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AUG 28 2015

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Mr. Bill McDonough
Division of Waste Management
Kentucky Department for Environmental Protection
625 Hospital Drive
Madisonville, Kentucky 42431

Dear Ms. Green, Mr. Hendricks, and Mr. McDonough:

C-746-S&T LANDFILLS SECOND QUARTER CALENDAR YEAR 2015 (APRIL–JUNE) COMPLIANCE MONITORING REPORT, PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY, PAD-ENM-0094/V2, PERMIT NUMBER: SW07300014, SW07300015, SW07300045

Enclosed is the subject report for second quarter calendar year (CY) 2015, provided in accordance with Solid Waste Landfill Permit Number: SW07300014, SW07300015, SW07300045. The report includes groundwater and surface water analytical data, validation summary, groundwater flow rate and direction determination, figures depicting well locations, and methane monitoring results.

This report serves as the statistical increase notification for the second quarter CY 2015, in accordance with Condition GSTR0003, Standard Requirement 8, of the C-746-S&T Solid Waste Landfill Permit Number: SW07300014, SW07300015, SW07300045.

If you have any questions or require additional information, please contact Dave Dollins at (270) 441-6819.

Sincerely,

Jennifer Woodard
Paducah Site Lead
Portsmouth/Paducah Project Office

Enclosure:
C-746-S&T Landfills Second Quarter CY 2015 (April-June) Compliance Monitoring Report

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PAD-ENM-0094/V2

C-746-S&T Landfills
Second Quarter Calendar Year 2015
(April–June)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky

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This document is approved for public release per review by:

David Hayden
FFS, Inc. Classification Support

8-27-15
Date

PAD-ENM-0094/V2

C-746-S&T Landfills
Second Quarter Calendar Year 2015
(April–June)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky

Date Issued—August 2015

U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Prepared by
FLUOR FEDERAL SERVICES, INC.,
Paducah Deactivation Project
managing the
Deactivation Project at the
Paducah Gaseous Diffusion Plant
under Task Order DE-DT0007774

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ACRONYMS

CFR	*Code of Federal Regulations*
CY	calendar year
KAR	*Kentucky Administrative Regulations*
KDWM	Kentucky Division of Waste Management
KRS	*Kentucky Revised Statutes*
LEL	lower explosive limit
LRGA	Lower Regional Gravel Aquifer
MCL	maximum contaminant level
MW	monitoring well
PGDP	Paducah Gaseous Diffusion Plant
RGA	Regional Gravel Aquifer
UCRS	Upper Continental Recharge System
URGA	Upper Regional Gravel Aquifer
UTL	upper tolerance limit

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1. INTRODUCTION

This report, *C-746-S&T Landfills Second Quarter Calendar Year 2015 (April–June) Compliance Monitoring Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* is being submitted in accordance with Solid Waste Landfill Permit Number SW07300014, SW07300015, SW07300045 for the C-746-S Residential Landfill and for the C-746-T Inert Landfill. This report was written in accordance with the approved *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (LATA Kentucky 2014), Technical Application, Attachment 25, of the Solid Waste Landfill permit.

The Groundwater, Surface Water, Leachate, and Methane Monitoring Sample Data Reporting Form is provided in Appendix A. The facility information sheet is provided in Appendix B. Groundwater analytical results are recorded on the Kentucky Division of Waste Management (KDWM) Groundwater Sample Analyses forms, which are presented in Appendix C. The statistical analyses and qualification statement are provided in Appendix D. The groundwater flow rate and direction determinations are provided in Appendix E. Appendix F contains the notifications for all permit required parameters whose concentrations exceed the maximum contaminant level (MCL) for Kentucky solid waste facilities provided in 401 *KAR* 47:030 § 6 and for all permit required parameters listed in 40 *CFR* § 302.4, Appendix A, that do not have an MCL and whose concentrations exceed the historical background concentrations [upper tolerance limit (UTL), as established at a 95% confidence]. Appendix G provides a chart of exceedances of the MCL and historical UTL that have occurred since the fourth quarter calendar year (CY) 2002. Methane monitoring was conducted in accordance with 401 *KAR* 48:090 § 4 and the approved Explosive Gas Monitoring Program (KEEC 2011), Technical Application, Attachment 12, of the Solid Waste Landfill permit. Methane monitoring results are documented on the approved C-746-S&T Landfill Methane Monitoring Report form provided in Appendix H. The form includes pertinent remarks/observations as required by 401 *KAR* 48:090 § 4.

Surface water was monitored, as specified in 401 *KAR* 48:300 § 2 and the approved *Surface Water Monitoring Plan for C-746-S and C-746-T Landfills Permit Numbers KY-073-00014 and KY-073-00015, Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (PRS 2008), Technical Application, Attachment 24, of the Solid Waste Landfill permit. The parameters identified in the Solid Waste Landfill Permit were analyzed for the two locations sampled for reporting only, pursuant to Permit Condition GMNP0003, Standard Requirement 1. A third location, L136, could not be sampled due to insufficient flow during the reporting period. Surface water results are provided in Appendix I.

1.1 BACKGROUND

The C-746-S&T Landfills are closed solid waste landfills located north of the Paducah Gaseous Diffusion Plant (PGDP) and south of the C-746-U Landfill. Construction and operation of the C-746-S Residential Landfill were permitted in April 1981 under Solid Waste Landfill Permit Number 073-00014. The permitted C-746-S Landfill area covers about 16 acres and contains a clay liner with a cover of compacted soil. The C-746-S Landfill was a sanitary landfill for PGDP. The C-746-S Landfill is closed and has been inactive since July 1995.

Construction and operation of the C-746-T Inert Landfill were permitted in February 1985 under Solid Waste Landfill Permit Number 073-00015. The permitted C-746-T Landfill area covers about 20 acres and contains a clay liner with a cover of compacted soil. The C-746-T Landfill was used to dispose of

construction debris (e.g., concrete, wood, and rock) and steam plant fly ash from PGDP. The C-746-T Landfill is closed and has been inactive since June 1992.

1.2 MONITORING PERIOD ACTIVITIES

1.2.1 Groundwater Monitoring

Three zones are monitored at the site: the Upper Continental Recharge System (UCRS), the Upper Regional Gravel Aquifer (URGA), and the Lower Regional Gravel Aquifer (LRGA). There are 25 monitoring wells (MWs) under permit for the C-746-S&T Landfills: 7 UCRS wells, 11 URGA wells, and 7 LRGA wells. A map of the MW locations is presented in Figure 1. All MWs listed on the permit were sampled this quarter except MW389 (screened in the UCRS), which had an insufficient amount of water to obtain samples; therefore, there are no analytical results for this location.

Consistent with the approved Groundwater Monitoring Plan (LATA Kentucky 2014), UCRS wells are included in the monitoring program. Groundwater flow gradients are downward through the UCRS, but the underlying Regional Gravel Aquifer (RGA) flows laterally. Groundwater flow in the RGA is typically in a north-northeasterly direction in the vicinity of the C-746-S&T Landfills. The Ohio River and lower reaches of Little Bayou Creek are the discharge areas for the RGA flow system from the vicinity of the landfills. Consistent with the conceptual site model, the constituent concentrations in UCRS wells are considered to be representative only of the conditions local to the well or sourced from overlying soils; thus, no discussion of potential "upgradient" sources is relevant to the discussion for the UCRS. Nevertheless, a UTL for background also has been calculated for UCRS wells using concentrations from UCRS wells located in the same direction (relative to the landfill) as those RGA wells identified as upgradient. The results from these wells are considered to represent historical "background" for the UCRS water quality. Similarly, other gradient references for UCRS wells are identified using the RGA wells located in the same direction (relative to the landfill) as nearby UCRS wells. Results from UCRS wells are compared to this UTL, and exceedances of these values are reported in the quarterly report.

Groundwater sampling was conducted in accordance with the Groundwater Monitoring Plan (LATA Kentucky 2014) within second quarter 2015 using LATA Environmental Services of Kentucky, LLC, procedure PAD-ENM-2101, *Groundwater Sampling*. Appropriate sample containers and preservatives were utilized. The laboratory also used U.S. Environmental Protection Agency-approved methods, as applicable. The parameters specified in Permit Condition GSTR0003, Special Condition 3, were analyzed for all locations sampled.

The groundwater flow rate and direction determination are provided in Appendix E. Depth-to-water measurements were collected on April 29 and 30, 2015; in MWs of the C-746-S&T Landfills (see Table E.1); in MWs of the C-746-U Landfill; and in MWs of the surrounding region (shown on Figure E.3). Water level measurements in 39 vicinity wells define the potentiometric surface for the RGA. Normal regional flow in the RGA is northeastward, toward the Ohio River. Groundwater flow in the RGA in April was eastward, in response to continuing high water levels of the Ohio River. The hydraulic gradient for the RGA in the vicinity of the C-746-S&T Landfills in April was 3.25×10^{-4} ft/ft, while the gradient beneath the C-746-S&T Landfills was 3.78×10^{-4} ft/ft. Calculated groundwater flow rates (average linear velocities) for the RGA at the C-746-S&T Landfills range from 0.55 to 1.09 ft/day (see Table E.3).

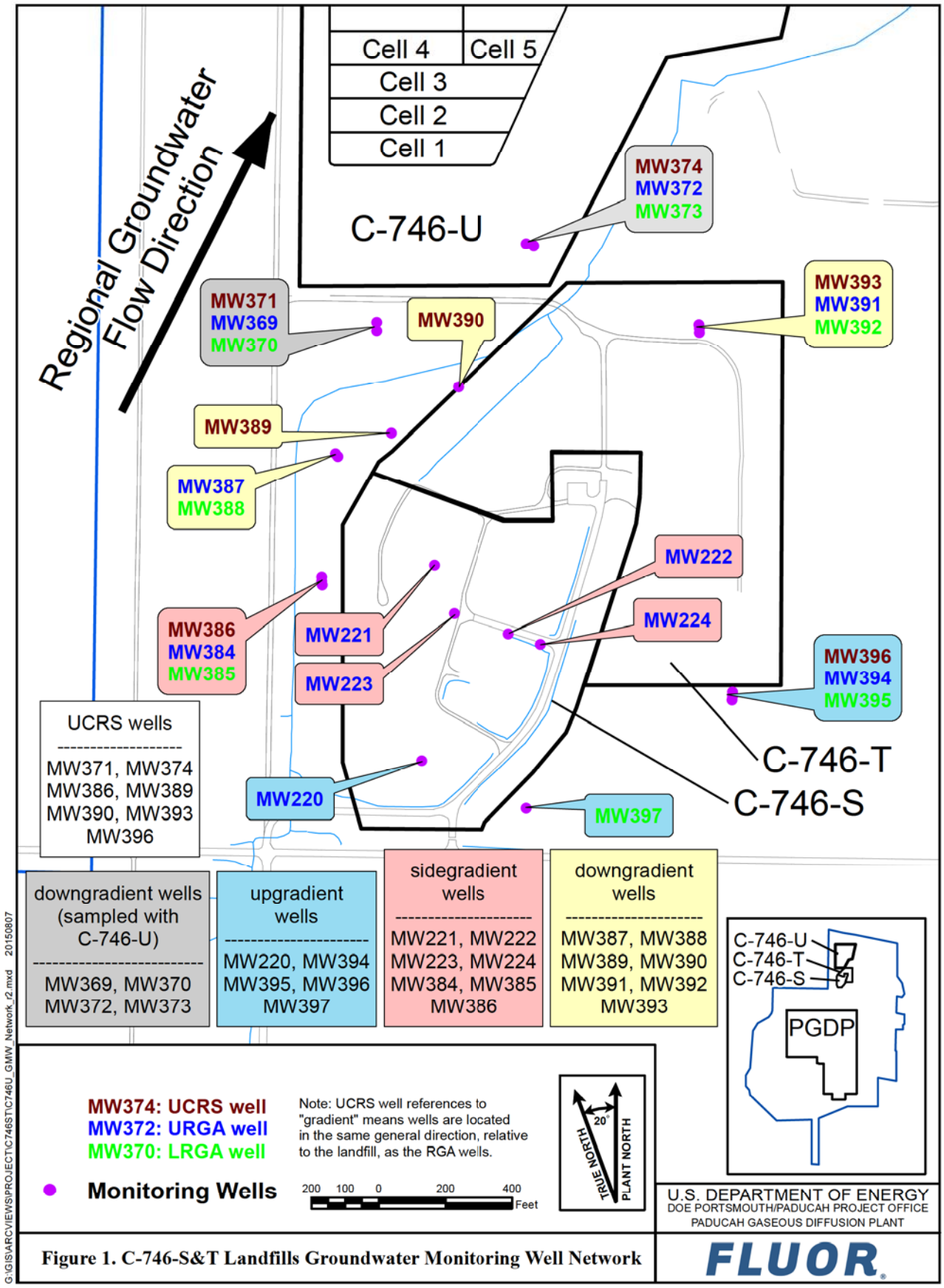

Figure 1. C-746-S&T Landfills Groundwater Monitoring Well Network

1.2.2 Methane Monitoring

In accordance with the Explosive Gas Monitoring Program (KEEC 2011), landfill operations staff monitored for the occurrence of methane, in 1 on-site building location, 4 locations along the landfill boundary, and 27 gas-passive vents located in Cells 1, 2, and 3 of the C-746-S Landfill on June 4, 2015. See Appendix H for a map of the monitoring locations. Monitoring identified 0.6% of the lower explosive limit (LEL) of methane at Cell 1 Gas Vent 3, 0.6% of the LEL of methane at Cell 1 Gas Vent 16, and 1.2% of the LEL of methane at Cell 2 Gas Vent 2, which are compliant with the regulatory requirement of < 100% LEL at boundary locations and < 25% LEL at all other locations. Methane monitoring identified 0% of the LEL of methane at all other locations. The results are documented on the approved C-746-S&T Landfill Methane Monitoring Report form provided in Appendix H.

1.2.3 Surface Water Monitoring

Surface water was sampled in accordance with 401 *KAR* 48:300 § 2 and the approved Surface Water Monitoring Plan (PRS 2008). Sampling was performed at two of the three locations within the C-746-S&T Landfills. The landfills have an upstream location, L135; a downstream location, L154; and a location capturing runoff from the landfill surface, L136. Location L136 could not be sampled due to insufficient flow during the reporting period. A map of the surface water monitoring locations is presented in Figure 2. The parameters identified in the Solid Waste Landfill Permit were analyzed for the three locations sampled for report only format, pursuant to Permit Condition GMNP0003, Standard Requirement 1. Surface water results are provided in Appendix I.

1.3 KEY RESULTS

Parameters that had concentrations that exceeded the respective MCL are listed in Table 1. Those constituents that exceeded their respective MCL were further evaluated against their historical background UTL. Table 2 identifies parameters (without MCLs) with concentrations that exceeded the statistically derived historical background UTL for the second quarter 2015, as well as parameters that exceeded their MCL (beta activity and trichloroethene) and also exceeded their historical background UTL. Those constituents (present in downgradient wells) that exceed their historical background UTL were evaluated against their current-background UTL-derived background using the most recent eight quarters of data from wells considered to be upgradient (Table 3).

The notification of parameters that exceeded the MCL has been submitted electronically to the KDWM, in accordance with 401 *KAR* 48:300 § 7, prior to the submittal of this report.

There were no new MCL exceedances for this quarter. The constituents that exceeded their MCL were subjected to a comparison against the UTL concentrations calculated using historical concentrations from wells identified as background. Because the trichloroethene concentration did not exceed the historical UTL, the MCL exceedances for trichloroethene in MW372, MW373, MW391, and MW392 (downgradient wells) are not attributable to a C-746-S&T Landfill source and are considered a Type 1 exceedance per the approved Groundwater Monitoring Plan.

The MCL exceedances for beta activity in MW387 and MW388 (downgradient wells) were shown to exceed both the historical background UTL and the current background UTL; therefore, they preliminarily were considered to be Type 2 exceedances because the source(s) of these exceedances is not determined. To further evaluate these preliminary Type 2 exceedances, these parameters were subjected to the Mann-Kendall statistical test for trend using the most recent eight quarters of data. The results are summarized in Table 4. These preliminary Type 2 exceedances in downgradient wells did not have an increasing trend and should be considered to be Type 1 exceedances (not attributable to the landfill).

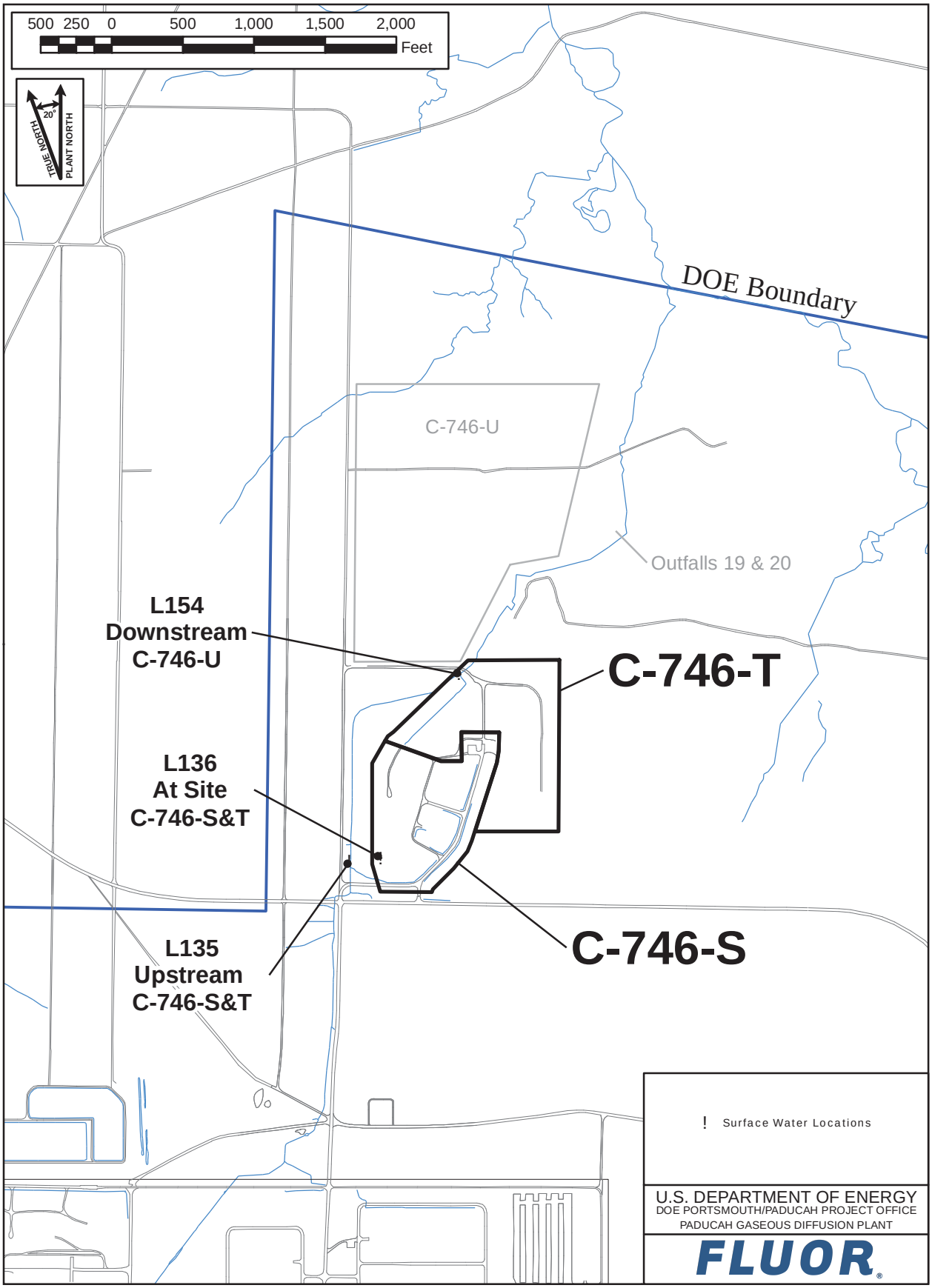

Figure 2. C-746-S&T Landfills Surface Water Monitoring Locations

Table 1. Summary of MCL Exceedances

UCRS	URGA	LRGA
None	MW372: Trichloroethene	MW373:Trichloroethene
	MW384: Beta activity	MW385: Beta activity
	MW387: Beta activity	MW388: Beta activity
	MW391: Trichloroethene	MW392: Trichloroethene

Table 2. Exceedances of Statistically Derived Historical Background Concentrations
(Parameters with MCLs are included only if listed in Table 1.)

UCRS*	URGA	LRGA
MW386: Oxidation-reduction potential	**MW220:** Oxidation-reduction potential, sulfate	**MW370:** Oxidation-reduction potential, radium-226, sulfate
MW390: Oxidation-reduction potential, radium-226, technetium-99	**MW221:** Oxidation-reduction potential	**MW373:** Calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate
MW393: Oxidation-reduction potential	**MW222:** Oxidation-reduction potential, radium-226	**MW385:** Beta activity,[a] oxidation-reduction potential, sulfate, technetium-99
MW396: Oxidation-reduction potential	**MW369:** Oxidation-reduction potential, sulfate, technetium-99	**MW388:** Beta activity,[a] oxidation-reduction potential, sulfate, technetium-99
	MW372: Calcium, conductivity, dissolved solids, magnesium, radium-226, sodium, sulfate	**MW392:** Oxidation-reduction potential
	MW384: Beta activity,[a] radium-226, sulfate, technetium-99	**MW395:** Oxidation-reduction potential
	MW387: Beta activity,[a] sulfate, technetium-99	**MW397:** Oxidation-reduction potential
	MW391: Oxidation-reduction potential, sulfate	
	MW394: Chemical oxygen demand, oxidation-reduction potential	

*Gradients in the UCRS are downward. UCRS gradient designations refer to locations of wells in the same direction, relative to the landfill as the RGA wells.
Sidegradient wells: MW221, MW222, MW223, MW224, MW384, MW385, MW386
Downgradient wells: MW369, MW370, MW372, MW373, MW387, MW388, MW389, MW390, MW391, MW392, MW393
Upgradient wells: MW220, MW394, MW395, MW396,[b] MW397
[a] Beta activity and trichloroethene have an MCL; the exceedances of the MCL were subjected to a comparison against the statistically derived historical background.

Table 3. Exceedances of Current Background UTL in Downgradient Wells of Constituents That Also Exceed the Historical Background UTL
(Parameters with MCLs are included only if listed in Table 1.)

URGA	LRGA
MW372: Calcium, conductivity, magnesium, sodium, sulfate	**MW373:** Calcium, conductivity, dissolved solids, magnesium, sulfate
MW387: Beta activity, sulfate, technetium-99	**MW388:** Beta activity, sulfate, technetium-99
MW391: Sulfate	

Table 4. C-746-S and T Landfills Downgradient Wells Trend Summary Utilizing the Previous Eight Quarters

Location	Well ID	Parameter	Sample Size	Alpha[1]	p-Value [2]	S[3]	Var(S)[4]	Sen's Slope[5]	Kendall Correlation[6]	Decision[7]
C-746-S and T Landfills Downgradient Wells	MW372	Calcium	8	0.05	0.452	-2.000	0.000	-0.296	-0.071	No Trend
		Conductivity	8	0.05	0.274	-6.000	0.000	-9.386	-0.214	No Trend
		Magnesium	8	0.05	0.452	-2.000	0.000	-0.1630	-0.071	No Trend
		Sodium	8	0.05	0.031	-16.00	0.000	-0.717	-0.571	**Negative Trend**
		Sulfate	8	0.05	0.106	-11.00	64.33	-6.200	-0.400	No Trend
	MW373	Calcium	8	0.05	0.159	-9.000	64.33	-0.843	-0.327	No Trend
		Conductivity	8	0.05	0.054	-14.00	0.000	-6.500	-0.500	No Trend
		Dissolved Solids	8	0.05	0.000	-26.00	0.000	-19.25	-0.929	**Negative Trend**
		Magnesium	8	0.05	0.500	1.000	64.33	0.010	0.036	No Trend
		Sulfate	8	0.05	0.007	-20.00	0.000	-5.500	-0.714	**Negative Trend**
	MW387	Beta Activity	8	0.05	0.548	0.000	0.000	-1.075	0.000	No Trend
		Sulfate	8	0.05	0.159	9.000	64.33	0.740	0.327	No Trend
		Technetium-99	8	0.05	0.500	1.000	64.33	1.833	0.036	No Trend
	MW388	Beta Activity	8	0.05	0.452	2.000	0.000	0.713	0.071	No Trend
		Sulfate	8	0.05	0.106	11.00	64.33	0.388	0.400	No Trend
		Technetium-99	8	0.05	0.199	8.000	0.000	5.196	0.286	No Trend
	MW391	Sulfate	8	0.05	0.452	-2.000	0.000	-0.543	-0.071	No Trend

Footnotes:

[1]An alpha of 0.05 represents a 95% confidence interval.

[2]The p-value represents the risk of acceptance the H_a hypothesis of a trend, in terms of a percentage.

[3]The initial value of the Mann-Kendall statistic, S, is assumed to be 0 (e.g., no trend). If a data value from a later time period is higher than a data value from an earlier time period, S is incremented by 1. On the other hand, if the data value from a later time period is lower than a data value sampled earlier, S is decremented by 1. The net result of all such increments and decrements yields the final value of S. A very high positive value of S is an indicator of an increasing trend, and a very low negative value indicates a decreasing trend.

[4]VAR(S) represents the variance of S in the sample set and takes into account statistical ties.

[5]The magnitude of trend is predicted by the Sen's Slope. Here, the slope is described as the median of all $(x_j - x_k)/(j-k)$, where x is a data point and j and k are values of time.

[6]Kendall's correlation is described as the difference of concordant pairs and discordant pairs, also taking sample size and statistical ties into account. When the Kendall's correlation is positive, it indicates an increasing trend and when it is negative, it indicates a decreasing trend.

[7]The Mann-Kendall decision operates on two hypothesis, the H_0 and H_a. H_0 assumes there is no trend in the data, whereas H_a assumes either a positive or negative trend. Two different tests were ran to test for positive or negative trends. This table reports the test with the lowest p-value.

Note: Statistics generated using XLSTAT Version 2015.2.01.16684.

This report serves as the notification of parameters that had statistically significant increased concentrations relative to historical background concentrations, as required by Permit Number SW07300014, SW07300015, SW07300045, Condition GSTR0003, Standard Requirement 8; and 401 *KAR* 48:300 § 7.

In accordance with Permit Condition GSTR0003, Variance 2, of the Solid Waste Permit, the groundwater assessment and corrective action requirements of 401 *KAR* 48:300 § 8 shall not apply to the C-746-S Residential Landfill and the C-746-T Inert Landfill. This variance in the Permit provides that groundwater assessment and corrective actions for these landfills will be conducted in accordance with the corrective action requirements of 401 *KAR* 34:060 § 12.

Of the constituents that had exceedances of the statistically derived historical background UTL, these parameters underwent additional statistical evaluation. The current quarter concentrations were compared to the current background UTL developed using the most recent eight quarters of data from wells identified as upgradient to identify if the current downgradient concentrations are consistent with current background values. Table 3 summarizes the evaluation against current background UTL for those constituents present in downgradient wells with historical UTL exceedances. Constituents in downgradient wells that exceed the historical UTL, but do not exceed the current UTL, are considered not to have a landfill source; therefore, they are a Type 1 exceedance. Those constituents listed in Table 3 that exceed both the historical UTL and the current UTL do not have an identified source and preliminarily are considered to be Type 2 exceedances per the approved Groundwater Monitoring Plan. To further evaluate these preliminary Type 2 exceedances, these parameters were subjected to the Mann-Kendall statistical test for trend using the most recent eight quarters of data. The results are summarized in Table 4. These preliminary Type 2 exceedances in downgradient wells did not have an increasing trend and are considered to be Type 1 exceedances (not attributable to the landfill).

All MCL and UTL exceedances reported for this quarter were evaluated and considered to be Type 1 exceedances—not attributable to the C-746-S&T Landfills.

2. DATA EVALUATION/STATISTICAL SYNOPSIS

The statistical analyses conducted on the second quarter 2015 groundwater data collected from the C746-S&T Landfills MWs were performed in accordance with the *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (LATA Kentucky 2014). The statistical analyses for this report utilize data from the first eight quarters that were sampled for each parameter, beginning with the first two baseline sampling events in 2002, when available. The sampling dates associated with background data are listed next to the result in the statistical analysis sheets in Appendix D (Attachments D1 and D2).

For those parameters that exceed the respective Kentucky solid waste facility MCL found in 401 *KAR* 47:030 § 6, these exceedances were documented and evaluated further as follows. Exceedances were reviewed against historical background results (UTL). If the MCL exceedance was found not to exceed the historical UTL, the exceedance was noted as a Type 1 exceedance—an exceedance not attributable to the landfill. If there was an exceedance of the MCL in a downgradient well and this constituent also exceeded the historical background, the quarterly result was compared to the current background UTL (developed using the most recent eight quarters of data from wells identified as upgradient) to identify if this exceedance is attributable to upgradient/non-landfill sources. If the downgradient concentration was less than the current background, the exceedance was noted as a Type 1 exceedance. If a constituent exceeds its Kentucky solid waste facility MCL, historical background UTL, and current background UTL, it was evaluated further to identify the source of the exceedance, if possible. If the source of the exceedance could not be identified, it was reported as a Type 2 exceedance—source undetermined. Type 2 exceedances (undetermined source) were further evaluated using the Mann-Kendall test for trend. If there was not a statistically significant increasing trend for a constituent in a downgradient well, the exceedance was reclassified as a Type 1 exceedance (not attributable to the landfill).

To calculate the UTL, the data are divided into censored (nondetects) and uncensored (detected) observations. The one-sided tolerance interval statistical test is conducted only on parameters that have at least one uncensored observation. Results of the one-sided tolerance interval statistical test are used to determine whether the data show a statistical exceedance in concentrations with respect to historical background concentrations (UTL).

For the statistical analysis of pH, a two-sided tolerance interval statistical test was conducted. The test well results were compared to both the upper and lower tolerance limit to determine if statistically significant deviations in concentrations exist with respect to upgradient (background) well data.

A stepwise list of the one-sided tolerance interval statistical procedures applied to the data is provided in Appendix D under Statistical Analysis Process. The statistical analysis was conducted separately for each parameter in each well.

2.1 STATISTICAL ANALYSIS OF GROUNDWATER DATA

Parameters requiring statistical analysis are summarized in Appendix D for each hydrological unit. A stepwise list for determining exceedances of statistically derived historical background concentrations is provided in Appendix D under Statistical Analysis Process. A comparison of the current quarter's results to the statistically derived historical background was conducted for parameters that do not have MCLs and also for those parameters whose concentrations exceed MCLs. Appendix G summarizes the occurrences (by well

and by quarter) of exceedances of historical UTLs and MCL exceedances. The constituents that had exceedances of the statistically derived historical background UTL underwent additional statistical evaluation. The current-quarter concentrations were compared to the current background UTL developed using the most recent eight quarters of data from wells identified as upgradient in order to determine if the current downgradient concentrations are consistent with current background values. Table 3 summarizes the constituents present in downgradient wells with historical UTL exceedances that are above the current UTL. Those constituents that have exceeded both the historical and current background UTLs in downgradient wells were further evaluated for increasing trends and are listed in Table 4.

2.1.1 Upper Continental Recharge System

In this quarter, 27 parameters, including those with MCLs, required statistical analysis in the UCRS. During the second quarter, oxidation-reduction potential, radium-226, and technetium-99 displayed concentrations that exceeded their respective historical UTL and are listed in Table 2.

2.1.2 Upper Regional Gravel Aquifer

In this quarter, 32 parameters, including those with MCLs, required statistical analysis in the URGA. During the second quarter, beta activity, calcium, chemical oxygen demand, conductivity, dissolved solids, magnesium, oxidation-reduction potential, radium-226, sodium, sulfate, and technetium-99 displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. Beta activity, calcium, conductivity, magnesium, sodium, sulfate, and technetium-99 exceeded the current background UTL and are included in Table 4.

2.1.3 Lower Regional Gravel Aquifer

In this quarter, 29 parameters, including those with MCLs, required statistical analysis in the LRGA. During the second quarter, beta activity, calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, radium-226, sulfate, and technetium-99 displayed concentrations that exceeded their respective historical UTL and are listed in Table 2. Beta activity, calcium, conductivity, dissolved solids, magnesium, sulfate, and technetium-99 exceeded the current background UTL and are included in Table 4.

2.2 DATA VERIFICATION AND VALIDATION

Data verification is the process of comparing a data set against set standard or contractual requirements. In accordance with the approved Groundwater Monitoring Plan (LATA Kentucky 2014), data verification is performed for 100% of the data. Data are flagged as necessary.

Data validation was performed on 100% of the organic, inorganic, and radiochemical analytical data by a qualified individual independent from sampling, laboratory, project management, or other decision-making personnel. Data validation evaluates the laboratory adherence to analytical method requirements. Validation qualifiers are added by the independent validator and not the laboratory. Validation qualifiers are not requested on the groundwater reporting forms.

Field quality control samples are collected for each sampling event. Field blanks, rinseate blanks, and trip blanks are obtained to ensure quality of field and laboratory practices, and data are reported in the Groundwater Sample Analysis forms in Appendix C. Laboratory quality control samples—such as matrix spikes, matrix spike duplicates, and method blanks—are performed by the laboratory. Both field and laboratory quality control sample results are reviewed as part of the data verification/validation process.

Data validation results for this data set indicated that all data were considered usable.

3. PROFESSIONAL GEOLOGIST AUTHORIZATION

DOCUMENT IDENTIFICATION: *C-746-S&T Landfills*
Second Quarter Calendar Year 2015 (April–June)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky (PAD-ENM-0094/V2)

Stamped and signed pursuant to my authority as a duly registered geologist under the provisions of *KRS* Chapter 322A.

Kenneth R. Davis — PG1194 — August 27, 2015

Kenneth R. Davis — PG1194 — Date

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4. REFERENCES

EPA (U.S. Environmental Protection Agency) 1989. *EPA Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities*, Interim Final Guidance, Office of Resource Conservation and Recovery, U.S. Environmental Protection Agency, Washington, DC.

KEEC (Kentucky Energy and Environment Cabinet) 2011. Solid Waste Landfill Permit, Division of Waste Management, Solid Waste Branch, Technical Application Attachment 12, "Explosive Gas Monitoring Program," January 21.

LATA Kentucky (LATA Environmental Services of Kentucky, LLC) 2014. *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, PAD-PROJ-0139, LATA Environmental Services of Kentucky, LLC, Kevil, KY, June.

PRS (Paducah Remediation Services, LLC) 2008. *Surface Water Monitoring Plan for C-746-S and C-746-T Landfills Permit Numbers KY-073-00014 and KY-073-00015, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, Paducah Remediation Services, LLC, Kevil, KY, June.

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APPENDIX A

GROUNDWATER, SURFACE WATER, LEACHATE, AND METHANE MONITORING SAMPLE DATA REPORTING FORM

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GROUNDWATER, SURFACE WATER, LEACHATE, AND METHANE MONITORING SAMPLE DATA REPORTING FORM

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
SOLID WASTE BRANCH
14 REILLY ROAD
FRANKFORT, KY 40601

Facility Name: U.S. DOE–Paducah Gaseous Diffusion Plant (As officially shown on DWM Permit Face) Activity: C-746-S&T Landfills

Permit No: SW07300014, SW07300015, SW07300045 Finds/Unit No: ____ Quarter & Year 2nd Qtr. CY 2015

Please check the following as applicable:

____ Characterization X Quarterly ____ Semiannual ____ Annual ____ Assessment

Please check applicable submittal(s): X Groundwater X Surface Water

____ Leachate X Methane Monitoring

This form is to be utilized by those sites required by regulation (Kentucky Waste Management Regulations-401 *KAR* 48:300 and 45:160) or by statute (Kentucky Revised Statues Chapter 224) to conduct groundwater and surface water monitoring under the jurisdiction of the Division of Waste Management. **You must report any indication of contamination within forty-eight (48) hours of making the determination using statistical analyses, direct comparison, or other similar techniques. Submitting the lab report is NOT considered notification.** Instructions for completing the form are attached. Do not submit the instruction pages.

I certify under penalty of law that the document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for such violations.

Myrna E. Redfield, Manager, Regulatory Affairs
Fluor Federal Services, Inc. Date 8/28/15

Jennifer Woodard, Paducah Site Lead
U.S. Department of Energy Date 8/28/15

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APPENDIX B

FACILITY INFORMATION SHEET

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FACILITY INFORMATION SHEET

Sampling Date: Groundwater: April 2015; Methane: June 2015; Surface Water: April 2015 | County: McCracken | Permit Nos. SW07300014, SW07300015, SW07300045

Facility Name: U.S. DOE, Paducah Gaseous Diffusion Plant
(As officially shown on DWM Permit Face)

Site Address: 5501 Hobbs Road (Street) | Kevil, Kentucky (City/State) | 42053 (Zip)

Phone No: (270) 441-6800 | Latitude: N 37° 07' 37.70" | Longitude: W 88° 47' 55.41"

OWNER INFORMATION

Facility Owner: U.S. DOE, W. E. Murphie, Manager | Phone No: (859) 219-4001

Contact Person: Mark J. Duff | Phone No: (270) 441-6127

Contact Person Title: Director, Environmental Management, Fluor Federal Services, Inc.

Mailing Address: 5511 Hobbs Road (Street) | Kevil, Kentucky (City/State) | 42053 (Zip)

SAMPLING PERSONNEL
(IF OTHER THAN LANDFILL OR LABORATORY)

Company: LATA Environmental Services of Kentucky, LLC

Contact Person: Jeff Boulton | Phone No: (270) 441-5444

Mailing Address: 761 Veterans Avenue (Street) | Kevil, Kentucky (City/State) | 42053 (Zip)

LABORATORY RECORD #1

Laboratory: GEL Laboratories, LLC | Lab ID No: KY90129

Contact Person: Joanne Harley | Phone No: (843) 769-7387

Mailing Address: 2040 Savage Road (Street) | Charleston, South Carolina (City/State) | 29407 (Zip)

LABORATORY RECORD #2

Laboratory: | Lab ID No:

Contact Person: | Phone No:

Mailing Address: Street | City/State | Zip

LABORATORY RECORD #3

Laboratory: | Lab ID No:

Contact Person: | Phone No:

Mailing Address: Street | City/State | Zip

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APPENDIX C

GROUNDWATER SAMPLE ANALYSES AND WRITTEN COMMENTS

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Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number	8000-5201	8000-5202	8000-5242	8000-5243
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	220	221	222	223
Sample Sequence #	1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	NA	NA	NA	NA
Sample Date and Time (Month/Day/Year hour: minutes)	4/14/2015 13:35	4/14/2015 12:40	4/14/2015 09:18	4/21/2015 08:44
Duplicate ("Y" or "N")[2]	N	N	N	N
Split ("Y" or "N")[3]	N	N	N	N
Facility Sample ID Number (if applicable)	MW220SG3-15	MW221SG3-15	MW222SG3-15	MW223SG3-15
Laboratory Sample ID Number (if applicable)	371073001	371073003	371073007	371543003
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis	4/21/2015	4/21/2015	4/21/2015	4/27/2015
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	UP	SIDE	SIDE	SIDE

CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9		Bromide	T	mg/L	9056	0.226		0.44		0.434		0.447	
16887-00-6		Chloride(s)	T	mg/L	9056	20.3		35.5		35		31.9	
16984-48-8		Fluoride	T	mg/L	9056	0.182		0.161		0.218		0.195	
S0595- -		Nitrate & Nitrite	T	mg/L	9056	1.41		1.18		1.04		0.927	*
14808-79-8		Sulfate	T	mg/L	9056	17.9		13.6		11.4		16.4	
NS1894		Barometric Pressure Reading	T	Inches/Hg	Field	30.13		30.13		30.11		29.92	
S0145- -		Specific Conductance	T	μMH0/cm	Field	422		404		383		390	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5201		8000-5202		8000-5242		8000-5243	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)						220		221		222		223	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field	326.81		327.08		326.91		327.81	
N238		Dissolved Oxygen	T	mg/L	Field	4.62		4		3.56		2.96	
S0266- -		Total Dissolved Solids	T	mg/L	160.1	197		181		176		154	
S0296- -		pH	T	Units	Field	6.09		6		6.01		6.02	
NS215		Eh	T	mV	Field	488		453		489		296	
S0907 - -		Temperature	T	°C	Field	16.39		16.94		15.39		14.39	
7429-90-5		Aluminum	T	mg/L	6020	0.0162	J	<0.05		0.0603		<0.05	
7440-36-0		Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2		Arsenic	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-39-3		Barium	T	mg/L	6020	0.211		0.211		0.289		0.234	
7440-41-7		Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8		Boron	T	mg/L	6020	0.0081	J	0.0139	J	0.0106	J	0.00758	J
7440-43-9		Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2		Calcium	T	mg/L	6020	23		21.1		18.8		21.6	
7440-47-3		Chromium	T	mg/L	6020	0.0071	J	0.0104		<0.01		0.00956	J
7440-48-4		Cobalt	T	mg/L	6020	0.00032	J	0.00079	J	0.00051	J	0.00187	
7440-50-8		Copper	T	mg/L	6020	0.00098	J	0.00089	J	0.00037	J	0.00053	J
7439-89-6		Iron	T	mg/L	6020	<0.1		0.0494	J	0.11		0.11	
7439-92-1		Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4		Magnesium	T	mg/L	6020	10.2		9.83		9.01		9.39	
7439-96-5		Manganese	T	mg/L	6020	0.00214	J	0.0042	J	0.00616		0.0174	
7439-97-6		Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5201		8000-5202		8000-5242		8000-5243	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						220		221		222		223	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7		Molybdenum	T	mg/L	6020	0.00158		0.00216		0.00033	J	0.00194	
7440-02-0		Nickel	T	mg/L	6020	0.04		0.0543		0.0367		0.459	
7440-09-7		Potassium	T	mg/L	6020	10.9		1.37		0.48		1.15	
7440-16-6		Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2		Selenium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-22-4		Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5		Sodium	T	mg/L	6020	44.9		45		46.3		47.9	
7440-25-7		Tantalum	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	*
7440-28-0		Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1		Uranium	T	mg/L	6020	<0.0002		<0.0002		<0.0002		<0.0002	
7440-62-2		Vanadium	T	mg/L	6010	<0.005		<0.005		<0.005		<0.005	
7440-66-6		Zinc	T	mg/L	6020	<0.01		<0.01		<0.01		0.00476	J
108-05-4		Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1		Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8		Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1		Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2		Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7		Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7		Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5		Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3		Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5		Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5201		8000-5202		8000-5242		8000-5243	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						220		221		222		223	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6		Ethene, Trichloro-	T	mg/L	8260	0.00043	J	0.00162		<0.001		0.00217	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: 073-00014 & 073-00015 LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5201		8000-5202		8000-5242		8000-5243	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						220		221		222		223	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4		Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6		2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4		Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1		Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5		Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2		Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
108-10-1		Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8		Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.00002		<0.00002		<0.0000205		<0.0000189	
78-87-5		Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6		trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5		cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5		trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4		Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4		1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1		Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7		Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3		PCB,Total	T	ug/L	8082		*		*		*		*
12674-11-2		PCB-1016	T	ug/L	8082		*		*		*		*
11104-28-2		PCB-1221	T	ug/L	8082		*		*		*		*
11141-16-5		PCB-1232	T	ug/L	8082		*		*		*		*
53469-21-9		PCB-1242	T	ug/L	8082		*		*		*		*
12672-29-6		PCB-1248	T	ug/L	8082		*		*		*		*

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5201		8000-5202		8000-5242		8000-5243	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						220		221		222		223	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082		*		*		*		*
11096-82-5		PCB-1260	T	ug/L	8082		*		*		*		*
11100-14-4		PCB-1268	T	ug/L	8082		*		*		*		*
12587-46-1		Gross Alpha	T	pCi/L	9310	1.57	*	-4.17	*	-2.52	*	-2.78	*
12587-47-2		Gross Beta	T	pCi/L	9310	11.4	*	7.28	*	5.97	*	-1.8	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	HASL 300	0.409	*	0.52	*	0.737	*	0.644	*
10098-97-2		Strontium-90	T	pCi/L	905.0	-0.0119	*	-2.99	*	0.55	*	-1.59	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	12.2	*	9.33	*	3.3	*	11.9	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	0.145	*	-0.181	*	-0.222	*	0.0534	*
10028-17-8		Tritium	T	pCi/L	906.0	9.15	*	30.2	*	40.9	*	99.6	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	<20		<20		<20		<20	
57-12-5		Cyanide	T	mg/L	9012	<0.2		<0.2		<0.2		<0.2	
20461-54-5		Iodide	T	mg/L	300.0	<0.5		<0.5		<0.5		<0.5	
S0268- -		Total Organic Carbon	T	mg/L	9060	<1		0.37	J	0.46	J	<1	
S0586- -		Total Organic Halides	T	mg/L	9020	0.00478	J	0.00594	J	0.00544	J	<0.01	

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number	8000-5244	8004-4820	8004-4818	8004-4808
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	224	369	370	372
Sample Sequence #	1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	NA	NA	NA	NA
Sample Date and Time (Month/Day/Year hour: minutes)	4/21/2015 09:42	4/13/2015 12:48	4/13/2015 13:41	4/9/2015 08:04
Duplicate ("Y" or "N")[2]	N	N	N	N
Split ("Y" or "N")[3]	N	N	N	N
Facility Sample ID Number (if applicable)	MW224SG3-15	MW369UG3-15	MW370UG3-15	MW372UG3-15
Laboratory Sample ID Number (if applicable)	371543005	370965006	370965008	370820001
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis	4/27/2015	4/16/2015	4/16/2015	4/16/2015
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	SIDE	DOWN	DOWN	DOWN

CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9		Bromide	T	mg/L	9056	0.467		0.503		0.519		0.561	
16887-00-6		Chloride(s)	T	mg/L	9056	35.3		37		38.6		44.4	
16984-48-8		Fluoride	T	mg/L	9056	0.247		0.176		0.159		0.159	
S0595- -		Nitrate & Nitrite	T	mg/L	9056	0.978		1.1		1.14		0.0393	J
14808-79-8		Sulfate	T	mg/L	9056	14.9		19.4		19.1		138	
NS1894		Barometric Pressure Reading	T	Inches/Hg	Field	29.92		30.04		30.04		29.86	
S0145- -		Specific Conductance	T	μMH0/cm	Field	444		434		432		769	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5244		8004-4820		8004-4818		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)						224		369		370		372	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field	327.69		326.68		326.68		326.43	
N238		Dissolved Oxygen	T	mg/L	Field	3.3		3.38		4.18		1.18	
S0266- -		Total Dissolved Solids	T	mg/L	160.1	186		201		194		421	
S0296- -		pH	T	Units	Field	6.11		6.11		6.1		6.06	
NS215		Eh	T	mV	Field	309		404		380		283	
S0907 - -		Temperature	T	°C	Field	15.72		17.44		16.94		17.28	
7429-90-5		Aluminum	T	mg/L	6020	<0.05		0.0644	*	<0.05	*	0.0384	BJ
7440-36-0		Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2		Arsenic	T	mg/L	6020	<0.005		<0.005		<0.005		0.00323	J
7440-39-3		Barium	T	mg/L	6020	0.222		0.521		0.194		0.0567	
7440-41-7		Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8		Boron	T	mg/L	6020	0.0219		0.0355		0.0351		1.31	
7440-43-9		Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2		Calcium	T	mg/L	6020	23.6		28		28.3		66.6	
7440-47-3		Chromium	T	mg/L	6020	<0.01		<0.01		<0.01		<0.01	
7440-48-4		Cobalt	T	mg/L	6020	0.00034	J	0.00062	J	0.00052	J	0.00153	
7440-50-8		Copper	T	mg/L	6020	<0.001		0.00055	J	0.00056	J	<0.001	
7439-89-6		Iron	T	mg/L	6020	0.0343	J	0.0871	J	<0.1		1.65	
7439-92-1		Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4		Magnesium	T	mg/L	6020	10.5		12.7		12.9		25.2	
7439-96-5		Manganese	T	mg/L	6020	0.00745		0.00599		0.00282	J	0.0295	
7439-97-6		Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5244		8004-4820		8004-4818		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						224		369		370		372	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7		Molybdenum	T	mg/L	6020	0.00031	J	<0.0005		<0.0005		0.00088	
7440-02-0		Nickel	T	mg/L	6020	0.00342		0.0014	J	0.00095	J	0.00119	J
7440-09-7		Potassium	T	mg/L	6020	0.924		1.47		2.49		2.65	
7440-16-6		Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2		Selenium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-22-4		Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5		Sodium	T	mg/L	6020	54.8		46.2		42.4		60.5	
7440-25-7		Tantalum	T	mg/L	6020	<0.005	*	<0.005	*	<0.005	*	<0.005	*
7440-28-0		Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1		Uranium	T	mg/L	6020	<0.0002		<0.0002		<0.0002		<0.0002	
7440-62-2		Vanadium	T	mg/L	6010	<0.005		0.00151	J	<0.005		<0.005	
7440-66-6		Zinc	T	mg/L	6020	<0.01		<0.01		<0.01		0.00622	J
108-05-4		Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1		Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8		Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1		Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2		Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7		Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7		Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5		Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3		Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5		Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5244		8004-4820		8004-4818		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						224		369		370		372	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6		Ethene, Trichloro-	T	mg/L	8260	0.00034	J	0.00152		0.00129		0.00896	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5244		8004-4820		8004-4818		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						224		369		370		372	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4		Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6		2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4		Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1		Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5		Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2		Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
108-10-1		Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8		Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000193		<0.00002		<0.00002		<0.00002	
78-87-5		Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6		trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5		cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5		trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4		Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4		1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1		Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7		Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3		PCB,Total	T	ug/L	8082		*	<0.0952		<0.0962		0.0729	J
12674-11-2		PCB-1016	T	ug/L	8082		*	<0.0952		<0.0962		<0.0952	
11104-28-2		PCB-1221	T	ug/L	8082		*	<0.0952		<0.0962		<0.0952	
11141-16-5		PCB-1232	T	ug/L	8082		*	<0.0952		<0.0962		<0.0952	
53469-21-9		PCB-1242	T	ug/L	8082		*	<0.0952		<0.0962		0.0729	J
12672-29-6		PCB-1248	T	ug/L	8082		*	<0.0952		<0.0962		<0.0952	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8000-5244		8004-4820		8004-4818		8004-4808	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						224		369		370		372	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082		*	<0.0952		<0.0962		<0.0952	
11096-82-5		PCB-1260	T	ug/L	8082		*	<0.0952		<0.0962		<0.0952	
11100-14-4		PCB-1268	T	ug/L	8082		*	<0.0952		<0.0962		<0.0952	
12587-46-1		Gross Alpha	T	pCi/L	9310	-4.56	*	0.652	*	0.95	*	0.816	*
12587-47-2		Gross Beta	T	pCi/L	9310	6.91	*	26.8	*	14.5	*	8.38	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	HASL 300	0.727	*	0.521	*	0.905	*	0.643	*
10098-97-2		Strontium-90	T	pCi/L	905.0	-1.16	*	0.138	*	-0.768	*	-1.07	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	2.19	*	37.3	*	20.9	*	10.8	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	0.0128	*	-0.122	*	-0.0229	*	0.138	*
10028-17-8		Tritium	T	pCi/L	906.0	75.3	*	79.1	*	41.8	*	160	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	<20		<20		<20		23	
57-12-5		Cyanide	T	mg/L	9012	<0.2		<0.2		<0.2		<0.2	
20461-54-5		Iodide	T	mg/L	300.0	<0.5		<0.5		<0.5		<0.5	
S0268- -		Total Organic Carbon	T	mg/L	9060	0.36	J	0.46	J	0.37	J	0.67	J
S0586- -		Total Organic Halides	T	mg/L	9020	0.00456	J	0.00914	BJ	0.007	BJ	0.0089	BJ

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number	8004-4792	8004-4809	8004-4810	8004-4804
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	373	384	385	386
Sample Sequence #	1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	NA	NA	NA	NA
Sample Date and Time (Month/Day/Year hour: minutes)	4/9/2015 09:43	4/15/2015 09:17	4/15/2015 13:38	4/15/2015 12:49
Duplicate ("Y" or "N")[2]	N	N	N	N
Split ("Y" or "N")[3]	N	N	N	N
Facility Sample ID Number (if applicable)	MW373UG3-15	MW384SG3-15	MW385SG3-15	MW386SG3-15
Laboratory Sample ID Number (if applicable)	370820003	371184001	371184003	371184005
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis	4/16/2015	4/21/2015	4/21/2015	4/21/2015
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	DOWN	SIDE	SIDE	SIDE

CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9		Bromide	T	mg/L	9056	0.584		0.496		0.288		0.158	J
16887-00-6		Chloride(s)	T	mg/L	9056	42.4		44		30.7		15.6	
16984-48-8		Fluoride	T	mg/L	9056	0.153		0.182		0.134		0.579	
S0595- -		Nitrate & Nitrite	T	mg/L	9056	0.3		1.14		1.01		0.129	J
14808-79-8		Sulfate	T	mg/L	9056	165		20.5		20.4		43.4	
NS1894		Barometric Pressure Reading	T	Inches/Hg	Field	29.9		30.04		30.05		30.05	
S0145- -		Specific Conductance	T	μMH0/cm	Field	873		497		421		619	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4792		8004-4809		8004-4810		8004-4804	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)						373		384		385		386	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field	326.41		326.92		326.87		348.47	
N238		Dissolved Oxygen	T	mg/L	Field	2.09		3.63		4.37		2.19	
S0266- -		Total Dissolved Solids	T	mg/L	160.1	476		180		171		347	
S0296- -		pH	T	Units	Field	6.02		5.98		5.92		6.7	
NS215		Eh	T	mV	Field	507		302		467		427	
S0907 - -		Temperature	T	°C	Field	17.22		15.56		18.28		16.61	
7429-90-5		Aluminum	T	mg/L	6020	0.0177	BJ	0.0168	J	0.0385	J	<0.05	
7440-36-0		Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2		Arsenic	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-39-3		Barium	T	mg/L	6020	0.0246		0.194		0.198		0.137	
7440-41-7		Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8		Boron	T	mg/L	6020	1.67		0.0236	B	0.017	B	0.00661	BJ
7440-43-9		Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2		Calcium	T	mg/L	6020	73.5		27.7		24.4		22.4	
7440-47-3		Chromium	T	mg/L	6020	<0.01		0.00298	J	<0.01		<0.01	
7440-48-4		Cobalt	T	mg/L	6020	<0.001		0.00014	J	<0.001		<0.001	
7440-50-8		Copper	T	mg/L	6020	<0.001		0.00055	J	0.00074	J	0.00059	J
7439-89-6		Iron	T	mg/L	6020	<0.1		0.356		0.0704	J	0.0421	J
7439-92-1		Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4		Magnesium	T	mg/L	6020	28.1		11.6		9.06		9.78	
7439-96-5		Manganese	T	mg/L	6020	0.00318	J	0.0201		0.00182	J	0.00805	
7439-97-6		Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4792		8004-4809		8004-4810		8004-4804	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						373		384		385		386	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7		Molybdenum	T	mg/L	6020	<0.0005		0.00018	J	<0.0005		0.00046	J
7440-02-0		Nickel	T	mg/L	6020	<0.002		0.00054	J	0.0007	J	<0.002	
7440-09-7		Potassium	T	mg/L	6020	2.89		1.41		1.52		0.258	J
7440-16-6		Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2		Selenium	T	mg/L	6020	<0.005		0.0015	J	<0.005		<0.005	
7440-22-4		Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5		Sodium	T	mg/L	6020	63.4		57.9		47		117	
7440-25-7		Tantalum	T	mg/L	6020	<0.005	*	<0.005		<0.005		<0.005	
7440-28-0		Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1		Uranium	T	mg/L	6020	<0.0002		<0.0002		<0.0002		<0.0002	
7440-62-2		Vanadium	T	mg/L	6010	<0.005		<0.005		<0.005		<0.005	
7440-66-6		Zinc	T	mg/L	6020	<0.01		<0.01		0.0117	B	<0.01	
108-05-4		Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1		Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8		Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1		Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2		Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7		Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7		Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5		Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3		Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5		Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4792		8004-4809		8004-4810		8004-4804	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						373		384		385		386	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6		Ethene, Trichloro-	T	mg/L	8260	0.00861		0.00049	J	0.00051	J	<0.001	

RESIDENTIAL/CONTAINED-QUARTERLY
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Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4792		8004-4809		8004-4810		8004-4804	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						373		384		385		386	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4		Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6		2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4		Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1		Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5		Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2		Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
108-10-1		Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8		Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.00002		<0.0000205		<0.0000194		<0.0000204	
78-87-5		Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6		trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5		cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5		trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4		Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4		1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1		Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7		Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3		PCB,Total	T	ug/L	8082	<0.0952			*		*		*
12674-11-2		PCB-1016	T	ug/L	8082	<0.0952			*		*		*
11104-28-2		PCB-1221	T	ug/L	8082	<0.0952			*		*		*
11141-16-5		PCB-1232	T	ug/L	8082	<0.0952			*		*		*
53469-21-9		PCB-1242	T	ug/L	8082	<0.0952			*		*		*
12672-29-6		PCB-1248	T	ug/L	8082	<0.0952			*		*		*

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4792		8004-4809		8004-4810		8004-4804	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						373		384		385		386	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082	<0.0952			*		*		*
11096-82-5		PCB-1260	T	ug/L	8082	<0.0952			*		*		*
11100-14-4		PCB-1268	T	ug/L	8082	<0.0952			*		*		*
12587-46-1		Gross Alpha	T	pCi/L	9310	-1.02	*	3.25	*	2.23	*	-2.69	*
12587-47-2		Gross Beta	T	pCi/L	9310	25.1	*	127	*	105	*	3.42	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	HASL 300	0.436	*	0.777	*	0.35	*	0.366	*
10098-97-2		Strontium-90	T	pCi/L	905.0	2.33	*	4.53	*	5.53	*	0.176	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	33.7	*	155	*	150	*	1.92	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	0.469	*	0.0823	*	0.279	*	0.104	*
10028-17-8		Tritium	T	pCi/L	906.0	-156	*	65.7	*	33.1	*	55	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	11	J	<20		<20		21.7	
57-12-5		Cyanide	T	mg/L	9012	<0.2		<0.2		<0.2		<0.2	
20461-54-5		Iodide	T	mg/L	300.0	<0.5		<0.5		<0.5		<0.5	
S0268- -		Total Organic Carbon	T	mg/L	9060	0.51	J	0.71	J	0.4	J	5.2	
S0586- -		Total Organic Halides	T	mg/L	9020	0.0139	B	0.00822	J	0.00984	J	0.189	

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number	8004-4815	8004-4816	8004-4812	8004-4811
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	387	388	389	390
Sample Sequence #	1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	NA	NA	NA	NA
Sample Date and Time (Month/Day/Year hour: minutes)	4/21/2015 12:26	4/21/2015 13:21	NA	4/15/2015 08:22
Duplicate ("Y" or "N")[2]	N	N	N	N
Split ("Y" or "N")[3]	N	N	N	N
Facility Sample ID Number (if applicable)	MW387SG3-15	MW388SG3-15	NA	MW390SG3-15
Laboratory Sample ID Number (if applicable)	371543001	371543007	NA	371184007
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis	4/27/2015	4/27/2015	NA	4/21/2015
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	DOWN	DOWN	SIDE	DOWN

CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9		Bromide	T	mg/L	9056	0.517		0.337			*	0.694	
16887-00-6		Chloride(s)	T	mg/L	9056	42.9		32.3			*	69.3	
16984-48-8		Fluoride	T	mg/L	9056	0.599		0.317			*	0.342	
S0595- -		Nitrate & Nitrite	T	mg/L	9056	1.33		1.12			*	2.41	
14808-79-8		Sulfate	T	mg/L	9056	23.4		22.6			*	27.9	
NS1894		Barometric Pressure Reading	T	Inches/Hg	Field	29.93		29.93			*	30.04	
S0145- -		Specific Conductance	T	μMH0/cm	Field	523		436			*	719	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4815		8004-4816		8004-4812		8004-4811	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)						387		388		389		390	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field	327.68		327.66			*	326.93	
N238		Dissolved Oxygen	T	mg/L	Field	3.24		4.39			*	4.36	
S0266- -		Total Dissolved Solids	T	mg/L	160.1	240		189			*	379	
S0296- -		pH	T	Units	Field	6.1		6.02			*	6.19	
NS215		Eh	T	mV	Field	313		320			*	494	
S0907 - -		Temperature	T	°C	Field	16.72		16.78			*	15	
7429-90-5		Aluminum	T	mg/L	6020	0.194		0.0479	J		*	0.209	
7440-36-0		Antimony	T	mg/L	6020	<0.003		<0.003			*	<0.003	
7440-38-2		Arsenic	T	mg/L	6020	0.00218	J	<0.005			*	<0.005	
7440-39-3		Barium	T	mg/L	6020	0.14		0.168			*	0.268	
7440-41-7		Beryllium	T	mg/L	6020	<0.0005		<0.0005			*	<0.0005	
7440-42-8		Boron	T	mg/L	6020	0.0241		0.0197			*	0.0129	BJ
7440-43-9		Cadmium	T	mg/L	6020	<0.001		<0.001			*	<0.001	
7440-70-2		Calcium	T	mg/L	6020	32.9		26.5			*	32.7	
7440-47-3		Chromium	T	mg/L	6020	0.00253	J	<0.01			*	0.00285	J
7440-48-4		Cobalt	T	mg/L	6020	0.00033	J	<0.001			*	0.00043	J
7440-50-8		Copper	T	mg/L	6020	0.00045	J	0.0005	J		*	0.00071	J
7439-89-6		Iron	T	mg/L	6020	0.714		0.152			*	0.21	
7439-92-1		Lead	T	mg/L	6020	<0.002		<0.002			*	<0.002	
7439-95-4		Magnesium	T	mg/L	6020	13.8		11.7			*	14.1	
7439-96-5		Manganese	T	mg/L	6020	0.0604		0.00116	J		*	0.00159	J
7439-97-6		Mercury	T	mg/L	7470	<0.0002		<0.0002			*	<0.0002	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4815		8004-4816		8004-4812		8004-4811	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						387		388		389		390	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7		Molybdenum	T	mg/L	6020	<0.0005		<0.0005			*	0.00052	
7440-02-0		Nickel	T	mg/L	6020	0.00062	J	0.00061	J		*	0.0015	J
7440-09-7		Potassium	T	mg/L	6020	1.54		1.89			*	0.339	
7440-16-6		Rhodium	T	mg/L	6020	<0.005		<0.005			*	<0.005	
7782-49-2		Selenium	T	mg/L	6020	0.00159	J	<0.005			*	<0.005	
7440-22-4		Silver	T	mg/L	6020	<0.001		<0.001			*	<0.001	
7440-23-5		Sodium	T	mg/L	6020	55.2		48.3			*	110	
7440-25-7		Tantalum	T	mg/L	6020	<0.005	*	<0.005	*		*	<0.005	
7440-28-0		Thallium	T	mg/L	6020	<0.002		<0.002			*	<0.002	
7440-61-1		Uranium	T	mg/L	6020	<0.0002		<0.0002			*	0.00014	J
7440-62-2		Vanadium	T	mg/L	6020	<0.005		<0.005			*	0.00149	J
7440-66-6		Zinc	T	mg/L	6020	0.00562	J	<0.01			*	0.00378	BJ
108-05-4		Vinyl acetate	T	mg/L	8260	<0.005		<0.005			*	<0.005	
67-64-1		Acetone	T	mg/L	8260	<0.005		<0.005			*	<0.005	
107-02-8		Acrolein	T	mg/L	8260	<0.005		<0.005			*	<0.005	
107-13-1		Acrylonitrile	T	mg/L	8260	<0.005		<0.005			*	<0.005	
71-43-2		Benzene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
108-90-7		Chlorobenzene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
1330-20-7		Xylenes	T	mg/L	8260	<0.003		<0.003			*	<0.003	
100-42-5		Styrene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
108-88-3		Toluene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
74-97-5		Chlorobromomethane	T	mg/L	8260	<0.001		<0.001			*	<0.001	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4815		8004-4816		8004-4812		8004-4811	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						387		388		389		390	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001			*	<0.001	
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001			*	<0.001	
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001			*	<0.001	
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005			*	<0.005	
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005			*	<0.005	
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005			*	<0.005	
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001			*	<0.001	
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001			*	<0.001	
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001			*	<0.001	
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	0.00034	J	0.0003	J		*	<0.001	
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001			*	<0.001	
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001			*	<0.001	
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001			*	<0.001	
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001			*	<0.001	
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001			*	<0.001	
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001			*	<0.001	
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001			*	<0.001	
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001			*	<0.001	
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001			*	<0.001	
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001			*	<0.001	
79-01-6		Ethene, Trichloro-	T	mg/L	8260	0.00105		0.00077	J		*	<0.001	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4815		8004-4816		8004-4812		8004-4811	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						387		388		389		390	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4		Ethylbenzene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
591-78-6		2-Hexanone	T	mg/L	8260	<0.005		<0.005			*	<0.005	
74-88-4		Iodomethane	T	mg/L	8260	<0.005		<0.005			*	<0.005	
124-48-1		Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001			*	<0.001	
56-23-5		Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001			*	<0.001	
75-09-2		Dichloromethane	T	mg/L	8260	<0.005		<0.005			*	<0.005	
108-10-1		Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005			*	<0.005	
96-12-8		Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000192		<0.000019			*	<0.0000205	
78-87-5		Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001			*	<0.001	
10061-02-6		trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
10061-01-5		cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
156-60-5		trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001			*	<0.001	
75-69-4		Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001			*	<0.001	
96-18-4		1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001			*	<0.001	
95-50-1		Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001			*	<0.001	
106-46-7		Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001			*	<0.001	
1336-36-3		PCB,Total	T	ug/L	8082		*		*		*		*
12674-11-2		PCB-1016	T	ug/L	8082		*		*		*		*
11104-28-2		PCB-1221	T	ug/L	8082		*		*		*		*
11141-16-5		PCB-1232	T	ug/L	8082		*		*		*		*
53469-21-9		PCB-1242	T	ug/L	8082		*		*		*		*
12672-29-6		PCB-1248	T	ug/L	8082		*		*		*		*

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4815		8004-4816		8004-4812		8004-4811	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						387		388		389		390	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082		*		*		*		*
11096-82-5		PCB-1260	T	ug/L	8082		*		*		*		*
11100-14-4		PCB-1268	T	ug/L	8082		*		*		*		*
12587-46-1		Gross Alpha	T	pCi/L	9310	-1.24	*	-1.72	*		*	-2.66	*
12587-47-2		Gross Beta	T	pCi/L	9310	169	*	88.1	*		*	44.3	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	HASL 300	0.818	*	1.12	*		*	1.26	*
10098-97-2		Strontium-90	T	pCi/L	905.0	-0.569	*	0.586	*		*	0.195	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	277	*	147	*		*	54.5	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	-0.0518	*	0.145	*		*	0.021	*
10028-17-8		Tritium	T	pCi/L	906.0	81.1	*	84.7	*		*	0.0326	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	<20		<20			*	<20	
57-12-5		Cyanide	T	mg/L	9012	<0.2		<0.2			*	<0.2	
20461-54-5		Iodide	T	mg/L	300.0	<0.5		<0.5			*	<0.5	
S0268- -		Total Organic Carbon	T	mg/L	9060	0.53	J	0.42	J		*	1.7	
S0586- -		Total Organic Halides	T	mg/L	9020	0.0102		0.00422	J		*	0.0219	

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number	8004-4805	8004-4806	8004-4807	8004-4802
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	391	392	393	394
Sample Sequence #	1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	NA	NA	NA	NA
Sample Date and Time (Month/Day/Year hour: minutes)	4/28/2015 13:10	4/28/2015 08:50	4/28/2015 09:40	4/22/2015 12:32
Duplicate ("Y" or "N")[2]	N	N	N	N
Split ("Y" or "N")[3]	N	N	N	N
Facility Sample ID Number (if applicable)	MW391SG3-15	MW392SG3-15	MW393SG3-15	MW394SG3-15
Laboratory Sample ID Number (if applicable)	371993001	371993003	371993005	371617001
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis	5/1/2015	5/1/2015	5/1/2015	4/27/2015
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	DOWN	DOWN	DOWN	UP

CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9		Bromide	T	mg/L	9056	0.479		0.575		0.177	J	0.57	
16887-00-6		Chloride(s)	T	mg/L	9056	37.2		47.2		15.2		47.7	
16984-48-8		Fluoride	T	mg/L	9056	0.146		0.204		0.145		0.162	
S0595- -		Nitrate & Nitrite	T	mg/L	9056	0.845		0.0486	J	0.17		1.67	
14808-79-8		Sulfate	T	mg/L	9056	25.1		6.14		17		10.3	
NS1894		Barometric Pressure Reading	T	Inches/Hg	Field	30.04		30.06		30.06		29.96	
S0145- -		Specific Conductance	T	μMH0/cm	Field	425		427		429		335	

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4805		8004-4806		8004-4807		8004-4802	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)						391		392		393		394	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field	327.88		327.83		340.37		327.17	
N238		Dissolved Oxygen	T	mg/L	Field	3.18		1.94		1.59		5.2	
S0266- -		Total Dissolved Solids	T	mg/L	160.1	199		186		226		181	
S0296- -		pH	T	Units	Field	6.1		6.21		6.19		5.99	
NS215		Eh	T	mV	Field	590		466		478		461	
S0907 - -		Temperature	T	°C	Field	16.22		14.33		14.83		16.33	
7429-90-5		Aluminum	T	mg/L	6020	<0.05		0.0175	J	<0.05		0.132	
7440-36-0		Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2		Arsenic	T	mg/L	6020	<0.005		<0.005		0.0031	J	<0.005	
7440-39-3		Barium	T	mg/L	6020	0.25		0.206		0.0925		0.255	
7440-41-7		Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8		Boron	T	mg/L	6020	0.0625		0.029		0.0196		0.0213	
7440-43-9		Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2		Calcium	T	mg/L	6020	26.7		28.3		12.2		26.5	
7440-47-3		Chromium	T	mg/L	6020	<0.01		<0.01		<0.01		<0.01	
7440-48-4		Cobalt	T	mg/L	6020	<0.001		0.00047	J	0.00013	J	0.00025	J
7440-50-8		Copper	T	mg/L	6020	<0.001		0.00037	J	0.00064	J	0.00073	J
7439-89-6		Iron	T	mg/L	6020	0.0788	J	0.435		1.22		1.08	
7439-92-1		Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4		Magnesium	T	mg/L	6020	11.1		9.93		3.62		11.1	
7439-96-5		Manganese	T	mg/L	6020	<0.005		0.293		0.039		0.0165	
7439-97-6		Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4805		8004-4806		8004-4807		8004-4802	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						391		392		393		394	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7		Molybdenum	T	mg/L	6020	<0.0005		0.00037	J	0.00027	J	<0.0005	
7440-02-0		Nickel	T	mg/L	6020	<0.002		0.00077	J	<0.002		0.00296	
7440-09-7		Potassium	T	mg/L	6020	1.52		1.83		0.385		1.32	
7440-16-6		Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2		Selenium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-22-4		Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5		Sodium	T	mg/L	6020	41.3		42.4		89.9		30.3	
7440-25-7		Tantalum	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	*
7440-28-0		Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1		Uranium	T	mg/L	6020	<0.0002		<0.0002		0.0001	J	<0.0002	
7440-62-2		Vanadium	T	mg/L	6010	<0.005		<0.005		<0.005		<0.005	
7440-66-6		Zinc	T	mg/L	6020	<0.01		<0.01		<0.01		0.00425	J
108-05-4		Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1		Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8		Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1		Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2		Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7		Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7		Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5		Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3		Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5		Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4805		8004-4806		8004-4807		8004-4802	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						391		392		393		394	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		0.00061	J	<0.001		<0.001	
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6		Ethene, Trichloro-	T	mg/L	8260	0.00862		0.0157		<0.001		0.00437	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: 073-00014 & 073-00015 LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4805		8004-4806		8004-4807		8004-4802	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						391		392		393		394	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4		Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6		2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4		Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1		Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5		Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2		Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
108-10-1		Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8		Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000189		<0.0000192		<0.000019		<0.0000193	
78-87-5		Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6		trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5		cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5		trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4		Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4		1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1		Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7		Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3		PCB,Total	T	ug/L	8082		*		*		*		*
12674-11-2		PCB-1016	T	ug/L	8082		*		*		*		*
11104-28-2		PCB-1221	T	ug/L	8082		*		*		*		*
11141-16-5		PCB-1232	T	ug/L	8082		*		*		*		*
53469-21-9		PCB-1242	T	ug/L	8082		*		*		*		*
12672-29-6		PCB-1248	T	ug/L	8082		*		*		*		*

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4805		8004-4806		8004-4807		8004-4802	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						391		392		393		394	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082		*		*		*		*
11096-82-5		PCB-1260	T	ug/L	8082		*		*		*		*
11100-14-4		PCB-1268	T	ug/L	8082		*		*		*		*
12587-46-1		Gross Alpha	T	pCi/L	9310	7.46	*	5.06	*	4.67	*	-1.34	*
12587-47-2		Gross Beta	T	pCi/L	9310	10.5	*	7.53	*	-2.34	*	9.13	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	HASL 300	0.767	*	0.595	*	0.885	*	0.557	*
10098-97-2		Strontium-90	T	pCi/L	905.0	3.34	*	-1.32	*	0.00509	*	-0.622	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	11.1	*	0.984	*	3.7	*	11.5	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	0.61	*	0.241	*	0.377	*	0.586	*
10028-17-8		Tritium	T	pCi/L	906.0	85	*	120	*	77.4	*	45.6	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	18.8	J	10.8	J	22.8		41.4	
57-12-5		Cyanide	T	mg/L	9012	<0.2		<0.2		<0.2		<0.2	
20461-54-5		Iodide	T	mg/L	300.0	<0.5		<0.5		<0.5		<0.5	
S0268- -		Total Organic Carbon	T	mg/L	9060	0.61	J	0.83	J	2.1		<1	
S0586- -		Total Organic Halides	T	mg/L	9020	0.00846	J	0.0324		0.0164		0.00564	J

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number	8004-4801	8004-4803	8004-4817	0000-0000
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	395	396	397	E. BLANK
Sample Sequence #	1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	NA	NA	NA	E
Sample Date and Time (Month/Day/Year hour: minutes)	4/22/2015 13:20	4/22/2015 09:54	4/22/2015 09:07	4/22/2015 07:35
Duplicate ("Y" or "N")[2]	N	N	N	N
Split ("Y" or "N")[3]	N	N	N	N
Facility Sample ID Number (if applicable)	MW395SG3-15	MW396SG3-15	MW397SG3-15	RI1SG3-15
Laboratory Sample ID Number (if applicable)	371617003	371617005	371617007	371617010
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis	4/27/2015	4/27/2015	4/27/2015	4/27/2015
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	UP	UP	UP	NA

CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9		Bromide	T	mg/L	9056	0.57		1.25		0.433			*
16887-00-6		Chloride(s)	T	mg/L	9056	47.2		81.7		37.2			*
16984-48-8		Fluoride	T	mg/L	9056	0.172		0.706		0.184			*
S0595- -		Nitrate & Nitrite	T	mg/L	9056	1.71		0.0864	J	1.15			*
14808-79-8		Sulfate	T	mg/L	9056	10.1		23.9		10.9			*
NS1894		Barometric Pressure Reading	T	Inches/Hg	Field	29.96		29.91		29.91			*
S0145- -		Specific Conductance	T	μMH0/cm	Field	338		757		325			*

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4801		8004-4803		8004-4817		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)						395		396		397		E. BLANK	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field	327.57		374.1		327.06			*
N238		Dissolved Oxygen	T	mg/L	Field	5.04		3.19		5.82			*
S0266- -		Total Dissolved Solids	T	mg/L	160.1	179		401		144			*
S0296- -		pH	T	Units	Field	5.75		6.27		5.82			*
NS215		Eh	T	mV	Field	474		469		471			*
S0907 - -		Temperature	T	°C	Field	16.17		15.56		15.17			*
7429-90-5		Aluminum	T	mg/L	6020	<0.05		0.214		0.194		<0.05	
7440-36-0		Antimony	T	mg/L	6020	<0.003		<0.003		<0.003		<0.003	
7440-38-2		Arsenic	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-39-3		Barium	T	mg/L	6020	0.246		0.387		0.144		<0.002	
7440-41-7		Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8		Boron	T	mg/L	6020	0.0205		0.00532	J	0.00702	J	<0.015	
7440-43-9		Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2		Calcium	T	mg/L	6020	26.4		33.6		18.7		<0.2	
7440-47-3		Chromium	T	mg/L	6020	<0.01		<0.01		<0.01		<0.01	
7440-48-4		Cobalt	T	mg/L	6020	<0.001		0.00019	J	0.00012	J	<0.001	
7440-50-8		Copper	T	mg/L	6020	0.001	J	0.00073	J	0.00058	J	0.00156	
7439-89-6		Iron	T	mg/L	6020	<0.1		0.568		0.277		<0.1	
7439-92-1		Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4		Magnesium	T	mg/L	6020	11.3		15.5		8.09		<0.03	
7439-96-5		Manganese	T	mg/L	6020	<0.005		0.0219		0.00539		<0.005	
7439-97-6		Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4801		8004-4803		8004-4817		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						395		396		397		E. BLANK	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7		Molybdenum	T	mg/L	6020	<0.0005		0.00043	J	<0.0005		<0.0005	
7440-02-0		Nickel	T	mg/L	6020	<0.002		<0.002		0.00067	J	<0.002	
7440-09-7		Potassium	T	mg/L	6020	1.59		0.857		1.78		<0.3	
7440-16-6		Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7782-49-2		Selenium	T	mg/L	6020	<0.005		<0.005		<0.005		<0.005	
7440-22-4		Silver	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-23-5		Sodium	T	mg/L	6020	29.9		102		35.4		<0.25	
7440-25-7		Tantalum	T	mg/L	6020	<0.005	*	<0.005	*	<0.005	*	<0.005	*
7440-28-0		Thallium	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7440-61-1		Uranium	T	mg/L	6020	<0.0002		0.00015	J	<0.0002		<0.0002	
7440-62-2		Vanadium	T	mg/L	6010	<0.005		<0.005		<0.005		<0.005	
7440-66-6		Zinc	T	mg/L	6020	<0.01		0.00367	J	0.00816	J	<0.01	
108-05-4		Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1		Acetone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-02-8		Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1		Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2		Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7		Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7		Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5		Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3		Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5		Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4801		8004-4803		8004-4817		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						395		396		397		E. BLANK	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6		Ethene, Trichloro-	T	mg/L	8260	0.00346		<0.001		0.00036	J	<0.001	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: 073-00014 & 073-00015 LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4801		8004-4803		8004-4817		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						395		396		397		E. BLANK	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4		Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6		2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4		Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1		Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5		Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2		Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
108-10-1		Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8		Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000189		<0.000019		<0.000019		<0.0000192	
78-87-5		Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6		trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5		cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5		trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4		Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4		1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1		Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7		Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3		PCB,Total	T	ug/L	8082		*		*		*		*
12674-11-2		PCB-1016	T	ug/L	8082		*		*		*		*
11104-28-2		PCB-1221	T	ug/L	8082		*		*		*		*
11141-16-5		PCB-1232	T	ug/L	8082		*		*		*		*
53469-21-9		PCB-1242	T	ug/L	8082		*		*		*		*
12672-29-6		PCB-1248	T	ug/L	8082		*		*		*		*

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						8004-4801		8004-4803		8004-4817		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						395		396		397		E. BLANK	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082		*		*		*		*
11096-82-5		PCB-1260	T	ug/L	8082		*		*		*		*
11100-14-4		PCB-1268	T	ug/L	8082		*		*		*		*
12587-46-1		Gross Alpha	T	pCi/L	9310	2.25	*	2.22	*	-2.51	*	-2.45	*
12587-47-2		Gross Beta	T	pCi/L	9310	1.03	*	0.992	*	5.37	*	-4.44	*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	HASL 300	0.892	*	0.786	*	0.69	*	0.315	*
10098-97-2		Strontium-90	T	pCi/L	905.0	0.17	*	-1.58	*	-0.543	*	-1.53	*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	7.25	*	2.84	*	9.32	*	3.54	*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	-0.305	*	0.468	*	-0.154	*	-0.249	*
10028-17-8		Tritium	T	pCi/L	906.0	-46.9	*	97.1	*	14.7	*	112	*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4	<20		6.77	J	<20			*
57-12-5		Cyanide	T	mg/L	9012	<0.2		<0.2		<0.2			*
20461-54-5		Iodide	T	mg/L	300.0	<0.5		<0.5		<0.5			*
S0268- -		Total Organic Carbon	T	mg/L	9060	<1		4.4		<1			*
S0586- -		Total Organic Halides	T	mg/L	9020	0.00402	J	0.0464		0.00394	J		*

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number	0000-0000	0000-0000	0000-0000	0000-0000
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	F. BLANK	T. BLANK 1	T. BLANK 2	T. BLANK 3
Sample Sequence #	1	1	1	1
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	F	T	T	T
Sample Date and Time (Month/Day/Year hour: minutes)	4/22/2015 08:52	4/14/2015 08:00	4/15/2015 07:25	4/21/2015 07:30
Duplicate ("Y" or "N")[2]	N	N	N	N
Split ("Y" or "N")[3]	N	N	N	N
Facility Sample ID Number (if applicable)	FB1SG3-15	TB1SG3-15	TB2SG3-15	TB3SG3-15
Laboratory Sample ID Number (if applicable)	371617009	371073009	371184009	371543009
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis	4/27/2015	4/21/2015	4/21/2015	4/27/2015
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	NA	NA	NA	NA

CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS[7]	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
24959-67-9		Bromide	T	mg/L	9056		*		*		*		*
16887-00-6		Chloride(s)	T	mg/L	9056		*		*		*		*
16984-48-8		Fluoride	T	mg/L	9056		*		*		*		*
S0595- -		Nitrate & Nitrite	T	mg/L	9056		*		*		*		*
14808-79-8		Sulfate	T	mg/L	9056		*		*		*		*
NS1894		Barometric Pressure Reading	T	Inches/Hg	Field		*		*		*		*
S0145- -		Specific Conductance	T	μMH0/cm	Field		*		*		*		*

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)						F. BLANK		T. BLANK 1		T. BLANK 2		T. BLANK 3	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field		*		*		*		*
N238		Dissolved Oxygen	T	mg/L	Field		*		*		*		*
S0266- -		Total Dissolved Solids	T	mg/L	160.1		*		*		*		*
S0296- -		pH	T	Units	Field		*		*		*		*
NS215		Eh	T	mV	Field		*		*		*		*
S0907 - -		Temperature	T	°C	Field		*		*		*		*
7429-90-5		Aluminum	T	mg/L	6020	<0.05			*		*		*
7440-36-0		Antimony	T	mg/L	6020	<0.003			*		*		*
7440-38-2		Arsenic	T	mg/L	6020	<0.005			*		*		*
7440-39-3		Barium	T	mg/L	6020	<0.002			*		*		*
7440-41-7		Beryllium	T	mg/L	6020	<0.0005			*		*		*
7440-42-8		Boron	T	mg/L	6020	<0.015			*		*		*
7440-43-9		Cadmium	T	mg/L	6020	<0.001			*		*		*
7440-70-2		Calcium	T	mg/L	6020	<0.2			*		*		*
7440-47-3		Chromium	T	mg/L	6020	<0.01			*		*		*
7440-48-4		Cobalt	T	mg/L	6020	<0.001			*		*		*
7440-50-8		Copper	T	mg/L	6020	0.00153			*		*		*
7439-89-6		Iron	T	mg/L	6020	<0.1			*		*		*
7439-92-1		Lead	T	mg/L	6020	<0.002			*		*		*
7439-95-4		Magnesium	T	mg/L	6020	<0.03			*		*		*
7439-96-5		Manganese	T	mg/L	6020	<0.005			*		*		*
7439-97-6		Mercury	T	mg/L	7470	<0.0002			*		*		*

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						F. BLANK		T. BLANK 1		T. BLANK 2		T. BLANK 3	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7		Molybdenum	T	mg/L	6020	<0.0005			*		*		*
7440-02-0		Nickel	T	mg/L	6020	<0.002			*		*		*
7440-09-7		Potassium	T	mg/L	6020	<0.3			*		*		*
7440-16-6		Rhodium	T	mg/L	6020	<0.005			*		*		*
7782-49-2		Selenium	T	mg/L	6020	<0.005			*		*		*
7440-22-4		Silver	T	mg/L	6020	<0.001			*		*		*
7440-23-5		Sodium	T	mg/L	6020	<0.25			*		*		*
7440-25-7		Tantalum	T	mg/L	6020	<0.005	*		*		*		*
7440-28-0		Thallium	T	mg/L	6020	<0.002			*		*		*
7440-61-1		Uranium	T	mg/L	6020	<0.0002			*		*		*
7440-62-2		Vanadium	T	mg/L	6010	<0.005			*		*		*
7440-66-6		Zinc	T	mg/L	6020	<0.01			*		*		*
108-05-4		Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
67-64-1		Acetone	T	mg/L	8260	<0.005		<0.005		0.00153	J	<0.005	
107-02-8		Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
107-13-1		Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
71-43-2		Benzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-90-7		Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1330-20-7		Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003		<0.003	
100-42-5		Styrene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
108-88-3		Toluene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-97-5		Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						F. BLANK		T. BLANK 1		T. BLANK 2		T. BLANK 3	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
79-01-6		Ethene, Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						F. BLANK		T. BLANK 1		T. BLANK 2		T. BLANK 3	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4		Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
591-78-6		2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
74-88-4		Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
124-48-1		Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
56-23-5		Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-09-2		Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
108-10-1		Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005		<0.005	
96-12-8		Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.000019		<0.0000204		<0.0000206		<0.0000192	
78-87-5		Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-02-6		trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
10061-01-5		cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
156-60-5		trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
75-69-4		Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
96-18-4		1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
95-50-1		Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
106-46-7		Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001	
1336-36-3		PCB,Total	T	ug/L	8082		*		*		*		*
12674-11-2		PCB-1016	T	ug/L	8082		*		*		*		*
11104-28-2		PCB-1221	T	ug/L	8082		*		*		*		*
11141-16-5		PCB-1232	T	ug/L	8082		*		*		*		*
53469-21-9		PCB-1242	T	ug/L	8082		*		*		*		*
12672-29-6		PCB-1248	T	ug/L	8082		*		*		*		*

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						F. BLANK		T. BLANK 1		T. BLANK 2		T. BLANK 3	
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082		*		*		*		*
11096-82-5		PCB-1260	T	ug/L	8082		*		*		*		*
11100-14-4		PCB-1268	T	ug/L	8082		*		*		*		*
12587-46-1		Gross Alpha	T	pCi/L	9310	-2.39	*		*		*		*
12587-47-2		Gross Beta	T	pCi/L	9310	1.99	*		*		*		*
10043-66-0		Iodine-131	T	pCi/L			*		*		*		*
13982-63-3		Radium-226	T	pCi/L	HASL 300	0.108	*		*		*		*
10098-97-2		Strontium-90	T	pCi/L	905.0	-0.968	*		*		*		*
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC	1.43	*		*		*		*
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC	0.552	*		*		*		*
10028-17-8		Tritium	T	pCi/L	906.0	93.5	*		*		*		*
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4		*		*		*		*
57-12-5		Cyanide	T	mg/L	9012		*		*		*		*
20461-54-5		Iodide	T	mg/L	300.0		*		*		*		*
S0268- -		Total Organic Carbon	T	mg/L	9060		*		*		*		*
S0586- -		Total Organic Halides	T	mg/L	9020		*		*		*		*

Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS(S)

AKGWA NUMBER[1], Facility Well/Spring Number					0000-0000		0000-0000		8000-5242				
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)					T. BLANK 4		T. BLANK 5		222				
Sample Sequence #					1		1		2				
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment					T		T		NA				
Sample Date and Time (Month/Day/Year hour: minutes)					4/22/2015 07:30		4/28/2015 07:15		4/14/2015 09:18				
Duplicate ("Y" or "N")[2]					N		N		Y				
Split ("Y" or "N")[3]					N		N		N				
Facility Sample ID Number (if applicable)					TB4SG3-15		TB5SG3-15		MW222DSG3-15				
Laboratory Sample ID Number (if applicable)					371617011		371993007		371073005				
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis					4/27/2015		5/1/2015		4/21/2015				
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)					NA		NA		DOWN				
CAS RN[4]		**CONSTITUENT**	**TD[5]**	**Unit OF MEASURE**	**METHOD**	**DETECTED VALUE OR PQL[6]**	**FLAGS[7]**	**DETECTED VALUE OR PQL[6]**	**FLAGS**	**DETECTED VALUE OR PQL[6]**	**FLAGS**	**DETECTED VALUE OR PQL[6]**	**FLAGS**
24959-67-9		**Bromide**	**T**	**mg/L**	**9056**		*		*	0.432			
16887-00-6		**Chloride(s)**	**T**	**mg/L**	**9056**		*		*	35.2			
16984-48-8		**Fluoride**	**T**	**mg/L**	**9056**		*		*	0.224			
S0595- -		**Nitrate & Nitrite**	**T**	**mg/L**	**9056**		*		*	1.05			
14808-79-8		**Sulfate**	**T**	**mg/L**	**9056**		*		*	11.4			
NS1894		**Barometric Pressure Reading**	**T**	**Inches/Hg**	**Field**		*		*	30.11			
S0145- -		**Specific Conductance**	**T**	**μMH0/cm**	**Field**		*		*	383			

[1]AKGWA # is 0000-0000 for any type of blank.
[2]Respond "Y" if the sample was a duplicate of another sample in this report.
[3]Respond "Y" if the sample was split and analyzed by separate laboratories.
[4]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[5]"T" = Total; "D" = Dissolved
[6]"<" indicates a non-detect; do not use "ND" or "BDL". Value shown is Practical Quantification Limit.
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments Page."

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		8000-5242			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)						T. BLANK 4		T. BLANK 5		222			
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
S0906 - -		Static Water Level Elevation	T	Ft. MSL	Field		*		*	68.29			
N238		Dissolved Oxygen	T	mg/L	Field		*		*	3.56			
S0266- -		Total Dissolved Solids	T	mg/L	160.1		*		*	184			
S0296- -		pH	T	Units	Field		*		*	6.01			
NS215		Eh	T	mV	Field		*		*	489			
S0907 - -		Temperature	T	°C	Field		*		*	15.39			
7429-90-5		Aluminum	T	mg/L	6020		*		*	0.0632			
7440-36-0		Antimony	T	mg/L	6020		*		*	<0.003			
7440-38-2		Arsenic	T	mg/L	6020		*		*	<0.005			
7440-39-3		Barium	T	mg/L	6020		*		*	0.289			
7440-41-7		Beryllium	T	mg/L	6020		*		*	<0.0005			
7440-42-8		Boron	T	mg/L	6020		*		*	0.0106	J		
7440-43-9		Cadmium	T	mg/L	6020		*		*	<0.001			
7440-70-2		Calcium	T	mg/L	6020		*		*	18.9			
7440-47-3		Chromium	T	mg/L	6020		*		*	<0.01			
7440-48-4		Cobalt	T	mg/L	6020		*		*	0.00049	J		
7440-50-8		Copper	T	mg/L	6020		*		*	0.00038	J		
7439-89-6		Iron	T	mg/L	6020		*		*	0.118			
7439-92-1		Lead	T	mg/L	6020		*		*	<0.002			
7439-95-4		Magnesium	T	mg/L	6020		*		*	8.93			
7439-96-5		Manganese	T	mg/L	6020		*		*	0.00827			
7439-97-6		Mercury	T	mg/L	7470		*		*	<0.0002			

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		8000-5242			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						T. BLANK 4		T. BLANK 5		222			
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
7439-98-7		Molybdenum	T	mg/L	6020		*		*	0.00034	J		
7440-02-0		Nickel	T	mg/L	6020		*		*	0.0369			
7440-09-7		Potassium	T	mg/L	6020		*		*	0.505			
7440-16-6		Rhodium	T	mg/L	6020		*		*	<0.005			
7782-49-2		Selenium	T	mg/L	6020		*		*	<0.005			
7440-22-4		Silver	T	mg/L	6020		*		*	<0.001			
7440-23-5		Sodium	T	mg/L	6020		*		*	46.4			
7440-25-7		Tantalum	T	mg/L	6020		*		*	<0.005			
7440-28-0		Thallium	T	mg/L	6020		*		*	<0.002			
7440-61-1		Uranium	T	mg/L	6020		*		*	<0.0002			
7440-62-2		Vanadium	T	mg/L	6010		*		*	<0.005			
7440-66-6		Zinc	T	mg/L	6020		*		*	<0.01			
108-05-4		Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005			
67-64-1		Acetone	T	mg/L	8260	<0.005		<0.005		<0.005			
107-02-8		Acrolein	T	mg/L	8260	<0.005		<0.005		<0.005			
107-13-1		Acrylonitrile	T	mg/L	8260	<0.005		<0.005		<0.005			
71-43-2		Benzene	T	mg/L	8260	<0.001		<0.001		<0.001			
108-90-7		Chlorobenzene	T	mg/L	8260	<0.001		<0.001		<0.001			
1330-20-7		Xylenes	T	mg/L	8260	<0.003		<0.003		<0.003			
100-42-5		Styrene	T	mg/L	8260	<0.001		<0.001		<0.001			
108-88-3		Toluene	T	mg/L	8260	<0.001		<0.001		<0.001			
74-97-5		Chlorobromomethane	T	mg/L	8260	<0.001		<0.001		<0.001			

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		8000-5242			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						T. BLANK 4		T. BLANK 5		222			
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
75-27-4		Bromodichloromethane	T	mg/L	8260	<0.001		<0.001		<0.001			
75-25-2		Tribromomethane	T	mg/L	8260	<0.001		<0.001		<0.001			
74-83-9		Methyl bromide	T	mg/L	8260	<0.001		<0.001		<0.001			
78-93-3		Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005			
110-57-6		trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005		<0.005			
75-15-0		Carbon disulfide	T	mg/L	8260	<0.005		<0.005		<0.005			
75-00-3		Chloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			
67-66-3		Chloroform	T	mg/L	8260	<0.001		<0.001		<0.001			
74-87-3		Methyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001			
156-59-2		cis-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001			
74-95-3		Methylene bromide	T	mg/L	8260	<0.001		<0.001		<0.001			
75-34-3		1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			
107-06-2		1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001		<0.001			
75-35-4		1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001		<0.001			
106-93-4		Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001		<0.001			
79-34-5		Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001			
71-55-6		Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
79-00-5		Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001		<0.001			
630-20-6		Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001		<0.001			
75-01-4		Vinyl chloride	T	mg/L	8260	<0.001		<0.001		<0.001			
127-18-4		Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
79-01-6		Ethene, Trichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		8000-5242			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						T. BLANK 4		T. BLANK 5		222			
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
100-41-4		Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<0.001			
591-78-6		2-Hexanone	T	mg/L	8260	<0.005		<0.005		<0.005			
74-88-4		Iodomethane	T	mg/L	8260	<0.005		<0.005		<0.005			
124-48-1		Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
56-23-5		Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001			
75-09-2		Dichloromethane	T	mg/L	8260	<0.005		<0.005		<0.005			
108-10-1		Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005		<0.005			
96-12-8		Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000191		<0.0000189		<0.0000205			
78-87-5		Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
10061-02-6		trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001			
10061-01-5		cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001		<0.001			
156-60-5		trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001			
75-69-4		Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<0.001			
96-18-4		1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001		<0.001			
95-50-1		Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
106-46-7		Benzene, 1,4-Dichloro-	T	mg/L	8260	<0.001		<0.001		<0.001			
1336-36-3		PCB,Total	T	ug/L	8082		*		*		*		
12674-11-2		PCB-1016	T	ug/L	8082		*		*		*		
11104-28-2		PCB-1221	T	ug/L	8082		*		*		*		
11141-16-5		PCB-1232	T	ug/L	8082		*		*		*		
53469-21-9		PCB-1242	T	ug/L	8082		*		*		*		
12672-29-6		PCB-1248	T	ug/L	8082		*		*		*		

RESIDENTIAL/CONTAINED-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant FINDS/UNIT: KY8-890-008-982 / 1
Permit Number: 073-00014 & 073-00015 LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

AKGWA NUMBER[1], Facility Well/Spring Number						0000-0000		0000-0000		8000-5242			
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)						T. BLANK 4		T. BLANK 5		222			
CAS RN[4]		CONSTITUENT	TD[5]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS	DETECTED VALUE OR PQL[6]	FLAGS
11097-69-1		PCB-1254	T	ug/L	8082		*		*		*		
11096-82-5		PCB-1260	T	ug/L	8082		*		*		*		
11100-14-4		PCB-1268	T	ug/L	8082		*		*		*		
12587-46-1		Gross Alpha	T	pCi/L	9310		*		*	-4.59	*		
12587-47-2		Gross Beta	T	pCi/L	9310		*		*	6.88	*		
10043-66-0		Iodine-131	T	pCi/L			*		*		*		
13982-63-3		Radium-226	T	pCi/L	903.1		*		*	0.34	*		
10098-97-2		Strontium-90	T	pCi/L	905.0		*		*	-1.01	*		
14133-76-7		Technetium-99	T	pCi/L	Tc-02-RC		*		*	6.65	*		
14269-63-7		Thorium-230	T	pCi/L	Th-01-RC		*		*	0.223	*		
10028-17-8		Tritium	T	pCi/L	906.0		*		*	35	*		
S0130- -		Chemical Oxygen Demand	T	mg/L	410.4		*		*	<20			
57-12-5		Cyanide	T	mg/L	9012		*		*	<0.2			
20461-54-5		Iodide	T	mg/L	300.0		*		*	<0.5			
S0268- -		Total Organic Carbon	T	mg/L	9060		*		*	0.5	J		
S0586- -		Total Organic Halides	T	mg/L	9020		*		*	<0.01			

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8000-5201 MW220	MW220SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.03. Rad error is 5.02.
		Gross beta		TPU is 6.64. Rad error is 6.37.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.511. Rad error is 0.507.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.2. Rad error is 2.2.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.7. Rad error is 10.6.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.498. Rad error is 0.495.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 152. Rad error is 152.

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Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8000-5202 MW221	MW221SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.69. Rad error is 3.69.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.95. Rad error is 5.83.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.478. Rad error is 0.472.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.56. Rad error is 2.56.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.5. Rad error is 10.5.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.279. Rad error is 0.279.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 152. Rad error is 152.

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Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID: None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8000-5242 MW222	MW222SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.98. Rad error is 3.98.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.49. Rad error is 6.41.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.564. Rad error is 0.553.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.77. Rad error is 1.77.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.1. Rad error is 10.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.32. Rad error is 0.319.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 152. Rad error is 152.

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Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

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WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8000-5243 MW223	MW223SG3-15	Nitrate & Nitrite	H	Analysis performed outside holding time requirement
		Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.68. Rad error is 3.67.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.53. Rad error is 7.53.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.499. Rad error is 0.488.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.18. Rad error is 2.18.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.7. Rad error is 11.6.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.315. Rad error is 0.313.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 90.7. Rad error is 88.7.

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Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

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WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8000-5244 MW224	MW224SG3-15	Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.59. Rad error is 3.59.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.18. Rad error is 7.08.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.532. Rad error is 0.52.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.69. Rad error is 2.69.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 13.1. Rad error is 13.1.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.4. Rad error is 0.399.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 86.4. Rad error is 85.2.
8004-4820 MW369	MW369UG3-15	Aluminum	N	Sample spike recovery not within control limits.
		Tantalum	N	Sample spike recovery not within control limits.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.09. Rad error is 4.09.
		Gross beta		TPU is 9.25. Rad error is 8.15.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.538. Rad error is 0.532.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.6. Rad error is 1.6.
		Technetium-99		TPU is 13.5. Rad error is 12.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.265. Rad error is 0.264.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 154. Rad error is 153.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4818 MW370	MW370UG3-15	Aluminum	N	Sample spike recovery not within control limits.
		Tantalum	N	Sample spike recovery not within control limits.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.17. Rad error is 5.17.
		Gross beta		TPU is 7.24. Rad error is 6.84.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.636. Rad error is 0.623.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.51. Rad error is 1.51.
		Technetium-99		TPU is 12.3. Rad error is 12.1.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.364. Rad error is 0.364.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 153. Rad error is 152.
8004-4808 MW372	MW372UG3-15	Tantalum	N	Sample spike recovery not within control limits.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.02. Rad error is 6.01.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 9.17. Rad error is 9.06.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.516. Rad error is 0.505.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.74. Rad error is 2.74.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.4. Rad error is 11.3.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.555. Rad error is 0.55.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 163. Rad error is 160.
8004-4792 MW373	MW373UG3-15	Tantalum	N	Sample spike recovery not within control limits.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.73. Rad error is 4.72.
		Gross beta		TPU is 9.52. Rad error is 8.53.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.377. Rad error is 0.37.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.31. Rad error is 2.28.
		Technetium-99		TPU is 12.1. Rad error is 11.5.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.631. Rad error is 0.621.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 156. Rad error is 156.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4809 MW384	MW384SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.87. Rad error is 5.81.
		Gross beta		TPU is 26. Rad error is 15.9.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.581. Rad error is 0.57.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.89. Rad error is 3.82.
		Technetium-99		TPU is 22.4. Rad error is 14.3.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.335. Rad error is 0.332.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 155. Rad error is 155.
8004-4810 MW385	MW385SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.38. Rad error is 5.37.
		Gross beta		TPU is 22.4. Rad error is 14.4.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.465. Rad error is 0.461.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.72. Rad error is 3.62.
		Technetium-99		TPU is 21.9. Rad error is 14.3.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.452. Rad error is 0.446.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 148. Rad error is 148.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4804 MW386	MW386SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.48. Rad error is 3.48.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.68. Rad error is 6.66.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.449. Rad error is 0.446.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.93. Rad error is 1.93.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.4. Rad error is 10.4.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.382. Rad error is 0.379.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 157. Rad error is 157.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4815 MW387	MW387SG3-15	Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.72. Rad error is 3.72.
		Gross beta		TPU is 32.3. Rad error is 17.3.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.585. Rad error is 0.57.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.94. Rad error is 1.94.
		Technetium-99		TPU is 36.1. Rad error is 18.8.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.291. Rad error is 0.29.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 87.5. Rad error is 86.1.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4816 MW388	MW388SG3-15	Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.07. Rad error is 4.07.
		Gross beta		TPU is 19.4. Rad error is 13.1.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.648. Rad error is 0.628.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.96. Rad error is 1.96.
		Technetium-99		TPU is 22.9. Rad error is 16.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.444. Rad error is 0.441.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 88.1. Rad error is 86.6.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4812 MW389		Bromide		During sampling, the well was dry; therefore, no sample was collected.
		Chloride		During sampling, the well was dry; therefore, no sample was collected.
		Fluoride		During sampling, the well was dry; therefore, no sample was collected.
		Nitrate & Nitrite		During sampling, the well was dry; therefore, no sample was collected.
		Sulfate		During sampling, the well was dry; therefore, no sample was collected.
		Barometric Pressure Reading		During sampling, the well was dry; therefore, no sample was collected.
		Specific Conductance		During sampling, the well was dry; therefore, no sample was collected.
		Static Water Level Elevation		During sampling, the well was dry; therefore, no sample was collected.
		Dissolved Oxygen		During sampling, the well was dry; therefore, no sample was collected.
		Total Dissolved Solids		During sampling, the well was dry; therefore, no sample was collected.
		pH		During sampling, the well was dry; therefore, no sample was collected.
		Eh		During sampling, the well was dry; therefore, no sample was collected.
		Temperature		During sampling, the well was dry; therefore, no sample was collected.
		Aluminum		During sampling, the well was dry; therefore, no sample was collected.
		Antimony		During sampling, the well was dry; therefore, no sample was collected.
		Arsenic		During sampling, the well was dry; therefore, no sample was collected.
		Barium		During sampling, the well was dry; therefore, no sample was collected.
		Beryllium		During sampling, the well was dry; therefore, no sample was collected.
		Boron		During sampling, the well was dry; therefore, no sample was collected.
		Cadmium		During sampling, the well was dry; therefore, no sample was collected.
		Calcium		During sampling, the well was dry; therefore, no sample was collected.
		Chromium		During sampling, the well was dry; therefore, no sample was collected.
		Cobalt		During sampling, the well was dry; therefore, no sample was collected.
		Copper		During sampling, the well was dry; therefore, no sample was collected.
		Iron		During sampling, the well was dry; therefore, no sample was collected.
		Lead		During sampling, the well was dry; therefore, no sample was collected.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4812 MW389		Magnesium		During sampling, the well was dry; therefore, no sample was collected.
		Manganese		During sampling, the well was dry; therefore, no sample was collected.
		Mercury		During sampling, the well was dry; therefore, no sample was collected.
		Molybdenum		During sampling, the well was dry; therefore, no sample was collected.
		Nickel		During sampling, the well was dry; therefore, no sample was collected.
		Potassium		During sampling, the well was dry; therefore, no sample was collected.
		Rhodium		During sampling, the well was dry; therefore, no sample was collected.
		Selenium		During sampling, the well was dry; therefore, no sample was collected.
		Silver		During sampling, the well was dry; therefore, no sample was collected.
		Sodium		During sampling, the well was dry; therefore, no sample was collected.
		Tantalum		During sampling, the well was dry; therefore, no sample was collected.
		Thallium		During sampling, the well was dry; therefore, no sample was collected.
		Uranium		During sampling, the well was dry; therefore, no sample was collected.
		Vanadium		During sampling, the well was dry; therefore, no sample was collected.
		Zinc		During sampling, the well was dry; therefore, no sample was collected.
		Vinyl acetate		During sampling, the well was dry; therefore, no sample was collected.
		Acetone		During sampling, the well was dry; therefore, no sample was collected.
		Acrolein		During sampling, the well was dry; therefore, no sample was collected.
		Acrylonitrile		During sampling, the well was dry; therefore, no sample was collected.
		Benzene		During sampling, the well was dry; therefore, no sample was collected.
		Chlorobenzene		During sampling, the well was dry; therefore, no sample was collected.
		Xylenes		During sampling, the well was dry; therefore, no sample was collected.
		Styrene		During sampling, the well was dry; therefore, no sample was collected.
		Toluene		During sampling, the well was dry; therefore, no sample was collected.
		Chlorobromomethane		During sampling, the well was dry; therefore, no sample was collected.
		Bromodichloromethane		During sampling, the well was dry; therefore, no sample was collected.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4812 MW389		Tribromomethane		During sampling, the well was dry; therefore, no sample was collected.
		Methyl bromide		During sampling, the well was dry; therefore, no sample was collected.
		Methyl Ethyl Ketone		During sampling, the well was dry; therefore, no sample was collected.
		trans-1,4-Dichloro-2-butene		During sampling, the well was dry; therefore, no sample was collected.
		Carbon disulfide		During sampling, the well was dry; therefore, no sample was collected.
		Chloroethane		During sampling, the well was dry; therefore, no sample was collected.
		Chloroform		During sampling, the well was dry; therefore, no sample was collected.
		Methyl chloride		During sampling, the well was dry; therefore, no sample was collected.
		cis-1,2-Dichloroethene		During sampling, the well was dry; therefore, no sample was collected.
		Methylene bromide		During sampling, the well was dry; therefore, no sample was collected.
		1,1-Dichloroethane		During sampling, the well was dry; therefore, no sample was collected.
		1,2-Dichloroethane		During sampling, the well was dry; therefore, no sample was collected.
		1,1-Dichloroethylene		During sampling, the well was dry; therefore, no sample was collected.
		1,2-Dibromoethane		During sampling, the well was dry; therefore, no sample was collected.
		1,1,2,2-Tetrachloroethane		During sampling, the well was dry; therefore, no sample was collected.
		1,1,1-Trichloroethane		During sampling, the well was dry; therefore, no sample was collected.
		1,1,2-Trichloroethane		During sampling, the well was dry; therefore, no sample was collected.
		1,1,1,2-Tetrachloroethane		During sampling, the well was dry; therefore, no sample was collected.
		Vinyl chloride		During sampling, the well was dry; therefore, no sample was collected.
		Tetrachloroethene		During sampling, the well was dry; therefore, no sample was collected.
		Trichloroethene		During sampling, the well was dry; therefore, no sample was collected.
		Ethylbenzene		During sampling, the well was dry; therefore, no sample was collected.
		2-Hexanone		During sampling, the well was dry; therefore, no sample was collected.
		Iodomethane		During sampling, the well was dry; therefore, no sample was collected.
		Dibromochloromethane		During sampling, the well was dry; therefore, no sample was collected.
		Carbon tetrachloride		During sampling, the well was dry; therefore, no sample was collected.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4812 MW389		Dichloromethane		During sampling, the well was dry; therefore, no sample was collected.
		Methyl Isobutyl Ketone		During sampling, the well was dry; therefore, no sample was collected.
		1,2-Dibromo-3-chloropropane		During sampling, the well was dry; therefore, no sample was collected.
		1,2-Dichloropropane		During sampling, the well was dry; therefore, no sample was collected.
		trans-1,3-Dichloropropene		During sampling, the well was dry; therefore, no sample was collected.
		cis-1,3-Dichloropropene		During sampling, the well was dry; therefore, no sample was collected.
		trans-1,2-Dichloroethene		During sampling, the well was dry; therefore, no sample was collected.
		Trichlorofluoromethane		During sampling, the well was dry; therefore, no sample was collected.
		1,2,3-Trichloropropane		During sampling, the well was dry; therefore, no sample was collected.
		1,2-Dichlorobenzene		During sampling, the well was dry; therefore, no sample was collected.
		1,4-Dichlorobenzene		During sampling, the well was dry; therefore, no sample was collected.
		PCB, Total		During sampling, the well was dry; therefore, no sample was collected.
		PCB-1016		During sampling, the well was dry; therefore, no sample was collected.
		PCB-1221		During sampling, the well was dry; therefore, no sample was collected.
		PCB-1232		During sampling, the well was dry; therefore, no sample was collected.
		PCB-1242		During sampling, the well was dry; therefore, no sample was collected.
		PCB-1248		During sampling, the well was dry; therefore, no sample was collected.
		PCB-1254		During sampling, the well was dry; therefore, no sample was collected.
		PCB-1260		During sampling, the well was dry; therefore, no sample was collected.
		PCB-1268		During sampling, the well was dry; therefore, no sample was collected.
		Gross alpha		During sampling, the well was dry; therefore, no sample was collected.
		Gross beta		During sampling, the well was dry; therefore, no sample was collected.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		During sampling, the well was dry; therefore, no sample was collected.
		Strontium-90		During sampling, the well was dry; therefore, no sample was collected.
		Technetium-99		During sampling, the well was dry; therefore, no sample was collected.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4812 MW389		Thorium-230		During sampling, the well was dry; therefore, no sample was collected.
		Tritium		During sampling, the well was dry; therefore, no sample was collected.
		Chemical Oxygen Demand		During sampling, the well was dry; therefore, no sample was collected.
		Cyanide		During sampling, the well was dry; therefore, no sample was collected.
		Iodide		During sampling, the well was dry; therefore, no sample was collected.
		Total Organic Carbon		During sampling, the well was dry; therefore, no sample was collected.
		Total Organic Halides		During sampling, the well was dry; therefore, no sample was collected.
8004-4811 MW390	MW390SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.99. Rad error is 3.99.
		Gross beta		TPU is 12.4. Rad error is 10.1.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.719. Rad error is 0.694.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.91. Rad error is 2.91.
		Technetium-99		TPU is 13.4. Rad error is 11.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.373. Rad error is 0.371.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 150. Rad error is 150.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4805 MW391	MW391SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.47. Rad error is 7.37.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.85. Rad error is 7.66.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.633. Rad error is 0.62.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.33. Rad error is 3.28.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.2. Rad error is 11.1.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.517. Rad error is 0.503.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 87.9. Rad error is 86.3.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4806 MW392	MW392SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6. Rad error is 5.94.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 8.33. Rad error is 8.24.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.59. Rad error is 0.582.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.52. Rad error is 2.52.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11. Rad error is 11.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.387. Rad error is 0.381.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 94.9. Rad error is 92.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4807 MW393	MW393SG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.08. Rad error is 6.03.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 9.02. Rad error is 9.02.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.641. Rad error is 0.627.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2. Rad error is 2.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.8. Rad error is 11.7.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.524. Rad error is 0.515.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 86.9. Rad error is 85.6.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4802 MW394	MW394SG3-15	Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.54. Rad error is 4.53.
		Gross beta		TPU is 6.08. Rad error is 5.89.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.507. Rad error is 0.5.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.39. Rad error is 1.39.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 12. Rad error is 11.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.56. Rad error is 0.546.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 80.2. Rad error is 79.7.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4801 MW395	MW395SG3-15	Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.66. Rad error is 5.65.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.53. Rad error is 5.53.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.58. Rad error is 0.561.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.43. Rad error is 1.43.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.6. Rad error is 11.6.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.33. Rad error is 0.33.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 86.5. Rad error is 86.4.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4803 MW396	MW396SG3-15	Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.73. Rad error is 5.72.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.84. Rad error is 4.83.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.552. Rad error is 0.537.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.55. Rad error is 1.55.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 12.6. Rad error is 12.6.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.664. Rad error is 0.653.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 90.6. Rad error is 88.6.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4817 MW397	MW397SG3-15	Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.7. Rad error is 3.7.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.08. Rad error is 5.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.546. Rad error is 0.536.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.81. Rad error is 1.81.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 12.6. Rad error is 12.6.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.271. Rad error is 0.271.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 75.6. Rad error is 75.5.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	RI1SG3-15	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.04. Rad error is 3.04.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.4. Rad error is 4.4.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.363. Rad error is 0.36.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.89. Rad error is 1.89.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.1. Rad error is 11.1.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.284. Rad error is 0.284.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 93.2. Rad error is 90.7.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	RI1SG3-15	Total Organic Halides		Analysis of constituent not required and not performed.

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WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	FB1SG3-15	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Tantalum	N	Sample spike recovery not within control limits.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.06. Rad error is 3.05.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.2. Rad error is 5.19.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.397. Rad error is 0.397.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.88. Rad error is 1.88.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.2. Rad error is 11.2.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.593. Rad error is 0.58.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 89.8. Rad error is 87.9.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID: None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	FB1SG3-15	Total Organic Halides		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB1SG3-15	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Aluminum		Analysis of constituent not required and not performed.
		Antimony		Analysis of constituent not required and not performed.
		Arsenic		Analysis of constituent not required and not performed.
		Barium		Analysis of constituent not required and not performed.
		Beryllium		Analysis of constituent not required and not performed.
		Boron		Analysis of constituent not required and not performed.
		Cadmium		Analysis of constituent not required and not performed.
		Calcium		Analysis of constituent not required and not performed.
		Chromium		Analysis of constituent not required and not performed.
		Cobalt		Analysis of constituent not required and not performed.
		Copper		Analysis of constituent not required and not performed.
		Iron		Analysis of constituent not required and not performed.
		Lead		Analysis of constituent not required and not performed.
		Magnesium		Analysis of constituent not required and not performed.
		Manganese		Analysis of constituent not required and not performed.
		Mercury		Analysis of constituent not required and not performed.
		Molybdenum		Analysis of constituent not required and not performed.
		Nickel		Analysis of constituent not required and not performed.
		Potassium		Analysis of constituent not required and not performed.
		Rhodium		Analysis of constituent not required and not performed.
		Selenium		Analysis of constituent not required and not performed.
		Silver		Analysis of constituent not required and not performed.
		Sodium		Analysis of constituent not required and not performed.
		Tantalum		Analysis of constituent not required and not performed.
		Thallium		Analysis of constituent not required and not performed.
		Uranium		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB1SG3-15	Vanadium		Analysis of constituent not required and not performed.
		Zinc		Analysis of constituent not required and not performed.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha		Analysis of constituent not required and not performed.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		Analysis of constituent not required and not performed.
		Strontium-90		Analysis of constituent not required and not performed.
		Technetium-99		Analysis of constituent not required and not performed.
		Thorium-230		Analysis of constituent not required and not performed.
		Tritium		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB2SG3-15	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Aluminum		Analysis of constituent not required and not performed.
		Antimony		Analysis of constituent not required and not performed.
		Arsenic		Analysis of constituent not required and not performed.
		Barium		Analysis of constituent not required and not performed.
		Beryllium		Analysis of constituent not required and not performed.
		Boron		Analysis of constituent not required and not performed.
		Cadmium		Analysis of constituent not required and not performed.
		Calcium		Analysis of constituent not required and not performed.
		Chromium		Analysis of constituent not required and not performed.
		Cobalt		Analysis of constituent not required and not performed.
		Copper		Analysis of constituent not required and not performed.
		Iron		Analysis of constituent not required and not performed.
		Lead		Analysis of constituent not required and not performed.
		Magnesium		Analysis of constituent not required and not performed.
		Manganese		Analysis of constituent not required and not performed.
		Mercury		Analysis of constituent not required and not performed.
		Molybdenum		Analysis of constituent not required and not performed.
		Nickel		Analysis of constituent not required and not performed.
		Potassium		Analysis of constituent not required and not performed.
		Rhodium		Analysis of constituent not required and not performed.
		Selenium		Analysis of constituent not required and not performed.
		Silver		Analysis of constituent not required and not performed.
		Sodium		Analysis of constituent not required and not performed.
		Tantalum		Analysis of constituent not required and not performed.
		Thallium		Analysis of constituent not required and not performed.
		Uranium		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB2SG3-15	Vanadium		Analysis of constituent not required and not performed.
		Zinc		Analysis of constituent not required and not performed.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha		Analysis of constituent not required and not performed.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		Analysis of constituent not required and not performed.
		Strontium-90		Analysis of constituent not required and not performed.
		Technetium-99		Analysis of constituent not required and not performed.
		Thorium-230		Analysis of constituent not required and not performed.
		Tritium		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB3SG3-15	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Aluminum		Analysis of constituent not required and not performed.
		Antimony		Analysis of constituent not required and not performed.
		Arsenic		Analysis of constituent not required and not performed.
		Barium		Analysis of constituent not required and not performed.
		Beryllium		Analysis of constituent not required and not performed.
		Boron		Analysis of constituent not required and not performed.
		Cadmium		Analysis of constituent not required and not performed.
		Calcium		Analysis of constituent not required and not performed.
		Chromium		Analysis of constituent not required and not performed.
		Cobalt		Analysis of constituent not required and not performed.
		Copper		Analysis of constituent not required and not performed.
		Iron		Analysis of constituent not required and not performed.
		Lead		Analysis of constituent not required and not performed.
		Magnesium		Analysis of constituent not required and not performed.
		Manganese		Analysis of constituent not required and not performed.
		Mercury		Analysis of constituent not required and not performed.
		Molybdenum		Analysis of constituent not required and not performed.
		Nickel		Analysis of constituent not required and not performed.
		Potassium		Analysis of constituent not required and not performed.
		Rhodium		Analysis of constituent not required and not performed.
		Selenium		Analysis of constituent not required and not performed.
		Silver		Analysis of constituent not required and not performed.
		Sodium		Analysis of constituent not required and not performed.
		Tantalum		Analysis of constituent not required and not performed.
		Thallium		Analysis of constituent not required and not performed.
		Uranium		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB3SG3-15	Vanadium		Analysis of constituent not required and not performed.
		Zinc		Analysis of constituent not required and not performed.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha		Analysis of constituent not required and not performed.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		Analysis of constituent not required and not performed.
		Strontium-90		Analysis of constituent not required and not performed.
		Technetium-99		Analysis of constituent not required and not performed.
		Thorium-230		Analysis of constituent not required and not performed.
		Tritium		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB4SG3-15	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Aluminum		Analysis of constituent not required and not performed.
		Antimony		Analysis of constituent not required and not performed.
		Arsenic		Analysis of constituent not required and not performed.
		Barium		Analysis of constituent not required and not performed.
		Beryllium		Analysis of constituent not required and not performed.
		Boron		Analysis of constituent not required and not performed.
		Cadmium		Analysis of constituent not required and not performed.
		Calcium		Analysis of constituent not required and not performed.
		Chromium		Analysis of constituent not required and not performed.
		Cobalt		Analysis of constituent not required and not performed.
		Copper		Analysis of constituent not required and not performed.
		Iron		Analysis of constituent not required and not performed.
		Lead		Analysis of constituent not required and not performed.
		Magnesium		Analysis of constituent not required and not performed.
		Manganese		Analysis of constituent not required and not performed.
		Mercury		Analysis of constituent not required and not performed.
		Molybdenum		Analysis of constituent not required and not performed.
		Nickel		Analysis of constituent not required and not performed.
		Potassium		Analysis of constituent not required and not performed.
		Rhodium		Analysis of constituent not required and not performed.
		Selenium		Analysis of constituent not required and not performed.
		Silver		Analysis of constituent not required and not performed.
		Sodium		Analysis of constituent not required and not performed.
		Tantalum		Analysis of constituent not required and not performed.
		Thallium		Analysis of constituent not required and not performed.
		Uranium		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB4SG3-15	Vanadium		Analysis of constituent not required and not performed.
		Zinc		Analysis of constituent not required and not performed.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha		Analysis of constituent not required and not performed.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		Analysis of constituent not required and not performed.
		Strontium-90		Analysis of constituent not required and not performed.
		Technetium-99		Analysis of constituent not required and not performed.
		Thorium-230		Analysis of constituent not required and not performed.
		Tritium		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB5SG3-15	Bromide		Analysis of constituent not required and not performed.
		Chloride		Analysis of constituent not required and not performed.
		Fluoride		Analysis of constituent not required and not performed.
		Nitrate & Nitrite		Analysis of constituent not required and not performed.
		Sulfate		Analysis of constituent not required and not performed.
		Barometric Pressure Reading		Analysis of constituent not required and not performed.
		Specific Conductance		Analysis of constituent not required and not performed.
		Static Water Level Elevation		Analysis of constituent not required and not performed.
		Dissolved Oxygen		Analysis of constituent not required and not performed.
		Total Dissolved Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Eh		Analysis of constituent not required and not performed.
		Temperature		Analysis of constituent not required and not performed.
		Aluminum		Analysis of constituent not required and not performed.
		Antimony		Analysis of constituent not required and not performed.
		Arsenic		Analysis of constituent not required and not performed.
		Barium		Analysis of constituent not required and not performed.
		Beryllium		Analysis of constituent not required and not performed.
		Boron		Analysis of constituent not required and not performed.
		Cadmium		Analysis of constituent not required and not performed.
		Calcium		Analysis of constituent not required and not performed.
		Chromium		Analysis of constituent not required and not performed.
		Cobalt		Analysis of constituent not required and not performed.
		Copper		Analysis of constituent not required and not performed.
		Iron		Analysis of constituent not required and not performed.
		Lead		Analysis of constituent not required and not performed.
		Magnesium		Analysis of constituent not required and not performed.
		Manganese		Analysis of constituent not required and not performed.
		Mercury		Analysis of constituent not required and not performed.
		Molybdenum		Analysis of constituent not required and not performed.
		Nickel		Analysis of constituent not required and not performed.
		Potassium		Analysis of constituent not required and not performed.
		Rhodium		Analysis of constituent not required and not performed.
		Selenium		Analysis of constituent not required and not performed.
		Silver		Analysis of constituent not required and not performed.
		Sodium		Analysis of constituent not required and not performed.
		Tantalum		Analysis of constituent not required and not performed.
		Thallium		Analysis of constituent not required and not performed.
		Uranium		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
0000-0000 QC	TB5SG3-15	Vanadium		Analysis of constituent not required and not performed.
		Zinc		Analysis of constituent not required and not performed.
		PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha		Analysis of constituent not required and not performed.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		Analysis of constituent not required and not performed.
		Strontium-90		Analysis of constituent not required and not performed.
		Technetium-99		Analysis of constituent not required and not performed.
		Thorium-230		Analysis of constituent not required and not performed.
		Tritium		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand		Analysis of constituent not required and not performed.
		Cyanide		Analysis of constituent not required and not performed.
		Iodide		Analysis of constituent not required and not performed.
		Total Organic Carbon		Analysis of constituent not required and not performed.
		Total Organic Halides		Analysis of constituent not required and not performed.

RESIDENTIAL/INERT – QUARTERLY Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant LAB ID:None

Permit Numbers: 073-00014 and 073-00015 For Official Use Only

GROUNDWATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8000-5242 MW222	MW222DSG3-15	PCB, Total		Analysis of constituent not required and not performed.
		PCB-1016		Analysis of constituent not required and not performed.
		PCB-1221		Analysis of constituent not required and not performed.
		PCB-1232		Analysis of constituent not required and not performed.
		PCB-1242		Analysis of constituent not required and not performed.
		PCB-1248		Analysis of constituent not required and not performed.
		PCB-1254		Analysis of constituent not required and not performed.
		PCB-1260		Analysis of constituent not required and not performed.
		PCB-1268		Analysis of constituent not required and not performed.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.49. Rad error is 3.49.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.86. Rad error is 7.78.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.444. Rad error is 0.442.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.92. Rad error is 1.92.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.7. Rad error is 10.7.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.469. Rad error is 0.464.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 152. Rad error is 152.

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APPENDIX D

STATISTICAL ANALYSES AND QUALIFICATION STATEMENT

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GROUNDWATER STATISTICAL COMMENTS

Introduction

The statistical analyses conducted on the second quarter 2015 groundwater data collected from the C-746-S&T Landfills monitoring wells (MWs) were performed in accordance with Permit GSTR0001, Standard Requirement 3, using the U.S. Environmental Protection Agency (EPA) guidance document, *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance* (1989).

The statistical evaluation was conducted separately for the three groundwater systems: the Upper Continental Recharge System (UCRS), the Upper Regional Gravel Aquifer (URGA), and the Lower Regional Gravel Aquifer (LRGA). For each groundwater system, results from wells considered to represent background conditions were compared with at least three test wells or sidegradient wells (Exhibit D.1). The second quarter 2015 data used to conduct the statistical analyses were collected in April 2015. The statistical analyses for this report first utilized data from the first eight quarters that had been sampled for each parameter, beginning with the first two baseline sampling events in 2002, when available. Then a second set of statistical analyses was run, using the last eight quarters, on analytes that had had at least one downgradient well that exceeded the historical background. The sampling dates associated with background data are listed next to the result in the statistical analysis sheets of this appendix.

Statistical Analysis Process

Chemicals of concern that have Kentucky maximum contaminant levels (MCLs) and results that do not exceed their respective MCL are not included in the statistical evaluation. Parameters that have MCLs can be found in 401 *KAR* 47:030 § 6. For parameters with no established MCL and those parameters that exceed their MCLs, the results are compared to historical background concentrations, as follows: the data are divided into censored and uncensored observations. The one-sided tolerance interval statistical test is conducted only on parameters that have at least one uncensored (detected) observation. The current result is compared to the results of the one-sided tolerance interval statistical test to determine if the current data exceed the historical background concentration calculated using the first eight quarters of data. For the statistical analysis of pH, a two-sided tolerance interval statistical test is conducted for pH. The test well results are compared to both an upper and lower tolerance limit to determine if statistically significant deviations in concentrations exist with respect to upgradient (background) well data from the first eight quarters. The tolerance interval statistical analysis is conducted separately for each parameter in each well (no pooling of downgradient data).

Statistical analyses are performed on the first eight quarters of historical background data, not on the data for the current quarter. Once a statistical result is obtained using the background data, the result for the current quarter is compared to that value. If the value is exceeded, the well is considered to have an exceedance of the statistically derived historical background concentration.

For those parameters that are determined to exceed the historical background concentration, a second one-sided tolerance interval statistical test, or a two-sided tolerance interval statistical test in the case of pH, is conducted. The second one-sided tolerance interval statistical test is conducted to determine whether the current concentration in downgradient wells exceeds the current background, as determined by a comparison against the statistically derived upper tolerance limit using the most recent eight quarters of data for the relevant background wells. For the statistical analysis of pH, a two-sided tolerance interval statistical test is conducted, if required. The test well pH results are compared to both an upper and lower tolerance limit to determine if the current pH is different from the current background level to a statistically significant level. The tolerance interval statistical analysis is conducted separately for each parameter in each well (no pooling of downgradient data).

Statistical analyses are performed on the last eight quarters of current background data, not on the data for the current quarter. Once a statistical result is obtained using the background data, the result for the current quarter is compared to that value. If the value is exceeded, the well has a statistically significant difference in concentration compared to the current background concentration.

A stepwise list of the one-sided tolerance interval statistical procedure applied to the data is summarized below:[1]

1. The tolerance limit (TL) is calculated for the background data (first using the first eight quarters, then using the last eight quarters).

    - For each parameter, the background data are used to establish a baseline. On this data set, the mean (X) and the standard deviation (S) are computed.

    - The data set is checked for normality using coefficient of variation (CV). If CV $\leq$ 1.0, then the data are assumed to be normally distributed. Data sets with CV > 1.0 are assumed to be log-normally distributed; for data sets with CV > 1.0, the data are log-transformed and analyzed.

    - The factor (K) for one-sided upper tolerance limit with 95% minimum coverage is determined (Table 5, Appendix B; *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance*, 1989) based on the number of background data points.

    - The one-sided upper tolerance limit is calculated using the following equation:
      $TL = X + (K \times S)$

2. Each observation from downgradient wells is compared to the calculated one-sided upper tolerance limit in Step 1. If an observation value exceeds the tolerance limit, then there is statistically significant evidence that the well concentration exceeds the historical background.

Type of Data Used

Exhibit D.1 presents the upgradient or background wells (identified as "BG"), the downgradient or test wells (identified as "TW"), and the sidegradient wells (identified as "SG") for the C-746-S&T Residential and Inert Landfills. Exhibit D.2 lists the parameters from the available data set for which a statistically

[1] For pH, two-sided TLs (upper and lower) were calculated with an adjusted K factor using the following equations:
upper $TL = X + (K \times S)$
lower $TL = X - (K \times S)$

derived historical background concentration was developed using the one-sided tolerance interval and the statistical test performed using the one-sided tolerance interval.

Exhibits D.3, D.4, and D.5 list the number of analyses (observations), nondetects (censored observations), and detects (uncensored observations) by parameter in the UCRS, the URGA, and the LRGA, respectively. Those parameters displayed with bold-face type indicate the one-sided tolerance interval statistical test was performed. The data presented in Exhibits D.3, D.4, and D.5 were collected during the current quarter, second quarter 2015. The observations are representative of the current quarter data. Background data are presented in Attachment D1. The sampling dates associated with background data are listed next to the result in Attachment D1. When field duplicate data are available, the higher of the two readings is retained for further evaluation. When a well is sampled on two different dates, the most current available data are used. When a data point has been rejected following data validation, this result is not used, and the next available data point is used for the background or current quarter data.

Exhibit D.1. Station Identification for Monitoring Wells Analyzed

Station	Type	Groundwater Unit
MW220	BG	URGA
MW221	SG	URGA
MW222	SG	URGA
MW223	SG	URGA
MW224	SG	URGA
MW369	TW	URGA
MW370	TW	LRGA
MW372	TW	URGA
MW373	TW	LRGA
MW384	SG	URGA
MW385	SG	LRGA
MW386	SG	UCRS
MW387	TW	URGA
MW388	TW	LRGA
MW389*	TW	UCRS
MW390	TW	UCRS
MW391	TW	URGA
MW392	TW	LRGA
MW393	TW	UCRS
MW394	BG	URGA
MW395	BG	LRGA
MW396	BG	UCRS
MW397	BG	LRGA

NOTE: The gradients in UCRS wells are downward. The UCRS wells identified as up-, side- or downgradient are those wells located in the same general direction as the RGA wells considered to be up-, side-, or downgradient.
BG: upgradient or background wells
TW: downgradient or test wells
SG: sidegradient wells
*****Well was dry this quarter and a groundwater sample could not be collected.

Exhibit D.2. List of Parameters Tested Using the One-Sided Upper Tolerance Level Test with Historical Background

Parameters
Aluminum
Beta Activity
Boron
Bromide
Calcium
Chemical Oxygen Demand
Chloride
cis-1,2-Dichloroethene
Cobalt
Conductivity
Copper
Dissolved Oxygen
Dissolved Solids
Iron
Magnesium
Manganese
Molybdenum
Nickel
Oxidation-Reduction Potential
PCB, Total
PCB-1242
pH*
Potassium
Radium-226
Sodium
Sulfate
Technetium-99
Total Organic Carbon
Total Organic Halides
Trichloroethene
Uranium
Vanadium
Zinc

*****For pH, the test well results were compared to both an upper and lower TL to determine if the current result differs to a statistically significant degree from the historical background values.

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Exhibit D.3. Summary of Censored and Uncensored Data—UCRS

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
1,1,1,2-Tetrachloroethane	4	4		No
1,1,2,2-Tetrachloroethane	4	4		No
1,1,2-Trichloroethane	4	4		No
1,1-Dichloroethane	4	4		No
1,2,3-Trichloropropane	4	4		No
1,2-Dibromo-3-chloropropane	4	4		No
1,2-Dibromoethane	4	4		No
1,2-Dichlorobenzene	4	4		No
1,2-Dichloropropane	4	4		No
2-Butanone	4	4		No
2-Hexanone	4	4		No
4-Methyl-2-pentanone	4	4		No
Acetone	4	4		No
Acrolein	4	4		No
Acrylonitrile	4	4		No
Aluminum	**4**	**2**	**2**	**Yes**
Antimony	4	4		No
Beryllium	4	4		No
Boron	**4**	**2**	**2**	**Yes**
Bromide	**4**	**0**	**4**	**Yes**
Bromochloromethane	4	4		No
Bromodichloromethane	4	4		No
Bromoform	4	4		No
Bromomethane	4	4		No
Calcium	**4**	**0**	**4**	**Yes**
Carbon disulfide	4	4		No
Chemical Oxygen Demand (COD)	**4**	**1**	**3**	**Yes**
Chloride	**4**	**0**	**4**	**Yes**
Chlorobenzene	4	4		No
Chloroethane	4	4		No
Chloroform	4	4		No
Chloromethane	4	4		No
cis-1,2-Dichloroethene	4	4		No
cis-1,3-Dichloropropene	4	4		No
Cobalt	**4**	**1**	**3**	**Yes**
Conductivity	**4**	**0**	**4**	**Yes**
Copper	4	4		No
Cyanide	4	4		No
Dibromochloromethane	4	4		No

Exhibit D.3. Summary of Censored and Uncensored Data—UCRS (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Dibromomethane	4	4		No
Dimethylbenzene, Total	4	4		No
Dissolved Oxygen	**4**	**0**	**4**	**Yes**
Dissolved Solids	**4**	**0**	**4**	**Yes**
Ethylbenzene	4	4		No
Iodide	4	4		No
Iodomethane	4	4		No
Iron	**4**	**0**	**4**	**Yes**
Magnesium	**4**	**0**	**4**	**Yes**
Manganese	**4**	**0**	**4**	**Yes**
Methylene chloride	4	4		No
Molybdenum	**4**	**0**	**4**	**Yes**
Nickel	**4**	**3**	**1**	**Yes**
Oxidation-Reduction Potential	**4**	**0**	**4**	**Yes**
pH	**4**	**0**	**4**	**Yes**
Potassium	**4**	**0**	**4**	**Yes**
Radium-226	**4**	**3**	**1**	**Yes**
Rhodium	4	4		No
Sodium	**4**	**0**	**4**	**Yes**
Styrene	4	4		No
Sulfate	**4**	**0**	**4**	**Yes**
Tantalum	4	4		No
Technetium-99	**4**	**3**	**1**	**Yes**
Tetrachloroethene	4	4		No
Thallium	4	4		No
Thorium-230	4	4		No
Toluene	4	4		No
Total Organic Carbon (TOC)	**4**	**1**	**3**	**Yes**
Total Organic Halides (TOX)	**4**	**0**	**4**	**Yes**
trans-1,2-Dichloroethene	4	4		No
trans-1,3-Dichloropropene	4	4		No
trans-1,4-Dichloro-2-Butene	4	4		No
Trichloroethene	4	4		No
Trichlorofluoromethane	4	4		No
Uranium	**4**	**1**	**3**	**Yes**
Vanadium	**4**	**3**	**1**	**Yes**
Vinyl Acetate	4	4		No
Zinc	**4**	**3**	**1**	**Yes**

Bold denotes parameters with at least one uncensored observation.

Exhibit D.4. Summary of Censored and Uncensored Data—URGA

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
1,1,1,2-Tetrachloroethane	11	11		No
1,1,2,2-Tetrachloroethane	11	11		No
1,1,2-Trichloroethane	11	11		No
1,1-Dichloroethane	11	11		No
1,2,3-Trichloropropane	11	11		No
1,2-Dibromo-3-chloropropane	11	11		No
1,2-Dibromoethane	11	11		No
1,2-Dichlorobenzene	11	11		No
1,2-Dichloropropane	11	11		No
2-Butanone	11	11		No
2-Hexanone	11	11		No
4-Methyl-2-pentanone	11	11		No
Acetone	11	11		No
Acrolein	11	11		No
Acrylonitrile	11	11		No
Aluminum	**11**	**5**	**6**	**Yes**
Antimony	11	11		No
Beryllium	11	11		No
Beta activity	**11**	**6**	**5**	**Yes**
Boron	**11**	**1**	**10**	**Yes**
Bromide	**11**	**0**	**11**	**Yes**
Bromochloromethane	11	11		No
Bromodichloromethane	11	11		No
Bromoform	11	11		No
Bromomethane	11	11		No
Calcium	**11**	**0**	**11**	**Yes**
Carbon disulfide	11	11		No
Chemical Oxygen Demand (COD)	**11**	**8**	**3**	**Yes**
Chloride	**11**	**0**	**11**	**Yes**
Chlorobenzene	11	11		No
Chloroethane	11	11		No
Chloroform	11	11		No
Chloromethane	11	11		No
***cis*-1,2-Dichloroethene**	**11**	**10**	**1**	**Yes**
cis-1,3-Dichloropropene	11	11		No
Cobalt	**11**	**1**	**10**	**Yes**
Conductivity	**11**	**0**	**11**	**Yes**
Copper	**11**	**10**	**1**	**Yes**
Cyanide	11	11		No

Exhibit D.4. Summary of Censored and Uncensored Data—URGA (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Dibromochloromethane	11	11		No
Dibromomethane	11	11		No
Dimethylbenzene, Total	11	11		No
Dissolved Oxygen	**11**	**0**	**11**	**Yes**
Dissolved Solids	**11**	**0**	**11**	**Yes**
Ethylbenzene	11	11		No
Iodide	11	11		No
Iodomethane	11	11		No
Iron	**11**	**1**	**10**	**Yes**
Magnesium	**11**	**0**	**11**	**Yes**
Manganese	**11**	**1**	**10**	**Yes**
Methylene chloride	11	11		No
Molybdenum	**11**	**4**	**7**	**Yes**
Nickel	**11**	**1**	**10**	**Yes**
Oxidation-Reduction Potential	**11**	**0**	**11**	**Yes**
PCB, Total	**2**	**1**	**1**	**Yes**
PCB-1016	2	2		No
PCB-1221	2	2		No
PCB-1232	2	2		No
PCB-1242	**2**	**1**	**1**	**Yes**
PCB-1248	2	2		No
PCB-1254	2	2		No
PCB-1260	2	2		No
pH	**11**	**0**	**11**	**Yes**
Potassium	**11**	**0**	**11**	**Yes**
Radium-226	**11**	**7**	**4**	**Yes**
Rhodium	11	11		No
Sodium	**11**	**0**	**11**	**Yes**
Styrene	11	11		No
Sulfate	**11**	**0**	**11**	**Yes**
Tantalum	11	11		No
Technetium-99	**11**	**8**	**3**	**Yes**
Tetrachloroethene	11	11		No
Thallium	11	11		No
Thorium-230	11	11		No
Toluene	11	11		No
Total Organic Carbon (TOC)	**11**	**4**	**7**	**Yes**
Total Organic Halides (TOX)	**12**	**4**	**8**	**Yes**
trans-1,2-Dichloroethene	11	11		No

Exhibit D.4. Summary of Censored and Uncensored Data—URGA (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
trans-1,3-Dichloropropene	11	11		No
trans-1,4-Dichloro-2-Butene	11	11		No
Trichloroethene	**11**	**1**	**10**	**Yes**
Trichlorofluoromethane	11	11		No
Uranium	11	11		No
Vanadium	**11**	**10**	**1**	**Yes**
Vinyl Acetate	11	11		No
Zinc	**11**	**7**	**4**	**Yes**

Bold denotes parameters with at least one uncensored observation.

Exhibit D.5. Summary of Censored and Uncensored Data—LRGA

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
1,1,1,2-Tetrachloroethane	7	7		No
1,1,2,2-Tetrachloroethane	7	7		No
1,1,2-Trichloroethane	7	7		No
1,1-Dichloroethane	7	7		No
1,2,3-Trichloropropane	7	7		No
1,2-Dibromo-3-chloropropane	7	7		No
1,2-Dibromoethane	7	7		No
1,2-Dichlorobenzene	7	7		No
1,2-Dichloropropane	7	7		No
2-Butanone	7	7		No
2-Hexanone	7	7		No
4-Methyl-2-pentanone	7	7		No
Acetone	7	7		No
Acrolein	7	7		No
Acrylonitrile	7	7		No
Aluminum	**7**	**3**	**4**	**Yes**
Antimony	7	7		No
Beryllium	7	7		No
Beta activity	**7**	**3**	**4**	**Yes**
Boron	**7**	**1**	**6**	**Yes**
Bromide	**7**	**0**	**7**	**Yes**
Bromochloromethane	7	7		No
Bromodichloromethane	7	7		No
Bromoform	7	7		No
Bromomethane	7	7		No
Calcium	**7**	**0**	**7**	**Yes**
Carbon disulfide	7	7		No
Chemical Oxygen Demand (COD)	**7**	**5**	**2**	**Yes**
Chloride	**7**	**0**	**7**	**Yes**
Chlorobenzene	7	7		No
Chloroethane	7	7		No
Chloroform	7	7		No
Chloromethane	7	7		No
***cis*-1,2-Dichloroethene**	**7**	**5**	**2**	**Yes**
cis-1,3-Dichloropropene	7	7		No
Cobalt	**7**	**4**	**3**	**Yes**
Conductivity	**7**	**0**	**7**	**Yes**
Copper	**7**	**6**	**1**	**Yes**
Cyanide	7	7		No
Dibromochloromethane	7	7		No
Dibromomethane	7	7		No

Exhibit D.5. Summary of Censored and Uncensored Data—LRGA (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Dimethylbenzene, Total	7	7		No
Dissolved Oxygen	**7**	**0**	**7**	**Yes**
Dissolved Solids	**7**	**0**	**7**	**Yes**
Ethylbenzene	7	7		No
Iodide	7	7		No
Iodomethane	7	7		No
Iron	**7**	**3**	**4**	**Yes**
Magnesium	**7**	**0**	**7**	**Yes**
Manganese	**7**	**1**	**6**	**Yes**
Methylene chloride	7	7		No
Molybdenum	**7**	**6**	**1**	**Yes**
Nickel	**7**	**2**	**5**	**Yes**
Oxidation-Reduction Potential	**7**	**0**	**7**	**Yes**
PCB, Total	2	2		No
PCB-1016	2	2		No
PCB-1221	2	2		No
PCB-1232	2	2		No
PCB-1242	2	2		No
PCB-1248	2	2		No
PCB-1254	2	2		No
PCB-1260	2	2		No
pH	**7**	**0**	**7**	**Yes**
Potassium	**7**	**0**	**7**	**Yes**
Radium-226	**7**	**5**	**2**	**Yes**
Rhodium	7	7		No
Sodium	**7**	**0**	**7**	**Yes**
Styrene	7	7		No
Sulfate	**7**	**0**	**7**	**Yes**
Tantalum	7	7		No
Technetium-99	**7**	**3**	**4**	**Yes**
Tetrachloroethene	7	7		No
Thallium	7	7		No
Thorium-230	7	7		No
Toluene	7	7		No
Total Organic Carbon (TOC)	**7**	**3**	**4**	**Yes**
Total Organic Halides (TOX)	**7**	**2**	**5**	**Yes**
trans-1,2-Dichloroethene	7	7		No
trans-1,3-Dichloropropene	7	7		No
trans-1,4-Dichloro-2-Butene	7	7		No
Trichloroethene	**7**	**0**	**7**	**Yes**
Trichlorofluoromethane	7	7		No

Exhibit D.5. Summary of Censored and Uncensored Data—LRGA (Continued)

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Uranium	7	7		No
Vanadium	7	7		No
Vinyl Acetate	7	7		No
Zinc	**7**	**6**	**1**	**Yes**

Bold denotes parameters with at least one uncensored observation.

Discussion of Results from Historical Background Comparison

For the UCRS, URGA, and LRGA, the concentrations of this quarter were compared to the results of the one-sided upper tolerance interval tests that were calculated using historical background and presented in Attachment D1. The statistician qualification statement is presented in Attachment D3. For the UCRS, URGA, and LRGA, the test was applied to 27, 32, and 29 parameters, respectively, including those listed in bold print in Exhibits D.3, D.4, and D.5, which includes those constituents (beta activity and trichloroethene) that exceeded their MCL. A summary of exceedances when compared to statistically derived historical upgradient background by well number is shown in Exhibit D.6.

UCRS

This quarter's results identified exceedances of historical background UTL for oxidation-reduction potential, radium-226, and technetium-99.

URGA

This quarter's results identified exceedances of historical background UTL for beta activity, calcium, chemical oxygen demand, conductivity, dissolved solids, magnesium, oxidation-reduction potential, radium-226, sodium, sulfate, and technetium-99.

LRGA

This quarter's results identified exceedances of historical background UTL for beta activity, calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, radium-226, sulfate, and technetium-99.

Statistical Summary

Summaries of the results of the statistical tests conducted on data obtained from wells in the UCRS, the URGA, and in the LRGA are presented in Exhibit D.7, Exhibit D.8, and Exhibit D.9, respectively.

Exhibit D.6. Summary of Exceedances of Statistically Derived Historical Background Concentrations

UCRS	URGA	LRGA
MW386: Oxidation-reduction potential	**MW220:** Oxidation-reduction potential, sulfate	**MW370:** Oxidation-reduction potential, radium-226, sulfate
MW390: Oxidation-reduction potential, radium-226, technetium-99	**MW221:** Oxidation-reduction potential	**MW373:** Calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate
MW393: Oxidation-reduction potential	**MW222:** Oxidation-reduction potential, radium-226	**MW385:** Beta activity, oxidation-reduction potential, sulfate, technetium-99
MW396: Oxidation-reduction potential	**MW369:** Oxidation-reduction potential, sulfate, technetium-99	**MW388:** Beta activity, oxidation-reduction potential, sulfate, technetium-99
	MW372: Calcium, conductivity, dissolved solids, magnesium, radium-226, sodium, sulfate	**MW392:** Oxidation-reduction potential
	MW384: Beta activity, radium-226, sulfate, technetium-99	**MW395:** Oxidation-reduction potential
	MW387: Beta activity, sulfate, technetium-99	**MW397:** Oxidation-reduction potential
	MW391: Oxidation-reduction potential, sulfate	
	MW394: Chemical oxygen demand, oxidation-reduction potential	

Exhibit D.7. Test Summaries for Qualified Parameters for Historical Background—UCRS

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Aluminum	Tolerance Interval	0.57	No exceedance of statistically derived historical background concentration.
Boron	Tolerance Interval	1.50	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.24	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.20	No exceedance of statistically derived historical background concentration.
Chemical Oxygen Demand	Tolerance Interval	0.02	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.05	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	1.34	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.12	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	1.20	No exceedance of statistically derived historical background concentration.
Dissolved Solids	Tolerance Interval	0.19	No exceedance of statistically derived historical background concentration.
Iron	Tolerance Interval	0.48	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.20	No exceedance of statistically derived historical background concentration.
Manganese	Tolerance Interval	0.46	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.51	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	1.27	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.

Exhibit D.7. Test Summaries for Qualified Parameters for Historical Background —UCRS (Continued)

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Oxidation-Reduction Potential	Tolerance Interval	4.77	Current results exceed statistically derived historical background concentration in MW386, MW390, MW393, and MW396.
pH	Tolerance Interval	0.05	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.28	No exceedance of statistically derived historical background concentration.
Radium-226	Tolerance Interval	1.78	Current results exceed statistically derived historical background concentration in MW390.
Sodium	Tolerance Interval	0.30	No exceedance of statistically derived historical background concentration.
Sulfate	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Technetium-99	Tolerance Interval	0.86	Current results exceed statistically derived historical background concentration in MW390.
Total Organic Carbon	Tolerance Interval	0.47	No exceedance of statistically derived historical background concentration.
Total Organic Halides	Tolerance Interval	0.38	No exceedance of statistically derived historical background concentration.
Uranium	Tolerance Interval	0.31	No exceedance of statistically derived historical background concentration.
Vanadium	Tolerance Interval	0.11	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	0.79	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.

Exhibit D.8. Test Summaries for Qualified Parameters for Historical Background —URGA

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Aluminum	Tolerance Interval	0.28	No exceedance of statistically derived historical background concentration.
Beta Activity[1]	Tolerance Interval	0.97	Current results exceed statistically derived historical background concentration in MW384 and MW387.
Boron	Tolerance Interval	1.45	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.17	Current results exceed statistically derived historical background concentration in MW372.
Chemical Oxygen Demand	Tolerance Interval	0.00	Current results exceed statistically derived historical background concentration in MW394.
Chloride	Tolerance Interval	0.23	No exceedance of statistically derived historical background concentration.
cis-1,2-Dichloroethene	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	2.44	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.28	Current results exceed statistically derived historical background concentration in MW372.
Copper	Tolerance Interval	0.43	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.50	No exceedance of statistically derived historical background concentration.
Dissolved Solids	Tolerance Interval	0.12	Current results exceed statistically derived historical background concentration in MW372.
Iron	Tolerance Interval	1.17	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.16	Current results exceed statistically derived historical background concentration in MW372.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.
[1] Tolerance interval was calculated based on an MCL exceedance.

Exhibit D.8. Test Summaries for Qualified Parameters for Historical Background —URGA (Continued)

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Manganese	Tolerance Interval	2.16	No exceedance of statistically derived historical background concentration.
Molybdenum	Tolerance Interval	1.26	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	1.79	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential	Tolerance Interval	0.48	Current results exceed statistically derived historical background concentration in MW220, MW221, MW222, MW369, MW391, and MW394.
PCB, Total	Tolerance Interval	0.72	No exceedance of statistically derived historical background concentration.
PCB-1242	Tolerance Interval	1.16	No exceedance of statistically derived historical background concentration.
pH	Tolerance Interval	0.05	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	1.40	No exceedance of statistically derived historical background concentration.
Radium-226	Tolerance Interval	10.59	Current results exceed statistically derived historical background concentration in MW222, MW372, and MW384.
Sodium	Tolerance Interval	0.24	Current results exceed statistically derived historical background concentration in MW372.
Sulfate	Tolerance Interval	0.25	Current results exceed statistically derived historical background concentration in MW220, MW369, MW372, MW384, MW387, and MW391.
Technetium-99	Tolerance Interval	0.99	Current results exceed statistically derived historical background concentration in MW369, MW384 and MW387.
Total Organic Carbon	Tolerance Interval	0.49	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.
[1] Tolerance interval was calculated based on an MCL exceedance.

Exhibit D.8. Test Summaries for Qualified Parameters for Historical Background —URGA (Continued)

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Total Organic Halides	Tolerance Interval	2.57	No exceedance of statistically derived historical background concentration.
Trichloroethene[1]	Tolerance Interval	0.95	No exceedance of statistically derived historical background concentration.
Vanadium	Tolerance Interval	0.08	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	0.72	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.
[1] Tolerance interval was calculated based on an MCL exceedance.

Exhibit D.9. Test Summaries for Qualified Parameters for Historical Background —LRGA

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Aluminum	Tolerance Interval	0.86	No exceedance of statistically derived historical background concentration.
Beta Activity[1]	Tolerance Interval	0.36	Current results exceed statistically derived historical background concentration in MW385 and MW388.
Boron	Tolerance Interval	1.24	No exceedance of statistically derived historical background concentration.
Bromide	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Calcium	Tolerance Interval	0.50	Current results exceed statistically derived historical background concentration in MW373.
Chemical Oxygen Demand	Tolerance Interval	0.04	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.23	No exceedance of statistically derived historical background concentration.
cis-1,2-Dichloroethene	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Cobalt	Tolerance Interval	1.52	No exceedance of statistically derived historical background concentration.
Conductivity	Tolerance Interval	0.14	Current results exceed statistically derived historical background concentration in MW373.
Copper	Tolerance Interval	0.47	No exceedance of statistically derived historical background concentration.
Dissolved Oxygen	Tolerance Interval	0.52	No exceedance of statistically derived historical background concentration.
Dissolved Solids	Tolerance Interval	0.16	Current results exceed statistically derived historical background concentration in MW373.
Iron	Tolerance Interval	1.29	No exceedance of statistically derived historical background concentration.
Magnesium	Tolerance Interval	0.52	Current results exceed statistically derived historical background concentration in MW373.
Manganese	Tolerance Interval	1.49	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.
[1] Tolerance interval was calculated based on an MCL exceedance.

Exhibit D.9. Test Summaries for Qualified Parameters for Historical Background —LRGA (Continued)

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Molybdenum	Tolerance Interval	1.45	No exceedance of statistically derived historical background concentration.
Nickel	Tolerance Interval	1.09	No exceedance of statistically derived historical background concentration.
Oxidation-Reduction Potential	Tolerance Interval	0.33	Current results exceed statistically derived historical background concentration in MW370, MW373, MW385, MW388, MW392, MW395, and MW397.
pH	Tolerance Interval	0.04	No exceedance of statistically derived historical background concentration.
Potassium	Tolerance Interval	0.40	No exceedance of statistically derived historical background concentration.
Radium-226	Tolerance Interval	10.74	Current results exceed statistically derived historical background concentration in MW370.
Sodium	Tolerance Interval	0.47	No exceedance of statistically derived historical background concentration.
Sulfate	Tolerance Interval	0.20	Current results exceed statistically derived historical background concentration in MW370, MW373, MW385, and MW388.
Technetium-99	Tolerance Interval	0.81	Current results exceed statistically derived historical background concentration in MW385 and MW388.
Total Organic Carbon	Tolerance Interval	0.55	No exceedance of statistically derived historical background concentration.
Total Organic Halides	Tolerance Interval	0.59	No exceedance of statistically derived historical background concentration.
Trichloroethene[1]	Tolerance Interval	0.78	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	0.76	No exceedance of statistically derived historical background concentration.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.
[1] Tolerance interval was calculated based on an MCL exceedance.

Discussion of Results from Current Background Comparison

For the UCRS, URGA, and LRGA, the concentrations from downgradient wells were compared to the one-sided tolerance limit calculated using the most recent eight quarters of data and are presented in Attachment D2 and the statistician qualification statement is presented in Attachment D3. For the UCRS, URGA, and LRGA, the test was applied to 3, 11, and 9 parameters, respectively, because these parameter concentrations exceeded the historical background TL. A summary of instances where downgradient well concentrations exceeded the TL calculated using current background data is shown in Exhibit D.10, presented by well number.

Exhibit D.10. Summary of Exceedances (Downgradient Wells) of the TL Calculated Using Current Background Concentrations

URGA	LRGA
MW372: Calcium, conductivity, magnesium, sodium, sulfate	**MW373:** Calcium, conductivity, dissolved solids, magnesium, sulfate
MW384: Beta activity, technetium-99	**MW385:** Beta activity, technetium-99
MW387: Beta activity, sulfate, technetium-99	**MW388:** Beta activity, sulfate, technetium-99
MW391: Sulfate	

UCRS

Because gradients in the UCRS are downward, there are no hydrogeologically downgradient UCRS wells that exceed the current background TL derived using the most recent eight quarters of data. NOTE: Technetium-99 concentrations in one UCRS well exceeded the current TL this quarter.

URGA

This quarter's results identified current background exceedances in downgradient wells for beta activity, calcium, conductivity, magnesium, sodium, sulfate, and technetium-99.

LRGA

This quarter's results identified current background exceedances in downgradient wells for beta activity, calcium, conductivity, dissolved solids, magnesium, sulfate, and technetium-99.

Statistical Summary

Summaries of the statistical tests conducted on data obtained from wells in the UCRS, the URGA, and in the LRGA are presented in Exhibit D.11, Exhibit D.12, and Exhibit D.13, respectively.

Exhibit D.11. Test Summaries for Qualified Parameters for Current Background—UCRS

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Oxidation-Reduction Potential	Tolerance Interval	0.44	No exceedance of statistically derived current background concentration.
Radium-226	Tolerance Interval	1.09	No exceedance of statistically derived current background concentration.
Technetium-99	Tolerance Interval	2.18	Because gradients in UCRS wells are downward, there are no UCRS wells that are hydrogeologically downgradient of the landfill. However, technetium-99 concentrations exceeded the TL calculated using current background data in MW390.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.

Exhibit D.12. Test Summaries for Qualified Parameters for Current Background —URGA

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Beta Activity	Tolerance Interval	0.60	Current results exceed statistically derived current background concentration in MW384 and MW387.
Calcium	Tolerance Interval	0.13	Current results exceed statistically derived current background concentration in MW372.
Chemical Oxygen Demand	Tolerance Interval	0.38	No exceedance of statistically derived current background concentration.
Conductivity	Tolerance Interval	0.07	Current results exceed statistically derived current background concentration in MW372.
Dissolved Solids	Tolerance Interval	0.41	No exceedance of statistically derived current background concentration.
Magnesium	Tolerance Interval	0.13	Current results exceed statistically derived current background concentration in MW372.
Oxidation-Reduction Potential	Tolerance Interval	0.32	No exceedance of statistically derived current background concentration.
Radium-226	Tolerance Interval	1.73	No exceedance of statistically derived current background concentration.
Sodium	Tolerance Interval	0.15	Current results exceed statistically derived current background concentration in MW372.
Sulfate	Tolerance Interval	0.28	Current results exceed statistically derived current background concentration in MW372, MW387, and MW391.
Technetium-99	Tolerance Interval	0.51	Current results exceed statistically derived current background concentration MW384 and MW387.

CV: coefficient of variation
*If CV > 1.0, used log-transformed data.

Exhibit D.13. Test Summaries for Qualified Parameters for Current Background —LRGA

Parameter	Performed Test	CV Normality Test*	Results of Tolerance Interval Test Conducted
Beta Activity	Tolerance Interval	0.50	Current results exceed statistically derived current background concentration in MW385 and MW388.
Calcium	Tolerance Interval	0.19	Current results exceed statistically derived current background concentration in MW373.
Conductivity	Tolerance Interval	0.07	Current results exceed statistically derived current background concentration in MW373.
Dissolved Solids	Tolerance Interval	0.15	Current results exceed statistically derived current background concentration in MW373.
Magnesium	Tolerance Interval	0.19	Current results exceed statistically derived current background concentration in MW373.
Oxidation-Reduction Potential	Tolerance Interval	0.29	No exceedance of statistically derived current background concentration.
Radium-226	Tolerance Interval	1.37	No exceedance of statistically derived current background concentration.
Sulfate	Tolerance Interval	0.30	Current results exceed statistically derived current background concentration in MW373 and MW388.
Technetium-99	Tolerance Interval	0.50	Current results exceed statistically derived current background concentration in MW385 and MW388.

CV: coefficient of variation
* If CV > 1.0, used log-transformed data.

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ATTACHMENT D1

COMPARISON OF CURRENT DATA TO ONE-SIDED UPPER TOLERANCE INTERVAL TEST CALCULATED USING HISTORICAL BACKGROUND DATA

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Aluminum UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.320	**S=** 0.182	**CV(1)=** 0.567	**K factor**=** 3.188	**TL(1)=** 0.900	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.259	**S=** 0.503	**CV(2)=** -0.400	**K factor**=** 3.188	**TL(2)=** 0.345	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	0.393	-0.934
9/16/2002	0.2	-1.609
10/16/2002	0.2	-1.609
1/13/2003	0.501	-0.691
4/8/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.2	-1.609
1/14/2004	0.668	-0.403

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	0.05	N/A	-2.996	N/A
MW390	Downgradient	Yes	0.209	NO	-1.565	N/A
MW393	Downgradient	No	0.05	N/A	-2.996	N/A
MW396	Upgradient	Yes	0.214	NO	-1.542	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Boron UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.425	**S=** 0.636	**CV(1)=** 1.497	**K factor**=** 3.188	**TL(1)=** 2.454	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.322	**S=** 0.814	**CV(2)=** -0.616	**K factor**=** 3.188	**TL(2)=** 1.274	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	2	0.693
9/16/2002	0.2	-1.609
10/16/2002	0.2	-1.609
1/13/2003	0.2	-1.609
4/8/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.2	-1.609
1/14/2004	0.2	-1.609

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	0.00661	N/A	-5.019	N/A
MW390	Downgradient	No	0.0129	N/A	-4.351	N/A
MW393	Downgradient	Yes	0.0196	N/A	-3.932	NO
MW396	Upgradient	Yes	0.00532	N/A	-5.236	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Bromide **UNITS: mg/L** **UCRS**

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 1.388	**S=** 0.327	**CV(1)=** 0.236	**K factor**=** 3.188	**TL(1)=** 2.430	**LL(1)=** N/A
Statistics-Transformed Background Data	**X=** 0.301	**S=** 0.252	**CV(2)=** 0.838	**K factor**=** 3.188	**TL(2)=** 1.105	**LL(2)=** N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	1.5	0.405
9/16/2002	1.6	0.470
10/16/2002	1.6	0.470
1/13/2003	1	0.000
4/8/2003	1	0.000
7/16/2003	1	0.000
10/14/2003	1.7	0.531
1/14/2004	1.7	0.531

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	0.158	NO	-1.845	N/A
MW390	Downgradient	Yes	0.694	NO	-0.365	N/A
MW393	Downgradient	Yes	0.177	NO	-1.732	N/A
MW396	Upgradient	Yes	1.25	NO	0.223	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Calcium UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 41.825	**S=** 8.445	**CV(1)=** 0.202	**K factor**=** 3.188	**TL(1)=** 68.748	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.711	**S=** 0.241	**CV(2)=** 0.065	**K factor**=** 3.188	**TL(2)=** 4.479	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	38.4	3.648
9/16/2002	42.9	3.759
10/16/2002	40.2	3.694
1/13/2003	46.7	3.844
4/8/2003	49.8	3.908
7/16/2003	43.3	3.768
10/14/2003	49.7	3.906
1/14/2004	23.6	3.161

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	22.4	NO	3.109	N/A
MW390	Downgradient	Yes	32.7	NO	3.487	N/A
MW393	Downgradient	Yes	12.2	NO	2.501	N/A
MW396	Upgradient	Yes	33.6	NO	3.515	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Chemical Oxygen Demand (COD) UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 35.375	**S=** 0.744	**CV(1)=** 0.021	**K factor**=** 3.188	**TL(1)=** 37.747	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.566	**S=** 0.021	**CV(2)=** 0.006	**K factor**=** 3.188	**TL(2)=** 3.632	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	36	3.584
9/16/2002	35	3.555
10/16/2002	37	3.611
1/13/2003	35	3.555
4/8/2003	35	3.555
7/16/2003	35	3.555
10/14/2003	35	3.555
1/14/2004	35	3.555

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	21.7	NO	3.077	N/A
MW390	Downgradient	No	20	N/A	2.996	N/A
MW393	Downgradient	Yes	22.8	NO	3.127	N/A
MW396	Upgradient	Yes	6.77	NO	1.913	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Chloride UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 101.725 **S=** 5.245 **CV(1)=** 0.052 **K factor**=** 3.188 **TL(1)=** 118.447 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 4.621 **S=** 0.053 **CV(2)=** 0.011 **K factor**=** 3.188 **TL(2)=** 4.789 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	91.6	4.517
9/16/2002	98.3	4.588
10/16/2002	101.4	4.619
1/13/2003	108.3	4.685
4/8/2003	100.5	4.610
7/16/2003	102.5	4.630
10/14/2003	106.8	4.671
1/14/2004	104.4	4.648

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	15.6	NO	2.747	N/A
MW390	Downgradient	Yes	69.3	NO	4.238	N/A
MW393	Downgradient	Yes	15.2	NO	2.721	N/A
MW396	Upgradient	Yes	81.7	NO	4.403	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Cobalt UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.008	**S=** 0.011	**CV(1)=** 1.340	**K factor**=** 3.188	**TL(1)=** 0.042	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -5.645	**S=** 1.339	**CV(2)=** -0.237	**K factor**=** 3.188	**TL(2)=** -1.377	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/16/2002	0.001	-6.908
1/13/2003	0.00324	-5.732
4/8/2003	0.00436	-5.435
7/16/2003	0.00276	-5.893
10/14/2003	0.001	-6.908
1/14/2004	0.001	-6.908

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	0.001	N/A	-6.908	N/A
MW390	Downgradient	Yes	0.00043	N/A	-7.752	NO
MW393	Downgradient	Yes	0.00013	N/A	-8.948	NO
MW396	Upgradient	Yes	0.00019	N/A	-8.568	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Conductivity UNITS: umho/cm UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 922.500 **S=** 107.616 **CV(1)=** 0.117 **K factor**=** 3.188 **TL(1)=** 1265.579 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 6.822 **S=** 0.111 **CV(2)=** 0.016 **K factor**=** 3.188 **TL(2)=** 7.175 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	784	6.664
9/30/2002	871	6.770
10/16/2002	868	6.766
1/13/2003	912	6.816
4/8/2003	942	6.848
7/16/2003	910	6.813
10/14/2003	935	6.841
1/14/2004	1158	7.054

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	619	NO	6.428	N/A
MW390	Downgradient	Yes	719	NO	6.578	N/A
MW393	Downgradient	Yes	429	NO	6.061	N/A
MW396	Upgradient	Yes	757	NO	6.629	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Dissolved Oxygen UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 1.395	**S=** 1.677	**CV(1)=** 1.202	**K factor**=** 3.188	**TL(1)=** 6.743	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -0.043	**S=** 0.814	**CV(2)=** -18.867	**K factor**=** 3.188	**TL(2)=** 2.553	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	5.45	1.696
9/16/2002	0.4	-0.916
10/16/2002	0.54	-0.616
1/13/2003	0.72	-0.329
4/8/2003	0.69	-0.371
7/16/2003	1.1	0.095
10/14/2003	0.71	-0.342
1/14/2004	1.55	0.438

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	2.19	N/A	0.784	NO
MW390	Downgradient	Yes	4.36	N/A	1.472	NO
MW393	Downgradient	Yes	1.59	N/A	0.464	NO
MW396	Upgradient	Yes	3.19	N/A	1.160	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Dissolved Solids UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 550.375 **S=** 104.330 **CV(1)=** 0.190 **K factor**=** 3.188 **TL(1)=** 882.980 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 6.298 **S=** 0.162 **CV(2)=** 0.026 **K factor**=** 3.188 **TL(2)=** 6.815 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	502	6.219
9/16/2002	506	6.227
10/16/2002	543	6.297
1/13/2003	521	6.256
4/8/2003	504	6.223
7/16/2003	532	6.277
10/14/2003	490	6.194
1/14/2004	805	6.691

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	347	NO	5.849	N/A
MW390	Downgradient	Yes	379	NO	5.938	N/A
MW393	Downgradient	Yes	226	NO	5.421	N/A
MW396	Upgradient	Yes	401	NO	5.994	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Iron UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 7.796	**S=** 3.723	**CV(1)=** 0.478	**K factor**=** 3.188	**TL(1)=** 19.666	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.880	**S=** 0.723	**CV(2)=** 0.384	**K factor**=** 3.188	**TL(2)=** 4.184	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	1.8	0.588
9/16/2002	9.53	2.254
10/16/2002	7.43	2.006
1/13/2003	9.93	2.296
4/8/2003	10.2	2.322
7/16/2003	9.16	2.215
10/14/2003	11.9	2.477
1/14/2004	2.42	0.884

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	0.0421	NO	-3.168	N/A
MW390	Downgradient	Yes	0.21	NO	-1.561	N/A
MW393	Downgradient	Yes	1.22	NO	0.199	N/A
MW396	Upgradient	Yes	0.568	NO	-0.566	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Magnesium UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 16.876	**S=** 3.313	**CV(1)=** 0.196	**K factor**=** 3.188	**TL(1)=** 27.438	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.804	**S=** 0.240	**CV(2)=** 0.086	**K factor**=** 3.188	**TL(2)=** 3.569	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	15.5	2.741
9/16/2002	17.3	2.851
10/16/2002	17.8	2.879
1/13/2003	19.2	2.955
4/8/2003	17.8	2.879
7/16/2003	17.8	2.879
10/14/2003	20.2	3.006
1/14/2004	9.41	2.242

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	9.78	NO	2.280	N/A
MW390	Downgradient	Yes	14.1	NO	2.646	N/A
MW393	Downgradient	Yes	3.62	NO	1.286	N/A
MW396	Upgradient	Yes	15.5	NO	2.741	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Manganese UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.774	**S=** 0.353	**CV(1)=** 0.456	**K factor**=** 3.188	**TL(1)=** 1.900	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -0.566	**S=** 1.192	**CV(2)=** -2.105	**K factor**=** 3.188	**TL(2)=** 3.235	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	0.57	-0.562
9/16/2002	0.647	-0.435
10/16/2002	0.88	-0.128
1/13/2003	1.132	0.124
4/8/2003	0.965	-0.036
7/16/2003	0.983	-0.017
10/14/2003	0.984	-0.016
1/14/2004	0.0314	-3.461

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	0.00805	NO	-4.822	N/A
MW390	Downgradient	Yes	0.00159	NO	-6.444	N/A
MW393	Downgradient	Yes	0.039	NO	-3.244	N/A
MW396	Upgradient	Yes	0.0219	NO	-3.821	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Molybdenum UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.007	**S=** 0.011	**CV(1)=** 1.507	**K factor**=** 3.188	**TL(1)=** 0.042	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -5.928	**S=** 1.420	**CV(2)=** -0.240	**K factor**=** 3.188	**TL(2)=** -1.400	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/16/2002	0.001	-6.908
1/13/2003	0.00128	-6.661
4/8/2003	0.00271	-5.911
7/16/2003	0.00117	-6.751
10/14/2003	0.001	-6.908
1/14/2004	0.001	-6.908

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	0.00046	N/A	-7.684	NO
MW390	Downgradient	Yes	0.00052	N/A	-7.562	NO
MW393	Downgradient	Yes	0.00027	N/A	-8.217	NO
MW396	Upgradient	Yes	0.00043	N/A	-7.752	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Nickel UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.016	**S=** 0.021	**CV(1)=** 1.272	**K factor**=** 3.188	**TL(1)=** 0.083	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -4.706	**S=** 1.057	**CV(2)=** -0.225	**K factor**=** 3.188	**TL(2)=** -1.338	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	0.05	-2.996
9/16/2002	0.05	-2.996
10/16/2002	0.005	-5.298
1/13/2003	0.005	-5.298
4/8/2003	0.00571	-5.166
7/16/2003	0.005	-5.298
10/14/2003	0.005	-5.298
1/14/2004	0.005	-5.298

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	0.002	N/A	-6.215	N/A
MW390	Downgradient	Yes	0.0015	N/A	-6.502	NO
MW393	Downgradient	No	0.002	N/A	-6.215	N/A
MW396	Upgradient	No	0.002	N/A	-6.215	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Oxidation-Reduction Potential UNITS: mV UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 13.000	**S=** 61.952	**CV(1)=** 4.766	**K factor**=** 3.188	**TL(1)=** 210.502	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 4.364	**S=** 0.333	**CV(2)=** 0.076	**K factor**=** 3.188	**TL(2)=** 4.736	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	60	4.094
4/8/2003	71	4.263
7/16/2003	-56	#Func!
10/14/2003	-54	#Func!
1/14/2004	-22	#Func!
4/12/2004	-6	#Func!
7/20/2004	-3	#Func!
10/12/2004	114	4.736

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	427	N/A	6.057	YES
MW390	Downgradient	Yes	494	N/A	6.203	YES
MW393	Downgradient	Yes	478	N/A	6.170	YES
MW396	Upgradient	Yes	469	N/A	6.151	YES

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW386
MW390
MW393
MW396

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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pH UNITS: Std Unit UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 6.460	**S=** 0.350	**CV(1)=** 0.054	**K factor**=** 3.736	**TL(1)=** 7.766	**LL(1)=**5.1541
Statistics-Transformed Background Data	**X=** 1.864	**S=** 0.054	**CV(2)=** 0.029	**K factor**=** 3.736	**TL(2)=** 2.067	**LL(2)=**1.6621

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	6.17	1.820
9/16/2002	6.4	1.856
10/16/2002	5.9	1.775
1/13/2003	6.4	1.856
4/8/2003	6.65	1.895
7/16/2003	6.4	1.856
10/14/2003	6.71	1.904
1/14/2004	7.05	1.953

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW386	Sidegradient	Yes	6.7	NO	1.902	N/A
MW390	Downgradient	Yes	6.19	NO	1.823	N/A
MW393	Downgradient	Yes	6.19	NO	1.823	N/A
MW396	Upgradient	Yes	6.27	NO	1.836	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Potassium UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 1.411	**S=** 0.399	**CV(1)=** 0.282	**K factor**=** 3.188	**TL(1)=** 2.682	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 0.311	**S=** 0.271	**CV(2)=** 0.870	**K factor**=** 3.188	**TL(2)=** 1.175	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	2	0.693
9/16/2002	2	0.693
10/16/2002	0.978	-0.022
1/13/2003	1.08	0.077
4/8/2003	1.12	0.113
7/16/2003	1.38	0.322
10/14/2003	1.24	0.215
1/14/2004	1.49	0.399

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	0.258	NO	-1.355	N/A
MW390	Downgradient	Yes	0.339	NO	-1.082	N/A
MW393	Downgradient	Yes	0.385	NO	-0.955	N/A
MW396	Upgradient	Yes	0.857	NO	-0.154	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Radium-226 UNITS: pCi/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.157	**S=** 0.280	**CV(1)=** 1.782	**K factor**=** 3.188	**TL(1)=** 1.050	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.836	**S=** 1.229	**CV(2)=** -0.669	**K factor**=** 3.188	**TL(2)=** -0.371	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
10/16/2002	0.69	-0.371
1/13/2003	-0.00693	#Func!
10/14/2003	-0.0514	#Func!
1/14/2004	0.494	-0.705
4/12/2004	-0.082	#Func!
7/20/2004	0.0879	-2.432
10/12/2004	0.0408	-3.199
1/18/2005	0.0844	-2.472

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	0.366	N/A	-1.005	N/A
MW390	Downgradient	Yes	1.26	N/A	0.231	YES
MW393	Downgradient	No	0.885	N/A	-0.122	N/A
MW396	Upgradient	No	0.786	N/A	-0.241	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW390

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Sodium UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 106.825 **S=** 32.041 **CV(1)=** 0.300 **K factor**=** 3.188 **TL(1)=** 208.973 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 4.595 **S=** 0.492 **CV(2)=** 0.107 **K factor**=** 3.188 **TL(2)=** 6.163 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	115	4.745
9/16/2002	116	4.754
10/16/2002	117	4.762
1/13/2003	122	4.804
4/8/2003	106	4.663
7/16/2003	117	4.762
10/14/2003	132	4.883
1/14/2004	29.6	3.388

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	117	NO	4.762	N/A
MW390	Downgradient	Yes	110	NO	4.700	N/A
MW393	Downgradient	Yes	89.9	NO	4.499	N/A
MW396	Upgradient	Yes	102	NO	4.625	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Sulfate UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 22.463	**S=** 8.876	**CV(1)=** 0.395	**K factor**=** 3.188	**TL(1)=** 50.759	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.054	**S=** 0.351	**CV(2)=** 0.115	**K factor**=** 3.188	**TL(2)=** 4.173	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	41.9	3.735
9/16/2002	26.3	3.270
10/16/2002	20.6	3.025
1/13/2003	16.6	2.809
4/8/2003	23.9	3.174
7/16/2003	18.8	2.934
10/14/2003	12.9	2.557
1/14/2004	18.7	2.929

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	43.4	NO	3.770	N/A
MW390	Downgradient	Yes	27.9	NO	3.329	N/A
MW393	Downgradient	Yes	17	NO	2.833	N/A
MW396	Upgradient	Yes	23.9	NO	3.174	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Technetium-99 UNITS: pCi/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 7.624	**S=** 6.558	**CV(1)=** 0.860	**K factor**=** 3.188	**TL(1)=** 28.531	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.498	**S=** 1.321	**CV(2)=** 0.882	**K factor**=** 3.188	**TL(2)=** 5.710	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	16.7	2.815
9/16/2002	6.39	1.855
10/16/2002	4.55	1.515
1/13/2003	16.5	2.803
4/8/2003	3.04	1.112
7/16/2003	0.354	-1.038
10/14/2003	11.9	2.477
1/14/2004	1.56	0.445

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	1.92	N/A	0.652	N/A
MW390	Downgradient	Yes	54.5	YES	3.998	N/A
MW393	Downgradient	No	3.7	N/A	1.308	N/A
MW396	Upgradient	No	2.84	N/A	1.044	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW390

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Total Organic Carbon (TOC) UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 9.988	**S=** 4.696	**CV(1)=** 0.470	**K factor**=** 3.188	**TL(1)=** 24.959	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.210	**S=** 0.454	**CV(2)=** 0.205	**K factor**=** 3.188	**TL(2)=** 3.657	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	19	2.944
9/16/2002	14.6	2.681
10/16/2002	10.4	2.342
1/13/2003	4.4	1.482
4/8/2003	7	1.946
7/16/2003	7.3	1.988
10/14/2003	9.1	2.208
1/14/2004	8.1	2.092

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	5.2	NO	1.649	N/A
MW390	Downgradient	Yes	1.7	NO	0.531	N/A
MW393	Downgradient	No	2.1	N/A	0.742	N/A
MW396	Upgradient	Yes	4.4	NO	1.482	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Total Organic Halides (TOX) UNITS: ug/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 142.650 **S=** 53.533 **CV(1)=** 0.375 **K factor**=** 3.188 **TL(1)=** 313.314 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 4.896 **S=** 0.390 **CV(2)=** 0.080 **K factor**=** 3.188 **TL(2)=** 6.138 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	193	5.263
9/16/2002	190	5.247
10/16/2002	221	5.398
1/13/2003	106	4.663
4/8/2003	77.8	4.354
7/16/2003	122	4.804
10/14/2003	86.4	4.459
1/14/2004	145	4.977

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	189	NO	5.242	N/A
MW390	Downgradient	Yes	21.9	NO	3.086	N/A
MW393	Downgradient	Yes	16.4	NO	2.797	N/A
MW396	Upgradient	Yes	46.4	NO	3.837	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Uranium UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.001	**S=** 0.000	**CV(1)=** 0.314	**K factor**=** 3.188	**TL(1)=** 0.002	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -6.821	**S=** 0.245	**CV(2)=** -0.036	**K factor**=** 3.188	**TL(2)=** -6.040	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	0.002	-6.215
9/16/2002	0.001	-6.908
10/16/2002	0.001	-6.908
1/13/2003	0.001	-6.908
4/8/2003	0.001	-6.908
7/16/2003	0.001	-6.908
10/14/2003	0.001	-6.908
1/14/2004	0.001	-6.908

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	0.0002	N/A	-8.517	N/A
MW390	Downgradient	Yes	0.00014	NO	-8.874	N/A
MW393	Downgradient	Yes	0.0001	NO	-9.210	N/A
MW396	Upgradient	Yes	0.00015	NO	-8.805	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Vanadium UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.021	**S=** 0.002	**CV(1)=** 0.109	**K factor**=** 3.188	**TL(1)=** 0.029	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.856	**S=** 0.103	**CV(2)=** -0.027	**K factor**=** 3.188	**TL(2)=** -3.527	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/16/2002	0.02	-3.912
1/13/2003	0.02	-3.912
4/8/2003	0.02	-3.912
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/14/2004	0.02	-3.912

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	0.005	N/A	-5.298	N/A
MW390	Downgradient	Yes	0.00149	NO	-6.509	N/A
MW393	Downgradient	No	0.005	N/A	-5.298	N/A
MW396	Upgradient	No	0.005	N/A	-5.298	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Zinc UNITS: mg/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.044	**S=** 0.035	**CV(1)=** 0.786	**K factor**=** 3.188	**TL(1)=** 0.156	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.342	**S=** 0.682	**CV(2)=** -0.204	**K factor**=** 3.188	**TL(2)=** -1.168	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
8/13/2002	0.1	-2.303
9/16/2002	0.1	-2.303
10/16/2002	0.025	-3.689
1/13/2003	0.035	-3.352
4/8/2003	0.035	-3.352
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/14/2004	0.02	-3.912

Dry/Partially Dry Wells

Well No.	Gradient
MW389	Downgradient

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	No	0.01	N/A	-4.605	N/A
MW390	Downgradient	No	0.00378	N/A	-5.578	N/A
MW393	Downgradient	No	0.01	N/A	-4.605	N/A
MW396	Upgradient	Yes	0.00367	NO	-5.608	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Aluminum UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.221	**S=** 0.061	**CV(1)=** 0.277	**K factor**=** 2.523	**TL(1)=** 0.376	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.534	**S=** 0.212	**CV(2)=** -0.138	**K factor**=** 2.523	**TL(2)=** -0.999	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	0.2	-1.609
1/15/2003	0.2	-1.609
4/10/2003	0.2	-1.609
7/14/2003	0.2	-1.609
10/13/2003	0.427	-0.851
1/13/2004	0.309	-1.174
4/13/2004	0.2	-1.609
7/21/2004	0.202	-1.599

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	0.2	-1.609
9/16/2002	0.2	-1.609
10/16/2002	0.2	-1.609
1/13/2003	0.2	-1.609
4/10/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.2	-1.609
1/13/2004	0.2	-1.609

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.0162	NO	-4.123	N/A
MW221	Downgradient	No	0.05	N/A	-2.996	N/A
MW222	Downgradient	Yes	0.0632	NO	-2.761	N/A
MW223	Downgradient	No	0.05	N/A	-2.996	N/A
MW224	Downgradient	No	0.05	N/A	-2.996	N/A
MW369	Downgradient	Yes	0.0644	NO	-2.743	N/A
MW372	Downgradient	No	0.0384	N/A	-3.260	N/A
MW384	Sidegradient	Yes	0.0168	NO	-4.086	N/A
MW387	Downgradient	Yes	0.194	NO	-1.640	N/A
MW391	Downgradient	No	0.05	N/A	-2.996	N/A
MW394	Upgradient	Yes	0.132	NO	-2.025	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Beta activity UNITS: pCi/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 14.273	**S=** 13.883	**CV(1)=** 0.973	**K factor**=** 2.523	**TL(1)=** 49.300	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.213	**S=** 1.033	**CV(2)=** 0.467	**K factor**=** 2.523	**TL(2)=** 4.819	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	15.2	2.721
1/15/2003	42.5	3.750
4/10/2003	45.4	3.816
7/14/2003	8.53	2.144
10/13/2003	11.7	2.460
1/13/2004	13.5	2.603
4/13/2004	33.5	3.512
7/21/2004	13.7	2.617

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	5.03	1.615
9/16/2002	5.57	1.717
10/16/2002	12.8	2.549
1/13/2003	4.3	1.459
4/10/2003	9.52	2.253
7/16/2003	3.92	1.366
10/14/2003	1.06	0.058
1/13/2004	2.14	0.761

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	11.4	N/A	2.434	N/A
MW221	Downgradient	No	7.28	N/A	1.985	N/A
MW222	Downgradient	No	6.88	N/A	1.929	N/A
MW223	Downgradient	No	-1.8	N/A	#Error	N/A
MW224	Downgradient	No	6.91	N/A	1.933	N/A
MW369	Downgradient	Yes	26.8	N/A	3.288	N/A
MW372	Downgradient	No	8.38	N/A	2.126	N/A
MW384	Sidegradient	Yes	127	YES	4.844	N/A
MW387	Downgradient	Yes	169	YES	5.130	N/A
MW391	Downgradient	No	10.5	N/A	2.351	N/A
MW394	Upgradient	Yes	9.13	N/A	2.212	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW384
MW387

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Boron UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.425	**S=** 0.615	**CV(1)=** 1.447	**K factor**=** 2.523	**TL(1)=** 1.976	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.322	**S=** 0.786	**CV(2)=** -0.595	**K factor**=** 2.523	**TL(2)=** 0.663	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	0.2	-1.609
1/15/2003	0.2	-1.609
4/10/2003	0.2	-1.609
7/14/2003	0.2	-1.609
10/13/2003	0.2	-1.609
1/13/2004	0.2	-1.609
4/13/2004	0.2	-1.609
7/21/2004	0.2	-1.609

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	2	0.693
9/16/2002	2	0.693
10/16/2002	0.2	-1.609
1/13/2003	0.2	-1.609
4/10/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.2	-1.609
1/13/2004	0.2	-1.609

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.0081	N/A	-4.816	NO
MW221	Downgradient	Yes	0.0139	N/A	-4.276	NO
MW222	Downgradient	Yes	0.0106	N/A	-4.547	NO
MW223	Downgradient	Yes	0.00758	N/A	-4.882	NO
MW224	Downgradient	Yes	0.0219	N/A	-3.821	NO
MW369	Downgradient	Yes	0.0355	N/A	-3.338	NO
MW372	Downgradient	Yes	1.31	N/A	0.270	NO
MW384	Sidegradient	No	0.0236	N/A	-3.747	N/A
MW387	Downgradient	Yes	0.0241	N/A	-3.726	NO
MW391	Downgradient	Yes	0.0625	N/A	-2.773	NO
MW394	Upgradient	Yes	0.0213	N/A	-3.849	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Bromide UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 1.000	**S=** 0.000	**CV(1)=** 0.000	**K factor**=** 2.523	**TL(1)=** 1.000	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 0.000	**S=** 0.000	**CV(2)=** #Num!	**K factor**=** 2.523	**TL(2)=** 0.000	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	1	0.000
1/15/2003	1	0.000
4/10/2003	1	0.000
7/14/2003	1	0.000
10/13/2003	1	0.000
1/13/2004	1	0.000
4/13/2004	1	0.000
7/21/2004	1	0.000

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	1	0.000
9/16/2002	1	0.000
10/16/2002	1	0.000
1/13/2003	1	0.000
4/10/2003	1	0.000
7/16/2003	1	0.000
10/14/2003	1	0.000
1/13/2004	1	0.000

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.226	NO	-1.487	N/A
MW221	Downgradient	Yes	0.44	NO	-0.821	N/A
MW222	Downgradient	Yes	0.434	NO	-0.835	N/A
MW223	Downgradient	Yes	0.447	NO	-0.805	N/A
MW224	Downgradient	Yes	0.467	NO	-0.761	N/A
MW369	Downgradient	Yes	0.503	NO	-0.687	N/A
MW372	Downgradient	Yes	0.561	NO	-0.578	N/A
MW384	Sidegradient	Yes	0.496	NO	-0.701	N/A
MW387	Downgradient	Yes	0.517	NO	-0.660	N/A
MW391	Downgradient	Yes	0.479	NO	-0.736	N/A
MW394	Upgradient	Yes	0.57	NO	-0.562	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Calcium UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 27.638	**S=** 4.743	**CV(1)=** 0.172	**K factor**=** 2.523	**TL(1)=** 39.604	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.304	**S=** 0.183	**CV(2)=** 0.055	**K factor**=** 2.523	**TL(2)=** 3.765	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	23.6	3.161
1/15/2003	25.9	3.254
4/10/2003	30.4	3.414
7/14/2003	33.9	3.523
10/13/2003	21.3	3.059
1/13/2004	20.3	3.011
4/13/2004	23.8	3.170
7/21/2004	19	2.944

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	29.5	3.384
9/16/2002	29.9	3.398
10/16/2002	31.2	3.440
1/13/2003	30.7	3.424
4/10/2003	34.4	3.538
7/16/2003	29.6	3.388
10/14/2003	30.3	3.411
1/13/2004	28.4	3.346

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	23	NO	3.135	N/A
MW221	Downgradient	Yes	21.1	NO	3.049	N/A
MW222	Downgradient	Yes	18.9	NO	2.939	N/A
MW223	Downgradient	Yes	21.6	NO	3.073	N/A
MW224	Downgradient	Yes	23.6	NO	3.161	N/A
MW369	Downgradient	Yes	28	NO	3.332	N/A
MW372	Downgradient	Yes	66.6	YES	4.199	N/A
MW384	Sidegradient	Yes	27.7	NO	3.321	N/A
MW387	Downgradient	Yes	32.9	NO	3.493	N/A
MW391	Downgradient	Yes	26.7	NO	3.285	N/A
MW394	Upgradient	Yes	26.5	NO	3.277	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Chemical Oxygen Demand (COD) UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 35.000	**S=** 0.000	**CV(1)=** 0.000	**K factor**=** 2.523	**TL(1)=** 35.000	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.555	**S=** 0.000	**CV(2)=** 0.000	**K factor**=** 2.523	**TL(2)=** 3.555	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	35	3.555
1/15/2003	35	3.555
4/10/2003	35	3.555
7/14/2003	35	3.555
10/13/2003	35	3.555
1/13/2004	35	3.555
4/13/2004	35	3.555
7/21/2004	35	3.555

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	35	3.555
9/16/2002	35	3.555
10/16/2002	35	3.555
1/13/2003	35	3.555
4/10/2003	35	3.555
7/16/2003	35	3.555
10/14/2003	35	3.555
1/13/2004	35	3.555

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	20	N/A	2.996	N/A
MW221	Downgradient	No	20	N/A	2.996	N/A
MW222	Downgradient	No	20	N/A	2.996	N/A
MW223	Downgradient	No	20	N/A	2.996	N/A
MW224	Downgradient	No	20	N/A	2.996	N/A
MW369	Downgradient	No	20	N/A	2.996	N/A
MW372	Downgradient	Yes	23	NO	3.135	N/A
MW384	Sidegradient	No	20	N/A	2.996	N/A
MW387	Downgradient	No	20	N/A	2.996	N/A
MW391	Downgradient	Yes	18.8	NO	2.934	N/A
MW394	Upgradient	Yes	41.4	YES	3.723	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW394

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Chloride UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 49.044	**S=** 11.278	**CV(1)=** 0.230	**K factor**=** 2.523	**TL(1)=** 77.499	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.866	**S=** 0.244	**CV(2)=** 0.063	**K factor**=** 2.523	**TL(2)=** 4.482	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	44.6	3.798
1/15/2003	43.2	3.766
4/10/2003	31.5	3.450
7/14/2003	30.8	3.428
10/13/2003	40.9	3.711
1/13/2004	40.8	3.709
4/13/2004	37.5	3.624
7/21/2004	40.8	3.709

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	60.4	4.101
9/16/2002	60.3	4.099
10/16/2002	58	4.060
1/13/2003	60.7	4.106
4/10/2003	62.9	4.142
7/16/2003	58.1	4.062
10/14/2003	58.2	4.064
1/13/2004	56	4.025

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	20.3	NO	3.011	N/A
MW221	Downgradient	Yes	35.5	NO	3.570	N/A
MW222	Downgradient	Yes	35.2	NO	3.561	N/A
MW223	Downgradient	Yes	31.9	NO	3.463	N/A
MW224	Downgradient	Yes	35.3	NO	3.564	N/A
MW369	Downgradient	Yes	37	NO	3.611	N/A
MW372	Downgradient	Yes	44.4	NO	3.793	N/A
MW384	Sidegradient	Yes	44	NO	3.784	N/A
MW387	Downgradient	Yes	42.9	NO	3.759	N/A
MW391	Downgradient	Yes	37.2	NO	3.616	N/A
MW394	Upgradient	Yes	47.7	NO	3.865	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

cis-1,2-Dichloroethene UNITS: ug/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 5.000	**S=** 0.000	**CV(1)=** 0.000	**K factor**=** 2.523	**TL(1)=** 5.000	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.609	**S=** 0.000	**CV(2)=** 0.000	**K factor**=** 2.523	**TL(2)=** 1.609	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	5	1.609
1/15/2003	5	1.609
4/10/2003	5	1.609
7/14/2003	5	1.609
10/13/2003	5	1.609
1/13/2004	5	1.609
4/13/2004	5	1.609
7/21/2004	5	1.609

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	5	1.609
9/30/2002	5	1.609
10/16/2002	5	1.609
1/13/2003	5	1.609
4/10/2003	5	1.609
7/16/2003	5	1.609
10/14/2003	5	1.609
1/13/2004	5	1.609

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	1	N/A	0.000	N/A
MW221	Downgradient	No	1	N/A	0.000	N/A
MW222	Downgradient	No	1	N/A	0.000	N/A
MW223	Downgradient	No	1	N/A	0.000	N/A
MW224	Downgradient	No	1	N/A	0.000	N/A
MW369	Downgradient	No	1	N/A	0.000	N/A
MW372	Downgradient	No	1	N/A	0.000	N/A
MW384	Sidegradient	No	1	N/A	0.000	N/A
MW387	Downgradient	Yes	0.34	NO	-1.079	N/A
MW391	Downgradient	No	1	N/A	0.000	N/A
MW394	Upgradient	No	1	N/A	0.000	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Cobalt UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.016	**S=** 0.040	**CV(1)=** 2.440	**K factor**=** 2.523	**TL(1)=** 0.116	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -5.582	**S=** 1.573	**CV(2)=** -0.282	**K factor**=** 2.523	**TL(2)=** -1.613	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	0.0041	-5.497
1/15/2003	0.00496	-5.306
4/10/2003	0.00289	-5.846
7/14/2003	0.161	-1.826
10/13/2003	0.0226	-3.790
1/13/2004	0.00464	-5.373
4/13/2004	0.001	-6.908
7/21/2004	0.00264	-5.937

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/16/2002	0.001	-6.908
1/13/2003	0.001	-6.908
4/10/2003	0.001	-6.908
7/16/2003	0.001	-6.908
10/14/2003	0.001	-6.908
1/13/2004	0.001	-6.908

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.00032	N/A	-8.047	NO
MW221	Downgradient	Yes	0.00079	N/A	-7.143	NO
MW222	Downgradient	Yes	0.00051	N/A	-7.581	NO
MW223	Downgradient	Yes	0.00187	N/A	-6.282	NO
MW224	Downgradient	Yes	0.00034	N/A	-7.987	NO
MW369	Downgradient	Yes	0.00062	N/A	-7.386	NO
MW372	Downgradient	Yes	0.00153	N/A	-6.482	NO
MW384	Sidegradient	Yes	0.00014	N/A	-8.874	NO
MW387	Downgradient	Yes	0.00033	N/A	-8.016	NO
MW391	Downgradient	No	0.001	N/A	-6.908	N/A
MW394	Upgradient	Yes	0.00025	N/A	-8.294	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Conductivity UNITS: umho/cm URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 382.132	**S=** 107.134	**CV(1)=** 0.280	**K factor**=** 2.523	**TL(1)=** 652.432	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 5.716	**S=** 1.164	**CV(2)=** 0.204	**K factor**=** 2.523	**TL(2)=** 8.652	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	368	5.908
1/15/2003	433.2	6.071
4/10/2003	489	6.192
7/14/2003	430	6.064
10/13/2003	346	5.846
1/13/2004	365	5.900
4/13/2004	416	6.031
7/21/2004	353	5.866

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	406	6.006
9/16/2002	418	6.035
10/16/2002	411	6.019
1/13/2003	422	6.045
4/10/2003	420	6.040
7/16/2003	438	6.082
10/14/2003	3.91	1.364
1/13/2004	395	5.979

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	422	NO	6.045	N/A
MW221	Downgradient	Yes	404	NO	6.001	N/A
MW222	Downgradient	Yes	383	NO	5.948	N/A
MW223	Downgradient	Yes	390	NO	5.966	N/A
MW224	Downgradient	Yes	444	NO	6.096	N/A
MW369	Downgradient	Yes	434	NO	6.073	N/A
MW372	Downgradient	Yes	769	YES	6.645	N/A
MW384	Sidegradient	Yes	497	NO	6.209	N/A
MW387	Downgradient	Yes	523	NO	6.260	N/A
MW391	Downgradient	Yes	425	NO	6.052	N/A
MW394	Upgradient	Yes	335	NO	5.814	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Copper UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.024	**S=** 0.010	**CV(1)=** 0.429	**K factor**=** 2.523	**TL(1)=** 0.050	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.794	**S=** 0.312	**CV(2)=** -0.082	**K factor**=** 2.523	**TL(2)=** -3.007	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	0.0211	-3.858
1/15/2003	0.02	-3.912
4/10/2003	0.02	-3.912
7/14/2003	0.02	-3.912
10/13/2003	0.02	-3.912
1/13/2004	0.02	-3.912
4/13/2004	0.02	-3.912
7/21/2004	0.02	-3.912

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	0.05	-2.996
9/16/2002	0.05	-2.996
10/16/2002	0.02	-3.912
1/13/2003	0.02	-3.912
4/10/2003	0.02	-3.912
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/13/2004	0.02	-3.912

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	0.00098	N/A	-6.928	N/A
MW221	Downgradient	No	0.00089	N/A	-7.024	N/A
MW222	Downgradient	No	0.00038	N/A	-7.875	N/A
MW223	Downgradient	No	0.00053	N/A	-7.543	N/A
MW224	Downgradient	No	0.001	N/A	-6.908	N/A
MW369	Downgradient	Yes	0.00055	NO	-7.506	N/A
MW372	Downgradient	No	0.001	N/A	-6.908	N/A
MW384	Sidegradient	No	0.00055	N/A	-7.506	N/A
MW387	Downgradient	No	0.00045	N/A	-7.706	N/A
MW391	Downgradient	No	0.001	N/A	-6.908	N/A
MW394	Upgradient	No	0.00073	N/A	-7.222	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Dissolved Oxygen UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 3.784	**S=** 1.887	**CV(1)=** 0.499	**K factor**=** 2.523	**TL(1)=** 8.545	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.182	**S=** 0.612	**CV(2)=** 0.518	**K factor**=** 2.523	**TL(2)=** 2.727	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	6.79	1.915
1/15/2003	7.25	1.981
4/10/2003	3.6	1.281
7/14/2003	0.94	-0.062
10/13/2003	1.65	0.501
1/13/2004	3.48	1.247
4/13/2004	1.05	0.049
7/21/2004	4.46	1.495

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	6.09	1.807
9/16/2002	3.85	1.348
10/16/2002	5.11	1.631
1/13/2003	3.83	1.343
4/10/2003	4.15	1.423
7/16/2003	1.83	0.604
10/14/2003	3.33	1.203
1/13/2004	3.14	1.144

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	4.62	NO	1.530	N/A
MW221	Downgradient	Yes	4	NO	1.386	N/A
MW222	Downgradient	Yes	3.56	NO	1.270	N/A
MW223	Downgradient	Yes	2.96	NO	1.085	N/A
MW224	Downgradient	Yes	3.3	NO	1.194	N/A
MW369	Downgradient	Yes	3.38	NO	1.218	N/A
MW372	Downgradient	Yes	1.18	NO	0.166	N/A
MW384	Sidegradient	Yes	3.63	NO	1.289	N/A
MW387	Downgradient	Yes	3.24	NO	1.176	N/A
MW391	Downgradient	Yes	3.18	NO	1.157	N/A
MW394	Upgradient	Yes	5.2	NO	1.649	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Dissolved Solids UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 232.688	**S=** 27.490	**CV(1)=** 0.118	**K factor**=** 2.523	**TL(1)=** 302.045	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 5.443	**S=** 0.118	**CV(2)=** 0.022	**K factor**=** 2.523	**TL(2)=** 5.740	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	208	5.338
1/15/2003	257	5.549
4/10/2003	288	5.663
7/14/2003	262	5.568
10/13/2003	197	5.283
1/13/2004	198	5.288
4/13/2004	245	5.501
7/21/2004	204	5.318

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	247	5.509
9/16/2002	259	5.557
10/16/2002	201	5.303
1/13/2003	228	5.429
4/10/2003	249	5.517
7/16/2003	240	5.481
10/14/2003	230	5.438
1/13/2004	210	5.347

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	197	NO	5.283	N/A
MW221	Downgradient	Yes	181	NO	5.198	N/A
MW222	Downgradient	Yes	184	NO	5.215	N/A
MW223	Downgradient	Yes	154	NO	5.037	N/A
MW224	Downgradient	Yes	186	NO	5.226	N/A
MW369	Downgradient	Yes	201	NO	5.303	N/A
MW372	Downgradient	Yes	421	YES	6.043	N/A
MW384	Sidegradient	Yes	180	NO	5.193	N/A
MW387	Downgradient	Yes	240	NO	5.481	N/A
MW391	Downgradient	Yes	199	NO	5.293	N/A
MW394	Upgradient	Yes	181	NO	5.198	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Iron UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.897	**S=** 1.050	**CV(1)=** 1.170	**K factor**=** 2.523	**TL(1)=** 3.545	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -0.565	**S=** 0.951	**CV(2)=** -1.683	**K factor**=** 2.523	**TL(2)=** 1.834	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	0.2	-1.609
1/15/2003	0.2	-1.609
4/10/2003	0.429	-0.846
7/14/2003	4.33	1.466
10/13/2003	1.81	0.593
1/13/2004	0.793	-0.232
4/13/2004	0.13	-2.040
7/21/2004	0.382	-0.962

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	1.34	0.293
9/16/2002	0.328	-1.115
10/16/2002	1.38	0.322
1/13/2003	1.3	0.262
4/10/2003	0.494	-0.705
7/16/2003	0.62	-0.478
10/14/2003	0.37	-0.994
1/13/2004	0.251	-1.382

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	0.1	N/A	-2.303	N/A
MW221	Downgradient	Yes	0.0494	N/A	-3.008	NO
MW222	Downgradient	Yes	0.118	N/A	-2.137	NO
MW223	Downgradient	Yes	0.11	N/A	-2.207	NO
MW224	Downgradient	Yes	0.0343	N/A	-3.373	NO
MW369	Downgradient	Yes	0.0871	N/A	-2.441	NO
MW372	Downgradient	Yes	1.65	N/A	0.501	NO
MW384	Sidegradient	Yes	0.356	N/A	-1.033	NO
MW387	Downgradient	Yes	0.714	N/A	-0.337	NO
MW391	Downgradient	Yes	0.0788	N/A	-2.541	NO
MW394	Upgradient	Yes	1.08	N/A	0.077	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Magnesium UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 10.796	**S=** 1.703	**CV(1)=** 0.158	**K factor**=** 2.523	**TL(1)=** 15.092	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.368	**S=** 0.158	**CV(2)=** 0.067	**K factor**=** 2.523	**TL(2)=** 2.766	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	9.16	2.215
1/15/2003	10	2.303
4/10/2003	10.8	2.380
7/14/2003	14.7	2.688
10/13/2003	9.03	2.201
1/13/2004	8.49	2.139
4/13/2004	9.7	2.272
7/21/2004	8.06	2.087

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	11.8	2.468
9/16/2002	12.1	2.493
10/16/2002	11.3	2.425
1/13/2003	10.3	2.332
4/10/2003	11.7	2.460
7/16/2003	12	2.485
10/14/2003	12.2	2.501
1/13/2004	11.4	2.434

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	10.2	NO	2.322	N/A
MW221	Downgradient	Yes	9.83	NO	2.285	N/A
MW222	Downgradient	Yes	9.01	NO	2.198	N/A
MW223	Downgradient	Yes	9.39	NO	2.240	N/A
MW224	Downgradient	Yes	10.5	NO	2.351	N/A
MW369	Downgradient	Yes	12.7	NO	2.542	N/A
MW372	Downgradient	Yes	25.2	YES	3.227	N/A
MW384	Sidegradient	Yes	11.6	NO	2.451	N/A
MW387	Downgradient	Yes	13.8	NO	2.625	N/A
MW391	Downgradient	Yes	11.1	NO	2.407	N/A
MW394	Upgradient	Yes	11.1	NO	2.407	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Manganese UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.287	**S=** 0.619	**CV(1)=** 2.156	**K factor**=** 2.523	**TL(1)=** 1.848	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -2.455	**S=** 1.619	**CV(2)=** -0.659	**K factor**=** 2.523	**TL(2)=** 1.630	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	0.0306	-3.487
1/15/2003	0.0291	-3.537
4/10/2003	0.0137	-4.290
7/14/2003	2.54	0.932
10/13/2003	0.378	-0.973
1/13/2004	0.159	-1.839
4/13/2004	0.00707	-4.952
7/21/2004	0.0841	-2.476

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	0.542	-0.612
9/16/2002	0.155	-1.864
10/16/2002	0.103	-2.273
1/13/2003	0.128	-2.056
4/10/2003	0.005	-5.298
7/16/2003	0.272	-1.302
10/14/2003	0.0795	-2.532
1/13/2004	0.0658	-2.721

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.00214	N/A	-6.147	NO
MW221	Downgradient	Yes	0.0042	N/A	-5.473	NO
MW222	Downgradient	Yes	0.00827	N/A	-4.795	NO
MW223	Downgradient	Yes	0.0174	N/A	-4.051	NO
MW224	Downgradient	Yes	0.00745	N/A	-4.900	NO
MW369	Downgradient	Yes	0.00599	N/A	-5.118	NO
MW372	Downgradient	Yes	0.0295	N/A	-3.523	NO
MW384	Sidegradient	Yes	0.0201	N/A	-3.907	NO
MW387	Downgradient	Yes	0.0604	N/A	-2.807	NO
MW391	Downgradient	No	0.005	N/A	-5.298	N/A
MW394	Upgradient	Yes	0.0165	N/A	-4.104	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Molybdenum UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.006	**S=** 0.008	**CV(1)=** 1.261	**K factor**=** 2.523	**TL(1)=** 0.026	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -5.747	**S=** 1.205	**CV(2)=** -0.210	**K factor**=** 2.523	**TL(2)=** -2.708	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	0.00558	-5.189
1/15/2003	0.00983	-4.622
4/10/2003	0.0109	-4.519
7/14/2003	0.00245	-6.012
10/13/2003	0.00566	-5.174
1/13/2004	0.00572	-5.164
4/13/2004	0.001	-6.908
7/21/2004	0.00392	-5.542

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/16/2002	0.001	-6.908
1/13/2003	0.001	-6.908
4/10/2003	0.001	-6.908
7/16/2003	0.001	-6.908
10/14/2003	0.001	-6.908
1/13/2004	0.001	-6.908

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.00158	N/A	-6.450	NO
MW221	Downgradient	Yes	0.00216	N/A	-6.138	NO
MW222	Downgradient	Yes	0.00034	N/A	-7.987	NO
MW223	Downgradient	Yes	0.00194	N/A	-6.245	NO
MW224	Downgradient	Yes	0.00031	N/A	-8.079	NO
MW369	Downgradient	No	0.0005	N/A	-7.601	N/A
MW372	Downgradient	Yes	0.00088	N/A	-7.036	NO
MW384	Sidegradient	Yes	0.00018	N/A	-8.623	NO
MW387	Downgradient	No	0.0005	N/A	-7.601	N/A
MW391	Downgradient	No	0.0005	N/A	-7.601	N/A
MW394	Upgradient	No	0.0005	N/A	-7.601	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Nickel UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.127	**S=** 0.228	**CV(1)=** 1.790	**K factor**=** 2.523	**TL(1)=** 0.701	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.617	**S=** 1.837	**CV(2)=** -0.508	**K factor**=** 2.523	**TL(2)=** 1.019	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	0.418	-0.872
1/15/2003	0.738	-0.304
4/10/2003	0.544	-0.609
7/14/2003	0.106	-2.244
10/13/2003	0.0529	-2.939
1/13/2004	0.0209	-3.868
4/13/2004	0.005	-5.298
7/21/2004	0.0192	-3.953

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	0.05	-2.996
9/16/2002	0.05	-2.996
10/16/2002	0.005	-5.298
1/13/2003	0.005	-5.298
4/10/2003	0.005	-5.298
7/16/2003	0.005	-5.298
10/14/2003	0.005	-5.298
1/13/2004	0.005	-5.298

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.04	N/A	-3.219	NO
MW221	Downgradient	Yes	0.0543	N/A	-2.913	NO
MW222	Downgradient	Yes	0.0369	N/A	-3.300	NO
MW223	Downgradient	Yes	0.459	N/A	-0.779	NO
MW224	Downgradient	Yes	0.00342	N/A	-5.678	NO
MW369	Downgradient	Yes	0.0014	N/A	-6.571	NO
MW372	Downgradient	Yes	0.00119	N/A	-6.734	NO
MW384	Sidegradient	Yes	0.00054	N/A	-7.524	NO
MW387	Downgradient	Yes	0.00062	N/A	-7.386	NO
MW391	Downgradient	No	0.002	N/A	-6.215	N/A
MW394	Upgradient	Yes	0.00296	N/A	-5.823	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Oxidation-Reduction Potential UNITS: mV URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 179.872	**S=** 86.318	**CV(1)=** 0.480	**K factor**=** 2.523	**TL(1)=** 397.652	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 4.861	**S=** 1.252	**CV(2)=** 0.258	**K factor**=** 2.523	**TL(2)=** 8.021	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	205	5.323
1/15/2003	1.95	0.668
4/10/2003	203	5.313
7/14/2003	30	3.401
10/13/2003	107	4.673
1/13/2004	295	5.687
4/13/2004	190	5.247
7/21/2004	319	5.765

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	90	4.500
9/16/2002	240	5.481
10/16/2002	185	5.220
1/13/2003	220	5.394
4/10/2003	196	5.278
7/16/2003	172	5.147
10/14/2003	175	5.165
1/13/2004	249	5.517

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	488	YES	6.190	N/A
MW221	Downgradient	Yes	453	YES	6.116	N/A
MW222	Downgradient	Yes	489	YES	6.192	N/A
MW223	Downgradient	Yes	296	NO	5.690	N/A
MW224	Downgradient	Yes	309	NO	5.733	N/A
MW369	Downgradient	Yes	404	YES	6.001	N/A
MW372	Downgradient	Yes	283	NO	5.645	N/A
MW384	Sidegradient	Yes	302	NO	5.710	N/A
MW387	Downgradient	Yes	313	NO	5.746	N/A
MW391	Downgradient	Yes	590	YES	6.380	N/A
MW394	Upgradient	Yes	461	YES	6.133	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW220
MW221
MW222
MW369
MW391
MW394

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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PCB, Total UNITS: ug/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.212	**S=** 0.152	**CV(1)=** 0.715	**K factor**=** 2.523	**TL(1)=** 0.594	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.655	**S=** 0.376	**CV(2)=** -0.227	**K factor**=** 2.523	**TL(2)=** -0.706	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
7/14/2003	0.78	-0.248
10/13/2003	0.17	-1.772
7/21/2004	0.18	-1.715
7/14/2005	0.18	-1.715
7/17/2006	0.18	-1.715
7/18/2007	0.17	-1.772
10/24/2007	0.17	-1.772
1/24/2008	0.17	-1.772

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	0.17	-1.772
9/16/2002	0.17	-1.772
7/16/2003	0.17	-1.772
10/14/2003	0.17	-1.772
7/20/2004	0.18	-1.715
7/11/2005	0.18	-1.715
7/17/2006	0.18	-1.715
7/17/2007	0.17	-1.772

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW369	Downgradient	No	0.0952	N/A	-2.352	N/A
MW372	Downgradient	Yes	0.0729	NO	-2.619	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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PCB-1242 UNITS: ug/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.146	**S=** 0.170	**CV(1)=** 1.164	**K factor**=** 2.523	**TL(1)=** 0.573	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -2.149	**S=** 0.517	**CV(2)=** -0.241	**K factor**=** 2.523	**TL(2)=** -0.844	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW220

Date Collected	Result	LN(Result)
7/14/2003	0.78	-0.248
10/13/2003	0.09	-2.408
7/21/2004	0.1	-2.303
7/14/2005	0.1	-2.303
7/17/2006	0.1	-2.303
7/18/2007	0.1	-2.303
10/24/2007	0.1	-2.303
1/24/2008	0.1	-2.303

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	0.11	-2.207
9/16/2002	0.13	-2.040
7/16/2003	0.13	-2.040
10/14/2003	0.09	-2.408
7/20/2004	0.1	-2.303
7/11/2005	0.1	-2.303
7/17/2006	0.1	-2.303
7/17/2007	0.1	-2.303

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW369	Downgradient	No	0.0952	N/A	-2.352	N/A
MW372	Downgradient	Yes	0.0729	N/A	-2.619	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

pH UNITS: Std Unit URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 6.138	**S=** 0.282	**CV(1)=** 0.046	**K factor**=** 2.904	**TL(1)=** 6.957	**LL(1)=**5.3179
Statistics-Transformed Background Data	**X=** 1.813	**S=** 0.047	**CV(2)=** 0.026	**K factor**=** 2.904	**TL(2)=** 1.950	**LL(2)=**1.6765

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	6.04	1.798
1/15/2003	6.31	1.842
4/10/2003	6.5	1.872
7/14/2003	6.3	1.841
10/13/2003	6.34	1.847
1/13/2004	6.33	1.845
4/13/2004	6.3	1.841
7/21/2004	5.9	1.775

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	5.8	1.758
9/30/2002	5.93	1.780
10/16/2002	5.42	1.690
1/13/2003	6	1.792
4/10/2003	6.04	1.798
7/16/2003	6.2	1.825
10/14/2003	6.4	1.856
1/13/2004	6.39	1.855

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW220	Upgradient	Yes	6.09	NO	1.807	N/A
MW221	Downgradient	Yes	6	NO	1.792	N/A
MW222	Downgradient	Yes	6.01	NO	1.793	N/A
MW223	Downgradient	Yes	6.02	NO	1.795	N/A
MW224	Downgradient	Yes	6.11	NO	1.810	N/A
MW369	Downgradient	Yes	6.11	NO	1.810	N/A
MW372	Downgradient	Yes	6.06	NO	1.802	N/A
MW384	Sidegradient	Yes	5.98	NO	1.788	N/A
MW387	Downgradient	Yes	6.1	NO	1.808	N/A
MW391	Downgradient	Yes	6.1	NO	1.808	N/A
MW394	Upgradient	Yes	5.99	NO	1.790	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Potassium UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 6.654	**S=** 9.310	**CV(1)=** 1.399	**K factor**=** 2.523	**TL(1)=** 30.144	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.130	**S=** 1.208	**CV(2)=** 1.069	**K factor**=** 2.523	**TL(2)=** 4.178	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	6.7	1.902
1/15/2003	29.7	3.391
4/10/2003	24.9	3.215
7/14/2003	1.13	0.122
10/13/2003	3.43	1.233
1/13/2004	6.71	1.904
4/13/2004	19.3	2.960
7/21/2004	3.97	1.379

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	2	0.693
9/16/2002	2	0.693
10/16/2002	1.03	0.030
1/13/2003	1.1	0.095
4/10/2003	1.24	0.215
7/16/2003	1.14	0.131
10/14/2003	1.05	0.049
1/13/2004	1.07	0.068

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	10.9	N/A	2.389	NO
MW221	Downgradient	Yes	1.37	N/A	0.315	NO
MW222	Downgradient	Yes	0.505	N/A	-0.683	NO
MW223	Downgradient	Yes	1.15	N/A	0.140	NO
MW224	Downgradient	Yes	0.924	N/A	-0.079	NO
MW369	Downgradient	Yes	1.47	N/A	0.385	NO
MW372	Downgradient	Yes	2.65	N/A	0.975	NO
MW384	Sidegradient	Yes	1.41	N/A	0.344	NO
MW387	Downgradient	Yes	1.54	N/A	0.432	NO
MW391	Downgradient	Yes	1.52	N/A	0.419	NO
MW394	Upgradient	Yes	1.32	N/A	0.278	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Radium-226 UNITS: pCi/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.036	**S=** 0.382	**CV(1)=** 10.588	**K factor**=** 2.523	**TL(1)=** 1.001	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.873	**S=** 1.110	**CV(2)=** -0.592	**K factor**=** 2.523	**TL(2)=** -0.538	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	-0.804	#Func!
1/15/2003	0	#Func!
10/13/2003	0.389	-0.944
1/13/2004	-0.12	#Func!
4/13/2004	0.159	-1.839
7/21/2004	0.382	-0.962
10/11/2004	0.211	-1.556
1/20/2005	0.229	-1.474

Well Number:	MW394	
Date Collected	Result	LN(Result)
10/16/2002	0.584	-0.538
1/13/2003	-0.839	#Func!
10/14/2003	0.0325	-3.427
1/13/2004	-0.00402	#Func!
4/12/2004	-0.000337	#Func!
7/20/2004	0.29	-1.238
10/12/2004	0.0366	-3.308
1/18/2005	0.0319	-3.445

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	0.409	N/A	-0.894	N/A
MW221	Downgradient	Yes	0.52	N/A	-0.654	NO
MW222	Downgradient	Yes	0.737	N/A	-0.305	YES
MW223	Downgradient	No	0.644	N/A	-0.440	N/A
MW224	Downgradient	No	0.727	N/A	-0.319	N/A
MW369	Downgradient	No	0.521	N/A	-0.652	N/A
MW372	Downgradient	Yes	0.643	N/A	-0.442	YES
MW384	Sidegradient	Yes	0.777	N/A	-0.252	YES
MW387	Downgradient	No	0.818	N/A	-0.201	N/A
MW391	Downgradient	No	0.767	N/A	-0.265	N/A
MW394	Upgradient	No	0.557	N/A	-0.585	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW222
MW372
MW384

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Sodium UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 36.363	**S=** 8.666	**CV(1)=** 0.238	**K factor**=** 2.523	**TL(1)=** 58.227	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.570	**S=** 0.222	**CV(2)=** 0.062	**K factor**=** 2.523	**TL(2)=** 4.129	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	35.4	3.567
1/15/2003	40.6	3.704
4/10/2003	51	3.932
7/14/2003	58.2	4.064
10/13/2003	38.1	3.640
1/13/2004	37	3.611
4/13/2004	43.2	3.766
7/21/2004	33.8	3.520

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	32.9	3.493
9/16/2002	29.9	3.398
10/16/2002	29	3.367
1/13/2003	27.1	3.300
4/10/2003	24.8	3.211
7/16/2003	35.6	3.572
10/14/2003	33.9	3.523
1/13/2004	31.3	3.444

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	44.9	NO	3.804	N/A
MW221	Downgradient	Yes	45	NO	3.807	N/A
MW222	Downgradient	Yes	46.4	NO	3.837	N/A
MW223	Downgradient	Yes	47.9	NO	3.869	N/A
MW224	Downgradient	Yes	54.8	NO	4.004	N/A
MW369	Downgradient	Yes	46.2	NO	3.833	N/A
MW372	Downgradient	Yes	60.5	YES	4.103	N/A
MW384	Sidegradient	Yes	57.9	NO	4.059	N/A
MW387	Downgradient	Yes	55.2	NO	4.011	N/A
MW391	Downgradient	Yes	41.3	NO	3.721	N/A
MW394	Upgradient	Yes	30.3	NO	3.411	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Sulfate UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 10.481	**S=** 2.648	**CV(1)=** 0.253	**K factor**=** 2.523	**TL(1)=** 17.161	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.322	**S=** 0.239	**CV(2)=** 0.103	**K factor**=** 2.523	**TL(2)=** 2.925	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	10.4	2.342
1/15/2003	9.8	2.282
4/10/2003	15.4	2.734
7/14/2003	14.9	2.701
10/13/2003	13.5	2.603
1/13/2004	10.3	2.332
4/13/2004	14.3	2.660
7/21/2004	10.5	2.351

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	11.2	2.416
9/16/2002	8.3	2.116
10/16/2002	8	2.079
1/13/2003	8.5	2.140
4/10/2003	7.9	2.067
7/16/2003	8.4	2.128
10/14/2003	8.2	2.104
1/13/2004	8.1	2.092

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	17.9	YES	2.885	N/A
MW221	Downgradient	Yes	13.6	NO	2.610	N/A
MW222	Downgradient	Yes	11.4	NO	2.434	N/A
MW223	Downgradient	Yes	16.4	NO	2.797	N/A
MW224	Downgradient	Yes	14.9	NO	2.701	N/A
MW369	Downgradient	Yes	19.4	YES	2.965	N/A
MW372	Downgradient	Yes	138	YES	4.927	N/A
MW384	Sidegradient	Yes	20.5	YES	3.020	N/A
MW387	Downgradient	Yes	23.4	YES	3.153	N/A
MW391	Downgradient	Yes	25.1	YES	3.223	N/A
MW394	Upgradient	Yes	10.3	NO	2.332	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW220
MW369
MW372
MW384
MW387
MW391

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Technetium-99 UNITS: pCi/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 9.354	**S=** 9.280	**CV(1)=** 0.992	**K factor**=** 2.523	**TL(1)=** 32.768	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.270	**S=** 0.849	**CV(2)=** 0.374	**K factor**=** 2.523	**TL(2)=** 3.262	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	19.7	2.981
1/15/2003	26.1	3.262
4/10/2003	3.56	1.270
7/14/2003	0	#Func!
10/13/2003	21	3.045
1/13/2004	6.32	1.844
4/13/2004	3	1.099
7/21/2004	14.6	2.681

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	14	2.639
9/16/2002	5.45	1.696
10/16/2002	2.49	0.912
1/13/2003	18.3	2.907
4/10/2003	-1.45	#Func!
7/16/2003	-1.71	#Func!
10/14/2003	18.3	2.907
1/13/2004	0	#Func!

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	12.2	N/A	2.501	N/A
MW221	Downgradient	No	9.33	N/A	2.233	N/A
MW222	Downgradient	No	6.65	N/A	1.895	N/A
MW223	Downgradient	No	11.9	N/A	2.477	N/A
MW224	Downgradient	No	2.19	N/A	0.784	N/A
MW369	Downgradient	Yes	37.3	YES	3.619	N/A
MW372	Downgradient	No	10.8	N/A	2.380	N/A
MW384	Sidegradient	Yes	155	YES	5.043	N/A
MW387	Downgradient	Yes	277	YES	5.624	N/A
MW391	Downgradient	No	11.1	N/A	2.407	N/A
MW394	Upgradient	No	11.5	N/A	2.442	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW369
MW384
MW387

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Total Organic Carbon (TOC) UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 1.494	**S=** 0.737	**CV(1)=** 0.493	**K factor**=** 2.523	**TL(1)=** 3.353	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 0.315	**S=** 0.402	**CV(2)=** 1.279	**K factor**=** 2.523	**TL(2)=** 1.330	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	1	0.000
1/15/2003	1.1	0.095
4/10/2003	1	0.000
7/14/2003	3.3	1.194
10/13/2003	1.8	0.588
1/13/2004	1	0.000
4/13/2004	2	0.693
7/21/2004	3.1	1.131

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	1.3	0.262
9/16/2002	1	0.000
10/16/2002	1	0.000
1/13/2003	1.6	0.470
4/10/2003	1	0.000
7/16/2003	1.4	0.336
10/14/2003	1.3	0.262
1/13/2004	1	0.000

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	1	N/A	0.000	N/A
MW221	Downgradient	Yes	0.37	NO	-0.994	N/A
MW222	Downgradient	Yes	0.5	NO	-0.693	N/A
MW223	Downgradient	No	1	N/A	0.000	N/A
MW224	Downgradient	Yes	0.36	NO	-1.022	N/A
MW369	Downgradient	Yes	0.46	NO	-0.777	N/A
MW372	Downgradient	Yes	0.67	NO	-0.400	N/A
MW384	Sidegradient	Yes	0.71	NO	-0.342	N/A
MW387	Downgradient	Yes	0.53	NO	-0.635	N/A
MW391	Downgradient	No	0.61	N/A	-0.494	N/A
MW394	Upgradient	No	1	N/A	0.000	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Total Organic Halides (TOX) UNITS: ug/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 63.475	**S=** 163.135	**CV(1)=** 2.570	**K factor**=** 2.523	**TL(1)=** 475.063	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.103	**S=** 1.145	**CV(2)=** 0.369	**K factor**=** 2.523	**TL(2)=** 5.992	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	50	3.912
1/15/2003	10	2.303
4/10/2003	10	2.303
7/14/2003	10	2.303
10/13/2003	10	2.303
1/13/2004	10	2.303
4/13/2004	10	2.303
7/21/2004	10	2.303

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	50	3.912
9/16/2002	672	6.510
10/16/2002	50	3.912
1/13/2003	36.1	3.586
4/10/2003	10	2.303
7/16/2003	42.7	3.754
10/14/2003	22	3.091
1/13/2004	12.8	2.549

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	4.78	N/A	1.564	NO
MW221	Downgradient	Yes	5.94	N/A	1.782	NO
MW222	Downgradient	Yes	5.44	N/A	1.694	NO
MW223	Downgradient	No	10	N/A	2.303	N/A
MW224	Downgradient	Yes	4.56	N/A	1.517	NO
MW369	Downgradient	No	9.14	N/A	2.213	N/A
MW372	Downgradient	No	8.9	N/A	2.186	N/A
MW384	Sidegradient	Yes	8.22	N/A	2.107	NO
MW387	Downgradient	Yes	10.2	N/A	2.322	NO
MW391	Downgradient	Yes	8.46	N/A	2.135	NO
MW394	Upgradient	Yes	5.64	N/A	1.730	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Trichloroethene UNITS: ug/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 8.813	**S=** 8.376	**CV(1)=** 0.951	**K factor**=** 2.523	**TL(1)=** 29.946	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.395	**S=** 1.449	**CV(2)=** 1.039	**K factor**=** 2.523	**TL(2)=** 5.052	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	1	0.000
1/15/2003	1	0.000
4/10/2003	1	0.000
7/14/2003	1	0.000
10/13/2003	1	0.000
1/13/2004	1	0.000
4/13/2004	1	0.000
7/21/2004	1	0.000

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	16	2.773
9/30/2002	20	2.996
10/16/2002	17	2.833
1/13/2003	15	2.708
4/10/2003	10	2.303
7/16/2003	19	2.944
10/14/2003	20	2.996
1/13/2004	16	2.773

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.43	N/A	-0.844	N/A
MW221	Downgradient	Yes	1.62	N/A	0.482	N/A
MW222	Downgradient	No	1	N/A	0.000	N/A
MW223	Downgradient	Yes	2.17	N/A	0.775	N/A
MW224	Downgradient	Yes	0.34	N/A	-1.079	N/A
MW369	Downgradient	Yes	1.52	N/A	0.419	N/A
MW372	Downgradient	Yes	8.96	NO	2.193	N/A
MW384	Sidegradient	Yes	0.49	N/A	-0.713	N/A
MW387	Downgradient	Yes	1.05	N/A	0.049	N/A
MW391	Downgradient	Yes	8.62	NO	2.154	N/A
MW394	Upgradient	Yes	4.37	N/A	1.475	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Vanadium UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.021	**S=** 0.002	**CV(1)=** 0.083	**K factor**=** 2.523	**TL(1)=** 0.025	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.884	**S=** 0.076	**CV(2)=** -0.020	**K factor**=** 2.523	**TL(2)=** -3.692	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
10/14/2002	0.02	-3.912
1/15/2003	0.02	-3.912
4/10/2003	0.02	-3.912
7/14/2003	0.02	-3.912
10/13/2003	0.02	-3.912
1/13/2004	0.02	-3.912
4/13/2004	0.02	-3.912
7/21/2004	0.02	-3.912

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/16/2002	0.02	-3.912
1/13/2003	0.02	-3.912
4/10/2003	0.02	-3.912
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/13/2004	0.02	-3.912

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	0.005	N/A	-5.298	N/A
MW221	Downgradient	No	0.005	N/A	-5.298	N/A
MW222	Downgradient	No	0.005	N/A	-5.298	N/A
MW223	Downgradient	No	0.005	N/A	-5.298	N/A
MW224	Downgradient	No	0.005	N/A	-5.298	N/A
MW369	Downgradient	Yes	0.00151	NO	-6.496	N/A
MW372	Downgradient	No	0.005	N/A	-5.298	N/A
MW384	Sidegradient	No	0.005	N/A	-5.298	N/A
MW387	Downgradient	No	0.005	N/A	-5.298	N/A
MW391	Downgradient	No	0.005	N/A	-5.298	N/A
MW394	Upgradient	No	0.005	N/A	-5.298	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Zinc UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.036	**S=** 0.026	**CV(1)=** 0.722	**K factor**=** 2.523	**TL(1)=** 0.101	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.485	**S=** 0.525	**CV(2)=** -0.151	**K factor**=** 2.523	**TL(2)=** -2.162	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
10/14/2002	0.025	-3.689
1/15/2003	0.035	-3.352
4/10/2003	0.035	-3.352
7/14/2003	0.0389	-3.247
10/13/2003	0.026	-3.650
1/13/2004	0.02	-3.912
4/13/2004	0.02	-3.912
7/21/2004	0.02	-3.912

Well Number:	MW394	
Date Collected	Result	LN(Result)
8/13/2002	0.1	-2.303
9/16/2002	0.1	-2.303
10/16/2002	0.025	-3.689
1/13/2003	0.035	-3.352
4/10/2003	0.035	-3.352
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/13/2004	0.02	-3.912

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	0.01	N/A	-4.605	N/A
MW221	Downgradient	No	0.01	N/A	-4.605	N/A
MW222	Downgradient	No	0.01	N/A	-4.605	N/A
MW223	Downgradient	Yes	0.00476	NO	-5.348	N/A
MW224	Downgradient	No	0.01	N/A	-4.605	N/A
MW369	Downgradient	No	0.01	N/A	-4.605	N/A
MW372	Downgradient	Yes	0.00622	NO	-5.080	N/A
MW384	Sidegradient	No	0.01	N/A	-4.605	N/A
MW387	Downgradient	Yes	0.00562	NO	-5.181	N/A
MW391	Downgradient	No	0.01	N/A	-4.605	N/A
MW394	Upgradient	Yes	0.00425	NO	-5.461	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Aluminum UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.258	**S=** 0.221	**CV(1)=** 0.856	**K factor**=** 2.523	**TL(1)=** 0.815	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -2.266	**S=** 2.485	**CV(2)=** -1.097	**K factor**=** 2.523	**TL(2)=** 4.003	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	0.2	-1.609
9/16/2002	0.2	-1.609
10/16/2002	0.0002	-8.517
1/13/2003	0.737	-0.305
4/10/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.2	-1.609
1/13/2004	0.2	-1.609

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	0.824	-0.194
9/16/2002	0.2	-1.609
10/17/2002	0.0002	-8.517
1/13/2003	0.363	-1.013
4/8/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.2	-1.609
1/13/2004	0.2	-1.609

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	0.05	N/A	-2.996	N/A
MW373	Downgradient	No	0.0177	N/A	-4.034	N/A
MW385	Sidegradient	Yes	0.0385	NO	-3.257	N/A
MW388	Downgradient	Yes	0.0479	NO	-3.039	N/A
MW392	Downgradient	Yes	0.0175	NO	-4.046	N/A
MW395	Upgradient	No	0.05	N/A	-2.996	N/A
MW397	Upgradient	Yes	0.194	NO	-1.640	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Beta activity UNITS: pCi/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 7.183	**S=** 2.612	**CV(1)=** 0.364	**K factor**=** 2.523	**TL(1)=** 13.773	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.870	**S=** 0.552	**CV(2)=** 0.295	**K factor**=** 2.523	**TL(2)=** 3.261	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.09	0.086
9/16/2002	5.79	1.756
10/16/2002	6.82	1.920
1/13/2003	5.01	1.611
4/10/2003	6.1	1.808
7/16/2003	8.51	2.141
10/14/2003	4.99	1.607
1/13/2004	6.58	1.884

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	9.57	2.259
9/16/2002	11	2.398
10/17/2002	9.3	2.230
1/13/2003	8.63	2.155
4/8/2003	10	2.303
7/16/2003	6.89	1.930
10/14/2003	10.1	2.313
1/13/2004	4.55	1.515

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	14.5	N/A	2.674	N/A
MW373	Downgradient	Yes	25.1	N/A	3.223	N/A
MW385	Sidegradient	Yes	105	YES	4.654	N/A
MW388	Downgradient	Yes	88.1	YES	4.478	N/A
MW392	Downgradient	No	7.53	N/A	2.019	N/A
MW395	Upgradient	No	1.03	N/A	0.030	N/A
MW397	Upgradient	No	5.37	N/A	1.681	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW385
MW388

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Boron UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.650	**S=** 0.805	**CV(1)=** 1.238	**K factor**=** 2.523	**TL(1)=** 2.681	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.034	**S=** 1.030	**CV(2)=** -0.996	**K factor**=** 2.523	**TL(2)=** 1.564	**LL(2)=**N/A

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	2	0.693
9/16/2002	2	0.693
10/16/2002	0.2	-1.609
1/13/2003	0.2	-1.609
4/10/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.2	-1.609
1/13/2004	0.2	-1.609

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	2	0.693
9/16/2002	2	0.693
10/17/2002	0.2	-1.609
1/13/2003	0.2	-1.609
4/8/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.2	-1.609
1/13/2004	0.2	-1.609

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.0351	N/A	-3.350	NO
MW373	Downgradient	Yes	1.67	N/A	0.513	NO
MW385	Sidegradient	No	0.017	N/A	-4.075	N/A
MW388	Downgradient	Yes	0.0197	N/A	-3.927	NO
MW392	Downgradient	Yes	0.029	N/A	-3.540	NO
MW395	Upgradient	Yes	0.0205	N/A	-3.887	NO
MW397	Upgradient	Yes	0.00702	N/A	-4.959	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Bromide UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 1.000	**S=** 0.000	**CV(1)=** 0.000	**K factor**=** 2.523	**TL(1)=** 1.000	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 0.000	**S=** 0.000	**CV(2)=** #Num!	**K factor**=** 2.523	**TL(2)=** 0.000	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	1	0.000
9/16/2002	1	0.000
10/16/2002	1	0.000
1/13/2003	1	0.000
4/10/2003	1	0.000
7/16/2003	1	0.000
10/14/2003	1	0.000
1/13/2004	1	0.000

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1	0.000
9/16/2002	1	0.000
10/17/2002	1	0.000
1/13/2003	1	0.000
4/8/2003	1	0.000
7/16/2003	1	0.000
10/14/2003	1	0.000
1/13/2004	1	0.000

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.519	NO	-0.656	N/A
MW373	Downgradient	Yes	0.584	NO	-0.538	N/A
MW385	Sidegradient	Yes	0.288	NO	-1.245	N/A
MW388	Downgradient	Yes	0.337	NO	-1.088	N/A
MW392	Downgradient	Yes	0.575	NO	-0.553	N/A
MW395	Upgradient	Yes	0.57	NO	-0.562	N/A
MW397	Upgradient	Yes	0.433	NO	-0.837	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Calcium UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 23.103	**S=** 11.538	**CV(1)=** 0.499	**K factor**=** 2.523	**TL(1)=** 52.213	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.357	**S=** 2.411	**CV(2)=** 1.023	**K factor**=** 2.523	**TL(2)=** 8.439	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	32.2	3.472
9/16/2002	33	3.497
10/16/2002	0.0295	-3.523
1/13/2003	32.1	3.469
4/10/2003	40.2	3.694
7/16/2003	32.4	3.478
10/14/2003	33.9	3.523
1/13/2004	31.2	3.440

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	19.4	2.965
9/16/2002	19	2.944
10/17/2002	0.0179	-4.023
1/13/2003	17.8	2.879
4/8/2003	20.3	3.011
7/16/2003	19.4	2.965
10/14/2003	19.9	2.991
1/13/2004	18.8	2.934

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	28.3	NO	3.343	N/A
MW373	Downgradient	Yes	73.5	YES	4.297	N/A
MW385	Sidegradient	Yes	24.4	NO	3.195	N/A
MW388	Downgradient	Yes	26.5	NO	3.277	N/A
MW392	Downgradient	Yes	28.3	NO	3.343	N/A
MW395	Upgradient	Yes	26.4	NO	3.273	N/A
MW397	Upgradient	Yes	18.7	NO	2.929	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Chemical Oxygen Demand (COD) UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 35.313	**S=** 1.250	**CV(1)=** 0.035	**K factor**=** 2.523	**TL(1)=** 38.466	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.564	**S=** 0.033	**CV(2)=** 0.009	**K factor**=** 2.523	**TL(2)=** 3.648	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	35	3.555
9/16/2002	35	3.555
10/16/2002	35	3.555
1/13/2003	35	3.555
4/10/2003	35	3.555
7/16/2003	35	3.555
10/14/2003	35	3.555
1/13/2004	35	3.555

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	40	3.689
9/16/2002	35	3.555
10/17/2002	35	3.555
1/13/2003	35	3.555
4/8/2003	35	3.555
7/16/2003	35	3.555
10/14/2003	35	3.555
1/13/2004	35	3.555

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	20	N/A	2.996	N/A
MW373	Downgradient	Yes	11	NO	2.398	N/A
MW385	Sidegradient	No	20	N/A	2.996	N/A
MW388	Downgradient	No	20	N/A	2.996	N/A
MW392	Downgradient	Yes	10.8	NO	2.380	N/A
MW395	Upgradient	No	20	N/A	2.996	N/A
MW397	Upgradient	No	20	N/A	2.996	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Chloride UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 51.844	**S=** 11.652	**CV(1)=** 0.225	**K factor**=** 2.523	**TL(1)=** 81.242	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.924	**S=** 0.229	**CV(2)=** 0.058	**K factor**=** 2.523	**TL(2)=** 4.501	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW395	
Date Collected	Result	LN(Result)
8/13/2002	62.2	4.130
9/16/2002	64.7	4.170
10/16/2002	62.2	4.130
1/13/2003	63.5	4.151
4/10/2003	64.1	4.160
7/16/2003	64	4.159
10/14/2003	63.2	4.146
1/13/2004	60.6	4.104

Well Number:	MW397	
Date Collected	Result	LN(Result)
8/13/2002	38.9	3.661
9/16/2002	39.8	3.684
10/17/2002	39.3	3.671
1/13/2003	40.5	3.701
4/8/2003	42.1	3.740
7/16/2003	42	3.738
10/14/2003	40.8	3.709
1/13/2004	41.6	3.728

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	38.6	NO	3.653	N/A
MW373	Downgradient	Yes	42.4	NO	3.747	N/A
MW385	Sidegradient	Yes	30.7	NO	3.424	N/A
MW388	Downgradient	Yes	32.3	NO	3.475	N/A
MW392	Downgradient	Yes	47.2	NO	3.854	N/A
MW395	Upgradient	Yes	47.2	NO	3.854	N/A
MW397	Upgradient	Yes	37.2	NO	3.616	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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cis-1,2-Dichloroethene UNITS: ug/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 5.000	**S=** 0.000	**CV(1)=** 0.000	**K factor**=** 2.523	**TL(1)=** 5.000	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.609	**S=** 0.000	**CV(2)=** 0.000	**K factor**=** 2.523	**TL(2)=** 1.609	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	5	1.609
9/30/2002	5	1.609
10/16/2002	5	1.609
1/13/2003	5	1.609
4/10/2003	5	1.609
7/16/2003	5	1.609
10/14/2003	5	1.609
1/13/2004	5	1.609

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	5	1.609
9/30/2002	5	1.609
10/17/2002	5	1.609
1/13/2003	5	1.609
4/8/2003	5	1.609
7/16/2003	5	1.609
10/14/2003	5	1.609
1/13/2004	5	1.609

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	1	N/A	0.000	N/A
MW373	Downgradient	No	1	N/A	0.000	N/A
MW385	Sidegradient	No	1	N/A	0.000	N/A
MW388	Downgradient	Yes	0.3	NO	-1.204	N/A
MW392	Downgradient	Yes	0.61	NO	-0.494	N/A
MW395	Upgradient	No	1	N/A	0.000	N/A
MW397	Upgradient	No	1	N/A	0.000	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Cobalt UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.007	**S=** 0.011	**CV(1)=** 1.515	**K factor**=** 2.523	**TL(1)=** 0.034	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -6.053	**S=** 1.416	**CV(2)=** -0.234	**K factor**=** 2.523	**TL(2)=** -2.480	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/16/2002	0.001	-6.908
1/13/2003	0.00148	-6.516
4/10/2003	0.00151	-6.496
7/16/2003	0.001	-6.908
10/14/2003	0.001	-6.908
1/13/2004	0.001	-6.908

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/17/2002	0.001	-6.908
1/13/2003	0.001	-6.908
4/8/2003	0.001	-6.908
7/16/2003	0.001	-6.908
10/14/2003	0.001	-6.908
1/13/2004	0.001	-6.908

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.00052	N/A	-7.562	NO
MW373	Downgradient	No	0.001	N/A	-6.908	N/A
MW385	Sidegradient	No	0.001	N/A	-6.908	N/A
MW388	Downgradient	No	0.001	N/A	-6.908	N/A
MW392	Downgradient	Yes	0.00047	N/A	-7.663	NO
MW395	Upgradient	No	0.001	N/A	-6.908	N/A
MW397	Upgradient	Yes	0.00012	N/A	-9.028	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Conductivity UNITS: umho/cm LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 377.875	**S=**	52.101	**CV(1)=** 0.138	**K factor**=** 2.523	**TL(1)=** 509.326	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 5.926	**S=**	0.136	**CV(2)=** 0.023	**K factor**=** 2.523	**TL(2)=** 6.270	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW395	
Date Collected	Result	LN(Result)
8/13/2002	405	6.004
9/16/2002	401	5.994
10/16/2002	392	5.971
1/13/2003	404	6.001
4/10/2003	488	6.190
7/16/2003	450	6.109
10/14/2003	410	6.016
1/13/2004	413	6.023

Well Number:	MW397	
Date Collected	Result	LN(Result)
8/13/2002	322	5.775
9/16/2002	315	5.753
10/17/2002	317	5.759
1/13/2003	320	5.768
4/8/2003	390	5.966
7/16/2003	354	5.869
10/14/2003	331	5.802
1/13/2004	334	5.811

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	432	NO	6.068	N/A
MW373	Downgradient	Yes	873	YES	6.772	N/A
MW385	Sidegradient	Yes	421	NO	6.043	N/A
MW388	Downgradient	Yes	436	NO	6.078	N/A
MW392	Downgradient	Yes	427	NO	6.057	N/A
MW395	Upgradient	Yes	338	NO	5.823	N/A
MW397	Upgradient	Yes	325	NO	5.784	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Copper UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.028	**S=** 0.013	**CV(1)=** 0.474	**K factor**=** 2.523	**TL(1)=** 0.061	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.662	**S=** 0.406	**CV(2)=** -0.111	**K factor**=** 2.523	**TL(2)=** -2.638	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	0.05	-2.996
9/16/2002	0.05	-2.996
10/16/2002	0.0281	-3.572
1/13/2003	0.02	-3.912
4/10/2003	0.02	-3.912
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/13/2004	0.02	-3.912

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	0.05	-2.996
9/16/2002	0.05	-2.996
10/17/2002	0.02	-3.912
1/13/2003	0.02	-3.912
4/8/2003	0.02	-3.912
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/13/2004	0.02	-3.912

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.00056	NO	-7.488	N/A
MW373	Downgradient	No	0.001	N/A	-6.908	N/A
MW385	Sidegradient	No	0.00074	N/A	-7.209	N/A
MW388	Downgradient	No	0.0005	N/A	-7.601	N/A
MW392	Downgradient	No	0.00037	N/A	-7.902	N/A
MW395	Upgradient	No	0.001	N/A	-6.908	N/A
MW397	Upgradient	No	0.00058	N/A	-7.452	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Dissolved Oxygen UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 4.678	**S=** 2.431	**CV(1)=** 0.520	**K factor**=** 2.523	**TL(1)=** 10.812	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.414	**S=** 0.550	**CV(2)=** 0.389	**K factor**=** 2.523	**TL(2)=** 2.802	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	7.29	1.987
9/30/2002	4.03	1.394
10/16/2002	3.85	1.348
1/13/2003	2.36	0.859
4/10/2003	1.14	0.131
7/16/2003	1.76	0.565
10/14/2003	4.05	1.399
1/13/2004	4.26	1.449

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	11.56	2.448
9/16/2002	5.86	1.768
10/17/2002	5.94	1.782
1/13/2003	4.66	1.539
4/8/2003	3.77	1.327
7/16/2003	3.47	1.244
10/14/2003	5.34	1.675
1/13/2004	5.51	1.707

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	4.18	NO	1.430	N/A
MW373	Downgradient	Yes	2.09	NO	0.737	N/A
MW385	Sidegradient	Yes	4.37	NO	1.475	N/A
MW388	Downgradient	Yes	4.39	NO	1.479	N/A
MW392	Downgradient	Yes	1.94	NO	0.663	N/A
MW395	Upgradient	Yes	5.04	NO	1.617	N/A
MW397	Upgradient	Yes	5.82	NO	1.761	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Dissolved Solids UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 219.250	**S=**	34.107	**CV(1)=** 0.156	**K factor**=** 2.523	**TL(1)=** 305.301	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 5.379	**S=**	0.152	**CV(2)=** 0.028	**K factor**=** 2.523	**TL(2)=** 5.762	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW395	
Date Collected	Result	LN(Result)
8/13/2002	249	5.517
9/16/2002	272	5.606
10/16/2002	255	5.541
1/13/2003	211	5.352
4/10/2003	289	5.666
7/16/2003	236	5.464
10/14/2003	224	5.412
1/13/2004	235	5.460

Well Number:	MW397	
Date Collected	Result	LN(Result)
8/13/2002	187	5.231
9/16/2002	197	5.283
10/17/2002	183	5.209
1/13/2003	182	5.204
4/8/2003	217	5.380
7/16/2003	196	5.278
10/14/2003	198	5.288
1/13/2004	177	5.176

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	194	NO	5.268	N/A
MW373	Downgradient	Yes	476	YES	6.165	N/A
MW385	Sidegradient	Yes	171	NO	5.142	N/A
MW388	Downgradient	Yes	189	NO	5.242	N/A
MW392	Downgradient	Yes	186	NO	5.226	N/A
MW395	Upgradient	Yes	179	NO	5.187	N/A
MW397	Upgradient	Yes	144	NO	4.970	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Iron UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.400	**S=** 0.514	**CV(1)=** 1.286	**K factor**=** 2.523	**TL(1)=** 1.698	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -2.197	**S=** 2.634	**CV(2)=** -1.199	**K factor**=** 2.523	**TL(2)=** 4.449	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	0.294	-1.224
9/16/2002	0.2	-1.609
10/16/2002	0.0002	-8.517
1/13/2003	1.33	0.285
4/10/2003	1.31	0.270
7/16/2003	0.2	-1.609
10/14/2003	0.1	-2.303
1/13/2004	0.1	-2.303

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1.58	0.457
9/16/2002	0.232	-1.461
10/17/2002	0.0002	-8.517
1/13/2003	0.453	-0.792
4/8/2003	0.2	-1.609
7/16/2003	0.2	-1.609
10/14/2003	0.1	-2.303
1/13/2004	0.1	-2.303

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	0.1	N/A	-2.303	N/A
MW373	Downgradient	No	0.1	N/A	-2.303	N/A
MW385	Sidegradient	Yes	0.0704	N/A	-2.654	NO
MW388	Downgradient	Yes	0.152	N/A	-1.884	NO
MW392	Downgradient	Yes	0.435	N/A	-0.832	NO
MW395	Upgradient	No	0.1	N/A	-2.303	N/A
MW397	Upgradient	Yes	0.277	N/A	-1.284	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Magnesium UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 9.102	**S=** 4.685	**CV(1)=** 0.515	**K factor**=** 2.523	**TL(1)=** 20.922	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.423	**S=** 2.408	**CV(2)=** 1.692	**K factor**=** 2.523	**TL(2)=** 7.500	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	12.5	2.526
9/16/2002	13	2.565
10/16/2002	0.0127	-4.366
1/13/2003	11.2	2.416
4/10/2003	17.5	2.862
7/16/2003	12.9	2.557
10/14/2003	13.4	2.595
1/13/2004	12.4	2.518

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	7.83	2.058
9/16/2002	7.64	2.033
10/17/2002	0.00658	-5.024
1/13/2003	6.69	1.901
4/8/2003	7.28	1.985
7/16/2003	7.82	2.057
10/14/2003	7.94	2.072
1/13/2004	7.51	2.016

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	12.9	NO	2.557	N/A
MW373	Downgradient	Yes	28.1	YES	3.336	N/A
MW385	Sidegradient	Yes	9.06	NO	2.204	N/A
MW388	Downgradient	Yes	11.7	NO	2.460	N/A
MW392	Downgradient	Yes	9.93	NO	2.296	N/A
MW395	Upgradient	Yes	11.3	NO	2.425	N/A
MW397	Upgradient	Yes	8.09	NO	2.091	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Manganese UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.131	**S=** 0.195	**CV(1)=** 1.487	**K factor**=** 2.523	**TL(1)=** 0.624	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.104	**S=** 1.529	**CV(2)=** -0.493	**K factor**=** 2.523	**TL(2)=** 0.755	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	0.361	-1.019
9/16/2002	0.028	-3.576
10/16/2002	0.026	-3.650
1/13/2003	0.0713	-2.641
4/10/2003	0.629	-0.464
7/16/2003	0.297	-1.214
10/14/2003	0.0198	-3.922
1/13/2004	0.0126	-4.374

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	0.466	-0.764
9/16/2002	0.077	-2.564
10/17/2002	0.028	-3.576
1/13/2003	0.0164	-4.110
4/8/2003	0.0407	-3.202
7/16/2003	0.0167	-4.092
10/14/2003	0.00555	-5.194
1/13/2004	0.005	-5.298

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.00282	N/A	-5.871	NO
MW373	Downgradient	Yes	0.00318	N/A	-5.751	NO
MW385	Sidegradient	Yes	0.00182	N/A	-6.309	NO
MW388	Downgradient	Yes	0.00116	N/A	-6.759	NO
MW392	Downgradient	Yes	0.293	N/A	-1.228	NO
MW395	Upgradient	No	0.005	N/A	-5.298	N/A
MW397	Upgradient	Yes	0.00539	N/A	-5.223	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Molybdenum UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.007	**S=** 0.011	**CV(1)=** 1.451	**K factor**=** 2.523	**TL(1)=** 0.034	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -5.990	**S=** 1.443	**CV(2)=** -0.241	**K factor**=** 2.523	**TL(2)=** -2.349	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/16/2002	0.001	-6.908
1/13/2003	0.00609	-5.101
4/10/2003	0.001	-6.908
7/16/2003	0.001	-6.908
10/14/2003	0.001	-6.908
1/13/2004	0.001	-6.908

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	0.025	-3.689
9/16/2002	0.025	-3.689
10/17/2002	0.001	-6.908
1/13/2003	0.001	-6.908
4/8/2003	0.001	-6.908
7/16/2003	0.001	-6.908
10/14/2003	0.001	-6.908
1/13/2004	0.001	-6.908

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	0.0005	N/A	-7.601	N/A
MW373	Downgradient	No	0.0005	N/A	-7.601	N/A
MW385	Sidegradient	No	0.0005	N/A	-7.601	N/A
MW388	Downgradient	No	0.0005	N/A	-7.601	N/A
MW392	Downgradient	Yes	0.00037	N/A	-7.902	NO
MW395	Upgradient	No	0.0005	N/A	-7.601	N/A
MW397	Upgradient	No	0.0005	N/A	-7.601	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Nickel UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.018	**S=** 0.020	**CV(1)=** 1.089	**K factor**=** 2.523	**TL(1)=** 0.068	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -4.540	**S=** 1.020	**CV(2)=** -0.225	**K factor**=** 2.523	**TL(2)=** -1.965	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	0.05	-2.996
9/16/2002	0.05	-2.996
10/16/2002	0.00702	-4.959
1/13/2003	0.029	-3.540
4/10/2003	0.0091	-4.699
7/16/2003	0.00627	-5.072
10/14/2003	0.005	-5.298
1/13/2004	0.005	-5.298

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	0.05	-2.996
9/16/2002	0.05	-2.996
10/17/2002	0.005	-5.298
1/13/2003	0.00502	-5.294
4/8/2003	0.005	-5.298
7/16/2003	0.005	-5.298
10/14/2003	0.005	-5.298
1/13/2004	0.005	-5.298

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.00095	N/A	-6.959	NO
MW373	Downgradient	No	0.002	N/A	-6.215	N/A
MW385	Sidegradient	Yes	0.0007	N/A	-7.264	NO
MW388	Downgradient	Yes	0.00061	N/A	-7.402	NO
MW392	Downgradient	Yes	0.00077	N/A	-7.169	NO
MW395	Upgradient	No	0.002	N/A	-6.215	N/A
MW397	Upgradient	Yes	0.00067	N/A	-7.308	NO

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Oxidation-Reduction Potential UNITS: mV LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 157.250 **S=** 52.376 **CV(1)=** 0.333 **K factor**=** 2.523 **TL(1)=** 289.395 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 5.003 **S=** 0.348 **CV(2)=** 0.069 **K factor**=** 2.523 **TL(2)=** 5.880 **LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW395	
Date Collected	Result	LN(Result)
8/13/2002	80	4.382
9/16/2002	145	4.977
10/16/2002	125	4.828
1/13/2003	85	4.443
4/10/2003	159	5.069
7/16/2003	98	4.585
10/14/2003	138	4.927
1/13/2004	233	5.451

Well Number:	MW397	
Date Collected	Result	LN(Result)
8/13/2002	115	4.745
9/30/2002	140	4.942
10/17/2002	185	5.220
1/13/2003	230	5.438
4/8/2003	155	5.043
7/16/2003	188	5.236
10/14/2003	187	5.231
1/13/2004	253	5.533

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	380	YES	5.940	N/A
MW373	Downgradient	Yes	507	YES	6.229	N/A
MW385	Sidegradient	Yes	467	YES	6.146	N/A
MW388	Downgradient	Yes	320	YES	5.768	N/A
MW392	Downgradient	Yes	466	YES	6.144	N/A
MW395	Upgradient	Yes	474	YES	6.161	N/A
MW397	Upgradient	Yes	471	YES	6.155	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW370
MW373
MW385
MW388
MW392
MW395
MW397

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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pH UNITS: Std Unit LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 6.048	**S=** 0.248	**CV(1)=** 0.041	**K factor**=** 2.904	**TL(1)=** 6.767	**LL(1)=**5.3289
Statistics-Transformed Background Data	**X=** 1.799	**S=** 0.042	**CV(2)=** 0.023	**K factor**=** 2.904	**TL(2)=** 1.920	**LL(2)=**1.6782

Historical Background Data from Upgradient Wells with Transformed Result

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	5.8	1.758
9/16/2002	6	1.792
10/16/2002	5.47	1.699
1/13/2003	6	1.792
4/10/2003	6.18	1.821
7/16/2003	6	1.792
10/14/2003	6.31	1.842
1/13/2004	6.24	1.831

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	5.84	1.765
9/30/2002	6	1.792
10/17/2002	5.75	1.749
1/13/2003	6	1.792
4/8/2003	6.3	1.841
7/16/2003	6.2	1.825
10/14/2003	6.36	1.850
1/13/2004	6.32	1.844

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)? Result <LL(1)?	LN(Result)	LN(Result) >TL(2)? LN(Result) <LL(2)?
MW370	Downgradient	Yes	6.1	NO	1.808	N/A
MW373	Downgradient	Yes	6.02	NO	1.795	N/A
MW385	Sidegradient	Yes	5.92	NO	1.778	N/A
MW388	Downgradient	Yes	6.02	NO	1.795	N/A
MW392	Downgradient	Yes	6.21	NO	1.826	N/A
MW395	Upgradient	Yes	5.75	NO	1.749	N/A
MW397	Upgradient	Yes	5.82	NO	1.761	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Potassium UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 1.590	**S=** 0.642	**CV(1)=** 0.404	**K factor**=** 2.523	**TL(1)=** 3.208	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -0.306	**S=** 2.457	**CV(2)=** -8.028	**K factor**=** 2.523	**TL(2)=** 5.892	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	2	0.693
9/16/2002	2	0.693
10/16/2002	0.00129	-6.653
1/13/2003	1.51	0.412
4/10/2003	1.67	0.513
7/16/2003	1.73	0.548
10/14/2003	1.7	0.531
1/13/2004	1.58	0.457

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	2.03	0.708
9/16/2002	2	0.693
10/17/2002	0.00145	-6.536
1/13/2003	1.69	0.525
4/8/2003	1.73	0.548
7/16/2003	2	0.693
10/14/2003	1.92	0.652
1/13/2004	1.87	0.626

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	2.49	NO	0.912	N/A
MW373	Downgradient	Yes	2.89	NO	1.061	N/A
MW385	Sidegradient	Yes	1.52	NO	0.419	N/A
MW388	Downgradient	Yes	1.89	NO	0.637	N/A
MW392	Downgradient	Yes	1.83	NO	0.604	N/A
MW395	Upgradient	Yes	1.59	NO	0.464	N/A
MW397	Upgradient	Yes	1.78	NO	0.577	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Radium-226 UNITS: pCi/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.039	**S=** 0.419	**CV(1)=** 10.740	**K factor**=** 2.523	**TL(1)=** 1.096	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.695	**S=** 1.043	**CV(2)=** -0.615	**K factor**=** 2.523	**TL(2)=** -0.414	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW395	
Date Collected	Result	LN(Result)
10/16/2002	0.661	-0.414
1/13/2003	-0.839	#Func!
10/14/2003	0.0266	-3.627
1/13/2004	-0.0777	#Func!
4/12/2004	-0.115	#Func!
7/20/2004	0.105	-2.254
10/12/2004	0.408	-0.896
1/18/2005	0.0564	-2.875

Well Number:	MW397	
Date Collected	Result	LN(Result)
10/17/2002	0.576	-0.552
1/13/2003	-0.841	#Func!
10/14/2003	-0.179	#Func!
1/13/2004	-0.0564	#Func!
4/12/2004	0.174	-1.749
7/21/2004	0.227	-1.483
10/12/2004	0.379	-0.970
1/20/2005	0.119	-2.129

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.905	N/A	-0.100	YES
MW373	Downgradient	Yes	0.436	N/A	-0.830	NO
MW385	Sidegradient	No	0.35	N/A	-1.050	N/A
MW388	Downgradient	No	1.12	N/A	0.113	N/A
MW392	Downgradient	No	0.595	N/A	-0.519	N/A
MW395	Upgradient	No	0.892	N/A	-0.114	N/A
MW397	Upgradient	No	0.69	N/A	-0.371	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW370

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Sodium UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 29.560	**S=** 13.894	**CV(1)=** 0.470	**K factor**=** 2.523	**TL(1)=** 64.616	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.615	**S=** 2.411	**CV(2)=** 0.922	**K factor**=** 2.523	**TL(2)=** 8.699	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number:	MW395	
Date Collected	Result	LN(Result)
8/13/2002	27	3.296
9/16/2002	27.2	3.303
10/16/2002	0.0253	-3.677
1/13/2003	22.6	3.118
4/10/2003	53.9	3.987
7/16/2003	30	3.401
10/14/2003	29.1	3.371
1/13/2004	26.4	3.273

Well Number:	MW397	
Date Collected	Result	LN(Result)
8/13/2002	35.2	3.561
9/16/2002	34.3	3.535
10/17/2002	0.0336	-3.393
1/13/2003	31.3	3.444
4/8/2003	46.1	3.831
7/16/2003	38.4	3.648
10/14/2003	37.1	3.614
1/13/2004	34.3	3.535

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	42.4	NO	3.747	N/A
MW373	Downgradient	Yes	63.4	NO	4.149	N/A
MW385	Sidegradient	Yes	47	NO	3.850	N/A
MW388	Downgradient	Yes	48.3	NO	3.877	N/A
MW392	Downgradient	Yes	42.4	NO	3.747	N/A
MW395	Upgradient	Yes	29.9	NO	3.398	N/A
MW397	Upgradient	Yes	35.4	NO	3.567	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Historical Background Comparison

Sulfate UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 10.756	**S=** 2.147	**CV(1)=** 0.200	**K factor**=** 2.523	**TL(1)=** 16.173	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.356	**S=** 0.203	**CV(2)=** 0.086	**K factor**=** 2.523	**TL(2)=** 2.869	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	10.3	2.332
9/16/2002	9.1	2.208
10/16/2002	8.8	2.175
1/13/2003	9	2.197
4/10/2003	8.3	2.116
7/16/2003	8.2	2.104
10/14/2003	8.3	2.116
1/13/2004	8.2	2.104

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	14	2.639
9/16/2002	12.8	2.549
10/17/2002	12.3	2.510
1/13/2003	12.7	2.542
4/8/2003	12.8	2.549
7/16/2003	13.1	2.573
10/14/2003	12.1	2.493
1/13/2004	12.1	2.493

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	19.1	YES	2.950	N/A
MW373	Downgradient	Yes	165	YES	5.106	N/A
MW385	Sidegradient	Yes	20.4	YES	3.016	N/A
MW388	Downgradient	Yes	22.6	YES	3.118	N/A
MW392	Downgradient	Yes	6.14	NO	1.815	N/A
MW395	Upgradient	Yes	10.1	NO	2.313	N/A
MW397	Upgradient	Yes	10.9	NO	2.389	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW370
MW373
MW385
MW388

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Technetium-99 UNITS: pCi/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 11.359	**S=** 9.138	**CV(1)=** 0.805	**K factor**=** 2.523	**TL(1)=** 34.414	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.398	**S=** 0.859	**CV(2)=** 0.358	**K factor**=** 2.523	**TL(2)=** 3.246	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	20.8	3.035
9/16/2002	16.2	2.785
10/16/2002	8.28	2.114
1/13/2003	13	2.565
4/10/2003	-9.37	#Func!
7/16/2003	0.826	-0.191
10/14/2003	14.1	2.646
1/13/2004	0	#Func!

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	6.06	1.802
9/16/2002	17.3	2.851
10/17/2002	25.7	3.246
1/13/2003	20.9	3.040
4/8/2003	20.1	3.001
7/16/2003	9.2	2.219
10/14/2003	10.1	2.313
1/13/2004	8.54	2.145

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	20.9	NO	3.040	N/A
MW373	Downgradient	Yes	33.7	NO	3.517	N/A
MW385	Sidegradient	Yes	150	YES	5.011	N/A
MW388	Downgradient	Yes	147	YES	4.990	N/A
MW392	Downgradient	No	0.984	N/A	-0.016	N/A
MW395	Upgradient	No	7.25	N/A	1.981	N/A
MW397	Upgradient	No	9.32	N/A	2.232	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to historical background data.

Wells with Exceedances

MW385
MW388

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Total Organic Carbon (TOC) UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 1.544	**S=** 0.856	**CV(1)=** 0.554	**K factor**=** 2.523	**TL(1)=** 3.702	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 0.325	**S=** 0.452	**CV(2)=** 1.393	**K factor**=** 2.523	**TL(2)=** 1.465	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	1.6	0.470
9/16/2002	1.1	0.095
10/16/2002	1	0.000
1/13/2003	2	0.693
4/10/2003	3.4	1.224
7/16/2003	2	0.693
10/14/2003	1	0.000
1/13/2004	1	0.000

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	1	0.000
9/16/2002	1	0.000
10/17/2002	1	0.000
1/13/2003	3.6	1.281
4/8/2003	1.9	0.642
7/16/2003	1.1	0.095
10/14/2003	1	0.000
1/13/2004	1	0.000

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.37	NO	-0.994	N/A
MW373	Downgradient	Yes	0.51	NO	-0.673	N/A
MW385	Sidegradient	Yes	0.4	NO	-0.916	N/A
MW388	Downgradient	Yes	0.42	NO	-0.868	N/A
MW392	Downgradient	No	0.83	N/A	-0.186	N/A
MW395	Upgradient	No	1	N/A	0.000	N/A
MW397	Upgradient	No	1	N/A	0.000	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Total Organic Halides (TOX) UNITS: ug/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 31.513	**S=** 18.609	**CV(1)=** 0.591	**K factor**=** 2.523	**TL(1)=** 78.462	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.240	**S=** 0.707	**CV(2)=** 0.218	**K factor**=** 2.523	**TL(2)=** 5.024	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	50	3.912
9/16/2002	50	3.912
10/16/2002	50	3.912
1/13/2003	18.3	2.907
4/10/2003	51.2	3.936
7/16/2003	42.6	3.752
10/14/2003	12.3	2.510
1/13/2004	10	2.303

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	50	3.912
9/16/2002	50	3.912
10/17/2002	50	3.912
1/13/2003	12	2.485
4/8/2003	19.9	2.991
7/16/2003	17.9	2.885
10/14/2003	10	2.303
1/13/2004	10	2.303

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	7	N/A	1.946	N/A
MW373	Downgradient	No	13.9	N/A	2.632	N/A
MW385	Sidegradient	Yes	9.84	NO	2.286	N/A
MW388	Downgradient	Yes	4.22	NO	1.440	N/A
MW392	Downgradient	Yes	32.4	NO	3.478	N/A
MW395	Upgradient	Yes	4.02	NO	1.391	N/A
MW397	Upgradient	Yes	3.94	NO	1.371	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Trichloroethene UNITS: ug/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 7.313	**S=** 5.701	**CV(1)=** 0.780	**K factor**=** 2.523	**TL(1)=** 21.695	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 1.467	**S=** 1.213	**CV(2)=** 0.827	**K factor**=** 2.523	**TL(2)=** 4.528	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	11	2.398
9/30/2002	14	2.639
10/16/2002	12	2.485
1/13/2003	14	2.639
4/10/2003	14	2.639
7/16/2003	13	2.565
10/14/2003	12	2.485
1/13/2004	11	2.398

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	5	1.609
9/30/2002	5	1.609
10/17/2002	1	0.000
1/13/2003	1	0.000
4/8/2003	1	0.000
7/16/2003	1	0.000
10/14/2003	1	0.000
1/13/2004	1	0.000

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	1.29	N/A	0.255	N/A
MW373	Downgradient	Yes	8.61	NO	2.153	N/A
MW385	Sidegradient	Yes	0.51	N/A	-0.673	N/A
MW388	Downgradient	Yes	0.77	N/A	-0.261	N/A
MW392	Downgradient	Yes	15.7	NO	2.754	N/A
MW395	Upgradient	Yes	3.46	N/A	1.241	N/A
MW397	Upgradient	Yes	0.36	N/A	-1.022	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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Zinc UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is evidence of an exceedance of the statistically-derived historical background concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.044	**S=** 0.034	**CV(1)=** 0.760	**K factor**=** 2.523	**TL(1)=** 0.129	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -3.342	**S=** 0.659	**CV(2)=** -0.197	**K factor**=** 2.523	**TL(2)=** -1.679	**LL(2)=**N/A

Historical Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
8/13/2002	0.1	-2.303
9/16/2002	0.1	-2.303
10/16/2002	0.025	-3.689
1/13/2003	0.035	-3.352
4/10/2003	0.035	-3.352
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/13/2004	0.02	-3.912

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	0.1	-2.303
9/16/2002	0.1	-2.303
10/17/2002	0.025	-3.689
1/13/2003	0.035	-3.352
4/8/2003	0.035	-3.352
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/13/2004	0.02	-3.912

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	0.01	N/A	-4.605	N/A
MW373	Downgradient	No	0.01	N/A	-4.605	N/A
MW385	Sidegradient	No	0.0117	N/A	-4.448	N/A
MW388	Downgradient	No	0.01	N/A	-4.605	N/A
MW392	Downgradient	No	0.01	N/A	-4.605	N/A
MW395	Upgradient	No	0.01	N/A	-4.605	N/A
MW397	Upgradient	Yes	0.00816	NO	-4.809	N/A

N/A - Results identified as Non-Detects during laboratory analysis or data validation and were not included in the statistical evaluation. Additionally for parameters that have MCLs, where the result for a well did not exceed the MCL value, that well was not included in the statistical evaluation.

Conclusion of Statistical Analysis on Historical Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from historical background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

ATTACHMENT D2

COMPARISON OF CURRENT DATA TO ONE-SIDED UPPER TOLERANCE INTERVAL TEST CALCULATED USING CURRENT BACKGROUND DATA

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C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Oxidation-Reduction Potential UNITS: mV UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 327.625 **S=** 142.675 **CV(1)=** 0.435 **K factor**=** 3.188 **TL(1)=** 782.474 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 5.702 **S=** 0.465 **CV(2)=** 0.082 **K factor**=** 3.188 **TL(2)=** 7.184 **LL(2)=**N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW396

Date Collected	Result	LN(Result)
4/16/2013	251	5.525
7/10/2013	472	6.157
10/3/2013	323	5.778
1/22/2014	549	6.308
4/9/2014	427	6.057
7/17/2014	265	5.580
10/27/2014	141	4.949
1/8/2015	193	5.263

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	427	NO	6.057	N/A
MW390	Downgradient	Yes	494	NO	6.203	N/A
MW393	Downgradient	Yes	478	NO	6.170	N/A
MW396	Upgradient	Yes	469	NO	6.151	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Radium-226 UNITS: pCi/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.644	**S=** 0.701	**CV(1)=** 1.089	**K factor**=** 3.188	**TL(1)=** 2.877	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.245	**S=** 2.002	**CV(2)=** -1.607	**K factor**=** 3.188	**TL(2)=** 5.136	**LL(2)=**N/A

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
4/16/2013	0.00273	-5.903
7/10/2013	0.28	-1.273
10/3/2013	0.404	-0.906
1/22/2014	0.255	-1.366
4/9/2014	2.28	0.824
7/17/2014	0.709	-0.344
10/27/2014	0.633	-0.457
1/8/2015	0.585	-0.536

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW390	Downgradient	Yes	1.26	N/A	0.231	NO

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Technetium-99 UNITS: pCi/L UCRS

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 2.484	**S=** 5.404	**CV(1)=** 2.176	**K factor**=** 3.188	**TL(1)=** 19.713	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 0.844	**S=** 1.452	**CV(2)=** 1.720	**K factor**=** 3.188	**TL(2)=** 2.416	**LL(2)=**N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW396	
Date Collected	Result	LN(Result)
4/16/2013	-1.17	#Func!
7/10/2013	0.223	-1.501
10/3/2013	2.12	0.751
1/22/2014	8.86	2.182
4/9/2014	-5.67	#Func!
7/17/2014	1.03	0.030
10/27/2014	3.28	1.188
1/8/2015	11.2	2.416

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW390	Downgradient	Yes	54.5	N/A	3.998	YES

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW390

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Beta Activity UNITS: pCi/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 11.524 **S=** 6.853 **CV(1)=** 0.595 **K factor**=** 2.523 **TL(1)=** 28.813 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 2.279 **S=** 0.594 **CV(2)=** 0.261 **K factor**=** 2.523 **TL(2)=** 3.777 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	16.5	2.803
7/15/2013	13.4	2.595
10/1/2013	23.4	3.153
1/22/2014	21.2	3.054
4/7/2014	7.94	2.072
7/17/2014	20.3	3.011
10/21/2014	9.99	2.302
1/5/2015	21.8	3.082

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	9.39	2.240
7/10/2013	5.21	1.651
10/3/2013	7.39	2.000
1/22/2014	5.63	1.728
4/9/2014	6.27	1.836
7/17/2014	6.9	1.932
10/27/2014	3.99	1.384
1/8/2015	5.07	1.623

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW384	Sidegradient	Yes	127	YES	4.844	N/A
MW387	Downgradient	Yes	169	YES	5.130	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW384
MW387

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Calcium UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 24.394	**S=** 3.140	**CV(1)=** 0.129	**K factor**=** 2.523	**TL(1)=** 32.315	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.186	**S=** 0.135	**CV(2)=** 0.042	**K factor**=** 2.523	**TL(2)=** 3.526	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	23.7	3.165
7/15/2013	23.3	3.148
10/1/2013	19.7	2.981
1/22/2014	22.9	3.131
4/7/2014	25.6	3.243
7/17/2014	21.6	3.073
10/21/2014	18.4	2.912
1/5/2015	20	2.996

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	28	3.332
7/10/2013	28.5	3.350
10/3/2013	25.7	3.246
1/22/2014	25.6	3.243
4/9/2014	27.3	3.307
7/17/2014	26.3	3.270
10/27/2014	26.5	3.277
1/8/2015	27.2	3.303

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	66.6	YES	4.199	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Chemical Oxygen Demand (COD) UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 25.175	**S=** 9.448	**CV(1)=** 0.375	**K factor**=** 2.523	**TL(1)=** 49.013	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.151	**S=** 0.415	**CV(2)=** 0.132	**K factor**=** 2.523	**TL(2)=** 4.197	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	25	3.219
7/15/2013	36	3.584
10/1/2013	36	3.584
1/22/2014	36	3.584
4/7/2014	20	2.996
7/17/2014	20	2.996
10/21/2014	10.2	2.322
1/5/2015	20	2.996

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	25	3.219
7/10/2013	36	3.584
10/3/2013	36	3.584
1/22/2014	36	3.584
4/9/2014	16.1	2.779
7/17/2014	18.8	2.934
10/27/2014	20	2.996
1/8/2015	11.7	2.460

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW394	Upgradient	Yes	41.4	NO	3.723	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Conductivity UNITS: umho/cm URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 383.250 **S=** 26.837 **CV(1)=** 0.070 **K factor**=** 2.523 **TL(1)=** 450.959 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 5.946 **S=** 0.074 **CV(2)=** 0.012 **K factor**=** 2.523 **TL(2)=** 6.134 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	390	5.966
7/15/2013	392	5.971
10/1/2013	353	5.866
1/22/2014	386	5.956
4/7/2014	403	5.999
7/17/2014	407	6.009
10/21/2014	316	5.756
1/5/2015	330	5.799

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	393	5.974
7/10/2013	405	6.004
10/3/2013	386	5.956
1/22/2014	382	5.945
4/9/2014	404	6.001
7/17/2014	391	5.969
10/27/2014	397	5.984
1/8/2015	397	5.984

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	769	YES	6.645	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Dissolved Solids UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 226.063 **S=** 92.564 **CV(1)=** 0.409 **K factor**=** 2.523 **TL(1)=** 459.601 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 5.371 **S=** 0.296 **CV(2)=** 0.055 **K factor**=** 2.523 **TL(2)=** 6.117 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	218	5.384
7/15/2013	233	5.451
10/1/2013	200	5.298
1/22/2014	219	5.389
4/7/2014	226	5.421
7/17/2014	556	6.321
10/21/2014	159	5.069
1/5/2015	140	4.942

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	223	5.407
7/10/2013	246	5.505
10/3/2013	226	5.421
1/22/2014	208	5.338
4/9/2014	214	5.366
7/17/2014	196	5.278
10/27/2014	187	5.231
1/8/2015	166	5.112

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	421	NO	6.043	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Magnesium UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 9.899	**S=** 1.307	**CV(1)=** 0.132	**K factor**=** 2.523	**TL(1)=** 13.196	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.284	**S=** 0.140	**CV(2)=** 0.061	**K factor**=** 2.523	**TL(2)=** 2.637	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	9.73	2.275
7/15/2013	9.07	2.205
10/1/2013	7.7	2.041
1/22/2014	9.57	2.259
4/7/2014	10.5	2.351
7/17/2014	8.95	2.192
10/21/2014	7.41	2.003
1/5/2015	8.05	2.086

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	10.9	2.389
7/10/2013	11.1	2.407
10/3/2013	10.7	2.370
1/22/2014	10.3	2.332
4/9/2014	11	2.398
7/17/2014	11.1	2.407
10/27/2014	11	2.398
1/8/2015	11.3	2.425

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	25.2	YES	3.227	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Oxidation-Reduction Potential UNITS: mV URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 569.000 **S=** 182.864 **CV(1)=** 0.321 **K factor**=** 2.523 **TL(1)=** 1030.366 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 6.296 **S=** 0.318 **CV(2)=** 0.051 **K factor**=** 2.523 **TL(2)=** 7.099 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
4/17/2013	558	6.324
7/15/2013	467	6.146
10/1/2013	777	6.655
1/22/2014	381	5.943
4/7/2014	400	5.991
7/17/2014	395	5.979
10/21/2014	401	5.994
1/5/2015	733	6.597

Well Number:	MW394	
Date Collected	Result	LN(Result)
4/22/2013	823	6.713
7/10/2013	756	6.628
10/3/2013	803	6.688
1/22/2014	832	6.724
4/9/2014	516	6.246
7/17/2014	356	5.875
10/27/2014	453	6.116
1/8/2015	453	6.116

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	488	NO	6.190	N/A
MW221	Downgradient	Yes	453	NO	6.116	N/A
MW222	Downgradient	Yes	489	NO	6.192	N/A
MW369	Downgradient	Yes	404	NO	6.001	N/A
MW391	Downgradient	Yes	590	NO	6.380	N/A
MW394	Upgradient	Yes	461	NO	6.133	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Radium-226 UNITS: pCi/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.603	**S=** 1.041	**CV(1)=** 1.728	**K factor**=** 2.523	**TL(1)=** 3.229	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -1.076	**S=** 1.253	**CV(2)=** -1.165	**K factor**=** 2.523	**TL(2)=** 1.449	**LL(2)=**N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW220	
Date Collected	Result	LN(Result)
4/17/2013	0.0543	-2.913
7/15/2013	0.252	-1.378
10/1/2013	0.199	-1.614
1/22/2014	0.357	-1.030
4/7/2014	1.3	0.262
7/17/2014	0.583	-0.540
10/21/2014	0.858	-0.153
1/5/2015	0.484	-0.726

Well Number:	MW394	
Date Collected	Result	LN(Result)
4/22/2013	0.125	-2.079
7/10/2013	0.0324	-3.430
10/3/2013	-0.051	#Func!
1/22/2014	-0.0832	#Func!
4/9/2014	4.26	1.449
7/17/2014	0.232	-1.461
10/27/2014	0.706	-0.348
1/8/2015	0.332	-1.103

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW222	Downgradient	Yes	0.737	N/A	-0.305	NO
MW372	Downgradient	Yes	0.643	N/A	-0.442	NO
MW384	Sidegradient	Yes	0.777	N/A	-0.252	NO

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Sodium UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 34.713 **S=** 5.230 **CV(1)=** 0.151 **K factor**=** 2.523 **TL(1)=** 47.909 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 3.536 **S=** 0.150 **CV(2)=** 0.043 **K factor**=** 2.523 **TL(2)=** 3.916 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	41.4	3.723
7/15/2013	40.5	3.701
10/1/2013	34.6	3.544
1/22/2014	39.5	3.676
4/7/2014	43.9	3.782
7/17/2014	39.1	3.666
10/21/2014	36	3.584
1/5/2015	38.1	3.640

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	28.2	3.339
7/10/2013	29.3	3.378
10/3/2013	28.8	3.360
1/22/2014	28.8	3.360
4/9/2014	29.9	3.398
7/17/2014	29.6	3.388
10/27/2014	33.9	3.523
1/8/2015	33.8	3.520

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	60.5	YES	4.103	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW372

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Sulfate UNITS: mg/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 13.450 **S=** 3.804 **CV(1)=** 0.283 **K factor**=** 2.523 **TL(1)=** 23.048 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 2.563 **S=** 0.275 **CV(2)=** 0.107 **K factor**=** 2.523 **TL(2)=** 3.256 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	19	2.944
7/15/2013	17	2.833
10/1/2013	14	2.639
1/22/2014	18	2.890
4/7/2014	18.9	2.939
7/17/2014	19.4	2.965
10/21/2014	13.5	2.603
1/5/2015	14	2.639

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	9.8	2.282
7/10/2013	9.7	2.272
10/3/2013	10	2.303
1/22/2014	10	2.303
4/9/2014	10	2.303
7/17/2014	10.3	2.332
10/27/2014	11.1	2.407
1/8/2015	10.5	2.351

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	17.9	NO	2.885	N/A
MW369	Downgradient	Yes	19.4	NO	2.965	N/A
MW372	Downgradient	Yes	138	YES	4.927	N/A
MW384	Sidegradient	Yes	20.5	NO	3.020	N/A
MW387	Downgradient	Yes	23.4	YES	3.153	N/A
MW391	Downgradient	Yes	25.1	YES	3.223	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW372
MW387
MW391

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Technetium-99 UNITS: pCi/L URGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 18.207	**S=** 9.212	**CV(1)=** 0.506	**K factor**=** 2.523	**TL(1)=** 41.448	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.762	**S=** 0.579	**CV(2)=** 0.210	**K factor**=** 2.523	**TL(2)=** 4.224	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
4/17/2013	6.61	1.889
7/15/2013	21.3	3.059
10/1/2013	20.7	3.030
1/22/2014	32.1	3.469
4/7/2014	24.8	3.211
7/17/2014	12.1	2.493
10/21/2014	35	3.555
1/5/2015	32.5	3.481

Well Number: MW394

Date Collected	Result	LN(Result)
4/22/2013	13.9	2.632
7/10/2013	15	2.708
10/3/2013	9.68	2.270
1/22/2014	18.8	2.934
4/9/2014	4.32	1.463
7/17/2014	10.1	2.313
10/27/2014	17.2	2.845
1/8/2015	17.2	2.845

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW369	Downgradient	Yes	37.3	NO	3.619	N/A
MW384	Sidegradient	Yes	155	YES	5.043	N/A
MW387	Downgradient	Yes	277	YES	5.624	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW384
MW387

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Beta Activity UNITS: pCi/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 10.328	**S=** 5.183	**CV(1)=** 0.502	**K factor**=** 2.523	**TL(1)=** 23.405	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.187	**S=** 0.607	**CV(2)=** 0.278	**K factor**=** 2.523	**TL(2)=** 3.719	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
4/22/2013	6.42	1.859
7/11/2013	6.34	1.847
10/3/2013	10.3	2.332
1/22/2014	9.4	2.241
4/9/2014	2.09	0.737
7/17/2014	11.5	2.442
10/27/2014	19.1	2.950
1/6/2015	5.98	1.788

Well Number: MW397

Date Collected	Result	LN(Result)
4/18/2013	14.4	2.667
7/8/2013	16.2	2.785
10/2/2013	17.6	2.868
1/22/2014	10	2.303
4/8/2014	4.03	1.394
7/16/2014	5.18	1.645
10/21/2014	10.4	2.342
1/7/2015	16.3	2.791

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW385	Sidegradient	Yes	105	YES	4.654	N/A
MW388	Downgradient	Yes	88.1	YES	4.478	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW385
MW388

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Calcium UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 22.944	**S=** 4.409	**CV(1)=** 0.192	**K factor**=** 2.523	**TL(1)=** 34.067	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 3.115	**S=** 0.194	**CV(2)=** 0.062	**K factor**=** 2.523	**TL(2)=** 3.606	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
4/22/2013	28.7	3.357
7/11/2013	28.1	3.336
10/3/2013	26.7	3.285
1/22/2014	27	3.296
4/9/2014	27.7	3.321
7/17/2014	26.5	3.277
10/27/2014	26.6	3.281
1/6/2015	25.8	3.250

Well Number: MW397

Date Collected	Result	LN(Result)
4/18/2013	18.1	2.896
7/8/2013	18.2	2.901
10/2/2013	18.6	2.923
1/22/2014	19.5	2.970
4/8/2014	19.4	2.965
7/16/2014	17.8	2.879
10/21/2014	19.8	2.986
1/7/2015	18.6	2.923

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	73.5	YES	4.297	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Conductivity UNITS: umho/cm LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 366.250 **S=** 26.368 **CV(1)=** 0.072 **K factor**=** 2.523 **TL(1)=** 432.776 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 5.901 **S=** 0.072 **CV(2)=** 0.012 **K factor**=** 2.523 **TL(2)=** 6.083 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
4/22/2013	394	5.976
7/11/2013	394	5.976
10/3/2013	376	5.930
1/22/2014	387	5.958
4/9/2014	402	5.996
7/17/2014	401	5.994
10/27/2014	387	5.958
1/6/2015	376	5.930

Well Number: MW397

Date Collected	Result	LN(Result)
4/18/2013	362	5.892
7/8/2013	335	5.814
10/2/2013	353	5.866
1/22/2014	338	5.823
4/8/2014	328	5.793
7/16/2014	336	5.817
10/21/2014	337	5.820
1/7/2015	354	5.869

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	873	YES	6.772	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Dissolved Solids UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 185.563 **S=** 27.403 **CV(1)=** 0.148 **K factor**=** 2.523 **TL(1)=** 254.700 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 5.213 **S=** 0.145 **CV(2)=** 0.028 **K factor**=** 2.523 **TL(2)=** 5.578 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
4/22/2013	226	5.421
7/11/2013	229	5.434
10/3/2013	225	5.416
1/22/2014	213	5.361
4/9/2014	217	5.380
7/17/2014	166	5.112
10/27/2014	181	5.198
1/6/2015	147	4.990

Well Number: MW397

Date Collected	Result	LN(Result)
4/18/2013	166	5.112
7/8/2013	182	5.204
10/2/2013	169	5.130
1/22/2014	190	5.247
4/8/2014	171	5.142
7/16/2014	167	5.118
10/21/2014	161	5.081
1/7/2015	159	5.069

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	476	YES	6.165	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Magnesium UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 9.320	**S=** 1.775	**CV(1)=** 0.190	**K factor**=** 2.523	**TL(1)=** 13.799	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.215	**S=** 0.192	**CV(2)=** 0.087	**K factor**=** 2.523	**TL(2)=** 2.699	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
4/22/2013	11.1	2.407
7/11/2013	10.9	2.389
10/3/2013	10.4	2.342
1/22/2014	10.8	2.380
4/9/2014	12.2	2.501
7/17/2014	11	2.398
10/27/2014	11.3	2.425
1/6/2015	9.96	2.299

Well Number: MW397

Date Collected	Result	LN(Result)
4/18/2013	7.4	2.001
7/8/2013	7.1	1.960
10/2/2013	7.32	1.991
1/22/2014	8.08	2.089
4/8/2014	8.36	2.123
7/16/2014	7.49	2.014
10/21/2014	8.07	2.088
1/7/2015	7.64	2.033

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	28.1	YES	3.336	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW373

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Oxidation-Reduction Potential UNITS: mV LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 498.750 **S=** 143.989 **CV(1)=** 0.289 **K factor**=** 2.523 **TL(1)=** 862.033 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 6.174 **S=** 0.281 **CV(2)=** 0.046 **K factor**=** 2.523 **TL(2)=** 6.884 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
4/22/2013	635	6.454
7/11/2013	495	6.205
10/3/2013	542	6.295
1/22/2014	803	6.688
4/9/2014	537	6.286
7/17/2014	381	5.943
10/27/2014	307	5.727
1/6/2015	586	6.373

Well Number: MW397

Date Collected	Result	LN(Result)
4/18/2013	383	5.948
7/8/2013	443	6.094
10/2/2013	679	6.521
1/22/2014	389	5.964
4/8/2014	363	5.894
7/16/2014	382	5.945
10/21/2014	380	5.940
1/7/2015	675	6.515

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	380	NO	5.940	N/A
MW373	Downgradient	Yes	507	NO	6.229	N/A
MW385	Sidegradient	Yes	467	NO	6.146	N/A
MW388	Downgradient	Yes	320	NO	5.768	N/A
MW392	Downgradient	Yes	466	NO	6.144	N/A
MW395	Upgradient	Yes	474	NO	6.161	N/A
MW397	Upgradient	Yes	471	NO	6.155	N/A

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Radium-226 UNITS: pCi/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 0.854	**S=** 1.171	**CV(1)=** 1.370	**K factor**=** 2.523	**TL(1)=** 3.808	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** -0.800	**S=** 1.368	**CV(2)=** -1.710	**K factor**=** 2.523	**TL(2)=** 1.218	**LL(2)=**N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number:	MW395	
Date Collected	Result	LN(Result)
4/22/2013	0.222	-1.505
7/11/2013	0.246	-1.402
10/3/2013	-0.081	#Func!
1/22/2014	0.116	-2.154
4/9/2014	2.13	0.756
7/17/2014	2.32	0.842
10/27/2014	0.537	-0.622
1/6/2015	0.566	-0.569

Well Number:	MW397	
Date Collected	Result	LN(Result)
4/18/2013	0.0654	-2.727
7/8/2013	0.135	-2.002
10/2/2013	-0.0866	#Func!
1/22/2014	0.0698	-2.662
4/8/2014	3.11	1.135
7/16/2014	3.38	1.218
10/21/2014	0.492	-0.709
1/7/2015	0.45	-0.799

Because CV(1) is greater than 1, the natural logarithm of background and test well results were calculated utilizing TL(2) for comparison.

#Because the natural log was not possbile for all background values, the TL was considered equal to the maximum background value.

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.905	N/A	-0.100	NO

Conclusion of Statistical Analysis on Current Data

None of the test wells exceeded the Upper Tolerance Limit, which is evidence that concentrations in these wells are not different from current background concentrations to a statistically-significant level.

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Sulfate UNITS: mg/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data **X=** 12.098 **S=** 3.611 **CV(1)=** 0.298 **K factor**=** 2.523 **TL(1)=** 21.209 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 2.461 **S=** 0.243 **CV(2)=** 0.099 **K factor**=** 2.523 **TL(2)=** 3.074 **LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
4/22/2013	9.8	2.282
7/11/2013	9.7	2.272
10/3/2013	20	2.996
1/22/2014	9.8	2.282
4/9/2014	9.77	2.279
7/17/2014	10.1	2.313
10/27/2014	10.6	2.361
1/6/2015	10.1	2.313

Well Number: MW397

Date Collected	Result	LN(Result)
4/18/2013	11	2.398
7/8/2013	11	2.398
10/2/2013	22	3.091
1/22/2014	12	2.485
4/8/2014	11.7	2.460
7/16/2014	11.7	2.460
10/21/2014	12.6	2.534
1/7/2015	11.7	2.460

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	19.1	NO	2.950	N/A
MW373	Downgradient	Yes	165	YES	5.106	N/A
MW385	Sidegradient	Yes	20.4	NO	3.016	N/A
MW388	Downgradient	Yes	22.6	YES	3.118	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW373
MW388

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

C-746-S/T Second Quarter 2015 Statistical Analysis Current Background Comparison

Technetium-99 UNITS: pCi/L LRGA

The CV is calculated to determine if background data are normally distributed. If so, the current test well results are compared to the TL. If not, a transformation is performed on the background and test well results, then each transformed test well result is compared to the transformed TL. If the test well result exceeds the TL, that is statistically significant evidence of elevated concentration in that well. For pH only, the current test well results are compared to the TL and LL. If the test well result for pH exceeds the TL or is less than the LL, that is statistically significant evidence of elevated or lowered concentration in that well.

Statistics-Background Data	**X=** 14.090	**S=** 7.107	**CV(1)=** 0.504	**K factor**=** 2.523	**TL(1)=** 32.020	**LL(1)=**N/A
Statistics-Transformed Background Data	**X=** 2.512	**S=** 0.573	**CV(2)=** 0.228	**K factor**=** 2.523	**TL(2)=** 3.959	**LL(2)=**N/A

Because CV(1) is less than or equal to 1, assume normal distribution and continue with statistical analysis utilizing TL(1).

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
4/22/2013	3.11	1.135
7/11/2013	10.7	2.370
10/3/2013	10.6	2.361
1/22/2014	20	2.996
4/9/2014	11.2	2.416
7/17/2014	8.05	2.086
10/27/2014	14.4	2.667
1/6/2015	17	2.833

Well Number: MW397

Date Collected	Result	LN(Result)
4/18/2013	16.6	2.809
7/8/2013	14.6	2.681
10/2/2013	19.1	2.950
1/22/2014	33.7	3.517
4/8/2014	16.5	2.803
7/16/2014	10.6	2.361
10/21/2014	14.7	2.688
1/7/2015	4.58	1.522

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW385	Sidegradient	Yes	150	YES	5.011	N/A
MW388	Downgradient	Yes	147	YES	4.990	N/A

Conclusion of Statistical Analysis on Current Data

The test well(s) listed exceeded the Upper Tolerance Limit, which is evidence of elevated concentration with respect to current background data.

Wells with Exceedances

MW385
MW388

NOTE: For UCRS wells, background ("upgradient") wells are those located in the same direction as RGA wells located upgradient from the landfill.

CV Coefficient-of-Variation, CV = S/X If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, S = [Sum ([(background result-X)^2]/[count of background results -1])]^0.5

TL Upper Tolerance Limit, TL = X + (K * S), LL Lower Tolerance Limit, LL = X - (K * S)

X Mean, X = (sum of background results)/(count of background results)

** *Read from Table 5, Appendix B of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,Interim Guidance, EPA, 1989, based on total number of background results - The K-factor for pH to account for a two-sided tolerance interval instead of a one-sided tolerance limit. The K-factor for pH was computed using a formula from NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/,2009.*

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ATTACHMENT D3

STATISTICIAN QUALIFICATION STATEMENT

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Fluor Federal Services, Inc.
Paducah Deactivation Project
P.O. Box 369
Kevil, KY 42053
USA

July 18, 2015

Ms. Myrna Redfield
Fluor Federal Services, Inc.
5511 Hobbs Road
Kevil, Kentucky 42053

Dear Ms. Redfield:

This statement is submitted in response to your request that it be included with the completed statistical analysis that I have performed on the groundwater data for the C-746-S&T and C-746-U Landfills at the Paducah Gaseous Diffusion Plant.

As a Chemist, with a Bachelor of Science degree in chemistry and a minor in biology, I have over twenty years of experience in reviewing and assessing laboratory analytical results associated with environmental sampling and investigation activities. For the generation of these statistical analyses, my work was observed and reviewed by a senior chemist and geologist with Fluor Federal Services, Inc.

For this project, the statistical analyses conducted on the second quarter 2015 monitoring well data collected from the C-746-S&T and C-746-U Landfills were performed in accordance with guidance provided in the U.S. Environmental Protection Agency guidance document, *EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance* (1989). For pH, an additional lower tolerance interval was established. For pH only, the test well data was compared to both the upper and lower tolerance intervals to determine if statistically significant deviations in concentration with respect to upgradient well exist.

Sincerely,

Jennifer R. Blewett

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APPENDIX E

GROUNDWATER FLOW RATE AND DIRECTION

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GROUNDWATER FLOW RATE AND DIRECTION

Whenever monitoring wells (MWs) are sampled, 401 *KAR* 48:300, Section 11, requires determination of groundwater flow rate and direction of flow in the uppermost aquifer. The uppermost aquifer below the C-746-S&T Landfills is the Regional Gravel Aquifer (RGA). Water level measurements currently are recorded in several wells at the landfill on a quarterly basis. These measurements were used to plot the potentiometric surface of the RGA for the second quarter 2015 and to determine the groundwater flow rate and direction.

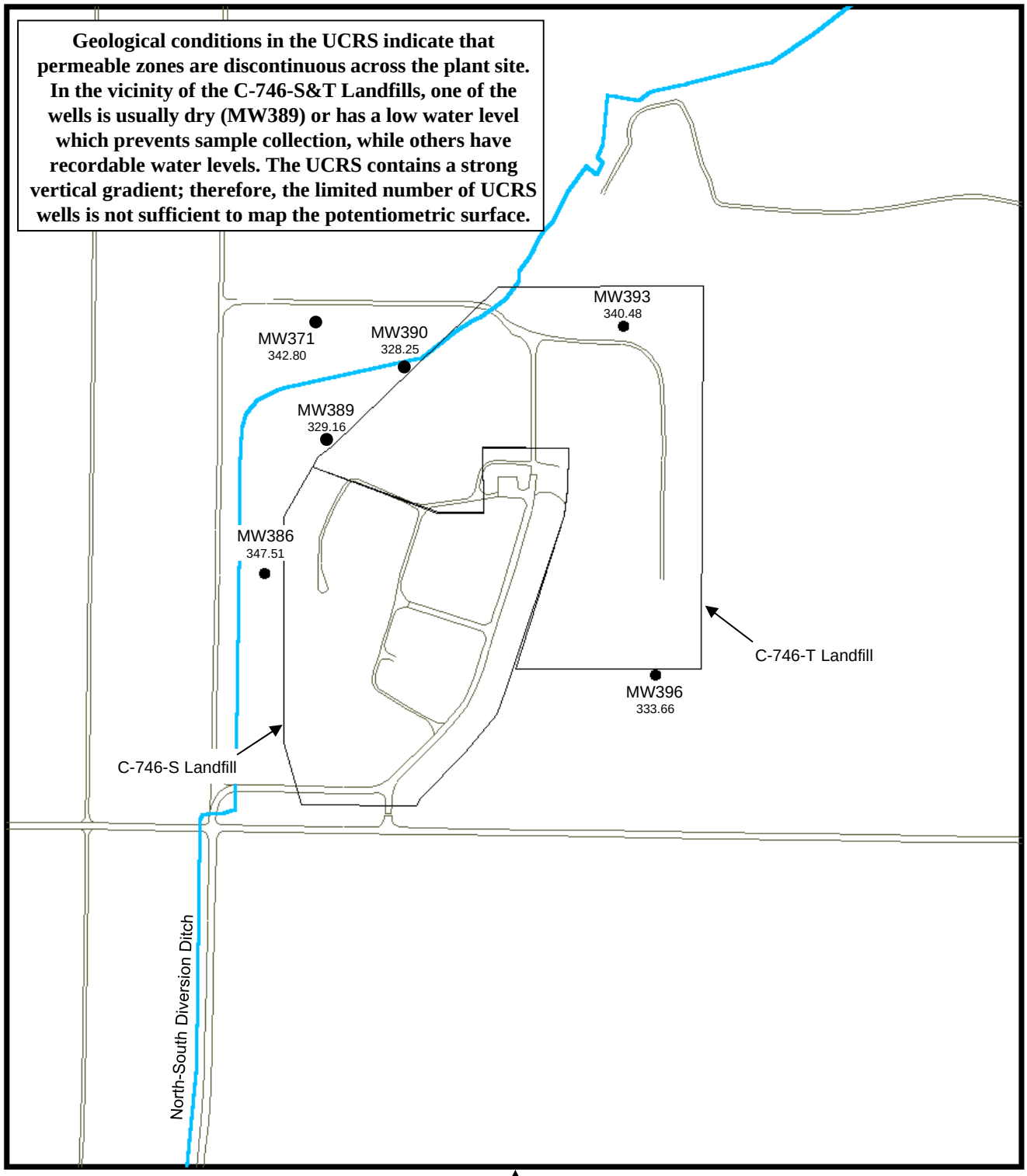
Water levels during this reporting period were measured on April 29 and 30, 2015. As shown on Figure E.1, MW389, screened in the Upper Continental Recharge System (UCRS), is usually dry, while other UCRS wells have recordable water levels. During this reporting period, MW389 had sufficient water for a measurement of the water level but had insufficient water to support sampling.

The UCRS has a strong vertical hydraulic gradient; therefore, the limited number of available UCRS wells, screened over different elevations, is not sufficient for mapping the potentiometric surface. Figure E.1 shows the location of UCRS MWs. The Upper Regional Gravel Aquifer (URGA) and Lower Regional Gravel Aquifer (LRGA) data were corrected for barometric pressure, if necessary, and converted to elevations to plot the potentiometric surface of the RGA, as a whole, as shown on Table E.1. Figure E.2 is a composite or average map of the URGA and LRGA elevations where well clusters exist. The contour lines are placed based on the average water level elevations of the clusters.[1] Based on the site potentiometric map (Figure E.2), the hydraulic gradient beneath the landfills is 3.78×10^{-4} ft/ft. Additional water level measurements in April (Figure E.3) document the vicinity groundwater hydraulic gradient for the RGA to be 3.25×10^{-4} ft/ft. The hydraulic gradients are shown in Table E.2.

The average linear groundwater flow velocity (v) is determined by multiplying the hydraulic gradient (i) by the hydraulic conductivity (K) [resulting in the specific discharge (q)] and dividing by the effective porosity (n_e). The RGA hydraulic conductivity values used are reported in the Administrative Application for the New Solid Waste Landfill Permit No. SW07300045NWC1 and range from 425 to 725 ft/day (0.150 to 0.256 cm/s). RGA effective porosity is assumed to be 25%. Vicinity and site flow velocities were calculated using the low and high values for hydraulic conductivity, as shown in Table E.3.

Regional groundwater flow near the C-746-S&T Landfills typically trends northeastward toward the Ohio River. The Ohio River stage was elevated during much of March and April 2015 such that RGA groundwater could not discharge to the Ohio River and the typical regional gradient was disrupted. As demonstrated on the potentiometric map for April 2015, the groundwater flow direction in the immediate area of the landfill temporarily was oriented eastward.

[1] Additional water level measurements, in wells at the C-746-U Landfill and in wells of the surrounding region (MW98, MW125, MW139, MW165A, MW173, MW193, MW197, MW200, and MW471), were used to contour the RGA potentiometric surface.



U.S. DEPARTMENT OF ENERGY
DOE PORTSMOUTH-PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT

Figure E.1. Potentiometric Surface of the Upper Continental Recharge System at the C-746 S&T Landfills Permit Numbers 073-00014 & 073-00015 April 29, 2015

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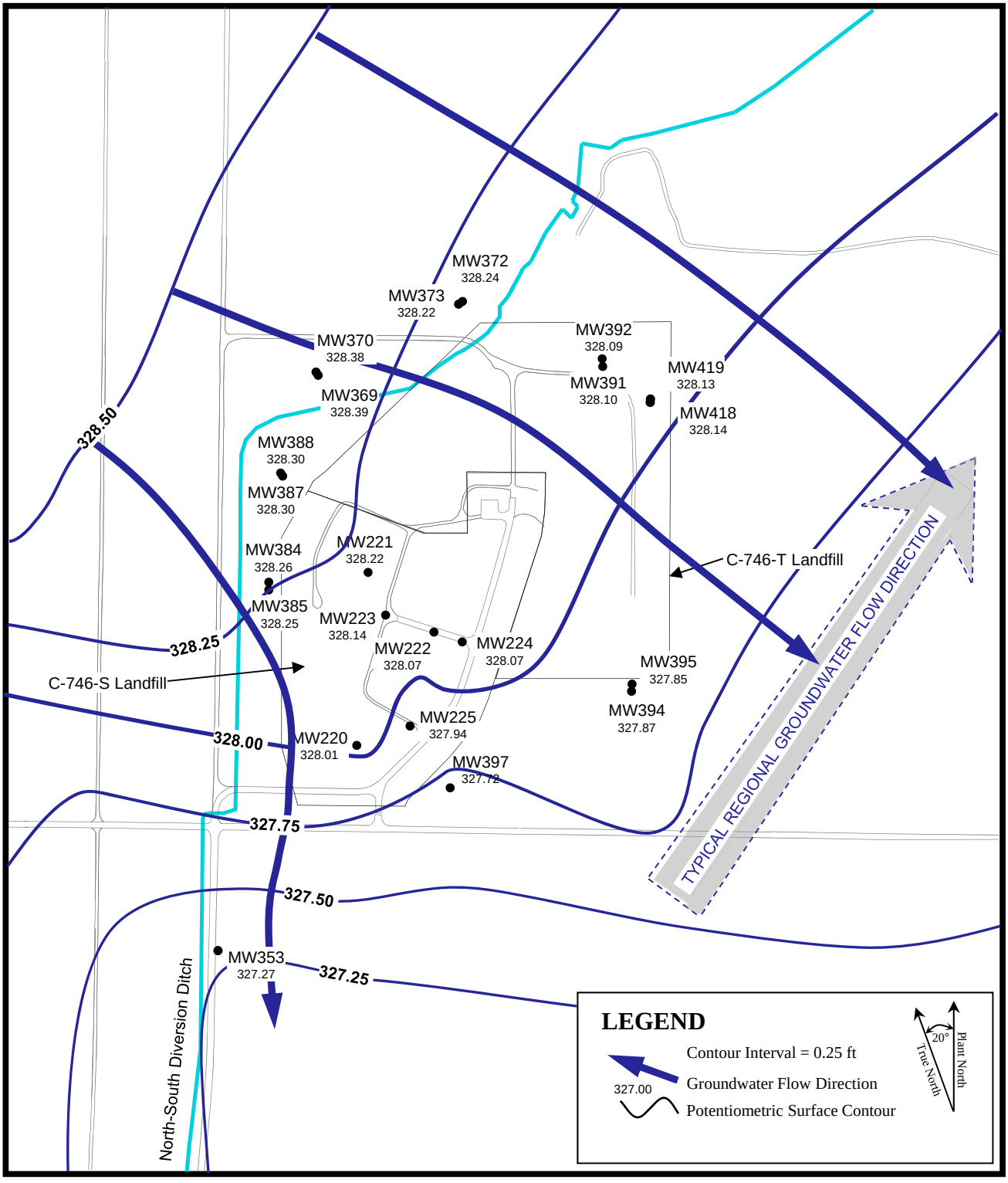
Table E.1. C-746-S&T Landfills Second Quarter 2015 (April) Water Levels

C-746-S&T Landfills (April 2015) Water Levels										
							Raw Data		*Corrected Data	
Date	Time	Well	Formation	Datum Elev (ft amsl)	BP (in Hg)	Delta BP (ft H20)	DTW (ft)	Elev (ft amsl)	DTW (ft)	Elev (ft amsl)
4/29/2015	7:58	MW220	URGA	381.44	29.91	0.01	53.42	328.02	53.43	328.01
4/29/2015	8:11	MW221	URGA	390.83	29.91	0.01	62.60	328.23	62.61	328.22
4/29/2015	8:06	MW222	URGA	394.87	29.91	0.01	66.79	328.08	66.80	328.07
4/29/2015	8:08	MW223	URGA	394.03	29.91	0.01	65.88	328.15	65.89	328.14
4/29/2015	8:04	MW224	URGA	395.41	29.91	0.01	67.33	328.08	67.34	328.07
4/29/2015	8:01	MW225	URGA	385.55	29.91	0.01	57.60	327.95	57.61	327.94
4/29/2015	9:43	MW353	LRGA	374.86	29.92	0.00	47.59	327.27	47.59	327.27
4/30/2015	9:30	MW369	URGA	364.48	29.86	0.07	36.02	328.46	36.09	328.39
4/30/2015	9:32	MW370	LRGA	365.35	29.86	0.07	36.90	328.45	36.97	328.38
4/29/2015	8:16	MW371	UCRS	364.88	29.91	0.01	22.07	342.81	22.08	342.80
4/29/2015	8:22	MW372	URGA	359.66	29.92	0.00	31.42	328.24	31.42	328.24
4/29/2015	8:19	MW373	LRGA	359.95	29.92	0.00	31.73	328.22	31.73	328.22
4/29/2015	7:52	MW384	URGA	365.06	29.91	0.01	36.79	328.27	36.80	328.26
4/29/2015	7:54	MW385	LRGA	365.54	29.91	0.01	37.28	328.26	37.29	328.25
4/29/2015	7:53	MW386	UCRS	365.21	29.91	0.01	17.69	347.52	17.70	347.51
4/29/2015	7:48	MW387	URGA	363.27	29.91	0.01	34.96	328.31	34.97	328.30
4/29/2015	7:50	MW388	LRGA	363.25	29.91	0.01	34.94	328.31	34.95	328.30
4/29/2015	7:46	MW389	UCRS	363.82	29.91	0.01	34.65	329.17	34.66	329.16
4/29/2015	7:43	MW390	UCRS	360.36	29.91	0.01	32.10	328.26	32.11	328.25
4/29/2015	7:18	MW391	URGA	366.54	29.91	0.01	38.43	328.11	38.44	328.10
4/29/2015	7:22	MW392	LRGA	365.67	29.91	0.01	37.57	328.10	37.58	328.09
4/29/2015	7:21	MW393	UCRS	366.59	29.91	0.01	26.10	340.49	26.11	340.48
4/30/2015	9:18	MW394	URGA	378.32	29.86	0.07	50.38	327.94	50.45	327.87
4/29/2015	7:31	MW395	LRGA	379.01	29.91	0.01	51.15	327.86	51.16	327.85
4/29/2015	7:33	MW396	UCRS	378.64	29.91	0.01	44.97	333.67	44.98	333.66
4/29/2015	7:38	MW397	LRGA	386.90	29.91	0.01	59.17	327.73	59.18	327.72
4/30/2015	9:23	MW418	URGA	366.78	29.86	0.07	38.57	328.21	38.64	328.14
4/30/2015	9:25	MW419	LRGA	366.68	29.86	0.07	38.48	328.2	38.55	328.13

Initial Barometric Pressure **29.92**
Elev = elevation
amsl = above mean sea level
BP = barometric pressure
DTW = depth to water in feet below datum
URGA = Upper Regional Gravel Aquifer
LRGA = Lower Regional Gravel Aquifer
UCRS = Upper Continental Recharge System

*Assumes a barometric efficiency of 1.0



U.S. DEPARTMENT OF ENERGY
DOE PORTSMOUTH-PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT

Figure E.2. Composite Potentiometric Surface of the Regional Gravel Aquifer at the C-746-S&T Landfills Permit Numbers 073-00014 & 073-00015 April 29 and 30, 2015

FLUOR®

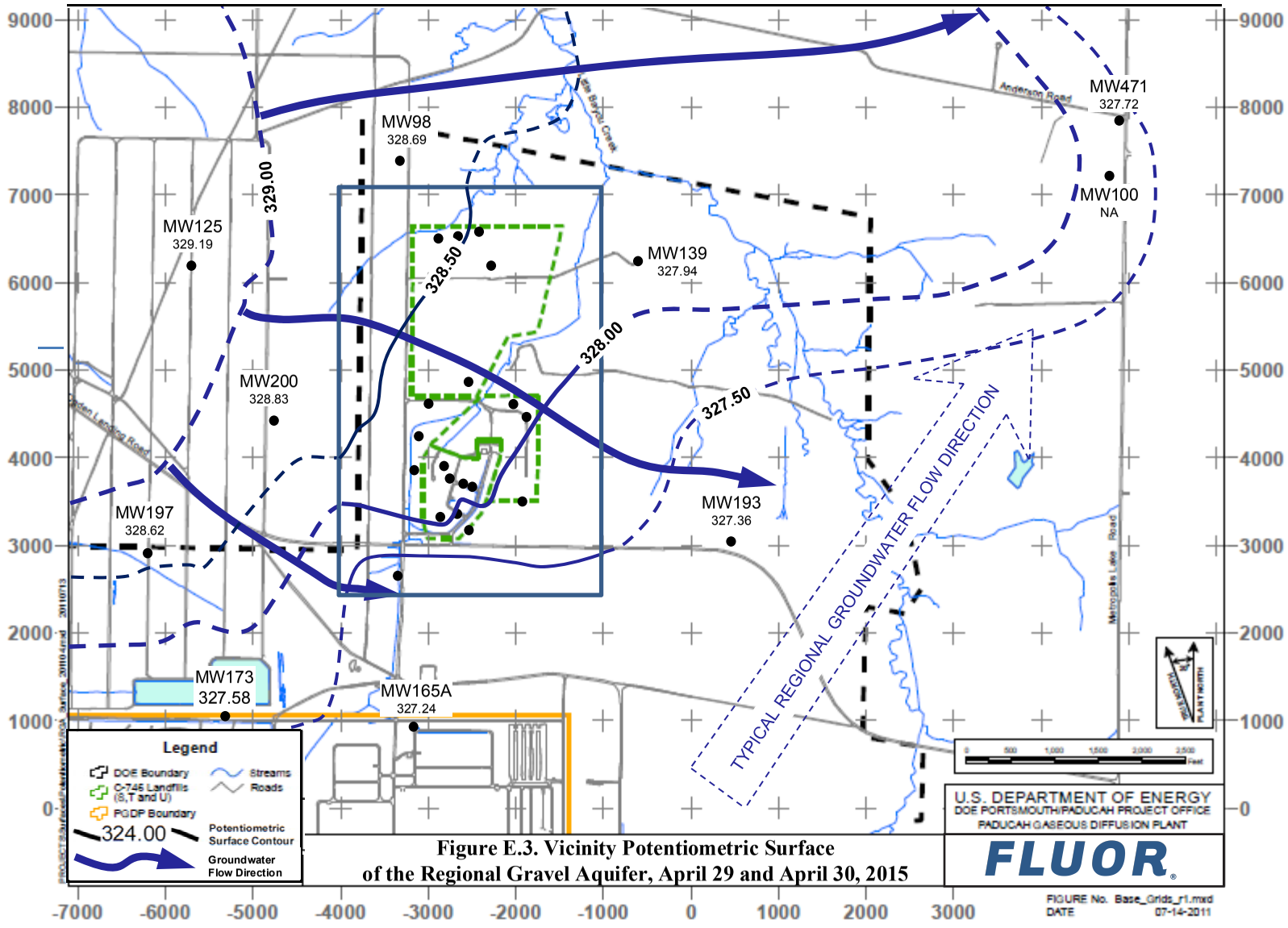


Figure E.3. Vicinity Potentiometric Surface of the Regional Gravel Aquifer, April 29 and April 30, 2015

Table E.2. C-746-S&T Landfills Hydraulic Gradients

	ft/ft
Beneath Landfill Mound	3.78×10^{-4}
Vicinity	3.25×10^{-4}

Table E.3. C-746-S&T Landfills Groundwater Flow Rate

Hydraulic Conductivity (K)		Specific Discharge (q)		Average Linear Velocity (v)	
ft/day	cm/s	ft/day	cm/s	ft/day	cm/s
Beneath Landfill Mound					
725	0.256	0.27	9.66×10^{-5}	1.09	3.87×10^{-4}
425	0.150	0.16	5.66×10^{-5}	0.64	2.27×10^{-4}
Vicinity					
725	0.256	0.24	8.33×10^{-5}	0.94	3.33×10^{-4}
425	0.150	0.14	4.88×10^{-5}	0.55	1.95×10^{-4}

APPENDIX F

NOTIFICATIONS

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NOTIFICATIONS

In accordance with 401 *KAR* 48:300 § 7, the notification for parameters that exceed the maximum contaminant level (MCL) has been submitted to the Kentucky Division of Waste Management. The parameters are listed on the page F-4. The notification for parameters that had statistically significant increased concentrations relative to historical background concentrations is provided below.

STATISTICAL ANALYSIS OF PARAMETERS NOTIFICATION

The statistical analyses conducted on the second quarter 2015 groundwater data collected from the C-746-S&T Landfills monitoring wells were performed in accordance with *Groundwater Monitoring Plan for the Solid Waste Permitted Landfills (C-746-S Residential Landfill, C-746-T Inert Landfill, and C-746-U Contained Landfill) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (LATA Kentucky 2014).

The following are the permit required parameters in 40 *CFR* § 302.4, Appendix A, which had statistically significant increased concentrations relative to historical background concentrations.

	Parameter	**Monitoring Well**
Upper Continental Recharge System	Technetium-99	MW390
Upper Regional Gravel Aquifer	Sodium	MW372
	Technetium-99	MW369, MW384, MW387
Lower Regional Gravel Aquifer	Technetium-99	MW385, MW388

6/2/2015

LATA Environmental Services of Kentucky
PROJECT ENVIRONMENTAL MEASUREMENTS SYSTEM
C-746-S and -T LANDFILLS
PERMIT NUMBERS 073-00014 and 073-00015
MAXIMUM CONTAMINANT LIMIT (MCL) EXCEEDANCE REPORT
Quarterly Groundwater Sampling

AKGWA	Station	Analysis	Method	Results	Units	MCL
8004-4808	MW372	Trichloroethene	8260B	8.96	ug/L	5
8004-4792	MW373	Trichloroethene	8260B	8.61	ug/L	5
8004-4809	MW384	Beta activity	900.0	127	pCi/L	50
8004-4810	MW385	Beta activity	900.0	105	pCi/L	50
8004-4815	MW387	Beta activity	900.0	169	pCi/L	50
8004-4816	MW388	Beta activity	900.0	88.1	pCi/L	50
8004-4805	MW391	Trichloroethene	8260B	8.62	ug/L	5
8004-4806	MW392	Trichloroethene	8260B	15.7	ug/L	5

NOTE 1: These limits are defined in 401 KAR 47:030.

NOTE 2: MW370, MW372, and MW373 are down-gradient wells for the C-746-S and C-746-T Landfills and upgradient for the the C-746-U Landfill. These wells are sampled with the C-746-U Landfill monitoring well network. These wells are reported on the exceedance reports for C-746-S, C-746-T, and C-746-U.

APPENDIX G

CHART OF MCL AND UTL EXCEEDANCES

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Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
ACETONE																							
Quarter 3, 2003							*					*											
Quarter 4, 2003											*								*				
Quarter 1, 2005									*														
ALPHA ACTIVITY																							
Quarter 4, 2002				■	■								■										
Quarter 4, 2008										■													
Quarter 4, 2010										■													
ALUMINUM																							
Quarter 1, 2003			*				*					*	*	*									
Quarter 2, 2003			*				*						*	*									
Quarter 3, 2003			*				*	*					*	*									
Quarter 4, 2003							*	*			*			*									
Quarter 1, 2004			*				*	*			*												
Quarter 2, 2004							*							*									
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Quarter 1, 2014							*																
Quarter 2, 2014											*												
Quarter 4, 2014			*																				
BARIUM																							
Quarter 3, 2003							■	■															
Quarter 4, 2003							■	■															

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
BETA ACTIVITY																							
Quarter 4, 2002													■										
Quarter 1, 2003													■				■						
Quarter 2, 2003			■	■													■			■			
Quarter 3, 2003			■										■				■						
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Quarter 3, 2006										■		■	■				■		■	■			
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Quarter 1, 2007			■							■		■	■				■		■	■			
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Quarter 3, 2007										■		■	■				■			■			
Quarter 4, 2007			■							■		■	■				■		■	■			
Quarter 1, 2008			■							■		■	■				■			■			
Quarter 2, 2008			■							■	■		■				■			■			
Quarter 3, 2008										■		■	■				■			■			
Quarter 4, 2008										■		■	■				■						
Quarter 1, 2009			■							■		■	■				■						
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Quarter 3, 2009										■		■	■				■			■			
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Quarter 3, 2012										■		■	■				■						
Quarter 4, 2012										■		■	■				■		■	■			
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Quarter 2, 2013										■			■				■			■			
Quarter 3, 2013										■		■	■				■		■	■			
Quarter 4, 2013										■		■	■				■			■			
Quarter 1, 2014			■							■		■	■				■						
Quarter 2, 2014										■			■				■			■			
Quarter 3, 2014										■			■				■			■			
Quarter 4, 2014										■		■	■				■			■			
Quarter 1, 2015										■		■	■				■			■			
Quarter 2, 2015										■			■				■			■			

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
BROMIDE																							
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CALCIUM																							
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Quarter 4, 2013												*							*				

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
CALCIUM																							
Quarter 1, 2014																		*	*				
Quarter 2, 2014												*							*				
Quarter 3, 2014												*						*	*				
Quarter 4, 2014												*							*				
Quarter 1, 2015												*	*						*				
Quarter 2, 2015												*							*				
CARBON DISULFIDE																							
Quarter 4, 2010											*												
Quarter 1, 2011												*									*		
CHEMICAL OXYGEN DEMAND																							
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Quarter 4, 2014							*																
Quarter 2, 2015																*							

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
CHLORIDE																							
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Quarter 4, 2014			*																				
CHROMIUM																							
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Quarter 1, 2003								■														■	
Quarter 2, 2003							■	■															
Quarter 3, 2009						■																	
COBALT																							
Quarter 3, 2003							*																

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
CONDUCTIVITY																							
Quarter 4, 2002										*									*				
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Quarter 3, 2010												*							*				
Quarter 4, 2010												*							*				
Quarter 1, 2011										*		*							*				
Quarter 2, 2011												*							*				
Quarter 3, 2011												*							*				
Quarter 4, 2011												*							*				
Quarter 1, 2012											*	*							*				
Quarter 2, 2012												*							*				
Quarter 3, 2012												*							*				
Quarter 4, 2012												*							*				
Quarter 1, 2013												*							*				
Quarter 2, 2013												*							*				
Quarter 3, 2013												*							*				
Quarter 4, 2013												*							*				
Quarter 1, 2014												*							*				
Quarter 2, 2014												*							*				
Quarter 3, 2014												*							*				
Quarter 4, 2014												*							*				
Quarter 1, 2015												*							*				
Quarter 2, 2015												*							*				

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
DISSOLVED OXYGEN																							
Quarter 3, 2006			*					*															
DISSOLVED SOLIDS																							
Quarter 4, 2002										*									*				
Quarter 1, 2003			*							*									*				
Quarter 2, 2003			*							*									*				
Quarter 3, 2003			*				*	*		*		*							*				
Quarter 4, 2003			*				*		*	*		*							*				
Quarter 1, 2004			*									*							*				
Quarter 2, 2004										*		*							*				
Quarter 3, 2004										*		*							*				
Quarter 4, 2004										*		*							*				
Quarter 1, 2005												*							*				
Quarter 2, 2005																			*				
Quarter 3, 2005																	*	*	*	*	*		
Quarter 4, 2005																	*	*	*	*	*		
Quarter 1, 2006																	*	*	*	*	*		
Quarter 2, 2006																	*	*	*	*	*		
Quarter 3, 2006																	*	*	*	*	*		
Quarter 4, 2006										*		*					*		*				
Quarter 1, 2007																			*				
Quarter 2, 2007										*		*							*				
Quarter 3, 2007										*		*							*				
Quarter 4, 2007												*							*				
Quarter 1, 2008												*							*				
Quarter 2, 2008												*							*				
Quarter 3, 2008												*							*				
Quarter 4, 2008										*		*							*				
Quarter 1, 2009												*							*				
Quarter 2, 2009												*	*						*				
Quarter 3, 2009												*	*						*				
Quarter 4, 2009												*	*						*				
Quarter 1, 2010												*	*						*				
Quarter 2, 2010										*		*	*						*				
Quarter 3, 2010										*		*							*				
Quarter 4, 2010										*		*							*				
Quarter 1, 2011										*		*							*				
Quarter 2, 2011												*	*						*				
Quarter 3, 2011												*							*				
Quarter 4, 2011												*							*				
Quarter 1, 2012											*	*	*						*				
Quarter 2, 2012												*							*				
Quarter 3, 2012										*		*	*						*				
Quarter 4, 2012												*	*						*				
Quarter 1, 2013										*		*							*				
Quarter 2, 2013												*							*				
Quarter 3, 2013												*							*				
Quarter 4, 2013												*							*				
Quarter 1, 2014												*	*						*				
Quarter 2, 2014												*							*				
Quarter 3, 2014									*			*	*						*				
Quarter 4, 2014												*	*						*				
Quarter 1, 2015												*							*				
Quarter 2, 2015												*							*				

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
IODIDE																							
Quarter 4, 2002																					*		
Quarter 2, 2003						*																	
Quarter 3, 2003													*										
Quarter 1, 2004				*																			
Quarter 3, 2010																					*		
Quarter 2, 2013										*													
IRON																							
Quarter 1, 2003							*			*	*			*									
Quarter 2, 2003										*	*	*	*										
Quarter 3, 2003							*	*	*	*	*	*											
Quarter 4, 2003											*												
Quarter 1, 2004											*												
Quarter 2, 2004										*	*												
Quarter 3, 2004										*													
Quarter 4, 2004										*													
Quarter 1, 2005												*											
Quarter 2, 2005											*	*											
Quarter 1, 2006							*																
Quarter 2, 2006												*											
Quarter 3, 2006											*												
Quarter 1, 2007											*	*											
Quarter 2, 2007											*												
Quarter 2, 2008												*											
Quarter 3, 2008												*											

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
MAGNESIUM																							
Quarter 1, 2003			*																				
Quarter 2, 2003			*									*							*				
Quarter 3, 2003			*				*					*											
Quarter 4, 2003			*									*							*				
Quarter 1, 2004			*									*		*					*				
Quarter 2, 2004			*									*							*				
Quarter 3, 2004			*									*							*				
Quarter 4, 2004			*									*							*				
Quarter 1, 2005												*							*				
Quarter 2, 2005												*							*				
Quarter 3, 2005												*							*				
Quarter 4, 2005												*							*				
Quarter 1, 2006												*							*				
Quarter 2, 2006												*							*				
Quarter 3, 2006												*							*				
Quarter 4, 2006												*							*				
Quarter 1, 2007												*							*				
Quarter 2, 2007												*							*				
Quarter 3, 2007												*							*				
Quarter 4, 2007												*							*				
Quarter 1, 2008												*							*				
Quarter 2, 2008												*							*				
Quarter 3, 2008												*							*				
Quarter 4, 2008												*							*				
Quarter 1, 2009												*							*				
Quarter 2, 2009												*							*				
Quarter 3, 2009												*	*						*				
Quarter 4, 2009												*							*				
Quarter 1, 2010												*							*				
Quarter 2, 2010												*	*						*				
Quarter 3, 2010												*							*				
Quarter 4, 2010												*							*				
Quarter 1, 2011												*							*				
Quarter 2, 2011												*	*						*				
Quarter 3, 2011												*							*				
Quarter 4, 2011												*							*				
Quarter 1, 2012												*							*				
Quarter 2, 2012												*							*				
Quarter 3, 2012												*	*						*				
Quarter 4, 2012												*	*						*				
Quarter 1, 2013												*							*				
Quarter 2, 2013												*							*				
Quarter 3, 2013												*							*				
Quarter 4, 2013												*							*				
Quarter 1, 2014																		*	*				
Quarter 2, 2014												*	*						*				
Quarter 3, 2014												*							*				
Quarter 4, 2014												*	*						*				
Quarter 1, 2015												*	*						*				
Quarter 2, 2015												*							*				

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
MANGANESE																							
Quarter 4, 2002																					*		
Quarter 3, 2003							*	*															
Quarter 4, 2003							*	*															
Quarter 1, 2004							*																
Quarter 2, 2004							*																
Quarter 4, 2004							*	*															
Quarter 1, 2005							*																
Quarter 3, 2005																					*		
Quarter 3, 2009	*																						
OXIDATION-REDUCTION POTENTIAL																							
Quarter 4, 2003			*																				
Quarter 2, 2004			*																				
Quarter 3, 2004			*															*					
Quarter 4, 2004			*			*																	
Quarter 1, 2005			*															*					
Quarter 2, 2005	*		*																				
Quarter 3, 2005	*		*																				
Quarter 4, 2005			*																				
Quarter 2, 2006			*																				
Quarter 3, 2006			*															*					
Quarter 4, 2006			*																				
Quarter 1, 2007			*																				
Quarter 2, 2007			*				*																
Quarter 3, 2007			*				*																
Quarter 4, 2007			*																				
Quarter 1, 2008			*			*			*														
Quarter 2, 2008	*		*	*		*							*				*		*	*			
Quarter 3, 2008			*	*		*							*				*		*	*			
Quarter 4, 2008			*	*		*	*	*	*				*				*	*		*			
Quarter 1, 2009			*				*	*	*				*	*				*		*			
Quarter 3, 2009			*	*		*											*	*	*	*			
Quarter 4, 2009			*			*			*									*		*			
Quarter 1, 2010	*		*																	*			
Quarter 2, 2010	*		*	*					*				*				*	*		*			
Quarter 3, 2010	*		*	*		*											*	*	*	*			
Quarter 4, 2010			*					*			*			*			*	*	*	*			
Quarter 1, 2011	*			*		*	*	*	*		*		*	*			*	*		*	*		
Quarter 2, 2011	*		*	*			*	*	*	*	*		*	*			*	*	*	*	*		
Quarter 3, 2011	*		*	*			*		*		*		*				*	*	*	*			
Quarter 4, 2011	*		*	*			*				*						*	*		*			
Quarter 1, 2012	*		*	*		*	*	*	*	*			*	*			*	*	*	*	*		
Quarter 2, 2012	*		*				*		*		*		*	*			*	*	*	*	*		
Quarter 3, 2012	*		*			*	*	*	*	*			*	*			*	*	*	*	*		
Quarter 4, 2012				*		*		*	*	*	*		*	*			*	*	*	*	*		
Quarter 1, 2013				*		*		*	*		*		*	*				*		*	*		
Quarter 2, 2013	*			*			*		*		*		*				*	*	*	*	*		
Quarter 3, 2013	*		*	*		*	*	*	*	*			*				*	*	*	*			
Quarter 4, 2013			*	*		*	*	*	*	*	*	*	*	*			*	*	*	*	*		
Quarter 1, 2014	*		*	*		*	*		*		*	*	*	*			*	*	*	*	*		
Quarter 2, 2014	*		*	*		*	*		*		*		*				*	*	*	*	*		
Quarter 3, 2014	*		*	*		*											*	*	*	*			
Quarter 4, 2014	*		*	*							*		*				*	*	*	*	*		
Quarter 1, 2015	*		*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*
Quarter 2, 2015	*		*	*	*	*	*				*			*	*	*	*	*	*	*	*	*	*

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
PCB, 1016																							
Quarter 4, 2003							*	*	*		*							*					
Quarter 3, 2004											*												
Quarter 3, 2005							*				*												
Quarter 1, 2006											*												
Quarter 2, 2006											*												
Quarter 4, 2006											*												
Quarter 1, 2007											*	*											
Quarter 2, 2007												*											
Quarter 3, 2007											*												
Quarter 2, 2008											*	*											
Quarter 3, 2008											*												
Quarter 4, 2008											*												
Quarter 1, 2009											*												
Quarter 2, 2009											*												
Quarter 3, 2009											*												
Quarter 4, 2009											*												
Quarter 1, 2010											*												
Quarter 2, 2010											*												
Quarter 3, 2010											*												
Quarter 4, 2010											*												
PCB-1232																							
Quarter 1, 2011											*												
PCB-1248																							
Quarter 2, 2008												*											
PCB-1260																							
Quarter 2, 2006																		*					
pH																							
Quarter 4, 2002																	*						
Quarter 2, 2003																	*						
Quarter 3, 2003																	*						
Quarter 4, 2003							*										*						
Quarter 1, 2004							*										*						
Quarter 2, 2004																	*						
Quarter 3, 2004																	*						
Quarter 4, 2004																	*						
Quarter 3, 2005										*							*				*		
Quarter 4, 2005										*							*						
Quarter 1, 2006																	*						
Quarter 2, 2006																	*						
Quarter 3, 2006																	*						
Quarter 3, 2007																	*						
Quarter 4, 2007																	*						
Quarter 4, 2008																	*						
Quarter 1, 2009																	*						
Quarter 1, 2011																	*						
Quarter 2, 2011											*												
Quarter 3, 2011											*												
Quarter 1, 2012														*									
Quarter 1, 2013										*			*				*						
Quarter 4, 2014																					*		

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
POTASSIUM																							
Quarter 4, 2002																		✱	✱				
Quarter 3, 2004																			✱				
Quarter 2, 2005																			✱				
Quarter 3, 2005																			✱				
Quarter 4, 2005																			✱				
Quarter 2, 2006																			✱				
Quarter 3, 2006																			✱				
Quarter 4, 2006																			✱				
Quarter 4, 2008																			✱				
Quarter 3, 2012																			✱				
Quarter 1, 2013																			✱				
Quarter 2, 2013																			✱				
Quarter 3, 2013																			✱				
RADIUM-226																							
Quarter 4, 2002			✱										✱	✱							✱		
Quarter 2, 2004																			✱				
Quarter 2, 2005									✱														
Quarter 1, 2009											✱												
Quarter 3, 2014									✱			✱											
Quarter 4, 2014			✱								✱							✱					
Quarter 1, 2015			✱				✱			✱		✱						✱					
Quarter 2, 2015			✱				✱			✱		✱						✱					
RADIUM-228																							
Quarter 2, 2005							■				■												
Quarter 3, 2005			■																				
Quarter 4, 2005							■		■														
Quarter 1, 2006					■																		
SELENIUM																							
Quarter 4, 2002			■		■																		
Quarter 1, 2003					■																	■	
Quarter 2, 2003			■																				
Quarter 3, 2003			■		■																		
Quarter 4, 2003			■																				

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
SODIUM																							
Quarter 4, 2002																			*		*		
Quarter 1, 2003				*					*	*	*												
Quarter 2, 2003				*						*	*		*										
Quarter 3, 2003							*	*		*													
Quarter 4, 2003							*		*	*													
Quarter 1, 2004									*	*				*									
Quarter 2, 2004										*													
Quarter 3, 2004										*													
Quarter 4, 2004									*	*													
Quarter 1, 2005										*									*				
Quarter 2, 2005										*									*				
Quarter 3, 2005									*	*									*				
Quarter 4, 2005									*	*													
Quarter 1, 2006									*	*													
Quarter 2, 2006									*														
Quarter 3, 2006									*	*		*							*				
Quarter 4, 2006									*	*							*						
Quarter 1, 2007									*			*											
Quarter 2, 2007									*	*													
Quarter 3, 2007									*														
Quarter 4, 2007									*														
Quarter 1, 2008									*														
Quarter 3, 2008												*											
Quarter 4, 2008									*	*													
Quarter 1, 2009									*			*							*				
Quarter 3, 2009												*											
Quarter 4, 2009									*			*											
Quarter 1, 2010												*											
Quarter 2, 2010										*		*											
Quarter 3, 2010										*													
Quarter 4, 2010									*	*													
Quarter 1, 2011										*													
Quarter 2, 2011									*														
Quarter 4, 2011																			*				
Quarter 1, 2012											*												
Quarter 3, 2012												*							*				
Quarter 4, 2012												*											
Quarter 1, 2013										*		*							*				
Quarter 2, 2013												*											
Quarter 3, 2013												*							*				
Quarter 4, 2013												*							*				
Quarter 1, 2014												*											
Quarter 2, 2014									*		*	*							*				
Quarter 3, 2014												*							*				
Quarter 4, 2014									*	*		*	*										
Quarter 1, 2015													*										
Quarter 2, 2015												*											

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
STRONTIUM-90																							
Quarter 2, 2003										■													
Quarter 1, 2004										■													
SULFATE																							
Quarter 4, 2002																			✱				
Quarter 1, 2003												✱	✱				✱		✱				
Quarter 2, 2003										✱		✱	✱					✱	✱				
Quarter 3, 2003										✱		✱	✱						✱				
Quarter 4, 2003										✱		✱	✱						✱				
Quarter 1, 2004										✱		✱	✱					✱	✱				
Quarter 2, 2004										✱		✱	✱				✱	✱	✱	✱			
Quarter 3, 2004									✱	✱		✱	✱					✱	✱				
Quarter 4, 2004										✱		✱	✱					✱	✱				
Quarter 1, 2005										✱		✱	✱				✱	✱	✱				
Quarter 2, 2005										✱		✱	✱					✱	✱				
Quarter 3, 2005										✱		✱	✱				✱	✱	✱				
Quarter 4, 2005										✱		✱	✱					✱	✱	✱			
Quarter 1, 2006										✱		✱	✱				✱	✱	✱	✱			
Quarter 2, 2006									✱	✱		✱	✱				✱	✱	✱	✱			
Quarter 3, 2006									✱	✱		✱	✱				✱		✱	✱			
Quarter 4, 2006									✱	✱		✱	✱				✱		✱				
Quarter 1, 2007									✱	✱		✱	✱				✱		✱	✱			
Quarter 2, 2007									✱	✱		✱	✱				✱		✱	✱			
Quarter 3, 2007									✱	✱		✱	✱				✱		✱	✱			
Quarter 4, 2007										✱		✱	✱				✱	✱	✱	✱			
Quarter 1, 2008										✱		✱	✱				✱	✱	✱	✱			
Quarter 2, 2008								✱		✱	✱	✱	✱	✱			✱	✱	✱	✱			
Quarter 3, 2008										✱		✱	✱				✱	✱	✱	✱			
Quarter 4, 2008										✱		✱	✱				✱		✱				
Quarter 1, 2009										✱		✱	✱				✱	✱	✱				
Quarter 2, 2009									✱	✱		✱	✱				✱	✱	✱	✱			
Quarter 3, 2009									✱	✱		✱	✱				✱	✱	✱	✱			
Quarter 4, 2009	✱									✱		✱	✱				✱	✱	✱				
Quarter 1, 2010	✱								✱	✱		✱	✱				✱		✱				
Quarter 2, 2010									✱	✱		✱	✱				✱	✱	✱	✱			
Quarter 3, 2010										✱		✱	✱				✱	✱	✱	✱			
Quarter 4, 2010	✱									✱		✱	✱				✱	✱	✱				
Quarter 1, 2011	✱									✱		✱	✱				✱	✱	✱				
Quarter 2, 2011	✱									✱		✱	✱	✱			✱	✱	✱	✱			
Quarter 3, 2011	✱									✱		✱	✱	✱			✱	✱	✱	✱			
Quarter 4, 2011	✱									✱		✱	✱				✱	✱	✱	✱			
Quarter 1, 2012	✱									✱		✱	✱				✱	✱	✱	✱			
Quarter 2, 2012	✱									✱		✱	✱				✱	✱	✱	✱			
Quarter 3, 2012	✱									✱		✱	✱				✱	✱	✱	✱			
Quarter 4, 2012										✱		✱	✱				✱	✱	✱	✱			
Quarter 1, 2013										✱		✱	✱				✱	✱	✱	✱			
Quarter 2, 2013										✱		✱	✱	✱			✱	✱	✱	✱			
Quarter 3, 2013										✱		✱	✱	✱			✱	✱	✱	✱			
Quarter 4, 2013										✱		✱	✱				✱	✱	✱	✱			
Quarter 1, 2014								✱		✱		✱	✱				✱	✱	✱	✱			
Quarter 2, 2014										✱		✱	✱	✱			✱	✱	✱	✱			
Quarter 3, 2014										✱		✱	✱	✱			✱	✱	✱	✱			
Quarter 4, 2014										✱		✱	✱				✱	✱	✱	✱			
Quarter 1, 2015										✱		✱	✱				✱	✱	✱	✱			
Quarter 2, 2015										✱	✱	✱	✱	✱	✱		✱	✱	✱	✱			

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
TECHNETIUM-99																							
Quarter 4, 2002																			*				
Quarter 1, 2003													*				*		*				
Quarter 2, 2003	*		*							*			*				*						
Quarter 3, 2003			*										*				*			*			
Quarter 4, 2003			*							*		*	*				*		*	*			
Quarter 1, 2004			*									*	*				*		*				
Quarter 2, 2004			*									*	*				*		*	*			
Quarter 3, 2004			*									*					*		*				
Quarter 4, 2004			*							*		*	*				*	*	*				
Quarter 1, 2005			*							*		*	*				*			*			
Quarter 2, 2005			*							*			*				*	*	*	*			
Quarter 3, 2005			*							*			*				*	*	*	*			
Quarter 4, 2005			*							*		*	*				*		*	*			
Quarter 1, 2006										*		*	*						*	*			
Quarter 2, 2006			*							*			*				*	*	*	*			
Quarter 3, 2006			*							*			*				*	*	*	*			
Quarter 4, 2006	*									*		*	*						*	*			
Quarter 1, 2007			*							*			*				*		*	*			
Quarter 2, 2007			*							*		*	*				*	*		*			
Quarter 3, 2007			*							*	*	*	*				*		*	*			
Quarter 4, 2007			*							*		*	*				*		*	*			
Quarter 1, 2008			*							*		*	*				*	*	*	*			
Quarter 2, 2008			*							*	*		*				*		*	*			
Quarter 3, 2008										*		*	*				*			*			
Quarter 4, 2008			*							*		*	*				*	*	*	*			
Quarter 1, 2009			*							*		*	*				*						
Quarter 2, 2009			*							*		*	*				*	*		*			
Quarter 3, 2009			*							*	*	*	*				*			*			
Quarter 4, 2009			*							*		*	*				*						
Quarter 1, 2010			*							*		*	*				*						
Quarter 2, 2010			*							*			*				*	*		*			
Quarter 3, 2010			*							*	*	*	*				*						
Quarter 4, 2010			*							*		*	*				*						
Quarter 1, 2011										*			*				*						
Quarter 2, 2011			*							*			*				*			*			
Quarter 3, 2011			*							*			*				*			*			
Quarter 4, 2011			*							*	*	*	*				*						
Quarter 1, 2012			*							*			*				*			*			
Quarter 2, 2012			*							*			*				*		*	*			
Quarter 3, 2012			*							*		*	*				*						
Quarter 4, 2012										*		*	*				*		*	*			
Quarter 1, 2013										*			*				*		*	*			
Quarter 2, 2013										*		*	*				*		*	*			
Quarter 3, 2013			*							*		*	*				*		*	*			
Quarter 4, 2013			*							*		*	*				*		*	*			
Quarter 1, 2014			*							*	*		*				*		*	*			
Quarter 2, 2014			*							*	*		*	*			*		*	*			
Quarter 3, 2014			*							*			*				*			*			
Quarter 4, 2014			*							*	*	*	*				*		*	*			
Quarter 1, 2015			*							*	*	*	*				*			*			
Quarter 2, 2015			*							*	*		*				*			*			
THORIUM-230																							
Quarter 1, 2012	*								*					*									
Quarter 4, 2014	*		*																				

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
THORIUM-234																							
Quarter 2, 2003						*			*					*									
Quarter 4, 2007									*														
TOLUENE																							
Quarter 2, 2014										*	*		*										
TOTAL ORGANIC CARBON																							
Quarter 4, 2002																					*		
Quarter 1, 2003				*						*	*							*	*		*		
Quarter 2, 2003										*	*		*								*		
Quarter 3, 2003							*	*	*	*	*	*											
Quarter 4, 2003							*		*	*													
Quarter 1, 2004										*													
Quarter 2, 2004										*	*												
Quarter 3, 2004										*													
Quarter 4, 2004										*													
Quarter 1, 2005										*													
Quarter 2, 2005										*											*		
Quarter 3, 2005										*		*									*		
Quarter 4, 2005										*											*		
Quarter 1, 2006										*													
Quarter 2, 2006										*		*											
Quarter 4, 2006																	*						
Quarter 1, 2007	*									*													
Quarter 3, 2007	*					*	*	*	*	*			*	*			*						
Quarter 2, 2011											*												
Quarter 3, 2012	*																						
TOTAL ORGANIC HALIDES																							
Quarter 4, 2002																		*	*		*		
Quarter 1, 2003				*														*			*		
Quarter 3, 2003				*																	*		
Quarter 2, 2004																					*		
Quarter 3, 2004	*																						
Quarter 1, 2005	*																						
Quarter 2, 2005	*																						
Quarter 3, 2005	*																						
Quarter 4, 2005	*																						
Quarter 1, 2006	*																						
Quarter 2, 2006	*																						
Quarter 3, 2006	*																						
Quarter 4, 2006																	*						
Quarter 1, 2007	*																						
Quarter 2, 2007	*																						
Quarter 3, 2007	*																						
Quarter 4, 2007	*																				*		
Quarter 1, 2008	*																						
Quarter 4, 2008	*																						
Quarter 4, 2008	*																						
Quarter 1, 2009	*																						
Quarter 2, 2009	*																				*		
Quarter 3, 2009	*																						
Quarter 4, 2009	*																						
Quarter 1, 2010	*																						
Quarter 2, 2010	*																						
Quarter 3, 2010	*																						

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
TOTAL ORGANIC HALIDES																							
Quarter 4, 2010	*																						
Quarter 1, 2011	*																						
Quarter 3, 2013																					*		
TRICHLOROETHENE																							
Quarter 4, 2002														■		■					■	■	
Quarter 1, 2003														■		■					■	■	
Quarter 2, 2003														■		■					■	■	
Quarter 3, 2003														■		■					■	■	
Quarter 4, 2003														■		■					■	■	
Quarter 1, 2004														■		■					■	■	
Quarter 2, 2004												■		■		■		■	■		■	■	
Quarter 3, 2004												■		■		■		■	■		■	■	
Quarter 4, 2004												■		■		■		■	■		■	■	
Quarter 1, 2005												■		■		■		■	■		■	■	
Quarter 2, 2005												■		■		■		■	■		■	■	
Quarter 3, 2005												■		■		■		■	■		■	■	
Quarter 4, 2005												■		■		■		■	■		■	■	
Quarter 1, 2006												■		■		■		■	■		■	■	
Quarter 2, 2006												■		■		■		■	■		■	■	
Quarter 2, 2007												■		■		■			■		■	■	
Quarter 3, 2007												■		■		■			■		■	■	
Quarter 4, 2007												■		■		■			■		■	■	
Quarter 1, 2008												■		■		■			■		■		
Quarter 2, 2008												■		■		■			■		■		
Quarter 3, 2008												■		■		■			■		■		
Quarter 4, 2008												■		■		■			■		■		
Quarter 1, 2009												■		■		■			■		■		
Quarter 2, 2009												■		■		■			■		■		
Quarter 3, 2009												■		■		■			■		■		
Quarter 4, 2009											■	■		■		■			■		■		
Quarter 1, 2010												■		■		■			■		■		
Quarter 2, 2010												■		■		■			■		■		
Quarter 3, 2010												■		■		■			■		■	■	
Quarter 4, 2010												■		■		■			■		■	■	
Quarter 1, 2011												■		■		■			■		■	■	
Quarter 2, 2011												■		■		■			■		■		
Quarter 3, 2011												■		■		■			■		■		
Quarter 4, 2011												■		■		■			■		■	■	
Quarter 1, 2012												■		■		■			■		■	■	
Quarter 2, 2012												■		■					■		■		
Quarter 3, 2012												■		■					■		■		
Quarter 4, 2012											■	■		■		■			■		■		
Quarter 1, 2013												■		■		■			■		■		
Quarter 2, 2013												■		■					■		■		
Quarter 3, 2013												■		■					■		■		
Quarter 4, 2013												■		■		■			■		■		
Quarter 1, 2014												■		■		■			■		■		
Quarter 2, 2014												■		■							■		
Quarter 3, 2014												■		■					■		■		
Quarter 4, 2014												■		■		■			■		■		
Quarter 1, 2015												■		■		■			■		■		
Quarter 2, 2015												■		■					■		■		

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA											LRGA						
Gradient	S	D	D	D	U	S	S	S	S	S	D	D	D	D	U	U	S	D	D	D	D	U	U
Monitoring Well	386	389	390	393	396	221	222	223	224	384	369	372	387	391	220	394	385	370	373	388	392	395	397
TURBIDITY																							
Quarter 4, 2002																					✱		
Quarter 1, 2003							✱					✱		✱									
URANIUM																							
Quarter 4, 2002																		✱	✱				
Quarter 1, 2003																			✱				
Quarter 4, 2003							✱																
Quarter 1, 2004							✱	✱	✱					✱			✱						
Quarter 4, 2004																	✱						
Quarter 4, 2006																			✱		✱		
ZINC																							
Quarter 3, 2003												✱											
Quarter 4, 2003							✱		✱			✱											
Quarter 4, 2004							✱																
Quarter 4, 2007							✱	✱	✱														

✱ Statistical test results indicate an elevated concentration (i.e., a statistically significant increase)

■ MCL Exceedance

UCRS Upper Continental Recharge System

URGA Upper Regional Gravel Aquifer

LRGA Lower Regional Gravel Aquifer

S Sidegradient; D Downgradient; U Upgradient

APPENDIX H

METHANE MONITORING DATA

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C-746-S & T LANDFILL METHANE MONITORING REPORT

Date:	6/04/2015	Time:	09:40	Monitor:	Tammy Smith

Weather Conditions:
Sunny with calm winds out of the east at 74.3 degrees

Monitoring Equipment:
MSA Sirius A3-12976

Monitoring Location		Reading (% LEL)
Ogden Landing Road Entrance	Checked at ground level	0
North Landfill Gate	Checked at ground level	0
West Side of Landfill: North 37° 07.652' West 88° 48.029'	Checked at ground level	0
East Side of Landfill: North 37° 07.628' West 88° 47.798'	Checked at ground level	0
Cell 1 Gas Vent (17)	1 0, 2 0, 3 0.6, 4 0, 5 0, 6 0, 7 0, 8 0, 9 0, 10 0, 11 0, 12 0, 13 0, 14 0, 15 0, 16 0.6, 17 0	3-0.6, 16-0.6
Cell 2 Gas Vent (3)	1 0, 2 1.2, 3 0	2-1.2
Cell 3 Gas Vent (7)	1 0, 2 0, 3 0, 4 0, 5 0, 6 0, 7 0	0
Landfill Office	CHECKED AT FLOOR LEVEL	0
Suspect or Problem Areas	NO AREAS NOTED	JB 6.4.15

Remarks:

ALL VENTS CHECKED 1" FROM THE MOUTH OF THE VENT

Performed by:

Tammy Smith — **Signature**

6/04/15 — **Date**

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APPENDIX I

SURFACE WATER ANALYSES AND WRITTEN COMMENTS

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Division of Waste Management
Solid Waste Branch
14 Reilly Road
Frankfort, KY 40601 (502)564-6716

RESIDENTIAL/INERT-QUARTERLY
Facility: US DOE - Paducah Gaseous Diffusion Plant
Permit Number:073-00014 & 073-00015 FINDS/UNIT: KY8-890-008-982 / 1
LAB ID: None
For Official Use Only

SURFACE WATER SAMPLE ANALYSIS (S)

Monitoring Point (KPDES Discharge Number, or "UPSTREAM", or "DOWNSTREAM")	L135 UPSTREAM	L154 DOWNSTREAM	L136 AT SITE	
Sample Sequence #	1	1	1	
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	NA	NA	NA	
Sample Date and Time (Month/Day/Year hour:minutes)	4/14/2015 08:52	4/14/2015 08:40	NA	
Duplicate ("Y" or "N")[1]	N	N	N	
Split ('Y' or "N")[2]	N	N	N	
Facility Sample ID Number (if applicable)	L135SS3-15	L154US3-15	NA	
Laboratory Sample ID Number (if applicable)	371082001	371075002	NA	
Date of Analysis (Month/Day/Year)	5/2/2015	5/6/2015	NA	

CAS RN[3]		CONSTITUENT	TD[4]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]
A200-00-0	0	Flow	T	MGD	Field	2.53		6.3			*		
16887-00-6	2	Chloride(s)	T	MG/L	300.0	0.576		0.552			*		
14808-79-8	0	Sulfate	T	MG/L	300.0	1.84		1.76			*		
7439-89-6	0	Iron	T	MG/L	200.8	1.93		2.11			*		
7440-23-5	0	Sodium	T	MG/L	200.8	1.2		1.17			*		
S0268- -	0	Organic Carbon[6]	T	MG/L	9060	9.1		9.6			*		
S0097- -	0	BOD[6]	T	MG/L	not applicable		*		*		*		
S0130- -	0	Chemical Oxygen Demand	T	MG/L	410.4	56.3		60.2			*		

[1]Respond "Y" if the sample was a duplicate of another sample in this report
[2]Respond "Y" if the sample was split and analyzed by separate laboratories.
[3]Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
[4]"T" = Total; "D" = Dissolved
[5]"<" indicates a non-detect; do not use "ND" or "BDL". Value then shown is Practical Quantification Limit
[6]Facility has either/or option on Organic Carbon and (BOD) Biochemical Oxygen Demand - both are not required
[7]Flags are as designated, do not use any other type. Use "*," then describe on "Written Comments" page.

STANDARD FLAGS:
* = See Comments
J = Estimated Value
B = Analyte found in blank
A = Average value
N = Presumptive ID
D = Concentration from analysis of a secondary dilution factor

SURFACE WATER - QUARTERLY

Facility: **US DOE - Paducah Gaseous Diffusion Plant**

Permit Number: **073-00014 & 073-00015**

FINDS/UNIT: KY8-890-008-982 / 1

LAB ID: None

For Official Use Only

SURFACE WATER SAMPLE ANALYSIS - (Cont.)

Monitoring Point (KPDES Discharge Number, or "UPSTREAM" or "DOWNSTREAM")						L135 UPSTREAM		L154 DOWNSTREAM		L136 AT SITE			
CAS RN[3]		CONSTITUENT	TD[4]	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]	DETECTED VALUE OR PQL[5]	FLAGS[7]
S0145- -	1	Specific Conductance	T	µHMS/CM	Field	78		73			*		
S0270- -	0	Total Suspended Solids	T	mg/L	160.1	20.1		22.6			*		
S0266- -	0	Total Dissolved Solids	T	mg/L	160.2	67.1		58.6			*		
S0269- -	0	Total Solids	T	mg/L	SM-2540 B 17	122		113			*		
S0296- -	0	pH	T	Units	Field	7.38		7.57			*		
7440-61-1		Uranium	T	mg/L	200.8	0.00127		0.00111			*		
12587-46-1		Gross Alpha (α)	T	pCi/L	900.0	12.8	*	2	*		*		
12587-47-2		Gross Beta (β)	T	pCi/L	900.0	3.45	*	2.21	*		*		

RESIDENTIAL/INERT – QUARTERLY **Finds/Unit: KY8-890-008-982 / 1**

Facility: US DOE - Paducah Gaseous Diffusion Plant **LAB ID: None**

Permit Numbers: 073-00014 & 073-00015 **For Official Use Only**

SURFACE WATER
WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
L135	L135SS3-15	Biochemical Oxygen Demand (BOD		Analysis of constituent not required and not performed.
		Alpha activity		TPU is 7.39. Rad error is 7.08.
		Beta activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.52. Rad error is 7.5.
L154	L154US3-15	Biochemical Oxygen Demand (BOD		Analysis of constituent not required and not performed.
		Alpha activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.12. Rad error is 5.11.
		Beta activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.29. Rad error is 7.28.

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