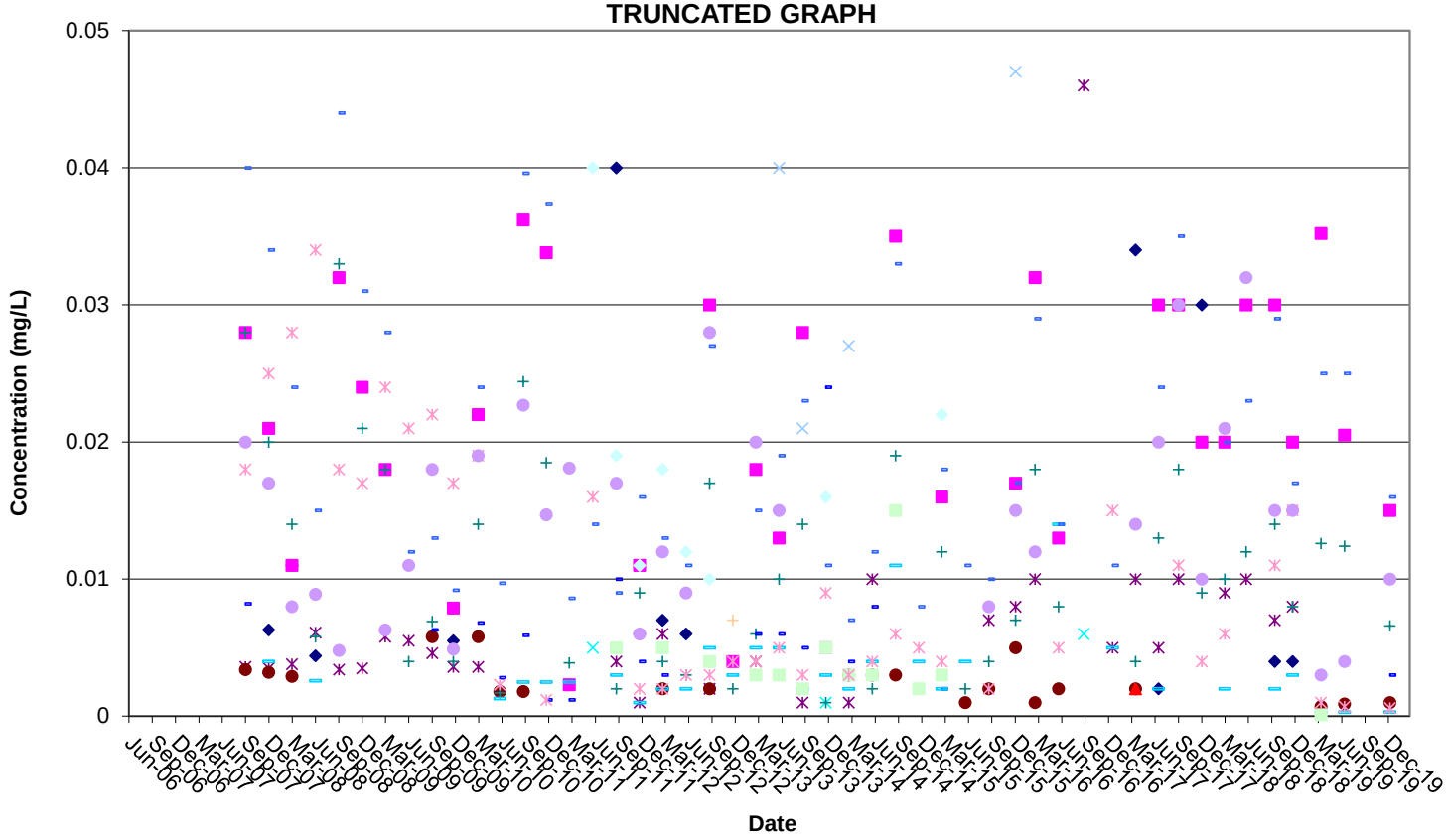


Detected Appendix A Metals in OW-15
Tiverton Landfill

COMPLETE GRAPH

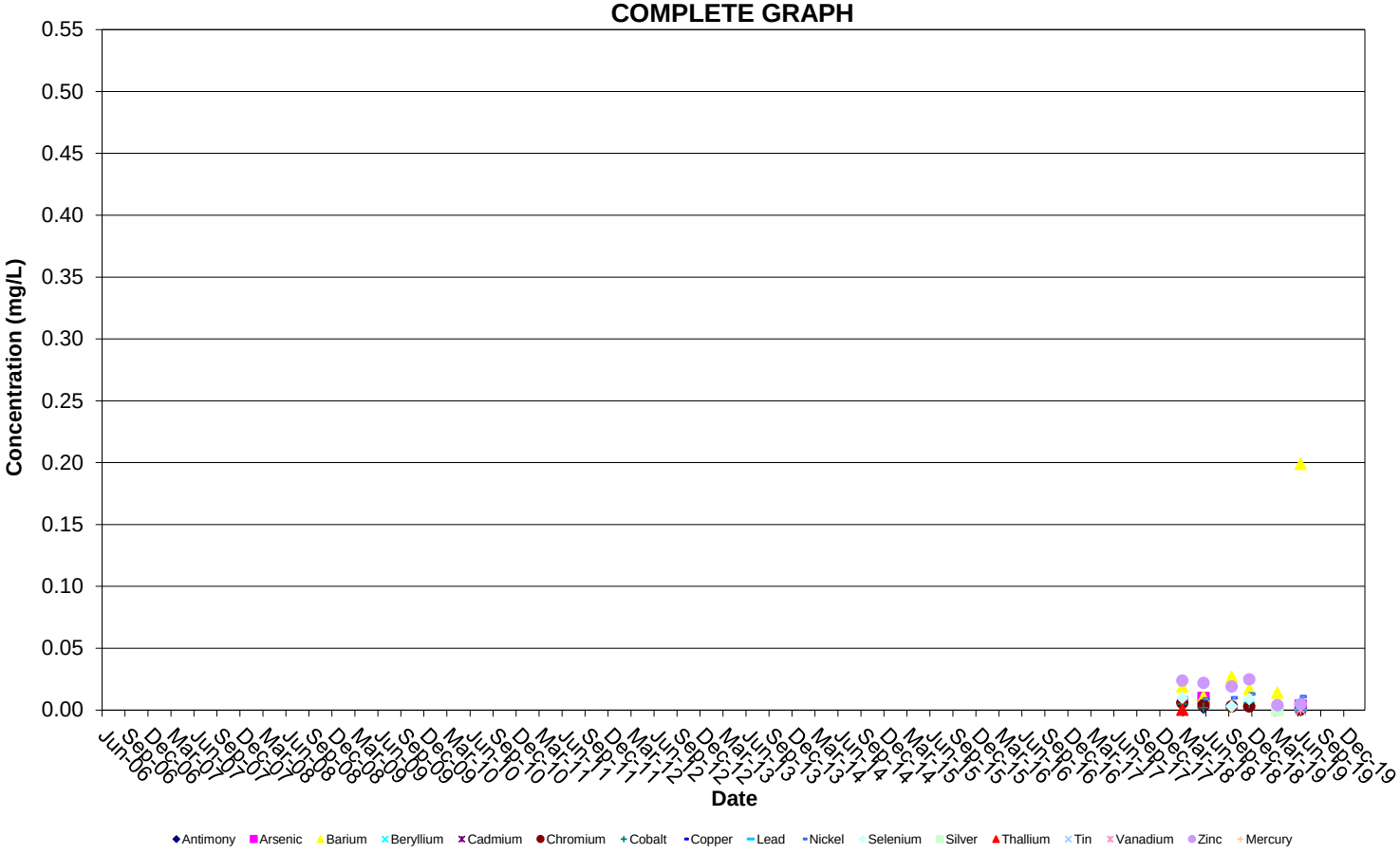


TRUNCATED GRAPH

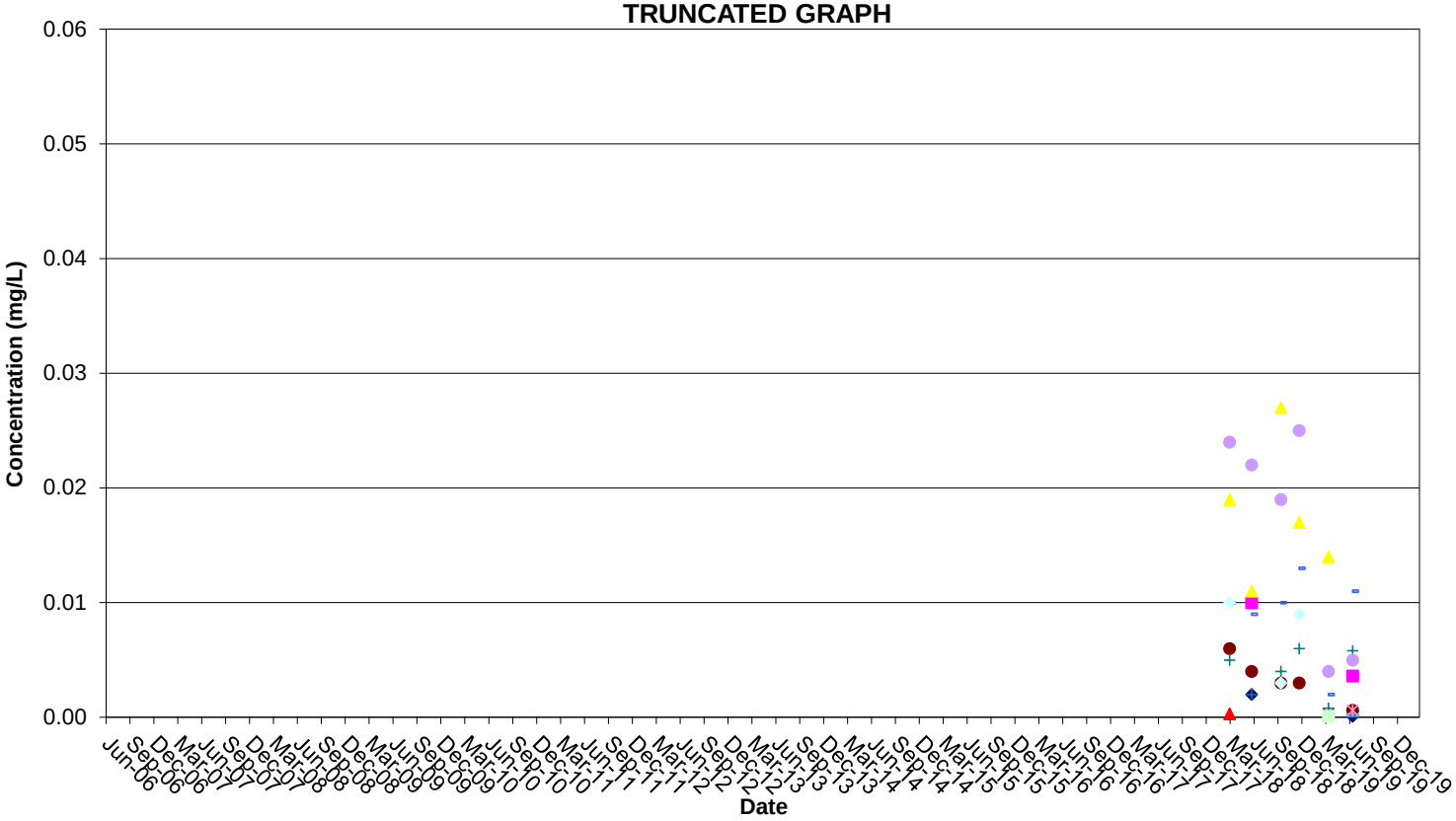


Detected Appendix A Metals in OW-16
Tiverton Landfill

COMPLETE GRAPH

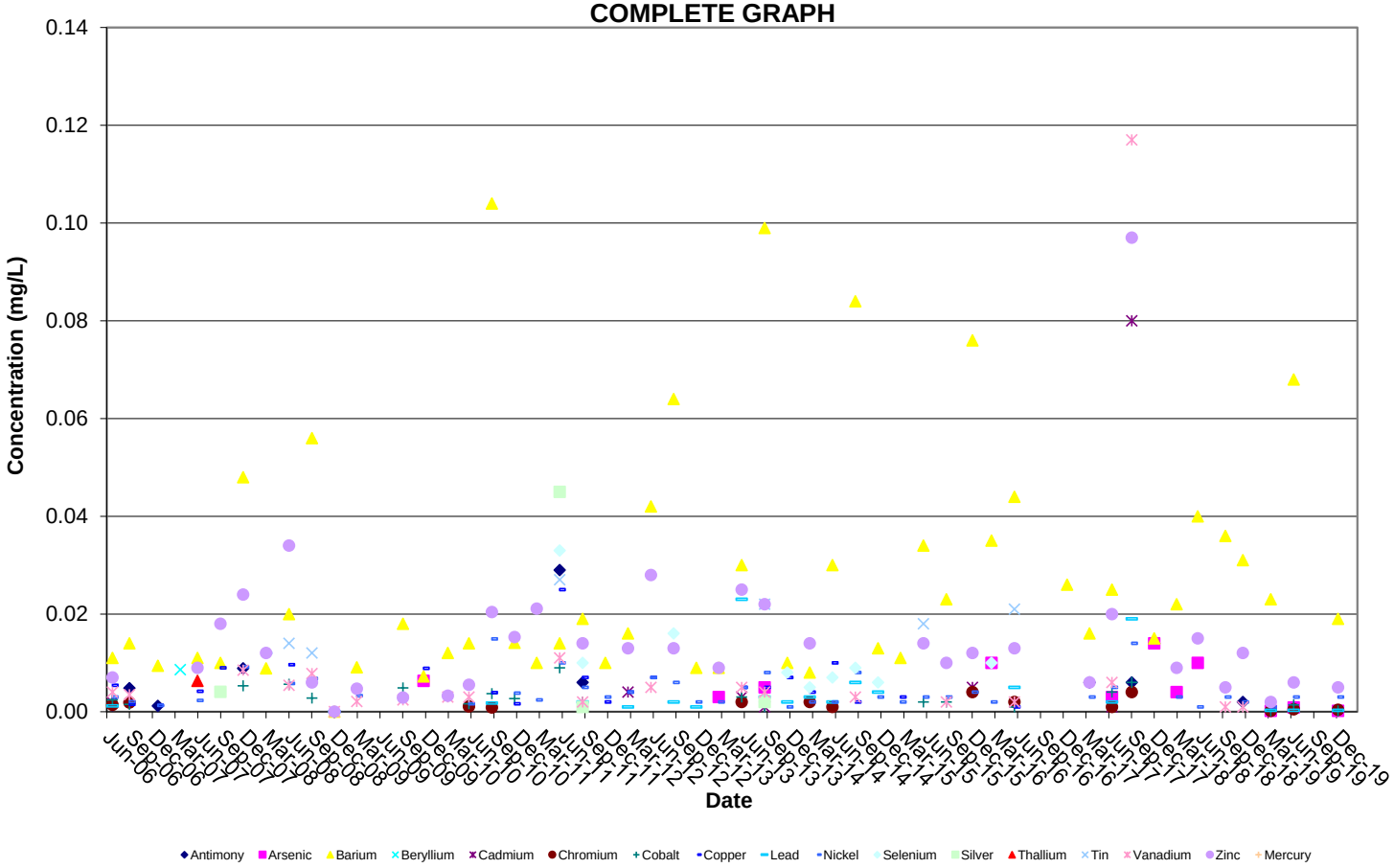


TRUNCATED GRAPH

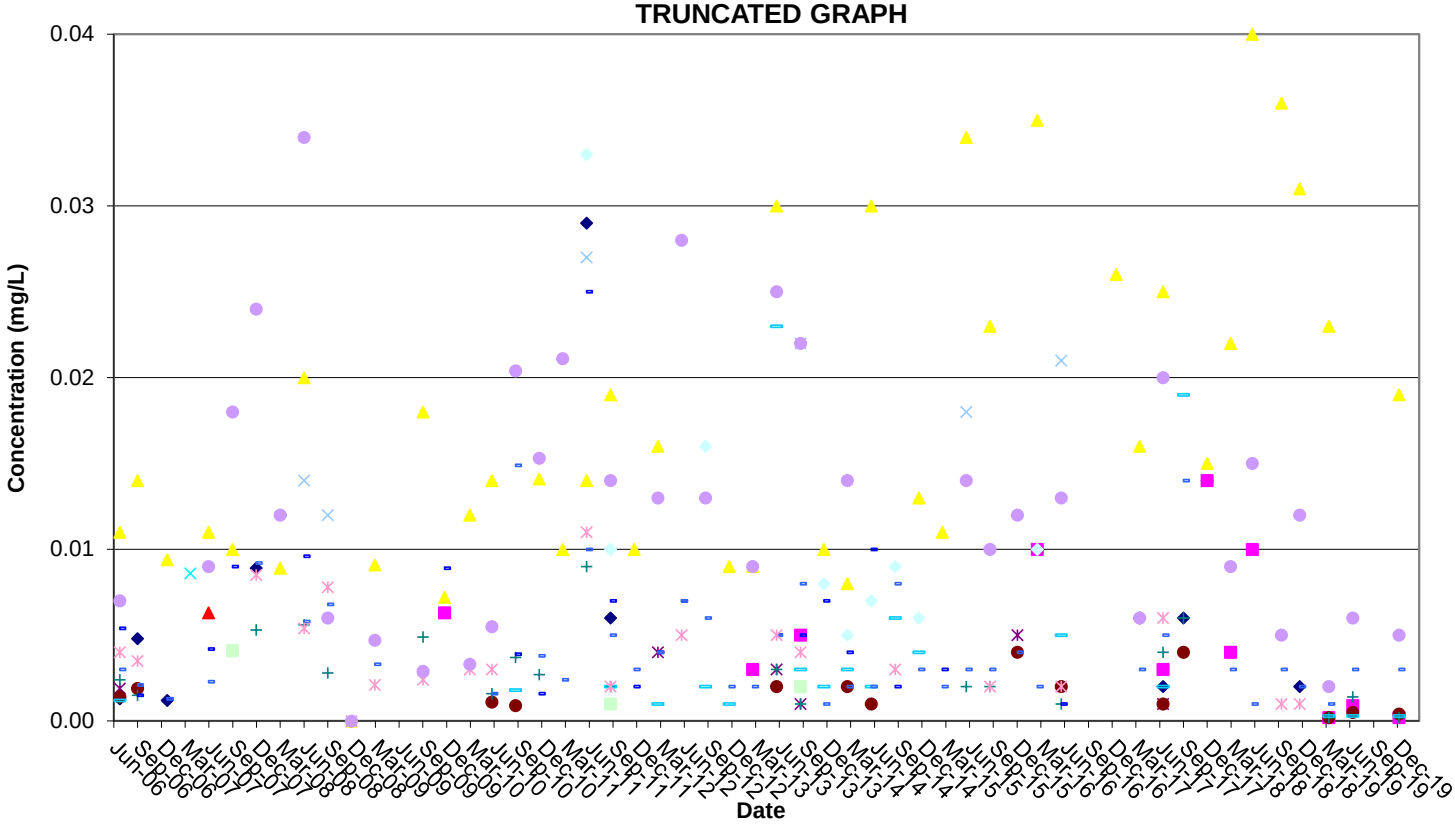


Detected Appendix A Metals at Surface Water Sampling Location SW-1
Tiverton Landfill

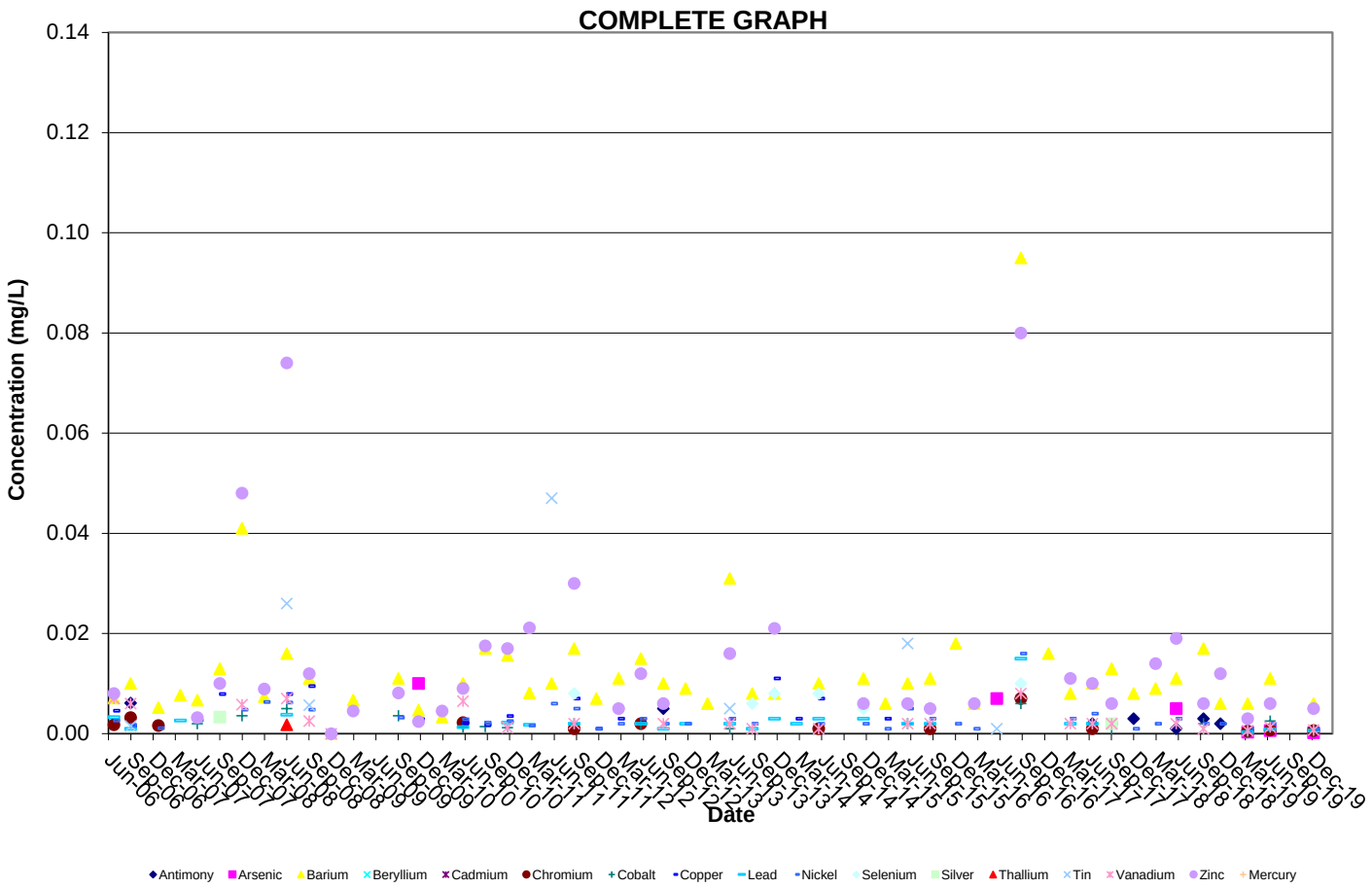
COMPLETE GRAPH

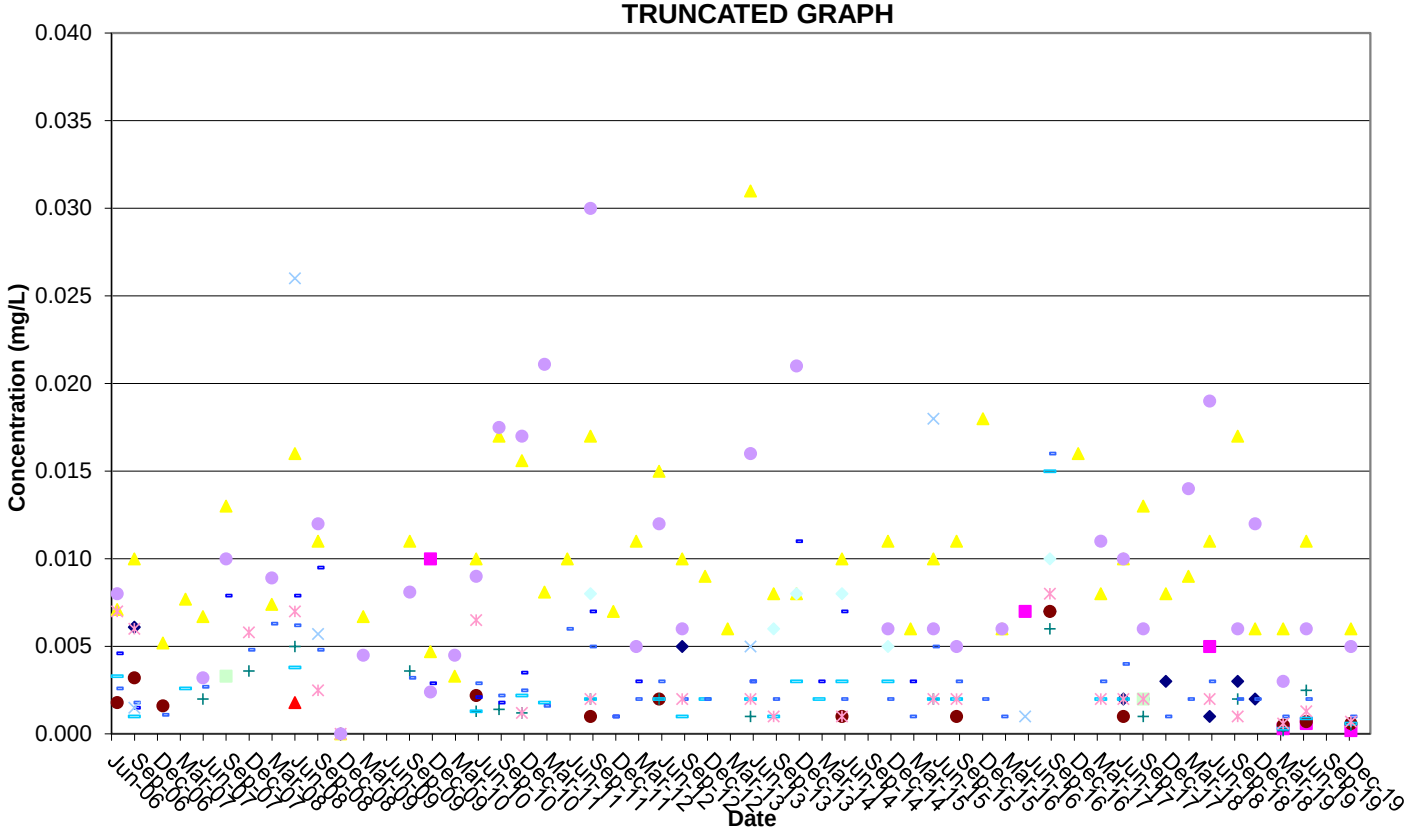


TRUNCATED GRAPH

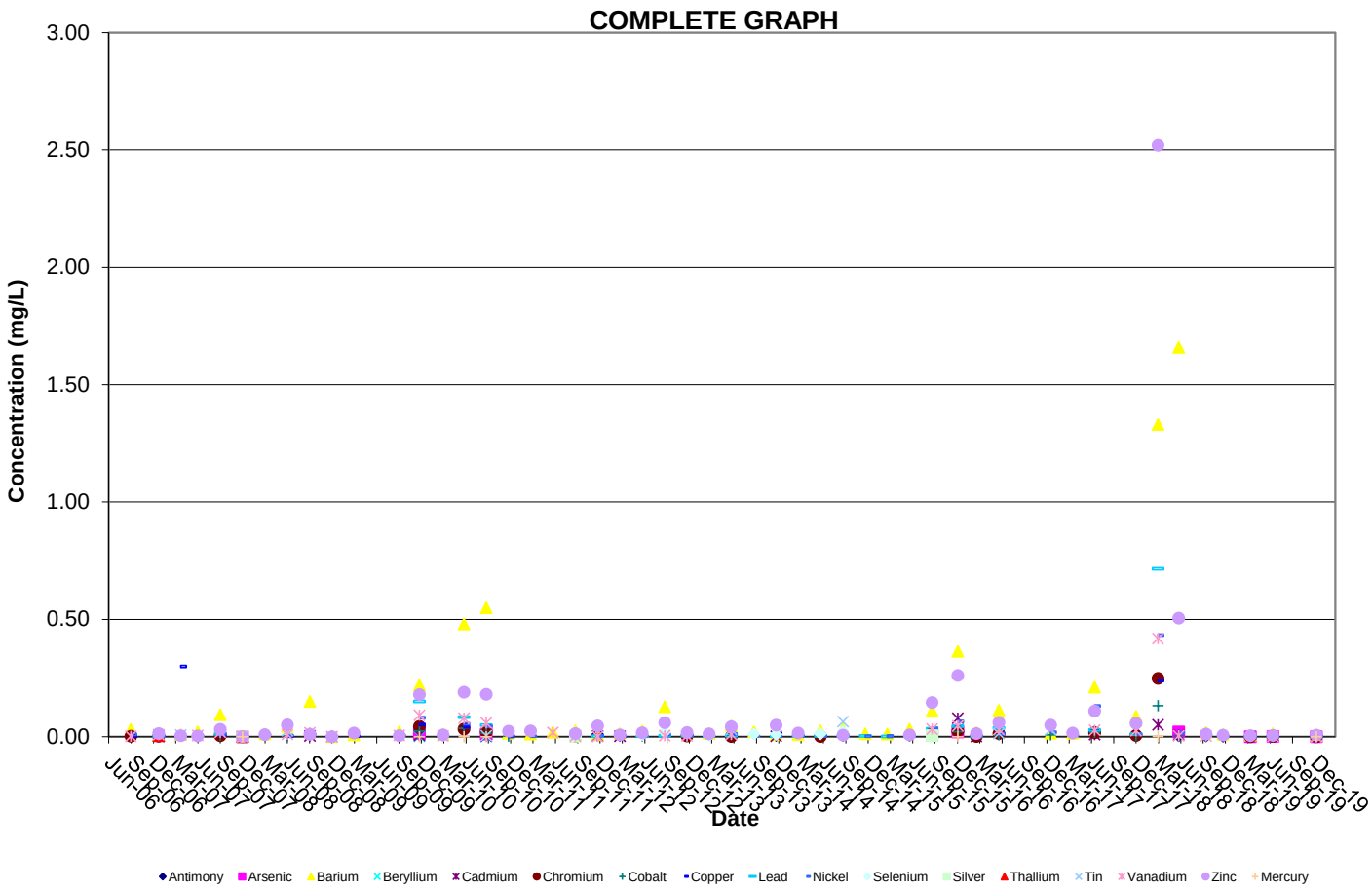


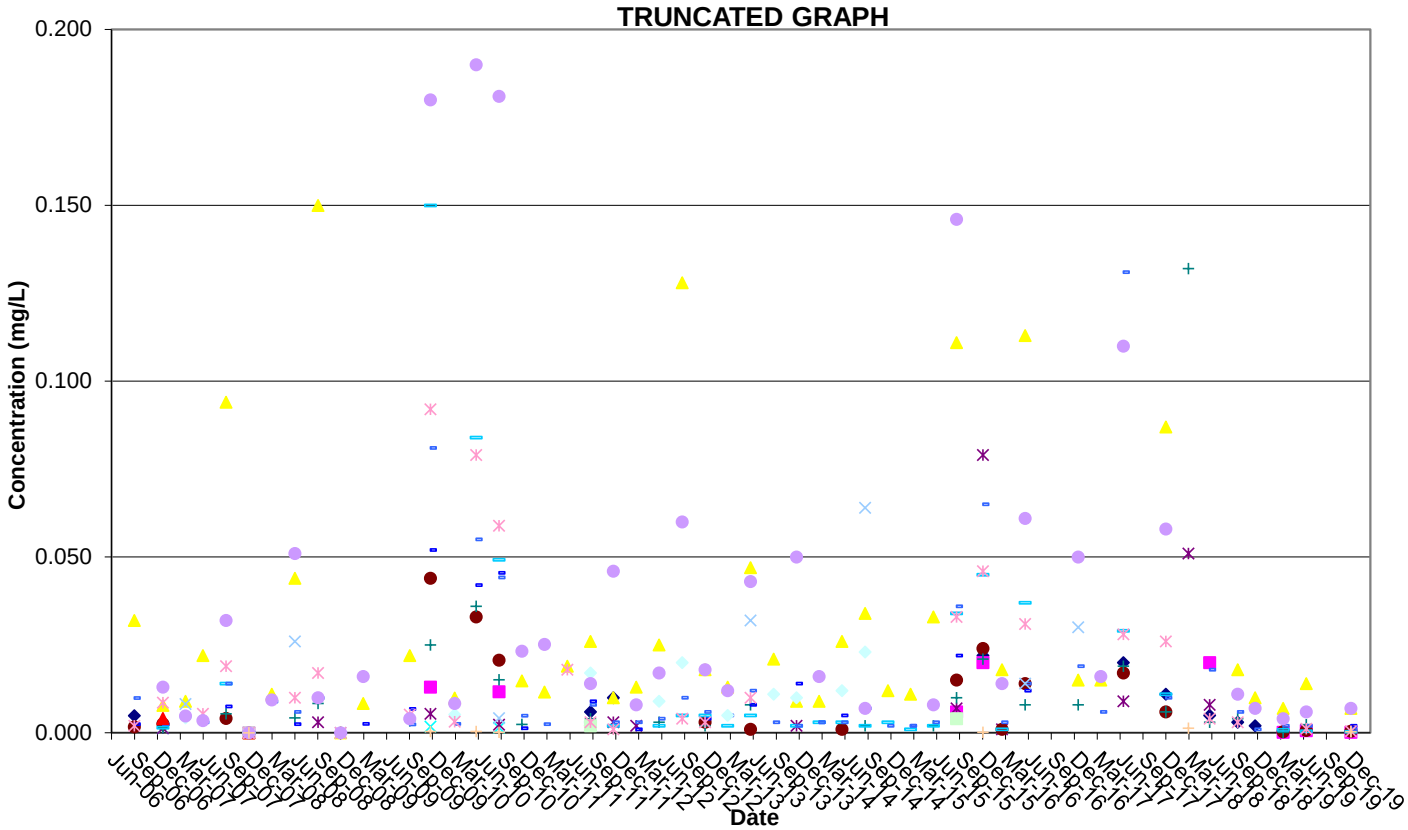
Detected Appendix A Metals at Surface Water Sampling Location SW-2
Tiverton Landfill





Detected Appendix A Metals at Surface Water Sampling Location SW-3
Tiverton Landfill





APPENDIX G

Tolerance Interval Statistical Evaluation

TABLE 4
SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON
DEC 2019 - SAMPLE ROUND
Concentration (units as specified for Threshold Value)

		OW-9 Tolerance Limit * TL=AVG+K*S		Threshold Value		Background Well	Compliance wells					
	Parameter					OW-9	OW-7	OW-12	OW-13	OW-14	OW-15	OW-16
METALS	Antimony	0.0290	mg/L	0.006	mg/L[1]	ND	NT	ND	ND	0.0002	ND	NT
	Arsenic	0.0030	mg/L	0.010	mg/L[1]	0.0001	NT	ND	0.0104	0.0004	0.0150	NT
	Barium	0.0572	mg/L	2	mg/L[1]	0.011	NT	0.023	0.122	0.168	0.151	NT
	Beryllium	0.0003	mg/L	0.004	mg/L[1]	ND	NT	ND	ND	ND	ND	NT
	Cadmium	0.4511	mg/L	0.005	mg/L[1]	0.0002	NT	0.0004	0.0008	0.0002	ND	NT
	Chromium	0.0384	mg/L	0.1	mg/L[1]	0.0020	NT	0.0001	0.0004	0.0003	0.0010	NT
	Cobalt	0.0041	mg/L	0.73	mg/L[5]	0.0004	NT	0.001	0.0105	0.0036	0.0066	NT
	Copper	0.0080	mg/L	1.3	mg/L[1]	ND	NT	ND	0.004	0.002	0.003	NT
	Lead	0.2246	mg/L	0.015	mg/L[1]	0.0031	NT	0.0003	0.0007	0.0014	0.0003	NT
	Mercury	0.0001	mg/L	0.002	mg/L[1]	ND	NT	ND	ND	ND	ND	NT
	Nickel	0.0297	mg/L	0.1	mg/L[2]	0.001	NT	0.010	0.010	0.007	0.016	NT
	Selenium	0.0010	mg/L	0.05	mg/L[1]	ND	NT	ND	ND	ND	ND	NT
	Silver	0.0005	mg/L	0.1	mg/L[2,3]	ND	NT	ND	ND	ND	ND	NT
	Thallium	0.0001	mg/L	0.002	mg/L[1]	ND	NT	ND	ND	ND	ND	NT
	Tin	0.0025	mg/L	22	mg/L[5]	ND	NT	ND	ND	ND	ND	NT
	Vanadium	0.0080	mg/L	0.26	mg/L[5]	0.0005	NT	ND	ND	ND	0.0006	NT
	Zinc	13.7198	mg/L	2 - 5	mg/L[2,3]	0.001	NT	ND	0.009	0.004	0.010	NT
VOC'S	Acetone			610	µg/L[5]							
	Acrylonitrile			0.039	µg/L[5]							
	Benzene			5	µg/L[1]							
	Bromochloromethane			80	µg/L[4]							
	Bromodichloromethane (THM)			90	µg/L[1]							
	Bromoform			80	µg/L[1]							
	Carbon disulfide			1000	µg/L[5]							
	Carbon tetrachloride			5	µg/L[1]							
	Chlorobenzene			100	µg/L[1]							
	Chloroethane			4.6	µg/L[5]							
	Chloroform			80	µg/L[1]							
	Chlorodibromomethane (THM)			80	µg/L[1]							
	1,2-Dibromo-3-chloropropane (DBCP)			0.2	µg/L[1]							
	1,2-Dibromoethane (EDB)			0.05	µg/L[1]							
	1,2-Dichlorobenzene			600	µg/L[1]							
	1,4-Dichlorobenzene			75	µg/L[1]							
	trans-1,4-Dichloro-2-butene				µg/L							
	1,1 -Dichloroethane			5	µg/L							
	1,2-Dichloroethane			5	µg/L[1]							
	1,1-Dichloroethylene			7	µg/L[1]							
	cis-1,2-Dichloroethene			70	µg/L[1]							
	trans-1,2-Dichloroethene			100	µg/L[1]							
	1,2-Dichloropropane			5	µg/L[1]							
	cis-1,3-Dichloropropene				µg/L							
	trans-1,3-Dichloropropene				µg/L							
	Ethylbenzene			700	µg/L[1]							
	Methyl butyl ketone(2-Hexanone)			160	µg/L[5]							
	Bromomethane			10	µg/L[4]							
	Chloromethane			30	µg/L[4]							
	Dibromomethane			61	µg/L[5]							
	Methylene chloride			5	µg/L[1]							
	Methyl ethyl ketone(2-Butanone)			4000	µg/L[4]							
	Methyl iodide				µg/L							
	4-Methyl-2-pentanone				µg/L							
	Styrene			100	µg/L[1]							
	1,1,1,2-Tetrachloroethane			70	µg/L[4]							
	1,1,2,2-Tetrachloroethane			0.3	µg/L[4]							
	Tetrachloroethylene(PCE)			5	µg/L[1]							
	Toluene			1000	µg/L[1]							
	1,1,1-Trichloroethane			200	µg/L[1]							
	1,1,2-Trichloroethane			5	µg/L[1]							
	Trichloroethylene(TCE)			5	µg/L[1]							
	Trichlorofluoromethane			2000	µg/L[4]							
	1,2,3-Trichloropropane			40	µg/L[4]							
	Vinyl acetate			410	µg/L[5]							
	Vinyl chloride			2	µg/L[1]							
	Xylenes			10000	µg/L[1]							
	Methyl tert-butyl ether (MTBE)			20 - 40	µg/L[6]							

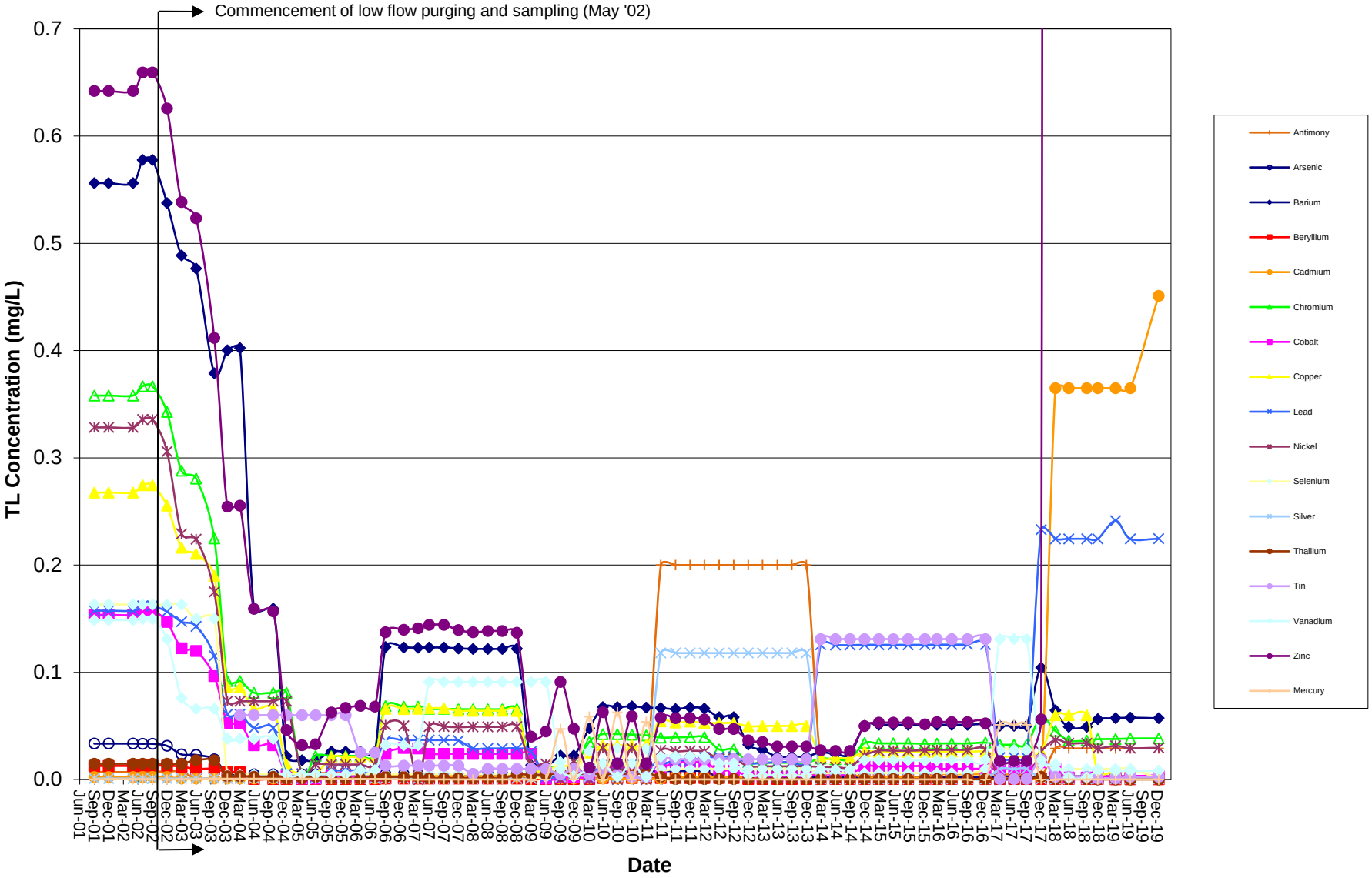
1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

" " = Exceedance of TL
ND = Not Detected

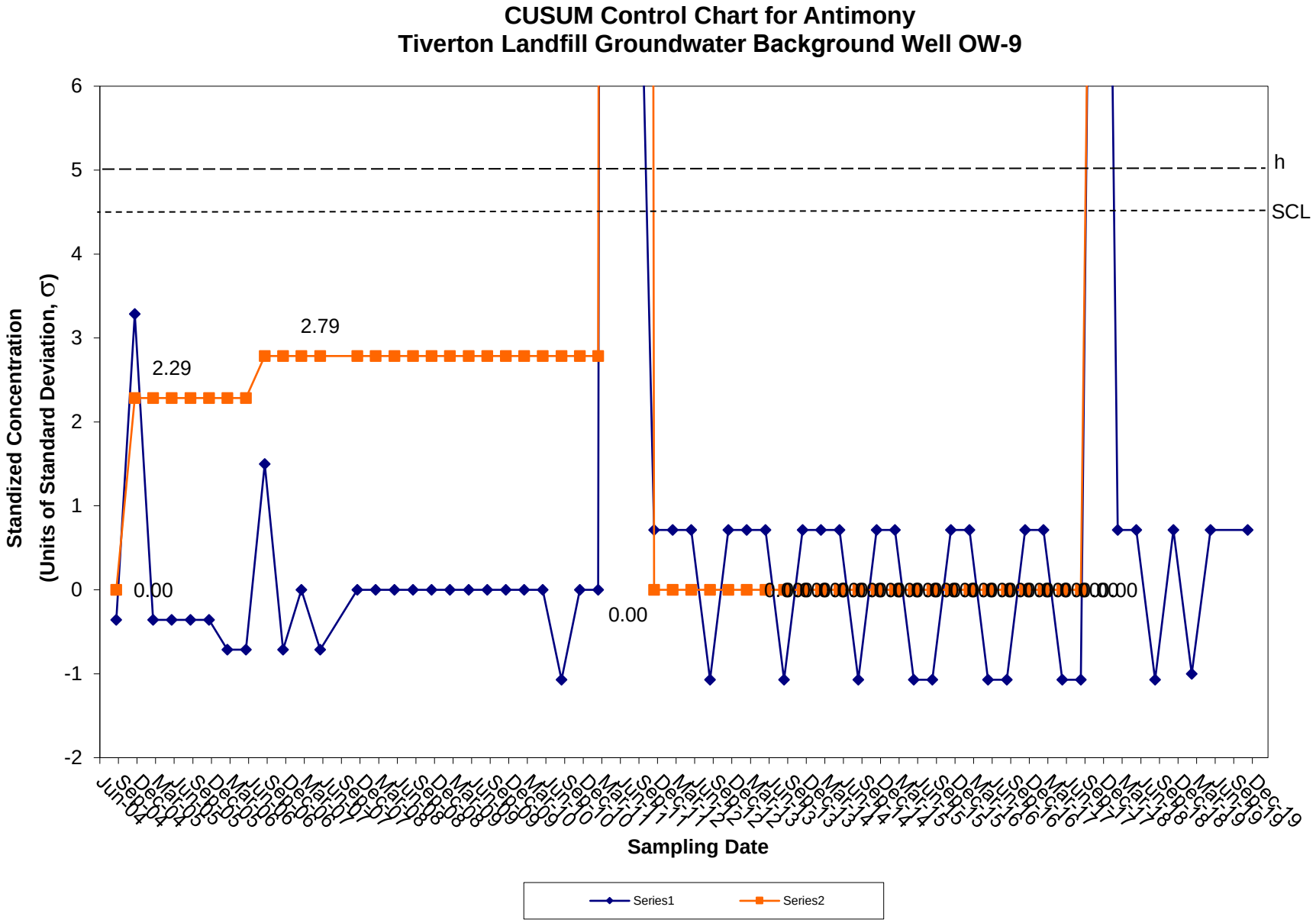
* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

Historical Tolerance Limit Concentrations from Background Well
Tiverton Landfill Compliance Sampling

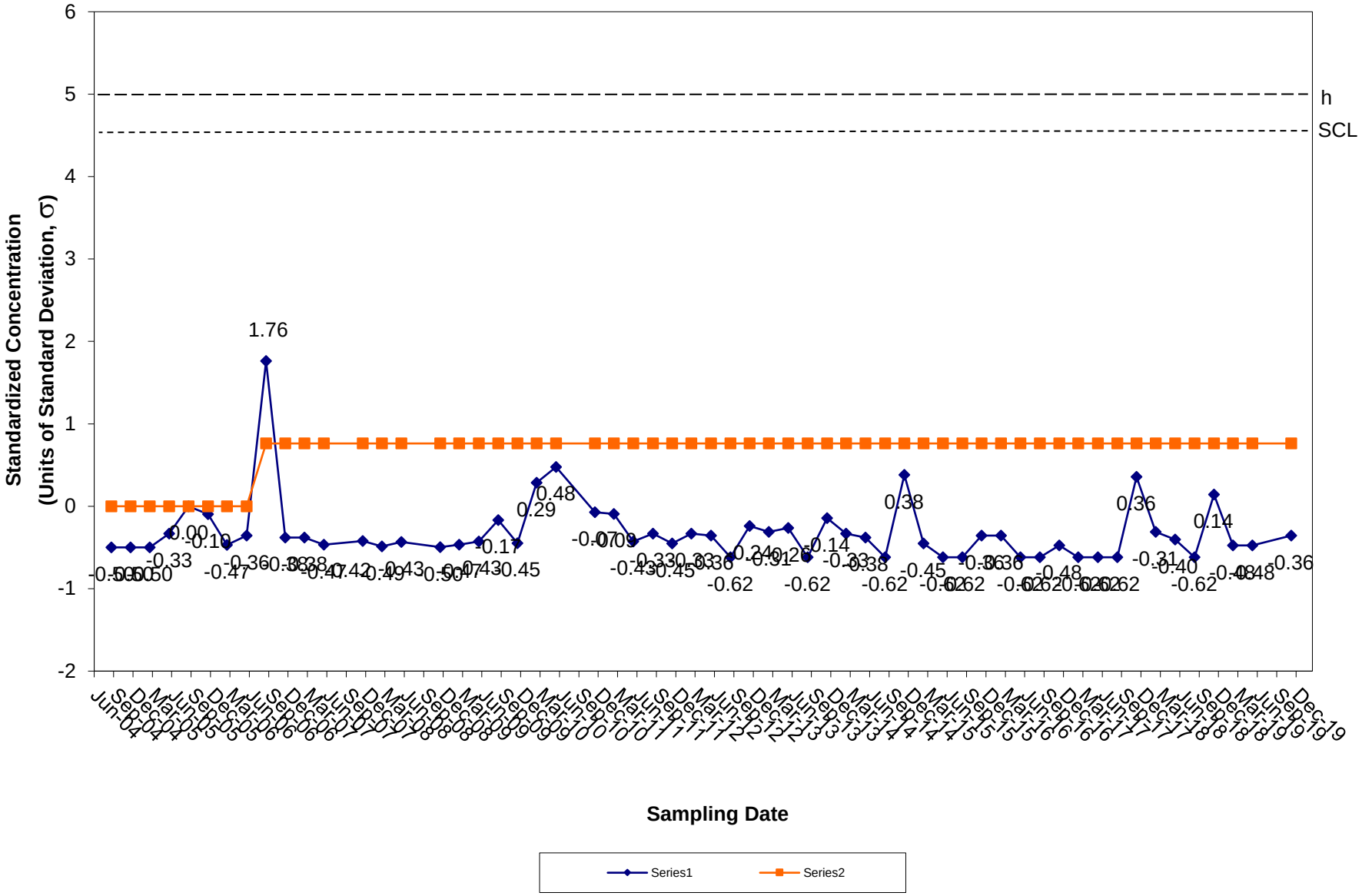


APPENDIX H

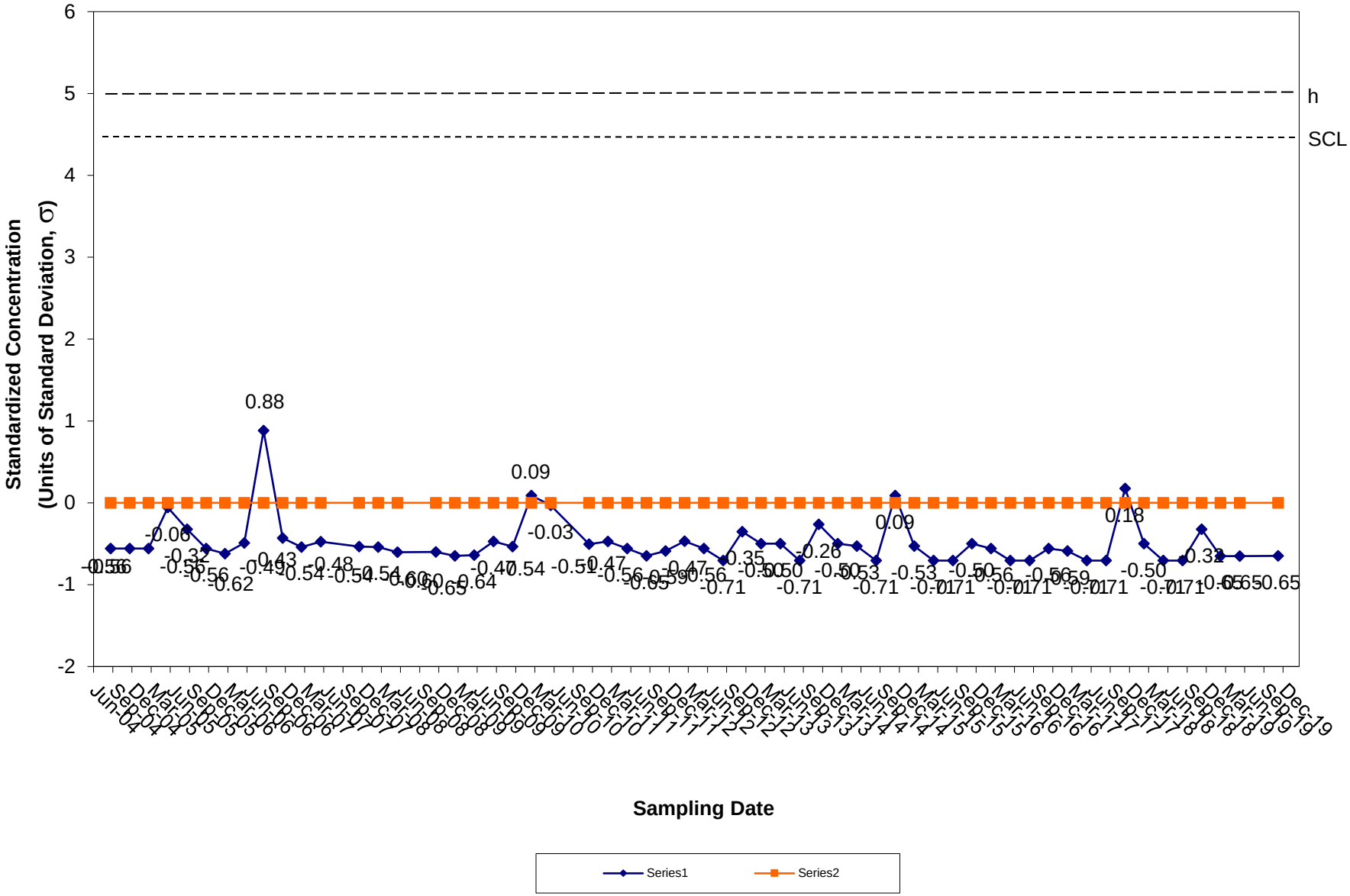
Cusum Method Statistical Evaluation


CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Background Well OW-9
Standized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
2.29
2.79
0.00
0.00
0.00
Sampling Date
Series1
Series2

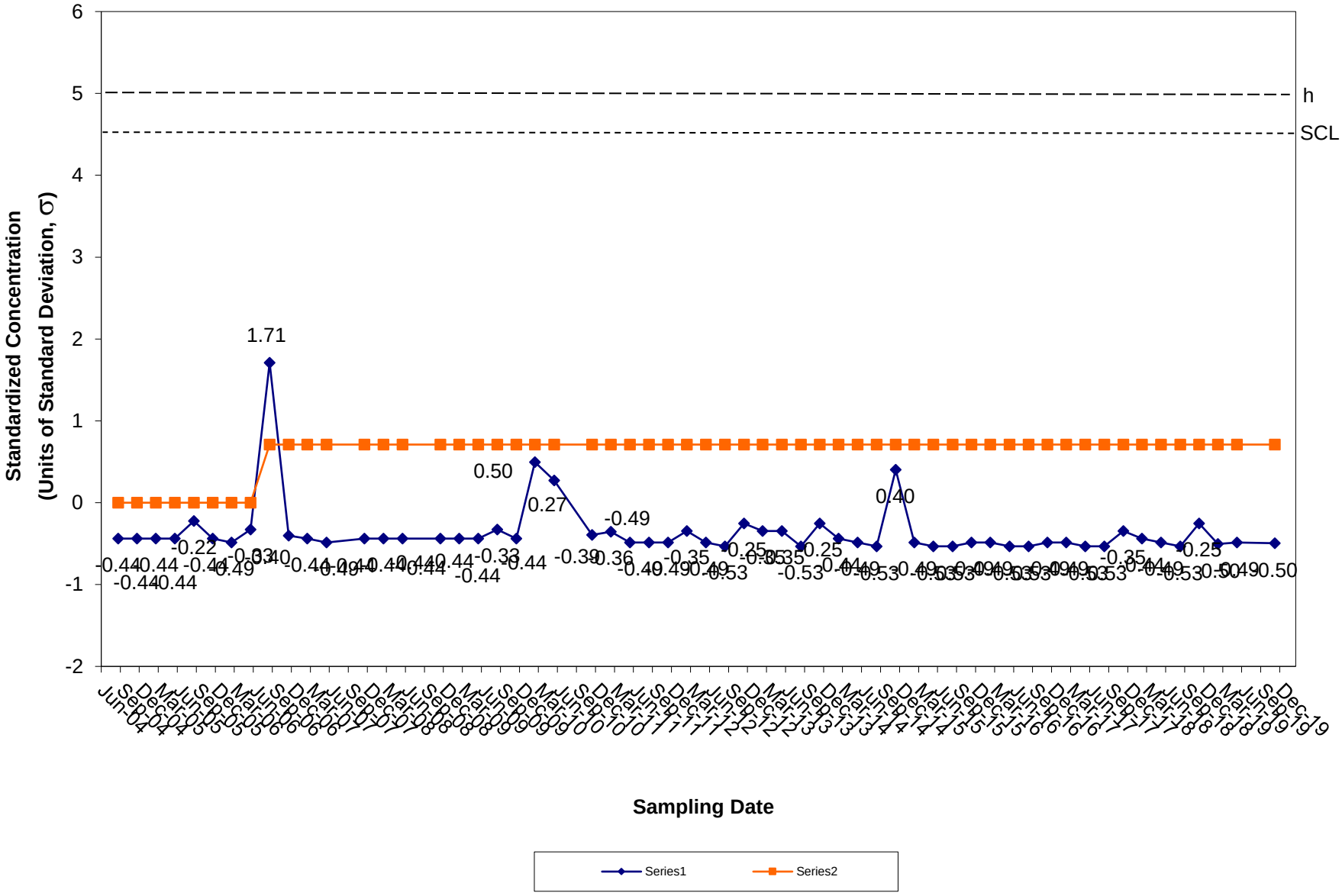
CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Background Well OW-9

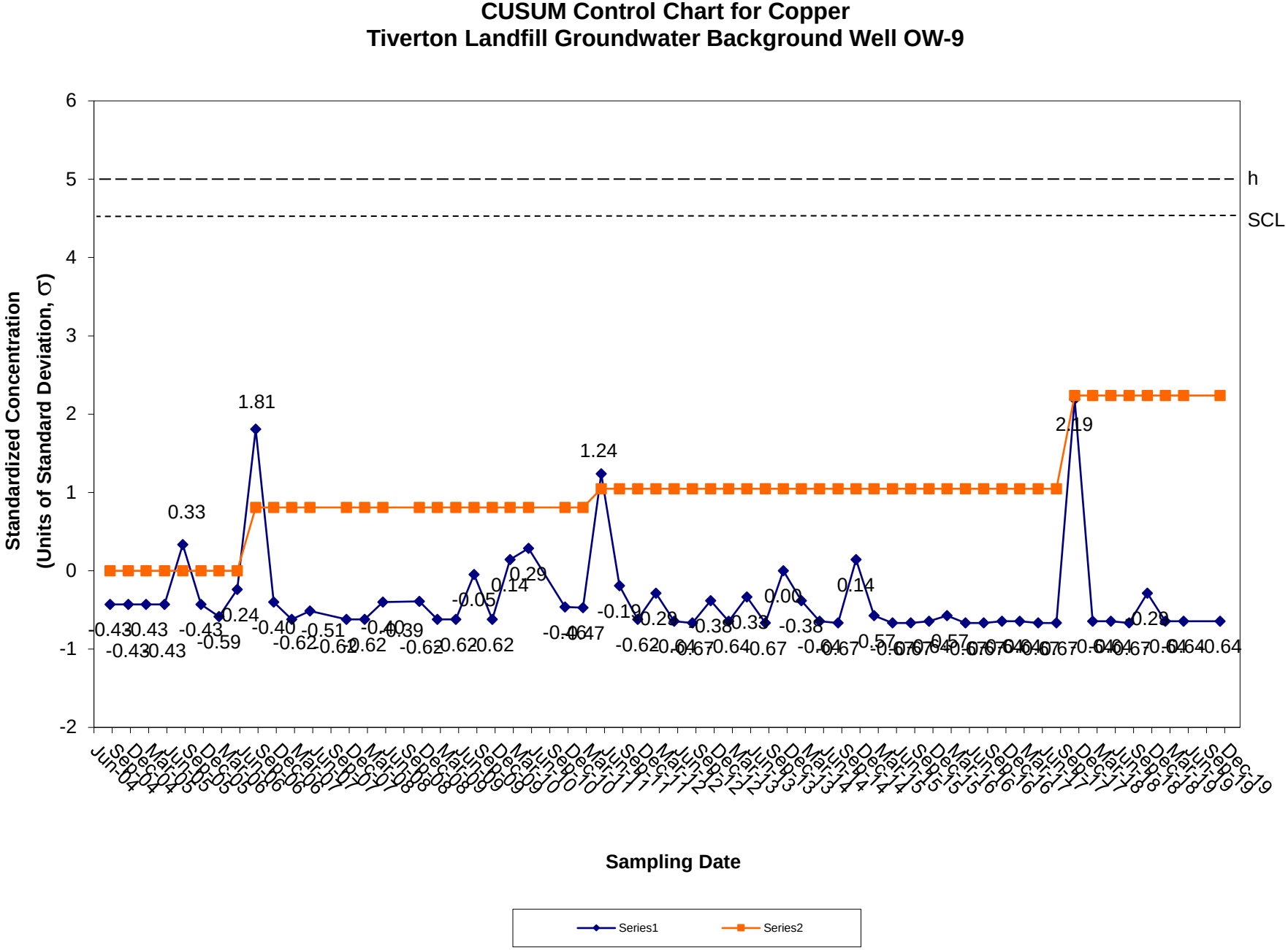


CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Background Well OW-9

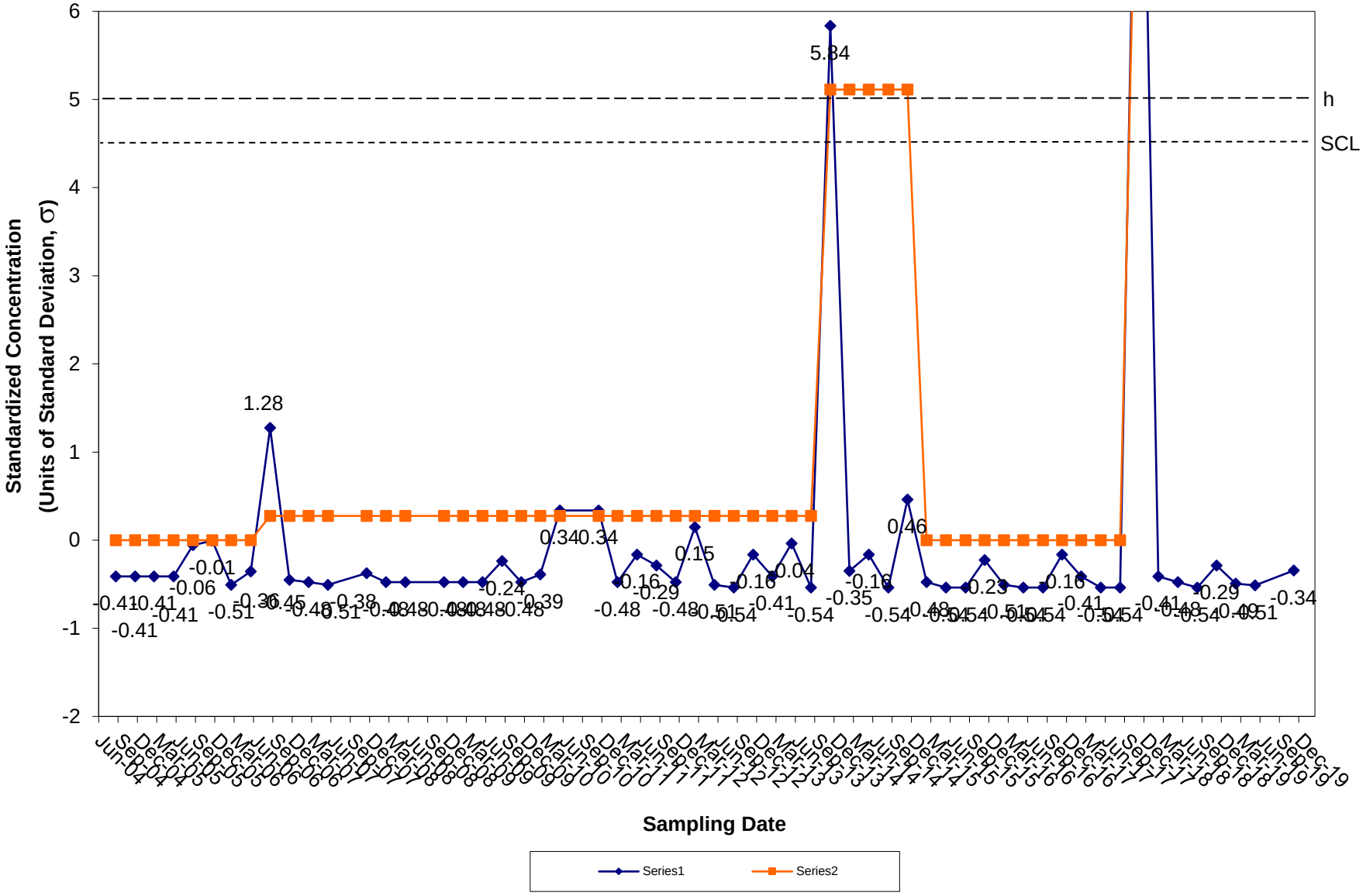


CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Background Well OW-9

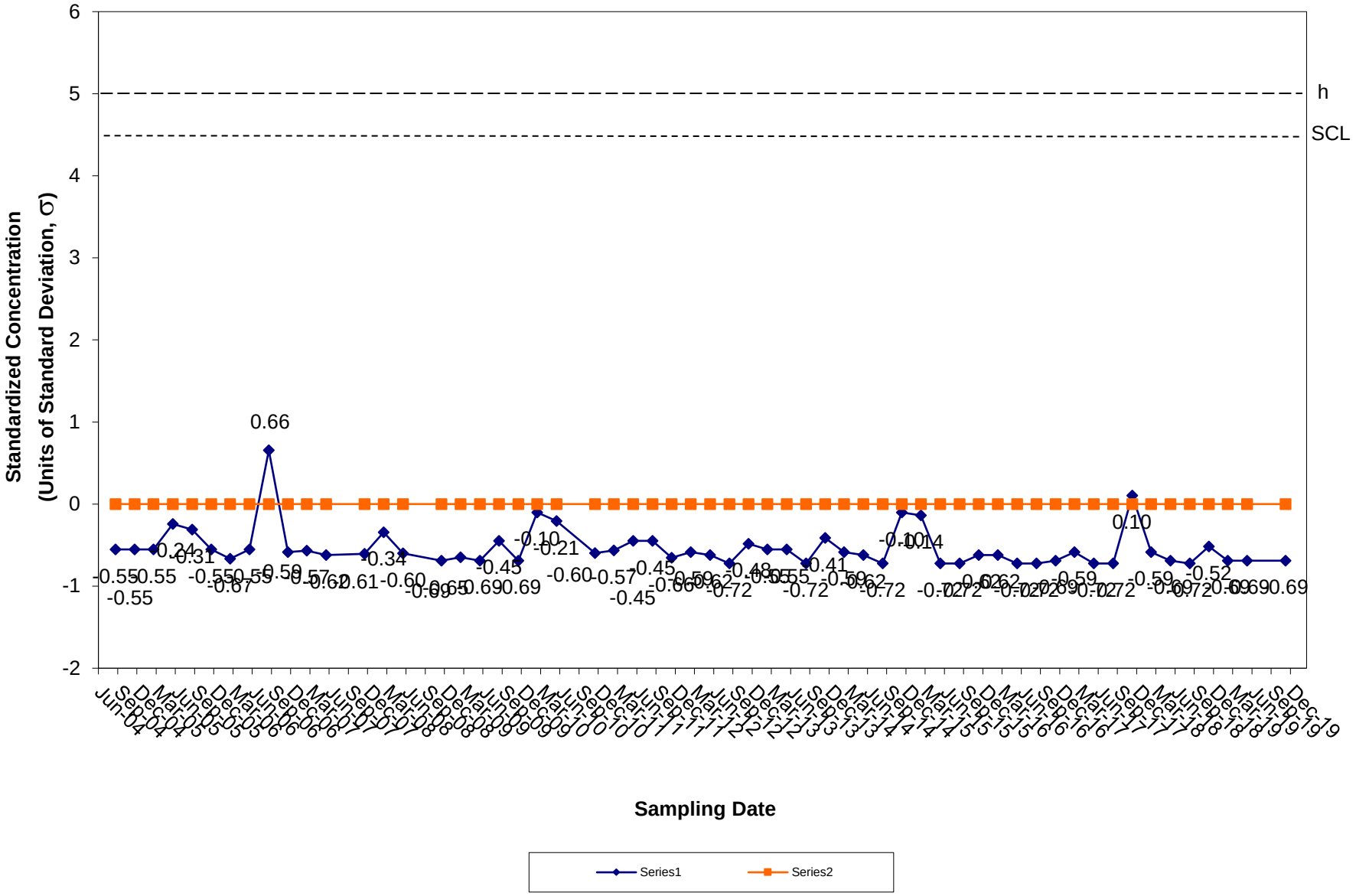



CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Background Well OW-9
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

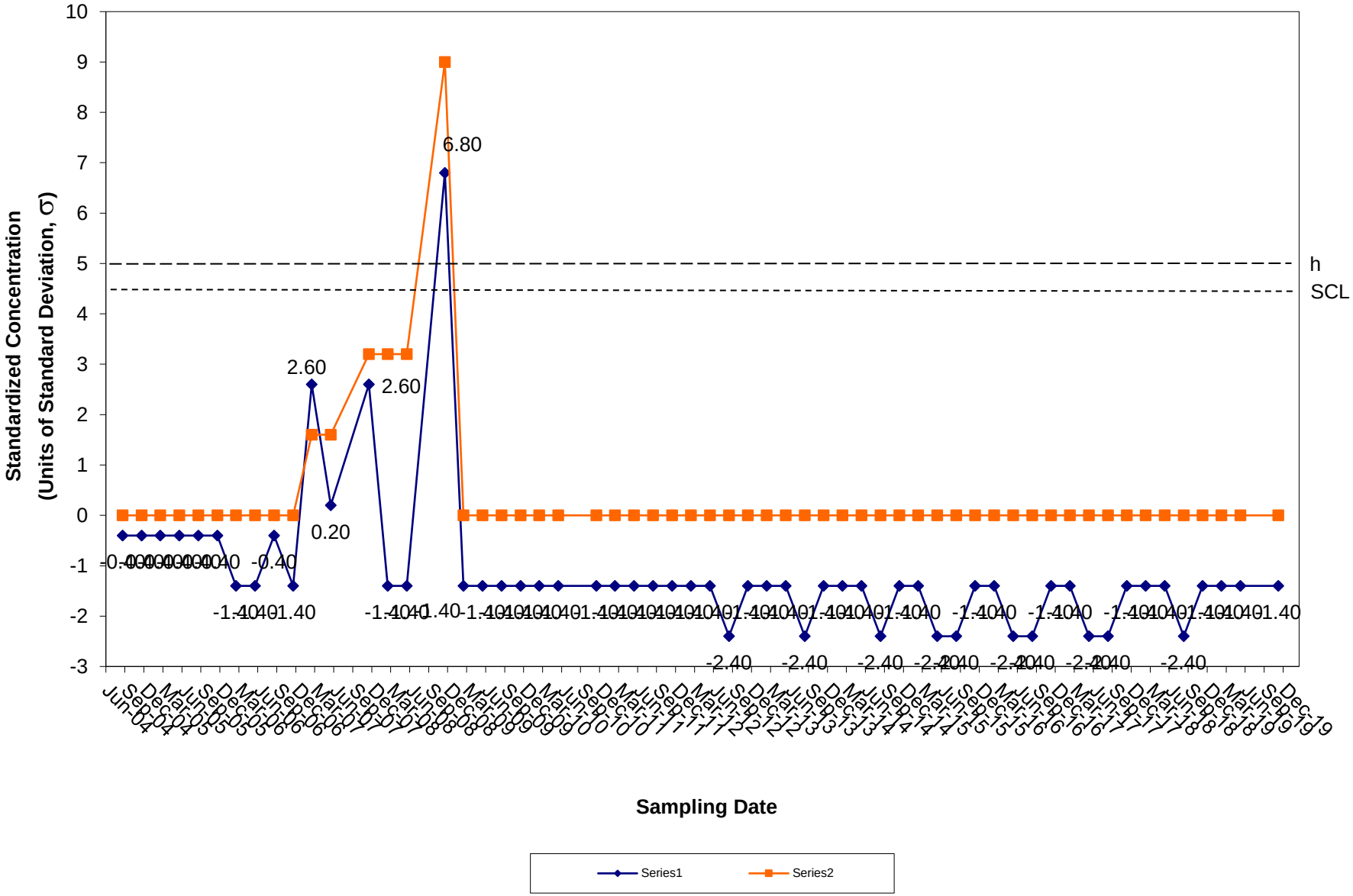
CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Background Well OW-9

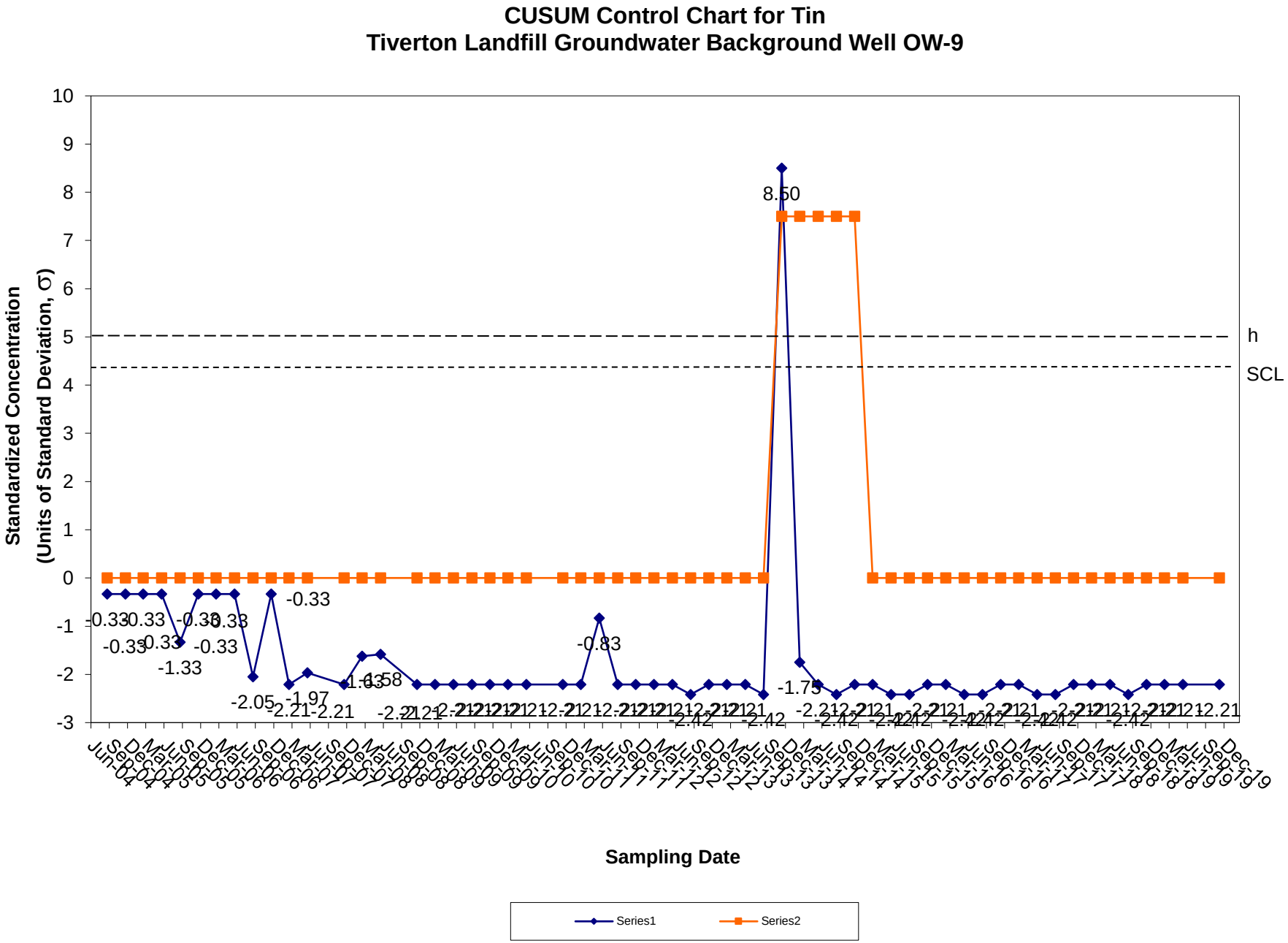


CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Background Well OW-9

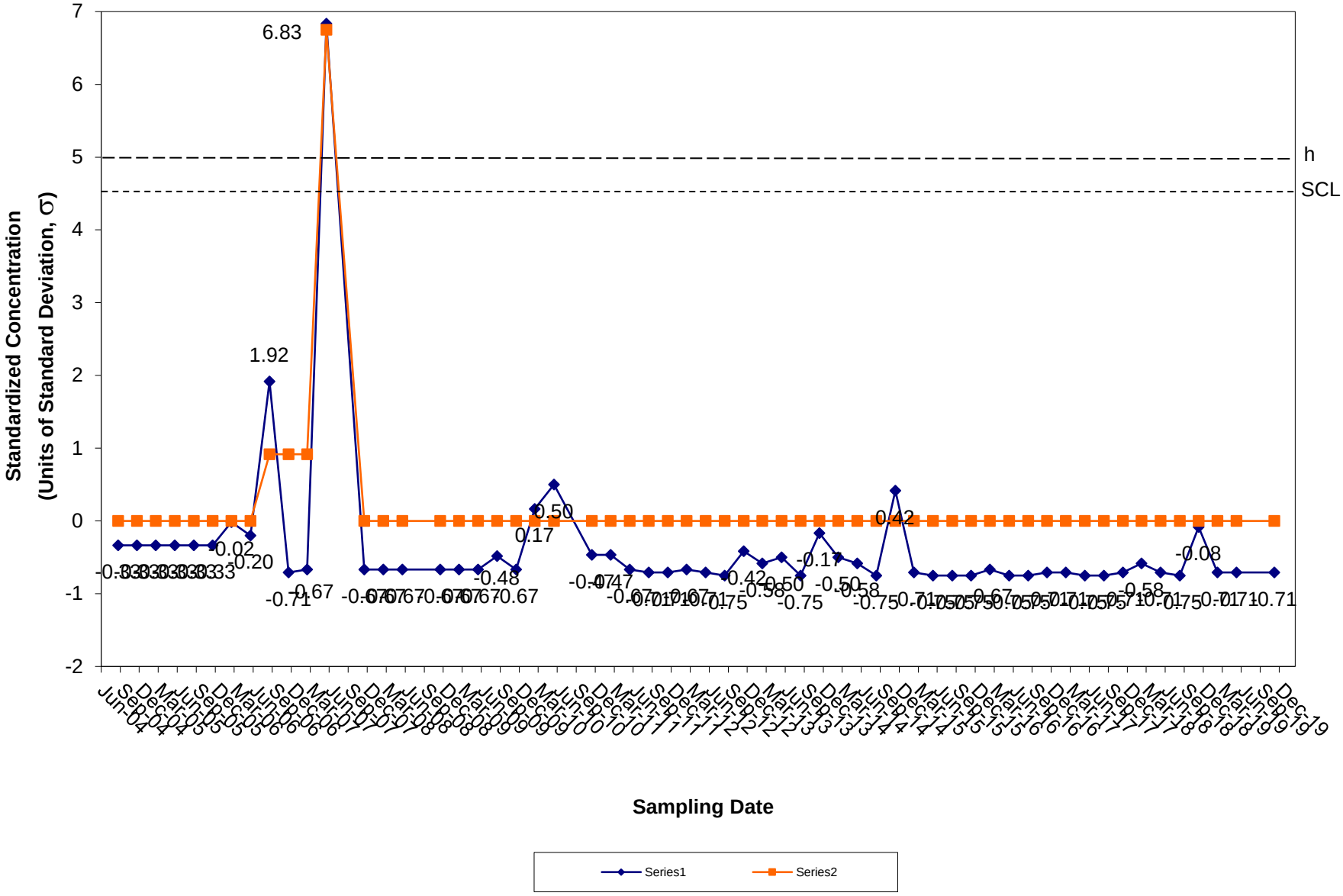


CUSUM Control Chart for Thallium
Tiverton Landfill Groundwater Background Well OW-9

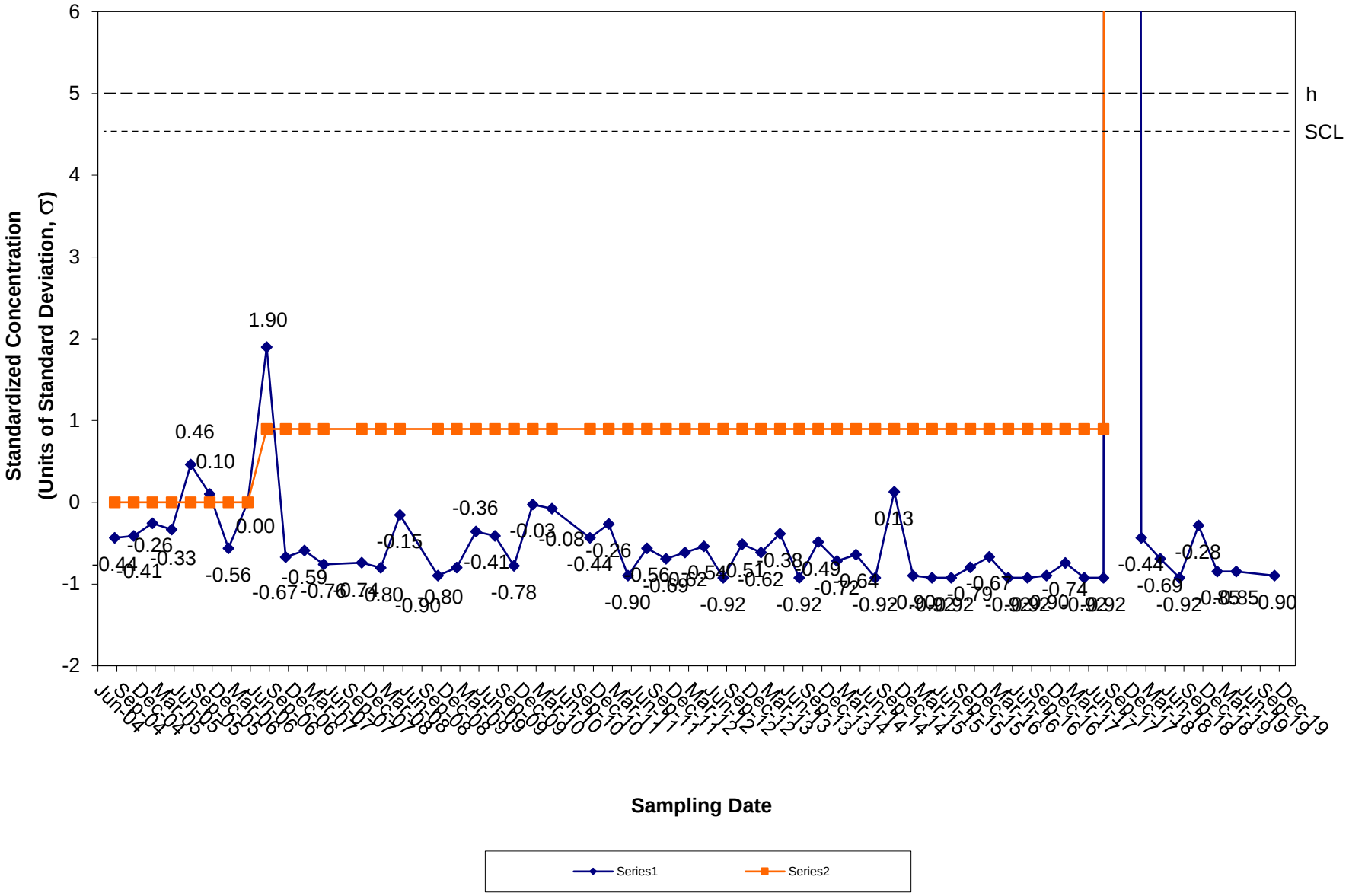



CUSUM Control Chart for Tin
Tiverton Landfill Groundwater Background Well OW-9
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
8.50
-0.33
-1.33
-2.05
-1.97
-0.83
-1.75
Series1
Series2

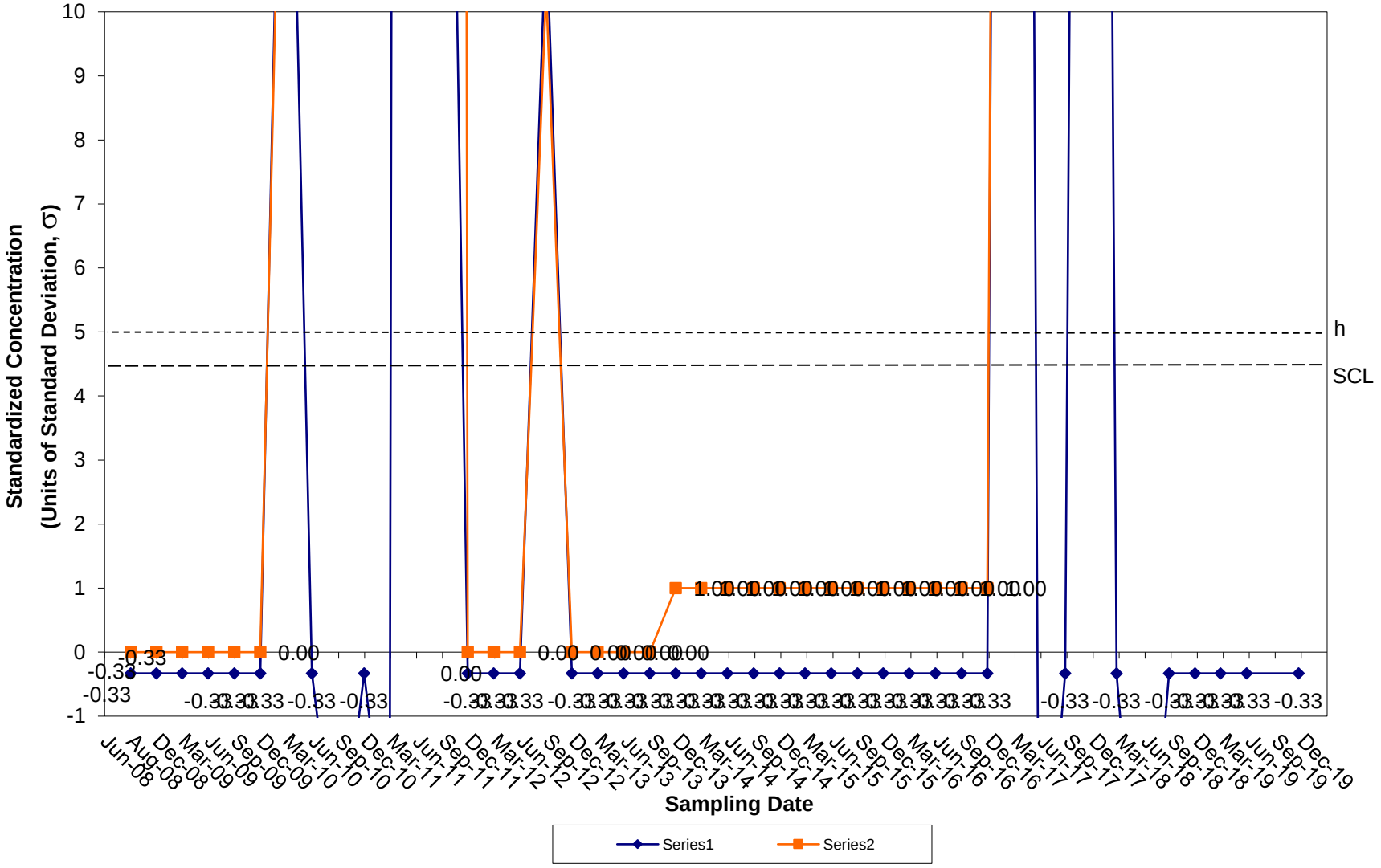
CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Background Well OW-9



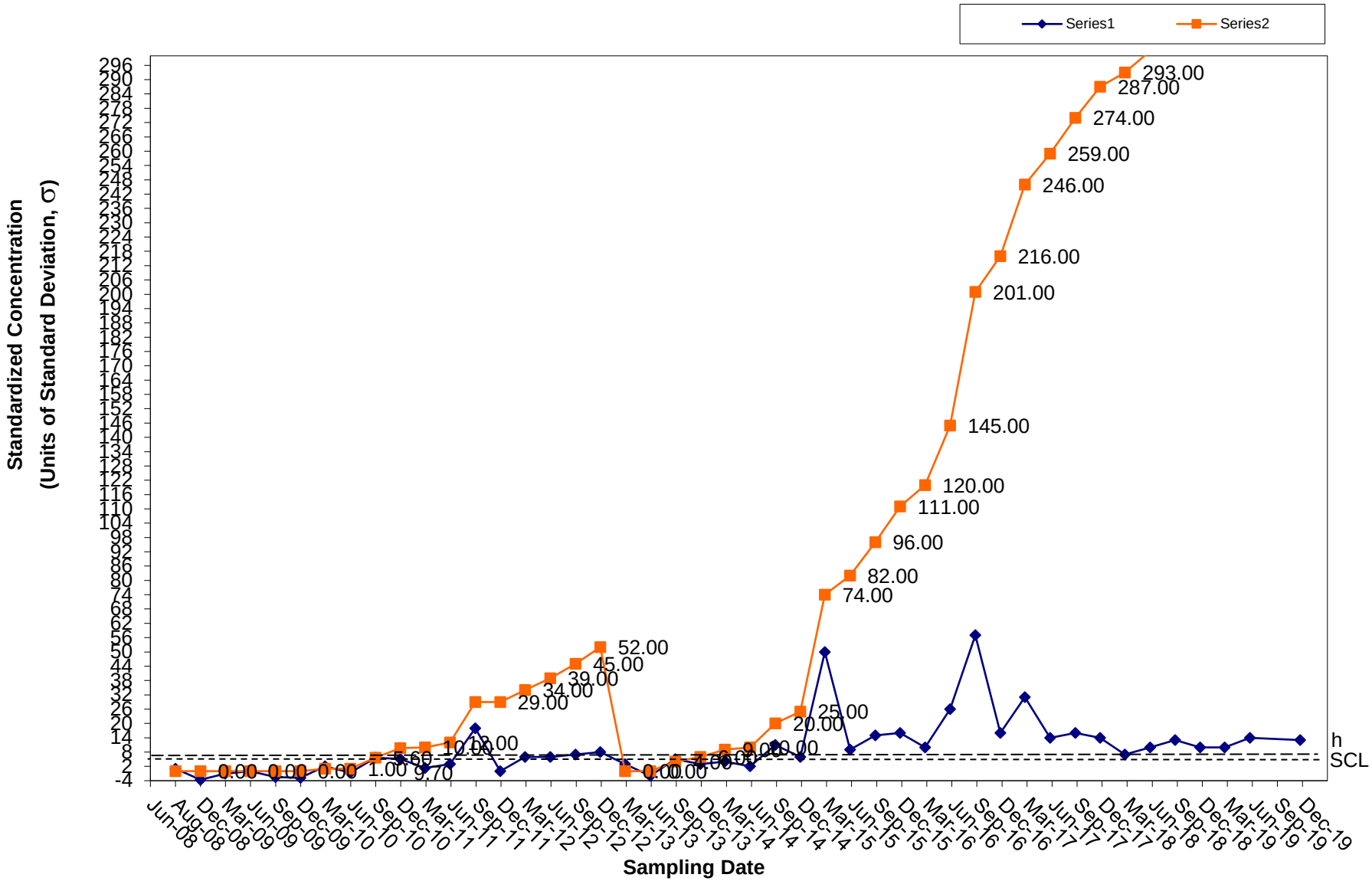
CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Background Well OW-9



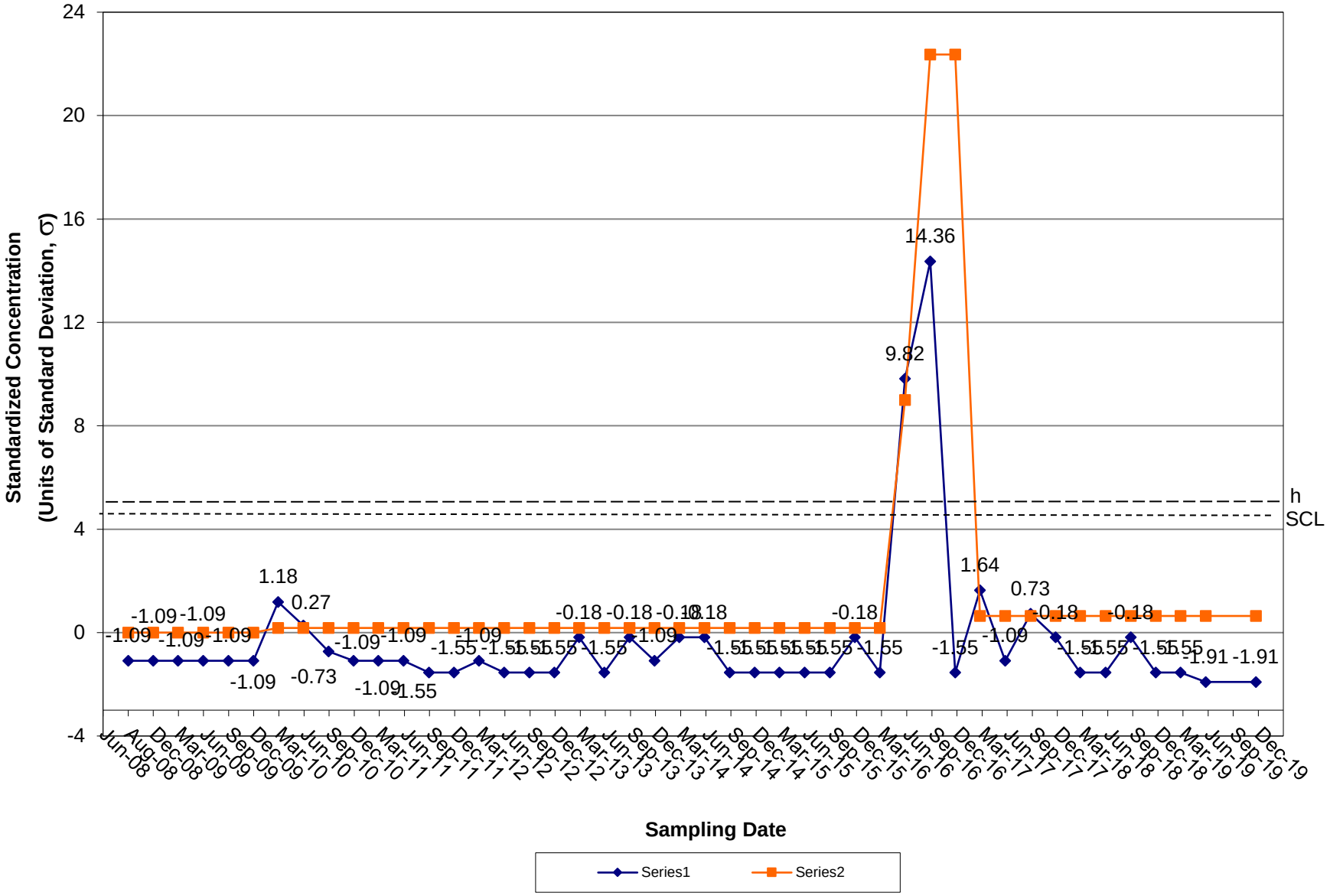
CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Background Well OW-12

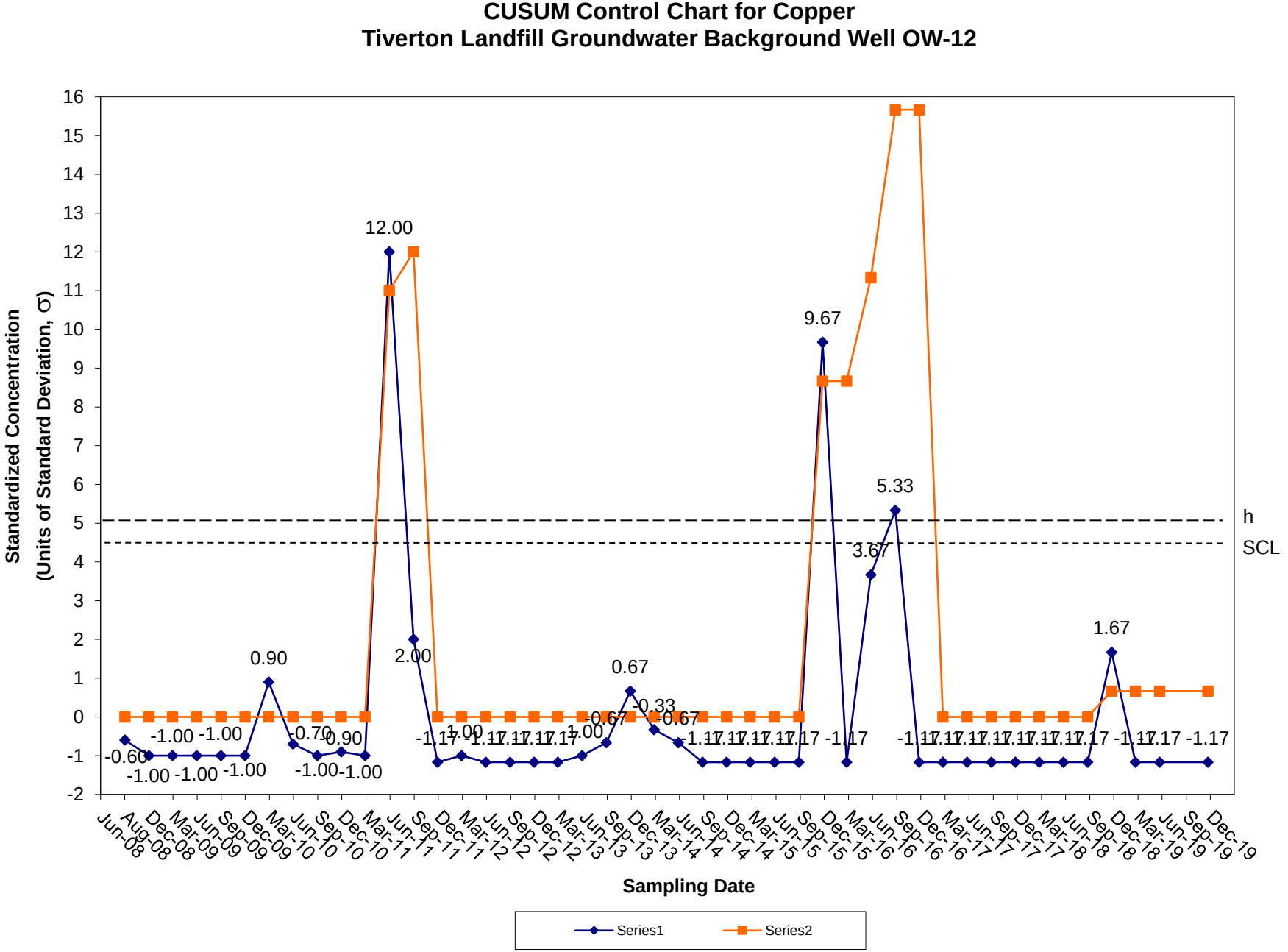


CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Background Well OW-12

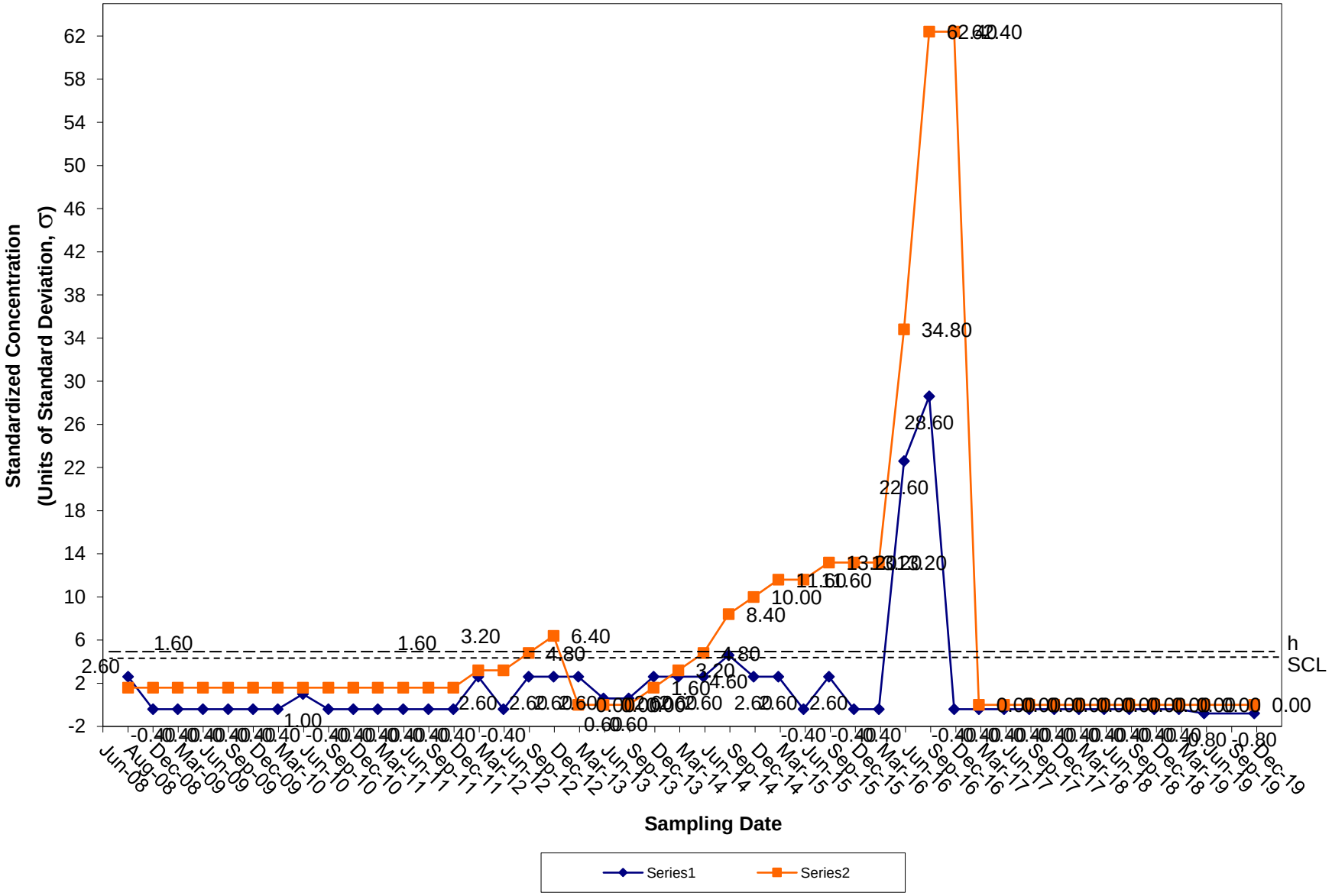


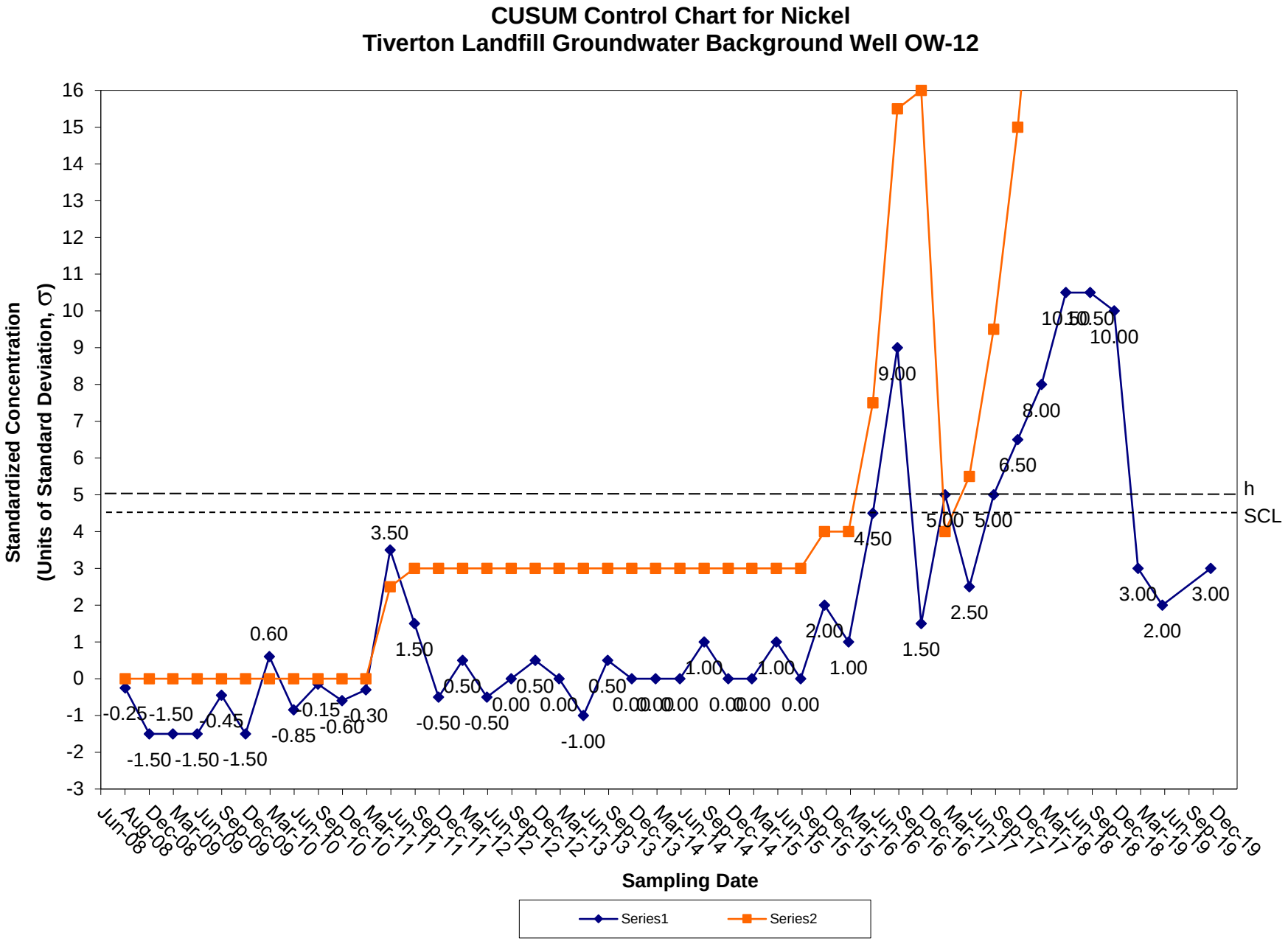
CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Background Well OW-12

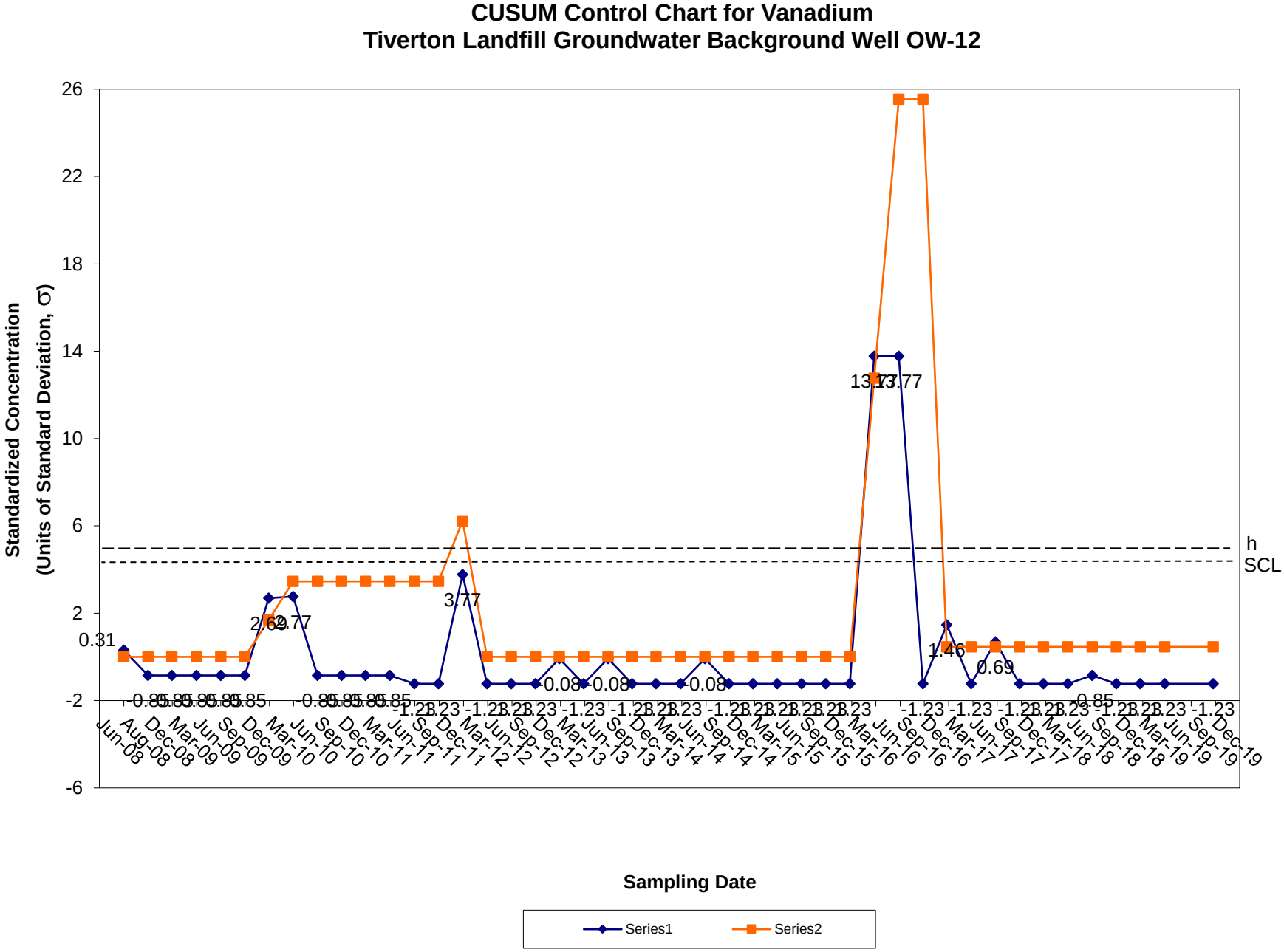



CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Background Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

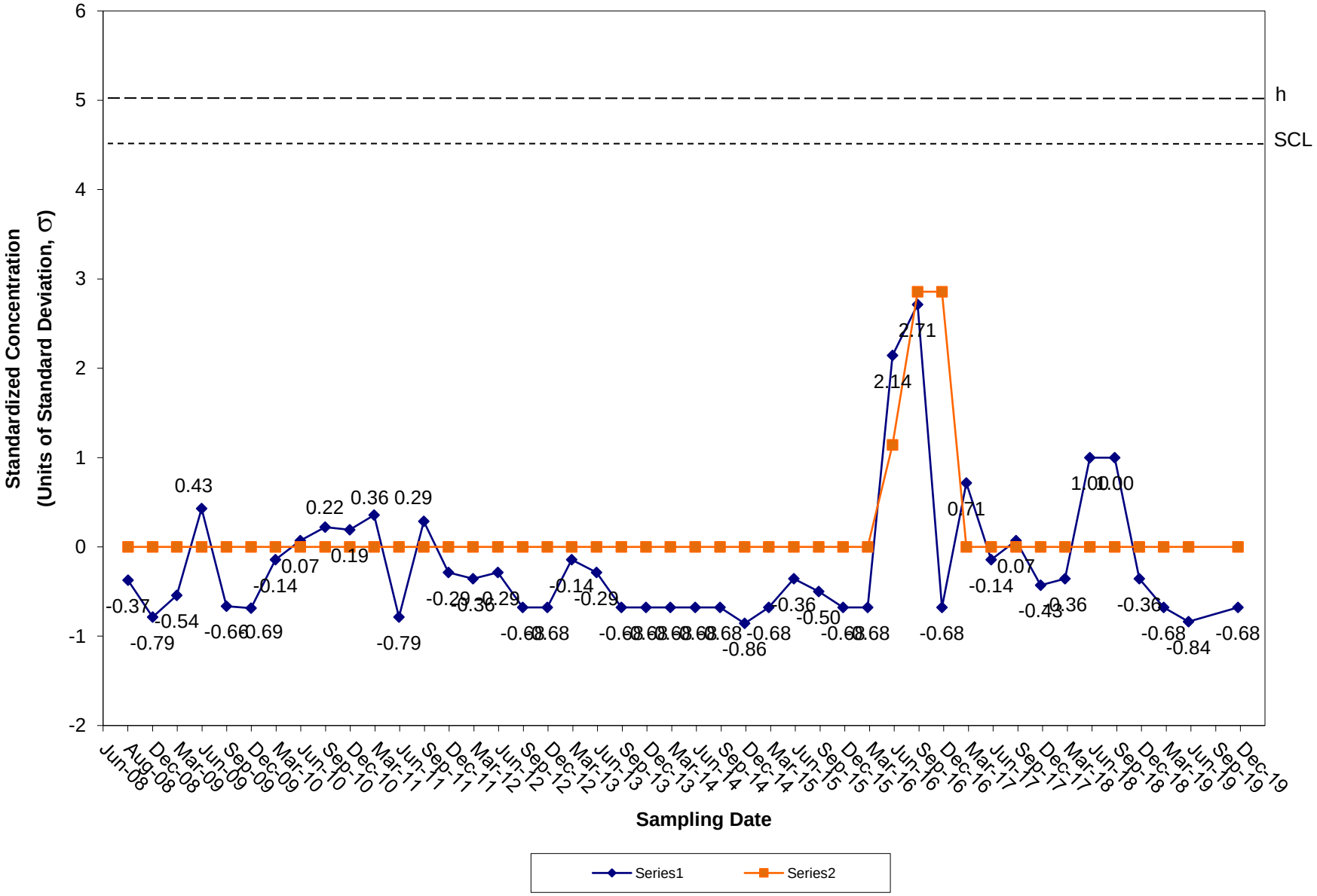
CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Background Well OW-12

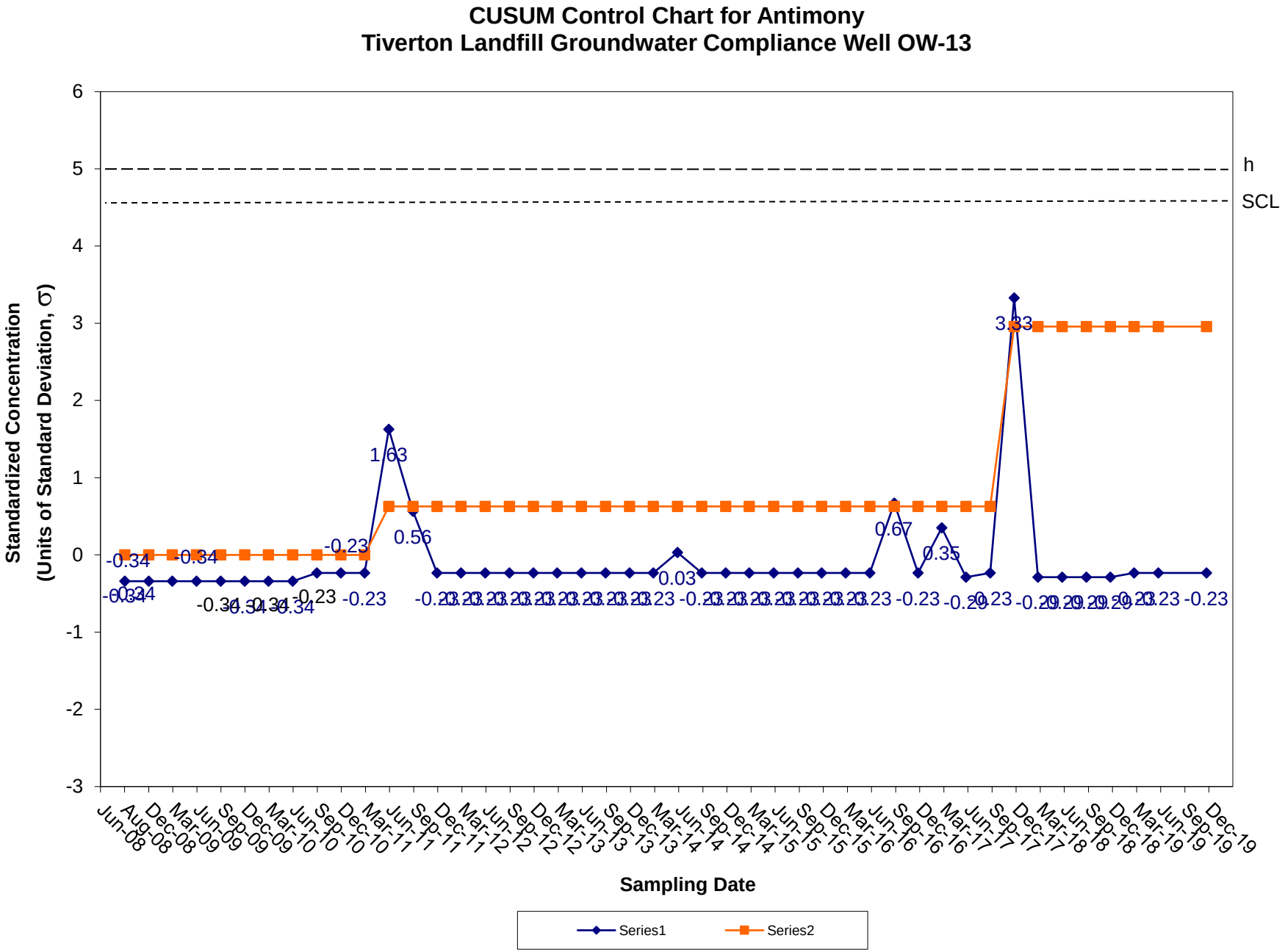



CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Background Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Background Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
26
22
18
14
10
6
2
-2
-6
h
SCL
0.31
2.62
2.77
3.77
-0.08
-0.08
-0.08
13.77
1.46
0.69
-0.85
-1.23
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Sampling Date
Series1
Series2

CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Background Well OW-12




CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
1.63
0.56
0.67
0.35
0.03
3.33
-0.34
-0.23
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
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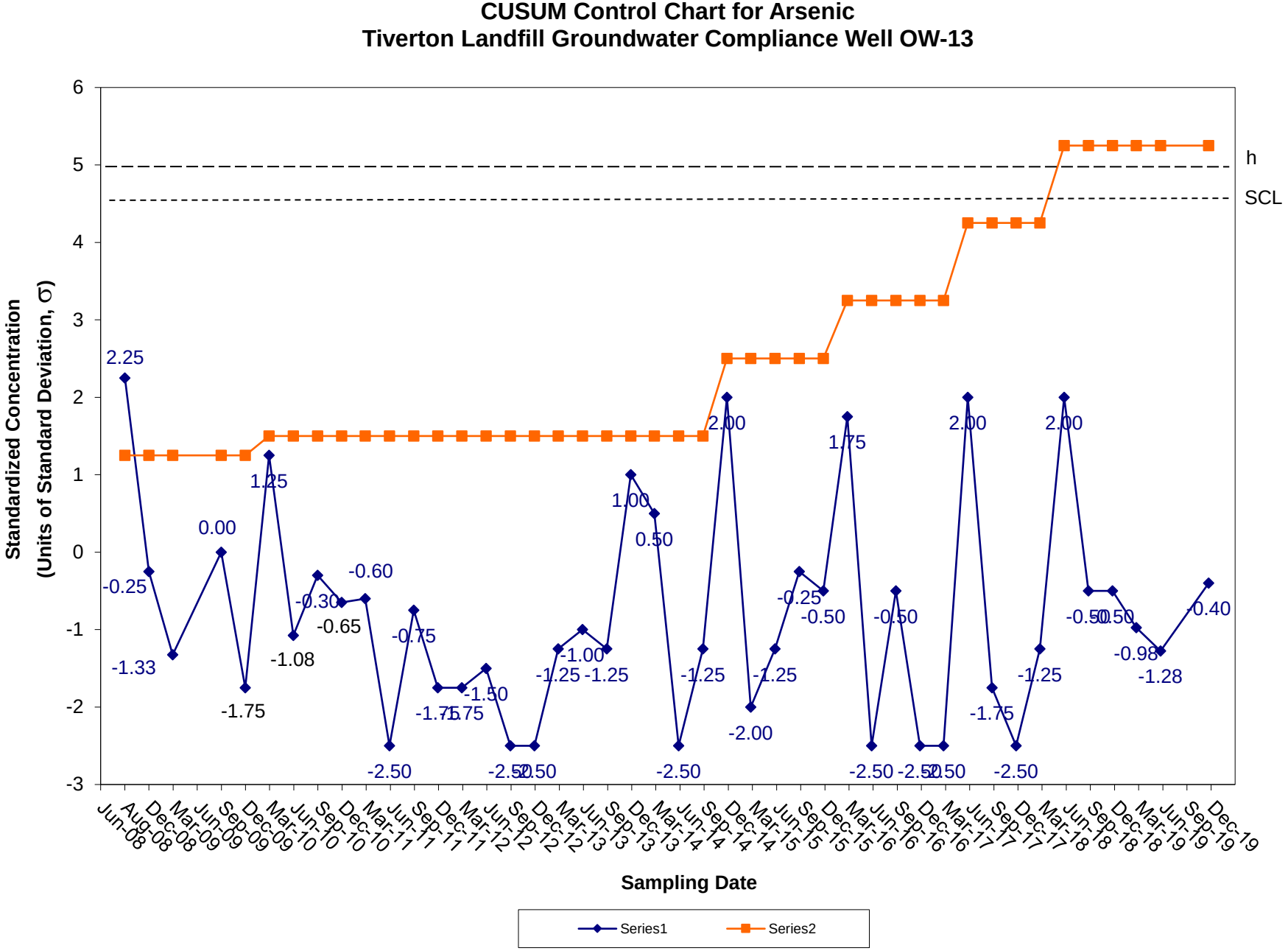
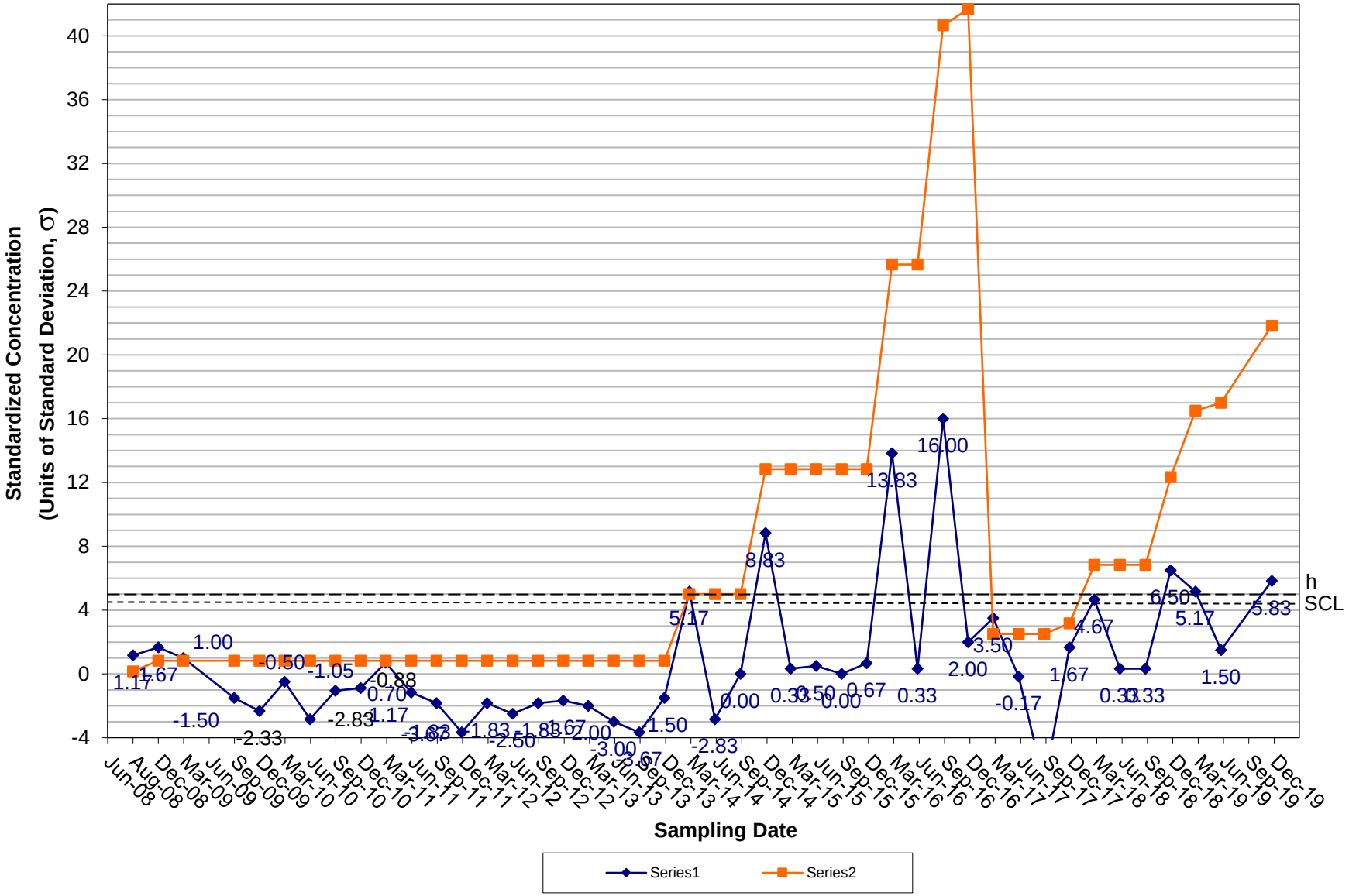
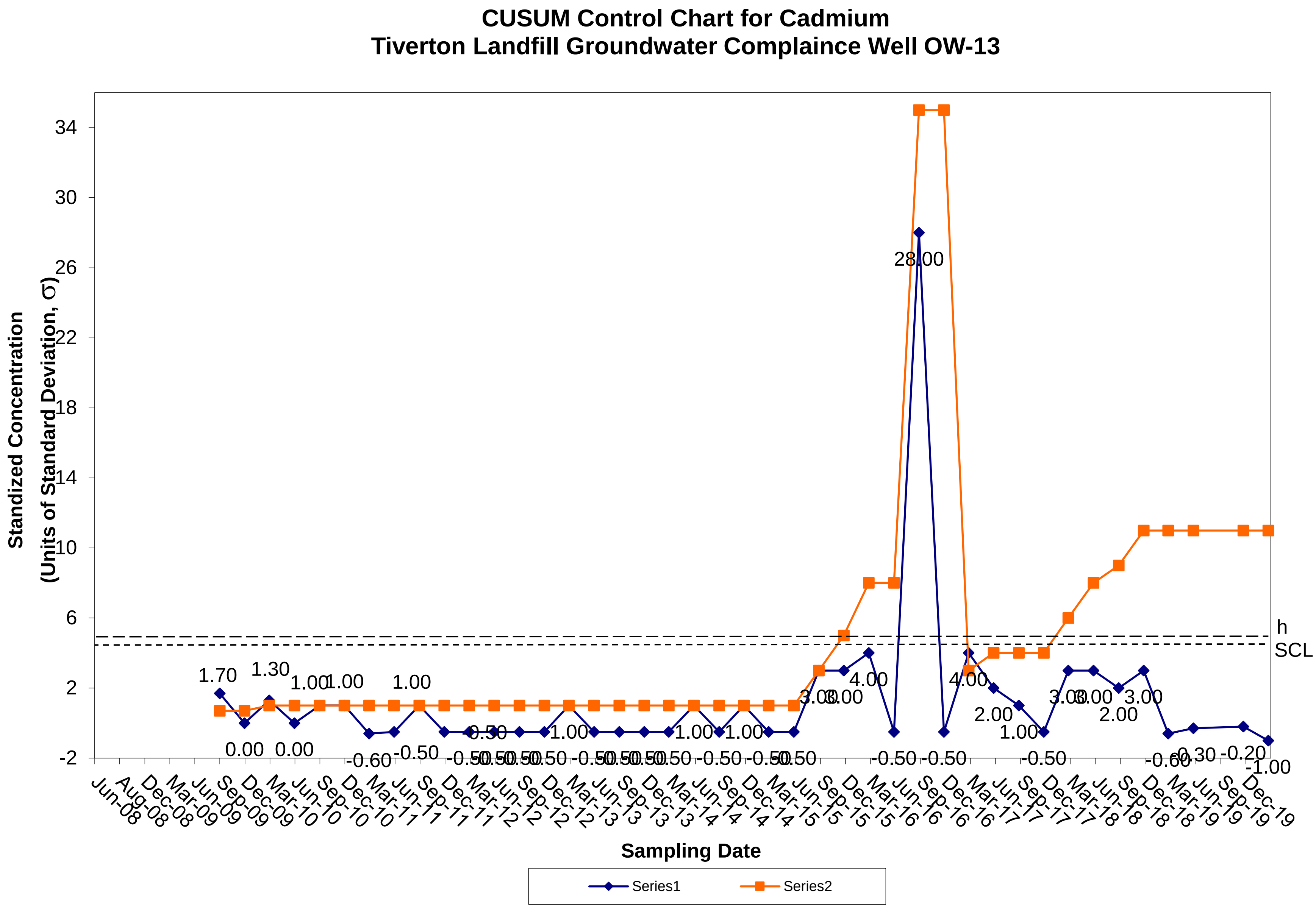
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-13




CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Complaince Well OW-13
Standized Concentration
(Units of Standard Deviation, σ)
34
30
26
22
18
14
10
6
2
-2
h
SCL
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
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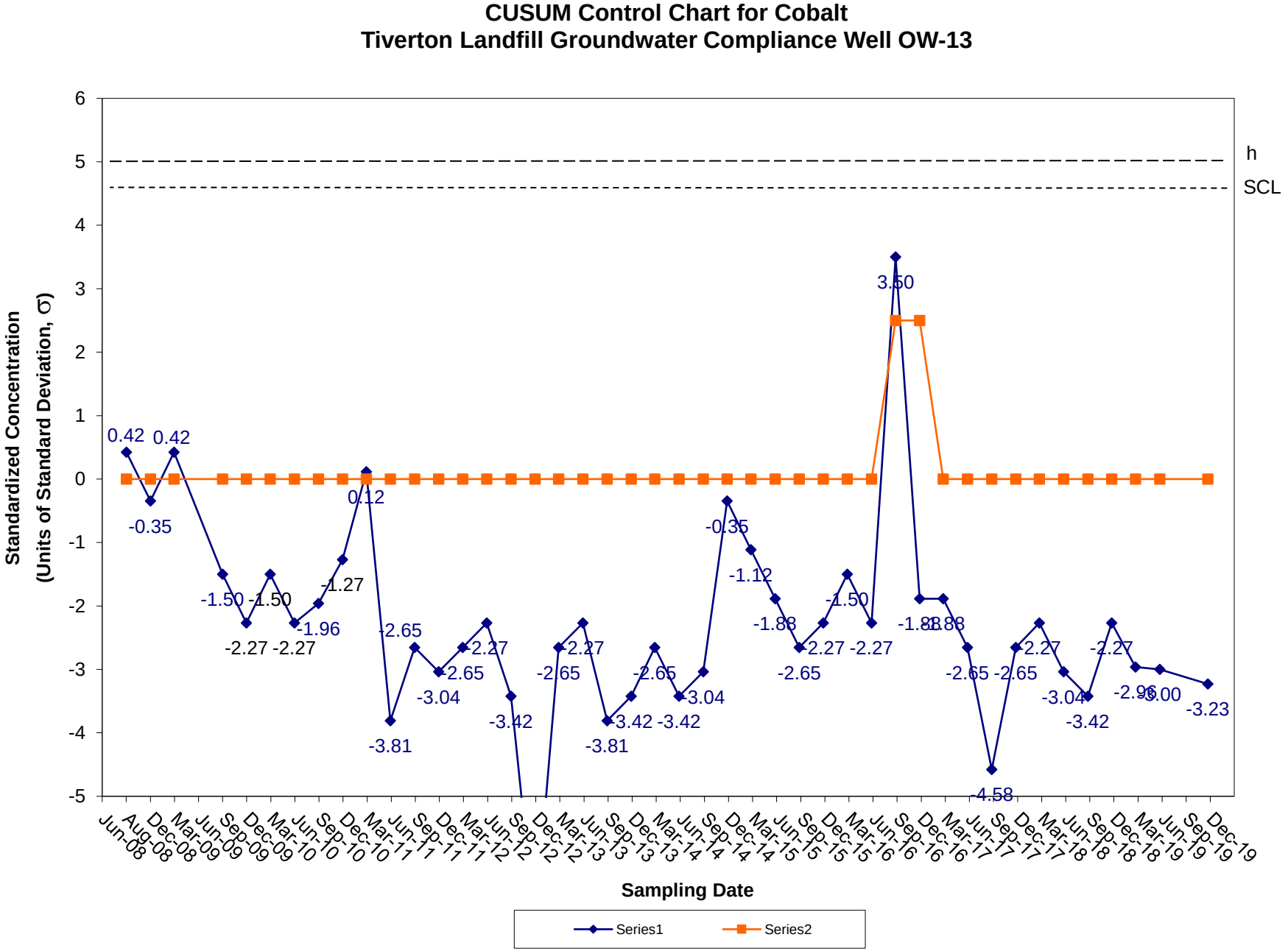
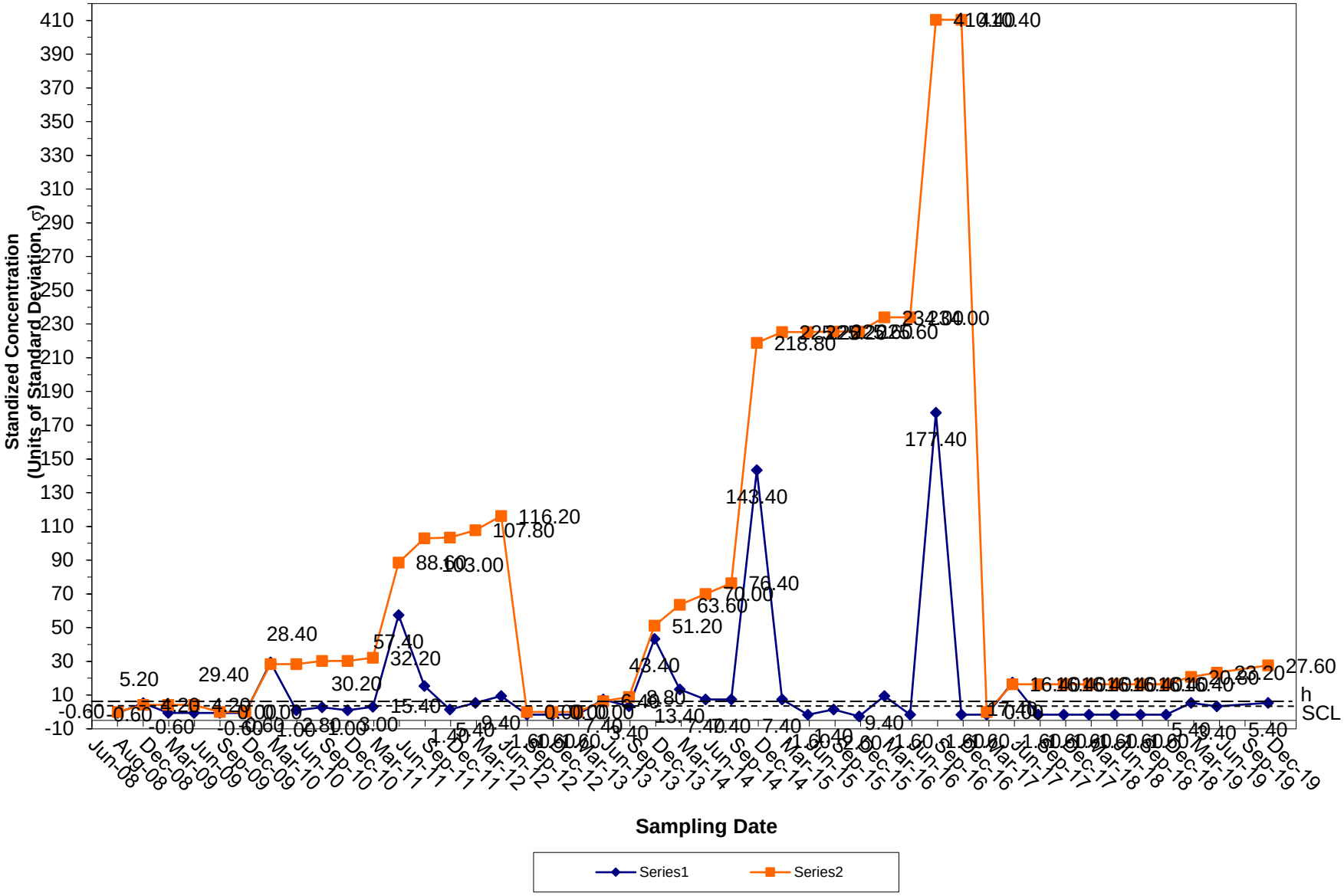
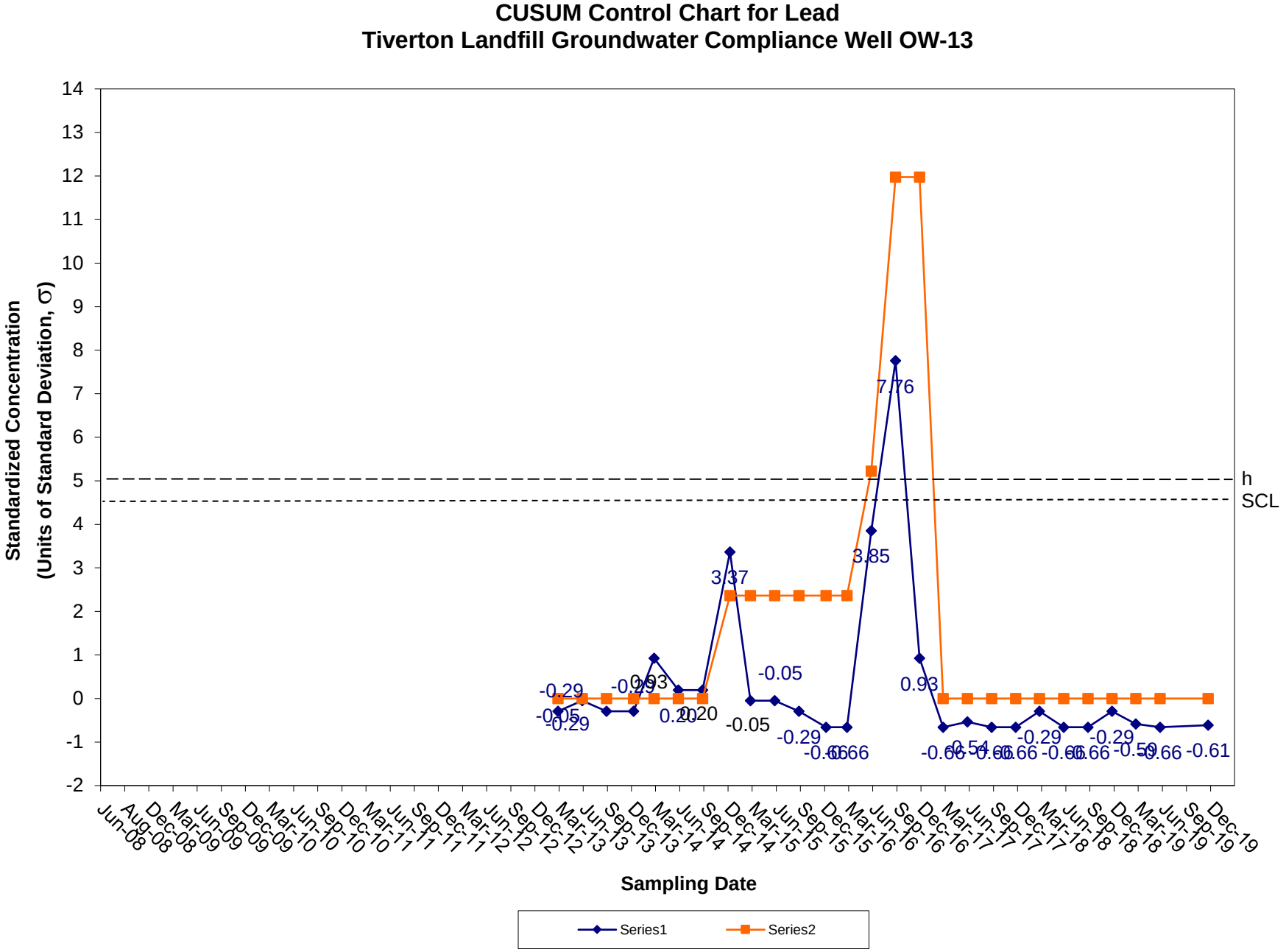
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
h
SCL
Sampling Date
Series1
Series2

CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Complaince Well OW-13




CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
h
SCL
7.76
3.85
3.37
0.93
-0.05
-0.29
-0.61
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
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Dec-13
Mar-14
Jun-14
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Mar-16
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Jun-17
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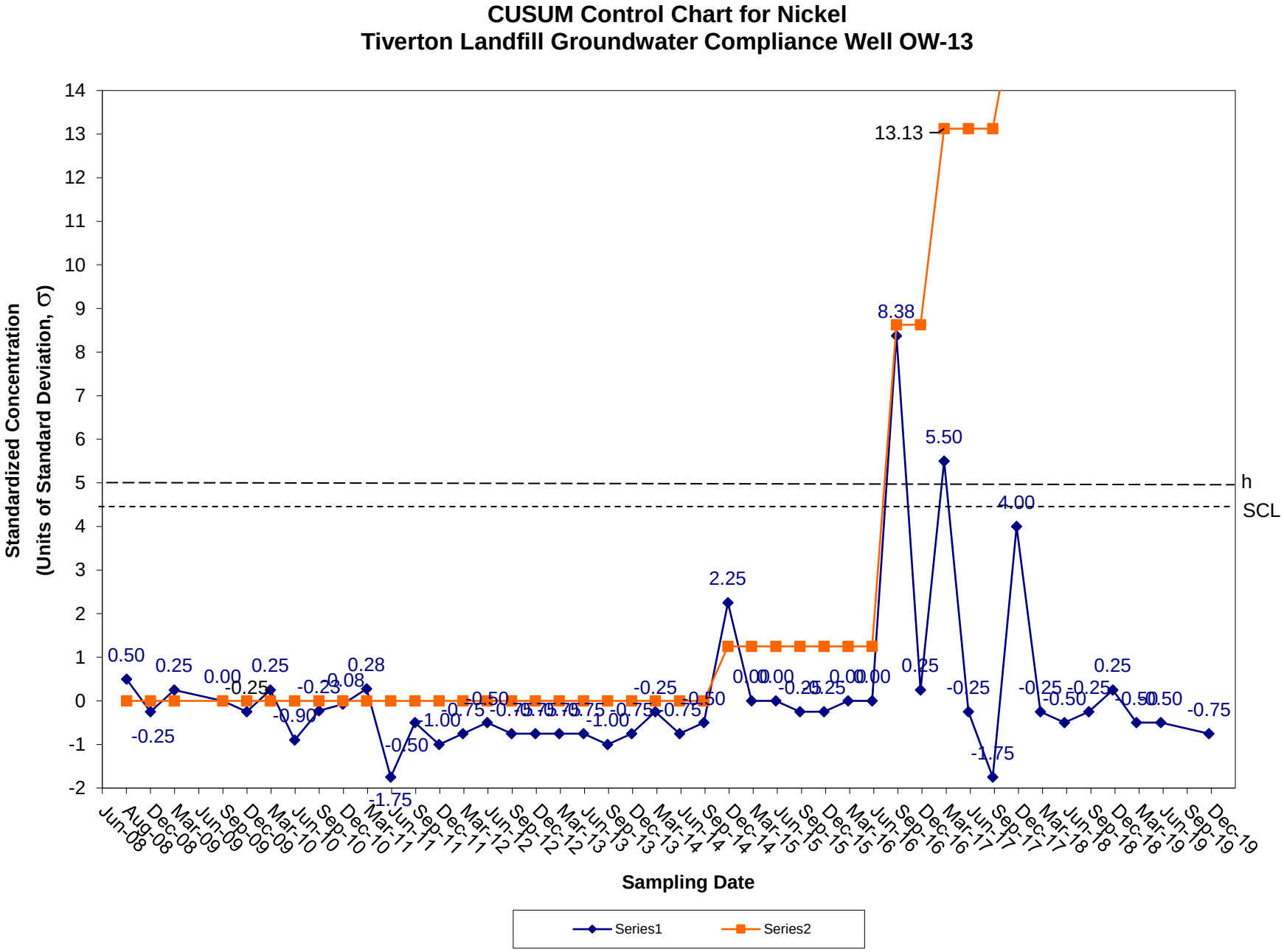
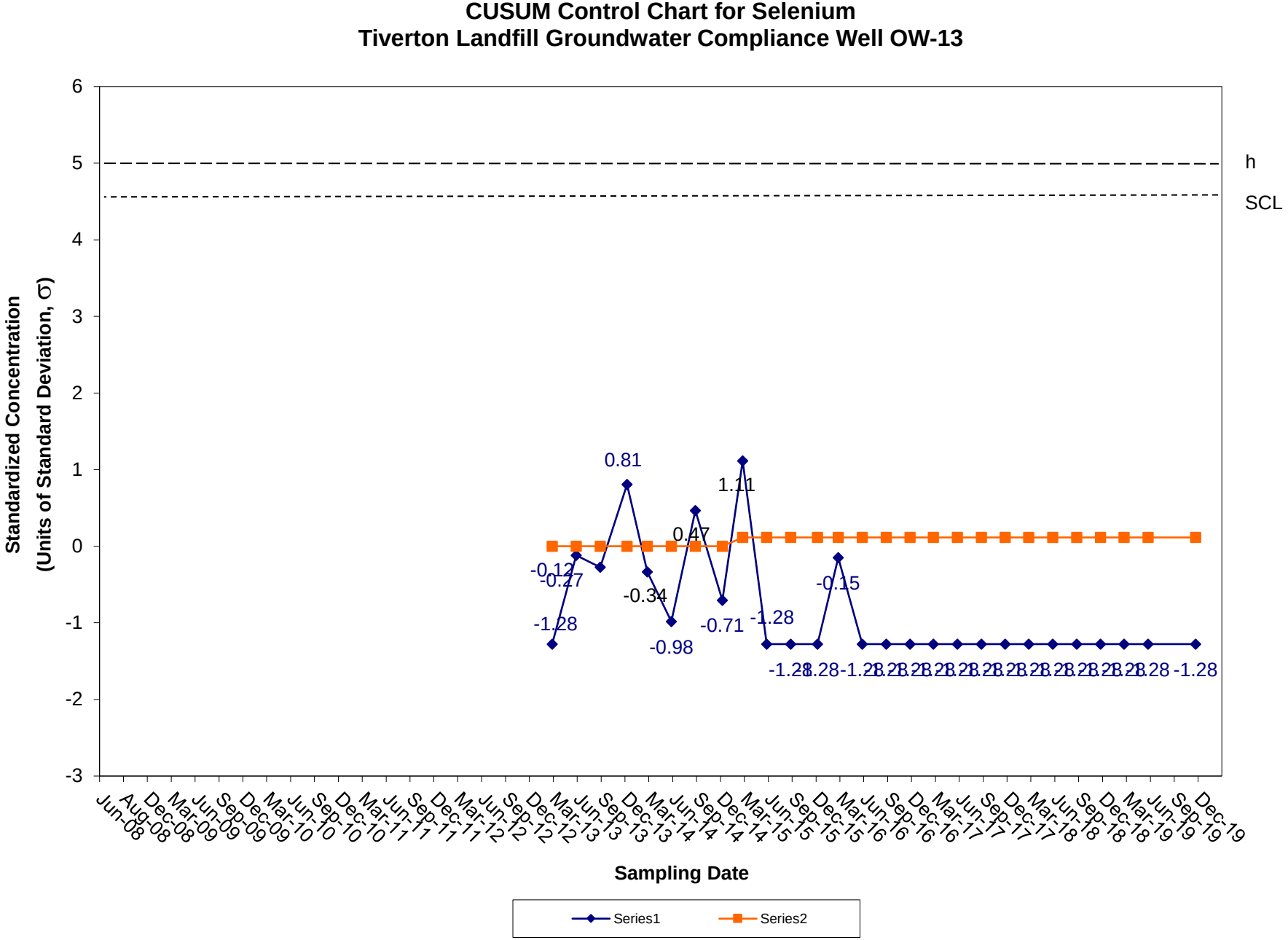
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Selenium
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
0.81
1.11
0.47
-0.12
-0.27
-0.34
-0.15
-1.28
-0.71
-1.28
-0.98
-1.28
-1.28
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
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Dec-16
Mar-17
Jun-17
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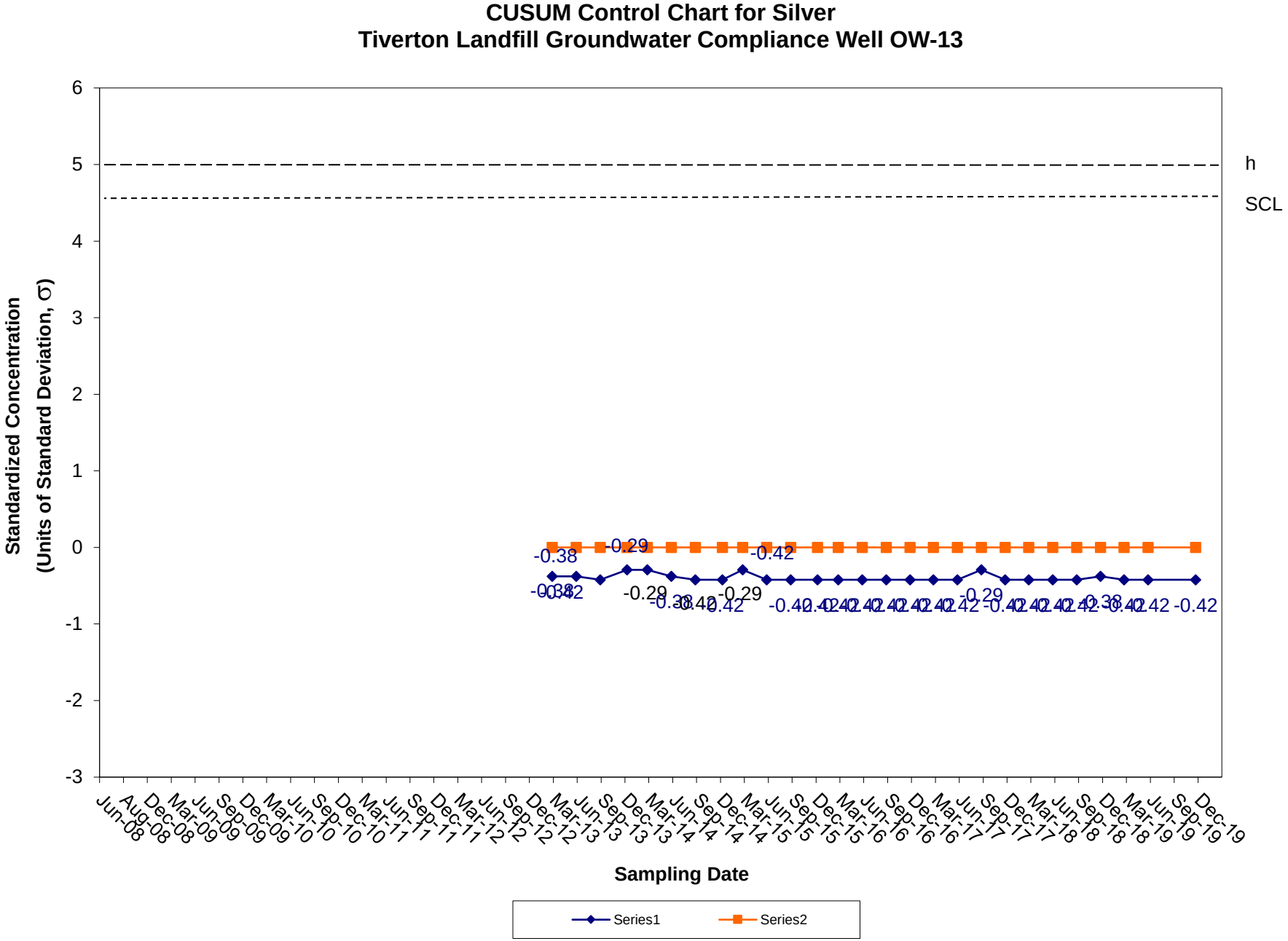
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Silver
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
-0.38
-0.29
-0.42
-0.29
-0.29
-0.29
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
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Mar-15
Jun-15
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Mar-17
Jun-17
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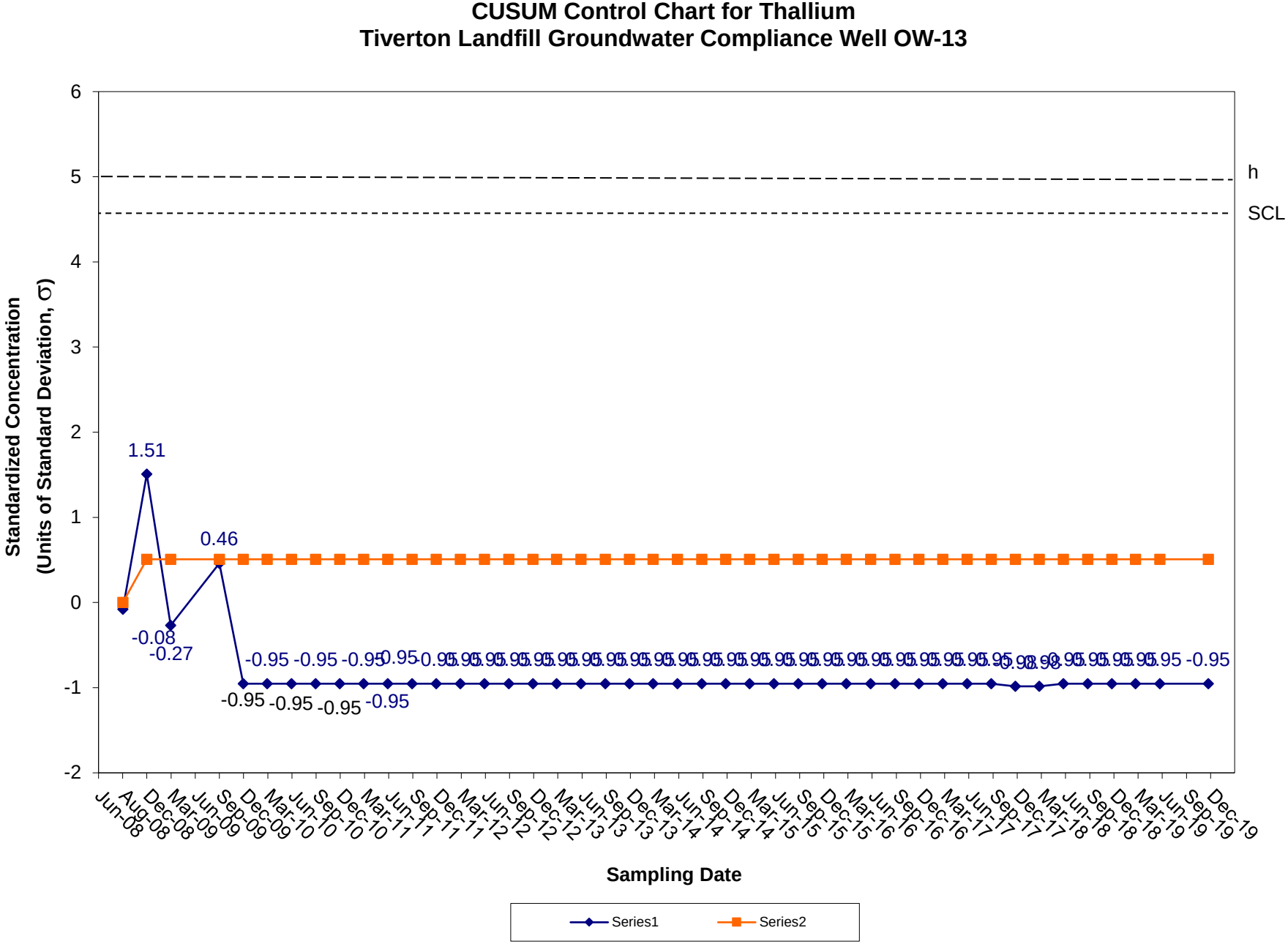
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Thallium
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
1.51
0.46
-0.08
-0.27
-0.95
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
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Dec-16
Mar-17
Jun-17
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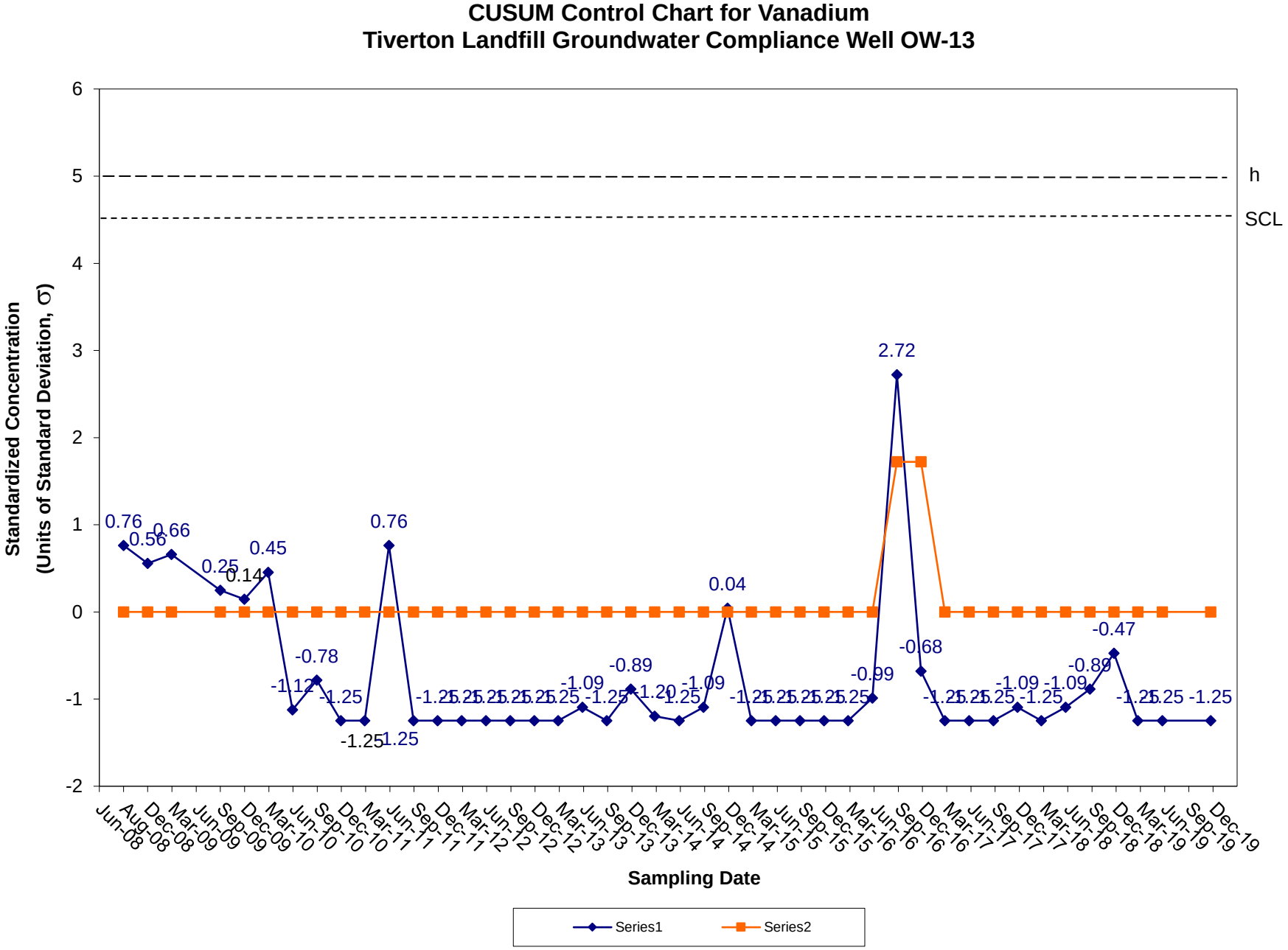
Sep-19
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
0.76
0.56
0.66
0.25
0.14
0.45
-1.12
-0.78
-1.25
-1.25
0.76
-1.25
-1.25
-1.25
-1.25
-1.25
-1.25
-1.25
-1.25
-1.09
-1.25
-0.89
-1.20
-1.25
-1.09
0.04
-1.25
-1.25
-1.25
-1.25
-1.25
-1.25
-0.99
2.72
-0.68
-1.25
-1.25
-1.25
-1.09
-1.25
-1.09
-0.89
-0.47
-1.25
-1.25
-1.25
-1.25
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
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Sep-10
Dec-10
Mar-11
Jun-11
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Mar-12
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Mar-17
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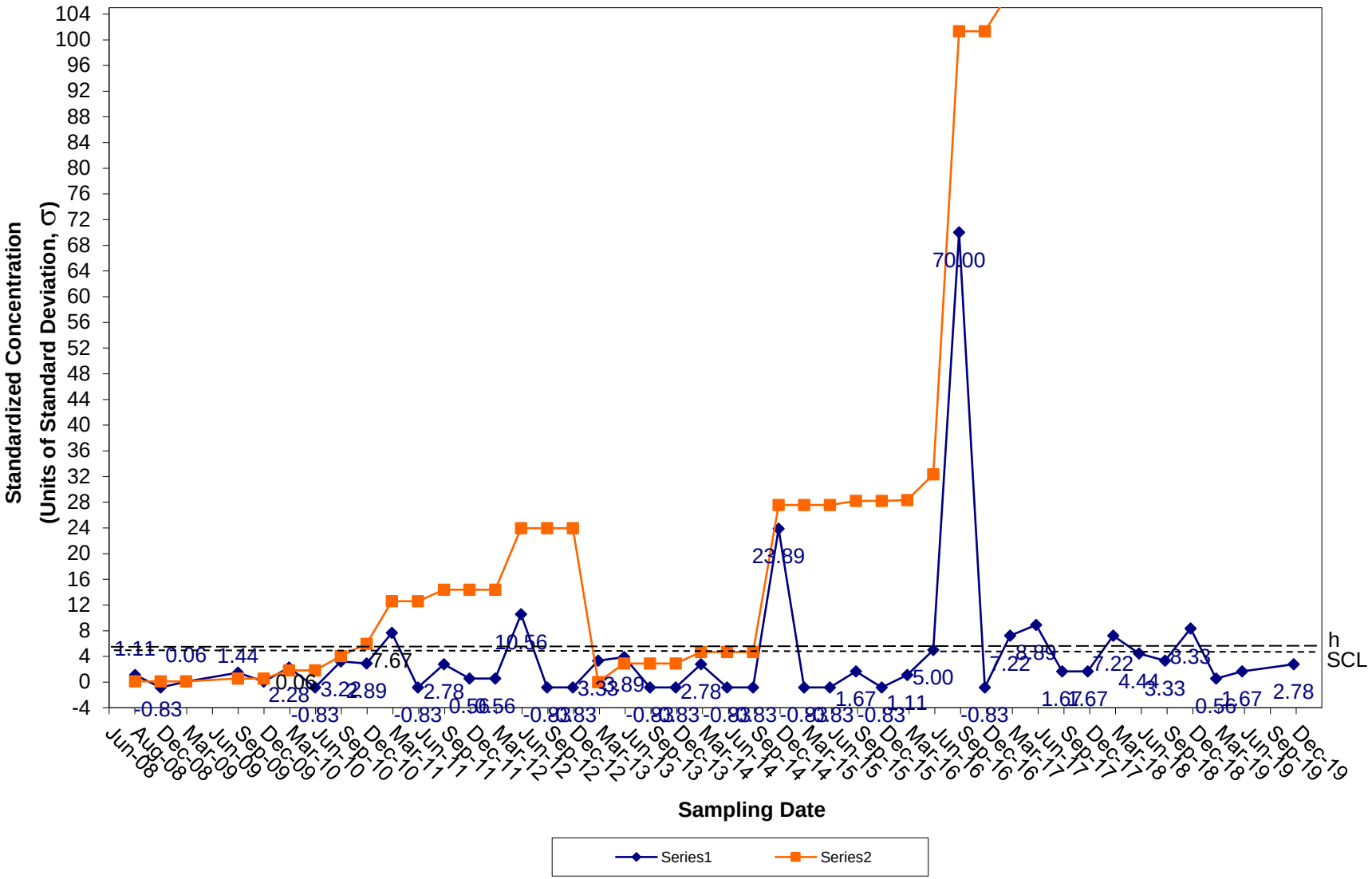
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
104
100
96
92
88
84
80
76
72
68
64
60
56
52
48
44
40
36
32
28
24
20
16
12
8
4
0
-4
h
SCL
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
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Mar-14
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Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
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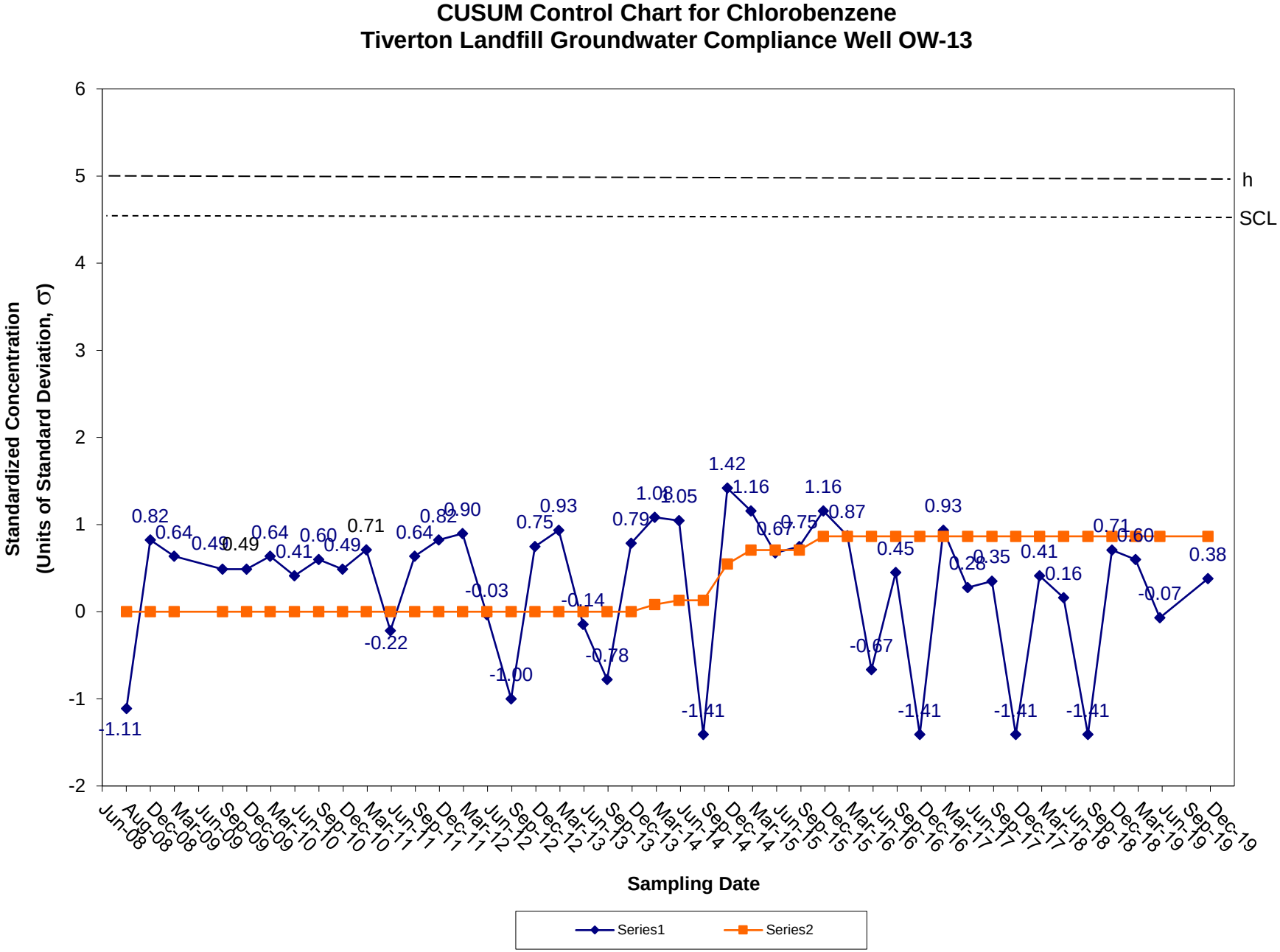
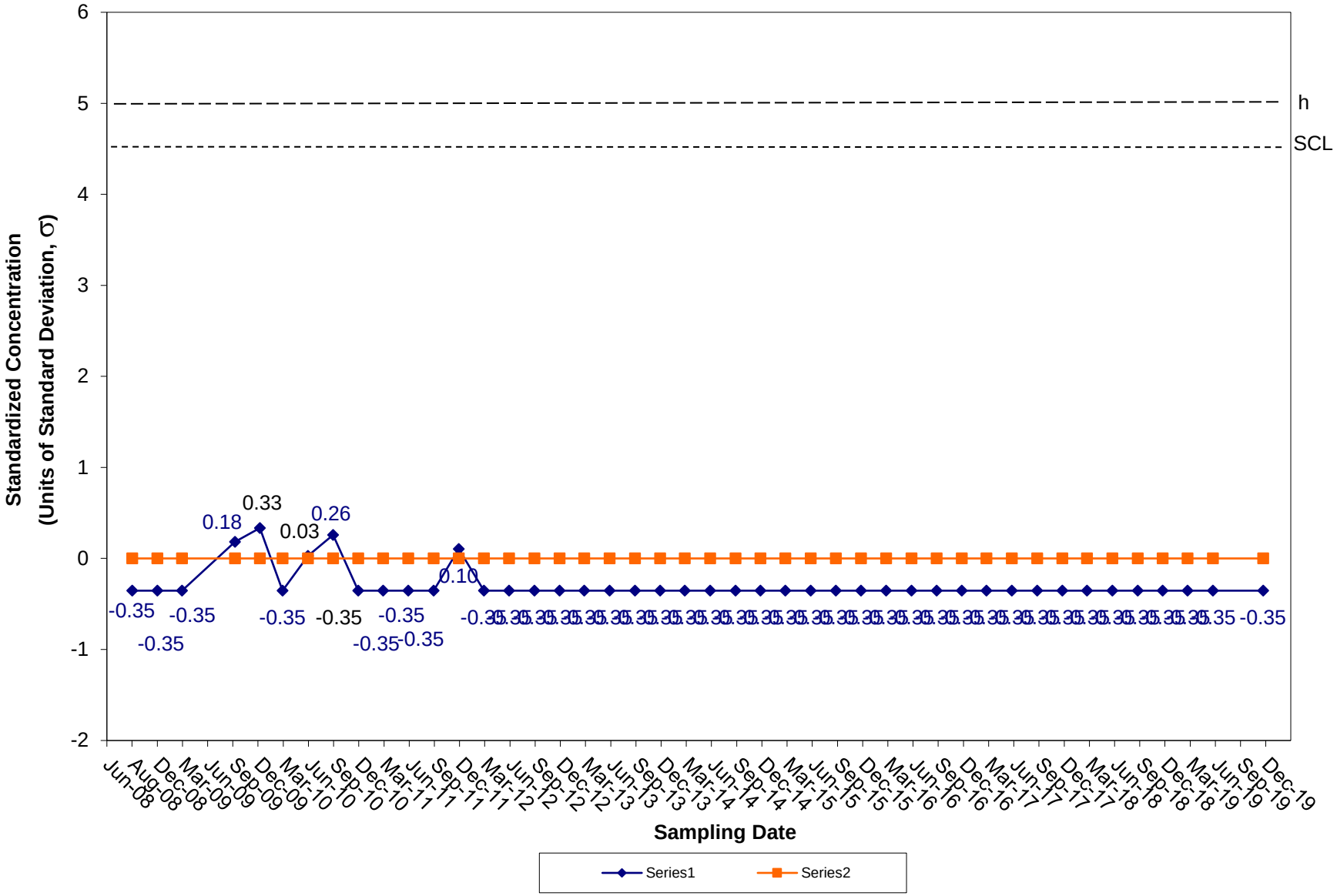
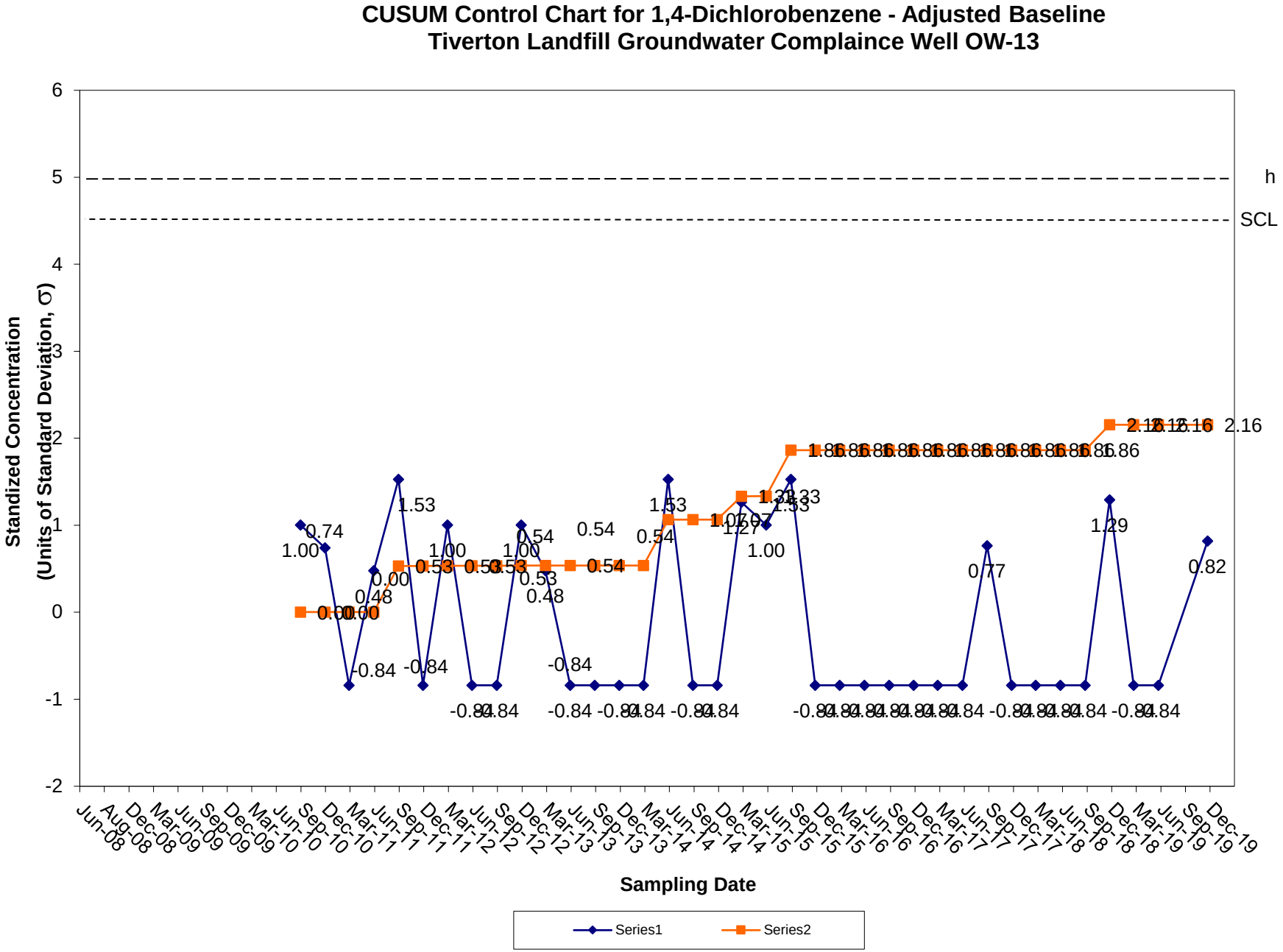
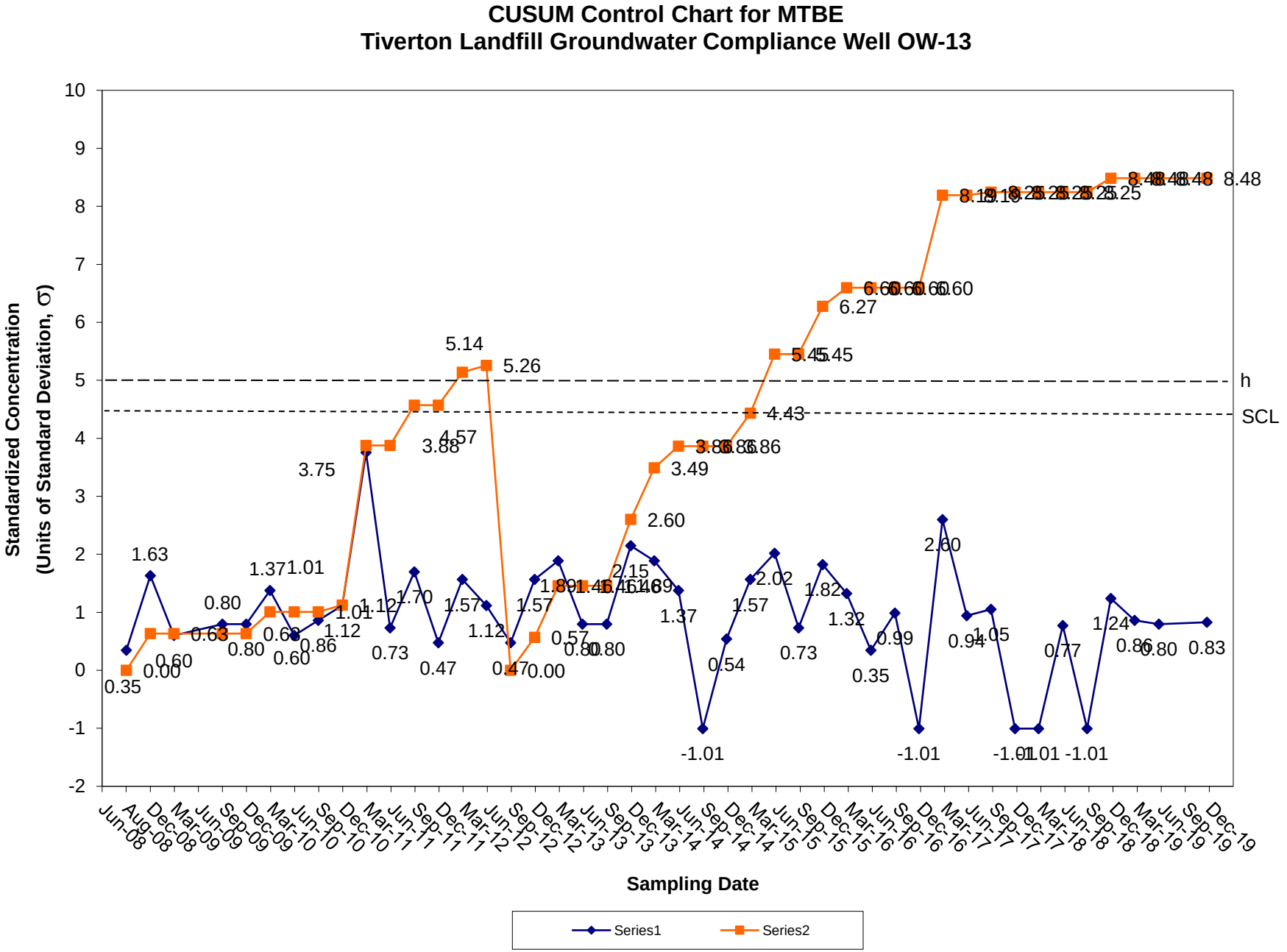
Dec-19
Sampling Date
Series1
Series2

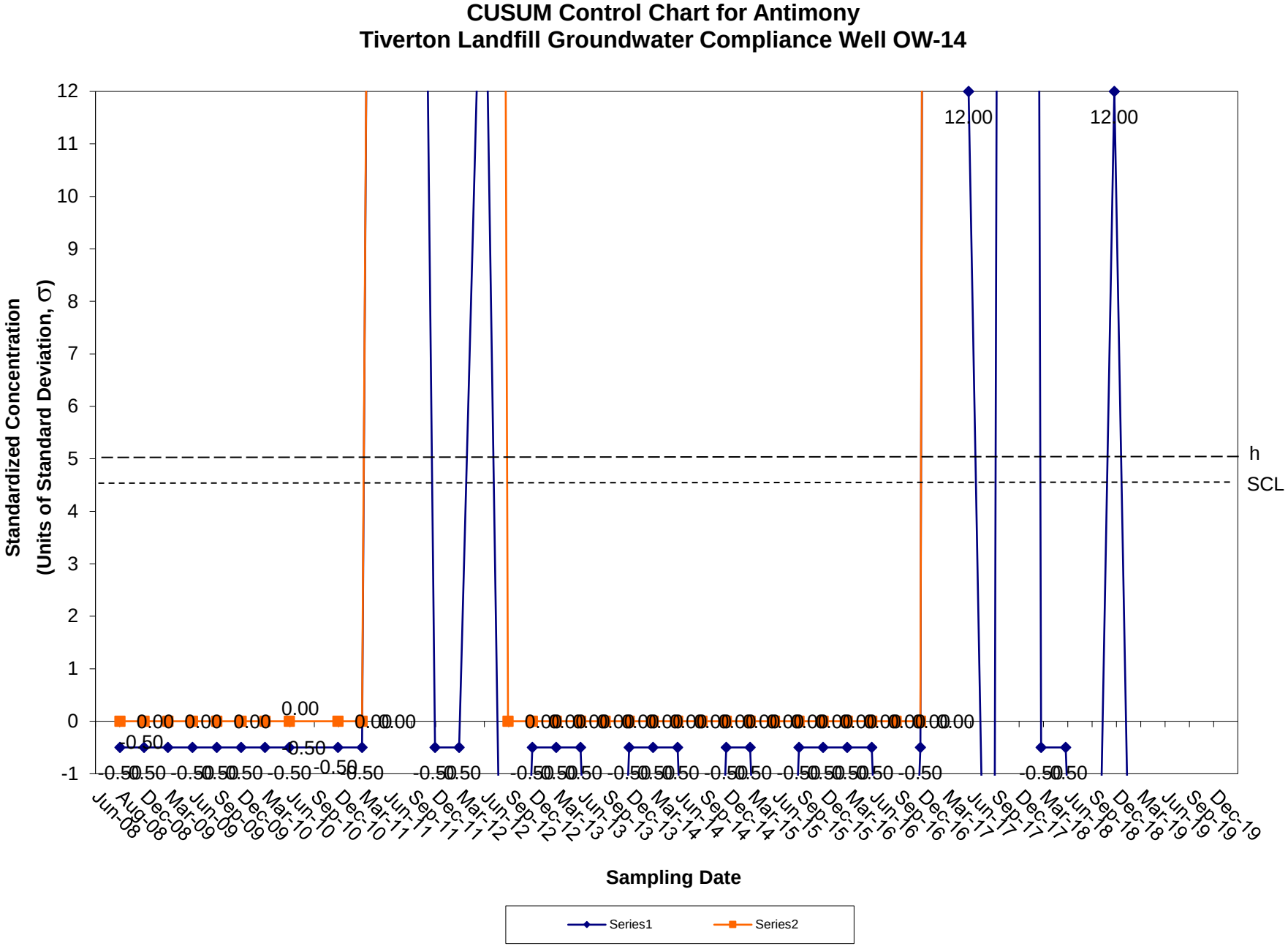

CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

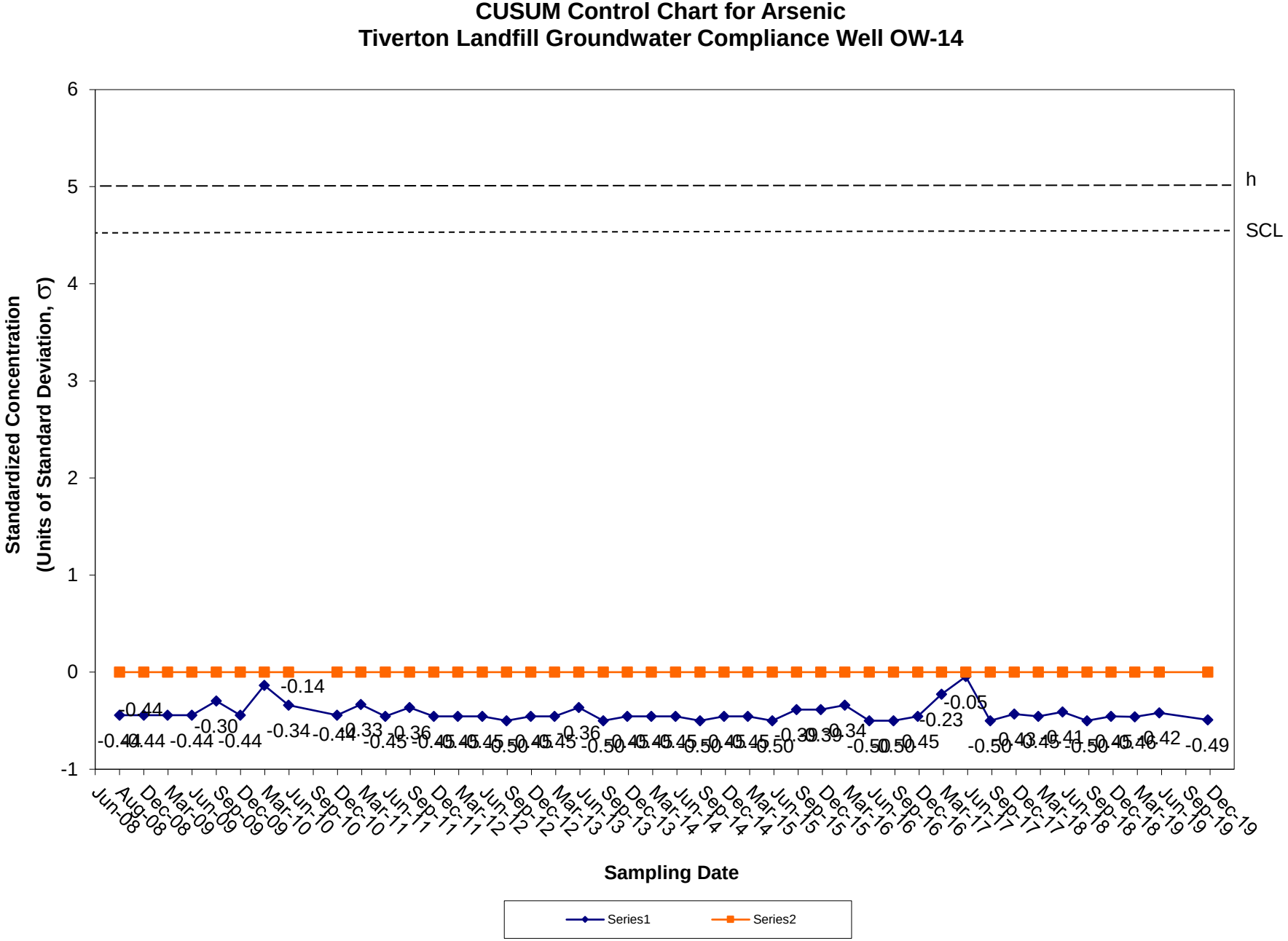
CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Compliance Well OW-13




CUSUM Control Chart for 1,4-Dichlorobenzene - Adjusted Baseline
Tiverton Landfill Groundwater Complaince Well OW-13
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
12.00
Series1
Series2


CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
h
SCL
-0.44
-0.30
-0.14
-0.34
-0.33
-0.36
-0.05
-0.23
-0.42
-0.49
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
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Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
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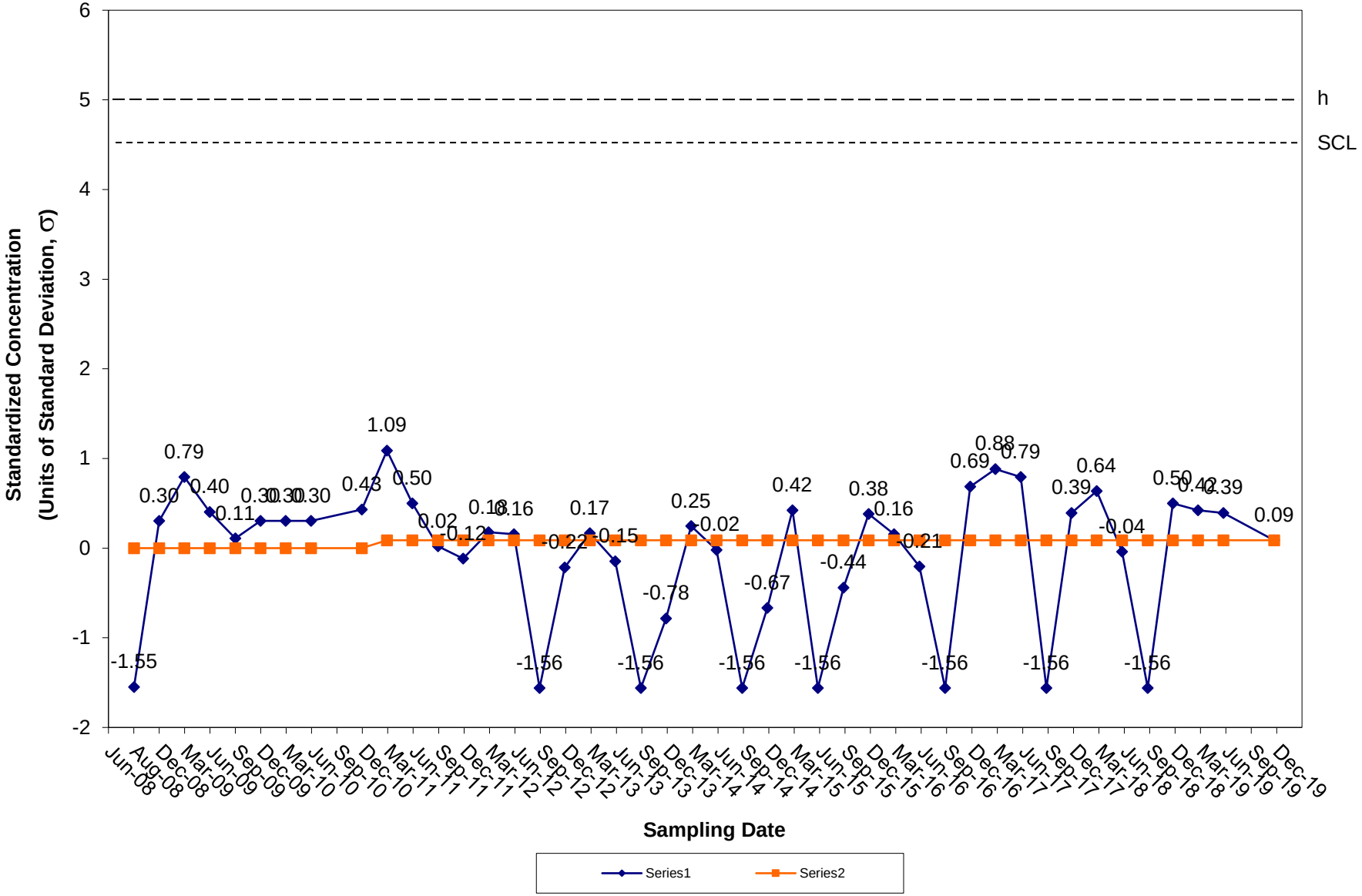
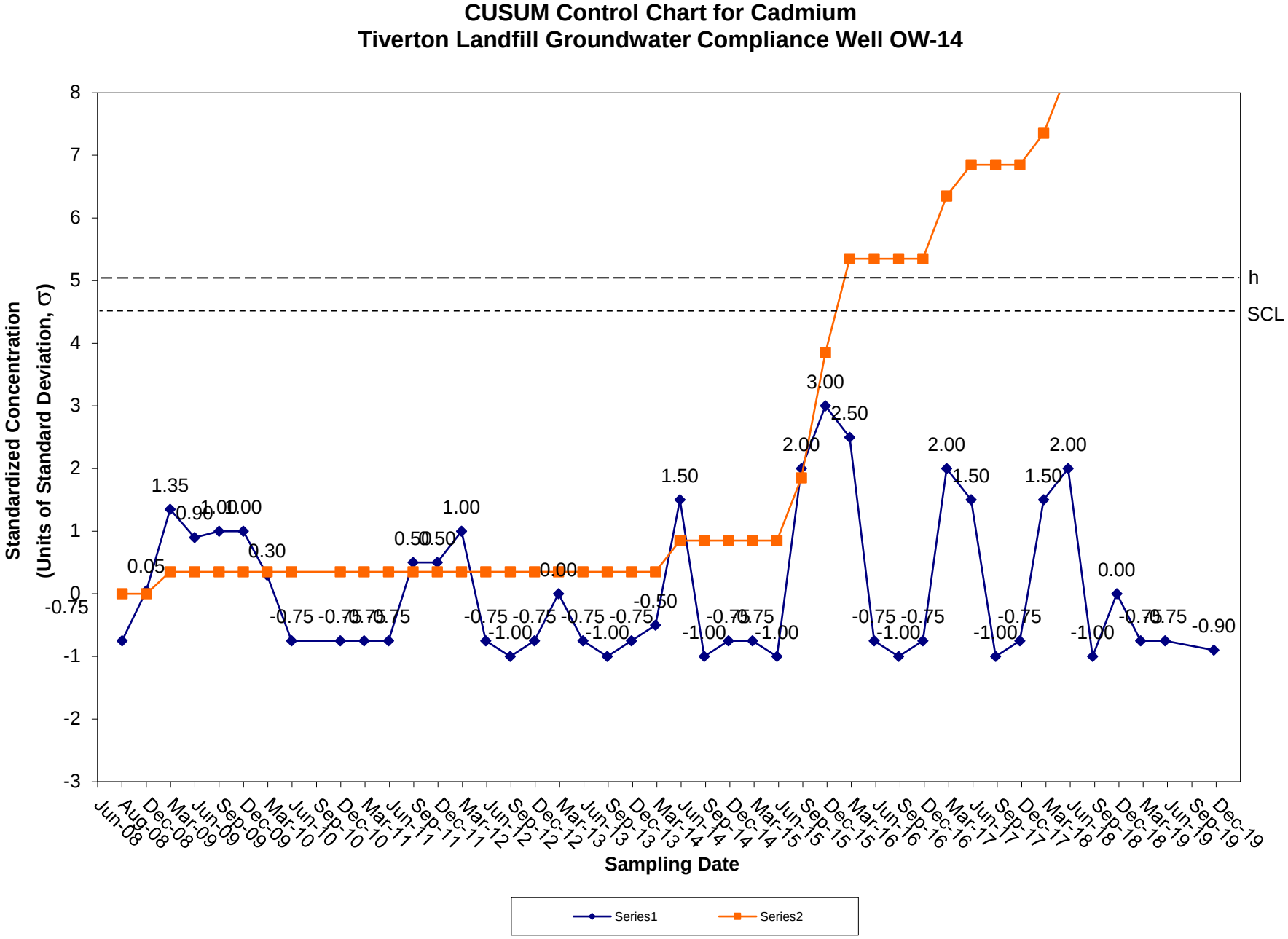
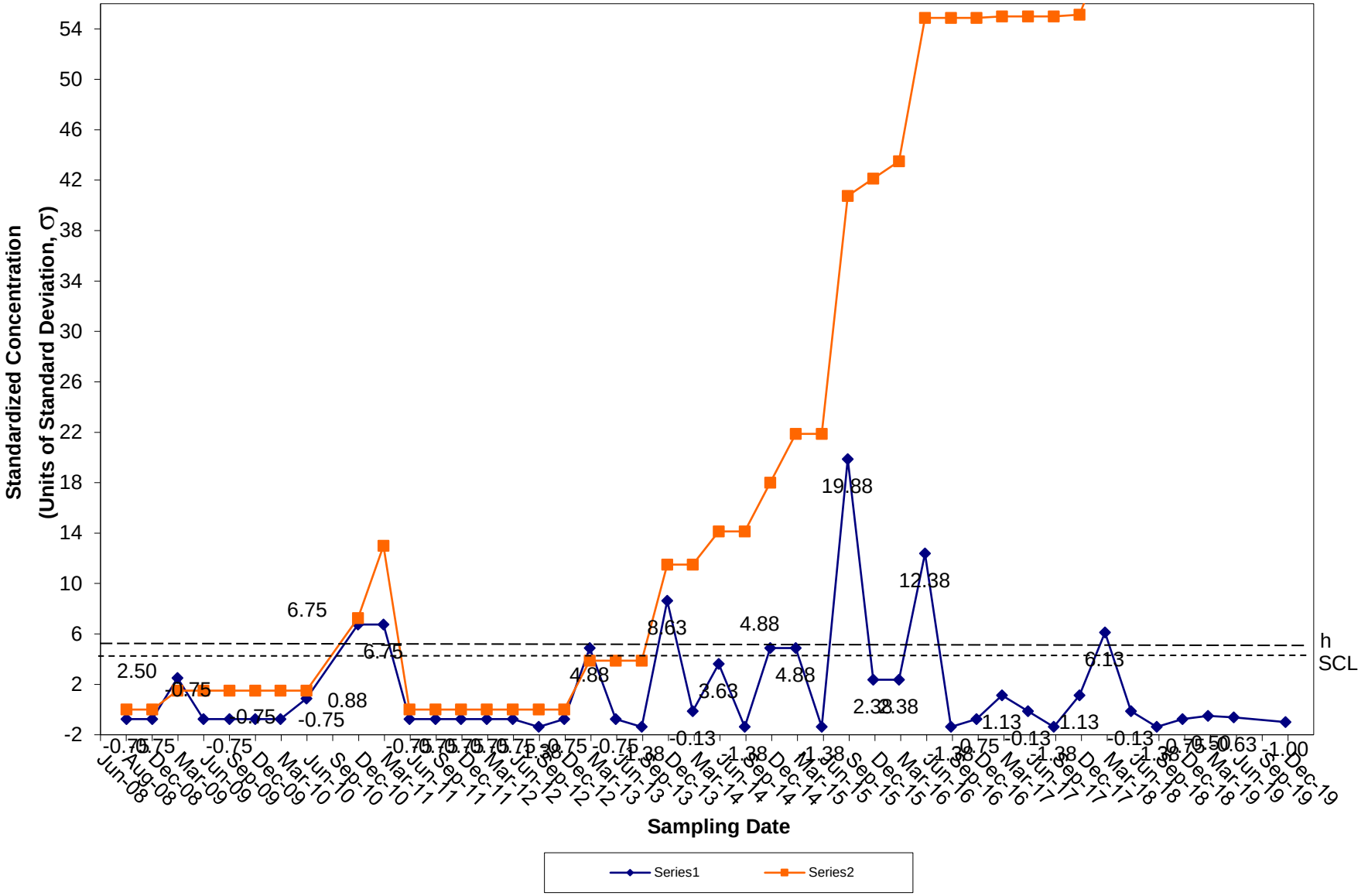
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Sampling Date
Series1
Series2

CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-14

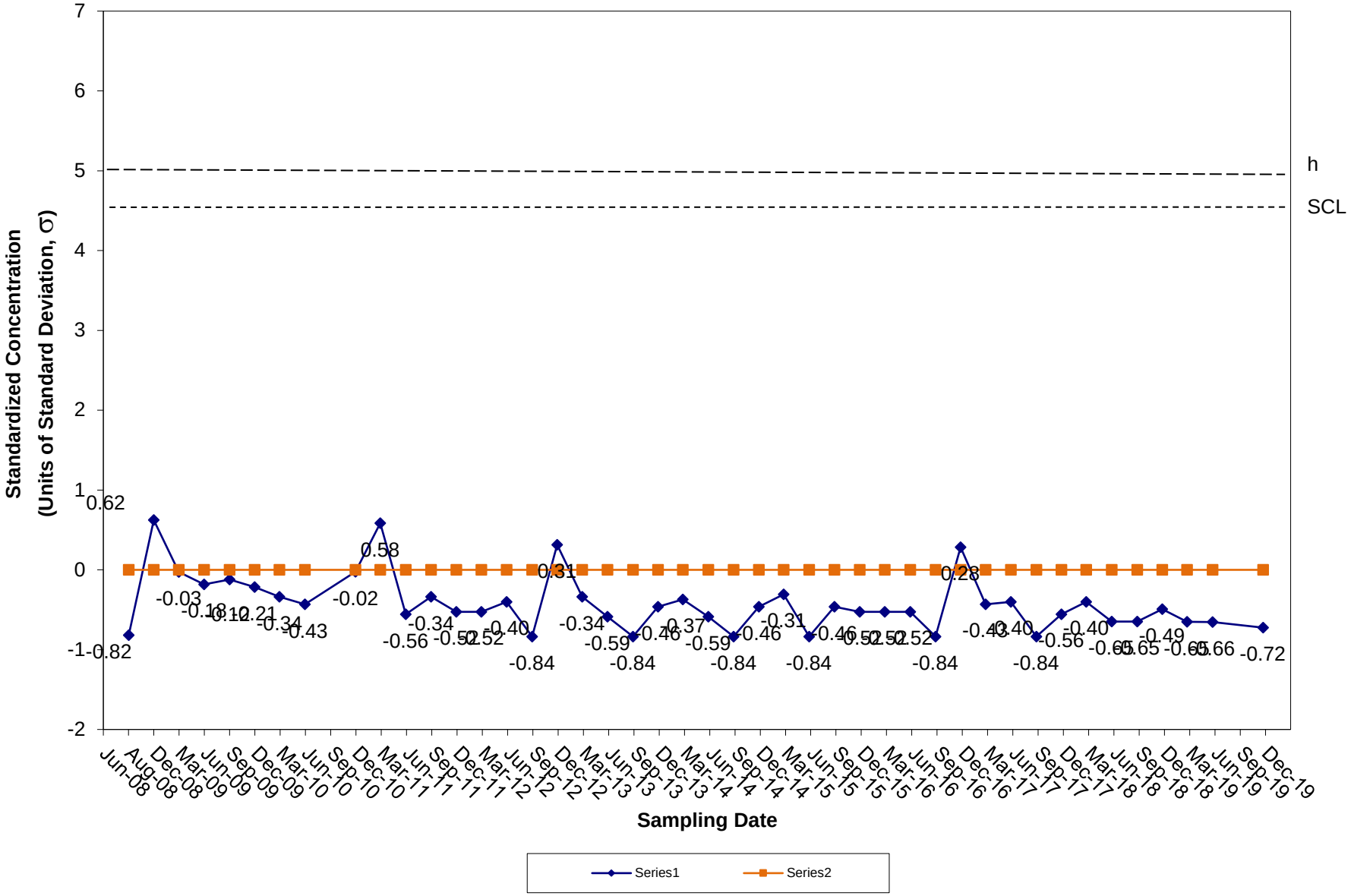



CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

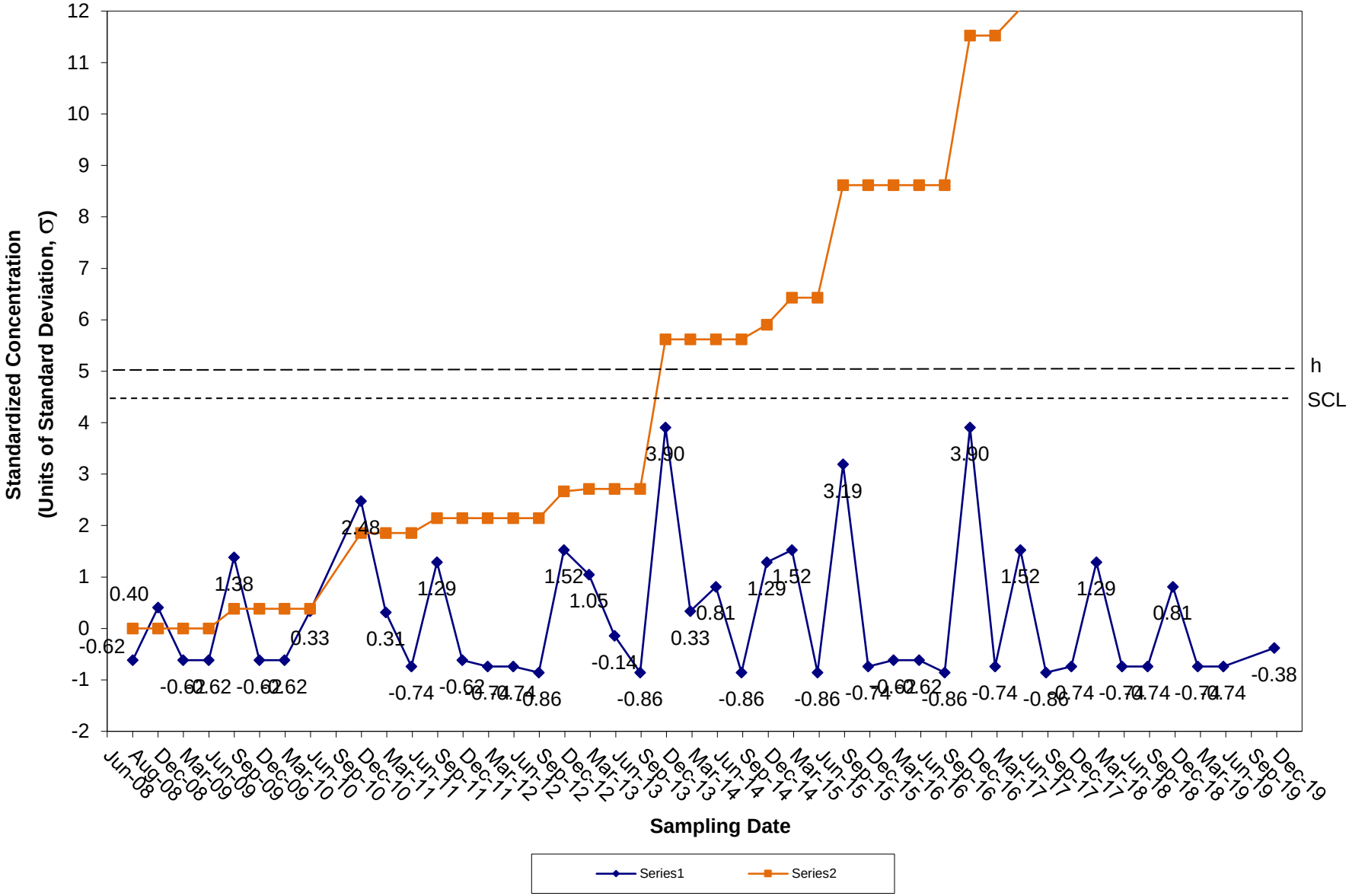
CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Compliance Well OW-14



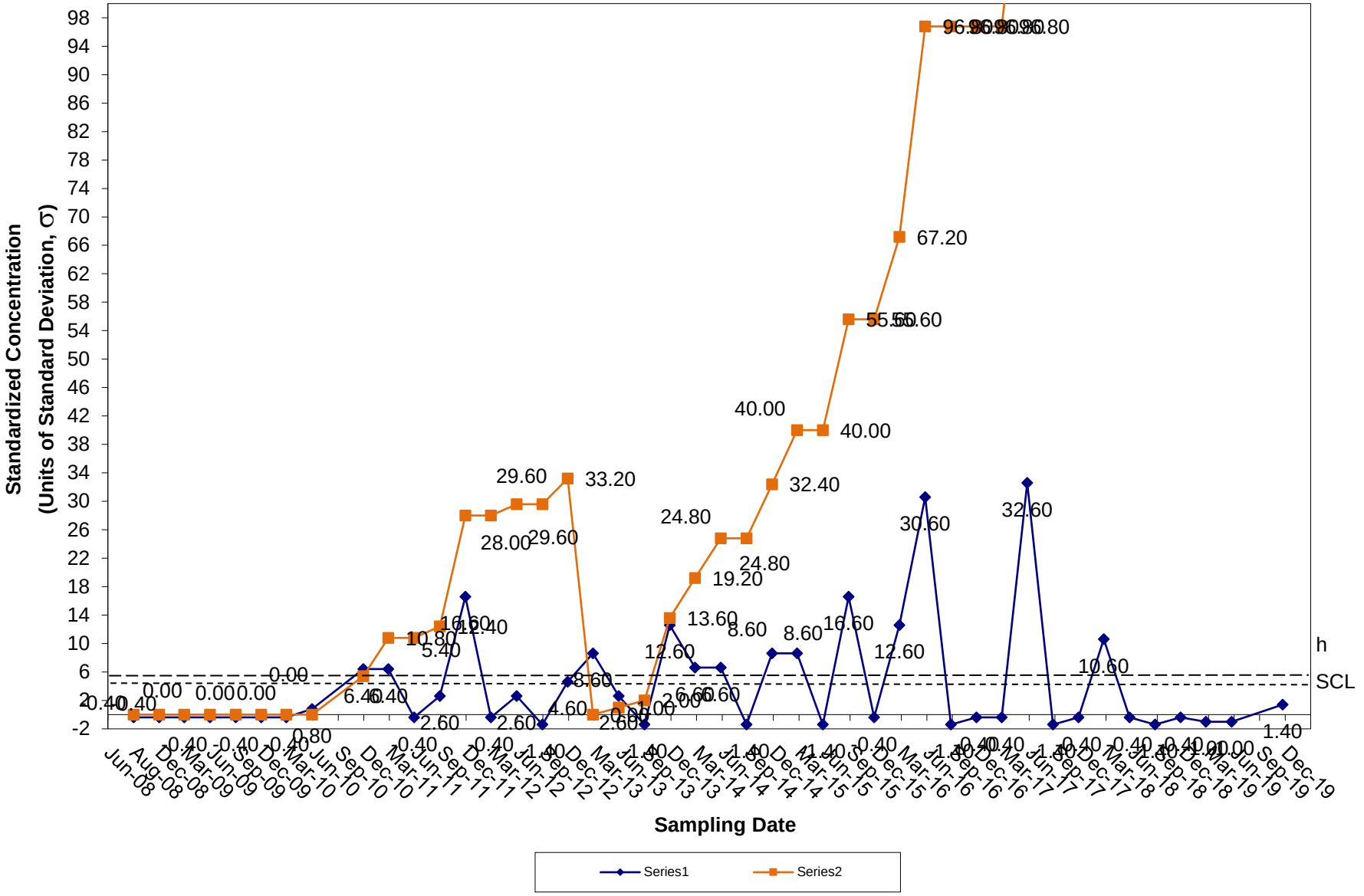
CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-14

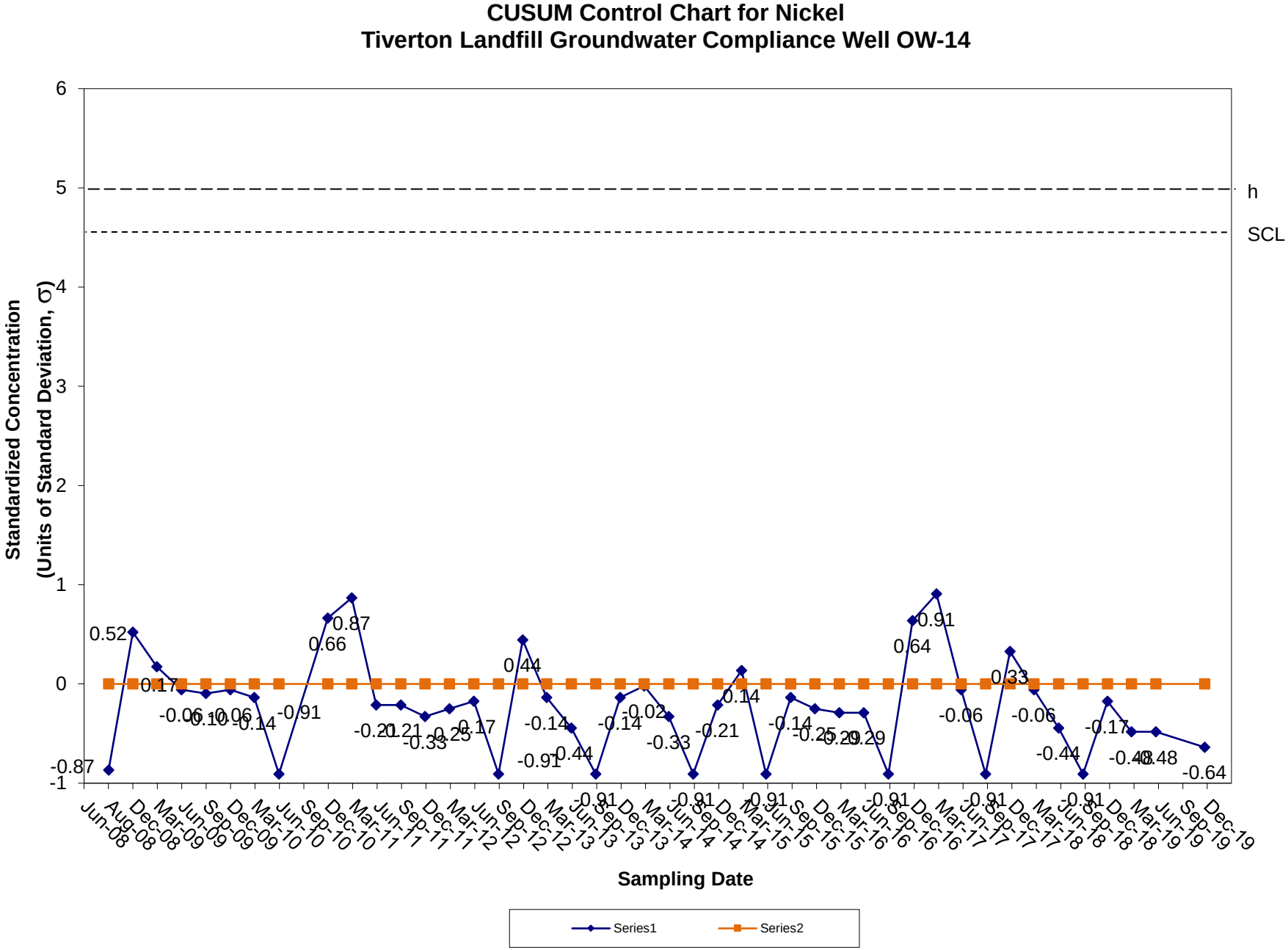


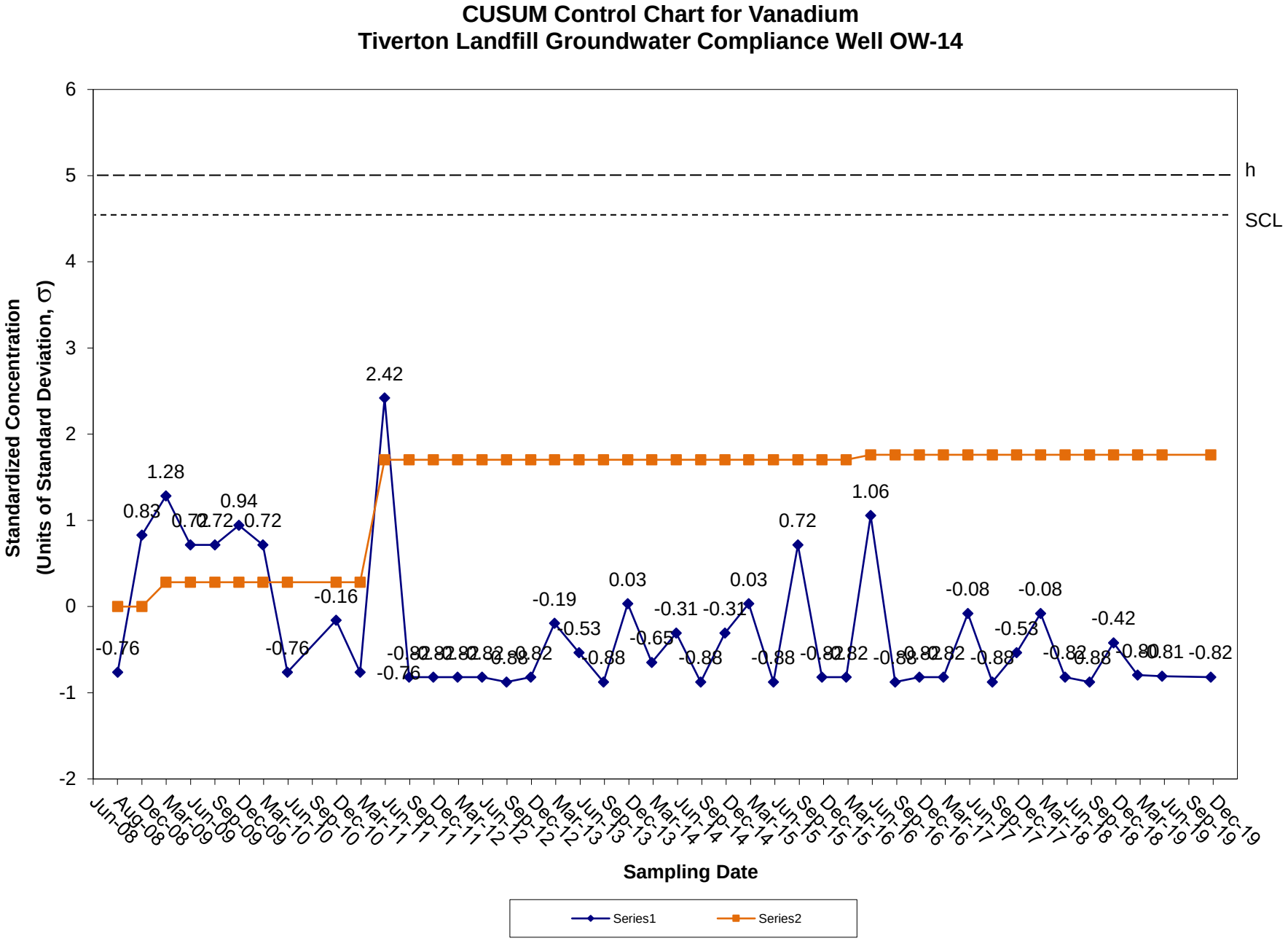
CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Compliance Well OW-14

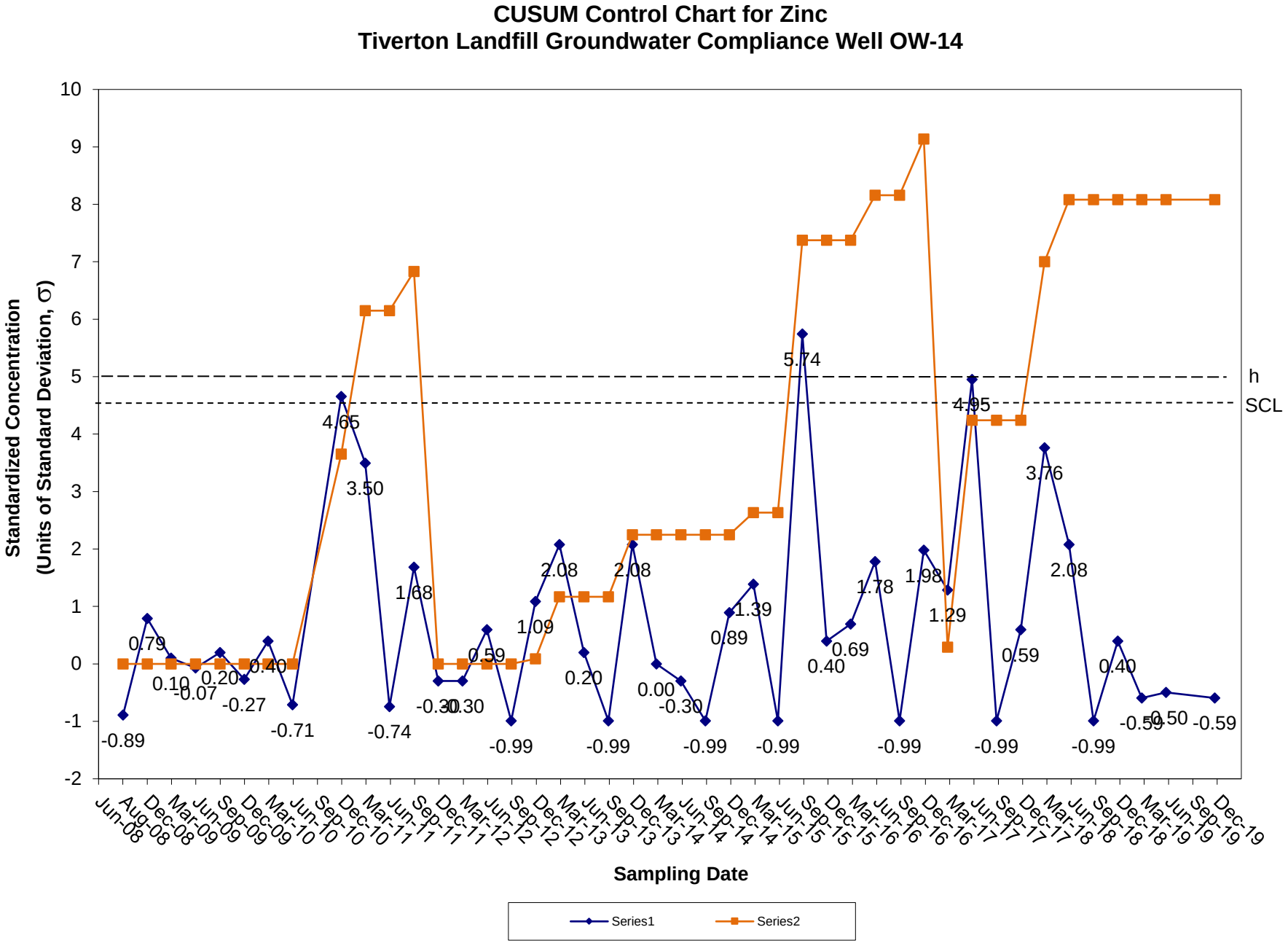


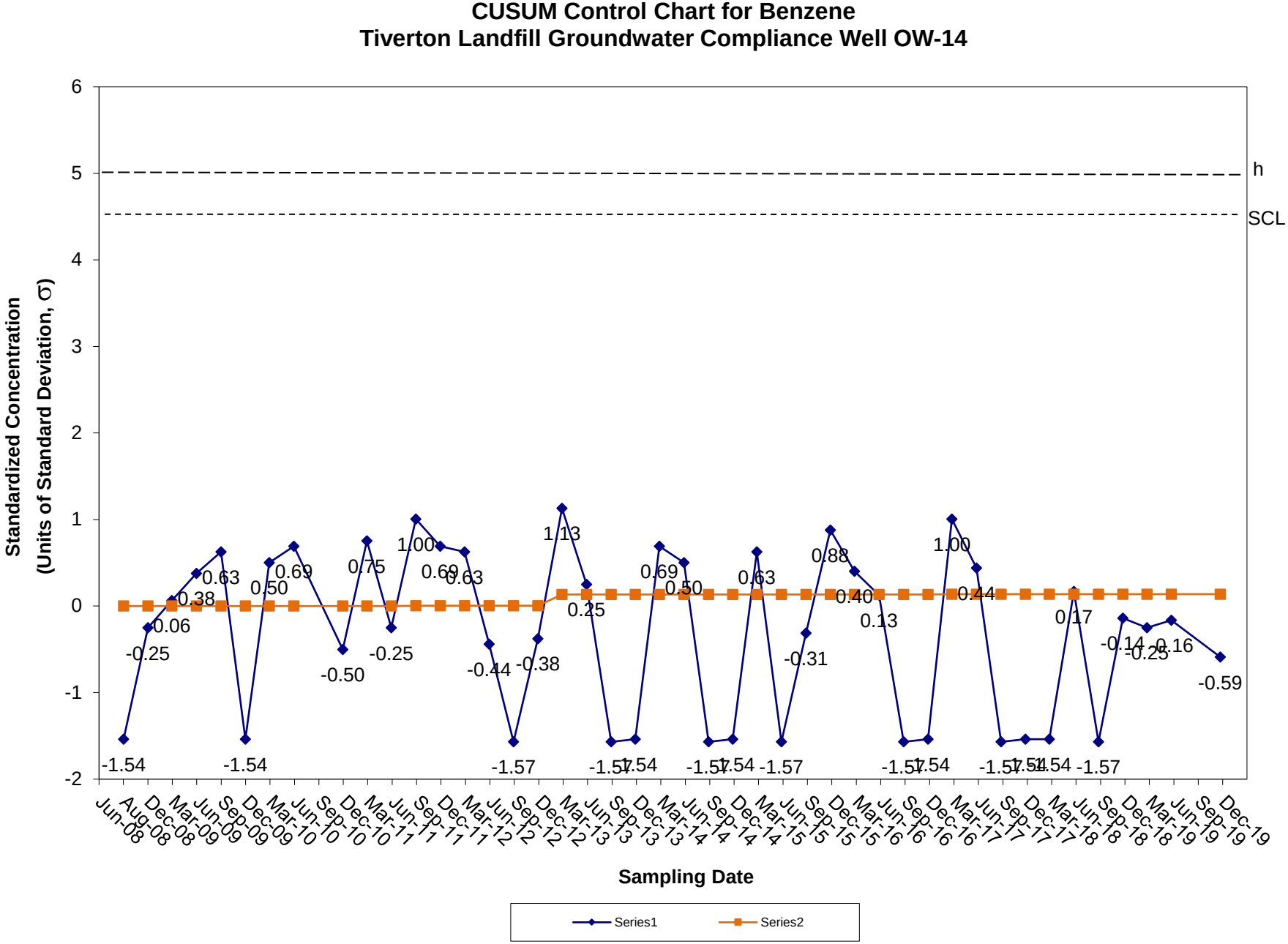
CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-14




CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Benzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
-1.54
-0.25
0.06
0.38
0.63
-1.54
0.50
0.69
-0.50
0.75
-0.25
1.00
0.69
0.63
-0.44
-1.57
-0.38
1.13
0.25
-1.57
-1.54
0.69
0.50
-1.57
-1.54
0.63
-1.57
-0.31
0.88
0.40
0.13
-1.57
-1.54
1.00
0.44
-1.57
-1.54
-1.54
0.17
-1.57
-0.14
-0.25
-0.16
-0.59
Jun-08
Aug-08
Dec-08
Mar-09
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Dec-10
Mar-11
Jun-11
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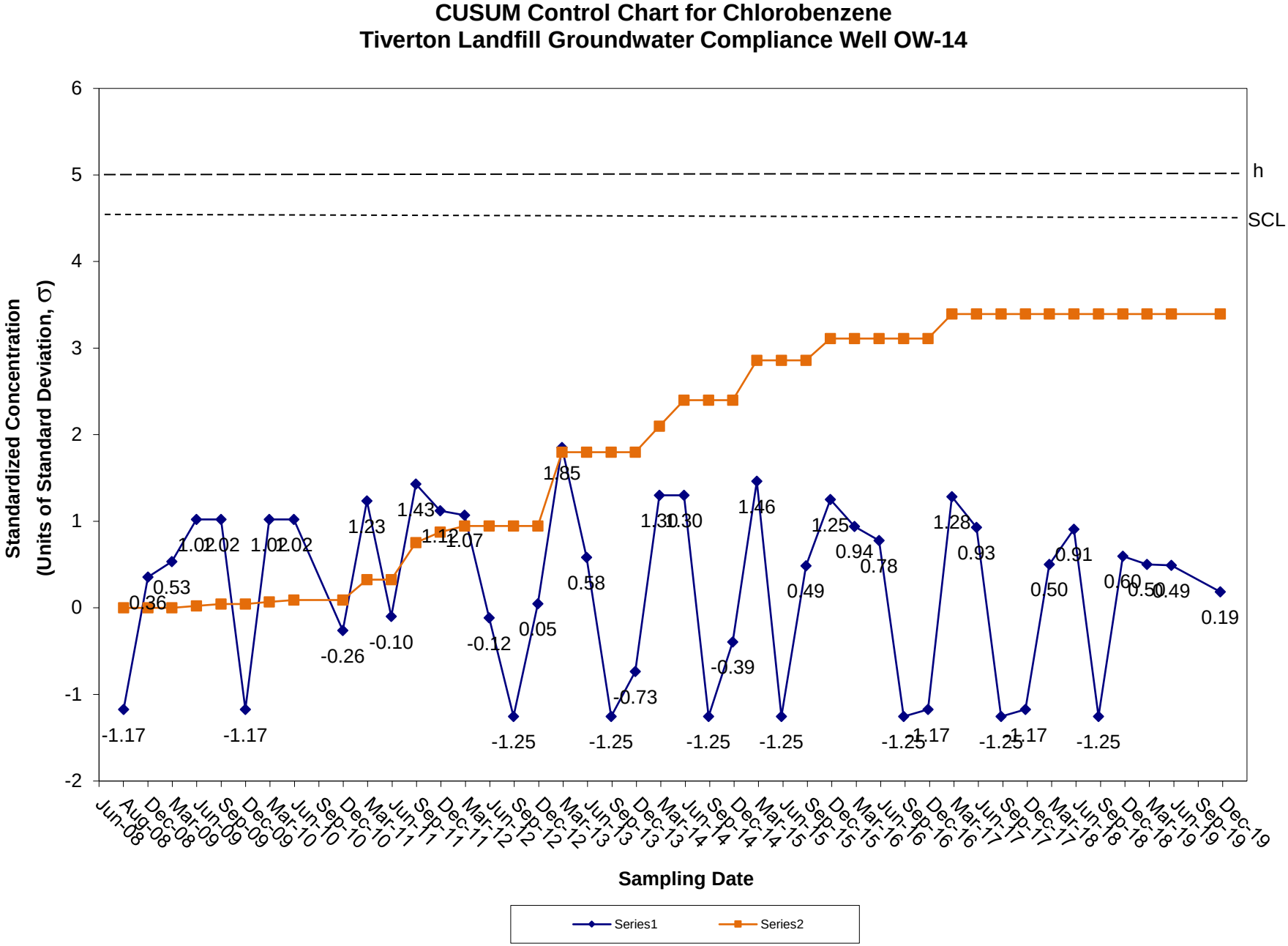
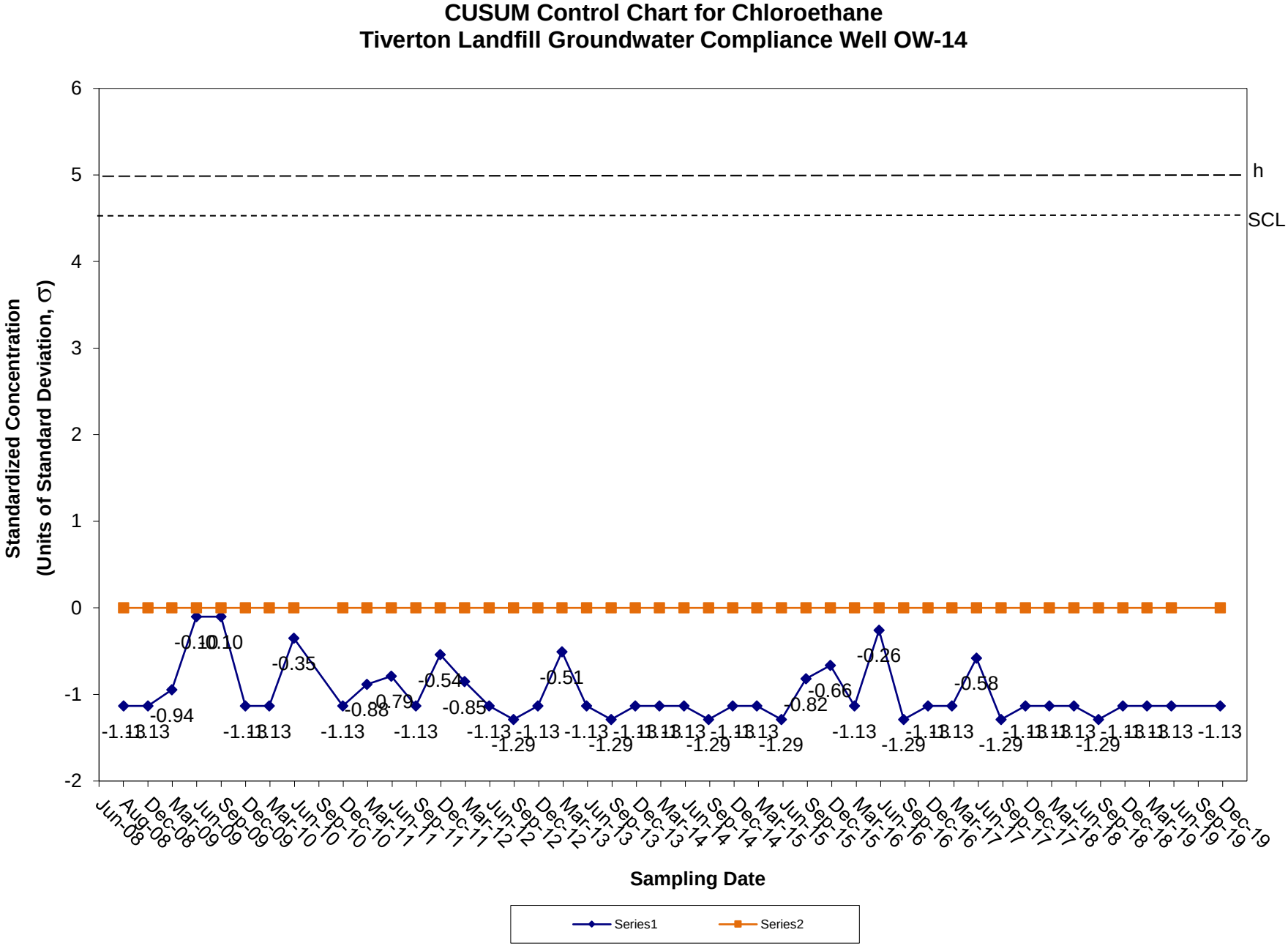
Sep-19
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
-0.94
-0.35
-0.88
-0.79
-0.54
-0.85
-0.51
-0.82
-0.66
-0.26
-0.58
-1.29
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
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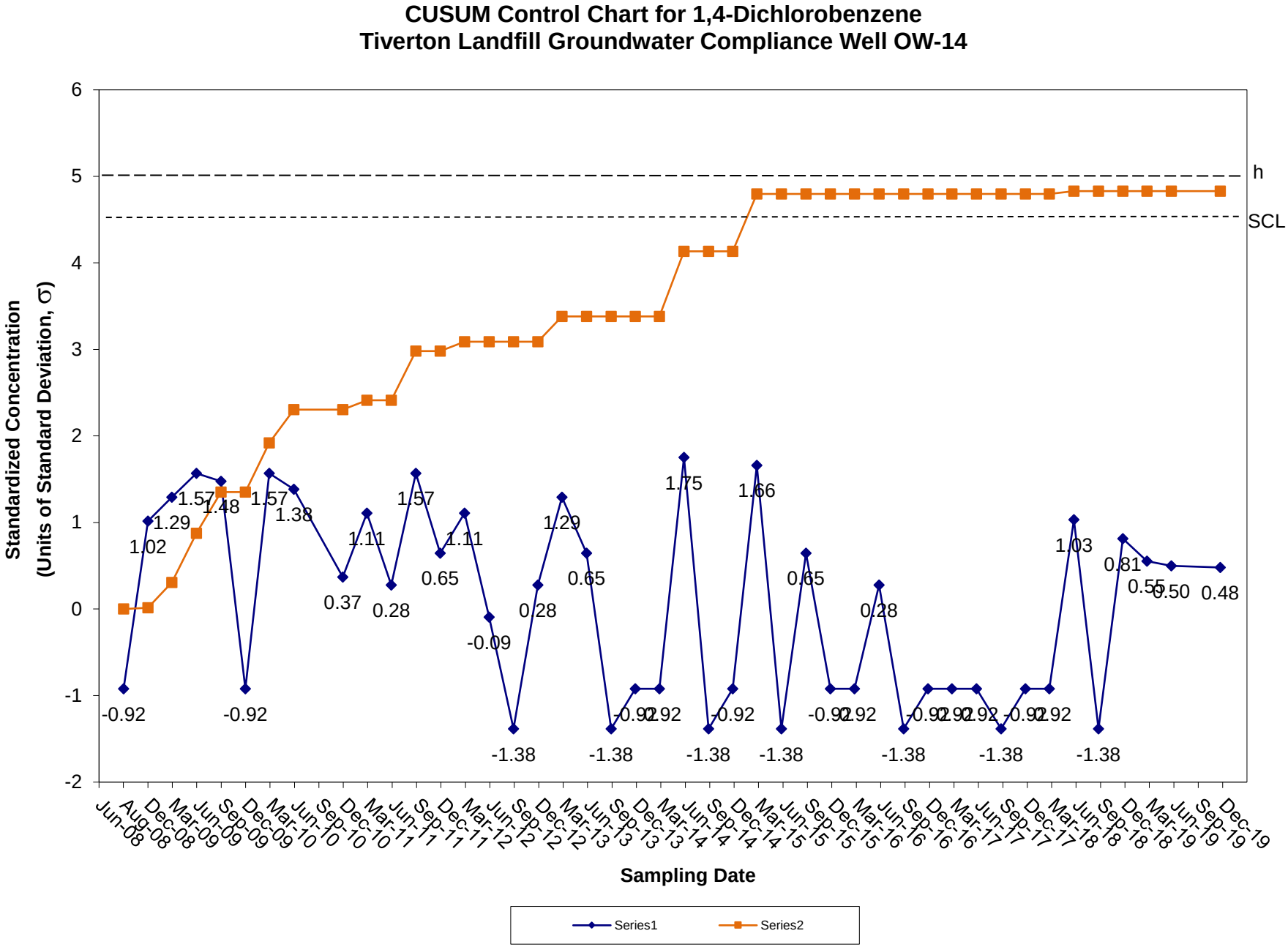
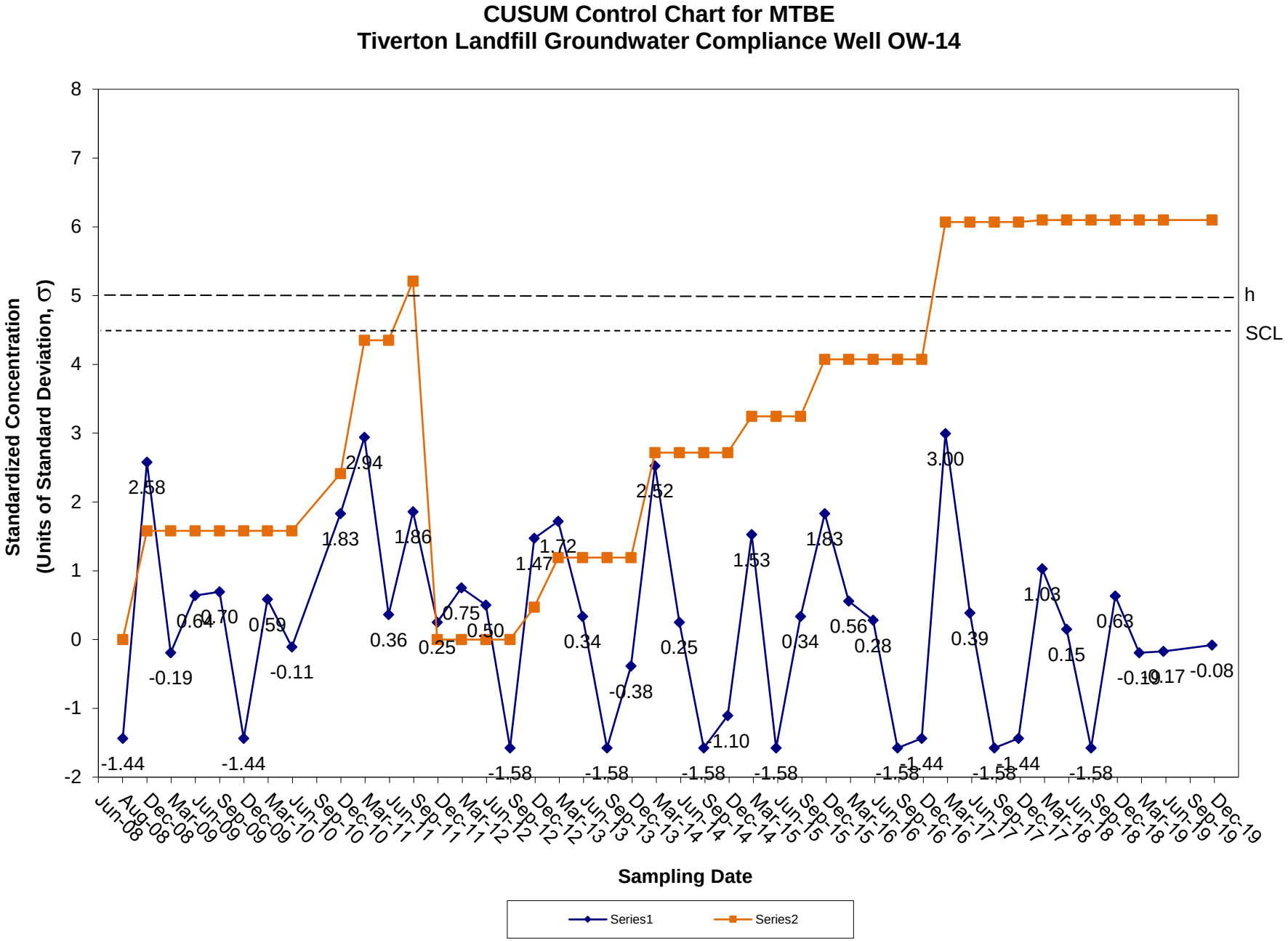
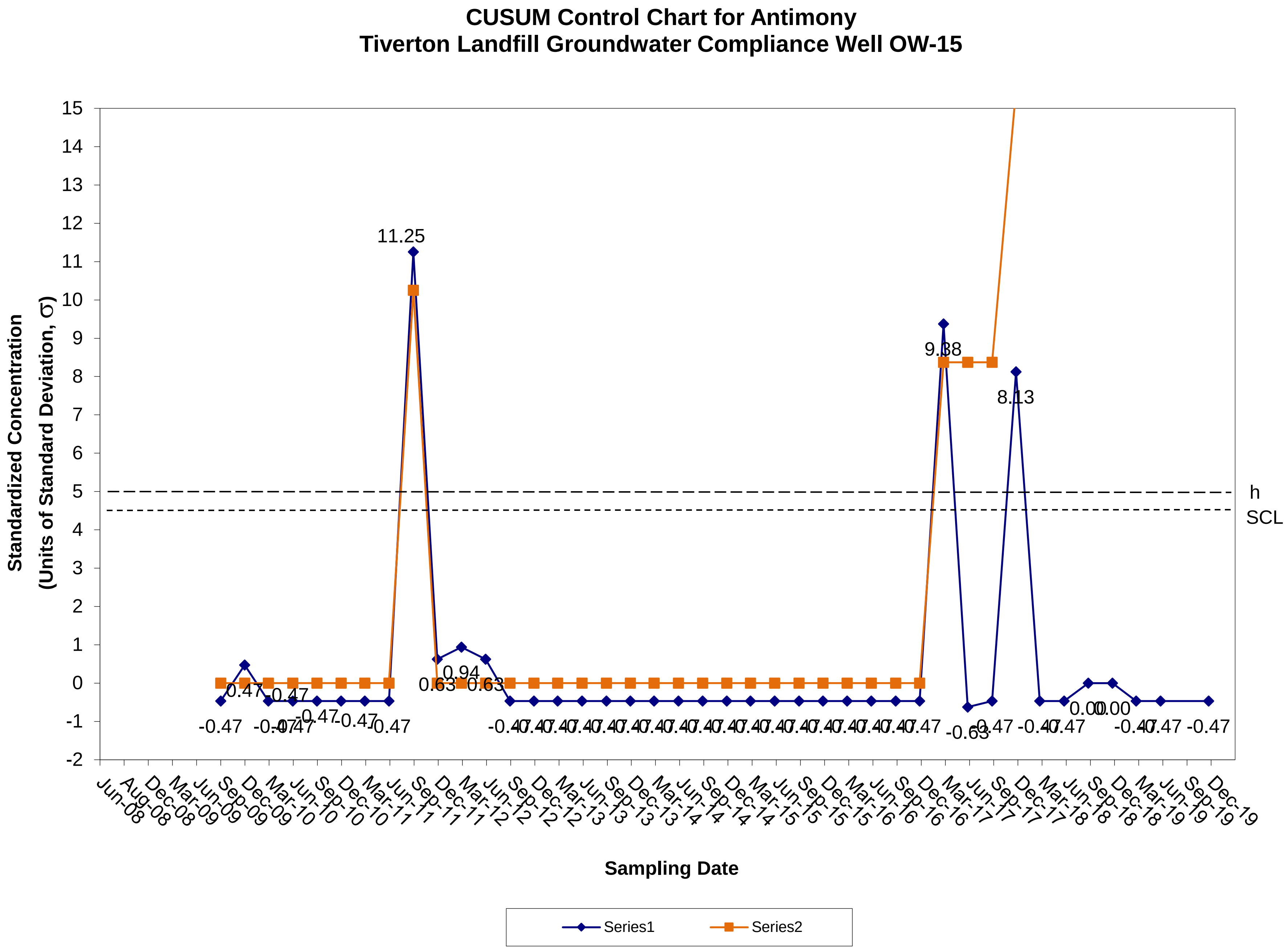
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
Sampling Date
Series1
Series2


CUSUM Control Chart for 1,4-Dichlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
11.25
9.38
8.13
0.94
0.63
0.63
0.00
0.00
-0.47
-0.63
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
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Mar-16
Jun-16
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Dec-16
Mar-17
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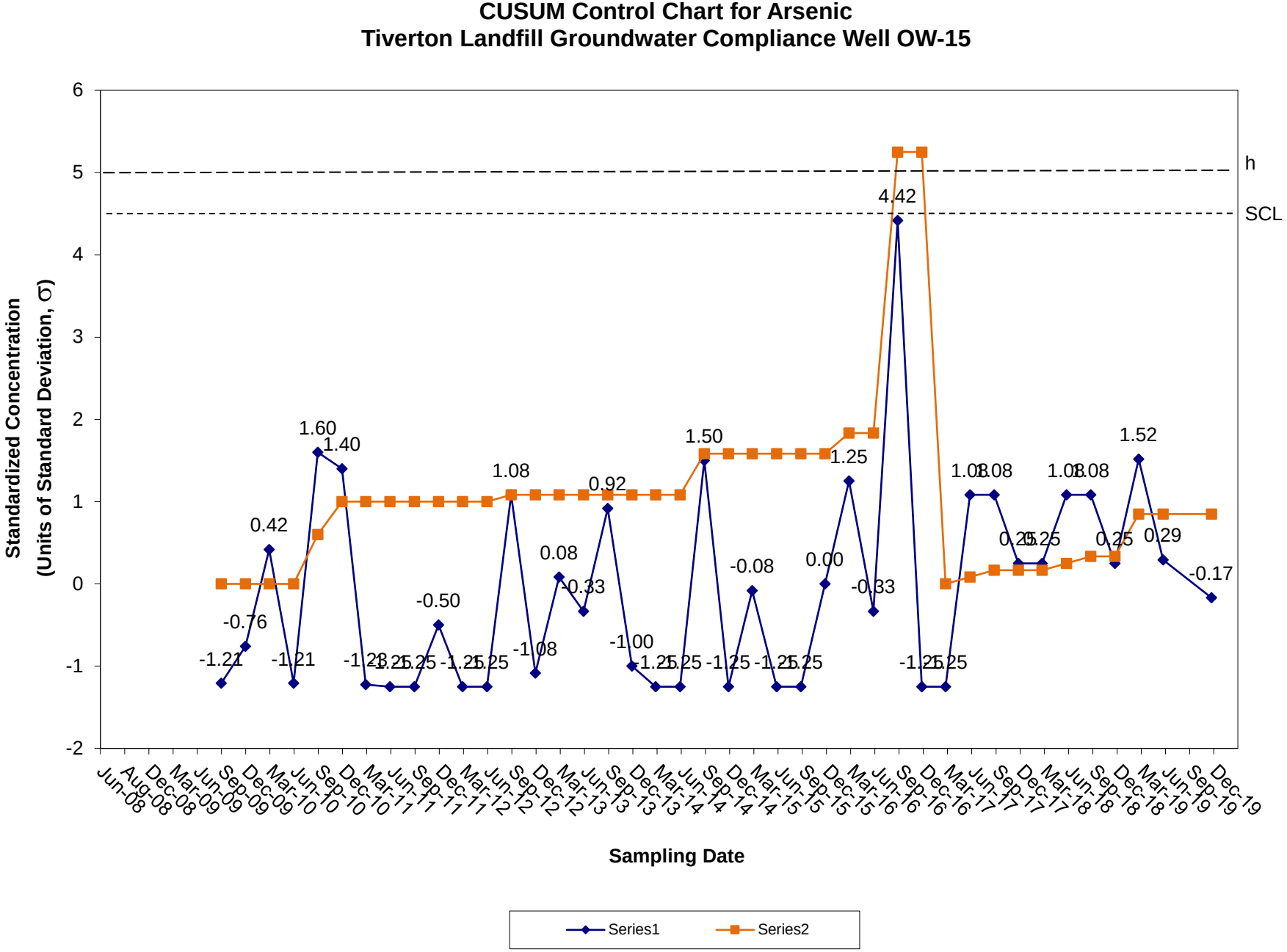
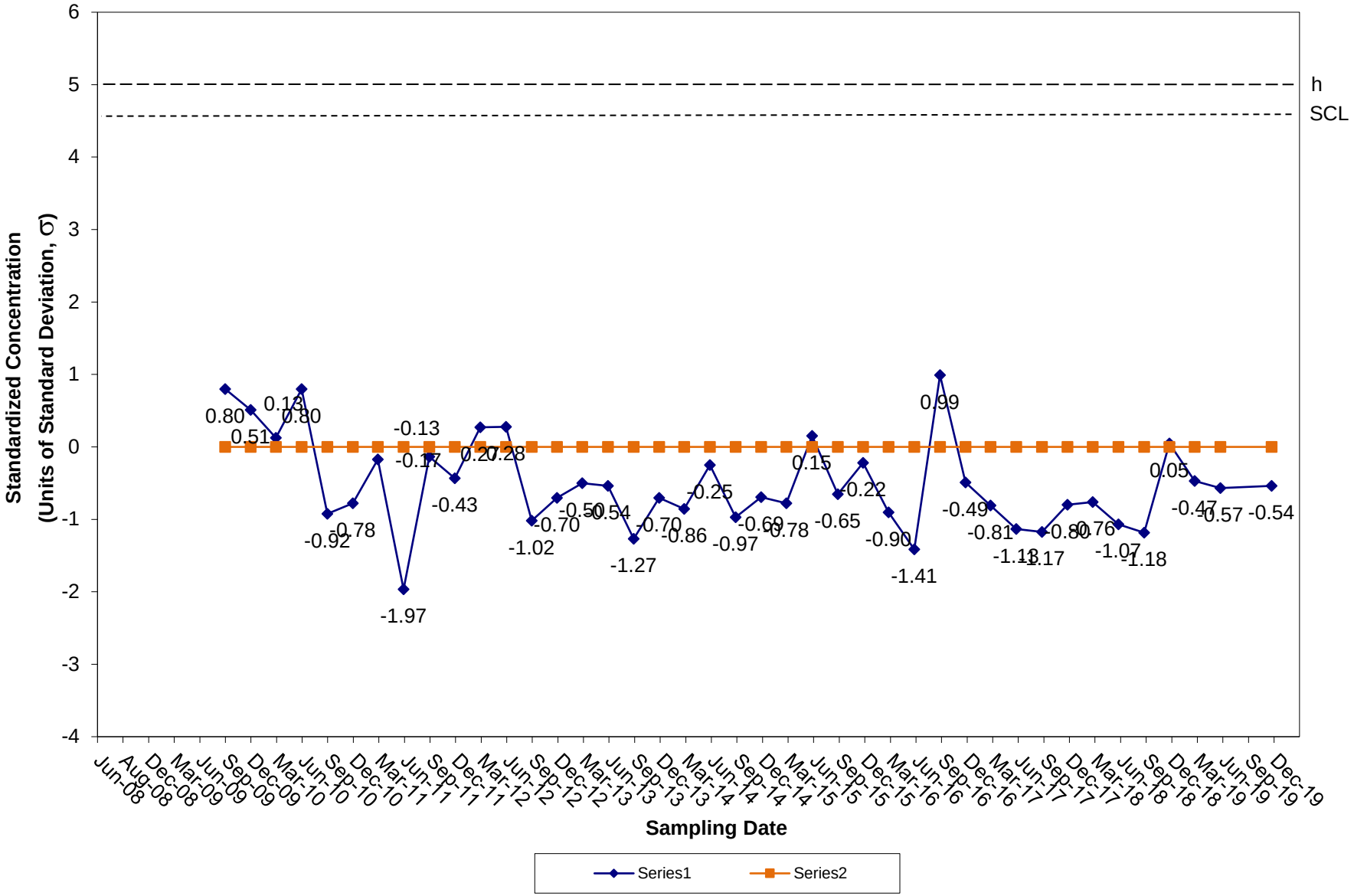
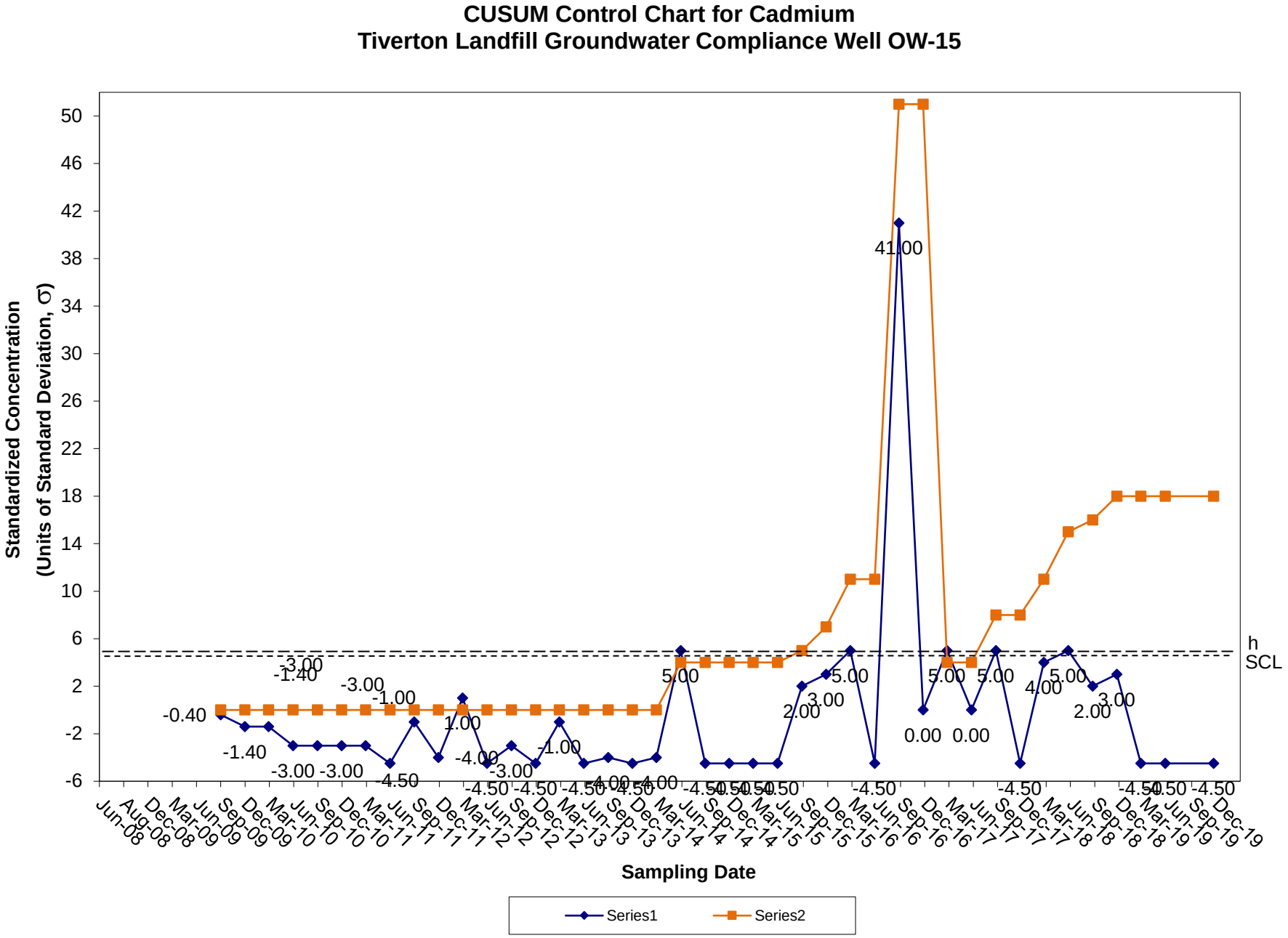
Jun-19
Sep-19
Dec-19
Series1
Series2

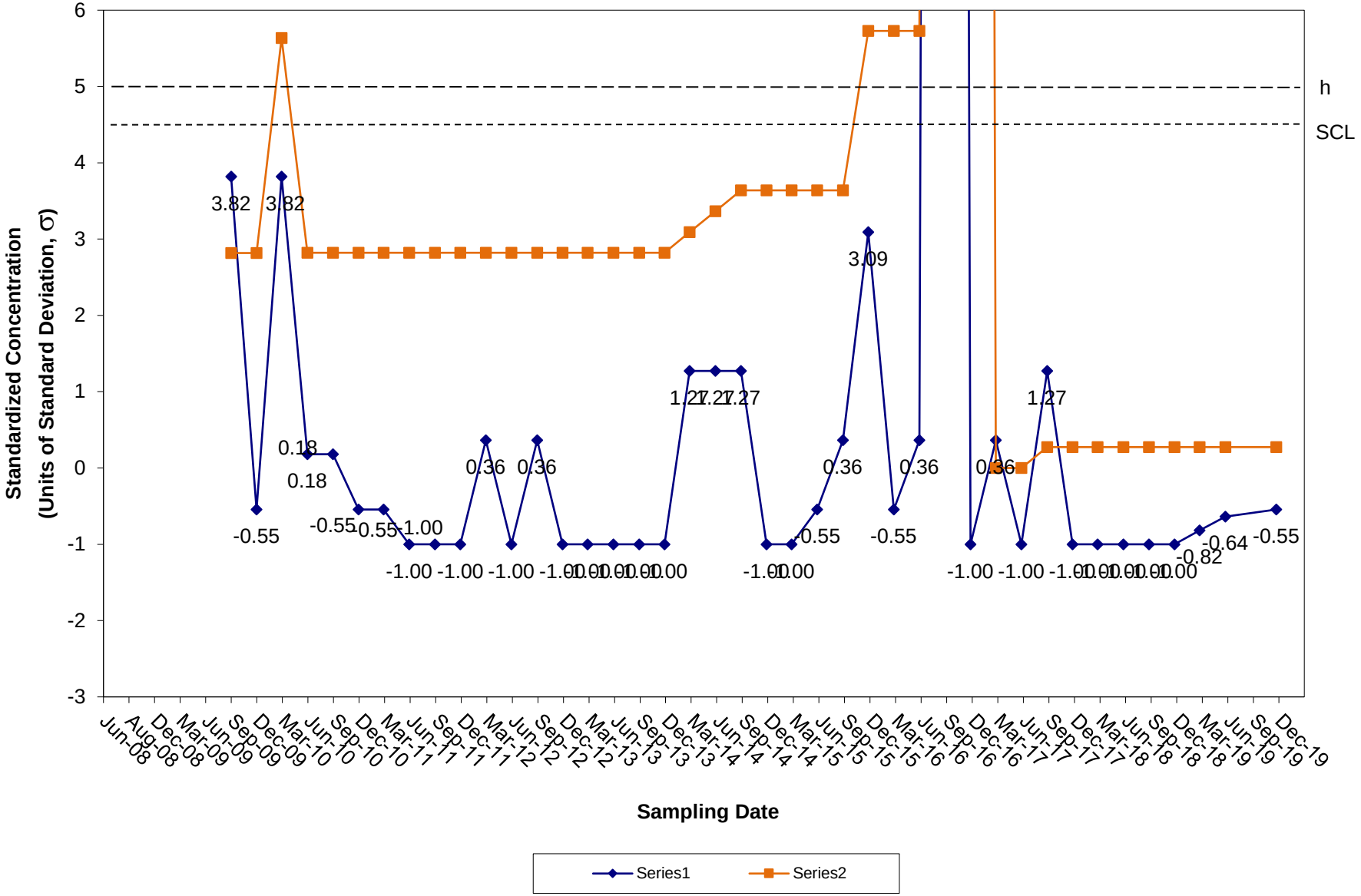

CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-15

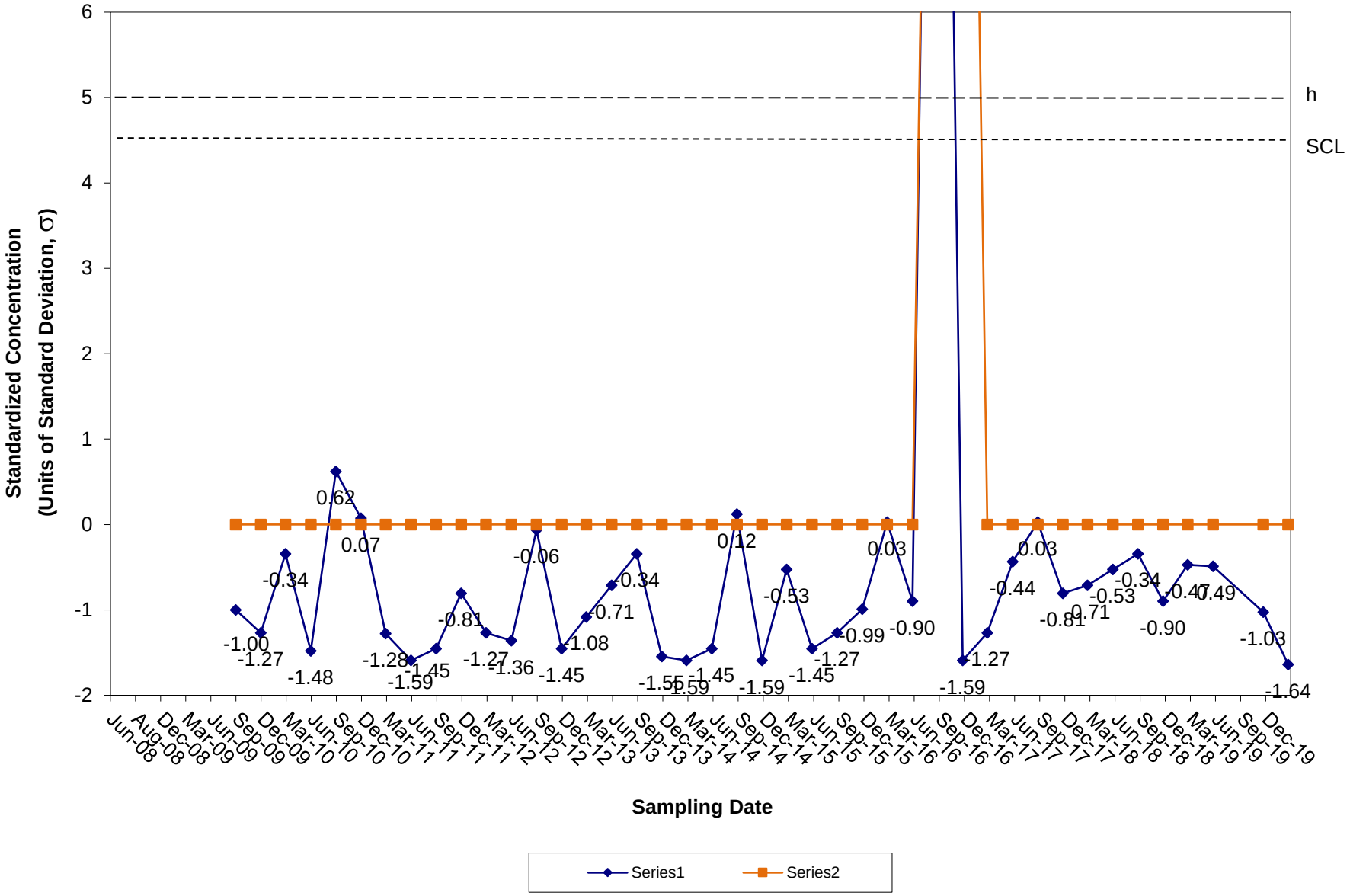


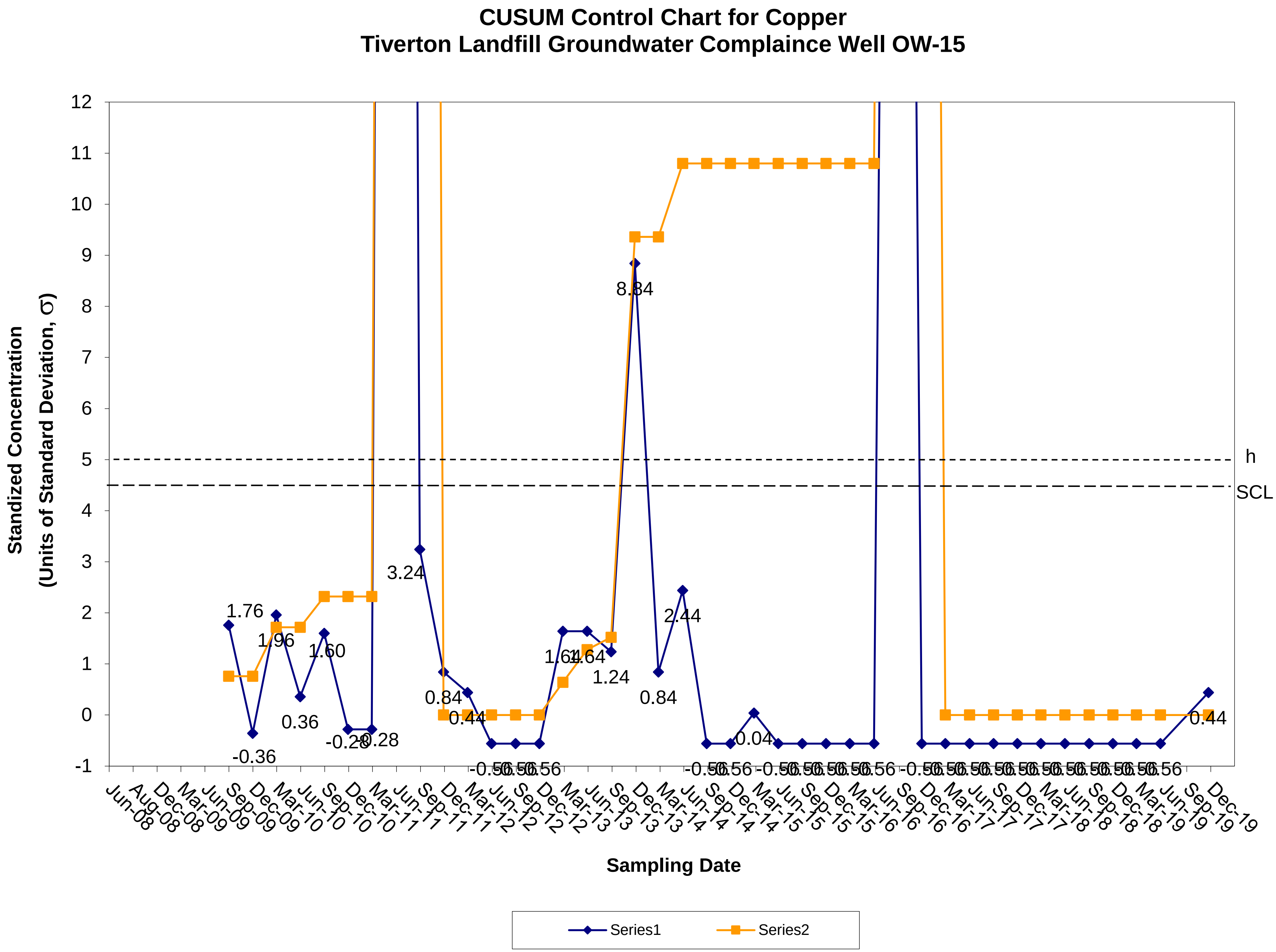

CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-15





CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
1.76
-0.36
1.96
0.36
1.60
-0.28
-0.28
3.24
0.84
0.44
1.64
1.64
1.24
8.84
0.84
2.44
-0.04
0.44
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
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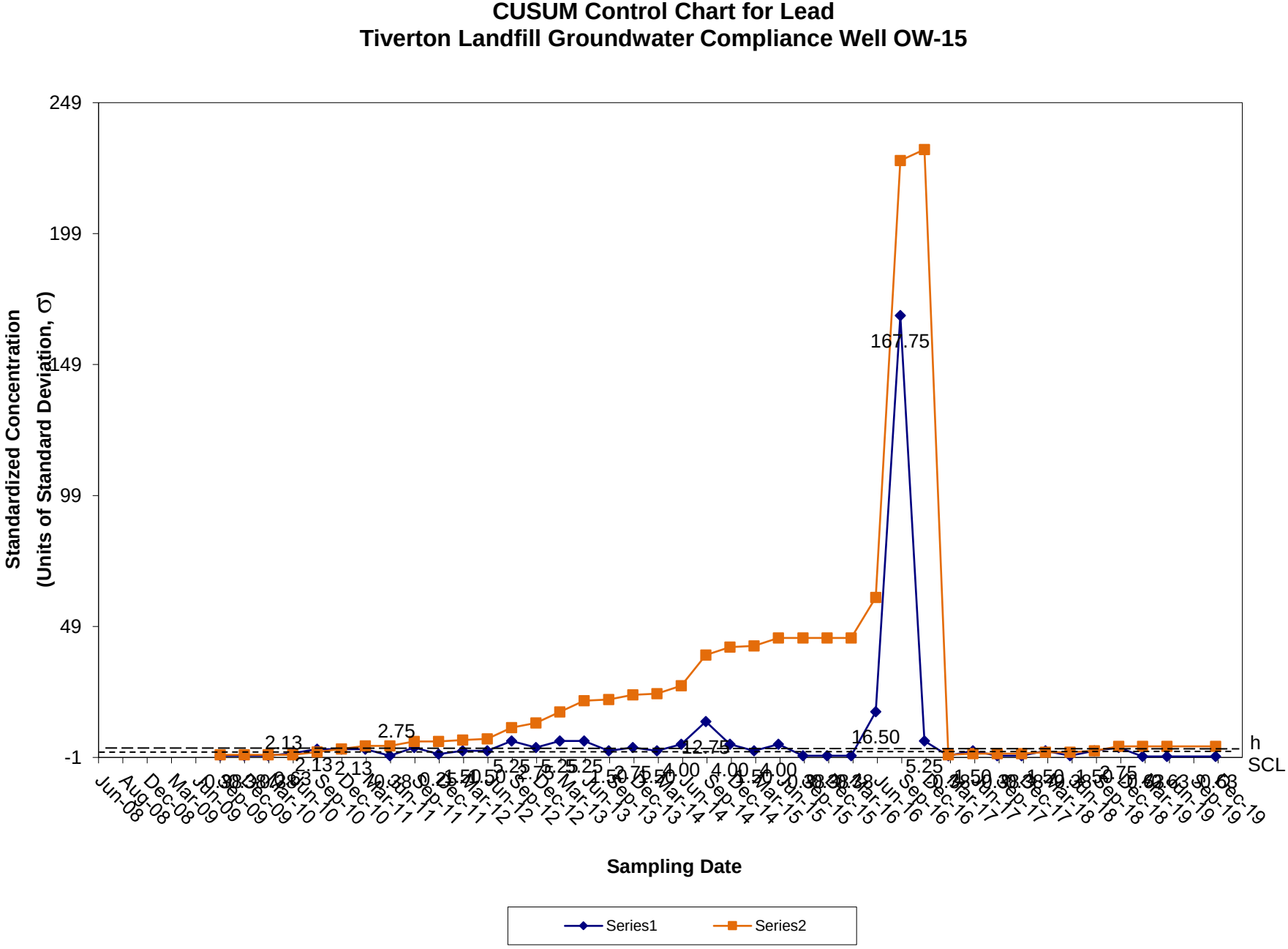
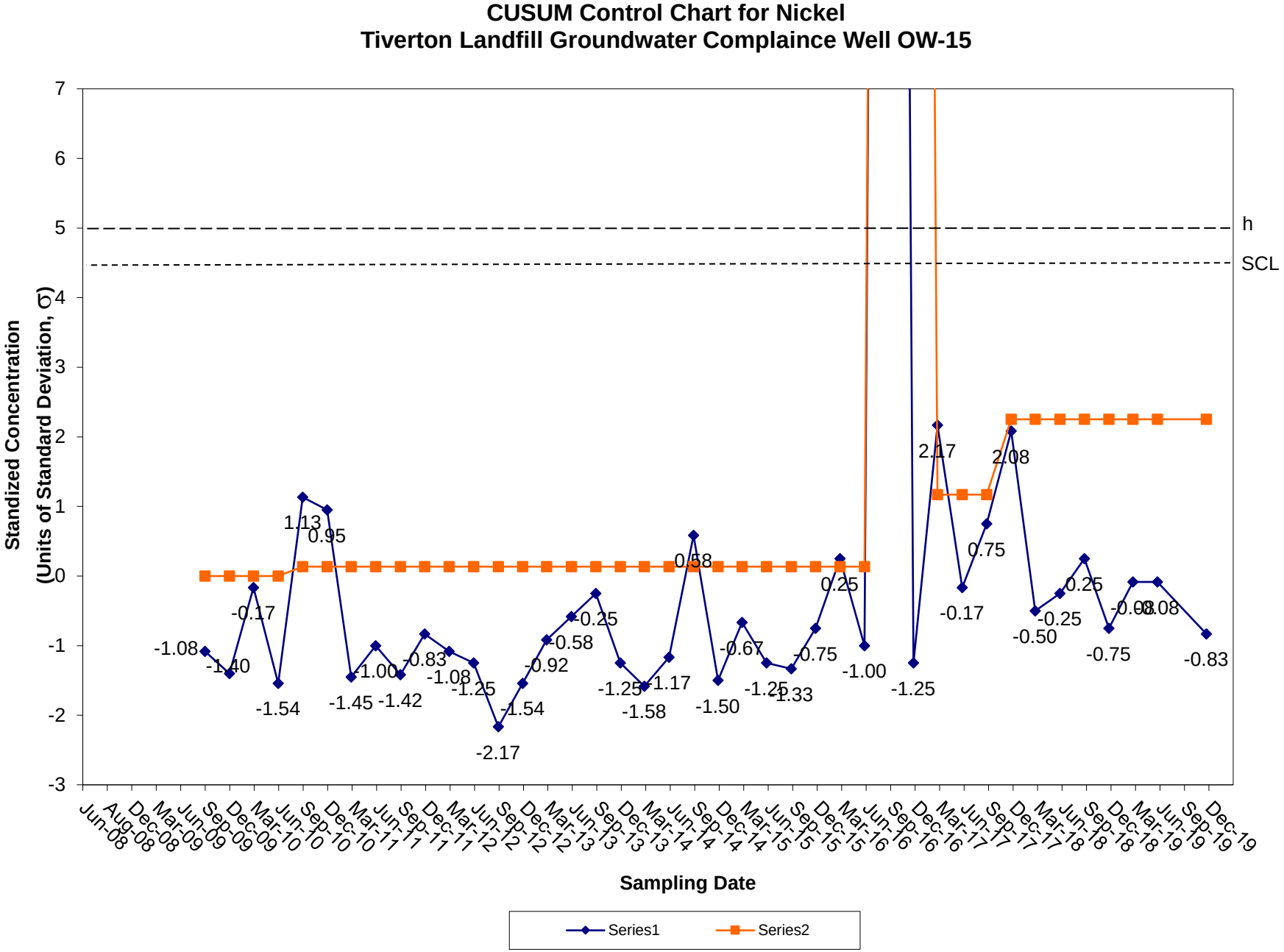
Jun-19
Sep-19
Dec-19


CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
249
199
149
99
49
-1
h
SCL
167.75
16.50
12.75
2.75
2.13
5.25
4.00
Sampling Date
Series1
Series2


CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
7
6
5
4
3
2
1
0
-1
-2
-3
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
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Mar-15
Jun-15
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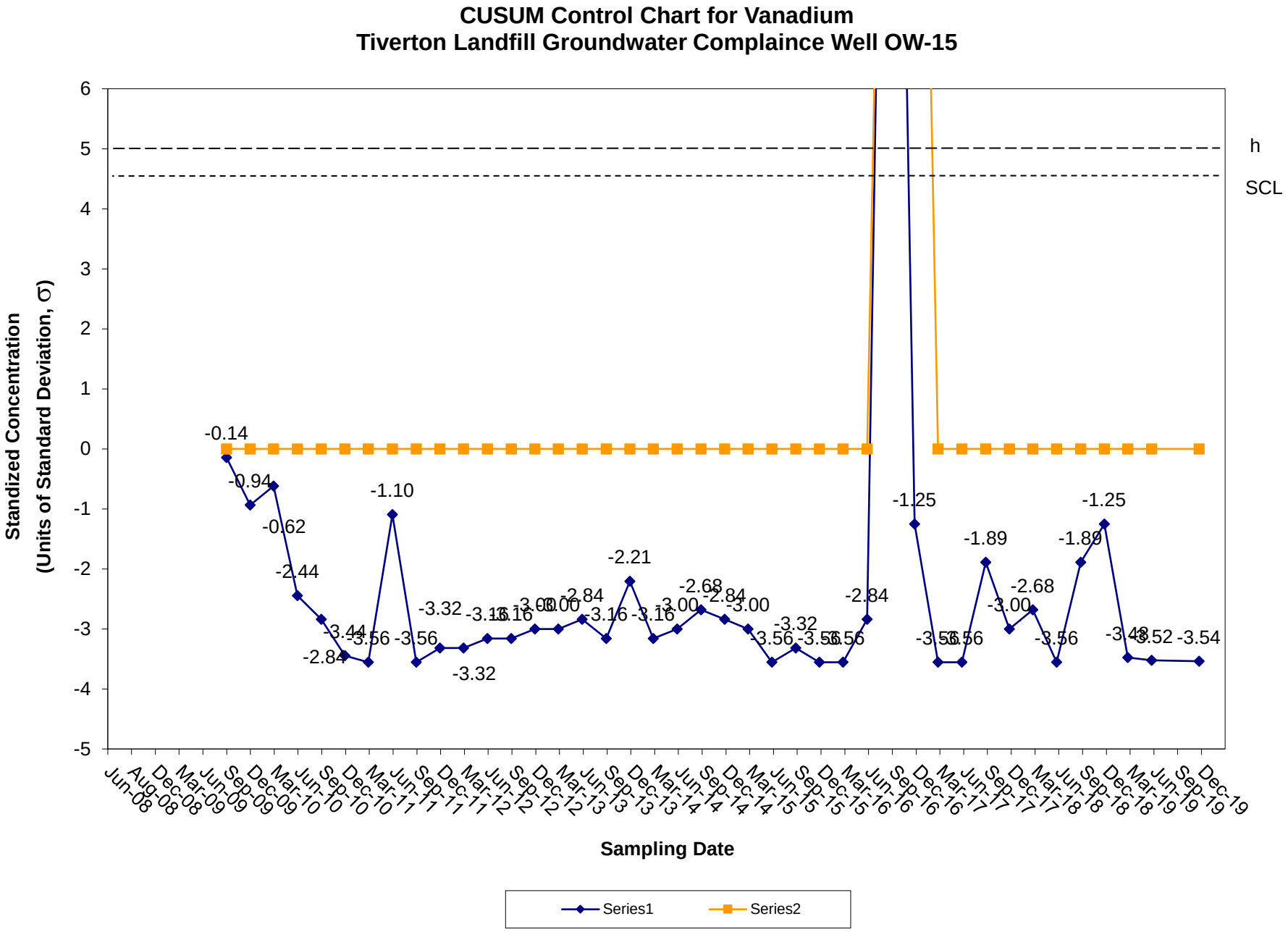
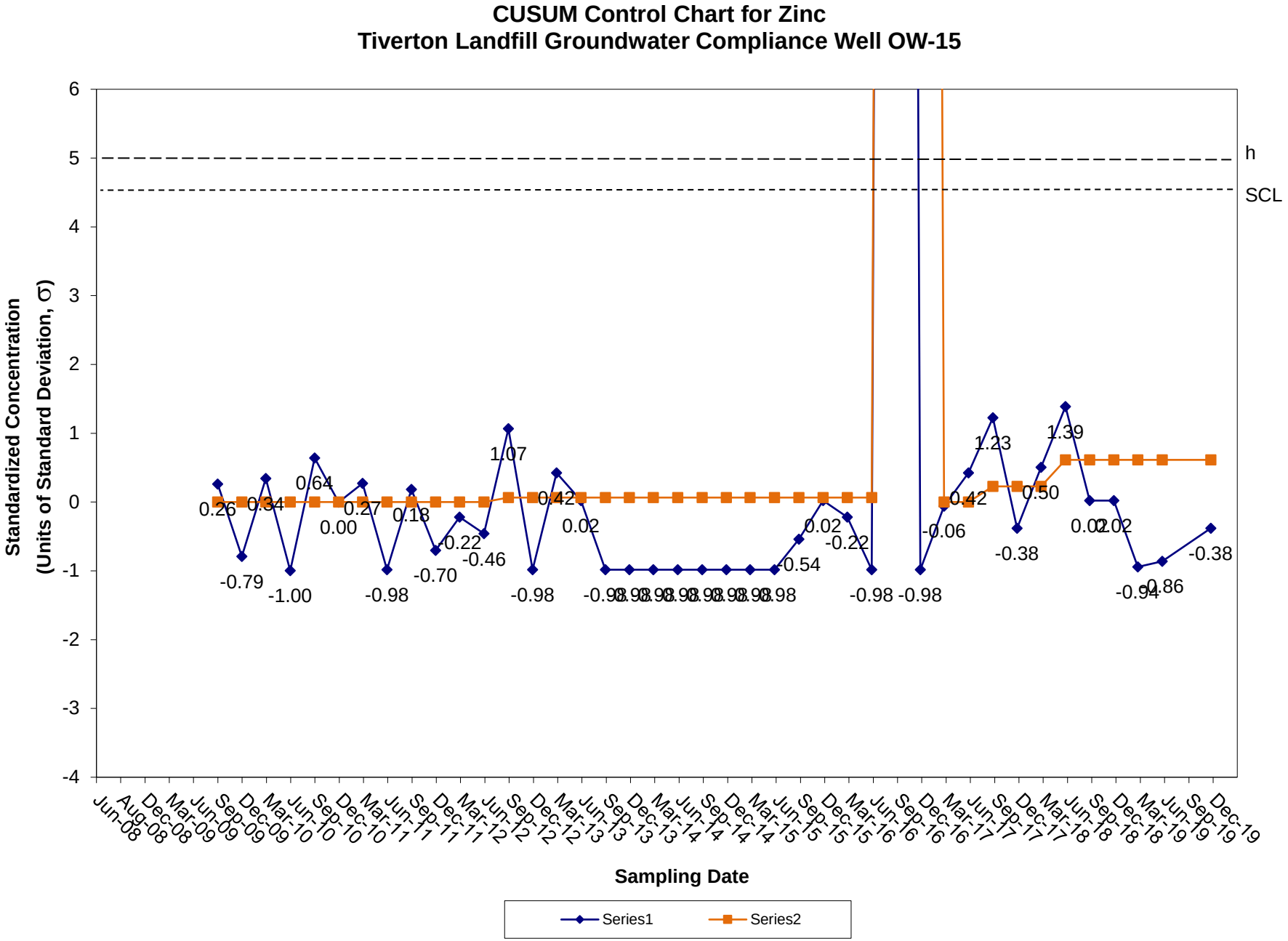
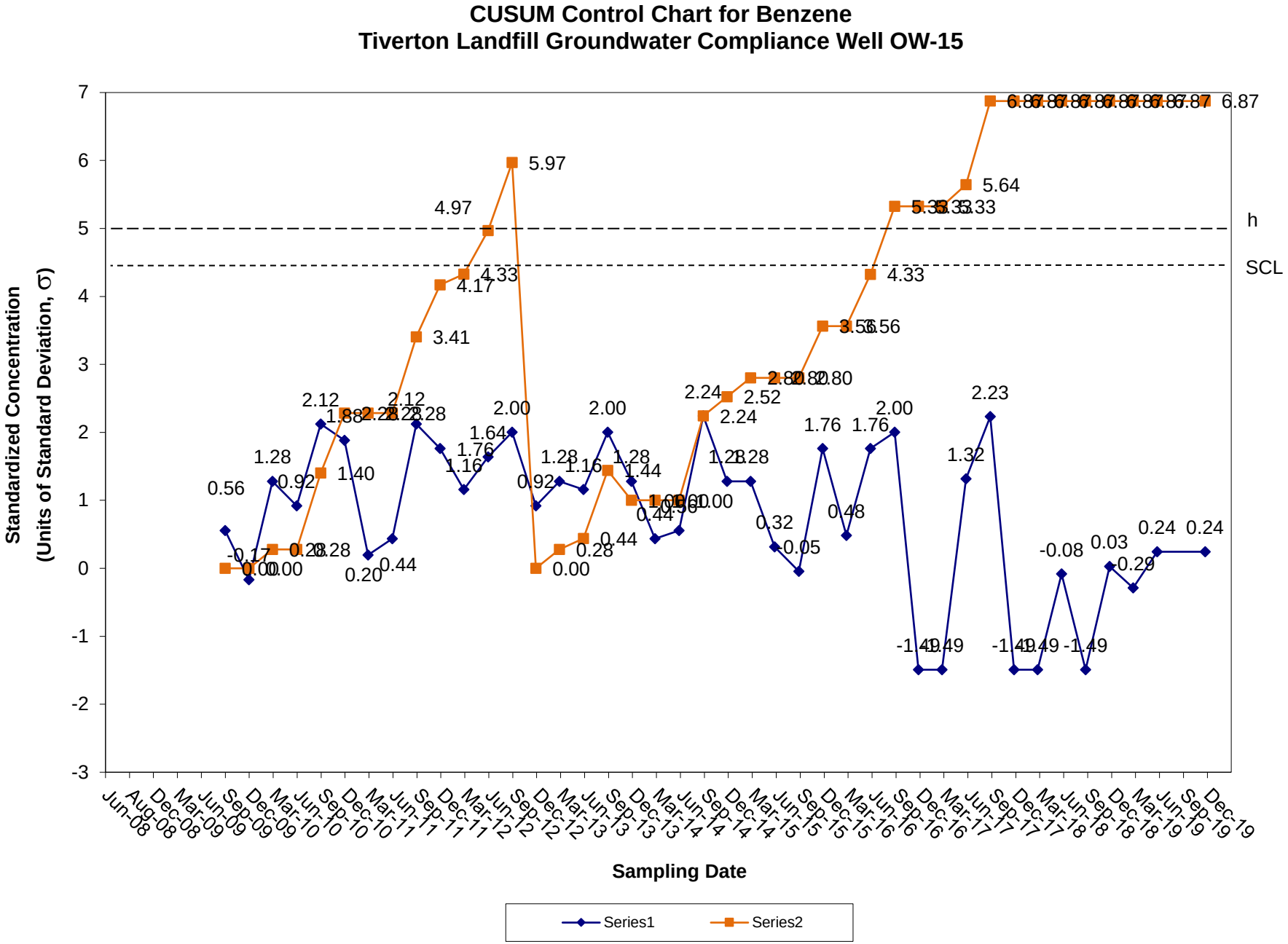
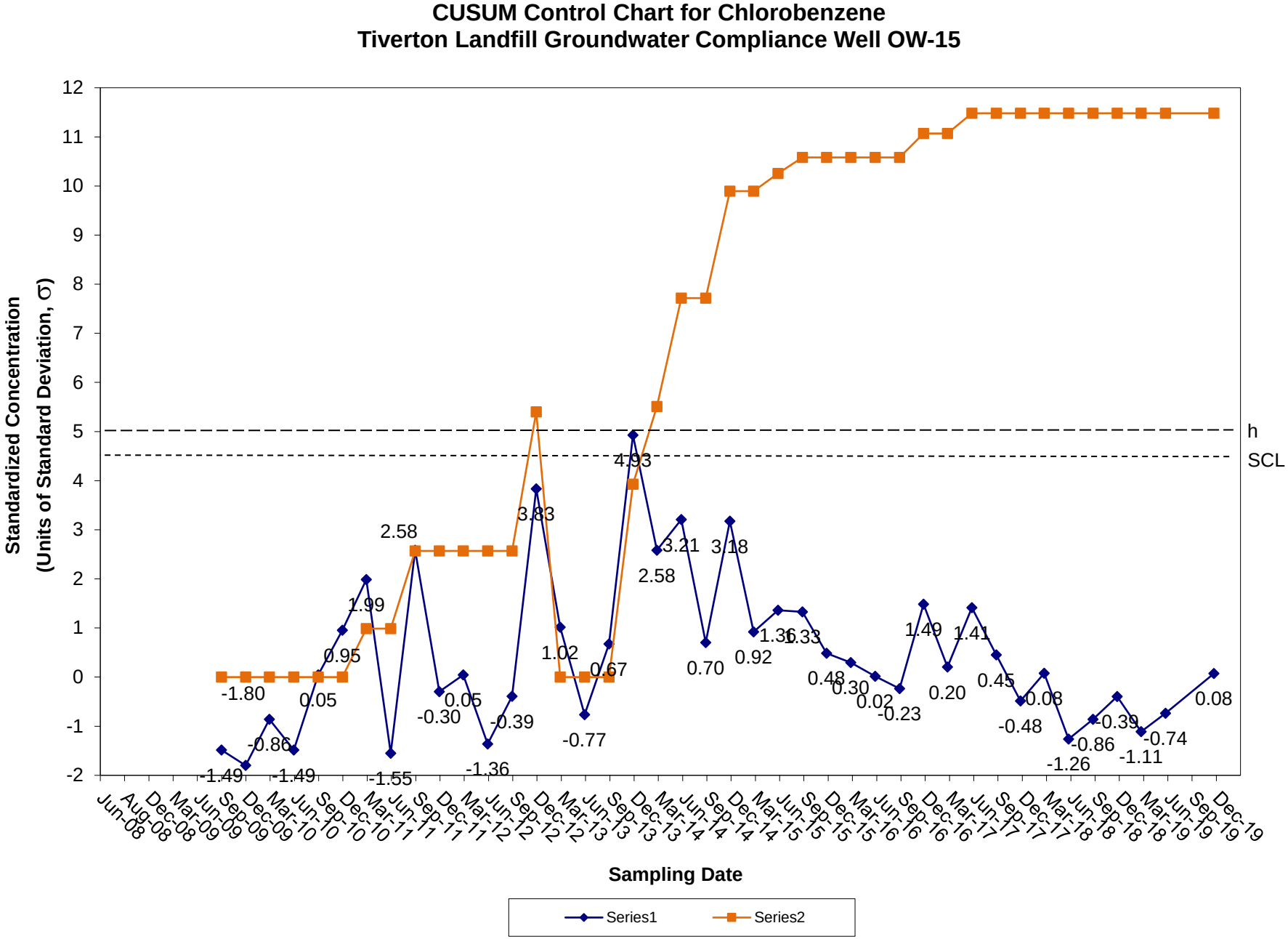
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
-1.08
-1.40
-0.17
-1.54
1.13
0.95
-1.45
-1.00
-1.42
-0.83
-1.08
-1.25
-2.17
-1.54
-0.92
-0.58
-0.25
-1.25
-1.58
-1.17
0.58
-1.50
-0.67
-1.25
-1.33
-0.75
0.25
-1.00
-1.25
2.17
-0.17
0.75
2.08
-0.50
-0.25
0.25
-0.75
-0.08
-0.08
-0.83


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Benzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
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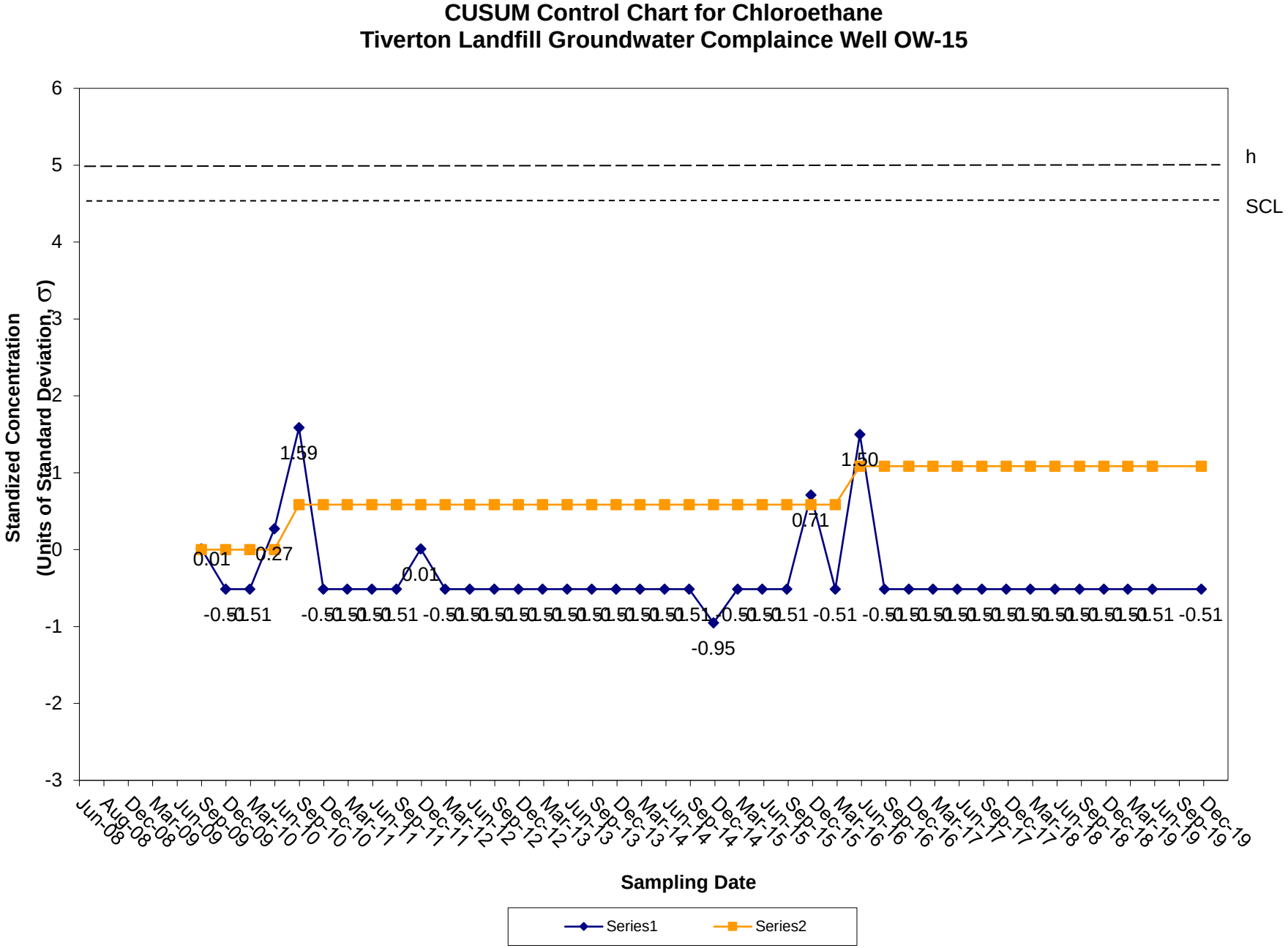
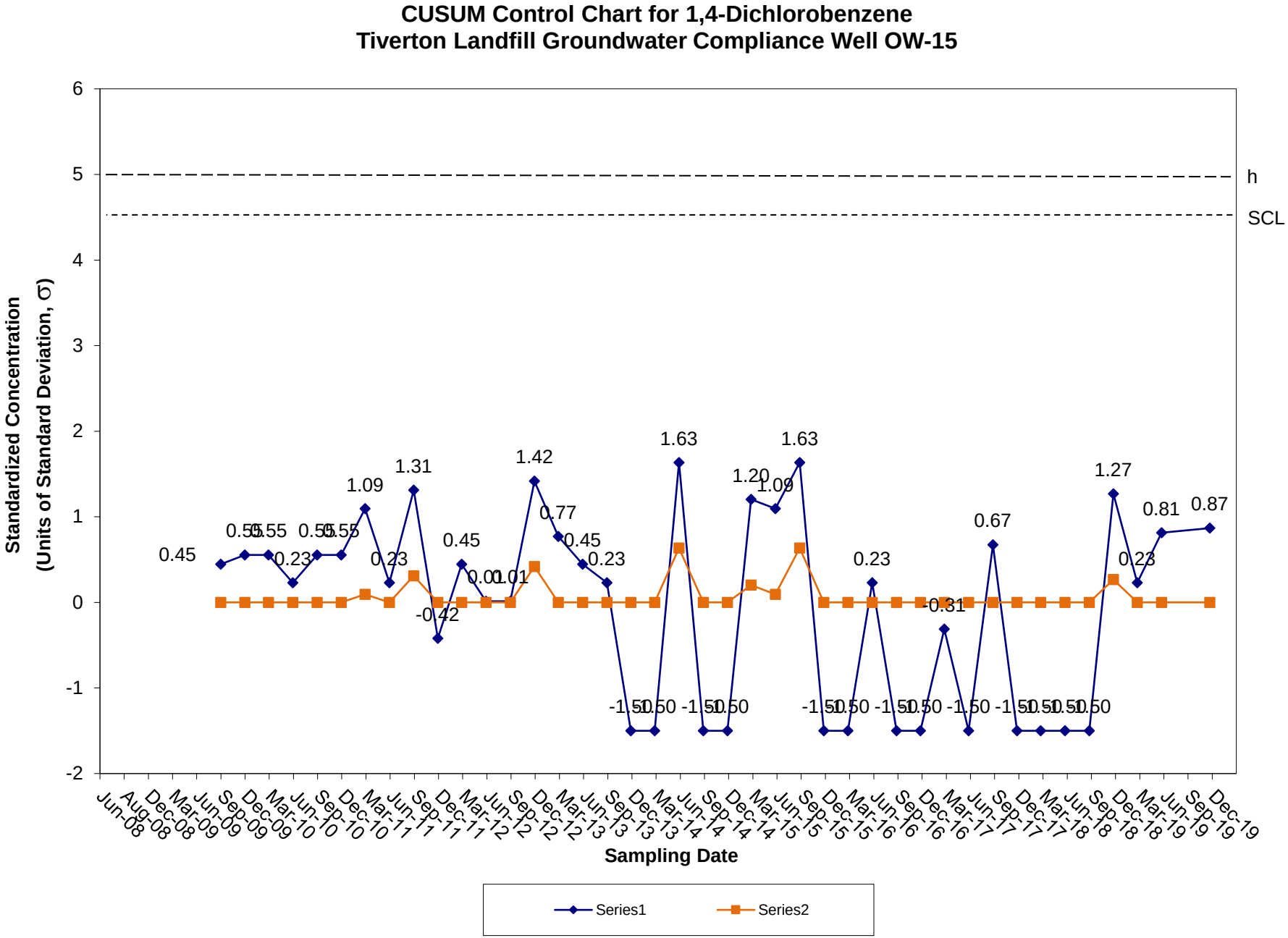
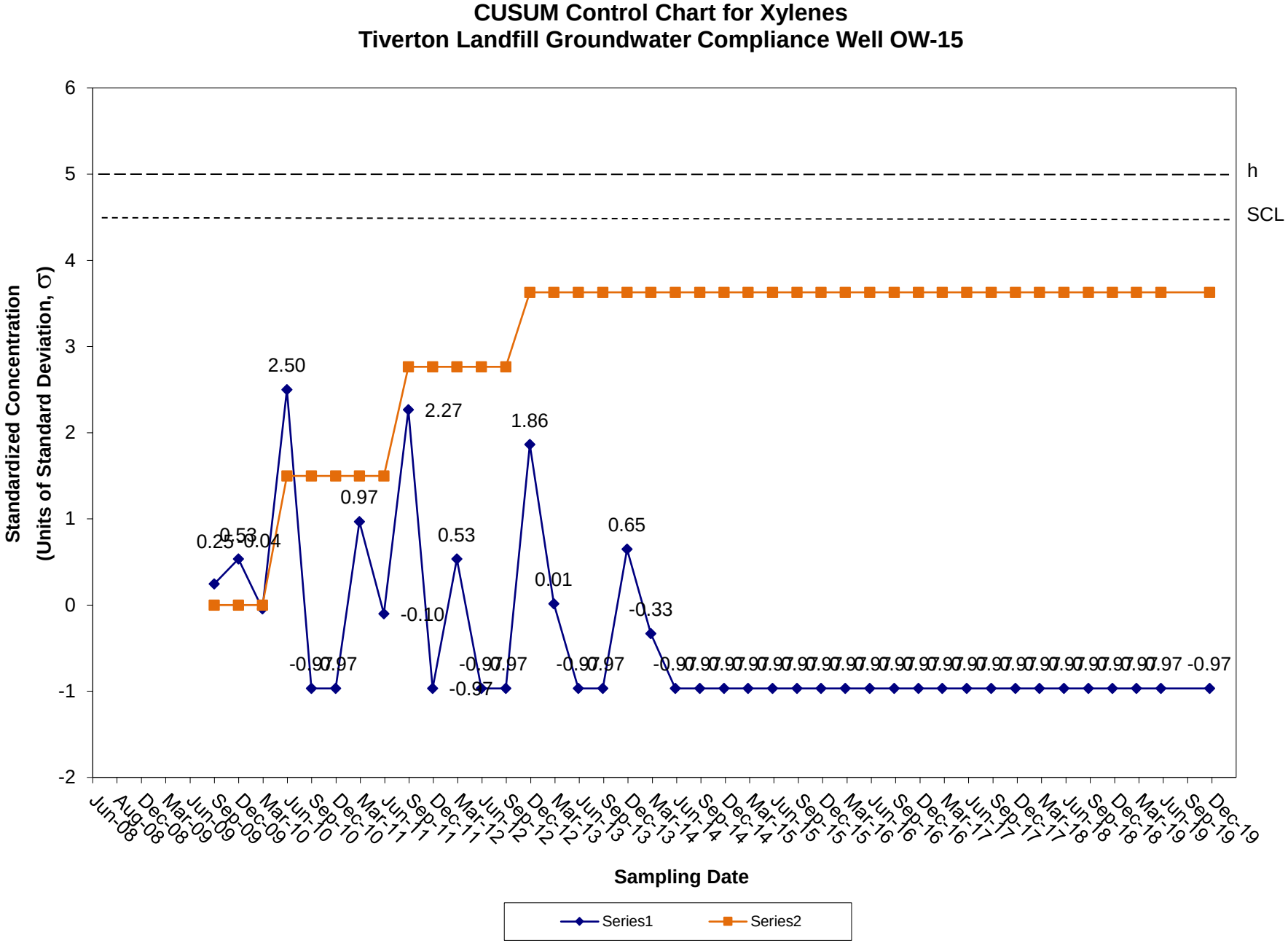
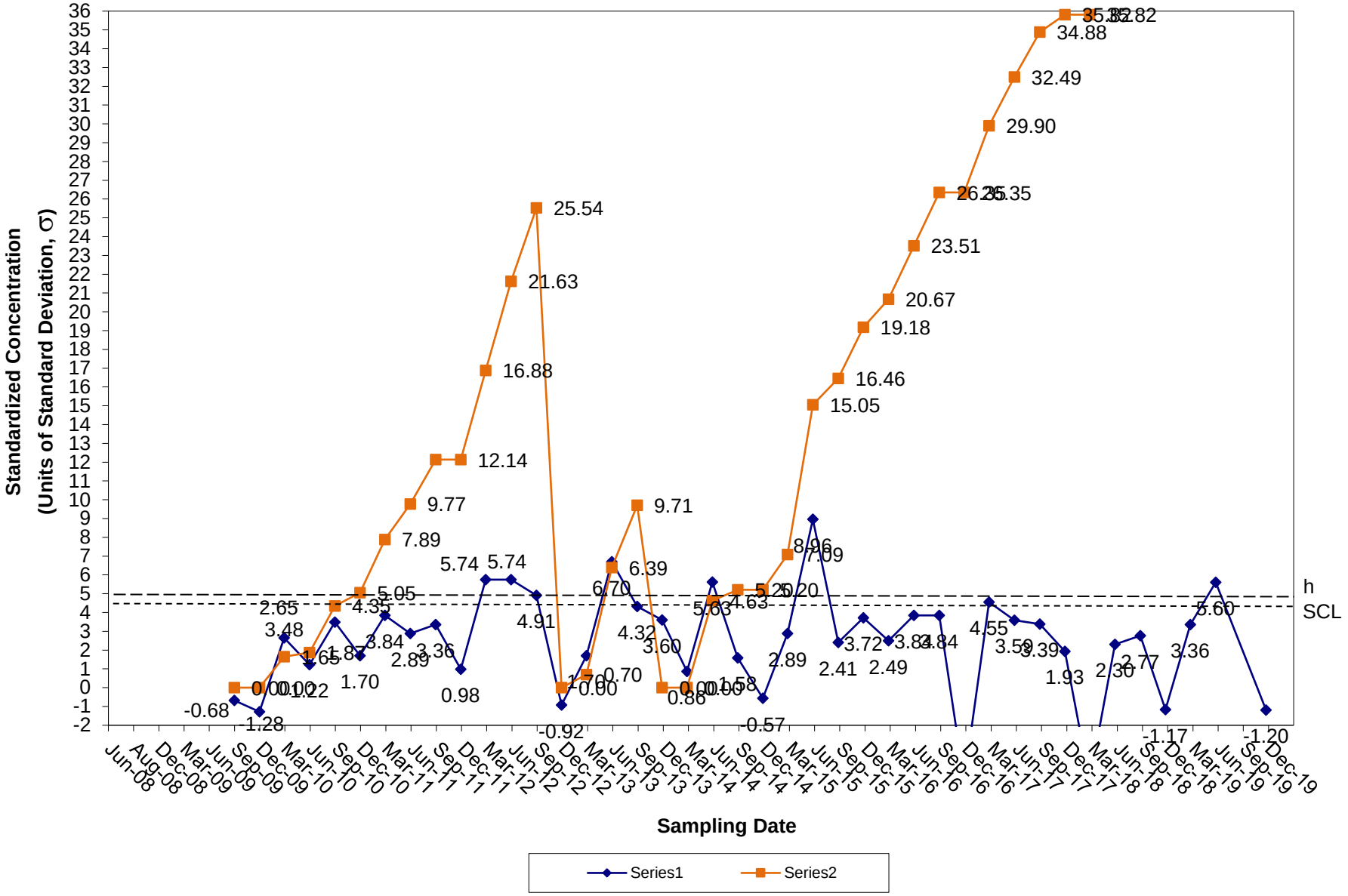
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sep-19
Dec-19
-1.80
-1.49
-0.86
-1.49
0.05
0.95
1.99
-1.55
2.58
-0.30
0.05
-1.36
-0.39
3.83
1.02
-0.77
0.67
4.93
2.58
3.21
0.70
3.18
0.92
1.36
1.33
0.48
0.30
0.02
-0.23
1.49
0.20
1.41
0.45
-0.48
0.08
-1.26
-0.86
-0.39
-1.11
-0.74
0.08


CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for 1,4-Dichlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Xylenes
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-15



APPENDIX I

Tolerance Limit Calculation

PARE
ENGINEERING CORPORATION

PROJECT TIVERTON LANDFILL PROJECT NO. 94139.01
SUBJECT TOLERANCE INTERVAL CALCULATION
COMPUTATIONS BY TPT DATE 01-22-04
CHECK BY _____ DATE _____

OBJECTIVE: PROVIDE SAMPLE CALCULATION FOR STATISTICAL ANALYSIS OF TIVERTON LANDFILL GROUNDWATER MONITORING DATA VIA TOLERANCE LIMIT APPROACH

GIVEN: DATA SET SIZE IS 8 ($N = 8$).

POPULATION OF DATA WE WILL PROVIDE FOR IS 95%. ($p = 0.95$)

PERCENT CONFIDENCE WE WILL CALCULATE IS 95%. ($\gamma = 0.95$)

CALCULATION: CALCULATE UPPER TOLERANCE LIMIT

$$Y_u = \bar{Y} + k_1 s$$

Y_u = UPPER TOLERANCE LIMIT
$\bar{Y}$ = MEAN VALUE OF DATA SET
K_1 = K FACTOR FOR ONE SIDED TOLERANCE LIMIT
s = STANDARD DEVIATION OF DATA SET

CALCULATE K FACTOR

$$K_1 = \frac{z_{(1-p)} + \sqrt{z_{(1-p)}^2 - ab}}{a}$$

$z_{(1-p)} = 1.645$ (REFER TO SECTION 1.3.6.7.1 - ATTACHED)

$$a = 1 - \frac{z_{(1-\gamma)}^2}{2(N-1)}$$

$$b = z_{(1-p)}^2 - \frac{z_{(1-\gamma)}^2}{N}$$

$z_{(1-\gamma)} = 1.645$ (REFER TO SECTION 1.3.6.7.1 - ATTACHED)

PARE
ENGINEERING CORPORATION

PROJECT TIVERTON LANDFILL PROJECT NO. 94139.01
SUBJECT TOLERANCE INTERVAL CALCULATION
COMPUTATIONS BY TPT DATE 01-22-04
CHECK BY _____ DATE _____

CALCULATIONS:

CALCULATE a

$$a = 1 - \frac{z^2_{(1-\gamma)}}{2(N-1)}$$

$$= 1 - \frac{(1.645)^2}{2(8-1)} \qquad = 0.807$$

CALCULATE b

$$b = z^2_{(1-p)} - \frac{z^2_{(1-\gamma)}}{N}$$

$$= (1.645)^2 - \frac{(1.645^2)}{8} \qquad = 2.368$$

CALCULATE K_1

$$K_1 = \frac{z_{(1-p)} + \sqrt{z^2_{(1-p)} - ab}}{a}$$

$$= \frac{1.645 + \sqrt{1.645^2 - (0.807)(2.368)}}{0.807}$$

$$= 3.143$$

UPPER TOLERANCE LIMIT IS

$$Y_u = \bar{Y} + 3.143(s)$$

CALCULATE UPPER TOLERANCE LIMIT FOR ZINC DETECTED IN OW-9 FOR THE LAST 8 SAMPLING ROUNDS FOR WHICH DATA WAS COLLECTED.

PARE
ENGINEERING CORPORATION

PROJECT TIVERTON LANDFILL PROJECT NO. 94139.01
SUBJECT TOLERANCE INTERVAL CALCULATION
COMPUTATIONS BY TPT DATE 01-22-04
CHECK BY _____ DATE _____

CALCULATIONS: (CONT...)

$\bar{Y}$ = 0.0571 (REFER TO ATTACHED EXCEL SHEET)

S = 0.0628 (REFER TO ATTACHED EXCEL SHEET)

$Y_u = 0.0571 + 3.143(0.0628)$

$= 0.254$

∴ 95% OF SAMPLES COLLECTED FROM OW-9 WILL HAVE A CONCENTRATION OF ZINC BELOW 0.254 mg/L WITH A 95% CERTAINTY

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1.3.6.7.1. Cumulative Distribution Function of the Standard Normal Distribution

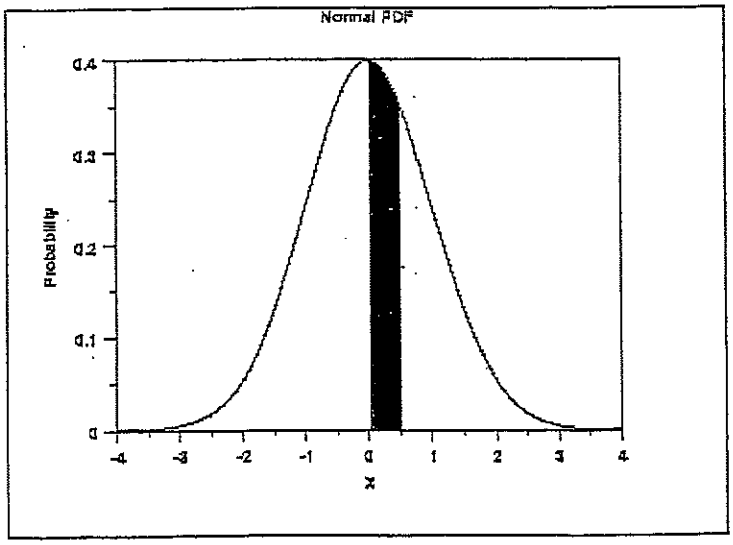
How to Use This Table

The table below contains the area under the standard normal curve from 0 to z. This can be used to compute the cumulative distribution function values for the standard normal distribution.

The table utilizes the symmetry of the normal distribution, so what in fact is given is

$$P[0 \leq x \leq |a|]$$

where a is the value of interest. This is demonstrated in the graph below for $a = 0.5$. The shaded area of the curve represents the probability that x is between 0 and a.



This can be clarified by a few simple examples.

1. What is the probability that x is less than or equal to 1.53? Look for 1.5 in the X column, go right to the 0.03 column to find the value 0.43699. Now add 0.5 (for the

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probability less than zero) to obtain the final result of 0.93699.

2. What is the probability that x is less than or equal to -1.53? For negative values, use the relationship

$$P[x \leq a] = 1 - P[x \leq |a|] \quad \text{for } x < 0$$

From the first example, this gives 1 - 0.93699 = 0.06301.

3. What is the probability that x is between -1 and 0.5? Look up the values for 0.5 (0.5 + 0.19146 = 0.69146) and -1 (1 - (0.5 + 0.34134) = 0.15866). Then subtract the results (0.69146 - 0.15866) to obtain the result 0.5328.

To use this table with a non-standard normal distribution (either the location parameter is not 0 or the scale parameter is not 1), standardize your value by subtracting the mean and dividing the result by the standard deviation. Then look up the value for this standardized value.

A few particularly important numbers derived from the table below, specifically numbers that are commonly used in significance tests, are summarized in the following table:

p	0.001	0.005	0.010	0.025	0.050	0.100
Z_p	-3.090	-2.576	-2.326	-1.960	-1.645	-1.282

p	0.999	0.995	0.990	0.975	0.950	0.900
Z_p	+3.090	+2.576	+2.326	+1.960	+1.645	+1.282

These are critical values for the normal distribution.

Area under the Normal Curve from 0 to X

X	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.
0.0	0.00000	0.00399	0.00798	0.01197	0.01595	0.01994	0.02392	0.02790	0.03188	0.
0.1	0.03983	0.04380	0.04776	0.05172	0.05567	0.05962	0.06356	0.06749	0.07142	0.
0.2	0.07926	0.08317	0.08706	0.09095	0.09483	0.09871	0.10257	0.10642	0.11026	0.
0.3	0.11791	0.12172	0.12552	0.12930	0.13307	0.13683	0.14058	0.14431	0.14803	0.
0.4	0.15542	0.15910	0.16276	0.16640	0.17003	0.17364	0.17724	0.18082	0.18439	0.
0.5	0.19146	0.19497	0.19847	0.20194	0.20540	0.20884	0.21226	0.21566	0.21904	0.
0.6	0.22575	0.22907	0.23237	0.23565	0.23891	0.24215	0.24537	0.24857	0.25175	0.
0.7	0.25804	0.26115	0.26424	0.26730	0.27035	0.27337	0.27637	0.27935	0.28230	0.
0.8	0.28814	0.29103	0.29389	0.29673	0.29955	0.30234	0.30511	0.30785	0.31057	0.

6|11

0.9	0.31594	0.31859	0.32121	0.32381	0.32639	0.32894	0.33147	0.33398	0.33646	0.
1.0	0.34134	0.34375	0.34614	0.34849	0.35083	0.35314	0.35543	0.35769	0.35993	0.
1.1	0.36433	0.36650	0.36864	0.37076	0.37286	0.37493	0.37698	0.37900	0.38100	0.
1.2	0.38493	0.38686	0.38877	0.39065	0.39251	0.39435	0.39617	0.39796	0.39973	0.
1.3	0.40320	0.40490	0.40658	0.40824	0.40988	0.41149	0.41308	0.41466	0.41621	0.
1.4	0.41924	0.42073	0.42220	0.42364	0.42507	0.42647	0.42785	0.42922	0.43056	0.
1.5	0.43319	0.43448	0.43574	0.43699	0.43822	0.43943	0.44062	0.44179	0.44295	0.
1.6	0.44520	0.44630	0.44738	0.44845	0.44950	0.45053	0.45154	0.45254	0.45352	0.
1.7	0.45543	0.45637	0.45728	0.45818	0.45907	0.45994	0.46080	0.46164	0.46246	0.
1.8	0.46407	0.46485	0.46562	0.46638	0.46712	0.46784	0.46856	0.46926	0.46995	0.
1.9	0.47128	0.47193	0.47257	0.47320	0.47381	0.47441	0.47500	0.47558	0.47615	0.
2.0	0.47725	0.47778	0.47831	0.47882	0.47932	0.47982	0.48030	0.48077	0.48124	0.
2.1	0.48214	0.48257	0.48300	0.48341	0.48382	0.48422	0.48461	0.48500	0.48537	0.
2.2	0.48610	0.48645	0.48679	0.48713	0.48745	0.48778	0.48809	0.48840	0.48870	0.
2.3	0.48928	0.48956	0.48983	0.49010	0.49036	0.49061	0.49086	0.49111	0.49134	0.
2.4	0.49180	0.49202	0.49224	0.49245	0.49266	0.49286	0.49305	0.49324	0.49343	0.
2.5	0.49379	0.49396	0.49413	0.49430	0.49446	0.49461	0.49477	0.49492	0.49506	0.
2.6	0.49534	0.49547	0.49560	0.49573	0.49585	0.49598	0.49609	0.49621	0.49632	0.
2.7	0.49653	0.49664	0.49674	0.49683	0.49693	0.49702	0.49711	0.49720	0.49728	0.
2.8	0.49744	0.49752	0.49760	0.49767	0.49774	0.49781	0.49788	0.49795	0.49801	0.
2.9	0.49813	0.49819	0.49825	0.49831	0.49836	0.49841	0.49846	0.49851	0.49856	0.
3.0	0.49865	0.49869	0.49874	0.49878	0.49882	0.49886	0.49889	0.49893	0.49896	0.
3.1	0.49903	0.49906	0.49910	0.49913	0.49916	0.49918	0.49921	0.49924	0.49926	0.
3.2	0.49931	0.49934	0.49936	0.49938	0.49940	0.49942	0.49944	0.49946	0.49948	0.
3.3	0.49952	0.49953	0.49955	0.49957	0.49958	0.49960	0.49961	0.49962	0.49964	0.
3.4	0.49966	0.49968	0.49969	0.49970	0.49971	0.49972	0.49973	0.49974	0.49975	0.
3.5	0.49977	0.49978	0.49978	0.49979	0.49980	0.49981	0.49981	0.49982	0.49983	0.
3.6	0.49984	0.49985	0.49985	0.49986	0.49986	0.49987	0.49987	0.49988	0.49988	0.
3.7	0.49989	0.49990	0.49990	0.49990	0.49991	0.49991	0.49992	0.49992	0.49992	0.
3.8	0.49993	0.49993	0.49993	0.49994	0.49994	0.49994	0.49994	0.49995	0.49995	0.
3.9	0.49995	0.49995	0.49996	0.49996	0.49996	0.49996	0.49996	0.49996	0.49997	0.
4.0	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0.49998	0.49998	0.49998	0.

7.2.6.3. Tolerance intervals for a normal distribution

Definition of a tolerance interval

A confidence interval covers a population parameter with a stated confidence, that is, a certain proportion of the time. There is also a way to cover a fixed proportion of the population with a stated confidence. Such an interval is called a *tolerance interval.* The endpoints of a tolerance interval are called *tolerance limits.* An application of tolerance intervals to manufacturing involves comparing specification limits prescribed by the client with tolerance limits that cover a specified proportion of the population.

Difference between confidence and tolerance intervals

Confidence limits are limits within which we expect a given population parameter, such as the mean, to lie. Statistical tolerance limits are limits within which we expect a stated proportion of the population to lie. Confidence intervals shrink towards zero as the sample size increases. Tolerance intervals tend towards a fixed value as the sample size increases.

Not related to engineering tolerances

Statistical tolerance intervals have a probabilistic interpretation. *Engineering tolerances* are specified outer limits of acceptability which are usually prescribed by a design engineer and do not necessarily reflect a characteristic of the actual measurements.

Three types of tolerance intervals

Three types of questions can be addressed by tolerance intervals. Question (1) leads to a two-sided interval; questions (2) and (3) lead to one-sided intervals.

1. What interval will contain p percent of the population measurements?
2. What interval guarantees that p percent of population measurements will not fall below a lower limit?
3. What interval guarantees that p percent of population measurements will not exceed an upper limit?

Tolerance intervals for measurements from a normal distribution

For the questions above, the corresponding tolerance intervals are defined by lower (L) and upper (U) tolerance limits which are computed from a series of measurements $Y_1, ..., Y_N$:

1. $Y_L = \bar{Y} - k_2 s; \quad Y_U = \bar{Y} + k_2 s$
2. $Y_L = \bar{Y} - k_1 s$

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3. $Y_U = \bar{Y} + k_1 s$ 90, 45, etc. 90, 80, 70, etc.

where the k factors are determined so that the intervals cover at least a proportion p of the population with confidence, γ.

Calculation of k factor for a two-sided tolerance limit for a normal distribution

If the data are from a normally distributed population, an approximate value for the factor as a function of p and γ for a two-sided tolerance interval (Howe, 1969) is

$$k_2 = \sqrt{\frac{(N-1)\left(1+\frac{1}{N}\right)z^2_{(1-p)/2}}{\chi^2_{\gamma,N-1}}}$$

where $\chi^2_{\gamma,N-1}$ is the critical value of the chi-square distribution with degrees of freedom, $N - 1$, that is exceeded with probability γ and $z_{(1-p)/2}$ is the critical value of the normal distribution which is exceeded with probability $(1-p)/2$.

Example of calculation

For example, suppose that we take a sample of $N = 43$ silicon wafers from a lot and measure their thicknesses in order to find tolerance limits within which a proportion $p = 0.90$ of the wafers in the lot fall with probability $\gamma = 0.99$.

Use of tables in calculating two-sided tolerance intervals

Values of the k factor as a function of p and γ are tabulated in some textbooks, such as Dixon and Massey (1969). To use the tables in this handbook, follow the steps outlined below:

1. Calculate $\alpha = (1 - p)/2 = 0.05$
2. Go to the table of upper critical values of the normal distribution and under the column labeled 0.05 find $z_{(1-p)/2} = 1.645$.
3. Go to the table of lower critical values of the chi-square distribution and under the column labeled 0.99 in the row labeled degrees of freedom = 42, find $\chi^2_{\gamma,N-1} = 23.650$.
4. Calculate

this value must be squared.

$$k_2 = \sqrt{\frac{(N-1)\left(1+\frac{1}{N}\right)z^2_{(1-p)/2}}{\chi^2_{\gamma,N-1}}} = \sqrt{\frac{42\left(\frac{44}{43}\right)(1.645)^2}{23.650}} = 2.217$$

do not square this value, it is already squared in the table.

The tolerance limits are then computed from the sample mean, $\bar{Y}$, and standard deviation, s, according to case (1).

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Important note

The notation for the critical value of the chi-square distribution can be confusing. Values as tabulated are, in a sense, already squared; whereas the critical value for the normal distribution must be squared in the formula above.

Dataplot commands for calculating the k factor for a two-sided tolerance interval

The Dataplot commands are:

```
let n = 43
let nu = n - 1
let p = .90
let g = .99
let g1=1-g
let p1=(1+p)/2
let cg=chsppf(g1,nu)
let np=norppf(p1)
let k = nu*(1+1/n)*np**2
let k2 = (k/cg)**.5
```

and the output is:

```
THE COMPUTED VALUE OF THE CONSTANT K2 = 0.2217316E+01
```

Another note

The notation for tail probabilities in Dataplot is the converse of the notation used in this handbook. Therefore, in the example above it is necessary to specify the critical value for the chi-square distribution, say, as chsppf(1-.99, 42) and similarly for the critical value for the normal distribution.

Direct calculation of tolerance intervals using Dataplot

Dataplot also has an option for calculating tolerance intervals directly from the data. The commands for producing tolerance intervals from twenty-five measurements of resistivity from a quality control study at a confidence level of 99% are:

```
read 100ohm.dat cr wafer mo day h min op hum ...
                probe temp y sw df
tolerance y
```

Automatic output is given for several levels of coverage, and the tolerance interval for 90% coverage is shown below in bold:

```
 2-SIDED NORMAL TOLERANCE LIMITS: XBAR +- K*S

     NUMBER OF OBSERVATIONS     =      25
     SAMPLE MEAN                = 97.069832
     SAMPLE STANDARD DEVIATION = 0.26798090E-01

CONFIDENCE =    99.%
  COVERAGE (%)        LOWER LIMIT          UPPER LIMIT
```

50.0	97.04242	97.09724
75.0	97.02308	97.11658
90.0	97.00299	97.13667
95.0	96.99020	97.14946
99.0	96.96522	97.17445
99.9	96.93625	97.20341

Calculation for a one-sided tolerance interval for a normal distribution

The calculation of an approximate k factor for one-sided tolerance intervals comes directly from the following set of formulas (Natrella, 1963):

$$k_1 = \frac{z_{(1-p)} + \sqrt{z_{1-p}^2 - ab}}{a}$$

$$a = 1 - \frac{z_{1-\gamma}^2}{2(N-1)};\ b = z_{1-p}^2 - \frac{z_{1-\gamma}^2}{N}$$

where $z_{(1-p)}$ is the critical value from the normal distribution that is exceeded with probability $1-p$ and $z_{(1-\gamma)}$ is the critical value from the normal distribution that is exceeded with probability $1-\gamma$.

Dataplot commands for calculating the k factor for a one-sided tolerance interval

For the example above, it may also be of interest to guarantee with 0.99 probability (or 99% confidence) that 90% of the wafers have thicknesses less than an upper tolerance limit. This problem falls under case (3), and the Dataplot commands for calculating the factor for the one-sided tolerance interval are:

```
let n = 43
let p = .90
let g = .99
let nu = n-1
let zp = norppf(p)
let zg=norppf(g)
let a = 1 - ((zg**2)/(2*nu))
let b = zp**2 - (zg**2)/n
let k1 = (zp + (zp**2 - a*b)**.5)/a
```

and the output is:

```
THE COMPUTED VALUE OF THE CONSTANT A  =  0.9355727E+00
THE COMPUTED VALUE OF THE CONSTANT B  =  0.1516516E+01
THE COMPUTED VALUE OF THE CONSTANT K1 =  0.1875189E+01
```

The upper (one-sided) tolerance limit is therefore 97.07 + 1.8752*2.68 = 102.096.

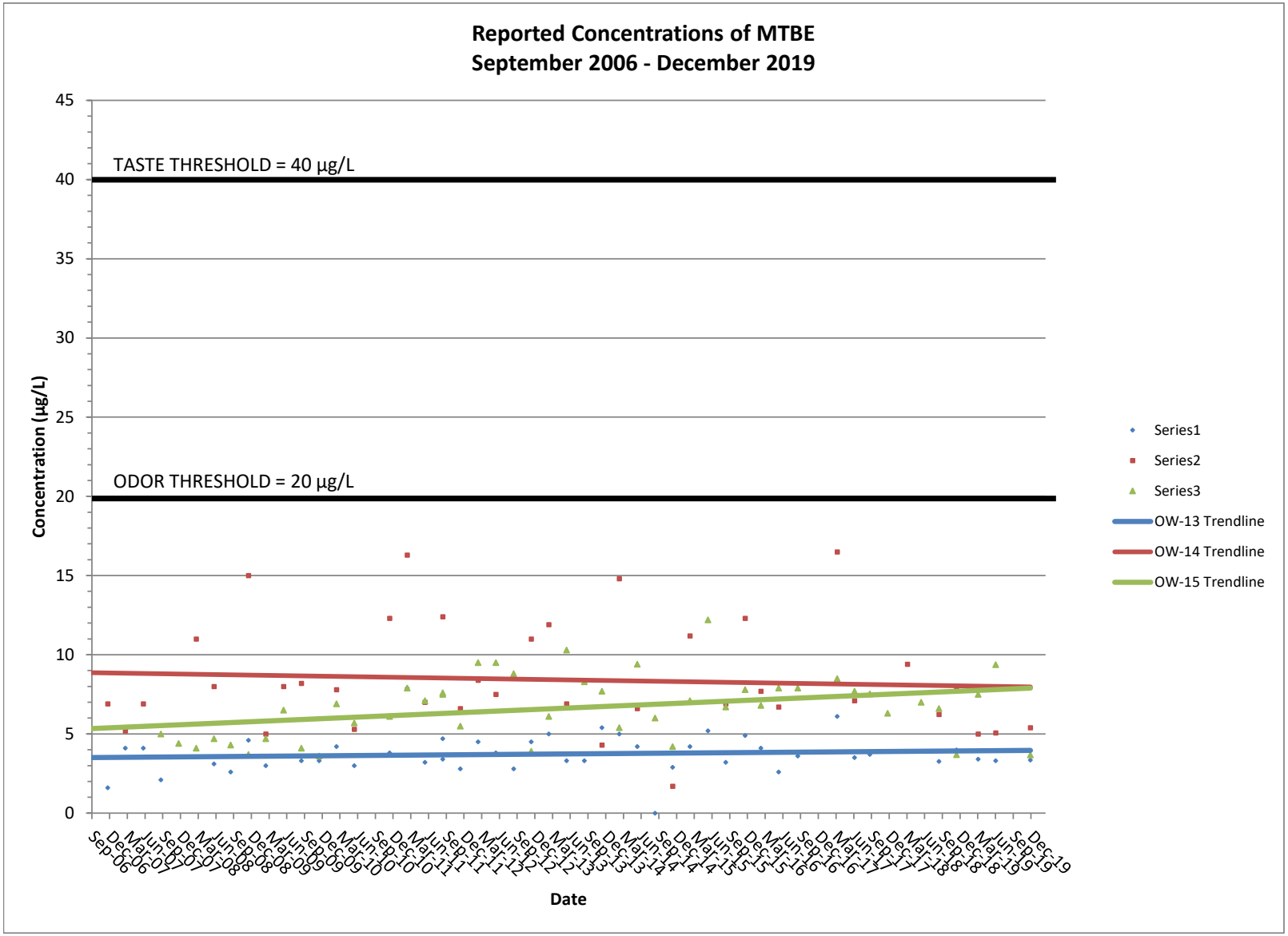
TABLE 3
BACKGROUND WELL HISTORICAL RESULTS
MONITORING WELL OW-9

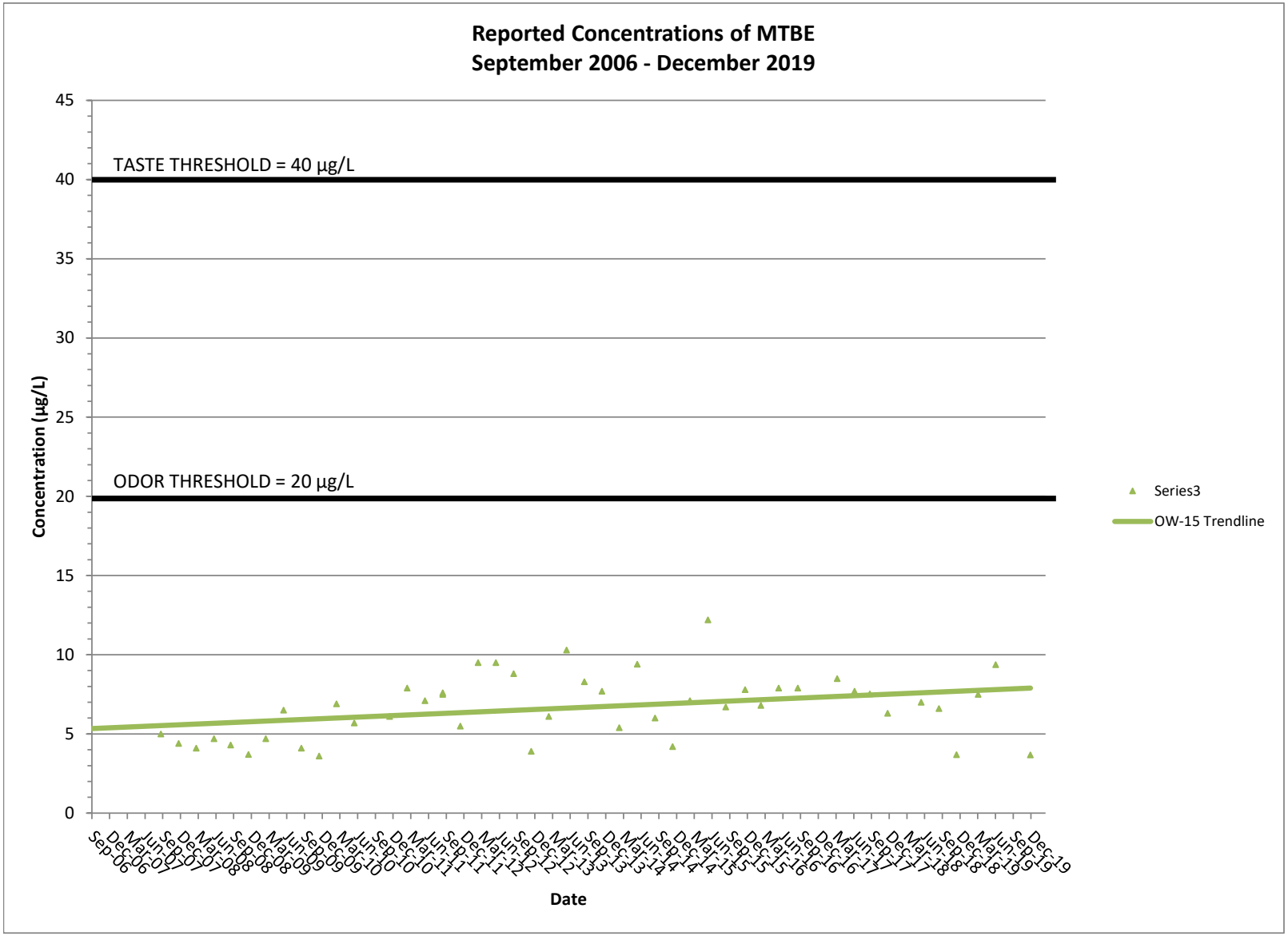
Concentration (units as specified for MCL)

	Parameter	DEC '03	SEP '03	JUN '03	MAR '03	DEC'02*	JULY '02	MAR '01	DEC '00
METALS	Antimony	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*	*0.005*	*0.005*
	Arsenic	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*
	Barium	0.012	0.018	0.013	0.022	0.13	*0.005*	0.31	0.035
	Beryllium	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	*0.0005*	0.0068	*0.0005*
	Cadmium	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*
	Chromium	*0.005*	*0.005*	*0.005*	0.081	0.078	*0.005*	0.092	0.011
	Cobalt	*0.001*	*0.001*	*0.001*	0.0047	0.0320	0.0040	0.053	0.0065
	Copper	*0.005*	*0.005*	*0.005*	0.014	0.066	*0.005*	0.086	*0.005*
	Lead	*0.002*	*0.002*	0.0057	0.0052	0.048	*0.002*	0.061	0.010
	Nickel	*0.005*	*0.005*	*0.005*	0.073	0.064	*0.005*	0.070	0.013
	Selenium	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*	*0.005*
	Silver	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*
	Thallium	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.0025*	*0.0025*	*0.003*
	Vanadium	*0.005*	*0.005*	*0.005*	*0.005*	0.038	*0.005*	0.011	*0.005*
	Zinc	0.018	0.027	0.021	0.04	0.13	*0.005*	0.18	0.036
	Mercury	*0.0001*	0.00072	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*
	Zinc Average (a)	0.057125							
	Zinc Standard Deviation (a)	0.062802269							

APPENDIX J

Reported Concentrations of MTBE


Reported Concentrations of MTBE
September 2006 - December 2019
TASTE THRESHOLD = 40 µg/L
ODOR THRESHOLD = 20 µg/L
Concentration (µg/L)
Date
Series1
Series2
Series3
OW-13 Trendline
OW-14 Trendline
OW-15 Trendline


Reported Concentrations of MTBE
September 2006 - December 2019
TASTE THRESHOLD = 40 µg/L
ODOR THRESHOLD = 20 µg/L
Concentration (µg/L)
Date
Series3
OW-15 Trendline

APPENDIX K

Quarterly Monitoring Reports

Engineers | Scientists | Planners

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PARE CORPORATION

June 19, 2019

Mr. Leo Hellested, P.E.
Office of Waste Management
Solid Waste Section
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908-5767

Attn: Mr. Robert Schmidt

Re: **Quarterly Monitoring Report**
1st Quarter (March) 2019, Groundwater Monitoring, Sampling, and Analysis
Tiverton Municipal Sanitary Landfill
Pare Project No.: 94139.24

Dear Mr. Hellested:

Enclosed herewith are results of the statistical analysis of groundwater monitoring data for the first quarterly monitoring round of Year 2019 from the Tiverton Landfill (Landfill). Pare Corporation (Pare) has prepared this report on behalf of the Town of Tiverton (Town). Pare conducted the groundwater sampling on March 28, 2019 at the background well OW-9 and compliance wells OW-7, OW-12, OW-13, OW-14, OW-15, and OW-16.

Groundwater samples were analyzed by New England Testing Laboratory (NETLAB) of West Warwick, Rhode Island for the constituents listed in Appendix A (Detection Monitoring) of the State Solid Waste Regulations. Certified laboratory results data are enclosed and are summarized on attached Tables 1-3.

Groundwater field parameters consisting of temperature, pH, and specific conductivity were measured at each monitoring well, in accordance with the RIDEM-approved Groundwater Monitoring Plan for the Landfill. Field parameters were collected until three successive measurements stabilized within ± 3% for temperature, ± 0.1 standard unit for pH, and ± 3% for specific conductivity, in accordance with US EPA's Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures. Field parameters are documented on Field Sampling Data Sheets, which are enclosed.

Combustible gases are monitored at each well and at the top of the Landfill. Each of the well locations with the exception of OW-15 had no detections of combustible gas observed during this monitoring round. OW-15 had a methane reading of 44% LEL. Combustible gases have not been detected at the Landfill in past quarterly monitoring rounds – this is the first round in which a detectable level of combustible gas have been detected at any groundwater monitoring wells. OW-15 is over 300 feet from the nearest property line and given that no other wells had combustible gases at detectable levels, it does not appear that this occurrence of combustible gases warrants immediate action. Pare will continue to monitor for combustible gases at OW-15, and the other monitoring wells to evaluate if this occurrence is the beginning of an increasing trend in gas at the landfill or a sampling anomaly.

8 BLACKSTONE VALLEY PLACE LINCOLN, RI 02865
T 401.334.4100 F 401.334.4108

10 LINCOLN ROAD, SUITE 210 FOXBORO, MA 02035
T 508.543.1755 F 508.543.1881

HUMAN HEALTH THRESHOLD EVALUATION

Background Well OW-9 – Eleven (11) target metals were reported in the groundwater sample collected from OW-9. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-9. No (0) target VOCs were reported above laboratory detection limits at OW-9.

Compliance Well OW-7 – Eleven (11) target metals were reported in the groundwater sample collected from OW-7. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-7. One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-7.

Compliance Well OW-12 – Five (5) target metals were reported in the groundwater sample collected from OW-12. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-12. No (0) target VOCs were reported above laboratory detection limits at OW-12.

Compliance Well OW-13 – Nine (9) target metals were reported in the groundwater sample collected from OW-13. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-13. Two (2) target VOCs; chlorobenzene and MTBE; were reported above their laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-13.

Compliance Well OW-14 – Ten (10) target metals were reported in the groundwater sample collected from OW-14. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-7. Four (4) target VOCs, MTBE, benzene, chlorobenzene, and 1,4-dichlorobenzene, were reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-14.

Compliance Well OW-15 – Nine (9) target metals were reported in the groundwater sample collected from OW-15. One (1) reported metal; arsenic (0.0352 mg/L); exceeded its MCL (0.01 mg/). Four (4) target VOCs; MTBE, benzene, chlorobenzene, and 1,4-dichlorobenzene were reported above their laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-15.

Compliance Well OW-16 – Seven (7) target metals were reported in the groundwater sample collected from OW-16. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-16. One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-16.

TOLERANCE INTERVAL STATISTICAL EVALUATION

The Tolerance Interval (TI) approach was used to develop Tolerance Limits (TLs) for each target inorganic constituent (i.e., metals) using the background well analytical results from the eight preceding rounds for which analytical results are available. The background well, OW-9, could not be sampled in several previous monitoring rounds including in the June 2016, September 2016, June 2017, September 2017, and September 2018 monitoring rounds due to dry conditions. Therefore, analytical results of the eight most recent rounds in which samples could be collected were utilized to generate the TLs for this monitoring round, dating back to December 2015. The TI approach is considered inappropriate for analysis of organic constituents and was therefore not performed to evaluate the results of reported VOCs. Table 2 summarizes historical results data from OW-9 used in the calculation of the TLs.

Four (4) metals; arsenic, barium, cobalt, and selenium; had reported concentrations that exceeded their corresponding TLs calculated during the March 2019 monitoring round in at least one compliance well. In total, there were eight (8) TL exceedances of these metals in this monitoring round. The TLs and the corresponding compliance well data from this monitoring round are presented in Table 3. Arsenic, barium, and cobalt are routinely detected in groundwater beneath the landfill.

CUSUM METHOD STATISTICAL EVALUATION

The Shewhart-CUSUM Method, a supplemental statistical analysis method used in addition to the TI Method, was performed in accordance with the US EPA documents titled “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Interim Final Guidance, April 1989” and "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Addendum to Interim Final Guidance, July, 1992".

Barium at OW-12 and OW-13 and copper at OW-13 exceeded both of their respective Shewhart-CUSUM thresholds during the March 2019 monitoring round.

ASSESSMENT MONITORING

The Shewhart-CUSUM analysis is utilized, along with the Tolerance Limits, to identify when Assessment Monitoring should be performed.

Pare performed Assessment Monitoring at OW-13 in the June 2018 monitoring round due to an exceedance of both the TL and the Shewhart-CUSUM threshold of barium in the March 2018 monitoring round. No (0) Appendix B parameters were reported in samples collected from OW-13.

One (1) Appendix B parameter, sulfides, was reported above its respective detection limits in December 2017, as a result, Pare recommended that OW-14 be tested for sulfides in March 2018. Sulfides (0.04 mg/L) were detected in the samples collected from OW-14 in March 2018. Pare attempted to sample OW-14 in the September 2018 monitoring round to test for sulfides; however, a sample was unobtainable due to dry conditions. Pare sampled OW-14 for sulfides in December 2018. Sulfides were not detected in the samples collected at OW-14 during the December 2018 monitoring round.

Pare sampled OW-14 for sulfides in the March 2019 monitoring round. Sulfides were not detected in the samples collected at OW-14 during this monitoring round.

SURFACE WATER MONITORING

Per the request of the RIDEM in a letter dated January 31, 2019, the Town began incorporating surface water monitoring at surface water locations SW-1, SW-2, and SW-3 into the existing regular quarterly monitoring program. The parameters for surface water monitoring include: Appendix A metals, mercury, tin, iron, ammonia, TKN, total nitrogen, total phosphorus, and hardness. Additionally, field screening was performed at each surface water location to determine temperature, pH, and specific conductivity.

Monitoring Location SW-1 – Eight (8) target metals were detected in the surface water sample collected at SW-1. No (0) metals were detected above their respective aquatic life thresholds. Two (2) parameters, iron (0.521 mg/L) and total phosphorous (0.05 mg/L), exceeded their human health threshold (0.3 mg/L and 0.05 mg/L, respectively) but did not exceed their aquatic life thresholds. Additionally, ammonia, total nitrogen, and TKN were detected in the samples collected at SW-1; however, they did not exceed their given threshold values, or no threshold values have been established for these parameters.

Monitoring Location SW-2 – Nine (9) target metals were detected in the surface water sample collected at SW-2. No (0) metals were detected above their respective aquatic life thresholds. One (1) parameter, iron (0.516 mg/L), exceeded its human health threshold (0.3 mg/L) but did not exceed its aquatic life threshold. Additionally, total nitrogen and TKN were detected in the samples collected at SW-2; however, no threshold values have been established for these parameters.

Monitoring Location SW-3 – Eight (8) target metals were detected in the surface water sample collected at SW-3. One (1) metal, lead (0.0009 mg/L), was detected above its chronic aquatic life threshold (0.0005 mg/L). One parameter, iron (0.449 mg/L), exceeded its human health threshold (0.3 mg/L) but did not exceed its aquatic life threshold. Additionally, total nitrogen and TKN were detected in the samples collected at SW-3; however, no threshold values have been provided for these parameters.

MTBE ANALYSIS

Many of the most recent Assessment Monitoring rounds have been conducted due to MTBE concentrations in groundwater. Reported MTBE concentrations have generally risen since September 2006, as depicted in the attached figure titled Reported Concentrations of MTBE. The figure compares the recent increases in reported MTBE concentrations at OW-13, OW-14 and OW-15 to historical concentrations and drinking water advisories defined in the US EPA document titled "2011 Edition of the Drinking Water Standards and Health Advisories". Although reported MTBE concentrations appear to be trending slowly upward, MTBE has never been reported above its odor threshold (0.020 mg/L) or its taste threshold (0.040 mg/L). The US EPA has not established a human health advisory concentration for MTBE.

Because the elevated concentrations of MTBE have recently triggered Assessment Monitoring at OW-13, OW-14, and OW-15, and that no Appendix B parameters were reported to a significant degree at these wells, it is Pare's opinion that the increasing trend in MTBE concentrations beneath the Landfill is an isolated phenomenon and not the result of a significant change in groundwater quality beneath the Landfill.

Despite CUSUM values of MTBE at OW-13, OW-14, and OW-15 remaining above their threshold during the September 2017 monitoring round, Pare does not recommend assessment monitoring due to the aforementioned MTBE trend. The lack of Appendix B parameters in the past, in conjunction with the lack of Appendix B parameters at OW-13 and OW-15 during the December 2016 monitoring round, and the lack of Appendix B parameters at OW-14 during the June 2016 monitoring round, suggests that the presence of MTBE trend does not indicate an increased likelihood that Appendix B parameters would be present beneath the Landfill.

CONCLUSIONS AND RECOMMENDATIONS

Currently, the Landfill conducts Detection Monitoring for the parameters listed in Appendix A of the State Solid Waste Regulations, as well as mercury and tin. During this monitoring round, four (4) metals; arsenic, barium, cobalt and selenium; exceeded their tolerance limits (TLs) in at least one well. Arsenic exceeded its TL during the previous monitoring round at OW-13 and OW-15. Barium exceeded its TL during the previous monitoring round at OW-13, OW-14, and OW-15. Cobalt exceeded its TL during the previous monitoring round at OW-7, OW-13, OW-14, and OW-15. Exceedances in two consecutive monitoring rounds is one of the criteria used to consider performing Assessment Monitoring in subsequent monitoring rounds.

The only parameter that might trigger Assessment Monitoring is barium at OW-3, which had two previous TL exceedances and a Shewhart-CUSUM exceedance this round. Barium is consistently detected in all the groundwater monitoring wells on-site at concentrations consistent with the recent detection at OW-13. As such, it does not, in Pare's opinion, appear as though this recent detection is a significant change in groundwater quality beneath the landfill, and therefore, Pare does not recommend Assessment Monitoring in June 2019.

Since the 2016 monitoring periods, a rising trend in detections of antimony at the compliance wells became apparent. Antimony was detected at the background well above its MCL during the December 2017 monitoring round. Antimony was detected at the background well again during the March 2019 monitoring round but below its MCL. Previously, antimony had not been detected at the background well since the September 2011 monitoring round. The detection of antimony at compliance well OW-14 in the June 2017 monitoring round triggered Assessment Monitoring, which was performed in the December 2017 monitoring round. The Assessment Monitoring resulted in detection of one Appendix B parameter, sulfides (0.04 mg/L). However, antimony was not detected at any groundwater well during the December 2017 monitoring period. Analysis of the samples collected from OW-14 during the March 2018 monitoring round indicated another detection of sulfides (0.04 mg/L). Assessment Monitoring was not performed at OW-14 in June but was performed at OW-13. Sulfides were not detected in the Assessment Monitoring performed at OW-13 during the June 2018 monitoring round. OW-14 was attempted to be sampled again for sulfides in the September 2018 monitoring round; however, a sample was unable to be collected due to dry conditions. OW-14 was sampled again in the December 2018 and March 2019 monitoring rounds, but sulfides were not detected in either round.

The EPA has no MCL for sulfides in groundwater. Water with dissolved hydrogen sulfide will smell musty or swampy around 0.5-1.0 mg/L and Pare did not identify a noticeable smell emanating from the groundwater sample in either round during which the constituent was detected. Hydrogen sulfide gas can occur naturally in groundwater from plant materials rotting underground in anaerobic conditions. Hydrogen sulfide gas could also be resulting from gypsum buried at the Landfill. Sulfides have not been detected at OW-14 for the past

two (2) monitoring rounds that the well has been sampled. Therefore, Pare recommends that sulfide monitoring be discontinued at OW-14 for the June 2019 monitoring round.

Pare recommended that wells OW-7 and OW-16 be incorporated into the compliance monitoring regimen in the 2017 Annual Groundwater Monitoring Report. Despite OW-7 having several years of sampling data, the sampling rounds were selected on a rotating basis with wells OW-6 and OW-8 for alternate monitoring. Pare recommends that wells OW-7 and OW-16 be sampled for two years, or eight consecutive monitoring rounds, prior to initiating statistical analysis. The March 2019 monitoring period marks the fifth monitoring round that these wells are to be sampled consistently; therefore, it is estimated that statistical analysis for the bedrock and overburden wells will begin in the March 2020 monitoring round.

Should the RIDEM have any questions regarding this letter or the attached data, please feel free to contact the undersigned at (401) 334-4100, thank you.

Very truly yours,

Timothy P. Thies, P.E.
Senior Vice President

TPT/TCJ/abv

Attachments

cc: Richard Rogers, Tiverton Public Works Director (w/encl.)
Jay Lambert, Tiverton Landfill Subcommittee (w/encl.)
Jan Reitsma, Tiverton Town Administrator (w/encl.)
Travis C. Johnson, Pare Corporation (w/o encl.)

ATTACHMENT NO. 1
LABORATORY ANALYTICAL DATA REPORT

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 9C29050
Client Project: 94139 - Tiverton Landfill

Report Date: 08-April-2019

Prepared for:

Travis Johnson
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
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Samples Submitted:

The samples listed below were submitted to New England Testing Laboratory on 03/29/19. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 9C29050. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
9C29050-01	OW-9	Water	03/28/2019	03/29/2019
9C29050-02	OW-12	Water	03/28/2019	03/29/2019
9C29050-03	OW-7	Water	03/28/2019	03/29/2019
9C29050-04	OW-16	Water	03/28/2019	03/29/2019
9C29050-05	OW-14	Water	03/28/2019	03/29/2019
9C29050-06	OW-15	Water	03/28/2019	03/29/2019
9C29050-07	OW-13	Water	03/28/2019	03/29/2019
9C29050-08	SW-1	Water	03/28/2019	03/29/2019
9C29050-09	SW-2	Water	03/28/2019	03/29/2019
9C29050-10	SW-3	Water	03/28/2019	03/29/2019

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

OW-12 (Lab Number: 9C29050-02)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 200.8
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-13 (Lab Number: 9C29050-07)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 200.8
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-14 (Lab Number: 9C29050-05)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8

Request for Analysis (continued)

OW-14 (Lab Number: 9C29050-05) (continued)

Analysis	Method
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 200.8
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Sulfide	SM4500-S-D
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-15 (Lab Number: 9C29050-06)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 200.8
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

Request for Analysis (continued)

OW-16 (Lab Number: 9C29050-04)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 200.8
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-7 (Lab Number: 9C29050-03)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 200.8
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

Request for Analysis (continued)

OW-9 (Lab Number: 9C29050-01)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 200.8
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

SW-1 (Lab Number: 9C29050-08)

Analysis	Method
Ammonia	SM4500-NH3-D
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Lead	EPA 200.8
Magnesium	SM3120-B
Mercury	EPA 200.8
Nickel	EPA 200.8
Nitrate and Nitrite as N	4500-N03-E
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E
Vanadium	EPA 200.8
Zinc	EPA 200.8

Request for Analysis (continued)

SW-2 (Lab Number: 9C29050-09)

Analysis	Method
Ammonia	SM4500-NH3-D
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Lead	EPA 200.8
Magnesium	SM3120-B
Mercury	EPA 200.8
Nickel	EPA 200.8
Nitrate and Nitrite as N	4500-N03-E
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E
Vanadium	EPA 200.8
Zinc	EPA 200.8

SW-3 (Lab Number: 9C29050-10)

Analysis	Method
Ammonia	SM4500-NH3-D
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Lead	EPA 200.8
Magnesium	SM3120-B
Mercury	EPA 200.8
Nickel	EPA 200.8
Nitrate and Nitrite as N	4500-N03-E
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E
Vanadium	EPA 200.8
Zinc	EPA 200.8

Method References

Methods for the Determination of Metals in Environmental Samples EPA-600/R-94/111, USEPA, 1994

Standard Methods for the Examination of Water and Wastewater, 20th Edition, APHA/ AWWA-WPCF, 1998

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

Soil Survey Laboratory Methods Manual, USDA/NCRS, 2014

Case Narrative

CASE NARRATIVE:

Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

Wet Chemistry

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures.

Sample: OW-14 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
18496-25-8	Sulfide	376.2	ND	0.01

ND = Not Detected

Sample: SW-1 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7664-41-7	Ammonia	SM4500-NH3-D	0.2	0.1
	TKN	SM-4500-NH3-D	0.4	0.1
	Total Phosphorus	SM-4500-P-E	0.05	0.02
7727-37-9	Total Nitrogen	Calculation	1.50	0.100

ND = Not Detected

Sample: SW-2 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7664-41-7	Ammonia	SM4500-NH3-D	ND	0.1
	TKN	SM-4500-NH3-D	0.5	0.1
	Total Phosphorus	SM-4500-P-E	ND	0.02
7727-37-9	Total Nitrogen	Calculation	0.500	0.100

ND = Not Detected

Sample: SW-3 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7664-41-7	Ammonia	SM4500-NH3-D	ND	0.1
	TKN	SM-4500-NH3-D	0.3	0.1
	Total Phosphorus	SM-4500-P-E	ND	0.02
7727-37-9	Total Nitrogen	Calculation	0.300	0.100

ND = Not Detected

Sample: OW-9 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.0001	0.0001
7440-38-2	Arsenic	6010C	0.0001	0.0001
7440-39-3	Barium	6010C	0.006	0.001
7440-41-7	Beryllium	6010C	0.0003	0.0001
7440-43-9	Cadmium	6010C	0.0001	0.0001
7440-47-3	Chromium	6010C	0.0019	0.0001
7440-48-4	Cobalt	6010C	0.0003	0.0001
7440-50-8	Copper	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.001	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	0.0005	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	ND	0.0005
7440-66-6	Zinc	6010C	0.003	0.001
7439-92-1	Lead	6010C	0.0007	0.0001

ND = Not Detected

Sample: OW-12 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.0001
7440-38-2	Arsenic	6010C	ND	0.0001
7440-39-3	Barium	6010C	0.020	0.001
7440-41-7	Beryllium	6010C	ND	0.0001
7440-43-9	Cadmium	6010C	0.0004	0.0001
7440-47-3	Chromium	6010C	ND	0.0001
7440-48-4	Cobalt	6010C	0.0005	0.0001
7440-50-8	Copper	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.010	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	0.003	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	ND	0.0005
7440-66-6	Zinc	6010C	ND	0.001
7439-92-1	Lead	6010C	ND	0.0001

ND = Not Detected

Sample: OW-7 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.0001
7440-38-2	Arsenic	6010C	0.0002	0.0001
7440-39-3	Barium	6010C	0.034	0.001
7440-41-7	Beryllium	6010C	ND	0.0001
7440-43-9	Cadmium	6010C	0.0007	0.0001
7440-47-3	Chromium	6010C	0.0011	0.0001
7440-48-4	Cobalt	6010C	0.0090	0.0001
7440-50-8	Copper	6010C	0.002	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.011	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	0.0002	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	0.0013	0.0005
7440-66-6	Zinc	6010C	0.006	0.001
7439-92-1	Lead	6010C	0.0013	0.0001

ND = Not Detected

Sample: OW-16 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.0001
7440-38-2	Arsenic	6010C	ND	0.0001
7440-39-3	Barium	6010C	0.014	0.001
7440-41-7	Beryllium	6010C	0.0001	0.0001
7440-43-9	Cadmium	6010C	0.0003	0.0001
7440-47-3	Chromium	6010C	ND	0.0001
7440-48-4	Cobalt	6010C	0.0008	0.0001
7440-50-8	Copper	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.002	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	0.0001	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	ND	0.0005
7440-66-6	Zinc	6010C	0.004	0.001
7439-92-1	Lead	6010C	ND	0.0001

ND = Not Detected

Sample: OW-14 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	0.0001	0.0001
7440-38-2	Arsenic	6010C	0.0018	0.0001
7440-39-3	Barium	6010C	0.202	0.001
7440-41-7	Beryllium	6010C	ND	0.0001
7440-43-9	Cadmium	6010C	ND	0.0001
7440-47-3	Chromium	6010C	0.0007	0.0001
7440-48-4	Cobalt	6010C	0.0059	0.0001
7440-50-8	Copper	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.011	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	0.0002	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	0.0007	0.0005
7440-66-6	Zinc	6010C	0.004	0.001
7439-92-1	Lead	6010C	0.0010	0.0001

ND = Not Detected

Sample: OW-15 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.0001
7440-38-2	Arsenic	6010C	0.0352	0.0001
7440-39-3	Barium	6010C	0.158	0.001
7440-41-7	Beryllium	6010C	ND	0.0001
7440-43-9	Cadmium	6010C	ND	0.0001
7440-47-3	Chromium	6010C	0.0007	0.0001
7440-48-4	Cobalt	6010C	0.0126	0.0001
7440-50-8	Copper	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.025	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	0.0001	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	0.0010	0.0005
7440-66-6	Zinc	6010C	0.003	0.001
7439-92-1	Lead	6010C	0.0003	0.0001

ND = Not Detected

Sample: OW-13 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.0001
7440-38-2	Arsenic	6010C	0.0081	0.0001
7440-39-3	Barium	6010C	0.118	0.001
7440-41-7	Beryllium	6010C	ND	0.0001
7440-43-9	Cadmium	6010C	0.0004	0.0001
7440-47-3	Chromium	6010C	0.0004	0.0001
7440-48-4	Cobalt	6010C	0.0112	0.0001
7440-50-8	Copper	6010C	0.004	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.011	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	ND	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	ND	0.0005
7440-66-6	Zinc	6010C	0.005	0.001
7439-92-1	Lead	6010C	0.0008	0.0001

ND = Not Detected

Sample: SW-1 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.0001
7440-38-2	Arsenic	6010C	0.0002	0.0001
7440-39-3	Barium	6010C	0.023	0.001
7440-41-7	Beryllium	6010C	ND	0.0001
7440-43-9	Cadmium	6010C	ND	0.0001
7440-47-3	Chromium	6010C	0.0002	0.0001
7440-48-4	Cobalt	6010C	0.0002	0.0001
7440-50-8	Copper	6010C	ND	0.001
7439-89-6	Iron	6010C	0.521	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.001	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	ND	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	ND	0.0005
7440-66-6	Zinc	6010C	0.002	0.001
7439-92-1	Lead	6010C	0.0003	0.0001

ND = Not Detected

Sample: SW-2 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.0001
7440-38-2	Arsenic	6010C	0.0003	0.0001
7440-39-3	Barium	6010C	0.006	0.001
7440-41-7	Beryllium	6010C	ND	0.0001
7440-43-9	Cadmium	6010C	ND	0.0001
7440-47-3	Chromium	6010C	0.0005	0.0001
7440-48-4	Cobalt	6010C	0.0002	0.0001
7440-50-8	Copper	6010C	ND	0.001
7439-89-6	Iron	6010C	0.516	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.001	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	ND	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	0.0006	0.0005
7440-66-6	Zinc	6010C	0.003	0.001
7439-92-1	Lead	6010C	0.0003	0.0001

ND = Not Detected

Sample: SW-3 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.0001
7440-38-2	Arsenic	6010C	0.0002	0.0001
7440-39-3	Barium	6010C	0.007	0.001
7440-41-7	Beryllium	6010C	ND	0.0001
7440-43-9	Cadmium	6010C	ND	0.0001
7440-47-3	Chromium	6010C	0.0003	0.0001
7440-48-4	Cobalt	6010C	0.0002	0.0001
7440-50-8	Copper	6010C	ND	0.001
7439-89-6	Iron	6010C	0.449	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.002	0.001
7782-49-2	Selenium	6010C	ND	0.005
7440-22-44	Silver	6010C	ND	0.0001
7440-28-0	Thallium	7010	ND	0.0001
7440-34-5	Tin	6010C	ND	0.005
7440-62-2	Vanadium	6010C	ND	0.0005
7440-66-6	Zinc	6010C	0.004	0.001
7439-92-1	Lead	6010C	0.0009	0.0001

ND = Not Detected

Sample: SW-1 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
(Total)	Hardness	6010C	112	0.125

ND = Not Detected

Sample: SW-2 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
(Total)	Hardness	6010C	20.6	0.125

ND = Not Detected

Sample: SW-3 Case Number: 9C29050

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
(Total)	Hardness	6010C	23.7	0.125

ND = Not Detected

Sample: OW-9 Case Number: 9C29050

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-9 Case Number: 9C29050
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	107%	70-130
1,2-Dichloroethane d4	103%	70-130
4 BFB	99%	70-130

ND = Not Detected

Sample: OW-12 Case Number: 9C29050

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-12 Case Number: 9C29050
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	104%	70-130
1,2-Dichloroethane d4	106%	70-130
4 BFB	95%	70-130

ND = Not Detected

Sample: OW-7 Case Number: 9C29050

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-7 Case Number: 9C29050
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	4.0	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	122%	70-130
1,2-Dichloroethane d4	89%	70-130
4 BFB	101%	70-130

ND = Not Detected

Sample: OW-16 Case Number: 9C29050

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-16 Case Number: 9C29050
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	4.67	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	105%	70-130
1,2-Dichloroethane d4	94%	70-130
4 BFB	100%	70-130

ND = Not Detected

Sample: OW-14 Case Number: 9C29050

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	2.1	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	10.8	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-14 Case Number: 9C29050
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	2.1	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	5.0	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	100%	70-130
1,2-Dichloroethane d4	99%	70-130
4 BFB	97%	70-130

ND = Not Detected

Sample: OW-15 Case Number: 9C29050

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	1.5	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	13.2	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-15 Case Number: 9C29050
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	2.1	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	7.5	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	108%	70-130
1,2-Dichloroethane d4	100%	70-130
4 BFB	103%	70-130

ND = Not Detected

Sample: OW-13 Case Number: 9C29050

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	5.9	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-13 Case Number: 9C29050
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.4	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	109%	70-130
1,2-Dichloroethane d4	102%	70-130
4 BFB	99%	70-130

ND = Not Detected

NEW ENGLAND TESTING LABORATORY, INC.
59 Greenhill Street
West Warwick, RI 02893
1-888-863-8522

9C2 9050\

CHAIN

PROJ. NO.	PROJECT NAME/LOCATION
94139.24	Tiverton LF Quarterly Monitoring

CLIENT: Pare Corporation
REPORT TO: nmeersman@parecorp.com
INVOICE TO: Accounting

DATE	TIME	COMP	GRAB	SAMPLE I.D.	AQUEOUS	SOIL	OTHER	NO. OF CONTAINERS	PRESERVATIVE	TESTS** App A Metals, Hg, So	App A VOCs	Sulfides	Hardness	Tot. N, Phos, Ammonia, TKN	Total Fe	REMARKS
3/28/19	11:35 am		X	OW-9	X			3		X	X					
	12:45		X	OW-12	X			3		X	X					
	2:30		X	OW-7	X			3		X	X					
	3:00		X	OW-16	X			3		X	X					
	3:45		X	OW-14	X			4		X	X	X				
	4:30		X	OW-15	X			3		X	X					
↓	5:00		X	OW-13	X			3		X	X					
3/28/19	10:45 am		X	SW-1	X			3		X			X	X	X	
	9:30		X	SW-2	X			3		X			X	X	X	
↓	10:15		X	SW-3	X			3		X			X	X	X	

Sampled by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	3/28/19 5:30 pm	B Pacheco	3/29/19 1330
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	3/29/19 15:30		
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time
B Pacheco	3/29/19 1420	Alle Path	3/29/19 1420

Laboratory Remarks:
Temp. received: 4
Cooled ☐

Special Instructions:
List Specific Detection Limit Requirements:

Turnaround (Business Days)

**Netlab subcontracts the following tests: Radiologicals, Radon, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates, CT ETPH

ATTACHMENT NO. 2
ANALYTICAL SUMMARY TABLES

TABLE 2
BACKGROUND WELL HISTORICAL RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-9
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEP '13	JUN '13	MAR '13	DEC '12	SEP '12	JUN '12	MAR '12	DEC '11	SEP '11	JUN '11	MAR '11	DEC '10	SEP '10	JUN '10
Antimony	0.006	mg/L[1]	0.0001	ND	NT	ND	ND	0.0290	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	0.0160	0.2000	ND	ND	NT	ND
Arsenic	0.010	mg/L[1]	0.0001	ND	NT	ND	ND	ND	NT	NT	0.0030	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Barium	2	mg/L[1]	0.0060	0.0320	NT	0.0090	0.0130	0.0410	NT	NT	0.0100	0.0060	NT	NT	0.0110	0.0110	NT	NT	0.0070	0.0420	NT	0.0100	0.0120	0.0200	NT	0.0150	0.0130	0.0160	NT	0.0110	0.0120	0.0070	0.0120	0.0080	0.0221	0.0230	NT	0.0460
Beryllium	0.004	mg/L[1]	0.0003	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	0.0015
Cadmium	0.005	mg/L[1]	0.0001	ND	NT	ND	0.0020	0.3650	NT	NT	ND	ND	NT	NT	0.0010	ND	NT	NT	ND	0.0020	NT	ND	ND	0.0050	NT	0.0040	ND	0.0010	NT	ND	ND	ND	0.0020	ND	ND	ND	NT	ND
Chromium	0.1	mg/L[1]	0.0019	0.013	NT	0.003	0.0070	0.0300	NT	NT	0.0040	ND	NT	NT	0.0050	0.0070	NT	NT	0.0060	0.0270	NT	0.0060	0.0070	0.0150	NT	0.0070	0.0070	0.0120	NT	0.0050	0.0080	0.0040	0.0020	ND	0.0079	0.0068	NT	0.0230
Cobalt	0.73	mg/L[3]	0.0003	0.0030	NT	ND	0.0010	0.0020	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	0.0100	NT	ND	0.0010	0.0030	NT	0.0020	0.0020	0.0030	NT	ND	0.0020	ND	ND	ND	0.0019	0.0015	NT	0.0086
Copper	1.3	mg/L[1]	ND	0.0080	NT	ND	ND	0.0600	NT	NT	ND	ND	NT	NT	0.0020	ND	NT	NT	0.0020	0.0170	NT	ND	0.0060	0.0140	NT	0.0070	ND	0.0060	NT	ND	0.0080	0.0010	0.0100	0.0400	0.0041	0.0043	NT	0.0200
Lead	0.015	mg/L[1]	0.0007	0.004	NT	0.001	0.0020	0.1820	NT	NT	0.0020	0.0060	NT	NT	ND	0.0050	NT	NT	0.0010	0.0160	NT	0.0060	0.0030	0.1020	NT	0.0080	0.0020	0.0060	NT	ND	0.0110	0.0010	0.0040	0.0060	ND	ND	NT	0.0140
Mercury	0.002	mg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Nickel	0.1	mg/L[1]	0.0010	0.006	NT	0.001	0.0040	0.0240	NT	NT	0.0040	ND	NT	NT	0.0030	0.0030	NT	NT	0.0170	0.0180	NT	0.0030	0.0040	0.0090	NT	0.0050	0.0050	0.0070	NT	0.0030	0.0040	0.0020	0.0080	0.0080	0.0046	0.0037	NT	0.0150
Selenium	0.05	mg/L	ND	ND	NT	ND	ND	ND	NT	NT	ND	0.0100	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	0.0060	NT	ND	ND	ND	NT	ND	ND	ND	0.0100	0.0100	ND	ND	NT	ND
Silver	0.1	mg/L[2,3]	0.0005	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	0.1180	ND	ND	NT	ND
Thallium	0.002	mg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Tin	22	mg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	0.0080	0.1310	NT	ND	ND	ND	NT	ND	ND	ND	ND	0.0190	ND	ND	NT	ND
Vanadium	0.26	mg/L[3]	ND	0.0080	NT	ND	0.0020	ND	NT	NT	ND	ND	NT	NT	0.0010	0.0020	NT	NT	ND	0.0140	NT	0.0020	0.0030	0.0070	NT	0.0030	0.0020	0.0040	NT	ND	0.0010	ND	ND	ND	0.0034	0.0034	NT	0.0150
Zinc	2	mg/L[2,3]	0.0030	0.0250	NT	0.0090	0.0190	11.1000	NT	NT	0.0070	ND	NT	NT	0.0100	0.0050	NT	NT	ND	0.0410	NT	0.0110	0.0080	0.0170	NT	0.0210	0.0120	0.0160	NT	0.0150	0.0120	0.0090	0.0140	ND	0.0257	0.0190	NT	0.0330
Acetone	610	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Acrylonitrile	0.039	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Benzene	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromochloromethane	80	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromodichloromethane (THM)	90	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromoform	80	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Carbon disulfide	1000	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Carbon tetrachloride	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chlorobenzene	100	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chloroethane	4.6	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chloroform (THM)	80	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dibromo-3-chloropropane (DBC	0.2	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,4-Dichlorobenzene	75	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethane	5	µg/L	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloroethane	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloropropane	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,3-Dichloropropene		µg/L	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Ethylbenzene	700	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Bromomethane	10	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Chloromethane	30	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Dibromomethane	61	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methylene chloride	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl iodide		µg/L	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
4-Methyl-2-pentanone		µg/L	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Styrene	100	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,1,2-Tetrachloroethane	70	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	2.1	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Toluene	1000	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Trichlorofluoromethane	2000	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
1,2,3-Trichloropropane	40	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Vinyl acetate	410	µg/L[3]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Vinyl chloride	2	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Xylenes	10000	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT	ND

= Exceeded MCL

Note: Analytical data reported since commencement of low flow purging and sampling. Low flow purging and sampling commenced in May 2002, but no sample was taken at OW-9 at this time.
July 2002 represents the first time low flow purging and sampling was conducted at OW-9.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit.
However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above
" " = One half of the laboratory detection limit "DL"
NT = Not Tested due to dry conditions at well.

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS

MONITORING WELL OW-7

Concentration (expressed in same units as MCL)

Parameter	Max. Cont. Level (MCL)		DEC '01	SEP '01	SEP '99	SEP '98	JUN '98	SEP '97	SEP '96	MAR'96	SEP '95	JUN. '95	DEC'94	SEP.'94
Antimony	0.006	mg/l	ND	ND	ND	ND	ND	ND	BDL	BDL	BDL	BDL	BDL	BDL
Arsenic	0.05	mg/l	ND	ND	ND	0.017	0.015	ND	0.066	0.18	0.15	0.073	0.1	0.041
Barium	2	mg/l	0.12	0.14	0.10	0.33	0.28	0.085	0.232	0.533	0.351	0.364	1.11	0.352
Beryllium	0.004	mg/l	0.0020	ND	0.0028	0.0083	0.007	ND	0.0046	0.0149	0.0084	0.0077	0.03	0.007
Cadmium	0.005	mg/l	0.091	0.26	0.0095	0.014	0.012	0.0087	0.067	0.068	0.052	0.025	0.04	0.007
Chromium	0.1	mg/l	0.056	0.049	ND	0.25	0.25	ND	0.127	0.43	0.194	0.143	0.73	0.123
Cobalt		mg/l	0.060	0.058	0.022	0.11	0.12	ND	0.067	0.205	0.104	0.085	0.37	0.097
Copper	1.3	mg/l	0.28	0.53	0.081	0.32	0.28	0.055	0.322	0.531	0.297	0.178	0.7	0.157
Lead	0.015	mg/l	0.045	0.048	0.033	0.092	0.081	0.03	0.073	0.24	0.1	0.066	0.26	0.072
Nickel	0.1	mg/l	0.11	0.13	0.046	0.33	0.16	0.042	0.172	0.476	0.242	0.17	0.72	0.13
Selenium	0.05	mg/l	ND	ND	0.027	0.0028	ND	ND	BDL	BDL	BDL	BDL	BDL	BDL
Silver	0.05	mg/l	ND	ND	ND	ND	ND	ND	BDL	BDL	BDL	0.001	BDL	BDL
Thallium	0.002	mg/l	0.047	0.048	ND	ND	ND	ND	BDL	BDL	BDL	BDL	BDL	BDL
Vanadium		mg/l	0.041	0.052	0.014	0.19	0.2	ND	0.118	0.367	0.179	0.135	0.58	0.106
Zinc	5	mg/l	0.28	0.56	0.085	0.66	0.62	0.11	0.367	1.08	0.57	0.419	1.9	0.36
Mercury	0.002	mg/l	ND	ND	ND	ND	ND	ND		BDL	BDL	BDL	NT	NT
Acetone		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Acrylonitrate		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Benzene	5	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Bromodichloromethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Bromomethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	0.005	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene		ug/l	NT	NT	1.8	1.8	ND	1.8	ND	ND	ND	ND	ND	ND
Chlorodibromomethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane		ug/l	NT	NT	1.9	ND	ND	2.0	2	5	ND	ND	ND	ND
Chloromethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
1,2-Dibromoethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Dibromomethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
1,2-Dichlorobenzene	600	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichlo-2-butene		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
1,1 -Dichloroethane	5	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	70	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2-Dichloroethylene	100	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene(1,1-Dichloroethene)	7	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
1,1,2,2-Tetrachloroethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroflouromethane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	2	ND
Toluene	1000	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	3	2	2
Xylenes	10000	ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	1	23	ND
Methyl butyl ketone(2-Hexanone)		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Methyl tert-butyl ether (MTBE)		ug/l	NT	NT	3.0	ND	ND	ND	ND	ND	ND	NT	NT	NT
Methyl ethyl ketone(2-Butanone)		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Methyl iodide		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
4-Methyl-2-pentanone		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Styrene		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
1,2,3-Trichloropropane		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT
Vinyl acetate		ug/l	NT	NT	ND	ND	ND	ND	ND	ND	ND			

ND = NOT DETECTED
NT = PARAMETER NOT TESTED FOR

No samples were collected during the March, June & December 1996, March & December 1997, March & December 1998, March, June & December 1999, March, June, September & December 2000, and March & June 2001 sampling rounds.

TABLE 1
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-12
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006	mg/L[1]	ND	ND	ND	0.001	ND	0.0210	ND	0.0010	0.0250	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	ND	ND	ND	0.0100	0.0600	ND	ND	ND
Arsenic	0.010	mg/L[1]	ND	ND	ND	0.01	ND	0.0050	ND	0.0090	ND	ND	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0300	ND	ND	ND
Barium	2	mg/L[1]	0.02	0.02	0.023	0.02	0.0170	0.0240	0.0260	0.0240	0.0410	0.0260	0.0670	0.0360	0.0200	0.0260	0.0250	0.0190	0.0600	0.0160	0.0210	0.0120	0.0140	0.0130	0.0150	0.0080	0.0130	0.0180	0.0170	0.0160	0.0160	0.0100	0.0280	0.0130	0.0113	0.0151	0.0156
Beryllium	0.004	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]	ND
Cadmium	0.005	mg/L[1]	0.0004	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	0.1	mg/L[1]	ND	ND	0.002	ND	ND	ND	0.0030	0.0010	0.0040	ND	0.0180	0.0130	ND	0.0020	ND	ND	ND	ND	0.0020	0.0020	0.0020	0.0010	0.0020	ND	0.0020	ND	ND	ND	0.0010	ND	ND	ND	ND[4]	ND[4]	0.0014
Cobalt	0.73	mcg/L[4]	0.0005	ND	0.002	ND	ND	ND	0.0020	ND	0.0020	ND	0.0090	0.0080	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]	0.0006	ND[7]
Copper	1.3	mg/L[1]	ND	0.009	ND	ND	ND	ND	ND	ND	ND	ND	0.0200	0.0150	ND	0.0330	ND	ND	ND	ND	ND	0.0020	0.0030	0.0060	0.0020	0.0010	ND	ND	ND	ND	0.0010	ND	0.0100	0.0400	ND	0.0013	ND
Lead	0.015	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0150	0.0120	ND	ND	0.0020	ND	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	0.0010	0.0010	0.0020	0.0020	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND
Mercury	0.002	mg/L[1]	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]	ND	ND
Nickel	0.1	mg/L[2,3]	0.01	0.024	0.025	0.025	0.0200	0.0170	0.0140	0.0090	0.0140	0.0070	0.0220	0.0130	0.0060	0.0080	0.0040	0.0060	0.0040	0.0040	0.0060	0.0040	0.0040	0.0040	0.0050	0.0020	0.0040	0.0050	0.0040	0.0030	0.0050	0.0030	0.0070	0.0110	0.0034	0.0028	0.0037
Selenium	0.05	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100	ND	ND	ND	ND	0.0060	ND	0.0120	0.0110	0.0060	ND	ND	ND	ND	ND	ND	0.0080	0.0060	ND	0.0300	ND	ND	ND
Silver	0.1	mg/L[2,3]	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1350	ND	ND	ND
Thallium	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22	mg/L[4]	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	0.0980	ND	0.1800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	0.26	mg/L[4]	ND	ND	0.001	ND	ND	0.0030	ND	0.0040	ND	0.0200	0.0200	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	2	mg/L[2,3]	ND	0.007	0.026	0.009	0.0070	0.0060	0.0130	0.0100	0.0220	ND	0.0500	0.0420	ND	ND	0.0050	0.0070	ND	ND	ND	ND	ND	ND	0.0080	0.0100	ND	ND	0.0080	0.0070	0.0080	0.0160	ND	0.0170	0.0147	0.0151
Acetone	610	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	0.039	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	80	ug/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4.6	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP	0.2	ug/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	ug/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7	ug/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	ug/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30	ug/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61	ug/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1005	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-13
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10
Antimony	0.006 mg/L[1]	ND	0.002	0.002	0.002	ND	0.0360	ND	0.0020	0.0080	ND	0.0110	ND	ND	ND	ND	ND	ND	ND	ND	0.0050	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100	0.0200	ND	ND
Arsenic	0.010 mg/L[1]	0.0081	0.01	0.01	0.02	0.0070	ND	0.0050	0.0200	ND	ND	0.0100	ND	0.0190	0.0100	0.0110	0.0070	0.0040	0.0200	0.0070	ND	0.0140	0.0160	0.0070	0.0080	0.0070	ND	ND	0.0060	0.0050	0.0050	0.0090	ND	0.0096	0.0094
Barium	2 mg/L[1]	0.118	0.126	0.089	0.089	0.1150	0.0970	0.0460	0.0860	0.1080	0.0990	0.1830	0.0890	0.1700	0.0910	0.0870	0.0900	0.0890	0.1400	0.0870	0.0700	0.1180	0.0780	0.0650	0.0690	0.0750	0.0770	0.0760	0.0720	0.0760	0.0650	0.0760	0.0800	0.0912	0.0817
Beryllium	0.004 mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	0.005 mg/L[1]	0.0004	0.004	0.003	0.004	0.0040	ND	0.0020	0.0030	0.0050	ND	0.0290	ND	0.0050	0.0040	0.0040	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	0.0020	ND	0.0004	0.0004
Chromium	0.1 mg/L[1]	0.0004	0.002	0.002	0.002	0.0020	0.0010	ND	0.0040	0.0030	ND	0.0330	0.0050	ND	0.0040	ND	ND	ND	0.0090	ND	0.0010	0.0050	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[5]
Cobalt	0.73 mg/L[5]	0.0112	0.013	0.01	0.011	0.0130	0.0120	0.0070	0.0120	0.0140	0.0140	0.0280	0.0130	0.0150	0.0130	0.0120	0.0140	0.0160	0.0180	0.0110	0.0100	0.0120	0.0100	0.0090	0.0130	0.0120	ND	0.0100	0.0130	0.0120	0.0110	0.0120	0.0090	0.0192	0.0156
Copper	1.3 mg/L[1]	0.004	ND	ND	ND	ND	ND	ND	0.0100	ND	ND	0.0900	ND	0.0060	ND	0.0020	ND	0.0050	0.0730	0.0050	0.0050	0.0080	0.0230	0.0030	0.0050	ND	ND	ND	0.0060	0.0040	0.0020	0.0090	0.0300	0.0028	0.0018
Lead	0.015 mg/L[1]	0.0008	0.002	ND	ND	0.0020	ND	ND	0.0010	ND	0.0070	0.0350	0.0190	ND	ND	0.0020	0.0030	0.0030	0.0170	0.0040	0.0040	0.0070	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	ND	0.0020	ND	0.0040	0.0130	0.0015	ND
Mercury	0.002 mg/L[1]	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]
Nickel	0.1 mg/L[2]	0.011	0.014	0.012	0.011	0.0120	0.0290	0.0060	0.0120	0.0350	0.0140	0.0465	0.0130	0.0130	0.0120	0.0120	0.0130	0.0130	0.0220	0.0110	0.0100	0.0120	0.0100	0.0090	0.0100	0.0100	0.0100	0.0100	0.0110	0.0100	0.0090	0.0110	0.0060	0.0141	0.0127
Selenium	0.05 mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0390	ND	ND	ND	0.0800	0.0210	0.0590	0.0120	0.0330	0.0700	0.0350	0.0400	ND	ND	0.0700	0.0640	0.0620	0.0710	0.0690	0.0100	ND	ND
Silver	0.1 mg/L[2,3]	ND	0.001	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	0.0010	0.0020	0.0020	ND	0.0010	0.0010	ND	0.0020	ND	0.0020	ND	0.0030	0.0340	ND	ND
Thallium	0.002 mg/L[1]	ND	ND	ND	ND	0.0003	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22 mg/L[5]	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	0.2800	0.1100	ND	0.0120	ND	ND	0.0010	ND	ND	ND	0.0170	0.0400	0.0090	0.0180	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]	ND
Vanadium	0.26 mg/L[5]	ND	0.008	0.004	ND	ND	0.0020	ND	ND	ND	0.0060	0.0390	0.0030	ND	ND	ND	ND	ND	0.0130	0.0020	ND	0.0010	0.0040	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	0.0200	ND	ND
Zinc	2 mg/L[2,3]	0.005	0.019	0.01	0.012	0.0170	0.0070	0.0070	0.0200	0.0170	ND	0.1300	0.0130	0.0060	ND	0.0070	ND	ND	0.0470	ND	ND	0.0090	ND	ND	0.0110	0.0100	ND	ND	0.0230	0.0050	0.0050	0.0090	ND	0.0178	0.0092
Acetone	610 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	0.039 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]	ND
Bromochloromethane	80 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100 µg/L[1]	5.9	6.19	ND	4.72	5.40	ND	5.23	5.03	6.8	ND	5.5	2.5	6.6	7.4	6.3	6.1	7.4	8.1	ND	7.1	7.2	6.4	2.2	3.9	6.8	6.3	1.6	4.2	6.7	6.5	6.0	3.7	6.2	5.6
Chloroethane	4.6 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	ND
Chloroform	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600 µg/L[1]	ND	ND	ND	ND	ND	ND	1.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75 µg/L[1]	ND	1.31	ND	ND	ND	ND	1.11	ND	ND	ND	ND	ND	ND	ND	1.4	1.2	1.3	ND	ND	1.4	ND	ND	ND	ND	1.0	1.2	ND	ND	1.2	ND	1.4	1.0	ND[6]	1.1
trans-1,4-Dichloro-2-butene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30 µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2000 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L[4]	3.4	3.99	ND	3.26	ND	ND	3.70	3.53	6.1	ND	3.6	2.6	4.1	4.9	3.2	5.2	4.5	2.9	ND	4.2	5.0	5.4	3.3	3.3	5.0	4.5	2.8	3.8	4.5	2.8	4.7	3.2	7.9	3.8

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-14
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEP '13	JUN '13	MAR '13	DEC '12	SEP '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006	mg/L[1]	0.0001	0.005	NT	ND	ND	0.0350	NT	0.0050	0.0410	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	0.0110	0.0170	ND	ND	NT
Arsenic	0.010	mg/L[1]	0.0018	ND	NT	0.01	ND	0.0030	NT	0.0200	0.0120	ND	NT	ND	0.0070	0.0050	0.0050	NT	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	NT	ND	ND	ND	0.0060	ND	0.0074	ND	NT
Barium	2	mg/L[1]	0.202	0.21	NT	0.155	0.2240	0.1990	NT	0.2400	0.2490	0.2290	NT	0.1380	0.1750	0.1980	0.1140	NT	0.2020	0.0910	NT	0.1570	0.1840	0.0790	NT	0.1440	0.1760	0.1370	NT	0.1750	0.1770	0.1470	0.1610	0.2100	0.2700	0.2030	NT
Beryllium	0.004	mg/L[1]	ND	ND	NT	ND	ND	ND	NT	0.0030	ND	ND	NT	0.0010	0.0010	ND	0.0010	NT	ND	ND	NT	ND	ND	0.0010	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0010	NT
Cadmium	0.005	mg/L[1]	ND	0.0020	NT	0.006	0.0050	ND	NT	0.0050	0.0060	ND	NT	ND	0.0070	0.0080	0.0060	NT	ND	ND	NT	0.0050	0.0010	ND	NT	ND	0.0020	ND	NT	ND	0.0040	0.0030	0.0030	ND	ND[4]	ND[3]	NT
Chromium	0.1	mg/L[1]	0.0007	ND	NT	0.001	0.0060	0.0020	NT	0.0010	0.0020	ND	NT	0.0110	0.0030	0.0030	0.0170	NT	0.0050	0.0050	NT	0.0040	0.0010	0.0080	NT	ND	0.0050	ND	NT	ND	ND	ND	ND	ND	ND	0.0065	NT
Cobalt	0.73	mg/L[5]	0.0059	0.011	NT	0.006	0.0140	0.0090	NT	0.0140	0.0130	0.0360	NT	0.0100	0.0100	0.0100	0.0120	NT	0.0170	0.0120	NT	0.0080	0.0150	0.0120	NT	0.0080	0.0160	0.0370	NT	0.0140	0.0100	0.0100	0.0160	0.0090	0.0457	0.0261	NT
Copper	1.3	mg/L[1]	ND	0.007	NT	ND	0.0090	ND	NT	0.0100	ND	0.0200	NT	0.0010	0.0010	ND	0.0170	NT	0.0100	0.0090	NT	0.0070	0.0050	0.0200	NT	0.0030	0.0080	0.0100	NT	ND	ND	0.0010	0.0090	ND	0.0049	0.0140	NT
Lead	0.015	mg/L[1]	0.001	ND	NT	ND	0.0060	ND	NT	0.0170	ND	ND	NT	0.0160	0.0070	ND	0.0090	NT	0.0050	0.0050	NT	0.0040	0.0040	0.0070	NT	0.0020	0.0050	0.0030	NT	0.0020	ND	0.0090	0.0020	ND	ND	0.0039	NT
Mercury	0.002	mg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Nickel	0.1	mg/L[1]	0.011	0.019	NT	0.012	0.0220	0.0320	NT	0.0220	0.0470	0.0400	NT	0.0160	0.0160	0.0170	0.0200	NT	0.0270	0.0180	NT	0.0150	0.0230	0.0200	NT	0.0120	0.0200	0.0350	NT	0.0190	0.0170	0.0150	0.0180	0.0180	0.0460	0.0407	NT
Selenium	0.05	mg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	0.0350	0.0140	NT	ND	ND	0.0260	NT	ND	ND	ND	NT	0.0200	0.0310	0.0240	0.0300	ND	ND	ND	NT
Silver	0.1	mg/L[2,3]	0.0002	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	0.0040	NT	0.0020	ND	NT	0.0020	0.0020	ND	NT	ND	0.0020	ND	NT	ND	0.0040	ND	0.0050	ND	ND	ND	NT
Thallium	0.002	mg/L[1]	ND	ND	NT	ND	0.0003	0.0003	NT	ND	ND	ND	NT	ND	ND	ND	0.0010	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	0.0010	ND	ND	ND	ND	NT
Tin	22	mg/L[5]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	0.0350	ND	0.0070	0.0010	NT	ND	ND	NT	ND	0.0220	0.0180	NT	0.0310	ND	ND	NT	ND	ND	ND	ND	ND	ND[3]	ND	NT
Vanadium	0.26	mg/L[5]	0.0007	0.004	NT	ND	0.0070	0.0030	NT	0.0070	ND	ND	NT	0.0170	ND	ND	0.0140	NT	0.0080	0.0050	NT	0.0050	0.0020	0.0080	NT	0.0030	0.0060	ND	NT	ND	ND	ND	ND	0.0290	ND	0.0063	NT
Zinc	2	mg/L[2,3]	0.004	0.014	NT	0.031	0.0480	0.0160	NT	0.0600	0.0230	0.0300	NT	0.0280	0.0170	0.0140	0.0680	NT	0.0240	0.0190	NT	0.0070	0.0100	0.0310	NT	0.0120	0.0310	0.0210	NT	0.0160	0.0070	0.0070	0.0270	ND	0.0453	0.0570	NT
Acetone	610	µg/L[5]	ND	ND	NT	ND	ND	ND	NT	ND	6.9	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	6.4	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Acrylonitrile	0.039	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Benzene	5	µg/L[1]	2.1	2.28	NT	2.77	ND	ND	NT	3.2	4.1	ND	NT	2.7	3.1	3.9	2.0	NT	3.5	ND	NT	3.3	3.6	ND	NT	2.9	4.3	1.9	NT	1.8	3.5	3.6	4.1	2.1	3.7	1.7	NT
Bromochloromethane	80	µg/L[5]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Bromodichloromethane (THM)	90	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Bromoform	80	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Carbon disulfide	1000	µg/L[5]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Carbon tetrachloride	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Chlorobenzene	100	µg/L[1]	10.8	11.38	NT	13.3	10.8	ND	NT	13.42	15.6	ND	NT	12.5	13.5	15.4	10.7	NT	16.7	5.3	NT	15.7	15.7	3.2	NT	11.3	19.1	8.0	NT	7.0	14.3	14.6	16.5	7.1	15.3	6.1	NT
Chloroethane	4.6	µg/L[5]	ND	ND	NT	ND	ND	ND	NT	2.27	ND	ND	NT	3.3	ND	2.0	1.5	NT	ND	ND	NT	ND	ND	ND	NT	ND	2.5	ND	NT	ND	1.4	2.4	ND	1.6	1.3	ND	NT
Chloroform	80	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dibromo-3-chloropropane /DBCP	0.2	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,4-Dichlorobenzene	75	µg/L[1]	2.1	2.38	NT	2.62	ND	ND	NT	ND	ND	ND	NT	1.8	ND	ND	2.2	NT	3.3	ND	NT	3.4	ND	ND	NT	2.2	2.9	1.8	NT	1.4	2.7	2.2	3.2	1.8	2.7	1.9	NT
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1-Dichloroethane	5	µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dichloroethane	5	µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1-Dichloroethylene	7	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dichloropropane	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
cis-1,3-Dichloropropene		µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
trans-1,3-Dichloropropene		µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Ethylbenzene	700	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Bromomethane	10	µg/L[2]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Chloromethane	30	µg/L[2]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Dibromomethane	61	µg/L[5]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methylene chloride	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methyl iodide		µg/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
4-Methyl-2-pentanone		ug/L	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Styrene	100	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1,1,2-Tetrachloroethane	70	µg/L[2]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1,2,2-Tetrachloroethane	0.3	µg/L[2]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Toluene	1000	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1,2-Trichloroethane	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Trichlorofluoromethane	2000	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2,3-Trichloropropane	40	µg/L[2]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Vinyl acetate	410	µg/L[5]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Vinyl chloride	2	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Xylenes	10000	µg/L[1]	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	5.0	7.97	NT	6.23	9.4	ND	NT	7.08	16.5	ND	NT	6.7	7.7	12.3	6.9	NT	11.2	1.7	NT	6.6	14.8	4.3	NT	6.9	11.9	11.0	NT	7.5	8.4	6.6	12.4	7.0	16.3	12.3	NT

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above
NT = Not Tested due to dry conditions at well.

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-15
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006	mg/L[1]	ND	0.0040	0.0040	ND	ND	0.0300	ND	0.0020	0.0340	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	0.0070	0.0060	0.0400	ND	ND	ND	ND
Arsenic	0.010	mg/L[1]	0.0352	0.02	0.03	0.03	0.0200	0.0200	0.0300	0.0300	ND	ND	0.0700	0.0130	0.0320	0.0170	ND	ND	0.0160	ND	0.0350	ND	ND	0.0050	0.0280	0.0130	0.0180	0.0040	0.0300	ND	ND	0.0110	ND	ND	0.0023	0.0338	0.0362
Barium	2	mg/L[1]	0.158	0.212	0.084	0.096	0.1280	0.1240	0.0850	0.0890	0.1230	0.1560	0.3100	0.0600	0.1130	0.1840	0.1390	0.2230	0.1260	0.1350	0.1060	0.1810	0.1180	0.1340	0.0750	0.1510	0.1550	0.1340	0.1010	0.2360	0.2350	0.1620	0.1930	ND	0.1890	0.1260	0.1110
Beryllium	0.004	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	0.0050	ND	ND	ND[5]
Cadmium	0.005	mg/L[1]	ND	0.008	0.007	0.010	0.0090	ND	0.0100	0.0050	0.0100	0.0050	0.0460	ND	0.0100	0.0080	0.0070	ND	ND	ND	ND	0.0100	0.0010	ND	0.0010	ND	0.0040	ND	0.0020	ND	0.0060	0.0010	0.0040	ND	ND	ND[3]	ND[4]
Chromium	0.1	mg/L[1]	0.0007	ND	ND	ND	ND	ND	0.0030	ND	0.0020	ND	0.1180	0.0020	0.0010	0.0050	0.0020	0.0010	ND	ND	0.0030	0.0030	0.0030	ND	ND	ND	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND[4]	0.0018
Cobalt	0.73	mg/L[4]	0.0126	0.008	0.014	0.012	0.0100	0.0090	0.0180	0.0130	0.0040	ND	0.2300	0.0080	0.0180	0.0070	0.0040	0.0020	0.0120	ND	0.0190	0.0020	ND	0.0010	0.0140	0.0100	0.0060	0.0020	0.0170	0.0030	0.0040	0.0090	0.0020	ND	0.0039	0.0185	0.0244
Copper	1.3	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1400	ND	ND	ND	ND	ND	0.0020	ND	ND	0.0080	0.0040	0.0240	0.0050	0.0060	0.0060	ND	ND	0.0030	0.0040	0.0100	0.2400	ND	0.0012	0.0059
Lead	0.015	mg/L[1]	0.0003	0.0030	0.0020	ND	0.0020	ND	ND	0.0020	ND	0.0050	0.1350	0.0140	ND	ND	ND	0.0040	0.0020	0.0040	0.0110	0.0040	0.0020	0.0030	0.0020	0.0050	0.0050	0.0030	0.0050	0.0020	0.0020	0.0010	0.0030	ND	ND	0.0025	0.0025
Mercury	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0070	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	0.1	mg/L[1]	0.025	0.017	0.029	0.023	0.0200	0.0510	0.0350	0.0240	0.0520	0.0110	0.6610	0.0140	0.0290	0.0170	0.0100	0.0110	0.0180	0.0080	0.0330	0.0120	0.0070	0.0110	0.0230	0.0190	0.0150	ND	0.0270	0.0110	0.0130	0.0160	0.0090	0.0140	0.0086	0.0374	0.0396
Selenium	0.05	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0220	ND	ND	ND	ND	0.0160	ND	ND	ND	ND	0.0100	0.0120	0.0180	0.0110	0.0190	0.0400	ND	ND[4]	ND
Silver	0.1	mg/L[2,3]	0.0001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0030	0.0020	0.0150	0.0030	0.0030	0.0050	0.0020	0.0030	0.0030	ND	0.0040	ND	0.0050	ND	0.0050	ND	ND	ND[4]	ND[4]
Thallium	0.002	mg/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22	mg/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0600	ND	ND	0.0470	ND	ND	ND	ND	ND	ND	0.0270	0.0780	0.0210	0.0400	ND	ND	ND	ND	ND	ND	ND	ND	ND[3]	ND[4]	ND[4]
Vanadium	0.26	mg/L[4]	0.0010	0.0150	0.0110	ND	0.0060	0.0040	0.0110	ND	ND	0.0150	0.1560	0.0050	ND	ND	0.0020	ND	0.0040	0.0050	0.0060	0.0040	0.0030	0.0090	0.0030	0.0050	0.0040	0.0040	0.0030	0.0030	0.0020	0.0020	ND	0.0160	ND	0.0012	0.0023
Zinc	2	mg/L[2,3]	0.0030	0.0150	0.0150	0.032	0.0210	0.0100	0.0300	0.0200	0.0140	ND	0.9700	ND	0.0120	0.0150	0.0080	ND	ND	ND	ND	ND	ND	ND	ND	0.0150	0.0200	ND	0.0280	0.0090	0.0120	0.0060	0.0170	ND	0.0181	0.0147	0.0227
Acetone	610	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.2	ND	ND	6.7	ND	ND	ND	ND	ND	ND	5.6	ND	ND	ND	18.6	ND	ND	ND	ND	ND	ND	6.8	ND	ND
Acrylonitrile	0.039	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	µg/L[1]	1.5	1.76	ND	1.67	ND	ND	3.59	2.83	ND	ND	3.4	3.2	2.1	3.2	1.7	2.0	2.8	2.8	3.6	2.2	2.1	2.8	3.4	2.7	2.8	2.5	3.4	3.1	2.7	3.2	3.5	2.1	1.9	3.3	3.5
Bromochloromethane	80	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	µg/L[1]	13.2	15.49	14.0	12.72	17	15.2	18.19	21.26	17.4	21.5	16.0	16.8	17.7	18.3	21.0	21.1	19.7	26.9	19.0	27.0	25.0	32.5	18.9	14.3	20.0	29.0	15.5	12.4	16.9	15.8	25.0	11.8	23.1	19.8	16.9
Chloroethane	4.6	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8	ND	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	2.9
Chloroform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP	0.2	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	1.0	1.3	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	2.1	3.06	ND	ND	ND	ND	2.51	ND	1.6	ND	ND	2.1	ND	ND	3.4	2.9	3.0	ND	ND	3.4	ND	ND	2.1	2.3	2.6	3.2	1.9	1.9	2.3	1.5	3.1	2.1	2.9	2.4	2.4
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone		ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	3.3	ND	ND	2.2	5.4	ND	ND	3.1	ND	6.1	2.0	3.9	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	7.5	3.69	7.0	6.61	ND	6.3	7.52	7.69	8.5	ND	7.9	7.9	6.8	7.8	6.7	12.2	7.1	4.2	6.0	9.4	5.4	7.7	8.3	10.3	6.1	3.9	8.8	9.5	9.5	5.5	7.5	7.1	7.9	6.1	7.6

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-16
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	NOV '17
Antimony	0.006	mg/L[1]	ND	ND	ND	0.002	ND	ND
Arsenic	0.010	mg/L[1]	ND	ND	ND	0.01	ND	ND
Barium	2	mg/L[1]	0.014	0.017	0.027	0.011	0.0190	0.1000
Beryllium	0.004	mg/L[1]	0.0001	ND	ND	ND	ND	ND
Cadmium	0.005	mg/L[1]	0.0003	ND	ND	ND	ND	ND
Chromium	0.1	mg/L[1]	ND	0.003	0.003	0.004	0.0060	0.0050
Cobalt	0.73	mg/L[4]	0.0008	0.006	0.004	0.002	0.0050	0.0050
Copper	1.3	mg/L[1]	ND	ND	ND	ND	ND	ND
Lead	0.015	mg/L[1]	ND	ND	ND	ND	ND	ND
Mercury	0.002	mg/L[1]	ND	ND	NT	ND	ND	ND
Nickel	0.1	mg/L[1]	0.002	0.013	0.01	0.009	0.0100	0.0100
Selenium	0.05	mg/L[1]	ND	0.009	0.003	ND	0.0100	0.0050
Silver	0.1	mg/L[2,3]	0.0001	ND	ND	ND	ND	ND
Thallium	0.002	mg/L[1]	ND	ND	ND	ND	0.0003	ND
Tin	22	mg/L[5]	ND	ND	NT	ND	ND	ND
Vanadium	0.26	mg/L[5]	ND	ND	ND	ND	ND	ND
Zinc	2	mg/L[2,3]	0.004	0.025	0.019	0.022	0.024	0.0210
Acetone	610	µg/L[5]	ND	ND	ND	ND	ND	ND
Acrylonitrile	0.039	µg/L[4]	ND	ND	ND	ND	ND	ND
Benzene	5	µg/L[1]	ND	ND	ND	ND	ND	ND
Bromochloromethane	80	ug/L[2]	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90	µg/L[1]	ND	ND	ND	ND	ND	ND
Bromoform	80	µg/L[1]	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000	µg/L[5]	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	µg/L[1]	ND	ND	ND	ND	ND	ND
Chloroethane	4.6	µg/L[4]	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/L[1]	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP	0.2	ug/L[1]	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L[1]	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	µg/L[1]	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	ND	ND	ND	ND	ND	ND
Bromomethane	10	µg/L[2]	ND	ND	ND	ND	ND	ND
Chloromethane	30	µg/L[4]	ND	ND	ND	ND	ND	ND
Dibromomethane	61	µg/L[4]	ND	ND	ND	ND	ND	ND
Methylene chloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	ND	ND	ND	ND	ND	ND
Methyl iodide		µg/L	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone		µg/L	ND	ND	ND	ND	ND	ND
Styrene	100	µg/L[1]	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	ug/L[2]	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[4]	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND
Toluene	1000	µg/L[1]	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2000	ug/L[5]	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40	µg/L[2]	ND	ND	ND	ND	ND	ND
Vinyl acetate	410	µg/L[5]	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/L[1]	ND	ND	ND	ND	ND	ND
Xylenes	10000	µg/L[1]	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	4.67	3.77	3.42	6.53	7.8	4.6

= Exceeded MCL

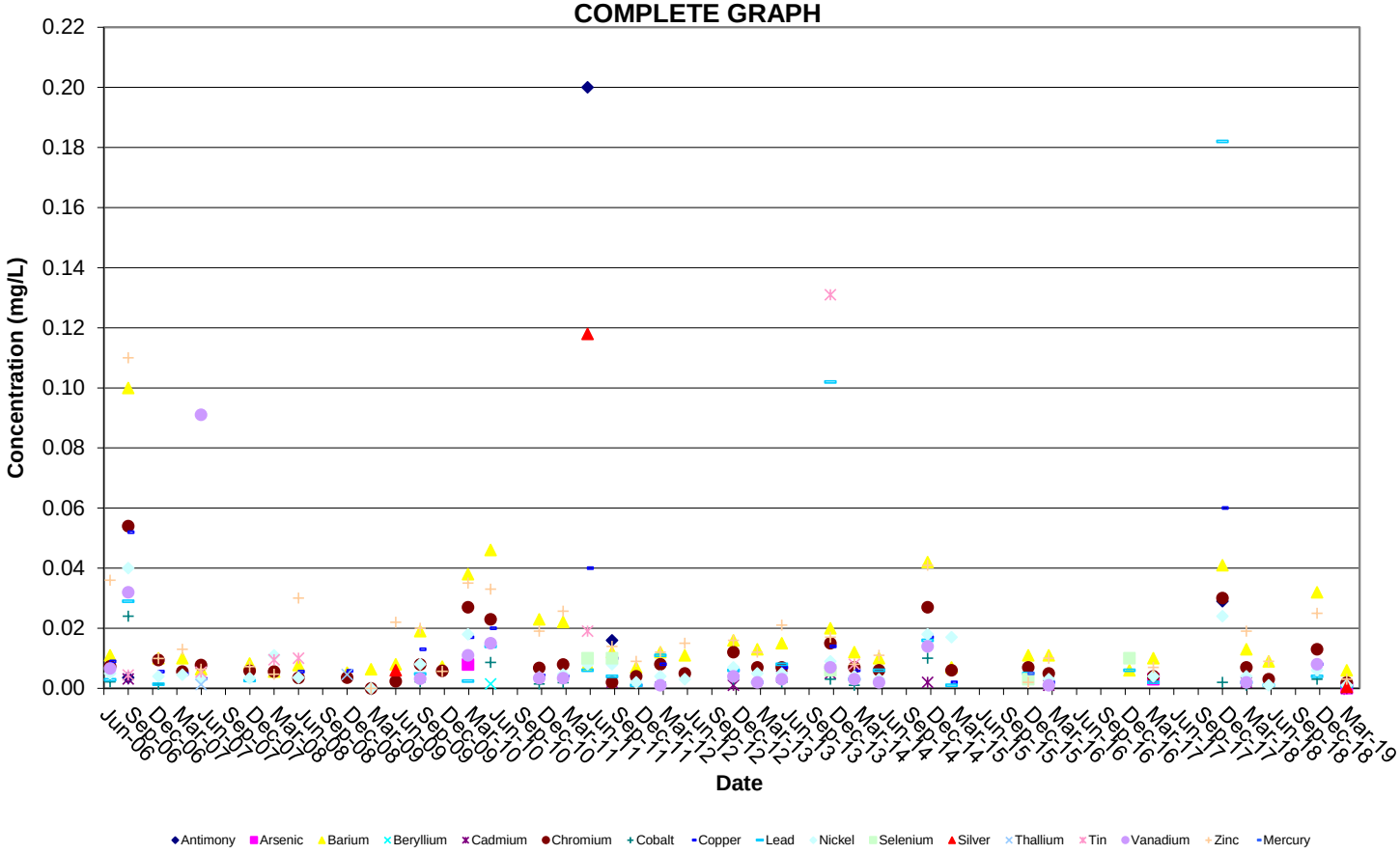
1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

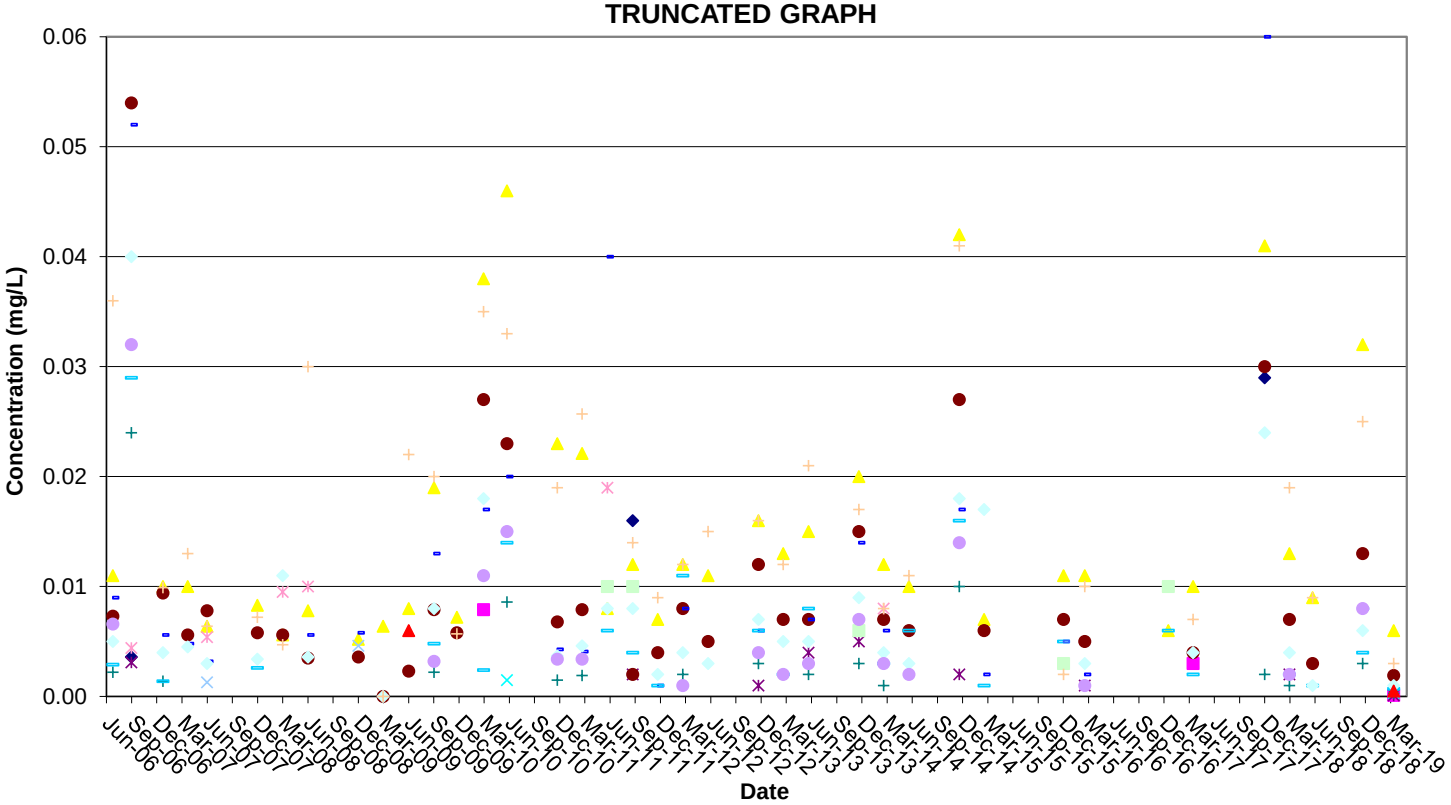
ATTACHMENT NO. 3
HISTORICAL DETECTED METALS GRAPHS

Detected Appendix A Metals in OW-9
Tiverton Landfill

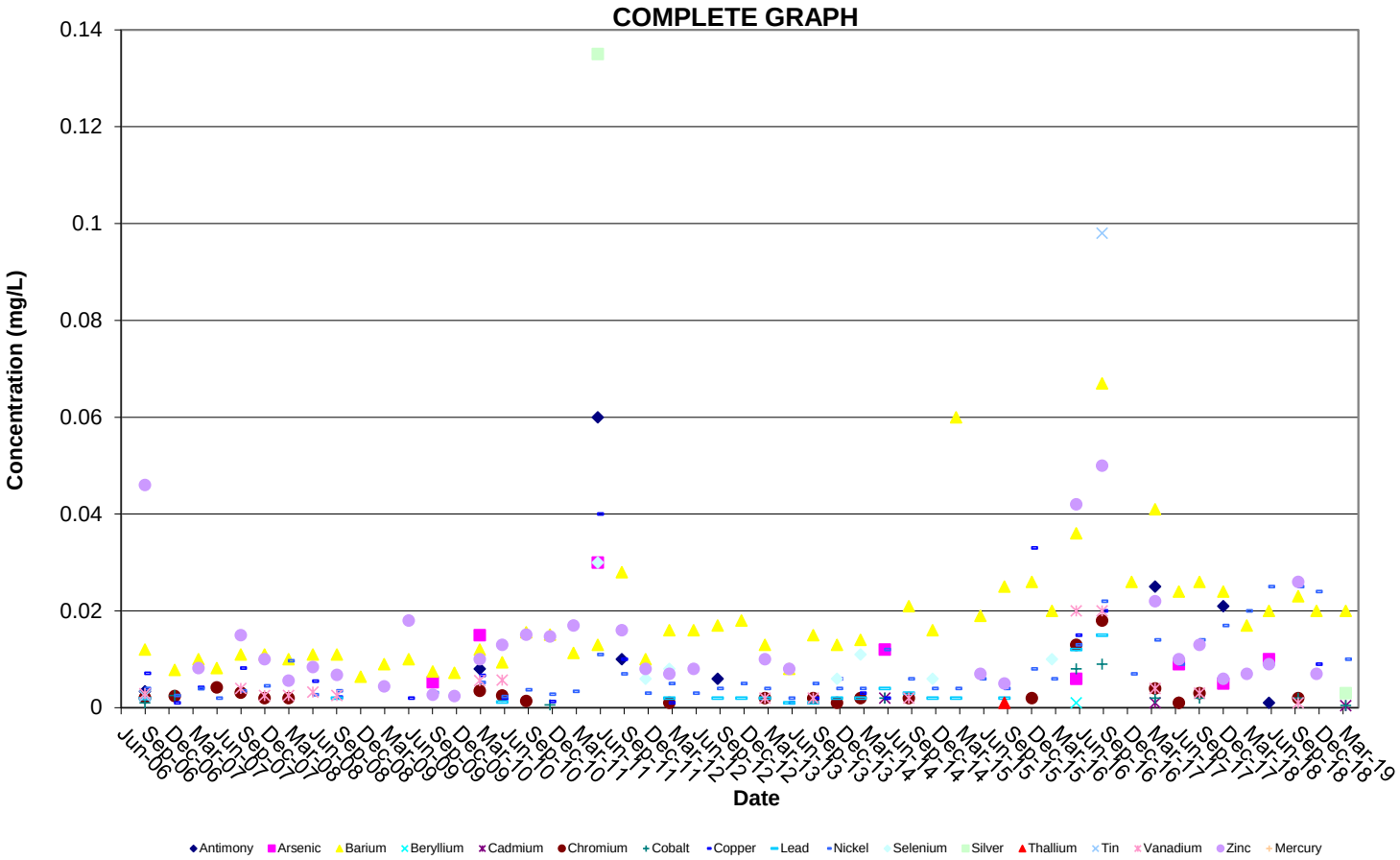
COMPLETE GRAPH

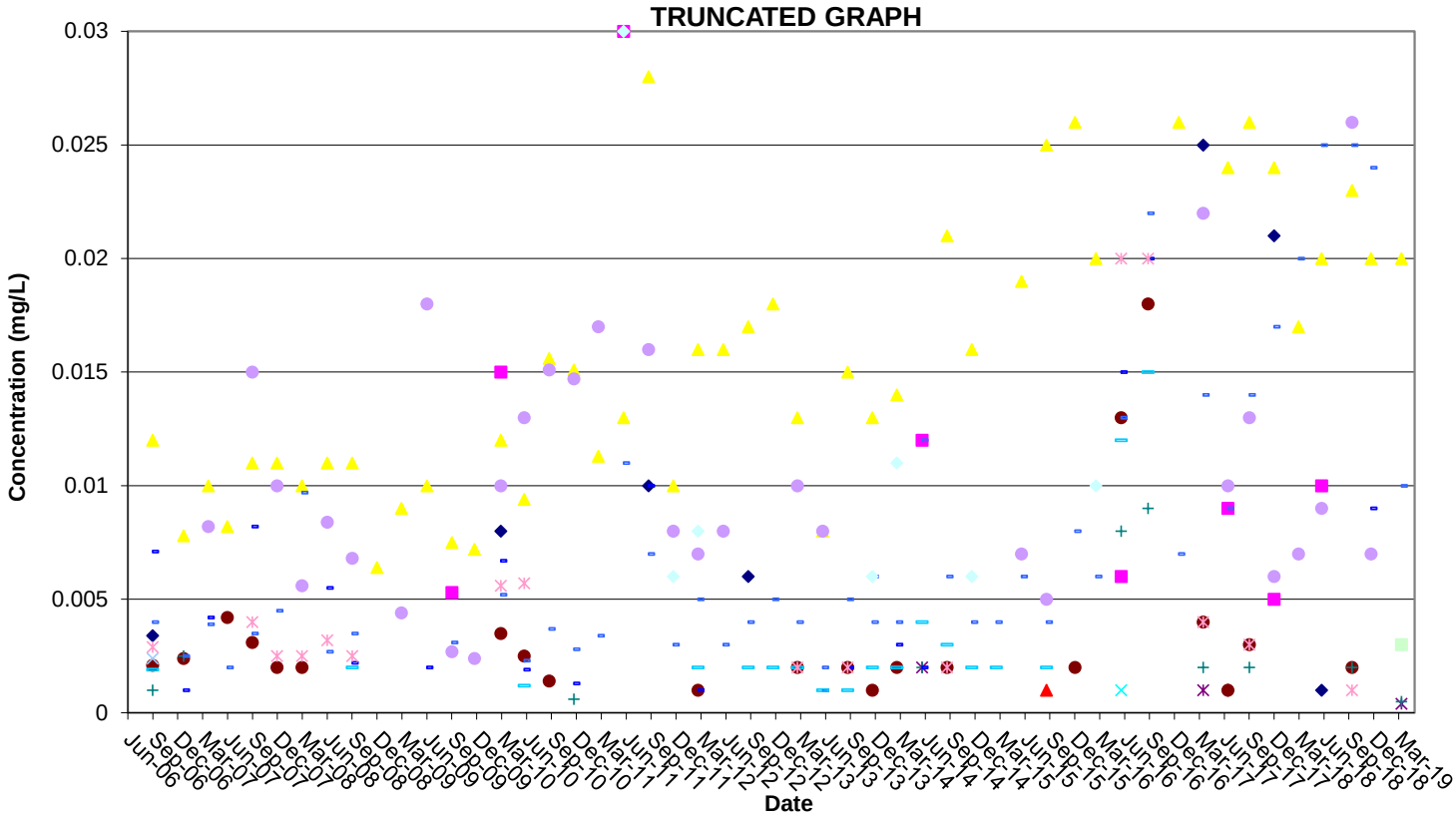


TRUNCATED GRAPH



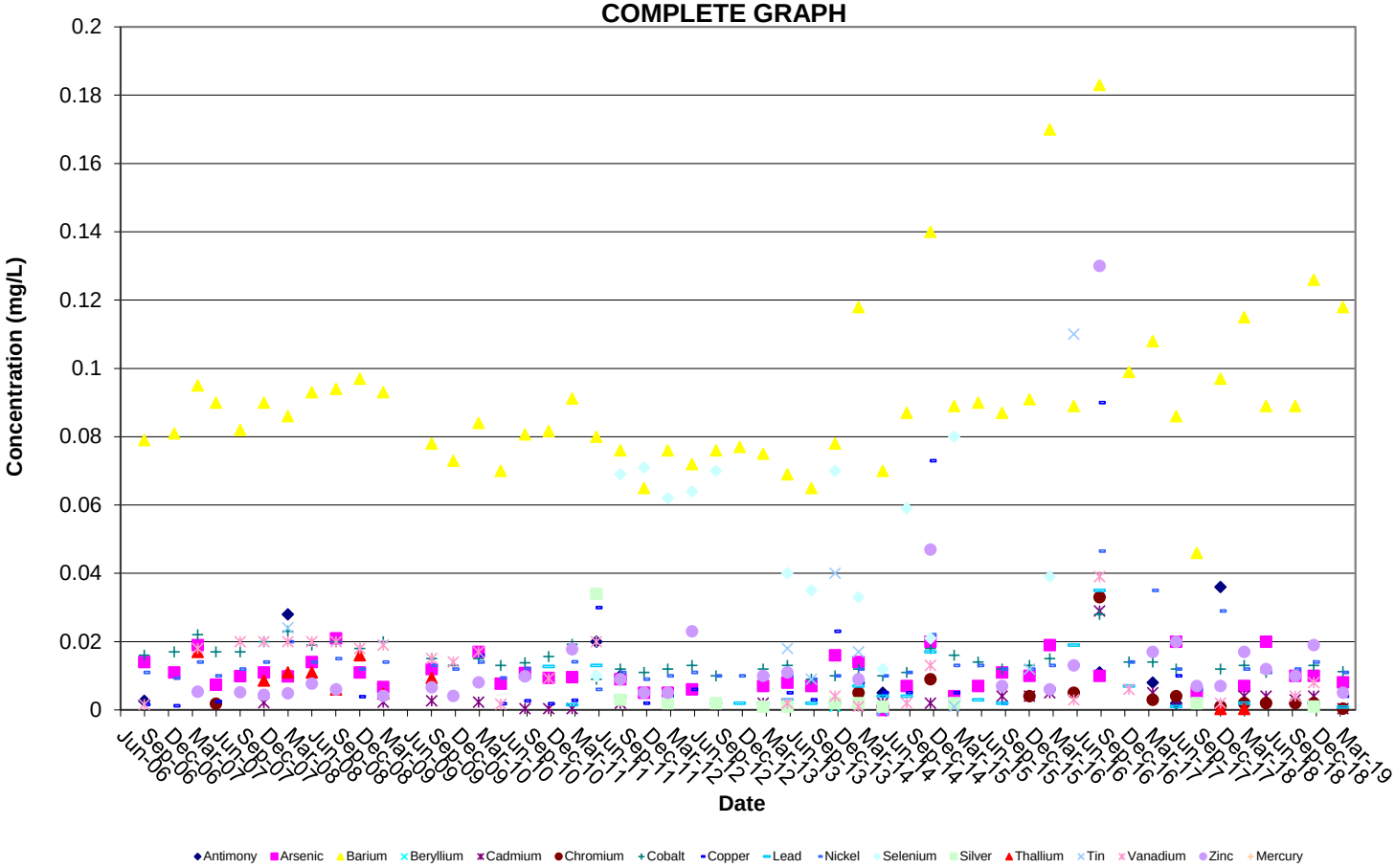
Detected Appendix A Metals in OW-12
Tiverton Landfill



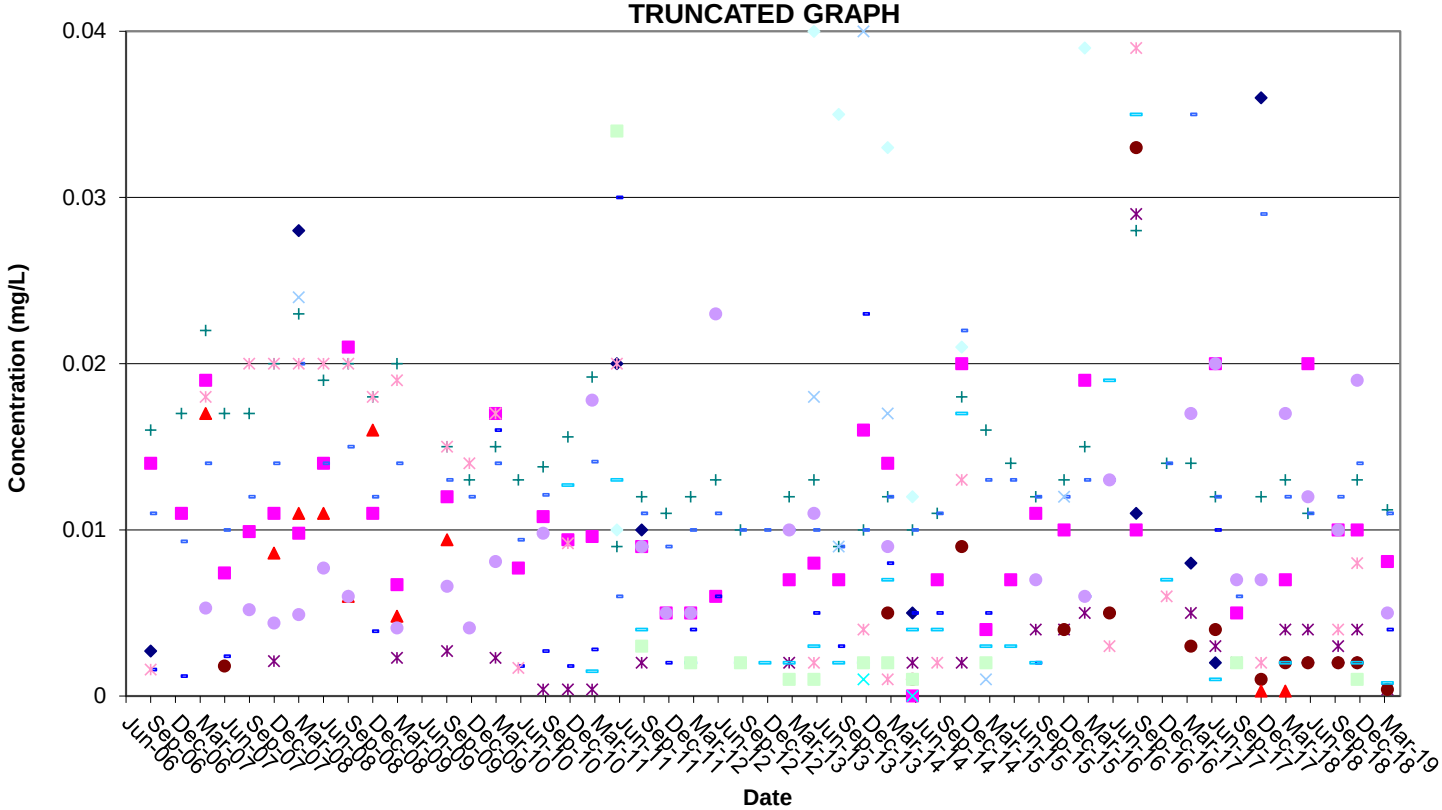


Detected Appendix A Metals in OW-13
Tiverton Landfill

COMPLETE GRAPH

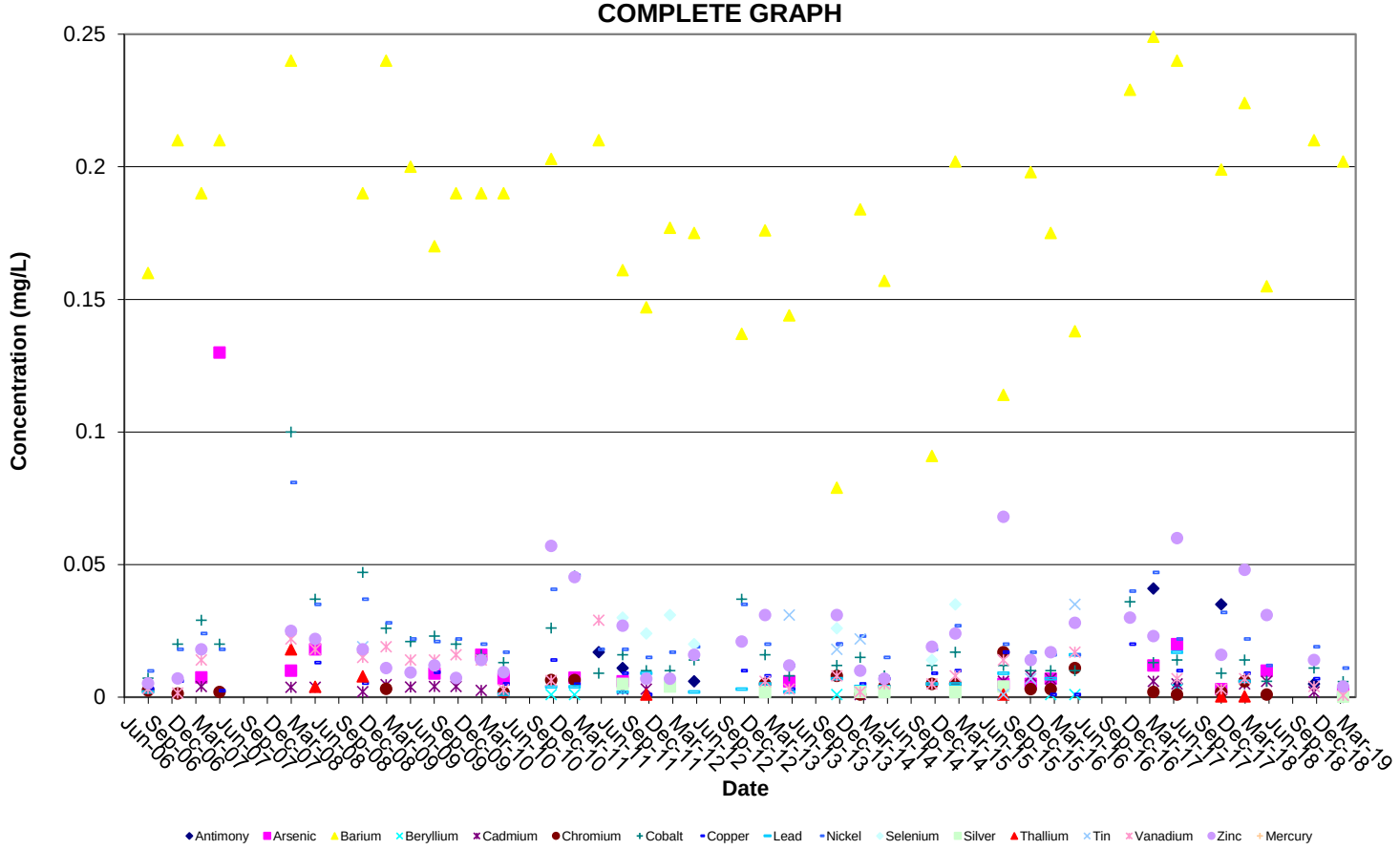


TRUNCATED GRAPH



Detected Appendix A Metals in OW-14
Tiverton Landfill

COMPLETE GRAPH



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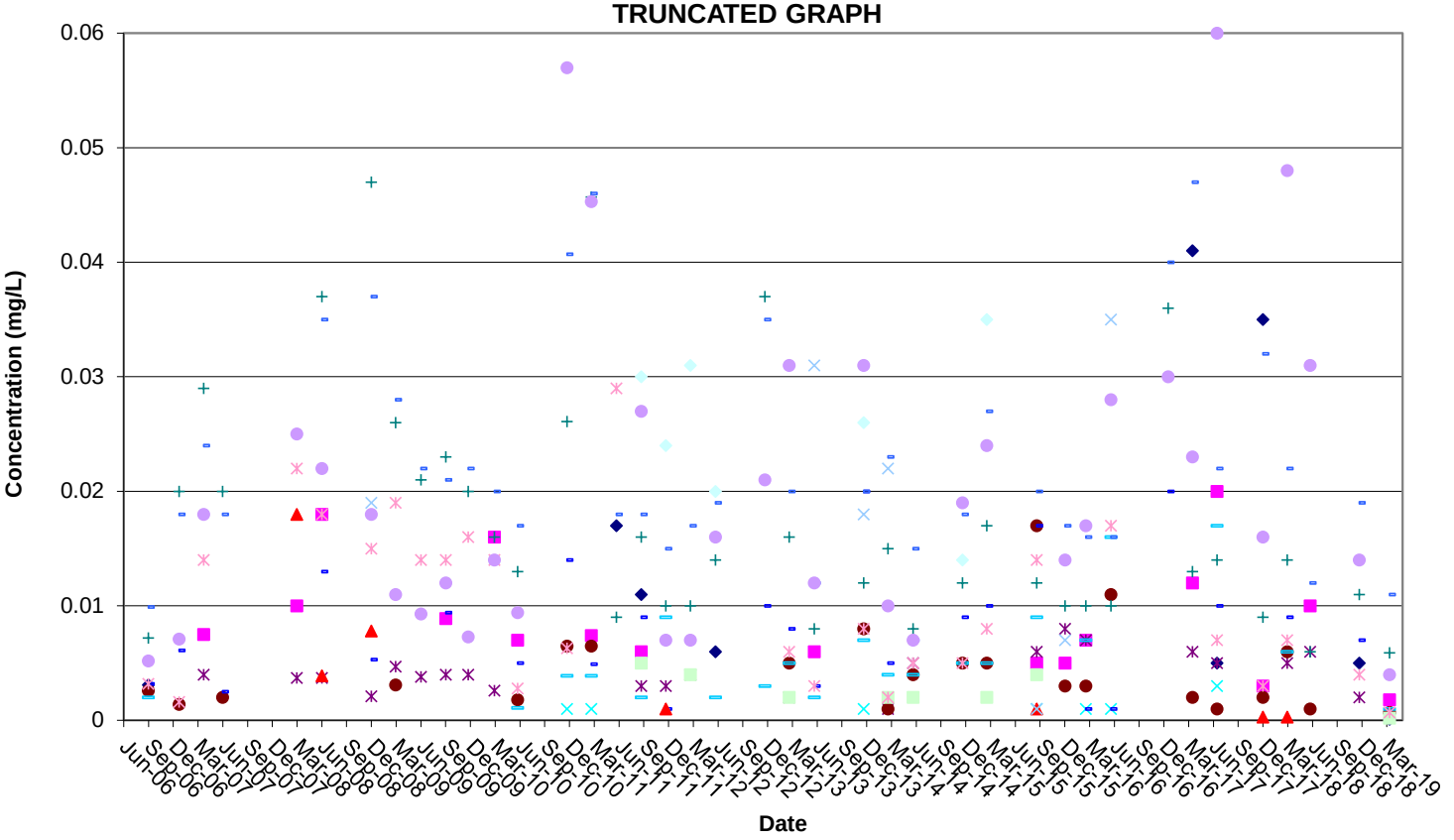
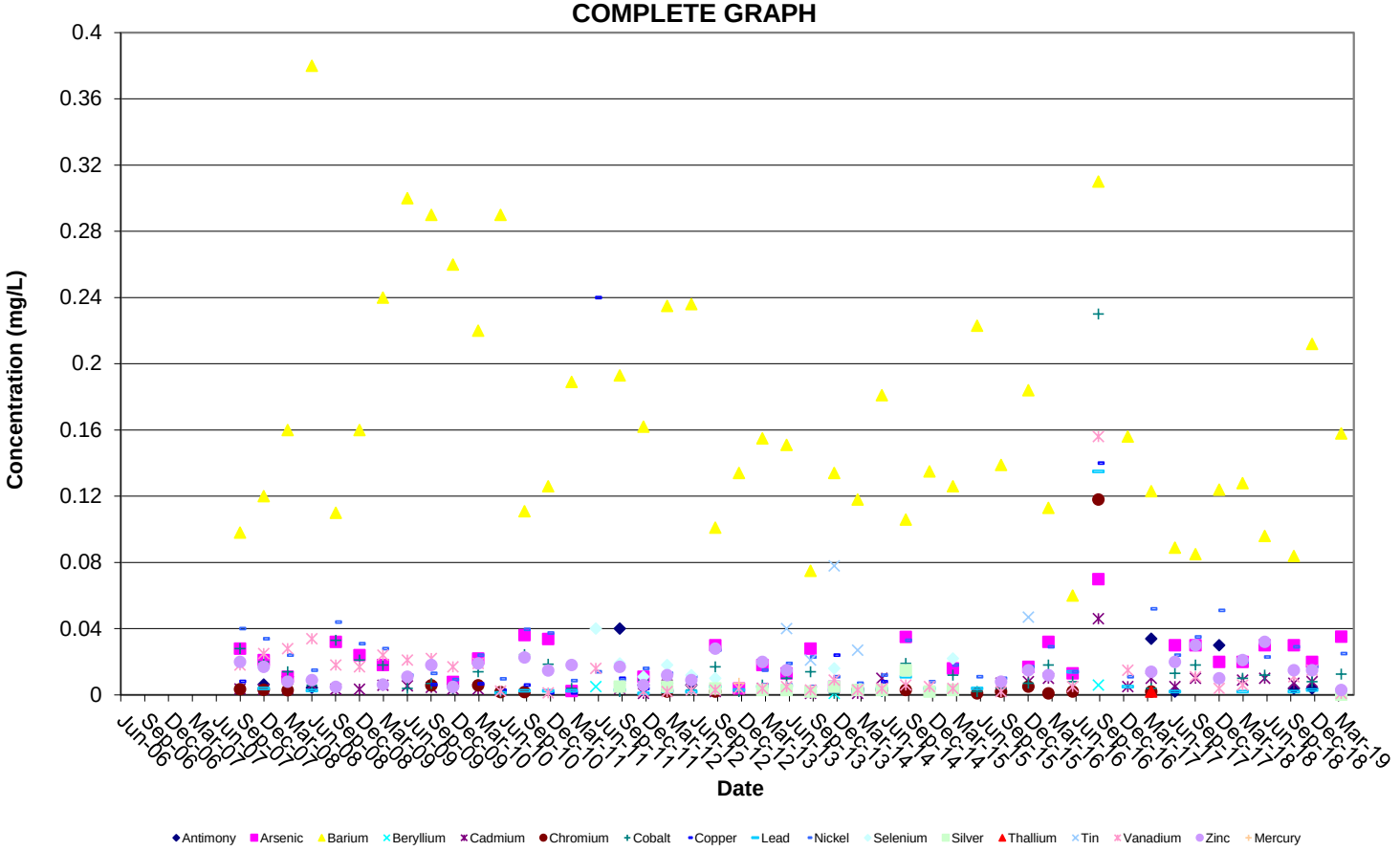
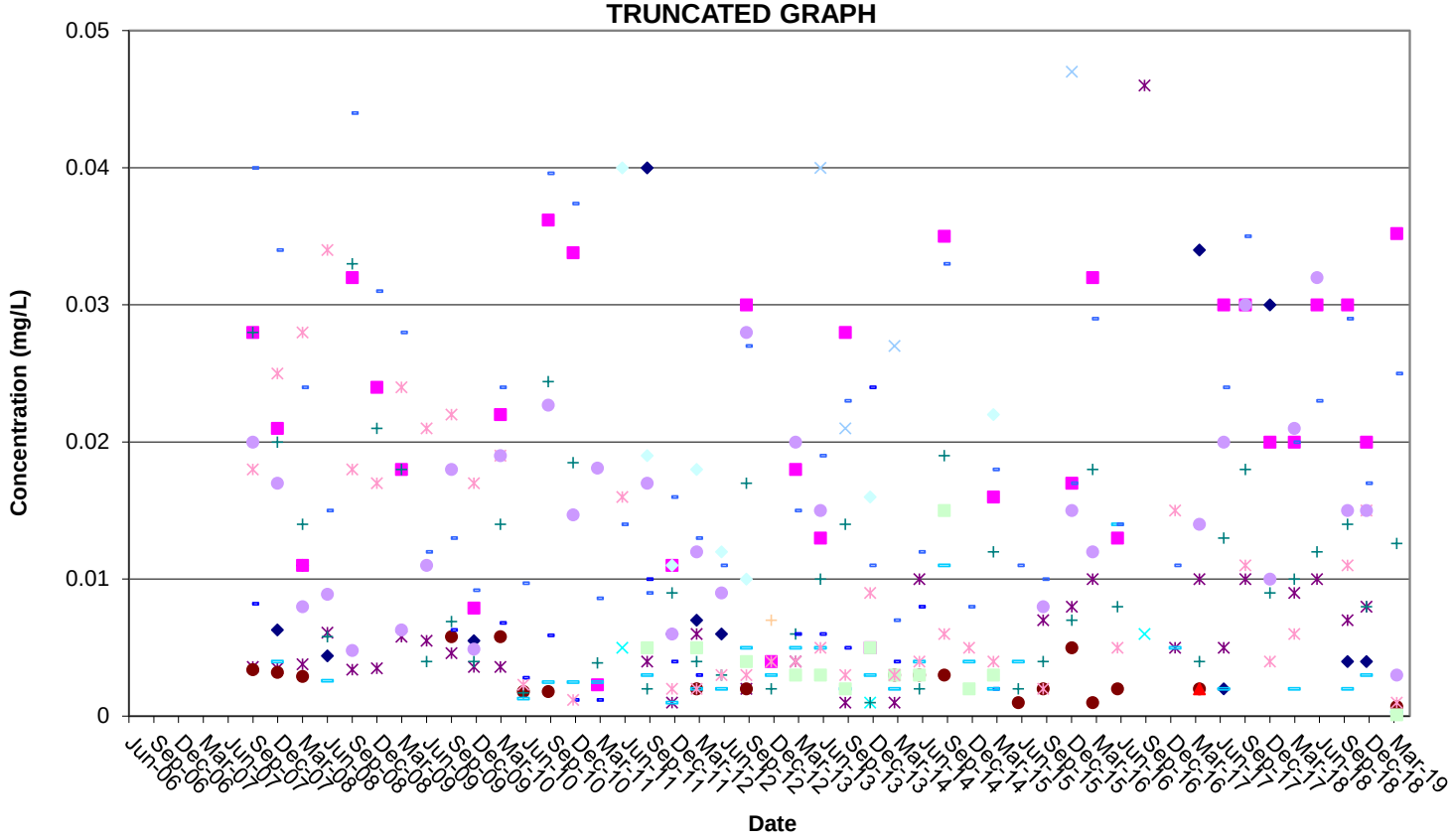


Detected Appendix A Metals in OW-15
Tiverton Landfill

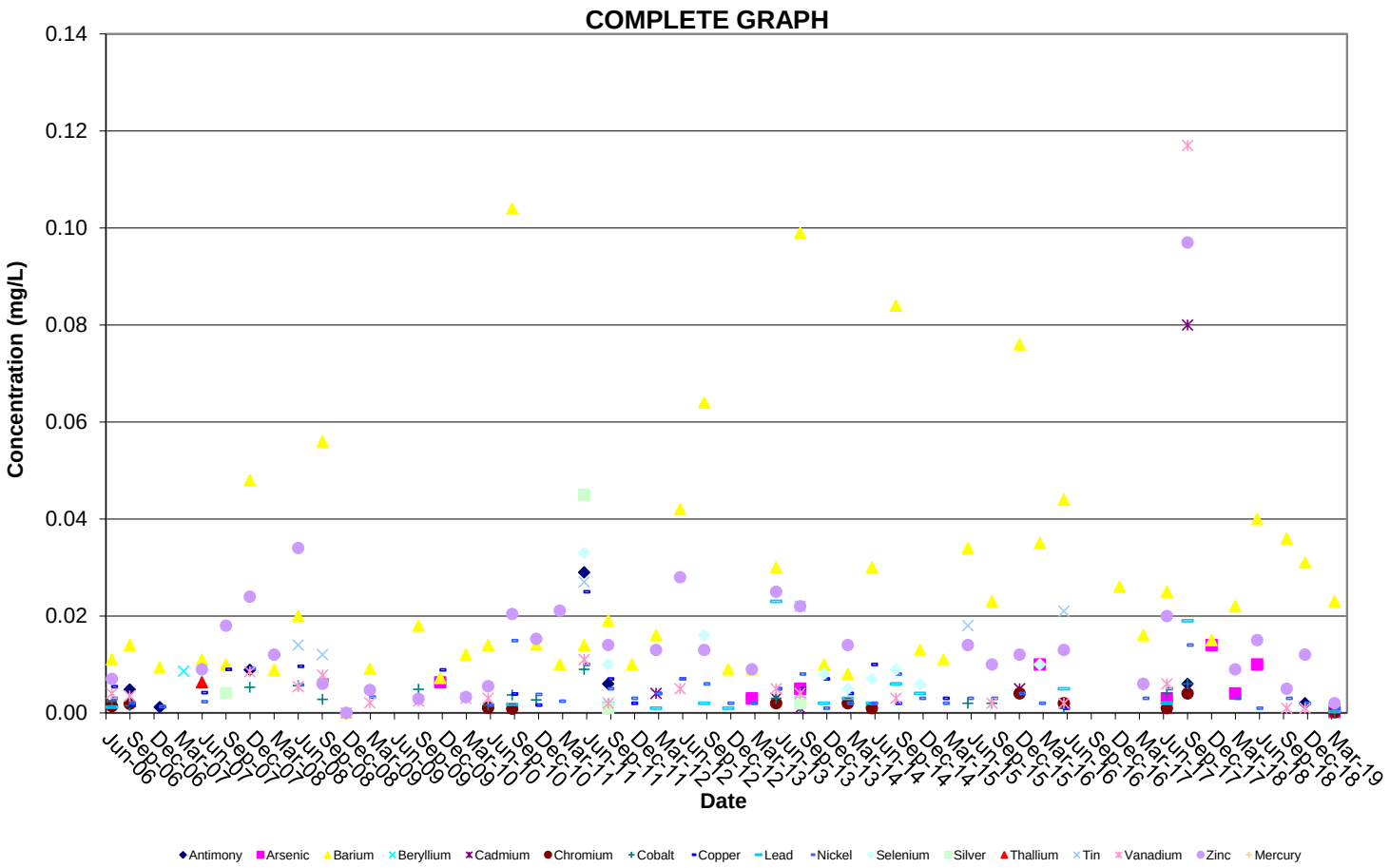
COMPLETE GRAPH

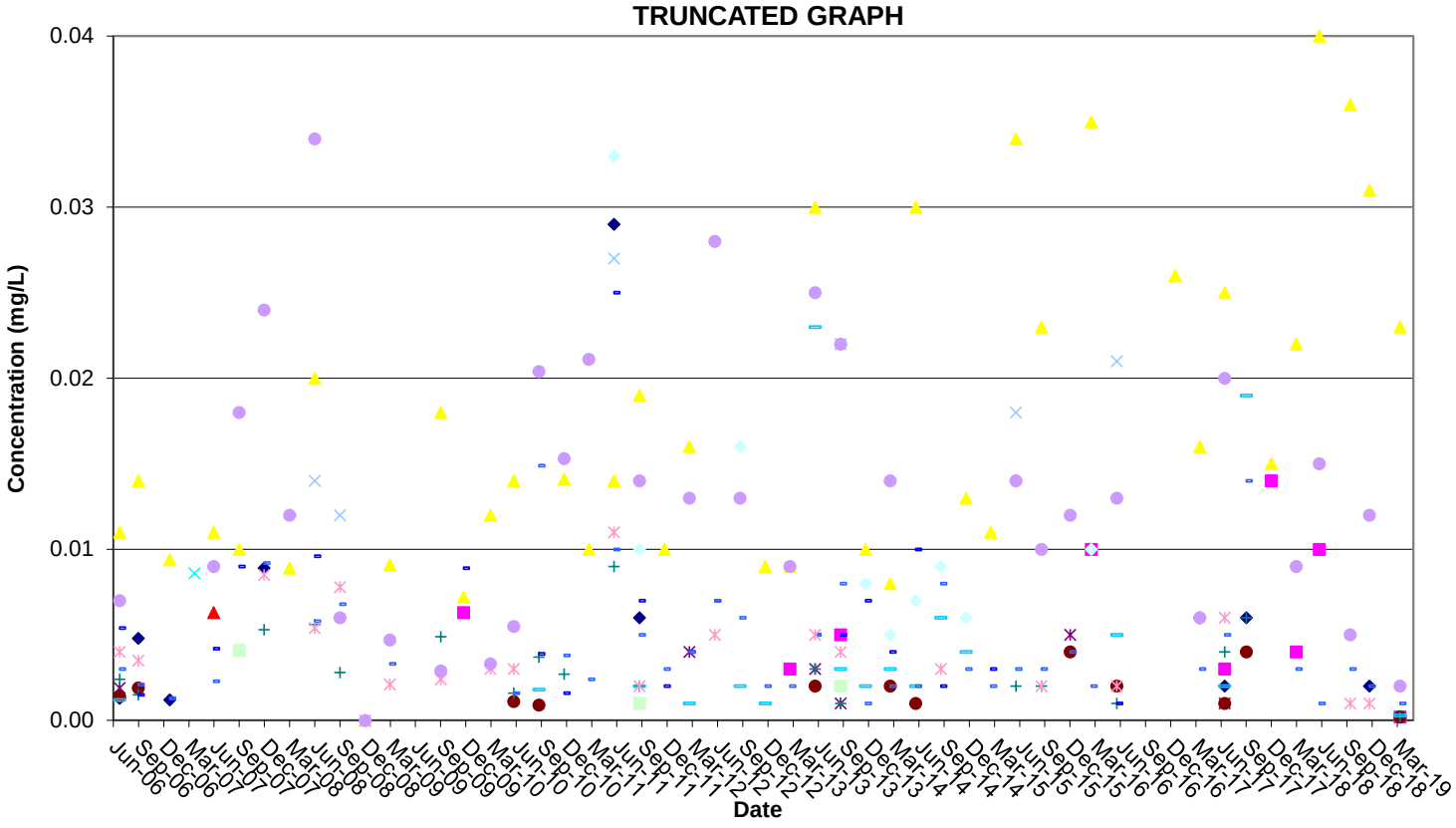


TRUNCATED GRAPH

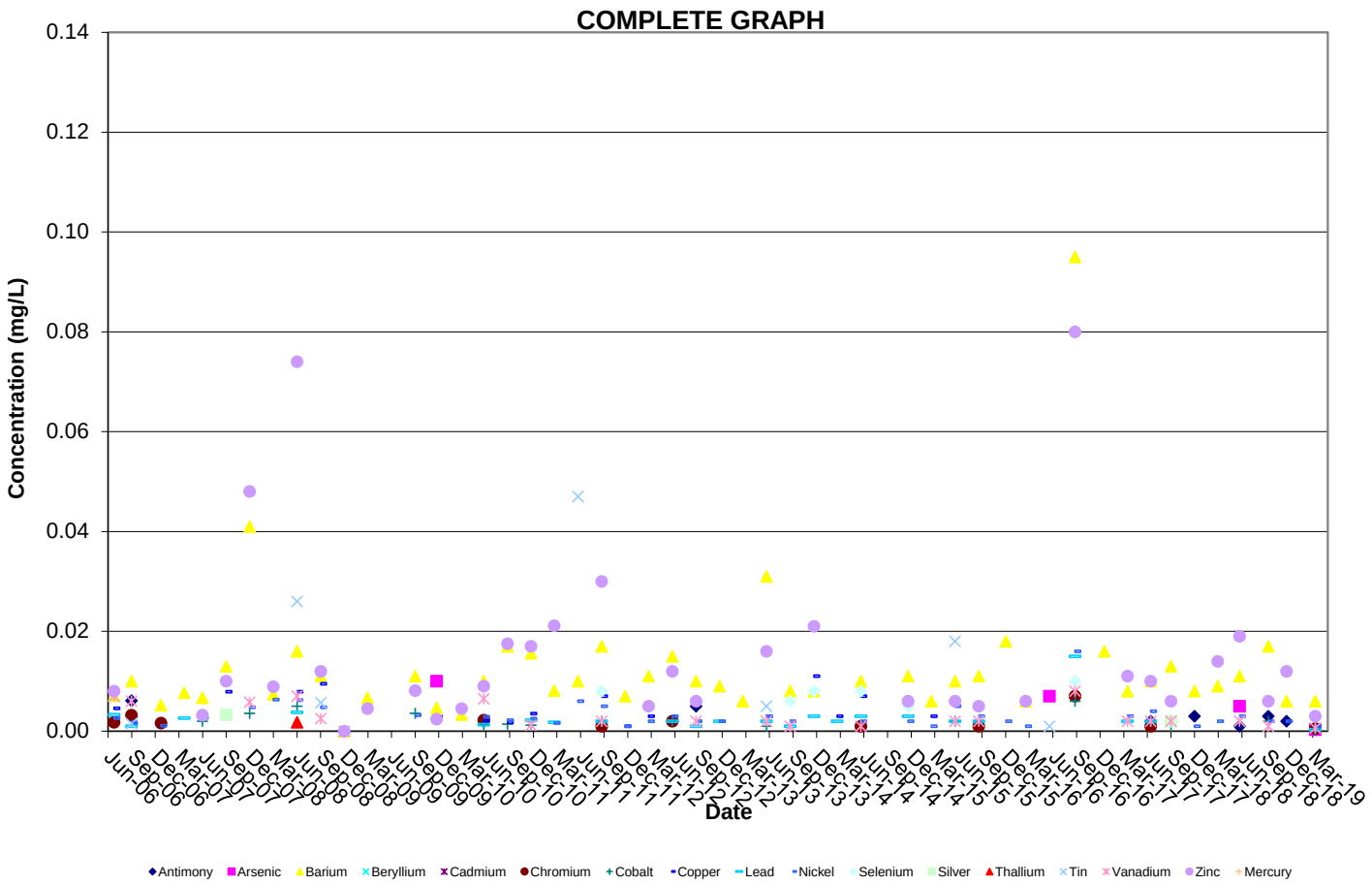


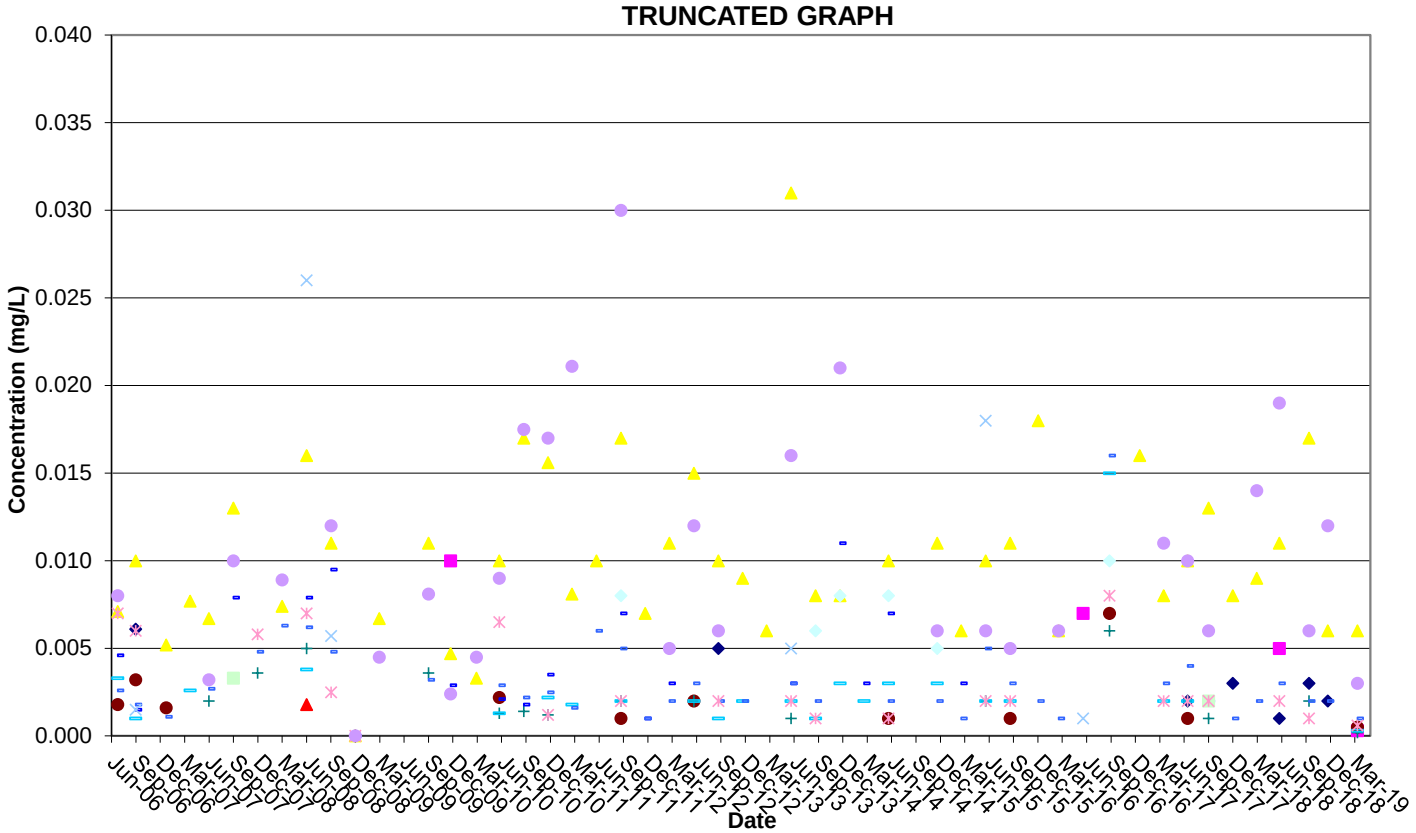
Detected Appendix A Metals at Surface Water Sampling Location SW-1
Tiverton Landfill



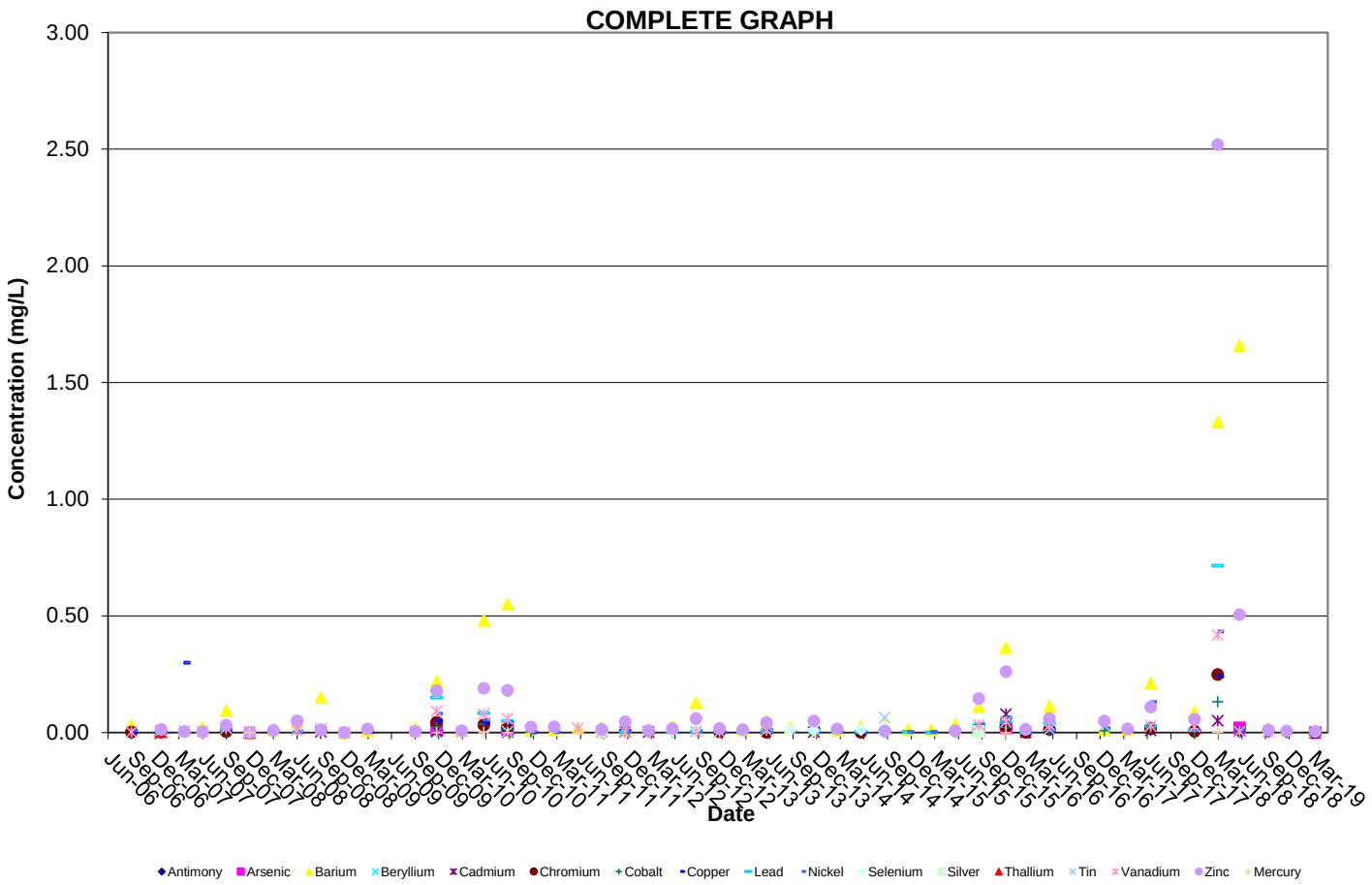


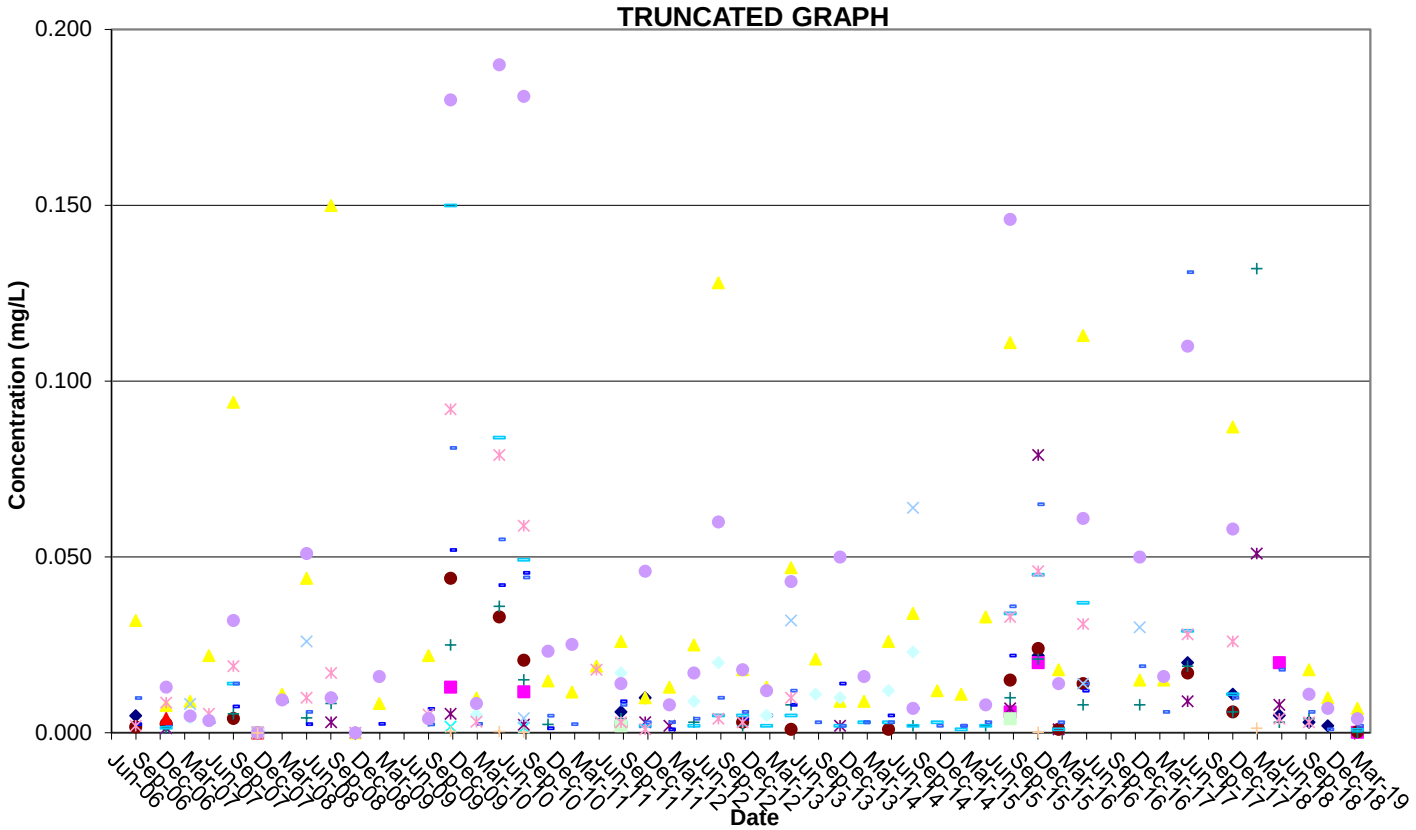
Detected Appendix A Metals at Surface Water Sampling Location SW-2
Tiverton Landfill





Detected Appendix A Metals at Surface Water Sampling Location SW-3
Tiverton Landfill





ATTACHMENT NO. 4
TOLERANCE INTERVAL STATISTICAL EVALUATION

TABLE 3
SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON
MAR 2019 - SAMPLE ROUND
Concentration (units as specified for Threshold Value)

		OW-9 Tolerance Limit *		Threshold		Background Well	Compliance wells				
	Parameter	TL=AVG+K*S		Value		OW-9	OW-7	OW-12	OW-13	OW-14	OW-15	OW-16
METALS	Antimony	0.0290	mg/L	0.006	mg/L[1]	0.0001	ND	ND	ND	0.0001	ND	ND
	Arsenic	0.0030	mg/L	0.010	mg/L[1]	0.0001	0.0002	ND	0.0081	0.0018	0.0352	ND
	Barium	0.0572	mg/L	2	mg/L[1]	0.006	0.034	0.02	0.118	0.202	0.158	0.014
	Beryllium	0.0003	mg/L	0.004	mg/L[1]	0.0003	ND	ND	ND	ND	ND	0.0001
	Cadmium	0.3650	mg/L	0.005	mg/L[1]	0.0001	0.0007	0.0004	0.0004	ND	ND	0.0003
	Chromium	0.0378	mg/L	0.1	mg/L[1]	0.0019	0.0011	ND	0.0004	0.0007	0.0007	ND
	Cobalt	0.0030	mg/L	0.73	mg/L[5]	0.0003	0.0090	0.0005	0.0112	0.0059	0.0126	0.0008
	Copper	0.0080	mg/L	1.3	mg/L[1]	ND	0.002	ND	0.004	ND	ND	ND
	Lead	0.2414	mg/L	0.015	mg/L[1]	0.0007	0.0013	ND	0.0008	0.0010	0.0003	ND
	Mercury	0.0001	mg/L	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND
	Nickel	0.0315	mg/L	0.1	mg/L[2]	0.001	0.011	0.01	0.011	0.011	0.025	0.002
	Selenium	0.0100	mg/L	0.05	mg/L[1]	ND	ND	ND	ND	ND	ND	ND
	Silver	0.0005	mg/L	0.1	mg/L[2,3]	0.0005	0.0002	0.003	ND	0.0002	0.0001	0.0001
	Thallium	0.0001	mg/L	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND
	Tin	0.0010	mg/L	22	mg/L[5]	ND	ND	ND	ND	ND	ND	ND
	Vanadium	0.0080	mg/L	0.26	mg/L[5]	ND	0.0013	ND	ND	0.0007	0.0010	ND
	Zinc	14.7679	mg/L	2 - 5	mg/L[2,3]	0.0030	0.006	ND	0.005	0.004	0.003	0.004
VOC'S	Acetone			610	µg/L[5]							
	Acrylonitrile			0.039	µg/L[5]							
	Benzene			5	µg/L[1]							
	Bromochloromethane			80	µg/L[4]							
	Bromodichloromethane (THM)			90	µg/L[1]							
	Bromoform			80	µg/L[1]							
	Carbon disulfide			1000	µg/L[5]							
	Carbon tetrachloride			5	µg/L[1]							
	Chlorobenzene			100	µg/L[1]							
	Chloroethane			4.6	µg/L[5]							
	Chloroform			80	µg/L[1]							
	Chlorodibromomethane (THM)			80	µg/L[1]							
	1,2-Dibromo-3-chloropropane (DBCP)			0.2	µg/L[1]							
	1,2-Dibromoethane (EDB)			0.05	µg/L[1]							
	1,2-Dichlorobenzene			600	µg/L[1]							
	1,4-Dichlorobenzene			75	µg/L[1]							
	trans-1,4-Dichloro-2-butene				µg/L							
	1,1 -Dichloroethane			5	µg/L							
	1,2-Dichloroethane			5	µg/L[1]							
	1,1-Dichloroethylene			7	µg/L[1]							
	cis-1,2-Dichloroethene			70	µg/L[1]							
	trans-1,2-Dichloroethene			100	µg/L[1]							
	1,2-Dichloropropane			5	µg/L[1]							
	cis-1,3-Dichloropropene				µg/L							
	trans-1,3-Dichloropropene				µg/L							
	Ethylbenzene			700	µg/L[1]							
	Methyl butyl ketone(2-Hexanone)			160	µg/L[5]							
	Bromomethane			10	µg/L[4]							
	Chloromethane			30	µg/L[4]							
	Dibromomethane			61	µg/L[5]							
	Methylene chloride			5	µg/L[1]							
	Methyl ethyl ketone(2-Butanone)			4000	µg/L[4]							
	Methyl iodide				µg/L							
	4-Methyl-2-pentanone				µg/L							
	Styrene			100	µg/L[1]							
	1,1,1,2-Tetrachloroethane			70	µg/L[4]							
	1,1,2,2-Tetrachloroethane			0.3	µg/L[4]							
	Tetrachloroethylene(PCE)			5	µg/L[1]							
	Toluene			1000	µg/L[1]							
	1,1,1-Trichloroethane			200	µg/L[1]							
	1,1,2-Trichloroethane			5	µg/L[1]							
	Trichloroethylene(TCE)			5	µg/L[1]							
	Trichlorofluoromethane			2000	µg/L[4]							
	1,2,3-Trichloropropane			40	µg/L[4]							
	Vinyl acetate			410	µg/L[5]							
	Vinyl chloride			2	µg/L[1]							
	Xylenes			10000	µg/L[1]							
	Methyl tert-butyl ether (MTBE)			20 - 40	µg/L[6]							

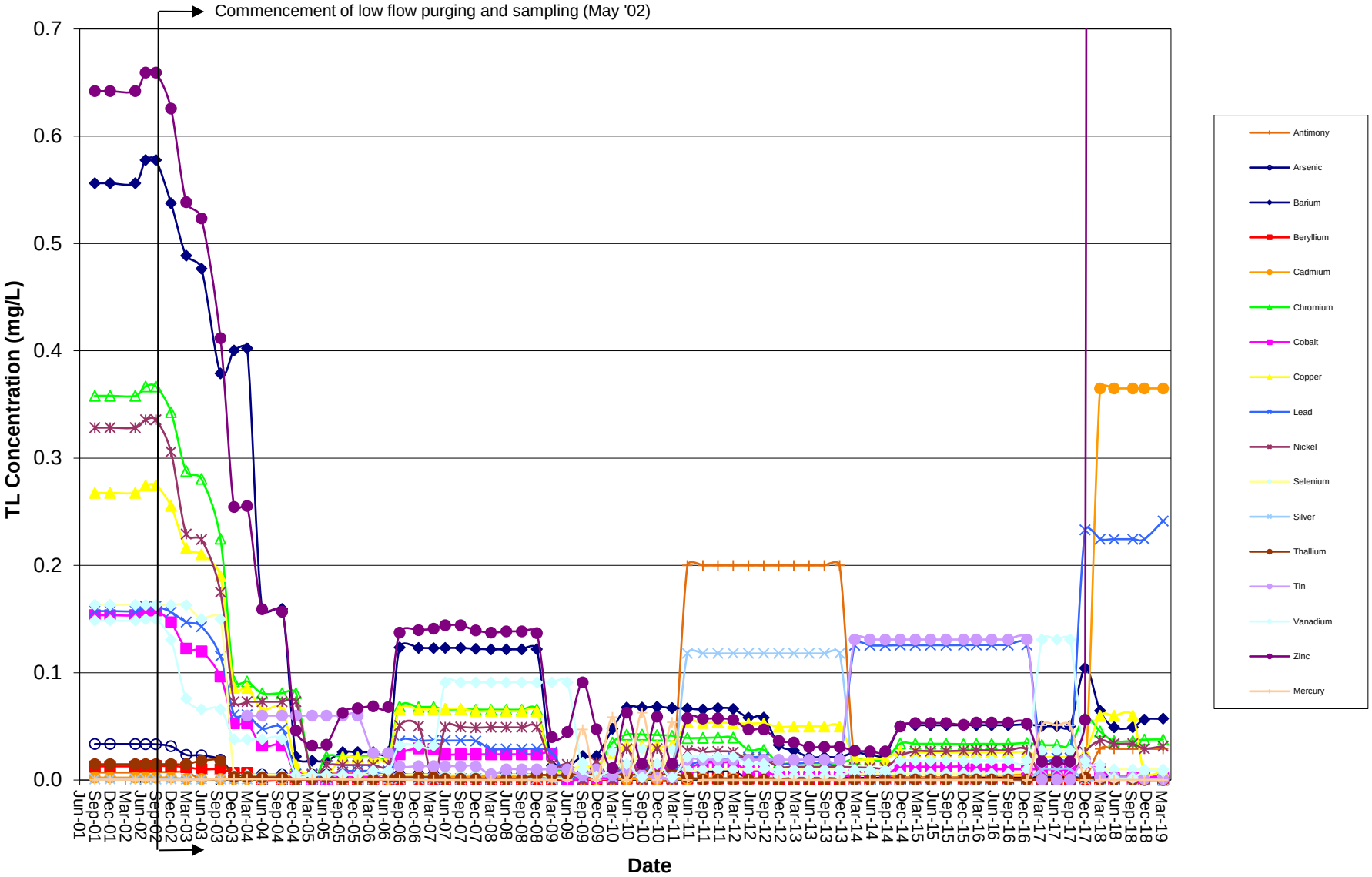
1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

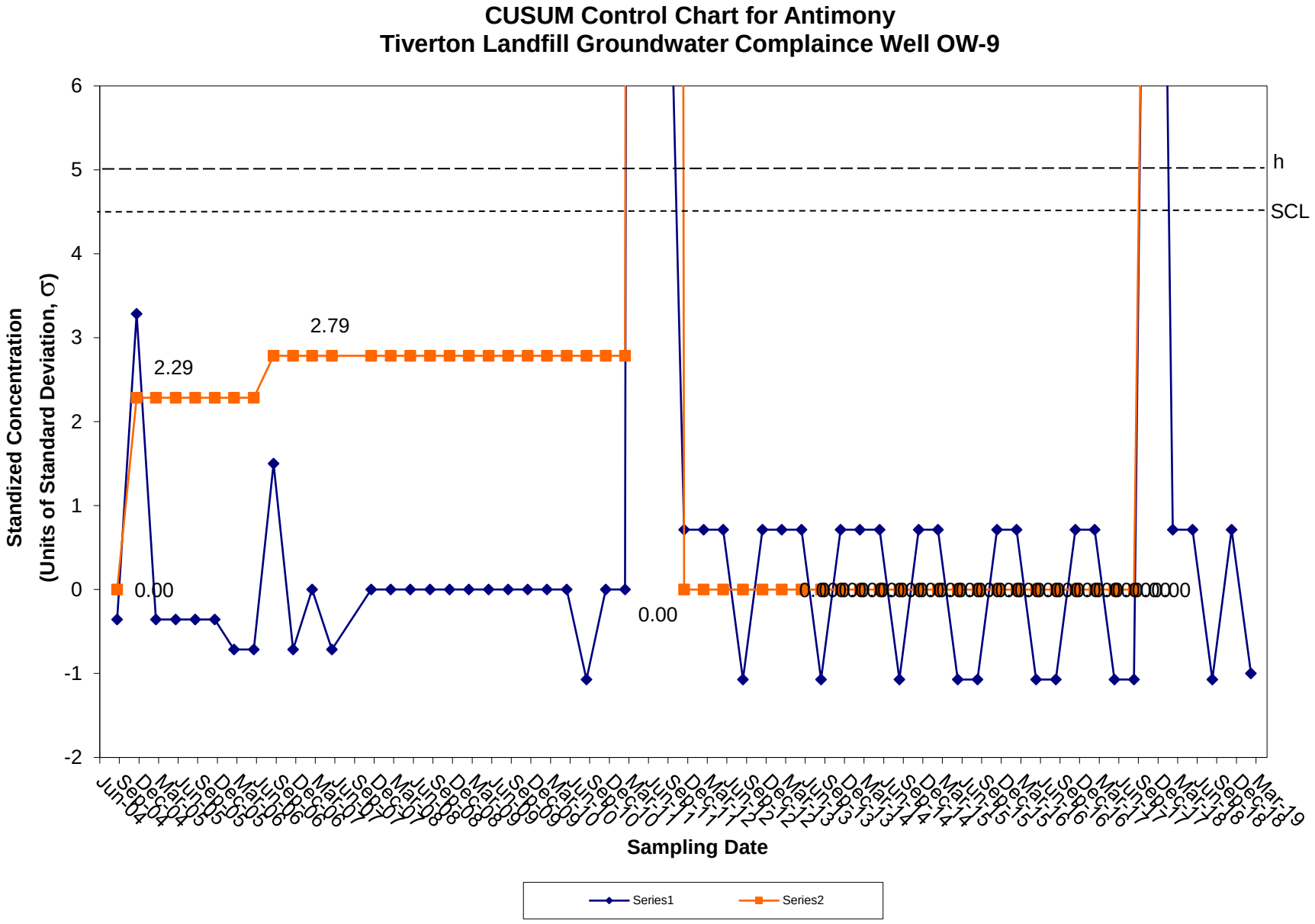
" " = Exceedance of TL
ND = Not Detected

* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

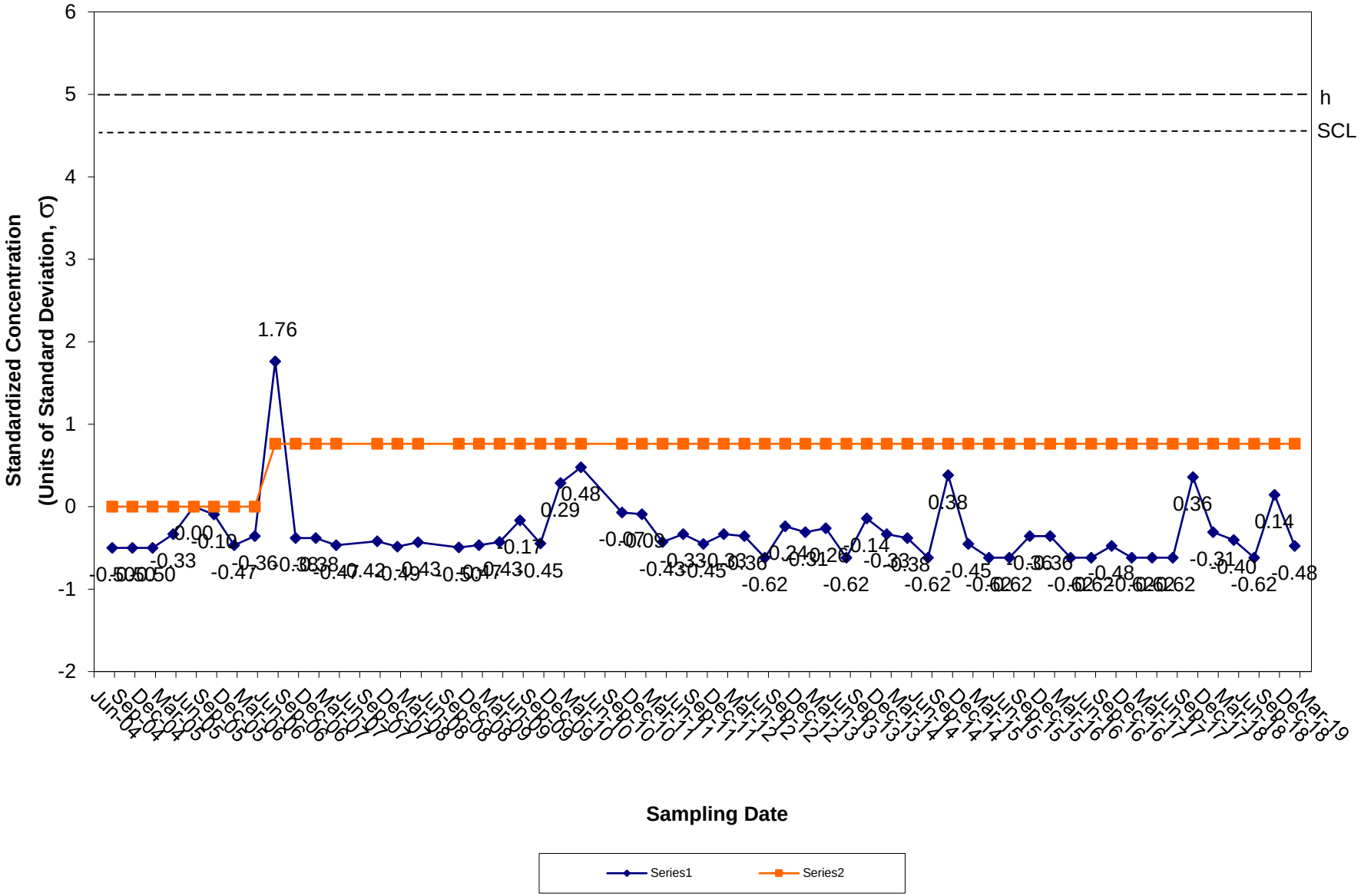
Historical Tolerance Limit Concentrations from Background Well
Tiverton Landfill Compliance Sampling



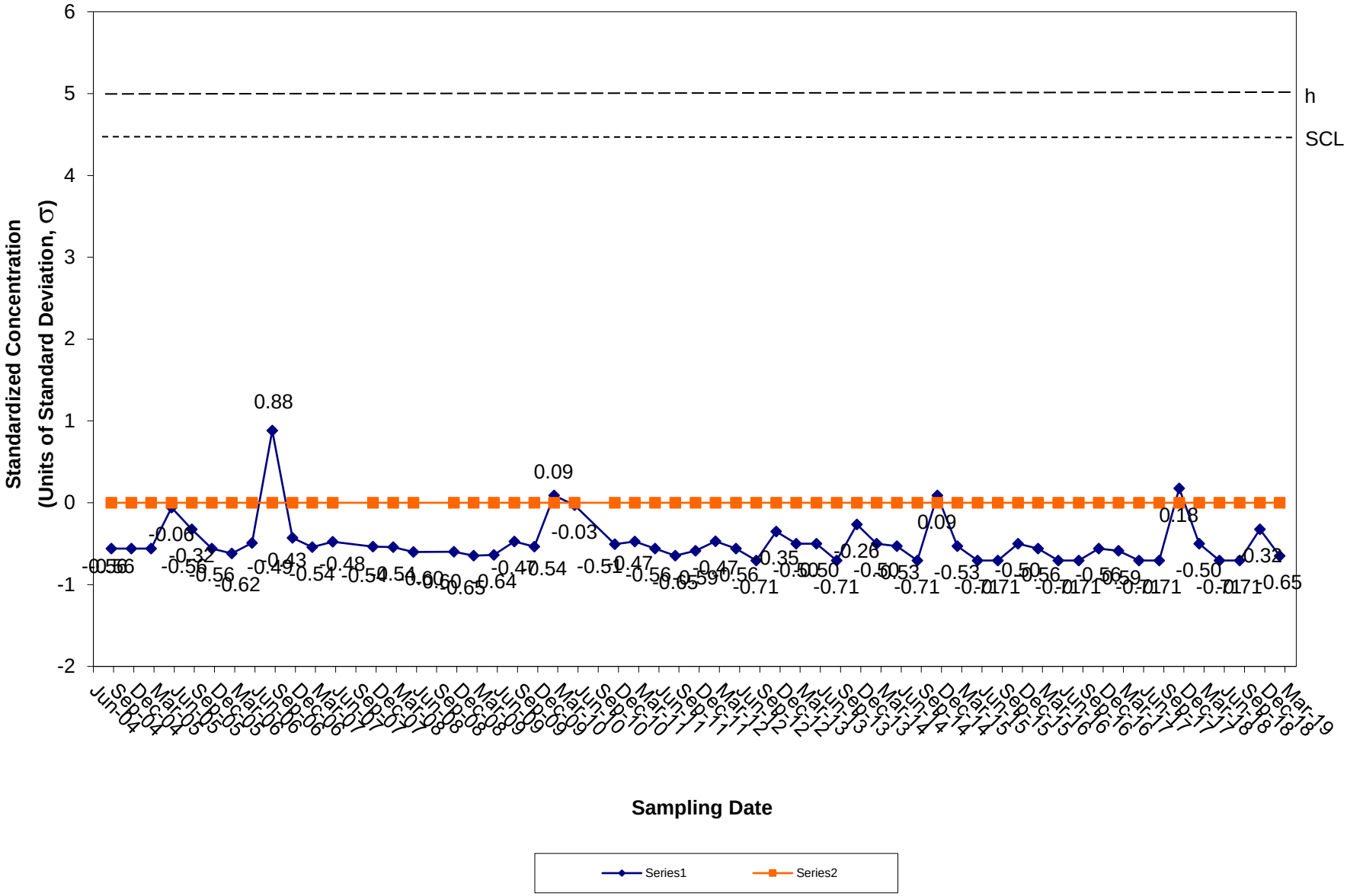
ATTACHMENT NO. 5
CUSUM METHOD STATISTICAL EVALUATION


CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Complaince Well OW-9
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
2.29
2.79
0.00
0.00
Series1
Series2

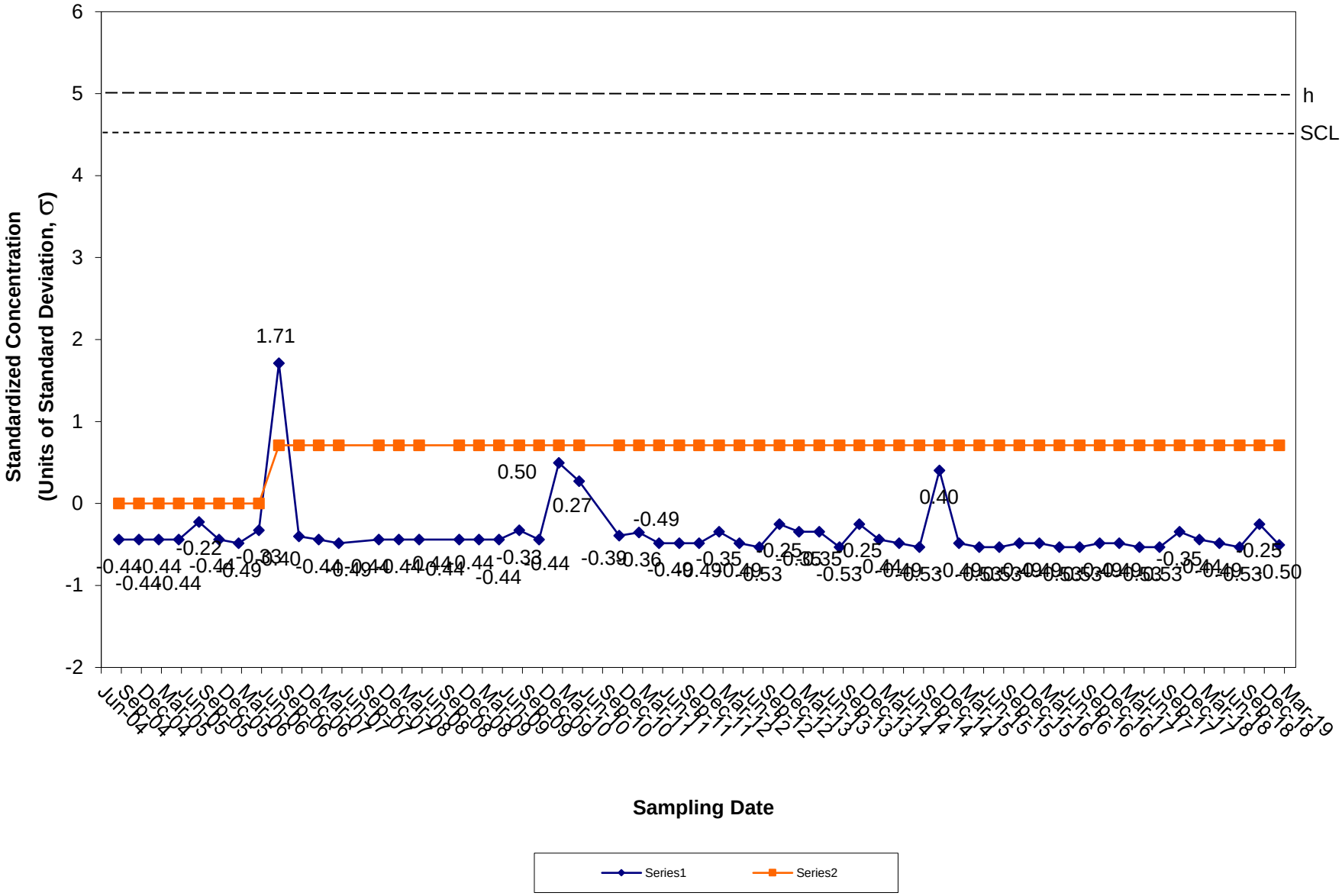
CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Background Well OW-9



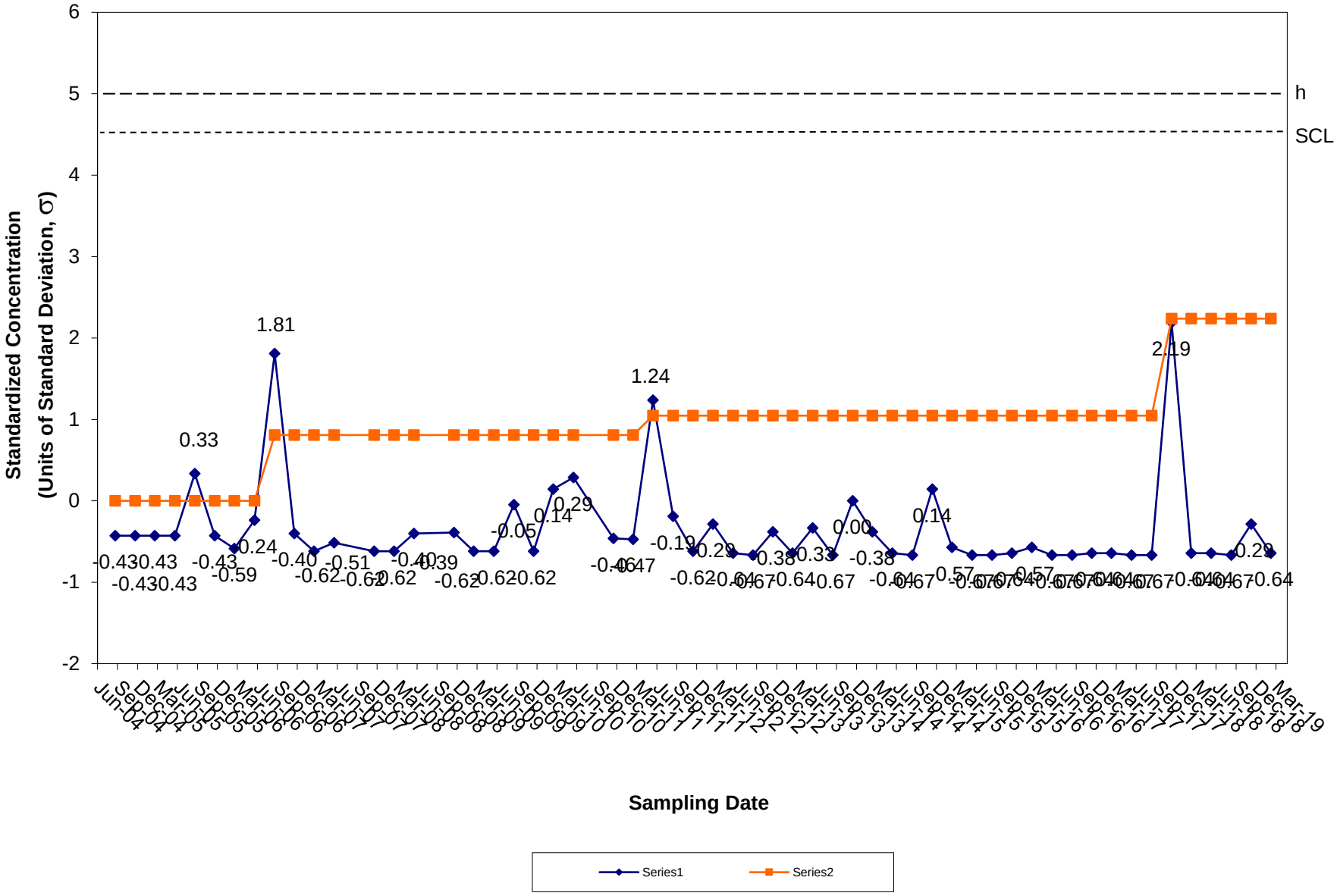
CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Background Well OW-9



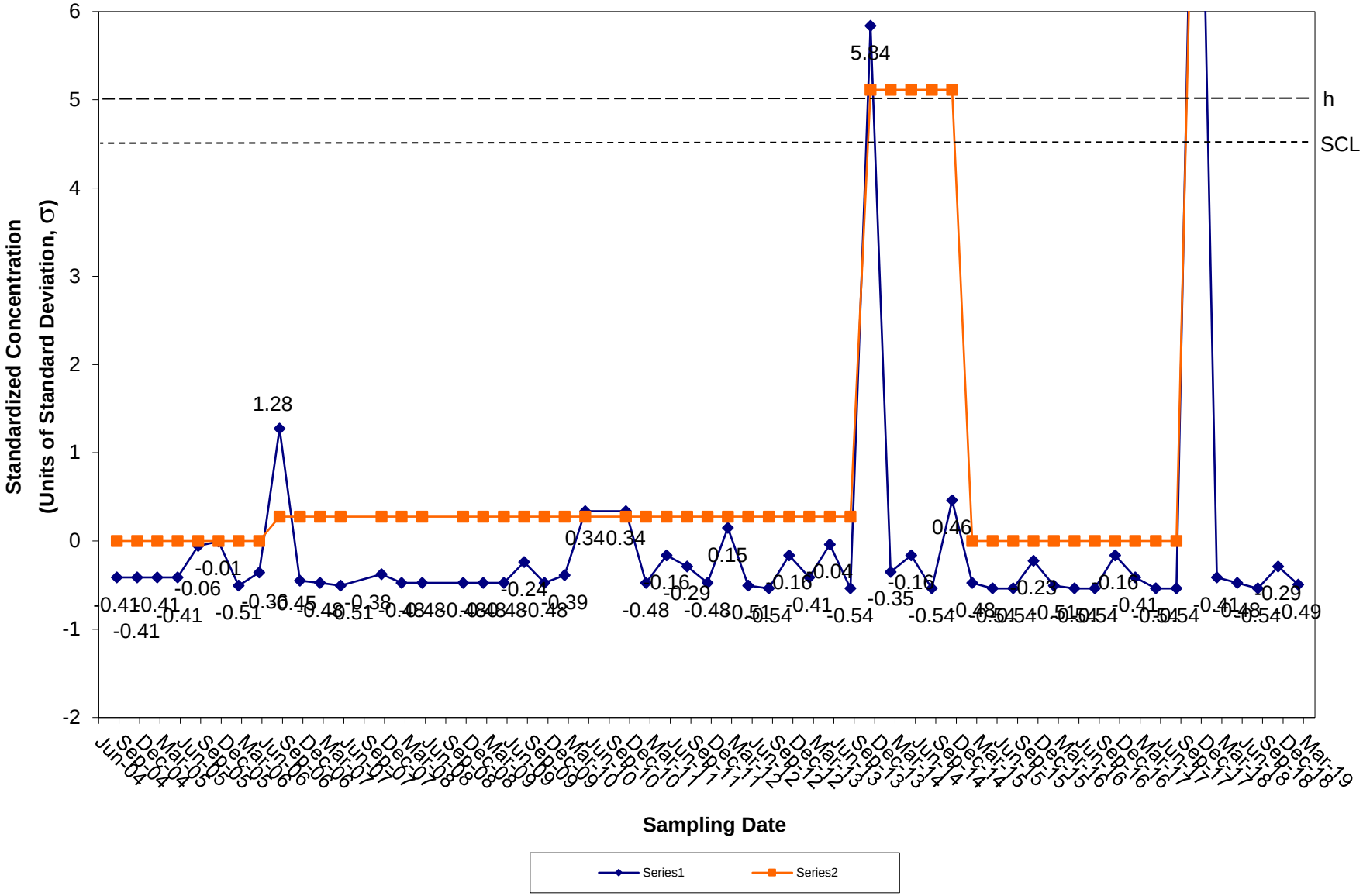
CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Background Well OW-9



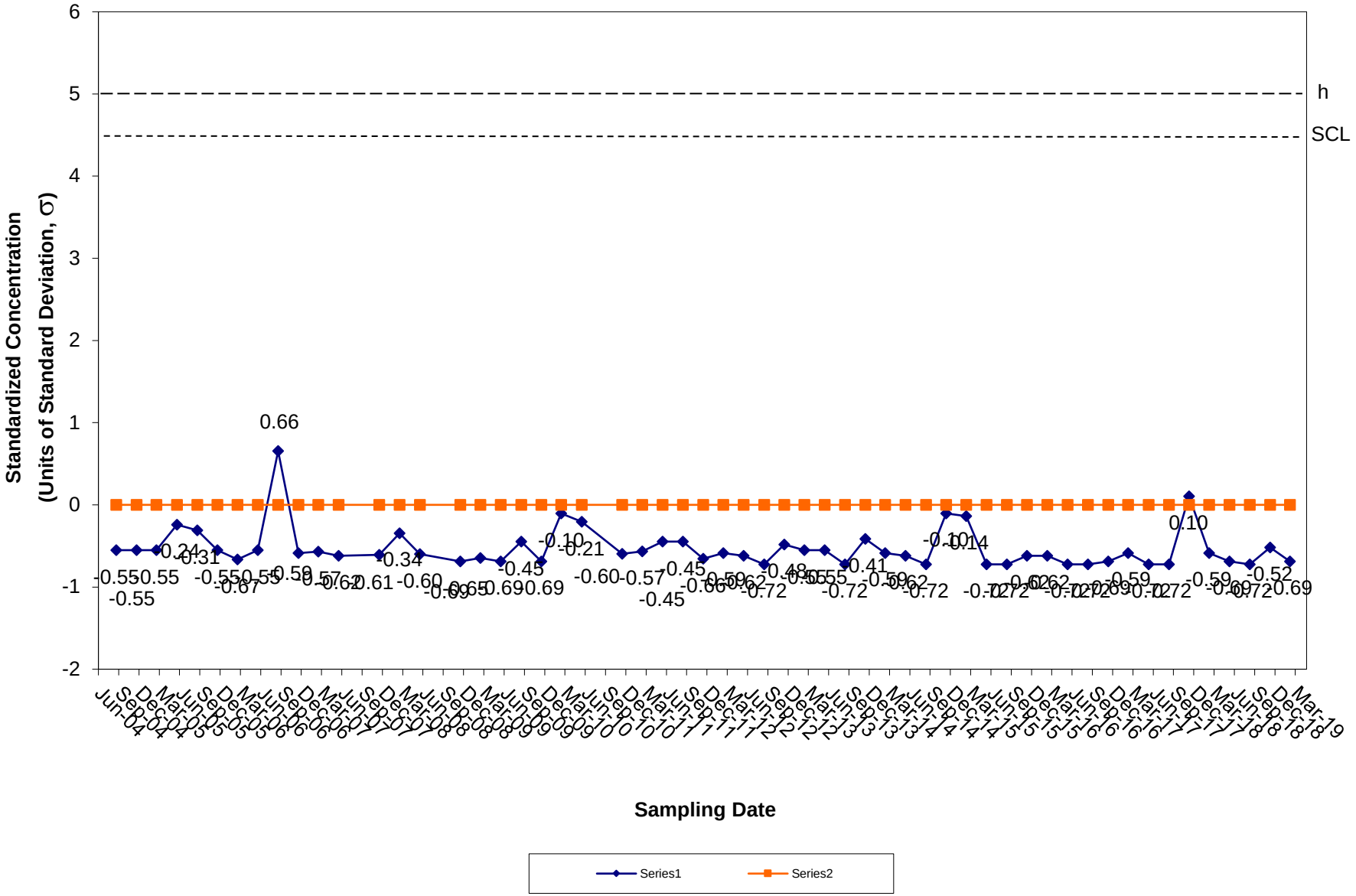
CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Background Well OW-9

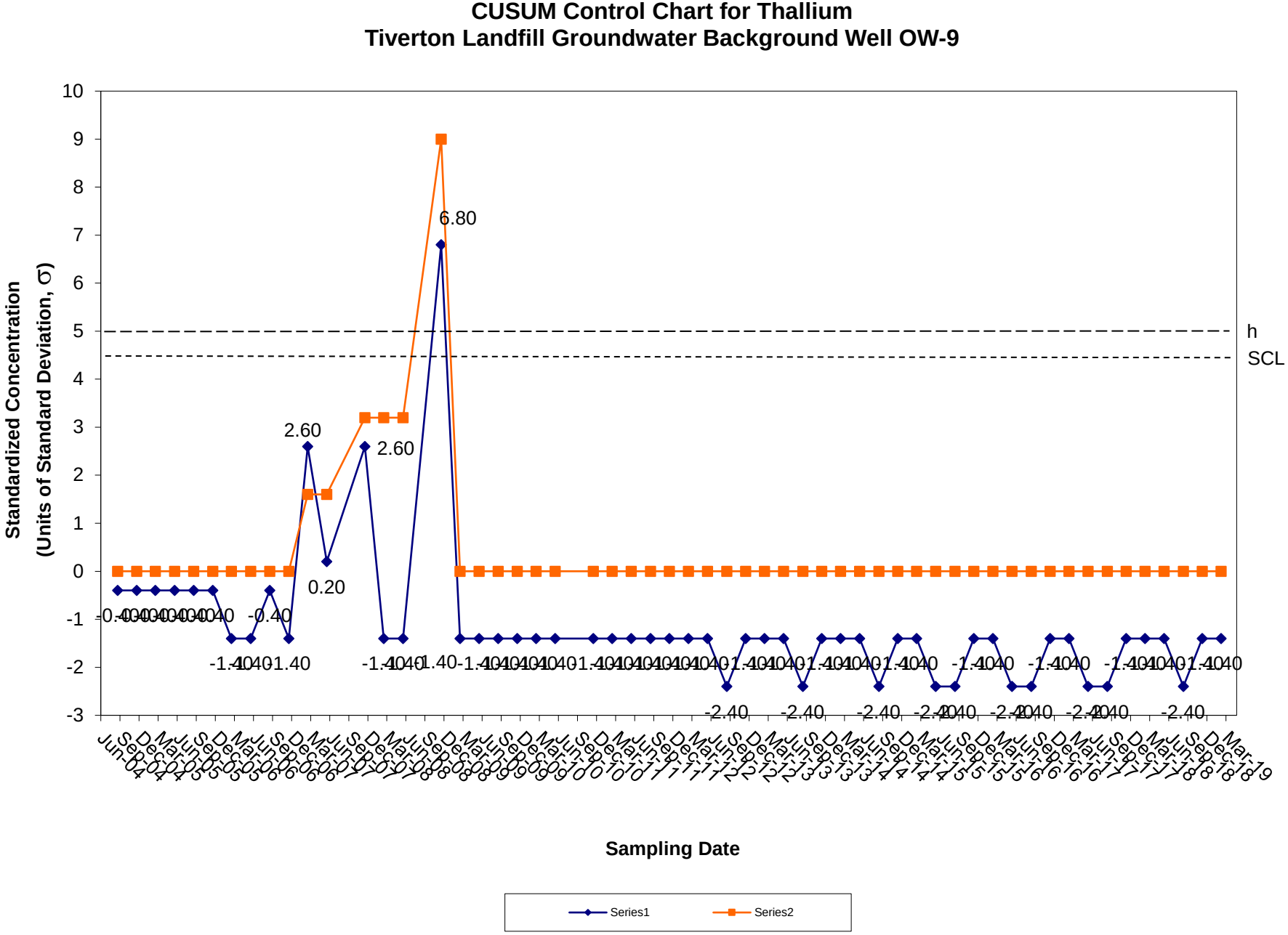


CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Background Well OW-9

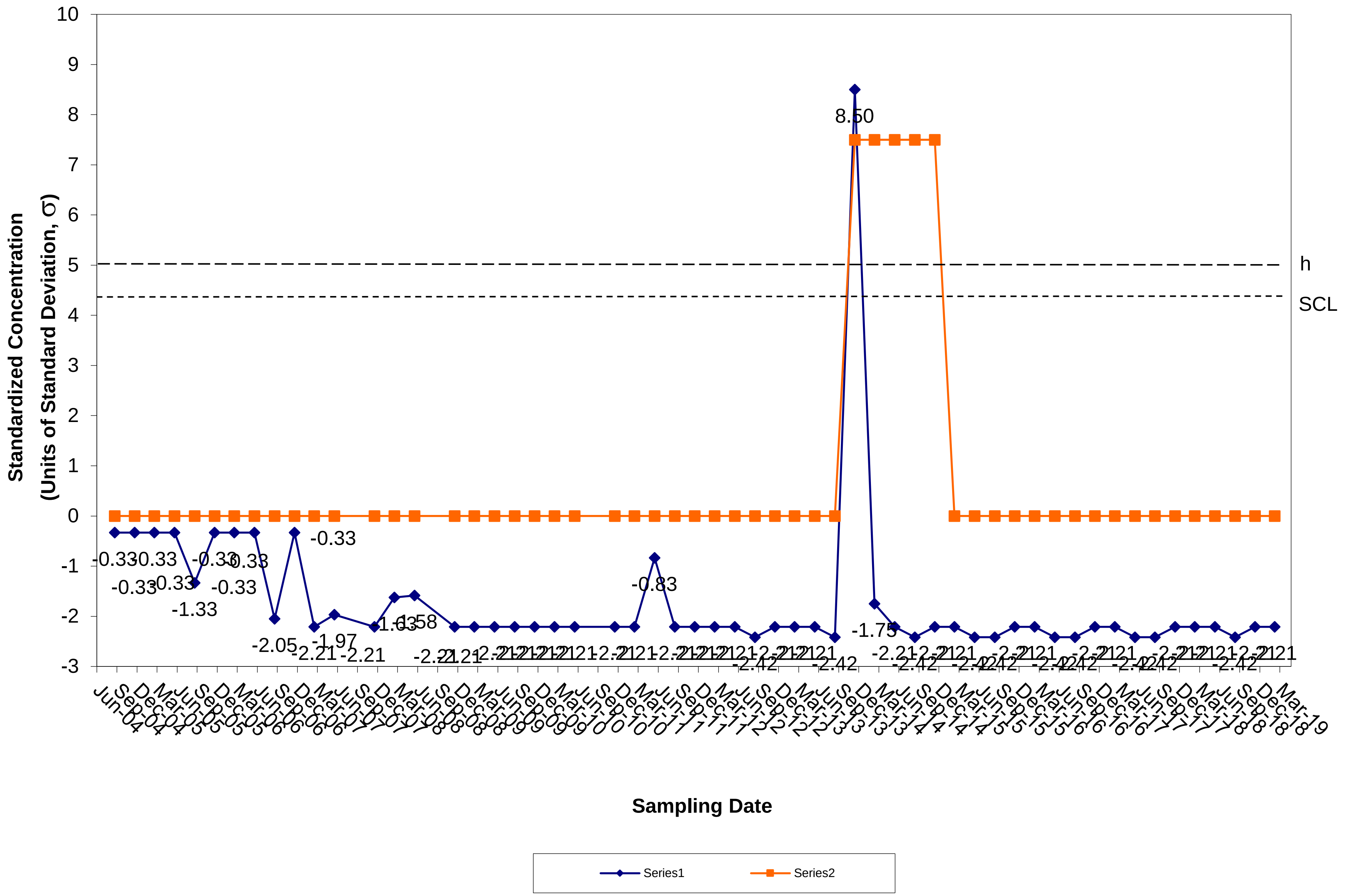


CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Background Well OW-9

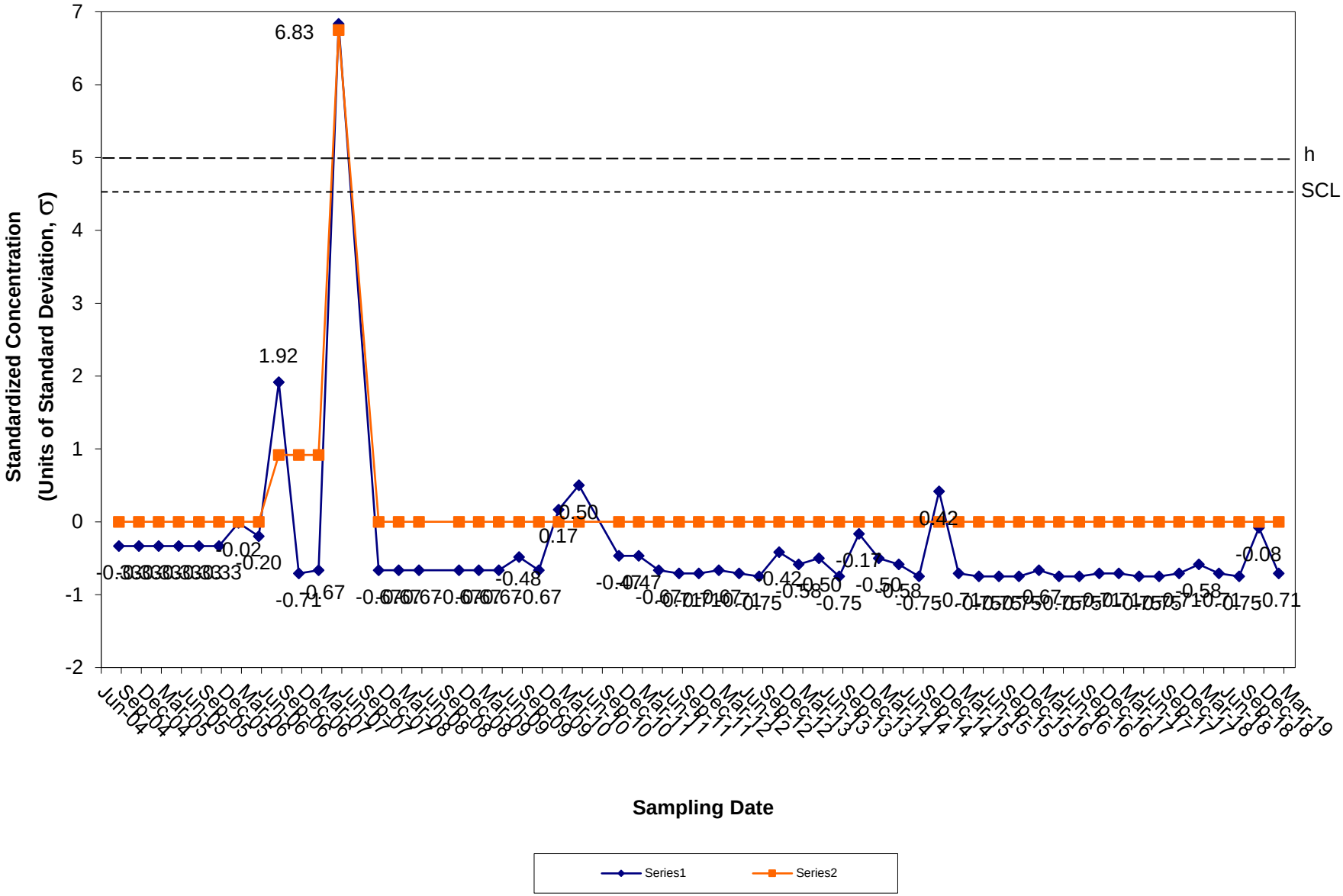



CUSUM Control Chart for Thallium
Tiverton Landfill Groundwater Background Well OW-9
Standardized Concentration
(Units of Standard Deviation, σ)
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
6.80
2.60
2.60
0.20
-0.40
-1.40
-2.40
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Mar-06
Jun-06
Sep-06
Dec-06
Mar-07
Jun-07
Sep-07
Dec-07
Mar-08
Jun-08
Sep-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2

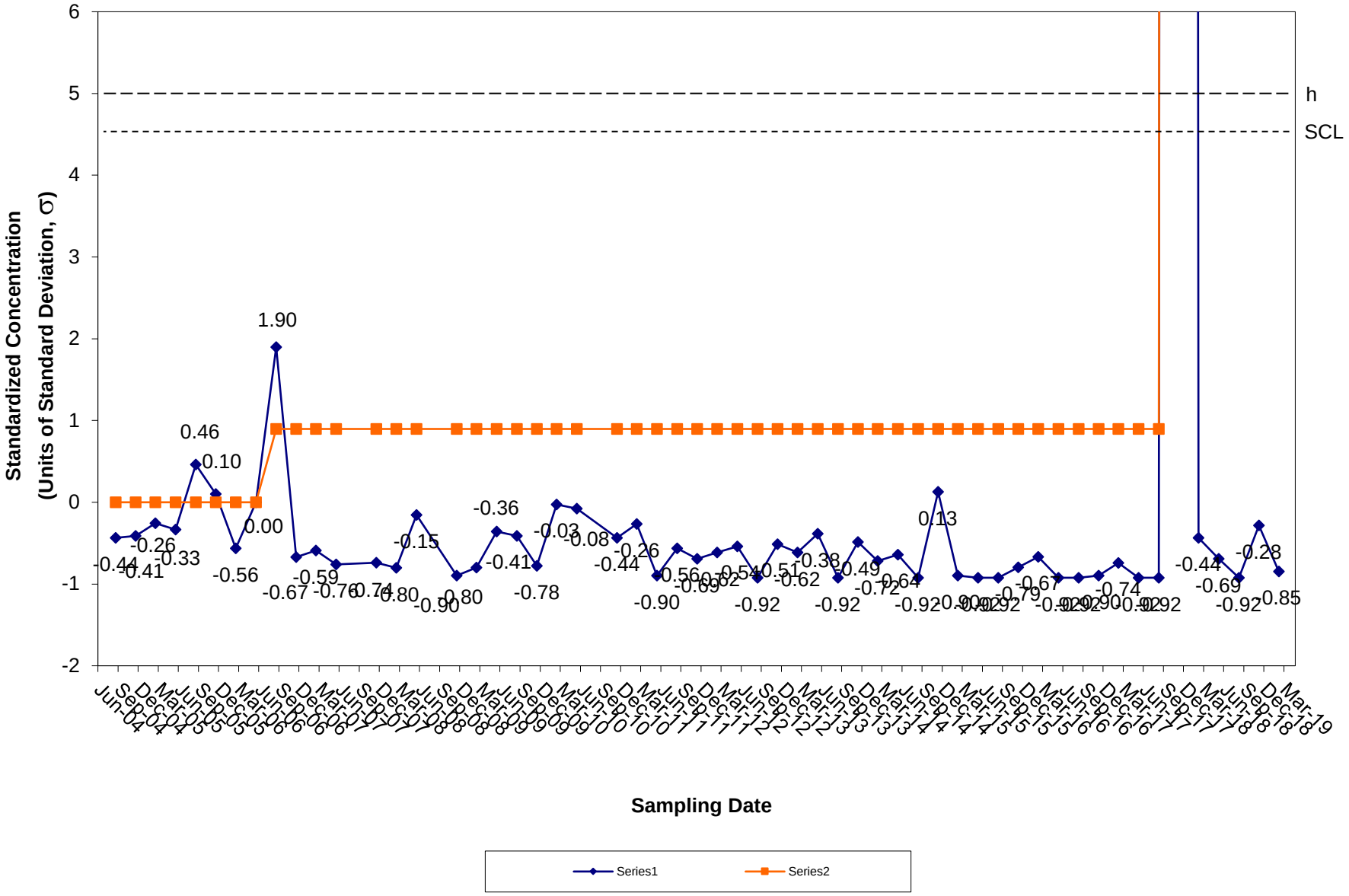
CUSUM Control Chart for Tin
Tiverton Landfill Groundwater Background Well OW-9

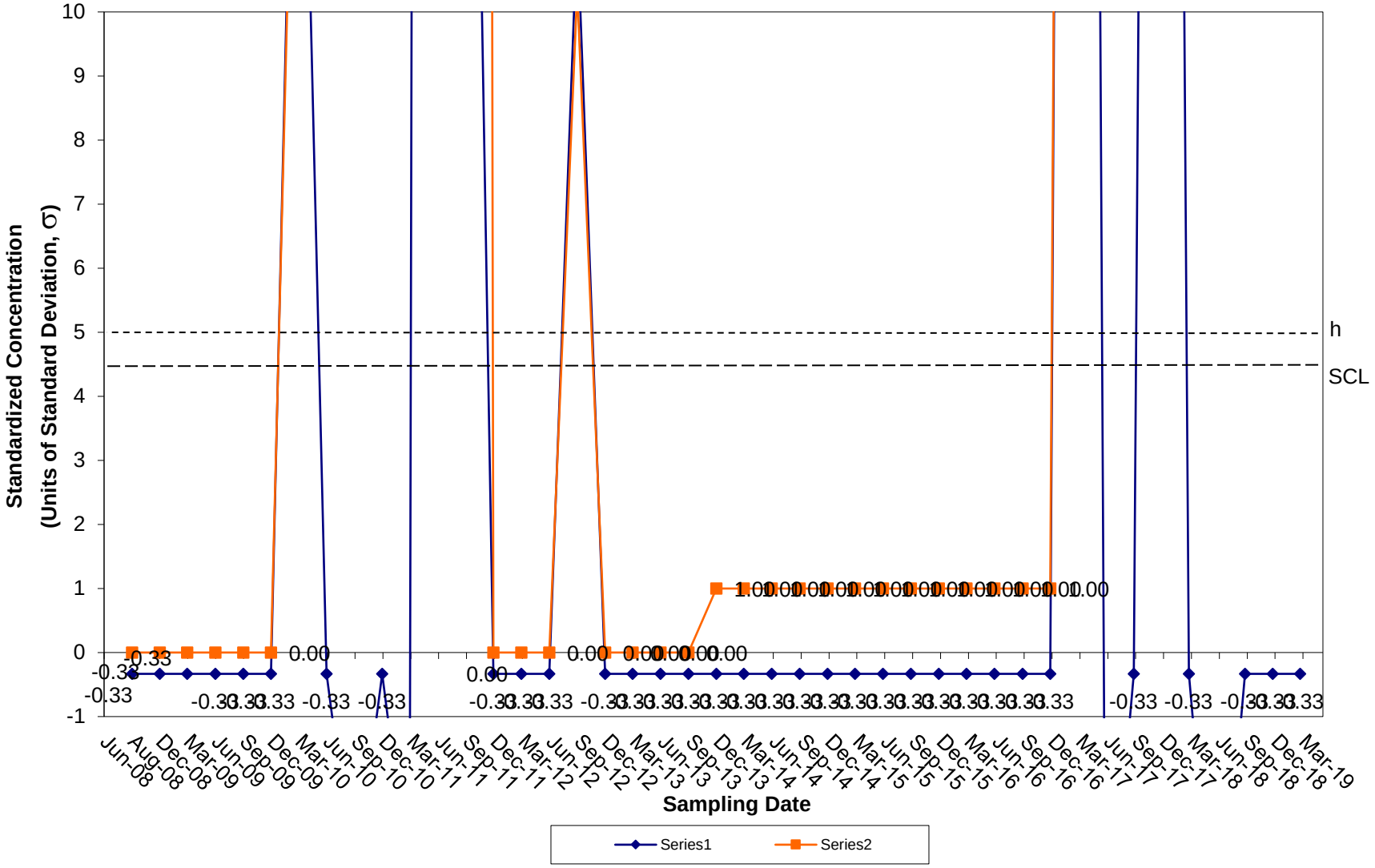


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Background Well OW-9

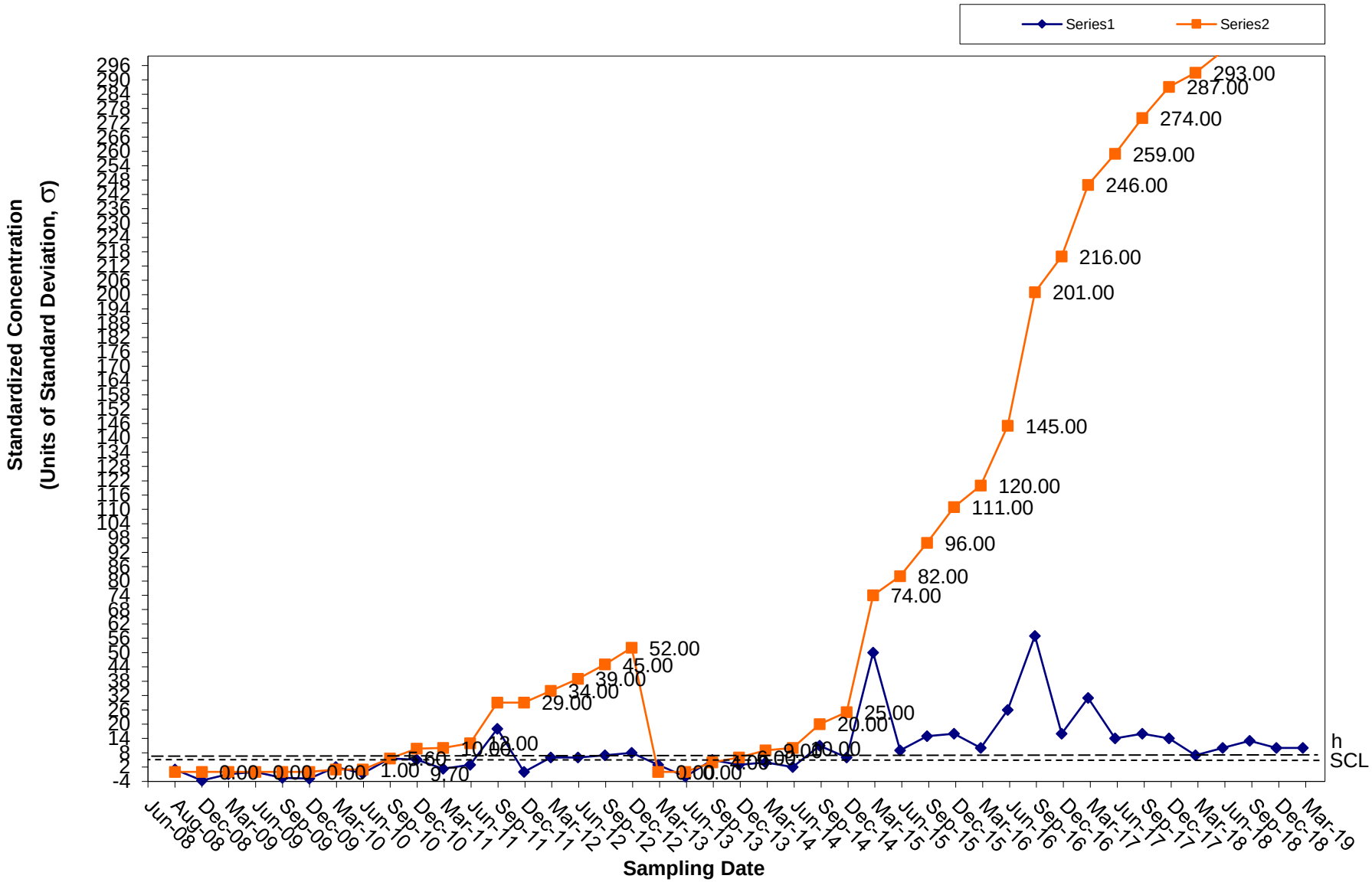


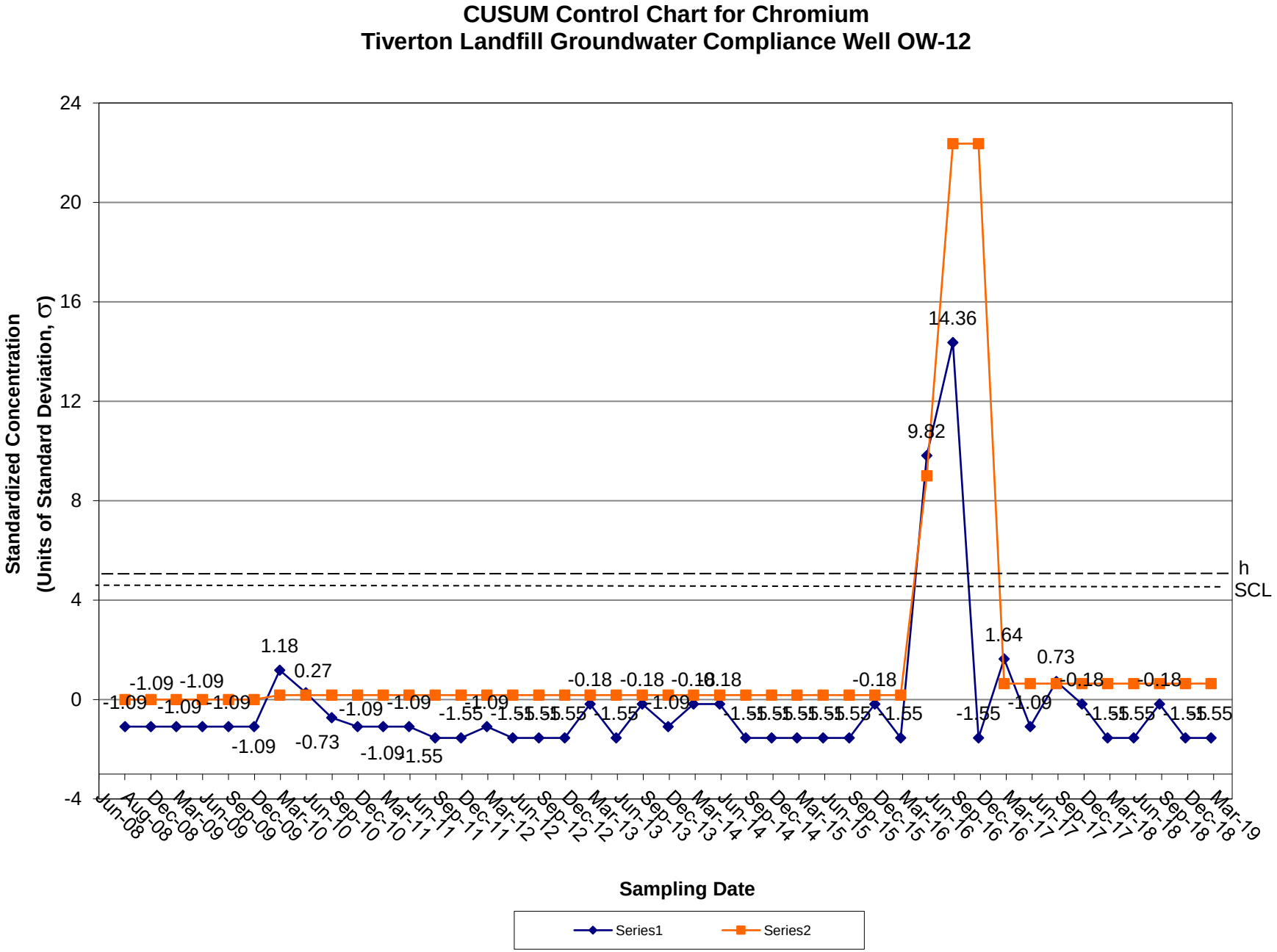
CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Background Well OW-9

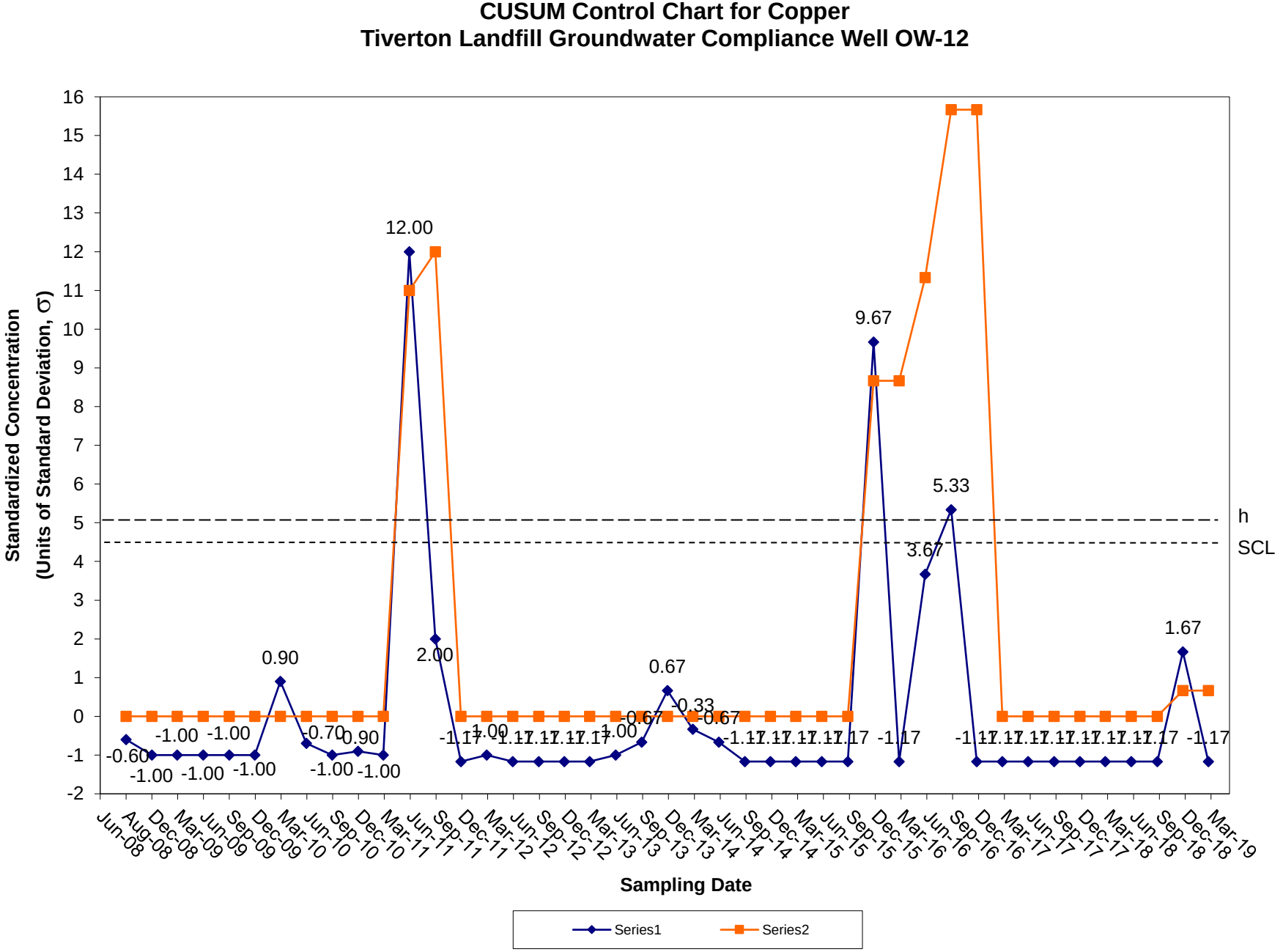



CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
10
9
8
7
6
5
4
3
2
1
0
-1
h
SCL
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2

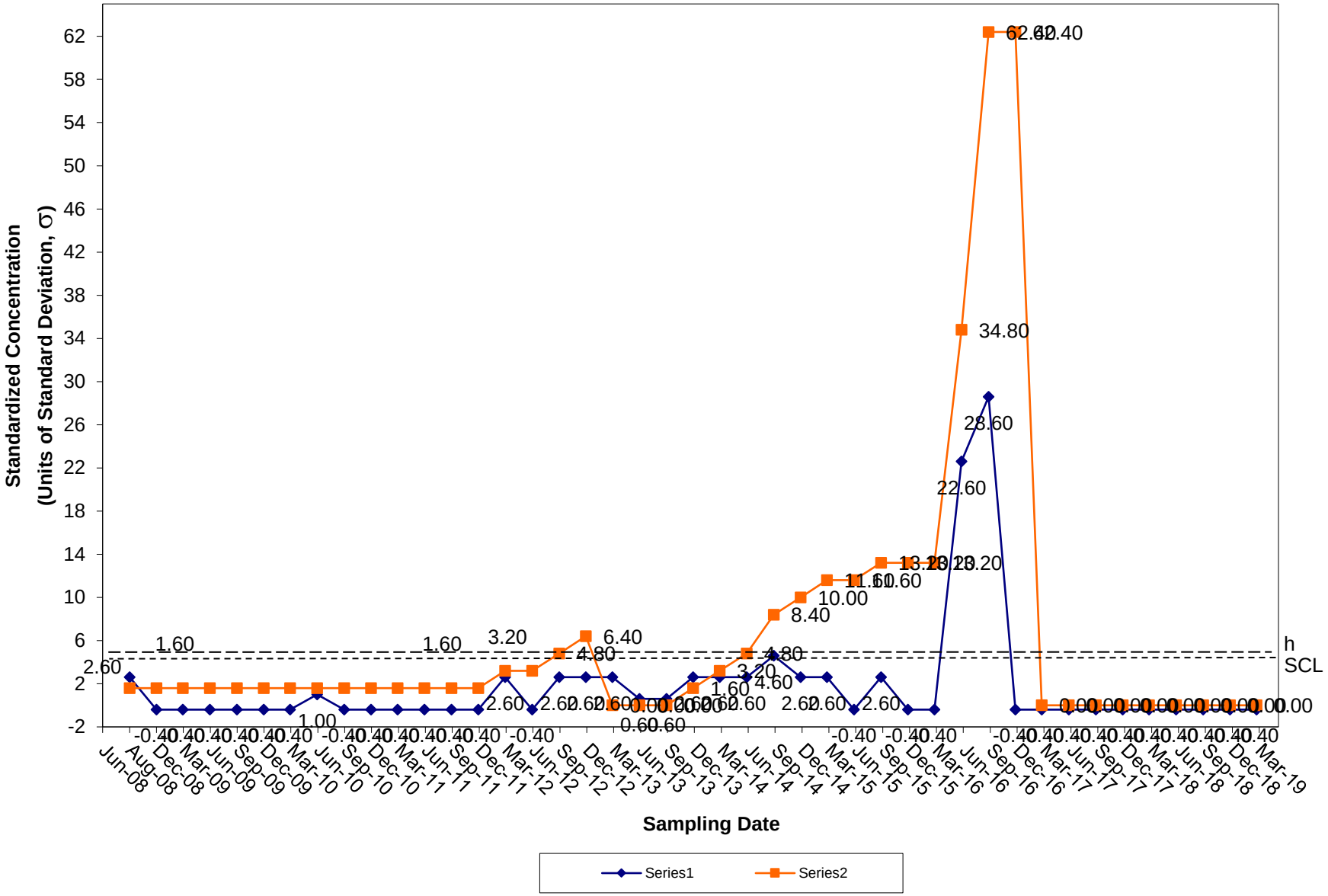
CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-12

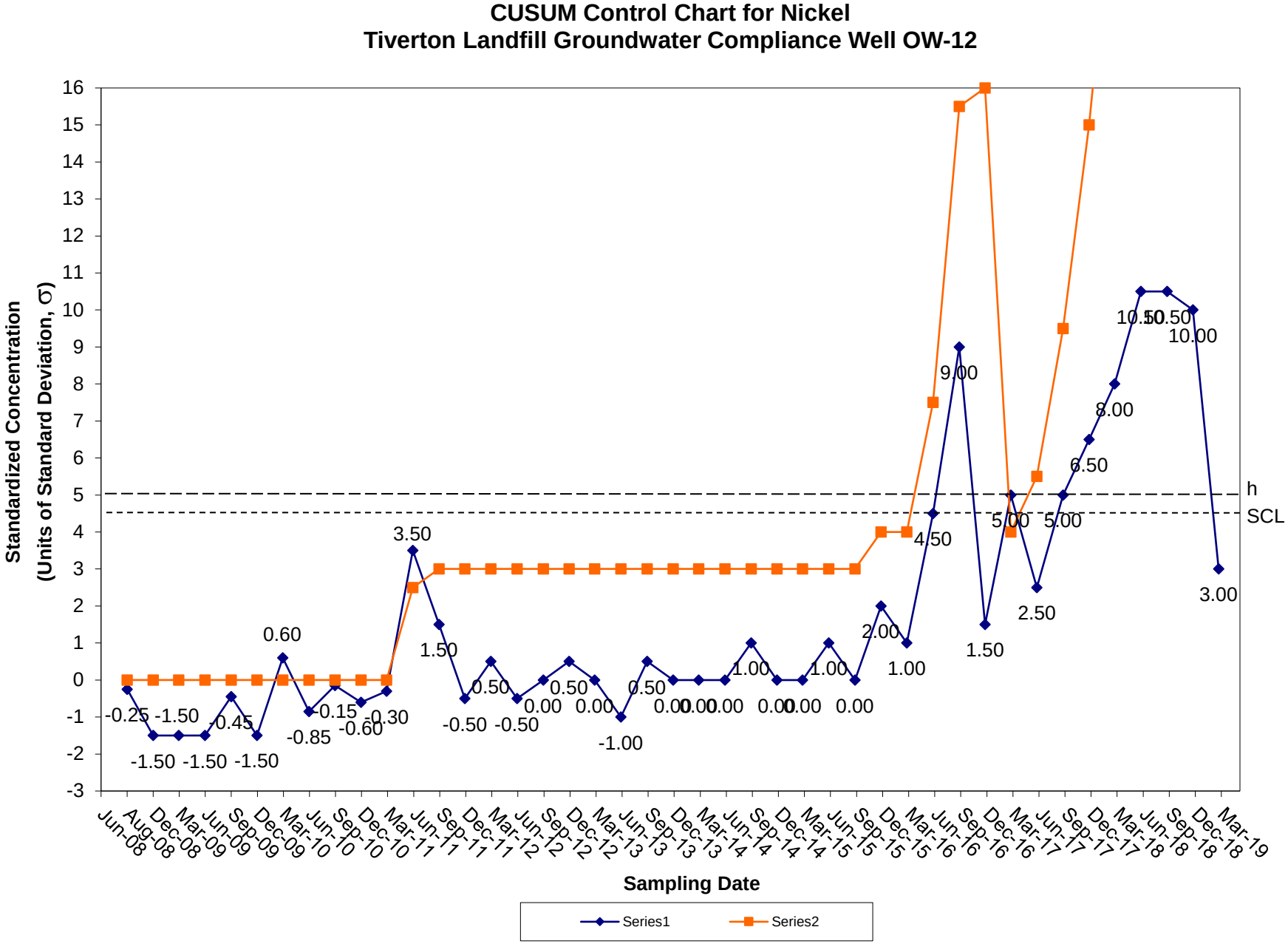


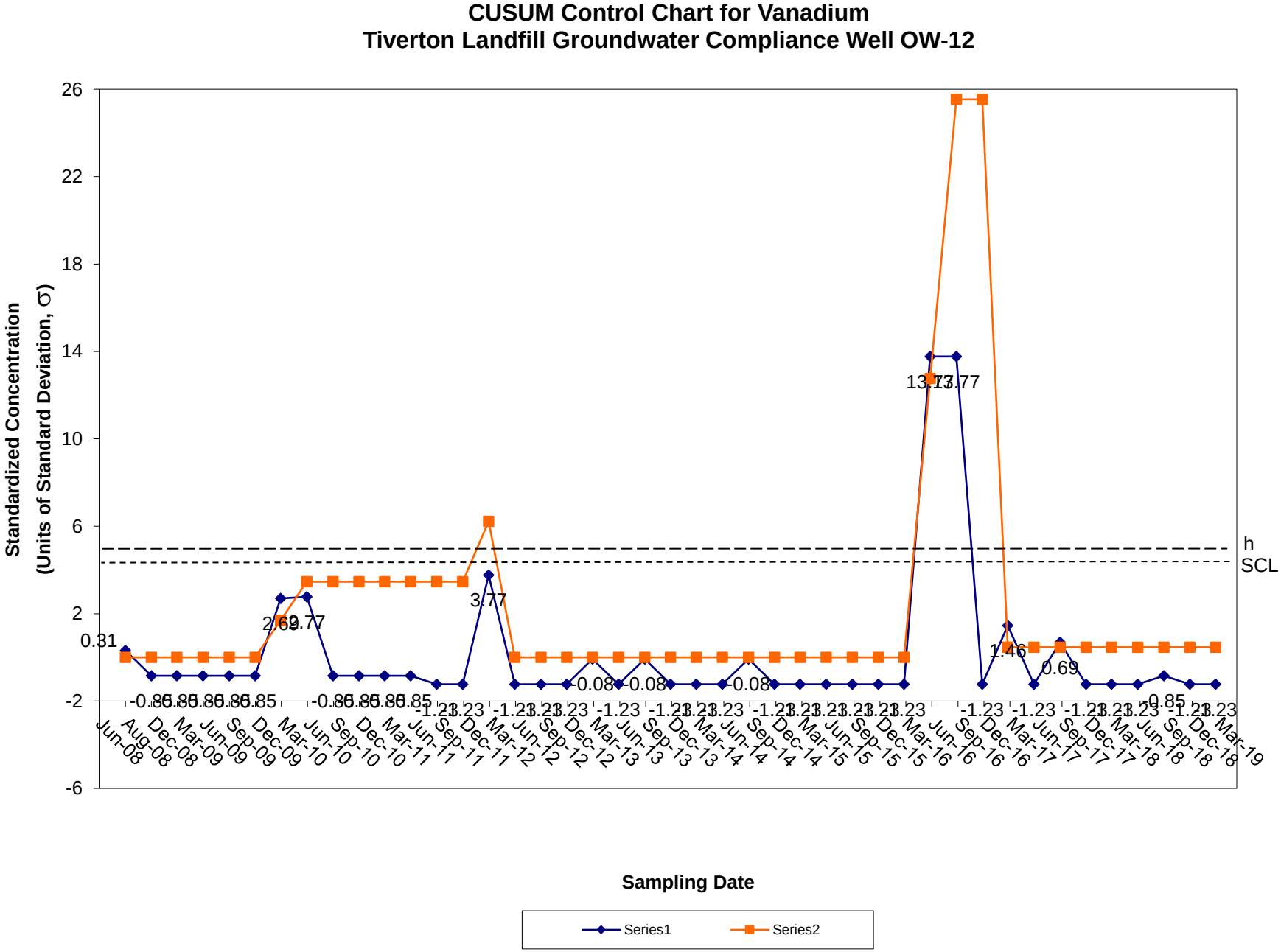

CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
24
20
16
12
8
4
0
-4
h
SCL
14.36
9.82
1.64
1.18
0.73
0.27
-0.73
-1.09
-1.55
-0.18
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-12




CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
26
22
18
14
10
6
2
-2
-6
h
SCL
0.31
2.69
2.77
3.77
-0.08
-0.08
-0.08
13.77
13.77
1.46
0.69
0.85
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
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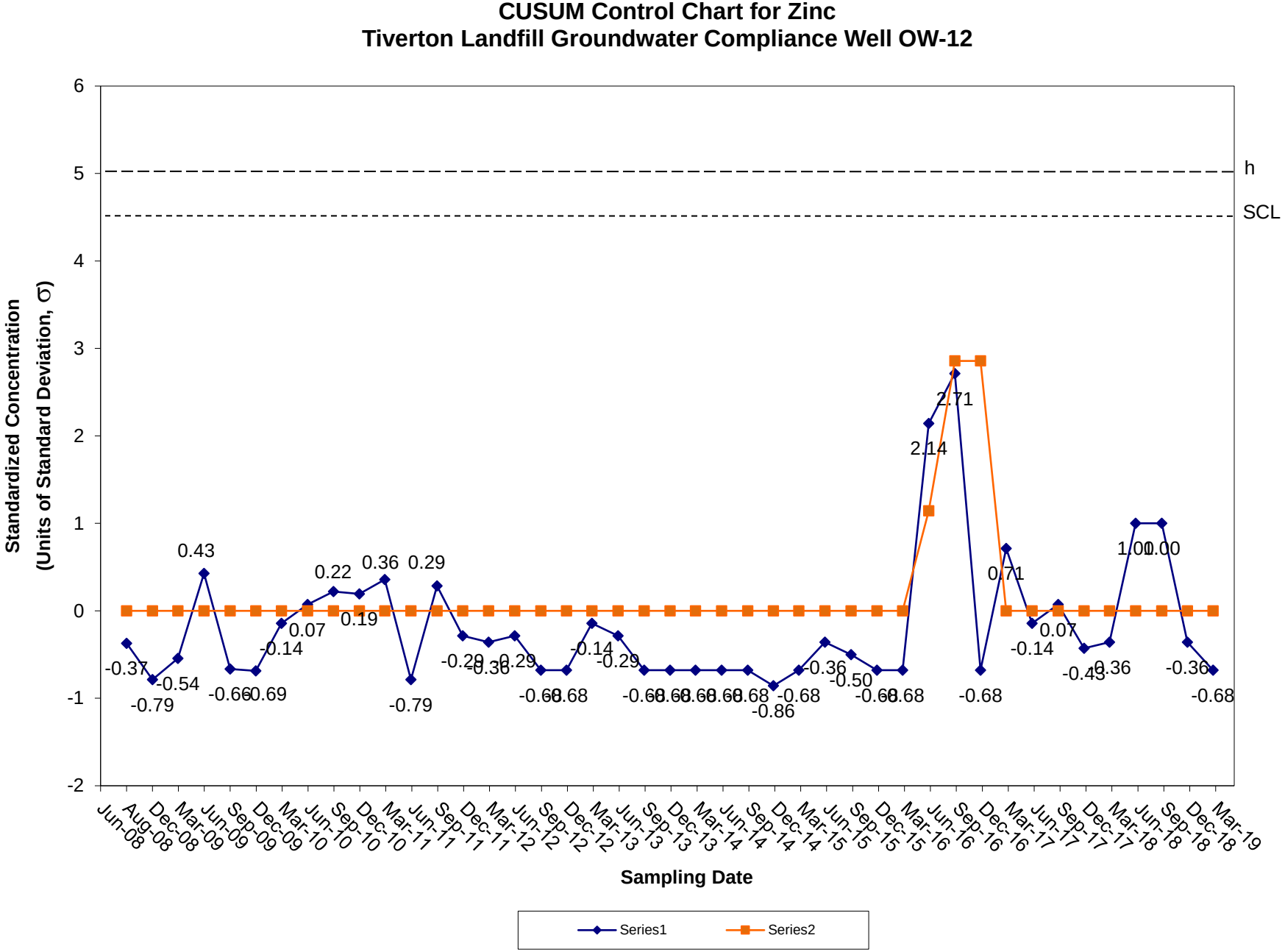
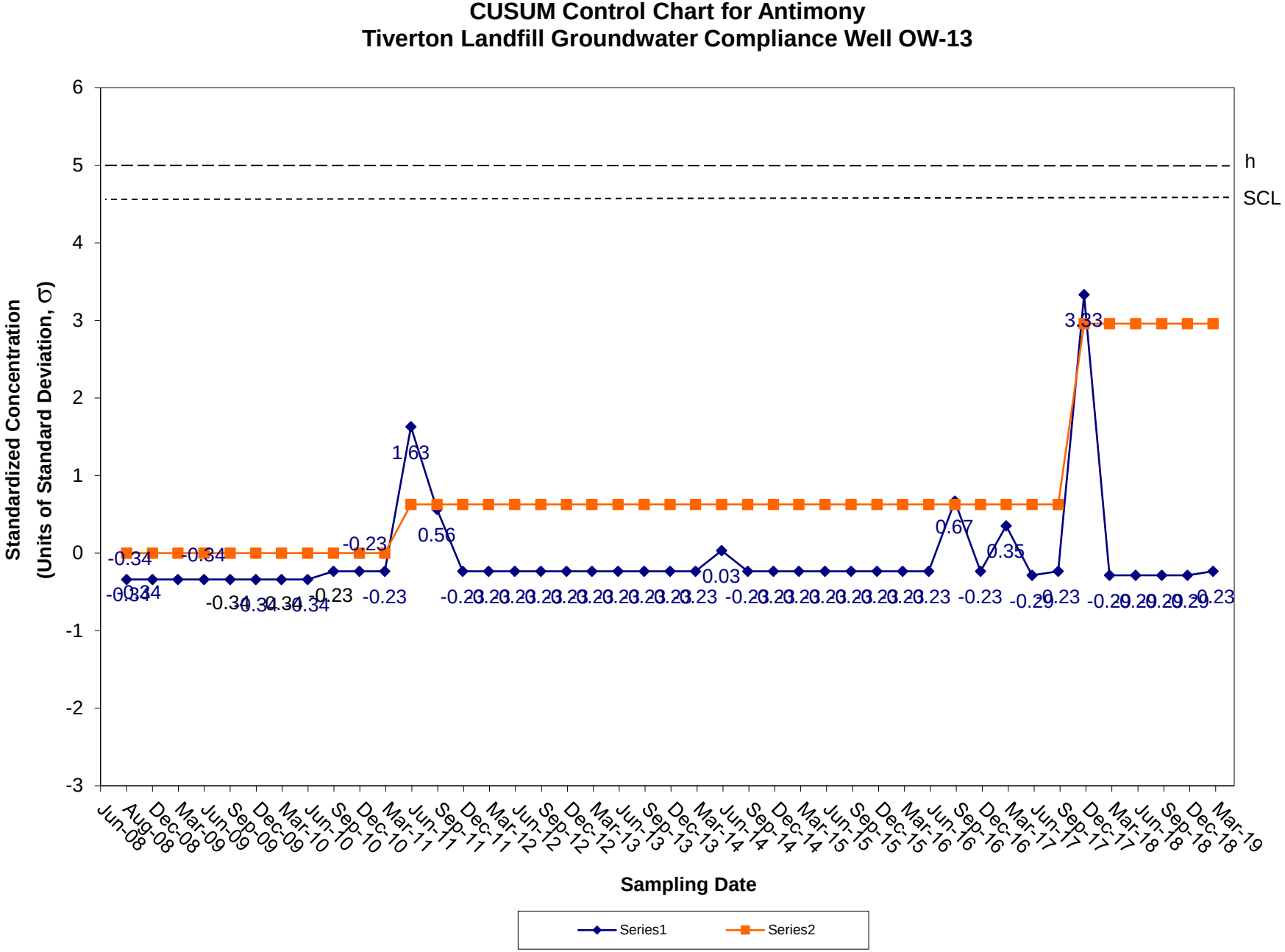
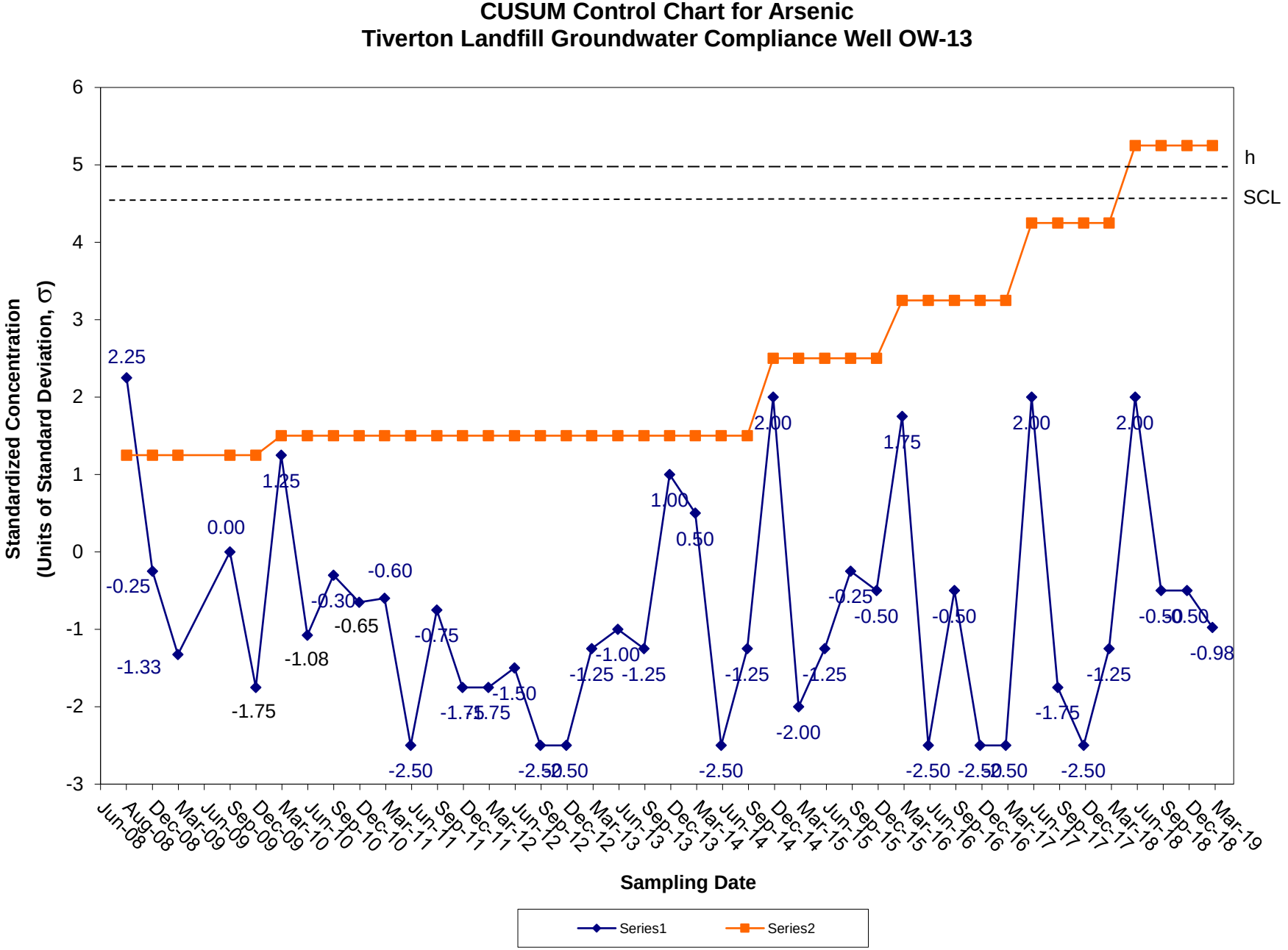
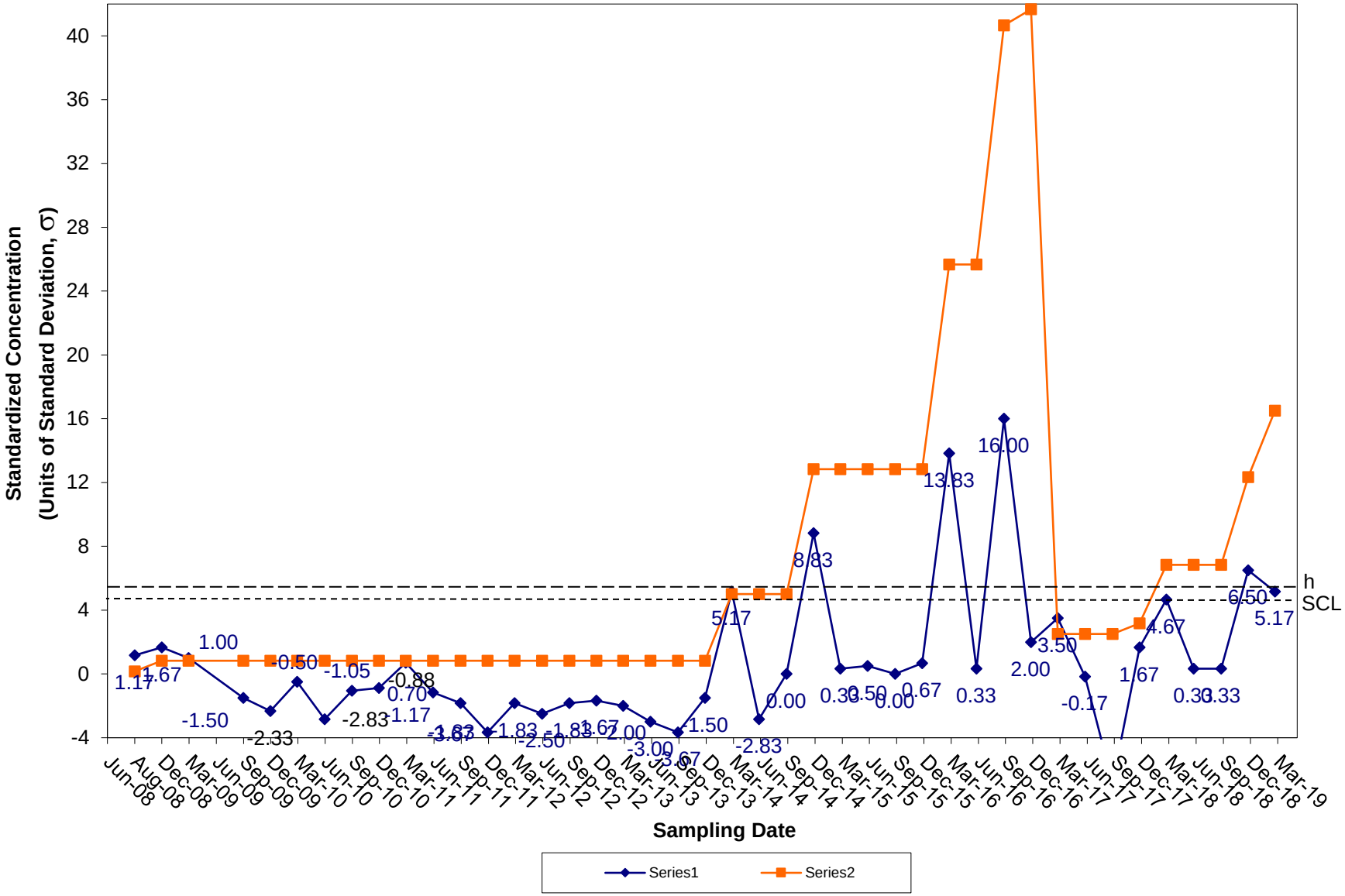
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2

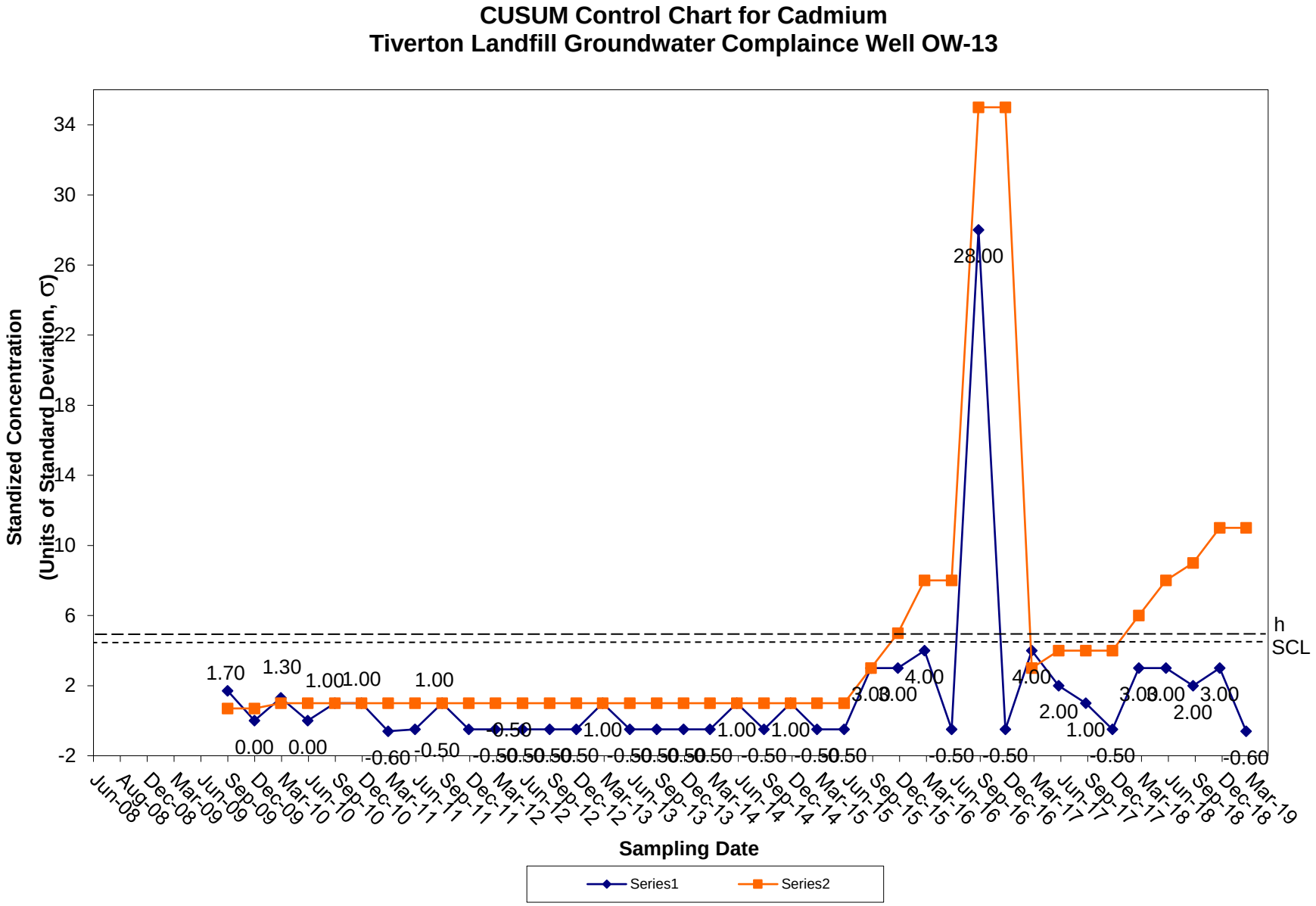

CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2

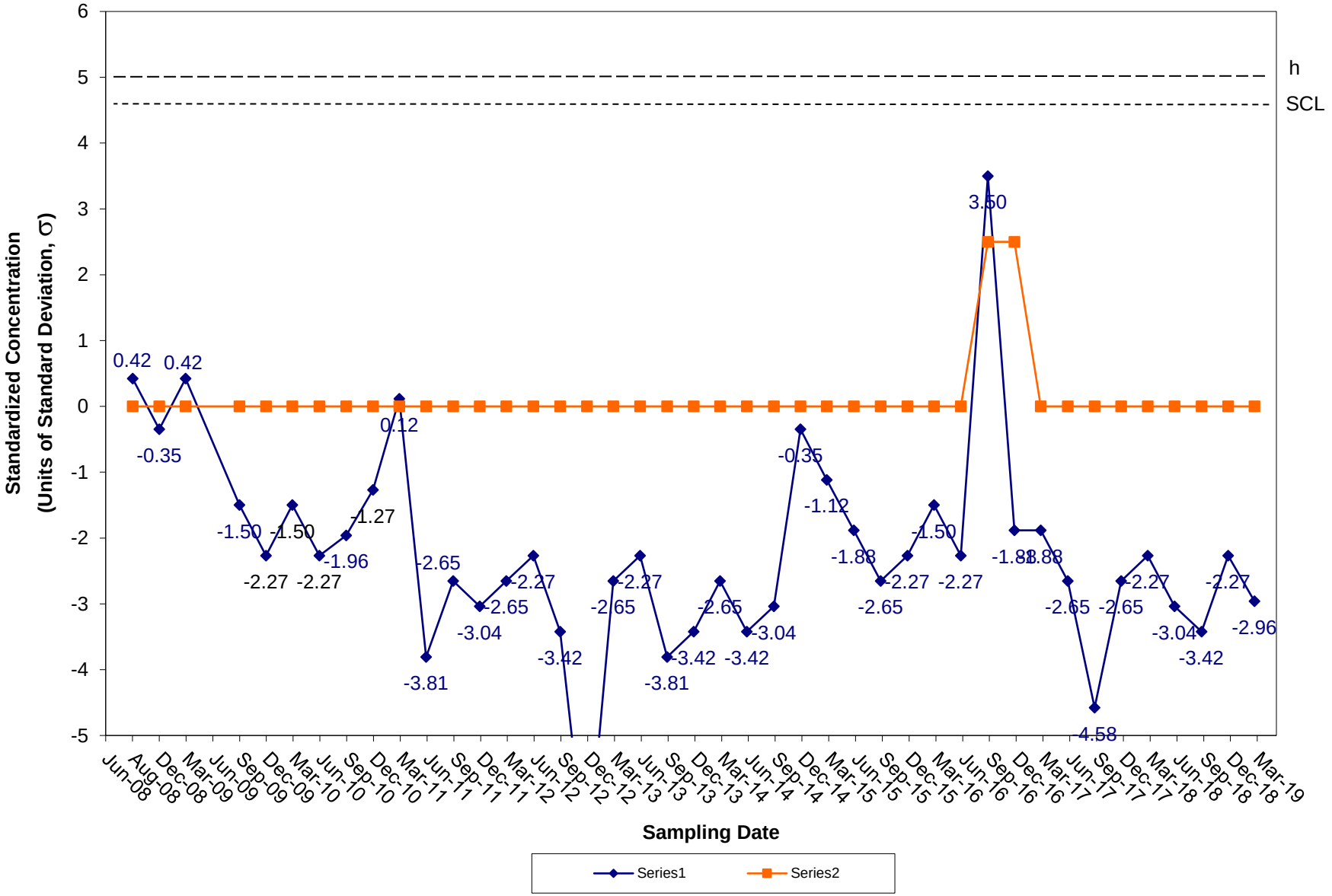

CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-13

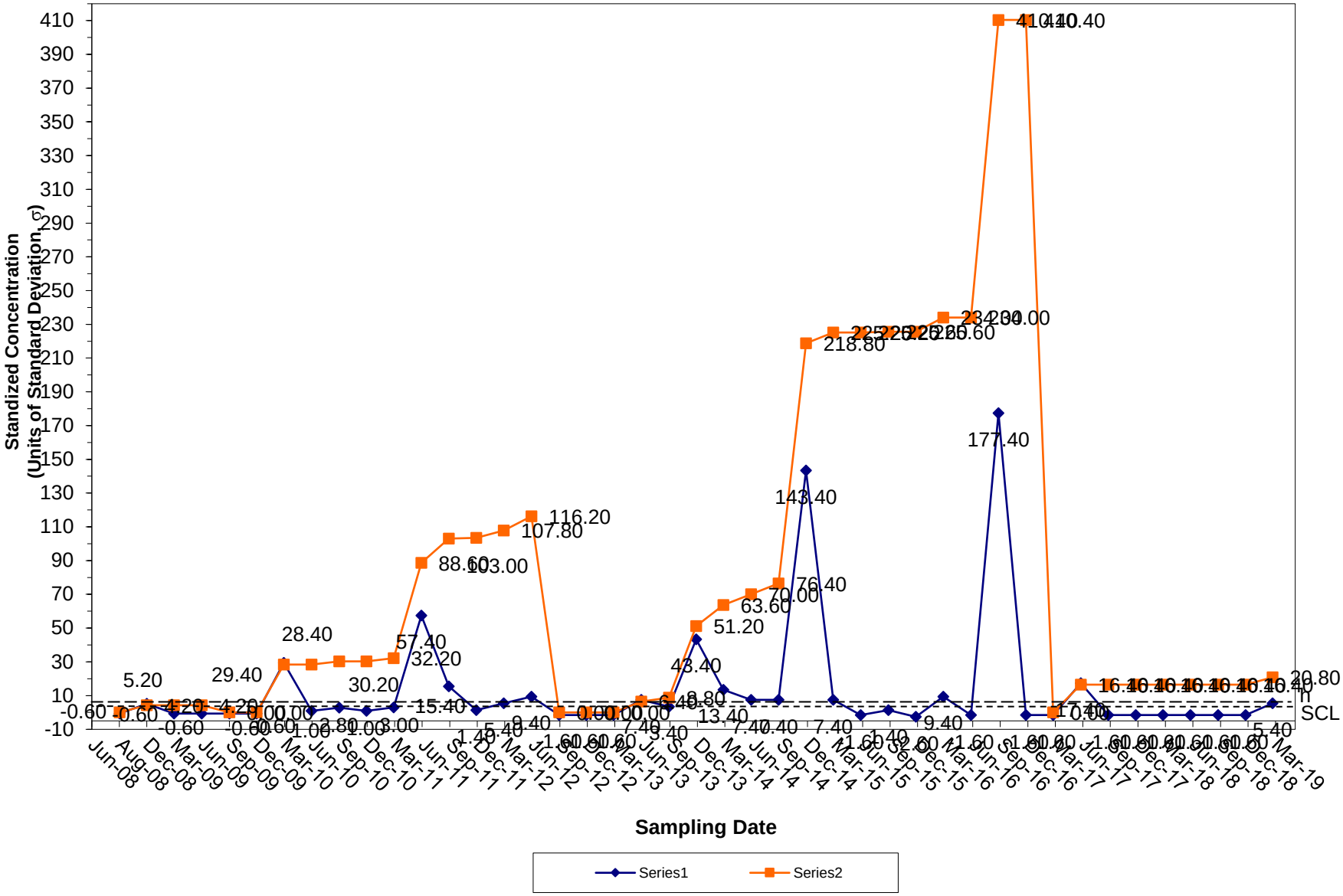


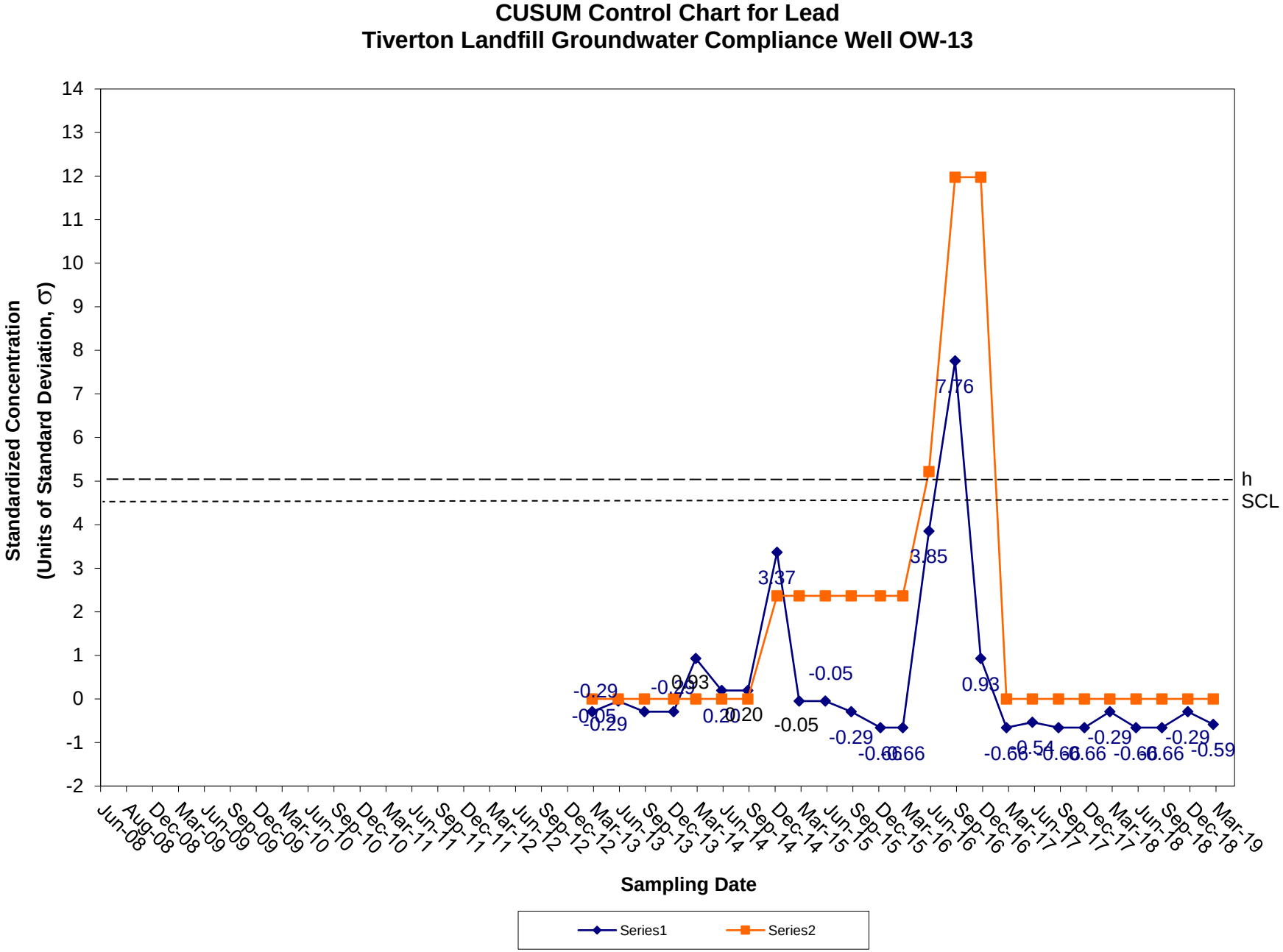

CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Complaince Well OW-13
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

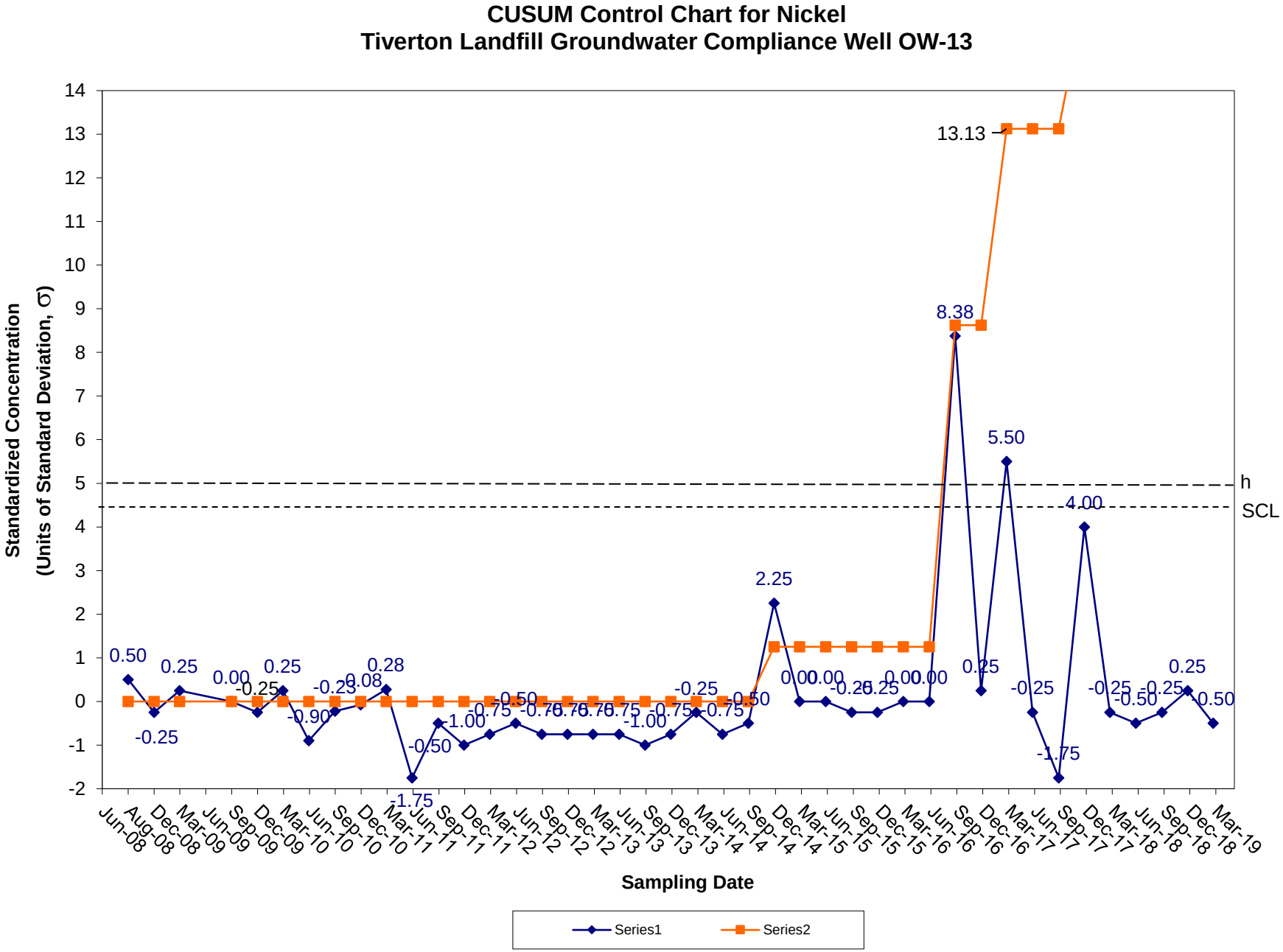
CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-13

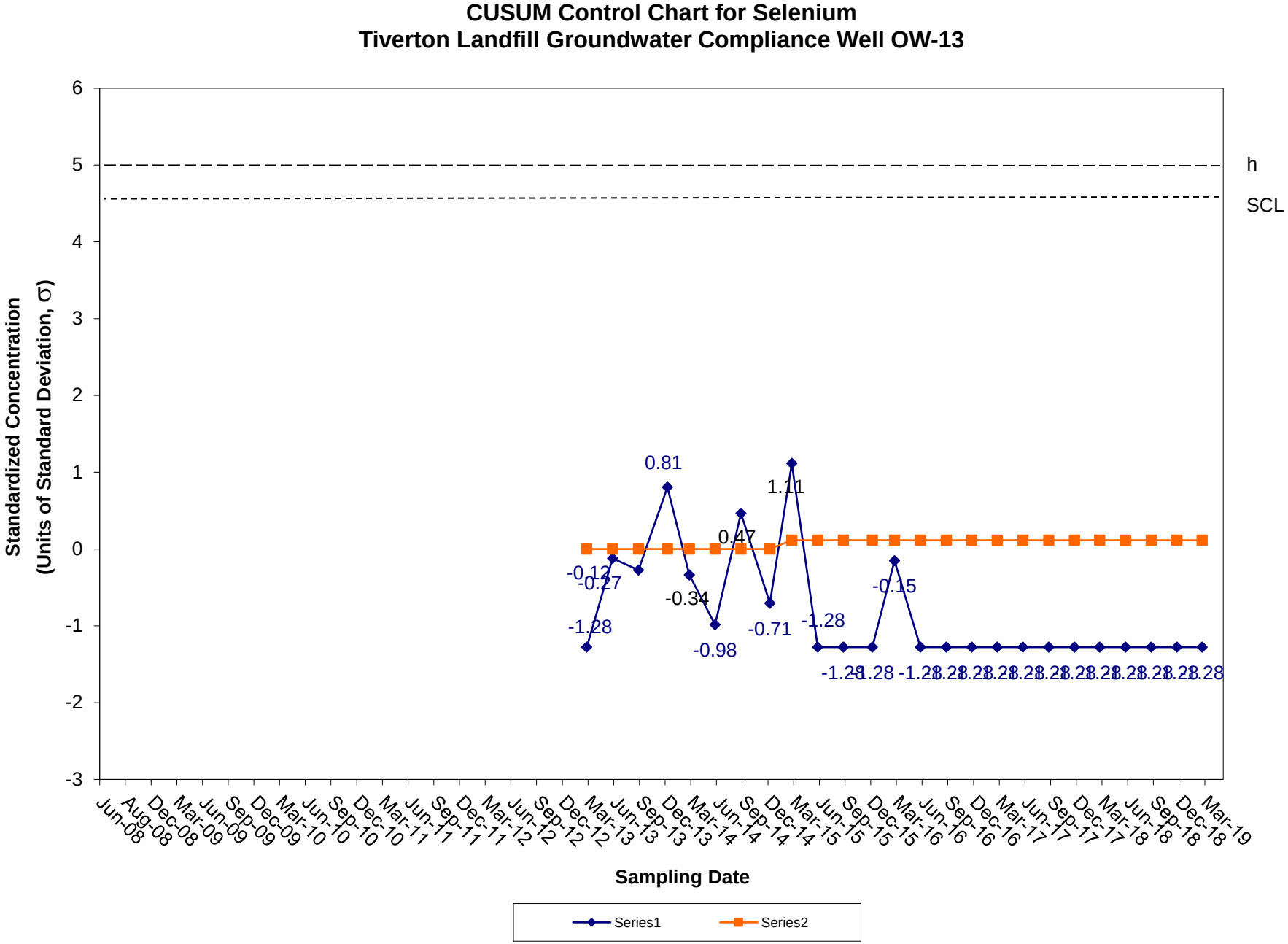


CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Complaince Well OW-13




CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Selenium
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
0.81
1.11
0.47
-0.12
-0.27
-0.34
-1.28
-0.98
-0.71
-1.28
-0.15
-1.28
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
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Jun-13
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Dec-15
Mar-16
Jun-16
Sep-16
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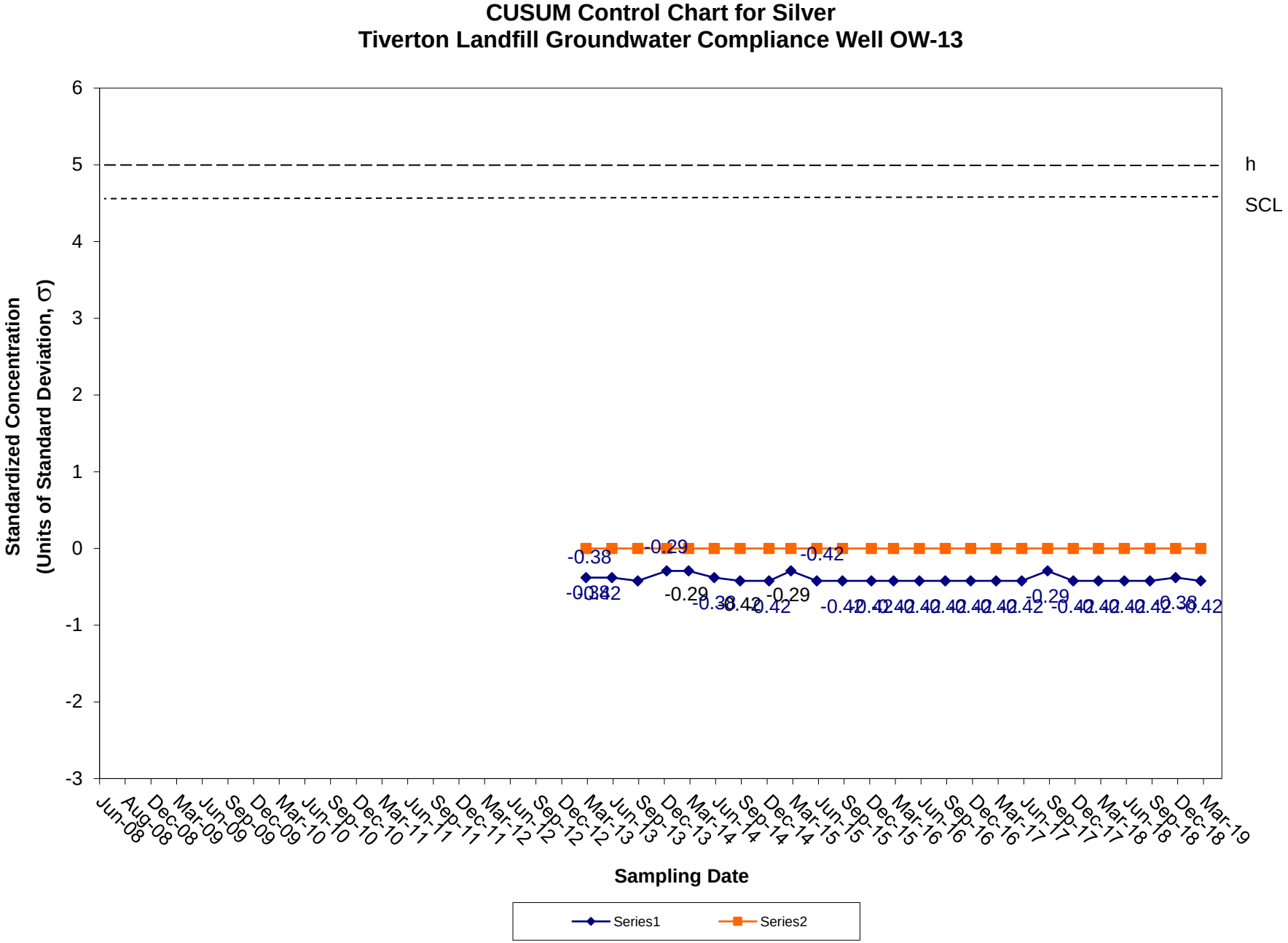
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Silver
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
-0.38
-0.29
-0.42
-0.29
-0.29
-0.38
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
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Mar-14
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Dec-15
Mar-16
Jun-16
Sep-16
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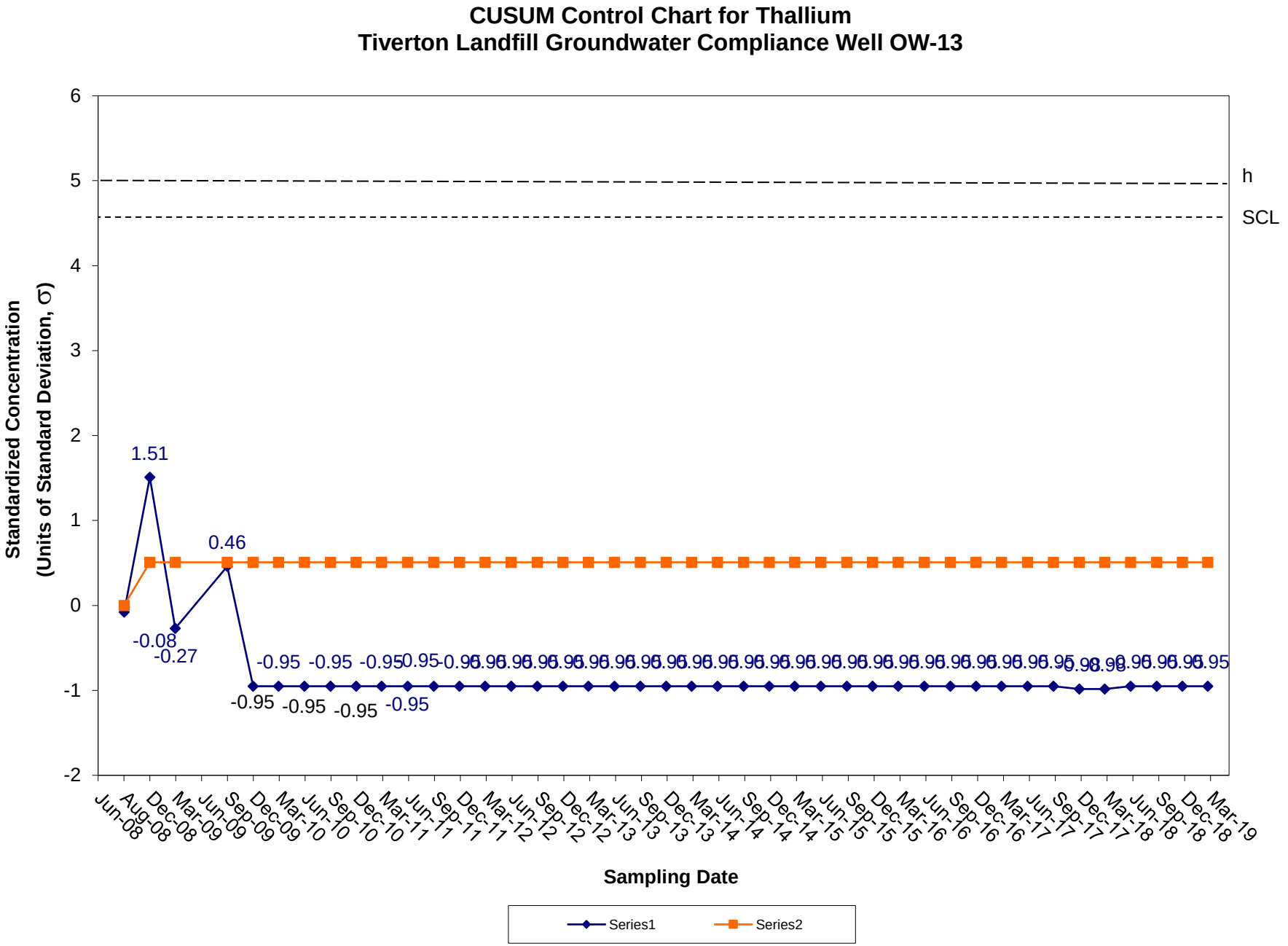
Dec-18
Mar-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Thallium
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
1.51
0.46
-0.08
-0.27
-0.95
-0.95
-0.95
-0.95
-0.95
-0.95
-0.95
-0.95
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
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Mar-13
Jun-13
Sep-13
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Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
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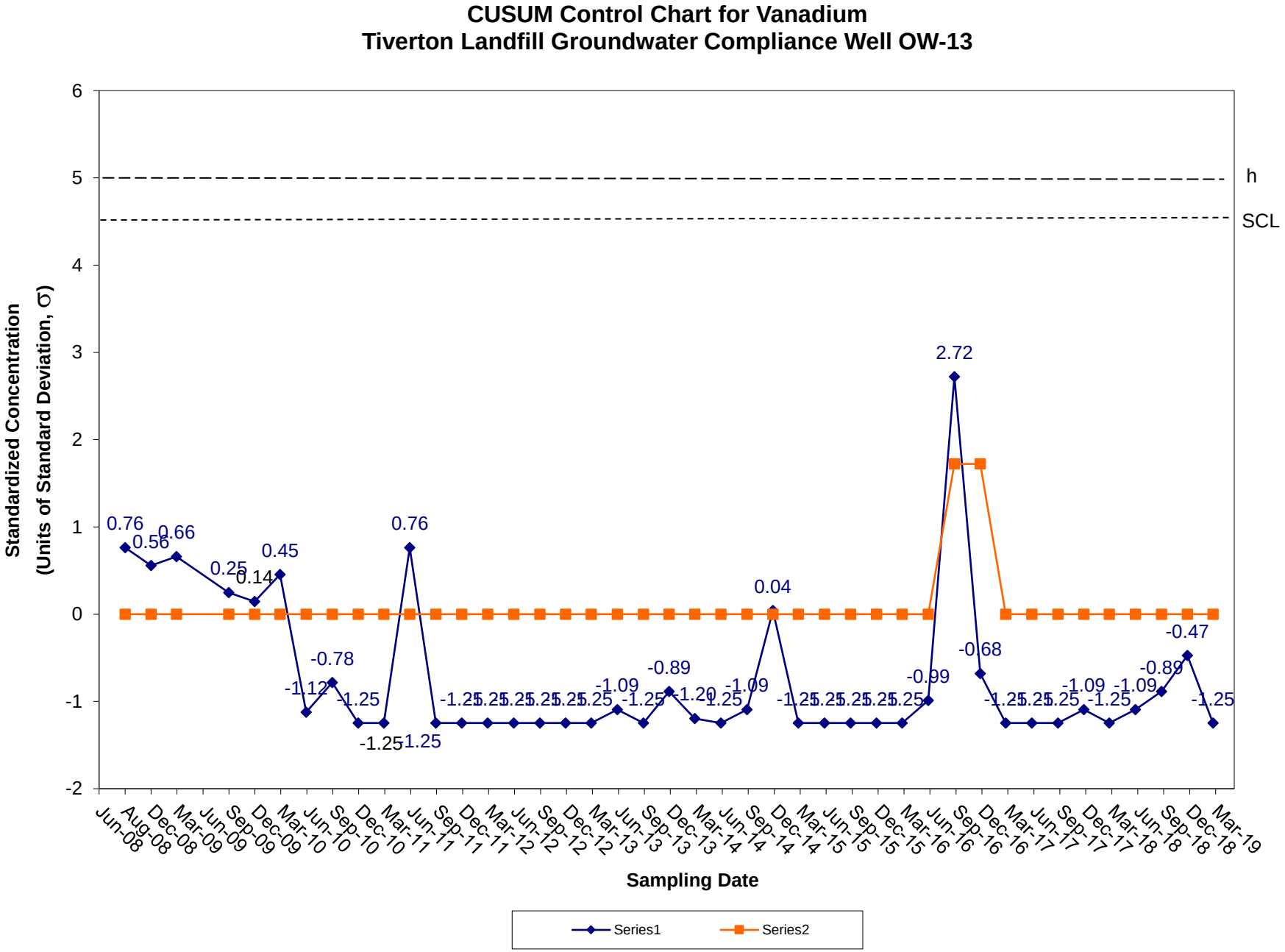
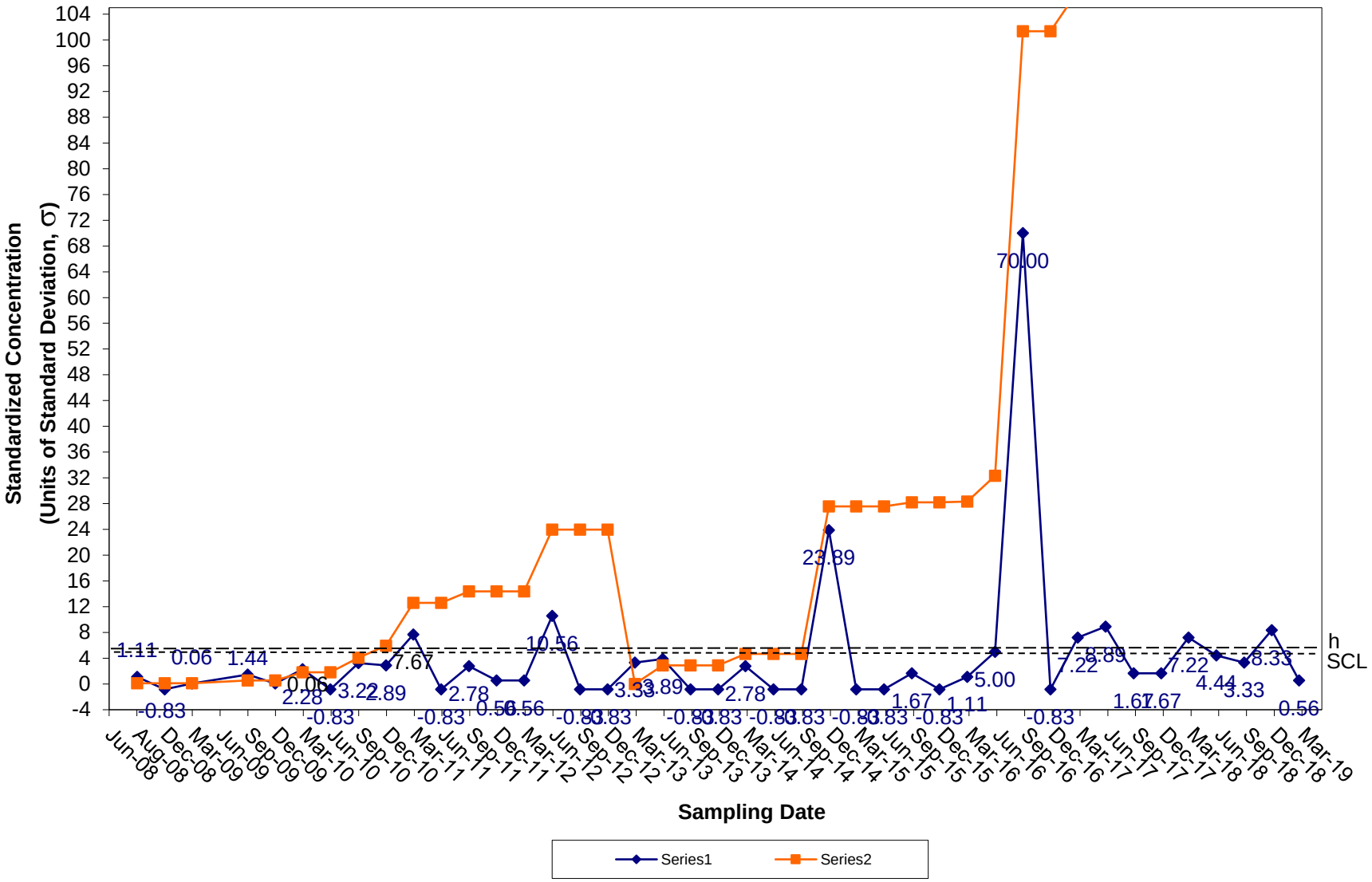
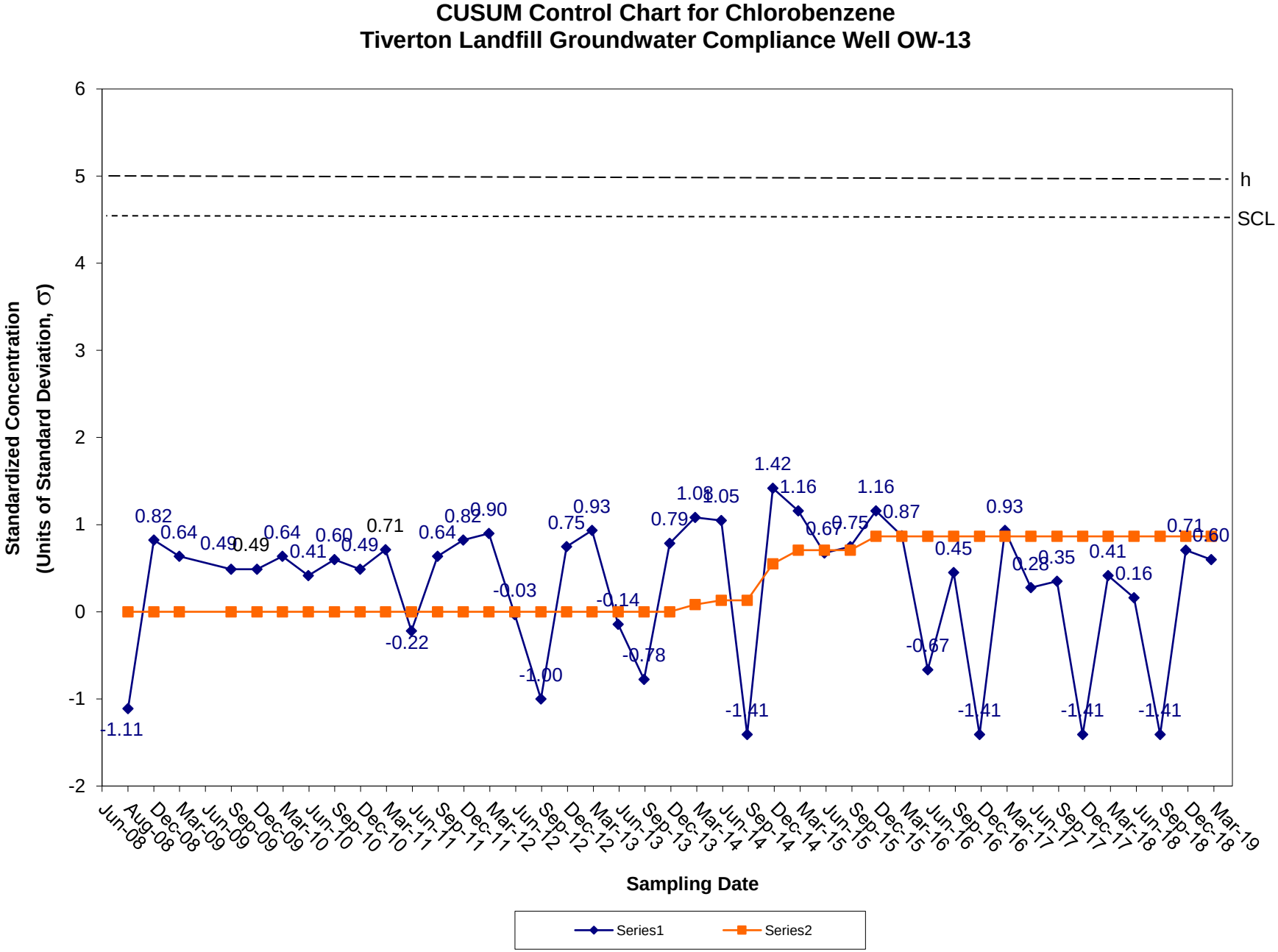
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-13




CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
-1.11
0.82
0.64
0.49
0.49
0.64
0.41
0.60
0.49
0.71
-0.22
0.64
0.82
0.90
-0.03
-1.00
0.75
0.93
-0.14
-0.78
0.79
1.08
1.05
-1.41
1.42
1.16
0.67
0.75
1.16
0.87
-0.67
0.45
-1.41
0.93
0.28
0.35
-1.41
0.41
0.16
-1.41
0.71
0.60
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
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Dec-13
Mar-14
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Dec-15
Mar-16
Jun-16
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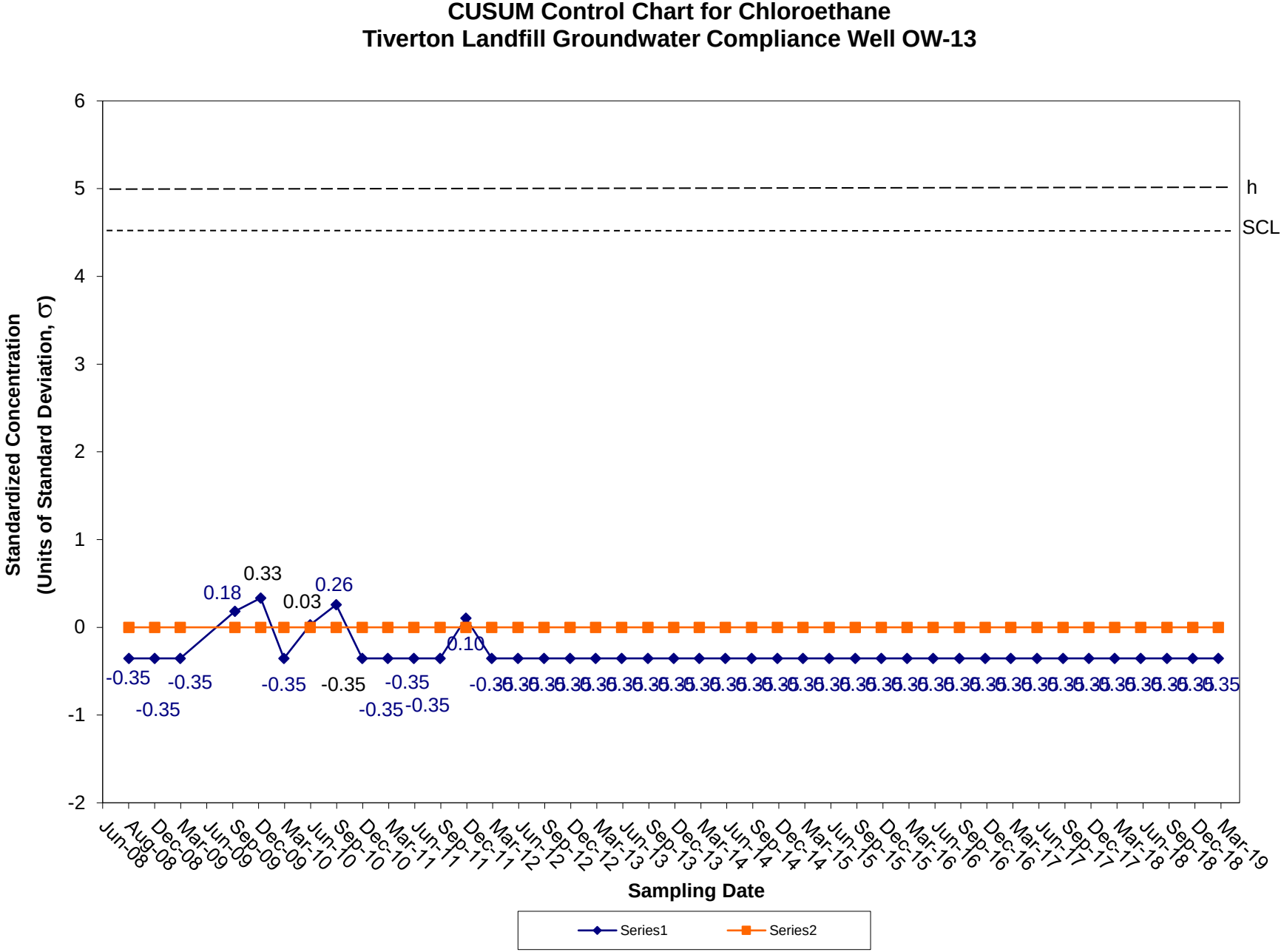
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
0.33
0.18
0.26
0.03
0.10
-0.35
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
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Mar-15
Jun-15
Sep-15
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Mar-16
Jun-16
Sep-16
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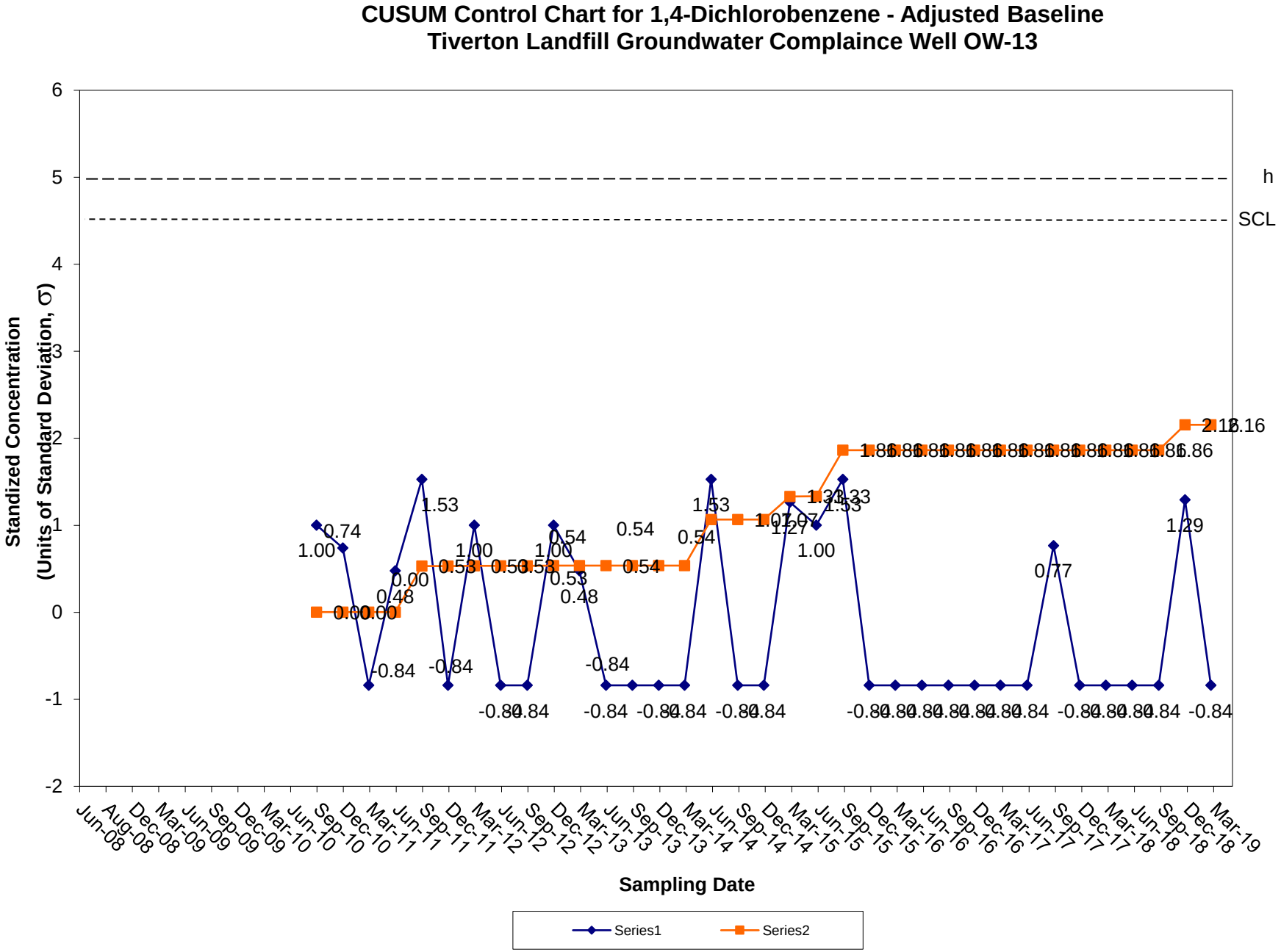
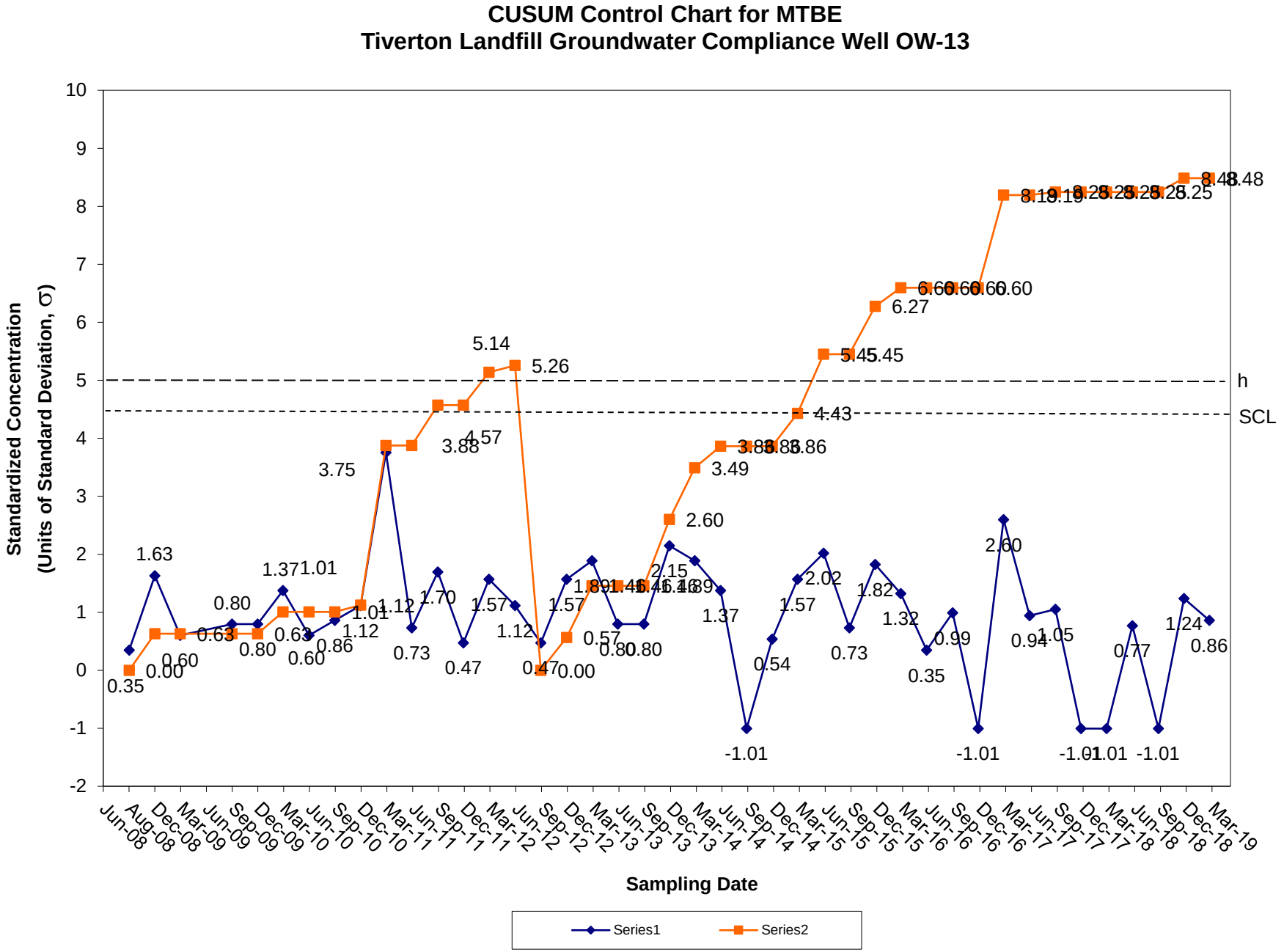
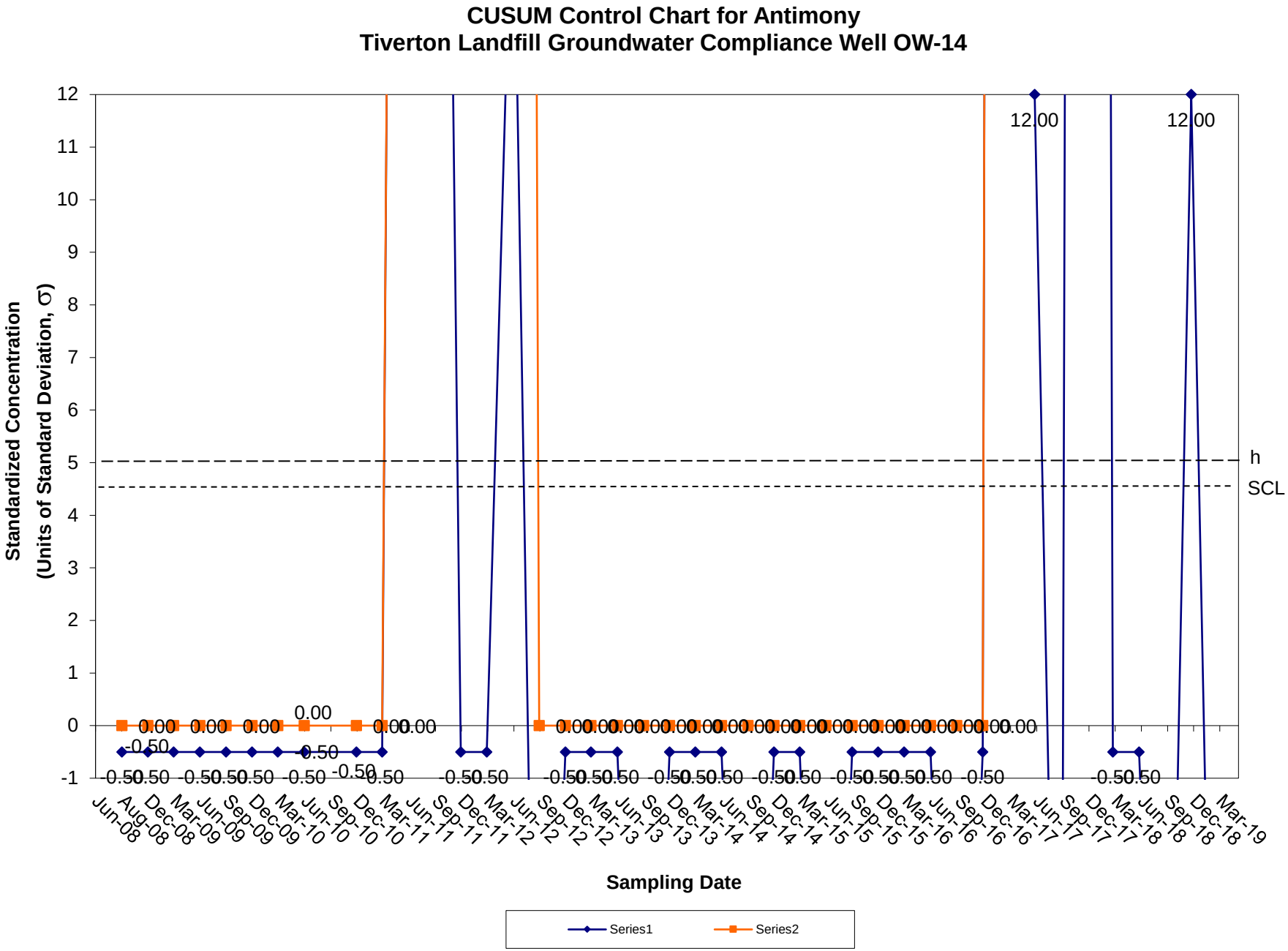
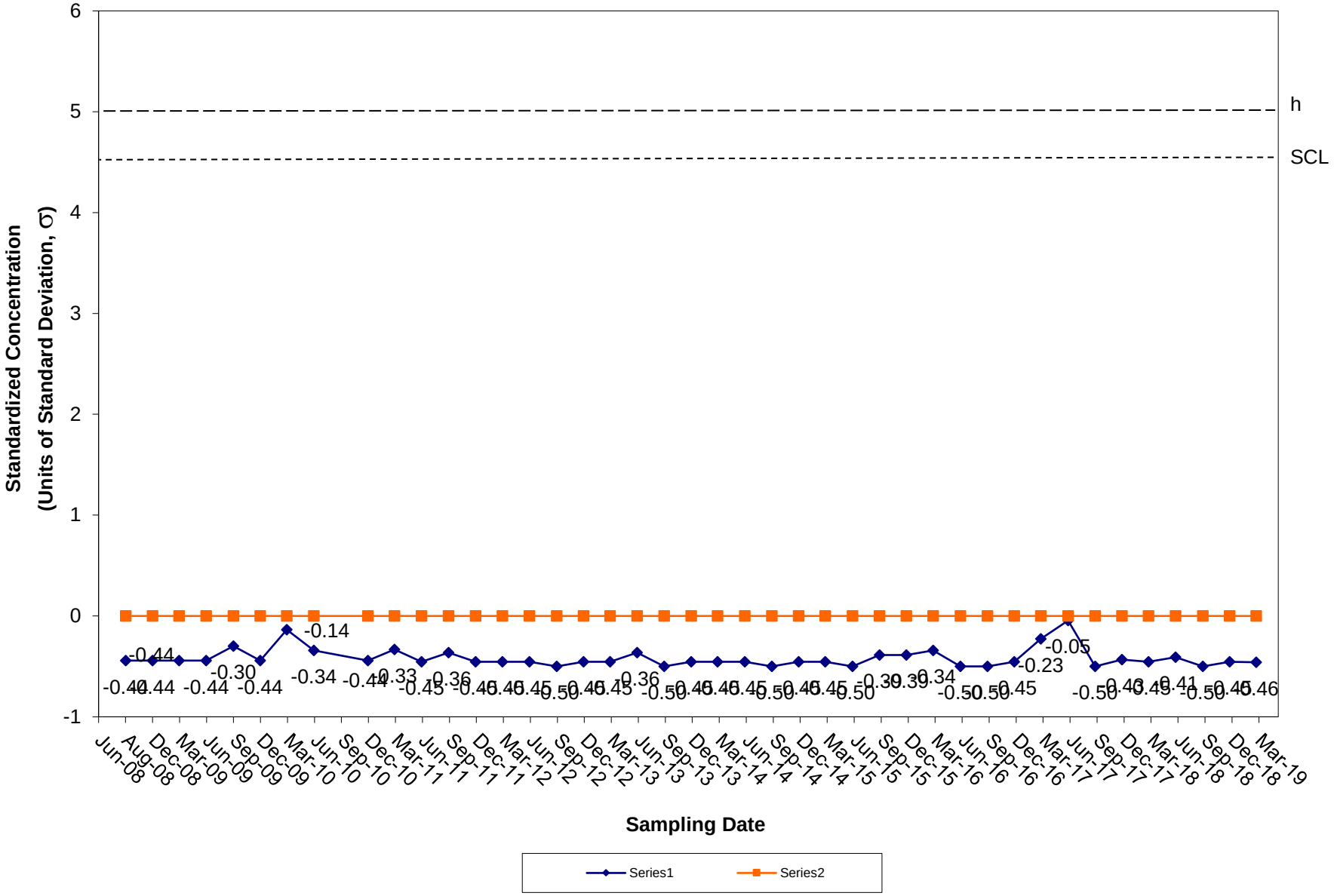
Dec-18
Mar-19
Sampling Date
Series1
Series2

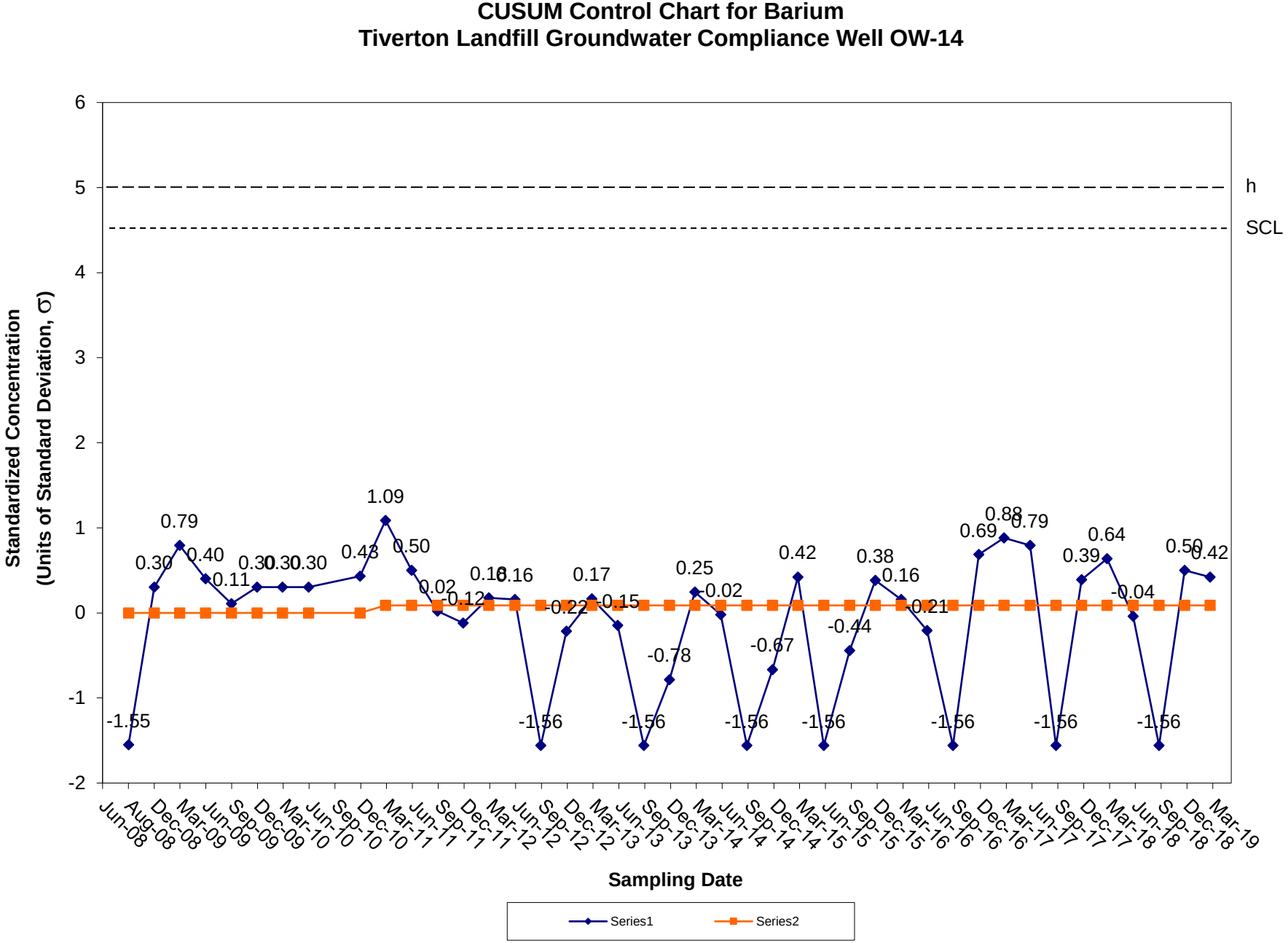

CUSUM Control Chart for 1,4-Dichlorobenzene - Adjusted Baseline
Tiverton Landfill Groundwater Complaince Well OW-13
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
12.00
12.00
Series1
Series2

CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-14




CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
-1.55
0.30
0.79
0.40
0.11
0.30
0.30
0.30
0.43
1.09
0.50
0.02
-0.12
0.16
0.16
-1.56
-0.22
0.17
-0.15
-1.56
-0.78
0.25
-0.02
-1.56
-0.67
0.42
-1.56
-0.44
0.38
0.16
-0.21
-1.56
0.69
0.88
0.79
-1.56
0.39
0.64
-0.04
-1.56
0.50
0.42
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
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Mar-14
Jun-14
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Dec-15
Mar-16
Jun-16
Sep-16
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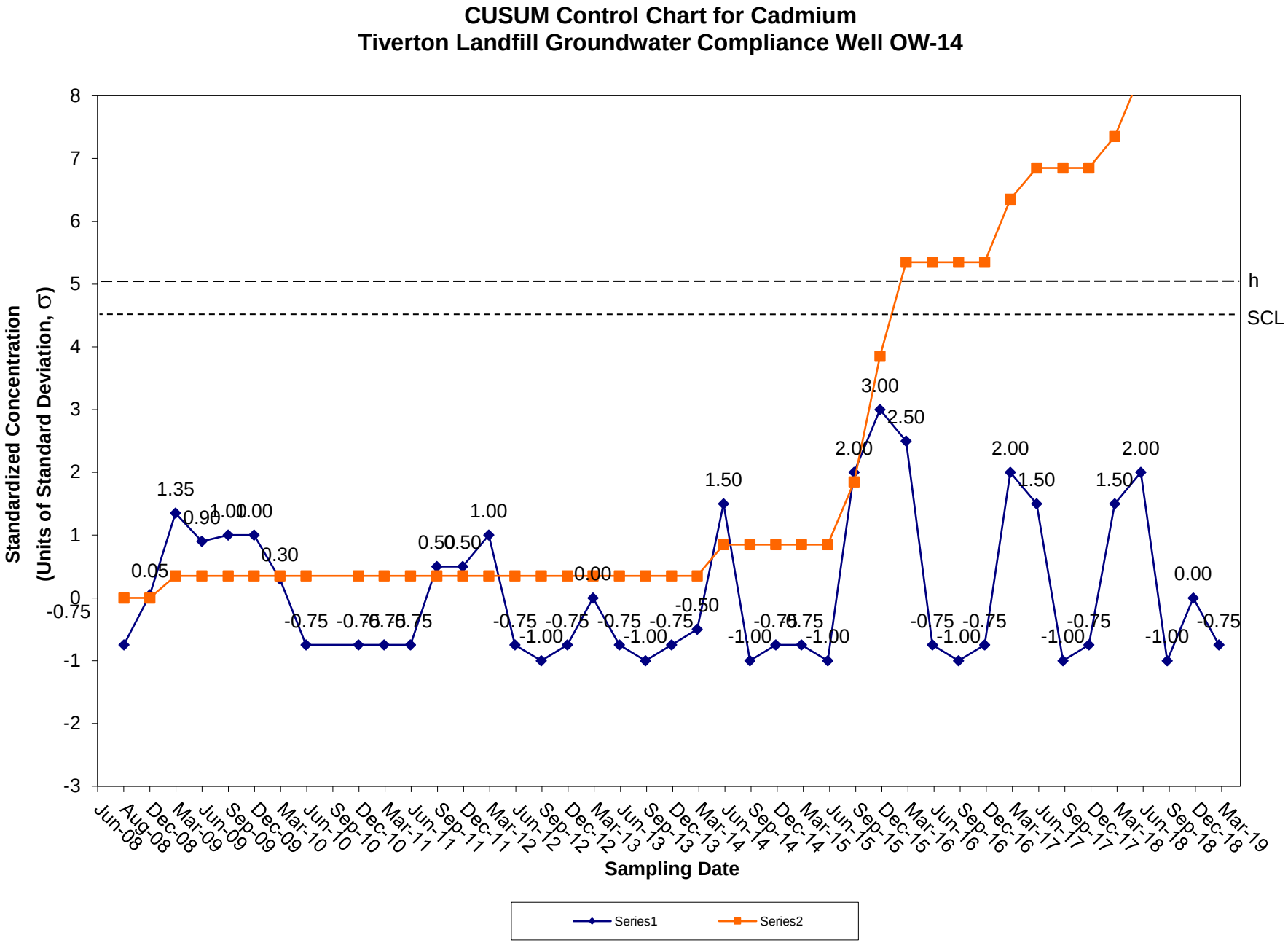
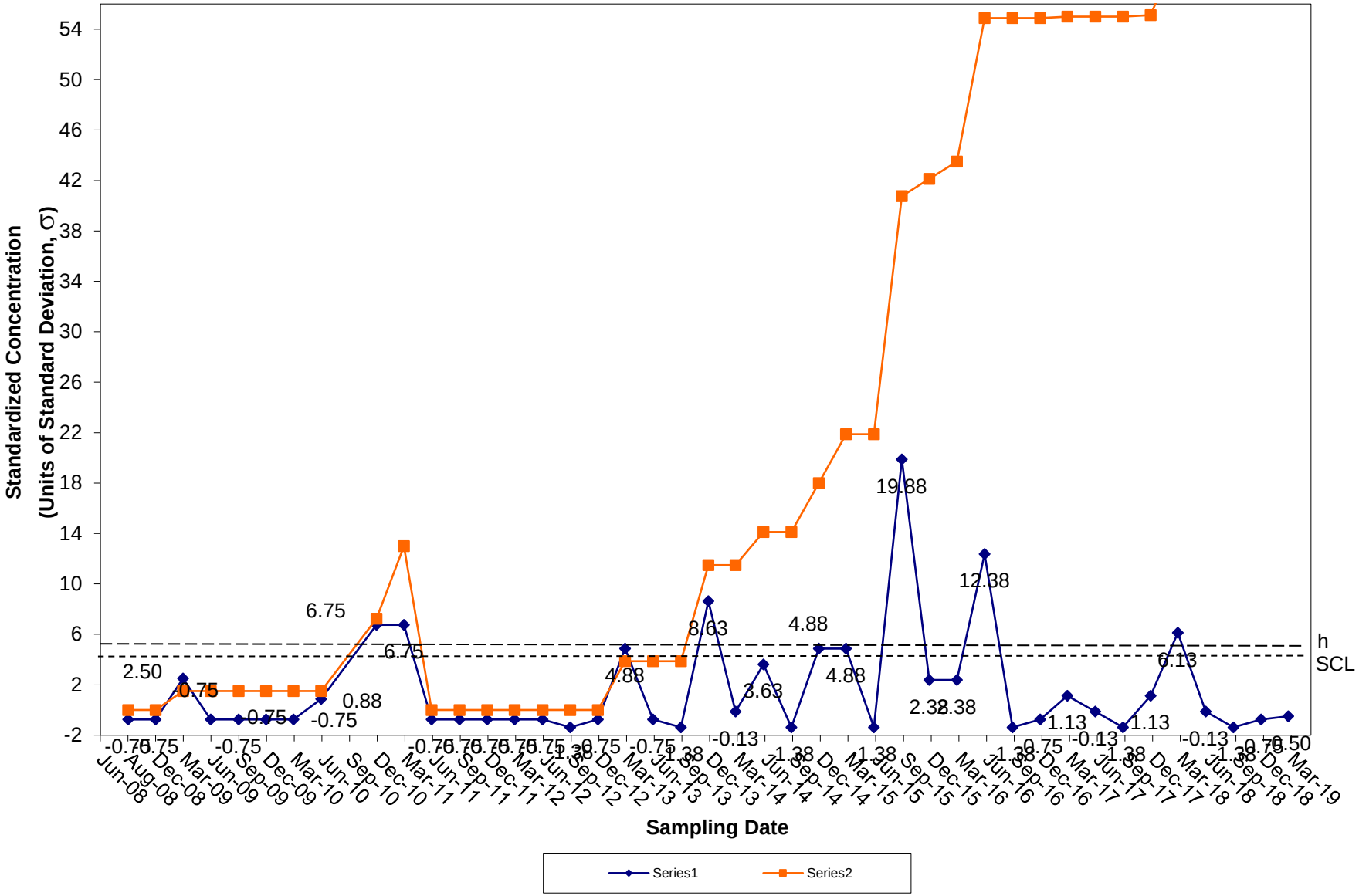
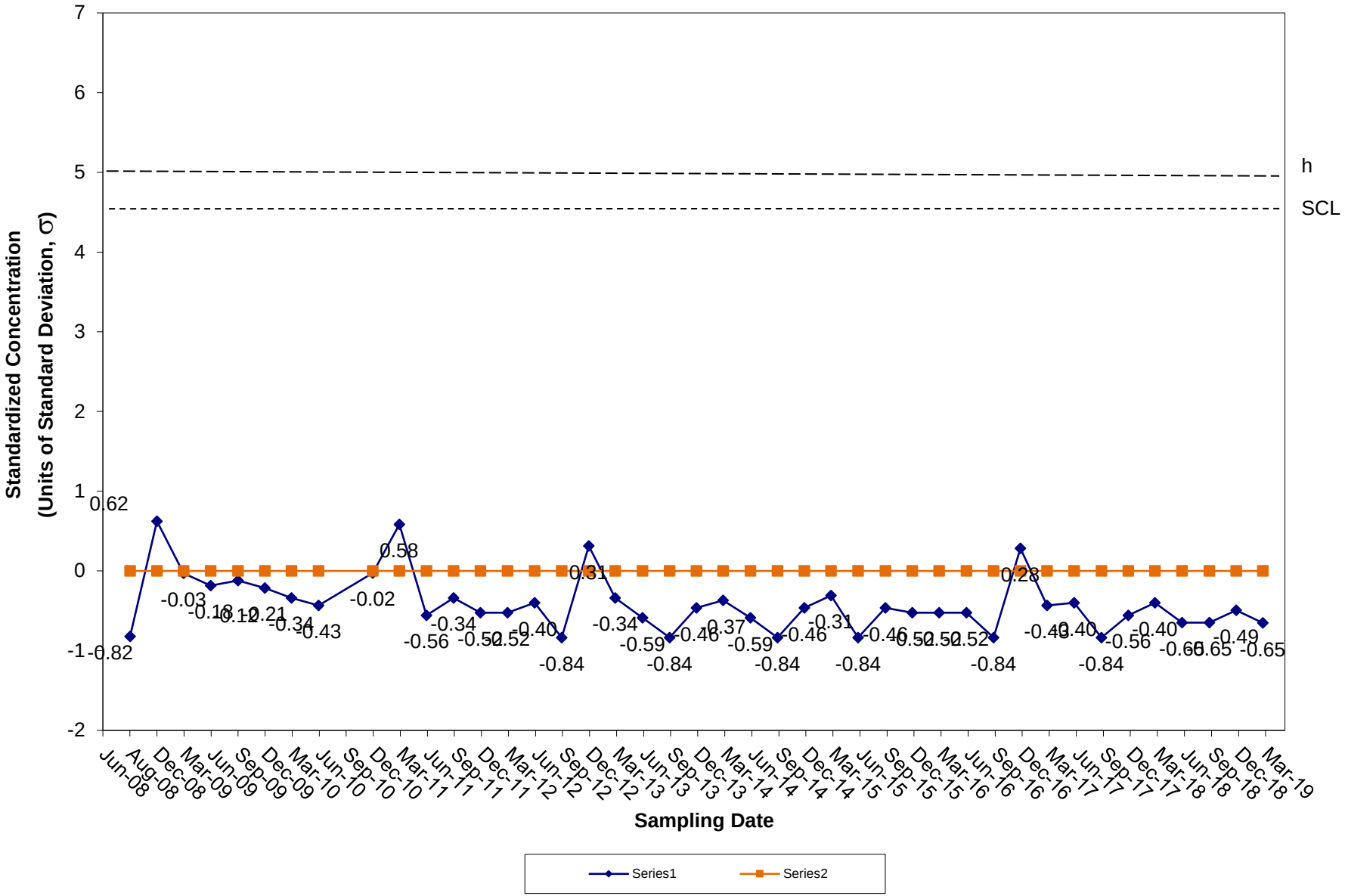
Dec-18
Mar-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

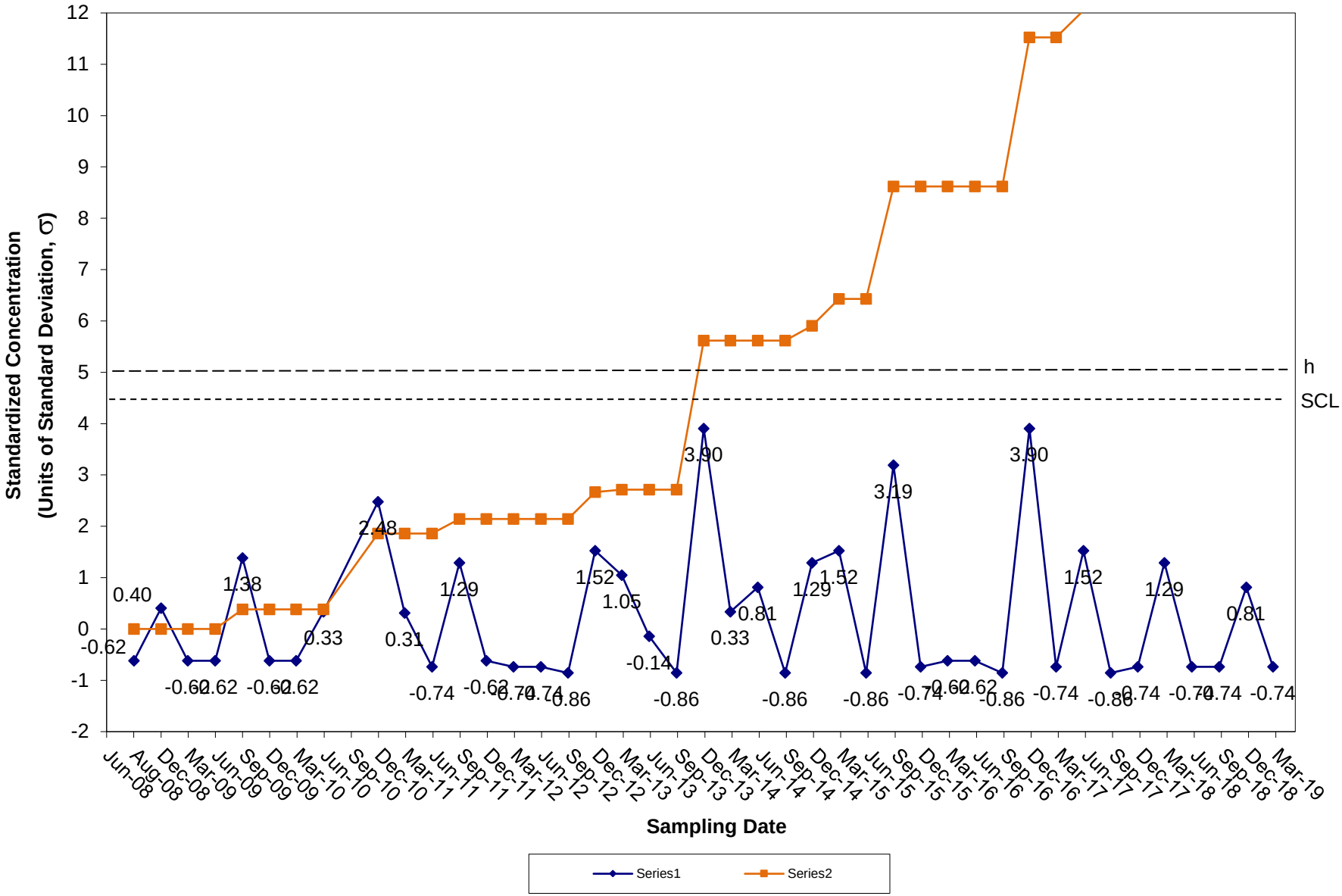
CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Compliance Well OW-14



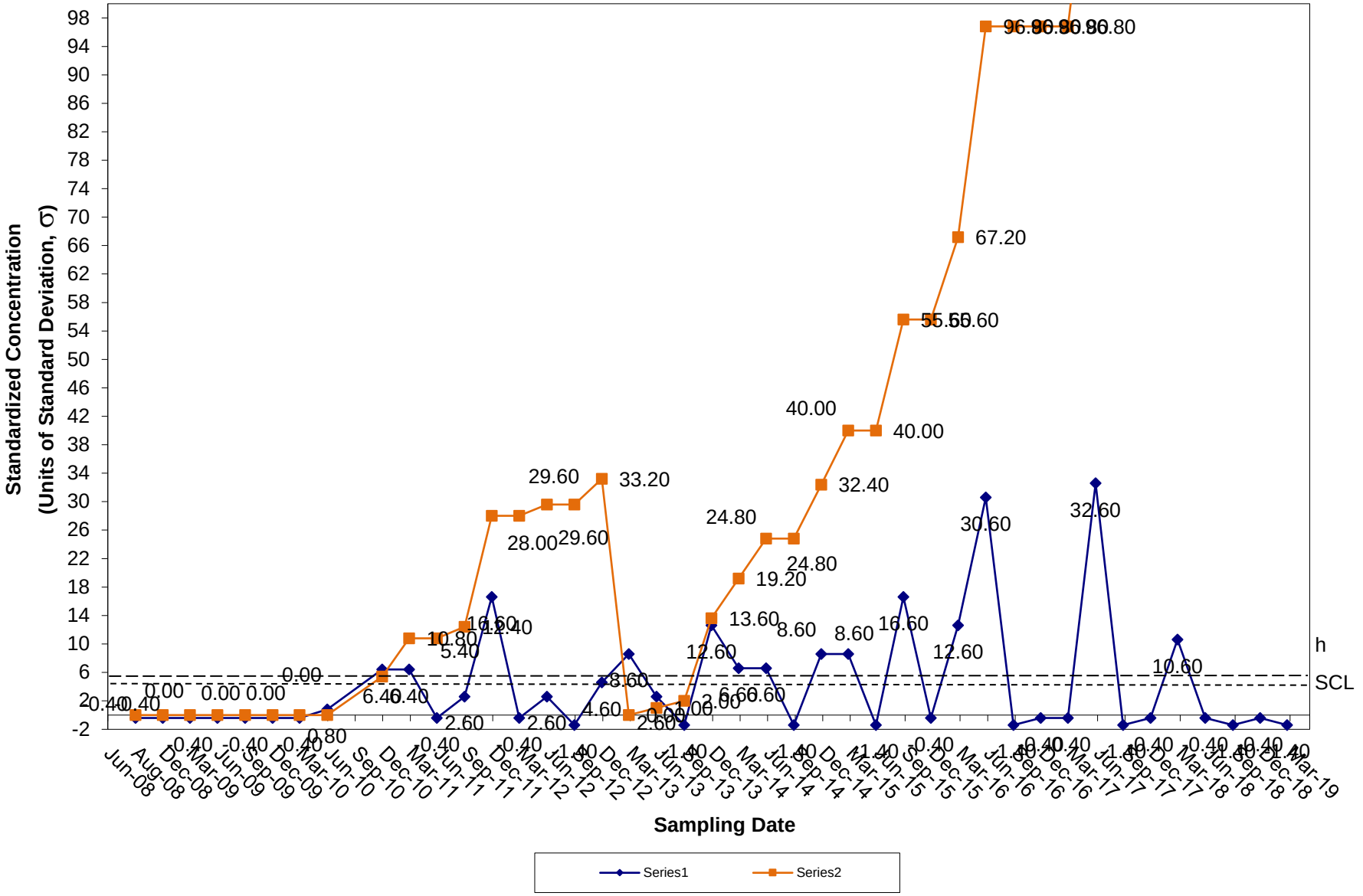
CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-14



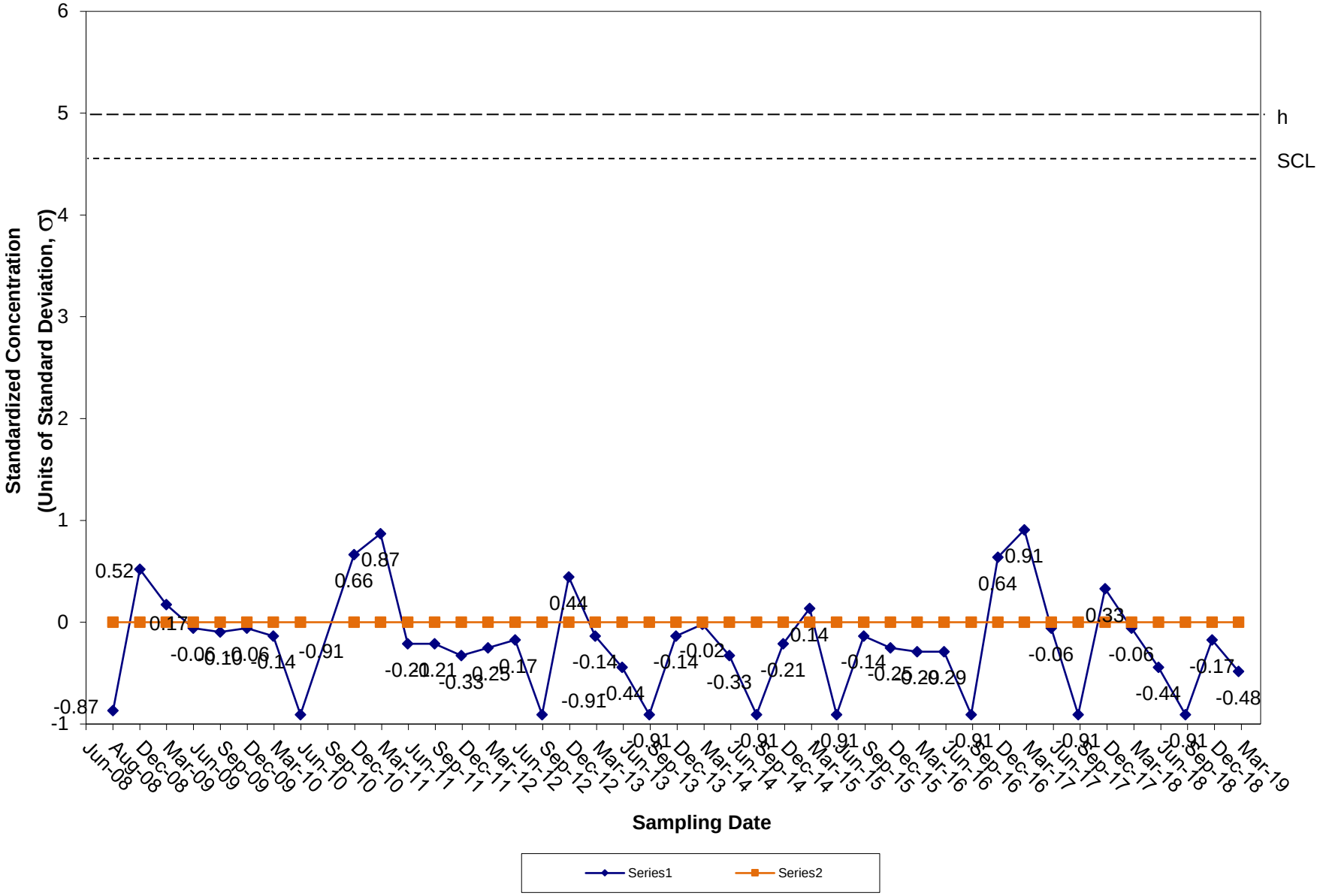
CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Compliance Well OW-14

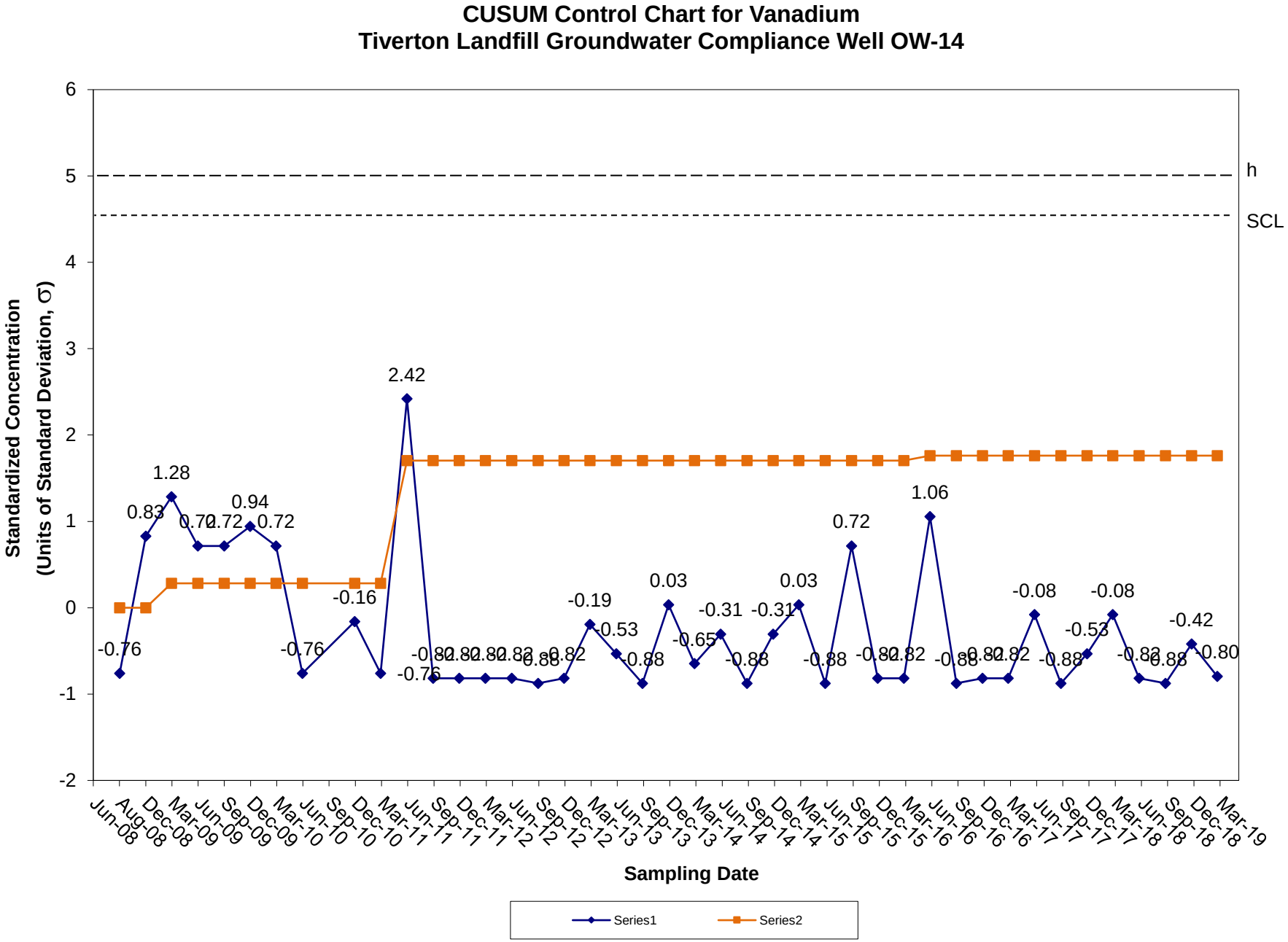


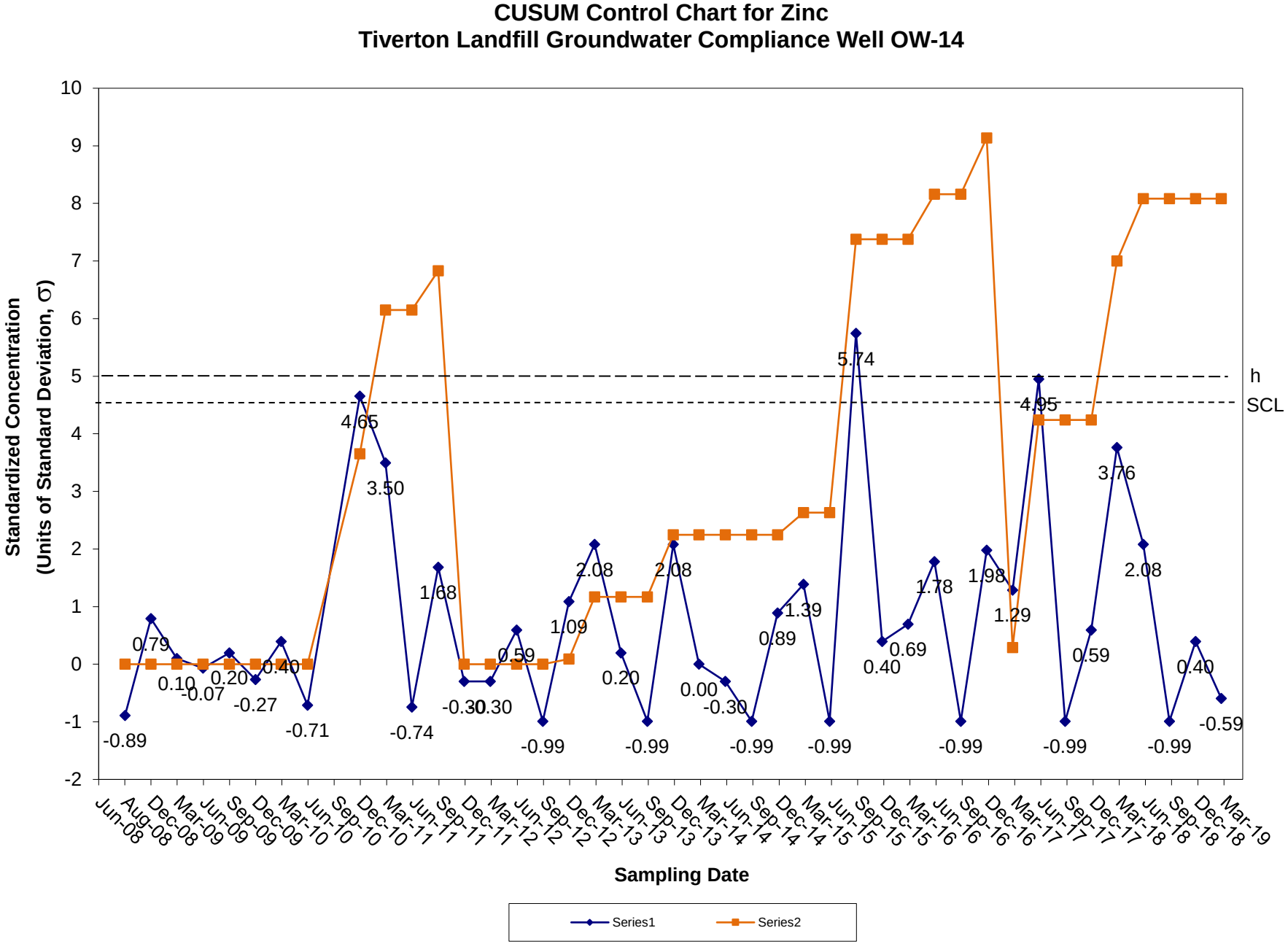
CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-14

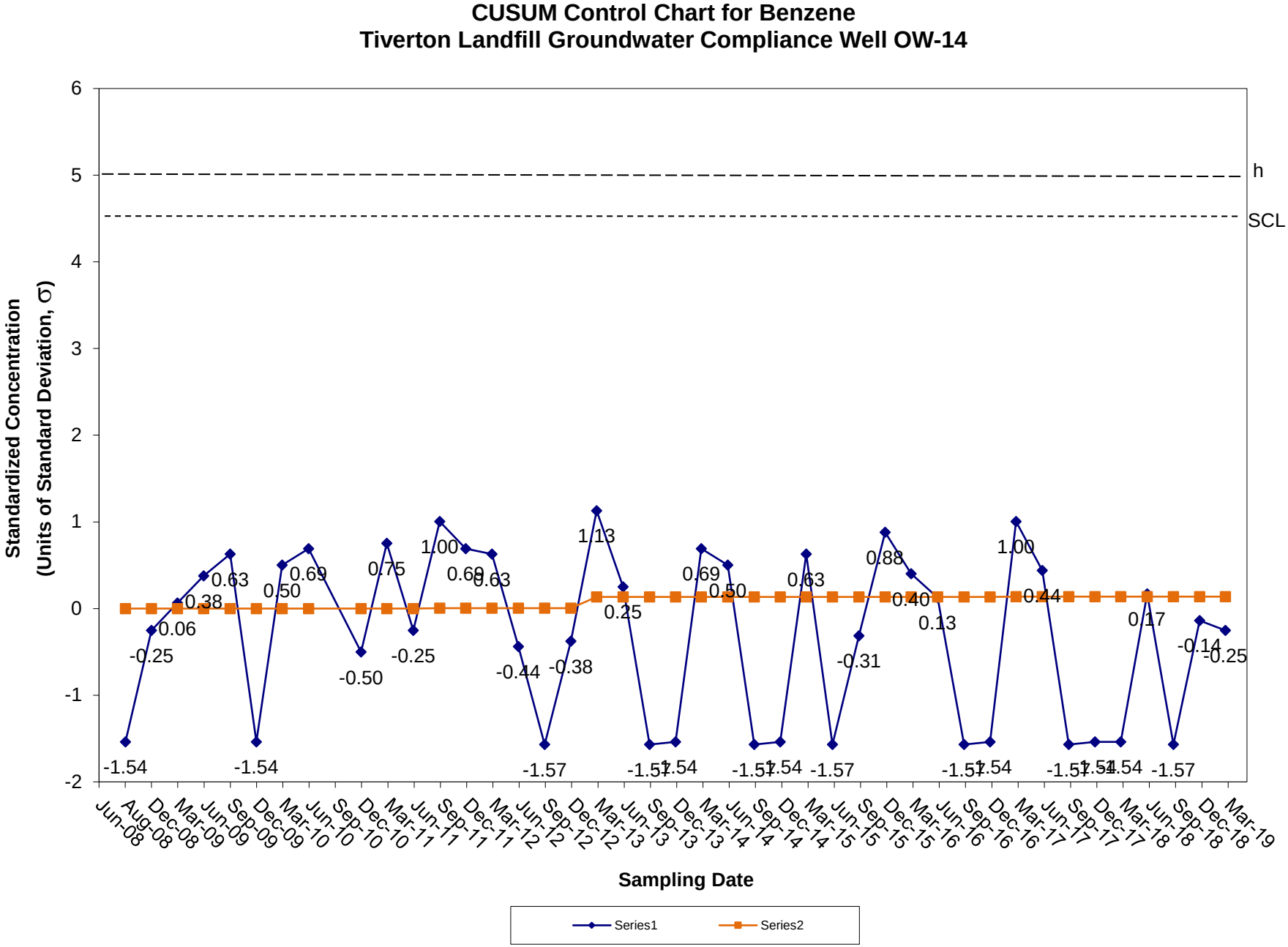


CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Compliance Well OW-14




CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Benzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
-1.54
-0.25
0.06
0.38
0.63
-1.54
0.50
0.69
-0.50
0.75
-0.25
1.00
0.69
0.63
-0.44
-1.57
-0.38
1.13
0.25
-1.57
-1.54
0.69
0.50
-1.57
-1.54
0.63
-1.57
-0.31
0.88
0.40
0.13
-1.57
-1.54
1.00
0.44
-1.57
-1.54
-1.54
0.17
-1.57
-0.14
-0.25
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
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Mar-13
Jun-13
Sep-13
Dec-13
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Dec-15
Mar-16
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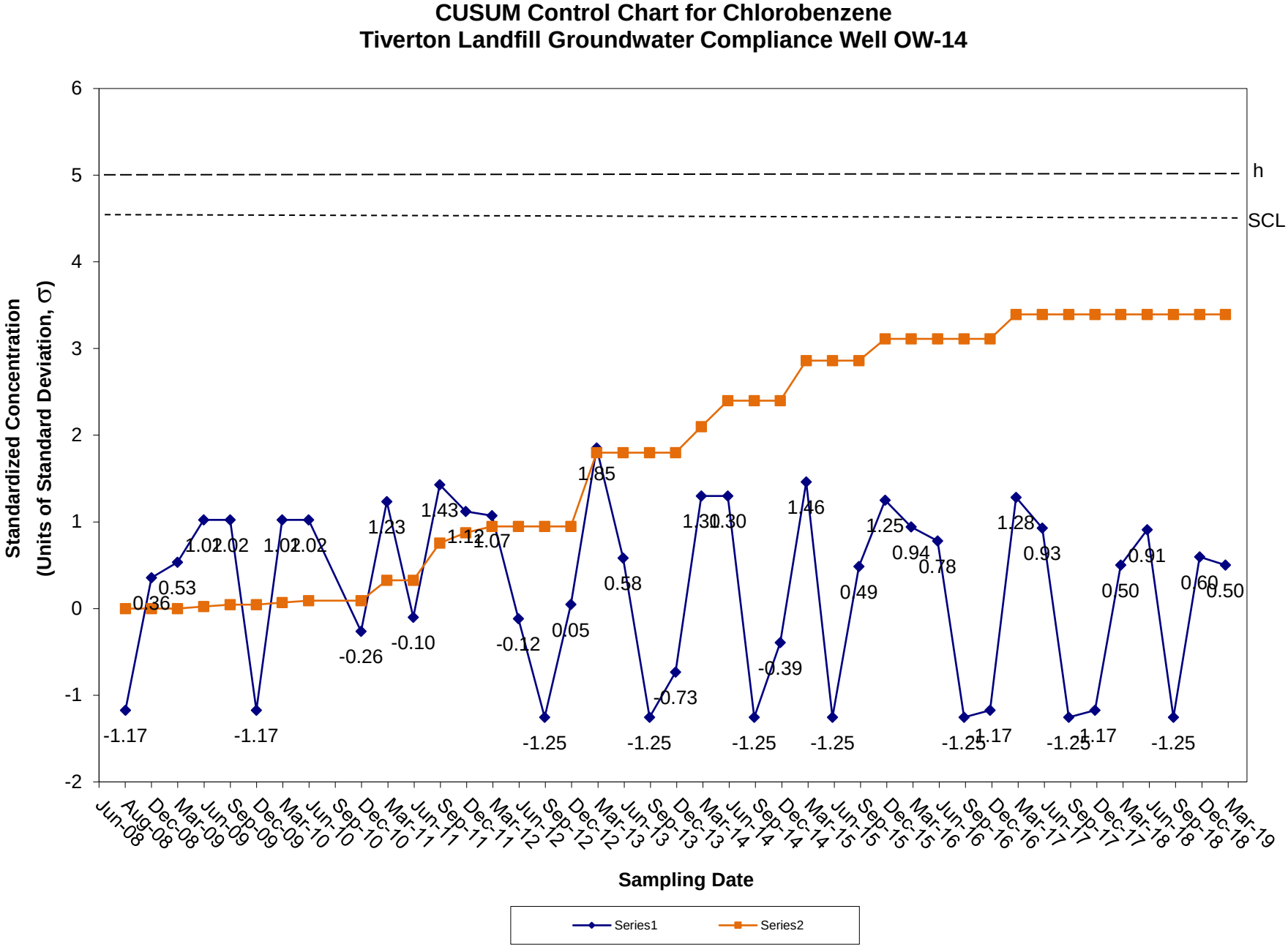
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
6
5
4
3
2
1
0
-1
-2
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
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Mar-13
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Sep-13
Dec-13
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Mar-15
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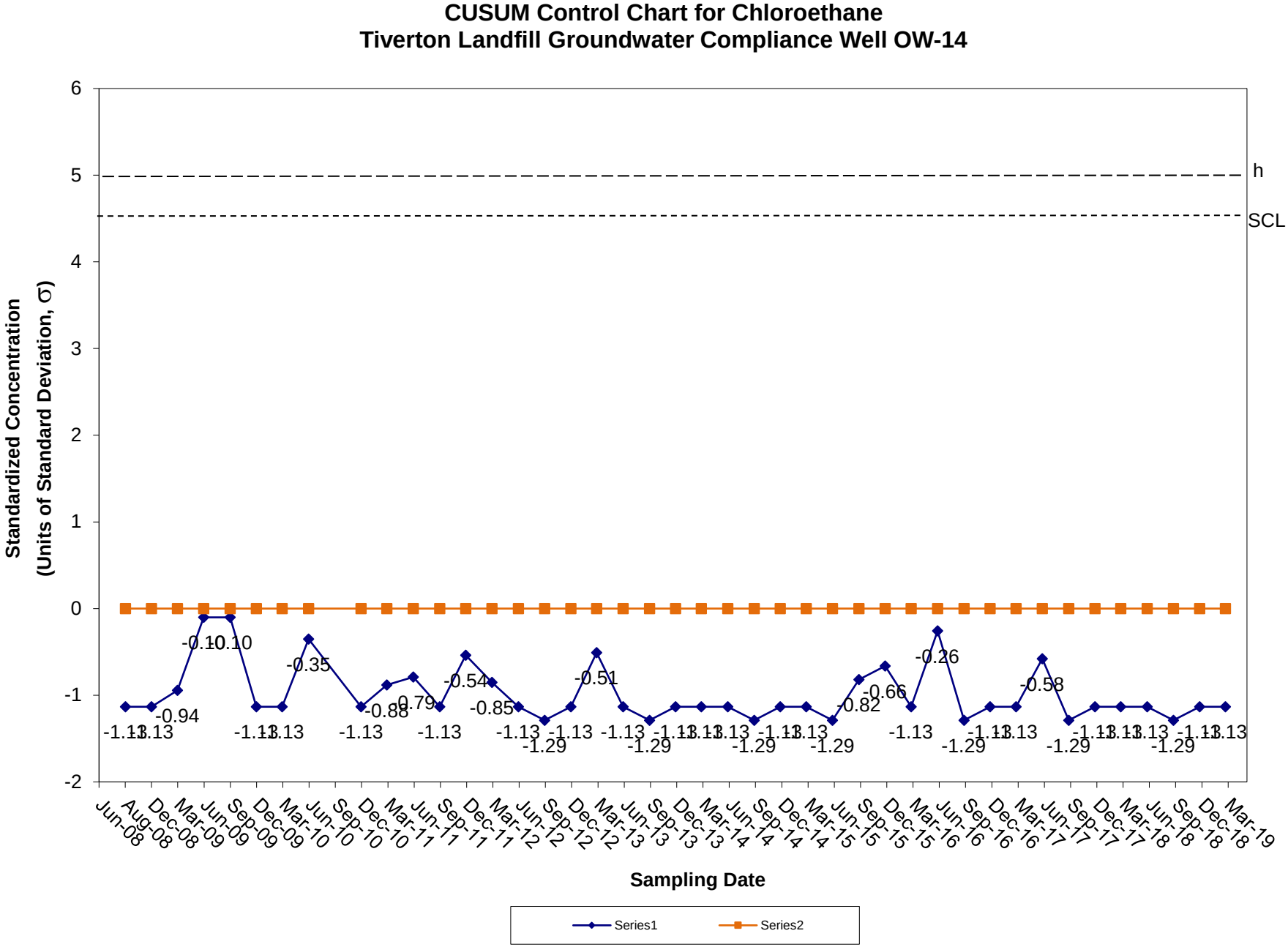
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
-1.17
0.36
0.53
1.02
1.02
-1.17
1.02
1.02
-0.26
1.23
-0.10
1.43
1.12
1.07
-0.12
-1.25
0.05
1.85
0.58
-1.25
-0.73
1.30
1.30
-1.25
-0.39
1.46
-1.25
0.49
1.25
0.94
0.78
-1.25
-1.17
1.28
0.93
-1.25
-1.17
0.50
0.91
-1.25
0.60
0.50


CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
-0.94
-0.35
-0.88
-0.79
-0.54
-0.85
-0.51
-0.82
-0.66
-0.26
-0.58
-1.29
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
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Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
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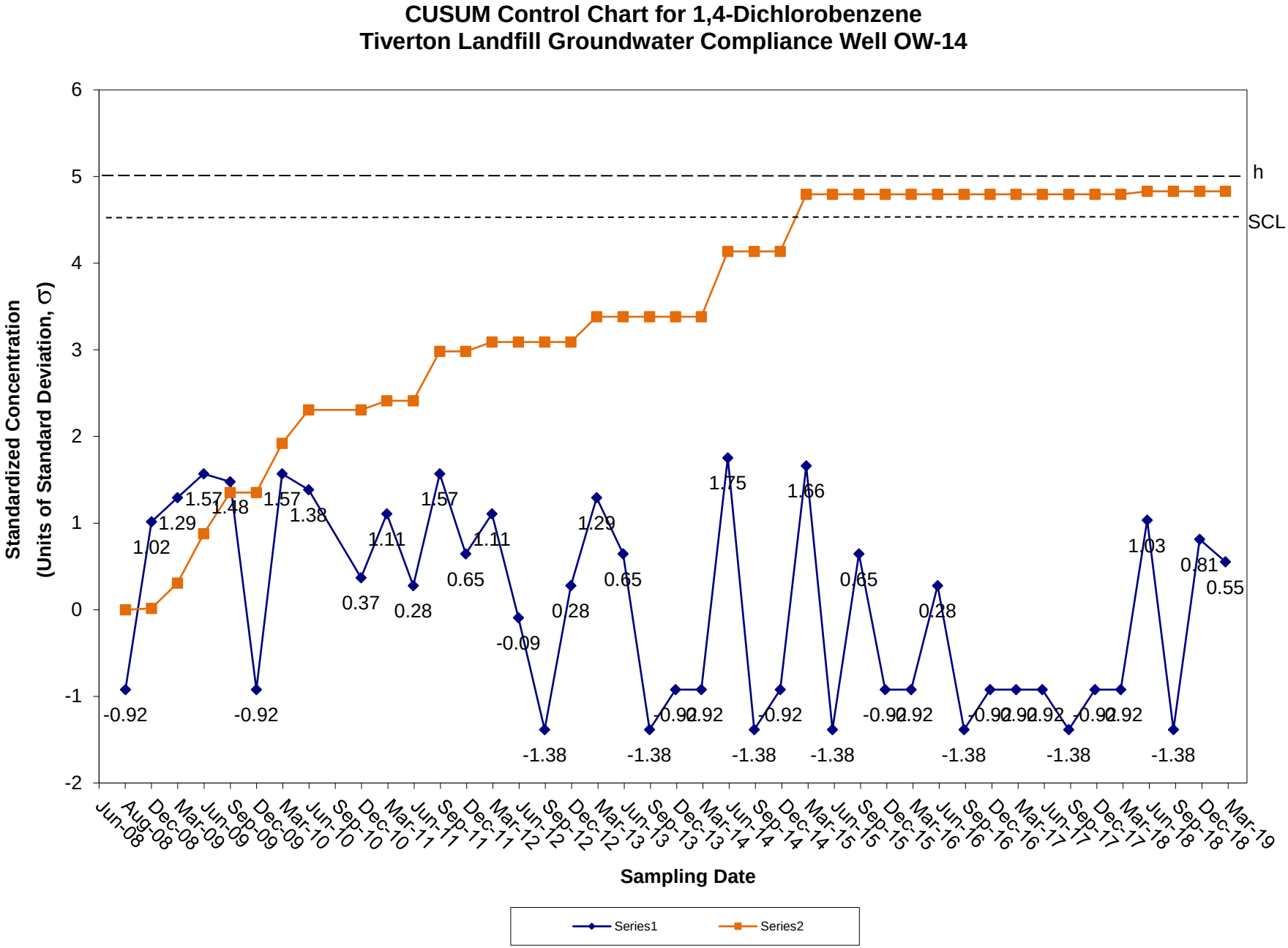
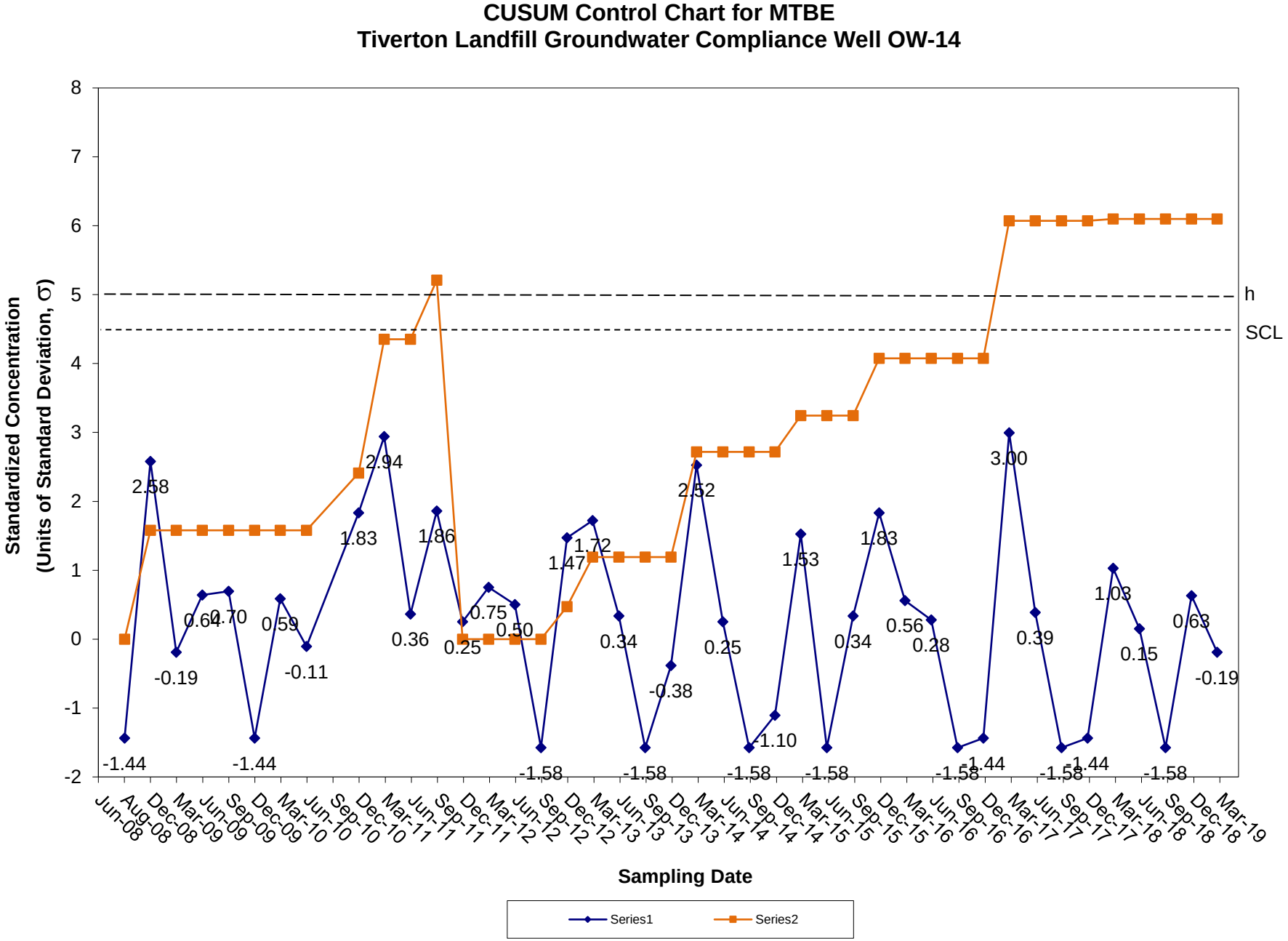
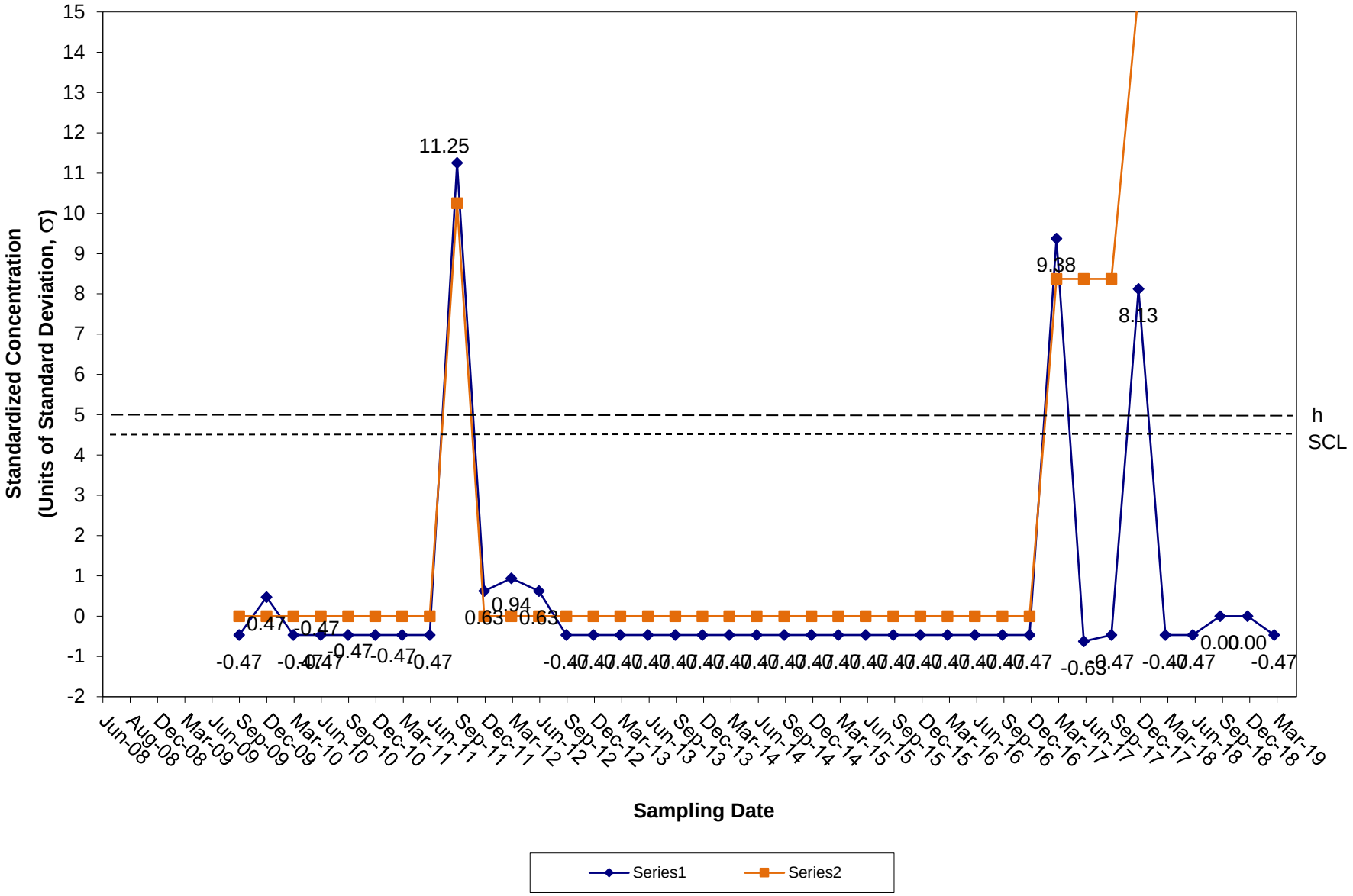
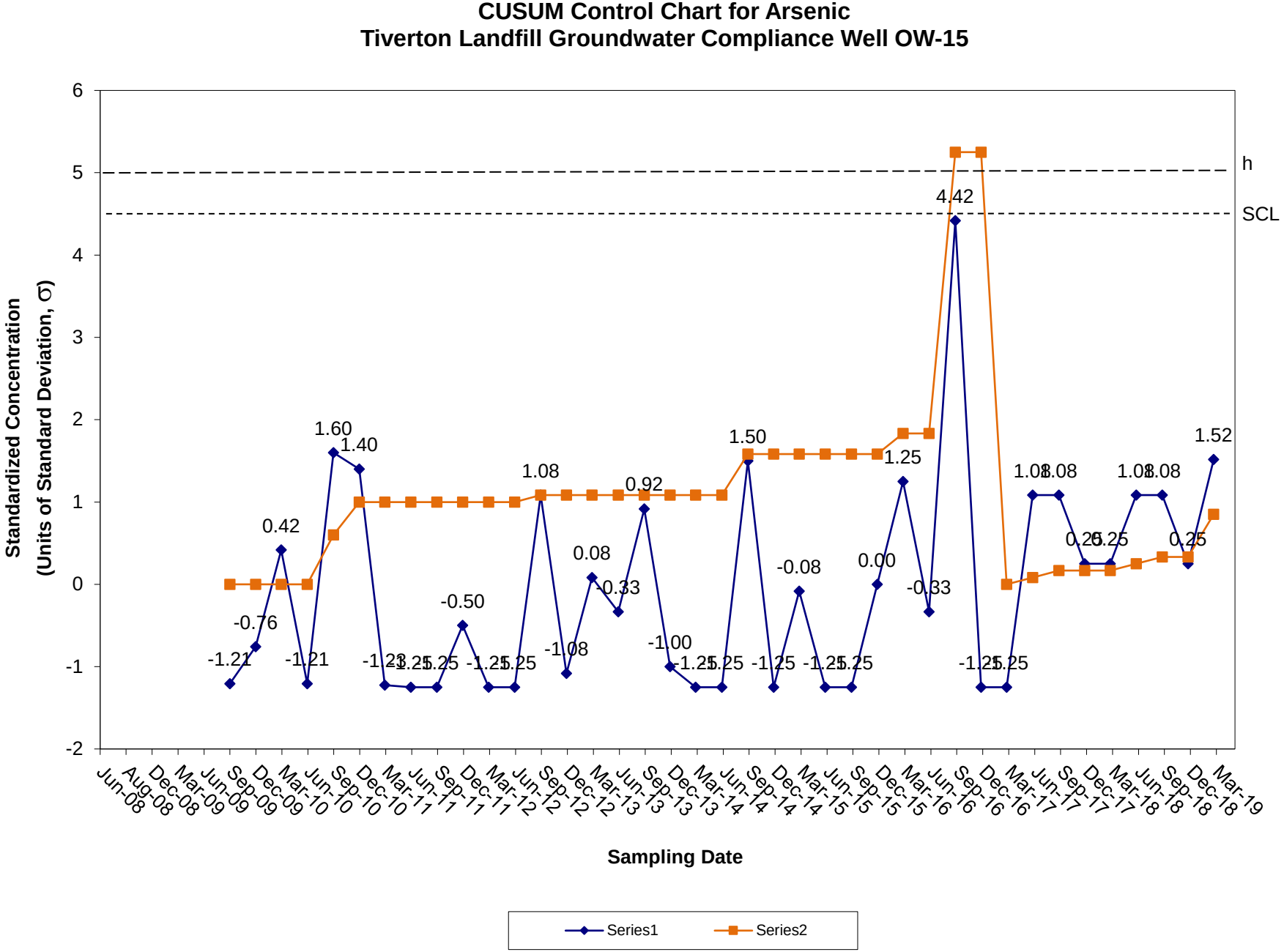
Dec-18
Mar-19
Sampling Date
Series1
Series2

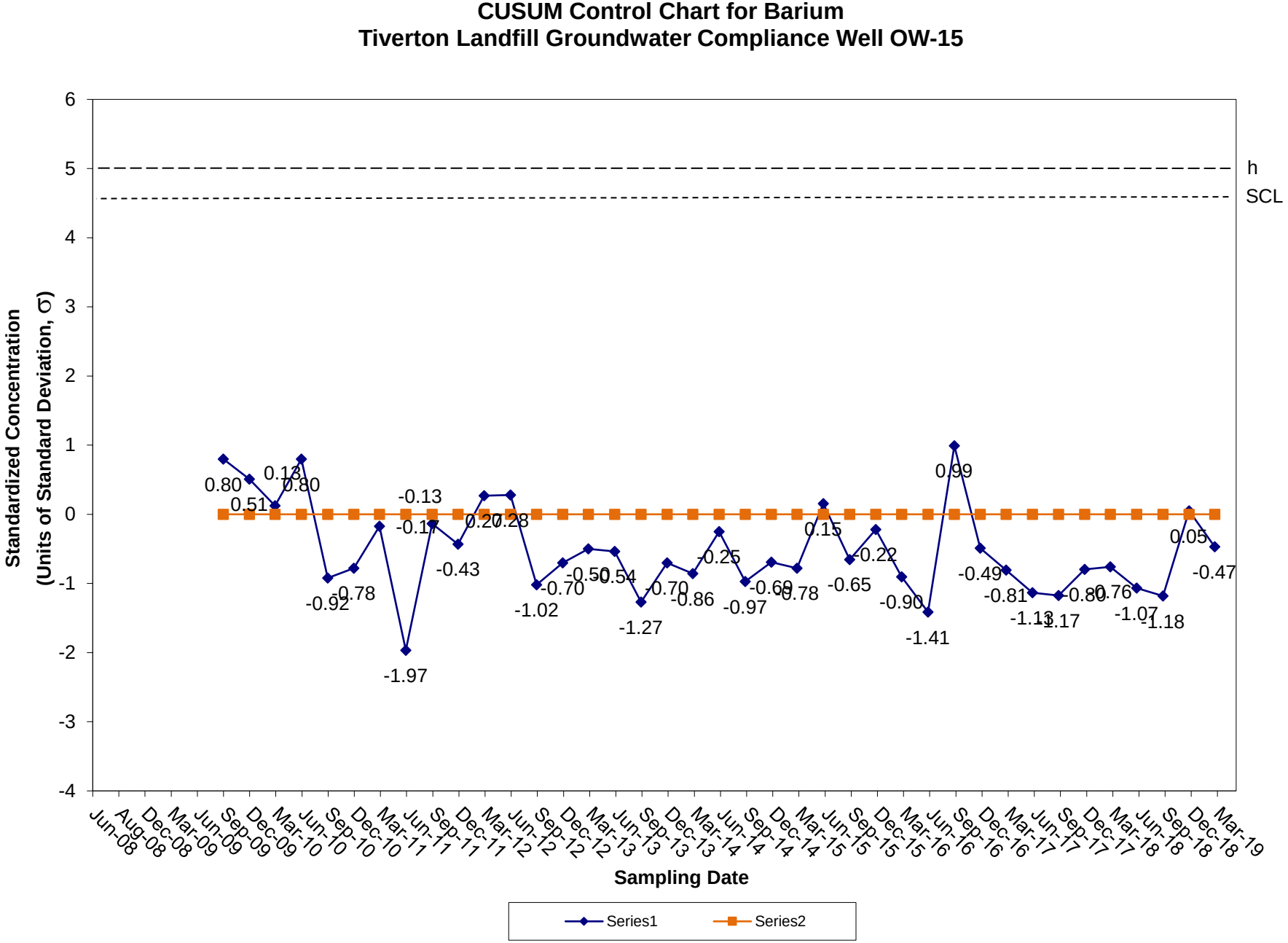

CUSUM Control Chart for 1,4-Dichlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
8
7
6
5
4
3
2
1
0
-1
-2
h
SCL
2.58
-0.19
0.64
0.70
-1.44
0.59
-0.11
1.83
2.94
0.36
1.86
0.25
0.75
0.50
-1.58
1.47
1.72
0.34
-1.58
-0.38
2.52
0.25
-1.58
-1.10
1.53
-1.58
0.34
1.83
0.56
0.28
-1.58
-1.44
3.00
0.39
-1.58
-1.44
1.03
0.15
-1.58
0.63
-0.19
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Sampling Date
Series1
Series2

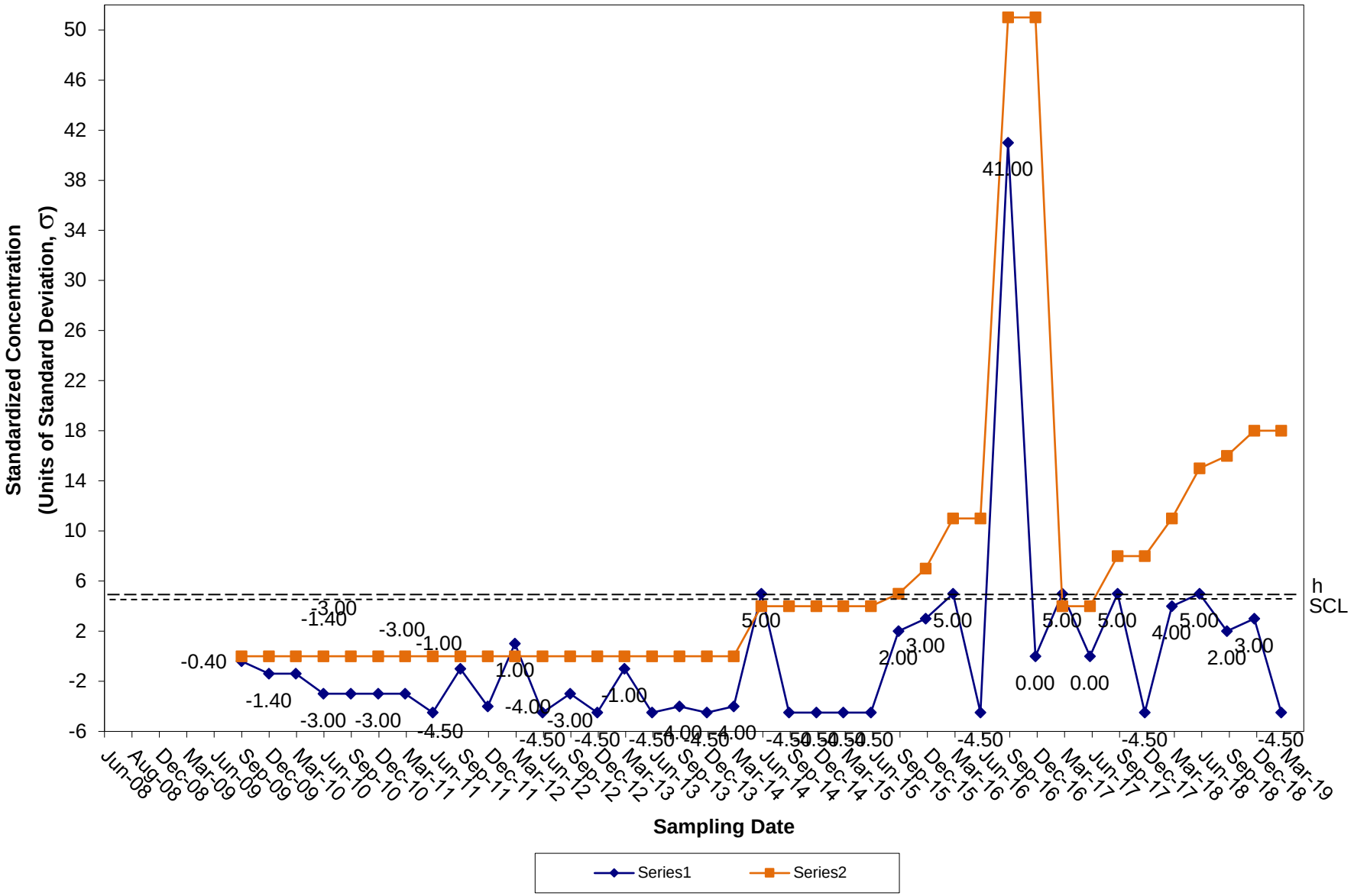
CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-15



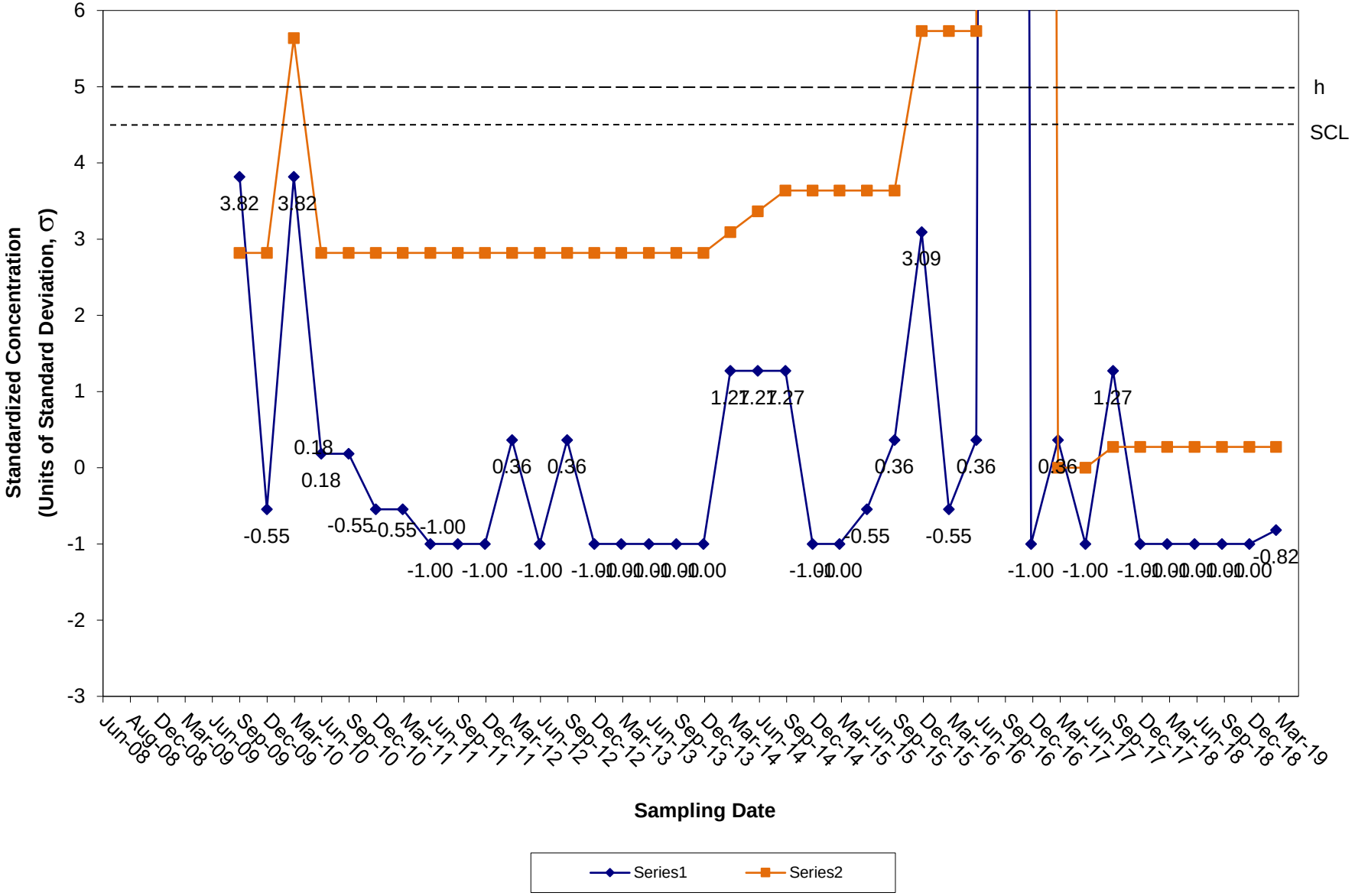

CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
6
5
4
3
2
1
0
-1
-2
-3
-4
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
0.80
0.51
0.13
0.80
-0.92
-0.78
-0.13
-1.97
-0.43
0.27
0.28
-1.02
-0.70
-0.50
-0.54
-1.27
-0.70
-0.86
-0.25
-0.97
-0.69
-0.78
0.15
-0.65
-0.22
-0.90
-1.41
0.99
-0.49
-0.81
-1.13
-1.17
-0.80
-0.76
-1.07
-1.18
0.05
-0.47

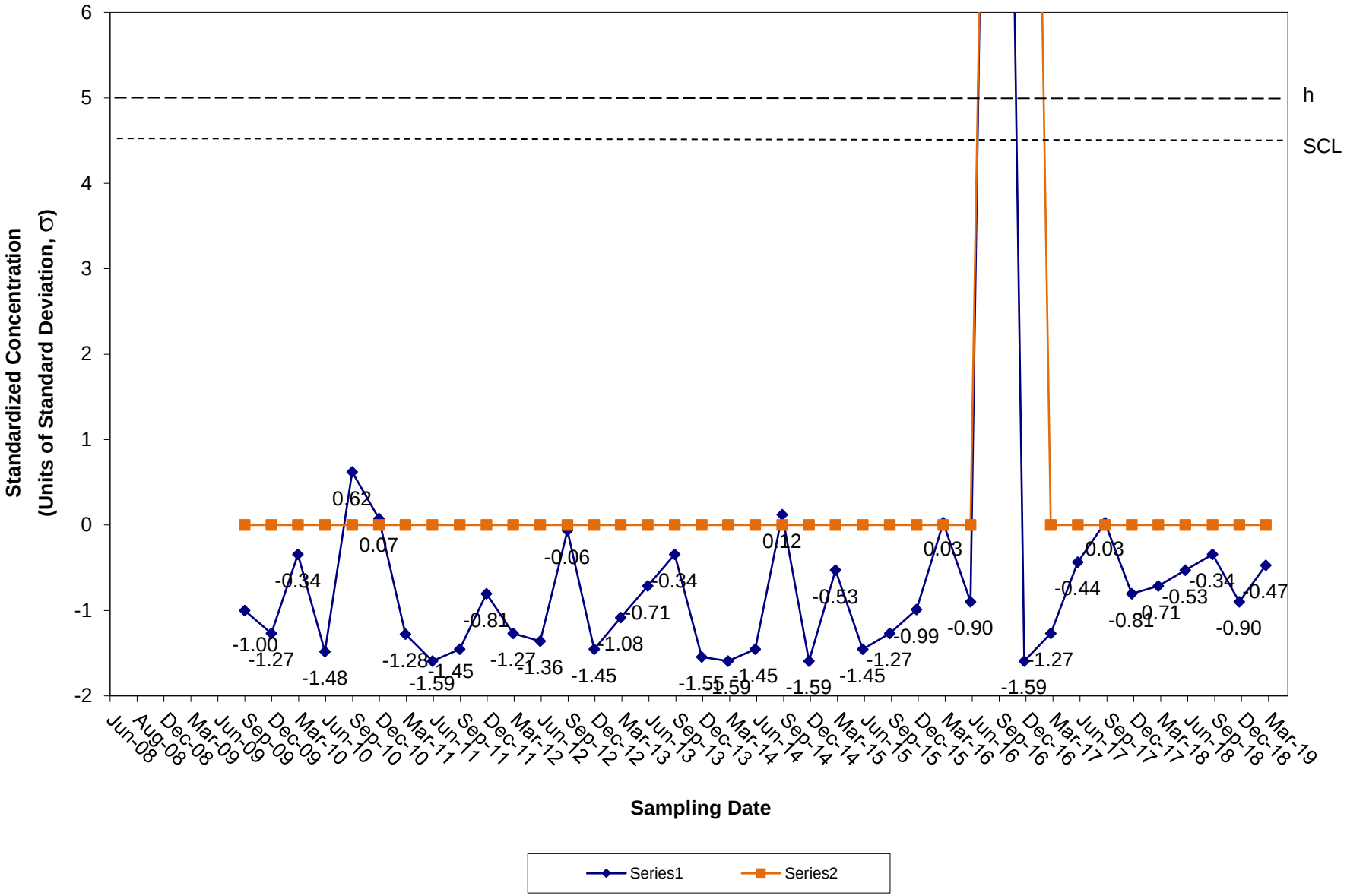
CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Compliance Well OW-15



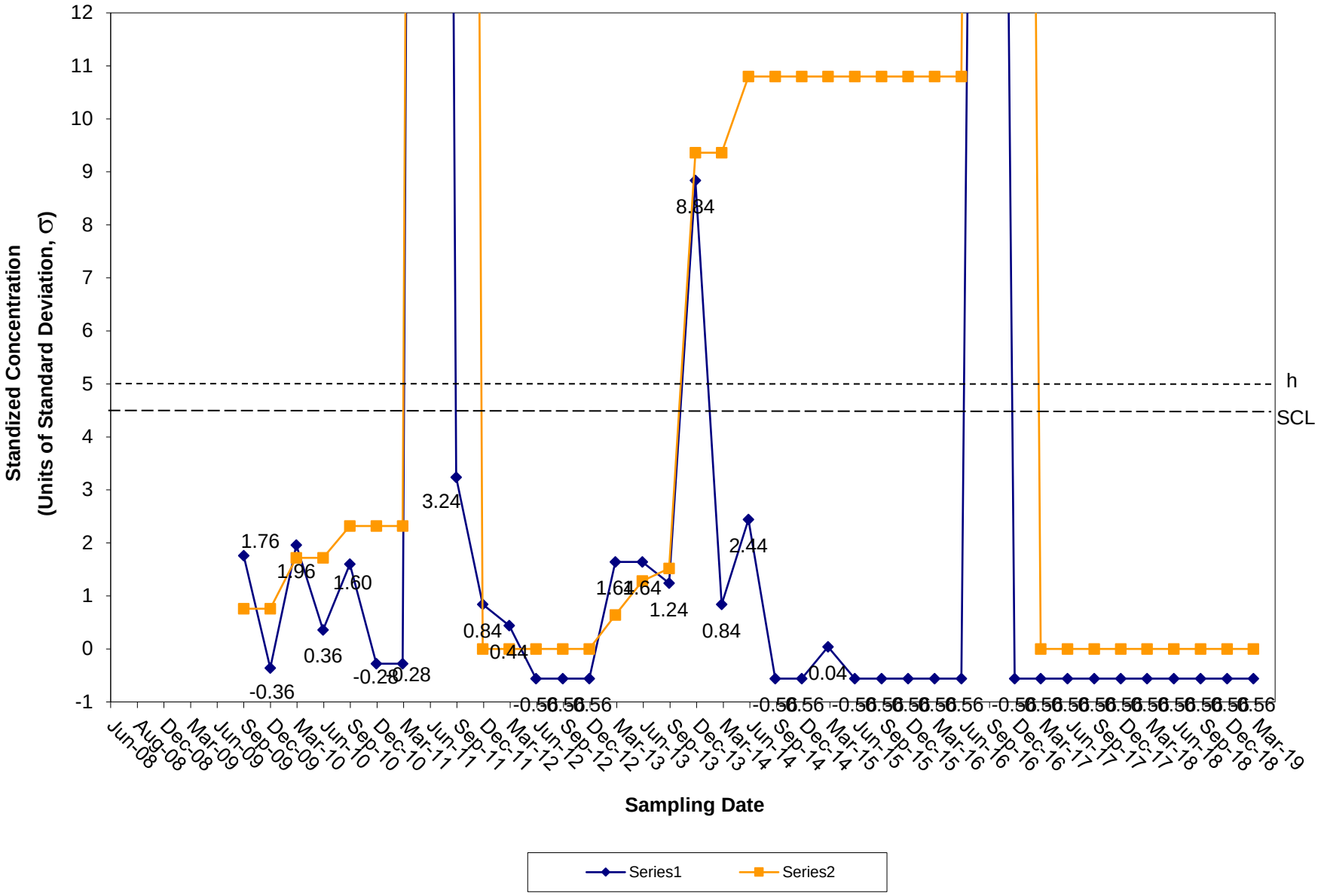
CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Compliance Well OW-15



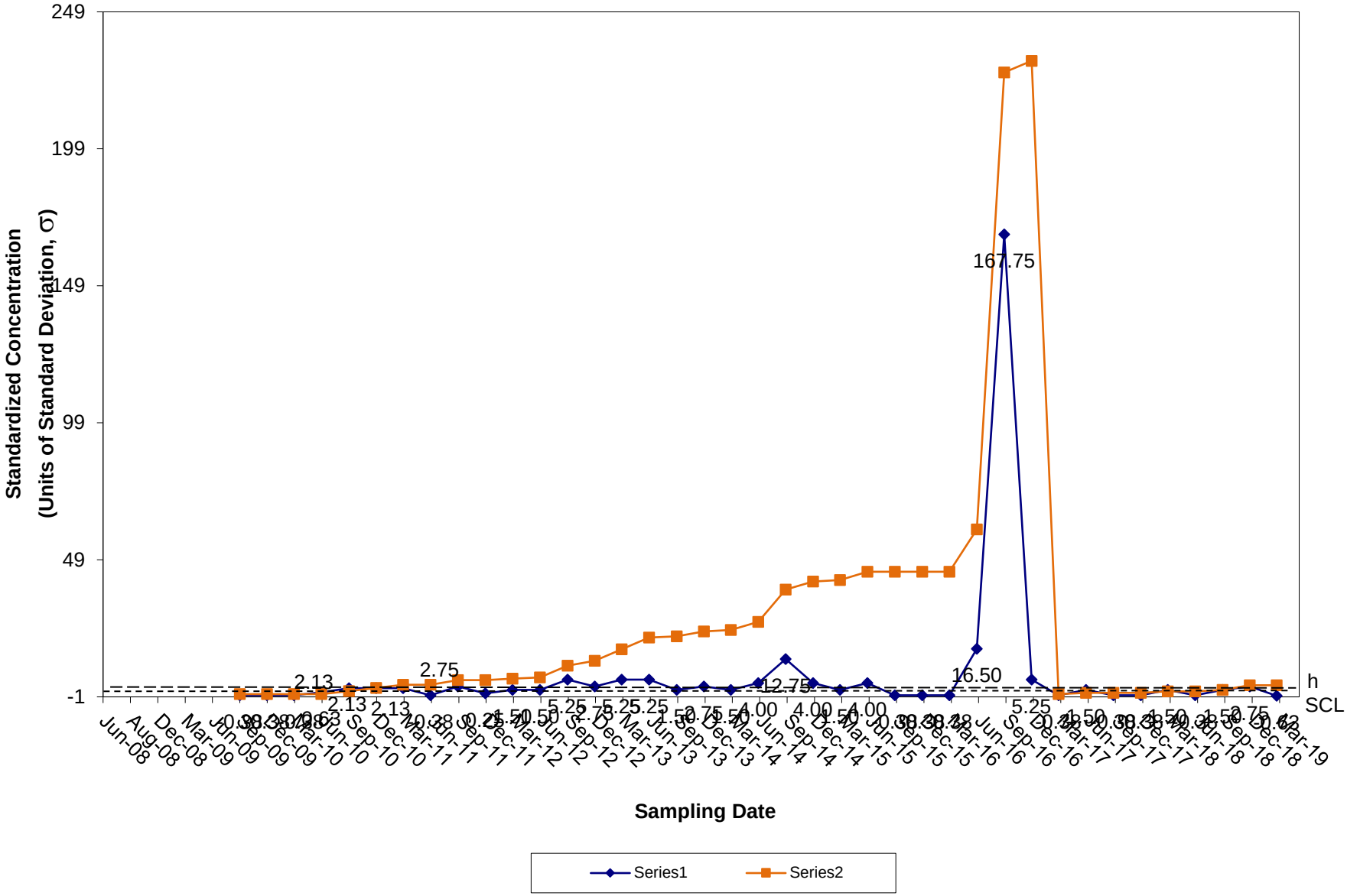
CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-15

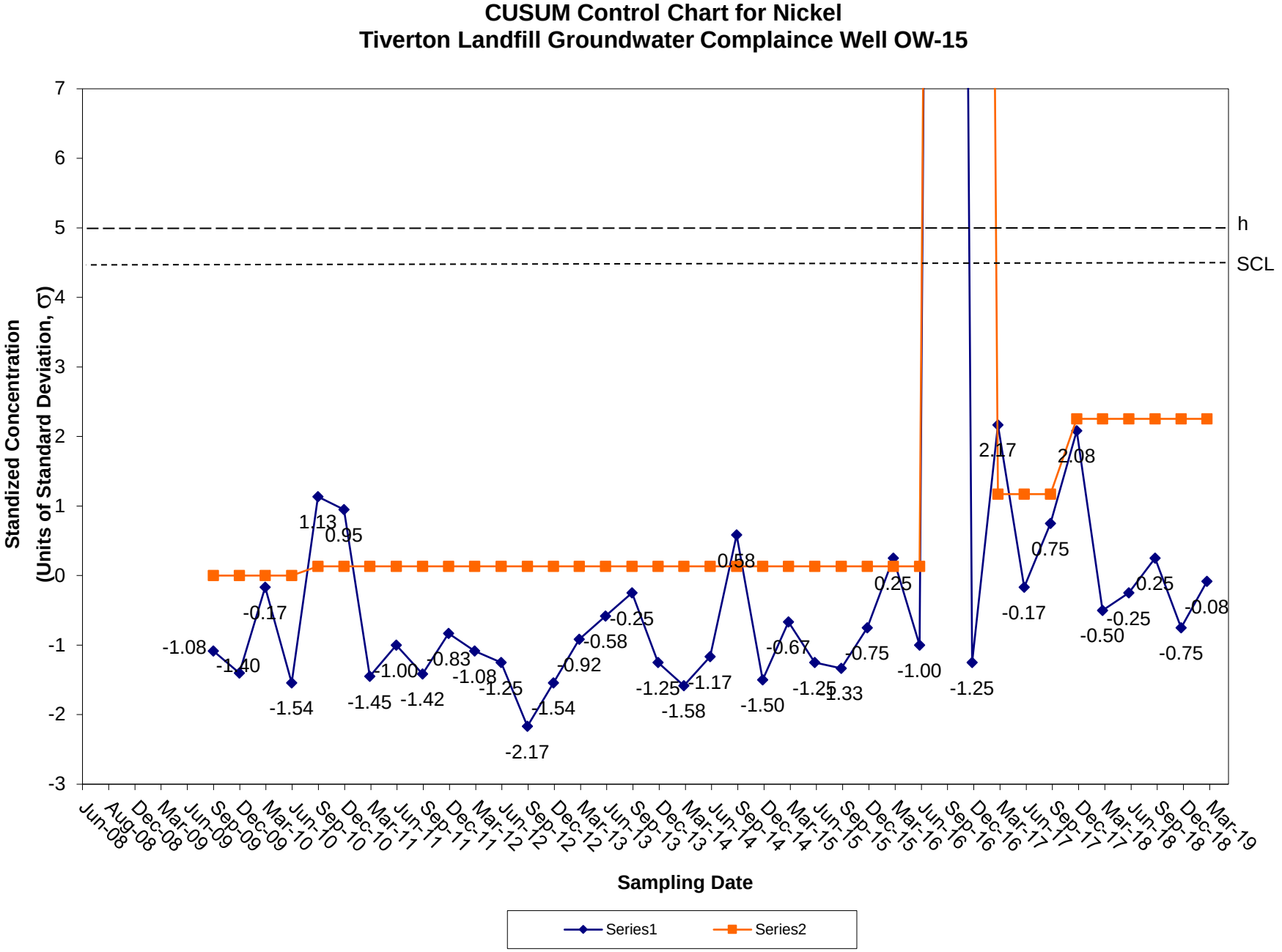


CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Complaince Well OW-15



CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-15




CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
7
6
5
4
3
2
1
0
-1
-2
-3
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
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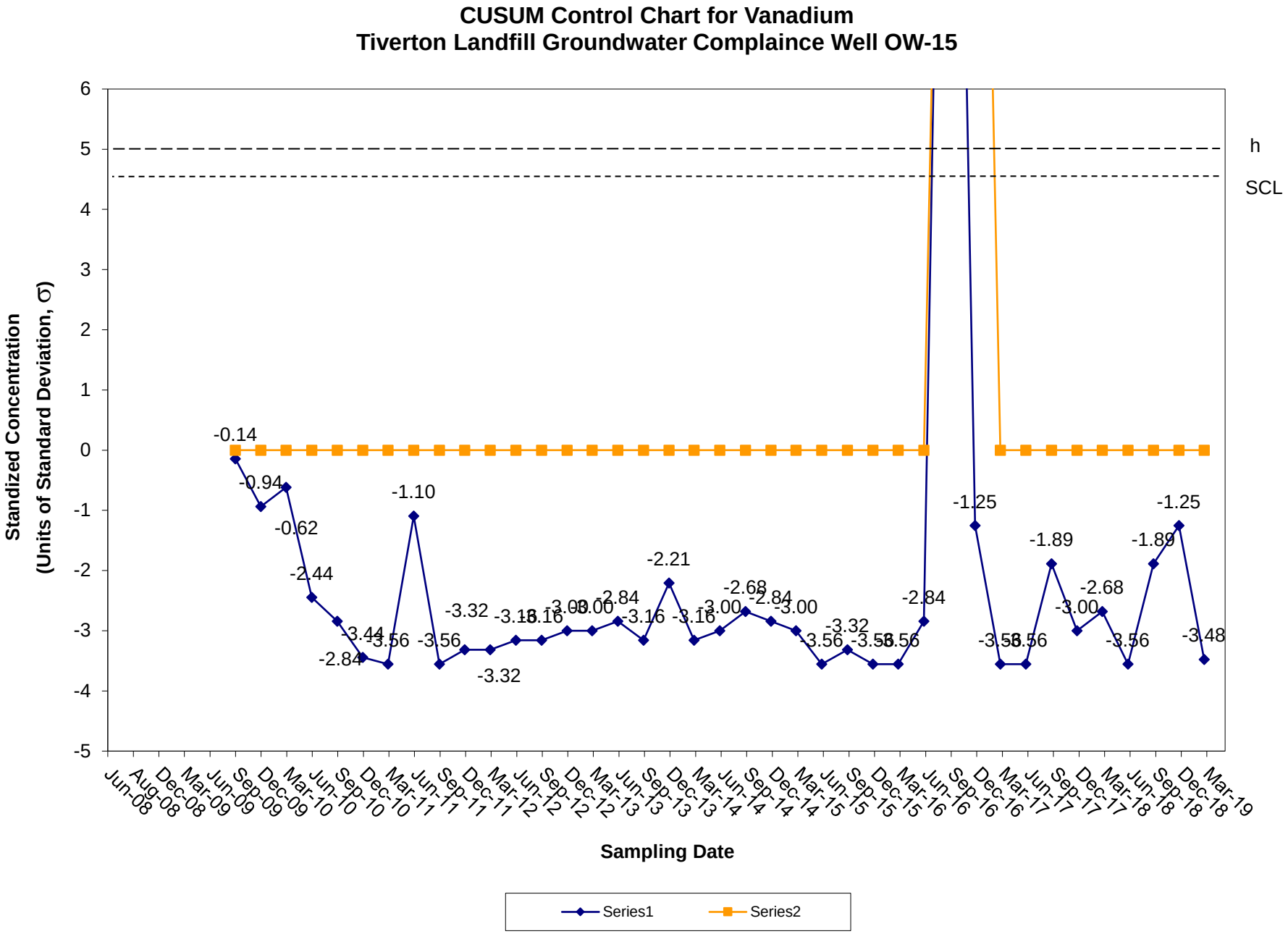
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
-1.08
-1.40
-0.17
-1.54
1.13
0.95
-1.45
-1.00
-1.42
-0.83
-1.08
-1.25
-2.17
-1.54
-0.92
-0.58
-0.25
-1.25
-1.58
-1.17
0.58
-1.50
-0.67
-1.25
-1.33
-0.75
0.25
-1.00
-1.25
2.17
-0.17
0.75
2.08
-0.50
-0.25
0.25
-0.75
-0.08


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
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Mar-14
Jun-14
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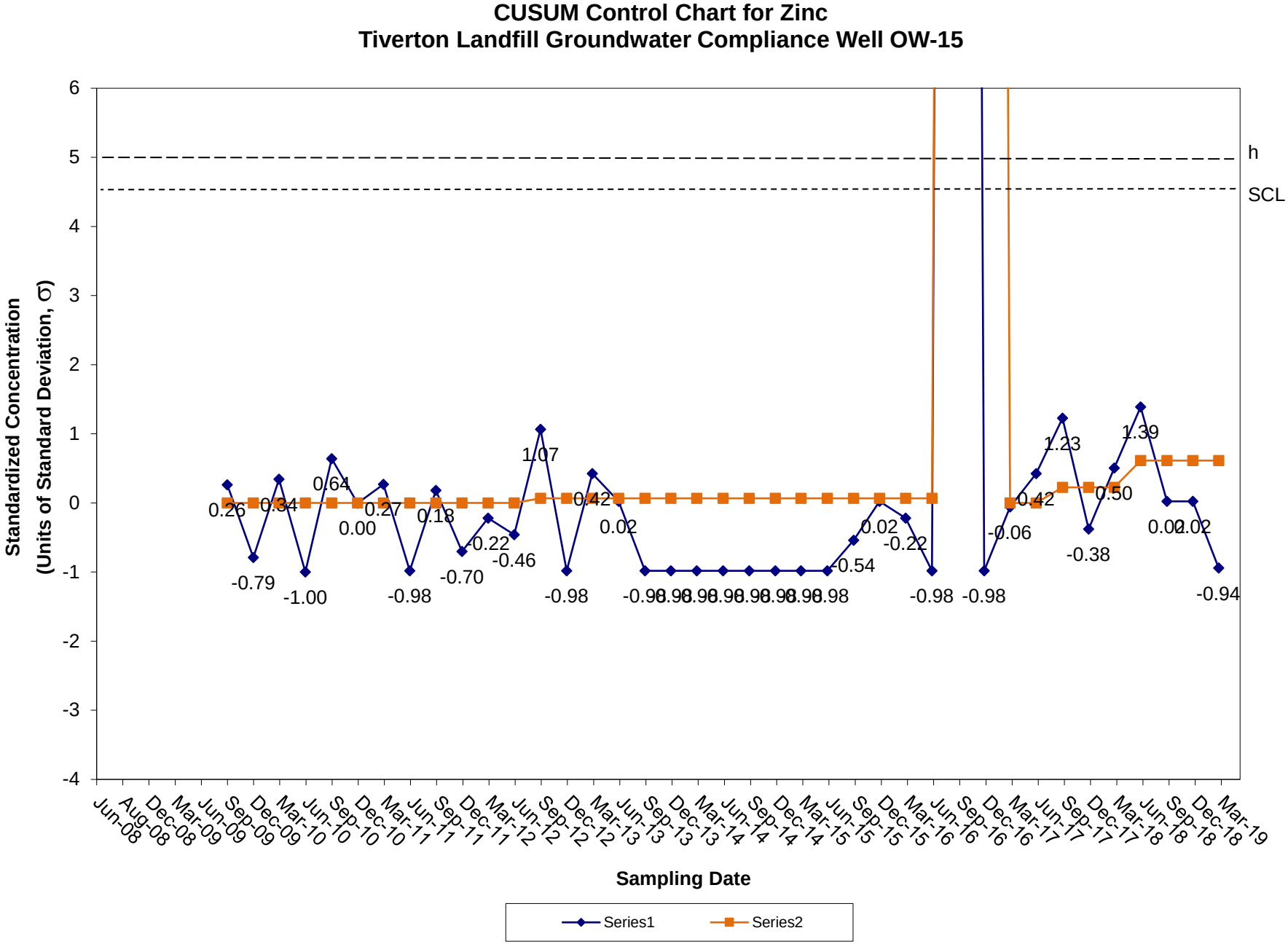
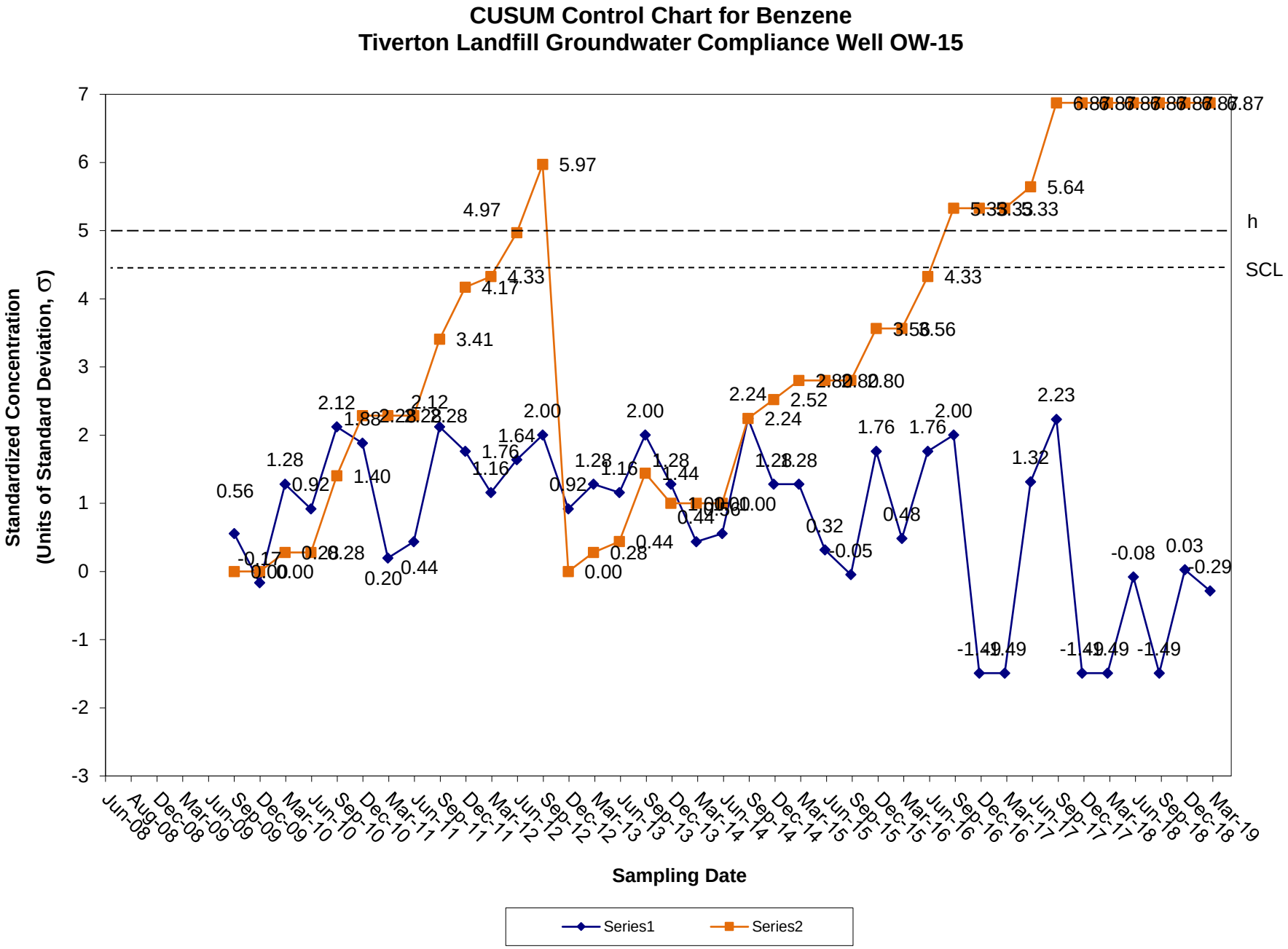
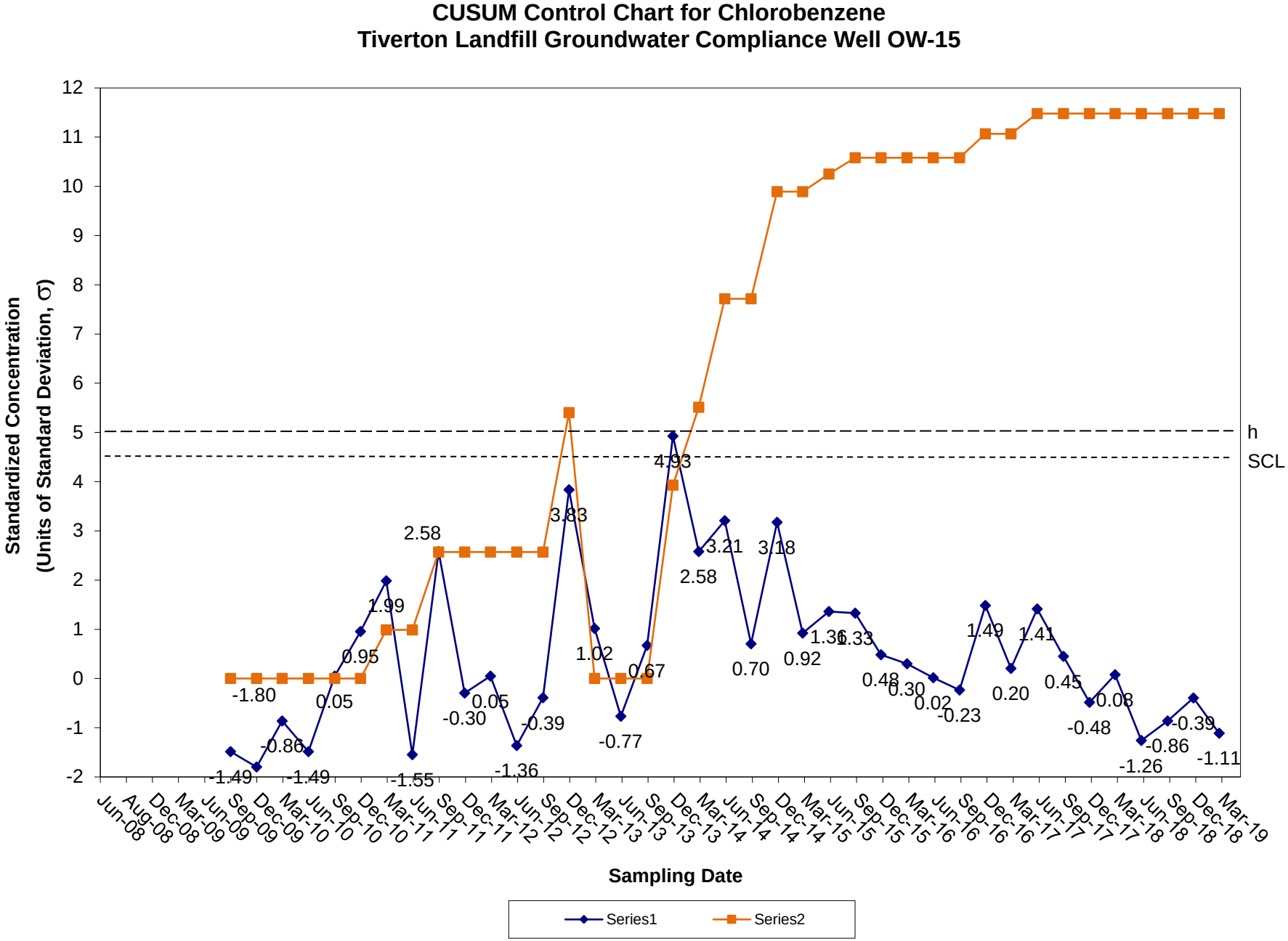
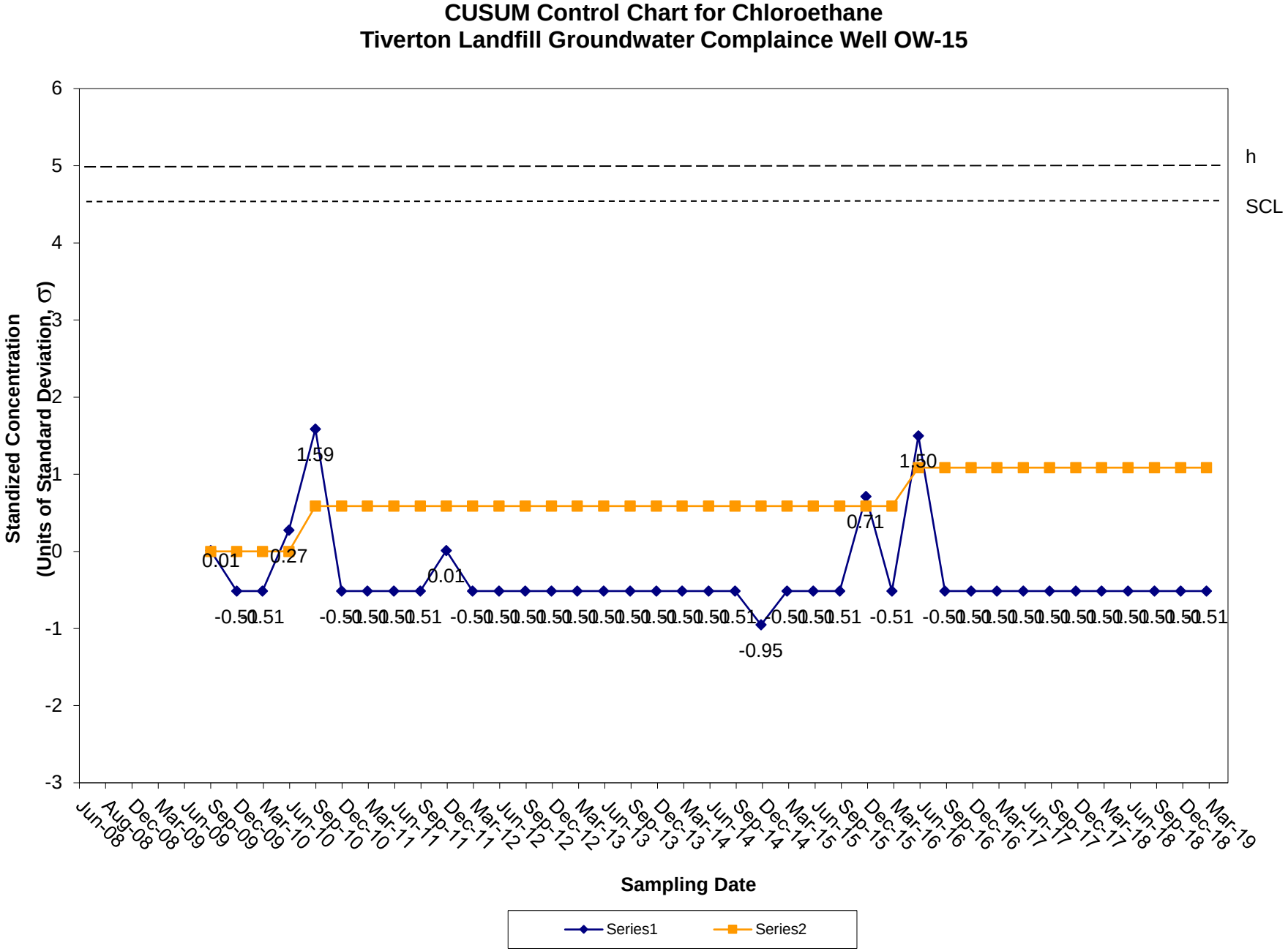
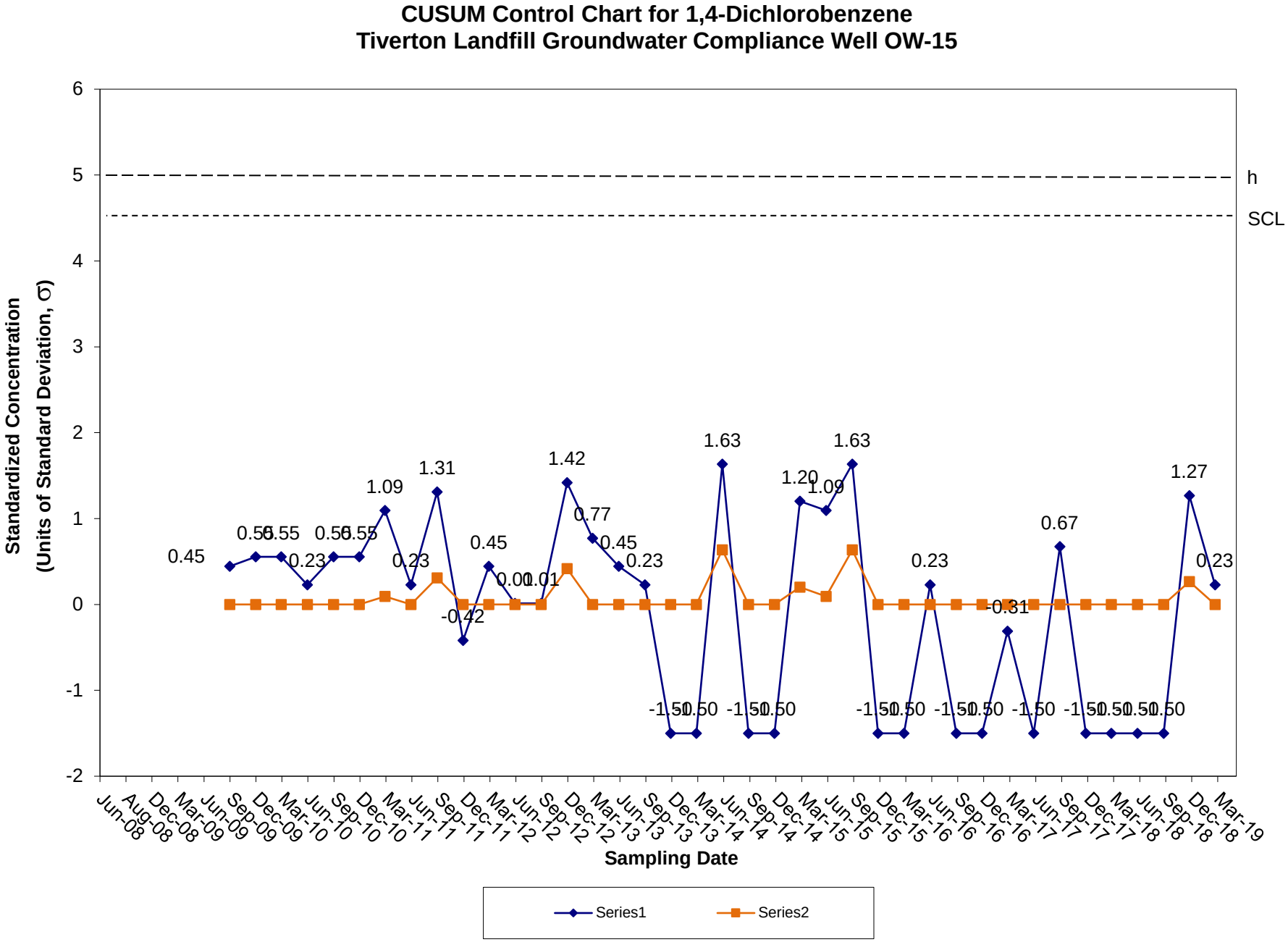
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
-0.14
-0.94
-0.62
-2.44
-2.84
-3.44
-3.56
-1.10
-3.56
-3.32
-3.32
-3.16
-3.16
-3.00
-2.84
-3.16
-2.21
-3.16
-3.00
-2.68
-2.84
-3.00
-3.56
-3.32
-2.84
-1.25
-3.56
-3.56
-1.89
-3.00
-2.68
-3.56
-1.89
-1.25
-3.48

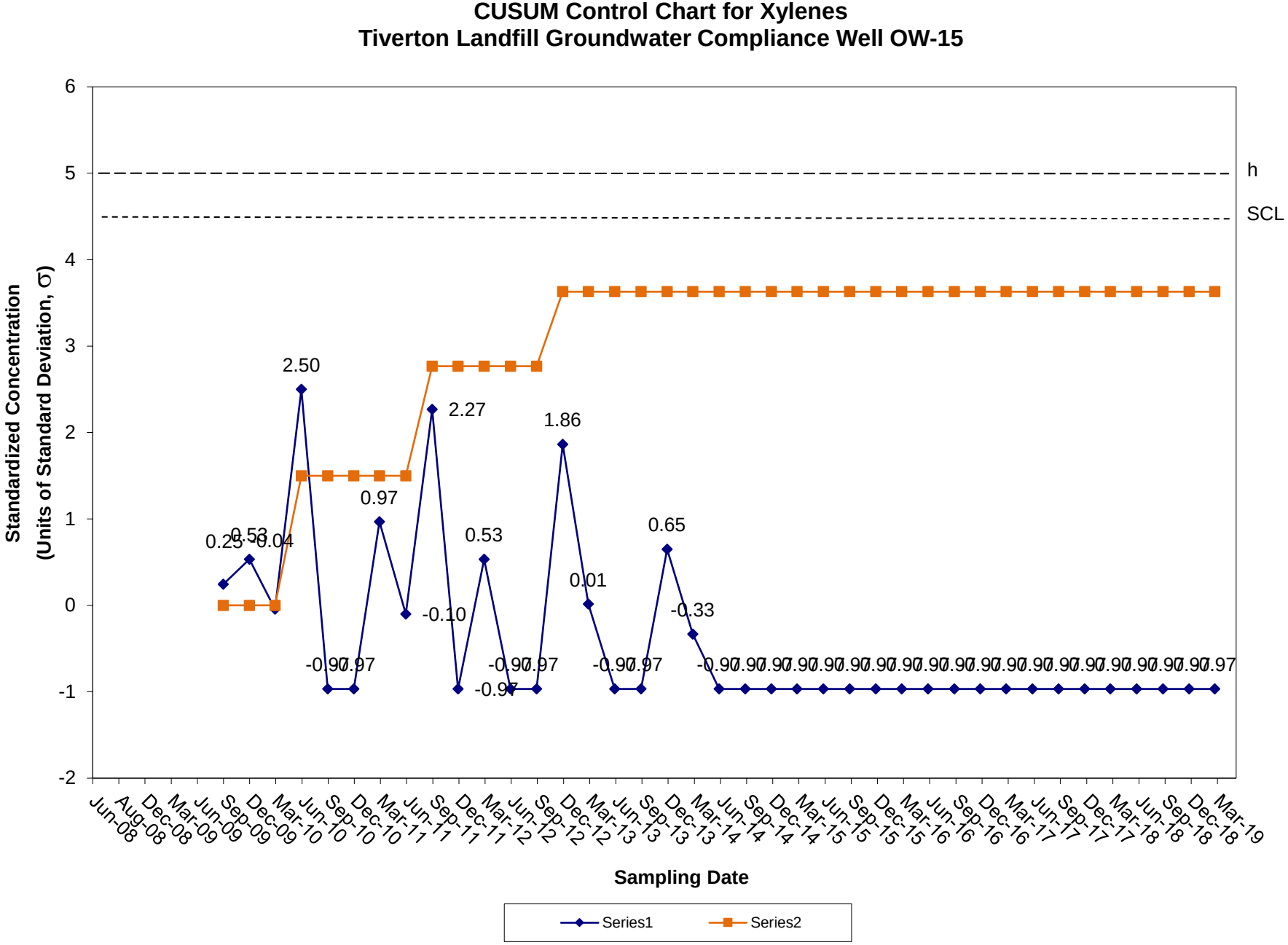

CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Benzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

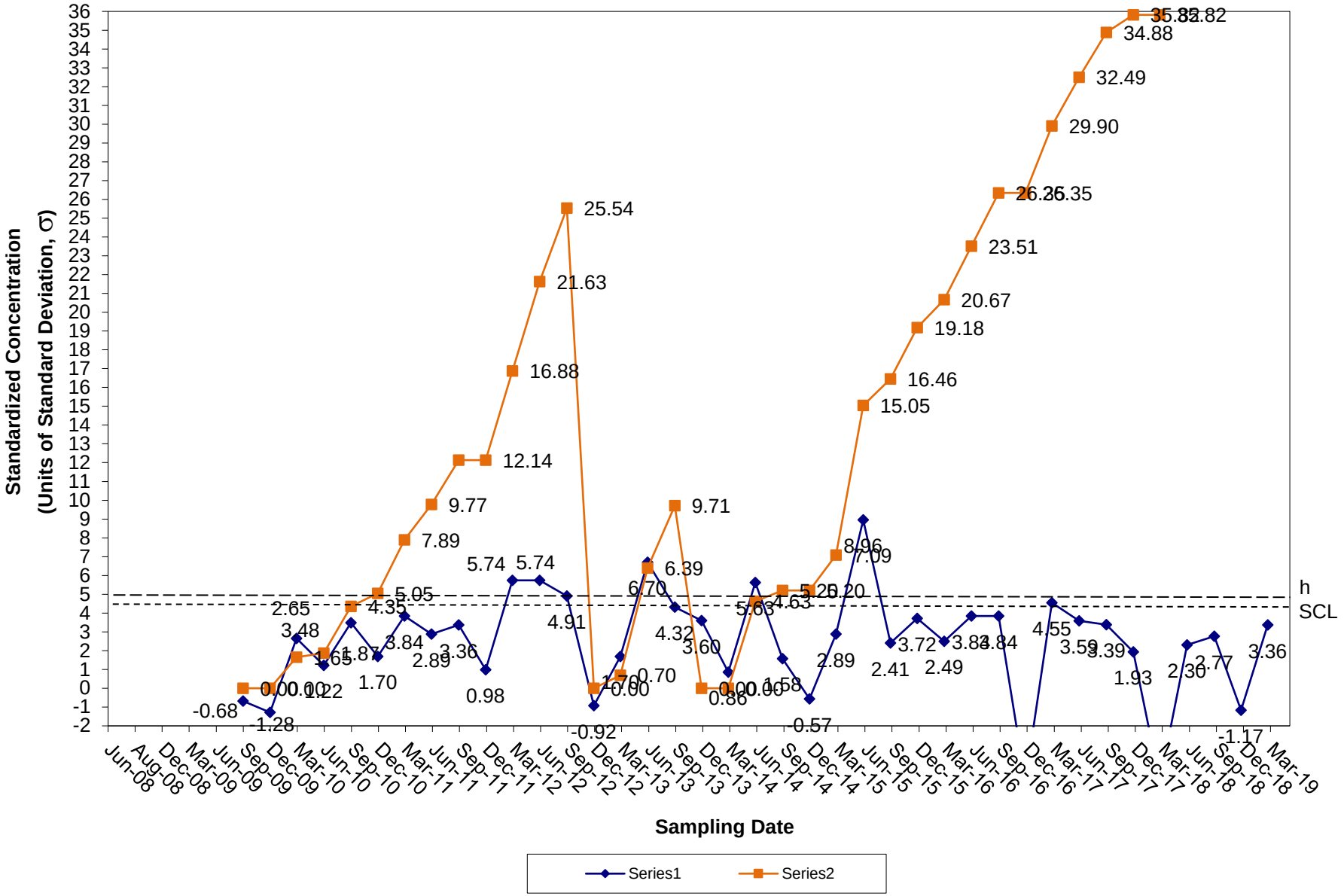

CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
-1.80
-1.49
-0.86
-1.49
0.05
0.95
1.99
-1.55
2.58
-0.30
0.05
-1.36
-0.39
3.83
1.02
-0.77
0.67
4.93
2.58
3.21
0.70
3.18
0.92
1.36
1.33
0.48
0.30
0.02
-0.23
1.49
0.20
1.41
0.45
-0.48
0.08
-1.26
-0.86
-0.39
-1.11


CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

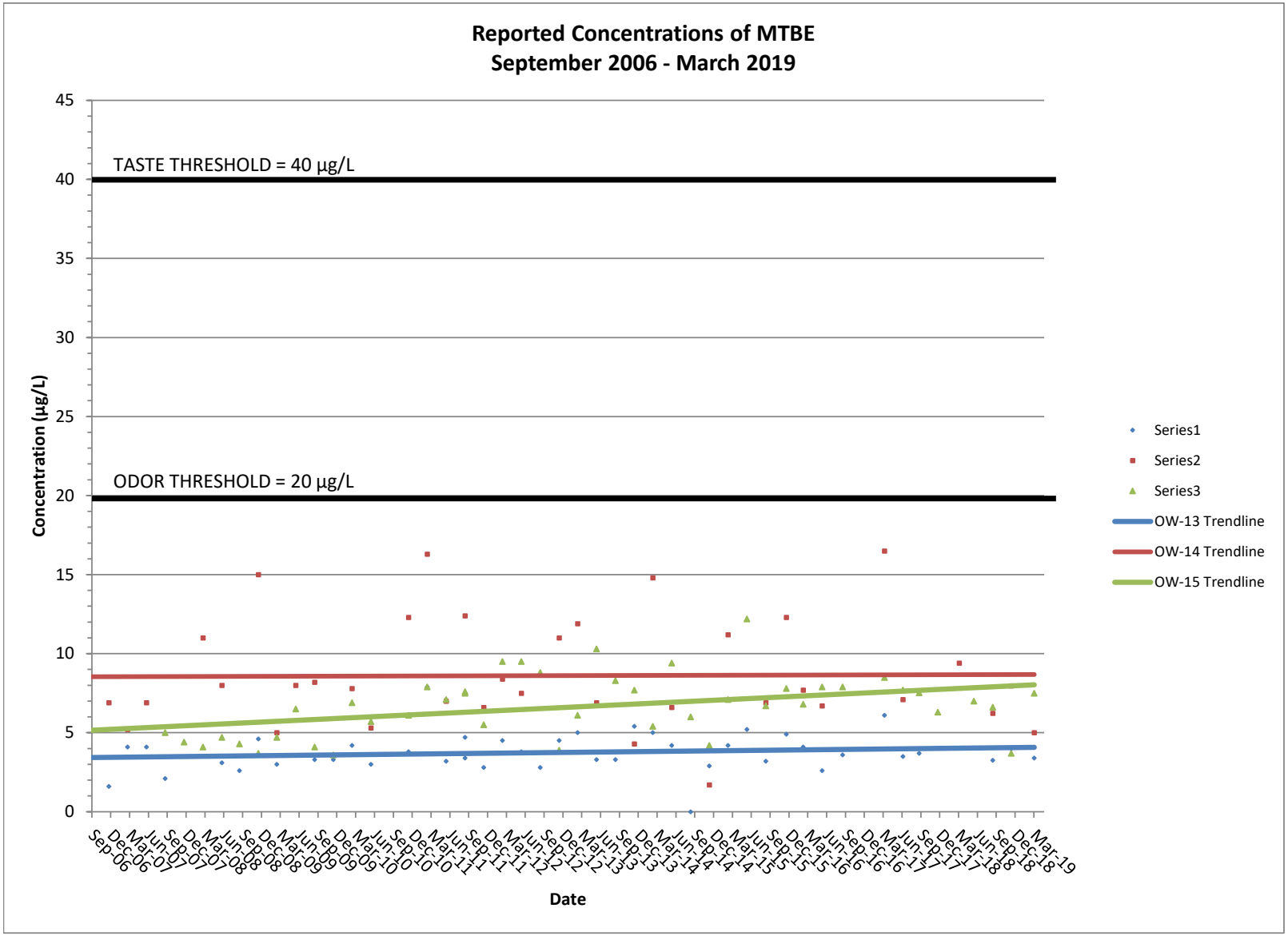

CUSUM Control Chart for 1,4-Dichlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Xylenes
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
6
5
4
3
2
1
0
-1
-2
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19

CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-15



ATTACHMENT NO. 6
REPORTED CONCENTRATIONS OF MTBE FIGURE


Reported Concentrations of MTBE
September 2006 - March 2019
TASTE THRESHOLD = 40 µg/L
ODOR THRESHOLD = 20 µg/L
Concentration (µg/L)
Date
Series1
Series2
Series3
OW-13 Trendline
OW-14 Trendline
OW-15 Trendline

ATTACHMENT NO. 7
FIELD SAMPLING DATA SHEETS

FIELD SAMPLING DATA SHEET

PROJECT NAME: TIVERTON LANDFILL
PARE PROJECT NO.: 94139.24
DATE: 3/28/2019
WEATHER: Sunny 40s

FIELD TESTING RESULTS:

SURFACE WATER LOCATION: SW-1

READING 1

pH:	6.71	pH UNITS
SPEC. COND:	0.72	mS/cm
TEMPERATURE:	5	^{o}C

SURFACE WATER LOCATION: SW-2

READING 1

pH:	6.12	pH UNITS
SPEC. COND:	0.26	mS/cm
TEMPERATURE:	5.8	^{o}C

SURFACE WATER LOCATION: SW-3

READING 1

pH:	6.13	pH UNITS
SPEC. COND:	0.60	mS/cm
TEMPERATURE:	6.2	^{o}C

NOTES:

All surface water samples were clear with a brownish tinge.

FIELD SAMPLING DATA SHEET

PROJECT NAME: TIVERTON LANDFILL
PARE PROJECT NO.: 94139.24

DATE: 3/28/2019
WEATHER: Sunny 40s

WELL ID: OW-9

DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	16 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	0.6 gallons	PURGE RATE (GPM):	N/A
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	N/A

WATER LEVEL DATA

DEPTH:	12.5 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	5.66	pH UNITS	5.67	pH UNITS
SPEC. COND:	0.145	mS/cm	0.143	mS/cm
TEMPERATURE:	9.9	^{o}C	9.8	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.
Samples were collected at 11:30 AM.
Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	3/28/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 40s

WELL ID: OW-12 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	16.2 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.30 gallons	PURGE RATE (GPM):	0.2 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	7 +/-

WATER LEVEL DATA

DEPTH:	2.3 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.18	pH UNITS	6.18	pH UNITS
SPEC. COND:	0.545	mS/cm	0.536	mS/cm
TEMPERATURE:	9.2	^{o}C	9.1	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 12:45 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	3/28/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 40s

WELL ID: OW-13 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	14.5 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.80 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	3.8 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.57	pH UNITS	6.57	pH UNITS
SPEC. COND:	1.480	mS/cm	1.481	mS/cm
TEMPERATURE:	7.6	^{o}C	7.6	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 5:00 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	3/28/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 40s

WELL ID: OW-14 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	10.6 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.2 gallons	PURGE RATE (GPM):	N/A
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	N/A

WATER LEVEL DATA

DEPTH:	3.6 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.5	pH UNITS	6.5	pH UNITS
SPEC. COND:	2.039	mS/cm	2.046	mS/cm
TEMPERATURE:	7.6	^{o}C	7.6	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of supernatant sampled after a 15-minute decanting period.

Samples were collected at 3:45 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	3/28/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 40s

WELL ID: OW-15 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	16.8 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.6 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	7 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.61	pH UNITS	6.60	pH UNITS
SPEC. COND:	1.821	mS/cm	1.806	mS/cm
TEMPERATURE:	11.2	^{o}C	11.0	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 4:30 PM.

Methane Reading (% LEL): 44

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	3/28/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 40s

WELL ID: OW-7 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	11.8 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	2.0 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	0 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.49	pH UNITS	6.49	pH UNITS
SPEC. COND:	1.023	mS/cm	1.026	mS/cm
TEMPERATURE:	8.2	^{o}C	8.3	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 2:30 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	3/28/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 40s

WELL ID: OW-16 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	45.8 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	7.3 gallons	PURGE RATE (GPM):	0.3 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	20 +/-

WATER LEVEL DATA

DEPTH:	1.3 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.58	pH UNITS	6.57	pH UNITS
SPEC. COND:	1.262	mS/cm	1.251	mS/cm
TEMPERATURE:	11.8	^{o}C	12.0	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 3:00 PM.

Methane Reading (% LEL): 0

Engineers | Scientists | Planners

PARECORP.COM

PARE CORPORATION

October 7, 2019

Mr. Leo Hellested, P.E.
Office of Waste Management
Solid Waste Section
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908-5767

Attn: Mr. Robert Schmidt

Re: **Quarterly Monitoring Report**
2nd Quarter (June) 2019, Groundwater Monitoring, Sampling, and Analysis
Tiverton Municipal Sanitary Landfill
Pare Project No.: 94139.24

Dear Mr. Hellested:

Enclosed herewith are results of the statistical analysis of groundwater monitoring data for the second quarterly monitoring round of Year 2019 from the Tiverton Landfill (Landfill). Pare Corporation (Pare) has prepared this report on behalf of the Town of Tiverton (Town). Pare conducted the groundwater sampling on June 28, 2019 at the background wells OW-9 and OW-12, and compliance wells OW-7, OW-13, OW-14, OW-15, and OW-16. June 2019 is the first quarterly monitoring period where OW-12 has been designated as a background well.

Groundwater samples were analyzed by New England Testing Laboratory (NETLAB) of West Warwick, Rhode Island for the constituents listed in Appendix A (Detection Monitoring) of the State Solid Waste Regulations. Certified laboratory results data are enclosed and are summarized on attached Tables 1-3.

Groundwater field parameters consisting of temperature, pH, and specific conductivity were measured at each monitoring well, in accordance with the RIDEM-approved Groundwater Monitoring Plan for the Landfill. Field parameters were collected until three successive measurements stabilized within ± 3% for temperature, ± 0.1 standard unit for pH, and ± 3% for specific conductivity, in accordance with US EPA's Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures. Field parameters are documented on Field Sampling Data Sheets, which are enclosed.

Combustible gases are monitored at each well and at the top of the Landfill. Each of the well locations, with the exception of OW-15, had no detections of combustible gas observed during this monitoring round. OW-15 had a methane reading of >99% LEL. Combustible gases have not been detected at the Landfill in past quarterly monitoring rounds except for the March 2019 round when methane was first detected at OW-15 with a 44% LEL reading. June 2019 is the second round in which a detectable level of combustible gas has been detected at any groundwater monitoring wells. OW-15 is over 300 feet from the nearest property line and given that no other wells had combustible gases at detectable levels, it does not appear that this occurrence of combustible gases warrants immediate action. Pare will continue to monitor for combustible gases at OW-15, and the other monitoring wells to evaluate if this occurrence is the beginning of an increasing trend in gas at the

landfill or a short-term spike in gas concentrations at OW-15. Additionally, Pare will conduct a surficial gas probing survey in the vicinity of OW-15 during the next quarterly monitoring round in September 2019 to further assess the gas trend at the monitoring well.

HUMAN HEALTH THRESHOLD EVALUATION

Background Well OW-9 – Six (6) target metals were reported in the groundwater sample collected from OW-9. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-9. No (0) target VOCs were reported above laboratory detection limits at OW-9.

Background Well OW-12 – Seven (7) target metals were reported in the groundwater sample collected from OW-12. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-12. No (0) target VOCs were reported above laboratory detection limits at OW-12.

Compliance Well OW-7 – Eleven (11) target metals were reported in the groundwater sample collected from OW-7. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-7. One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-7.

Compliance Well OW-13 – Nine (9) target metals were reported in the groundwater sample collected from OW-13. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-13. Three (3) target VOCs; acetone, chlorobenzene and MTBE; were reported above their laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-13.

Compliance Well OW-14 – Nine (9) target metals were reported in the groundwater sample collected from OW-14. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-4. Five (5) target VOCs; acetone, benzene, chlorobenzene, 1,4-dichlorobenzene, and MTBE; were reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-14.

Compliance Well OW-15 – Eight (8) target metals were reported in the groundwater sample collected from OW-15. One (1) reported metal; arsenic (0.0205 mg/L); exceeded its MCL (0.01 mg/). Five (5) target VOCs; acetone, benzene, chlorobenzene, 1,4-dichlorobenzene, and MTBE were reported above their laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-15.

Compliance Well OW-16 – Six (6) target metals were reported in the groundwater sample collected from OW-16. No (0) target metals were reported above their corresponding MCLs or human health thresholds at OW-16. One (1) target VOC, MTBE, was reported above laboratory detection limits. No (0) target VOCs were reported above their corresponding MCLs or human health thresholds at OW-16.

TOLERANCE INTERVAL STATISTICAL EVALUATION

The Tolerance Interval (TI) approach was used to develop Tolerance Limits (TLs) for each target inorganic constituent (i.e., metals) using the background well analytical results from the eight preceding rounds for which analytical results are available. The background well, OW-9, could not be sampled in several previous monitoring rounds including in the June 2016, September 2016, June 2017, September 2017, and September 2018 monitoring rounds due to dry conditions. Therefore, analytical results of the eight most recent rounds in which samples could be collected were utilized to generate the TLs for this monitoring round, dating back to December 2016. The TI approach is considered inappropriate for analysis of organic constituents and was therefore not performed to evaluate the results of reported VOCs. Table 2 summarizes historical results data from OW-9 used in the calculation of the TLs.

Three (3) metals; arsenic, barium, and cobalt; had reported concentrations that exceeded their corresponding TLs calculated during the June 2019 monitoring round in at least one compliance well. In total, there were ten (10) TL exceedances of these metals in this monitoring round. The TLs and the corresponding compliance well data from this monitoring round are presented in Table 3. Arsenic, barium, and cobalt are routinely detected in groundwater beneath the landfill.

CUSUM METHOD STATISTICAL EVALUATION

The Shewhart-CUSUM Method, a supplemental statistical analysis method used in addition to the TI Method, was performed in accordance with the US EPA documents titled “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Interim Final Guidance, April 1989” and "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Addendum to Interim Final Guidance, July, 1992".

Barium at OW-12 and MTBE at OW-15 exceeded both of their respective Shewhart-CUSUM thresholds during the June 2019 monitoring round.

ASSESSMENT MONITORING

The Shewhart-CUSUM analysis is utilized, along with the Tolerance Limits, to identify when Assessment Monitoring should be performed.

One (1) Appendix B parameter, sulfides, was reported above its respective detection limits in December 2017, as a result, Pare recommended that OW-14 be tested for sulfides in March 2018. Sulfides (0.04 mg/L) were detected in the samples collected from OW-14 in March 2018. Pare attempted to sample OW-14 in the September 2018 monitoring round to test for sulfides; however, a sample was unobtainable due to dry conditions. Pare sampled OW-14 for sulfides in December 2018. Sulfides were not detected in the samples collected at OW-14 during the December 2018 monitoring round.

Pare sampled OW-14 for sulfides in the March 2019 monitoring round. Sulfides were not detected in the samples collected at OW-14 during the March 2019 monitoring round. As such, Pare recommended that sulfides be discontinued from regular monitoring at the Landfill due to the lack of detections.

Pare did not perform Assessment Monitoring in the June 2019 monitoring round.

SURFACE WATER MONITORING

Per the request of the RIDEM in a letter dated January 31, 2019, the Town began incorporating surface water monitoring at surface water locations SW-1, SW-2, and SW-3 into the existing regular quarterly monitoring program. The parameters for surface water monitoring include: Appendix A metals, mercury, tin, iron, ammonia, TKN, total nitrogen, total phosphorus, and hardness. Additionally, field screening was performed at each surface water location to determine temperature, pH, and specific conductivity.

Monitoring Location SW-1 – Eight (8) target metals were detected in the surface water sample collected at SW-1. One (1) metal, iron (10.7 mg/L), exceeded both its human health threshold (0.3 mg/L) and its chronic aquatic life threshold (1 mg/L). Additionally, ammonia, total nitrogen, and TKN were detected in the samples collected at SW-1; however, they did not exceed their given threshold values, or no threshold values have been established for these parameters.

Monitoring Location SW-2 – Nine (9) target metals were detected in the surface water sample collected at SW-2. Two (2) metals; lead (0.0009 mg/L) and iron (3.05 mg/L); were detected above thresholds. Lead was detected above its chronic aquatic life threshold (0.00067 mg/L). Iron (3.05 mg/L), exceeded both its human health threshold (0.3 mg/L) and its chronic aquatic life threshold (1 mg/L). Additionally, ammonia, total nitrogen, and TKN were detected in the samples collected at SW-2; they did not exceed their given threshold values, or no threshold values have been established for these parameters.

Monitoring Location SW-3 – Nine (9) target metals were detected in the surface water sample collected at SW-3. One (1) metal, iron (4.13 mg/L), was detected above its human health threshold (0.3 mg/L) and its chronic aquatic life threshold (1 mg/L). One (1) parameter, total phosphorous (0.22 mg/L), exceeded its human health threshold (0.025 mg/L). Additionally, ammonia, total nitrogen, and TKN were detected in the samples collected at SW-3; however, they did not exceed their given threshold values, or no threshold values have been established for these parameters.

MTBE ANALYSIS

Many of the most recent Assessment Monitoring rounds have been conducted due to MTBE concentrations in groundwater. Reported MTBE concentrations have generally risen since September 2006, as depicted in the attached figure titled Reported Concentrations of MTBE. The figure compares the recent increases in reported MTBE concentrations at OW-13, OW-14 and OW-15 to historical concentrations and drinking water advisories defined in the US EPA document titled “2011 Edition of the Drinking Water Standards and Health Advisories”.

Although reported MTBE concentrations appear to be trending slowly upward, MTBE has never been reported above its odor threshold (0.020 mg/L) or its taste threshold (0.040 mg/L). The US EPA has not established a human health advisory concentration for MTBE.

Because the elevated concentrations of MTBE have recently triggered Assessment Monitoring at OW-13, OW-14, and OW-15, and that no Appendix B parameters were reported to a significant degree at these wells, it is Pare’s opinion that the increasing trend in MTBE concentrations beneath the Landfill is an isolated phenomenon and not the result of a significant change in groundwater quality beneath the Landfill.

Despite CUSUM values of MTBE at OW-13, OW-14, and OW-15 remaining above their threshold during the June 2019 monitoring round, Pare does not recommend assessment monitoring due to the aforementioned MTBE trend. The lack of Appendix B parameters in the past suggests that the presence of MTBE trend does not indicate an increased likelihood that Appendix B parameters would be present beneath the Landfill.

CONCLUSIONS AND RECOMMENDATIONS

Currently, the Landfill conducts Detection Monitoring for the parameters listed in Appendix A of the State Solid Waste Regulations, as well as mercury and tin. During this monitoring round, three (3) metals; arsenic, barium, and cobalt; exceeded their tolerance limits (TLs) in at least one well. Arsenic exceeded its TL during the previous monitoring round at OW-13 and OW-15. Barium exceeded its TL during the previous monitoring round at OW-13, OW-14, and OW-15. Cobalt exceeded its TL during the previous monitoring round at OW-7, OW-13, OW-14, and OW-15. Exceedances in two consecutive monitoring rounds is one of the criteria used to consider performing Assessment Monitoring in subsequent monitoring rounds. Assessment Monitoring criteria were not triggered in the June 2019 monitoring round; therefore, Pare does not recommend Assessment Monitoring be conducted at the Landfill during the upcoming September 2019 monitoring round.

Since the 2016 monitoring periods, a rising trend in detections of antimony at the compliance wells became apparent. Antimony was detected at the background well above its MCL during the December 2017 monitoring round. Antimony was detected at the background well again during the March 2019 monitoring round but below its MCL. Previously, antimony had not been detected at the background well since the September 2011 monitoring round. The detection of antimony at compliance well OW-14 in the June 2017 monitoring round triggered Assessment Monitoring, which was performed in the December 2017 monitoring round. The Assessment Monitoring resulted in detection of one Appendix B parameter, sulfides (0.04 mg/L). However, antimony was not detected at any groundwater well during the December 2017 monitoring period. Analysis of the samples collected from OW-14 during the March 2018 monitoring round indicated another detection of sulfides (0.04 mg/L). Assessment Monitoring was not performed at OW-14 in June 2018 but was performed at OW-13. Sulfides were not detected in the Assessment Monitoring performed at OW-13 during the June 2018 monitoring round. OW-14 was attempted to be sampled again for sulfides in the September 2018 monitoring round; however, a sample was unable to be collected due to dry conditions. OW-14 was sampled again in the December 2018 and March 2019 monitoring rounds, but sulfides were not detected in either round.

The EPA has no MCL for sulfides in groundwater. Water with dissolved hydrogen sulfide will smell musty or swampy around 0.5-1.0 mg/L and Pare did not identify a noticeable smell emanating from the groundwater sample in either round during which the constituent was detected. Hydrogen sulfide gas can occur naturally in groundwater from plant materials rotting underground in anaerobic conditions. Hydrogen sulfide gas could also be resulting from gypsum buried at the Landfill. Sulfides were not detected at OW-14 in the December 2018 and March 2019 monitoring rounds. Therefore, Pare recommended that sulfide monitoring be discontinued at OW-14, which began with the June 2019 monitoring round.

Pare recommended that wells OW-7 and OW-16 be incorporated into the compliance monitoring regimen in the 2017 Annual Groundwater Monitoring Report. Despite OW-7 having several years of sampling data, the sampling rounds were selected on a rotating basis with wells OW-6 and OW-8 for alternate monitoring. Pare recommends that wells OW-7 and OW-16 be sampled for two years, or eight consecutive monitoring rounds,

prior to initiating statistical analysis. The June 2019 monitoring period marks the sixth monitoring round that these wells are to be sampled consistently; therefore, it is estimated that statistical analysis for the bedrock and overburden wells will begin in the March 2020 monitoring round.

Historically, methane has not been an issue at the Landfill. However; the last two monitoring rounds have seen methane detections at monitoring well OW-15, including a >99% LEL reading in June 2019. Pare will continue to monitor OW-15 for methane and will include a surficial gas probing survey in the vicinity of the well in the September 2019 round to further assess the gas trend. The Landfill is expected to begin its multiphase closure in the winter of 2019; if methane detections at OW-15 continue, Pare will evaluate the inclusion of additional gas ventilation features in the closure design.

Should the RIDEM have any questions regarding this letter or the attached data, please feel free to contact the undersigned at (401) 334-4100, thank you.

Very truly yours,

Timothy P. Thies, P.E.
Senior Vice President

TPT/TCJ/abv

Attachments

cc: Richard Rogers, Tiverton Public Works Director (w/encl.)
Jay Lambert, Tiverton Landfill Subcommittee (w/encl.)
Jan Reitsma, Tiverton Town Administrator (w/encl.)
Travis C. Johnson, Pare Corporation (w/o encl.)

ATTACHMENT NO. 1
LABORATORY ANALYTICAL DATA REPORT

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 9F28003
Client Project: 94139 - Tiverton Landfill

Report Date: 08-July-2019

Prepared for:

Travis Johnson
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com

Samples Submitted:

The samples listed below were submitted to New England Testing Laboratory on 06/28/19. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 9F28003. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
9F28003-01	OW-7	Water	06/27/2019	06/28/2019
9F28003-02	OW-9	Water	06/27/2019	06/28/2019
9F28003-03	OW-12	Water	06/27/2019	06/28/2019
9F28003-04	OW-13	Water	06/27/2019	06/28/2019
9F28003-05	OW-14	Water	06/27/2019	06/28/2019
9F28003-06	OW-15	Water	06/27/2019	06/28/2019
9F28003-07	OW-16	Water	06/27/2019	06/28/2019

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

OW-12 (Lab Number: 9F28003-03)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-13 (Lab Number: 9F28003-04)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-14 (Lab Number: 9F28003-05)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8

Request for Analysis (continued)

OW-14 (Lab Number: 9F28003-05) (continued)

Analysis	Method
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-15 (Lab Number: 9F28003-06)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

Request for Analysis (continued)

OW-16 (Lab Number: 9F28003-07)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

OW-7 (Lab Number: 9F28003-01)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

Request for Analysis (continued)

OW-9 (Lab Number: 9F28003-02)

Analysis	Method
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Lead	EPA 200.8
Mercury	EPA 7470A
Nickel	EPA 200.8
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Vanadium	EPA 200.8
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 200.8

Method References

Methods for the Determination of Metals in Environmental Samples EPA-600/R-94/111, USEPA, 1994

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

Case Narrative

CASE NARRATIVE:

Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

Sample: OW-7 Case Number: 9F28003

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	200.8	0.0002	0.0001
7440-38-2	Arsenic	200.8	0.0001	0.0001
7440-39-3	Barium	200.8	0.027	0.001
7440-41-7	Beryllium	200.8	ND	0.0001
7440-43-9	Cadmium	200.8	0.0005	0.0001
7440-47-3	Chromium	200.8	0.0008	0.0001
7440-48-4	Cobalt	200.8	0.0078	0.0001
7440-50-8	Copper	200.8	0.002	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	200.8	0.009	0.001
7782-49-2	Selenium	200.8	ND	0.005
7440-22-44	Silver	200.8	ND	0.0001
7440-28-0	Thallium	200.8	ND	0.0001
7440-34-5	Tin	200.8	ND	0.005
7440-62-2	Vanadium	200.8	0.0009	0.0005
7440-66-6	Zinc	200.8	0.007	0.001
7439-92-1	Lead	200.8	0.0008	0.0001

ND = Not Detected

Sample: OW-9 Case Number: 9F28003

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	200.8	ND	0.0001
7440-38-2	Arsenic	200.8	ND	0.0001
7440-39-3	Barium	200.8	0.006	0.001
7440-41-7	Beryllium	200.8	0.0001	0.0001
7440-43-9	Cadmium	200.8	0.0001	0.0001
7440-47-3	Chromium	200.8	0.0019	0.0001
7440-48-4	Cobalt	200.8	ND	0.0001
7440-50-8	Copper	200.8	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	200.8	ND	0.001
7782-49-2	Selenium	200.8	ND	0.005
7440-22-44	Silver	200.8	ND	0.0001
7440-28-0	Thallium	200.8	ND	0.0001
7440-34-5	Tin	200.8	ND	0.005
7440-62-2	Vanadium	200.8	ND	0.0005
7440-66-6	Zinc	200.8	0.003	0.001
7439-92-1	Lead	200.8	0.0004	0.0001

ND = Not Detected

Sample: OW-12 Case Number: 9F28003

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	200.8	ND	0.0001
7440-38-2	Arsenic	200.8	ND	0.0001
7440-39-3	Barium	200.8	0.024	0.001
7440-41-7	Beryllium	200.8	ND	0.0001
7440-43-9	Cadmium	200.8	0.0004	0.0001
7440-47-3	Chromium	200.8	0.0001	0.0001
7440-48-4	Cobalt	200.8	0.0006	0.0001
7440-50-8	Copper	200.8	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	200.8	0.008	0.001
7782-49-2	Selenium	200.8	ND	0.005
7440-22-44	Silver	200.8	ND	0.0001
7440-28-0	Thallium	200.8	ND	0.0001
7440-34-5	Tin	200.8	ND	0.005
7440-62-2	Vanadium	200.8	ND	0.0005
7440-66-6	Zinc	200.8	0.001	0.001
7439-92-1	Lead	200.8	0.0003	0.0001

ND = Not Detected

Sample: OW-13 Case Number: 9F28003

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	200.8	ND	0.0001
7440-38-2	Arsenic	200.8	0.0069	0.0001
7440-39-3	Barium	200.8	0.096	0.001
7440-41-7	Beryllium	200.8	ND	0.0001
7440-43-9	Cadmium	200.8	0.0007	0.0001
7440-47-3	Chromium	200.8	0.0007	0.0001
7440-48-4	Cobalt	200.8	0.0111	0.0001
7440-50-8	Copper	200.8	0.003	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	200.8	0.011	0.001
7782-49-2	Selenium	200.8	ND	0.005
7440-22-44	Silver	200.8	ND	0.0001
7440-28-0	Thallium	200.8	ND	0.0001
7440-34-5	Tin	200.8	ND	0.005
7440-62-2	Vanadium	200.8	ND	0.0005
7440-66-6	Zinc	200.8	0.007	0.001
7439-92-1	Lead	200.8	0.0005	0.0001

ND = Not Detected

Sample: OW-14 Case Number: 9F28003

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	200.8	0.0001	0.0001
7440-38-2	Arsenic	200.8	0.0036	0.0001
7440-39-3	Barium	200.8	0.199	0.001
7440-41-7	Beryllium	200.8	ND	0.0001
7440-43-9	Cadmium	200.8	ND	0.0001
7440-47-3	Chromium	200.8	0.0006	0.0001
7440-48-4	Cobalt	200.8	0.0058	0.0001
7440-50-8	Copper	200.8	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	200.8	0.011	0.001
7782-49-2	Selenium	200.8	ND	0.005
7440-22-44	Silver	200.8	ND	0.0001
7440-28-0	Thallium	200.8	ND	0.0001
7440-34-5	Tin	200.8	ND	0.005
7440-62-2	Vanadium	200.8	0.0006	0.0005
7440-66-6	Zinc	200.8	0.005	0.001
7439-92-1	Lead	200.8	0.0002	0.0001

ND = Not Detected

Sample: OW-15 Case Number: 9F28003

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	200.8	ND	0.0001
7440-38-2	Arsenic	200.8	0.0205	0.0001
7440-39-3	Barium	200.8	0.148	0.001
7440-41-7	Beryllium	200.8	ND	0.0001
7440-43-9	Cadmium	200.8	ND	0.0001
7440-47-3	Chromium	200.8	0.0009	0.0001
7440-48-4	Cobalt	200.8	0.0124	0.0001
7440-50-8	Copper	200.8	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	200.8	0.025	0.001
7782-49-2	Selenium	200.8	ND	0.005
7440-22-44	Silver	200.8	ND	0.0001
7440-28-0	Thallium	200.8	ND	0.0001
7440-34-5	Tin	200.8	ND	0.005
7440-62-2	Vanadium	200.8	0.0007	0.0005
7440-66-6	Zinc	200.8	0.004	0.001
7439-92-1	Lead	200.8	0.0003	0.0001

ND = Not Detected

Sample: OW-16 Case Number: 9F28003

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	200.8	ND	0.0001
7440-38-2	Arsenic	200.8	ND	0.0001
7440-39-3	Barium	200.8	0.008	0.001
7440-41-7	Beryllium	200.8	0.0002	0.0001
7440-43-9	Cadmium	200.8	0.0002	0.0001
7440-47-3	Chromium	200.8	ND	0.0001
7440-48-4	Cobalt	200.8	0.0009	0.0001
7440-50-8	Copper	200.8	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	200.8	0.002	0.001
7782-49-2	Selenium	200.8	ND	0.005
7440-22-44	Silver	200.8	ND	0.0001
7440-28-0	Thallium	200.8	ND	0.0001
7440-34-5	Tin	200.8	ND	0.005
7440-62-2	Vanadium	200.8	ND	0.0005
7440-66-6	Zinc	200.8	0.004	0.001
7439-92-1	Lead	200.8	ND	0.0001

ND = Not Detected

Sample: OW-7 Case Number: 9F28003

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-7 Case Number: 9F28003
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.01	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	102.02	70-130
1,2-Dichloroethane d4	104.54	70-130
4 BFB	95.14	70-130

ND = Not Detected

Sample: OW-9 Case Number: 9F28003

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-9 Case Number: 9F28003
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	100.26	70-130
1,2-Dichloroethane d4	105.52	70-130
4 BFB	95.84	70-130

ND = Not Detected

Sample: OW-12 Case Number: 9F28003

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-12 Case Number: 9F28003
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	103.40	70-130
1,2-Dichloroethane d4	112.88	70-130
4 BFB	95.26	70-130

ND = Not Detected

Sample: OW-13 Case Number: 9F28003

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	16.88	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	4.10	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-13 Case Number: 9F28003
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	3.30	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	97.14	70-130
1,2-Dichloroethane d4	104.50	70-130
4 BFB	94.08	70-130

ND = Not Detected

Sample: OW-14 Case Number: 9F28003

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	20.96	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	2.24	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	10.74	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-14 Case Number: 9F28003
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	2.04	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	5.07	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	100.14	70-130
1,2-Dichloroethane d4	111.26	70-130
4 BFB	95.48	70-130

ND = Not Detected

Sample: OW-15 Case Number: 9F28003

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	19.19	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	1.94	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	14.40	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-15 Case Number: 9F28003
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	2.64	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	9.38	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	101.82	70-130
1,2-Dichloroethane d4	110.44	70-130
4 BFB	96.30	70-130

ND = Not Detected

Sample: OW-16 Case Number: 9F28003

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-16 Case Number: 9F28003
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	4.90	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	100.58	70-130
1,2-Dichloroethane d4	104.64	70-130
4 BFB	94.48	70-130

ND = Not Detected

NEW ENGLAND TESTING LABORATORY, INC.
59 Greenhill Street
West Warwick, RI 02893
1-888-863-8522

9 F 2 8003 K

CHAIN OF CUSTODY RECORD

PROJ. NO.: 94139.24

PROJECT NAME/LOCATION: TIVERTON LANDFILL QUARTERLY

CLIENT: PARE CORP

REPORT TO: fjohnson@parecorp.com

INVOICE TO: ACCOUNTING

DATE	TIME	COMP	GRAB	SAMPLE I.D.	AQUEOUS	SOIL	OTHER	NO. OF CONTAINERS	PRESERVATIVE	TESTS**: App A Metals Hg	App A VOCs				REMARKS
6/27			X	OW-7	X			3	HCl, HNO3						
				OW-9											
				OW-12											
				OW-13											
				OW-14											
				OW-15				2							
				OW-16				3							

Sampled by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	4/28 9:35		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	4/28 9:35	B Pacheco	4/28/15 9:35

Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time
B Pacheco	6/28/19 1455	[signature]	6/28/19 1455

Laboratory Remarks:
Temp. received: 4
Cooled ☐

Special Instructions:
List Specific Detection
Limit Requirements: RP

Turnaround (Business Days) ____

**Netlab subcontracts the following tests: Radiologicals, Radon, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates, CT ETPH

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 9F28004
Client Project: 94139.01 - Tiverton Landfill Surface Water

Report Date: 12-July-2019

Prepared for:

Travis Johnson
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com

Samples Submitted :

The samples listed below were submitted to New England Testing Laboratory on 06/28/19. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 9F28004. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
9F28004-01	SW-1	Water	06/27/2019	06/28/2019
9F28004-02	SW-2	Water	06/27/2019	06/28/2019
9F28004-03	SW-3	Water	06/27/2019	06/28/2019

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

SW-1 (Lab Number: 9F28004-01)

Analysis	Method
Ammonia	SM4500-NH3-D
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Lead	EPA 200.8
Magnesium	SM3120-B
Mercury	EPA 7470A
Nickel	EPA 200.8
Nitrate and Nitrite as N	4500-N03-E
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E
Vanadium	EPA 200.8
Zinc	EPA 200.8

SW-2 (Lab Number: 9F28004-02)

Analysis	Method
Ammonia	SM4500-NH3-D
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Lead	EPA 200.8
Magnesium	SM3120-B
Mercury	EPA 7470A
Nickel	EPA 200.8
Nitrate and Nitrite as N	4500-N03-E
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8

Request for Analysis (continued)

SW-2 (Lab Number: 9F28004-02) (continued)

Analysis	Method
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E
Vanadium	EPA 200.8
Zinc	EPA 200.8

SW-3 (Lab Number: 9F28004-03)

Analysis	Method
Ammonia	SM4500-NH3-D
Antimony	EPA 200.8
Arsenic	EPA 200.8
Barium	EPA 200.8
Beryllium	EPA 200.8
Cadmium	EPA 200.8
Calcium	SM3120-B
Chromium	EPA 200.8
Cobalt	EPA 200.8
Copper	EPA 200.8
Iron	EPA 200.8
Lead	EPA 200.8
Magnesium	SM3120-B
Mercury	EPA 7470A
Nickel	EPA 200.8
Nitrate and Nitrite as N	4500-N03-E
Selenium	EPA 200.8
Silver	EPA 200.8
Thallium	EPA 200.8
Tin	EPA 200.8
Total Kjeldahl Nitrogen	SM4500NH3-D
Total Nitrogen	Calculation
Total Phosphorous	SM4500-P-E
Vanadium	EPA 200.8
Zinc	EPA 200.8

Method References

Methods for the Determination of Metals in Environmental Samples EPA-600/R-94/111, USEPA, 1994

Standard Methods for the Examination of Water and Wastewater, 20th Edition, APHA/ AWWA-WPCF, 1998

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

Soil Survey Laboratory Methods Manual, USDA/NCRS, 2014

Case Narrative

CASE NARRATIVE:

Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

Wet Chemistry

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures.

Results: General Chemistry

Sample: SW-1

Lab Number: 9F28004-01 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Ammonia	**0.1**		0.1	mg/L	07/03/19	07/03/19
Kjeldahl Nitrogen	**0.4**		0.1	mg/L	07/05/19	07/05/19
Nitrate and Nitrite as N	ND		0.03	mg/L	07/08/19	07/08/19
Total Phosphorous	ND		0.10	mg/L	07/03/19	07/03/19
Total Nitrogen	**0.400**		0.100	mg/L	07/11/19	07/11/19

Results: General Chemistry

Sample: SW-2

Lab Number: 9F28004-02 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Ammonia	**0.4**		0.1	mg/L	07/03/19	07/03/19
Kjeldahl Nitrogen	**1.0**		0.5	mg/L	07/08/19	07/08/19
Nitrate and Nitrite as N	ND		0.03	mg/L	07/08/19	07/08/19
Total Phosphorous	ND		0.20	mg/L	07/03/19	07/03/19
Total Nitrogen	**1.00**		0.100	mg/L	07/11/19	07/11/19

Results: General Chemistry

Sample: SW-3

Lab Number: 9F28004-03 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Ammonia	**0.2**		0.1	mg/L	07/03/19	07/03/19
Kjeldahl Nitrogen	**0.5**		0.1	mg/L	07/05/19	07/05/19
Nitrate and Nitrite as N	ND		0.03	mg/L	07/08/19	07/08/19
Total Phosphorous	**0.22**		0.20	mg/L	07/03/19	07/03/19
Total Nitrogen	**0.500**		0.100	mg/L	07/11/19	07/11/19

Results: Total Metals

Sample: SW-1

Lab Number: 9F28004-01 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Total Hardness	**204**		0.125	mg/L	07/01/19	07/01/19
Antimony	ND		0.0001	mg/L	07/01/19	07/01/19
Arsenic	**0.0009**		0.0001	mg/L	07/01/19	07/01/19
Barium	**0.068**		0.001	mg/l	07/01/19	07/01/19
Beryllium	ND		0.0001	mg/L	07/01/19	07/01/19
Cadmium	ND		0.0001	mg/L	07/01/19	07/01/19
Calcium	**62.2**		0.05	mg/L	07/01/19	07/01/19
Chromium	**0.0005**		0.0001	mg/L	07/01/19	07/01/19
Cobalt	**0.0014**		0.0001	mg/L	07/01/19	07/01/19
Copper	ND		0.001	mg/l	07/01/19	07/01/19
Iron	**10.7**		0.001	mg/l	07/01/19	07/01/19
Magnesium	**11.8**		0.05	mg/L	07/01/19	07/01/19
Mercury	ND		0.0002	mg/L	07/02/19	07/02/19
Nickel	**0.003**		0.001	mg/l	07/01/19	07/01/19
Selenium	ND		0.005	mg/L	07/01/19	07/01/19
Silver	ND		0.0001	mg/L	07/01/19	07/02/19
Thallium	ND		0.0001	mg/L	07/01/19	07/01/19
Tin	ND		0.005	mg/l	07/01/19	07/01/19
Vanadium	ND		0.0005	mg/L	07/01/19	07/01/19
Zinc	**0.006**		0.001	mg/l	07/01/19	07/01/19
Lead	**0.0003**		0.0001	mg/L	07/01/19	07/01/19

Results: Total Metals

Sample: SW-2

Lab Number: 9F28004-02 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Total Hardness	**30.1**		0.125	mg/L	07/01/19	07/01/19
Antimony	ND		0.0001	mg/L	07/01/19	07/01/19
Arsenic	**0.0006**		0.0001	mg/L	07/01/19	07/01/19
Barium	**0.011**		0.001	mg/l	07/01/19	07/01/19
Beryllium	ND		0.0001	mg/L	07/01/19	07/01/19
Cadmium	ND		0.0001	mg/L	07/01/19	07/01/19
Calcium	**7.51**		0.05	mg/L	07/01/19	07/01/19
Chromium	**0.0007**		0.0001	mg/L	07/01/19	07/01/19
Cobalt	**0.0025**		0.0001	mg/L	07/01/19	07/01/19
Copper	ND		0.001	mg/l	07/01/19	07/01/19
Iron	**3.05**		0.001	mg/l	07/01/19	07/01/19
Magnesium	**2.75**		0.05	mg/L	07/01/19	07/01/19
Mercury	ND		0.0002	mg/L	07/02/19	07/02/19
Nickel	**0.002**		0.001	mg/l	07/01/19	07/01/19
Selenium	ND		0.005	mg/L	07/01/19	07/01/19
Silver	ND		0.0001	mg/L	07/01/19	07/02/19
Thallium	ND		0.0001	mg/L	07/01/19	07/01/19
Tin	ND		0.005	mg/l	07/01/19	07/01/19
Vanadium	**0.0013**		0.0005	mg/L	07/01/19	07/01/19
Zinc	**0.006**		0.001	mg/l	07/01/19	07/01/19
Lead	**0.0009**		0.0001	mg/L	07/01/19	07/01/19

Results: Total Metals

Sample: SW-3

Lab Number: 9F28004-03 (Water)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Total Hardness	**40.7**		0.125	mg/L	07/01/19	07/01/19
Antimony	ND		0.0001	mg/L	07/01/19	07/01/19
Arsenic	**0.0006**		0.0001	mg/L	07/01/19	07/01/19
Barium	**0.014**		0.001	mg/l	07/01/19	07/01/19
Beryllium	ND		0.0001	mg/L	07/01/19	07/01/19
Cadmium	ND		0.0001	mg/L	07/01/19	07/01/19
Calcium	**10.8**		0.05	mg/L	07/01/19	07/01/19
Chromium	**0.0007**		0.0001	mg/L	07/01/19	07/01/19
Cobalt	**0.0023**		0.0001	mg/L	07/01/19	07/01/19
Copper	ND		0.001	mg/l	07/01/19	07/01/19
Iron	**4.13**		0.001	mg/l	07/01/19	07/01/19
Magnesium	**3.33**		0.05	mg/L	07/01/19	07/01/19
Mercury	ND		0.0002	mg/L	07/02/19	07/02/19
Nickel	**0.002**		0.001	mg/l	07/01/19	07/01/19
Selenium	ND		0.005	mg/L	07/01/19	07/01/19
Silver	ND		0.0001	mg/L	07/01/19	07/02/19
Thallium	ND		0.0001	mg/L	07/01/19	07/01/19
Tin	ND		0.005	mg/l	07/01/19	07/01/19
Vanadium	**0.0012**		0.0005	mg/L	07/01/19	07/01/19
Zinc	**0.006**		0.001	mg/l	07/01/19	07/01/19
Lead	**0.0005**		0.0001	mg/L	07/01/19	07/01/19

Quality Control

General Chemistry

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9G0178 - Ammonia										
Blank (B9G0178-BLK1)					Prepared & Analyzed: 07/03/19					
Ammonia	ND		0.1	mg/L						
Blank (B9G0178-BLK2)					Prepared & Analyzed: 07/03/19					
Ammonia	ND		0.1	mg/L						
LCS (B9G0178-BS1)					Prepared & Analyzed: 07/03/19					
Ammonia	1.1		0.1	mg/L	1.00		106	90-110		
LCS (B9G0178-BS2)					Prepared & Analyzed: 07/03/19					
Ammonia	1.0		0.1	mg/L	1.00		96.3	90-110		
Duplicate (B9G0178-DUP1)		**Source: 9G01072-01**			Prepared & Analyzed: 07/03/19					
Ammonia	ND		0.1	mg/L		ND				20
Matrix Spike (B9G0178-MS1)		**Source: 9G01072-01**			Prepared & Analyzed: 07/03/19					
Ammonia	1.1		0.1	mg/L	1.00	ND	112	80-120		
Batch: B9G0220 - Total phosphate										
Blank (B9G0220-BLK1)					Prepared & Analyzed: 07/03/19					
Total Phosphorous	ND		0.02	mg/L						
Blank (B9G0220-BLK2)					Prepared & Analyzed: 07/03/19					
Total Phosphorous	ND		0.02	mg/L						
LCS (B9G0220-BS1)					Prepared & Analyzed: 07/03/19					
Total Phosphorous	1.04		0.02	mg/L	1.00		104	90-110		

Quality Control
(Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9G0220 - Total phosphate (Continued)										
LCS (B9G0220-BS2)					Prepared & Analyzed: 07/03/19					
Total Phosphorous	1.04		0.02	mg/L	1.00		104	90-110		
Duplicate (B9G0220-DUP1)		**Source: 9F27014-02**			Prepared & Analyzed: 07/03/19					
Total Phosphorous	ND		0.02	mg/L		ND				20
Matrix Spike (B9G0220-MS1)		**Source: 9F27014-02**			Prepared & Analyzed: 07/03/19					
Total Phosphorous	1.08		0.02	mg/L	1.00	ND	108	80-120		
Batch: B9G0295 - TKN										
Blank (B9G0295-BLK1)					Prepared & Analyzed: 07/05/19					
Kjeldahl Nitrogen	ND		0.1	mg/L						
Blank (B9G0295-BLK2)					Prepared & Analyzed: 07/05/19					
Kjeldahl Nitrogen	ND		0.1	mg/L						
Batch: B9G0335 - General Chemistry										
Blank (B9G0335-BLK1)					Prepared & Analyzed: 07/08/19					
Nitrate and Nitrite as N	ND		0.03	mg/L						
Blank (B9G0335-BLK2)					Prepared & Analyzed: 07/08/19					
Nitrate and Nitrite as N	ND		0.03	mg/L						
Blank (B9G0335-BLK3)					Prepared & Analyzed: 07/08/19					
Nitrate and Nitrite as N	ND		0.03	mg/L						

Quality Control
(Continued)

General Chemistry (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9G0335 - General Chemistry (Continued)										
LCS (B9G0335-BS1)					Prepared & Analyzed: 07/08/19					
Nitrate and Nitrite as N	0.80		0.03	mg/L	0.800		99.4	90-110		
LCS (B9G0335-BS2)					Prepared & Analyzed: 07/08/19					
Nitrate and Nitrite as N	0.80		0.03	mg/L	0.800		99.6	90-110		
LCS (B9G0335-BS3)					Prepared & Analyzed: 07/08/19					
Nitrate and Nitrite as N	0.74		0.03	mg/L	0.800		91.9	90-110		
Duplicate (B9G0335-DUP1)		**Source: 9F28004-01**			Prepared & Analyzed: 07/08/19					
Nitrate and Nitrite as N	ND		0.03	mg/L		ND				200
Matrix Spike (B9G0335-MS1)		**Source: 9F28004-01**			Prepared & Analyzed: 07/08/19					
Nitrate and Nitrite as N	0.60		0.03	mg/L	0.800	ND	74.9	80-120		
Batch: B9G0427 - TKN										
Blank (B9G0427-BLK1)					Prepared & Analyzed: 07/08/19					
Kjeldahl Nitrogen	ND		0.1	mg/L						
Blank (B9G0427-BLK2)					Prepared & Analyzed: 07/08/19					
Kjeldahl Nitrogen	ND		0.1	mg/L						

Quality Control
(Continued)

Total Metals

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B9G0011 - Hot plate acid digestion waters										
Blank (B9G0011-BLK1)					Prepared & Analyzed: 07/01/19					
Antimony	ND		0.0001	mg/L						
Arsenic	ND		0.0001	mg/L						
Silver	ND		0.0001	mg/L						
Beryllium	ND		0.0001	mg/L						
Nickel	ND		0.001	mg/l						
Cadmium	ND		0.0001	mg/L						
Calcium	ND		0.05	mg/L						
Iron	ND		0.001	mg/l						
Barium	ND		0.001	mg/l						
Magnesium	ND		0.05	mg/L						
Chromium	ND		0.0001	mg/L						
Vanadium	ND		0.0005	mg/L						
Tin	ND		0.005	mg/l						
Zinc	ND		0.001	mg/l						
Thallium	ND		0.0001	mg/L						
Copper	ND		0.001	mg/l						
Cobalt	ND		0.0001	mg/L						
Selenium	ND		0.005	mg/L						
Lead	ND		0.0001	mg/L						
LCS (B9G0011-BS1)					Prepared & Analyzed: 07/01/19					
Calcium	11.4		0.05	mg/L	10.0		114	85-115		
Magnesium	11.5		0.05	mg/L	10.0		115	85-115		
LCS (B9G0011-BS2)					Prepared & Analyzed: 07/01/19					
Iron	0.206		0.001	mg/l	0.200		103	85-115		
Copper	0.192		0.001	mg/l	0.200		96.2	85-115		
Chromium	0.0206		0.0001	mg/L	0.0200		103	85-115		
Cobalt	0.0199		0.0001	mg/L	0.0200		99.4	85-115		
Nickel	0.199		0.001	mg/l	0.200		99.5	85-115		
Silver	0.0201		0.0001	mg/L	0.0200		101	85-115		
Arsenic	0.0184		0.0001	mg/L	0.0200		92.1	85-115		
Barium	0.207		0.001	mg/l	0.200		104	85-115		
Beryllium	0.0191		0.0001	mg/L	0.0200		95.4	85-115		
Cadmium	0.0190		0.0001	mg/L	0.0200		95.1	85-115		
Antimony	0.0196		0.0001	mg/L	0.0200		98.1	85-115		
Tin	0.021		0.005	mg/l	0.0200		103	85-115		
Thallium	0.0203		0.0001	mg/L	0.0200		102	85-115		
Vanadium	0.0205		0.0005	mg/L	0.0200		102	85-115		
Zinc	0.180		0.001	mg/l	0.200		90.2	85-115		
Selenium	0.019		0.005	mg/L	0.0200		92.7	85-115		
Lead	0.0202		0.0001	mg/L	0.0200		101	85-115		

Notes and Definitions

Item	Definition
Wet	Sample results reported on a wet weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.

NEW ENGLAND TESTING LABORATOR
59 Greenhill Street
West Warwick, RI 02893
1-888-863-8522

9 F 2 8004Q

PROJ. NO.: 94139.01
PROJECT NAME/LOCATION: Tiverton Alternate Monitoring
CLIENT: Pare Corp.
REPORT TO: fjohnson@parecorp.com
INVOICE TO: Accounting

TESTS**: App A Metals Hg Sn, Total Fe; TKN Total N, Ammonia, Phosphorus; Hardness 3

DATE	TIME	COMP	GRAB	SAMPLE I.D.	AQUEOUS	SOIL	OTHER	NO. OF CONTAINERS	PRESERVATIVE	App A Metals Hg Sn	TKN Total N, Ammonia, Phosphorus	Hardness 3				REMARKS
6/27			X	SW-1	X			2	H_2SO_4, HCl	|	|	|				
			|	SW-2	|			|	|	|	|	|				
			|	SW-3	|			|	|	|	|	|				

Sampled by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	6/28 9:35		
Relinquished by: (Signature)	**Date/Time**	**Received by: (Signature)**	**Date/Time**
[signature]	6/28 9:35	[signature]	6/28/19 935
Relinquished by: (Signature)	**Date/Time**	**Received for Laboratory by: (Signature)**	**Date/Time**
[signature]	6/28/19 1408	[signature]	6/28/19 1485

Laboratory Remarks: 4
Temp. received: ______
Cooled ☐

Special Instructions:
List Specific Detection
Limit Requirements:
RP

Turnaround (Business Days)__________

**Netlab subcontracts the following tests: Radiologicals, Radon, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates, CT ETPH

ATTACHMENT NO. 2
ANALYTICAL SUMMARY TABLES

TABLE 1
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-7
Concentration (expressed in same units as Threshold Value)

Parameter	Threshold Value		JUN '19	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	NOV '17	SEP '17	MAR '17	MAR '16	SEP '15	MAR '15	DEC '14	MAR '14	SEP '13	MAR '13	SEP '12	MAR '12	JUN '11	MAR '11	SEP '10	JUN '10	SEP '09	JUN '07	SEP '05
Antimony	0.006	mg/L[1]	2E-04	2E-04	0.001	ND	ND	ND	ND	ND	0.0070	ND	ND	ND	NT	ND	ND	ND	ND	ND	0.0250	ND	ND	ND	ND	ND	ND
Arsenic	0.01	mg/L[1]	0.0001	0.0002	ND	ND	0.0100	ND	ND	ND	ND	0.0070	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND[6]	ND	ND	ND	ND	ND	ND
Barium	2	mg/L[1]	0.0270	0.0340	0.0400	0.0540	0.0280	0.0380	0.0350	0.0330	0.0380	0.0390	0.0300	0.0330	NT	0.0310	0.0200	0.0310	0.0260	0.0280	0.0350	0.0398	0.0375	0.0370	0.0310	0.0340	0.0240
Beryllium	0.004	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND[6]	ND[6]	ND	ND	ND	ND
Cadmium	0.005	mg/L[1]	5E-04	7E-04	ND	0.004	ND	ND	ND	ND	0.0010	ND	0.0010	ND	NT	0.0010	ND	ND	0.0050	ND	ND	0.0012	0.0419	0.0410	ND	ND	ND
Chromium	0.1	mg/L[1]	0.0008	0.0011	0.0040	0.0180	0.0040	0.0050	0.0050	0.0040	0.0060	ND	ND	ND	NT	ND	ND	ND	ND	0.0010	0.0080	ND	0.0054	0.0048	0.0530	ND	ND
Cobalt	0.73	mg/L[5]	0.0078	0.0090	0.0200	0.0220	0.0150	0.0190	0.0180	0.0180	0.0250	0.0280	0.0200	0.0250	NT	0.0220	0.0130	0.0250	0.0160	0.0200	0.0200	0.0353	0.0229	0.0250	0.0250	0.0200	0.0190
Copper	1.3	mg/L[1]	0.002	0.002	ND	0.03	ND	ND	0.0050	ND	0.0060	0.0060	0.0080	0.0250	NT	0.0180	0.0040	ND	0.0080	0.0040	0.0390	0.0056	0.2180	0.5000	0.0058	0.0098	ND
Lead	0.015	mg/L[1]	8E-04	0.001	ND	0.006	ND	ND	ND	ND	ND	ND	0.0010	0.0050	NT	0.0060	0.0040	0.0020	0.0020	0.0040	0.0460	0.0033	0.0074	0.0060	0.0043	0.0042	ND
Nickel	0.1	mg/L[2]	0.0090	0.0110	0.0220	0.0320	0.0180	0.0210	0.0210	0.0190	0.0250	ND	0.0200	0.0240	NT	0.0190	0.0120	0.0220	0.0150	0.0020	0.0220	0.0302	0.0270	0.0280	0.0390	0.0240	0.0220
Selenium	0.05	mg/L[1]	ND	ND	0.005	ND	ND	0.0100	ND	0.0030	ND	0.1070	0.0070	0.1880	NT	0.1830	0.1410	0.1800	0.1920	0.2260	0.0340	ND	ND	ND	0.0120	0.0110	0.0140
Silver	0.1	mg/L[2]	ND	2E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0054	ND	ND
Thallium	0.002	mg/L[1]	ND	ND	3E-04	ND	ND	0.0003	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0032	ND	ND	0.0420	0.0440	ND
Tin	22	mg/L[5]	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	0.26	mg/L[5]	9E-04	0.001	ND	0.016	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	0.0170	ND	0.0051	0.0072	0.0230	0.0240	ND
Zinc	5	mg/L[3]	0.0070	0.0060	0.0180	0.0850	0.0140	0.0180	0.0200	0.0120	0.0210	0.0050	0.0120	0.0060	0.0060	190.00	ND	0.0150	0.0100	0.0130	ND	0.0250	0.0472	0.0380	0.0120	0.0110	0.0160
Mercury	0.002	mg/L[1]	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	610	ug/l[5]	ND	ND	ND	ND	ND	ND	ND	ND	5.8	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrate	0.039	ug/l[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	80	ug/l[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	90	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000	ug/l[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10	ug/l[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	1.0	2.0	ND	1.4	1.8	2.7	1.7
Chlorodibromomethane	80	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	80	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4.6	ug/l[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	2.2	ND	1.3	1.6	1.5	3.8	ND
Chloromethane	30	ug/l[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	0.2	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.05	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61	ug/l[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichlo-2-butene		ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	70	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2-Dichloroethylene	100	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene		ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene		ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	ug/l[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	ug/l[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroflouromethane	2000	ug/l[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	ug/l[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	ug/l[4]	3.01	4.0	6.38	4.87	3.56	6.80	5.9	5.36	10.3	8.8	ND	ND	NT	9.7	5.6	11.9	8.0	11.2	10.7	15.7	7.2	8.2	9.0	12.0	7.4
Methyl ethyl ketone(2-Butanone)	4000	ug/l[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide		ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone		ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	ug/l[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.9	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40	ug/l[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410	ug/l[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND

Note: Low flow purging and sampling used starting with the June 2005 monitoring round

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

= Exceeded MCL

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-12
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		JUN '19	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006	mg/L[1]	ND	ND	ND	ND	0.001	ND	0.0210	ND	0.0010	0.0250	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	ND	ND	ND	0.0100	0.0600	ND	ND	ND
Arsenic	0.010	mg/L[1]	ND	ND	ND	ND	0.01	ND	0.0050	ND	0.0090	ND	ND	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0300	ND	ND	ND
Barium	2	mg/L[1]	0.024	0.02	0.02	0.023	0.02	0.0170	0.0240	0.0260	0.0240	0.0410	0.0260	0.0670	0.0360	0.0200	0.0260	0.0250	0.0190	0.0600	0.0160	0.0210	0.0120	0.0140	0.0130	0.0150	0.0080	0.0130	0.0180	0.0170	0.0160	0.0160	0.0100	0.0280	0.0130	0.0113	0.0151	0.0156
Beryllium	0.004	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[4]	ND
Cadmium	0.005	mg/L[1]	0.0004	0.0004	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	0.1	mg/L[1]	0.0001	ND	ND	0.002	ND	ND	0.0030	0.0010	0.0040	ND	0.0180	0.0130	ND	0.0020	ND	ND	ND	ND	ND	0.0020	0.0020	0.0020	0.0010	0.0020	ND	0.0020	ND	ND	ND	0.0010	ND	ND	ND	ND[4]	ND[4]	0.0014
Cobalt	0.73	mg/L[5]	0.0006	0.0005	ND	0.002	ND	ND	ND	0.0020	ND	0.0020	ND	0.0090	0.0080	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[4]	0.0006	ND[4]
Copper	1.3	mg/L[1]	ND	ND	0.009	ND	ND	ND	ND	ND	ND	ND	ND	0.0200	0.0150	ND	0.0330	ND	ND	ND	ND	ND	0.0020	0.0030	0.0060	0.0020	0.0010	ND	ND	ND	ND	0.0010	ND	0.0100	0.0400	ND	0.0013	ND
Lead	0.015	mg/L[1]	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0155	0.0120	ND	ND	0.0020	ND	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	0.0010	0.0010	0.0020	0.0020	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND
Mercury	0.002	mg/L[1]	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]	ND	ND
Nickel	0.1	mg/L[2]	0.008	0.01	0.024	0.025	0.025	0.0200	0.0170	0.0140	0.0090	0.0140	0.0070	0.0220	0.0130	0.0060	0.0080	0.0040	0.0060	0.0040	0.0040	0.0060	0.0040	0.0040	0.0040	0.0050	0.0020	0.0040	0.0050	0.0040	0.0030	0.0050	0.0030	0.0070	0.0110	0.0034	0.0028	0.0037
Selenium	0.05	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100	ND	ND	ND	ND	ND	0.0060	ND	0.0120	0.0110	0.0060	ND	ND	ND	ND	ND	ND	0.0080	0.0060	ND	0.0300	ND	ND	ND
Silver	0.1	mg/L[2,3]	ND	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1350	ND	ND	ND
Thallium	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22	mg/L[5]	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	0.0980	ND	0.1800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	0.26	mg/L[5]	ND	ND	ND	0.001	ND	ND	ND	0.0030	ND	0.0040	ND	0.0200	0.0200	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	2	mg/L[2,3]	0.001	ND	0.007	0.026	0.009	0.0070	0.0060	0.0130	0.0100	0.0220	ND	0.0500	0.0430	ND	ND	0.0050	0.0070	ND	ND	ND	ND	ND	ND	0.0080	0.0100	ND	ND	0.0080	0.0070	0.0080	0.0160	ND	0.0170	0.0147	0.0151
Acetone	610	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	0.039	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	80	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4.6	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	us/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	us/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	us/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-13
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		JUN '19	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10
Antimony	0.006	mg/L[1]	ND	ND	0.002	0.002	0.002	ND	0.0360	ND	0.0020	0.0080	ND	0.0110	ND	ND	ND	ND	ND	ND	ND	ND	0.0050	ND	ND	ND	ND	ND	ND	ND	ND	0.0100	0.0200	ND	ND
Arsenic	0.010	mg/L[1]	0.0069	0.0081	0.01	0.01	0.02	0.0070	ND	0.0050	0.0200	ND	ND	0.0100	ND	0.0190	0.0100	0.0110	0.0070	0.0040	0.0200	0.0070	ND	0.0140	0.0160	0.0070	0.0080	0.0070	ND	ND	0.0060	0.0050	0.0050	0.0090	ND	0.0096	0.0094
Barium	2	mg/L[1]	0.096	0.118	0.126	0.089	0.089	0.1150	0.0970	0.0460	0.0860	0.1080	0.0990	0.1830	0.0890	0.1700	0.0910	0.0870	0.0900	0.0890	0.1400	0.0870	0.0700	0.1180	0.0780	0.0650	0.0690	0.0750	0.0770	0.0760	0.0720	0.0760	0.0650	0.0760	0.0800	0.0912	0.0817
Beryllium	0.004	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	0.005	mg/L[1]	0.0007	0.0004	0.004	0.003	0.004	0.0040	ND	0.0020	0.0030	0.0050	ND	0.0290	ND	0.0050	0.0040	0.0040	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	0.0020	ND	0.0004	0.0004
Chromium	0.1	mg/L[1]	0.0007	0.0004	0.002	0.002	0.002	0.0020	0.0010	ND	0.0040	0.0030	ND	0.0330	0.0050	ND	0.0040	ND	ND	ND	0.0090	ND	0.0010	0.0050	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[2]
Cobalt	0.73	mg/L[4]	0.0111	0.0112	0.013	0.01	0.011	0.0130	0.0120	0.0070	0.0120	0.0140	0.0140	0.0280	0.0130	0.0150	0.0130	0.0120	0.0140	0.0160	0.0180	0.0110	0.0100	0.0120	0.0100	0.0090	0.0130	0.0120	ND	0.0100	0.0130	0.0120	0.0110	0.0120	0.0090	0.0192	0.0156
Copper	1.3	mg/L[1]	0.003	0.004	ND	ND	ND	ND	ND	ND	0.0100	ND	ND	0.0900	ND	0.0060	ND	0.0020	ND	0.0050	0.0730	0.0050	0.0050	0.0080	0.0230	0.0030	0.0050	ND	ND	ND	0.0060	0.0040	0.0020	0.0090	0.0300	0.0028	0.0018
Lead	0.015	mg/L[1]	0.0005	0.0008	0.002	ND	ND	0.0020	ND	ND	0.0010	ND	0.0070	0.0350	0.0190	ND	ND	0.0020	0.0030	0.0030	0.0170	0.0040	0.0040	0.0070	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	ND	0.0020	ND	0.0040	0.0130	0.0015	ND
Mercury	0.002	mg/L[1]	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[2]
Nickel	0.1	mg/L[1]	0.011	0.011	0.014	0.012	0.011	0.0120	0.0290	0.0060	0.0120	0.0350	0.0140	0.0465	0.0130	0.0130	0.0120	0.0120	0.0120	0.0130	0.0130	0.0220	0.0110	0.0100	0.0120	0.0100	0.0090	0.0100	0.0100	0.0100	0.0100	0.0110	0.0100	0.0090	0.0110	0.0060	0.0141	0.0127
Selenium	0.05	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0390	ND	ND	ND	0.0800	0.0210	0.0590	0.0120	0.0330	0.0700	0.0350	0.0400	ND	ND	0.0700	0.0640	0.0620	0.0710	0.0690	0.0100	ND	ND
Silver	0.1	mg/L[2,3]	ND	ND	0.001	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	0.0010	0.0020	0.0020	ND	0.0010	0.0010	ND	0.0020	ND	0.0020	ND	0.0030	0.0340	ND	ND
Thallium	0.002	mg/L[4]	ND	ND	ND	ND	ND	0.0003	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22	mg/L[4]	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	0.2800	0.1100	ND	0.0120	ND	ND	0.0010	ND	ND	ND	0.0170	0.0400	0.0090	0.0180	ND	ND	ND	ND	ND	ND	ND	ND	ND[4]	ND
Vanadium	0.26	mg/L[4]	ND	ND	0.008	0.004	ND	ND	0.0020	ND	ND	ND	0.0060	0.0390	0.0030	ND	ND	ND	ND	ND	0.0130	0.0020	ND	0.0010	0.0040	ND	0.0020	ND	ND	ND	ND	ND	ND	0.0200	ND	ND
Zinc	2	mg/L[2,3]	0.007	0.005	0.019	0.01	0.012	0.0170	0.0070	0.0070	0.0200	0.0170	ND	0.1300	0.0130	0.0060	ND	0.0070	ND	ND	0.0470	ND	ND	0.0090	ND	ND	0.0110	0.0100	ND	ND	0.0230	0.0050	0.0050	0.0090	ND	0.0178	0.0092
Acetone	610	µg/L[4]	16.88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	0.039	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]	ND
Bromochloromethane	80	uG/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	µg/L[1]	4.1	5.9	6.19	ND	4.72	5.40	ND	5.23	5.03	6.8	ND	5.5	2.5	6.6	7.4	6.3	6.1	7.4	8.1	ND	7.1	7.2	6.4	2.2	3.9	6.8	6.3	1.6	4.2	6.7	6.5	6.0	3.7	6.2	5.6
Chloroethane	4.6	µg/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND
Chloroform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP	0.2	uG/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	µG/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	1.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	ND	ND	1.31	ND	ND	ND	ND	1.11	ND	ND	ND	ND	ND	ND	ND	1.4	1.2	1.3	ND	ND	1.4	ND	ND	ND	ND	1.0	1.2	ND	ND	1.2	ND	1.4	1.0	ND[4]	1.1
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7	uG/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	uG/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30	uG/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61	uG/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone		ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	uG/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	uG/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000	uG/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	uG/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2000	uG/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40	µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410	µg/L[4]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	uG/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	3.3	3.4	3.99	ND	3.26	ND	ND	3.70	3.53	6.1	ND	3.6	2.6	4.1	4.9	3.2	5.2	4.5	2.9	ND	4.2	5.0	5.4	3.3	3.3	5.0	4.5	2.8	3.8	4.5	2.8	4.7	3.2	7.9	3.8

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-14
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value	JUN '19	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEP '13	JUN '13	MAR '13	DEC '12	SEP '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006 mg/L[1]	0.0001	0.0001	0.005	NT	ND	ND	0.0350	NT	0.0050	0.0410	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	0.0110	0.0170	ND	ND	NT
Arsenic	0.010 mg/L[1]	0.0036	0.0018	ND	NT	0.01	ND	0.0030	NT	0.0200	0.0120	ND	NT	ND	0.0070	0.0050	0.0050	NT	ND	ND	NT	ND	ND	ND	NT	0.0060	ND	ND	NT	ND	ND	ND	0.0060	ND	0.0074	ND	NT
Barium	2 mg/L[1]	0.199	0.202	0.21	NT	0.155	0.2240	0.1990	NT	0.2400	0.2490	0.2290	NT	0.1380	0.1750	0.1980	0.1140	NT	0.2020	0.0910	NT	0.1570	0.1840	0.0790	NT	0.1440	0.1760	0.1370	NT	0.1750	0.1770	0.1470	0.1610	0.2100	0.2700	0.2030	NT
Beryllium	0.004 mg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	0.0030	ND	ND	NT	0.0010	0.0010	ND	0.0010	NT	ND	ND	NT	ND	ND	0.0010	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	0.0010	NT
Cadmium	0.005 mg/L[1]	ND	ND	0.0020	NT	0.006	0.0050	ND	NT	0.0050	0.0060	ND	NT	ND	0.0070	0.0080	0.0060	NT	ND	ND	NT	0.0050	0.0010	ND	NT	ND	0.0020	ND	NT	ND	0.0040	0.0030	0.0030	ND	ND[3]	ND[3]	NT
Chromium	0.1 mg/L[1]	0.0006	0.0007	ND	NT	0.001	0.0060	0.0020	NT	0.0010	0.0020	ND	NT	0.0110	0.0030	0.0030	0.0170	NT	0.0050	0.0050	NT	0.0040	0.0010	0.0080	NT	ND	0.0050	ND	NT	ND	ND	ND	ND	ND	ND	0.0065	NT
Cobalt	0.73 mg/L[5]	0.0058	0.0059	0.011	NT	0.006	0.0140	0.0090	NT	0.0140	0.0130	0.0360	NT	0.0100	0.0100	0.0100	0.0120	NT	0.0170	0.0120	NT	0.0080	0.0150	0.0120	NT	0.0080	0.0160	0.0370	NT	0.0140	0.0100	0.0100	0.0160	0.0090	0.0457	0.0261	NT
Copper	1.3 mg/L[1]	ND	ND	0.007	NT	ND	0.0090	ND	NT	0.0100	ND	0.0200	NT	0.0010	0.0010	ND	0.0170	NT	0.0100	0.0090	NT	0.0070	0.0050	0.0200	NT	0.0030	0.0080	0.0100	NT	ND	ND	0.0010	0.0090	ND	0.0049	0.0140	NT
Lead	0.015 mg/L[1]	0.0002	0.001	ND	NT	ND	0.0060	ND	NT	0.0170	ND	ND	NT	0.0160	0.0070	ND	0.0090	NT	0.0050	0.0050	NT	0.0040	0.0040	0.0070	NT	0.0020	0.0050	0.0030	NT	0.0020	ND	0.0090	0.0020	ND	ND	0.0039	NT
Mercury	0.002 mg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Nickel	0.1 mg/L[2]	0.011	0.011	0.019	NT	0.012	0.0220	0.0320	NT	0.0220	0.0470	0.0400	NT	0.0160	0.0160	0.0170	0.0200	NT	0.0270	0.0180	NT	0.0150	0.0230	0.0200	NT	0.0120	0.0200	0.0350	NT	0.0190	0.0170	0.0150	0.0180	0.0180	0.0460	0.0407	NT
Selenium	0.05 mg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	0.0350	0.0140	NT	ND	ND	0.0260	NT	ND	ND	ND	NT	0.0200	0.0310	0.0240	0.0300	ND	ND	ND	NT
Silver	0.1 mg/L[1,3]	ND	0.0002	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	0.0040	NT	0.0020	ND	NT	0.0020	0.0020	ND	NT	ND	0.0020	ND	NT	ND	0.0040	ND	0.0050	ND	ND	ND	NT
Thallium	0.002 mg/L[1]	ND	ND	ND	NT	ND	0.0003	0.0003	NT	ND	ND	ND	NT	ND	ND	ND	0.0010	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	0.0010	ND	ND	ND	ND	NT
Tin	22 mg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	0.0350	ND	0.0070	0.0010	NT	ND	ND	NT	ND	0.0220	0.0180	NT	0.0310	ND	ND	NT	ND	ND	ND	ND	ND	ND[3]	ND	NT
Vanadium	0.26 mg/L[5]	0.0006	0.0007	0.004	NT	ND	0.0070	0.0030	NT	0.0070	ND	ND	NT	0.0170	ND	ND	0.0140	NT	0.0080	0.0050	NT	0.0050	0.0020	0.0080	NT	0.0030	0.0060	ND	NT	ND	ND	ND	ND	0.0290	ND	0.0063	NT
Zinc	2 mg/L[1,3]	0.005	0.004	0.014	NT	0.031	0.0480	0.0160	NT	0.0600	0.0230	0.0300	NT	0.0280	0.0170	0.0140	0.0680	NT	0.0240	0.0190	NT	0.0070	0.0100	0.0310	NT	0.0120	0.0310	0.0210	NT	0.0160	0.0070	0.0070	0.0270	ND	0.0453	0.0570	NT
Acetone	610 µg/L[5]	20.96	ND	ND	NT	ND	ND	ND	NT	ND	6.9	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	6.4	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Acrylonitrile	0.039 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Benzene	5 µg/L[1]	2.24	2.1	2.28	NT	2.77	ND	ND	NT	3.2	4.1	ND	NT	2.7	3.1	3.9	2.0	NT	3.5	ND	NT	3.3	3.6	ND	NT	2.9	4.3	1.9	NT	1.8	3.5	3.6	4.1	2.1	3.7	1.7	NT
Bromochloromethane	80 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Bromodichloromethane (THM)	90 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Bromoform	80 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Carbon disulfide	1000 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Carbon tetrachloride	5 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Chlorobenzene	100 µg/L[1]	10.74	10.8	11.38	NT	13.3	10.8	ND	NT	13.42	15.6	ND	NT	12.5	13.5	15.4	10.7	NT	16.7	5.3	NT	15.7	15.7	3.2	NT	11.3	19.1	8.0	NT	7.0	14.3	14.6	16.5	7.1	15.3	6.1	NT
Chloroethane	4.6 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	2.27	ND	ND	NT	3.3	ND	2.0	1.5	NT	ND	ND	NT	ND	ND	ND	NT	ND	2.5	ND	NT	ND	1.4	2.4	ND	1.6	1.3	ND	NT
Chloroform	80 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Chlorodibromomethane (THM)	80 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dibromoethane (EDB)	0.05 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dichlorobenzene	600 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,4-Dichlorobenzene	75 µg/L[1]	2.04	2.1	2.38	NT	2.62	ND	ND	NT	ND	ND	ND	NT	1.8	ND	ND	2.2	NT	3.3	ND	NT	3.4	ND	ND	NT	2.2	2.9	1.8	NT	1.4	2.7	2.2	3.2	1.8	2.7	1.9	NT
trans-1,4-Dichloro-2-butene	µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1-Dichloroethane	5 µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dichloroethane	5 µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1-Dichloroethylene	7 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
cis-1,2-Dichloroethene	70 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
trans-1,2-Dichloroethene	100 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2-Dichloropropane	5 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
cis-1,3-Dichloropropene	µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
trans-1,3-Dichloropropene	µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Ethylbenzene	700 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methyl butyl ketone(2-Hexanone)	160 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Bromomethane	10 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Chloromethane	30 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Dibromomethane	61 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methylene chloride	5 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methyl ethyl ketone(2-Butanone)	4000 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methyl Iodide	µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
4-Methyl-2-pentanone	µg/L	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Styrene	100 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1,1,2-Tetrachloroethane	70 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1,2,2-Tetrachloroethane	0.3 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Tetrachloroethylene(PCE)	5 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Toluene	1000 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1,1-Trichloroethane	200 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,1,2-Trichloroethane	5 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Trichloroethylene(TCE)	5 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Trichlorofluoromethane	2000 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
1,2,3-Trichloropropane	40 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Vinyl acetate	410 µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Vinyl chloride	2 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Xylenes	10000 µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	NT
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L[1]	5.07	5.0	7.97	NT	6.23	9.4	ND	NT	7.08	16.5	ND	NT	6.7	7.7	12.3	6.9	NT	11.2	1.7	NT	6.6	14.8	4.3	NT	6.9	11.9	11.0	NT	7.5	8.4	6.6	12.4	7.0	16.3	12.3	NT

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit.
   However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above
NT = Not Tested due to dry conditions at well.

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-15
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		JUN '19	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006	mg/L[1]	ND	ND	0.0040	0.0040	ND	ND	0.0300	ND	0.0020	0.0340	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	0.0070	0.0060	0.0400	ND	ND	ND	ND
Arsenic	0.010	mg/L[1]	0.0205	0.0352	0.02	0.03	0.03	0.0200	0.0200	0.0300	0.0300	ND	ND	0.0700	0.0130	0.0320	0.0170	ND	ND	0.0160	ND	0.0350	ND	ND	0.0050	0.0280	0.0130	0.0180	0.0040	0.0300	ND	ND	0.0110	ND	ND	0.0023	0.0338	0.0362
Barium	2	mg/L[1]	0.148	0.158	0.212	0.084	0.096	0.1280	0.1240	0.0850	0.0890	0.1230	0.1560	0.3100	0.0600	0.1130	0.1840	0.1390	0.2230	0.1260	0.1350	0.1060	0.1810	0.1180	0.1340	0.0750	0.1510	0.1550	0.1340	0.1010	0.2360	0.2350	0.1620	0.1930	ND	0.1890	0.1260	0.1110
Beryllium	0.004	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	0.0050	ND	ND	ND[3]
Cadmium	0.005	mg/L[1]	ND	ND	0.008	0.007	0.010	0.0090	ND	0.0100	0.0050	0.0100	0.0050	0.0460	ND	0.0100	0.0080	0.0070	ND	ND	ND	ND	0.0100	0.0010	ND	0.0010	ND	0.0040	ND	0.0020	ND	0.0060	0.0010	0.0040	ND	ND	ND[3]
Chromium	0.1	mg/L[1]	0.0009	0.0007	ND	ND	ND	ND	ND	0.0030	ND	0.0020	ND	0.1180	0.0020	0.0010	0.0050	0.0020	0.0010	ND	ND	0.0030	0.0030	0.0030	ND	ND	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND[3]	0.0018
Cobalt	0.73	mg/L[5]	0.0124	0.0126	0.008	0.014	0.012	0.0100	0.0090	0.0180	0.0130	0.0040	ND	0.2300	0.0080	0.0180	0.0070	0.0040	0.0020	0.0120	ND	0.0190	0.0020	ND	0.0010	0.0140	0.0100	0.0060	0.0020	0.0170	0.0030	0.0040	0.0090	0.0020	ND	0.0039	0.0185	0.0244
Copper	1.3	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1400	ND	ND	ND	ND	ND	0.0020	ND	ND	0.0080	0.0040	0.0240	0.0050	0.0060	0.0060	ND	ND	ND	0.0030	0.0040	0.0100	0.2400	ND	0.0012	0.0059
Lead	0.015	mg/L[1]	0.0003	0.0003	0.0030	0.0020	ND	0.0020	ND	ND	0.0020	ND	0.0050	0.1350	0.0140	ND	ND	ND	0.0040	0.0020	0.0040	0.0110	0.0040	0.0020	0.0030	0.0020	0.0050	0.0050	0.0030	0.0050	0.0020	0.0020	0.0010	0.0030	ND	ND	0.0025	0.0025
Mercury	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0070	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	0.1	mg/L[2]	0.025	0.025	0.017	0.029	0.023	0.0200	0.0510	0.0350	0.0240	0.0520	0.0110	0.6610	0.0140	0.0290	0.0170	0.0100	0.0110	0.0180	0.0080	0.0330	0.0120	0.0070	0.0110	0.0230	0.0190	0.0150	ND	0.0270	0.0110	0.0130	0.0160	0.0090	0.0140	0.0086	0.0374	0.0396
Selenium	0.05	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0220	ND	ND	ND	ND	0.0160	ND	ND	ND	ND	0.0100	0.0120	0.0180	0.0110	0.0190	0.0400	ND	ND[3]	ND
Silver	0.1	mg/L[2,3]	ND	0.0001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0030	0.0020	0.0150	0.0030	0.0030	0.0050	0.0020	0.0030	0.0030	ND	0.0040	ND	0.0050	ND	0.0050	ND	ND	ND[3]	ND[3]
Thallium	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22	mg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0600	ND	ND	0.0470	ND	ND	ND	ND	ND	ND	0.0270	0.0780	0.0210	0.0400	ND	ND	ND	ND	ND	ND	ND	ND	ND[3]	ND[4]	ND[4]
Vanadium	0.26	mg/L[5]	0.0007	0.0010	0.0150	0.0110	ND	0.0060	0.0040	0.0110	ND	ND	0.0150	0.1560	0.0050	ND	ND	0.0020	ND	0.0040	0.0050	0.0060	0.0040	0.0030	0.0090	0.0030	0.0050	0.0040	0.0040	0.0030	0.0030	0.0020	0.0020	ND	0.0160	ND	0.0012	0.0023
Zinc	2	mg/L[2,3]	0.0040	0.0030	0.0150	0.0150	0.032	0.0210	0.0100	0.0300	0.0200	0.0140	ND	0.9700	ND	0.0120	0.0150	0.0080	ND	ND	ND	ND	ND	ND	ND	ND	0.0150	0.0200	ND	0.0280	0.0090	0.0120	0.0060	0.0170	ND	0.0181	0.0147	0.0227
Acetone	610	µg/L[5]	19.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.2	ND	ND	6.7	ND	ND	ND	ND	ND	ND	5.6	ND	ND	ND	18.6	ND	ND	ND	ND	ND	ND	6.8	ND	ND
Acrylonitrile	0.039	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	µg/L[1]	1.94	1.5	1.76	ND	1.67	ND	ND	3.59	2.83	ND	ND	3.4	3.2	2.1	3.2	1.7	2.0	2.8	2.8	3.6	2.2	2.1	2.8	3.4	2.7	2.8	2.5	3.4	3.1	2.7	3.2	3.5	2.1	1.9	3.3	3.5
Bromochloromethane	90	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	µg/L[1]	14.4	13.2	15.49	14.0	12.72	17	15.2	18.19	21.26	17.4	21.5	16.0	16.8	17.7	18.3	21.0	21.1	19.7	26.9	19.0	27.0	25.0	32.5	18.9	14.3	20.0	29.0	15.5	12.4	16.9	15.8	25.0	11.8	23.1	19.8	16.9
Chloroethane	4.6	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8	ND	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	2.9
Chloroform	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	1.0	1.3	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	µg/L[1]	2.64	2.1	3.06	ND	ND	ND	2.51	ND	1.6	ND	ND	2.1	ND	ND	3.4	2.9	3.0	ND	ND	3.4	ND	ND	2.1	2.3	2.6	3.2	1.9	1.9	2.3	1.5	3.1	2.1	2.9	2.4	2.4
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	us/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	us/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5	us/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone		µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100	us/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2000	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410	µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000	µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	3.3	ND	ND	2.2	5.4	ND	ND	3.1	ND	6.1	2.0	3.9	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[1]	9.38	7.5	3.69	7.0	6.61	ND	6.3	7.52	7.69	8.5	ND	7.9	7.9	6.8	7.8	6.7	12.2	7.1	4.2	6.0	9.4	5.4	7.7	8.3	10.3	6.1	3.9	8.8	9.5	9.5	5.5	7.5	7.1	7.9	6.1	7.6

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 1 (CONT.)
SUMMARY OF GROUNDWATER MONITORING RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-16
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value	JUN '19	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	NOV '17
Antimony	0.006 mg/L[1]	ND	ND	ND	ND	0.002	ND	ND
Arsenic	0.010 mg/L[1]	ND	ND	ND	ND	0.01	ND	ND
Barium	2 mg/L[1]	0.008	0.014	0.017	0.027	0.011	0.0190	0.1000
Beryllium	0.004 mg/L[1]	0.0002	0.0001	ND	ND	ND	ND	ND
Cadmium	0.005 mg/L[1]	0.0002	0.0003	ND	ND	ND	ND	ND
Chromium	0.1 mg/L[1]	ND	ND	0.003	0.003	0.004	0.0060	0.0050
Cobalt	0.73 mg/L[5]	0.0009	0.0008	0.006	0.004	0.002	0.0050	0.0050
Copper	1.3 mg/L[1]	ND	ND	ND	ND	ND	ND	ND
Lead	0.015 mg/L[1]	ND	ND	ND	ND	ND	ND	ND
Mercury	0.002 mg/L[1]	ND	ND	ND	NT	ND	ND	ND
Nickel	0.1 mg/L[2]	0.002	0.002	0.013	0.01	0.009	0.0100	0.0100
Selenium	0.05 mg/L[1]	ND	ND	0.009	0.003	ND	0.0100	0.0050
Silver	0.1 mg/L[2,3]	ND	0.0001	ND	ND	ND	ND	ND
Thallium	0.002 mg/L[1]	ND	ND	ND	ND	ND	0.0003	ND
Tin	22 mg/L[5]	ND	ND	ND	NT	ND	ND	ND
Vanadium	0.26 mg/L[5]	ND	ND	ND	ND	ND	ND	ND
Zinc	2 mg/L[2,3]	0.004	0.004	0.025	0.019	0.022	0.024	0.0210
Acetone	610 µg/L[5]	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	0.039 µg/L[5]	ND	ND	ND	ND	ND	ND	ND
Benzene	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	80 µg/L[2]	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Bromoform	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000 µg/L[5]	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4.6 µg/L[5]	ND	ND	ND	ND	ND	ND	ND
Chloroform	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	µg/L	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160 µg/L[5]	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 µg/L[2]	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30 µg/L[2]	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61 µg/L[5]	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000 µg/L[2]	ND	ND	ND	ND	ND	ND	ND
Methyl iodide	µg/L	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	µg/L	ND	ND	ND	ND	ND	ND	ND
Styrene	100 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L[2]	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L[2]	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Toluene	1000 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Trichloroflouromethane	2000 µg/L[2]	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40 µg/L[2]	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410 µg/L[5]	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 µg/L[1]	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L[4]	4.9	4.67	3.77	3.42	6.53	7.8	4.6

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 2
BACKGROUND WELL HISTORICAL RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-9
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value		JUN '19	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEP '13	JUN '13	MAR '13	DEC '12	SEP '12	JUN '12	MAR '12	DEC '11	SEP '11	JUN '11	MAR '11	DEC '10	SEP '10	JUN '10
Antimony	0.006	mg/L[1]	ND	0.0001	ND	NT	ND	ND	0.0290	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	0.0160	0.2000	ND	ND	NT	ND
Arsenic	0.010	mg/L[1]	ND	0.0001	ND	NT	ND	ND	ND	NT	NT	0.0030	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	ND
Barium	2	mg/L[1]	0.0060	0.0060	0.0320	NT	0.0090	0.0130	0.0410	NT	NT	0.0100	0.0060	NT	NT	0.0110	0.0110	NT	NT	0.0070	0.0420	NT	0.0100	0.0120	0.0200	NT	0.0150	0.0130	0.0160	NT	0.0110	0.0120	0.0070	0.0120	0.0080	0.0221	0.0250	NT	0.0460
Beryllium	0.004	mg/L[1]	0.0001	0.0003	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	NT	NT	0.0015
Cadmium	0.005	mg/L[1]	0.0001	0.0001	ND	NT	ND	0.0020	0.3650	NT	NT	ND	ND	NT	NT	0.0010	ND	NT	NT	ND	0.0020	NT	ND	ND	0.0050	NT	0.0040	ND	0.0010	NT	ND	ND	ND	0.0020	ND	ND	ND	NT	ND
Chromium	0.1	mg/L[1]	0.0019	0.0019	0.013	NT	0.003	0.0070	0.0300	NT	NT	0.0040	ND	NT	NT	0.0050	0.0070	NT	NT	0.0060	0.0270	NT	0.0060	0.0070	0.0150	NT	0.0070	0.0070	0.0120	NT	0.0050	0.0080	0.0040	0.0020	ND	0.0079	0.0068	NT	0.0230
Cobalt	0.73	mg/L[1]	ND	0.0003	0.0030	NT	ND	0.0010	0.0020	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	0.0100	NT	ND	0.0010	0.0030	NT	0.0020	0.0020	0.0030	NT	ND	0.0020	ND	ND	ND	0.0019	0.0015	NT	0.0086
Copper	1.3	mg/L[1]	ND	ND	0.0080	NT	ND	ND	0.0600	NT	NT	ND	ND	NT	NT	0.0020	ND	NT	NT	0.0020	0.0170	NT	ND	0.0060	0.0140	NT	0.0070	ND	0.0060	NT	ND	0.0080	0.0010	0.0100	0.0400	0.0041	0.0043	NT	0.0200
Lead	0.015	mg/L[1]	0.0004	0.0007	0.004	NT	0.001	0.0020	0.1620	NT	NT	0.0020	0.0060	NT	NT	ND	0.0050	NT	NT	0.0010	0.0160	NT	0.0060	0.0030	0.1020	NT	0.0080	0.0020	0.0060	NT	ND	0.0110	0.0010	0.0040	0.0060	ND	ND	NT	0.0140
Mercury	0.002	mg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Nickel	0.1	mg/L[2]	ND	0.0010	0.006	NT	0.001	0.0040	0.0240	NT	NT	0.0040	ND	NT	NT	0.0030	0.0030	NT	NT	0.0170	0.0180	NT	0.0030	0.0040	0.0090	NT	0.0050	0.0050	0.0070	NT	0.0030	0.0040	0.0020	0.0080	0.0080	0.0046	0.0037	NT	0.0150
Selenium	0.05	mg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	0.0100	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	0.0060	NT	ND	ND	ND	NT	ND	ND	ND	0.0100	0.0100	ND	ND	NT	ND
Silver	0.1	mg/L[1,3]	ND	0.0005	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	0.1180	ND	ND	NT	ND
Thallium	0.002	mg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Tin	22	mg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	0.0080	0.1310	NT	ND	ND	ND	NT	ND	ND	ND	ND	0.0190	ND	ND	NT	ND
Vanadium	0.26	mg/L[1]	ND	ND	0.0080	NT	ND	0.0020	ND	NT	NT	ND	ND	NT	NT	0.0010	0.0020	NT	NT	ND	0.0140	NT	0.0020	0.0030	0.0070	NT	0.0030	0.0020	0.0040	NT	ND	0.0010	ND	ND	ND	0.0034	0.0034	NT	0.0150
Zinc	2	mg/L[2,3]	0.0030	0.0030	0.0250	NT	0.0090	0.0190	11.1000	NT	NT	0.0070	ND	NT	NT	0.0100	0.0050	NT	NT	ND	0.0410	NT	0.0110	0.0080	0.0170	NT	0.0210	0.0120	0.0160	NT	0.0150	0.0120	0.0090	0.0140	ND	0.0257	0.0190	NT	0.0330
Acetone	610	µg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Acrylonitrile	0.039	µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Benzene	5	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Bromochloromethane	80	µg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Bromodichloromethane (THM)	80	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Bromoform	80	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Carbon disulfide	1000	µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Carbon tetrachloride	5	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Chlorobenzene	100	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Chloroethane	4.6	µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Chloroform (THM)	80	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Chlorodibromomethane (THM)	80	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dibromo-3-chloropropane (DBC)	0.2	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dibromoethane (EDB)	0.05	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichlorobenzene	600	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,4-Dichlorobenzene	75	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,4-Dichloro-2-butene		µg/L	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloroethane	5	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,1-Dichloroethylene	7	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
cis-1,2-Dichloroethene	70	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,2-Dichloroethene	100	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,2-Dichloropropane	5	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
cis-1,3-Dichloropropene		µg/L	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
trans-1,3-Dichloropropene		µg/L	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Ethylbenzene	700	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Methyl butyl ketone(2-Hexanone)	160	µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Bromomethane	10	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Chloromethane	30	µg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Dibromomethane	61	µg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Methylene chloride	5	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Methyl ethyl ketone(2-Butanone)	4000	µg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Methyl iodide		µg/L	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
4-Methyl-2-pentanone		µg/L	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Styrene	100	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,1,1,2-Tetrachloroethane	70	µg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,1,2,2-Tetrachloroethane	0.3	µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Tetrachloroethylene(PCE)	5	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	2.1	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Toluene	1000	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,1,1-Trichloroethane	200	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,1,2-Trichloroethane	5	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Trichloroethylene(TCE)	5	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Trichlorofluoromethane	2000	µg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
1,2,3-Trichloropropane	40	µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Vinyl acetate	410	µg/L[5]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Vinyl chloride	2	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Xylenes	10000	µg/L[1]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND
Methyl tert-butyl ether (MTBE)	20 - 40	µg/L[4]	ND	ND	ND	NT	ND	ND	ND	NT	NT	ND	NT	NT	NT	ND	ND	NT	NT	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	NT	ND

= Exceeded MCL

Note: Analytical data reported since commencement of low flow purging and sampling. Low flow puring and sampling commenced in May 2002, but no sample was taken at OW-9 at this time.

July 2002 represents the first time low flow purging and sampling was conducted at OW-9.

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit.
However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above
" - " = One half of the laboratory detection limit "DL"
NT = Not Tested due to dry conditions at well.

TABLE 2 (CONT.)
BACKGROUND WELL HISTORICAL RESULTS
APPENDIX A - CONSTITUENTS FOR DETECTION MONITORING
MONITORING WELL OW-12
Concentration (Expressed in same units as Threshold Value)

Parameter	Threshold Value	JUN '19	MAR '19	DEC '18	SEP '18	JUN '18	MAR '18	DEC '17	SEP '17	JUN '17	MAR '17	DEC '16	SEP '16	JUN '16	MAR '16	DEC '15	SEP '15	JUN '15	MAR '15	DEC '14	SEP '14	JUN '14	MAR '14	DEC '13	SEPT '13	JUN '13	MAR '13	DEC '12	SEPT '12	JUN '12	MAR '12	DEC '11	SEPT '11	JUN '11	MAR '11	DEC '10	SEPT '10
Antimony	0.006 mg/L[1]	ND	ND	ND	ND	0.001	ND	0.0210	ND	0.0010	0.0250	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0060	ND	ND	ND	0.0100	0.0600	ND	ND	ND
Arsenic	0.010 mg/L[1]	ND	ND	ND	ND	0.01	ND	0.0050	ND	0.0090	ND	ND	ND	0.0060	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0300	ND	ND	ND
Barium	2 mg/L[1]	0.024	0.02	0.02	0.023	0.02	0.0170	0.0240	0.0260	0.0240	0.0410	0.0260	0.0670	0.0360	0.0200	0.0260	0.0250	0.0190	0.0600	0.0160	0.0210	0.0120	0.0140	0.0130	0.0150	0.0080	0.0130	0.0180	0.0170	0.0160	0.0160	0.0100	0.0280	0.0130	0.0113	0.0151	0.0156
Beryllium	0.004 mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[4]	ND
Cadmium	0.005 mg/L[1]	0.0004	0.0004	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	0.1 mg/L[1]	0.0001	ND	ND	0.002	ND	ND	0.0030	0.0010	0.0040	ND	0.0180	0.0130	ND	0.0020	ND	ND	0.0190	ND	ND	0.0020	0.0020	0.0020	0.0010	0.0020	ND	0.0020	ND	ND	ND	0.0010	ND	ND	ND	ND[4]	ND[4]	0.0014
Cobalt	0.73 mg/L[5]	0.0006	0.0005	ND	0.002	ND	ND	ND	0.0020	ND	0.0020	ND	0.0090	0.0080	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[4]	0.0006	ND[4]
Copper	1.3 mg/L[1]	ND	ND	0.009	ND	ND	ND	ND	ND	ND	ND	ND	0.0200	0.0150	ND	0.0330	ND	ND	ND	ND	ND	0.0020	0.0030	0.0060	0.0020	0.0010	ND	ND	ND	ND	0.0010	ND	0.0100	0.0400	ND	0.0013	ND
Lead	0.015 mg/L[1]	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0155	0.0120	ND	ND	0.0020	ND	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	0.0010	0.0010	0.0030	0.0020	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND
Mercury	0.002 mg/L[1]	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND[6]	ND	ND
Nickel	0.1 mg/L[2]	0.008	0.01	0.024	0.025	0.025	0.0200	0.0170	0.0140	0.0090	0.0140	0.0070	0.0220	0.0130	0.0060	0.0080	0.0040	0.0060	0.0040	0.0040	0.0060	0.0040	0.0040	0.0040	0.0050	0.0020	0.0040	0.0050	0.0040	0.0030	0.0050	0.0030	0.0070	0.0110	0.0034	0.0028	0.0037
Selenium	0.05 mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100	ND	ND	ND	ND	ND	0.0060	ND	0.0120	0.0110	0.0060	ND	ND	ND	ND	ND	ND	0.0080	0.0060	ND	0.0300	ND	ND	ND
Silver	0.1 mg/L[2,3]	ND	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1350	ND	ND	ND
Thallium	0.002 mg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin	22 mg/L[5]	ND	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	0.0980	ND	0.1800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	0.26 mg/L[5]	ND	ND	ND	0.001	ND	ND	ND	0.0030	ND	0.0040	ND	0.0200	0.0200	ND	ND	ND	ND	ND	ND	0.0020	ND	ND	ND	0.0020	ND	0.0020	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	2 mg/L[2,3]	0.001	ND	0.007	0.026	0.009	0.0070	0.0060	0.0130	0.0100	0.0220	ND	0.0500	0.0430	ND	ND	0.0050	0.0070	ND	ND	ND	ND	ND	ND	ND	0.0080	0.0100	ND	ND	0.0080	0.0070	0.0080	0.0160	ND	0.0170	0.0147	0.0151
Acetone	610 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	0.039 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	80 µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane (THM)	90 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1000 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	4.6 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodibromomethane (THM)	80 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane (DBCP)	0.2 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	0.05 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5 ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	7 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5 ug/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl butyl ketone(2-Hexanone)	160 ug/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	10 µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	30 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	61 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone(2-Butanone)	4000 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl iodide	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	100 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	70 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.3 µg/L[2]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene(PCE)	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene(TCE)	5 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	2000 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	40 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	410 µg/L[5]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	10000 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether (MTBE)	20 - 40 µg/L[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

= Exceeded MCL

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

TABLE 3
SUMMARY OF SURFACE WATER MONITORING RESULTS
SURFACE WATER SW-1
JUNE 2019 MONITORING ROUND

Concentration (expressed in same units as Human Health Threshold)

Parameter	Human Health Threshold		Jun-19 Aquatic Life Threshold (Acute)	Jun-19 Aquatic Life Threshold (Chronic)	Jun-19 Data	Mar-19 Aquatic Life Threshold (Acute)	Mar-19 Aquatic Life Threshold (Chronic)	Mar-19 Data	Dec-18 Aquatic Life Threshold (Acute)	Dec-18 Aquatic Life Threshold (Chronic)	Dec-18 Data	Sep-18 Aquatic Life Threshold (Acute)	Sep-18 Aquatic Life Threshold (Chronic)	Sep-18 Data	Jun-18 Aquatic Life Threshold (Acute)	Jun-18 Aquatic Life Threshold (Chronic)	Jun-18 Data	Mar-18 Aquatic Life Threshold (Acute)	Mar-18 Aquatic Life Threshold (Chronic)	Mar-18 Data	Dec-17 Aquatic Life Threshold (Acute)	Dec-17 Aquatic Life Threshold (Chronic)	Dec-17 Data	Sep-17 Aquatic Life Threshold (Acute)	Sep-17 Aquatic Life Threshold (Chronic)	Sep-17 Data	Jun-17 Aquatic Life Threshold (Acute)	Jun-17 Aquatic Life Threshold (Chronic)	Jun-17 Data	Mar-17 Aquatic Life Threshold (Acute)	Mar-17 Aquatic Life Threshold (Chronic)	Mar-17 Data
Antimony	0.006	mg/L[1]	0.4500	0.0100	ND	0.4500	0.0100	ND	0.4500	0.0100	0.002	0.4500	0.0100	ND	0.4500	0.0100	ND	0.4500	0.0100	ND	0.4500	0.0100	ND	0.4500	0.0100	0.006	0.4500	0.0100	0.002	0.4500	0.0100	0.006
Arsenic	0.01	mg/L[1]	0.3400	0.1500	0.0009	0.3400	0.1500	0.0002	0.3400	0.1500	ND	0.3400	0.1500	ND	0.3400	0.1500	0.010	0.3400	0.1500	0.004	0.3400	0.1500	0.004	0.3400	0.1500	ND	0.3400	0.1500	0.003	0.3400	0.1500	ND
Barium	2	mg/L[1]	No Data	No Data	0.068	No Data	No Data	0.023	No Data	No Data	0.031	No Data	No Data	0.036	No Data	No Data	0.040	No Data	No Data	0.022	No Data	No Data	0.022	No Data	No Data	0.473	No Data	No Data	0.025	No Data	No Data	0.016
Beryllium	0.004	mg/L[1]	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND
Cadmium	0.005	mg/L[1]	*0.0040*	*0.00040*	ND	*0.0022*	*0.00027*	ND	*0.0036*	*0.00037*	ND	*0.00256*	*0.00029*	ND	*0.00330*	*0.00035*	ND	*0.00213*	*0.00026*	ND	*0.00146*	*0.00020*	ND	*0.00585*	*0.00053*	0.080	*0.00073*	*0.00012*	0.001	*0.00143*	*0.00019*	ND
Chromium	0.1	mg/L[1]	0.0160	0.0110	0.0005	0.0160	0.0110	0.0002	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	0.004	0.0160	0.0110	0.001	0.0160	0.0110	ND
Cobalt	0.73	mg/L[5]	No Data	No Data	0.0014	No Data	No Data	0.0002	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	0.006	No Data	No Data	0.004	No Data	No Data	ND
Copper	1.3	mg/L[1]	*0.0263*	*0.0165*	ND	*0.0150*	*0.0099*	ND	*0.0236*	*0.01494*	ND	*0.01696*	*0.01106*	ND	*0.02166*	*0.01381*	ND	*0.01420*	*0.00941*	ND	*0.00984*	*0.00675*	ND	*0.03784*	*0.02290*	ND	*0.00502*	*0.00367*	ND	*0.00963*	*0.00662*	ND
Lead	0.015	mg/L[1]	*0.1390*	*0.0054*	0.0003	*0.0730*	*0.0028*	0.0003	*0.1231*	*0.00480*	ND	*0.08441*	*0.00329*	ND	*0.11162*	*0.00435*	ND	*0.06881*	*0.00268*	ND	*0.04494*	*0.00175*	ND	*0.20858*	*0.00813*	0.019	*0.02038*	*0.00079*	0.002	*0.04384*	*0.00171*	ND
Nickel	0.1	mg/L[2]	*0.8559*	*0.0951*	0.003	*0.5154*	*0.0572*	0.001	*0.7771*	*0.08631*	0.002	*0.57698*	*0.06409*	0.003	*0.71891*	*0.07985*	0.001	*0.49190*	*0.05463*	0.003	*0.35379*	*0.03930*	0.003	*1.18607*	*0.13174*	0.014	*0.19357*	*0.02150*	0.005	*0.34711*	*0.03855*	0.003
Selenium	0.05	mg/L[1]	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND
Silver	0.1	mg/L[2]	*0.0118*	No Data	ND	*0.0042*	No Data	ND	*0.0097*	No Data	ND	*0.00527*	No Data	ND	*0.00825*	No Data	ND	*0.00381*	No Data	ND	*0.00195*	No Data	ND	*0.02283*	No Data	ND	*0.00057*	No Data	ND	*0.00188*	No Data	ND
Thallium	0.002	mg/L[1]	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND
Tin	22	mg/L[5]	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND
Vanadium	0.26	mg/L[5]	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	0.001	No Data	No Data	0.001	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	0.117	No Data	No Data	0.006	No Data	No Data	ND
Zinc	5	mg/L[3]	*0.2144*	*0.2161*	0.006	*0.1290*	*0.1300*	0.002	*0.1946*	*0.19622*	0.012	*0.14444*	*0.14562*	0.005	*0.18003*	*0.18151*	0.015	*0.12311*	*0.12412*	0.009	*0.08850*	*0.08923*	0.009	*0.29725*	*0.29968*	0.097	*0.04838*	*0.04877*	0.020	*0.08683*	*0.08754*	0.006
Mercury	0.002	mg/L[1]	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND
Hardness (as CaCO3)		mg/L			204			112			182			128			166			106			71.8			300			35.2			70.2
Natural Log of Hardness for Calculation				5.318			4.718			5.204			4.852			5.112			4.663			4.274			5.704			3.561			4.251
Iron	0.3	mg/L[3]	No Data	1	10.7	No Data	1	0.521																								
Ammonia	30	mg/L[2]	33.5	3.38	0.1	29.8	6.44	0.2																								
TKN	--		--	--	0.4	--	--	0.4																								
Total Phosphorus	0.025	mg/L[7]	--	--	ND	--	--	0.05																								
Total Nitrogen	--		--	--	0.4	--	--	1.5																								

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.
7. Ambient water quality standard.

No threshold value has been provided for parameters not identified in the sources listed above
Aquatic Life criteria provided above from RIDEM Water Quality Regulations. "No Data" represents parameters for which no aquatic life criteria has been established.
"O.R." - Threshold value is temperature and/or pH dependent. Temperature and/ or pH was outside of the range for which a threshold value is established.

TABLE 3 (CONT.)
SUMMARY OF SURFACE WATER MONITORING RESULTS
SURFACE WATER SW-2
JUNE 2019 MONITORING ROUND
Concentration (expressed in same units as Human Health Threshold)

Parameter	Human Health Threshold		Jun-19 Aquatic Life Threshold (Acute)	Jun-19 Aquatic Life Threshold (Chronic)	Jun-19 Data	Mar-19 Aquatic Life Threshold (Acute)	Mar-19 Aquatic Life Threshold (Chronic)	Mar-19 Data	Dec-18 Aquatic Life Threshold (Acute)	Dec-18 Aquatic Life Threshold (Chronic)	Dec-18 Data	Sep-18 Aquatic Life Threshold (Acute)	Sep-18 Aquatic Life Threshold (Chronic)	Sep-18 Data	Jun-18 Aquatic Life Threshold (Acute)	Jun-18 Aquatic Life Threshold (Chronic)	Jun-18 Data	Mar-18 Aquatic Life Threshold (Acute)	Mar-18 Aquatic Life Threshold (Chronic)	Mar-18 Data	Dec-17 Aquatic Life Threshold (Acute)	Dec-17 Aquatic Life Threshold (Chronic)	Dec-17 Data	Sep-17 Aquatic Life Threshold (Acute)	Sep-17 Aquatic Life Threshold (Chronic)	Sep-17 Data	Jun-17 Aquatic Life Threshold (Acute)	Jun-17 Aquatic Life Threshold (Chronic)	Jun-17 Data	Mar-17 Aquatic Life Threshold (Acute)	Mar-17 Aquatic Life Threshold (Chronic)	Mar-17 Data
Antimony	0.006	mg/L[1]	0.4500	0.0100	ND	0.4500	0.0100	ND	0.4500	0.0100	0.002	0.4500	0.0100	0.003	0.4500	0.0100	0.001	0.4500	0.0100	ND	0.4500	0.0100	0.003	0.4500	0.0100	ND	0.4500	0.0100	0.002	0.4500	0.0100	ND
Arsenic	0.01	mg/L[1]	0.3400	0.1900	0.0006	0.3400	0.1900	0.0003	0.3400	0.1900	ND	0.3400	0.1900	ND	0.3400	0.1900	0.005	0.3400	0.1900	ND	0.3400	0.1900	ND	0.3400	0.1900	ND	0.3400	0.1900	ND	0.3400	0.1900	ND
Barium	2	mg/L[1]	No Data	No Data	0.011	No Data	No Data	0.006	No Data	No Data	0.006	No Data	No Data	0.017	No Data	No Data	0.011	No Data	No Data	0.009	No Data	No Data	0.008	No Data	No Data	0.013	No Data	No Data	0.010	No Data	No Data	0.008
Beryllium	0.004	mg/L[1]	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND
Cadmium	0.005	mg/L[1]	*0.0006*	*0.00011*	ND	*0.0004*	*0.00008*	ND	*0.0004*	*0.0001*	ND	*0.0007*	*0.0001*	ND	*0.0004*	*0.0001*	ND	*0.0003*	*0.0001*	ND	*0.0006*	*0.0001*	ND	*0.0004*	*0.0001*	ND	*0.0003*	*0.0001*	ND	*0.0004*	*0.0001*	ND
Chromium	0.1	mg/L[1]	0.0160	0.0110	0.0007	0.0160	0.0110	0.0005	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	0.001	0.0160	0.0110	ND
Cobalt	0.73	mg/L[5]	No Data	No Data	0.0025	No Data	No Data	0.0002	No Data	No Data	ND	No Data	No Data	0.002	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	0.001	No Data	No Data	0.002	No Data	No Data	ND
Copper	1.3	mg/L[1]	*0.0043*	*0.00321*	ND	*0.0030*	*0.00232*	ND	*0.0029*	*0.0022*	ND	*0.0050*	*0.0036*	ND	*0.0026*	*0.0020*	ND	*0.0024*	*0.0019*	ND	*0.0040*	*0.0030*	ND	*0.0029*	*0.0023*	ND	*0.0025*	*0.0019*	ND	*0.0027*	*0.0021*	ND
Lead	0.015	mg/L[1]	*0.0171*	*0.00067*	0.0009	*0.0112*	*0.00043*	0.0003	*0.0105*	*0.0004*	ND	*0.0202*	*0.0008*	ND	*0.0092*	*0.0004*	ND	*0.0085*	*0.0003*	ND	*0.0157*	*0.0006*	ND	*0.0108*	*0.0004*	ND	*0.0087*	*0.0003*	0.002	*0.0098*	*0.0004*	0.002
Nickel	0.1	mg/L[2]	*0.1696*	*0.01883*	0.002	*0.1230*	*0.01366*	0.001	*0.1174*	*0.0130*	0.002	*0.1922*	*0.0213*	0.002	*0.1061*	*0.0118*	0.003	*0.1004*	*0.0112*	0.002	*0.1590*	*0.0177*	0.001	*0.1200*	*0.0133*	0.002	*0.1020*	*0.0113*	0.004	*0.1118*	*0.0124*	0.003
Selenium	0.05	mg/L[1]	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND
Silver	0.1	mg/L[2]	*0.0004*	No Data	ND	*0.0002*	No Data	ND	*0.0002*	No Data	ND	*0.0006*	No Data	ND	*0.0002*	No Data	ND	*0.0002*	No Data	ND	*0.0004*	No Data	ND	*0.0002*	No Data	0.002	*0.0002*	No Data	ND	*0.0002*	No Data	ND
Thallium	0.002	mg/L[1]	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND
Tin	22	mg/L[5]	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND
Vanadium	0.26	mg/L[5]	No Data	No Data	0.0013	No Data	No Data	0.0006	No Data	No Data	ND	No Data	No Data	0.001	No Data	No Data	0.002	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	0.002	No Data	No Data	0.002	No Data	No Data	0.002
Zinc	5	mg/L[3]	*0.0424*	*0.0427*	0.006	*0.0307*	*0.0310*	0.003	*0.0293*	*0.0296*	0.012	*0.0480*	*0.0484*	0.006	*0.0265*	*0.0267*	0.019	*0.0251*	*0.0253*	0.014	*0.0397*	*0.0401*	ND	*0.0300*	*0.0302*	0.006	*0.0255*	*0.0257*	0.010	*0.0279*	*0.0281*	0.011
Mercury	0.002	mg/L[1]	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND
Hardness (CaCO3)		mg/L			30.1			20.6			19.5			34.9			17.3			16.2			27.9			20			16.5			18.4
Natural Log of Hardness for Calculation					3.405			3.025			2.970			3.552			2.851			2.785			3.329			2.996			2.803			2.912
Iron	0.3	mg/L[3]	No Data	1	3.05	No Data	1	0.516																								
Ammonia	30	mg/L[2]	O.R.	O.R.	0.4	O.R.	O.R.	ND																								
TKN	--		--	--	1.0	--	--	0.5																								
Total Phosphorus	0.025	mg/L[7]	--	--	ND	--	--	ND																								
Total Nitrogen	--		--	--	1.000	--	--	0.500																								

1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.
7. Ambient water quality standard.

No threshold value has been provided for parameters not identified in the sources listed above
Aquatic Life criteria provided above from RIDEM Water Quality Regulations. "No Data" represents parameters for which no aquatic life criteria has been established.
"O.R." - Threshold value is temperature and/or pH dependent. Temperature and/ or pH was outside of the range for which a threshold value is established.

TABLE 3 (CONT.)
SUMMARY OF SURFACE WATER MONITORING RESULTS
SURFACE WATER SW-3
JUNE 2019 MONITORING ROUND
Concentration (expressed in same units as Human Health Threshold)

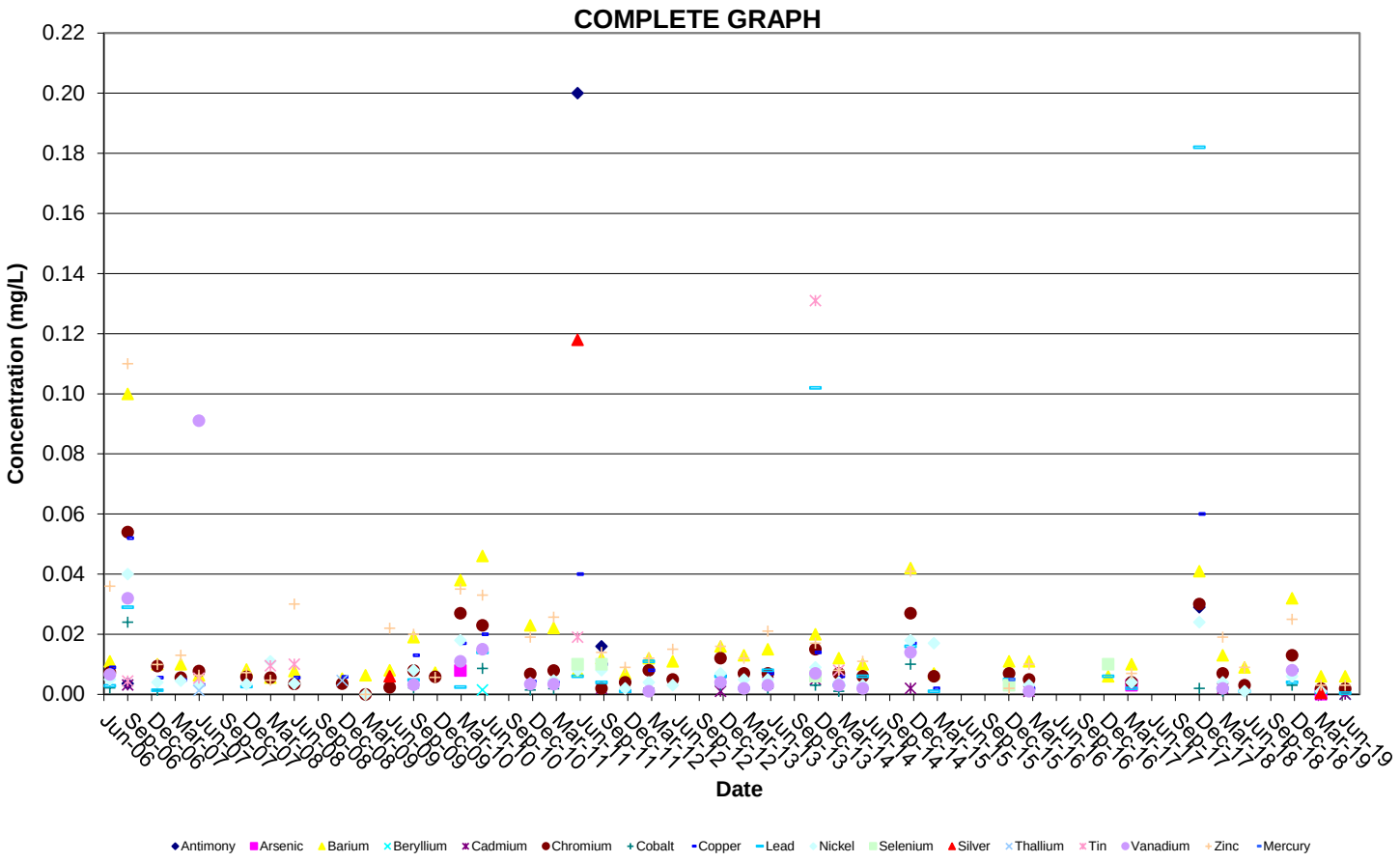
Parameter	Human Health Threshold		Jun-19 Aquatic Life Threshold (Acute)	Jun-19 Aquatic Life Threshold (Chronic)	Jun-19 Data	Mar-19 Aquatic Life Threshold (Acute)	Mar-19 Aquatic Life Threshold (Chronic)	Mar-19 Data	Dec-18 Aquatic Life Threshold (Acute)	Dec-18 Aquatic Life Threshold (Chronic)	Dec-18 Data	Sep-18 Aquatic Life Threshold (Acute)	Sep-18 Aquatic Life Threshold (Chronic)	Sep-18 Data	Jun-18 Aquatic Life Threshold (Acute)	Jun-18 Aquatic Life Threshold (Chronic)	Jun-18 Data	Mar-18 Aquatic Life Threshold (Acute)	Mar-18 Aquatic Life Threshold (Chronic)	Mar-18 Data	Dec-17 Aquatic Life Threshold (Acute)	Dec-17 Aquatic Life Threshold (Chronic)	Dec-17 Data	Sep-17 Aquatic Life Threshold (Acute)	Sep-17 Aquatic Life Threshold (Chronic)	Sep-17 Data	Jun-17 Aquatic Life Threshold (Acute)	Jun-17 Aquatic Life Threshold (Chronic)	Jun-17 Data	Mar-17 Aquatic Life Threshold (Acute)	Mar-17 Aquatic Life Threshold (Chronic)	Mar-17 Data	Dec-16 Aquatic Life Threshold (Acute)	Dec-16 Aquatic Life Threshold (Chronic)	Dec-16 Data
Antimony	0.006	mg/L[1]	0.4500	0.0100	ND	0.4500	0.0100	ND	0.4500	0.0100	0.002	0.4500	0.0100	0.003	0.4500	0.0100	0.005	0.4500	0.0100	ND	0.4500	0.0100	0.011	0.4500	0.0100	NT	0.4500	0.0100	0.020	0.4500	0.0100	ND	0.4500	0.0100	ND
Arsenic	0.01	mg/L[1]	0.3400	0.1500	0.0006	0.3400	0.1500	0.0002	0.3400	0.1500	ND	0.3400	0.1500	ND	0.3400	0.1500	0.020	0.3400	0.1500	ND	0.3400	0.1500	ND	0.3400	0.1500	NT	0.3400	0.1500	ND	0.3400	0.1500	ND	0.3400	0.1500	ND
Barium	2	mg/L[1]	No Data	No Data	0.014	No Data	No Data	0.007	No Data	No Data	0.010	No Data	No Data	0.018	No Data	No Data	1.660	No Data	No Data	1.330	No Data	No Data	0.087	No Data	No Data	NT	No Data	No Data	0.211	No Data	No Data	0.015	No Data	No Data	0.015
Beryllium	0.004	mg/L[1]	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	NT	0.0075	0.00017	ND	0.0075	0.00017	ND	0.0075	0.00017	ND
Cadmium	0.005	mg/L[1]	*0.0008*	*0.00013*	ND	*0.0005*	*0.00009*	ND	*0.0010*	*0.0002*	ND	*0.0010*	*0.0001*	ND	*0.0016*	*0.0002*	0.008	*0.0085*	*0.0007*	0.051	*0.0013*	*0.0002*	ND	*0.0000*	*0.0000*	NT	*0.0057*	*0.0005*	0.009	*0.0010*	*0.0001*	ND	*0.0013*	*0.0002*	ND
Chromium	0.1	mg/L[1]	0.0160	0.0110	0.0007	0.0160	0.0110	0.0003	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	ND	0.0160	0.0110	0.249	0.0160	0.0110	0.006	0.0160	0.0110	NT	0.0160	0.0110	0.017	0.0160	0.0110	ND	0.0160	0.0110	ND
Cobalt	0.73	mg/L[5]	No Data	No Data	0.0023	No Data	No Data	0.0002	No Data	No Data	ND	No Data	No Data	0.004	No Data	No Data	0.003	No Data	No Data	0.132	No Data	No Data	0.006	No Data	No Data	NT	No Data	No Data	0.019	No Data	No Data	ND	No Data	No Data	0.008
Copper	1.3	mg/L[1]	*0.0058*	*0.0042*	ND	*0.0035*	*0.0026*	ND	*0.0071*	*0.0050*	ND	*0.0066*	*0.0047*	ND	*0.0108*	*0.0074*	ND	*0.0544*	*0.0318*	0.240	*0.0090*	*0.0062*	ND	*0.0002*	*0.0002*	NT	*0.0371*	*0.0225*	ND	*0.0066*	*0.0047*	ND	*0.0091*	*0.0063*	ND
Lead	0.015	mg/L[1]	*0.0240*	*0.0009*	0.0005	*0.0131*	*0.0005*	0.0009	*0.0306*	*0.0012*	ND	*0.0283*	*0.0011*	ND	*0.0503*	*0.0020*	ND	*0.3103*	*0.0121*	0.715	*0.0404*	*0.0016*	0.011	*0.0003*	*0.0000*	NT	*0.2042*	*0.0080*	0.029	*0.0282*	*0.0011*	ND	*0.0408*	*0.0016*	ND
Nickel	0.1	mg/L[2]	*0.2189*	*0.0243*	0.002	*0.1385*	*0.0154*	0.002	*0.2636*	*0.0293*	0.001	*0.2481*	*0.0276*	0.006	*0.3856*	*0.0428*	0.018	*1.6431*	*0.1825*	0.433	*0.3257*	*0.0362*	0.01	*0.0095*	*0.0011*	NT	*1.1660*	*0.1295*	0.131	*0.2477*	*0.0275*	0.006	*0.3286*	*0.0365*	0.019
Selenium	0.05	mg/L[1]	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	NT	0.0200	0.0050	ND	0.0200	0.0050	ND	0.0200	0.0050	ND
Silver	0.1	mg/L[2]	*0.0007*	No Data	ND	*0.0003*	No Data	ND	*0.0011*	No Data	ND	*0.0009*	No Data	ND	*0.0023*	No Data	ND	*0.0443*	No Data	ND	*0.0016*	No Data	ND	*0.0000*	No Data	NT	*0.0220*	No Data	ND	*0.0009*	No Data	ND	*0.0017*	No Data	ND
Thallium	0.002	mg/L[1]	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	NT	0.0460	0.0010	ND	0.0460	0.0010	ND	0.0460	0.0010	ND
Tin	22	mg/L[5]	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	NT	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	0.030
Vanadium	0.26	mg/L[5]	No Data	No Data	0.0012	No Data	No Data	ND	No Data	No Data	ND	No Data	No Data	0.003	No Data	No Data	0.004	No Data	No Data	0.418	No Data	No Data	0.026	No Data	No Data	NT	No Data	No Data	0.028	No Data	No Data	ND	No Data	No Data	ND
Zinc	5	mg/L[3]	*0.0547*	*0.0552*	0.006	*0.0346*	*0.0349*	0.004	*0.0659*	*0.0664*	0.007	*0.0620*	*0.0625*	0.011	*0.0965*	*0.0973*	0.505	*0.4120*	*0.4154*	2.520	*0.0815*	*0.0821*	0.058	*0.0024*	*0.0024*	NT	*0.2922*	*0.2946*	0.110	*0.0619*	*0.0624*	0.016	*0.0822*	*0.0829*	0.050
Mercury	0.002	mg/L[1]	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	0.001	0.0014	0.00077	ND	0.0014	0.00077	NT	0.0014	0.00077	ND	0.0014	0.00077	ND	0.0014	0.00077	ND
Hardness (CaCO3)		mg/L			40.7			23.7			50.7			47.2			79.5			441			65.1			NT			294			47.1			65.8
Natural Log of Hardness for Calculation					3.706			3.165			3.926			3.854			4.376			6.089			4.176						5.684			3.852			4.187
Iron	0.3	mg/L[3]	No Data	1	4.130	No Data	1	0.449																												
Ammonia	30	mg/L[2]	38.5	4.09	0.2	O.R.	O.R.	ND																												
TKN	--		--	--	0.5	--	--	0.3																												
Total Phosphorus	0.025	mg/L[7]	--	--	0.22	--	--	ND																												
Total Nitrogen	--		--	--	0.500	--	--	0.300																												

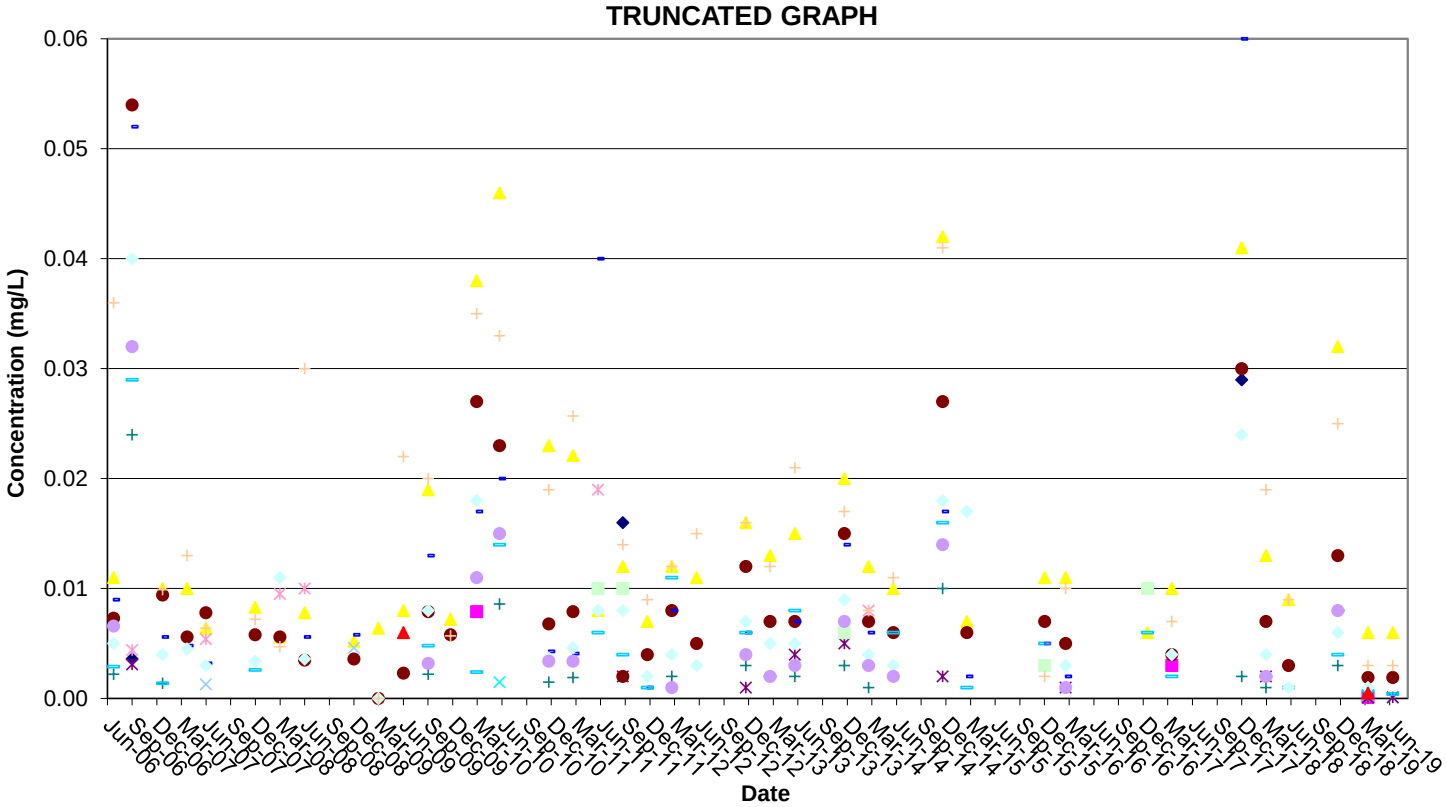
1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.
7. Ambient water quality standard.

No threshold value has been provided for parameters not identified in the sources listed above
Aquatic Life criteria provided above from RIDEM Water Quality Regulations. "No Data" represents parameters for which no aquatic life criteria has been established.
"O.R." - Threshold value is temperature and/or pH dependent. Temperature and/ or pH was outside of the range for which a threshold value is established.

ATTACHMENT NO. 3
HISTORICAL DETECTED METALS GRAPHS

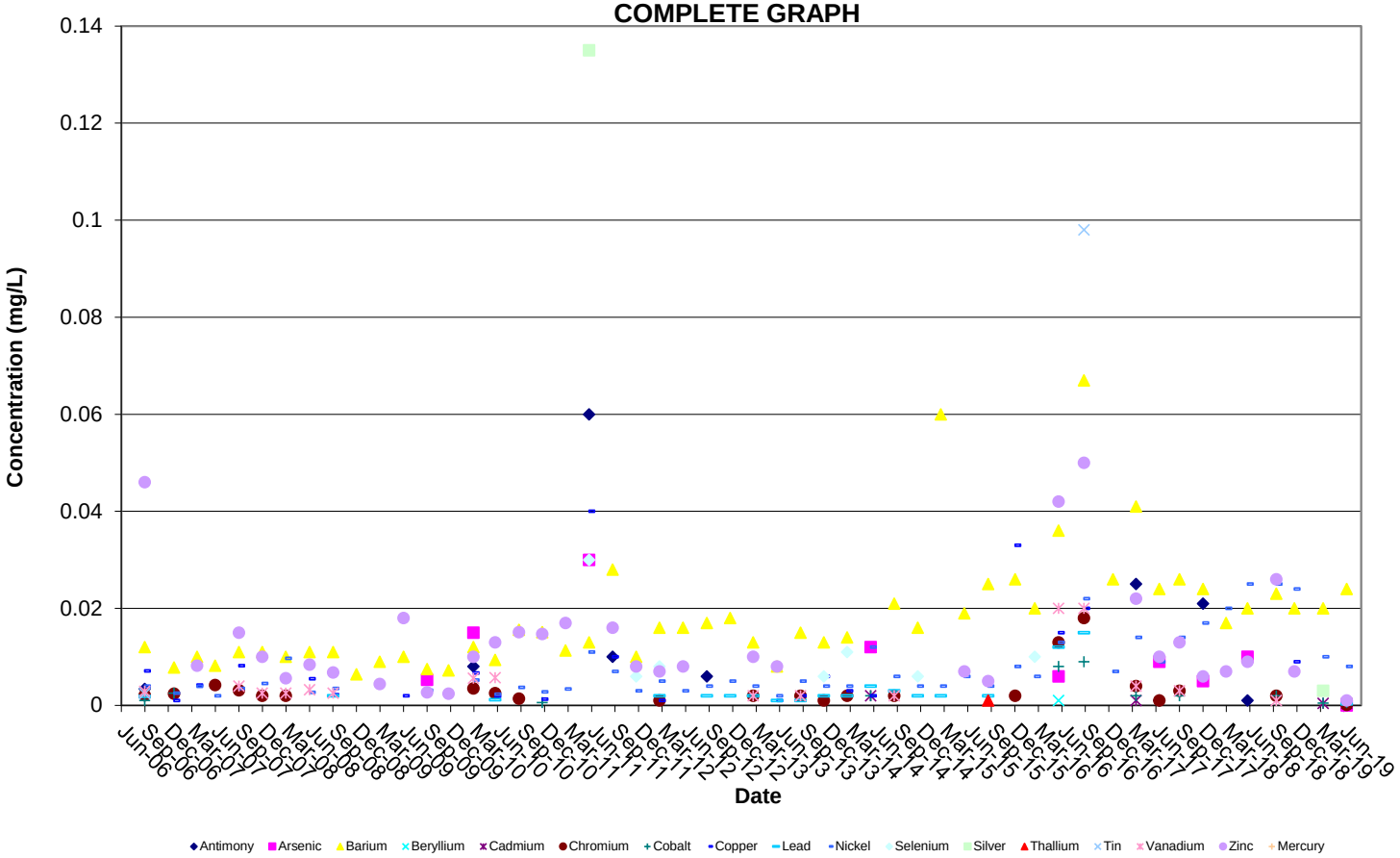
Detected Appendix A Metals in OW-9
Tiverton Landfill





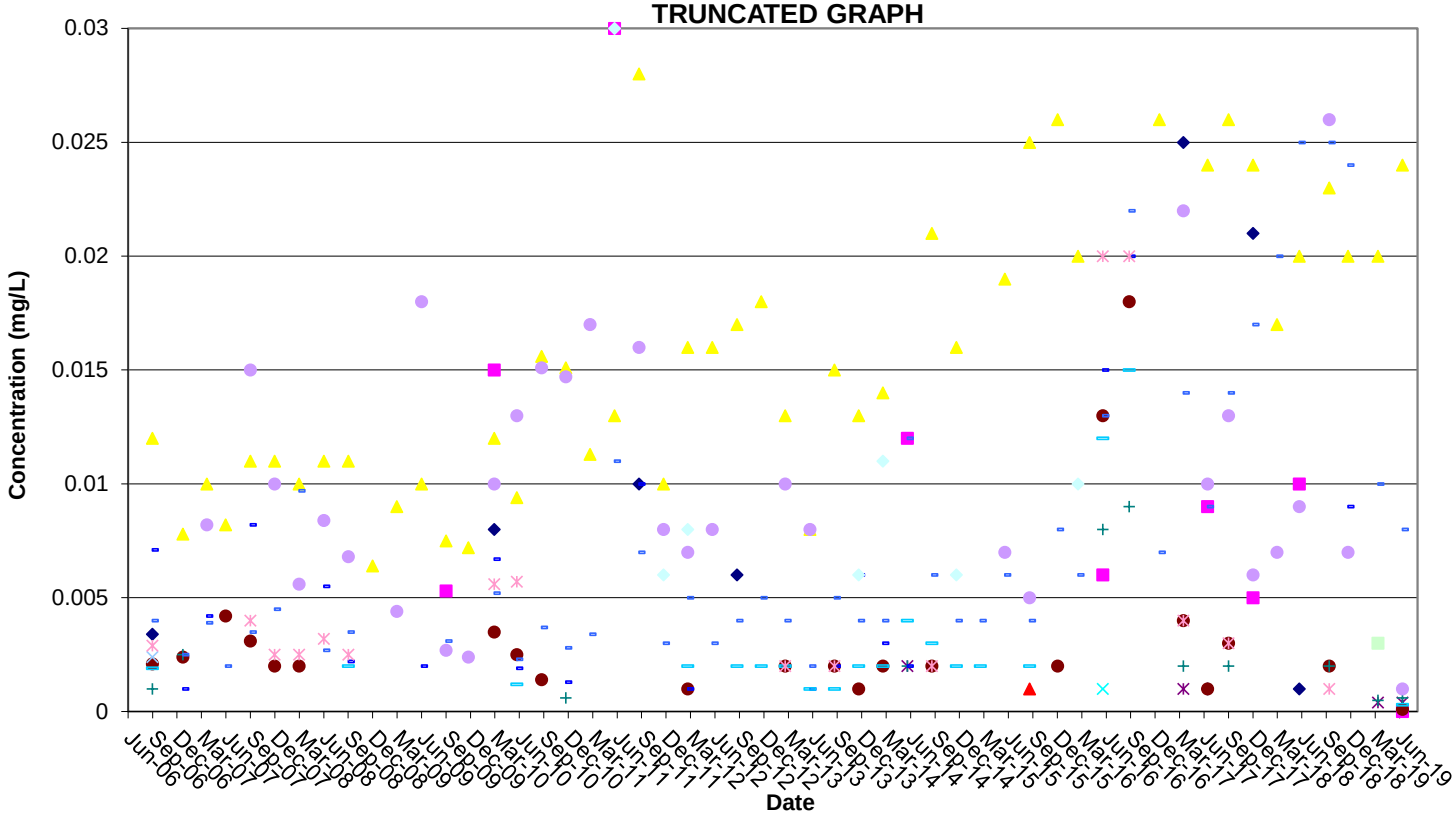
Detected Appendix A Metals in OW-12
Tiverton Landfill

COMPLETE GRAPH



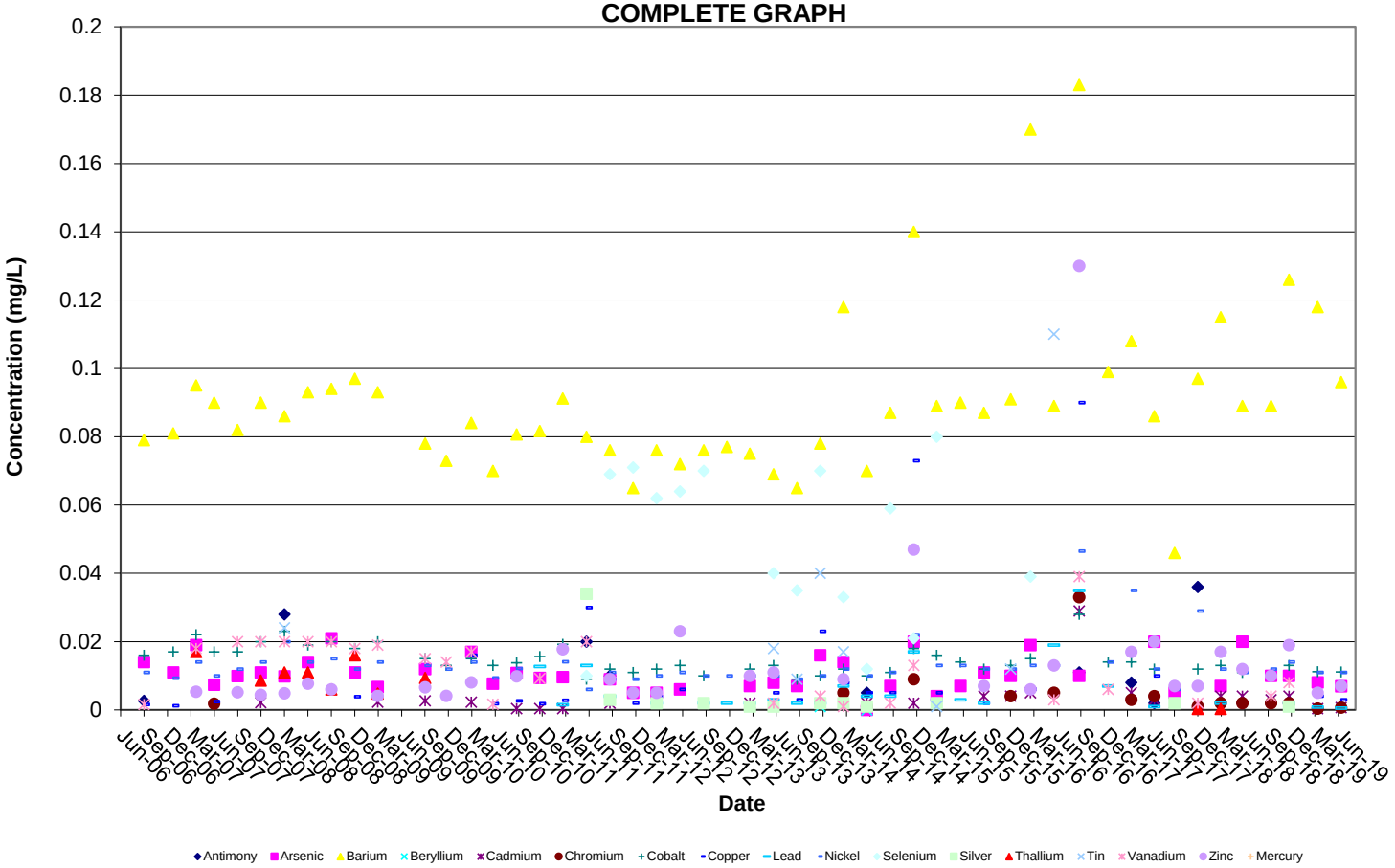
◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt -Copper -Lead -Nickel ·Selenium ·Silver ▲Thallium ×Tin ×Vanadium ●Zinc ·Mercury

TRUNCATED GRAPH



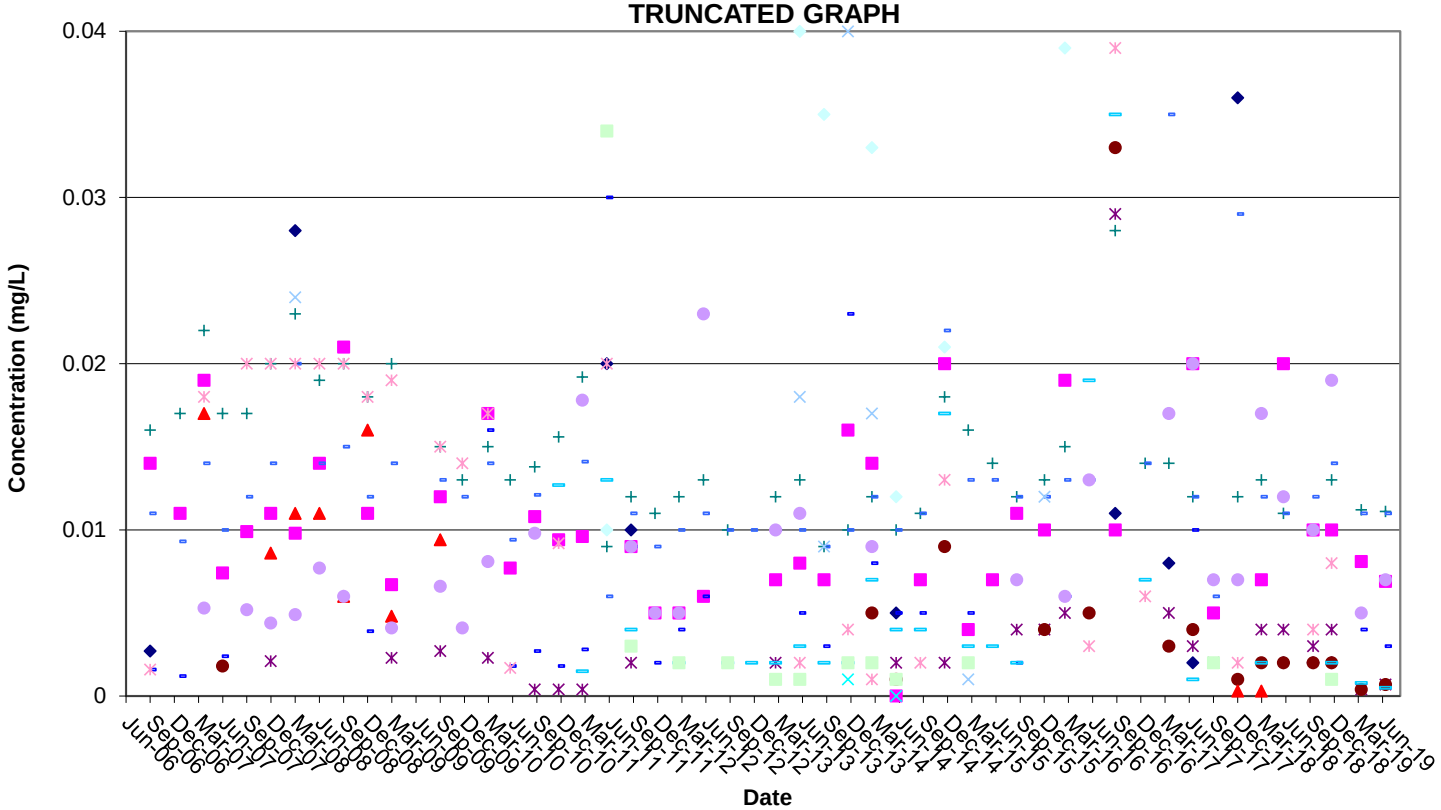
Detected Appendix A Metals in OW-13
Tiverton Landfill

COMPLETE GRAPH



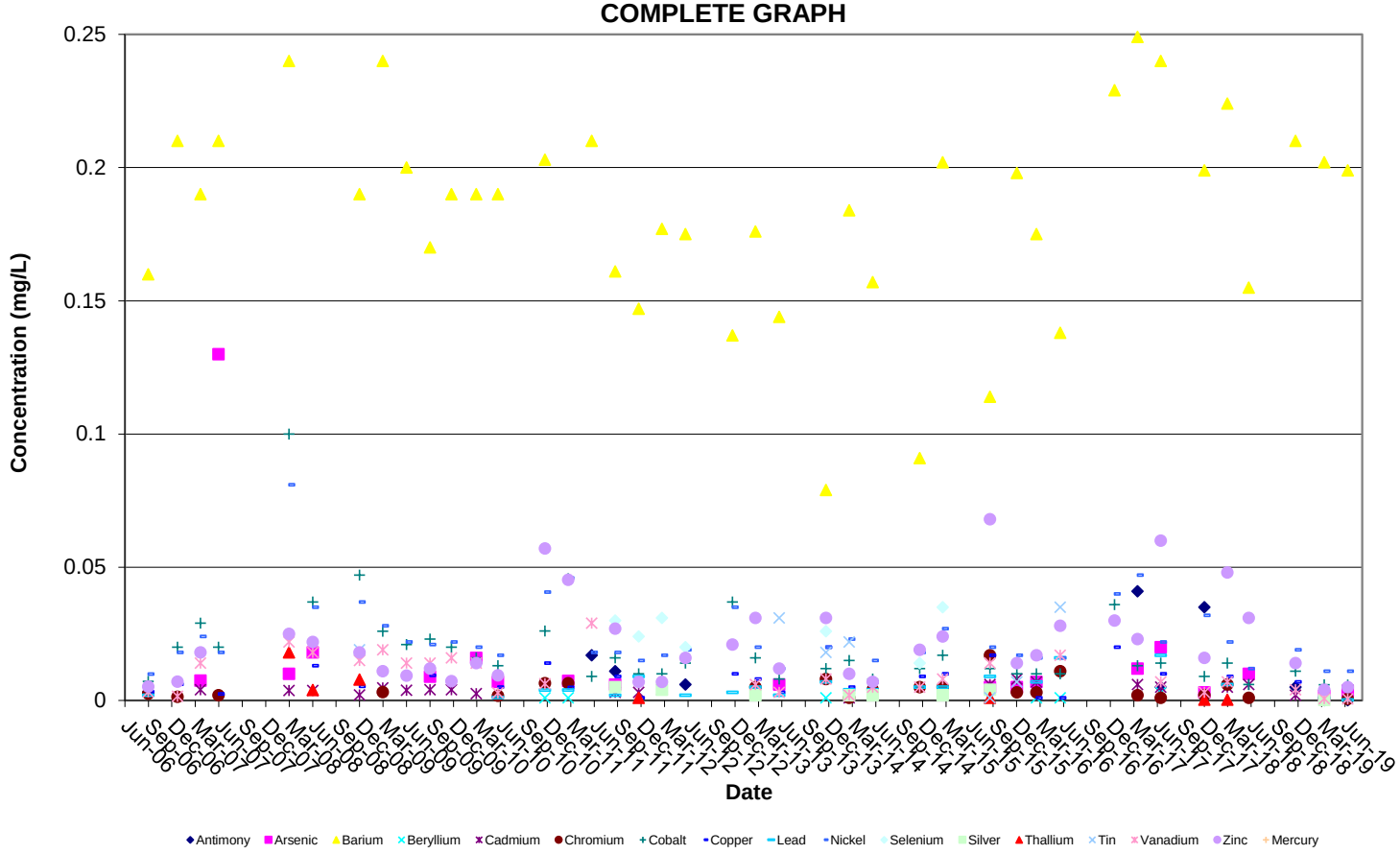
◆Antimony ■Arsenic ▲Barium ×Beryllium ×Cadmium ●Chromium +Cobalt -Copper -Lead -Nickel ·Selenium ·Silver ▲Thallium ×Tin ×Vanadium ●Zinc ·Mercury

TRUNCATED GRAPH

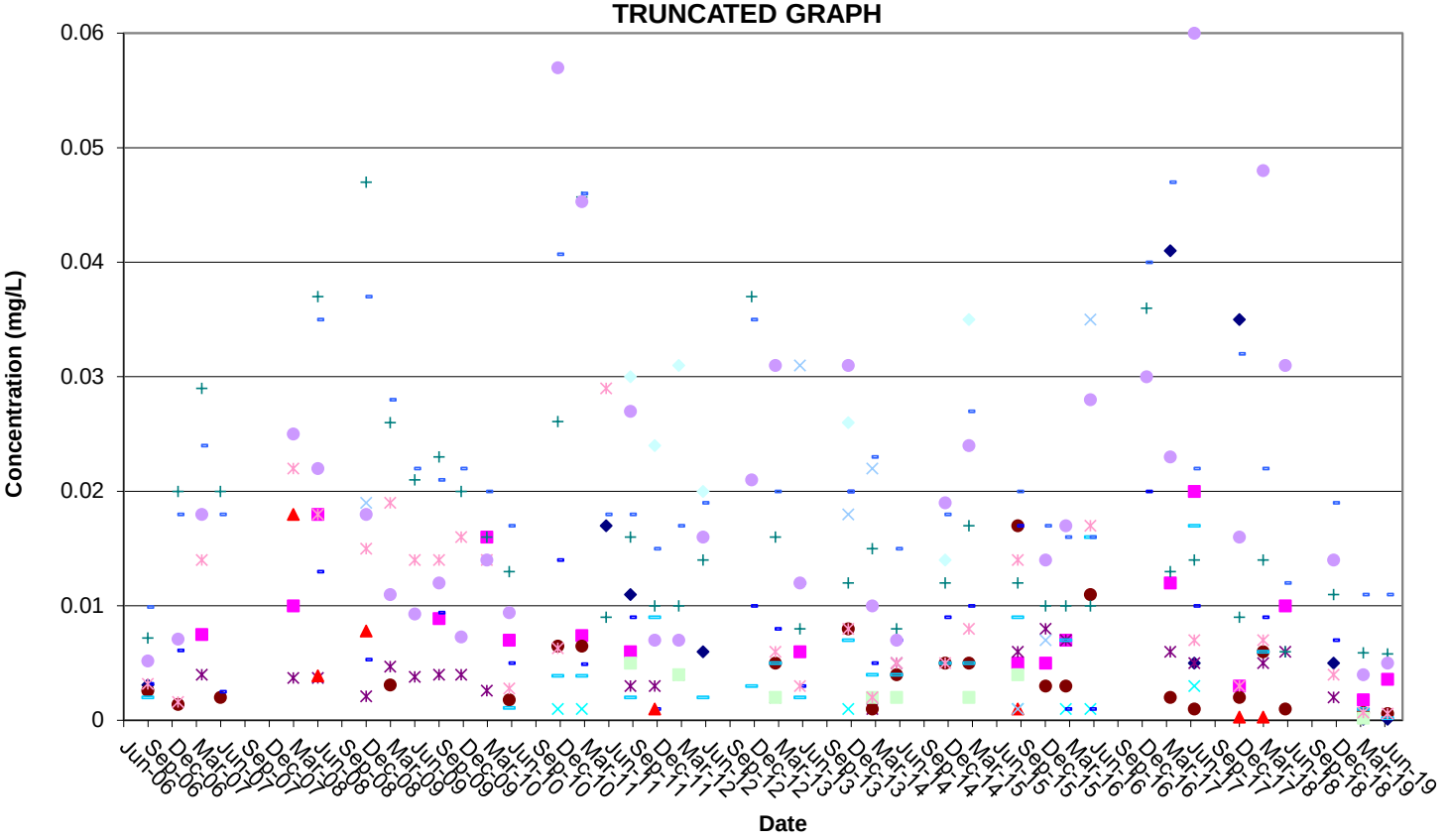


Detected Appendix A Metals in OW-14
Tiverton Landfill

COMPLETE GRAPH

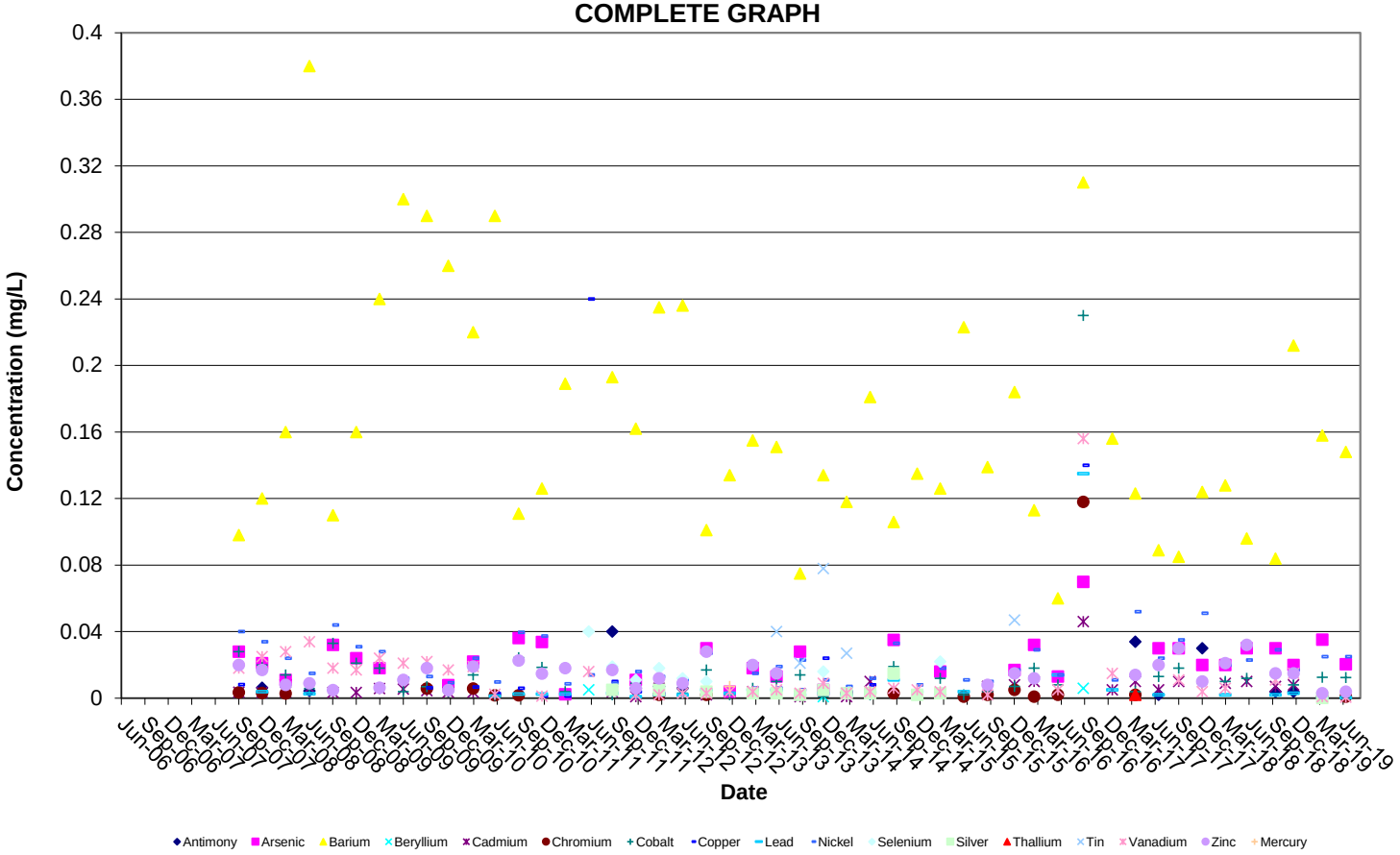


TRUNCATED GRAPH



Detected Appendix A Metals in OW-15
Tiverton Landfill

COMPLETE GRAPH



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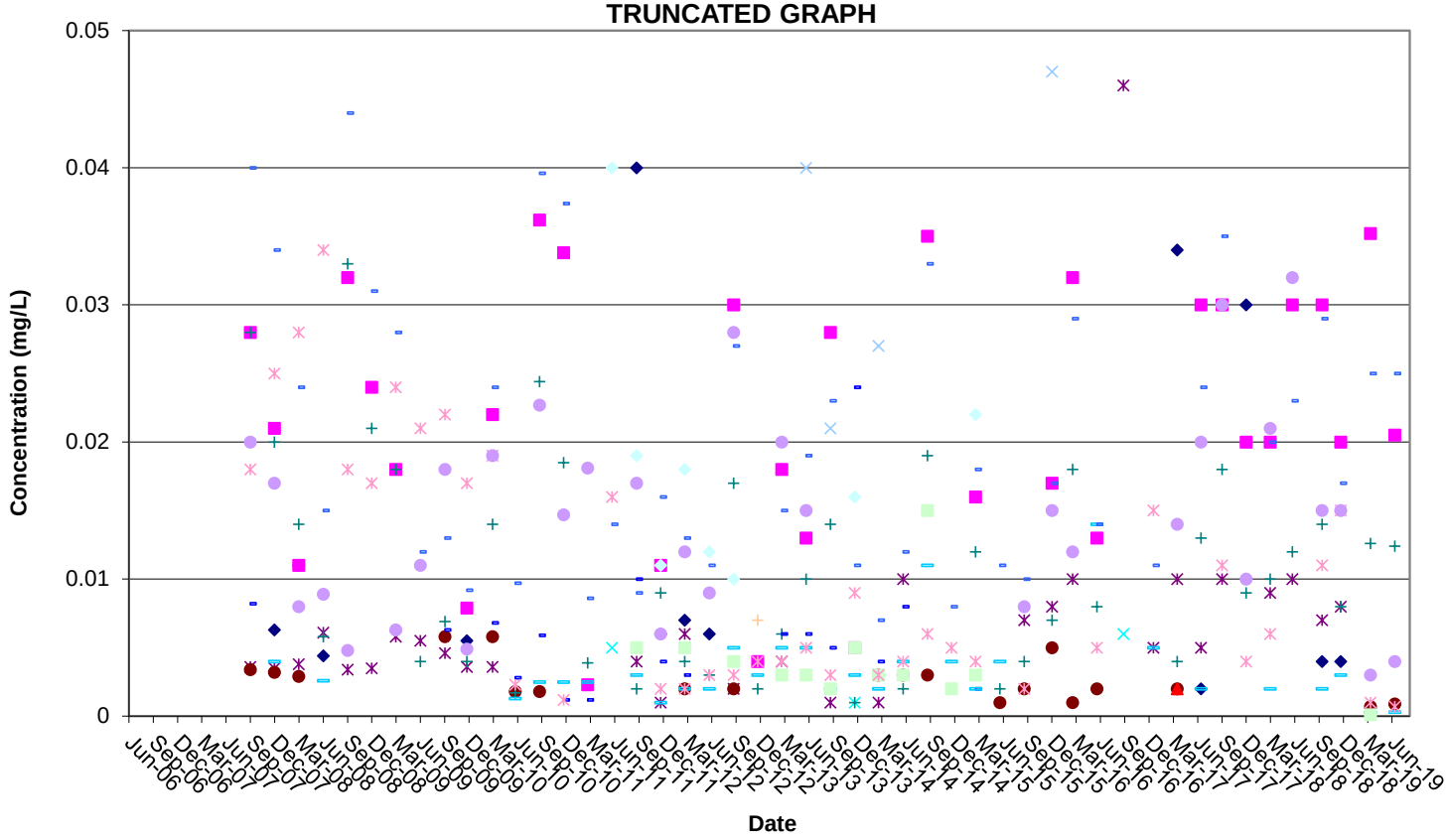
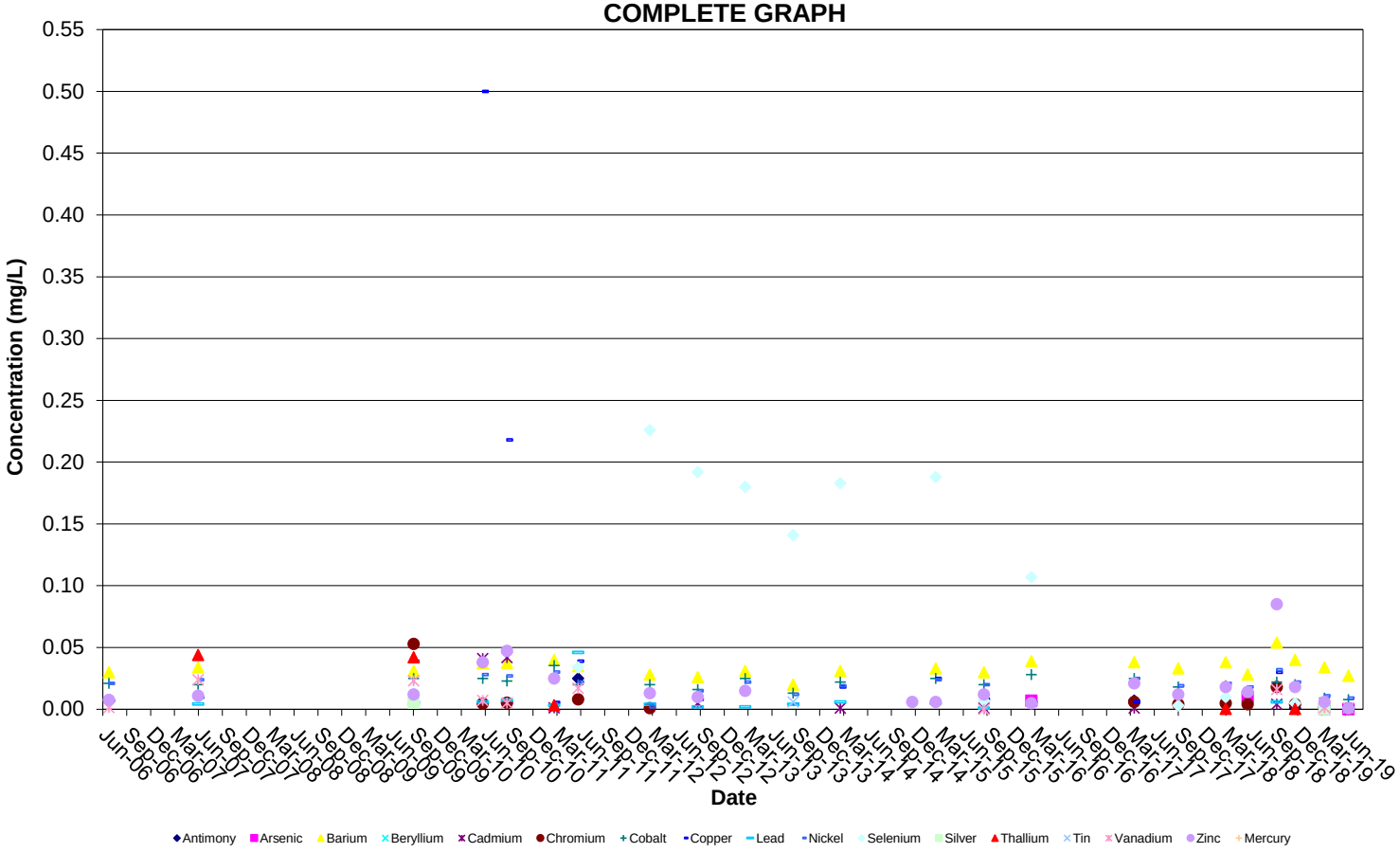
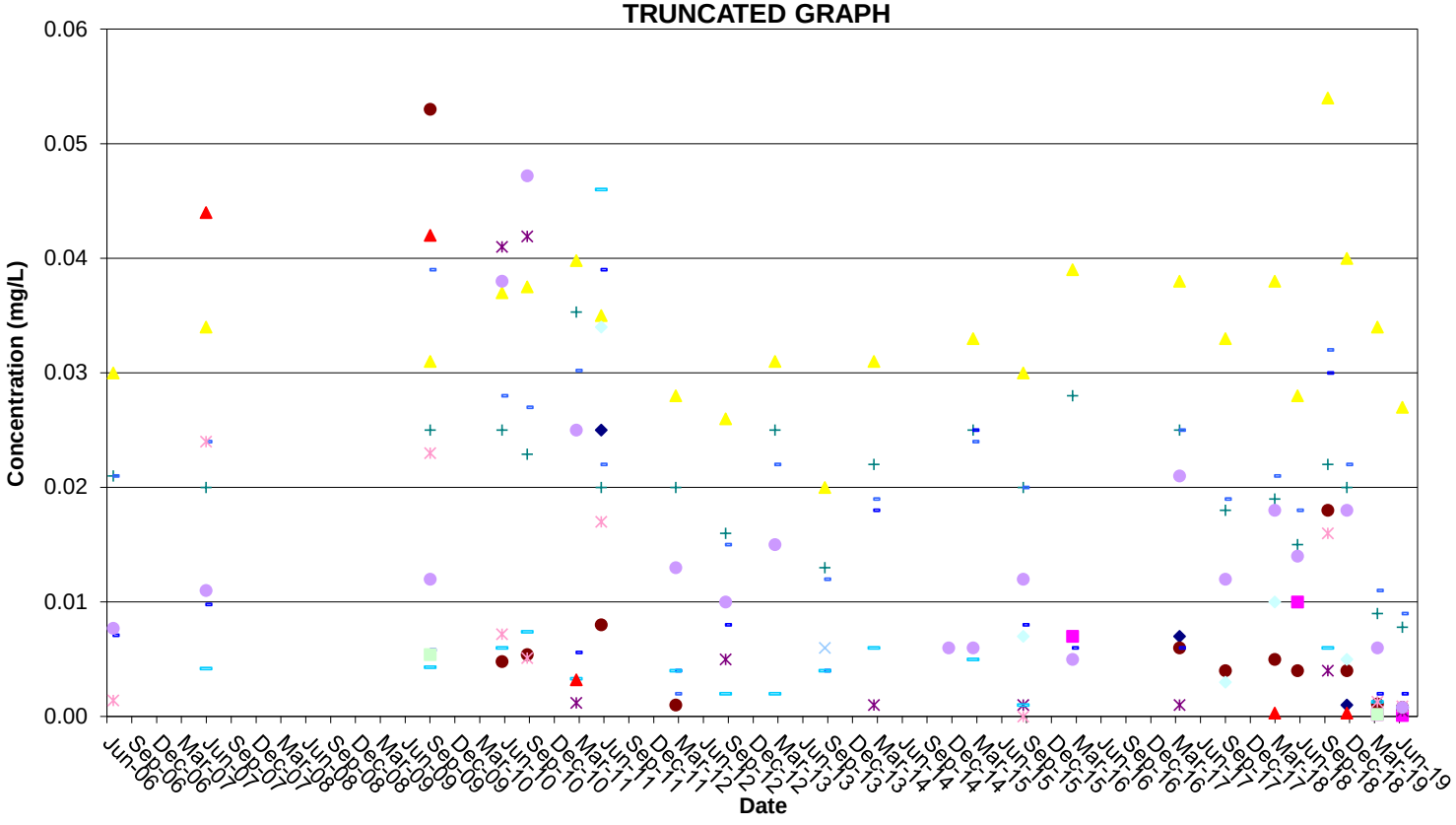


Detected Appendix A Metals in OW-7
Tiverton Landfill

COMPLETE GRAPH

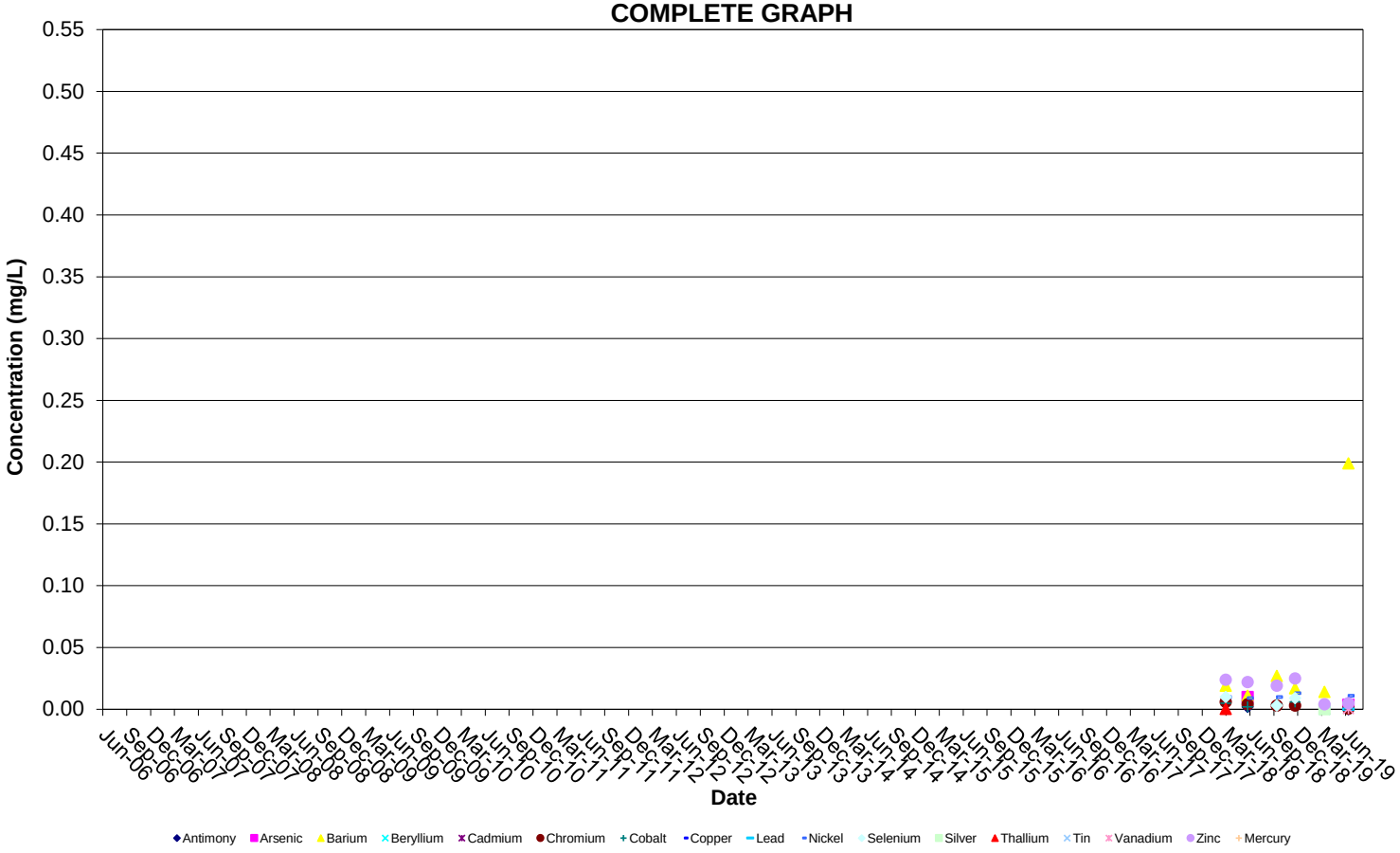


TRUNCATED GRAPH



Detected Appendix A Metals in OW-16
Tiverton Landfill

COMPLETE GRAPH



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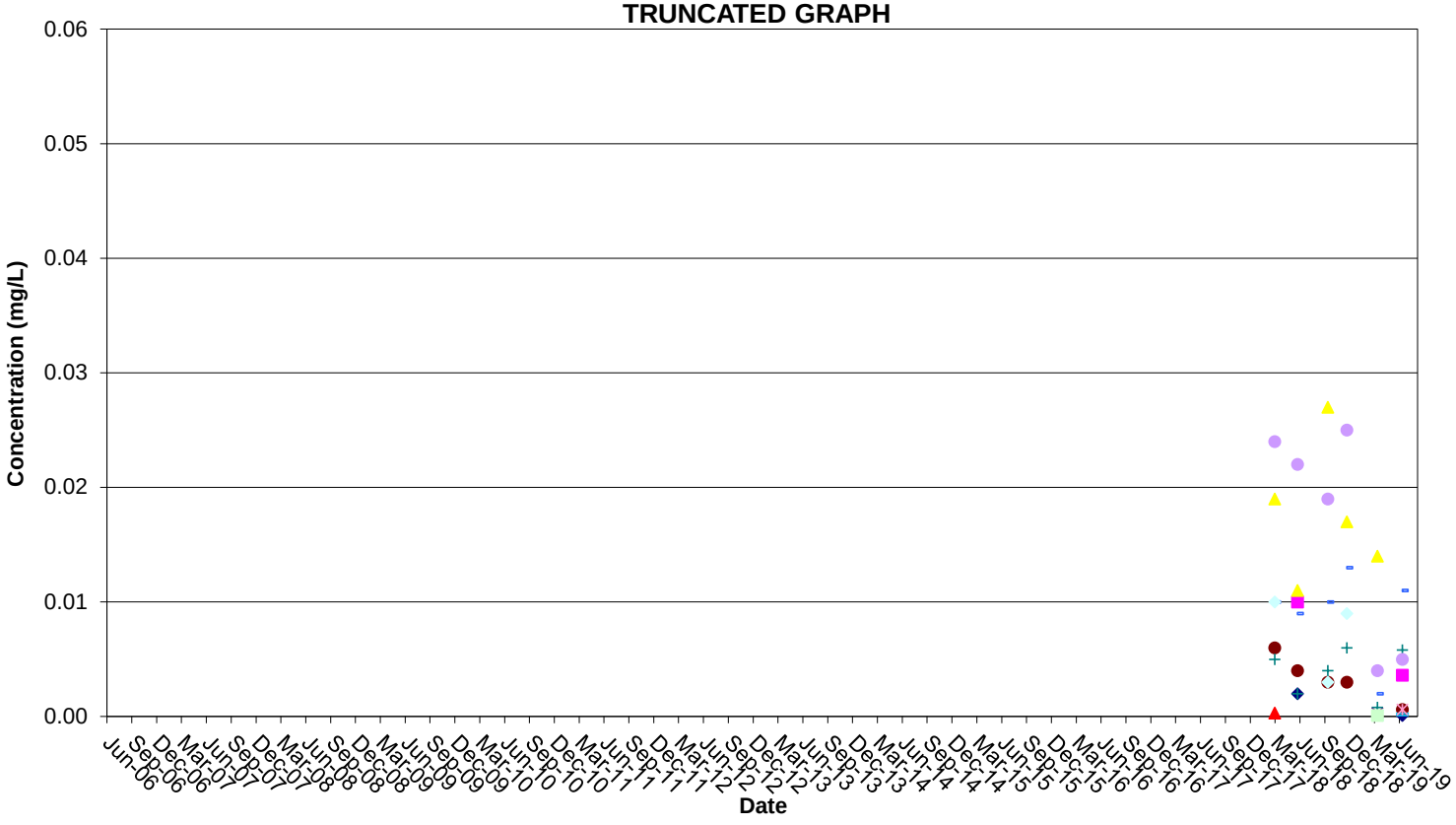
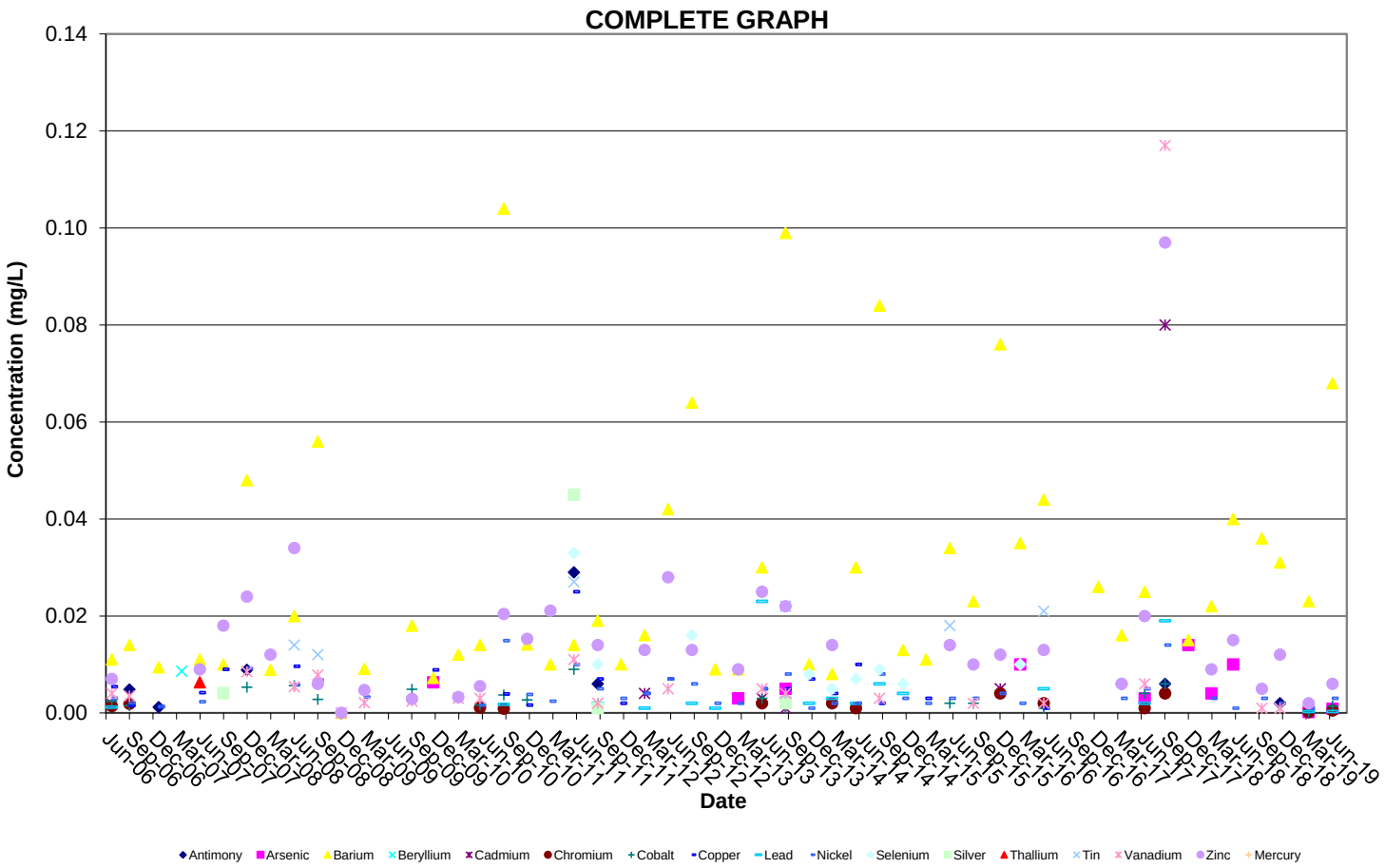
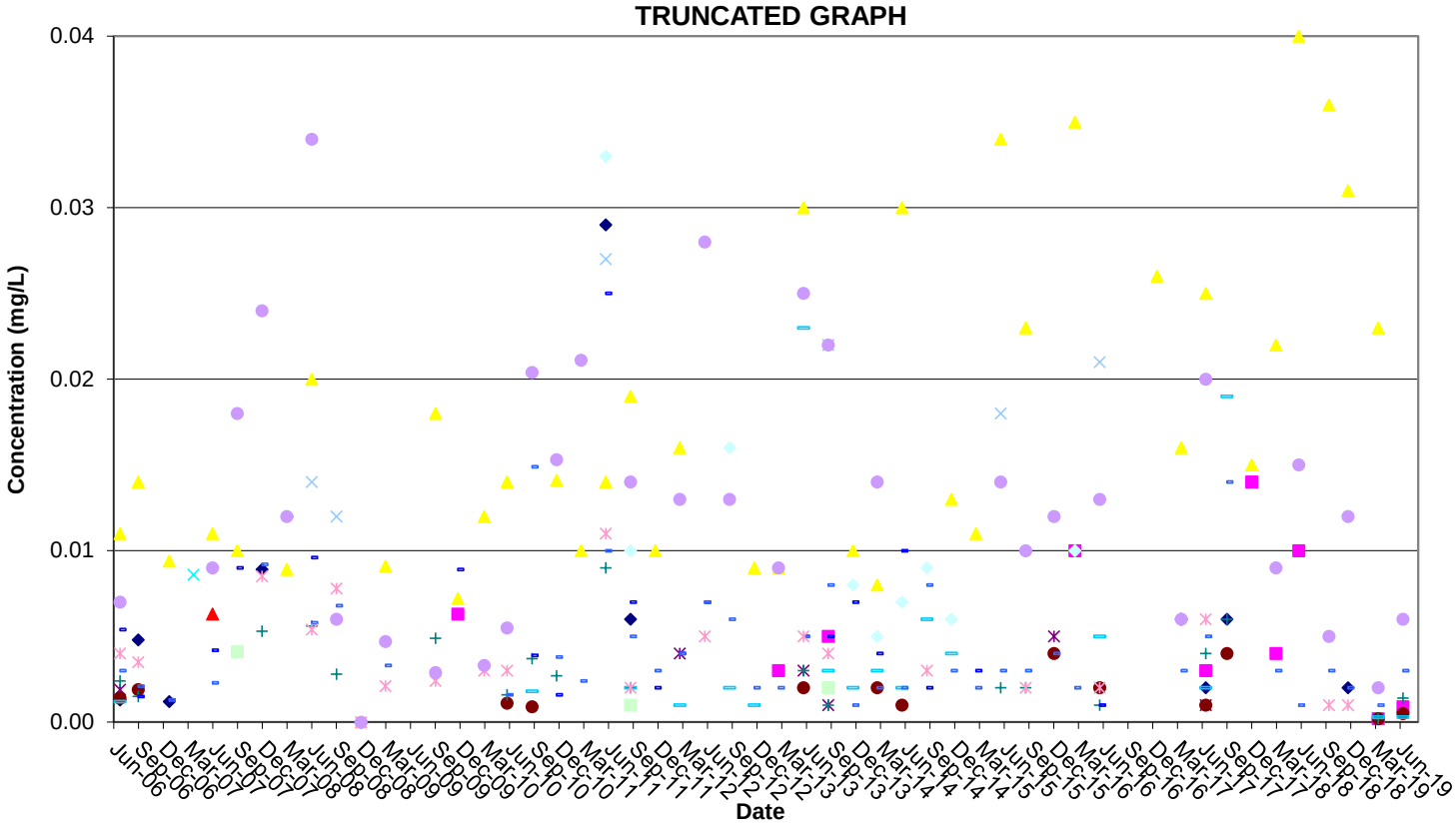
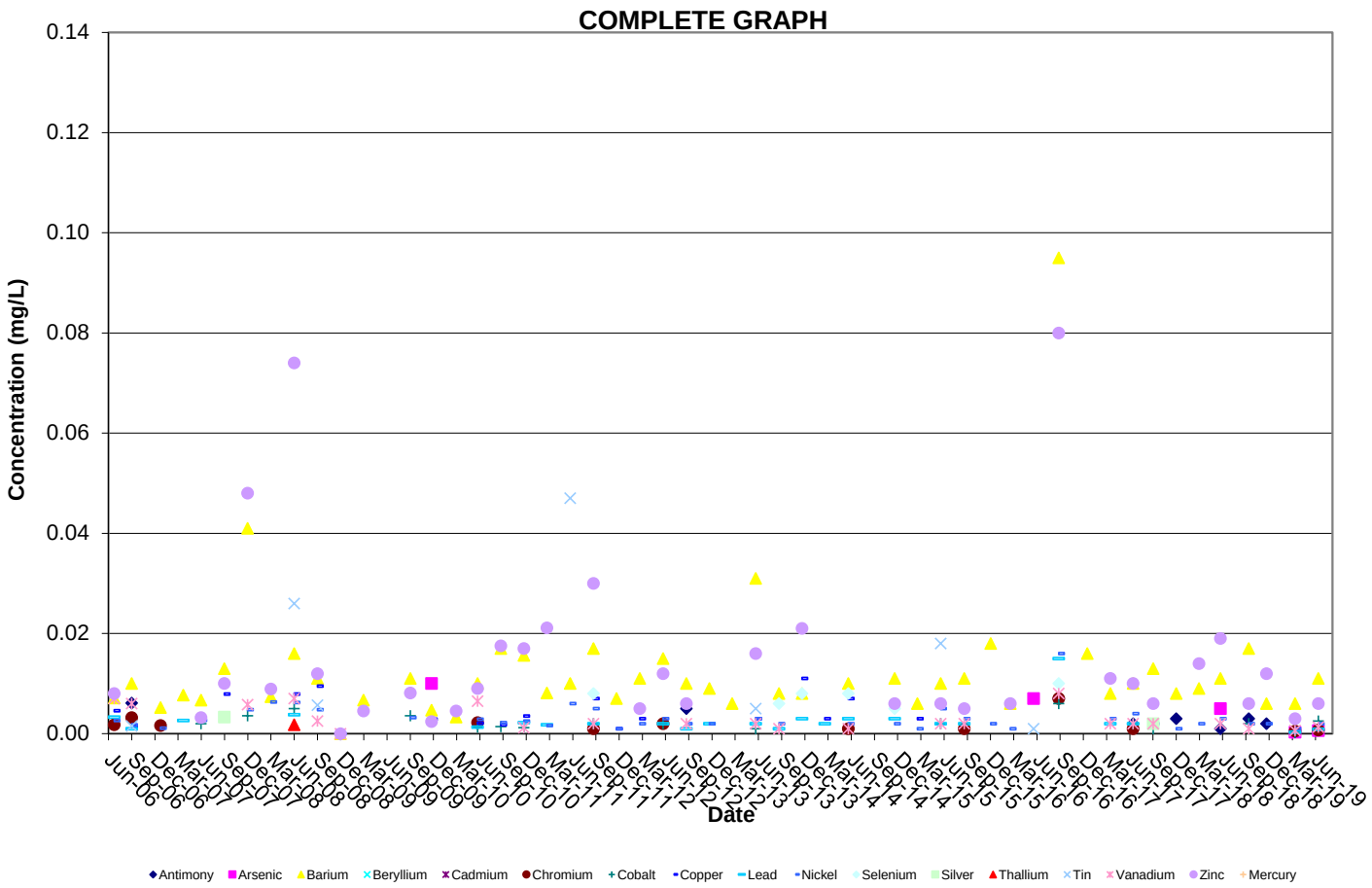


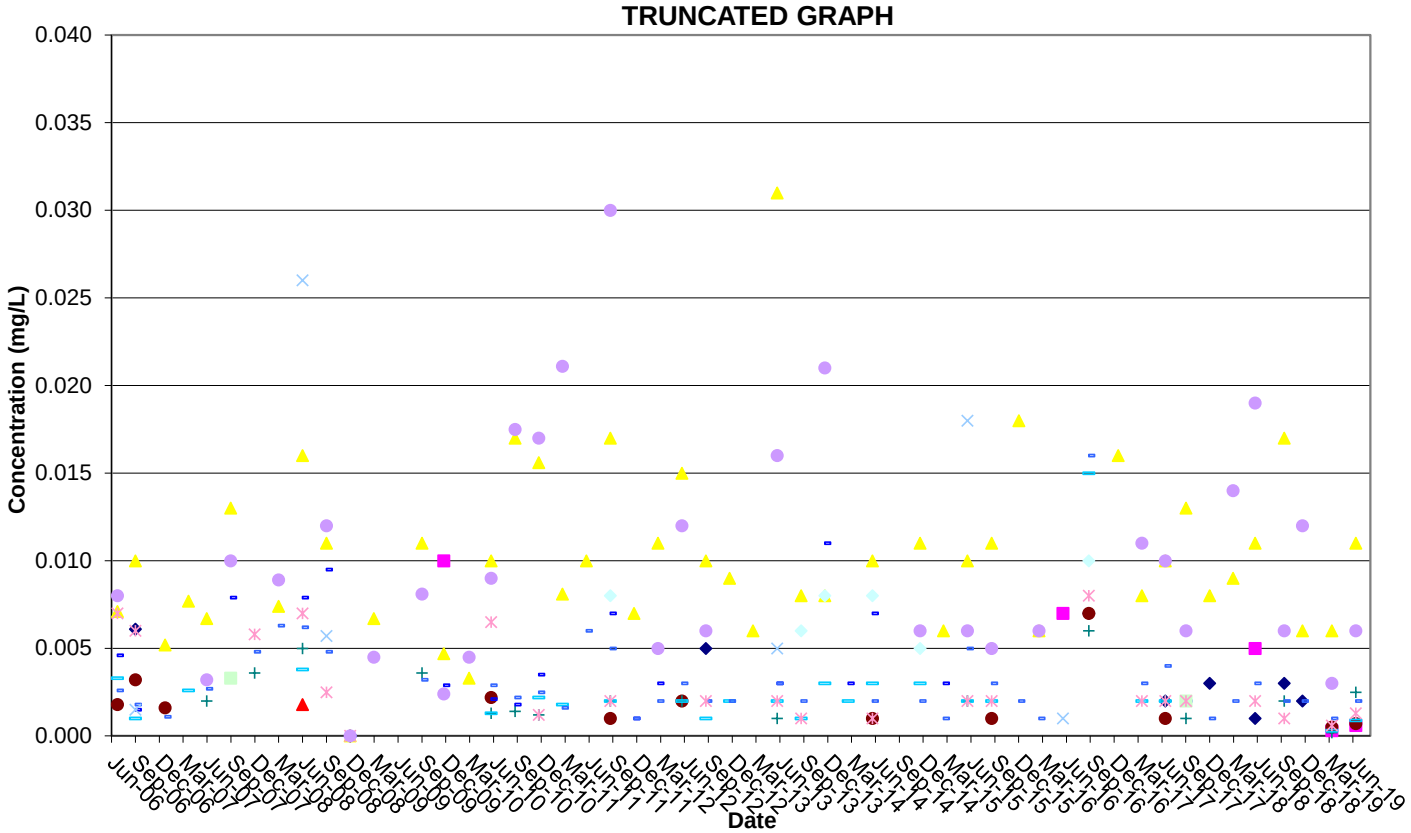
Detected Appendix A Metals at Surface Water Sampling Location SW-1
Tiverton Landfill



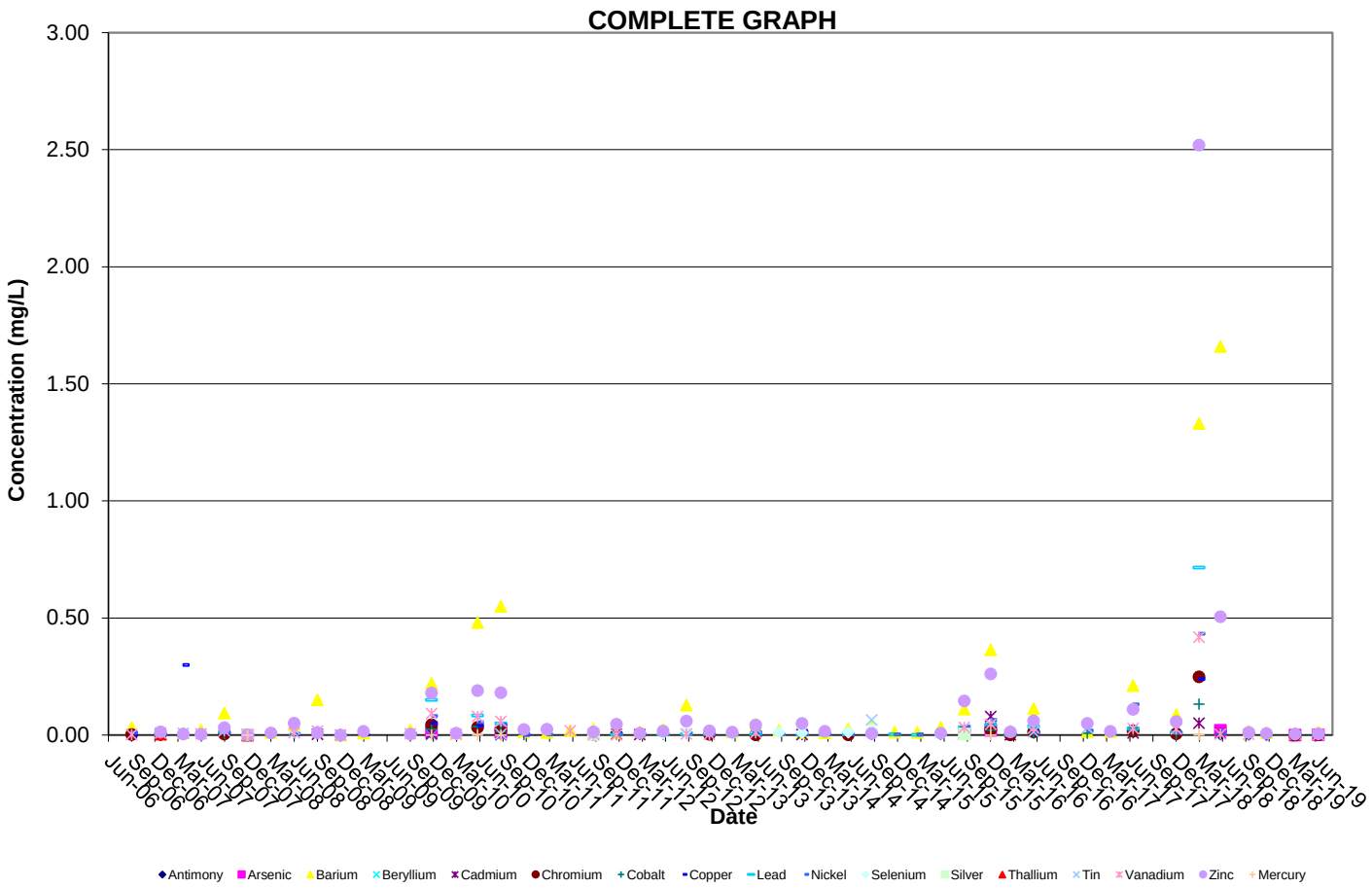


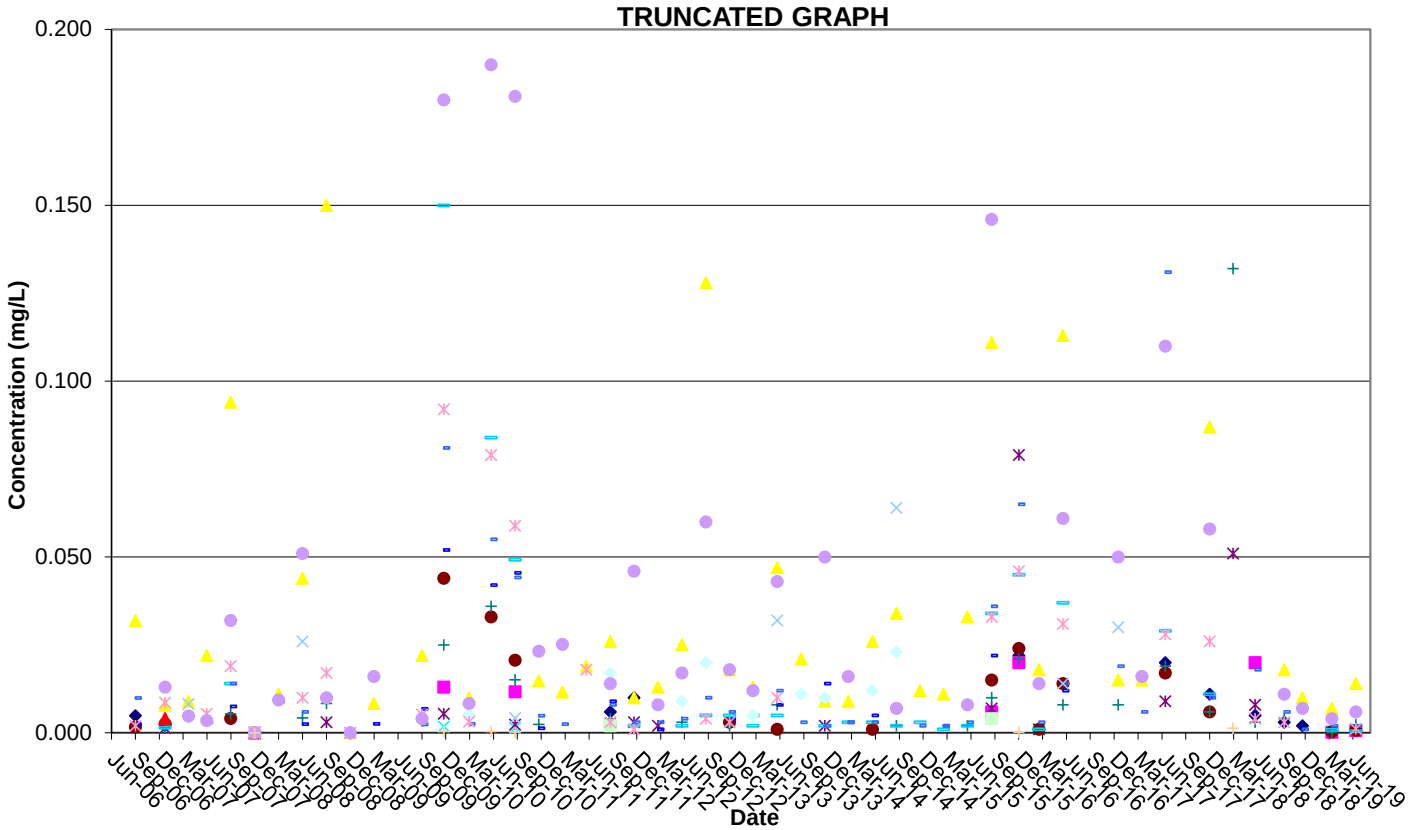
Detected Appendix A Metals at Surface Water Sampling Location SW-2
Tiverton Landfill





Detected Appendix A Metals at Surface Water Sampling Location SW-3
Tiverton Landfill





ATTACHMENT NO. 4
TOLERANCE INTERVAL STATISTICAL EVALUATION

TABLE 4
SUMMARY OF GROUNDWATER MONITORING RESULTS - TOLERANCE INTERVAL COMPARISON
JUN 2019 - SAMPLE ROUND
Concentration (units as specified for Threshold Value)

		OW-9 Tolerance Limit *		Threshold		Background Well	Compliance wells				
	Parameter	TL=AVG+K*S		Value		OW-9	OW-7	OW-12	OW-13	OW-14	OW-15	OW-16
METALS	Antimony	0.0290	mg/L	0.006	mg/L[1]	ND	0.0002	ND	ND	0.0001	ND	ND
	Arsenic	0.0030	mg/L	0.010	mg/L[1]	ND	0.0001	ND	0.0069	0.0036	0.0205	ND
	Barium	0.0577	mg/L	2	mg/L[1]	0.0060	0.027	0.024	0.0960	0.1990	0.1480	0.008
	Beryllium	0.0003	mg/L	0.004	mg/L[1]	0.0001	ND	ND	ND	ND	ND	0.0002
	Cadmium	0.3650	mg/L	0.005	mg/L[1]	0.0001	0.0005	0.0004	0.0007	ND	ND	0.0002
	Chromium	0.0383	mg/L	0.1	mg/L[1]	0.0019	0.0008	0.0001	0.0007	0.0006	0.0009	ND
	Cobalt	0.0030	mg/L	0.73	mg/L[5]	ND	0.0078	0.0006	0.0111	0.0058	0.0124	0.0009
	Copper	0.0080	mg/L	1.3	mg/L[1]	ND	0.002	ND	0.003	ND	ND	ND
	Lead	0.2245	mg/L	0.015	mg/L[1]	0.0004	0.0008	0.0003	0.0005	0.0002	0.0003	ND
	Mercury	0.0001	mg/L	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND
	Nickel	0.0295	mg/L	0.1	mg/L[2]	ND	0.0009	0.008	0.011	0.011	0.025	0.002
	Selenium	0.0100	mg/L	0.05	mg/L[1]	ND	ND	ND	ND	ND	ND	ND
	Silver	0.0005	mg/L	0.1	mg/L[2,3]	ND	ND	ND	ND	ND	ND	ND
	Thallium	0.0001	mg/L	0.002	mg/L[1]	ND	ND	ND	ND	ND	ND	ND
	Tin	0.0025	mg/L	22	mg/L[5]	ND	ND	ND	ND	ND	ND	ND
	Vanadium	0.0080	mg/L	0.26	mg/L[5]	ND	0.0009	ND	ND	0.0006	0.0007	ND
	Zinc	13.7198	mg/L	2 - 5	mg/L[2,3]	0.0030	0.0070	0.001	0.007	0.005	0.004	0.004
VOC'S	Acetone			610	µg/L[5]							
	Acrylonitrile			0.039	µg/L[5]							
	Benzene			5	µg/L[1]							
	Bromochloromethane			80	µg/L[4]							
	Bromodichloromethane (THM)			90	µg/L[1]							
	Bromoform			80	µg/L[1]							
	Carbon disulfide			1000	µg/L[5]							
	Carbon tetrachloride			5	µg/L[1]							
	Chlorobenzene			100	µg/L[1]							
	Chloroethane			4.6	µg/L[5]							
	Chloroform			80	µg/L[1]							
	Chlorodibromomethane (THM)			80	µg/L[1]							
	1,2-Dibromo-3-chloropropane (DBCP)			0.2	µg/L[1]							
	1,2-Dibromoethane (EDB)			0.05	µg/L[1]							
	1,2-Dichlorobenzene			600	µg/L[1]							
	1,4-Dichlorobenzene			75	µg/L[1]							
	trans-1,4-Dichloro-2-butene				µg/L							
	1,1 -Dichloroethane			5	µg/L							
	1,2-Dichloroethane			5	µg/L[1]							
	1,1-Dichloroethylene			7	µg/L[1]							
	cis-1,2-Dichloroethene			70	µg/L[1]							
	trans-1,2-Dichloroethene			100	µg/L[1]							
	1,2-Dichloropropane			5	µg/L[1]							
	cis-1,3-Dichloropropene				µg/L							
	trans-1,3-Dichloropropene				µg/L							
	Ethylbenzene			700	µg/L[1]							
	Methyl butyl ketone(2-Hexanone)			160	µg/L[5]							
	Bromomethane			10	µg/L[4]							
	Chloromethane			30	µg/L[4]							
	Dibromomethane			61	µg/L[5]							
	Methylene chloride			5	µg/L[1]							
	Methyl ethyl ketone(2-Butanone)			4000	µg/L[4]							
	Methyl iodide				µg/L							
	4-Methyl-2-pentanone				µg/L							
	Styrene			100	µg/L[1]							
	1,1,1,2-Tetrachloroethane			70	µg/L[4]							
	1,1,2,2-Tetrachloroethane			0.3	µg/L[4]							
	Tetrachloroethylene(PCE)			5	µg/L[1]							
	Toluene			1000	µg/L[1]							
	1,1,1-Trichloroethane			200	µg/L[1]							
	1,1,2-Trichloroethane			5	µg/L[1]							
	Trichloroethylene(TCE)			5	µg/L[1]							
	Trichlorofluromethane			2000	µg/L[4]							
	1,2,3-Trichloropropane			40	µg/L[4]							
	Vinyl acetate			410	µg/L[5]							
	Vinyl chloride			2	µg/L[1]							
	Xylenes			10000	µg/L[1]							
	Methyl tert-butyl ether (MTBE)			20 - 40	µg/L[6]							

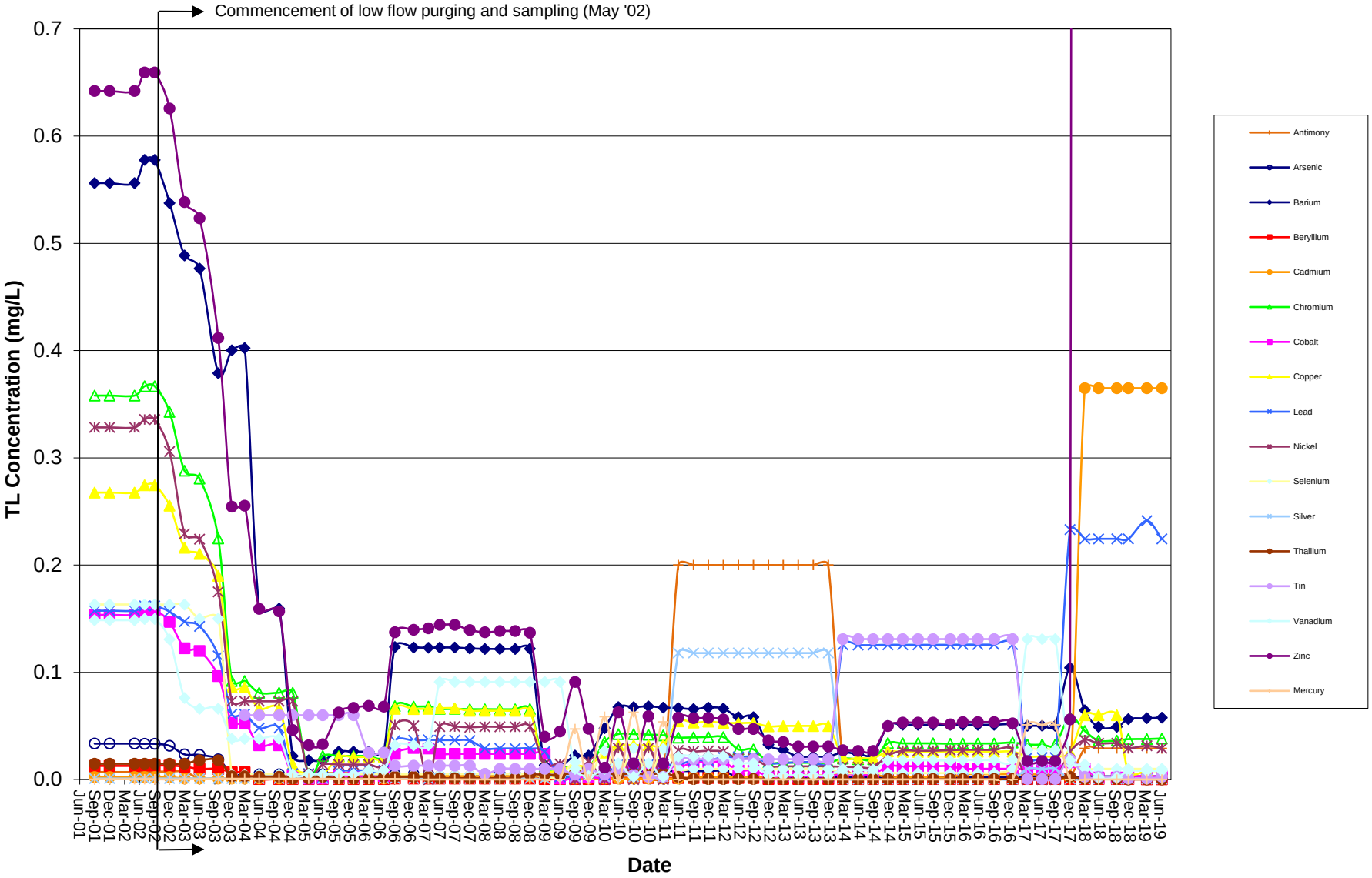
1. Threshold value given is the Maximum Contaminant Level (MCL) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
2. Threshold value given is the lifetime health advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
3. Threshold value given is the Secondary Drinking Water Regulation (SDWR) as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
4. Threshold value given is the Drinking Water Advisory as provided in the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories
5. Threshold value given is the Preliminary Remedial Goal (PRG) for tap water, as provided in the October 2002 USEPA Region 9 PRGs Table 2002 Update
6. Constituent concentration was reported above its laboratory method detection limit, but lower than its laboratory reporting limit and historical reporting limit. However, the reporting limit this round was significantly higher than previous reporting limits. Therefore, to be consistent with historical data, only those constituents with concentrations lower than historical reporting limits were reported as non-detect.

No threshold value has been provided for parameters not identified in the sources listed above

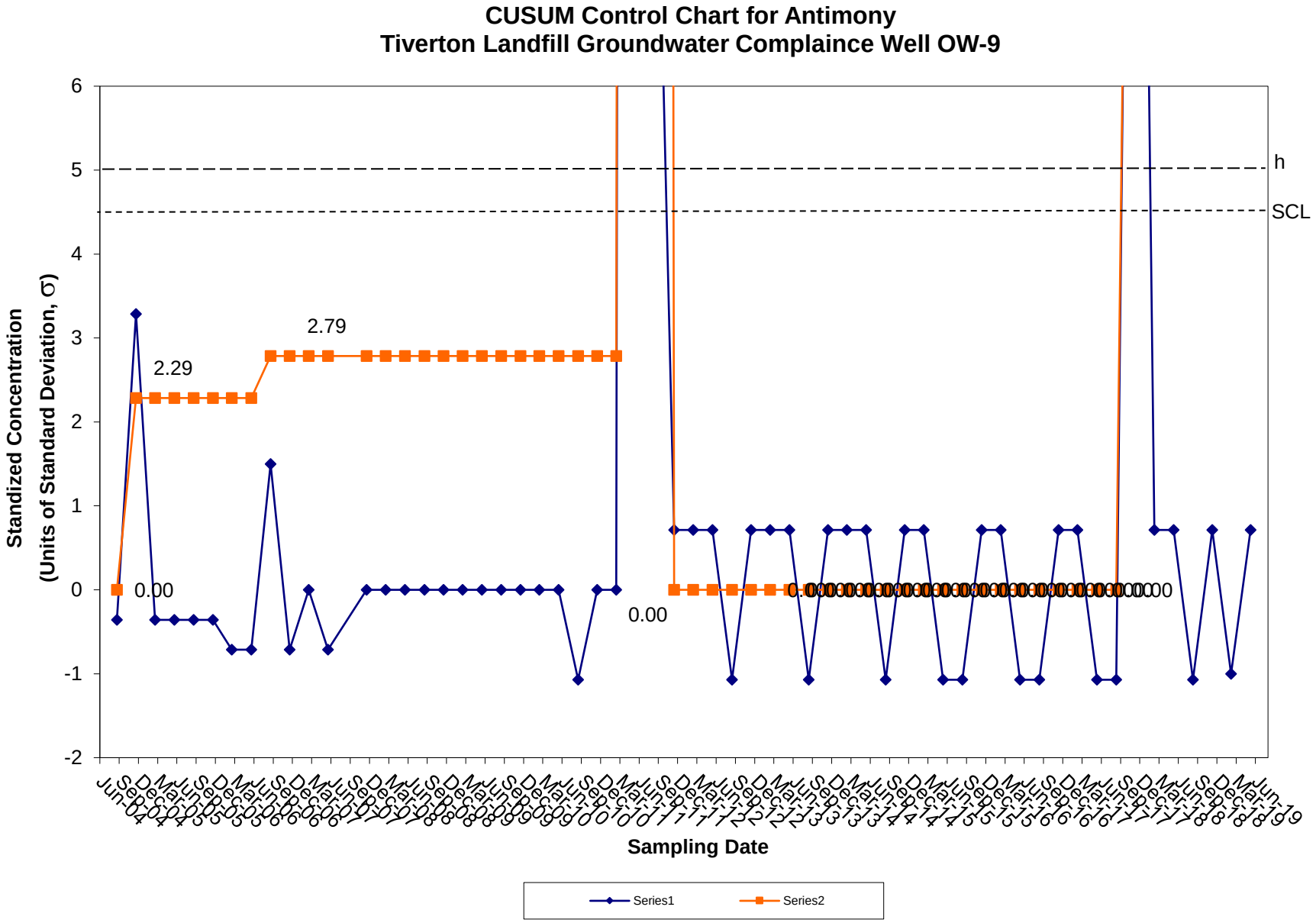
" " = Exceedance of TL
ND = Not Detected

* Tolerance Limit (TL) constructed from background (upgradient) well data from OW-9.

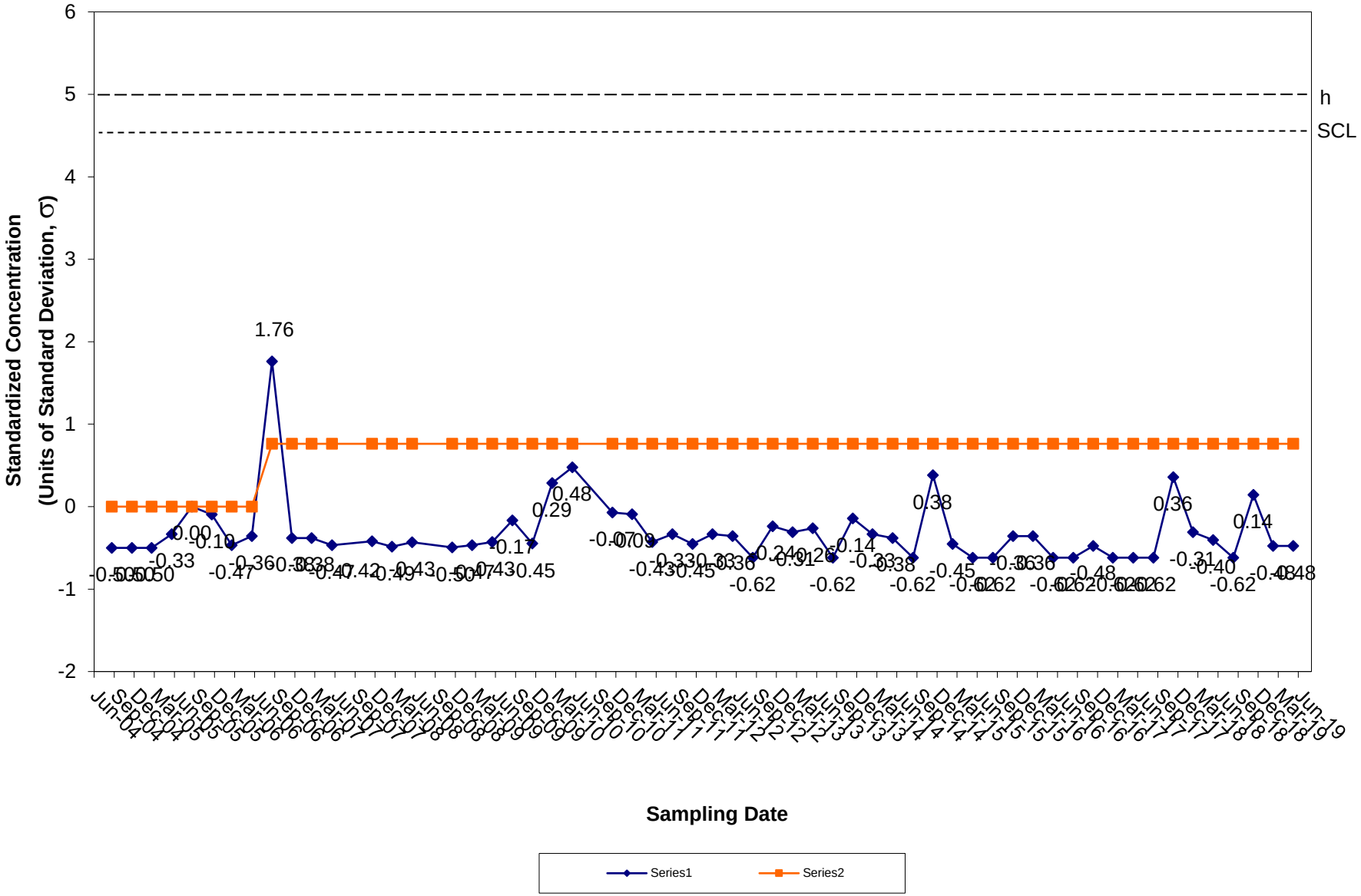
Historical Tolerance Limit Concentrations from Background Well
Tiverton Landfill Compliance Sampling



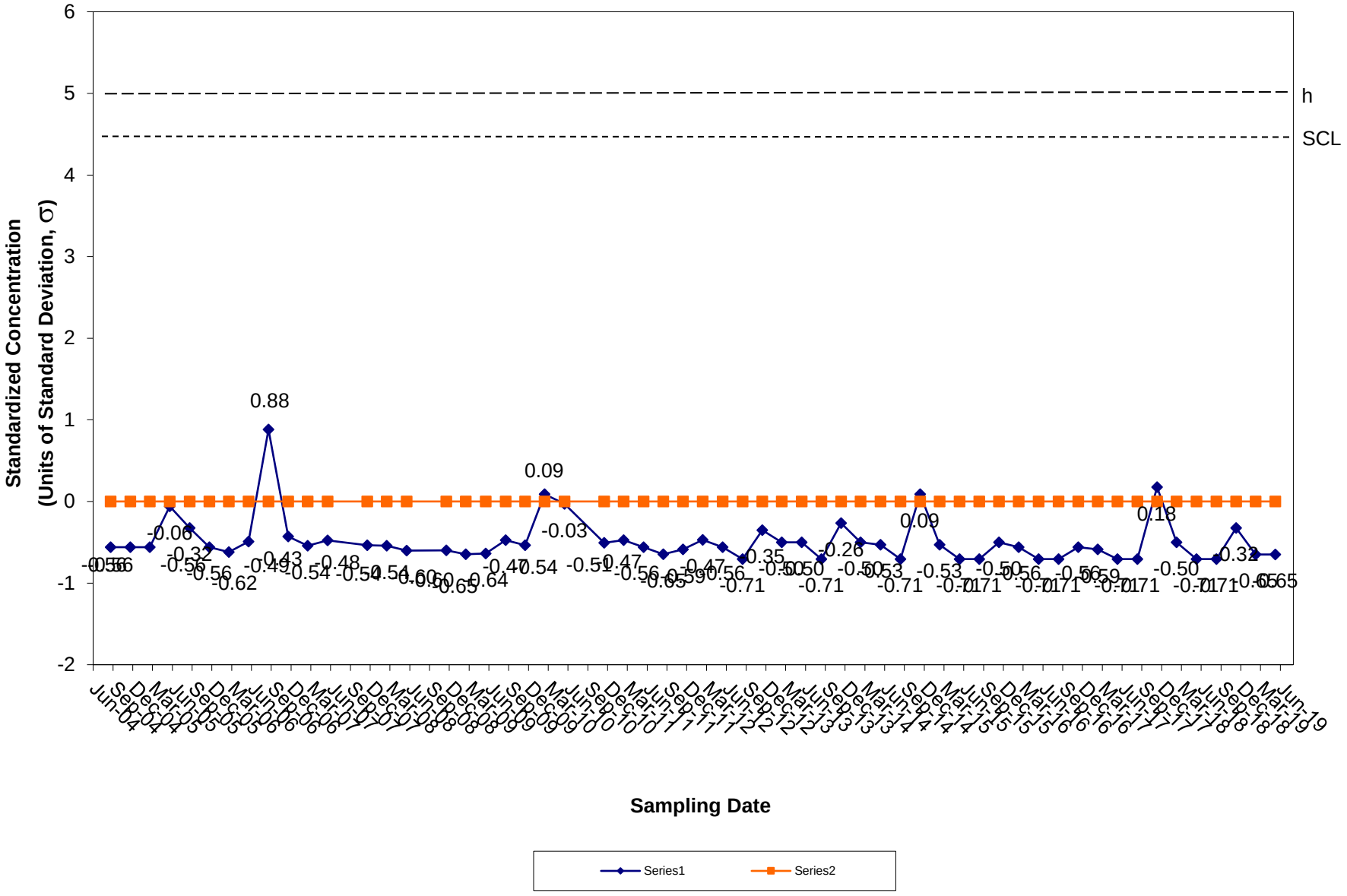
ATTACHMENT NO. 5
CUSUM METHOD STATISTICAL EVALUATION


CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Complaince Well OW-9
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
2.29
2.79
0.00
0.00
Series1
Series2

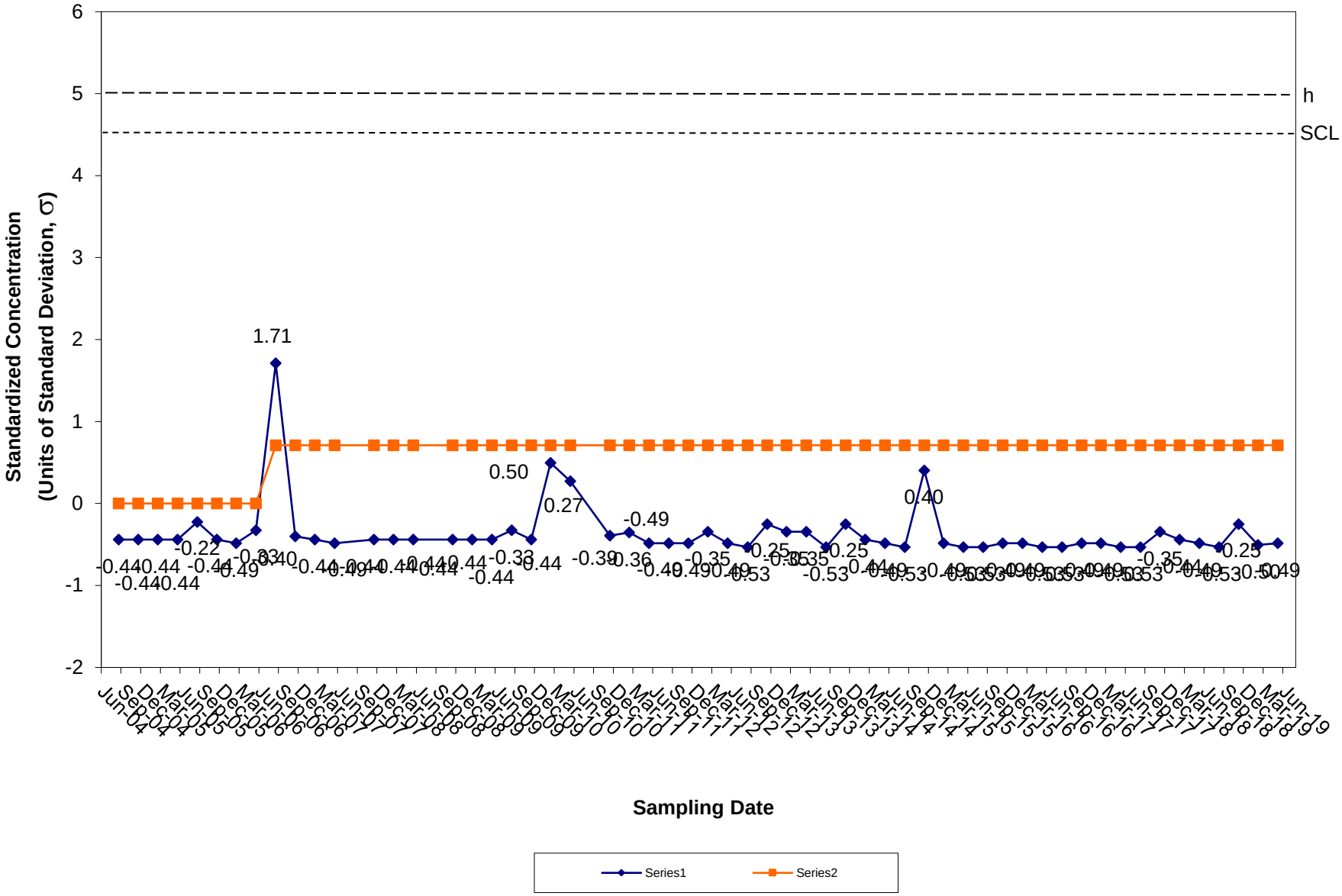
CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Background Well OW-9



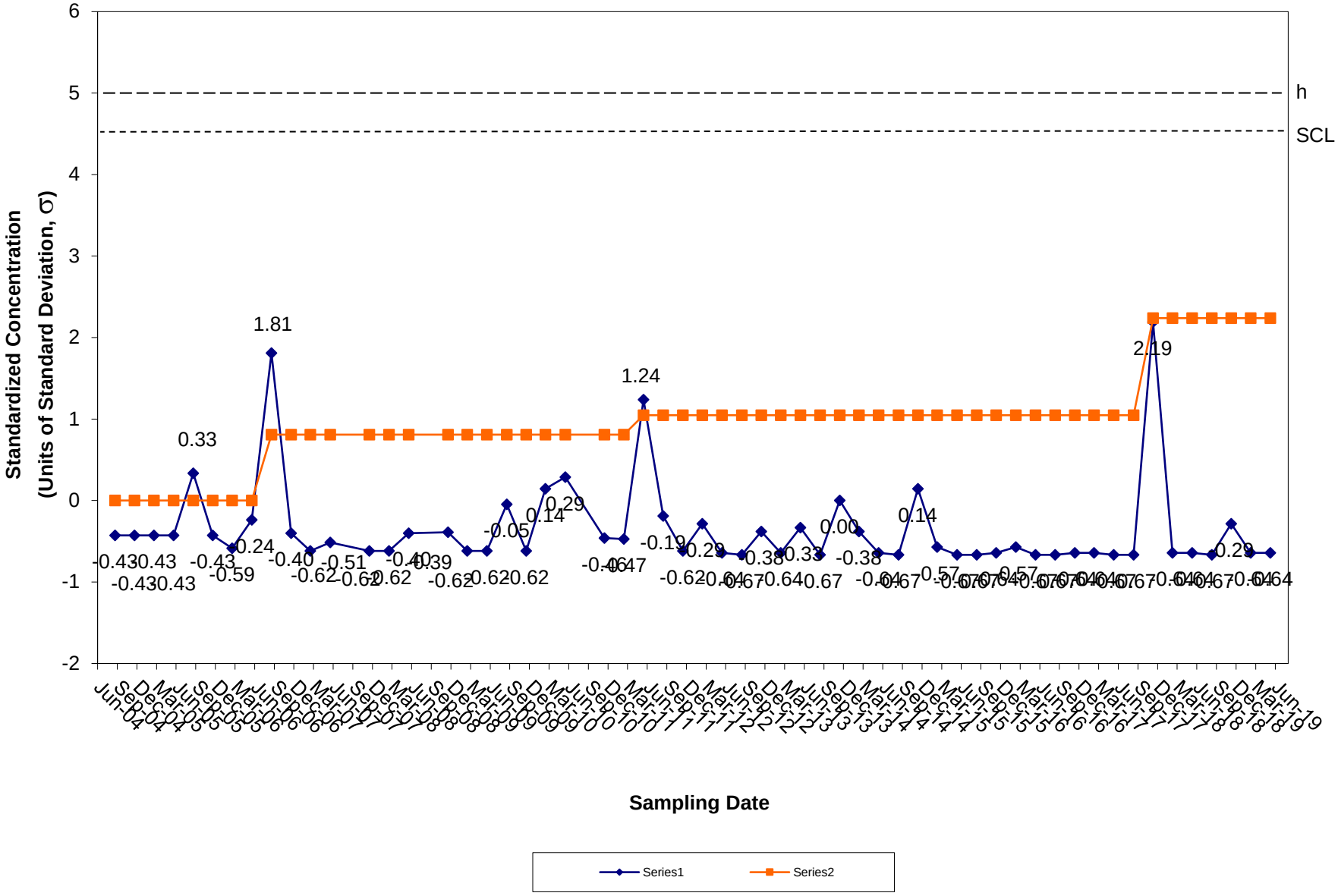
CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Background Well OW-9



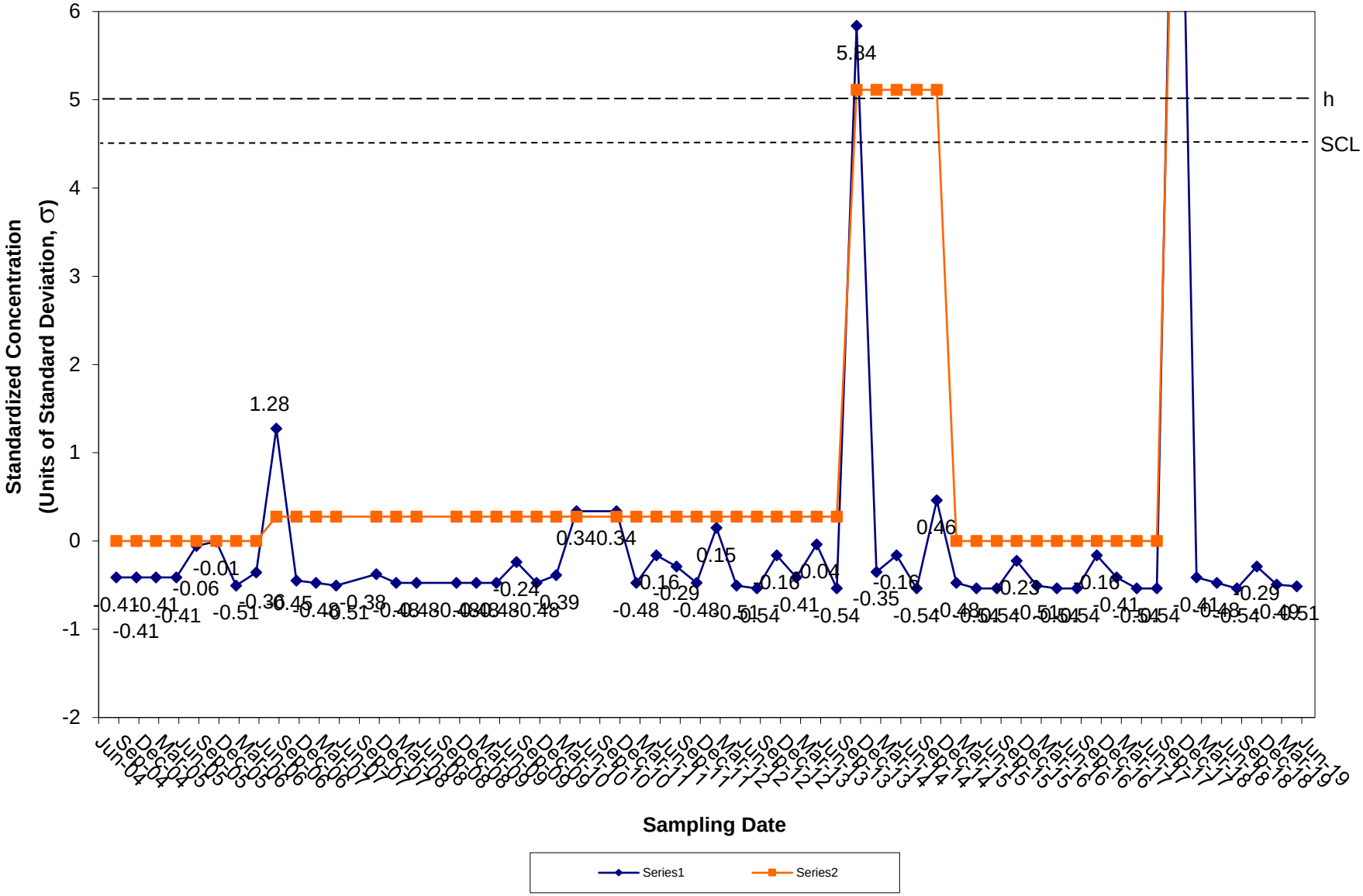
CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Background Well OW-9



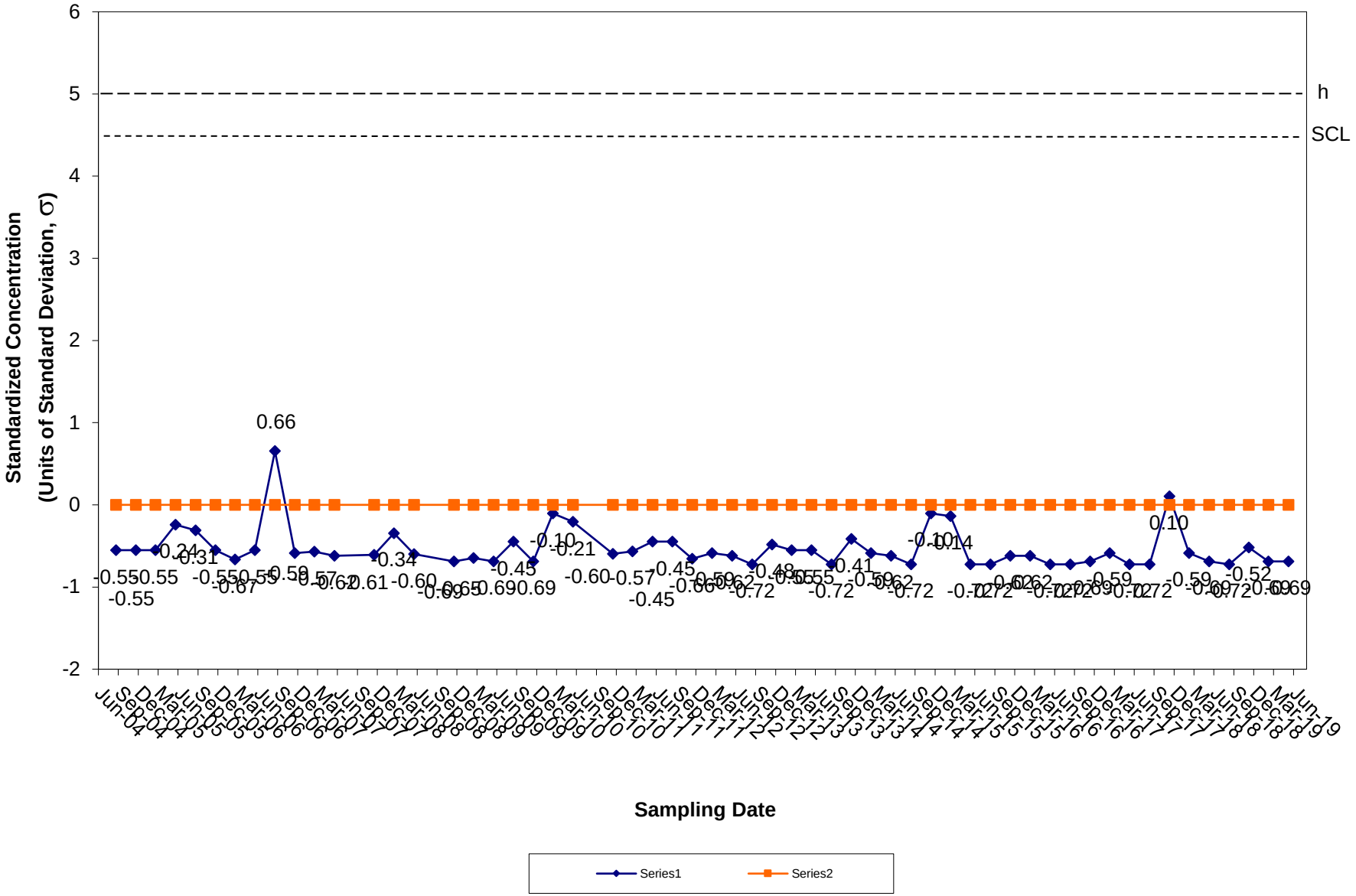
CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Background Well OW-9

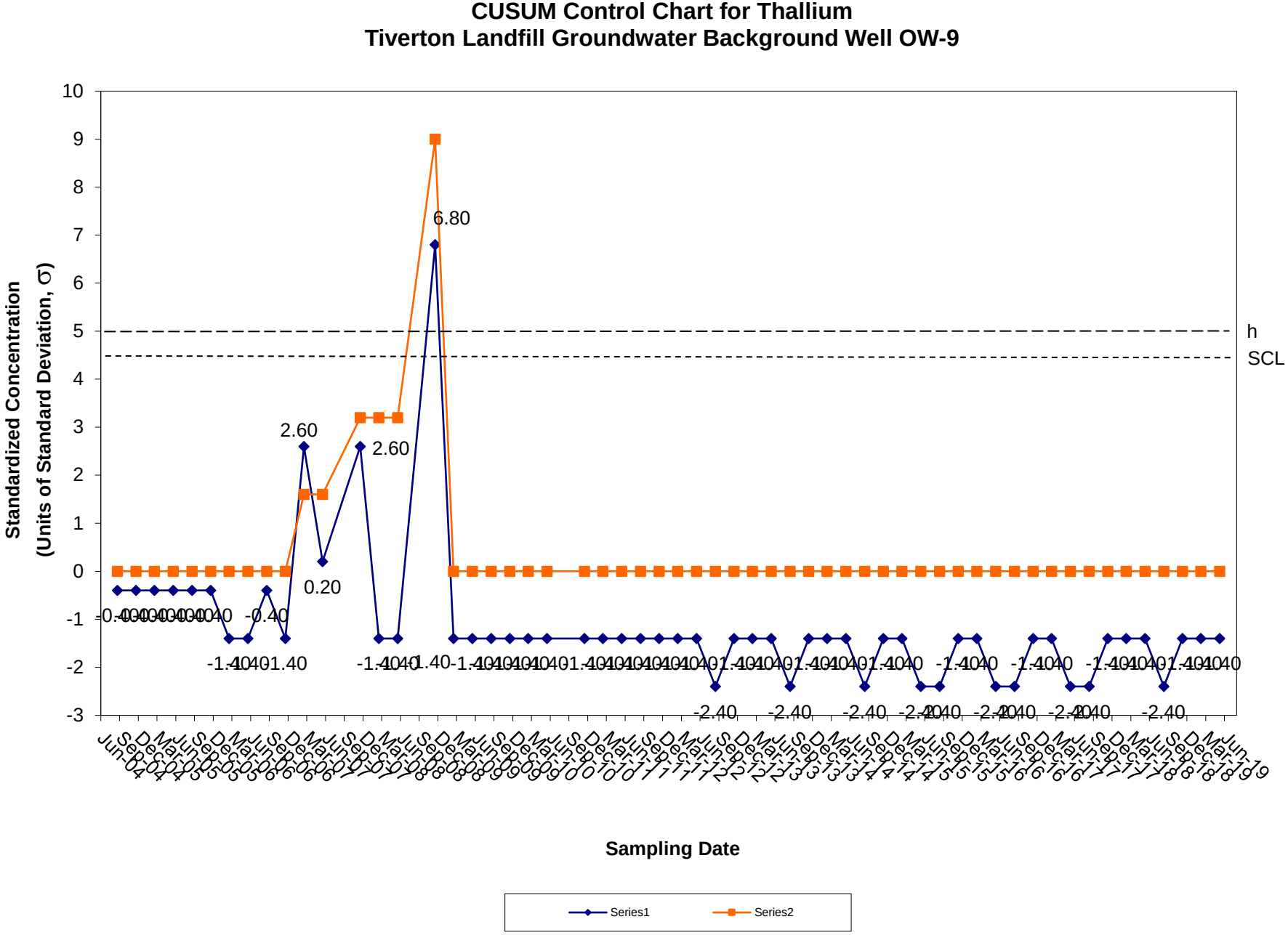


CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Background Well OW-9

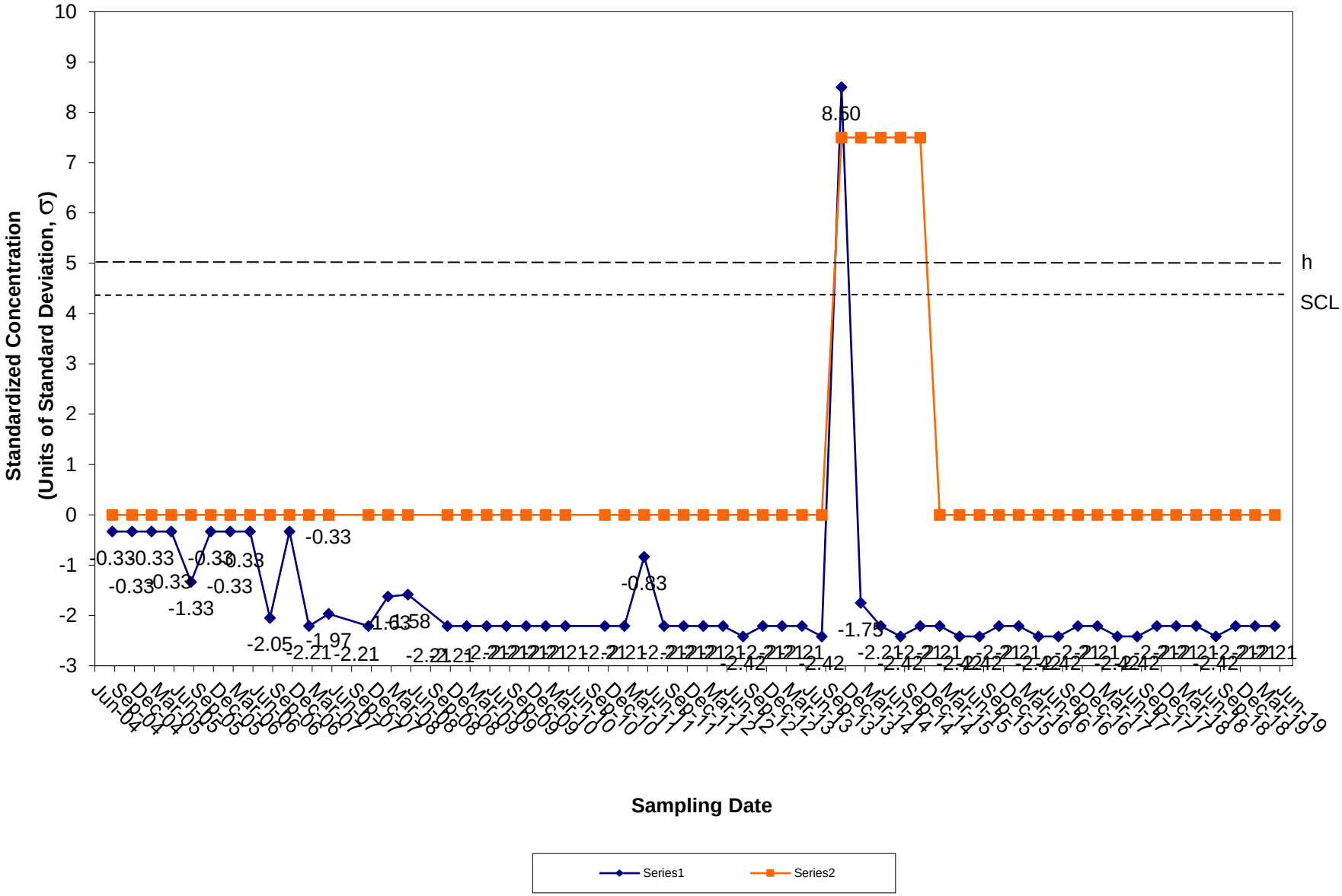


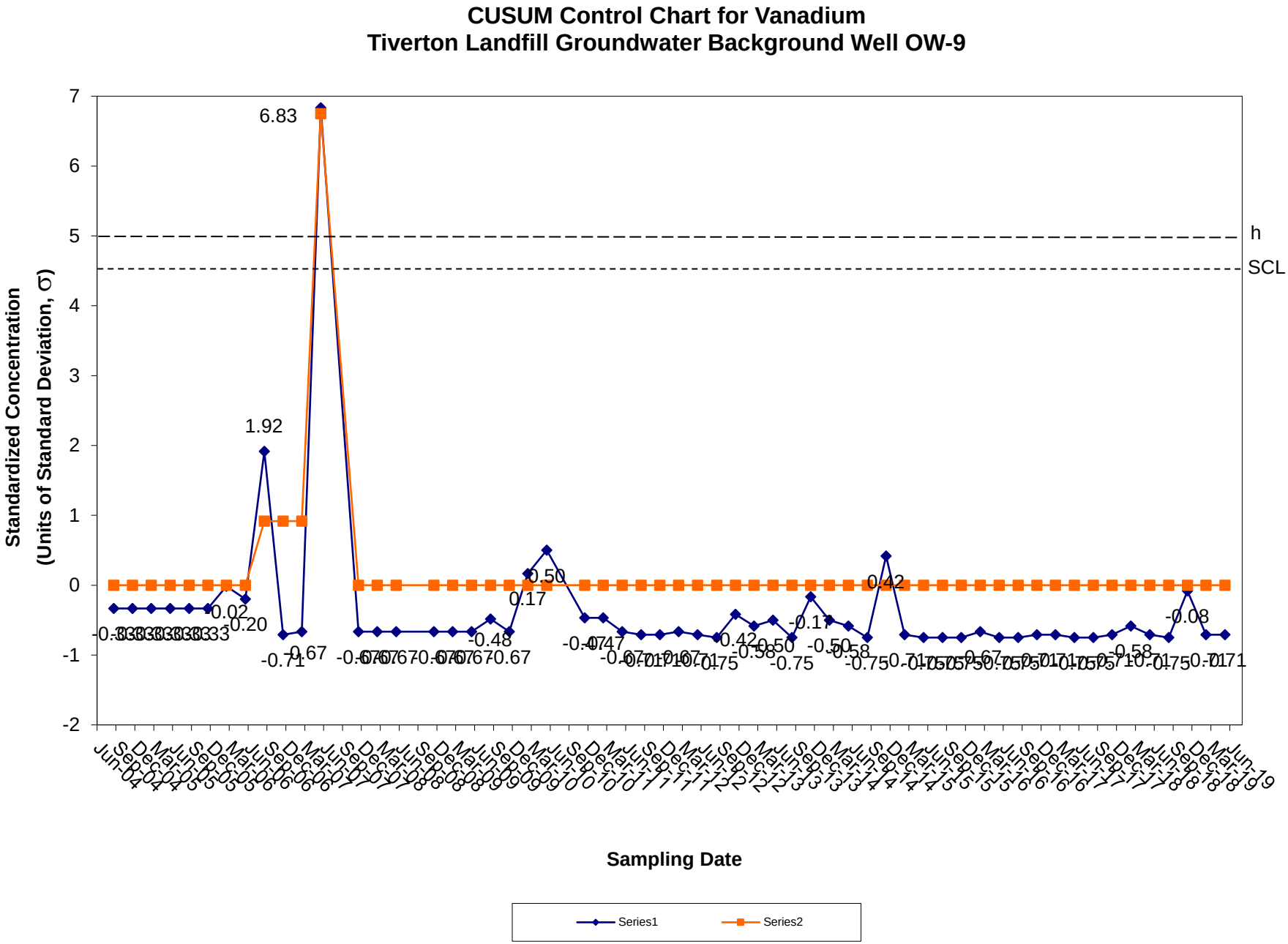
CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Background Well OW-9



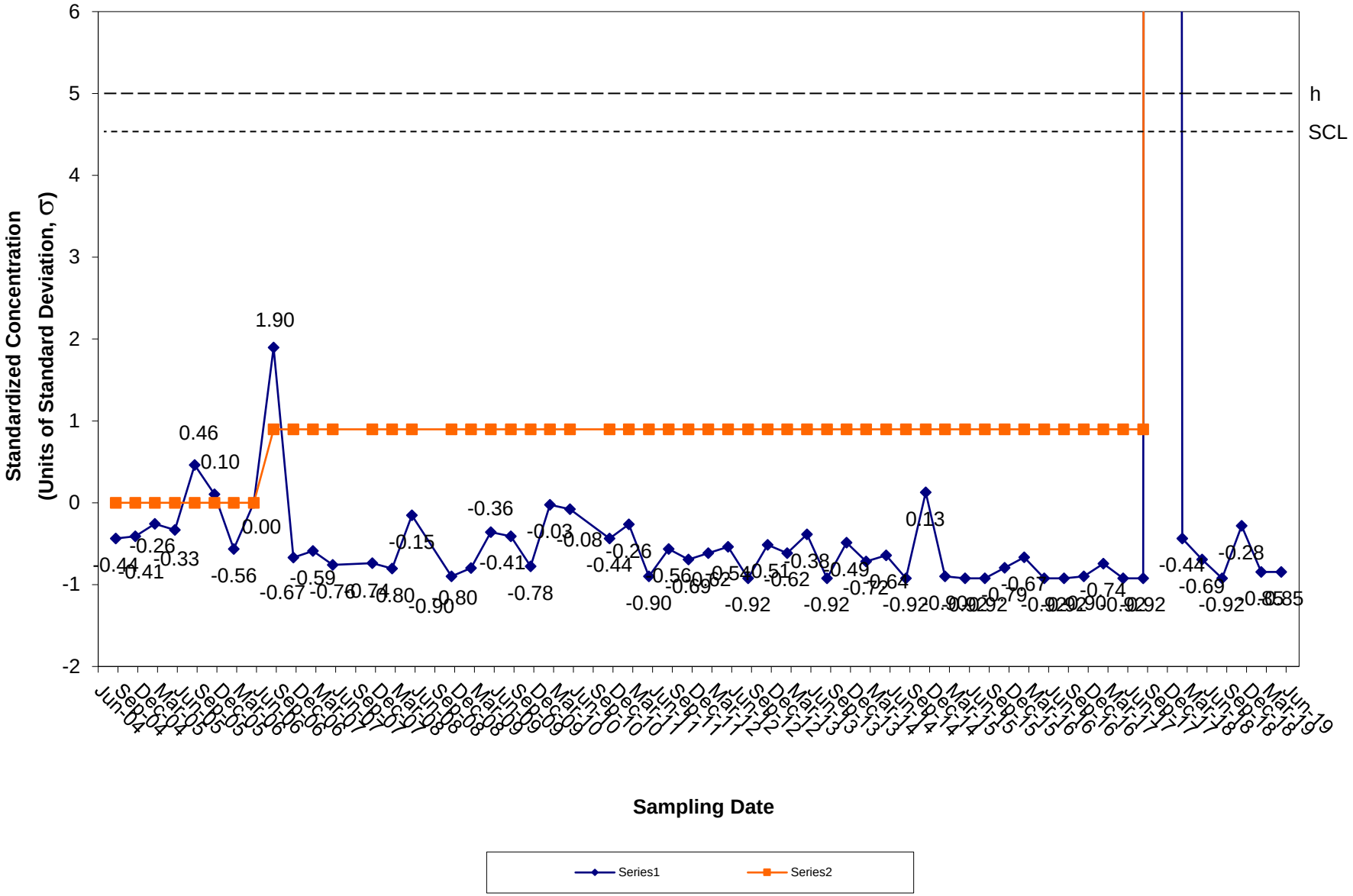

CUSUM Control Chart for Thallium
Tiverton Landfill Groundwater Background Well OW-9
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
6.80
2.60
2.60
0.20
-0.40
-1.40
-2.40
Series1
Series2

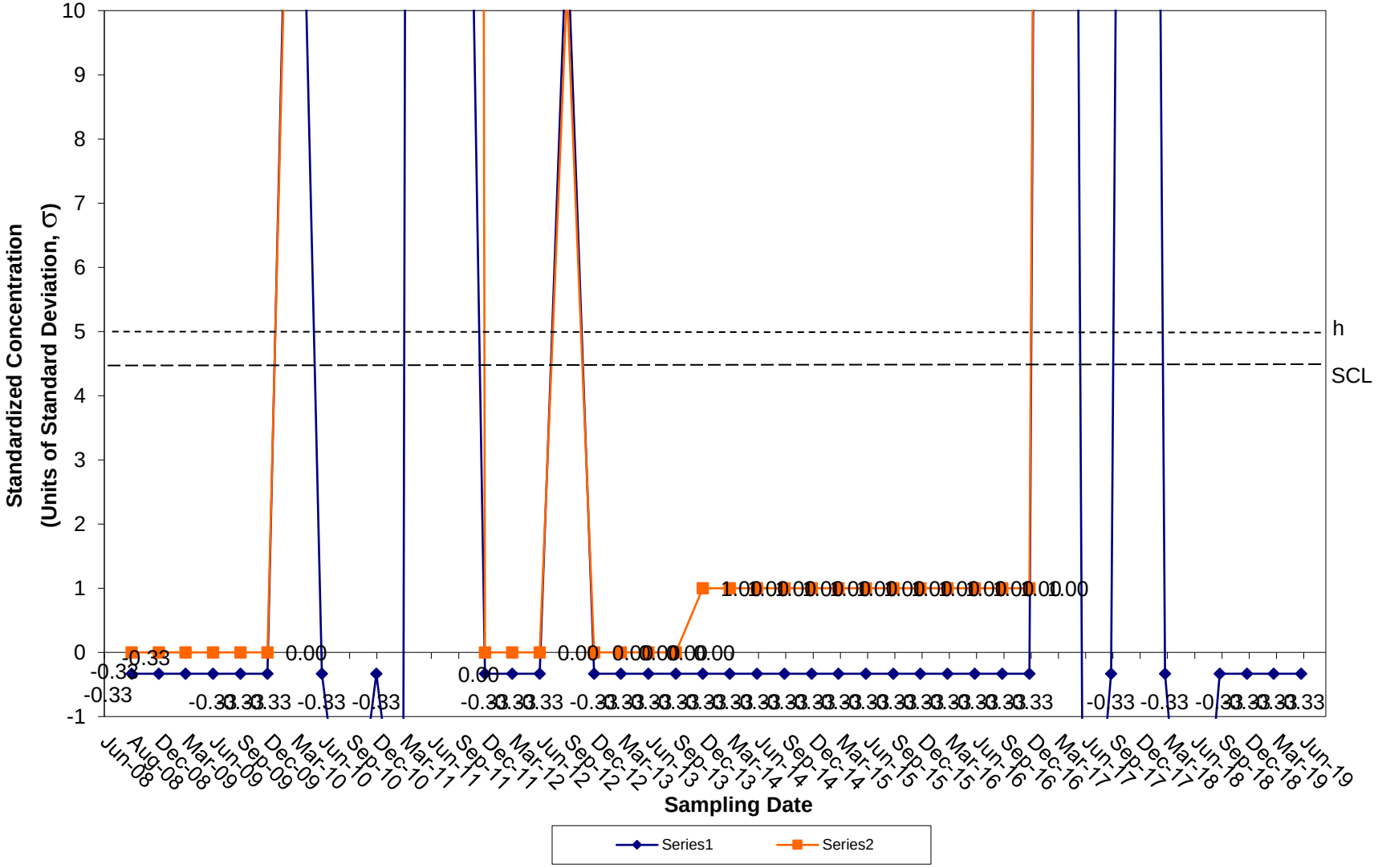
CUSUM Control Chart for Tin
Tiverton Landfill Groundwater Background Well OW-9




CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Background Well OW-9
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Background Well OW-9




CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
10
9
8
7
6
5
4
3
2
1
0
-1
h
SCL
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
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Mar-16
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Dec-16
Mar-17
Jun-17
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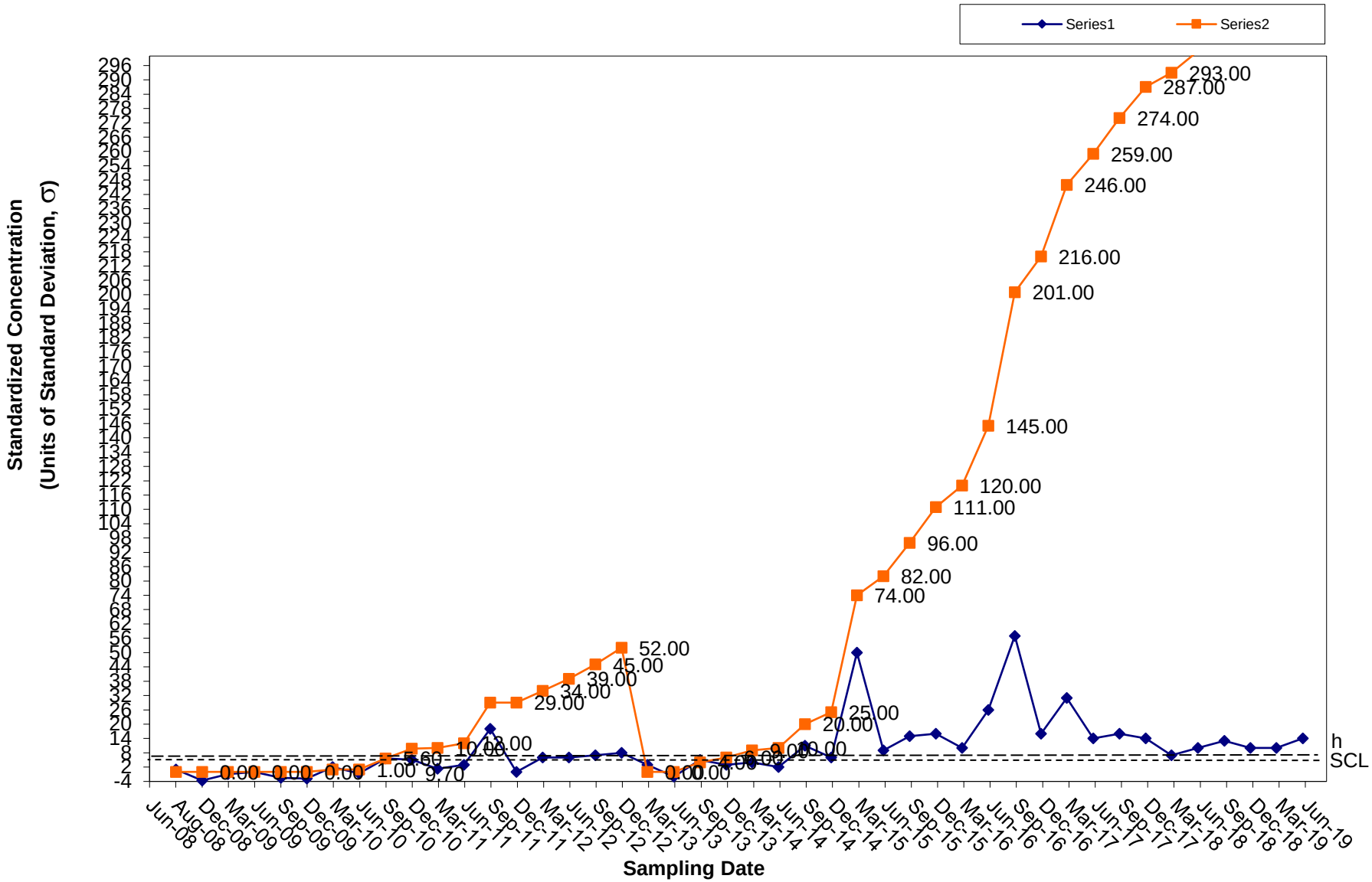
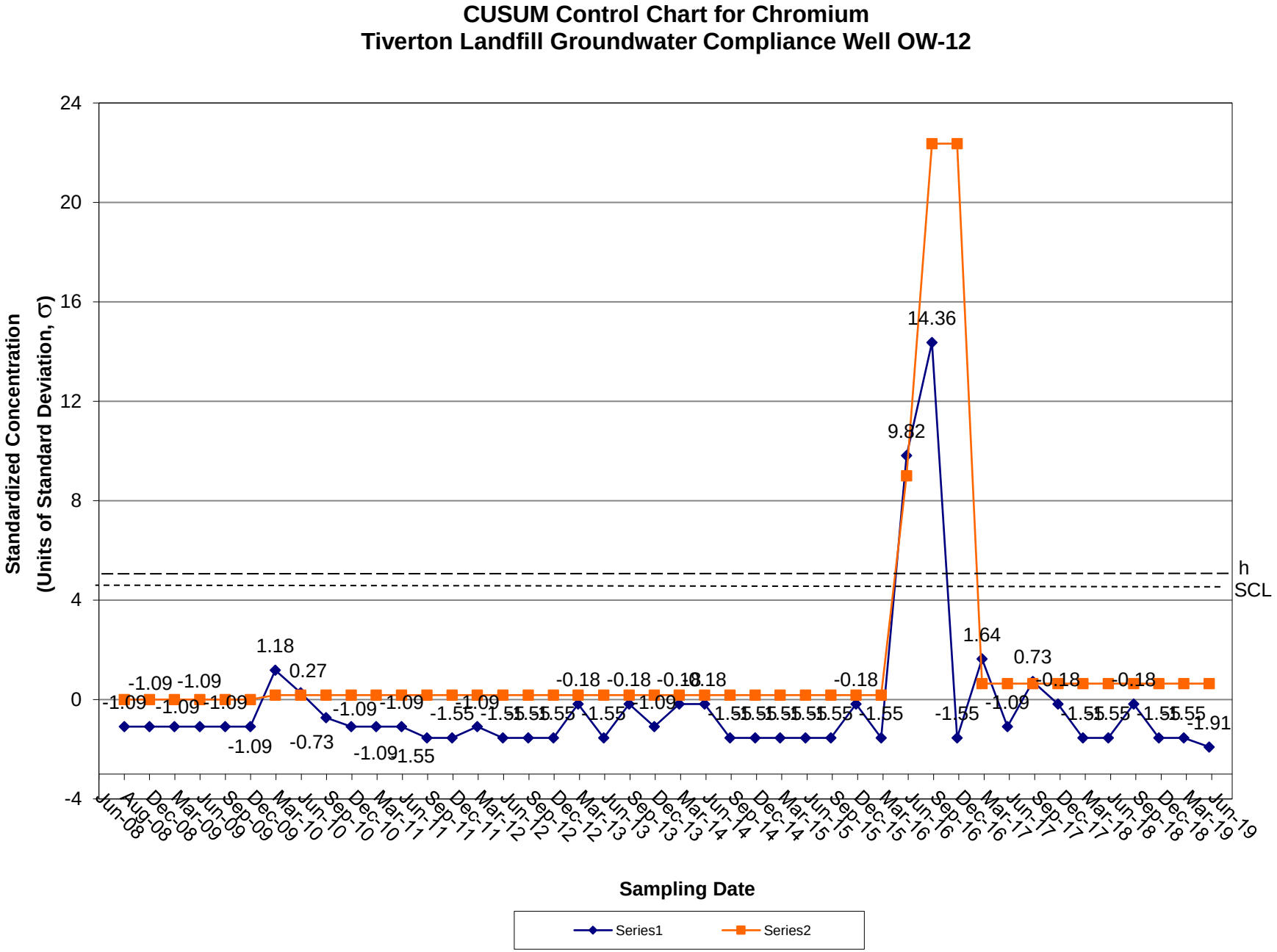
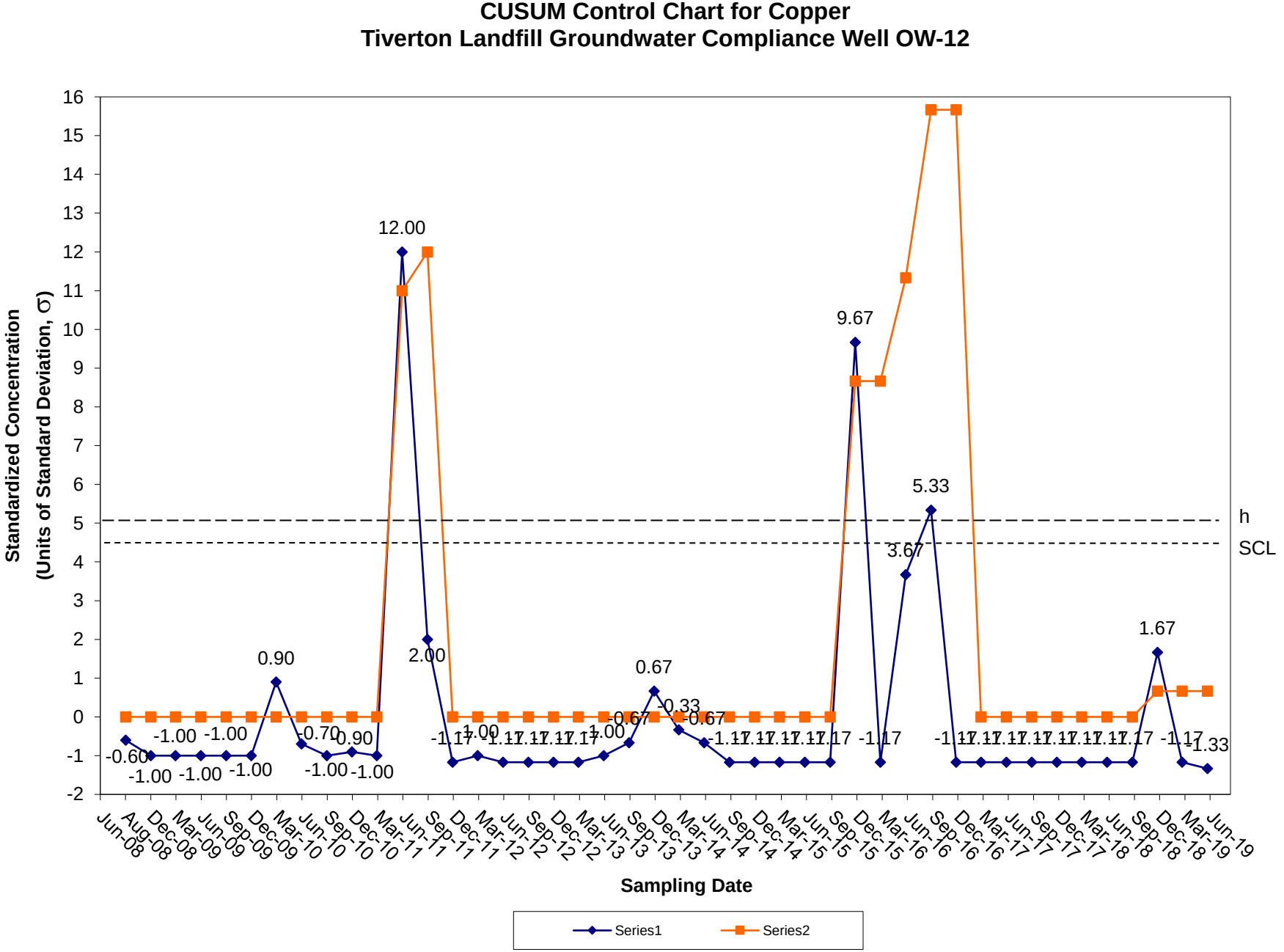
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2

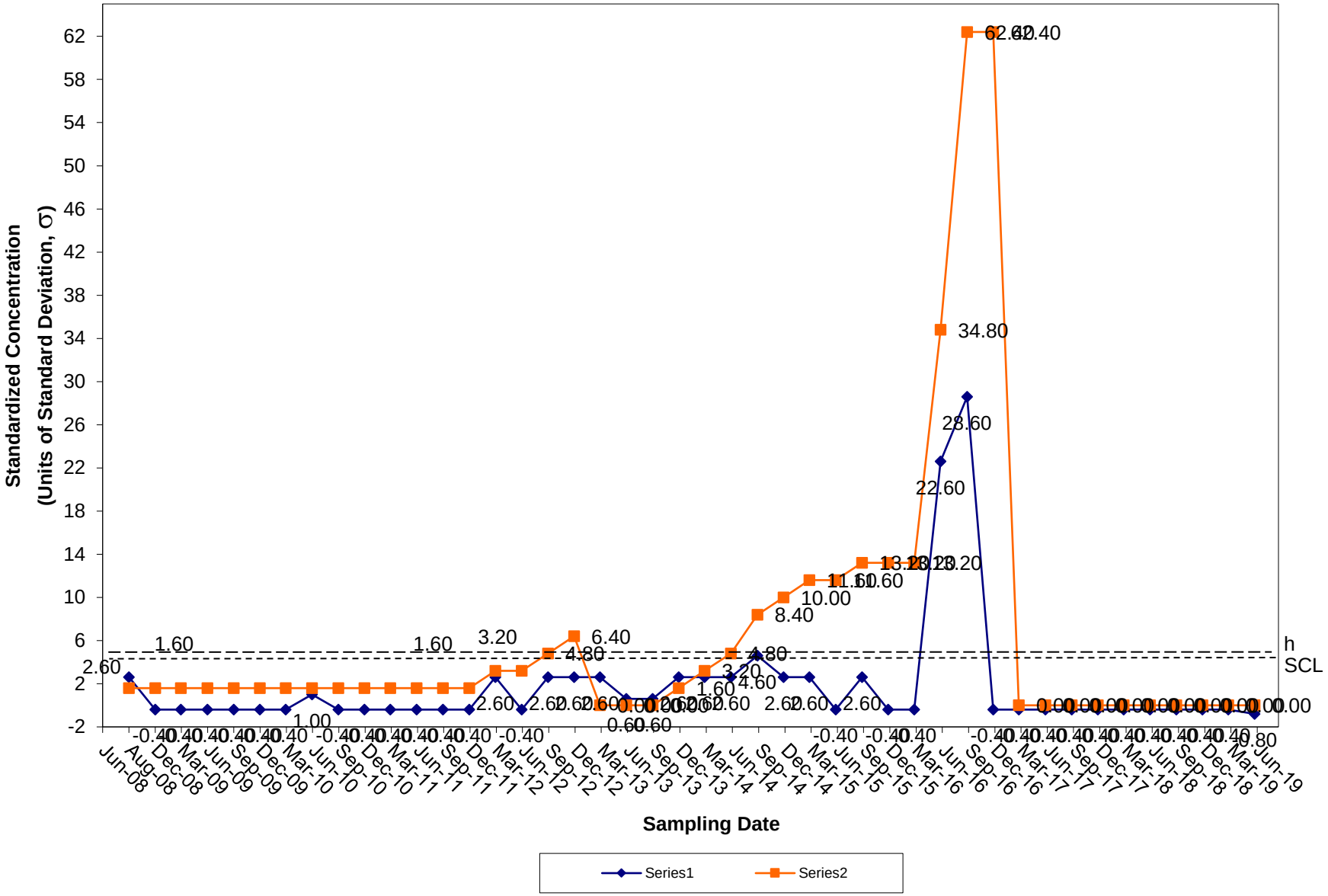
CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-12

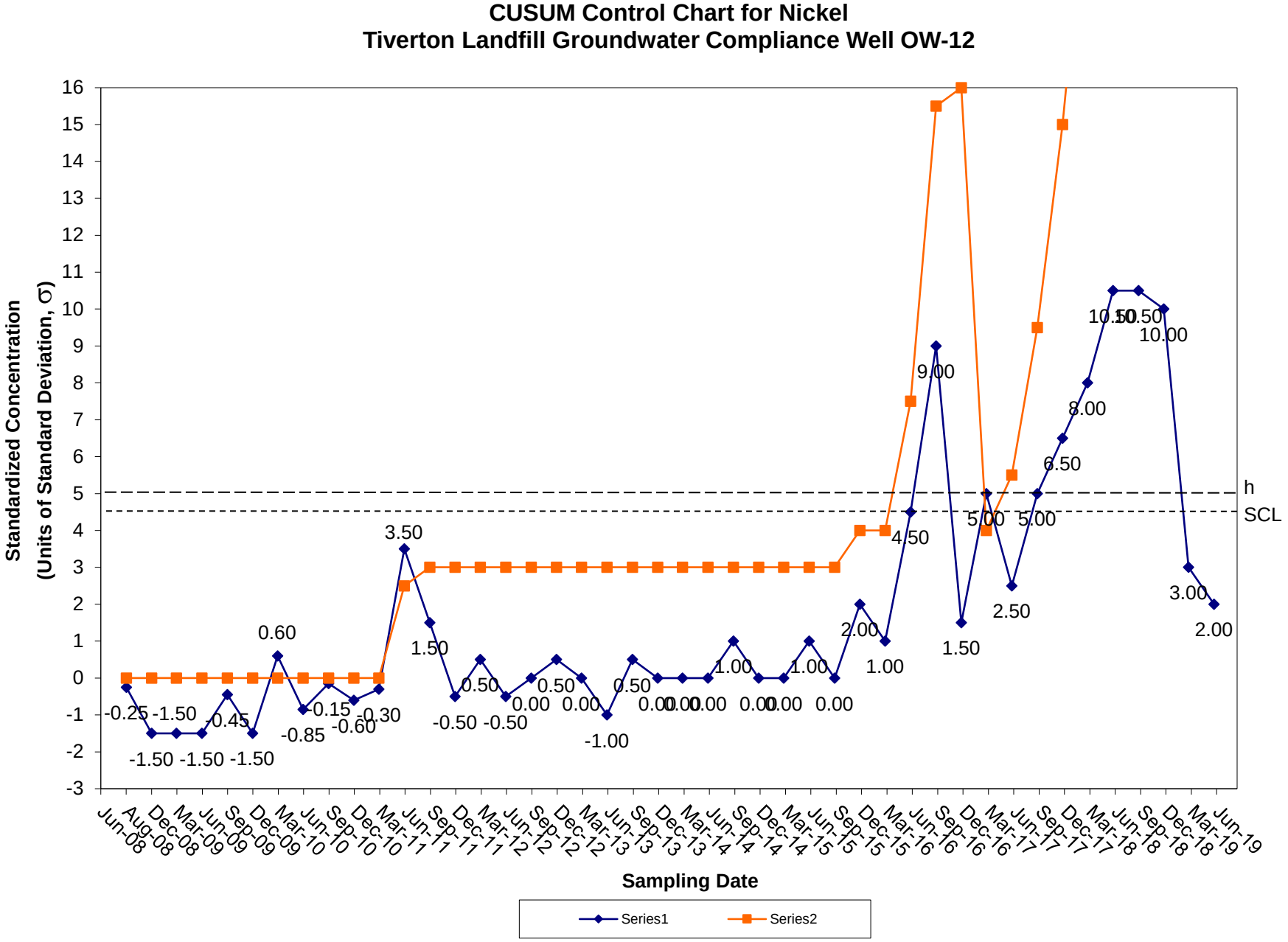



CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
24
20
16
12
8
4
0
-4
h
SCL
14.36
9.82
1.64
1.18
0.73
0.27
-0.73
-1.91
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2

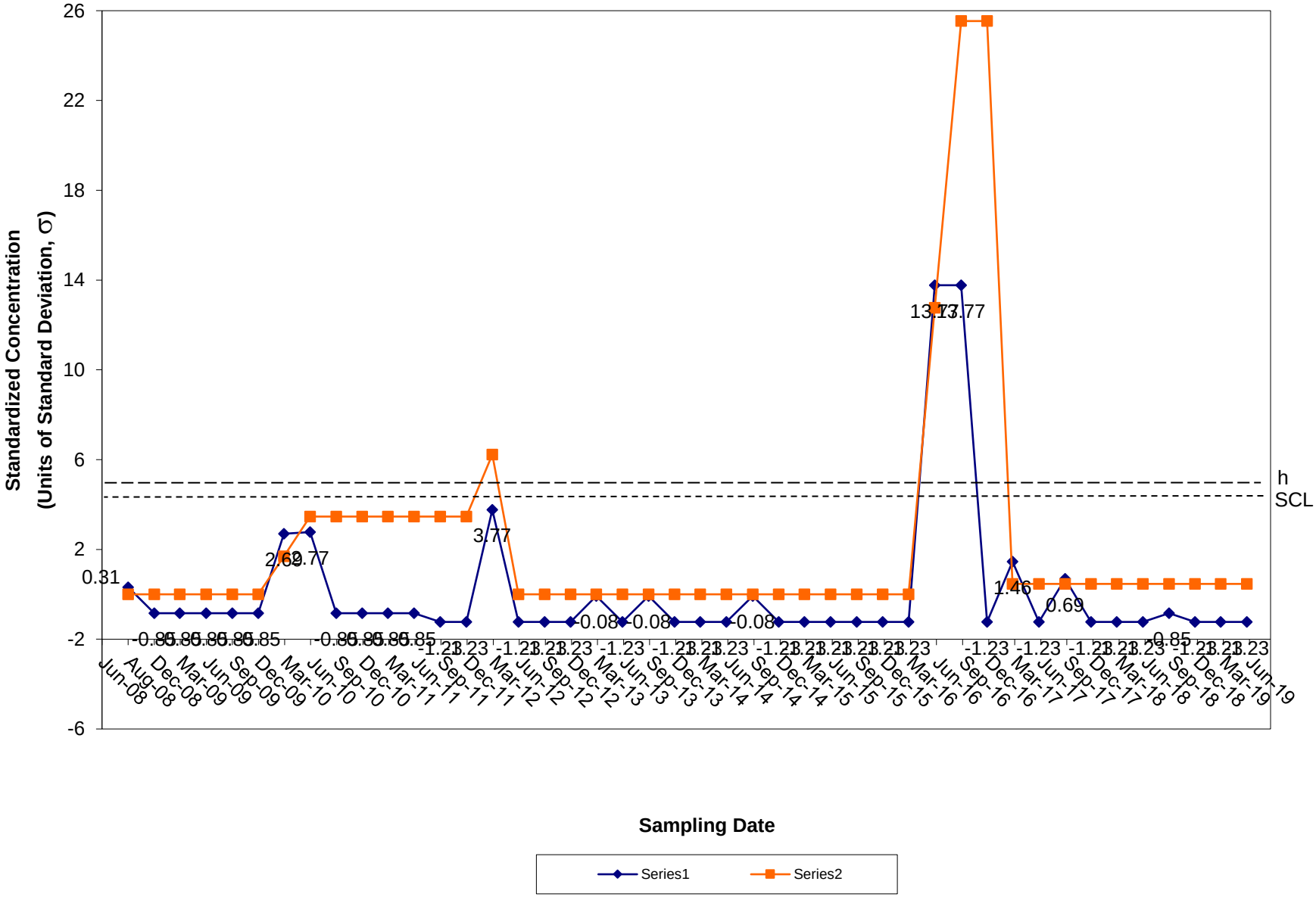

CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

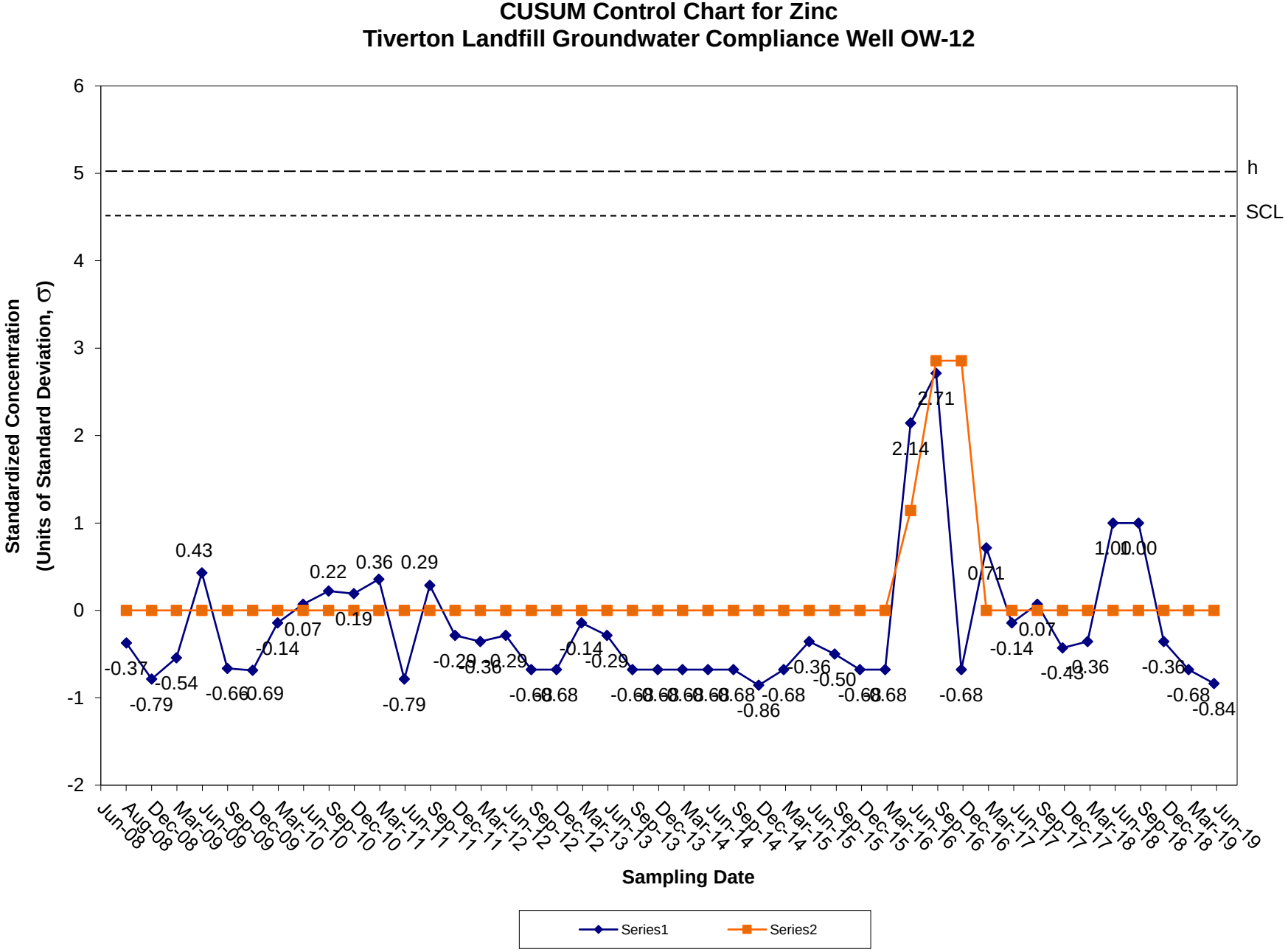
CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-12

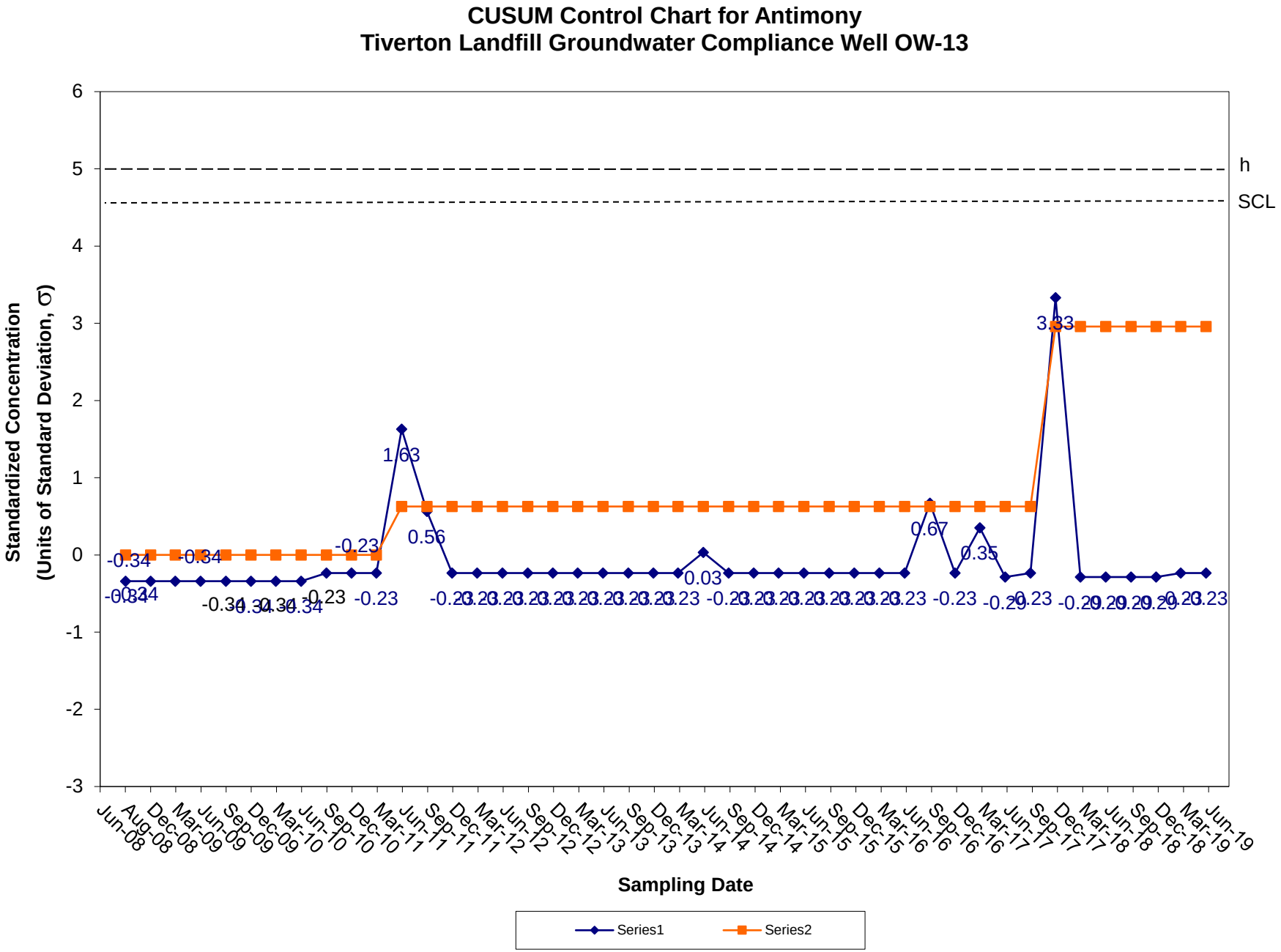



CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Compliance Well OW-12




CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-12
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
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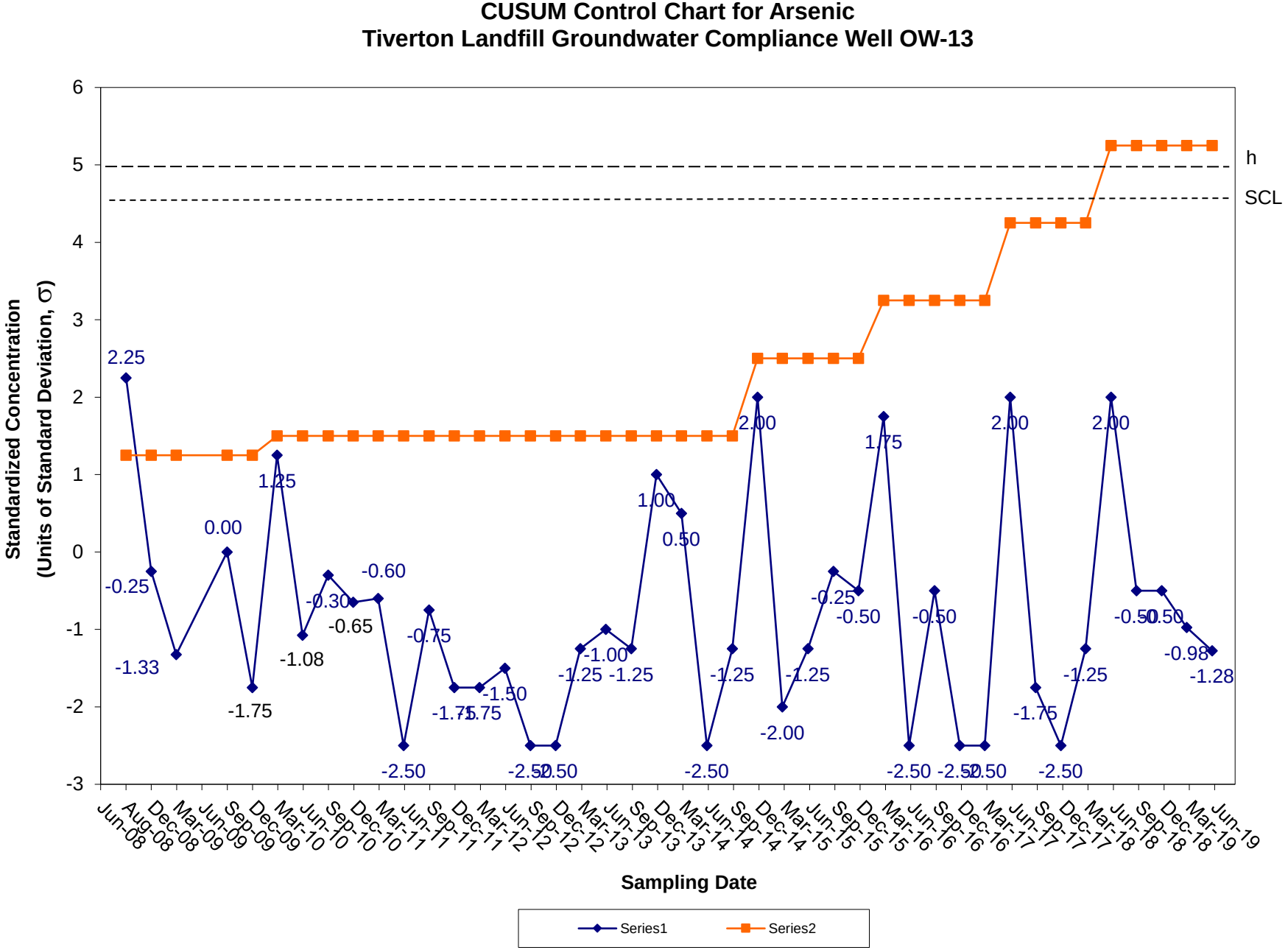
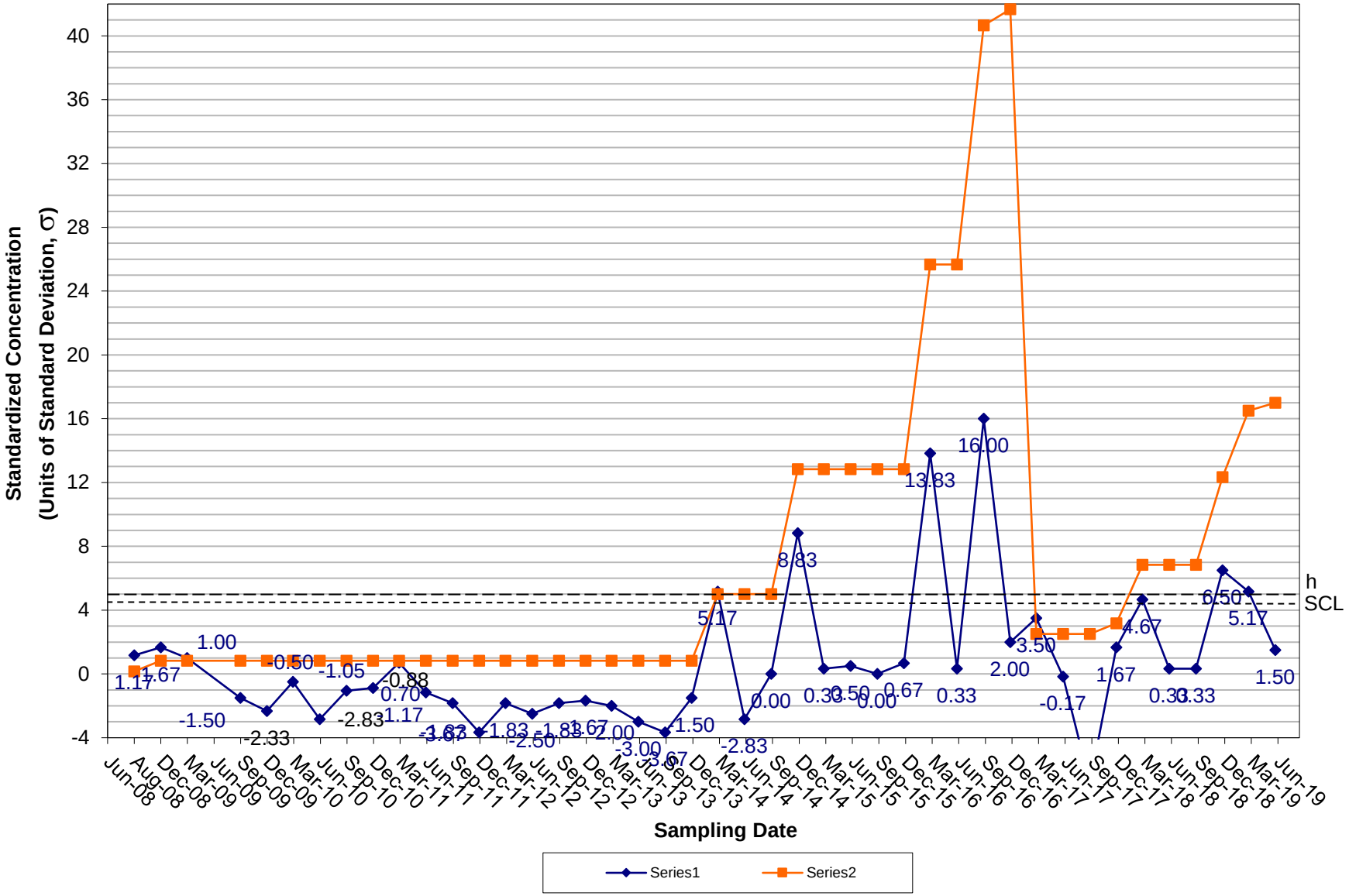
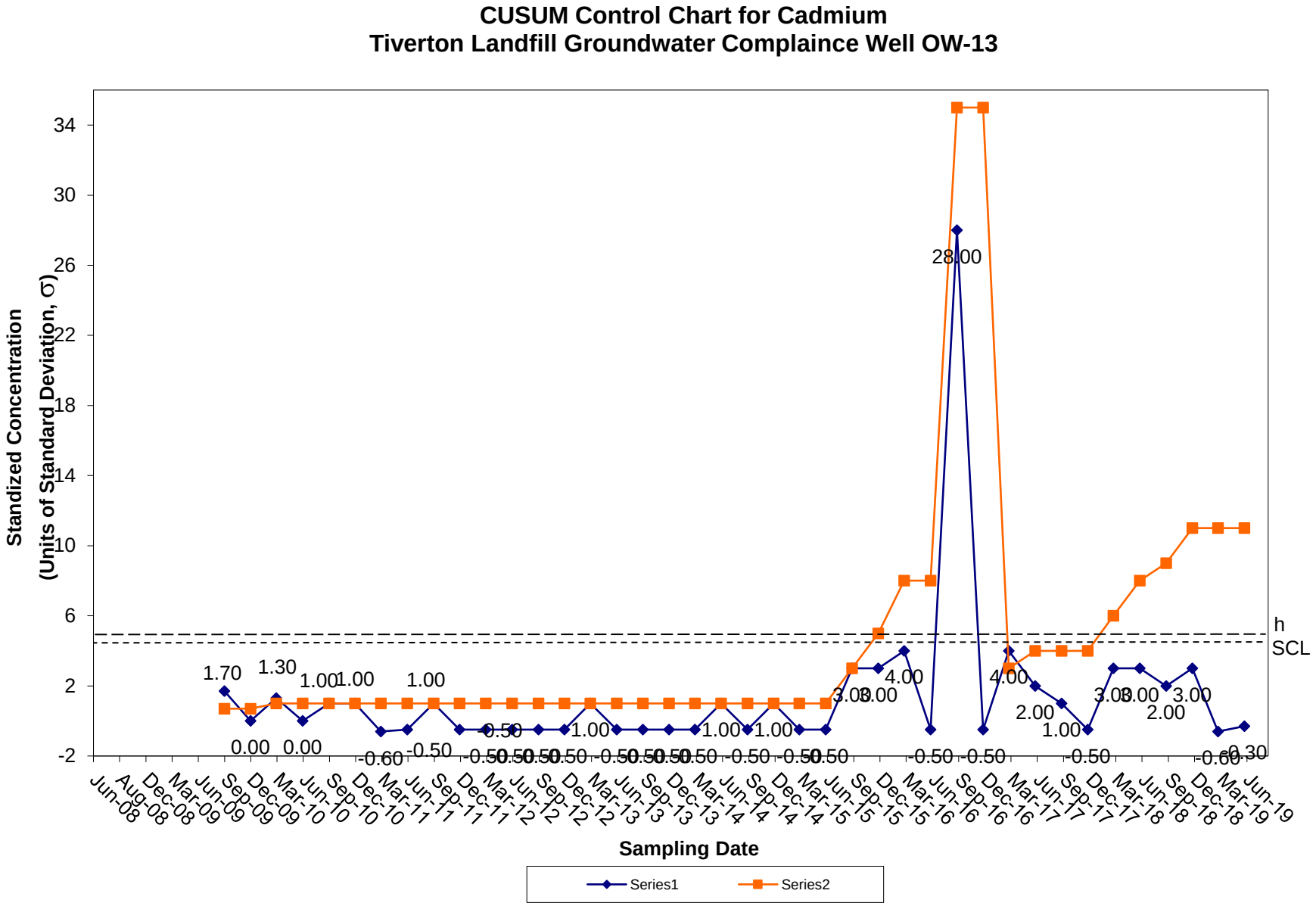
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2

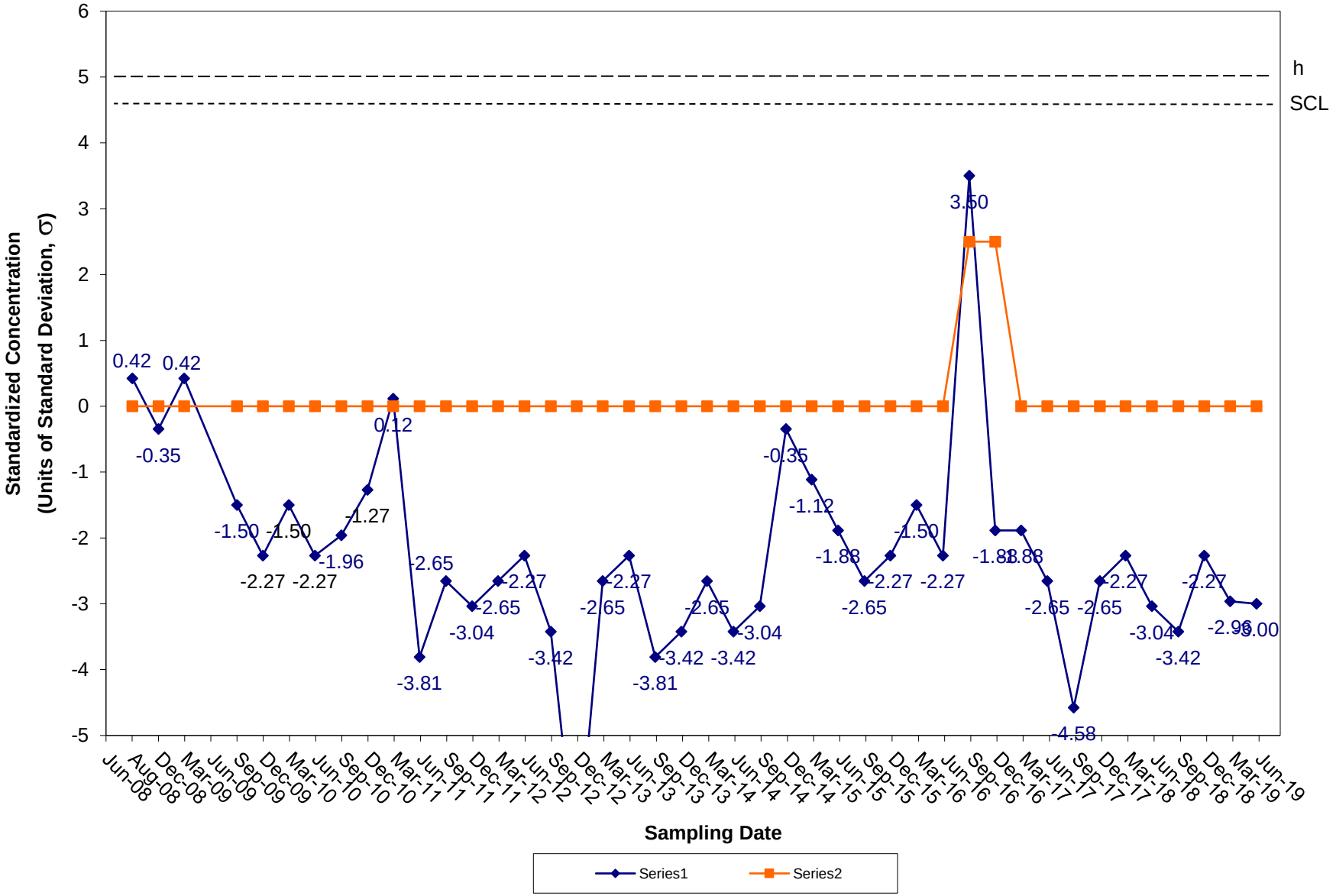

CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-13

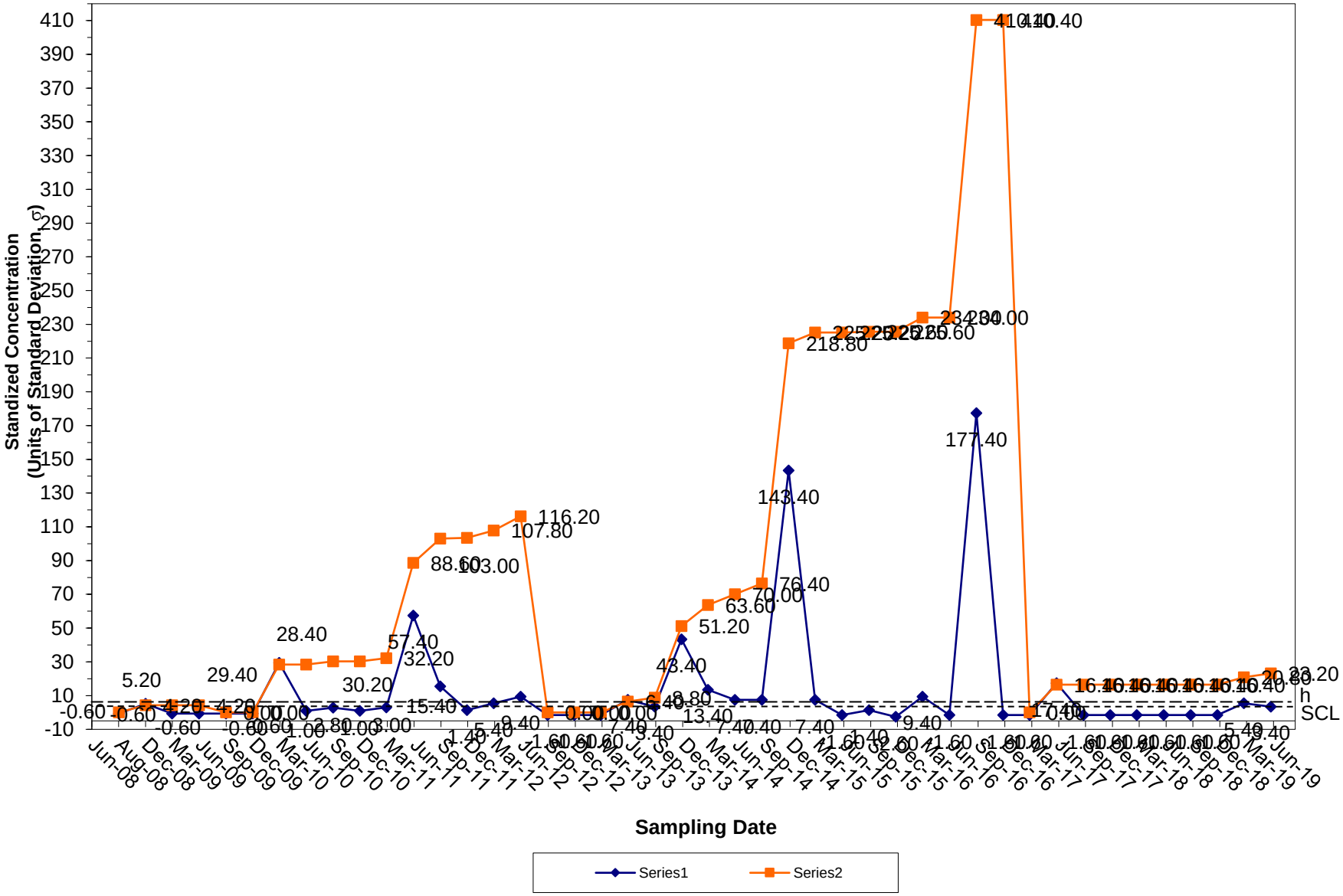


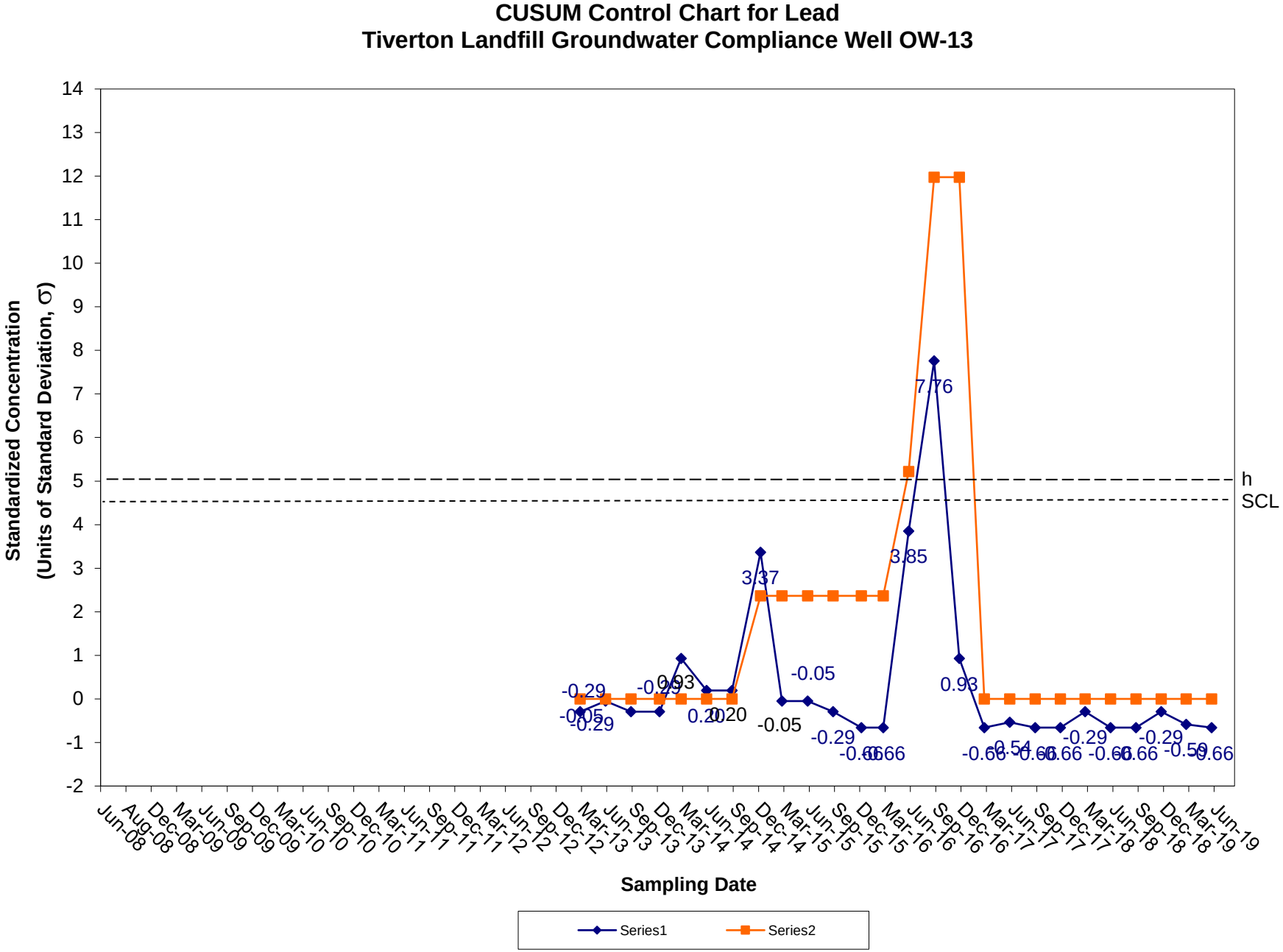

CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Complaince Well OW-13
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

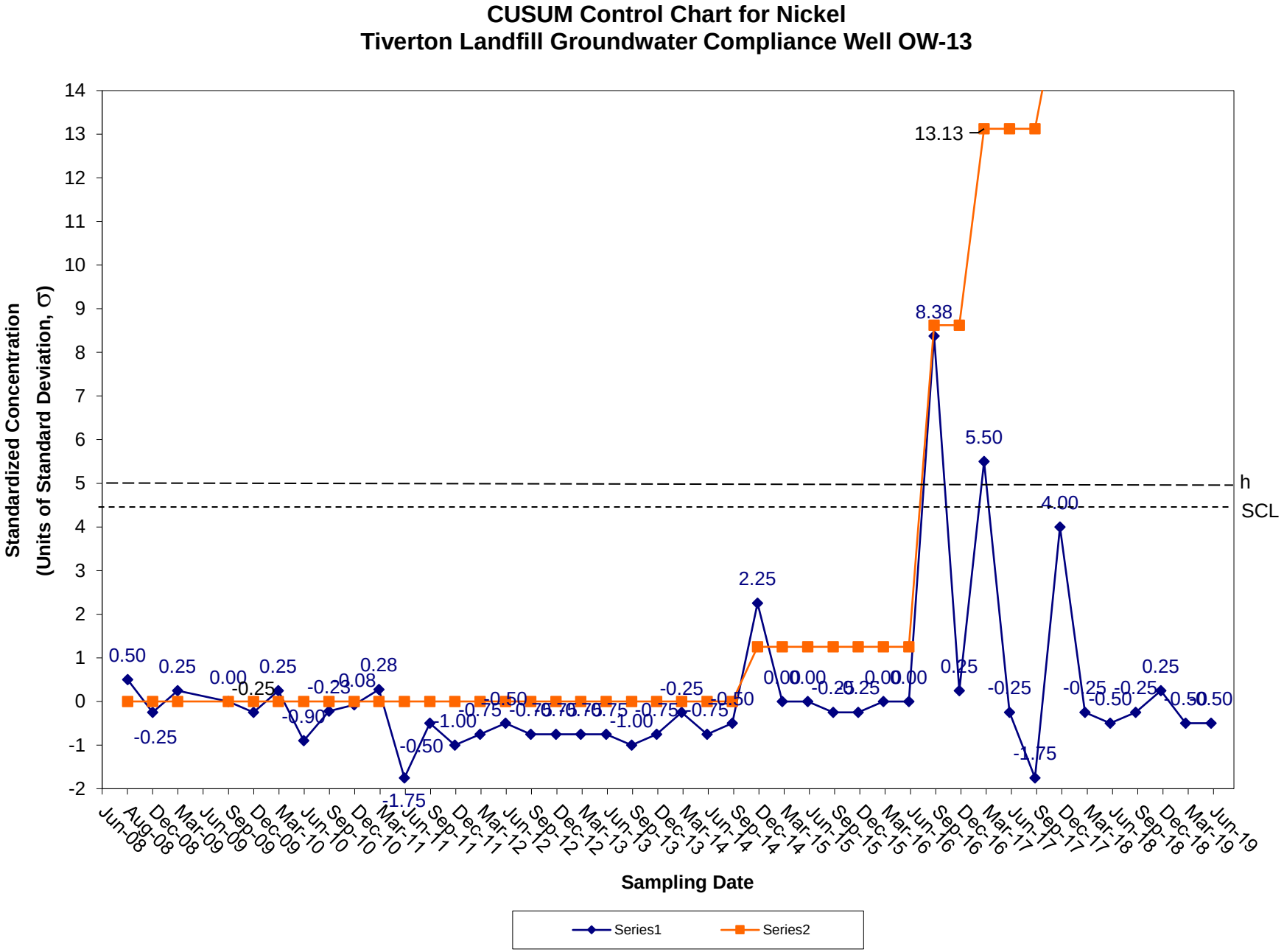
CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-13

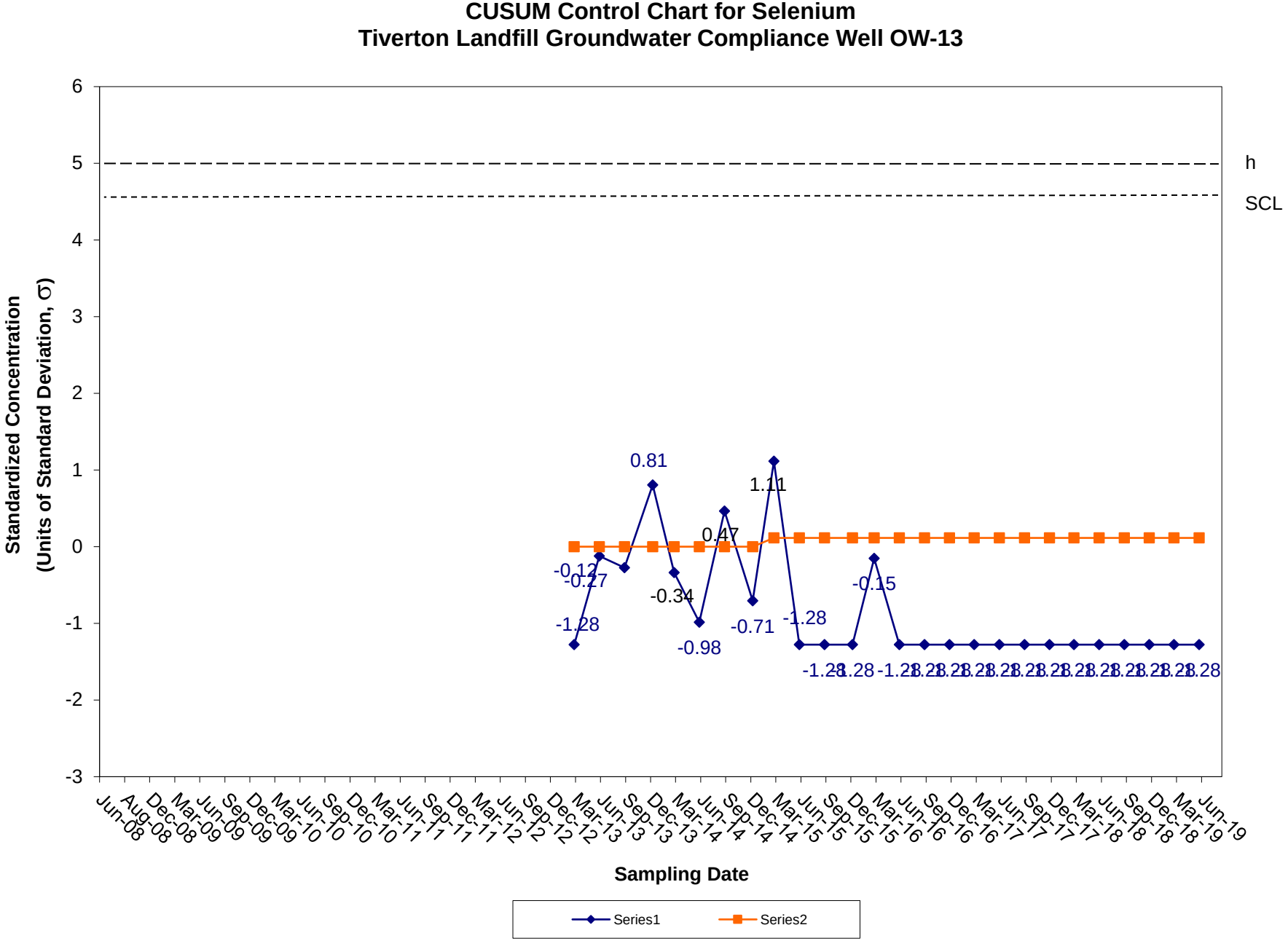


CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Complaince Well OW-13




CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Selenium
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
0.81
1.11
0.47
-0.12
-0.27
-0.34
-1.28
-0.98
-0.71
-1.28
-0.15
-1.28
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
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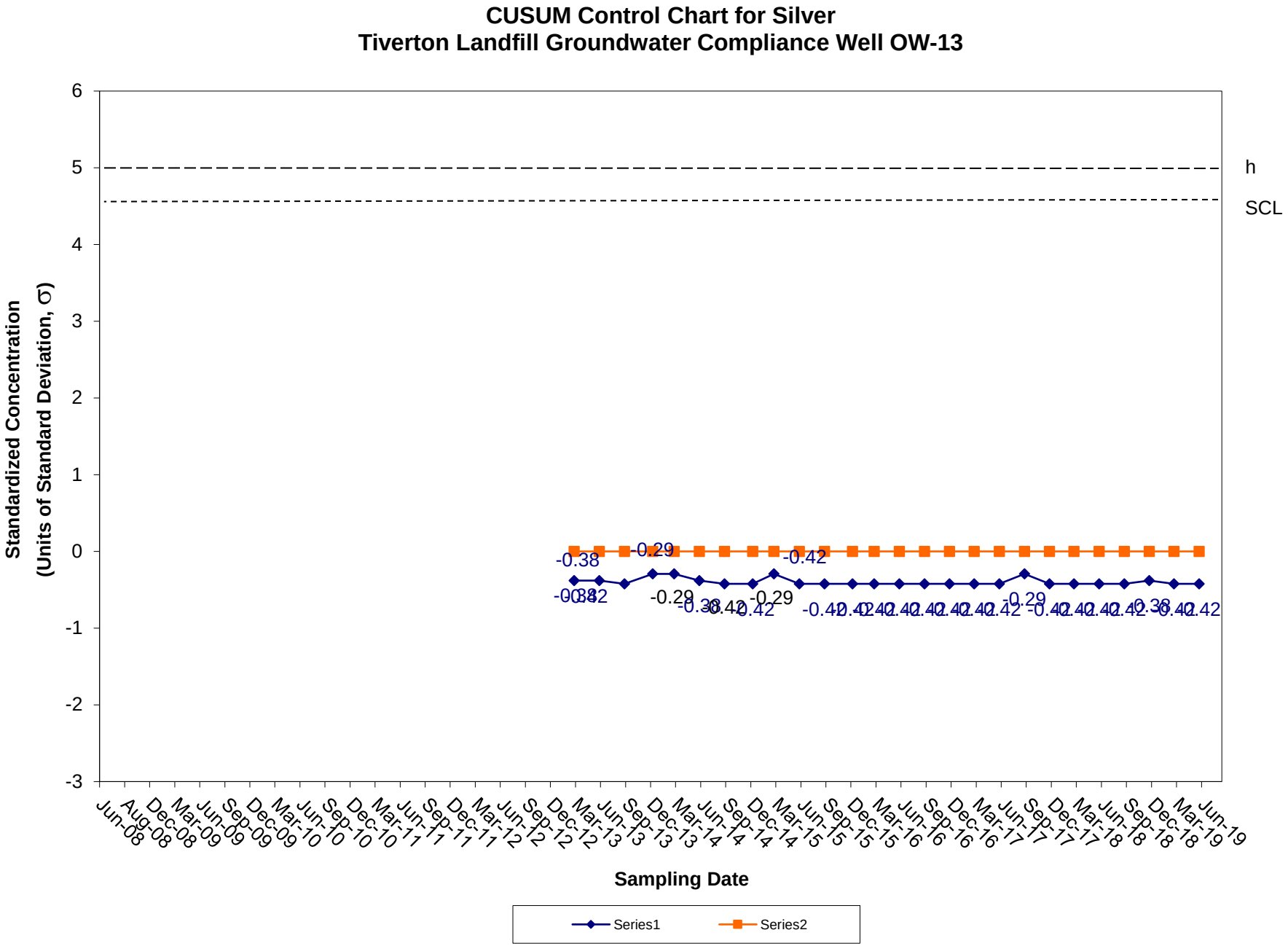
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Silver
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
-3
h
SCL
-0.38
-0.29
-0.42
-0.29
-0.29
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
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Dec-14
Mar-15
Jun-15
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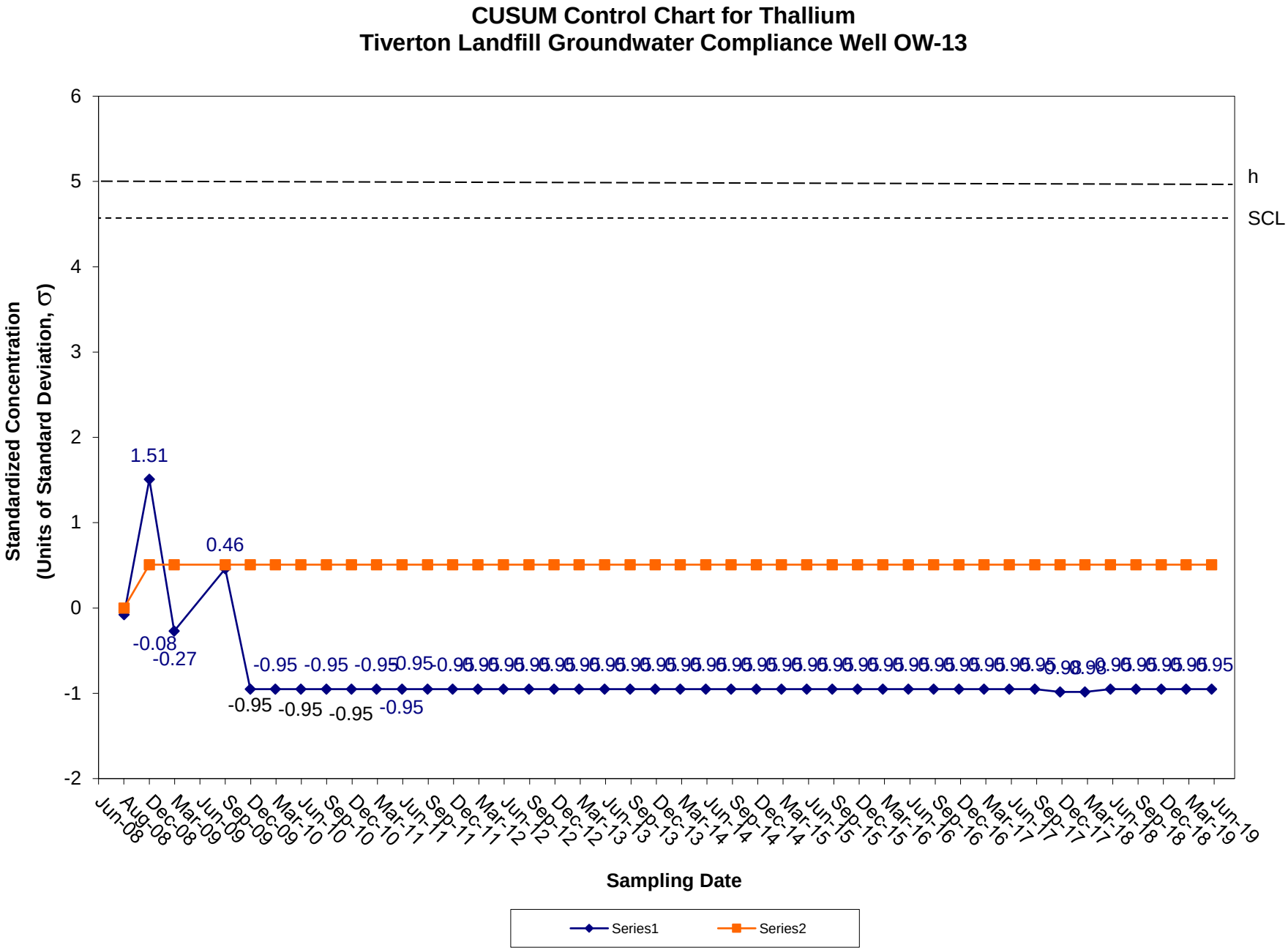
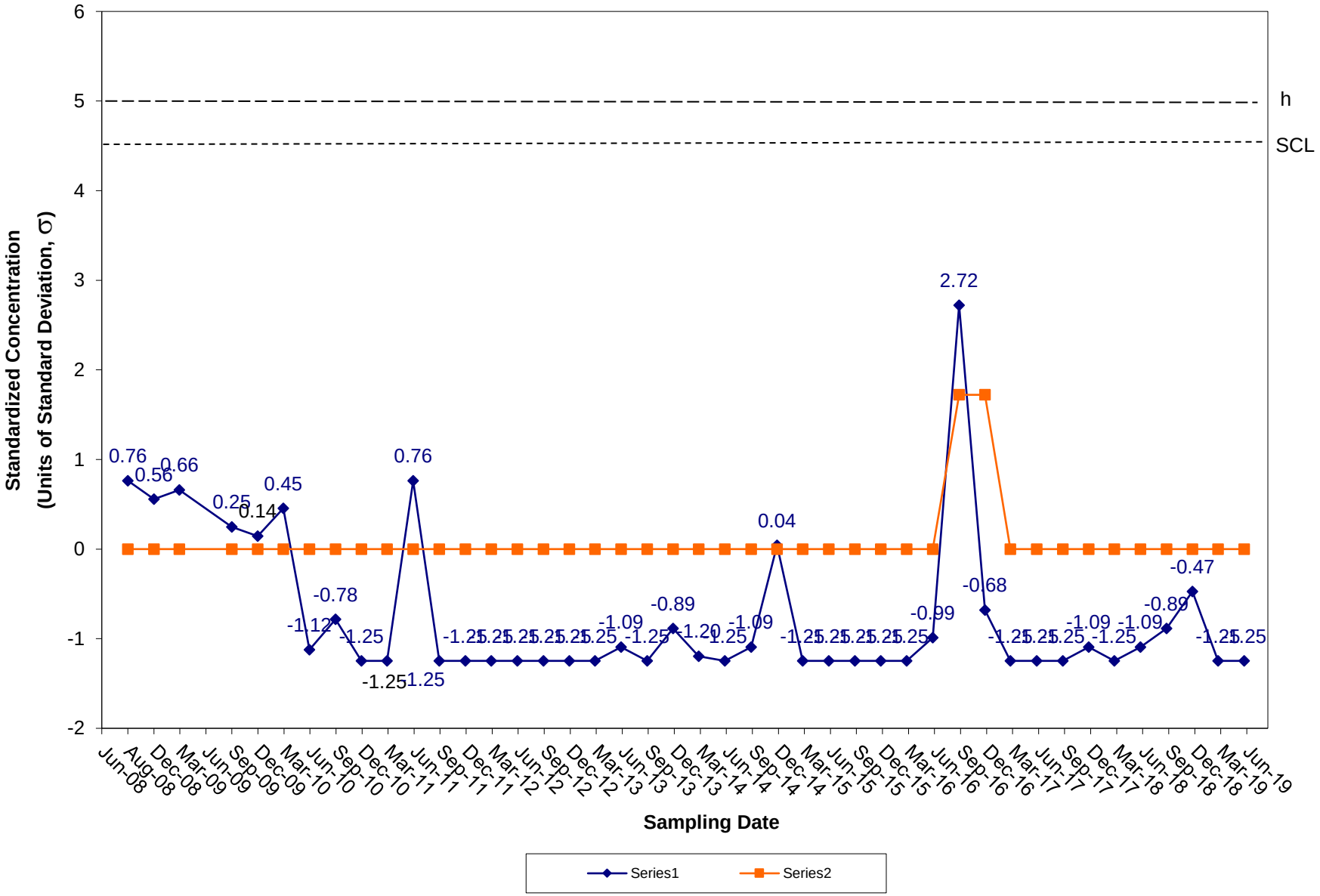
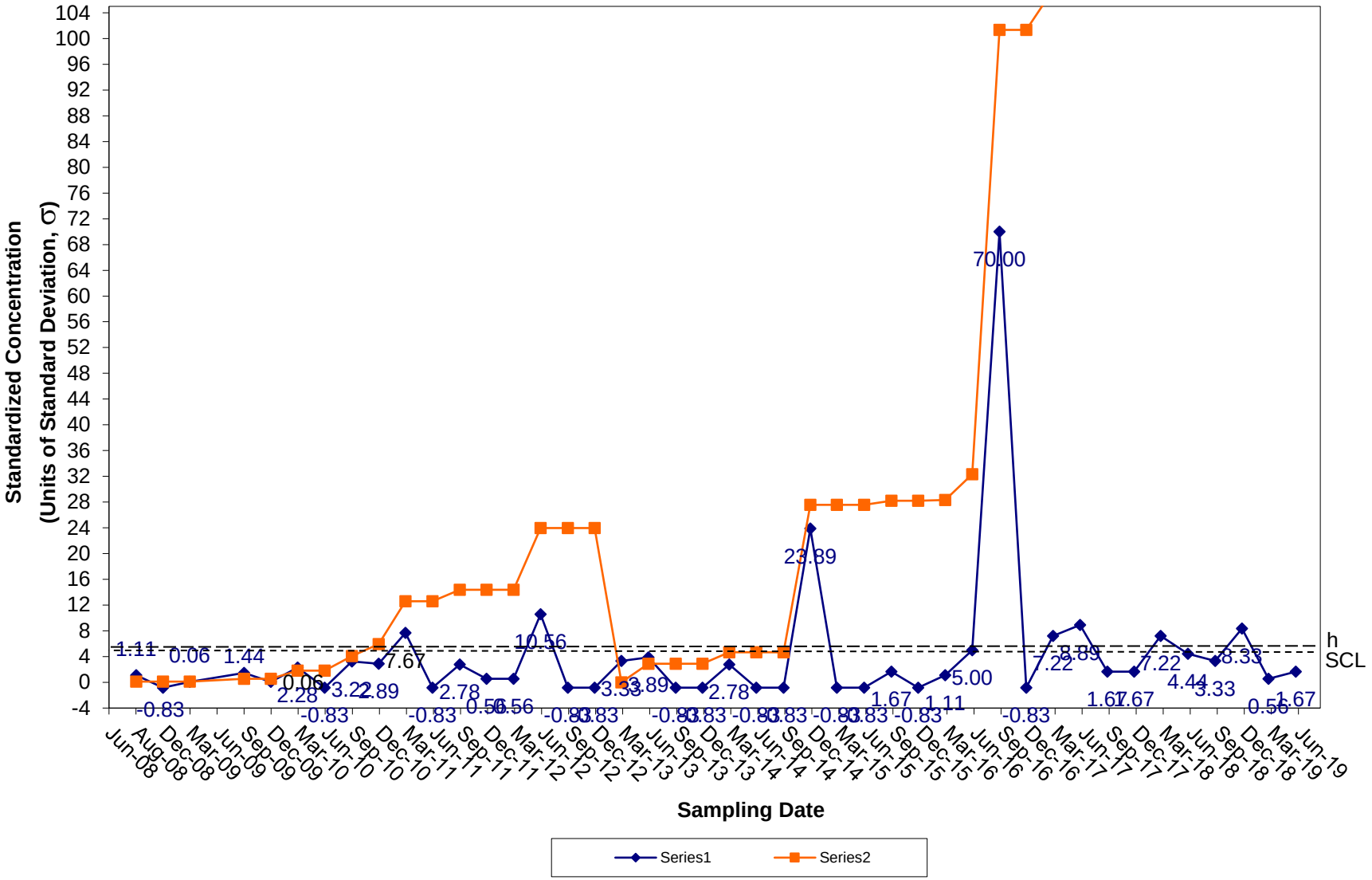
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2

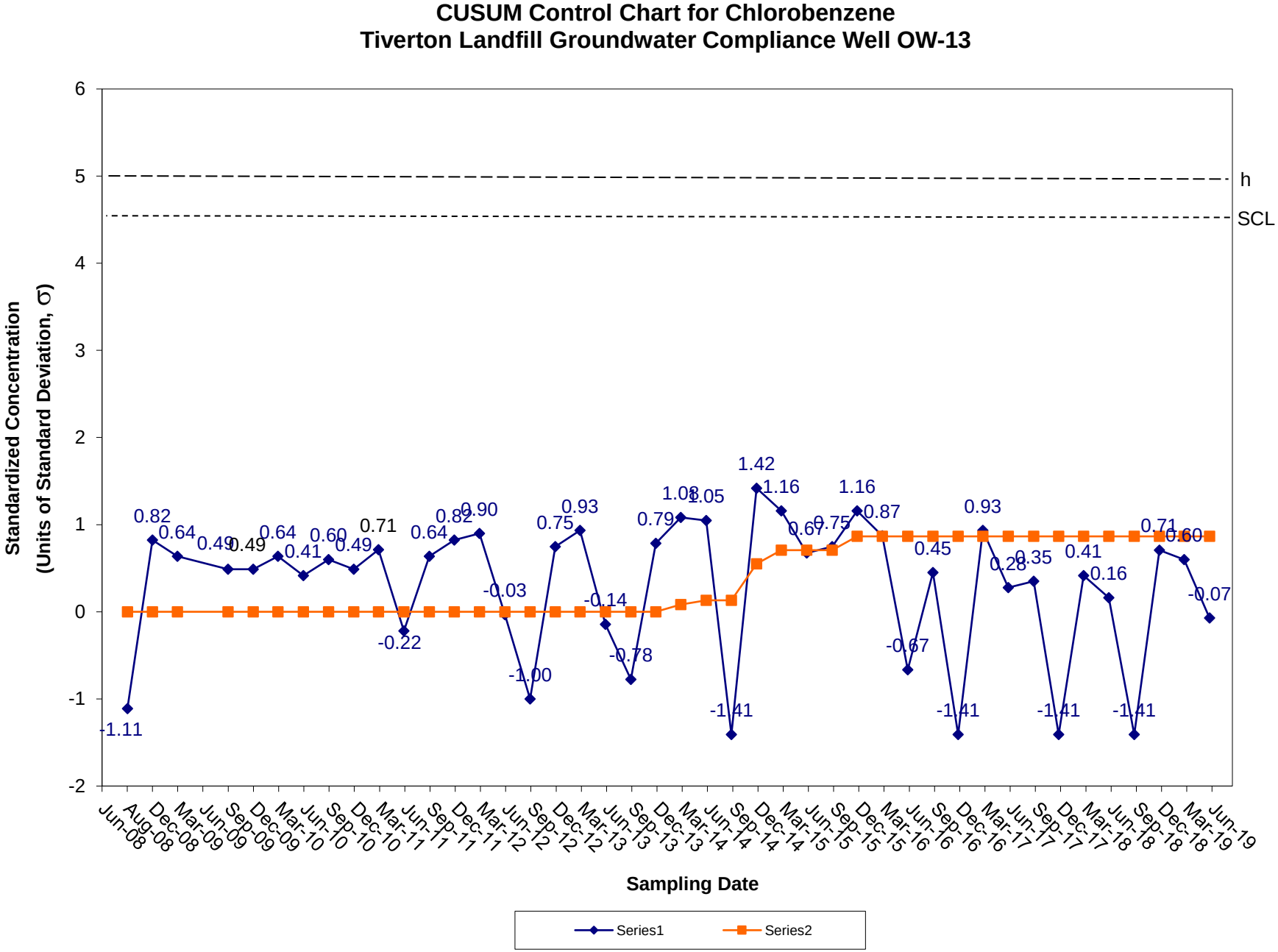

CUSUM Control Chart for Thallium
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
1.51
0.46
-0.08
-0.27
-0.95
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2

CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Compliance Well OW-13

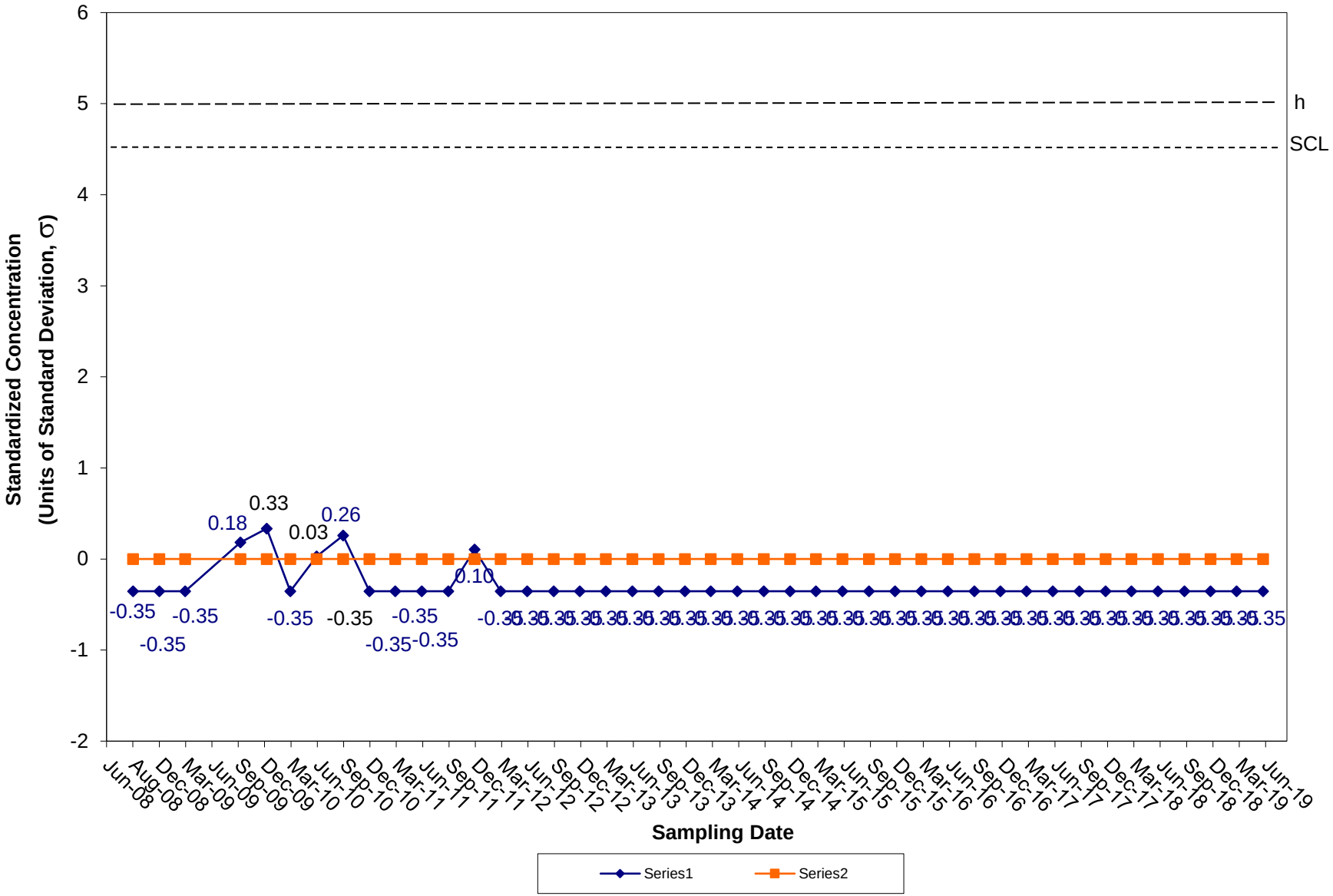


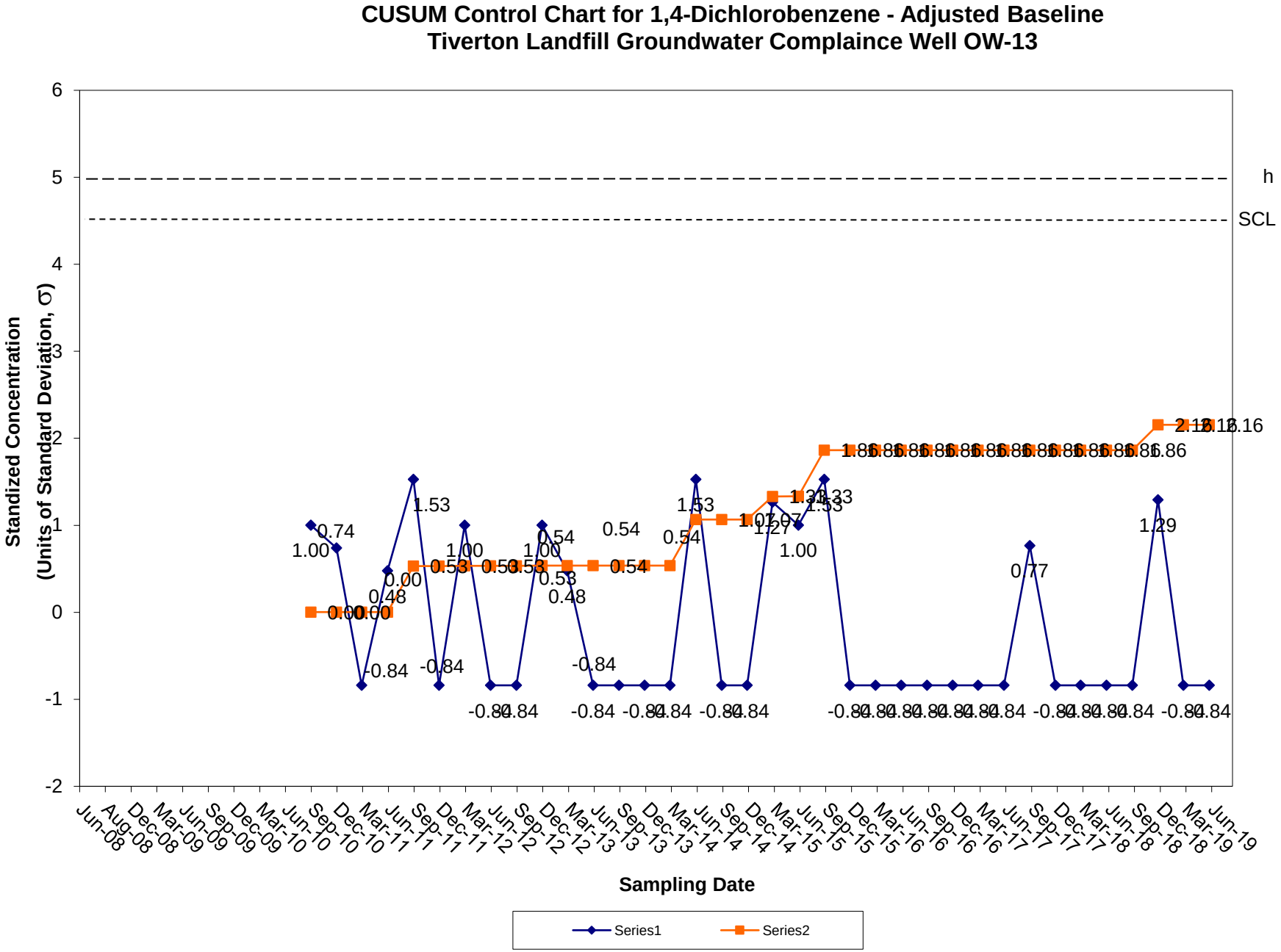
CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-13

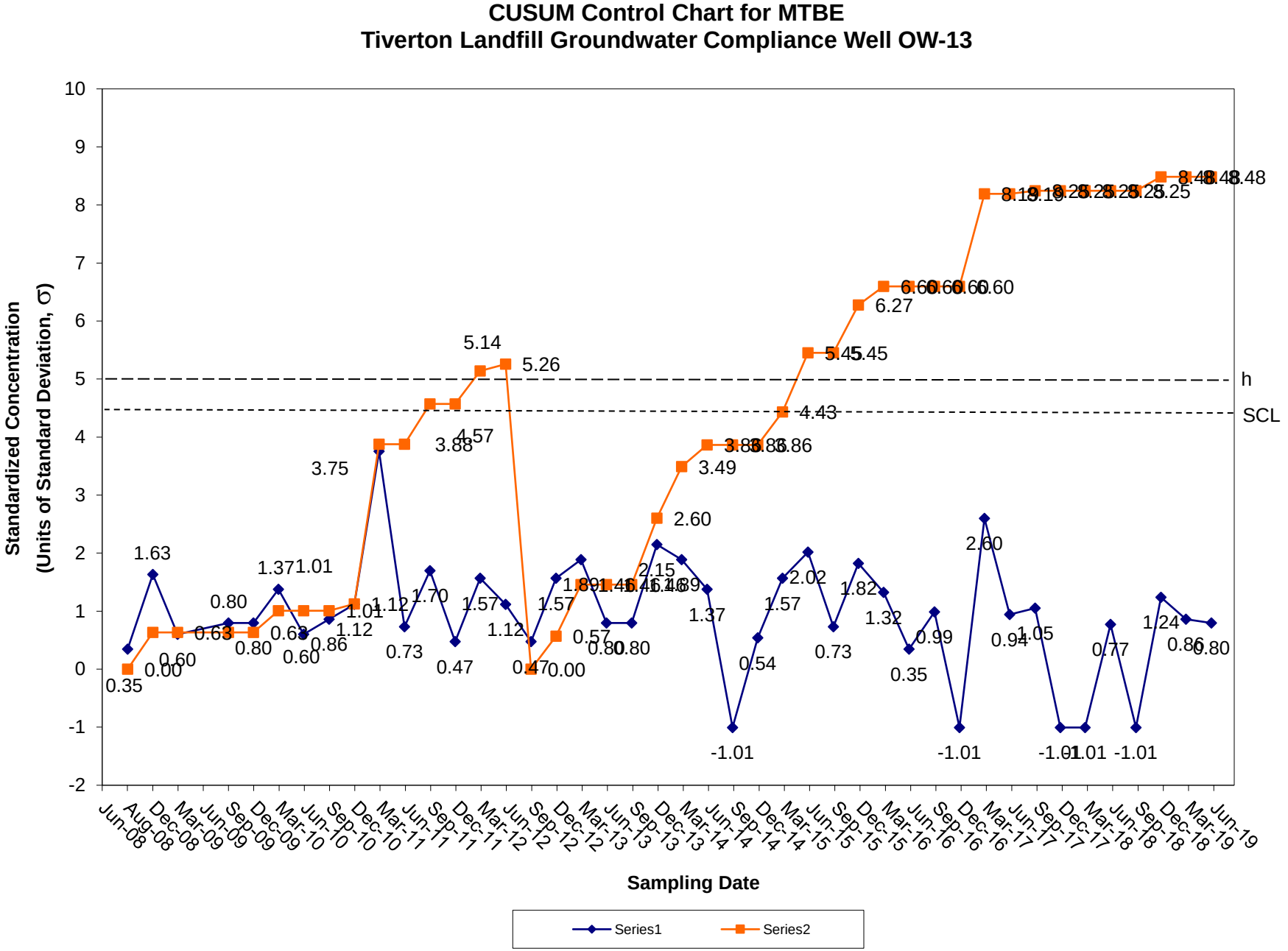


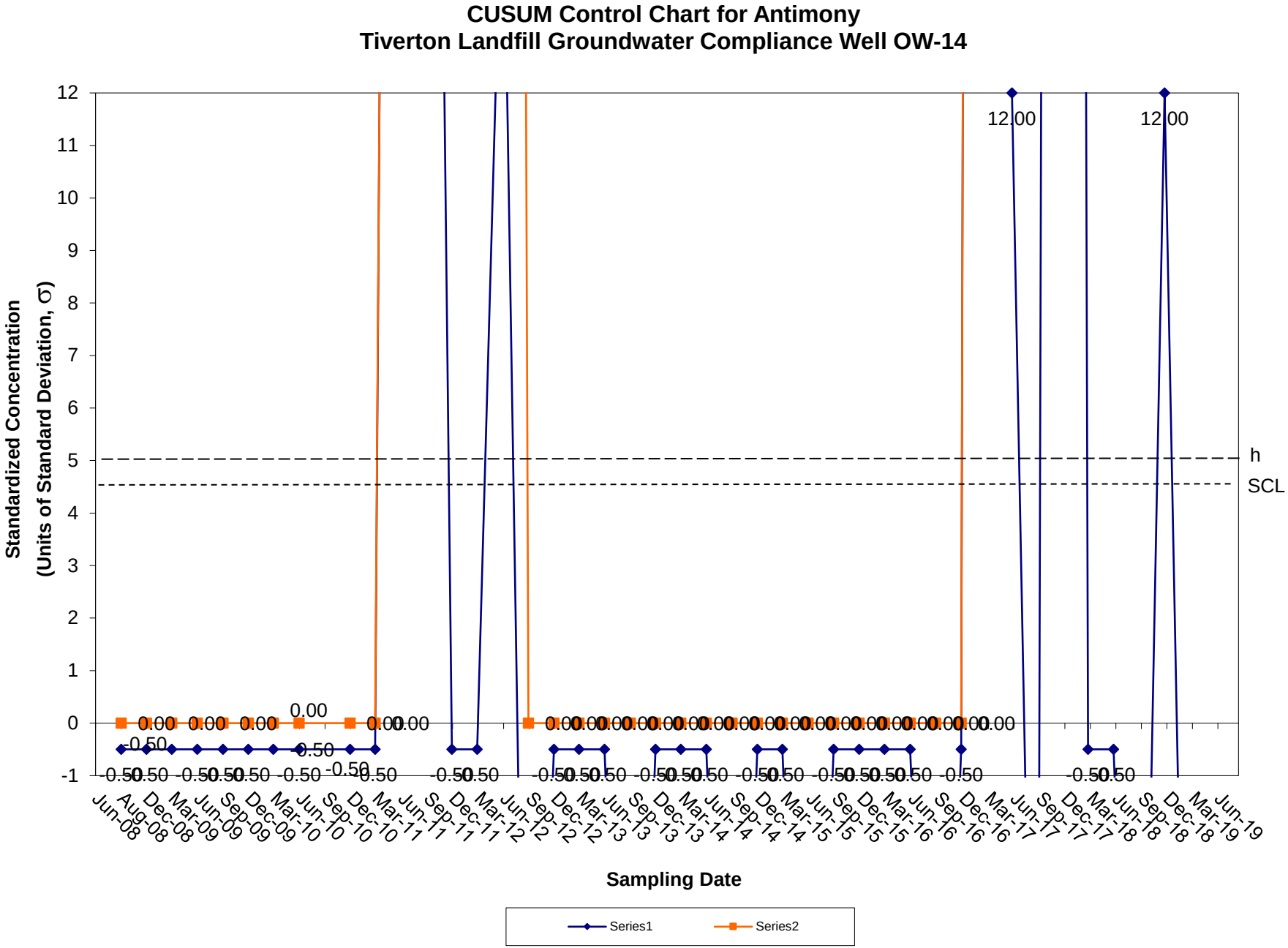

CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Compliance Well OW-13

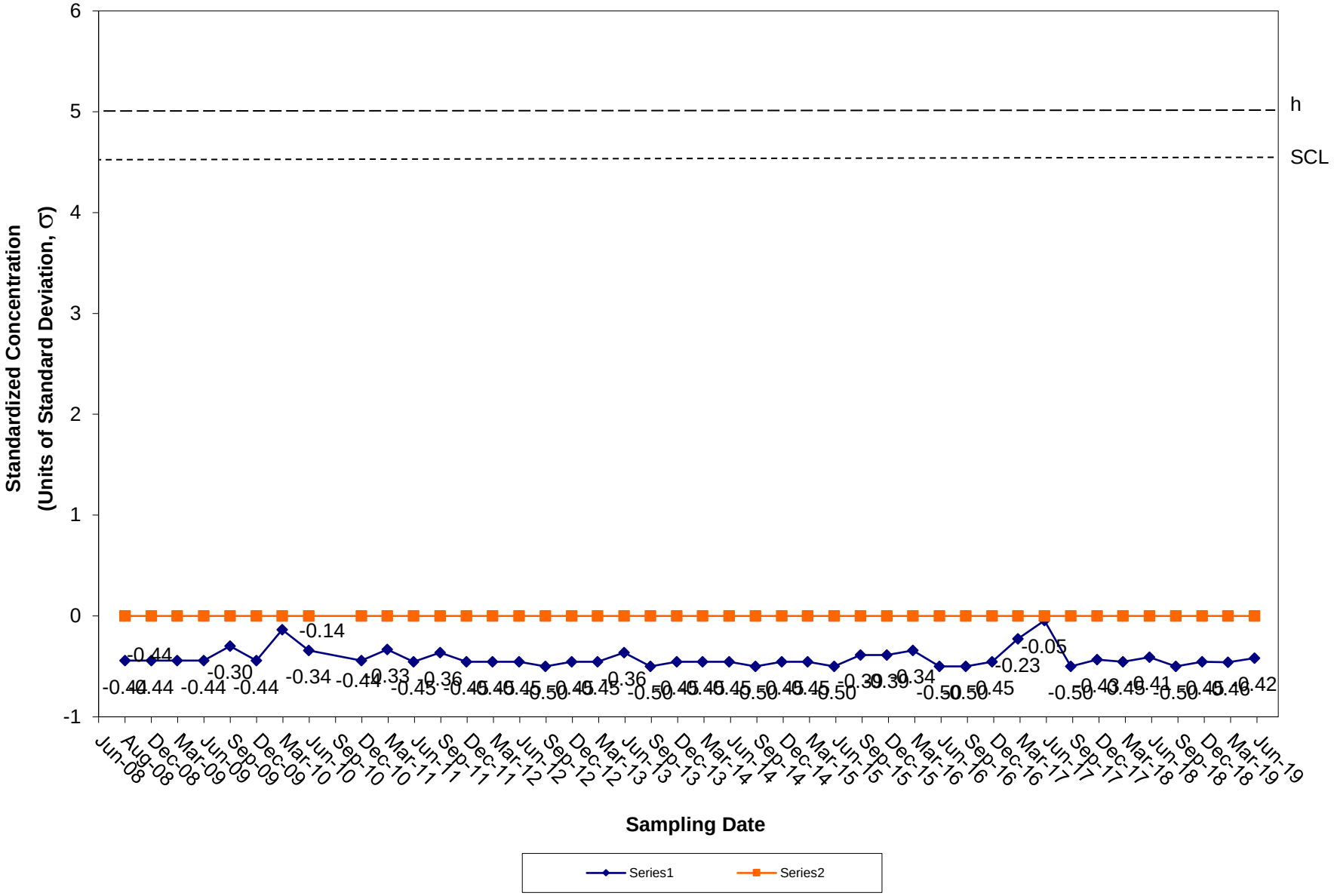



CUSUM Control Chart for 1,4-Dichlorobenzene - Adjusted Baseline
Tiverton Landfill Groundwater Complaince Well OW-13
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

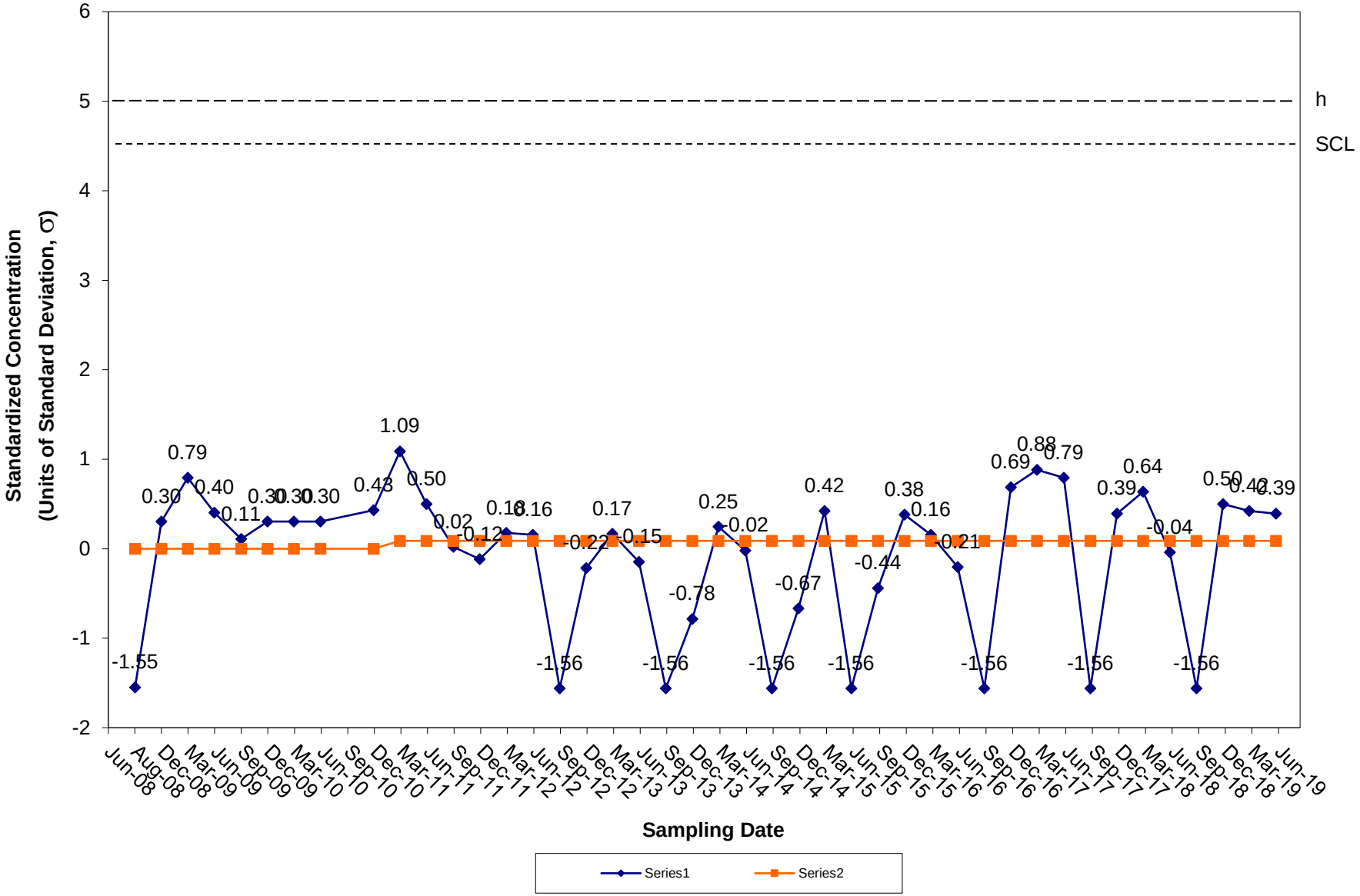

CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-13
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

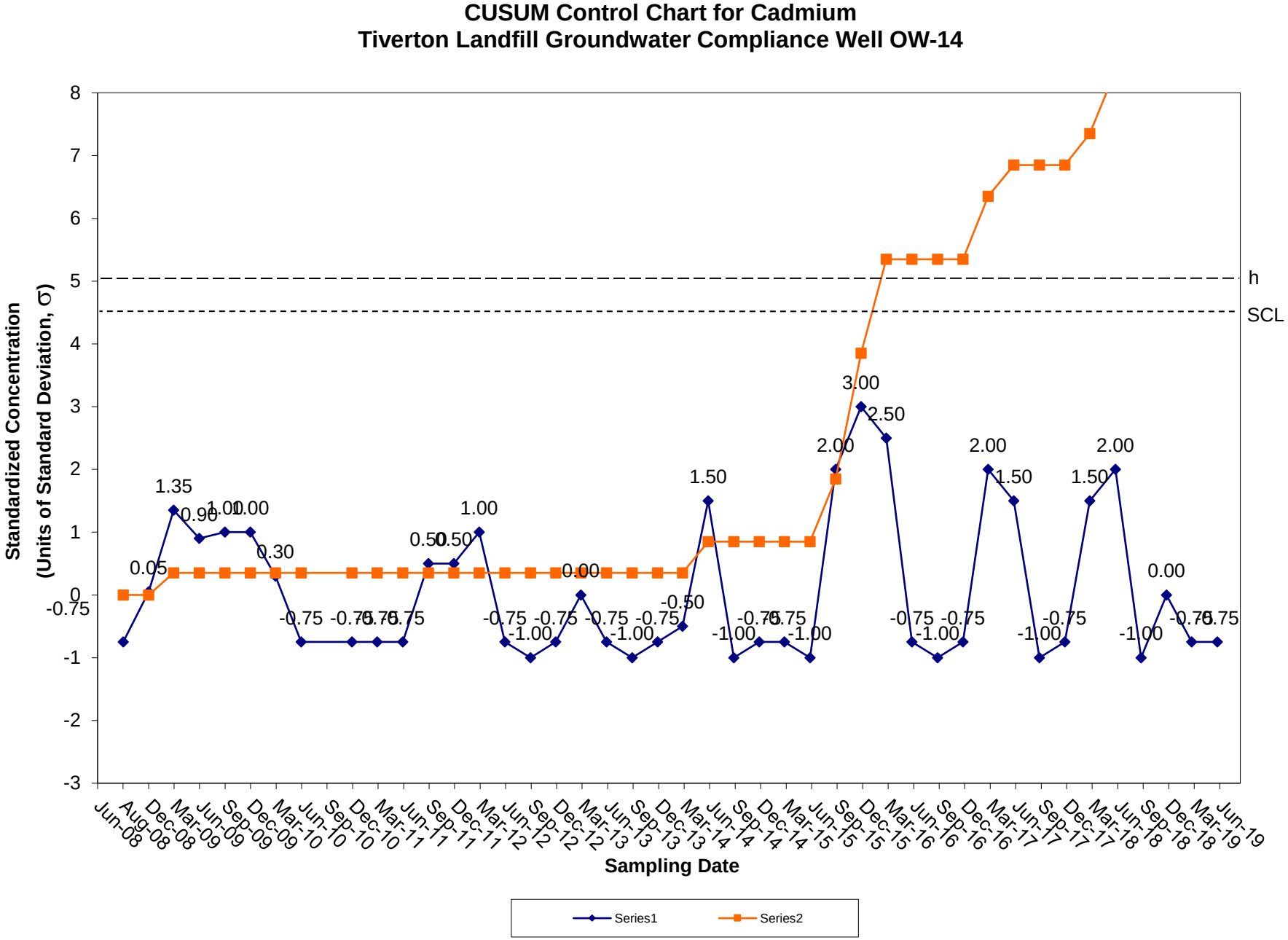

CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
12.00
12.00
Series1
Series2

CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-14

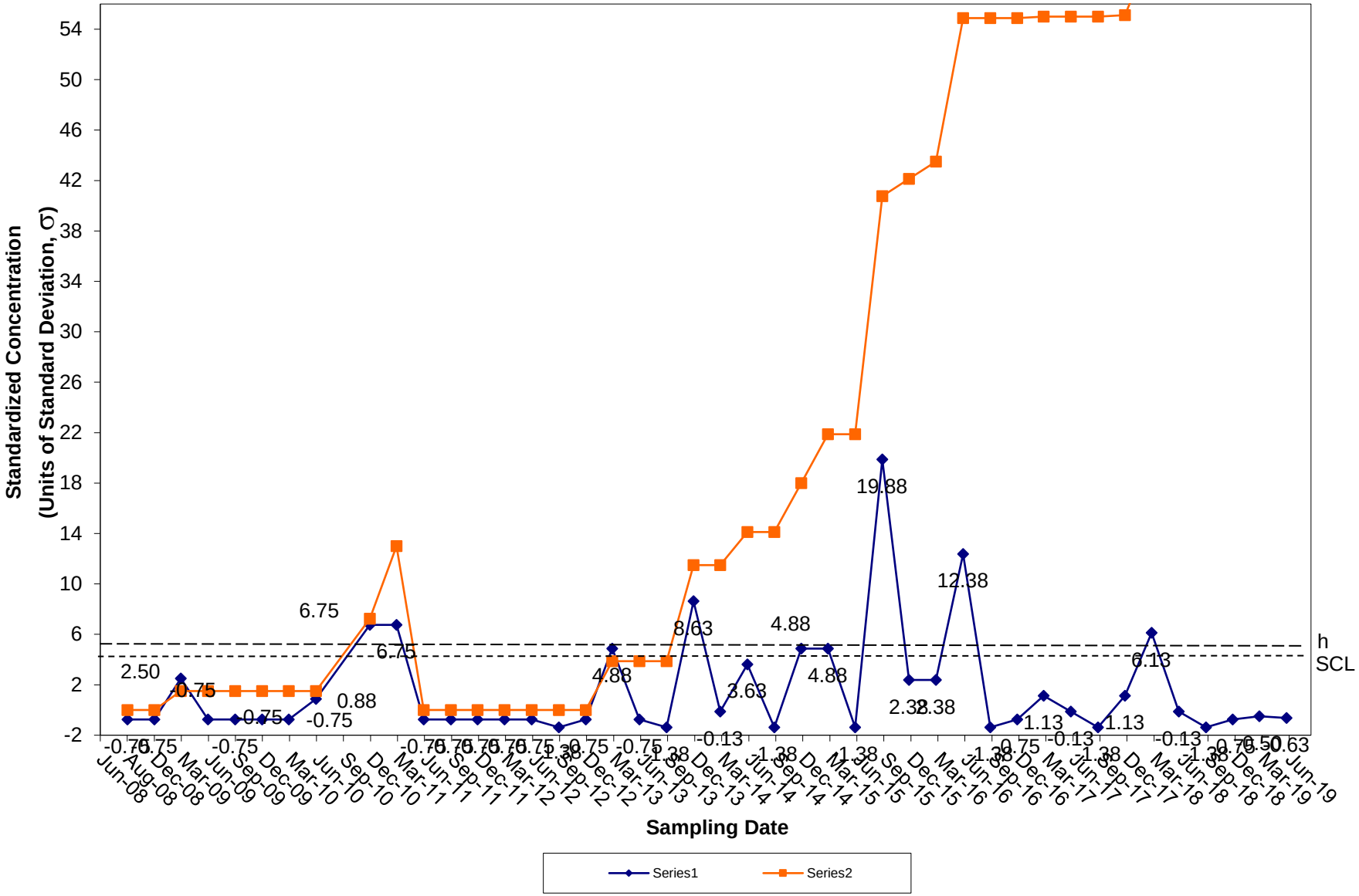


CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-14

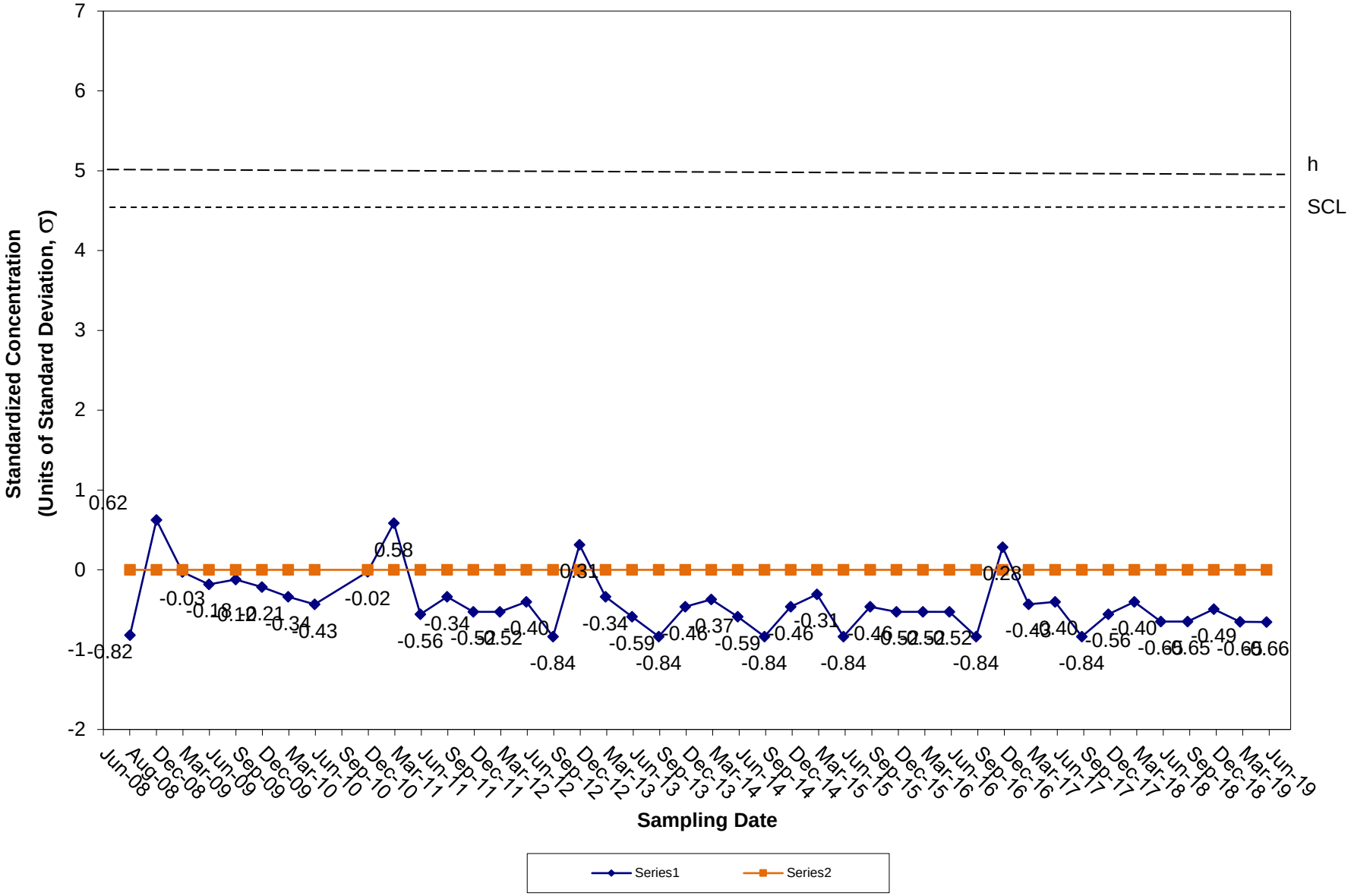



CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

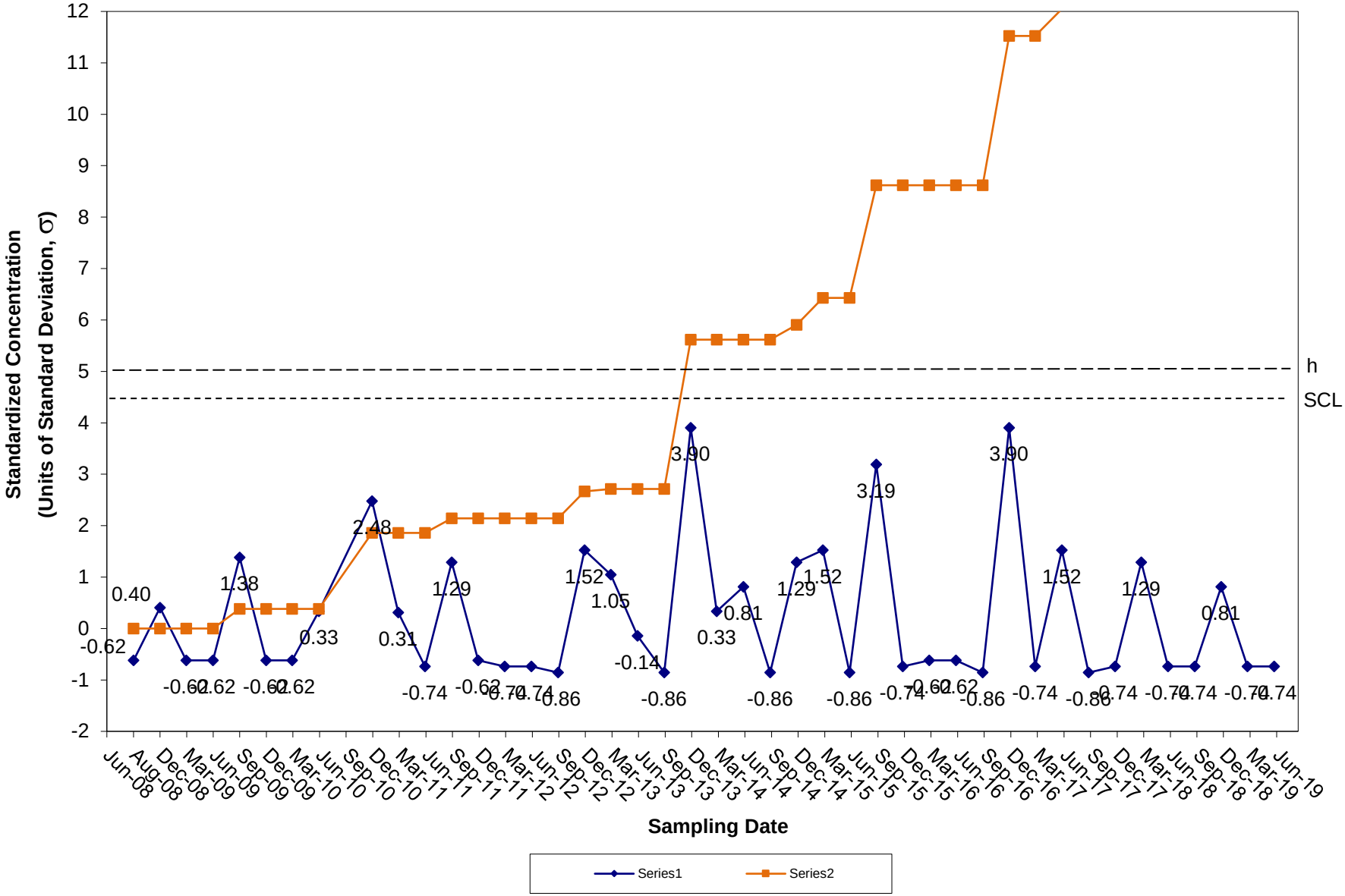
CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Compliance Well OW-14



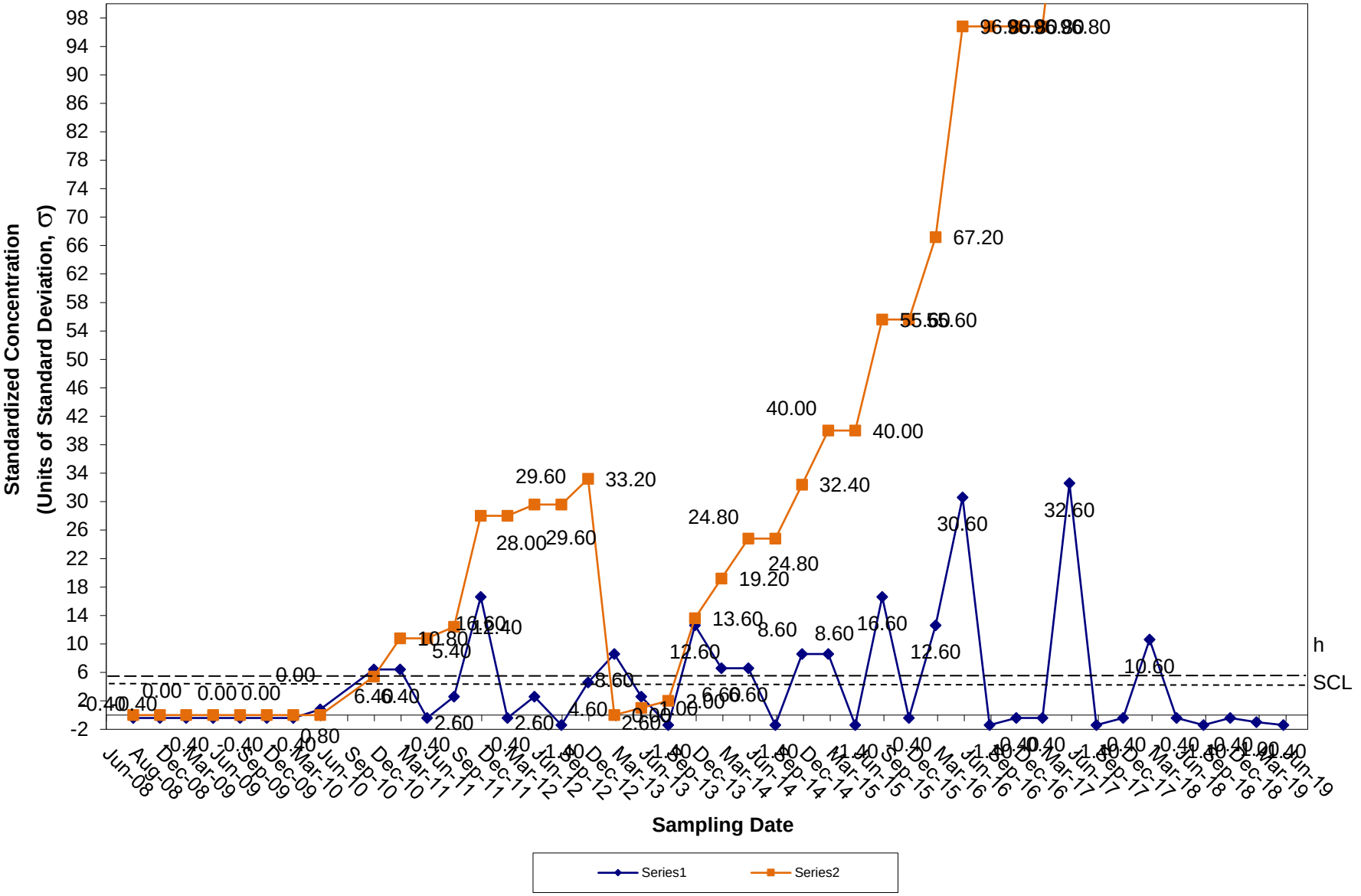
CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-14



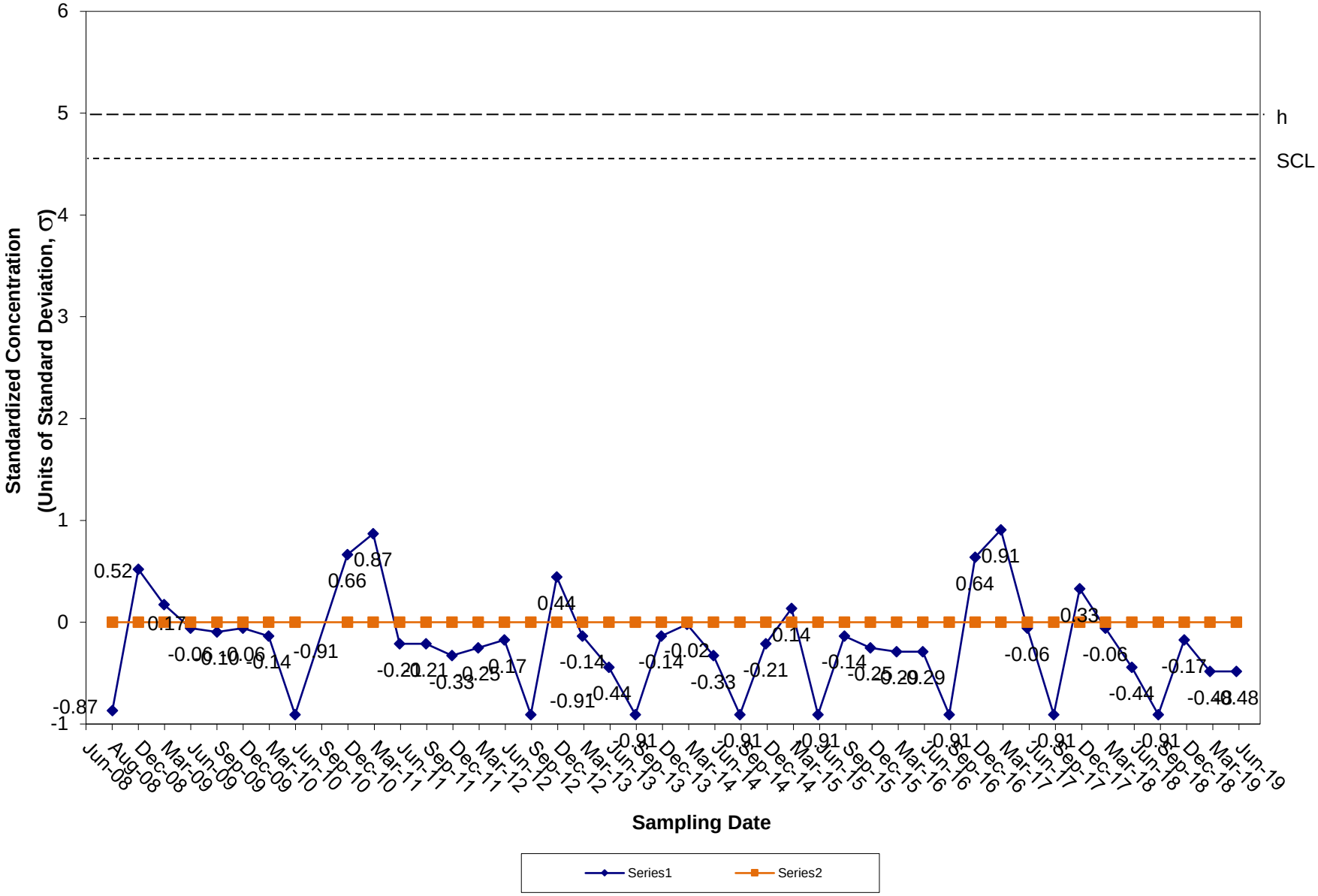
CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Compliance Well OW-14

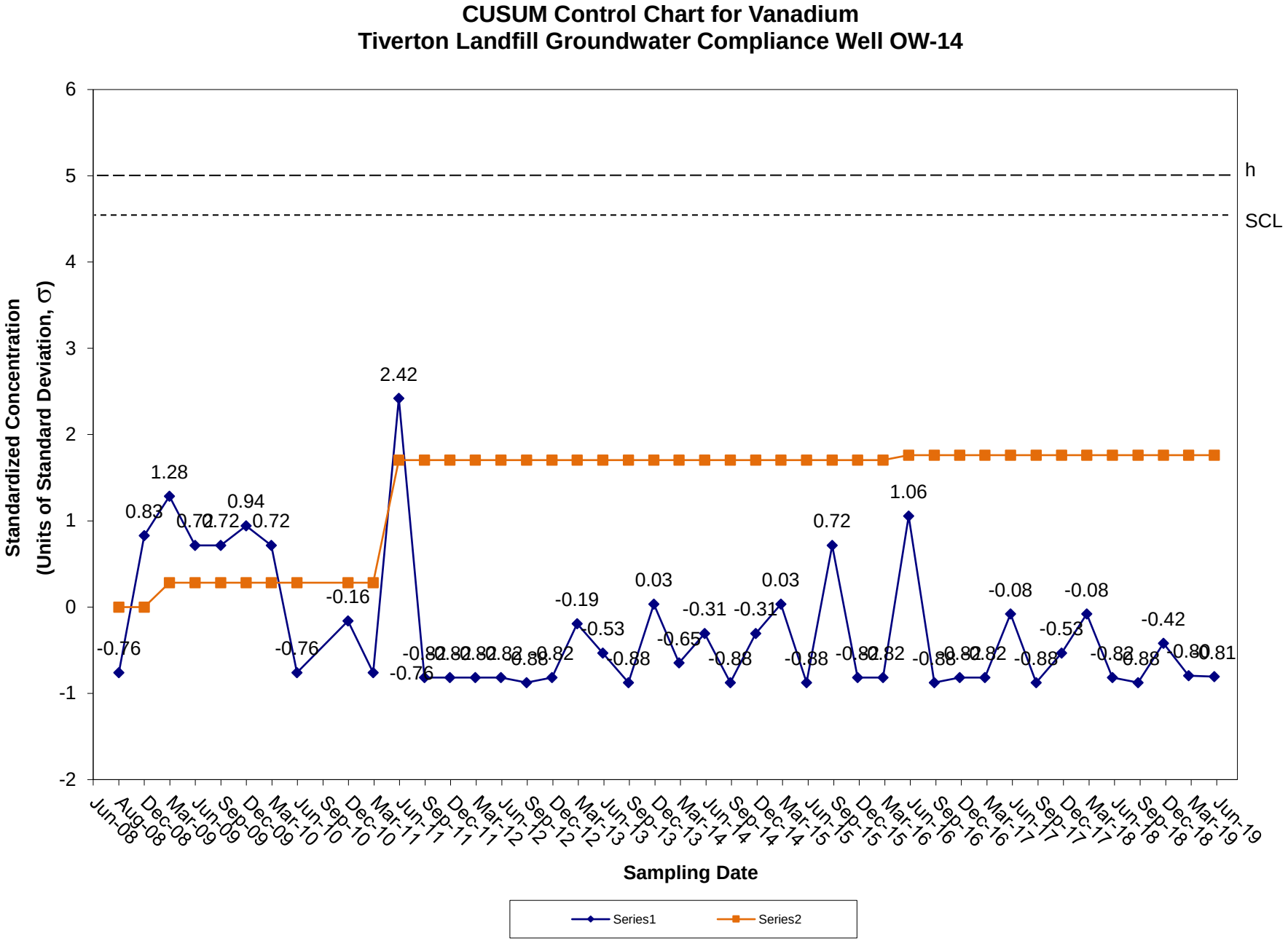


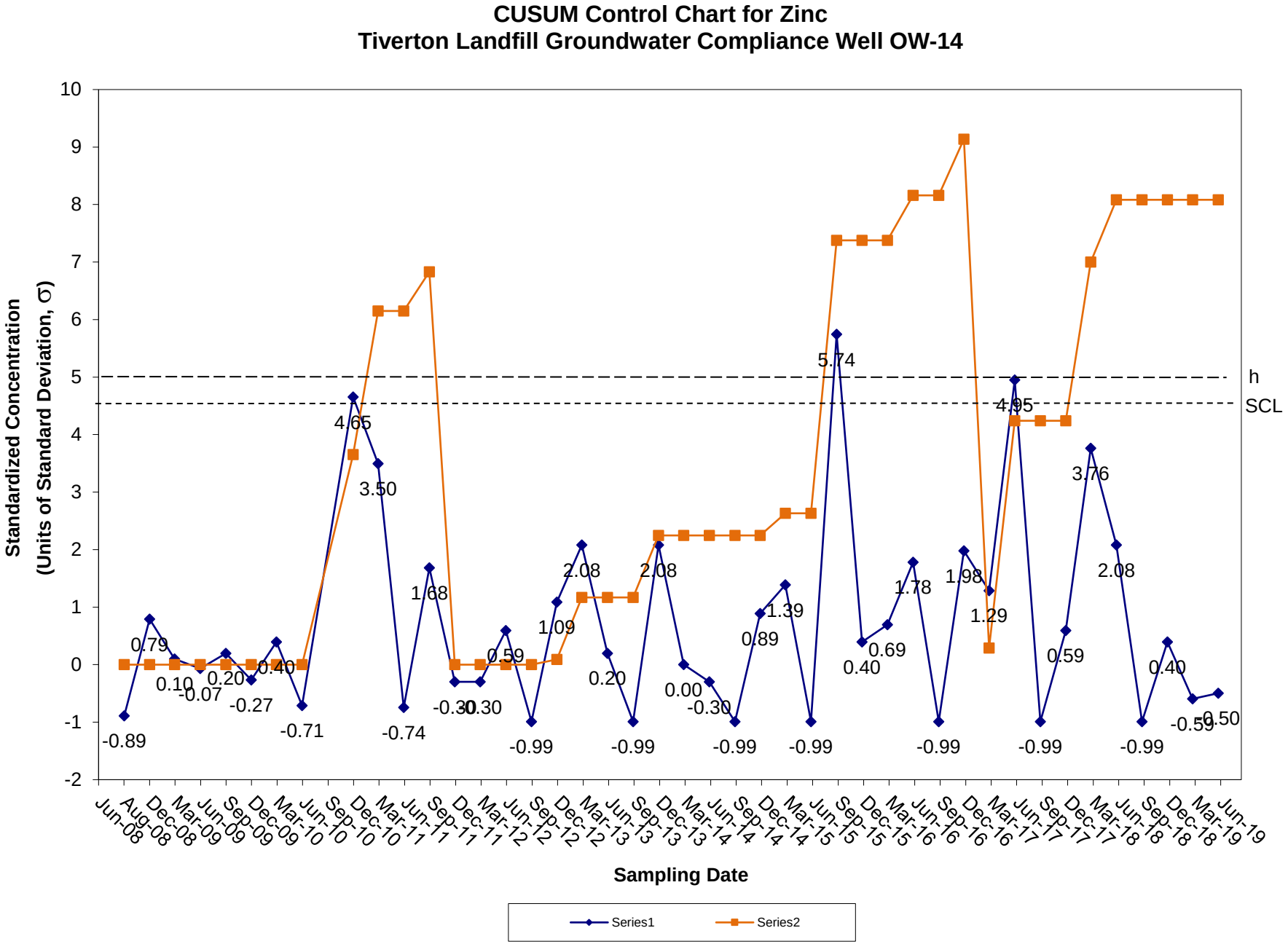
CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-14

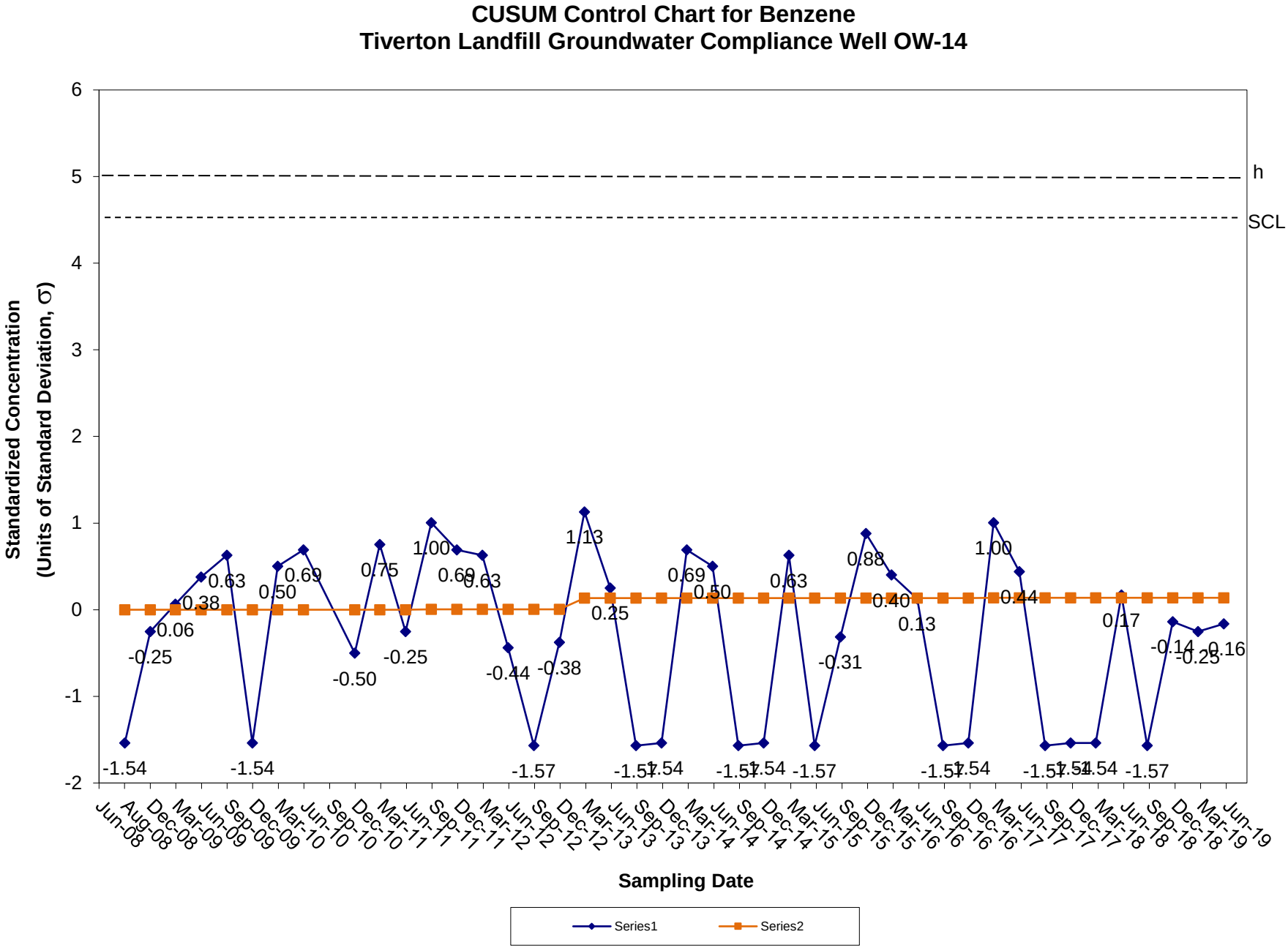


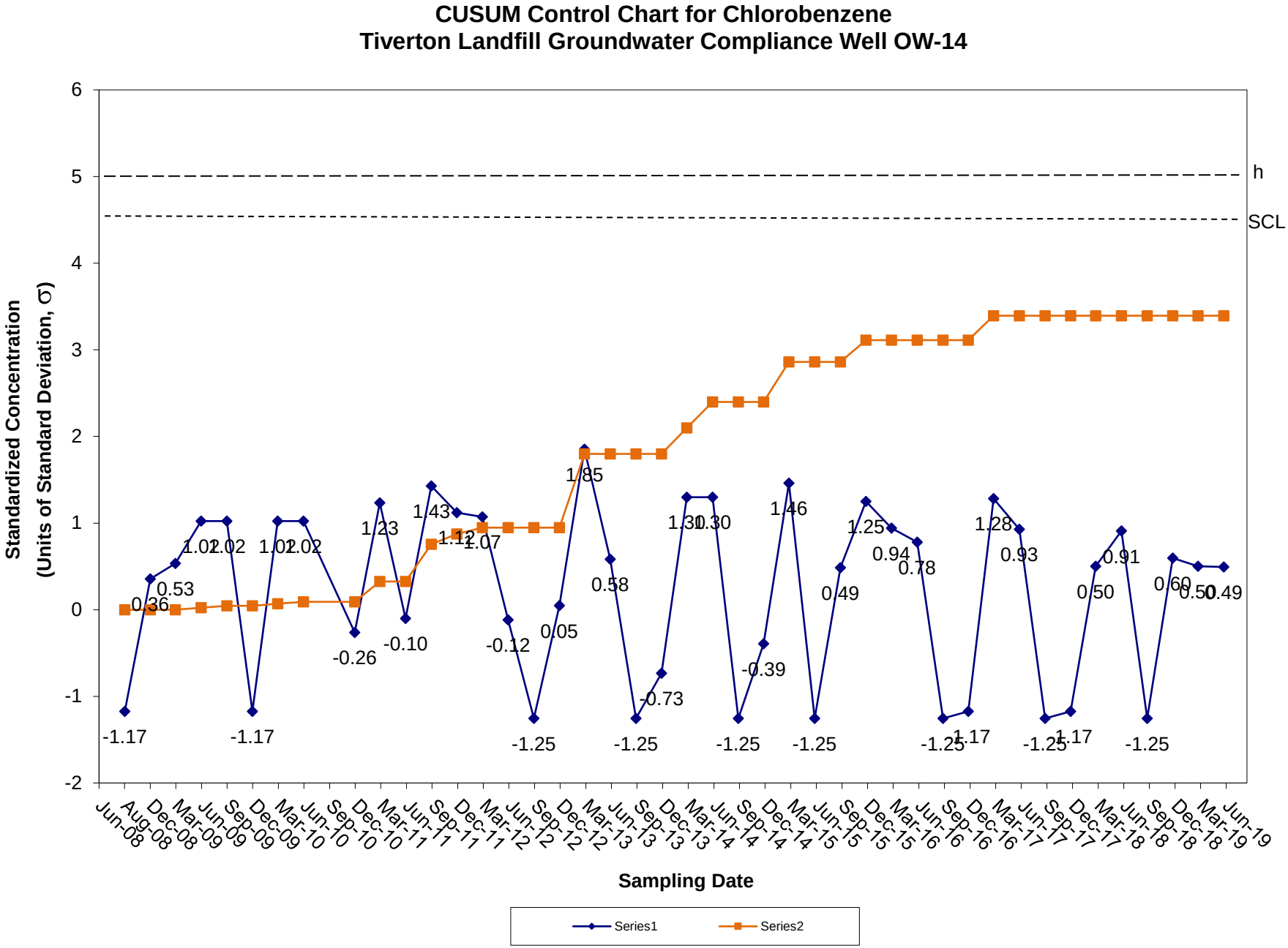
CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Compliance Well OW-14

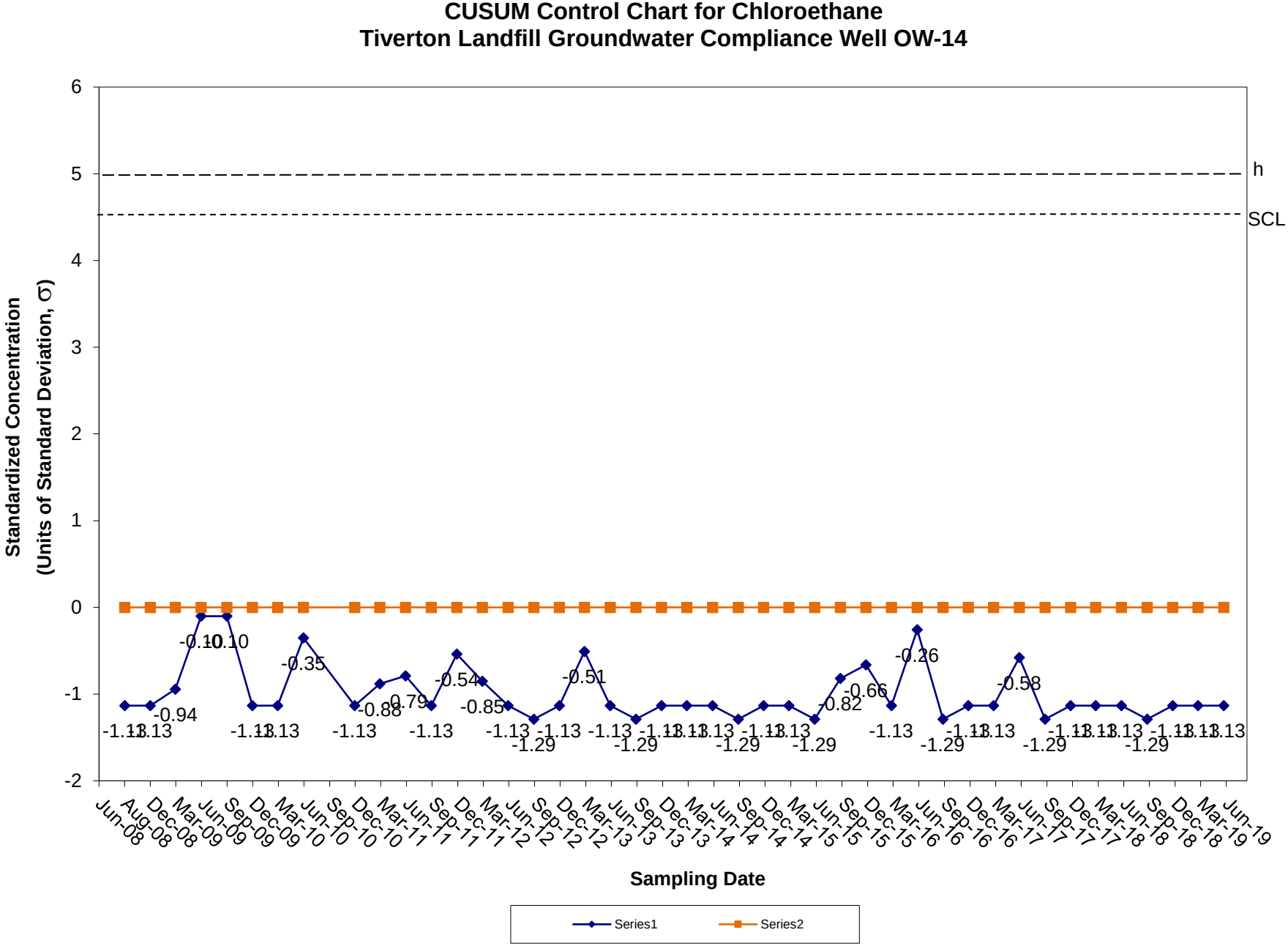


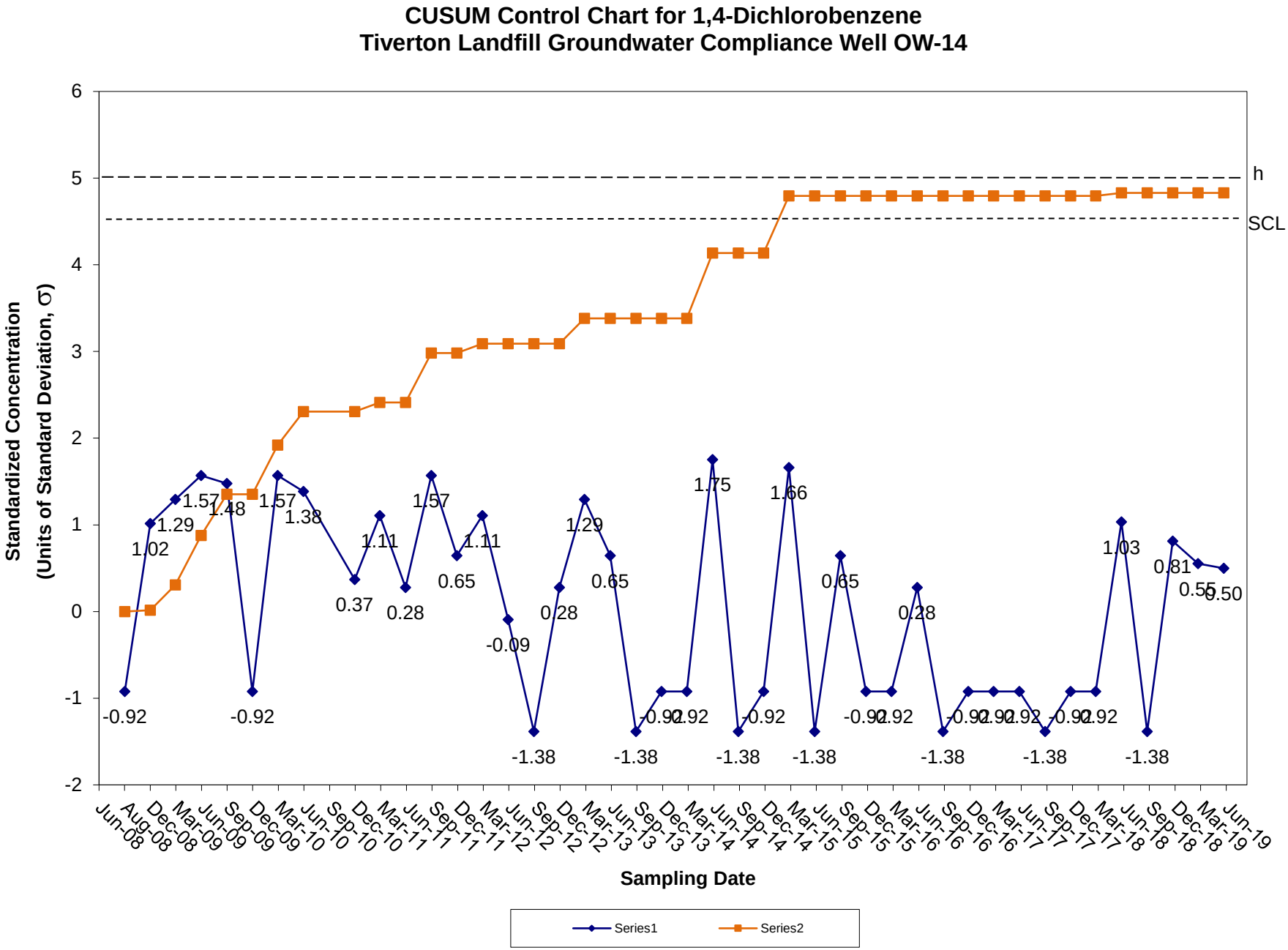

CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

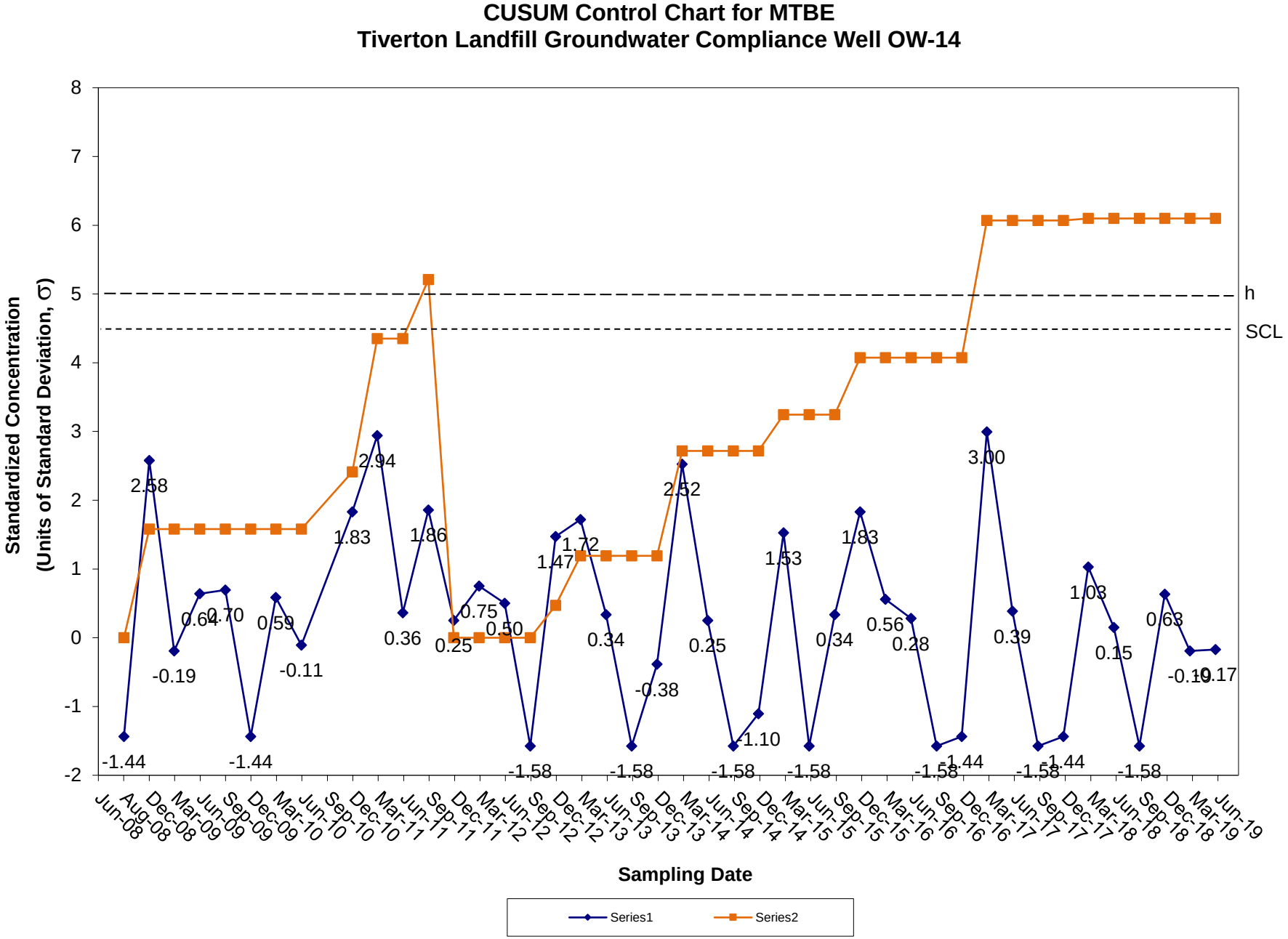

CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Benzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
-1.54
-0.25
0.06
0.38
0.63
-1.54
0.50
0.69
-0.50
0.75
-0.25
1.00
0.69
0.63
-0.44
-1.57
-0.38
1.13
0.25
-1.57
-1.54
0.69
0.50
-1.57
-1.54
0.63
-1.57
-0.31
0.88
0.40
0.13
-1.57
-1.54
1.00
0.44
-1.57
-1.54
-1.54
0.17
-1.57
-0.14
-0.25
-0.16
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2

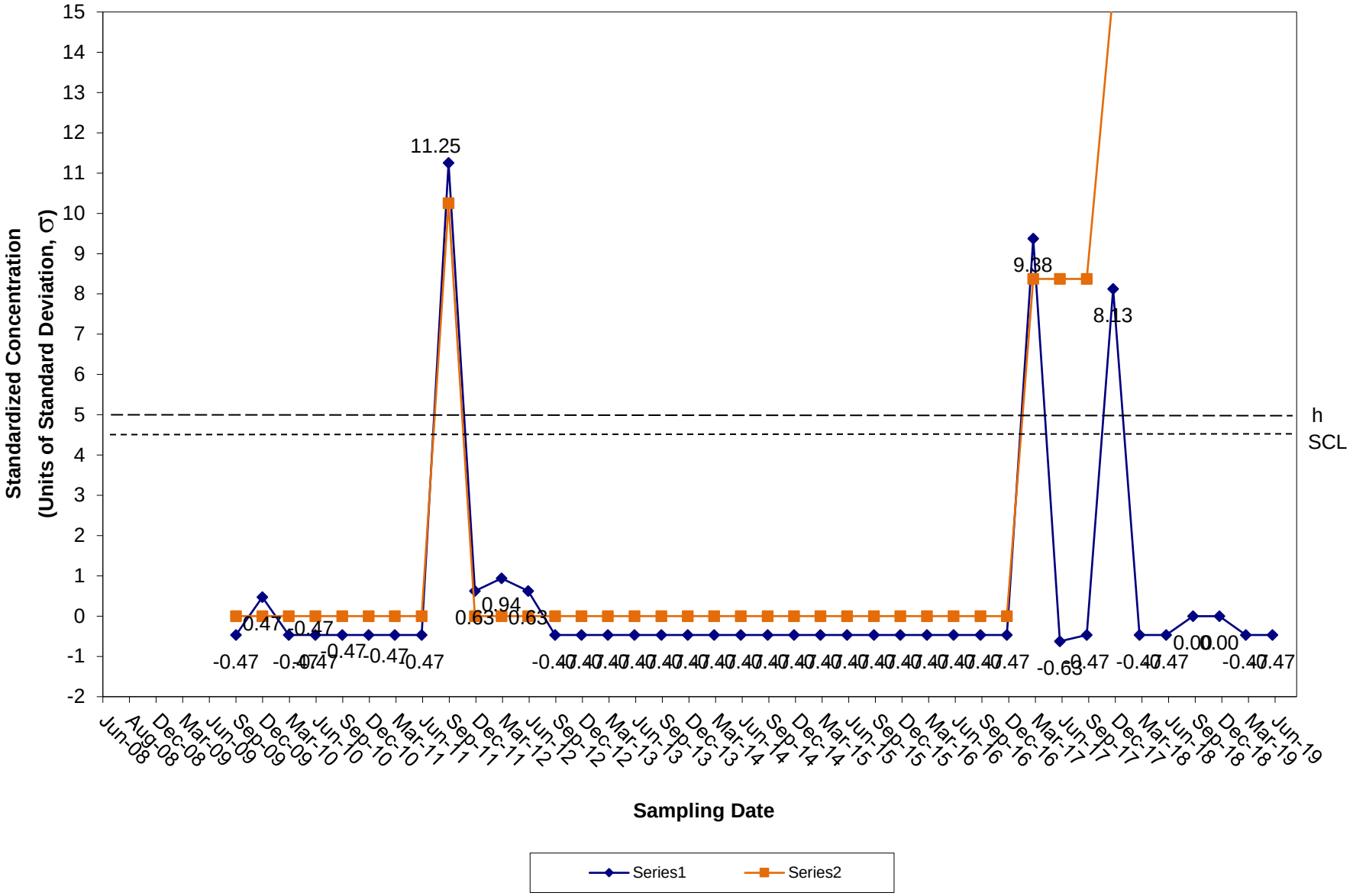

CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

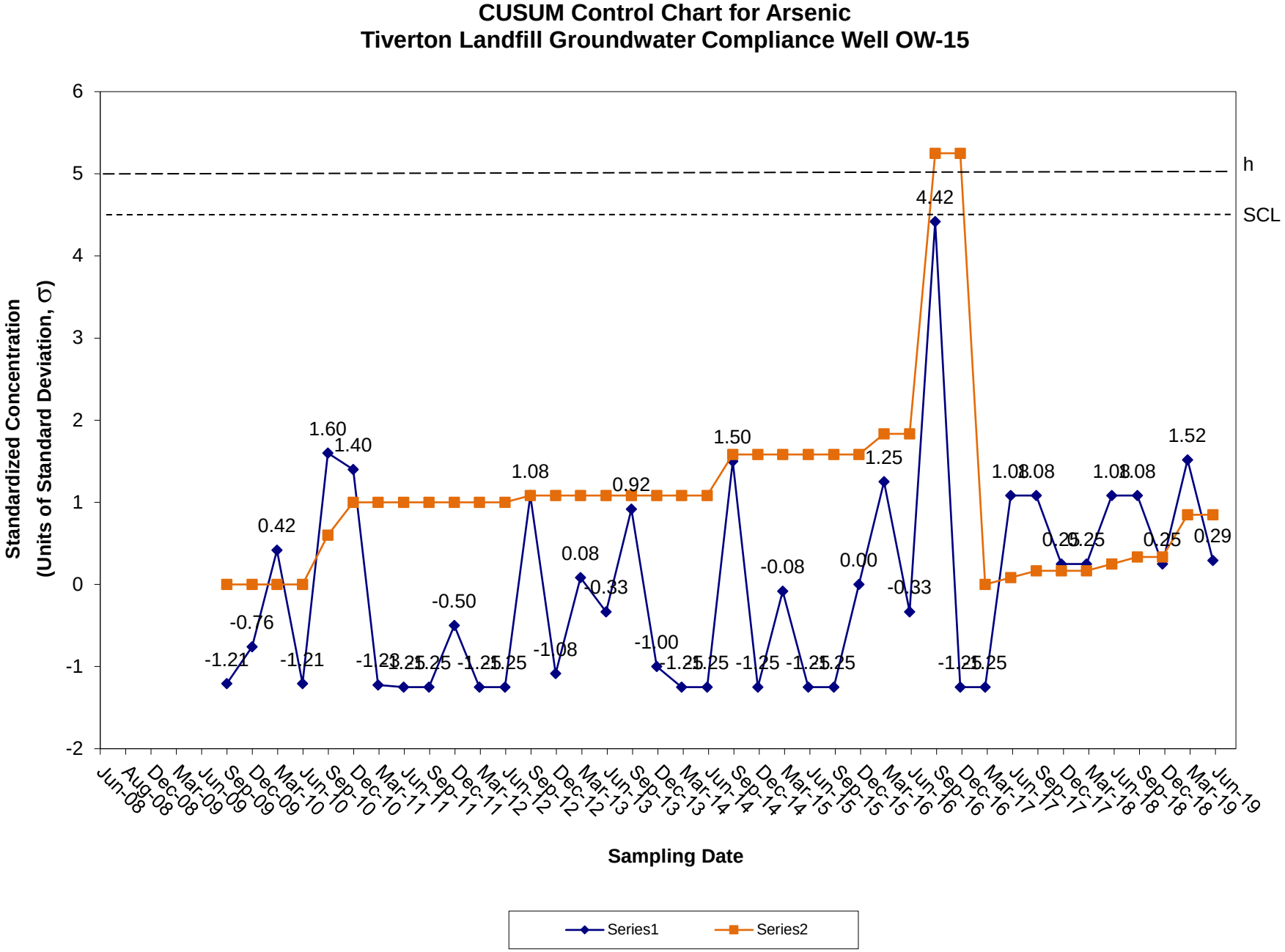

CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
6
5
4
3
2
1
0
-1
-2
h
SCL
-0.94
-0.10
-0.35
-0.88
-0.79
-0.54
-0.85
-0.51
-0.82
-0.66
-0.26
-0.58
-1.13
-1.29
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2


CUSUM Control Chart for 1,4-Dichlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

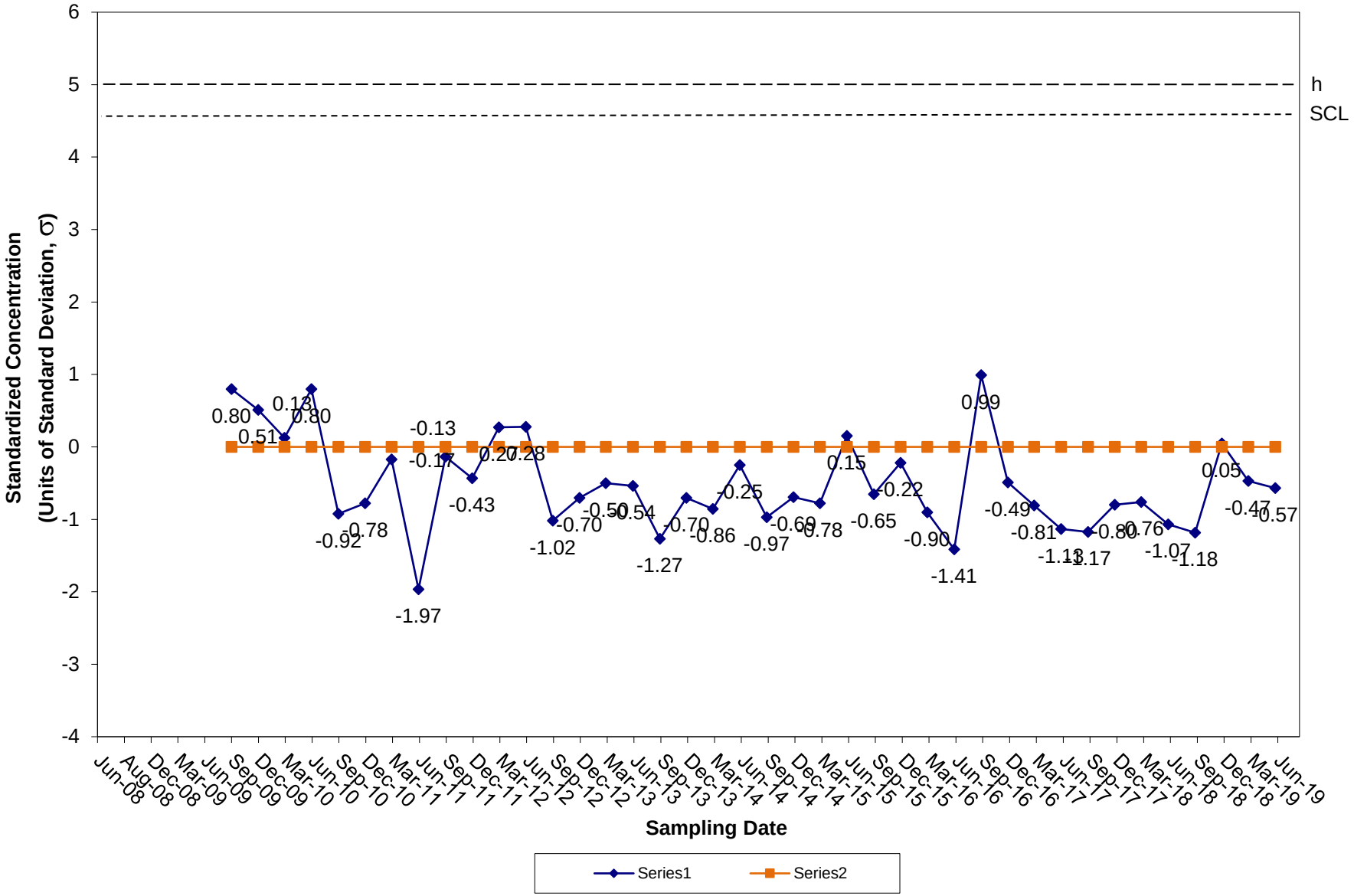

CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-14
Standardized Concentration
(Units of Standard Deviation, σ)
8
7
6
5
4
3
2
1
0
-1
-2
h
SCL
2.58
-0.19
0.64
0.70
-1.44
0.59
-0.11
1.83
2.94
0.36
1.86
0.25
0.75
0.50
-1.58
1.47
1.72
0.34
-0.38
2.52
0.25
-1.10
1.53
-1.58
0.34
1.83
0.56
0.28
-1.58
-1.44
3.00
0.39
-1.58
-1.44
1.03
0.15
-1.58
0.63
-0.19
-0.17
-1.44
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2

CUSUM Control Chart for Antimony
Tiverton Landfill Groundwater Compliance Well OW-15

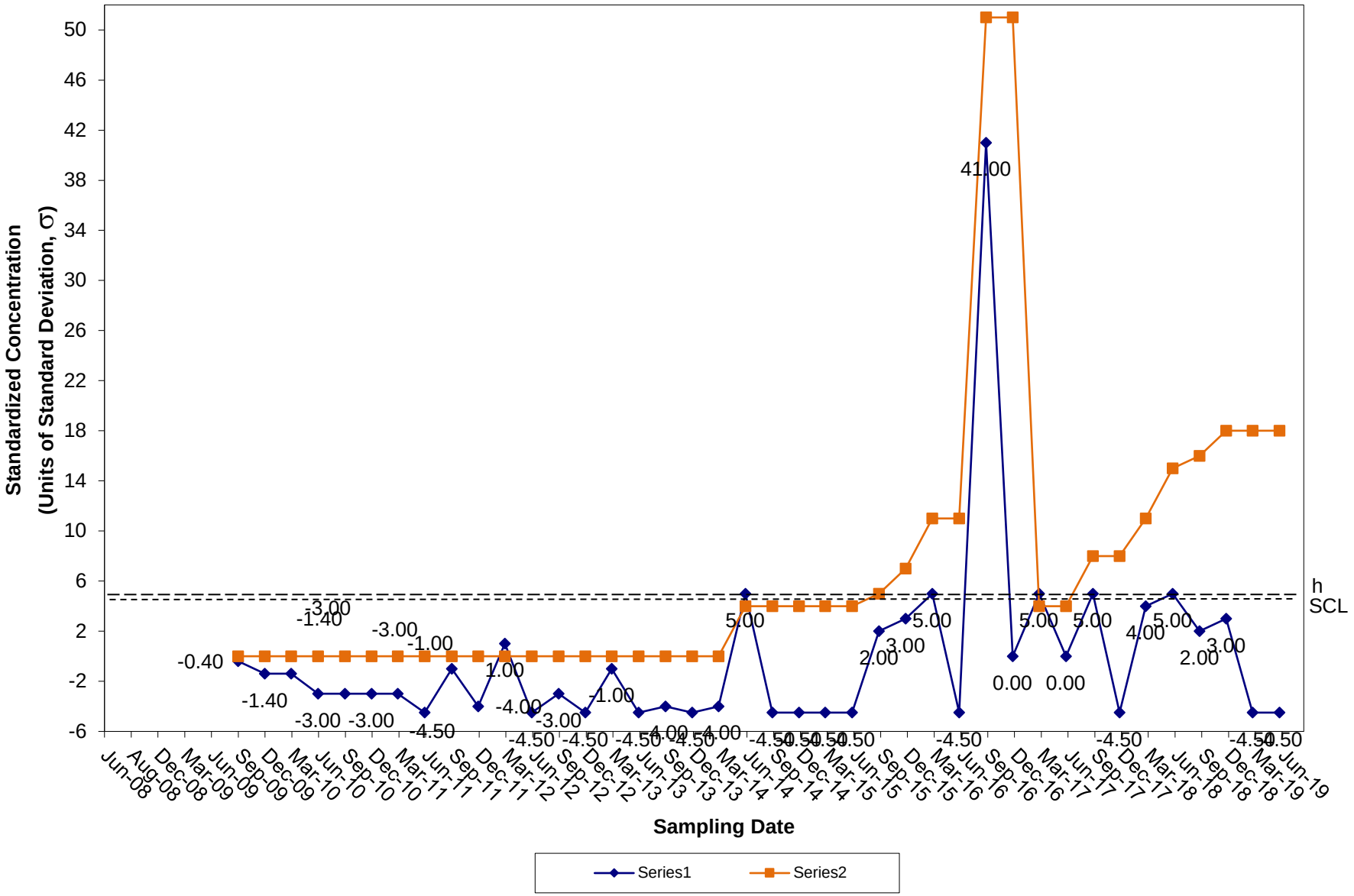



CUSUM Control Chart for Arsenic
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

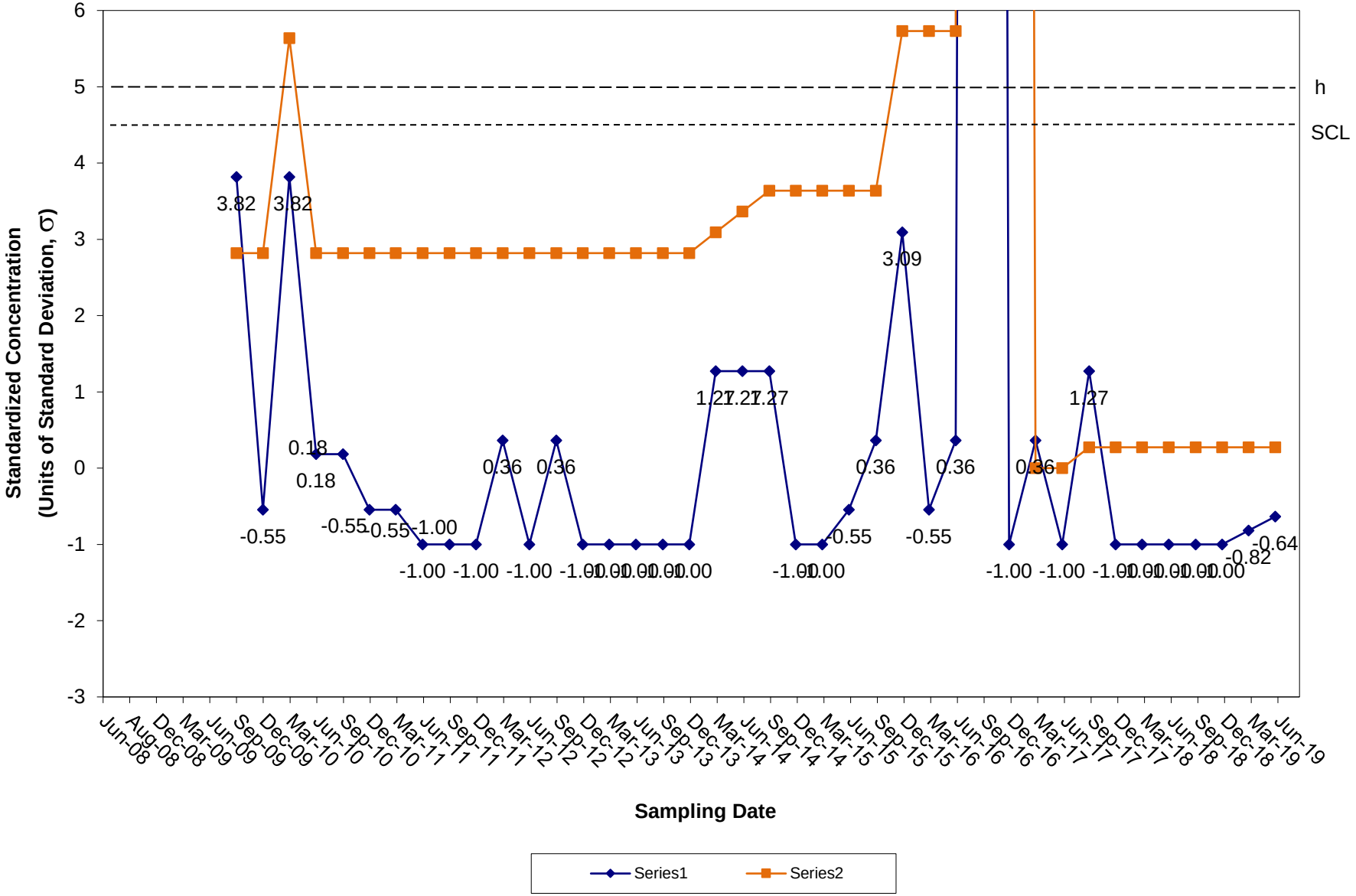
CUSUM Control Chart for Barium
Tiverton Landfill Groundwater Compliance Well OW-15



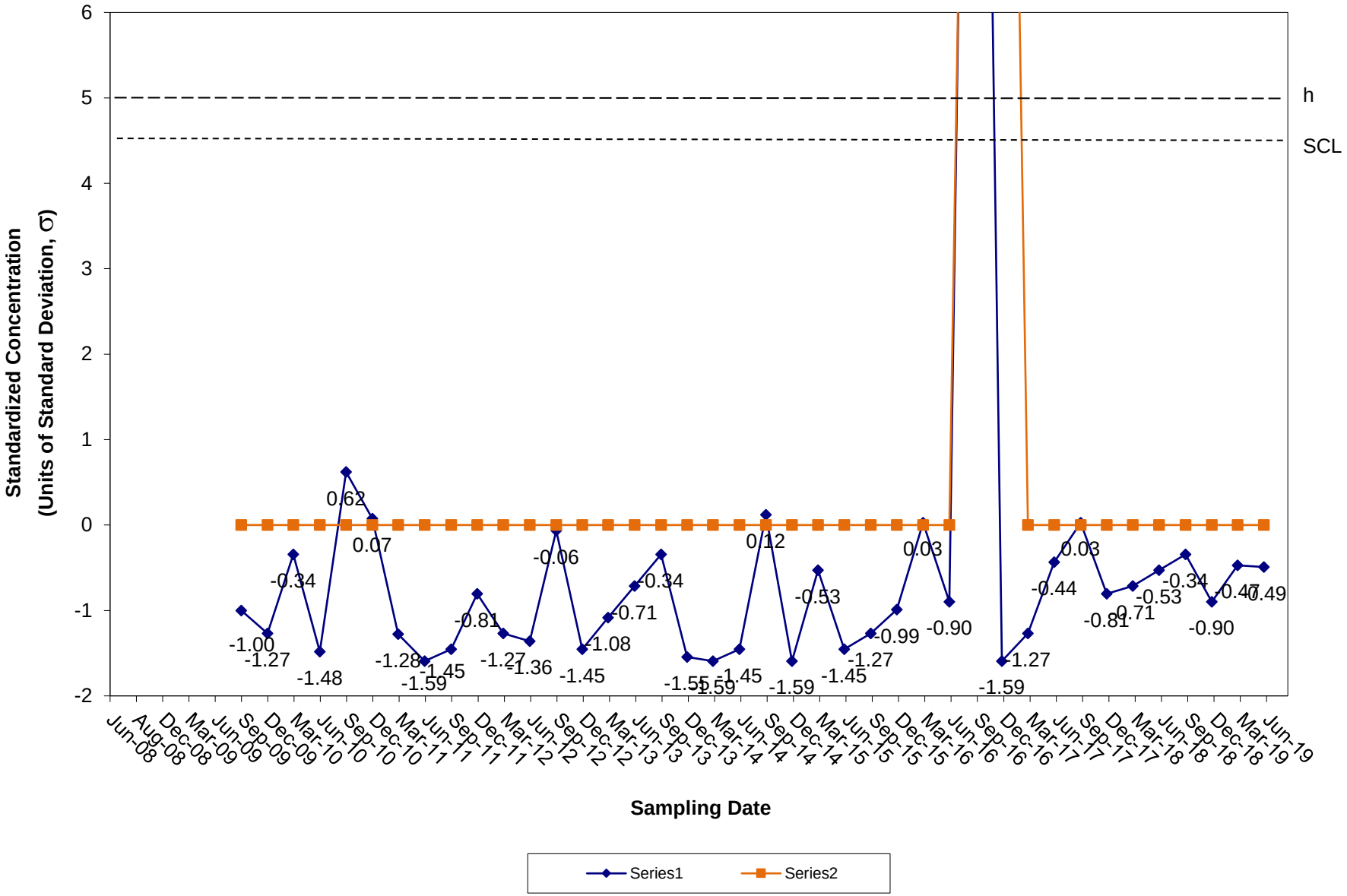
CUSUM Control Chart for Cadmium
Tiverton Landfill Groundwater Compliance Well OW-15

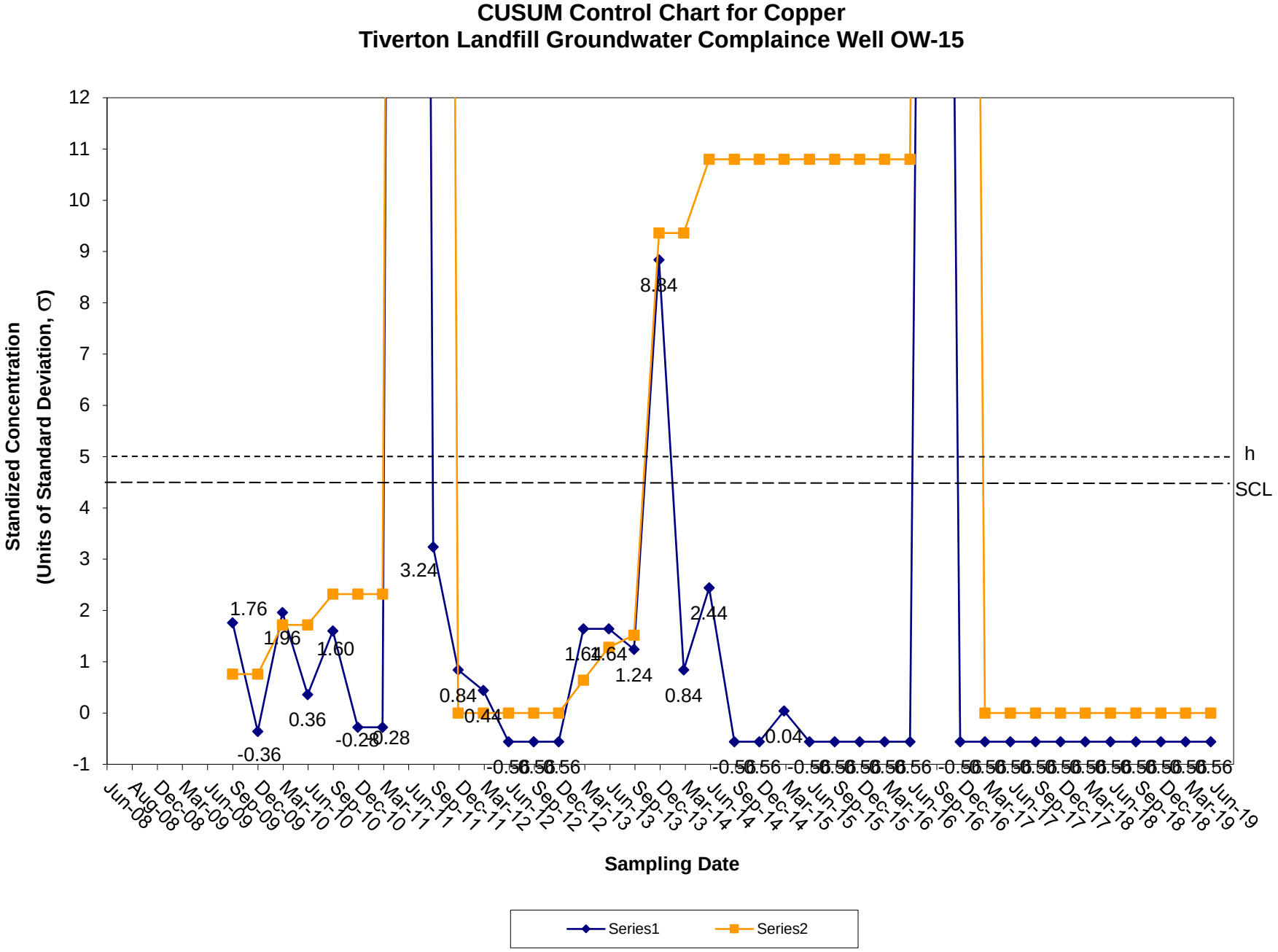


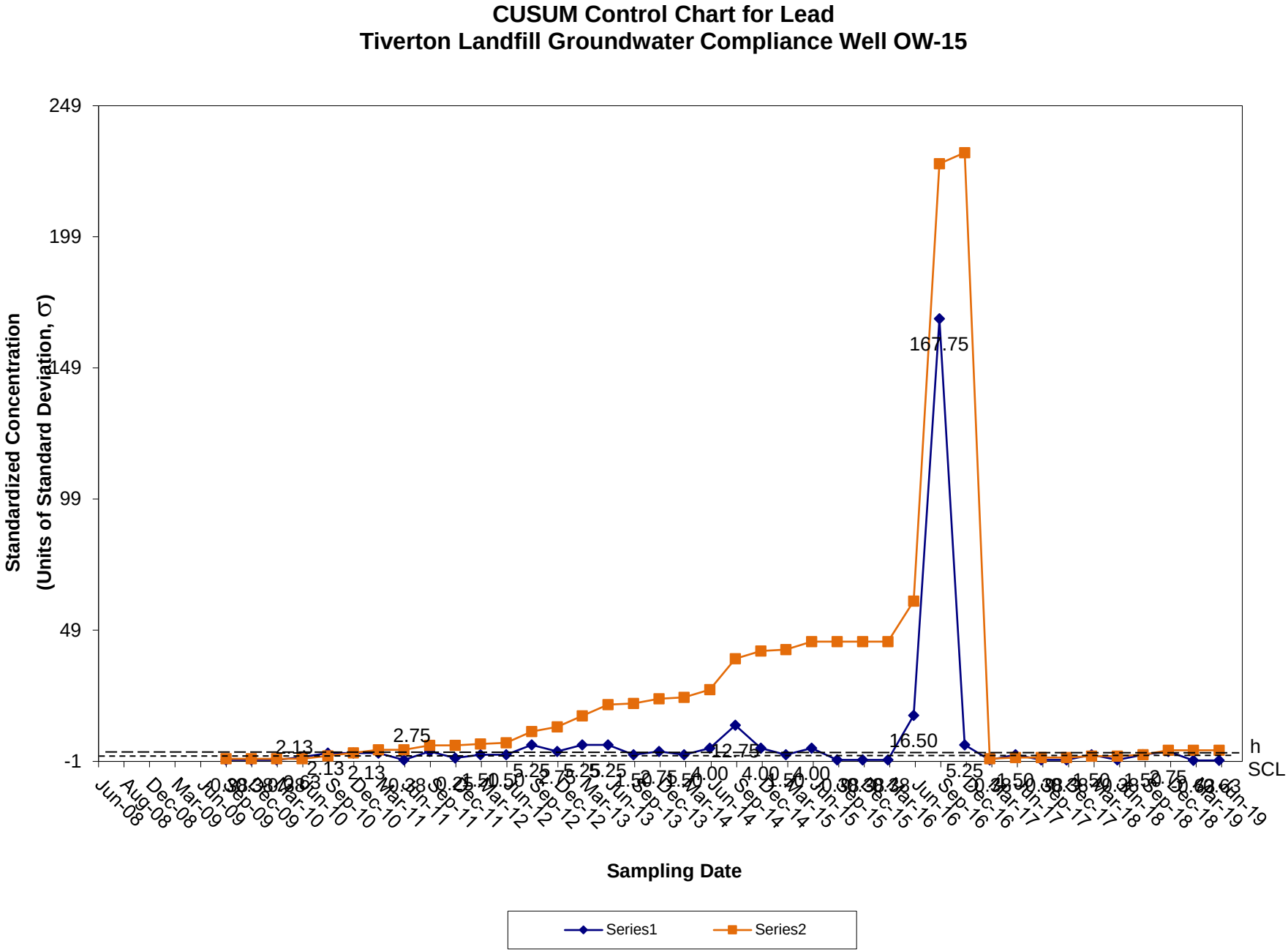
CUSUM Control Chart for Chromium
Tiverton Landfill Groundwater Compliance Well OW-15



CUSUM Control Chart for Cobalt
Tiverton Landfill Groundwater Compliance Well OW-15




CUSUM Control Chart for Copper
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Lead
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
249
199
149
99
49
-1
h
SCL
167.75
16.50
12.75
2.75
2.13
5.25
4.00
1.50
0.38
0.25
0.63
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
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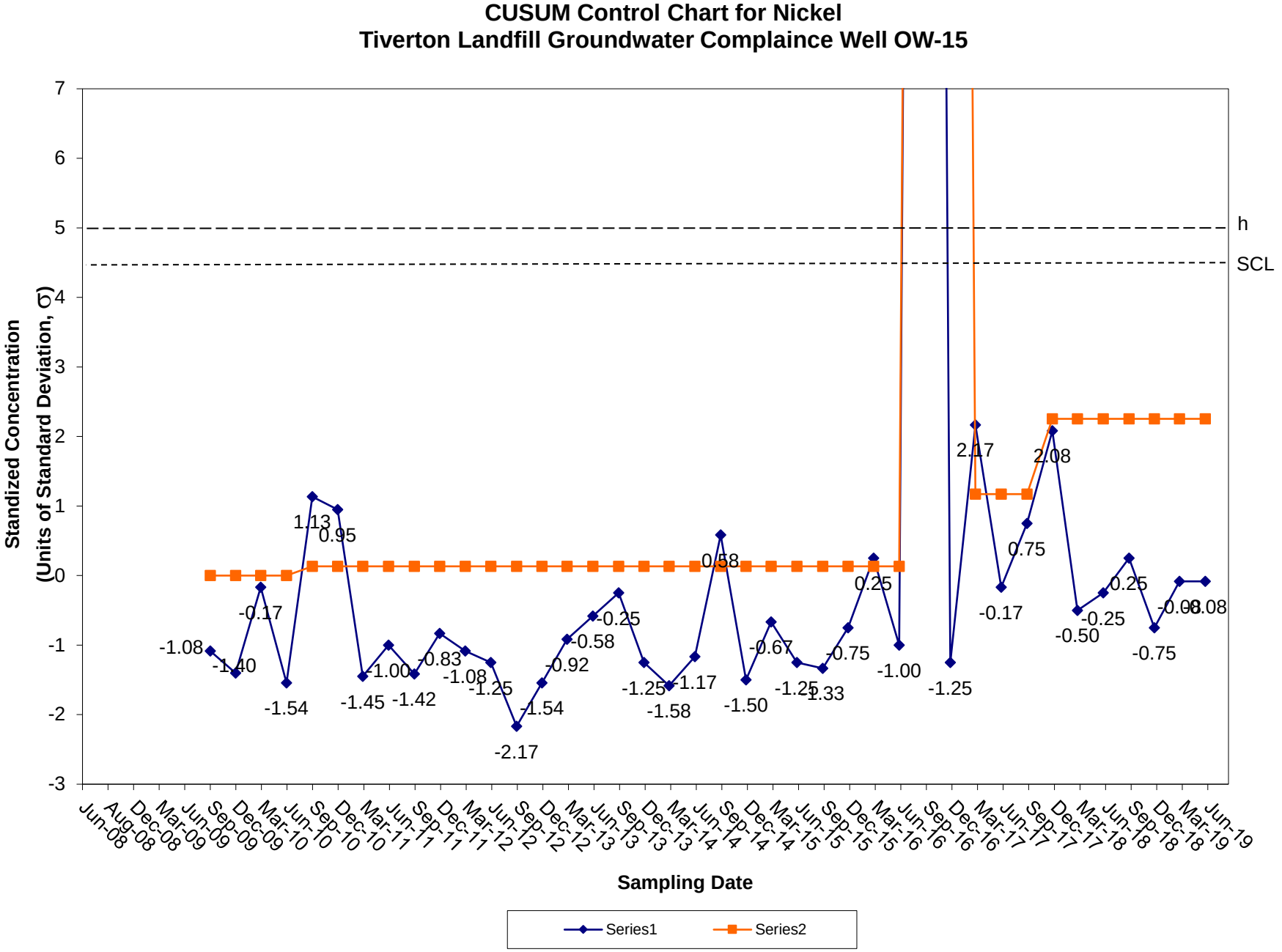
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
Sampling Date
Series1
Series2


CUSUM Control Chart for Nickel
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
7
6
5
4
3
2
1
0
-1
-2
-3
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
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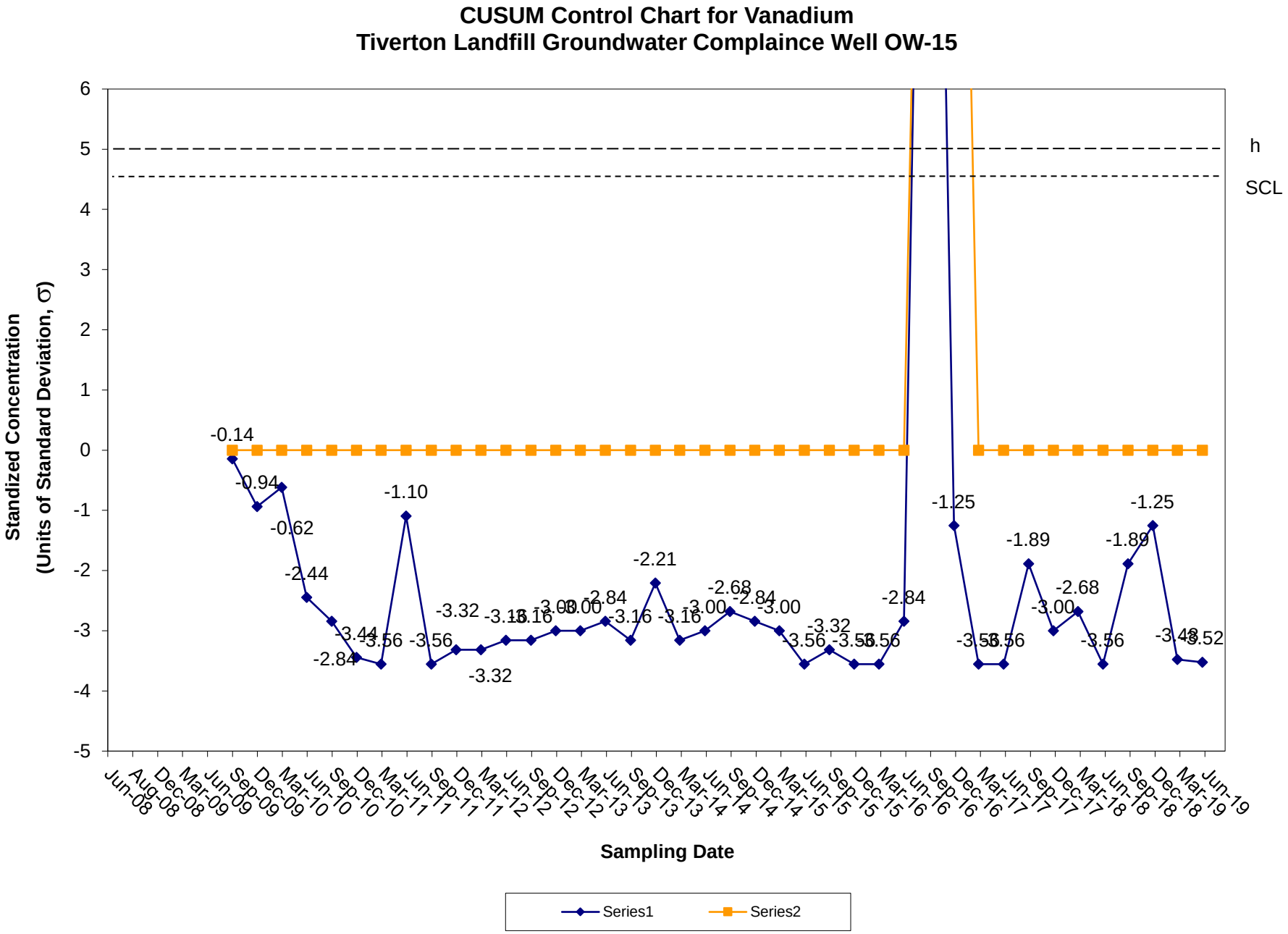
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
-1.08
-1.40
-0.17
-1.54
1.13
0.95
-1.45
-1.00
-1.42
-0.83
-1.08
-1.25
-2.17
-1.54
-0.92
-0.58
-0.25
-1.25
-1.58
-1.17
0.58
-1.50
-0.67
-1.25
-1.33
-0.75
0.25
-1.00
-1.25
2.17
-0.17
0.75
2.08
-0.50
-0.25
0.25
-0.75
-0.08
-0.08


CUSUM Control Chart for Vanadium
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
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Jun-12
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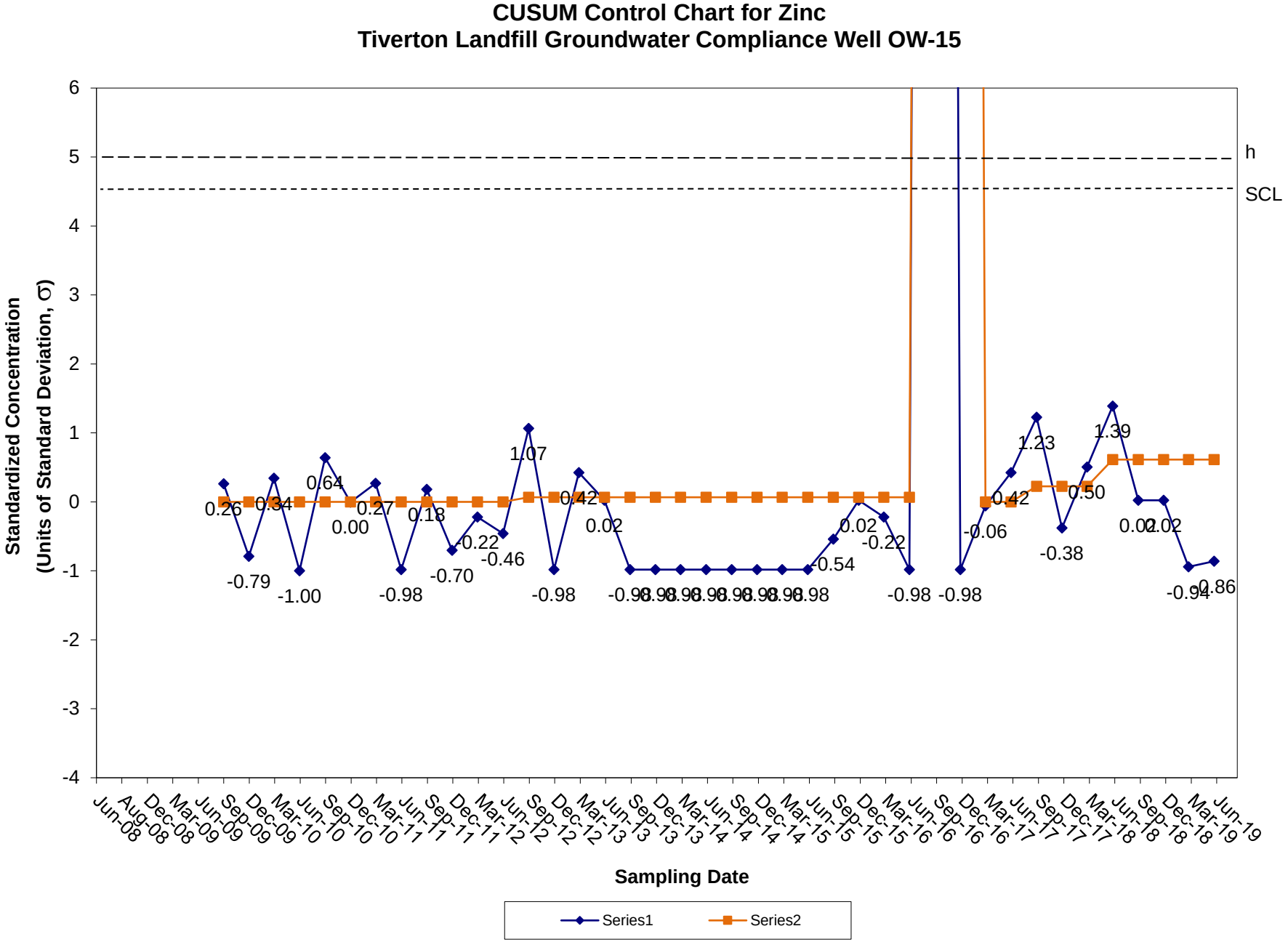
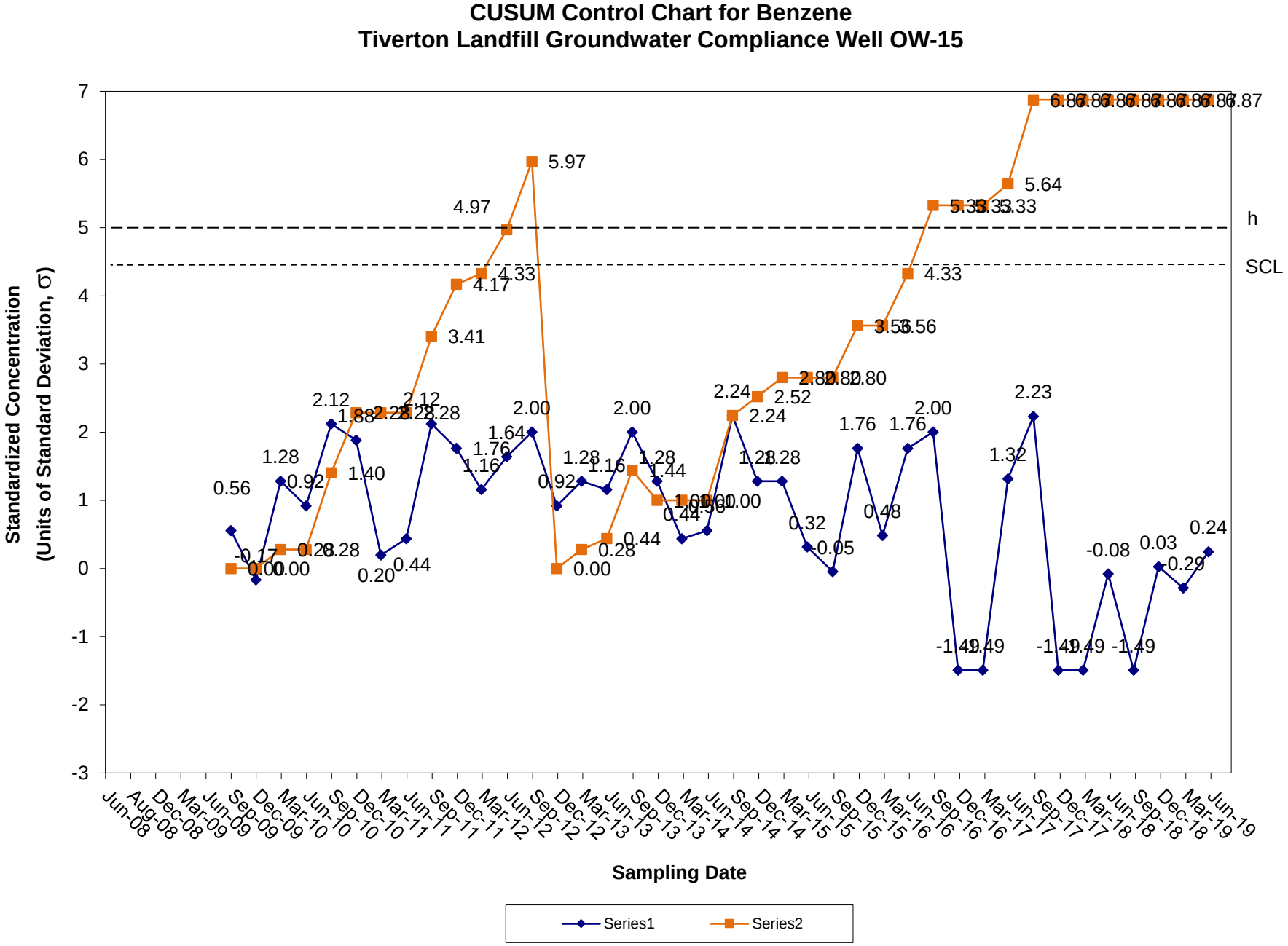
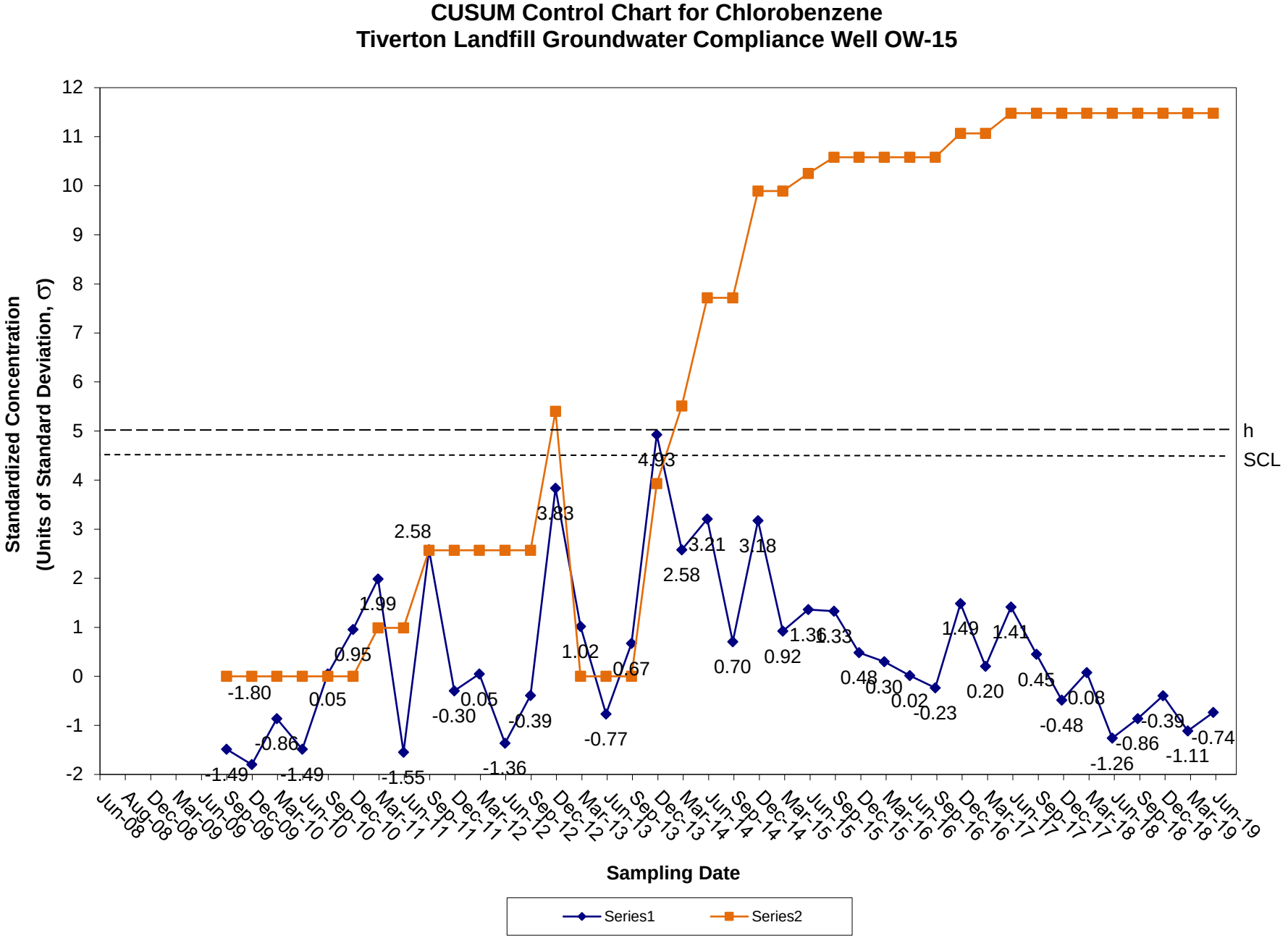
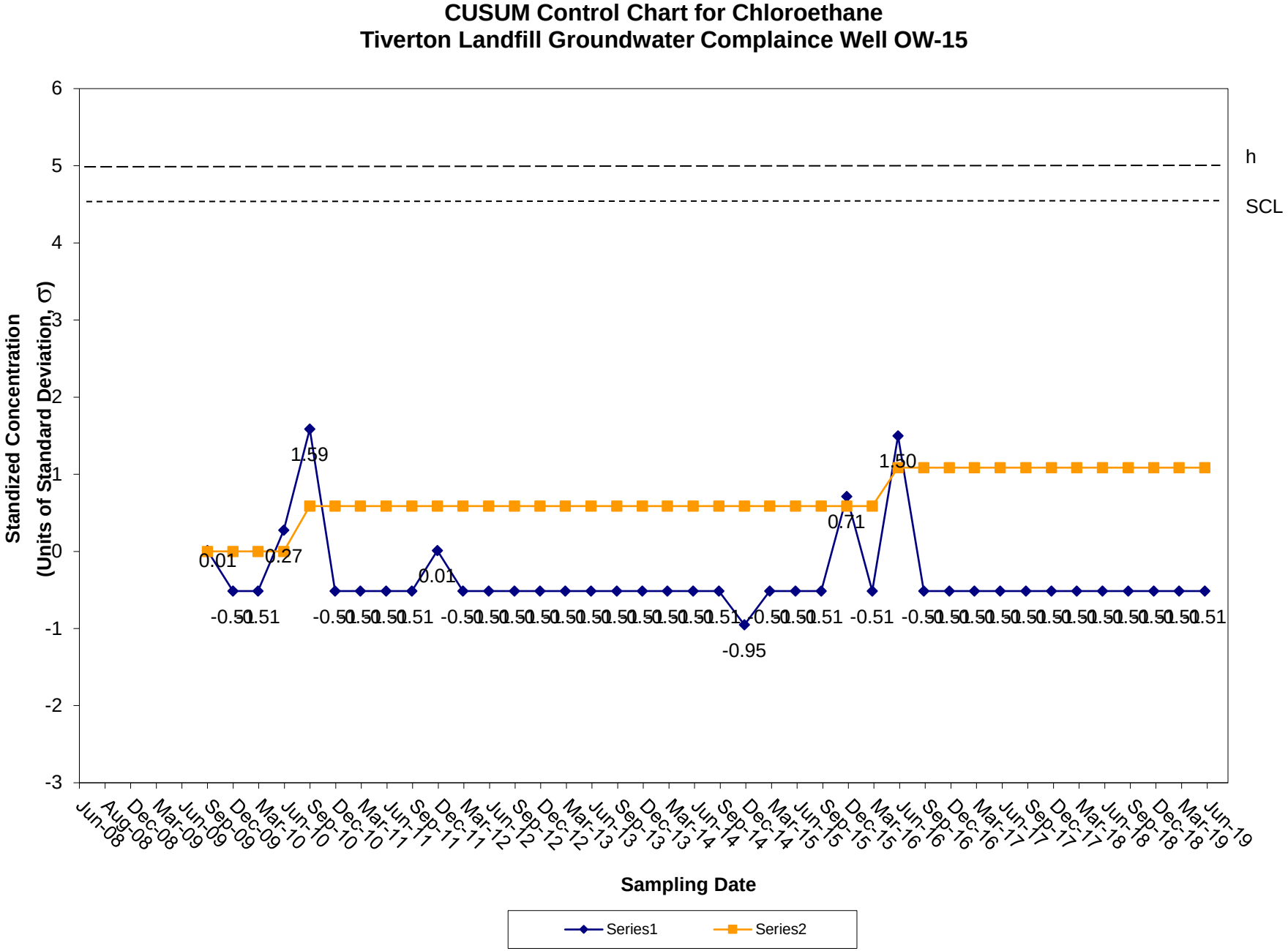
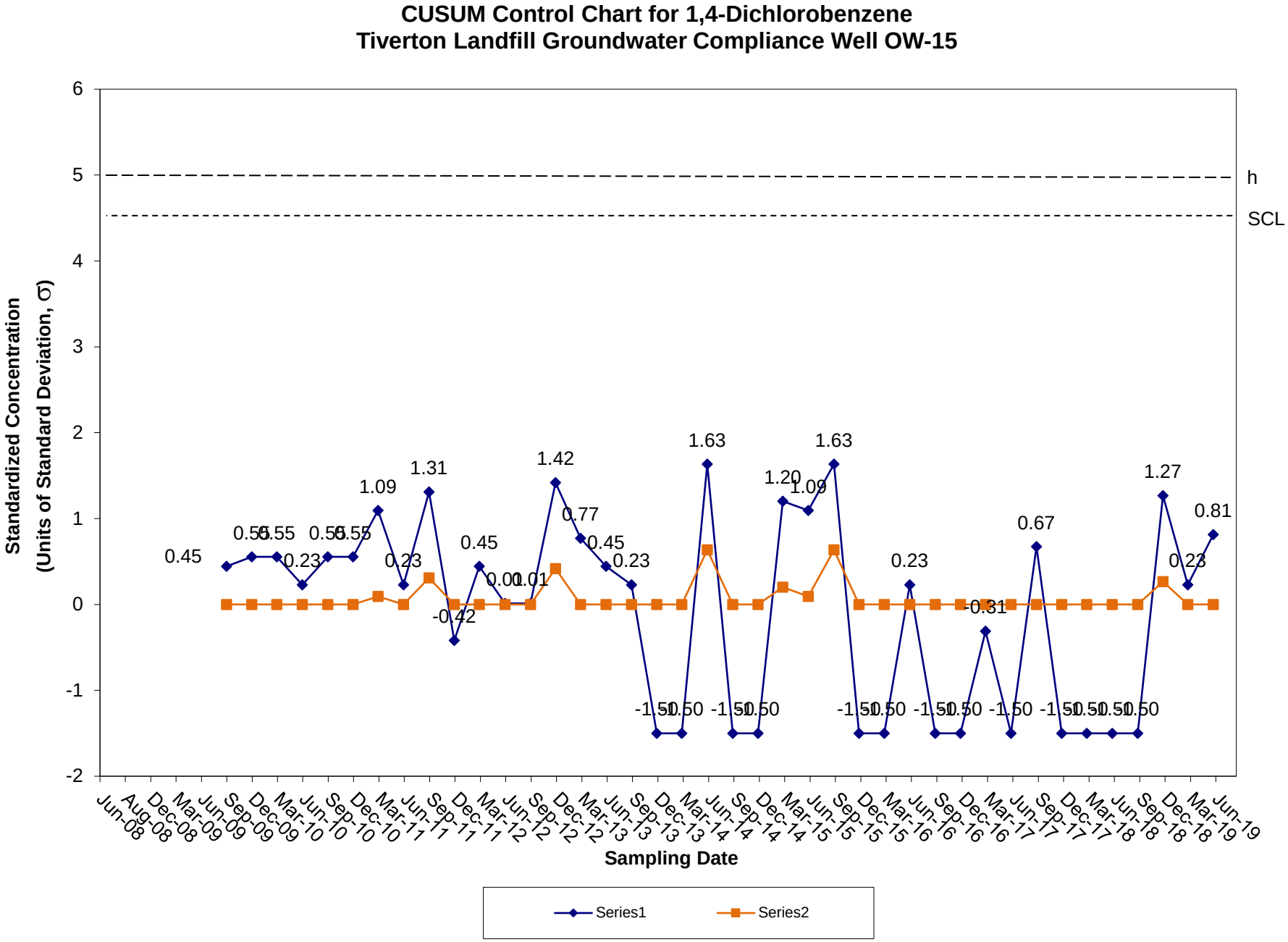
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19
-0.14
-0.94
-0.62
-2.44
-2.84
-3.44
-3.56
-1.10
-3.56
-3.32
-3.32
-2.21
-2.84
-1.25
-1.89
-2.68
-3.56
-1.89
-1.25
-3.52

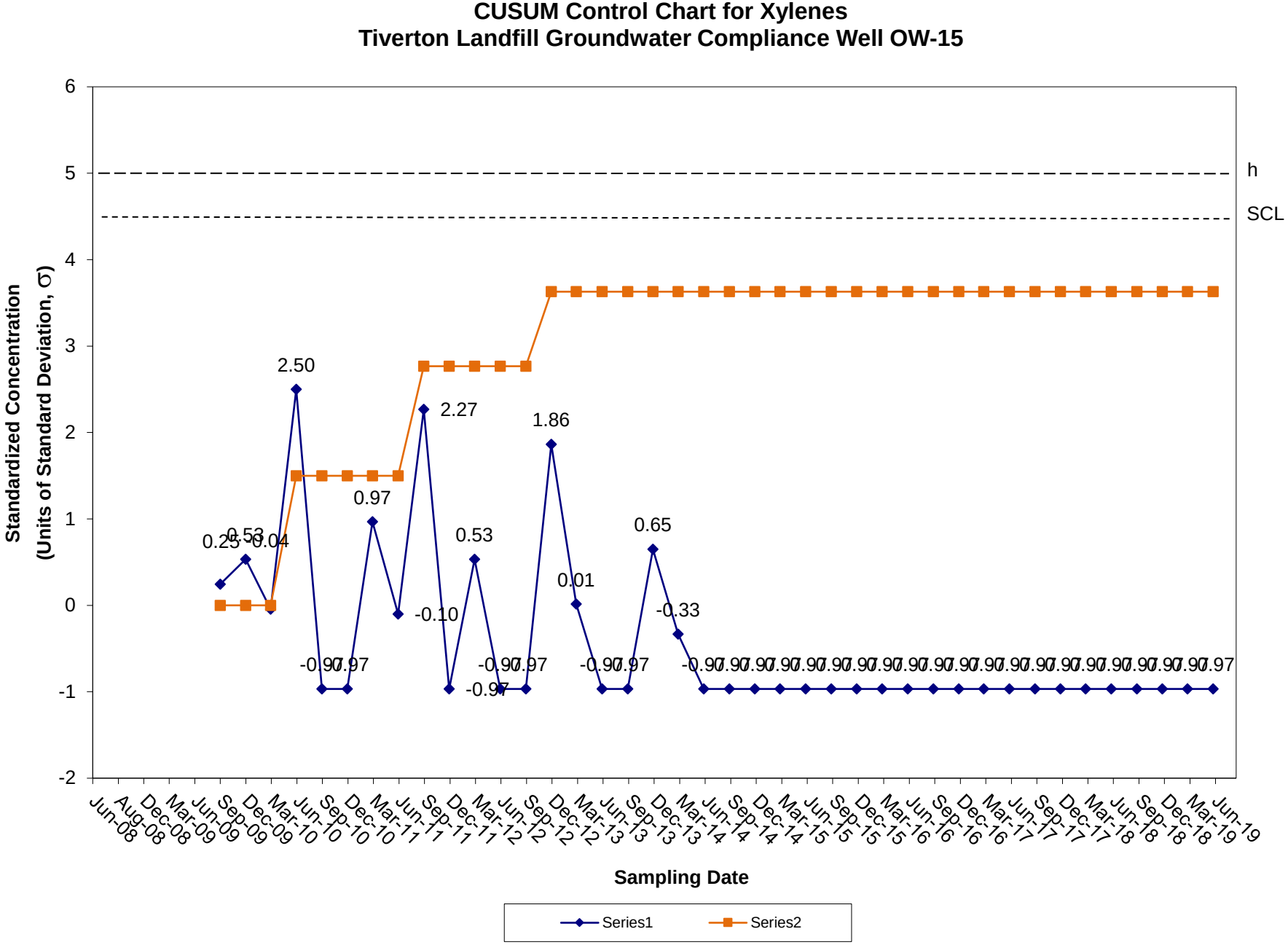

CUSUM Control Chart for Zinc
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Benzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2

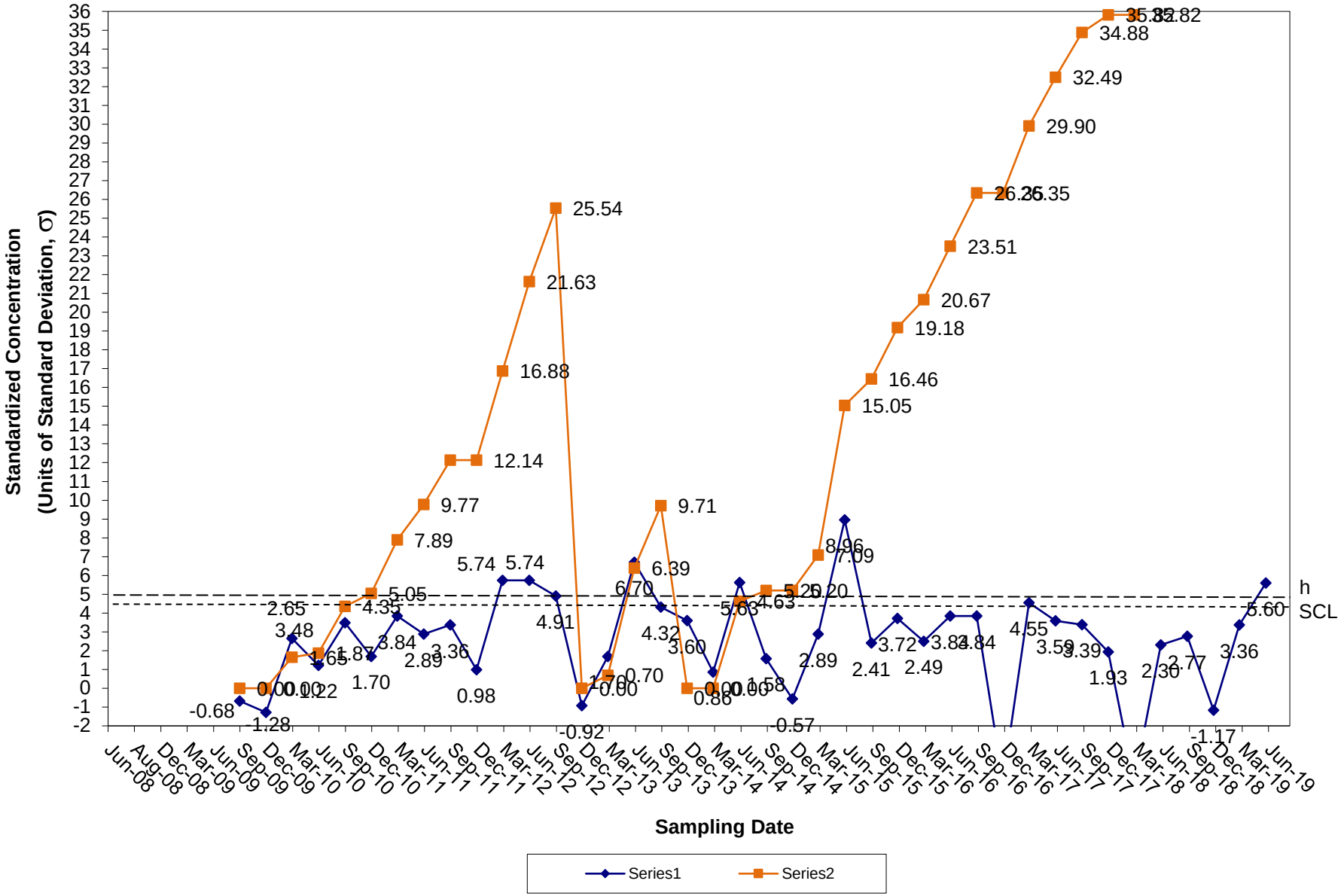

CUSUM Control Chart for Chlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
-1.80
-1.49
-0.86
-1.49
0.05
0.95
1.99
-1.55
2.58
-0.30
0.05
-1.36
-0.39
3.83
1.02
-0.77
0.67
4.93
2.58
3.21
0.70
3.18
0.92
1.36
1.33
0.48
0.30
0.02
-0.23
0.20
1.49
1.41
0.45
-0.48
0.08
-1.26
-0.86
-0.39
-1.11
-0.74


CUSUM Control Chart for Chloroethane
Tiverton Landfill Groundwater Complaince Well OW-15
Standized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
1.59
0.01
0.27
0.01
0.71
1.50
-0.95

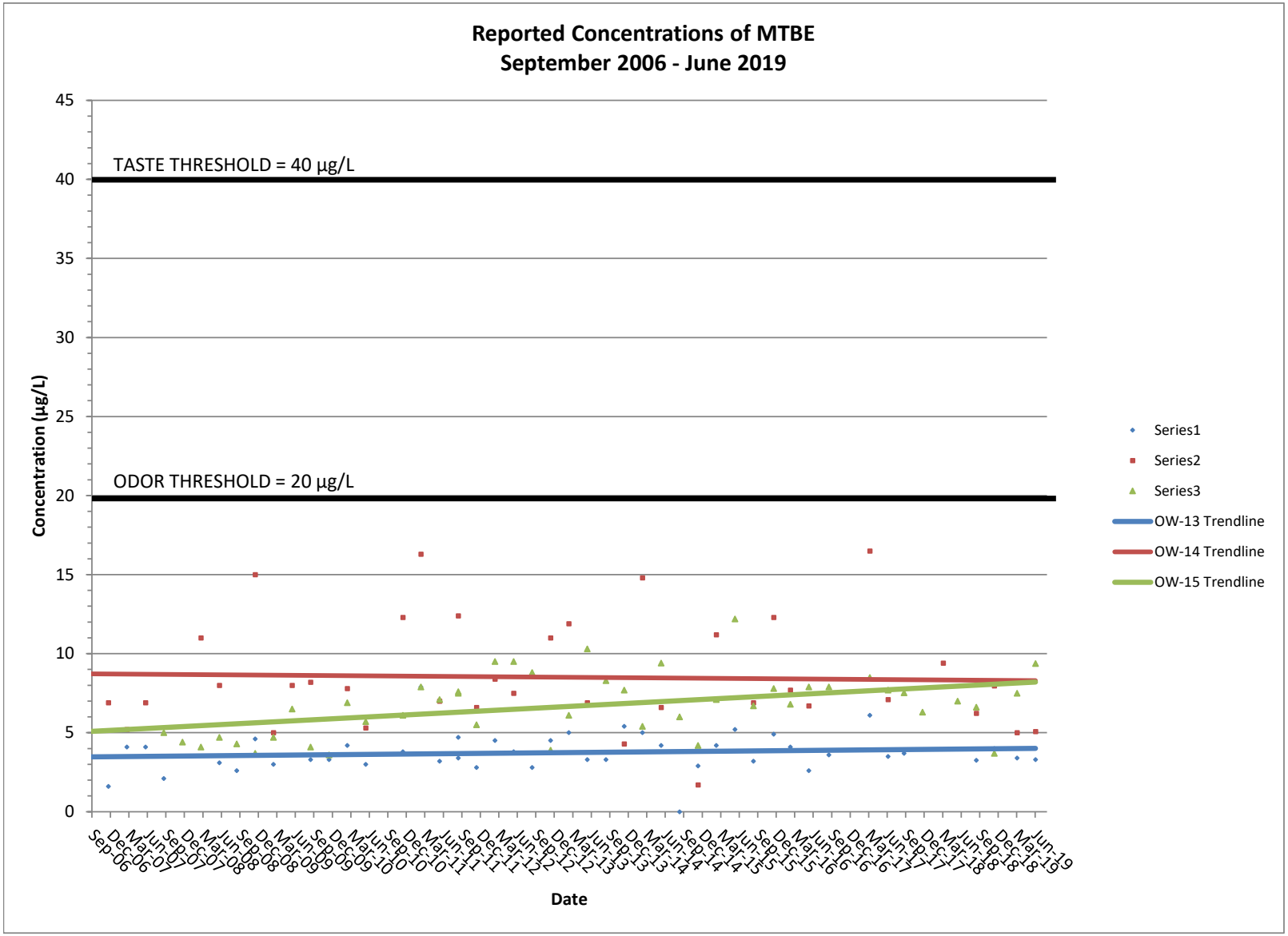

CUSUM Control Chart for 1,4-Dichlorobenzene
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2


CUSUM Control Chart for Xylenes
Tiverton Landfill Groundwater Compliance Well OW-15
Standardized Concentration
(Units of Standard Deviation, σ)
Sampling Date
h
SCL
Series1
Series2
6
5
4
3
2
1
0
-1
-2
Jun-08
Aug-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
Mar-17
Jun-17
Sep-17
Dec-17
Mar-18
Jun-18
Sep-18
Dec-18
Mar-19
Jun-19

CUSUM Control Chart for MTBE
Tiverton Landfill Groundwater Compliance Well OW-15



ATTACHMENT NO. 6
REPORTED CONCENTRATIONS OF MTBE FIGURE


Reported Concentrations of MTBE
September 2006 - June 2019
TASTE THRESHOLD = 40 µg/L
ODOR THRESHOLD = 20 µg/L
Concentration (µg/L)
Date
Series1
Series2
Series3
OW-13 Trendline
OW-14 Trendline
OW-15 Trendline

ATTACHMENT NO. 7
FIELD SAMPLING DATA SHEETS

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	6/27/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 80s

FIELD TESTING RESULTS:

SURFACE WATER LOCATION: SW-1

READING 1

pH:	7.08	pH UNITS
SPEC. COND:	0.50	mS/cm
TEMPERATURE:	22.7	^{o}C

SURFACE WATER LOCATION: SW-2

READING 1

pH:	5.89	pH UNITS
SPEC. COND:	0.397	mS/cm
TEMPERATURE:	24.8	^{o}C

SURFACE WATER LOCATION: SW-3

READING 1

pH:	6.92	pH UNITS
SPEC. COND:	0.144	mS/cm
TEMPERATURE:	20.7	^{o}C

NOTES:

All surface water samples were clear with a brownish tinge.

FIELD SAMPLING DATA SHEET

PROJECT NAME: TIVERTON LANDFILL
PARE PROJECT NO.: 94139.24

DATE: 6/27/2019
WEATHER: Sunny 80s

WELL ID: OW-9

DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	15.9	feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	0.4	gallons	PURGE RATE (GPM):	N/A
PURGER TYPE:	Peristaltic pump		ELAPSED TIME (MIN):	N/A

WATER LEVEL DATA

DEPTH:	13.7	feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing		DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	5.48	pH UNITS	5.47	pH UNITS
SPEC. COND:	0.056	mS/cm	0.055	mS/cm
TEMPERATURE:	14.8	^{o}C	14.9	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.
Samples were collected at 4:00 PM.
Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	6/27/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 80s

WELL ID: OW-12 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	16.1 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	2.2 gallons	PURGE RATE (GPM):	0.2 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	7 +/-

WATER LEVEL DATA

DEPTH:	3.5 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.02	pH UNITS	6.03	pH UNITS
SPEC. COND:	0.403	mS/cm	0.395	mS/cm
TEMPERATURE:	12.4	^{o}C	12.3	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 3:00 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	6/27/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 80s

WELL ID: OW-13 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	14.5 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.70 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	4.0 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.45	pH UNITS	6.45	pH UNITS
SPEC. COND:	0.942	mS/cm	0.937	mS/cm
TEMPERATURE:	14.7	^{o}C	14.6	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 6:00 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	6/27/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 80s

WELL ID: OW-14 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	10.7 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.1 gallons	PURGE RATE (GPM):	N/A
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	N/A

WATER LEVEL DATA

DEPTH:	6.5 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.31	pH UNITS	6.31	pH UNITS
SPEC. COND:	1.382	mS/cm	1.36	mS/cm
TEMPERATURE:	18.3	^{o}C	18.3	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of supernatant sampled after a 15-minute decanting period.

Samples were collected at 1:00 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	6/27/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 80s

WELL ID: OW-15 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	16.9 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.6 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	7.2 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.52	pH UNITS	6.53	pH UNITS
SPEC. COND:	1.293	mS/cm	1.309	mS/cm
TEMPERATURE:	14.9	^{o}C	14.9	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 2:00 PM.

Methane Reading (% LEL): >99%

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	6/27/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 80s

WELL ID: OW-7 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	11.8 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	1.9 gallons	PURGE RATE (GPM):	0.1 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	15 +/-

WATER LEVEL DATA

DEPTH:	0 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.47	pH UNITS	6.47	pH UNITS
SPEC. COND:	0.503	mS/cm	0.503	mS/cm
TEMPERATURE:	13.4	^{o}C	13.3	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 5:30 PM.

Methane Reading (% LEL): 0

FIELD SAMPLING DATA SHEET

PROJECT NAME:	TIVERTON LANDFILL	DATE:	6/27/2019
PARE PROJECT NO.:	94139.24	WEATHER:	Sunny 80s

WELL ID: OW-16 DIAMETER (INCHES): 2

PURGE DATA

WELL DEPTH:	45.8 feet	MEASURE POINT:	Top of Casing
PURGE VOLUME (GAL):	7.5 gallons	PURGE RATE (GPM):	0.3 +/-
PURGER TYPE:	Peristaltic pump	ELAPSED TIME (MIN):	20 +/-

WATER LEVEL DATA

DEPTH:	0.8 feet	ELEVATION:	See Site Plan
MEASURE POINT:	Top of Casing	DEVICE:	Water Level Indicator

FIELD TESTING RESULTS

	READING 1		READING 2	
pH:	6.52	pH UNITS	6.52	pH UNITS
SPEC. COND:	0.532	mS/cm	0.542	mS/cm
TEMPERATURE:	12.8	^{o}C	13.0	^{o}C

NOTES:

Samples were noted as generally clear and low in turbidity based on visual inspections of samples.

Samples were collected at 5:00 PM.

Methane Reading (% LEL): 0

APPENDIX L

Bedrock Well Installation Report

Engineers | Scientists | Planners

PARECORP.COM

PARE CORPORATION

December 4, 2017

William Anderson, P.E., Director Tiverton DPW
Town of Tiverton
343 Highland Road
Tiverton, Rhode Island 02878

Re: **Bedrock Well Installation**
Tiverton Municipal Sanitary Landfill
Pare Project No. 94139.01/Task 27

Dear Mr. Anderson:

On October 4 and 5, 2017, a bedrock well (OW-16) was installed at the Tiverton Landfill in Tiverton, Rhode Island by New England Boring Contractors and observed by Pare Corporation (Pare). The bedrock well was installed using a track mounted drill rig with an air drill. The bedrock well was constructed using 4-inch steel casing, slotted PVC pipe, and solid PVC pipe.

The 4-inch casing was installed to a depth of 42 feet below the ground surface to approximately 2 feet above the ground surface. The top of bedrock was discovered at 10.5 feet below the ground surface with groundwater first being discovered at 17 feet below the ground surface. At the beginning of the day on October 5, the groundwater level has risen to 2 feet below the ground surface. From a depth of 32 feet to 42 feet below the ground surface slotted PVC pipe was installed. From a depth of 32 feet to the top of casing, solid PVC pipe was installed. Between the outside of the PVC pipe and the inside of the steel casing, holliston sand, bentonite, grout, and quickcrete were installed. Holliston sand was installed from the bottom of the hole to 15 feet below the ground surface. A bentonite seal was established from the top of rock to 15 feet below the ground surface. The rest of the hole was filled with grout. A detail drawing of the bedrock well and site photography are attached.

Personnel from Pare went to sample OW-16 and the adjacent overburden well OW-7 on November 8, 2017. During the purge and sampling of OW-16, the water level of OW-7 was unchanged, implicating that the wells are not directly connected. Attached are an analytical summary table and analytical results for the sampling of both wells.

Should you have any questions regarding this letter or the attached data, please feel free to contact the undersigned at (401) 334-4100, thank you.

Very truly yours,

Timothy P. Thies, P.E.
Vice President

TPT/TCJ/abv

8 BLACKSTONE VALLEY PLACE LINCOLN, RI 02865
T 401.334.4100 F 401.334.4108

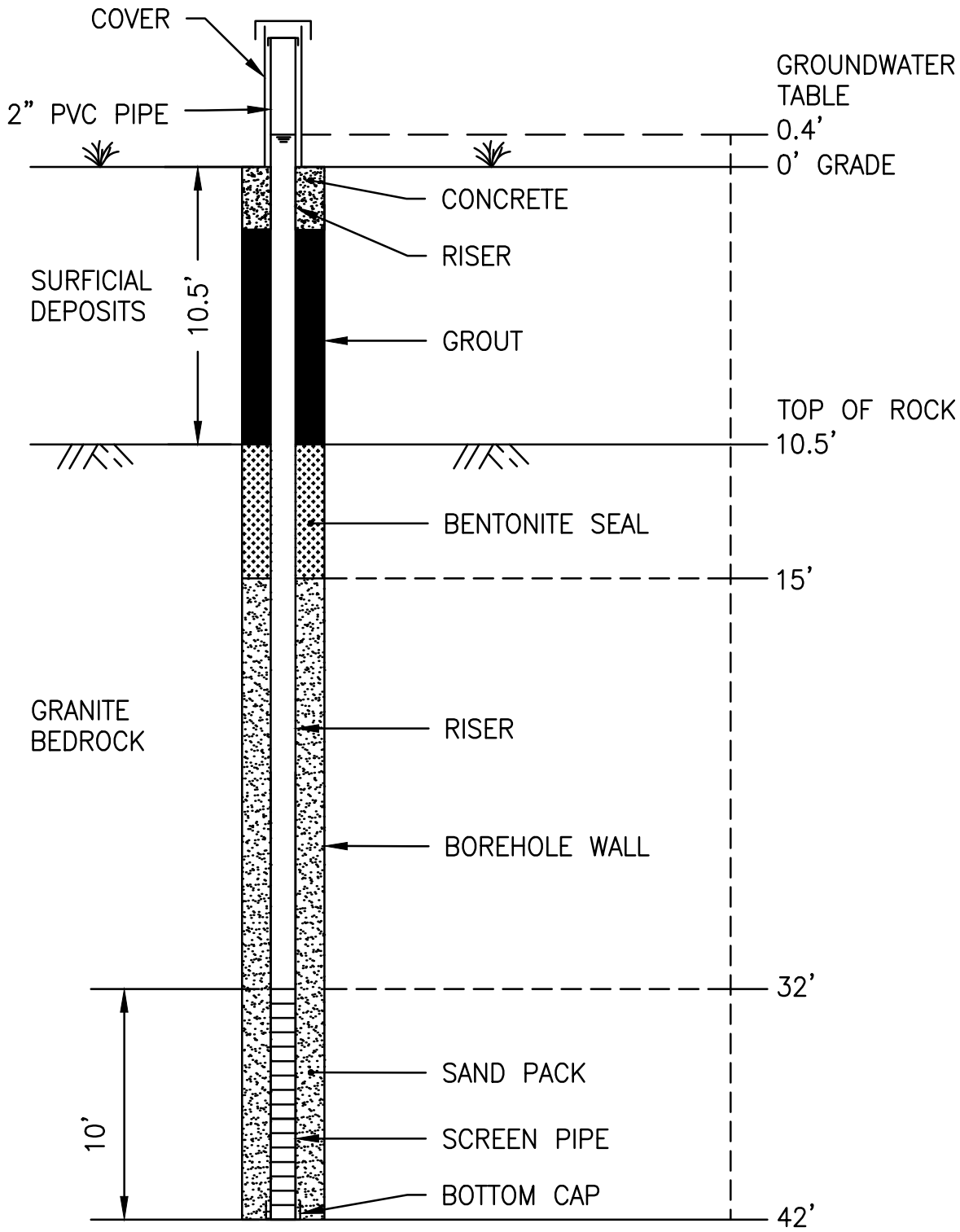
10 LINCOLN ROAD, SUITE 210 FOXBORO, MA 02035
T 508.543.1755 F 508.543.1881

William Anderson, P.E., Director Tiverton DPW December 4, 2017

Attachments: Bedrock Well Detail
Site Photography
Analytical Summary Table
Analytical Data Report

cc: Jay Lambert, Tiverton Landfill Subcommittee (w/encl.)
Matthew Wojcik, Tiverton Town Administrator (w/encl.)
Travis C. Johnson, Pare Corporation (w/o encl.)
George G. Palmisciano, P.E. Pare Corporation (w/o encl.)

Z:\JOBS\01 - Earlier Jobs\94139.00\94139.01\Task 027 Bedrock Well Installation\Bedrock Well Letter Report



BEDROCK WELL OW-16 DETAIL

NOT TO SCALE

PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

PROJECT NO. 94139.01/27

DATE: DECEMBER 2017

BEDROCK WELL DETAIL

TIVERTON MUNICIPAL SANITARY LANDFILL

TIVERTON

RHODE ISLAND

Tiverton Landfill Monitoring Well Sampling Results					
				11/8/2017	
				Overburden Well	Bedrock Well
	Parameter	**Threshold Value**	**Method Detection Limit**	**OW-7**	**OW-16**
METALS	Antimony	0.006 mg/L[1]	0.001 mg/L[1]	ND	ND
	Arsenic	0.010 mg/L[1]	0.002 mg/L[1]	ND	ND
	Barium	2 mg/L[1]	0.001 mg/L[1]	0.035	0.100
	Beryllium	0.004 mg/L[1]	0.001 mg/L[1]	ND	ND
	Cadmium	0.005 mg/L[1]	0.001 mg/L[1]	ND	ND
	Chromium	0.1 mg/L[1]	0.001 mg/L[1]	0.005	0.005
	Cobalt	0.73 mg/L[5]	0.001 mg/L[5]	0.018	0.005
	Copper	1.3 mg/L[1]	0.005 mg/L[1]	0.005	ND
	Lead	0.015 mg/L[1]	0.001 mg/L[1]	ND	ND
	Mercury	0.002 mg/L[1]	0.0002 mg/L[1]	ND	ND
	Nickel	0.1 mg/L[2]	0.001 mg/L[2]	0.021	0.010
	Selenium	0.05 mg/L[1]	0.002 mg/L[1]	ND	0.005
	Silver	0.1 mg/L[2,3]	0.001 mg/L[2,3]	ND	ND
	Thallium	0.002 mg/L[1]	0.0002 mg/L[1]	ND	ND
	Tin	22 mg/L[5]	0.002 mg/L[5]	ND	ND
	Vanadium	0.26 mg/L[5]	0.001 mg/L[5]	ND	ND
	Zinc	2 - 5 mg/L[2,3]	0.005 mg/L[2,3]	0.020	0.021
VOC's	MTBE	20-40 µg/L[4]	1.0 µg/L[4]	5.9	4.6
	= Exceedance of Threshold Value				

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 7K09004
Client Project: 94139 - Tiverton Landfill

Report Date: 16-November-2017

Prepared for:

Travis Johnson
Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02865

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com

Project: 94139 - Tiverton Landfill

Case Number: 7K09004

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
7K09004-01	OW-7	Water	11/08/2017	11/09/2017
7K09004-02	OW-16	Water	11/08/2017	11/09/2017

Project: 94139 - Tiverton Landfill
Case Number: 7K09004

Request for Analysis

OW-16

Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C
Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

OW-7

Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Cobalt	EPA 6010C
Copper	EPA 6010C
Lead	EPA 6010C
Mercury	EPA 7470A
Nickel	EPA 6010C
Selenium	EPA 6010C

Silver	EPA 6010C
Thallium	EPA 7010
Tin	EPA 6010C
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

Project: 94139 - Tiverton Landfill
Case Number: 7K09004

Case Narrative

CASE NARRATIVE:

Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Metals

All analyses were performed according to NETLAB's documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.

Volatile Organic Compounds

All samples were analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control criteria. Those compounds in italics were qualitatively screened via reconstructed ion chromatography and no detections were identified to the listed PQLs.

Sample: OW-7 Case Number: 7K09004

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.035	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.005	0.001
7440-48-4	Cobalt	6010C	0.018	0.001
7440-50-8	Copper	6010C	0.005	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.021	0.001
7782-49-2	Selenium	6010C	ND	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.020	0.005

ND = Not Detected

Sample: OW-16 Case Number: 7K09004

CAS RN	Common Name	Method	Result, ppm	PQL (ppm)
7440-36-0	Antimony	6010C	ND	0.001
7440-38-2	Arsenic	6010C	ND	0.002
7440-39-3	Barium	6010C	0.100	0.001
7440-41-7	Beryllium	6010C	ND	0.001
7440-43-9	Cadmium	6010C	ND	0.001
7440-47-3	Chromium	6010C	0.005	0.001
7440-48-4	Cobalt	6010C	0.005	0.001
7440-50-8	Copper	6010C	ND	0.005
7439-92-1	Lead	6010C	ND	0.001
7439-97-6	Mercury	7470A	ND	0.0002
7440-02-0	Nickel	6010C	0.010	0.001
7782-49-2	Selenium	6010C	0.005	0.002
7440-22-44	Silver	6010C	ND	0.001
7440-28-0	Thallium	6010C	ND	0.0002
7440-34-5	Tin	6010C	ND	0.002
7440-62-2	Vanadium	7010	ND	0.001
7440-66-6	Zinc	6010C	0.021	0.005

ND = Not Detected

Sample: OW-7 Case Number: 7K09004

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-7 Case Number: 7K09004
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	5.9	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	108	70-130
1,2-Dichloroethane d4	100	70-130
4 BFB	103	70-130

ND = Not Detected

Sample: OW-16 Case Number: 7K09004

Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethylene	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
96-18-4	1,2,3-Trichloropropane	ND	1.0
96-12-8	1,2-Dibromo-3-chloropropane(DBCP)	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
591-78-6	2-Hexanone (Methyl butyl ketone)	ND	5.0
108-10-1	4-Methyl-2-pentanone	ND	5.0
67-64-1	Acetone	ND	5.0
75-05-8	*Acetonitrile (Methyl cyanide)*	*ND*	*5.0*
107-02-8	Acrolein	ND	5.0
107-13-1	Acrylonitrile	ND	5.0
107-05-1	*Allyl chloride*	*ND*	*5.0*
71-43-2	Benzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform (Tribromomethane)	ND	1.0
75-15-0	Carbon disulfide	ND	5.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane (Ethyl chloride)	ND	1.0
67-66-3	Chloroform (Trichloromethane)	ND	1.0
126-99-8	*Chloroprene*	*ND*	*5.0*
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1.0
97-63-2	*Ethyl methacrylate*	*ND*	*5.0*
100-41-4	Ethylbenzene	ND	1.0
78-83-1	*Isobutyl alcohol*	*ND*	*20.0*
465-73-6	*Isodrin*	*ND*	*5.0*
541-73-1	m-Dichlorobenzene	ND	1.0
126-98-7	*Methacrylonitrile*	*ND*	*10.0*
74-83-9	Methyl bromide (Bromomethane)	ND	1.0

Sample: OW-16 Case Number: 7K09004
Method: 8260C

CAS RN	Common Name	Result, ppb	PQL (ppb)
74-87-3	Methyl chloride (Chloromethane)	ND	1.0
78-93-3	Methyl ethyl ketone (MEK)	ND	5.0
74-88-4	*Methyl iodide (Iodomethane)*	*ND*	*5.0*
80-62-6	*Methyl methacrylate*	*ND*	*10.0*
74-95-3	Methylene bromide (Dibromomethane)	ND	1.0
75-09-2	Methylene chloride (Dichloromethane)	ND	1.0
95-50-1	o-Dichlorobenzene	ND	1.0
106-46-7	p-Dichlorobenzene	ND	1.0
107-12-0	*Propionitrile (Ethyl cyanide)*	*ND*	*20.0*
100-42-5	Styrene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
1634-04-4	tert-Butylmethylether	4.6	1.0
108-88-3	Toluene	ND	1.0
156-60-5	trans-1,2-Dichloroethylene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
110-57-6	*trans-1,4-Dichloro-2-butene*	*ND*	*5.0*
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	ND	1.0
108-05-4	*Vinyl acetate*	*ND*	*5.0*
75-01-4	Vinyl chloride (Chloroethene)	ND	1.0
1330-20-7	Xylene (total)	ND	1.0

Surrogates:

Compound	% Recovery	Limits
Toluene d8	96	70-130
1,2-Dichloroethane d4	94	70-130
4 BFB	103	70-130

ND = Not Detected

NEW ENGLAND TESTING LABORATORY, INC.
59 Greenhill Street
West Warwick, RI 02893
1-888-863-8522

7K0 9004

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME/LOCATION
9413201/27	TIVERTON LANDFILL

CLIENT: PARE CORPORATION
REPORT TO: tjohnson@parecorp.com
INVOICE TO: ACCOUNTING

DATE	TIME	COMP	GRAB	SAMPLE I.D.	AQUEOUS	SOIL	OTHER	NO. OF CONTAINERS	PRESERVATIVE	TESTS** App A Metals Hg, 5n	App A VOCs	REMARKS
11/8	3:15		X	OW-7	X			3	HCl, HNO3	X	X	
	2:45		X	OW-16	X			3	↓	X	X	

Sampled by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Laboratory Remarks:
	11/8 3:30			Temp. received: 3°
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Cooled ☐
	11/9 9:30		11/9 930	
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	
	11/9 1515	Alya Stone	11/9/17 1515	

Special Instructions:
List Specific Detection Limit Requirements:

Turnaround (Business Days)_____

**Netlab subcontracts the following tests: Radiologicals, Radon, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates, CT ETPH

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