


**C-746-S&T Landfills
First Quarter Calendar Year 2015
(January–March)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**



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LATA Kentucky Classification Support


Date

**C-746-S&T Landfills
First Quarter Calendar Year 2015
(January–March)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

Date Issued—May 2015

Prepared for the
U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Prepared by
LATA ENVIRONMENTAL SERVICES OF KENTUCKY, LLC
managing the
Environmental Remediation Activities at the
Paducah Gaseous Diffusion Plant
under contract DE-AC30-10CC40020

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ACRONYMS

<i>CFR</i>	<i>Code of Federal Regulations</i>
COD	chemical oxygen demand
CY	calendar year
<i>KAR</i>	<i>Kentucky Administrative Regulations</i>
KDWM	Kentucky Division of Waste Management
<i>KRS</i>	<i>Kentucky Revised Statutes</i>
LATA Kentucky	LATA Environmental Services of Kentucky, LLC
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 First Quarter Calendar Year 2015 (January–March) 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 using 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).

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 reporting 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) listed in 401 KAR 47:030 § 6 for Kentucky solid waste facilities 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 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. The parameters identified in the Solid Waste Landfill Permit were analyzed for the three locations sampled for reporting only, pursuant to Permit Condition GMNP0003, Standard Requirement 1. 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: (1) the Upper Continental Recharge System (UCRS), (2) the Upper Regional Gravel Aquifer (URGA), and (3) the Lower Regional Gravel Aquifer (LRGA).

A map of the monitoring well (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 in a north-northeasterly direction in the vicinity of the C-746-S&T Landfill. 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 within the first quarter 2015 during January using LATA Environmental Services of Kentucky, LLC, (LATA Kentucky) 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 January 28 and 29, 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.¹ Regional flow in the RGA in January was northeastward, toward the Ohio River. The hydraulic gradient for the RGA in the vicinity of the C-746-S&T Landfills in January was 3.78×10^{-4} ft/ft, while the gradient beneath the C-746-S&T Landfills was 2.95×10^{-4} ft/ft. Calculated groundwater flow rates (average linear velocities) for the RGA at the C-746-S&T Landfills range from 0.50 to 1.10 ft/day (see Table E.3).

1.2.2 Methane Monitoring

Landfill operations staff monitored for the occurrence of methane on March 12, 2015, 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. See Appendix H for a map of the monitoring locations. Monitoring

¹ Although depth-to-water is measured in the UCRS wells, the UCRS has a strong vertical hydraulic gradient that varies locally. The UCRS wells are screened over different elevations; therefore, the UCRS well measurements are not sufficient for mapping the potentiometric surface.

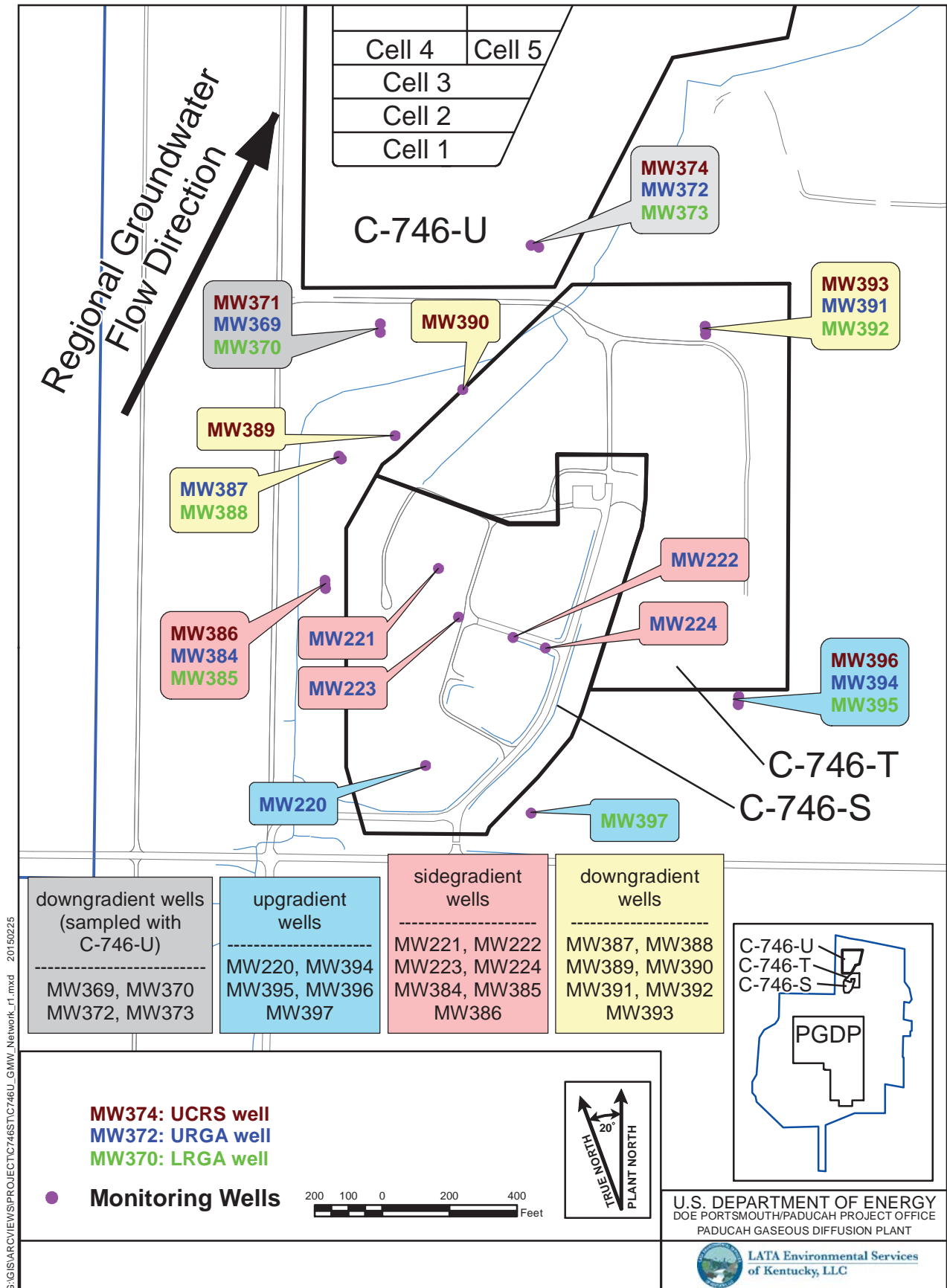


Figure 1. C-746-S&T Landfills Groundwater Monitoring Well Network

identified 4.2% of the lower explosive limit (LEL) of methane at Cell 1 Gas Vent 3 and 1.2% of the LEL of methane at Cell 1 Gas Vent 16, 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. Sampling was performed in 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. 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 (present in downgradient wells) that exceeded their respective MCL were further evaluated against their historical UTL. Table 2 identifies parameters (without MCLs) with concentrations that exceeded the statistically derived historical background UTL for the first quarter 2015, as well as parameters that exceeded their MCL (beta activity) that also exceeded their historical background UTL. Those constituents (present in downgradient wells) that exceed their historical UTL were evaluated against their current-background UTL derived 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, MW392, and MW394 are not attributable to a C-746-S&T Landfill source and are considered a Type I exceedance per the approved Groundwater Monitoring Plan (LATA Kentucky 2014).

The MCL exceedances for beta activity in MW372, MW387 and MW388 (downgradient wells) also were shown to exceed both the historical background UTL and the current background UTL; therefore, they preliminarily were considered to be Type 2 exceedances (source unknown). Sidegradient wells MW384 and MW385 also had exceedances; however, they are not considered to be Type 2 exceedances.

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

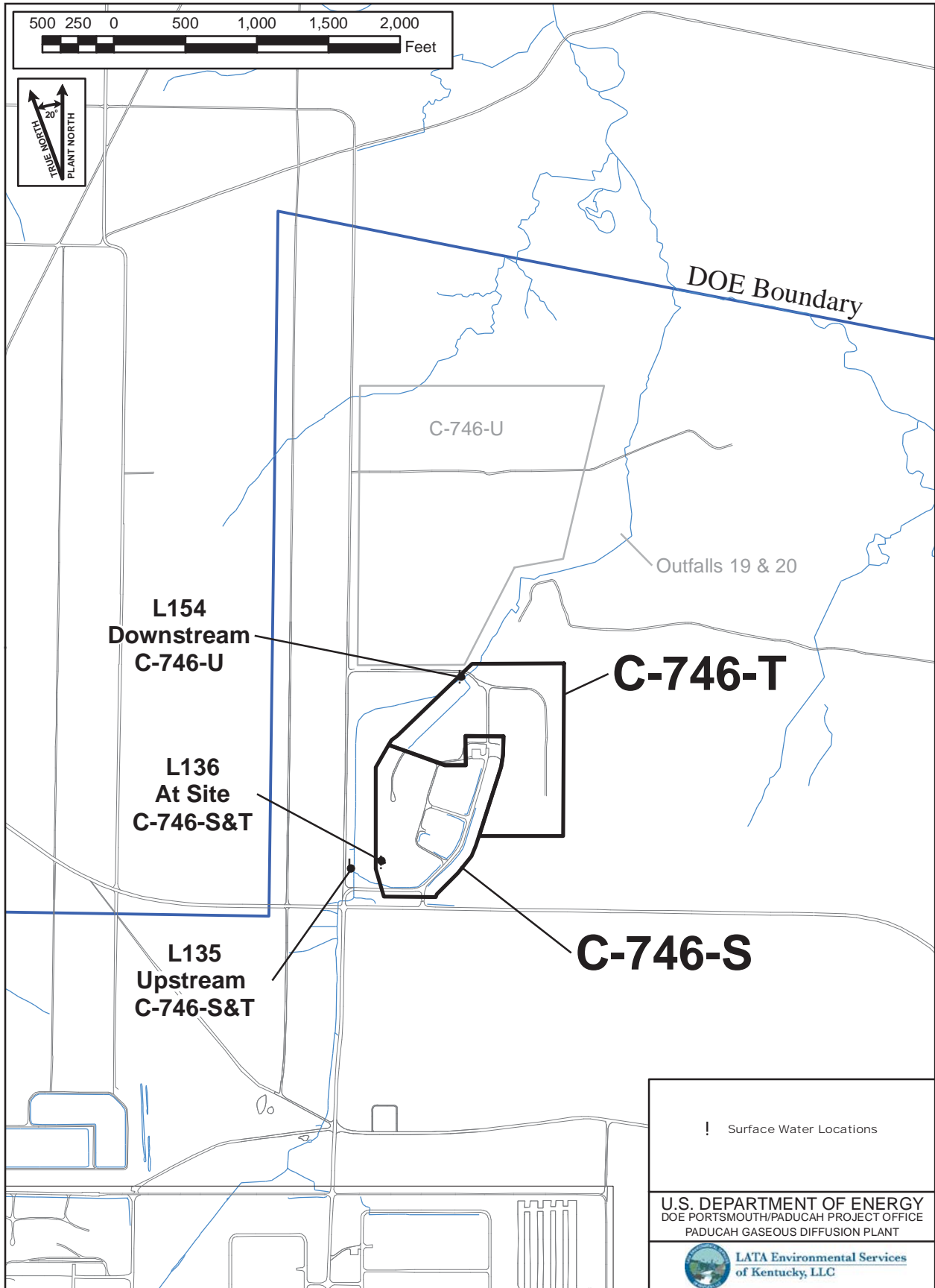


Figure 2. C-746-S&T Landfills Surface Water Monitoring Locations

Table 1. Summary of MCL Exceedances

UCRS	URGA	LRGA
NONE	MW372: Beta activity, trichloroethene	MW373: Trichloroethene
	MW384: Beta activity	MW385: Beta activity
	MW387: Beta activity	MW388: Beta activity
	MW391: Trichloroethene	MW392: Trichloroethene
	MW394: 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	MW370: Oxidation-reduction potential, sulfate
MW390: Oxidation-reduction potential, technetium-99	MW221: Oxidation-reduction potential	MW373: Calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate
MW393: Oxidation-reduction potential	MW222: Oxidation-reduction potential	MW385: Beta activity, ^a oxidation-reduction potential, sulfate, technetium-99
MW396: Oxidation-reduction potential	MW223: Oxidation-reduction potential	MW388: Beta activity, ^a oxidation-reduction potential, sulfate, technetium-99
	MW224: Oxidation-reduction potential	MW392: Oxidation-reduction potential
	MW369: Oxidation-reduction potential, technetium-99	MW395: Oxidation-reduction potential
	MW372: Beta activity, ^a calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate, technetium-99	MW397: Oxidation-reduction potential
	MW384: Beta activity, ^a sulfate, technetium-99	
	MW387: Beta activity, ^a calcium, magnesium, oxidation-reduction potential, sodium, sulfate, technetium-99	
	MW391: Oxidation-reduction potential	
	MW394: Oxidation-reduction potential	

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 has an MCL; the exceedances of the MCL were subjected to a comparison against the statistically derived historical background.

^b In the same direction (relative to the landfill) as RGA wells considered to be upgradient.

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
MW369: Technetium-99	MW373: Calcium, conductivity, dissolved solids, magnesium, sulfate
MW372: Beta activity, calcium, conductivity, magnesium, sulfate, technetium-99	MW388: Beta activity, sulfate, technetium-99
MW387: Beta activity, calcium, magnesium, sodium, sulfate, technetium-99	

In accordance with Permit Condition GSTR0003, Variance 2, of the Solid Waste Permit (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 could have the C-746-S or C-746-T Landfills as a source. These preliminarily are considered to be Type 2 exceedances per the approved monitoring plan.

1.3.1 Summary of C-746-S&T Results and Discussion

Groundwater monitoring identified parameters (TCE, beta activity) that exceeded their respective MCL (see Table 1); however, the TCE exceedances did not exceed their respective historical UTL and are considered Type 1 exceedances (not attributable to the landfill).

The beta activity MCL exceedances also exceeded their historical UTL.

Groundwater monitoring identified parameters that exceeded their respective historical UTL (see Table 2) but did not exceed the current UTL; thus, these also are considered to be Type I exceedances (not attributable to the landfill). The gradients in UCRS wells are downward. Thus, none of the UCRS wells are properly considered to be downgradient of the landfill. However, the statistical evaluation of current UCRS wells against the current UCRS background UTL identified UCRS wells with parameters that exceeded both the historical and current background. These exceedances are not attributable to C-746-S&T landfills and are considered Type 1 exceedances. These exceedances are identified in Appendix D2.

Groundwater monitoring identified parameters that exceeded both their historical UTL (see Table 2) and their current UTL (see Table 3). The source(s) of these exceedances are not determined and are considered to be preliminary Type 2 exceedances.

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).

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	MW369	Technetium-99	8	0.05	0.451	2.000	65.33	1.065	0.071	No Trend
		Beta Activity	8	0.05	0.355	-4.000	65.33	-5.205	-0.143	No Trend
		Calcium	8	0.05	0.087	-12.000	65.33	-1.100	-0.429	No Trend
		Conductivity	8	0.05	0.133	-10.000	65.33	-10.85	-0.357	No Trend
	MW372	Magnesium	8	0.05	0.106	-11.000	64.33	-0.575	-0.400	No Trend
		Sulfate	8	0.05	0.265	-6.000	63.33	-5.000	-0.222	No Trend
		Technetium-99	8	0.05	0.402	-3.000	64.33	-1.963	-0.109	No Trend
		Calcium	8	0.05	0.159	-9.000	64.33	-0.752	-0.327	No Trend
		Conductivity	8	0.05	0.054	-14.000	65.33	-3.450	-0.500	No Trend
	MW373	Dissolved Solids	8	0.05	0.054	-14.000	65.33	-8.333	-0.500	No Trend
		Magnesium	8	0.05	0.018	-18.000	65.33	-0.446	-0.643	Negative Trend
		Sulfate	8	0.05	0.067	-13.000	64.33	-3.250	-0.473	No Trend
		Beta Activity	8	0.05	0.451	2.000	65.33	1.625	0.071	No Trend
		Calcium	8	0.05	0.451	2.000	65.33	0.217	0.071	No Trend
	MW387	Magnesium	8	0.05	0.268	6.000	65.33	0.167	0.214	No Trend
		Sodium	8	0.05	0.159	9.000	64.33	0.510	0.327	No Trend
	Sulfate	8	0.05	0.067	13.000	64.33	0.490	0.473	No Trend	
	Technetium-99	8	0.05	0.309	5.000	64.33	11.67	0.182	No Trend	
	Beta Activity	8	0.05	0.451	-2.000	65.33	-2.019	-0.071	No Trend	
MW388	Sulfate	8	0.05	0.268	-6.000	65.33	-0.375	-0.214	No Trend	
	Technetium-99	8	0.05	0.451	2.000	65.33	0.913	0.071	No Trend	

Footnotes:

- ¹An alpha of 0.05 represents a 95% confidence interval.
- ²The p-value represents the risk of acceptance the H₀ hypothesis of a trend, in terms of a percentage.
- ³The 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.
- ⁴VAR(S) represents the variance of S in the sample set and takes into account statistical ties.
- ⁵The magnitude of trend is predicted by the Sen's Slope. Here, the slope is described as the median of all $(y_j - y_k) / (j - k)$, where x is a data point and j and k are values of time.
- ⁶Kendall's correlation is described as the difference of concordant pairs and discordant 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.
- ⁷The Mann-Kendall decision operates on two hypothesis, the H₀ and H_a. H₀ 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 2014.2.07.

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2. DATA EVALUATION/STATISTICAL SYNOPSIS

The statistical analyses conducted on the first quarter 2015 groundwater data collected from the C-746-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, D2, and D3).

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-side 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.

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 that 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.

3. DATA 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 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 acceptable.

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4. PROFESSIONAL GEOLOGIST AUTHORIZATION

DOCUMENT IDENTIFICATION: *C-746-S&T Landfills
First Quarter Calendar Year 2015 (January–March)
Compliance Monitoring Report,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky (PAD-ENM-0094/V1)*

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



Kenneth R. Davis
Kenneth R. Davis

PG1194

May 26, 2015
Date

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5. 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.
- 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.

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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 Activity: C-746-S&T Landfills
(As officially shown on DWM Permit Face)

Permit No: 073-00014 & 073-00015 Finds/Unit No: _____ Quarter & Year 1st Qtr. CY 2015
073-00045

Please check the following as applicable:

 Characterization Quarterly Semiannual Annual Assessment

Please check applicable submittal(s): Groundwater Surface Water
 Leachate 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 Statutes 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.

Mark J. Duff, Paducah Project Manager
LATA Environmental Services of Kentucky, LLC

Date

Jennifer Woodard, Paducah Site Lead
U.S. Department of Energy

Date

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APPENDIX B
FACILITY INFORMATION SHEET

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FACILITY INFORMATION SHEET

Groundwater: January 2015
Methane: January 2015
Surface Water: January and March 2015

County: McCracken Permit Nos. 073-00014 & 073-00015 & 073-00045

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

Site Address: 5501 Hobbs Road Kevil, Kentucky 42053
Street City/State 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) 441-5030

Contact Person Title: Project Manager, LATA Environmental Services of Kentucky, LLC

Mailing Address: 761 Veterans Avenue Kevil, Kentucky 42053
Street City/State 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 Kevil, Kentucky 42053
Street City/State 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 Charleston, South Carolina 29407
Street City/State 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

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								
Sample Date and Time (Month/Day/Year hour: minutes)		1/5/2015 09:52	1/7/2015 08:48	1/6/2015 08:56	1/5/2015 13:51			
Duplicate ("Y" or "N") ²								
		N	N	N	N			
Split ("Y" or "N") ³								
		N	N	N	N			
Facility Sample ID Number (if applicable)		MW220SG2-15	MW221SG2-15	MW222SG2-15	MW223SG2-15			
Laboratory Sample ID Number (if applicable)		364301001	364506001	364386001	364301003			
Date of Analysis (Month/Day/Year) For Volatile Organics Analysis		1/8/2015	1/13/2015	1/12/2015	1/8/2015			
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)								
		UP	SIDE	SIDE	SIDE			
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S
24959-67-9	Bromide	T	mg/L	9056	0.252		0.512	
16887-00-6	Chloride(s)	T	mg/L	9056	22.2		34.4	
16984-48-8	Fluoride	T	mg/L	9056	0.168		0.172	
50595- -	Nitrate & Nitrite	T	mg/L	9056	1.38	*	1.3	*
14808-79-8	Sulfate	T	mg/L	9056	14		13.2	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.73		30.61	
S0145- -	Specific Conductance	T	µMHO/cm	Field	330		405	

¹AKGWA # is 0000-0000 for any type of blank.
²Respond "Y" if the sample was a duplicate of another sample in this report.
³Respond "Y" if the sample was split and analyzed by separate laboratories.
⁴Chemical 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.
⁷Flags 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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8000-5201		8000-5202		8000-5242		8000-5243	
					DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	322.21		322.57		322.2		321.93	
N238	Dissolved Oxygen	T	mg/L	Field	5.7		5.01		5.15		2.17	
S0266- -	Total Dissolved Solids	T	mg/L	160.1	140		166		169		170	
S0296- -	pH	T	Units	Field	5.95		6.14		6.16		6.02	
NS215	Eh	T	mV	Field	733		850		554		604	
S0907 - -	Temperature	T	°C	Field	10.44		10.39		11.39		13.22	
7429-90-5	Aluminum	T	mg/L	6020	0.207		<0.003		0.306		0.0161	J
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	0.193		0.212		0.268		0.274	
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8	Boron	T	mg/L	6020	0.00772	J	0.0146	J	0.00996	J	0.0072	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	20		19.7		14.6		22.8	
7440-47-3	Chromium	T	mg/L	6020	0.022		0.0125		0.00398	J	0.0112	
7440-48-4	Cobalt	T	mg/L	6020	0.00218		0.00099	J	0.00356		0.00255	
7440-50-8	Copper	T	mg/L	6020	0.00177		0.00063	J	0.00047	J	0.00102	
7439-89-6	Iron	T	mg/L	6020	0.697		0.0858	J	0.634		0.0436	J
7439-92-1	Lead	T	mg/L	6020	0.00055	J	<0.002		<0.002		<0.002	
7439-95-4	Magnesium	T	mg/L	6020	8.05		8.41		6.24		8.69	
7439-96-5	Manganese	T	mg/L	6020	0.0194		0.00618		0.0117		0.0555	
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶
7439-98-7	Molybdenum	T	mg/L	6020	0.00078		0.0025	J	0.00373
7440-02-0	Nickel	T	mg/L	6020	0.0373		0.059		0.318
7440-09-7	Potassium	T	mg/L	6020	3.31		1.51	J	1.69
7440-16-6	Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005
7782-49-2	Selenium	T	mg/L	6020	0.00152	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	38.1		42.4		47
7440-25-7	Tantalum	T	mg/L	6020	<0.005	*	<0.005	J*	<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	J	<0.0002
7440-62-2	Vanadium	T	mg/L	6010	<0.005		<0.005		<0.005
7440-66-6	Zinc	T	mg/L	6020	0.00389	J	<0.01		0.00572
108-05-4	Vinyl acetate	T	mg/L	8260	<0.005		<0.005		<0.005
67-64-1	Acetone	T	mg/L	8260	0.00158	J	0.00374	BJ	<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

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵
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		0.00064	J	0.00114

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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8000-5201		8000-5202		8000-5242		8000-5243	
					DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S
	Facility Well/Spring Number				220		221		222		223	
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)											
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	<0.0000204		<0.0000202		<0.0000199		<0.0000199	
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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8000-5201		8000-5202		8000-5242		8000-5243	
					DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)				220		221		222		223	
	AKGWA NUMBER ¹ , Facility Well/Spring Number											
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	4.95	-0.217		-0.376		0.633		
12587-47-2	Gross Beta	T	pCi/L	9310	21.8	6.33		31.6		26.1		
10043-66-0	Iodine-131	T	pCi/L		*		*		*		*	
13982-63-3	Radium-226	T	pCi/L	HASL 300	0.484	0.395		0.289		0.159		
10098-97-2	Strontium-90	T	pCi/L	905.0	1.52	1.12		0.541		-0.776		
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC	32.5	17.5		15.2		16.8		
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC	5.94	3.25		0.777		1.4		
10028-17-8	Tritium	T	pCi/L	906.0	88.4	91.7		182		10.7		
S0130- -	Chemical Oxygen Demand	T	mg/L	410.4	<20	11.7	J	<20		<20		
57-12-5	Cyanide	T	mg/L	9012	<0.2	<0.2		<0.2		0.00189	J	
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	1.19	1.35	J	1.29	J	1.39	J	
S0586- -	Total Organic Halides	T	mg/L	9020	0.0037	0.00686	J	0.00342	J	0.0063	J	

Division of Waste Management **RESIDENTIAL/INERT-QUARTERLY**
Solid Waste Branch **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road **Permit Number: 073-00014 & 073-00015**
Frankfort, KY 40601 (502)564-6716 **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								
Sample Date and Time (Month/Day/Year hour: minutes)		1/6/2015 13:11	1/13/2015 08:22	1/13/2015 09:13	1/21/2015 08:54			
Duplicate ("Y" or "N") ²								
Split ("Y" or "N") ³								
Facility Sample ID Number (if applicable)		MW224SG2-15	MW369UG2-15	MW370UG2-15	MW372UG2-15			
Laboratory Sample ID Number (if applicable)		364386003	364933007	364933009	365612007			
Date of Analysis (Month/Day/Year) For <u>Volatile Organics Analysis</u>		1/12/2015	1/20/2015	1/20/2015	1/26/2015			
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)								
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S
24959-67-9	Bromide	T	mg/L	9056	0.226		0.402	
16887-00-6	Chloride(s)	T	mg/L	9056	17.4		31.9	
16984-48-8	Fluoride	T	mg/L	9056	0.253		0.181	
50595- -	Nitrate & Nitrite	T	mg/L	9056	0.524	*	0.657	J
14808-79-8	Sulfate	T	mg/L	9056	10.8		8.7	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.4		30.53	
S0145- -	Specific Conductance	T	µMHO/cm	Field	404		374	
							0.562	
							0.606	
							39.4	
							0.141	
							1.42	
							20	
							30.53	
							441	
							0.606	
							46.3	
							0.152	
							1.23	
							109	
							30.16	
							701	

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

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

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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S		
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	318.97		322.32		322.26		322.76	
N238	Dissolved Oxygen	T	mg/L	Field	2.95		1.15		3.64		1.44	
S0266- -	Total Dissolved Solids	T	mg/L	160.1	211		207		203		374	
S0296- -	pH	T	Units	Field	6.06		6.29		6.23		6.34	
NS215	Eh	T	mV	Field	534		779		691		693	
S0907 - -	Temperature	T	°C	Field	13.39		10.06		10.78		14.5	
7429-90-5	Aluminum	T	mg/L	6020	0.0154	J	0.273		<0.05		<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	0.21		0.387		0.222		0.05	
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8	Boron	T	mg/L	6020	0.0127	J	0.0164		0.0339		0.906	
7440-43-9	Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2	Calcium	T	mg/L	6020	19.5		16.5		28.7		53.5	
7440-47-3	Chromium	T	mg/L	6020	0.0025	J	<0.01		<0.01		<0.01	
7440-48-4	Cobalt	T	mg/L	6020	0.00097	J	0.0124		0.00056	J	0.00023	J
7440-50-8	Copper	T	mg/L	6020	<0.001		0.00119		<0.001		0.00037	J
7439-89-6	Iron	T	mg/L	6020	0.0924	J	0.824		0.066	J	0.0711	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	7.92	B	7.19		13.4	B	20.4	
7439-96-5	Manganese	T	mg/L	6020	0.00795		0.11		0.0113		0.00314	J
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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		8000-5244		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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵		
7439-98-7	Molybdenum	T	mg/L	6020	0.00029	J	0.00018	J	0.00032	BJ	
7440-02-0	Nickel	T	mg/L	6020	0.00634		0.0116		0.00301	J	
7440-09-7	Potassium	T	mg/L	6020	0.608		0.542		2.45	2.1	
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	0.00172	J
7440-22-4	Silver	T	mg/L	6020	0.00029	J	<0.001		<0.001	<0.001	
7440-23-5	Sodium	T	mg/L	6020	49.2		52.2		42.8	55.7	
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		0.00134	J	<0.005	<0.005	
7440-66-6	Zinc	T	mg/L	6020	<0.01		0.00408	J	<0.01	0.0101	*
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: USDOE - 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		8000-5244		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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵
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		0.00146		0.00808

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	T I D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
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	<0.0000198		<0.00002		<0.0000202	
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	*		<0.099		<0.0971	
12674-11-2	PCB-1016	T	ug/L	8082	*		<0.099		<0.0971	
11104-28-2	PCB-1221	T	ug/L	8082	*		<0.099		<0.0971	
11141-16-5	PCB-1232	T	ug/L	8082	*		<0.099		<0.0971	
53469-21-9	PCB-1242	T	ug/L	8082	*		<0.099		<0.0971	
12672-29-6	PCB-1248	T	ug/L	8082	*		<0.099		<0.0971	

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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8000-5244 DETECTED VALUE OR PQL ⁶	8004-4820 DETECTED VALUE OR PQL ⁶	8004-4818 DETECTED VALUE OR PQL ⁶	8004-4808 DETECTED VALUE OR PQL ⁶
					224	369	370	372
11097-69-1	PCB-1254	T	ug/L	8082	*	<0.099	<0.0971	<0.0935
11096-82-5	PCB-1260	T	ug/L	8082	*	<0.099	<0.0971	<0.0935
11100-14-4	PCB-1268	T	ug/L	8082	*	<0.099	<0.0971	<0.0935
12587-46-1	Gross Alpha	T	pCi/L	9310	*	1.63	0.837	4.08
12587-47-2	Gross Beta	T	pCi/L	9310	*	33.4	16	115
10043-66-0	Iodine-131	T	pCi/L		*			
13982-63-3	Radium-226	T	pCi/L	HASL 300	*	0.664	0.66	-0.021
10098-97-2	Strontium-90	T	pCi/L	905.0	*	2.32	-0.025	1.91
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC	*	45.2	14.8	181
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC	*	0.309	0.324	-0.0582
10028-17-8	Tritium	T	pCi/L	906.0	*	-34.5	-93.2	-88.3
S0130- -	Chemical Oxygen Demand	T	mg/L	410.4		<20	<20	8.05
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	J	1.66	1.15	1.57
S0586- -	Total Organic Halides	T	mg/L	9020		0.0213	0.00714	0.0135

Division of Waste Management **RESIDENTIAL/INERT-QUARTERLY**
Solid Waste Branch **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road **Permit Number: 073-00014 & 073-00015**
Frankfort, KY 40601 (502)564-6716

LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS (s)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
8004-4792	8004-4809	8004-4810	8004-4804							
AKGWA NUMBER ¹ , Facility Well/Spring Number										
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)										
Sample Sequence #										
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment										
Sample Date and Time (Month/Day/Year hour: minutes)										
Duplicate ("Y" or "N") ²										
Split ("Y" or "N") ³										
Facility Sample ID Number (if applicable)										
Laboratory Sample ID Number (if applicable)										
Date of Analysis (Month/Day/Year) For <u>Volatile Organics Analysis</u>										
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)										
24959-67-9	Bromide	T	mg/L	9056	0.602		0.604		0.248	J
16887-00-6	Chloride(s)	T	mg/L	9056	42.8		48.2		23.7	
16984-48-8	Fluoride	T	mg/L	9056	0.148		0.2		0.152	
50595- -	Nitrate & Nitrite	T	mg/L	9056	0.672		1.27		0.535	
14808-79-8	Sulfate	T	mg/L	9056	197		20.3		18.6	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.15		30.37		30.41	
S0145- -	Specific Conductance	T	µMHO/cm	Field	933		537		462	

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

¹AKGWA # is 0000-0000 for any type of blank.
²Respond "Y" if the sample was a duplicate of another sample in this report.
³Respond "Y" if the sample was split and analyzed by separate laboratories.
⁴Chemical 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.
⁷Flags are as designated, do not use any other type. Use "*", then describe on "Written Comments Page."

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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S		
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	322.76		322.38		322.34		345.93	
N238	Dissolved Oxygen	T	mg/L	Field	1.34		3.6		1.79		0.4	
S0266- -	Total Dissolved Solids	T	mg/L	160.1	499		249		200		350	
S0296- -	pH	T	Units	Field	5.99		6.32		6.55		6.69	
NS215	Eh	T	mV	Field	336		350		375		227	
S0907 - -	Temperature	T	°C	Field	15.44		12.61		13.56		14.61	
7429-90-5	Aluminum	T	mg/L	6020	<0.05	J	0.0343		0.17		0.0182	J
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	0.028		0.146		0.243		0.205	
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8	Boron	T	mg/L	6020	1.77		0.0166		0.0125	J	0.00648	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	71.5		29.5		37.9		22.3	
7440-47-3	Chromium	T	mg/L	6020	<0.01		0.00745	J	<0.01		<0.01	
7440-48-4	Cobalt	T	mg/L	6020	0.00069	J	0.0004	J	0.00026	J	0.00643	
7440-50-8	Copper	T	mg/L	6020	<0.001		0.00154		0.0011		0.00073	J
7439-89-6	Iron	T	mg/L	6020	0.071	J	1.81		0.43		0.88	
7439-92-1	Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4	Magnesium	T	mg/L	6020	28.2		10.2		13.4		8.53	
7439-96-5	Manganese	T	mg/L	6020	0.123		0.0588		0.0109		1.02	
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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		8004-4792	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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S		
7439-98-7	Molybdenum	T	mg/L	6020	<0.0005		<0.0005	J	0.00049	J	0.00047	J
7440-02-0	Nickel	T	mg/L	6020	0.00494		0.00151	J	0.00138	J	0.00217	
7440-09-7	Potassium	T	mg/L	6020	2.9		1.06		1.75		0.214	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	J	0.00198	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	61.5		53.5		30.6		104	
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		0.00032		<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	*	0.00574	J	0.00385	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: USDOE - 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		8004-4792		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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S
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	0.00767	J	0.00048		<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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8004-4792		8004-4809		8004-4810		8004-4804	
					DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S
	Facility Well/Spring Number				373	384	385	386				
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)											
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<0.005	<0.005	<0.005	<0.005
74-88-4	Iodomethane	T	mg/L	8260	<0.005	<0.005	<0.005	<0.005	<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	<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	<0.001	<0.001	<0.001	<0.001
75-09-2	Dichloromethane	T	mg/L	8260	<0.005	<0.005	<0.005	<0.005	<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	<0.005	<0.005	<0.005	<0.005
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000202	<0.0000202	<0.0000205	<0.0000198	<0.0000202	<0.0000202	<0.0000202	<0.0000202
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
1336-36-3	PCB, Total	T	ug/L	8082	<0.467	<0.467		*				*
12674-11-2	PCB-1016	T	ug/L	8082	<0.467	<0.467		*				*
11104-28-2	PCB-1221	T	ug/L	8082	<0.467	<0.467		*				*
11141-16-5	PCB-1232	T	ug/L	8082	<0.467	<0.467		*				*
53469-21-9	PCB-1242	T	ug/L	8082	<0.467	<0.467		*				*
12672-29-6	PCB-1248	T	ug/L	8082	<0.467	<0.467		*				*

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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8004-4792		8004-4809		8004-4810		8004-4804	
					DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
	Facility Well/Spring Number				373		384		385			8004-4804
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)											386
11097-69-1	PCB-1254	T	ug/L	8082	<0.467	*		*		*		*
11096-82-5	PCB-1260	T	ug/L	8082	<0.467			*		*		*
11100-14-4	PCB-1268	T	ug/L	8082	<0.467			*		*		*
12587-46-1	Gross Alpha	T	pCi/L	9310	8.21	*	3.68	*	2.99	*	-6.47	*
12587-47-2	Gross Beta	T	pCi/L	9310	14.1	*	138	*	100	*	0.966	*
10043-66-0	Iodine-131	T	pCi/L			*		*		*		*
13982-63-3	Radium-226	T	pCi/L	HASL 300	0.055	*	0.123	*	0.261	*	0.442	*
10098-97-2	Strontium-90	T	pCi/L	905.0	-0.105	*	1.05	*	-1.68	*	-2.46	*
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC	28.8	*	191	*	134	*	2.11	*
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC	1.66	*	2.62	*	4.08	*	6.07	*
10028-17-8	Tritium	T	pCi/L	906.0	-58	*	191	*	159	*	28	*
S0130- -	Chemical Oxygen Demand	T	mg/L	410.4	<20		<20		<20		24.7	
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	1.9	J	2.13		1.47	J	11.2	
S0586- -	Total Organic Halides	T	mg/L	9020	0.0141		0.011		0.0051	J	0.226	

Division of Waste Management **RESIDENTIAL/INERT-QUARTERLY**
 Solid Waste Branch **Facility: US DOE - Paducah Gaseous Diffusion Plant**
 14 Reilly Road **Permit Number: 073-00014 & 073-00015**
 Frankfort, KY 40601 (502)564-6716

LAB ID: None
 For Official Use Only

GROUNDWATER SAMPLE ANALYSIS (s)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
8004-4815	8004-4815	8004-4816	8004-4812	8004-4811						
	AKGWA NUMBER ¹ , Facility Well/Spring Number									
	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)	1/12/2015 12:48	1/12/2015 13:55	NA	1/12/2015 09:54					
	Duplicate ("Y" or "N") ²	N	N	N	N					
	Split ("Y" or "N") ³	N	N	N	N					
	Facility Sample ID Number (if applicable)	MW387SG2-15	MW388SG2-15	NA	MW390SG2-15					
	Laboratory Sample ID Number (if applicable)	364787001	364787003	NA	364787005					
	Date of Analysis (Month/Day/Year) For <u>Volatile Organics</u> Analysis	1/15/2015	1/15/2015	NA	1/15/2015					
	Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	DOWN	DOWN	SIDE	DOWN					
24959-67-9	Bromide	T	mg/L	9056	0.562		0.394	*	0.875	
16887-00-6	Chloride(s)	T	mg/L	9056	41		31.5	*	93.2	
16984-48-8	Fluoride	T	mg/L	9056	0.681		0.183	*	0.281	
S0595-	Nitrate & Nitrite	T	mg/L	9056	1.2		1.27	*	3.66	
14808-79-8	Sulfate	T	mg/L	9056	34.4		24.4	*	26.7	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.3		30.3	*	30.19	
S0145-	Specific Conductance	T	µMH0/cm	Field	602		466	*	755	

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
- ¹AKGWA # is 0000-0000 for any type of blank.
²Respond "Y" if the sample was a duplicate of another sample in this report.
³Respond "Y" if the sample was split and analyzed by separate laboratories.
⁴Chemical 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.
⁷Flags are as designated, do not use any other type. Use "*", then describe on "Written Comments Page."

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	8004-4815	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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	322.72		322.64	*	322.7	
N238	Dissolved Oxygen	T	mg/L	Field	5.67		4.64	*	5.18	
S0266- -	Total Dissolved Solids	T	mg/L	160.1	290		211	*	396	
S0296- -	pH	T	Units	Field	6.14		6.01	*	6.33	
NS215	Eh	T	mV	Field	820		634	*	817	
S0907 - -	Temperature	T	°C	Field	12.67		13.78	*	13.67	
7429-90-5	Aluminum	T	mg/L	6020	0.0443	J	0.18	*	0.465	
7440-36-0	Antimony	T	mg/L	6020	<0.003		<0.003	*	<0.003	
7440-38-2	Arsenic	T	mg/L	6020	0.00304	J	<0.005	*	<0.005	
7440-39-3	Barium	T	mg/L	6020	0.144		0.231	*	0.297	
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005	*	<0.0005	
7440-42-8	Boron	T	mg/L	6020	0.0385		0.0258	*	0.011	J
7440-43-9	Cadmium	T	mg/L	6020	<0.001		<0.001	*	<0.001	
7440-70-2	Calcium	T	mg/L	6020	40		27.7	*	34.5	
7440-47-3	Chromium	T	mg/L	6020	0.00547	J	<0.01	*	0.00638	J
7440-48-4	Cobalt	T	mg/L	6020	0.00017	J	0.0003	J	0.00062	J
7440-50-8	Copper	T	mg/L	6020	<0.001		0.00073	BJ	0.00096	BJ
7439-89-6	Iron	T	mg/L	6020	0.165	B	0.751	B	0.541	B
7439-92-1	Lead	T	mg/L	6020	<0.002		<0.002	*	<0.002	
7439-95-4	Magnesium	T	mg/L	6020	18.5		13.4	*	15.4	
7439-96-5	Manganese	T	mg/L	6020	0.0179		0.00573	*	0.00326	J
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002	*	<0.0002	

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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.)

CAS RN ⁴	CONSTITUENT	T D 5	Unit OF MEASURE	METHOD	8004-4815		8004-4816		8004-4812		8004-4811	
					DETECTED VALUE OR PQL ⁶	FLA GS	DETECTED VALUE OR PQL ⁶	FLA GS	DETECTED VALUE OR PQL ⁶	FLA GS	DETECTED VALUE OR PQL ⁶	FLA GS
					387		388		389		390	
7439-98-7	Molybdenum	T	mg/L	6020	<0.0005	0.00024	BJ	0.00041	*	0.00041	BJ	
7440-02-0	Nickel	T	mg/L	6020	0.0041	0.00477		0.0053	*	0.0053		
7440-09-7	Potassium	T	mg/L	6020	1.97	2.07		0.434	*	0.434		
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	61.6	48.9		98.1	*	98.1		
7440-25-7	Tantalum	T	mg/L	6020	0.00201	<0.005	J*	<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		0.00012	*	0.00012	J	
7440-62-2	Vanadium	T	mg/L	6020	<0.005	<0.005		0.002	*	0.002	J	
7440-66-6	Zinc	T	mg/L	6020	<0.01	<0.01		0.0038	*	0.0038	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	0.00459	0.00468	BJ	0.0045	*	0.0045	BJ	
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: USDOE - 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		8004-4815		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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶
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	0.00039	J	0.00042	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	0.00074	J	0.00066	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.)

CAS RN ⁴	CONSTITUENT	TID ⁵	Unit OF MEASURE	METHOD	8004-4815		8004-4816		8004-4812		8004-4811	
					DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S
	Facility Well/Spring Number				387	388	389	390				
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)											
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001	<0.001	*	<0.001	*	<0.001	<0.001	8004-4811
591-78-6	2-Hexanone	T	mg/L	8260	<0.005	<0.005	*	<0.005	*	<0.005	<0.005	390
74-88-4	Iodomethane	T	mg/L	8260	<0.005	<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	<0.001	
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001	<0.001	*	<0.001	*	<0.001	<0.001	
75-09-2	Dichloromethane	T	mg/L	8260	<0.005	<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	<0.005	
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000201	<0.00002	*	<0.00002	*	<0.0000203	<0.0000203	
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001	<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	<0.001	
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001	<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	<0.001	
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001	<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	<0.001	
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001	<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	<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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8004-4815		8004-4816		8004-4812		8004-4811	
					DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)				387		388		389			390
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	-0.0682		1.61			*		-4.04
12587-47-2	Gross Beta	T	pCi/L	9310	158		63.3			*		39
10043-66-0	Iodine-131	T	pCi/L		*					*		*
13982-63-3	Radium-226	T	pCi/L	HASL 300	0.344		0.815			*		0.109
10098-97-2	Strontium-90	T	pCi/L	905.0	0.469		0.51			*		3.36
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC	211		90.4			*		55.7
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC	0.626		0.79			*		1.16
10028-17-8	Tritium	T	pCi/L	906.0	-48.7		-25.8			*		-36.1
S0130 - -	Chemical Oxygen Demand	T	mg/L	410.4	7.88	J	<20			*		15.4
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	1.75	J	1.55	J		*		2.63
S0586 - -	Total Organic Halides	T	mg/L	9020	0.0112		0.00946	J		*		0.0132

Division of Waste Management **RESIDENTIAL/INERT-QUARTERLY**
Solid Waste Branch **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road **Permit Number: 073-00014 & 073-00015**
Frankfort, KY 40601 (502)564-6716 **FINDS/UNIT: KY8-890-008-982 / 1**

LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS (s)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
8004-4805	8004-4805	8004-4806	8004-4807	8004-4802						
	AKGWA NUMBER ¹ , Facility Well/Spring Number									
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	391	392	393						
	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)	1/15/2015 12:36	1/14/2015 13:40	1/14/2015 14:20						1/8/2015 09:08
	Duplicate ("Y" or "N") ²	N	N	N						N
	Split ("Y" or "N") ³	N	N	N						N
	Facility Sample ID Number (if applicable)	MW391SG2-15	MW392SG2-15	MW393SG2-15						MW394SG2-15
	Laboratory Sample ID Number (if applicable)	365222003	365066001	365066003						364610001
	Date of Analysis (Month/Day/Year) For <u>Volatile Organics Analysis</u>	1/20/2015	1/20/2015	1/20/2015						1/13/2015
	Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	DOWN	DOWN	DOWN						UP
24959-67-9	Bromide	T	mg/L	9056	0.648		0.594	J	0.192	
16887-00-6	Chloride(s)	T	mg/L	9056	50.5		46.3		14.2	B
16984-48-8	Fluoride	T	mg/L	9056	0.137		0.193		0.137	
S0595- -	Nitrate & Nitrite	T	mg/L	9056	1.4		0.579	J	0.0332	
14808-79-8	Sulfate	T	mg/L	9056	12.5		6.92		14.3	
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.23		30.33		30.33	
S0145- -	Specific Conductance	T	µMHO/cm	Field	402		395		415	

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

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

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	8004-4805	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	T D S	Unit OF MEASURE	METHOD	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	322.81		322.72		339.16		318.67	
N238	Dissolved Oxygen	T	mg/L	Field	4.06		1.3		0.75		5.07	
S0266- -	Total Dissolved Solids	T	mg/L	160.1	191		191		220		166	
S0296- -	pH	T	Units	Field	6.22		6.21		6.21		6.06	
NS215	Eh	T	mV	Field	760		762		456		453	
S0907 - -	Temperature	T	°C	Field	11.78		14.22		14.61		12.28	
7429-90-5	Aluminum	T	mg/L	6020	0.0261	J	0.0318	J	0.0424	J	0.133	
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		0.00485	J	<0.005	
7440-39-3	Barium	T	mg/L	6020	0.259		0.21		0.123		0.249	
7440-41-7	Beryllium	T	mg/L	6020	<0.0005		<0.0005		<0.0005		<0.0005	
7440-42-8	Boron	T	mg/L	6020	0.0279		0.0259		0.0228		0.0247	B
7440-43-9	Cadmium	T	mg/L	6020	<0.001		<0.001		<0.001		<0.001	
7440-70-2	Calcium	T	mg/L	6020	27.2		26.5		12.2		27.2	
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		0.00018	J	<0.001		0.00015	J
7440-50-8	Copper	T	mg/L	6020	0.00055	J	0.00055	J*	<0.001	*	0.00047	J
7439-89-6	Iron	T	mg/L	6020	0.179		0.249		2.77		0.772	
7439-92-1	Lead	T	mg/L	6020	<0.002		<0.002		<0.002		<0.002	
7439-95-4	Magnesium	T	mg/L	6020	11.4		9.65		3.42		11.3	
7439-96-5	Manganese	T	mg/L	6020	0.00198	J	0.0709		0.0444		0.0128	
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002		<0.0002		<0.0002	*

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶
7439-98-7	Molybdenum	T	mg/L	6020	<0.0005	BJ	0.00038	BJ	0.00023
7440-02-0	Nickel	T	mg/L	6020	0.00086	J	0.00288	J	0.00487
7440-09-7	Potassium	T	mg/L	6020	1.54		1.72		1.26
7440-16-6	Rhodium	T	mg/L	6020	<0.005		<0.005		<0.005
7782-49-2	Selenium	T	mg/L	6020	<0.005		<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	30.8		32.3		33.8
7440-25-7	Tantalum	T	mg/L	6020	<0.005		<0.005		0.00158
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	J	<0.0002
7440-62-2	Vanadium	T	mg/L	6010	<0.005		<0.005		<0.005
7440-66-6	Zinc	T	mg/L	6020	0.00475	J	0.00388	J	0.00904
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		0.00375
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

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵
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	0.00076	J	0.00063	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	0.0174		0.0182		0.00603

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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8004-4805		8004-4806		8004-4807		8004-4802	
					DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S
	Facility Well/Spring Number				391	392	393	394				
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)											
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<0.005	<0.005	<0.005	<0.005
74-88-4	Iodomethane	T	mg/L	8260	<0.005	<0.005	<0.005	<0.005	<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	<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	<0.001	<0.001	<0.001	<0.001
75-09-2	Dichloromethane	T	mg/L	8260	<0.005	<0.005	<0.005	<0.005	<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	<0.005	<0.005	<0.005	<0.005
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000202	<0.0000203	<0.0000202	<0.0000203	<0.0000202	<0.0000203	<0.0000203	<0.0000203
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<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	<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	<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 FINDS/UNIT: KY8-890-008-982 / 1

Permit Number: 073-00014 & 073-00015 LAB ID: None

For Official Use Only

GROUNDWATER SAMPLE ANALYSIS - (Cont.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8004-4805		8004-4806		8004-4807		8004-4802	
					DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)				391		392		393		394	
	AKGWA NUMBER ¹ , Facility Well/Spring Number											
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	*	5.85	2.62	-0.649			-0.00963	
12587-47-2	Gross Beta	T	pCi/L	9310	*	9.92	0.353	2.3			5.07	
10043-66-0	Iodine-131	T	pCi/L		*							
13982-63-3	Radium-226	T	pCi/L	HASL 300	*	0.512	0.23	0.485			0.332	
10098-97-2	Strontium-90	T	pCi/L	905.0	*	-0.872	1.49	-0.368			0.106	
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC	*	-0.905	3.17	-2.91			17.2	
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC	*	3.72	0.168	-0.181			-1.65	
10028-17-8	Tritium	T	pCi/L	906.0	*	-162	-121	-62.4			-54.4	
S0130- -	Chemical Oxygen Demand	T	mg/L	410.4	J	13.4	13.8	16.3	J		11.7	J
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	J	1.45	1.54	3.41	J		1.47	J
S0586- -	Total Organic Halides	T	mg/L	9020		0.0142	0.027	0.0191			0.0102	

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

LAB ID: None
 For Official Use Only

FINDS/UNIT: KY8-890-008-982 / 1

GROUNDWATER SAMPLE ANALYSIS (s)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	
8004-4801	AKGWA NUMBER ¹ , Facility Well/Spring Number				8004-4803		8004-4817		8004-4817		0000-0000
395	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)				396		397		397		E. BLANK
1	Sample Sequence #				1		1		1		1
	If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (B)quipment				NA		NA		NA		E
	Sample Date and Time (Month/Day/Year hour: minutes)				1/6/2015 10:13		1/8/2015 09:49		1/7/2015 09:41		1/12/2015 08:45
	Duplicate ("Y" or "N") ²				N		N		N		N
	Split ("Y" or "N") ³				N		N		N		N
	Facility Sample ID Number (if applicable)				MW395SG2-15		MW396SG2-15		MW397SG2-15		R11SG2-15
	Laboratory Sample ID Number (if applicable)				364386011		364610003		364506003		364787008
	Date of Analysis (Month/Day/Year) For <u>Volatile Organics Analysis</u>				1/12/2015		1/13/2015		1/13/2015		1/15/2015
	Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)				UP		UP		UP		NA
24959-67-9	Bromide	T	mg/L	9056	0.536		0.762		0.514		*
16887-00-6	Chloride(s)	T	mg/L	9056	43.3		86.3	B	38		*
16984-48-8	Fluoride	T	mg/L	9056	0.106		0.468		0.124		*
S0595- -	Nitrate & Nitrite	T	mg/L	9056	1.78		<1		1.54	*	*
14808-79-8	Sulfate	T	mg/L	9056	10.1		22.3		11.7		*
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	30.37		30.68		30.65		*
S0145- -	Specific Conductance	T	µMH0/cm	Field	376		822		354		*

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

¹AKGWA # is 0000-0000 for any type of blank.
²Respond "Y" if the sample was a duplicate of another sample in this report.
³Respond "Y" if the sample was split and analyzed by separate laboratories.
⁴Chemical 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.
⁷Flags are as designated, do not use any other type. Use "*", then describe on "Written Comments Page."

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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field	319.17		366.26		322.36		*
N238	Dissolved Oxygen	T	mg/L	Field	5.24		1.99		5.53		*
S0266- -	Total Dissolved Solids	T	mg/L	160.1	147		410		159		*
S0296- -	pH	T	Units	Field	5.99		6.46		5.92		*
NS215	Eh	T	mV	Field	586		193		675		*
S0907 - -	Temperature	T	°C	Field	12.78		12.11		10.28		*
7429-90-5	Aluminum	T	mg/L	6020	0.0914		0.114		0.609		<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		0.00325	J	<0.005		<0.005
7440-39-3	Barium	T	mg/L	6020	0.249		0.446		0.146		<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	0.0204		0.00923	BJ	0.00879	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	25.8		39.7		18.6		<0.2
7440-47-3	Chromium	T	mg/L	6020	<0.01		<0.01		0.00275	J	<0.01
7440-48-4	Cobalt	T	mg/L	6020	0.0001	J	0.0045		0.00057	J	<0.001
7440-50-8	Copper	T	mg/L	6020	<0.001		0.00124		0.00093	J	<0.001
7439-89-6	Iron	T	mg/L	6020	0.394		4.87		1.8		<0.1
7439-92-1	Lead	T	mg/L	6020	<0.002		<0.002		0.00057	J	<0.002
7439-95-4	Magnesium	T	mg/L	6020	9.96		17.9		7.64		<0.03
7439-96-5	Manganese	T	mg/L	6020	0.00506		0.598		0.0273		<0.005
7439-97-6	Mercury	T	mg/L	7470	<0.0002		<0.0002	*	<0.0002		<0.0002

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	
7439-98-7	Molybdenum	T	mg/L	6020	0.0002	J	0.00072	J	0.00017	J	<0.0005
7440-02-0	Nickel	T	mg/L	6020	0.00149	J	0.00225	J	0.00194	J	<0.002
7440-09-7	Potassium	T	mg/L	6020	1.46		0.808		1.57		<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	25.8		106		30.3		<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		0.00016	J	<0.0002		<0.0002
7440-62-2	Vanadium	T	mg/L	6010	<0.005		<0.005		0.00166	J	<0.005
7440-66-6	Zinc	T	mg/L	6020	<0.01		0.00492	BJ	0.0136		<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		0.00407	BJ	0.00381	BJ	0.00525
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: USDOE - 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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵
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		0.00083 J
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	0.00399		<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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8004-4801		8004-4803		8004-4817		0000-0000	
					DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S
	Facility Well/Spring Number				395	396	397					E. BLANK
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)											
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<0.005	<0.005	<0.005	<0.005
74-88-4	Iodomethane	T	mg/L	8260	<0.005	<0.005	<0.005	<0.005	<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	<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	<0.001	<0.001	<0.001	<0.001
75-09-2	Dichloromethane	T	mg/L	8260	<0.005	<0.005	<0.005	<0.005	<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	<0.005	<0.005	<0.005	<0.005
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000202	<0.00002	<0.0000204	<0.00002	<0.0000204	<0.0000204	<0.0000199	<0.0000199
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001	<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	<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	<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	<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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	8004-4801		8004-4803		8004-4817		0000-0000
					DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)				395		396		397		E. BLANK
	AKGWA NUMBER ¹ , Facility Well/Spring Number										
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	3.35	*	7.83	*	3.82	*	-0.514
12587-47-2	Gross Beta	T	pCi/L	9310	5.98	*	-0.133	*	16.3	*	0.686
10043-66-0	Iodine-131	T	pCi/L			*		*		*	
13982-63-3	Radium-226	T	pCi/L	HASL 300	0.566	*	0.585	*	0.45	*	0.667
10098-97-2	Strontium-90	T	pCi/L	905.0	1.33	*	0.192	*	-0.438	*	0.615
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC	17	*	11.2	*	4.58	*	3.99
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC	3.76	*	2.03	*	3.59	*	1.45
10028-17-8	Tritium	T	pCi/L	906.0	74.1	*	-81.6	*	166	*	-94.9
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		0.8		<0.5		
S0268- -	Total Organic Carbon	T	mg/L	9060	1.21	J	7.12		1.25	J	
S0586- -	Total Organic Halides	T	mg/L	9020	0.00736	J	0.0436		0.00634	J	

Division of Waste Management **RESIDENTIAL/INERT-QUARTERLY**
Solid Waste Branch **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road **Permit Number: 073-00014 & 073-00015**
Frankfort, KY 40601 (502)564-6716 **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	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 (B)quipment	F	T	T	T				
Sample Date and Time (Month/Day/Year hour: minutes)	1/12/2015 10:00	1/5/2015 08:15	1/6/2015 07:15	1/6/2015 07:15				
Duplicate ("Y" or "N") ²	N	N	N	N				
Split ("Y" or "N") ³	N	N	N	N				
Facility Sample ID Number (if applicable)	FB1SG2-15	TB1SG2-15	TB2SG2-15	TB3SG2-15				
Laboratory Sample ID Number (if applicable)	364787007	364301005	364386013	364386014				
Date of Analysis (Month/Day/Year) For <u>Volatile Organics Analysis</u>	1/15/2015	1/8/2015	1/12/2015	1/12/2015				
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)	NA	NA	NA	NA				
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S
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		*		*

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

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

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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	0000-0000		0000-0000		0000-0000	
					F. BLANK	T. BLANK 1	T. BLANK 2	T. BLANK 3		
					DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S
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	*	<0.05	*	<0.05	*
7440-36-0	Antimony	T	mg/L	6020	<0.003	*	<0.003	*	<0.003	*
7440-38-2	Arsenic	T	mg/L	6020	<0.005	*	<0.005	*	<0.005	*
7440-39-3	Barium	T	mg/L	6020	<0.002	*	<0.002	*	<0.002	*
7440-41-7	Beryllium	T	mg/L	6020	<0.0005	*	<0.0005	*	<0.0005	*
7440-42-8	Boron	T	mg/L	6020	<0.015	*	<0.015	*	<0.015	*
7440-43-9	Cadmium	T	mg/L	6020	<0.001	*	<0.001	*	<0.001	*
7440-70-2	Calcium	T	mg/L	6020	<0.2	*	<0.2	*	<0.2	*
7440-47-3	Chromium	T	mg/L	6020	<0.01	*	<0.01	*	<0.01	*
7440-48-4	Cobalt	T	mg/L	6020	<0.001	*	<0.001	*	<0.001	*
7440-50-8	Copper	T	mg/L	6020	<0.001	*	<0.001	*	<0.001	*
7439-89-6	Iron	T	mg/L	6020	<0.1	*	<0.1	*	<0.1	*
7439-92-1	Lead	T	mg/L	6020	<0.002	*	<0.002	*	<0.002	*
7439-95-4	Magnesium	T	mg/L	6020	<0.03	*	<0.03	*	<0.03	*
7439-96-5	Manganese	T	mg/L	6020	<0.005	*	<0.005	*	<0.005	*
7439-97-6	Mercury	T	mg/L	7470	<0.0002	*	<0.0002	*	<0.0002	*

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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		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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶
7439-98-7	Molybdenum	T	mg/L	6020	<0.0005	*	<0.0005	*	<0.0005
7440-02-0	Nickel	T	mg/L	6020	<0.002	*	<0.002	*	<0.002
7440-09-7	Potassium	T	mg/L	6020	<0.3	*	<0.3	*	<0.3
7440-16-6	Rhodium	T	mg/L	6020	<0.005	*	<0.005	*	<0.005
7782-49-2	Selenium	T	mg/L	6020	<0.005	*	<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	<0.25	*	<0.25	*	<0.25
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	*	<0.0002
7440-62-2	Vanadium	T	mg/L	6010	<0.005	*	<0.005	*	<0.005
7440-66-6	Zinc	T	mg/L	6020	<0.01	*	<0.01	*	<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	0.00517	B	0.00178	J	<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

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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		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	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵
75-27-4	Bromodichloromethane	T	mg/L	8260	0.00071	J	<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	0.00087	J	<0.001		0.00125
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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	0000-0000		0000-0000		0000-0000		0000-0000	
					DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S
					F. BLANK	T. BLANK 1	T. BLANK 2	T. BLANK 3				
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001	<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				<0.005
74-88-4	Iodomethane	T	mg/L	8260	<0.005	<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				<0.001
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001	<0.001	<0.001	<0.001				<0.001
75-09-2	Dichloromethane	T	mg/L	8260	<0.005	<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				<0.005
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000202	<0.0000204	<0.0000203	<0.0000203				<0.0000203
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001	<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				<0.001
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001	<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				<0.001
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001	<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				<0.001
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001	<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				<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	ID ⁵	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	
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	1.02	*		*		*		*	
12587-47-2	Gross Beta	T	pCi/L	9310	-0.488	*		*		*		*	
10043-66-0	Iodine-131	T	pCi/L			*		*		*		*	
13982-63-3	Radium-226	T	pCi/L	HASL 300	0.34	*		*		*		*	
10098-97-2	Strontium-90	T	pCi/L	905.0	-0.614	*		*		*		*	
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC	-5.83	*		*		*		*	
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC	0.456	*		*		*		*	
10028-17-8	Tritium	T	pCi/L	906.0	-184	*		*		*		*	
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 **RESIDENTIAL/INERT-QUARTERLY**
Solid Waste Branch **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road **Permit Number: 073-00014 & 073-00015**
Frankfort, KY 40601 (502)564-6716 **FINDS/UNIT: KY8-890-008-982 / 1**

LAB ID: None
For Official Use Only

GROUNDWATER SAMPLE ANALYSIS (s)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
	AKGWA NUMBER ¹ , Facility Well/Spring Number				0000-0000	0000-0000	0000-0000	0000-0000	0000-0000	0000-0000
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)				T. BLANK 4	T. BLANK 5	T. BLANK 6	T. BLANK 7		
	Sample Sequence #				1	1	1	1	1	1
	If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (B)quipment				T	T	T	T	T	T
	Sample Date and Time (Month/Day/Year hour: minutes)				1/7/2015 07:30	1/8/2015 08:00	1/12/2015 08:40	1/15/2015 07:30		
	Duplicate ("Y" or "N") ²				N	N	N	N	N	N
	Split ("Y" or "N") ³				N	N	N	N	N	N
	Facility Sample ID Number (if applicable)				TB4SG2-15	TB5SG2-15	TB6SG2-15	TB7SG2-15		
	Laboratory Sample ID Number (if applicable)				364506005	364610005	364787009	365222005		
	Date of Analysis (Month/Day/Year) For <u>Volatile Organics</u> Analysis				1/13/2015	1/13/2015	1/15/2015	1/20/2015		
	Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)				NA	NA	NA	NA	NA	NA
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	*	*	*	*	*	*

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

¹AKGWA # is 0000-0000 for any type of blank.
²Respond "Y" if the sample was a duplicate of another sample in this report.
³Respond "Y" if the sample was split and analyzed by separate laboratories.
⁴Chemical 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.
⁷Flags are as designated, do not use any other type. Use "*", then describe on "Written Comments Page."

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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	0000-0000			0000-0000			0000-0000		
					DETECTED VALUE OR PQL ⁶	FLA G S	F L A G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S		
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	*	*	*	*	*	*	*	*	
7440-36-0	Antimony	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-38-2	Arsenic	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-39-3	Barium	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-41-7	Beryllium	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-42-8	Boron	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-43-9	Cadmium	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-70-2	Calcium	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-47-3	Chromium	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-48-4	Cobalt	T	mg/L	6020	*	*	*	*	*	*	*	*	
7440-50-8	Copper	T	mg/L	6020	*	*	*	*	*	*	*	*	
7439-89-6	Iron	T	mg/L	6020	*	*	*	*	*	*	*	*	
7439-92-1	Lead	T	mg/L	6020	*	*	*	*	*	*	*	*	
7439-95-4	Magnesium	T	mg/L	6020	*	*	*	*	*	*	*	*	
7439-96-5	Manganese	T	mg/L	6020	*	*	*	*	*	*	*	*	
7439-97-6	Mercury	T	mg/L	7470	*	*	*	*	*	*	*	*	

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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			0000-0000			0000-0000		
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)		T. BLANK 4			T. BLANK 5			T. BLANK 6			T. BLANK 7		
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	
7439-98-7	Molybdenum	T	mg/L	6020		*		*		*		*	
7440-02-0	Nickel	T	mg/L	6020		*		*		*		*	
7440-09-7	Potassium	T	mg/L	6020		*		*		*		*	
7440-16-6	Rhodium	T	mg/L	6020		*		*		*		*	
7782-49-2	Selenium	T	mg/L	6020		*		*		*		*	
7440-22-4	Silver	T	mg/L	6020		*		*		*		*	
7440-23-5	Sodium	T	mg/L	6020		*		*		*		*	
7440-25-7	Tantalum	T	mg/L	6020		*		*		*		*	
7440-28-0	Thallium	T	mg/L	6020		*		*		*		*	
7440-61-1	Uranium	T	mg/L	6020		*		*		*		*	
7440-62-2	Vanadium	T	mg/L	6010		*		*		*		*	
7440-66-6	Zinc	T	mg/L	6020		*		*		*		*	
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	0.0038	BJ	0.00435	BJ	0.00496	BJ	<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: USDOE - 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		0000-0000		0000-0000	
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)		T. BLANK 4		T. BLANK 5		T. BLANK 6		T. BLANK 7	
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵
75-27-4	Bromodichloromethane	T	mg/L	8260	0.00073	J	0.00072	J	<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	0.00105	J	0.00099	J	0.0011
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.)

CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	0000-0000			0000-0000			0000-0000					
					DETECTED VALUE OR PQL ⁵	F L A G S	T. BLANK 4	DETECTED VALUE OR PQL ⁵	F L A G S	T. BLANK 5	DETECTED VALUE OR PQL ⁵	F L A G S	T. BLANK 6	DETECTED VALUE OR PQL ⁵	F L A G S	T. BLANK 7
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001		<0.001		<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		<0.005		<0.005	
74-88-4	Iodomethane	T	mg/L	8260	<0.005		<0.005		<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		<0.001		<0.001	
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001		<0.001		<0.001	
75-09-2	Dichloromethane	T	mg/L	8260	<0.005		<0.005		<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		<0.005		<0.005	
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000203		<0.0000203		<0.0000203		<0.0000203		<0.0000203		<0.0000203	
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<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		<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		<0.001		<0.001	
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001		<0.001		<0.001		<0.001		<0.001	
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001		<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		<0.001		<0.001	
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001		<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		<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		0000-0000		
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)		T. BLANK 4		T. BLANK 5		T. BLANK 6		T. BLANK 7		T. BLANK 7		
CAS RN ⁴	CONSTITUENT	ID ⁵	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S
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		*		*		*		*
12587-47-2	Gross Beta	T	pCi/L	9310		*		*		*		*
10043-66-0	Iodine-131	T	pCi/L			*		*		*		*
13982-63-3	Radium-226	T	pCi/L	HASL 300		*		*		*		*
10098-97-2	Strontium-90	T	pCi/L	905.0		*		*		*		*
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC		*		*		*		*
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC		*		*		*		*
10028-17-8	Tritium	T	pCi/L	906.0		*		*		*		*
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 **RESIDENTIAL/INERT-QUARTERLY**
Solid Waste Branch **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road **Permit Number: 073-00014 & 073-00015**
Frankfort, KY 40601 (502)564-6716 **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	8004-4805										
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)	T. BLANK 8	391										
Sample Sequence #	1	2										
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (B)quipment												
Sample Date and Time (Month/Day/Year hour: minutes)	1/14/2015 12:25	1/15/2015 12:36										
Duplicate ("Y" or "N") ²												
Split ("Y" or "N") ³												
Facility Sample ID Number (if applicable)	TB8SG2-15	MW391DSG2-15										
Laboratory Sample ID Number (if applicable)	365066005	365222001										
Date of Analysis (Month/Day/Year) For <u>Volatile Organics Analysis</u>	1/20/2015	1/20/2015										
Gradient with respect to Monitored Unit (UP, DOWN, SIDE, UNKNOWN)												
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S ⁷	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S		
24959-67-9	Bromide	T	mg/L	9056	*		0.643					
16887-00-6	Chloride(s)	T	mg/L	9056	*		50.2					
16984-48-8	Fluoride	T	mg/L	9056	*		0.138					
S0595- -	Nitrate & Nitrite	T	mg/L	9056	*		1.38					
14808-79-8	Sulfate	T	mg/L	9056	*		12.3					
NS1894	Barometric Pressure Reading	T	Inches/Hg	Field	*		30.23					
S0145- -	Specific Conductance	T	µMH0/cm	Field	*		402					

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

¹AKGWA # is 0000-0000 for any type of blank.
²Respond "Y" if the sample was a duplicate of another sample in this report.
³Respond "Y" if the sample was split and analyzed by separate laboratories.
⁴Chemical 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.
⁷Flags are as designated, do not use any other type. Use "*", then describe on "Written Comments Page."

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	8004-4805								
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, BLANK-F, etc.)	T. BLANK 8	391								
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
S0906 - -	Static Water Level Elevation	T	Ft. MSL	Field		*	322.81			
N238	Dissolved Oxygen	T	mg/L	Field		*	4.06			
S0266- -	Total Dissolved Solids	T	mg/L	160.1		*	209			
S0296- -	pH	T	Units	Field		*	6.22			
NS215	Eh	T	mV	Field		*	760			
S0907 - -	Temperature	T	°C	Field		*	11.78			
7429-90-5	Aluminum	T	mg/L	6020		*	0.0208	J		
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		*	0.261			
7440-41-7	Beryllium	T	mg/L	6020		*	<0.0005			
7440-42-8	Boron	T	mg/L	6020		*	0.025			
7440-43-9	Cadmium	T	mg/L	6020		*	<0.001			
7440-70-2	Calcium	T	mg/L	6020		*	26.9			
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		*	0.00053	J		
7439-89-6	Iron	T	mg/L	6020		*	0.146			
7439-92-1	Lead	T	mg/L	6020		*	<0.002			
7439-95-4	Magnesium	T	mg/L	6020		*	11			
7439-96-5	Manganese	T	mg/L	6020		*	0.00145	J		
7439-97-6	Mercury	T	mg/L	7470		*	<0.0002			

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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		8004-4805						
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)		T. BLANK 8		391						
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S	DETECTED VALUE OR PQL ⁶	F L A G S
7439-98-7	Molybdenum	T	mg/L	6020		*	<0.0005		<0.0005	
7440-02-0	Nickel	T	mg/L	6020		*	0.00062	J	0.00062	J
7440-09-7	Potassium	T	mg/L	6020		*	1.49		1.49	
7440-16-6	Rhodium	T	mg/L	6020		*	<0.005		<0.005	
7782-49-2	Selenium	T	mg/L	6020		*	<0.005		<0.005	
7440-22-4	Silver	T	mg/L	6020		*	<0.001		<0.001	
7440-23-5	Sodium	T	mg/L	6020		*	30.5		30.5	
7440-25-7	Tantalum	T	mg/L	6020		*	<0.005		<0.005	
7440-28-0	Thallium	T	mg/L	6020		*	<0.002		<0.002	
7440-61-1	Uranium	T	mg/L	6020		*	0.000091	J	0.000091	J
7440-62-2	Vanadium	T	mg/L	6010		*	<0.005		<0.005	
7440-66-6	Zinc	T	mg/L	6020		*	0.00434	J	0.00434	J
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	

RESIDENTIAL/INERT-QUARTERLY

Facility: USDOE - 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		8004-4805						
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)		T. BLANK 8		391						
CAS RN ⁴	CONSTITUENT	T D S	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S
75-27-4	Bromodichloromethane	T	mg/L	8260	<0.001		<0.001			
75-25-2	Tribromomethane	T	mg/L	8260	<0.001		<0.001			
74-83-9	Methyl bromide	T	mg/L	8260	<0.001		<0.001			
78-93-3	Methyl ethyl ketone	T	mg/L	8260	<0.005		<0.005			
110-57-6	trans-1,4-Dichloro-2-butene	T	mg/L	8260	<0.005		<0.005			
75-15-0	Carbon disulfide	T	mg/L	8260	<0.005		<0.005			
75-00-3	Chloroethane	T	mg/L	8260	<0.001		<0.001			
67-66-3	Chloroform	T	mg/L	8260	0.00108		<0.001			
74-87-3	Methyl chloride	T	mg/L	8260	<0.001		<0.001			
156-59-2	cis-1,2-Dichloroethene	T	mg/L	8260	<0.001	J	0.00077			
74-95-3	Methylene bromide	T	mg/L	8260	<0.001		<0.001			
75-34-3	1,1-Dichloroethane	T	mg/L	8260	<0.001		<0.001			
107-06-2	1,2-Dichloroethane	T	mg/L	8260	<0.001		<0.001			
75-35-4	1,1-Dichloroethylene	T	mg/L	8260	<0.001		<0.001			
106-93-4	Ethane, 1,2-dibromo	T	mg/L	8260	<0.001		<0.001			
79-34-5	Ethane, 1,1,2,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001			
71-55-6	Ethane, 1,1,1-Trichloro-	T	mg/L	8260	<0.001		<0.001			
79-00-5	Ethane, 1,1,2-Trichloro	T	mg/L	8260	<0.001		<0.001			
630-20-6	Ethane, 1,1,1,2-Tetrachloro	T	mg/L	8260	<0.001		<0.001			
75-01-4	Vinyl chloride	T	mg/L	8260	<0.001		<0.001			
127-18-4	Ethene, Tetrachloro-	T	mg/L	8260	<0.001		<0.001			
79-01-6	Ethene, Trichloro-	T	mg/L	8260	<0.001		0.0183			

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.)

CAS RN ⁴	CONSTITUENT	T I D S	Unit OF MEASURE	METHOD	0000-0000		8004-4805	
					DETECTED VALUE OR PQL ⁵	F L A G S	DETECTED VALUE OR PQL ⁵	F L A G S
	Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)				T. BLANK 8		391	
	AKGWA NUMBER ¹ , Facility Well/Spring Number				0000-0000		8004-4805	
100-41-4	Ethylbenzene	T	mg/L	8260	<0.001		<0.001	
591-78-6	2-Hexanone	T	mg/L	8260	<0.005		<0.005	
74-88-4	Iodomethane	T	mg/L	8260	<0.005		<0.005	
124-48-1	Methane, Dibromochloro-	T	mg/L	8260	<0.001		<0.001	
56-23-5	Carbon Tetrachloride	T	mg/L	8260	<0.001		<0.001	
75-09-2	Dichloromethane	T	mg/L	8260	<0.005		<0.005	
108-10-1	Methyl isobutyl ketone	T	mg/L	8260	<0.005		<0.005	
96-12-8	Propane, 1,2-Dibromo-3-chloro	T	mg/L	8011	<0.0000201		<0.0000199	
78-87-5	Propane, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001	
10061-02-6	trans-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001	
10061-01-5	cis-1,3-Dichloro-1-propene	T	mg/L	8260	<0.001		<0.001	
156-60-5	trans-1,2-Dichloroethene	T	mg/L	8260	<0.001		<0.001	
75-69-4	Trichlorofluoromethane	T	mg/L	8260	<0.001		<0.001	
96-18-4	1,2,3-Trichloropropane	T	mg/L	8260	<0.001		<0.001	
95-50-1	Benzene, 1,2-Dichloro-	T	mg/L	8260	<0.001		<0.001	
106-46-7	Benzene, 1,4-Dichloro-	T	mg/L	8260	<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		8004-4805						
Facility's Local Well or Spring Number (e.g., MW-1, MW-2, etc.)		T. BLANK 8		391						
CAS RN ⁴	CONSTITUENT	ID ⁵	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S	DETECTED VALUE OR PQL ⁶	FLA G S
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		*	-0.0128	*		
12587-47-2	Gross Beta	T	pCi/L	9310		*	1.63	*		
10043-66-0	Iodine-131	T	pCi/L			*		*		
13982-63-3	Radium-226	T	pCi/L	HASL 300		*	0.441	*		
10098-97-2	Strontium-90	T	pCi/L	905.0		*	-0.537	*		
14133-76-7	Technetium-99	T	pCi/L	Tc-02-RC		*	-0.684	*		
14269-63-7	Thorium-230	T	pCi/L	Th-01-RC		*	-0.154	*		
10028-17-8	Tritium	T	pCi/L	906.0		*	-17.9	*		
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		*	1.44	J		
S0586- -	Total Organic Halides	T	mg/L	9020		*	0.0124	*		

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	MW220SG2-15		
		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 6.52. Rad error is 6.47.
		Gross beta		TPU is 10.8. Rad error is 10.2.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.695. Rad error is 0.692.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.89. Rad error is 1.87.
		Technetium-99		TPU is 14.5. Rad error is 14.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 5.26. Rad error is 5.08.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 149. Rad error is 148.

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

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GROUNDWATER WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8000-5202 MW221	MW221SG2-15	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 3.29. Rad error is 3.29.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.8. Rad error is 6.72.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.472. Rad error is 0.468.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.75. Rad error is 1.74.
		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 3.35. Rad error is 3.27.
Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 153. Rad error is 152.		

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	MW222SG2-15	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 3.65. Rad error is 3.65.
		Gross beta		TPU is 11. Rad error is 9.61.
		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 0.395.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.03. Rad error is 2.03.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 12.4. Rad error is 12.3.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.71. Rad error is 2.69.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 157. Rad error is 153.

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
8000-5243 MW223	MW223SG2-15	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 4.43. Rad error is 4.43.
		Gross beta		TPU is 10.3. Rad error is 9.36.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.46. Rad error is 0.459.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.34. Rad error is 2.34.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 12. Rad error is 11.8.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.25. Rad error is 3.22.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 146. Rad error is 146.

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

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GROUNDWATER WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8000-5244 MW224	MW224SG2-15	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 5.06. Rad error is 5.06.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 8.43. Rad error is 8.28.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.413. Rad error is 0.413.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.22. Rad error is 2.22.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11. Rad error is 10.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.15. Rad error is 3.11.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 146. Rad error is 146.
		8004-4820 MW369	MW369UG2-15	Gross alpha
Gross beta				TPU is 11.8. Rad error is 10.4.
Iodine-131				Analysis of constituent not required and not performed.
Radium-226	U			Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.572. Rad error is 0.564.
Strontium-90	U			Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.92. Rad error is 1.89.
Technetium-99				TPU is 14.2. Rad error is 13.3.
Thorium-230	U			Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.66. Rad error is 1.65.
Tritium	U			Indicates analyte/nuclide was analyzed for, but not detected. TPU is 153. Rad error is 153.

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

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GROUNDWATER WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4818 MW370	MW370UG2-15	Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.95. Rad error is 3.95. TPU is 8.4. Rad error is 7.96.
		Gross beta		
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226		TPU is 0.511. Rad error is 0.5.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.56. Rad error is 1.56.
		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 0.289. Rad error is 0.282.
8004-4808 MW372	MW372UG2-15	Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 158. Rad error is 158.
		Tantalum	N	Sample spike recovery not within control limits.
		Zinc	*	Duplicate analysis not within control limits.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.11. Rad error is 7.02. TPU is 23.9. Rad error is 14.9.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.349. Rad error is 0.348.
8004-4792 MW373	MW373UG2-15	Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.86. Rad error is 1.83.
		Technetium-99		TPU is 25.1. Rad error is 15.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.224. Rad error is 0.223.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 152. Rad error is 152.
		Tantalum	N	Sample spike recovery not within control limits.
		Zinc	*	Duplicate analysis not within control limits.
		Gross alpha	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 8.66. Rad error is 8.52. TPU is 8.9. Rad error is 8.59.
		Gross beta		Analysis of constituent not required and not performed.
		Iodine-131		
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.318. Rad error is 0.317.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.93. Rad error is 1.93.
		Technetium-99		TPU is 11.7. Rad error is 11.2.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.76. Rad error is 1.72.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 144. Rad error is 144.

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
8004-4809 MW384	MW384SG2-15	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 6.37. Rad error is 6.34.
		Gross beta		TPU is 27.2. Rad error is 15.3.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.536. Rad error is 0.535.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.84. Rad error is 1.83.
		Technetium-99		TPU is 26.7. Rad error is 16.3.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.9. Rad error is 3.84.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 160. Rad error is 156.

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

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GROUNDWATER WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4810 MW385	MW385SG2-15	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 6.62. Rad error is 6.6.
		Gross beta		TPU is 21.3. Rad error is 13.9.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.451. Rad error is 0.449.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.9. Rad error is 2.9.
		Technetium-99		TPU is 21.2. Rad error is 15.2.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.01. Rad error is 3.9.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 159. Rad error is 156.

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

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GROUNDWATER WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4804 MW386	MW386SG2-15	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 4.48. Rad error is 4.47.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.55. Rad error is 6.55.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.478. Rad error is 0.474.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.98. Rad error is 1.98.
		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 5.52. Rad error is 5.34.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 144. Rad error is 144.

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

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GROUNDWATER WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4815 MW387	MW387SG2-15	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 2.84. Rad error is 2.84.
		Gross beta		TPU is 26.4. Rad error is 6.67.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.434. Rad error is 0.431.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.49. Rad error is 1.49.
		Technetium-99		TPU is 28.5. Rad error is 16.3.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.5. Rad error is 1.49.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 142. Rad error is 142.

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
8004-4816 MW388	MW388SG2-15	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 3.24. Rad error is 3.23.
		Gross beta		TPU is 11.4. Rad error is 4.79.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.727. Rad error is 0.717.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.01. Rad error is 2.01.
		Technetium-99		TPU is 17.8. Rad error is 14.6.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.84. Rad error is 1.83.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 147. Rad error is 147.

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
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.

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

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GROUNDWATER WRITTEN COMMENTS

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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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
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.	

RESIDENTIAL/INERT – QUARTERLY

Finds/Unit: KY8-890-008-982 / 1

Facility: US DOE - Paducah Gaseous Diffusion Plant

LAB ID: None

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GROUNDWATER WRITTEN COMMENTS

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		During sampling, the well was dry; therefore, no sample was collected.
		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.

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

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GROUNDWATER WRITTEN COMMENTS

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 MW390SG2-15		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 3.79. Rad error is 3.79.
		Gross beta		TPU is 7.9. Rad error is 4.73.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.544. Rad error is 0.544.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.51. Rad error is 2.45.
Technetium-99		TPU is 14.5. Rad error is 13.2.		
Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.12. Rad error is 2.1.		
Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 145. Rad error is 145.		

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

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GROUNDWATER WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4805 MW391	MW391SG2-15	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		TPU is 2.52. Rad error is 2.33.
		Gross beta		TPU is 4.16. Rad error is 3.83.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.474. Rad error is 0.469.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.54. Rad error is 1.54.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.9. Rad error is 11.9.
Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.22. Rad error is 3.09.		
Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 139. Rad error is 139.		

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

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Monitoring Point	Facility Sample ID	Constituent	Flag	Description
8004-4806 MW392	MW392SG2-15	Copper	*	Duplicate analysis 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 2.54. Rad error is 2.5.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.66. Rad error is 3.66.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.374. Rad error is 0.373.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.76. Rad error is 1.74.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.9. Rad error is 10.9.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.299. Rad error is 0.296.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 140. Rad error is 140.

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	
8004-4807 MW393	MW393SG2-15	Copper	*	Duplicate analysis 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 2.57. Rad error is 2.57.
		Gross beta		U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.19. Rad error is 4.17.
		Iodine-131			Analysis of constituent not required and not performed.
		Radium-226		U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.451. Rad error is 0.445.
		Strontium-90		U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.35. Rad error is 1.35.
		Technetium-99		U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 10.8. Rad error is 10.8.
		Thorium-230		U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.264. Rad error is 0.264.
Tritium		U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 145. Rad error is 145.		

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
8004-4802 MW394	MW394SG2-15	Mercury	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 2.77. Rad error is 2.77.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3.76. Rad error is 3.66.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.382. Rad error is 0.379.
		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 11.8. Rad error is 11.6.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.86. Rad error is 1.85.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 144. Rad error is 144.

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
8004-4801 MW395	MW395SG2-15	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 5.68. Rad error is 5.66.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 7.08. Rad error is 7.01.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.541. Rad error is 0.534.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.73. Rad error is 1.72.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 11.9. Rad error is 11.7.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.5. Rad error is 4.4.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 149. Rad error is 148.

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
8004-4803 MW396	MW396SG2-15	Mercury	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 7.48. Rad error is 7.36.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.66. Rad error is 4.66.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.513. Rad error is 0.506.
		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 11.3. Rad error is 11.2.
		Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.97. Rad error is 4.93.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 146. Rad error is 146.

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
8004-4817 MW397	MW397SG2-15	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 4.75. Rad error is 4.71.
		Gross beta		TPU is 7.99. Rad error is 7.53.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.497. Rad error is 0.493.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.16. Rad error is 1.16.
		Technetium-99	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 12.1. Rad error is 12.1.
Thorium-230	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.07. Rad error is 3.98.		
Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 160. Rad error is 156.		

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	RI1SG2-15	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 1.83. Rad error is 1.83.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 2.99. Rad error is 2.99.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.844. Rad error is 0.837.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.63. Rad error is 1.63.
		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 1.73. Rad error is 1.7.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 145. Rad error is 145.
		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	FB1SG2-15	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 1.71. Rad error is 1.7.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 3. Rad error is 3.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.416. Rad error is 0.414.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.46. Rad error is 1.46.
		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 1.34. Rad error is 1.33.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 136. Rad error is 136.
		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	TB1SG2-15	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	TB1SG2-15	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	TB2SG2-15	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	TB2SG2-15	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	TB3SG2-15	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	TB3SG2-15	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	TB4SG2-15	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	TB4SG2-15	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	TB5SG2-15	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	TB5SG2-15	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	TB6SG2-15	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	TB6SG2-15	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	TB7SG2-15	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	TB7SG2-15	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	TB8SG2-15	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	TB8SG2-15	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
8004-4805 MW391	MW391DSG2-15	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 2.48. Rad error is 2.48.
		Gross beta	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.62. Rad error is 4.61.
		Iodine-131		Analysis of constituent not required and not performed.
		Radium-226	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 0.463. Rad error is 0.458.
		Strontium-90	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 1.53. Rad error is 1.53.
		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 0.185. Rad error is 0.185.
		Tritium	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 148. Rad error is 148.

APPENDIX D
STATISTICAL ANALYSES AND
QUALIFICATION STATEMENT

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Residential/Inert – QUARTERLY, 1st Quarter 2015
Facility: U.S. DOE – Paducah Gaseous Diffusion Plant
Permit Number: SW7300014, SW7300015, SW7300043

Finds/Unit: _____
Lab ID: None
For Official Use Only

GROUNDWATER STATISTICAL COMMENTS

Introduction

The statistical analyses conducted on the first quarter 2015 groundwater data collected from the C-746-S&T Landfill 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 first quarter 2015 data used to conduct the statistical analyses were collected in January 2015. The statistical analyses for this report first 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. Then a second set of statistical analyses were run, using the last eight quarters, on analytes that 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

For chemicals of concern that have Kentucky maximum contaminant levels (MCLs) and the results that do not exceed their respective MCL, no exceedance is reported. 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 was conducted for pH. The test well results were 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 was 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, was conducted. The second one-sided tolerance interval statistical test was 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 was 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) was calculated for the background data (first using the first eight quarters, then using the last eight quarters).
 - For each parameter, the background data were used to establish a baseline. On this data set, the mean (X) and the standard deviation (S) were computed.
 - The data set was 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 was 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 was calculated using the following equation:
$$TL = X + (K \times S)$$
2. Each observation from downgradient wells was 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 TL (upper and lower) were calculated with an adjusted K factor using the following equations:

$$\text{upper TL} = X + (K \times S)$$

$$\text{lower TL} = X - (K \times S)$$

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, first 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
Cyanide
Dissolved Oxygen
Dissolved Solids
Iodide
Iron
Magnesium
Manganese
Molybdenum
Nickel
Oxidation-Reduction Potential
pH
Potassium
Radium-226
Sodium
Sulfate
Tantalum
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.

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

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Dibromomethane	4	4	0	No
Dimethylbenzene, Total	4	4	0	No
Dissolved Oxygen	4	0	4	Yes
Dissolved Solids	4	0	4	Yes
Ethylbenzene	4	4	0	No
Iodide	4	3	1	Yes
Iodomethane	4	4	0	No
Iron	4	0	4	Yes
Magnesium	4	0	4	Yes
Manganese	4	0	4	Yes
Methylene chloride	4	4	0	No
Molybdenum	4	3	1	Yes
Nickel	4	0	4	Yes
Oxidation-Reduction Potential	4	0	4	Yes
pH	4	0	4	Yes
Potassium	4	0	4	Yes
Radium-226	4	4	0	No
Rhodium	4	4	0	No
Sodium	4	0	4	Yes
Styrene	4	4	0	No
Sulfate	4	0	4	Yes
Tantalum	4	4	0	No
Technetium-99	4	3	1	Yes
Tetrachloroethene	4	4	0	No
Thallium	4	4	0	No
Thorium-230	4	4	0	No
Toluene	4	4	0	No
Total Organic Carbon	4	0	4	Yes
Total Organic Halides	4	0	4	Yes
trans-1,2-Dichloroethene	4	4	0	No
trans-1,3-Dichloropropene	4	4	0	No
trans-1,4-Dichloro-2-Butene	4	4	0	No
Trichlorofluoromethane	4	4	0	No
Uranium	4	2	2	Yes
Vanadium	4	3	1	Yes
Vinyl Acetate	4	4	0	No
Zinc	4	2	2	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	0	No
1,1,2,2-Tetrachloroethane	11	11	0	No
1,1,2-Trichloroethane	11	11	0	No
1,1-Dichloroethane	11	11	0	No
1,2,3-Trichloropropane	11	11	0	No
1,2-Dibromo-3-chloropropane	11	11	0	No
1,2-Dibromoethane	11	11	0	No
1,2-Dichlorobenzene	11	11	0	No
1,2-Dichloropropane	11	11	0	No
2-Butanone	11	11	0	No
2-Hexanone	11	11	0	No
4-Methyl-2-pentanone	11	11	0	No
Acetone	11	11	0	No
Acrolein	11	11	0	No
Acrylonitrile	11	11	0	No
Aluminum	11	2	9	Yes
Antimony	11	11	0	No
Beryllium	11	11	0	No
Beta Activity	11	3	8	Yes
Boron	11	0	11	Yes
Bromide	11	0	11	Yes
Bromochloromethane	11	11	0	No
Bromodichloromethane	11	11	0	No
Bromoform	11	11	0	No
Bromomethane	11	11	0	No
Calcium	11	0	11	Yes
Carbon Disulfide	11	11	0	No
Chemical Oxygen Demand	11	6	5	Yes
Chloride	11	0	11	Yes
Chlorobenzene	11	11	0	No
Chloroethane	11	11	0	No
Chloroform	11	11	0	No
Chloromethane	11	11	0	No
cis-1,2-Dichloroethene	11	9	2	Yes
cis-1,3-Dichloropropene	11	11	0	No
Cobalt	11	1	10	Yes
Conductivity	11	0	11	Yes
Copper	11	2	9	Yes
Cyanide	11	10	1	Yes

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Dibromochloromethane	11	11	0	No
Dibromomethane	11	11	0	No
Dimethylbenzene, Total	11	11	0	No
Dissolved Oxygen	11	0	11	Yes
Dissolved Solids	11	0	11	Yes
Ethylbenzene	11	11	0	No
Iodide	11	11	0	No
Iodomethane	11	11	0	No
Iron	11	1	10	Yes
Magnesium	11	0	11	Yes
Manganese	11	0	11	Yes
Methylene chloride	11	11	0	No
Molybdenum	11	6	5	Yes
Nickel	11	0	11	Yes
Oxidation-Reduction Potential	11	0	11	Yes
PCB, Total	2	2	0	No
PCB-1016	2	2	0	No
PCB-1221	2	2	0	No
PCB-1232	2	2	0	No
PCB-1242	2	2	0	No
PCB-1248	2	2	0	No
PCB-1254	2	2	0	No
PCB-1260	2	2	0	No
PCB-1268	2	2	0	No
pH	11	0	11	Yes
Potassium	11	0	11	Yes
Radium-226	11	11	0	No
Rhodium	11	11	0	No
Sodium	11	0	11	Yes
Styrene	11	11	0	No
Sulfate	11	0	11	Yes
Tantalum	11	9	2	Yes
Technetium-99	11	6	5	Yes
Tetrachloroethene	11	11	0	No
Thallium	11	11	0	No
Thorium-230	11	11	0	No
Toluene	11	11	0	No
Total Organic Carbon	11	0	11	Yes
Total Organic Halides	11	1	10	Yes

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
trans-1,2-Dichloroethene	11	11	0	No
trans-1,3-Dichloropropene	11	11	0	No
trans-1,4-Dichloro-2-Butene	11	11	0	No
Trichloroethene	11	3	8	Yes
Trichlorofluoromethane	11	11	0	No
Uranium	11	10	1	Yes
Vanadium	11	10	1	Yes
Vinyl Acetate	11	11	0	No
Zinc	11	5	6	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	0	No
1,1,2,2-Tetrachloroethane	7	7	0	No
1,1,2-Trichloroethane	7	7	0	No
1,1-Dichloroethane	7	7	0	No
1,2,3-Trichloropropane	7	7	0	No
1,2-Dibromo-3-chloropropane	7	7	0	No
1,2-Dibromoethane	7	7	0	No
1,2-Dichlorobenzene	7	7	0	No
1,2-Dichloropropane	7	7	0	No
2-Butanone	7	7	0	No
2-Hexanone	7	7	0	No
4-Methyl-2-pentanone	7	7	0	No
Acetone	7	7	0	No
Acrolein	7	7	0	No
Acrylonitrile	7	7	0	No
Aluminum	7	2	5	Yes
Antimony	7	7	0	No
Beryllium	7	7	0	No
Beta Activity	7	2	5	Yes
Boron	7	0	7	Yes
Bromide	7	0	7	Yes
Bromochloromethane	7	7	0	No
Bromodichloromethane	7	7	0	No
Bromoform	7	7	0	No
Bromomethane	7	7	0	No
Calcium	7	0	7	Yes
Carbon Disulfide	7	7	0	No
Chemical Oxygen Demand	7	6	1	Yes
Chloride	7	0	7	Yes
Chlorobenzene	7	7	0	No
Chloroethane	7	7	0	No
Chloroform	7	7	0	No
Chloromethane	7	7	0	No
cis-1,2-Dichloroethene	7	5	2	Yes
cis-1,3-Dichloropropene	7	7	0	No
Cobalt	7	0	7	Yes
Conductivity	7	0	7	Yes
Copper	7	4	3	Yes
Cyanide	7	7	0	No
Dibromochloromethane	7	7	0	No
Dibromomethane	7	7	0	No

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Dimethylbenzene, Total	7	7	0	No
Dissolved Oxygen	7	0	7	Yes
Dissolved Solids	7	0	7	Yes
Ethylbenzene	7	7	0	No
Iodide	7	7	0	No
Iodomethane	7	7	0	No
Iron	7	0	7	Yes
Magnesium	7	0	7	Yes
Manganese	7	0	7	Yes
Methylene chloride	7	7	0	No
Molybdenum	7	4	3	Yes
Nickel	7	0	7	Yes
Oxidation-Reduction Potential	7	0	7	Yes
PCB, Total	2	2	0	No
PCB-1016	2	2	0	No
PCB-1221	2	2	0	No
PCB-1232	2	2	0	No
PCB-1242	2	2	0	No
PCB-1248	2	2	0	No
PCB-1254	2	2	0	No
PCB-1260	2	2	0	No
PCB-1268	2	2	0	No
pH	7	0	7	Yes
Potassium	7	0	7	Yes
Radium-226	7	6	1	Yes
Rhodium	7	7	0	No
Sodium	7	0	7	Yes
Styrene	7	7	0	No
Sulfate	7	0	7	Yes
Tantalum	7	7	0	No
Technetium-99	7	4	3	Yes
Tetrachloroethene	7	7	0	No
Thallium	7	7	0	No
Thorium-230	7	7	0	No
Toluene	7	7	0	No
Total Organic Carbon	7	0	7	Yes
Total Organic Halides	7	0	7	Yes
trans-1,2-Dichloroethene	7	7	0	No
trans-1,3-Dichloropropene	7	7	0	No
trans-1,4-Dichloro-2-Butene	7	7	0	No
Trichloroethene	7	2	5	Yes

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

Parameters	Observations	Censored Observation	Uncensored Observation	Statistical Analysis?
Trichlorofluoromethane	7	7	0	No
Uranium	7	6	1	Yes
Vanadium	7	6	1	Yes
Vinyl Acetate	7	7	0	No
Zinc	7	4	3	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 28, 32, and 31 parameters, respectively, including those listed in bold print in Exhibits D.3, D.4, and D.5, plus those constituents (beta activity and TCE) 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 and technetium-99.

URGA

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

Conclusion

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	MW370: Oxidation-reduction potential, sulfate
MW390: Oxidation-reduction potential, technetium-99	MW221: Oxidation-reduction potential	MW373: Calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate
MW393: Oxidation-reduction potential	MW222: Oxidation-reduction potential	MW385: Beta activity, oxidation-reduction potential, sulfate, technetium-99
MW396: Oxidation-reduction potential	MW223: Oxidation-reduction potential	MW388: Beta activity, oxidation-reduction potential, sulfate, technetium-99
	MW224: Oxidation-reduction potential	MW392: Oxidation-reduction potential
	MW369: Oxidation-reduction potential, technetium-99	MW395: Oxidation-reduction potential
	MW372: Beta activity, calcium, conductivity, dissolved solids, magnesium, oxidation-reduction potential, sulfate, technetium-99	MW397: Oxidation-reduction potential
	MW384: Beta activity, sulfate, technetium-99	
	MW387: Beta activity, calcium, magnesium, oxidation-reduction potential, sodium, sulfate, technetium-99	
	MW391: Oxidation-reduction potential	
	MW394: 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	1.28	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.
Copper	Tolerance Interval	0.48	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.
Iodide	Tolerance Interval	0.13	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.

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
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.
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.
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 MW372, 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 and MW387.
Chemical Oxygen Demand	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Chloride	Tolerance Interval	0.23	No exceedance of statistically derived historical background concentration.
<i>cis</i> -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.
Cyanide	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.

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
Magnesium	Tolerance Interval	0.16	Current results exceed statistically derived historical background concentration in MW372 and MW387.
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, MW223, MW224, MW369, MW372, MW387, MW391, and MW394.
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.
Sodium	Tolerance Interval	0.24	Current results exceed statistically derived historical background concentration in MW387.
Sulfate	Tolerance Interval	0.25	Current results exceed statistically derived historical background concentration in MW372, MW384, and MW387.
Tantalum	Tolerance Interval	2.27	No exceedance of statistically derived historical background concentration.
Technetium-99	Tolerance Interval	0.99	Current results exceed statistically derived historical background concentration in MW369, MW372, 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.
Uranium	Tolerance Interval	0.44	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 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.
<i>cis</i> -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	No exceedance of statistically derived historical background concentration.
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.
Uranium	Tolerance Interval	0.00	No exceedance of statistically derived historical background concentration.
Vanadium	Tolerance Interval	0.11	No exceedance of statistically derived historical background concentration.
Zinc	Tolerance Interval	0.76	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 2, 9, and 8 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.

UCRS

Because gradients in the UCRS are downward, there are no truly downgradient UCRS wells that exceed the current background TL derived using the most recent eight quarters of data. NOTE: Oxidation-reduction potential and technetium-99 concentrations in some UCRS wells 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.

Conclusion

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

URGA	LRGA
MW369: Technetium-99	MW373: Calcium, conductivity, dissolved solids, magnesium, sulfate
MW372: Beta activity, calcium, conductivity, magnesium, sulfate, technetium-99	MW388: Beta activity, sulfate, technetium-99
MW387: Beta activity, calcium, magnesium, sodium, sulfate, technetium-99	

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	0.39	Because gradients in UCRS wells are downward, there are no UCRS wells that are actually downgradient of the landfill. However, oxidation-reduction potential concentrations exceeded the TL calculated using current background data in MW390.
Technetium-99	Tolerance Interval	2.68	Because gradients in UCRS wells are downward, there are no UCRS wells that are actually 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.Replacement

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 MW372, MW384, and MW387.
Calcium	Tolerance Interval	0.13	Current results exceed statistically derived current background concentration in MW372 and MW387.
Conductivity	Tolerance Interval	0.07	Current results exceed statistically derived current background concentration in MW372.
Dissolved Solids	Tolerance Interval	0.38	No exceedance of statistically derived current background concentration.
Magnesium	Tolerance Interval	0.14	Current results exceed statistically derived current background concentration in MW372 and MW387.
Oxidation-Reduction Potential	Tolerance Interval	0.33	No exceedance of statistically derived current background concentration.
Sodium	Tolerance Interval	0.15	Current results exceed statistically derived current background concentration in MW387.
Sulfate	Tolerance Interval	0.29	Current results exceed statistically derived current background concentration in MW372 and MW387.
Technetium-99	Tolerance Interval	0.60	Current results exceed statistically derived current background concentration in MW369, MW372, 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	0.49	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	0.08	Current results exceed statistically derived current background concentration in MW373.
Dissolved Solids	Tolerance Interval	0.14	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	0.32	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	0.64	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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C-746-S/T First Quarter 2015 Statistical Analysis Historical Background Comparison

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	Yes	0.0182	NO	-4.006	N/A
MW390	Downgradient	Yes	0.465	NO	-0.766	N/A
MW393	Downgradient	Yes	0.0424	NO	-3.161	N/A
MW396	Upgradient	Yes	0.114	NO	-2.172	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First 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	Yes	0.00648	N/A	-5.039	NO
MW390	Downgradient	Yes	0.011	N/A	-4.510	NO
MW393	Downgradient	Yes	0.0228	N/A	-3.781	NO
MW396	Upgradient	Yes	0.00923	N/A	-4.685	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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	0.152	NO	-1.884	N/A
MW390	Downgradient	Yes	0.875	NO	-0.134	N/A
MW393	Downgradient	Yes	0.192	NO	-1.650	N/A
MW396	Upgradient	Yes	0.762	NO	-0.272	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$
- TL Upper Tolerance Limit, $TL = X + (K * S)$, LL Lower Tolerance Limit, $LL = X - (K * S)$
- X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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	22.3	NO	3.105	N/A
MW390	Downgradient	Yes	34.5	NO	3.541	N/A
MW393	Downgradient	Yes	12.2	NO	2.501	N/A
MW396	Upgradient	Yes	39.7	NO	3.681	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

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	24.7	NO	3.207	N/A
MW390	Downgradient	Yes	15.4	NO	2.734	N/A
MW393	Downgradient	Yes	16.3	NO	2.791	N/A
MW396	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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	15.1	NO	2.715	N/A
MW390	Downgradient	Yes	93.2	NO	4.535	N/A
MW393	Downgradient	Yes	14.2	NO	2.653	N/A
MW396	Upgradient	Yes	86.3	NO	4.458	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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	Yes	0.00643	N/A	-5.047	NO
MW390	Downgradient	Yes	0.00062	N/A	-7.386	NO
MW393	Downgradient	No	0.001	N/A	-6.908	N/A
MW396	Upgradient	Yes	0.0045	N/A	-5.404	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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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	622	NO	6.433	N/A
MW390	Downgradient	Yes	755	NO	6.627	N/A
MW393	Downgradient	Yes	415	NO	6.028	N/A
MW396	Upgradient	Yes	822	NO	6.712	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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Copper

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= 0.028 S= 0.014 CV(1)=0.481 K factor**= 3.188 TL(1)= 0.072 LL(1)=N/A

Statistics-Transformed Background Data X= -3.650 S= 0.414 CV(2)=-0.113 K factor**= 3.188 TL(2)= -2.331 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	0.026	-3.650
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	Yes	0.00073	NO	-7.222	N/A
MW390	Downgradient	No	0.00096	N/A	-6.949	N/A
MW393	Downgradient	No	0.001	N/A	-6.908	N/A
MW396	Upgradient	Yes	0.00124	NO	-6.693	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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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	0.4	N/A	-0.916	NO
MW390	Downgradient	Yes	5.18	N/A	1.645	NO
MW393	Downgradient	Yes	0.75	N/A	-0.288	NO
MW396	Upgradient	Yes	1.99	N/A	0.688	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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	350	NO	5.858	N/A
MW390	Downgradient	Yes	396	NO	5.981	N/A
MW393	Downgradient	Yes	220	NO	5.394	N/A
MW396	Upgradient	Yes	410	NO	6.016	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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Iodide

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**= 2.150 **S**= 0.283 **CV(1)**=0.132 **K factor****= 3.188 **TL(1)**= 3.052 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 0.759 **S**= 0.123 **CV(2)**=0.162 **K factor****= 3.188 **TL(2)**= 1.150 **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	2	0.693
1/13/2003	2	0.693
4/8/2003	2	0.693
7/16/2003	2.7	0.993
10/14/2003	2.5	0.916
1/14/2004	2	0.693

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	0.5	N/A	-0.693	N/A
MW390	Downgradient	No	0.5	N/A	-0.693	N/A
MW393	Downgradient	No	0.5	N/A	-0.693	N/A
MW396	Upgradient	Yes	0.8	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, $S = [\text{Sum}([(background\ result - X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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	0.88	NO	-0.128	N/A
MW390	Downgradient	Yes	0.541	NO	-0.614	N/A
MW393	Downgradient	Yes	2.77	NO	1.019	N/A
MW396	Upgradient	Yes	4.87	NO	1.583	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 First 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	8.53	NO	2.144	N/A
MW390	Downgradient	Yes	15.4	NO	2.734	N/A
MW393	Downgradient	Yes	3.42	NO	1.230	N/A
MW396	Upgradient	Yes	17.9	NO	2.885	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
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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, $S = \sqrt{\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])^0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First 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	1.02	NO	0.020	N/A
MW390	Downgradient	Yes	0.00326	NO	-5.726	N/A
MW393	Downgradient	Yes	0.0444	NO	-3.115	N/A
MW396	Upgradient	Yes	0.598	NO	-0.514	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First 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	0.00047	N/A	-7.663	NO
MW390	Downgradient	No	0.00041	N/A	-7.799	N/A
MW393	Downgradient	No	0.00021	N/A	-8.468	N/A
MW396	Upgradient	No	0.00072	N/A	-7.236	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First Quarter 2015 Statistical Analysis Historical Background Comparison

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	Yes	0.00217	N/A	-6.133	NO
MW390	Downgradient	Yes	0.0053	N/A	-5.240	NO
MW393	Downgradient	Yes	0.00145	N/A	-6.536	NO
MW396	Upgradient	Yes	0.00225	N/A	-6.097	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, $S = [\text{Sum} ((\text{background result}-X)^2)/[\text{count of background results} - 1]]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First Quarter 2015 Statistical Analysis Historical 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 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 possible 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	227	N/A	5.425	YES
MW390	Downgradient	Yes	817	N/A	6.706	YES
MW393	Downgradient	Yes	456	N/A	6.122	YES
MW396	Upgradient	Yes	193	N/A	5.263	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, $S = \sqrt{[\text{Sum} ((\text{background result}-X)^2)/(\text{count of background results} - 1)]^{0.5}}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First Quarter 2015 Statistical Analysis Historical Background Comparison

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) >TL(2)? LN(Result) <LL(2)?
MW386	Sidegradient	Yes	6.69	NO	1.901 N/A
MW390	Downgradient	Yes	6.33	NO	1.845 N/A
MW393	Downgradient	Yes	6.21	NO	1.826 N/A
MW396	Upgradient	Yes	6.46	NO	1.866 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, $S = [\text{Sum}((\text{background result}-X)^2)/(\text{count of background results} - 1)]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First Quarter 2015 Statistical Analysis Historical Background Comparison

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	0.214	NO	-1.542	N/A
MW390	Downgradient	Yes	0.434	NO	-0.835	N/A
MW393	Downgradient	Yes	0.399	NO	-0.919	N/A
MW396	Upgradient	Yes	0.808	NO	-0.213	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First Quarter 2015 Statistical Analysis Historical Background Comparison

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	104	NO	4.644	N/A
MW390	Downgradient	Yes	98.1	NO	4.586	N/A
MW393	Downgradient	Yes	80.4	NO	4.387	N/A
MW396	Upgradient	Yes	106	NO	4.663	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	42.9	NO	3.759	N/A
MW390	Downgradient	Yes	26.7	NO	3.285	N/A
MW393	Downgradient	Yes	14.3	NO	2.660	N/A
MW396	Upgradient	Yes	22.3	NO	3.105	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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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	2.11	N/A	0.747	N/A
MW390	Downgradient	Yes	55.7	YES	4.020	N/A
MW393	Downgradient	No	-2.91	N/A	#Error	N/A
MW396	Upgradient	No	11.2	N/A	2.416	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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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	11.2	NO	2.416	N/A
MW390	Downgradient	Yes	2.63	NO	0.967	N/A
MW393	Downgradient	Yes	3.41	NO	1.227	N/A
MW396	Upgradient	Yes	7.12	NO	1.963	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, $S = [\text{Sum}([(background\ result - X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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	226	NO	5.421	N/A
MW390	Downgradient	Yes	13.2	NO	2.580	N/A
MW393	Downgradient	Yes	19.1	NO	2.950	N/A
MW396	Upgradient	Yes	43.6	NO	3.775	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, $S = [\text{Sum} ((\text{background result}-X)^2)/[\text{count of background results} - 1]]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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	No	0.00012	N/A	-9.028	N/A
MW393	Downgradient	Yes	0.00013	NO	-8.948	N/A
MW396	Upgradient	Yes	0.00016	NO	-8.740	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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	0.002	NO	-6.215	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.

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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	Yes	0.0038	NO	-5.573	N/A
MW393	Downgradient	Yes	0.0037	NO	-5.599	N/A
MW396	Upgradient	No	0.00492	N/A	-5.314	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.207	NO	-1.575	N/A
MW221	Downgradient	No	0.05	N/A	-2.996	N/A
MW222	Downgradient	Yes	0.306	NO	-1.184	N/A
MW223	Downgradient	Yes	0.0161	NO	-4.129	N/A
MW224	Downgradient	Yes	0.0154	NO	-4.173	N/A
MW369	Downgradient	Yes	0.273	NO	-1.298	N/A
MW372	Downgradient	No	0.05	N/A	-2.996	N/A
MW384	Sidegradient	Yes	0.0343	NO	-3.373	N/A
MW387	Downgradient	Yes	0.0443	NO	-3.117	N/A
MW391	Downgradient	Yes	0.0261	NO	-3.646	N/A
MW394	Upgradient	Yes	0.133	NO	-2.017	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.

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

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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	21.8	N/A	3.082	N/A
MW221	Downgradient	No	6.33	N/A	1.845	N/A
MW222	Downgradient	Yes	31.6	N/A	3.453	N/A
MW223	Downgradient	Yes	26.1	N/A	3.262	N/A
MW224	Downgradient	No	9.49	N/A	2.250	N/A
MW369	Downgradient	Yes	33.4	N/A	3.509	N/A
MW372	Downgradient	Yes	115	YES	4.745	N/A
MW384	Sidegradient	Yes	138	YES	4.927	N/A
MW387	Downgradient	Yes	158	YES	5.063	N/A
MW391	Downgradient	Yes	9.92	N/A	2.295	N/A
MW394	Upgradient	No	5.07	N/A	1.623	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.

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

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
- 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 First 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

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	0.2	-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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.00772	N/A	-4.864	NO
MW221	Downgradient	Yes	0.0146	N/A	-4.227	NO
MW222	Downgradient	Yes	0.00996	N/A	-4.609	NO
MW223	Downgradient	Yes	0.0072	N/A	-4.934	NO
MW224	Downgradient	Yes	0.0127	N/A	-4.366	NO
MW369	Downgradient	Yes	0.0164	N/A	-4.110	NO
MW372	Downgradient	Yes	0.906	N/A	-0.099	NO
MW384	Sidegradient	Yes	0.0166	N/A	-4.098	NO
MW387	Downgradient	Yes	0.0385	N/A	-3.257	NO
MW391	Downgradient	Yes	0.0279	N/A	-3.579	NO
MW394	Upgradient	Yes	0.0247	N/A	-3.701	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

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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.252	NO	-1.378	N/A
MW221	Downgradient	Yes	0.512	NO	-0.669	N/A
MW222	Downgradient	Yes	0.45	NO	-0.799	N/A
MW223	Downgradient	Yes	0.441	NO	-0.819	N/A
MW224	Downgradient	Yes	0.226	NO	-1.487	N/A
MW369	Downgradient	Yes	0.402	NO	-0.911	N/A
MW372	Downgradient	Yes	0.606	NO	-0.501	N/A
MW384	Sidegradient	Yes	0.604	NO	-0.504	N/A
MW387	Downgradient	Yes	0.562	NO	-0.576	N/A
MW391	Downgradient	Yes	0.648	NO	-0.434	N/A
MW394	Upgradient	Yes	0.624	NO	-0.472	N/A

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

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

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 \bar{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 \bar{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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	20	NO	2.996	N/A
MW221	Downgradient	Yes	19.7	NO	2.981	N/A
MW222	Downgradient	Yes	14.6	NO	2.681	N/A
MW223	Downgradient	Yes	22.8	NO	3.127	N/A
MW224	Downgradient	Yes	19.5	NO	2.970	N/A
MW369	Downgradient	Yes	16.5	NO	2.803	N/A
MW372	Downgradient	Yes	53.5	YES	3.980	N/A
MW384	Sidegradient	Yes	29.5	NO	3.384	N/A
MW387	Downgradient	Yes	40	YES	3.689	N/A
MW391	Downgradient	Yes	27.2	NO	3.303	N/A
MW394	Upgradient	Yes	27.2	NO	3.303	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.

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

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
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, $CV = S/\bar{X}$ If CV is less than or equal to 1 assume normal distribution.

S Standard Deviation, $S = [\text{Sum}([(background\ result - \bar{X})^2]/[\text{count of background results} - 1])]^{0.5}$

TL Upper Tolerance Limit, $TL = \bar{X} + (K * S)$, LL Lower Tolerance Limit, $LL = \bar{X} - (K * S)$

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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

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

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

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

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	Yes	11.7	NO	2.460	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	8.05	NO	2.086	N/A
MW384	Sidegradient	No	20	N/A	2.996	N/A
MW387	Downgradient	Yes	7.88	NO	2.064	N/A
MW391	Downgradient	Yes	13.4	NO	2.595	N/A
MW394	Upgradient	Yes	11.7	NO	2.460	N/A

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

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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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	22.2	NO	3.100	N/A
MW221	Downgradient	Yes	34.4	NO	3.538	N/A
MW222	Downgradient	Yes	31.4	NO	3.447	N/A
MW223	Downgradient	Yes	30.4	NO	3.414	N/A
MW224	Downgradient	Yes	17.4	NO	2.856	N/A
MW369	Downgradient	Yes	31.9	NO	3.463	N/A
MW372	Downgradient	Yes	46.3	NO	3.835	N/A
MW384	Sidegradient	Yes	48.2	NO	3.875	N/A
MW387	Downgradient	Yes	41	NO	3.714	N/A
MW391	Downgradient	Yes	50.5	NO	3.922	N/A
MW394	Upgradient	Yes	45.7	NO	3.822	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.

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

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

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

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

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

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	0.39	NO	-0.942	N/A
MW391	Downgradient	Yes	0.77	NO	-0.261	N/A
MW394	Upgradient	No	1	N/A	0.000	N/A

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

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 First 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	0.00218	N/A	-6.128	NO
MW221	Downgradient	Yes	0.00099	N/A	-6.918	NO
MW222	Downgradient	Yes	0.00356	N/A	-5.638	NO
MW223	Downgradient	Yes	0.00255	N/A	-5.972	NO
MW224	Downgradient	Yes	0.00097	N/A	-6.938	NO
MW369	Downgradient	Yes	0.0124	N/A	-4.390	NO
MW372	Downgradient	Yes	0.00023	N/A	-8.377	NO
MW384	Sidegradient	Yes	0.0004	N/A	-7.824	NO
MW387	Downgradient	Yes	0.00017	N/A	-8.680	NO
MW391	Downgradient	No	0.001	N/A	-6.908	N/A
MW394	Upgradient	Yes	0.00015	N/A	-8.805	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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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	330	NO	5.799	N/A
MW221	Downgradient	Yes	405	NO	6.004	N/A
MW222	Downgradient	Yes	321	NO	5.771	N/A
MW223	Downgradient	Yes	388	NO	5.961	N/A
MW224	Downgradient	Yes	404	NO	6.001	N/A
MW369	Downgradient	Yes	374	NO	5.924	N/A
MW372	Downgradient	Yes	701	YES	6.553	N/A
MW384	Sidegradient	Yes	537	NO	6.286	N/A
MW387	Downgradient	Yes	602	NO	6.400	N/A
MW391	Downgradient	Yes	402	NO	5.996	N/A
MW394	Upgradient	Yes	397	NO	5.984	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.

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

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>.

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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.00177	NO	-6.337	N/A
MW221	Downgradient	Yes	0.00063	NO	-7.370	N/A
MW222	Downgradient	Yes	0.00047	NO	-7.663	N/A
MW223	Downgradient	Yes	0.00102	NO	-6.888	N/A
MW224	Downgradient	No	0.001	N/A	-6.908	N/A
MW369	Downgradient	Yes	0.00119	NO	-6.734	N/A
MW372	Downgradient	Yes	0.00037	NO	-7.902	N/A
MW384	Sidegradient	Yes	0.00154	NO	-6.476	N/A
MW387	Downgradient	No	0.001	N/A	-6.908	N/A
MW391	Downgradient	Yes	0.00055	NO	-7.506	N/A
MW394	Upgradient	Yes	0.00047	NO	-7.663	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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Cyanide

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)=0.431 K factor**= 2.523 TL(1)= 0.050 LL(1)=N/A

Statistics-Transformed Background Data X= -3.797 S= 0.313 CV(2)=-0.082 K factor**= 2.523 TL(2)= -3.008 LL(2)=N/A

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: 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	0.05	-2.996
7/21/2004	0.05	-2.996

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	0.2	N/A	-1.609	N/A
MW221	Downgradient	No	0.2	N/A	-1.609	N/A
MW222	Downgradient	No	0.2	N/A	-1.609	N/A
MW223	Downgradient	Yes	0.00189	NO	-6.271	N/A
MW224	Downgradient	No	0.2	N/A	-1.609	N/A
MW369	Downgradient	No	0.2	N/A	-1.609	N/A
MW372	Downgradient	No	0.2	N/A	-1.609	N/A
MW384	Sidegradient	No	0.2	N/A	-1.609	N/A
MW387	Downgradient	No	0.2	N/A	-1.609	N/A
MW391	Downgradient	No	0.2	N/A	-1.609	N/A
MW394	Upgradient	No	0.2	N/A	-1.609	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.

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	0.02	-3.912
9/16/2002	0.02	-3.912
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

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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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	5.7	NO	1.740	N/A
MW221	Downgradient	Yes	5.01	NO	1.611	N/A
MW222	Downgradient	Yes	5.15	NO	1.639	N/A
MW223	Downgradient	Yes	2.17	NO	0.775	N/A
MW224	Downgradient	Yes	2.95	NO	1.082	N/A
MW369	Downgradient	Yes	1.15	NO	0.140	N/A
MW372	Downgradient	Yes	1.44	NO	0.365	N/A
MW384	Sidegradient	Yes	3.6	NO	1.281	N/A
MW387	Downgradient	Yes	5.67	NO	1.735	N/A
MW391	Downgradient	Yes	4.06	NO	1.401	N/A
MW394	Upgradient	Yes	5.07	NO	1.623	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.

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

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, $S = [\text{Sum}([(background\ result - X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	140	NO	4.942	N/A
MW221	Downgradient	Yes	166	NO	5.112	N/A
MW222	Downgradient	Yes	169	NO	5.130	N/A
MW223	Downgradient	Yes	170	NO	5.136	N/A
MW224	Downgradient	Yes	211	NO	5.352	N/A
MW369	Downgradient	Yes	207	NO	5.333	N/A
MW372	Downgradient	Yes	374	YES	5.924	N/A
MW384	Sidegradient	Yes	249	NO	5.517	N/A
MW387	Downgradient	Yes	290	NO	5.670	N/A
MW391	Downgradient	Yes	209	NO	5.342	N/A
MW394	Upgradient	Yes	166	NO	5.112	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.

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

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>.

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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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.697	N/A	-0.361	NO
MW221	Downgradient	Yes	0.0858	N/A	-2.456	NO
MW222	Downgradient	Yes	0.634	N/A	-0.456	NO
MW223	Downgradient	Yes	0.0436	N/A	-3.133	NO
MW224	Downgradient	Yes	0.0924	N/A	-2.382	NO
MW369	Downgradient	Yes	0.824	N/A	-0.194	NO
MW372	Downgradient	Yes	0.0711	N/A	-2.644	NO
MW384	Sidegradient	Yes	1.81	N/A	0.593	NO
MW387	Downgradient	No	0.165	N/A	-1.802	N/A
MW391	Downgradient	Yes	0.179	N/A	-1.720	NO
MW394	Upgradient	Yes	0.772	N/A	-0.259	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.

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

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, $S = [\text{Sum}([(background\ result - X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	8.05	NO	2.086	N/A
MW221	Downgradient	Yes	8.41	NO	2.129	N/A
MW222	Downgradient	Yes	6.24	NO	1.831	N/A
MW223	Downgradient	Yes	8.69	NO	2.162	N/A
MW224	Downgradient	Yes	7.92	NO	2.069	N/A
MW369	Downgradient	Yes	7.19	NO	1.973	N/A
MW372	Downgradient	Yes	20.4	YES	3.016	N/A
MW384	Sidegradient	Yes	10.2	NO	2.322	N/A
MW387	Downgradient	Yes	18.5	YES	2.918	N/A
MW391	Downgradient	Yes	11.4	NO	2.434	N/A
MW394	Upgradient	Yes	11.3	NO	2.425	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.

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

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
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>.

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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	0.0194	N/A	-3.942	NO
MW221	Downgradient	Yes	0.00618	N/A	-5.086	NO
MW222	Downgradient	Yes	0.0117	N/A	-4.448	NO
MW223	Downgradient	Yes	0.0555	N/A	-2.891	NO
MW224	Downgradient	Yes	0.00795	N/A	-4.835	NO
MW369	Downgradient	Yes	0.11	N/A	-2.207	NO
MW372	Downgradient	Yes	0.00314	N/A	-5.764	NO
MW384	Sidegradient	Yes	0.0588	N/A	-2.834	NO
MW387	Downgradient	Yes	0.0179	N/A	-4.023	NO
MW391	Downgradient	Yes	0.00198	N/A	-6.225	NO
MW394	Upgradient	Yes	0.0128	N/A	-4.358	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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

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	0.00558	-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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.00078	N/A	-7.156	NO
MW221	Downgradient	Yes	0.0025	N/A	-5.991	NO
MW222	Downgradient	No	0.0003	N/A	-8.112	N/A
MW223	Downgradient	Yes	0.00373	N/A	-5.591	NO
MW224	Downgradient	Yes	0.00029	N/A	-8.146	NO
MW369	Downgradient	Yes	0.00018	N/A	-8.623	NO
MW372	Downgradient	No	0.00032	N/A	-8.047	N/A
MW384	Sidegradient	No	0.0005	N/A	-7.601	N/A
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	0.00023	N/A	-8.377	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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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

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	0.418	-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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.0373	N/A	-3.289	NO
MW221	Downgradient	Yes	0.059	N/A	-2.830	NO
MW222	Downgradient	Yes	0.0405	N/A	-3.206	NO
MW223	Downgradient	Yes	0.318	N/A	-1.146	NO
MW224	Downgradient	Yes	0.00634	N/A	-5.061	NO
MW369	Downgradient	Yes	0.0116	N/A	-4.457	NO
MW372	Downgradient	Yes	0.00067	N/A	-7.308	NO
MW384	Sidegradient	Yes	0.00151	N/A	-6.496	NO
MW387	Downgradient	Yes	0.0041	N/A	-5.497	NO
MW391	Downgradient	Yes	0.00086	N/A	-7.059	NO
MW394	Upgradient	Yes	0.00487	N/A	-5.325	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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	733	YES	6.597	N/A
MW221	Downgradient	Yes	850	YES	6.745	N/A
MW222	Downgradient	Yes	554	YES	6.317	N/A
MW223	Downgradient	Yes	604	YES	6.404	N/A
MW224	Downgradient	Yes	534	YES	6.280	N/A
MW369	Downgradient	Yes	779	YES	6.658	N/A
MW372	Downgradient	Yes	693	YES	6.541	N/A
MW384	Sidegradient	Yes	350	NO	5.858	N/A
MW387	Downgradient	Yes	820	YES	6.709	N/A
MW391	Downgradient	Yes	760	YES	6.633	N/A
MW394	Upgradient	Yes	453	YES	6.116	N/A

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

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.

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>.

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
- MW223
- MW224
- MW369
- MW372
- MW387
- 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, $S = [\text{Sum} ((\text{background result}-X)^2)/[\text{count of background results} - 1]]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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

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

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

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

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	5.95	NO	1.783	N/A
MW221	Downgradient	Yes	6.14	NO	1.815	N/A
MW222	Downgradient	Yes	6.16	NO	1.818	N/A
MW223	Downgradient	Yes	6.02	NO	1.795	N/A
MW224	Downgradient	Yes	6.06	NO	1.802	N/A
MW369	Downgradient	Yes	6.29	NO	1.839	N/A
MW372	Downgradient	Yes	6.34	NO	1.847	N/A
MW384	Sidegradient	Yes	6.32	NO	1.844	N/A
MW387	Downgradient	Yes	6.14	NO	1.815	N/A
MW391	Downgradient	Yes	6.22	NO	1.828	N/A
MW394	Upgradient	Yes	6.06	NO	1.802	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, $S = \sqrt{[\text{Sum} ((\text{background result}-X)^2)/(\text{count of background results} - 1)]}^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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

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	3.31	N/A	1.197	NO
MW221	Downgradient	Yes	1.51	N/A	0.412	NO
MW222	Downgradient	Yes	0.29	N/A	-1.238	NO
MW223	Downgradient	Yes	1.69	N/A	0.525	NO
MW224	Downgradient	Yes	0.608	N/A	-0.498	NO
MW369	Downgradient	Yes	0.542	N/A	-0.612	NO
MW372	Downgradient	Yes	2.1	N/A	0.742	NO
MW384	Sidegradient	Yes	1.06	N/A	0.058	NO
MW387	Downgradient	Yes	1.97	N/A	0.678	NO
MW391	Downgradient	Yes	1.54	N/A	0.432	NO
MW394	Upgradient	Yes	1.26	N/A	0.231	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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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	38.1	NO	3.640	N/A
MW221	Downgradient	Yes	42.4	NO	3.747	N/A
MW222	Downgradient	Yes	39.2	NO	3.669	N/A
MW223	Downgradient	Yes	47	NO	3.850	N/A
MW224	Downgradient	Yes	49.2	NO	3.896	N/A
MW369	Downgradient	Yes	52.2	NO	3.955	N/A
MW372	Downgradient	Yes	55.7	NO	4.020	N/A
MW384	Sidegradient	Yes	53.5	NO	3.980	N/A
MW387	Downgradient	Yes	61.6	YES	4.121	N/A
MW391	Downgradient	Yes	30.8	NO	3.428	N/A
MW394	Upgradient	Yes	33.8	NO	3.520	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.

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

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

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>.

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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	14	NO	2.639	N/A
MW221	Downgradient	Yes	13.2	NO	2.580	N/A
MW222	Downgradient	Yes	10.3	NO	2.332	N/A
MW223	Downgradient	Yes	13.9	NO	2.632	N/A
MW224	Downgradient	Yes	10.8	NO	2.380	N/A
MW369	Downgradient	Yes	8.7	NO	2.163	N/A
MW372	Downgradient	Yes	109	YES	4.691	N/A
MW384	Sidegradient	Yes	20.3	YES	3.011	N/A
MW387	Downgradient	Yes	34.4	YES	3.538	N/A
MW391	Downgradient	Yes	12.5	NO	2.526	N/A
MW394	Upgradient	Yes	10.5	NO	2.351	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.

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

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
- 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.

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Tantalum

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= 0.029 S= 0.067 CV(1)=2.267 K factor**= 2.523 TL(1)= 0.197 LL(1)=N/A

Statistics-Transformed Background Data X= -4.837 S= 1.260 CV(2)=-0.260 K factor**= 2.523 TL(2)= -1.658 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	0.005	-5.298
1/15/2003	0.005	-5.298
4/10/2003	0.005	-5.298
7/14/2003	0.005	-5.298
10/13/2003	0.005	-5.298
1/13/2004	0.005	-5.298
4/13/2004	0.005	-5.298
7/21/2004	0.005	-5.298

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	0.005	-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

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	Yes	0.0013	N/A	-6.645	NO
MW223	Downgradient	No	0.005	N/A	-5.298	N/A
MW224	Downgradient	No	0.005	N/A	-5.298	N/A
MW369	Downgradient	No	0.005	N/A	-5.298	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	0.00201	N/A	-6.210	N/A
MW391	Downgradient	No	0.005	N/A	-5.298	N/A
MW394	Upgradient	Yes	0.00158	N/A	-6.450	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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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 possible 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	Yes	32.5	NO	3.481	N/A
MW221	Downgradient	No	17.5	N/A	2.862	N/A
MW222	Downgradient	No	15.2	N/A	2.721	N/A
MW223	Downgradient	No	16.8	N/A	2.821	N/A
MW224	Downgradient	No	9.13	N/A	2.212	N/A
MW369	Downgradient	Yes	45.2	YES	3.811	N/A
MW372	Downgradient	Yes	181	YES	5.198	N/A
MW384	Sidegradient	Yes	191	YES	5.252	N/A
MW387	Downgradient	Yes	211	YES	5.352	N/A
MW391	Downgradient	No	-0.684	N/A	#Error	N/A
MW394	Upgradient	No	17.2	N/A	2.845	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
- MW372
- 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.

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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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	1.19	NO	0.174	N/A
MW221	Downgradient	Yes	1.35	NO	0.300	N/A
MW222	Downgradient	Yes	1.29	NO	0.255	N/A
MW223	Downgradient	Yes	1.39	NO	0.329	N/A
MW224	Downgradient	Yes	1.46	NO	0.378	N/A
MW369	Downgradient	Yes	1.66	NO	0.507	N/A
MW372	Downgradient	Yes	1.57	NO	0.451	N/A
MW384	Sidegradient	Yes	2.13	NO	0.756	N/A
MW387	Downgradient	Yes	1.75	NO	0.560	N/A
MW391	Downgradient	Yes	1.45	NO	0.372	N/A
MW394	Upgradient	Yes	1.47	NO	0.385	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

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	3.7	N/A	1.308	NO
MW221	Downgradient	Yes	6.86	N/A	1.926	NO
MW222	Downgradient	Yes	3.42	N/A	1.230	NO
MW223	Downgradient	Yes	6.3	N/A	1.841	NO
MW224	Downgradient	No	10	N/A	2.303	N/A
MW369	Downgradient	Yes	21.3	N/A	3.059	NO
MW372	Downgradient	Yes	13.5	N/A	2.603	NO
MW384	Sidegradient	Yes	11	N/A	2.398	NO
MW387	Downgradient	Yes	11.2	N/A	2.416	NO
MW391	Downgradient	Yes	14.2	N/A	2.653	NO
MW394	Upgradient	Yes	10.2	N/A	2.322	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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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

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

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

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	Yes	0.64	N/A	-0.446	N/A
MW223	Downgradient	Yes	1.14	N/A	0.131	N/A
MW224	Downgradient	No	1	N/A	0.000	N/A
MW369	Downgradient	Yes	1.46	N/A	0.378	N/A
MW372	Downgradient	Yes	8.08	NO	2.089	N/A
MW384	Sidegradient	Yes	0.48	N/A	-0.734	N/A
MW387	Downgradient	Yes	0.74	N/A	-0.301	N/A
MW391	Downgradient	Yes	18.3	NO	2.907	N/A
MW394	Upgradient	Yes	6.03	NO	1.797	N/A

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

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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Uranium

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= 0.001 S= 0.000 CV(1)=0.440 K factor**= 2.523 TL(1)= 0.002 LL(1)=N/A

Statistics-Transformed Background Data X= -6.840 S= 0.273 CV(2)=-0.040 K factor**= 2.523 TL(2)= -6.151 LL(2)=N/A

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: MW220

Date Collected	Result	LN(Result)
10/14/2002	0.001	-6.908
1/15/2003	0.001	-6.908
4/10/2003	0.001	-6.908
7/14/2003	0.001	-6.908
10/13/2003	0.001	-6.908
1/13/2004	0.00298	-5.816
4/13/2004	0.001	-6.908
7/21/2004	0.001	-6.908

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	No	0.0002	N/A	-8.517	N/A
MW221	Downgradient	No	0.0002	N/A	-8.517	N/A
MW222	Downgradient	No	0.000078	N/A	-9.459	N/A
MW223	Downgradient	No	0.0002	N/A	-8.517	N/A
MW224	Downgradient	No	0.0002	N/A	-8.517	N/A
MW369	Downgradient	No	0.0002	N/A	-8.517	N/A
MW372	Downgradient	No	0.0002	N/A	-8.517	N/A
MW384	Sidegradient	No	0.0002	N/A	-8.517	N/A
MW387	Downgradient	No	0.0002	N/A	-8.517	N/A
MW391	Downgradient	Yes	0.000091	NO	-9.305	N/A
MW394	Upgradient	No	0.0002	N/A	-8.517	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.

Well Number: MW394

Date Collected	Result	LN(Result)
8/13/2002	0.001	-6.908
9/16/2002	0.001	-6.908
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

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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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

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

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

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	0.00134	NO	-6.615	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

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

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

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

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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	0.00389	NO	-5.549	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	0.00572	NO	-5.164	N/A
MW224	Downgradient	No	0.01	N/A	-4.605	N/A
MW369	Downgradient	Yes	0.00408	NO	-5.502	N/A
MW372	Downgradient	Yes	0.0101	NO	-4.595	N/A
MW384	Sidegradient	Yes	0.00574	NO	-5.160	N/A
MW387	Downgradient	No	0.01	N/A	-4.605	N/A
MW391	Downgradient	Yes	0.00475	NO	-5.350	N/A
MW394	Upgradient	No	0.00904	N/A	-4.706	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.

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

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

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	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

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	0.05	N/A	-2.996	N/A
MW385	Sidegradient	Yes	0.17	NO	-1.772	N/A
MW388	Downgradient	Yes	0.18	NO	-1.715	N/A
MW392	Downgradient	Yes	0.0318	NO	-3.448	N/A
MW395	Upgradient	Yes	0.0914	NO	-2.393	N/A
MW397	Upgradient	Yes	0.609	NO	-0.496	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.

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

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

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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	16	N/A	2.773	N/A
MW373	Downgradient	Yes	14.1	N/A	2.646	N/A
MW385	Sidegradient	Yes	100	YES	4.605	N/A
MW388	Downgradient	Yes	63.3	YES	4.148	N/A
MW392	Downgradient	No	0.353	N/A	-1.041	N/A
MW395	Upgradient	No	5.98	N/A	1.788	N/A
MW397	Upgradient	Yes	16.3	N/A	2.791	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.

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

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 First 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

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	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	0.0339	N/A	-3.384	NO
MW373	Downgradient	Yes	1.77	N/A	0.571	NO
MW385	Sidegradient	Yes	0.0125	N/A	-4.382	NO
MW388	Downgradient	Yes	0.0258	N/A	-3.657	NO
MW392	Downgradient	Yes	0.0259	N/A	-3.654	NO
MW395	Upgradient	Yes	0.0204	N/A	-3.892	NO
MW397	Upgradient	Yes	0.00879	N/A	-4.734	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

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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.562	NO	-0.576	N/A
MW373	Downgradient	Yes	0.602	NO	-0.507	N/A
MW385	Sidegradient	Yes	0.248	NO	-1.394	N/A
MW388	Downgradient	Yes	0.394	NO	-0.931	N/A
MW392	Downgradient	Yes	0.594	NO	-0.521	N/A
MW395	Upgradient	Yes	0.536	NO	-0.624	N/A
MW397	Upgradient	Yes	0.514	NO	-0.666	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.

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

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

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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	28.7	NO	3.357	N/A
MW373	Downgradient	Yes	71.5	YES	4.270	N/A
MW385	Sidegradient	Yes	37.9	NO	3.635	N/A
MW388	Downgradient	Yes	27.7	NO	3.321	N/A
MW392	Downgradient	Yes	26.5	NO	3.277	N/A
MW395	Upgradient	Yes	25.8	NO	3.250	N/A
MW397	Upgradient	Yes	18.6	NO	2.923	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.

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

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

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	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

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	No	20	N/A	2.996	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	13.8	NO	2.625	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.

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

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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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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	39.4	NO	3.674	N/A
MW373	Downgradient	Yes	42.8	NO	3.757	N/A
MW385	Sidegradient	Yes	23.7	NO	3.165	N/A
MW388	Downgradient	Yes	31.5	NO	3.450	N/A
MW392	Downgradient	Yes	46.3	NO	3.835	N/A
MW395	Upgradient	Yes	43.3	NO	3.768	N/A
MW397	Upgradient	Yes	38	NO	3.638	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.

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

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

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	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

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	0.42	NO	-0.868	N/A
MW392	Downgradient	Yes	0.63	NO	-0.462	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.

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

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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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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.00056	N/A	-7.488	NO
MW373	Downgradient	Yes	0.00069	N/A	-7.279	NO
MW385	Sidegradient	Yes	0.00026	N/A	-8.255	NO
MW388	Downgradient	Yes	0.0003	N/A	-8.112	NO
MW392	Downgradient	Yes	0.00018	N/A	-8.623	NO
MW395	Upgradient	Yes	0.0001	N/A	-9.210	NO
MW397	Upgradient	Yes	0.00057	N/A	-7.470	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.

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

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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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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	441	NO	6.089	N/A
MW373	Downgradient	Yes	933	YES	6.838	N/A
MW385	Sidegradient	Yes	462	NO	6.136	N/A
MW388	Downgradient	Yes	466	NO	6.144	N/A
MW392	Downgradient	Yes	395	NO	5.979	N/A
MW395	Upgradient	Yes	376	NO	5.930	N/A
MW397	Upgradient	Yes	354	NO	5.869	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.

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

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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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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	0.001	N/A	-6.908	N/A
MW373	Downgradient	No	0.001	N/A	-6.908	N/A
MW385	Sidegradient	Yes	0.0011	NO	-6.812	N/A
MW388	Downgradient	No	0.00073	N/A	-7.222	N/A
MW392	Downgradient	Yes	0.00055	NO	-7.506	N/A
MW395	Upgradient	No	0.001	N/A	-6.908	N/A
MW397	Upgradient	Yes	0.00093	NO	-6.980	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.

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

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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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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	3.64	NO	1.292	N/A
MW373	Downgradient	Yes	1.34	NO	0.293	N/A
MW385	Sidegradient	Yes	1.79	NO	0.582	N/A
MW388	Downgradient	Yes	4.64	NO	1.535	N/A
MW392	Downgradient	Yes	1.3	NO	0.262	N/A
MW395	Upgradient	Yes	5.24	NO	1.656	N/A
MW397	Upgradient	Yes	5.53	NO	1.710	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.

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

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, $S = [\text{Sum}([(background\ result - X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	203	NO	5.313	N/A
MW373	Downgradient	Yes	499	YES	6.213	N/A
MW385	Sidegradient	Yes	200	NO	5.298	N/A
MW388	Downgradient	Yes	211	NO	5.352	N/A
MW392	Downgradient	Yes	191	NO	5.252	N/A
MW395	Upgradient	Yes	147	NO	4.990	N/A
MW397	Upgradient	Yes	159	NO	5.069	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.

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

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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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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	0.066	N/A	-2.718	NO
MW373	Downgradient	Yes	0.071	N/A	-2.645	NO
MW385	Sidegradient	Yes	0.43	N/A	-0.844	NO
MW388	Downgradient	Yes	0.751	N/A	-0.286	NO
MW392	Downgradient	Yes	0.249	N/A	-1.390	NO
MW395	Upgradient	Yes	0.394	N/A	-0.931	NO
MW397	Upgradient	Yes	1.8	N/A	0.588	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.

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

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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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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	13.4	NO	2.595	N/A
MW373	Downgradient	Yes	28.2	YES	3.339	N/A
MW385	Sidegradient	Yes	13.4	NO	2.595	N/A
MW388	Downgradient	Yes	13.4	NO	2.595	N/A
MW392	Downgradient	Yes	9.65	NO	2.267	N/A
MW395	Upgradient	Yes	9.96	NO	2.299	N/A
MW397	Upgradient	Yes	7.64	NO	2.033	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.

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

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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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	0.0113	N/A	-4.483	NO
MW373	Downgradient	Yes	0.123	N/A	-2.096	NO
MW385	Sidegradient	Yes	0.0109	N/A	-4.519	NO
MW388	Downgradient	Yes	0.00573	N/A	-5.162	NO
MW392	Downgradient	Yes	0.0709	N/A	-2.646	NO
MW395	Upgradient	Yes	0.00506	N/A	-5.286	NO
MW397	Upgradient	Yes	0.0273	N/A	-3.601	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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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	Yes	0.00049	N/A	-7.621	NO
MW388	Downgradient	No	0.00024	N/A	-8.335	N/A
MW392	Downgradient	No	0.00038	N/A	-7.875	N/A
MW395	Upgradient	Yes	0.0002	N/A	-8.517	NO
MW397	Upgradient	Yes	0.00017	N/A	-8.680	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

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	0.00301	N/A	-5.806	NO
MW373	Downgradient	Yes	0.00494	N/A	-5.310	NO
MW385	Sidegradient	Yes	0.00138	N/A	-6.586	NO
MW388	Downgradient	Yes	0.00477	N/A	-5.345	NO
MW392	Downgradient	Yes	0.00288	N/A	-5.850	NO
MW395	Upgradient	Yes	0.00149	N/A	-6.509	NO
MW397	Upgradient	Yes	0.00194	N/A	-6.245	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

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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	691	YES	6.538	N/A
MW373	Downgradient	Yes	336	YES	5.817	N/A
MW385	Sidegradient	Yes	375	YES	5.927	N/A
MW388	Downgradient	Yes	634	YES	6.452	N/A
MW392	Downgradient	Yes	762	YES	6.636	N/A
MW395	Upgradient	Yes	586	YES	6.373	N/A
MW397	Upgradient	Yes	675	YES	6.515	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.

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

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	6.23	NO	1.829	N/A
MW373	Downgradient	Yes	5.99	NO	1.790	N/A
MW385	Sidegradient	Yes	6.55	NO	1.879	N/A
MW388	Downgradient	Yes	6.01	NO	1.793	N/A
MW392	Downgradient	Yes	6.21	NO	1.826	N/A
MW395	Upgradient	Yes	5.99	NO	1.790	N/A
MW397	Upgradient	Yes	5.92	NO	1.778	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

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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	2.45	NO	0.896	N/A
MW373	Downgradient	Yes	2.9	NO	1.065	N/A
MW385	Sidegradient	Yes	1.75	NO	0.560	N/A
MW388	Downgradient	Yes	2.07	NO	0.728	N/A
MW392	Downgradient	Yes	1.72	NO	0.542	N/A
MW395	Upgradient	Yes	1.46	NO	0.378	N/A
MW397	Upgradient	Yes	1.57	NO	0.451	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.

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

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

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 possible 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	0.66	N/A	-0.416	NO
MW373	Downgradient	No	0.055	N/A	-2.900	N/A
MW385	Sidegradient	No	0.261	N/A	-1.343	N/A
MW388	Downgradient	No	0.815	N/A	-0.205	N/A
MW392	Downgradient	No	0.23	N/A	-1.470	N/A
MW395	Upgradient	No	0.566	N/A	-0.569	N/A
MW397	Upgradient	No	0.45	N/A	-0.799	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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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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	42.8	NO	3.757	N/A
MW373	Downgradient	Yes	61.5	NO	4.119	N/A
MW385	Sidegradient	Yes	30.6	NO	3.421	N/A
MW388	Downgradient	Yes	48.9	NO	3.890	N/A
MW392	Downgradient	Yes	32.3	NO	3.475	N/A
MW395	Upgradient	Yes	25.8	NO	3.250	N/A
MW397	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.

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

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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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 possible 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	No	14.8	N/A	2.695	N/A
MW373	Downgradient	Yes	28.8	NO	3.360	N/A
MW385	Sidegradient	Yes	134	YES	4.898	N/A
MW388	Downgradient	Yes	90.4	YES	4.504	N/A
MW392	Downgradient	No	3.17	N/A	1.154	N/A
MW395	Upgradient	No	17	N/A	2.833	N/A
MW397	Upgradient	No	4.58	N/A	1.522	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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	1.15	NO	0.140	N/A
MW373	Downgradient	Yes	1.9	NO	0.642	N/A
MW385	Sidegradient	Yes	1.47	NO	0.385	N/A
MW388	Downgradient	Yes	1.55	NO	0.438	N/A
MW392	Downgradient	Yes	1.54	NO	0.432	N/A
MW395	Upgradient	Yes	1.21	NO	0.191	N/A
MW397	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.

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

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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	7.14	NO	1.966	N/A
MW373	Downgradient	Yes	14.1	NO	2.646	N/A
MW385	Sidegradient	Yes	5.1	NO	1.629	N/A
MW388	Downgradient	Yes	9.46	NO	2.247	N/A
MW392	Downgradient	Yes	27	NO	3.296	N/A
MW395	Upgradient	Yes	7.36	NO	1.996	N/A
MW397	Upgradient	Yes	6.34	NO	1.847	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, $S = [\text{Sum}([(background\ result - X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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

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	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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	1.04	N/A	0.039	N/A
MW373	Downgradient	Yes	7.67	NO	2.037	N/A
MW385	Sidegradient	No	1	N/A	0.000	N/A
MW388	Downgradient	Yes	0.66	N/A	-0.416	N/A
MW392	Downgradient	Yes	18.2	NO	2.901	N/A
MW395	Upgradient	Yes	3.99	N/A	1.384	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.

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

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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Uranium

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**= 0.001 **S**= 0.000 **CV(1)**=0.000 **K factor****= 2.523 **TL(1)**= 0.001 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= -6.908 **S**= 0.000 **CV(2)**=0.000 **K factor****= 2.523 **TL(2)**= -6.908 **LL(2)**=N/A

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	0.001	-6.908
9/16/2002	0.001	-6.908
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

Well Number: MW397

Date Collected	Result	LN(Result)
8/13/2002	0.001	-6.908
9/16/2002	0.001	-6.908
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	0.0002	N/A	-8.517	N/A
MW373	Downgradient	No	0.0002	N/A	-8.517	N/A
MW385	Sidegradient	Yes	0.00032	NO	-8.047	N/A
MW388	Downgradient	No	0.0002	N/A	-8.517	N/A
MW392	Downgradient	No	0.0002	N/A	-8.517	N/A
MW395	Upgradient	No	0.0002	N/A	-8.517	N/A
MW397	Upgradient	No	0.0002	N/A	-8.517	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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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Vanadium

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= 0.021 S= 0.002 CV(1)=0.105 K factor***= 2.523 TL(1)= 0.027 LL(1)=N/A

Statistics-Transformed Background Data X= -3.856 S= 0.100 CV(2)=-0.026 K factor***= 2.523 TL(2)= -3.604 LL(2)=N/A

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	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
7/16/2003	0.02	-3.912
10/14/2003	0.02	-3.912
1/13/2004	0.02	-3.912
4/12/2004	0.02	-3.912

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	No	0.005	N/A	-5.298	N/A
MW373	Downgradient	No	0.005	N/A	-5.298	N/A
MW385	Sidegradient	No	0.005	N/A	-5.298	N/A
MW388	Downgradient	No	0.005	N/A	-5.298	N/A
MW392	Downgradient	No	0.005	N/A	-5.298	N/A
MW395	Upgradient	No	0.005	N/A	-5.298	N/A
MW397	Upgradient	Yes	0.00166	NO	-6.401	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.

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	0.02	-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

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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First Quarter 2015 Statistical Analysis Historical Background Comparison

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

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	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

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	Yes	0.00385	NO	-5.560	N/A
MW388	Downgradient	No	0.01	N/A	-4.605	N/A
MW392	Downgradient	Yes	0.00388	NO	-5.552	N/A
MW395	Upgradient	No	0.01	N/A	-4.605	N/A
MW397	Upgradient	Yes	0.0136	NO	-4.298	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.

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

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, $S = [\text{Sum}([(background\ result - X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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 First 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= 340.750 S= 133.025 CV(1)=0.390 **K factor**= 3.188** TL(1)= 764.834 LL(1)=N/A

Statistics-Transformed Background Data X= 5.756 S= 0.430 CV(2)=0.075 **K factor**= 3.188** TL(2)= 7.128 LL(2)=N/A

Current 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: MW396

Date Collected	Result	LN(Result)
1/15/2013	298	5.697
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW386	Sidegradient	Yes	227	NO	5.425	N/A
MW390	Downgradient	Yes	817	YES	6.706	N/A
MW393	Downgradient	Yes	456	NO	6.122	N/A
MW396	Upgradient	Yes	193	NO	5.263	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.

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.

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= 1.572 S= 4.206 CV(1)=2.676 K factor**= 3.188 TL(1)= 14.980 LL(1)=N/A

Statistics-Transformed Background Data X= 0.668 S= 1.277 CV(2)=1.911 K factor**= 3.188 TL(2)= 2.182 LL(2)=N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW396

Date Collected	Result	LN(Result)
1/15/2013	3.9	1.361
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

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 possible 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	55.7	N/A	4.020	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.

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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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= 10.984 S= 6.586 CV(1)=0.600 **K factor**= 2.523** TL(1)= 27.601 LL(1)=N/A

Statistics-Transformed Background Data X= 2.215 S= 0.642 CV(2)=0.290 **K factor**= 2.523** TL(2)= 3.836 LL(2)=N/A

Current 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: MW220

Date Collected	Result	LN(Result)
1/15/2013	15.7	2.754
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

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	2.54	0.932
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	115	YES	4.745	N/A
MW384	Sidegradient	Yes	138	YES	4.927	N/A
MW387	Downgradient	Yes	158	YES	5.063	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
- 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.

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= 24.338 S= 3.197 CV(1)=0.131 **K factor**= 2.523** TL(1)= 32.405 LL(1)=N/A

Statistics-Transformed Background Data X= 3.183 S= 0.138 CV(2)=0.043 **K factor**= 2.523** TL(2)= 3.532 LL(2)=N/A

Current 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: MW220

Date Collected	Result	LN(Result)
1/15/2013	19.3	2.960
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	53.5	YES	3.980	N/A
MW387	Downgradient	Yes	40	YES	3.689	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	27	3.296
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

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

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.

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**= 383.625 **S**= 26.232 **CV(1)**=0.068 **K factor****= 2.523 **TL(1)**= 449.808 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 5.947 **S**= 0.072 **CV(2)**=0.012 **K factor****= 2.523 **TL(2)**= 6.130 **LL(2)**=N/A

Current 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: MW220

Date Collected	Result	LN(Result)
1/15/2013	335	5.814
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	701	YES	6.553	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	398	5.986
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

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, $S = \sqrt{[\text{Sum } ((\text{background result}-X)^2)/(\text{count of background results } -1)]}^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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**= 232.813 **S**= 88.599 **CV(1)**=0.381 **K factor****= 2.523 **TL(1)**= 456.347 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 5.409 **S**= 0.264 **CV(2)**=0.049 **K factor****= 2.523 **TL(2)**= 6.075 **LL(2)**=N/A

Current 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: MW220

Date Collected	Result	LN(Result)
1/15/2013	196	5.278
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	374	NO	5.924	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	218	5.384
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

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, $S = \sqrt{[\text{Sum } ((\text{background result}-X)^2)/(\text{count of background results} - 1)]}^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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= 9.873 S= 1.331 CV(1)=0.135 **K factor**= 2.523** TL(1)= 13.231 LL(1)=N/A

Statistics-Transformed Background Data X= 2.281 S= 0.143 CV(2)=0.063 **K factor**= 2.523** TL(2)= 2.642 LL(2)=N/A

Current 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: MW220

Date Collected	Result	LN(Result)
1/15/2013	7.74	2.046
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	20.4	YES	3.016	N/A
MW387	Downgradient	Yes	18.5	YES	2.918	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	11.2	2.416
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

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

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.

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= 557.000 S= 184.531 CV(1)=0.331 K factor**= 2.523 TL(1)= 1022.571 LL(1)=N/A

Statistics-Transformed Background Data X= 6.272 S= 0.326 CV(2)=0.052 K factor**= 2.523 TL(2)= 7.096 LL(2)=N/A

Current 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: MW220

Date Collected	Result	LN(Result)
1/15/2013	353	5.866
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

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	641	6.463
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW220	Upgradient	Yes	733	NO	6.597	N/A
MW221	Downgradient	Yes	850	NO	6.745	N/A
MW222	Downgradient	Yes	554	NO	6.317	N/A
MW223	Downgradient	Yes	604	NO	6.404	N/A
MW224	Downgradient	Yes	534	NO	6.280	N/A
MW369	Downgradient	Yes	779	NO	6.658	N/A
MW372	Downgradient	Yes	693	NO	6.541	N/A
MW387	Downgradient	Yes	820	NO	6.709	N/A
MW391	Downgradient	Yes	760	NO	6.633	N/A
MW394	Upgradient	Yes	453	NO	6.116	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.

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= 34.325 S= 5.240 CV(1)=0.153 **K factor**= 2.523** TL(1)= 47.545 LL(1)=N/A

Statistics-Transformed Background Data X= 3.525 S= 0.150 CV(2)=0.043 **K factor**= 2.523** TL(2)= 3.905 LL(2)=N/A

Current 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: MW220

Date Collected	Result	LN(Result)
1/15/2013	35	3.555
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW387	Downgradient	Yes	61.6	YES	4.121	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	30.7	3.424
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

Conclusion of Statistical Analysis on Current Data

Wells with Exceedances

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

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.

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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**= 13.481 **S**= 3.850 **CV(1)**=0.286 **K factor****= 2.523 **TL(1)**= 23.195 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 2.564 **S**= 0.279 **CV(2)**=0.109 **K factor****= 2.523 **TL(2)**= 3.269 **LL(2)**=N/A

Current 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: MW220

Date Collected	Result	LN(Result)
1/15/2013	15	2.708
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW372	Downgradient	Yes	109	YES	4.691	N/A
MW384	Sidegradient	Yes	20.3	NO	3.011	N/A
MW387	Downgradient	Yes	34.4	YES	3.538	N/A

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	10	2.303
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

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

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, $S = \sqrt{[\text{Sum } ((\text{background result}-X)^2)/(\text{count of background results} - 1)]}^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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**= 15.904 **S**= 9.533 **CV(1)**=0.599 **K factor****= 2.523 **TL(1)**= 39.956 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 2.699 **S**= 0.565 **CV(2)**=0.210 **K factor****= 2.523 **TL(2)**= 3.555 **LL(2)**=N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW220

Date Collected	Result	LN(Result)
1/15/2013	13.6	2.610
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

Well Number: MW394

Date Collected	Result	LN(Result)
1/15/2013	-0.751	#Func!
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

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 possible 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)
MW369	Downgradient	Yes	45.2	YES	3.811	N/A
MW372	Downgradient	Yes	181	YES	5.198	N/A
MW384	Sidegradient	Yes	191	YES	5.252	N/A
MW387	Downgradient	Yes	211	YES	5.352	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

- MW369
- MW372
- 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, $S = \sqrt{[\text{Sum } ((\text{background result}-X)^2)/(\text{count of background results } -1)]}^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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

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= 10.238 S= 4.993 CV(1)=0.488 **K factor**= 2.523** TL(1)= 22.835 LL(1)=N/A

Statistics-Transformed Background Data X= 2.186 S= 0.593 CV(2)=0.271 **K factor**= 2.523** TL(2)= 3.683 LL(2)=N/A

Current 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)
1/15/2013	6.85	1.924
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW385	Sidegradient	Yes	100	YES	4.605	N/A
MW388	Downgradient	Yes	63.3	YES	4.148	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
1/15/2013	14	2.639
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

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>.

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**= 23.063 **S**= 4.405 **CV(1)**=0.191 **K factor****= 2.523 **TL(1)**= 34.175 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 3.121 **S**= 0.194 **CV(2)**=0.062 **K factor****= 2.523 **TL(2)**= 3.609 **LL(2)**=N/A

Current 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)
1/15/2013	26.8	3.288
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	71.5	YES	4.270	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
1/15/2013	19.5	2.970
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

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, $S = [\text{Sum}([(background\ result-X)^2]/[\text{count of background results} - 1])]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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=** 364.625 **S=** 28.978 **CV(1)=**0.079 **K factor**=** 2.523 **TL(1)=** 437.736 **LL(1)=**N/A

Statistics-Transformed Background Data **X=** 5.896 **S=** 0.080 **CV(2)=**0.014 **K factor**=** 2.523 **TL(2)=** 6.098 **LL(2)=**N/A

Current 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)
1/15/2013	384	5.951
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	933	YES	6.838	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
1/15/2013	320	5.768
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

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, $S = [\text{Sum} ((\text{background result}-X)^2)/[\text{count of background results} - 1]]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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**= 193.250 **S**= 26.534 **CV(1)**=0.137 **K factor****= 2.523 **TL(1)**= 260.196 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 5.255 **S**= 0.136 **CV(2)**=0.026 **K factor****= 2.523 **TL(2)**= 5.598 **LL(2)**=N/A

Current 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)
1/15/2013	234	5.455
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	499	YES	6.213	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
1/15/2013	195	5.273
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

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, $S = \sqrt{[\text{Sum } ((\text{background result}-X)^2)/(\text{count of background results } -1)]}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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 = 9.413	S = 1.804	CV(1) =0.192	K factor** = 2.523	TL(1) = 13.966	LL(1) =N/A
Statistics-Transformed Background Data	X = 2.225	S = 0.194	CV(2) =0.087	K factor** = 2.523	TL(2) = 2.714	LL(2) =N/A

Current 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)
1/15/2013	11.1	2.407
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW373	Downgradient	Yes	28.2	YES	3.339	N/A

Well Number: MW397

Date Collected	Result	LN(Result)
1/15/2013	7.99	2.078
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

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, $S = \sqrt{[\text{Sum } ((\text{background result}-X)^2)/(\text{count of background results} - 1)]}^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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= 504.313 S= 158.694 CV(1)=0.315** **K factor**= 2.523** **TL(1)= 904.697** **LL(1)=N/A**

Statistics-Transformed Background Data **X= 6.180 S= 0.298 CV(2)=0.048** **K factor**= 2.523** **TL(2)= 6.931** **LL(2)=N/A**

Current 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)
1/15/2013	527	6.267
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

Well Number: MW397

Date Collected	Result	LN(Result)
1/15/2013	823	6.713
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	691	NO	6.538	N/A
MW373	Downgradient	Yes	336	NO	5.817	N/A
MW385	Sidegradient	Yes	375	NO	5.927	N/A
MW388	Downgradient	Yes	634	NO	6.452	N/A
MW392	Downgradient	Yes	762	NO	6.636	N/A
MW395	Upgradient	Yes	586	NO	6.373	N/A
MW397	Upgradient	Yes	675	NO	6.515	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, $S = [\text{Sum} ((\text{background result}-X)^2)/[\text{count of background results} - 1]]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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**= 12.111 **S**= 3.613 **CV(1)**=0.298 **K factor****= 2.523 **TL(1)**= 21.227 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 2.462 **S**= 0.243 **CV(2)**=0.099 **K factor****= 2.523 **TL(2)**= 3.076 **LL(2)**=N/A

Current 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)
1/15/2013	10	2.303
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

Well Number: MW397

Date Collected	Result	LN(Result)
1/15/2013	12	2.485
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

Current Quarter Data

Well No.	Gradient	Detected?	Result	Result >TL(1)?	LN(Result)	LN(Result) >TL(2)
MW370	Downgradient	Yes	20	NO	2.996	N/A
MW373	Downgradient	Yes	197	YES	5.283	N/A
MW385	Sidegradient	Yes	18.6	NO	2.923	N/A
MW388	Downgradient	Yes	24.4	YES	3.195	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, $S = [\text{Sum } ((\text{background result}-X)^2)/[\text{count of background results } -1]]^{0.5}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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.

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**= 12.920 **S**= 8.240 **CV(1)**=0.638 **K factor****= 2.523 **TL(1)**= 33.710 **LL(1)**=N/A

Statistics-Transformed Background Data **X**= 2.519 **S**= 0.546 **CV(2)**=0.217 **K factor****= 2.523 **TL(2)**= 3.517 **LL(2)**=N/A

Current Background Data from Upgradient Wells with Transformed Result

Well Number: MW395

Date Collected	Result	LN(Result)
1/15/2013	-4.1	#Func!
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

Well Number: MW397

Date Collected	Result	LN(Result)
1/15/2013	6.96	1.940
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

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 possible 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)
MW385	Sidegradient	Yes	134	YES	4.898	N/A
MW388	Downgradient	Yes	90.4	YES	4.504	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, $S = \sqrt{[\text{Sum } ((\text{background result}-X)^2)/(\text{count of background results } -1)]^{0.5}}$

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

X Mean, $X = (\text{sum of background results})/(\text{count of background results})$

** 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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LATA
756 Park Meadow Road
Westerville, Ohio 43081

April 9th, 2015

Mr. Craig Jones
LATA Environmental Services of Kentucky, LLC
761 Veterans Avenue
Kevil, Kentucky 42053

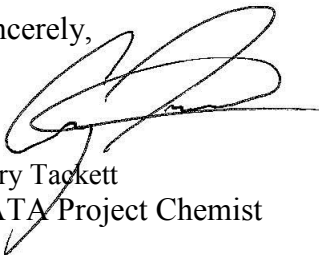
Dear Mr. Jones:

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 mathematics, I have over two 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 LATA.

For this project, the statistical analyses conducted on the first 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,


Cory Tackett
LATA Project Chemist

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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 first quarter 2015 and to determine the groundwater flow rate and direction.

Water levels during this reporting period were measured on January 28 and 29, 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 insufficient water for a measurement of the water level and for sampling.

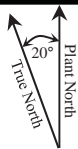
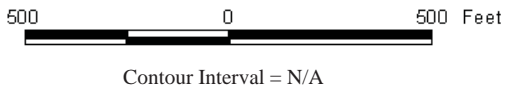
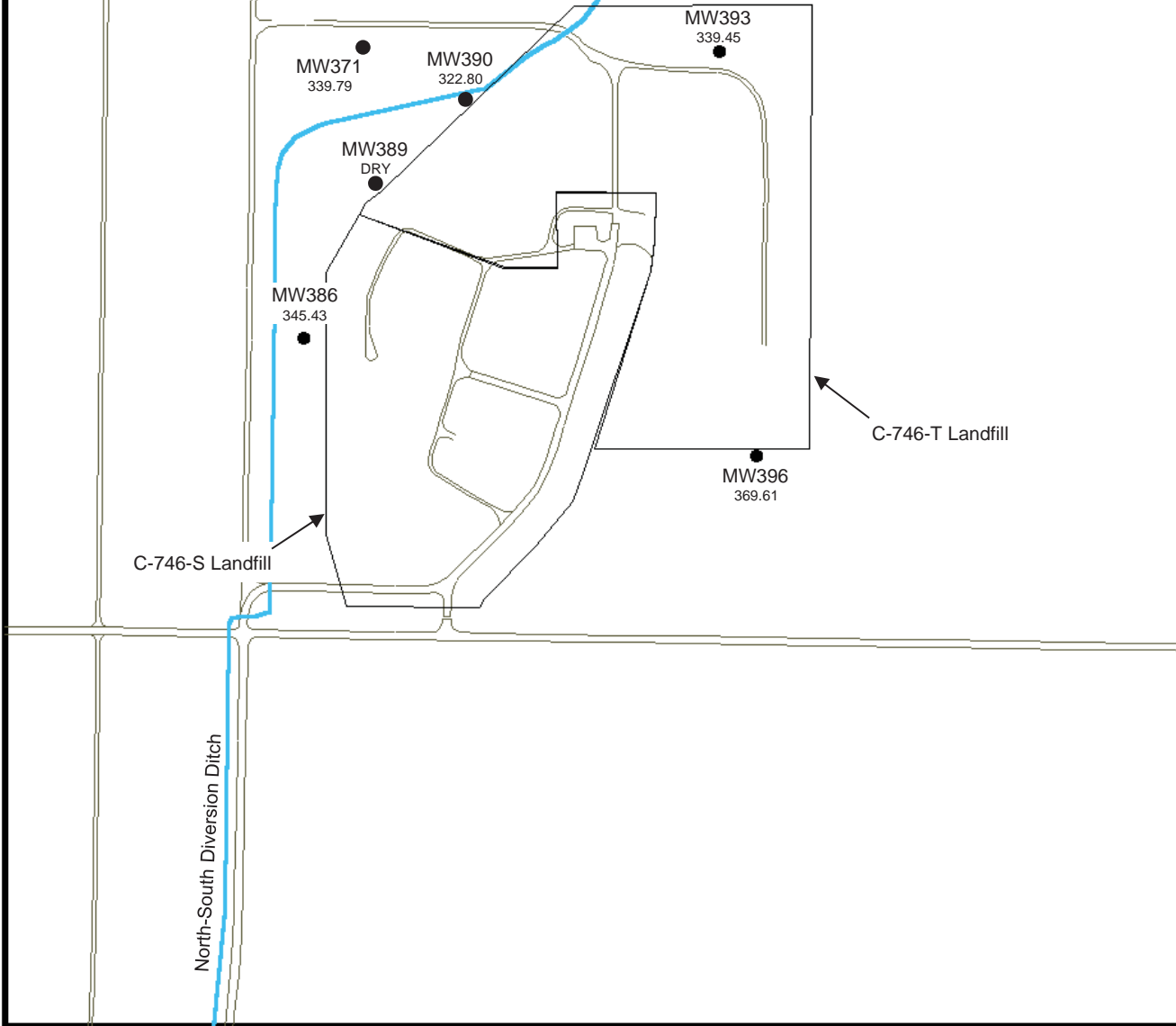
The UCRS has a strong vertical hydraulic gradient; therefore, the limited number of available UCRS wells, screened over different elevations, is not sufficient for mapping the potentiometric surface. Figure E.1 shows the location of UCRS MWs. The Upper Regional Gravel Aquifer (URGA) and Lower Regional 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 landfill is 2.95×10^{-4} ft/ft. Additional water level measurements in January (Figure E.3) document the vicinity groundwater hydraulic gradient for the RGA to be 3.78×10^{-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. 073-00045NWC1 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. As demonstrated on the potentiometric map for January 2015, the groundwater flow direction in the immediate area of the landfill is oriented westward to the typical regional flow direction.

¹ Additional water level measurements, in wells at the C-746-U Landfill and in wells of the surrounding region (MW98, MW100, MW125, MW139, MW165A, MW173, MW193, MW197, and MW200), were used to contour the RGA potentiometric surface.

Geological conditions in the UCRS indicate that permeable zones are discontinuous across the plant site. In the vicinity of the C-746-S&T Landfills, one of the wells is usually dry (MW389) or has a low water level which prevents sample collection, while others have recordable water levels. The UCRS contains a strong vertical gradient; therefore, the limited number of UCRS wells is not sufficient to map the potentiometric surface.



U.S. DEPARTMENT OF ENERGY
DOE PORTSMOUTH-PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT

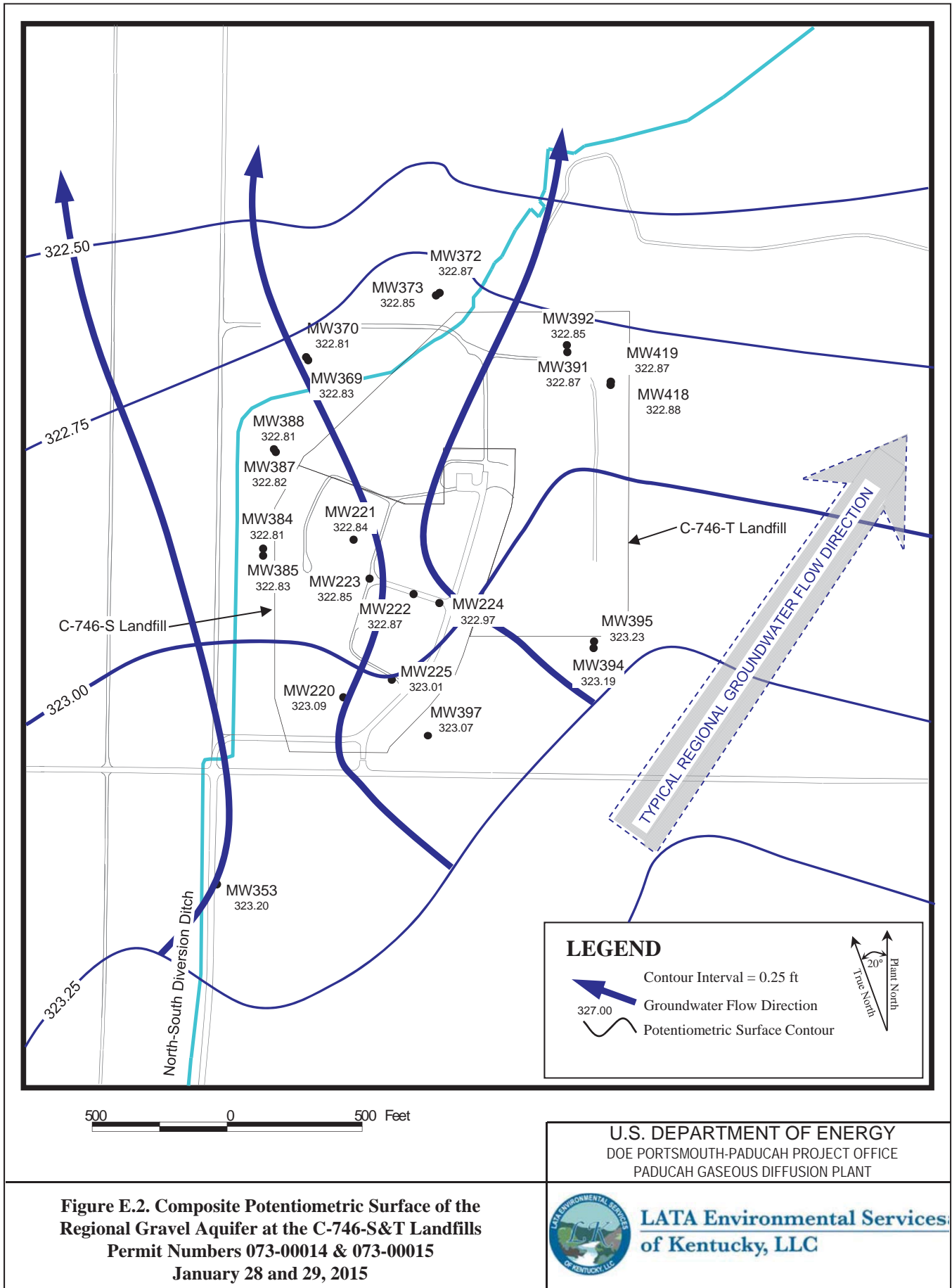
Figure E.1. Potentiometric Surface of the Upper Continental Recharge System at the C-746 S&T Landfills
Permit Numbers 073-00014 & 073-00015
January 28, 2015



Table E.1. C-746-S&T Landfills First Quarter 2015 (January) Water Levels

C-746-S&T Landfills (January 2015) Water Levels										
Date	Time	Well	Formation	Datum Elev (ft amsl)	BP (in Hg)	Delta BP (ft H2O)	Raw Data		*Corrected Data	
							DTW (ft)	Elev (ft amsl)	DTW (ft)	Elev (ft amsl)
1/28/2015	8:48	MW220	URGA	381.44	30.30	0.00	58.35	323.09	58.35	323.09
1/28/2015	8:58	MW221	URGA	390.83	30.30	0.00	67.99	322.84	67.99	322.84
1/28/2015	8:54	MW222	URGA	394.87	30.30	0.00	72.00	322.87	72.00	322.87
1/28/2015	8:56	MW223	URGA	394.03	30.30	0.00	71.18	322.85	71.18	322.85
1/28/2015	8:52	MW224	URGA	395.41	30.30	0.00	72.44	322.97	72.44	322.97
1/28/2015	8:50	MW225	URGA	385.55	30.30	0.00	62.54	323.01	62.54	323.01
1/28/2015	9:04	MW353	LRGA	374.86	30.30	0.00	51.66	323.20	51.66	323.20
1/28/2015	8:08	MW369	URGA	364.48	30.30	0.00	41.65	322.83	41.65	322.83
1/28/2015	8:09	MW370	LRGA	365.35	30.30	0.00	42.54	322.81	42.54	322.81
1/28/2015	8:10	MW371	UCRS	364.88	30.30	0.00	25.09	339.79	25.09	339.79
1/29/2015	9:05	MW372	URGA	359.66	30.04	0.29	36.50	323.16	36.79	322.87
1/29/2015	9:07	MW373	LRGA	359.95	30.04	0.29	36.81	323.14	37.10	322.85
1/28/2015	8:39	MW384	URGA	365.06	30.30	0.00	42.25	322.81	42.25	322.81
1/28/2015	8:37	MW385	LRGA	365.54	30.30	0.00	42.71	322.83	42.71	322.83
1/28/2015	8:38	MW386	UCRS	365.21	30.30	0.00	19.78	345.43	19.78	345.43
1/28/2015	8:42	MW387	URGA	363.27	30.30	0.00	40.45	322.82	40.45	322.82
1/28/2015	8:41	MW388	LRGA	363.25	30.30	0.00	40.44	322.81	40.44	322.81
1/28/2015	8:44	MW389	UCRS	363.82	30.30	0.00	DRY	--	DRY	--
1/28/2015	8:46	MW390	UCRS	360.36	30.30	0.00	37.56	322.80	37.56	322.80
1/29/2015	9:18	MW391	URGA	366.54	30.04	0.29	43.38	323.16	43.67	322.87
1/29/2015	9:20	MW392	LRGA	365.67	30.04	0.29	42.53	323.14	42.82	322.85
1/28/2015	8:19	MW393	UCRS	366.59	30.30	0.00	27.14	339.45	27.14	339.45
1/28/2015	8:29	MW394	URGA	378.32	30.30	0.00	55.13	323.19	55.13	323.19
1/28/2015	8:27	MW395	LRGA	379.01	30.30	0.00	55.78	323.23	55.78	323.23
1/28/2015	8:28	MW396	UCRS	378.64	30.30	0.00	9.03	369.61	9.03	369.61
1/28/2015	8:32	MW397	LRGA	386.90	30.30	0.00	63.83	323.07	63.83	323.07
1/28/2015	8:24	MW418	URGA	366.78	30.30	0.00	43.90	322.88	43.90	322.88
1/28/2015	8:25	MW419	LRGA	366.68	30.30	0.00	43.81	322.87	43.81	322.87

Initial Barometric Pressure **30.30**
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



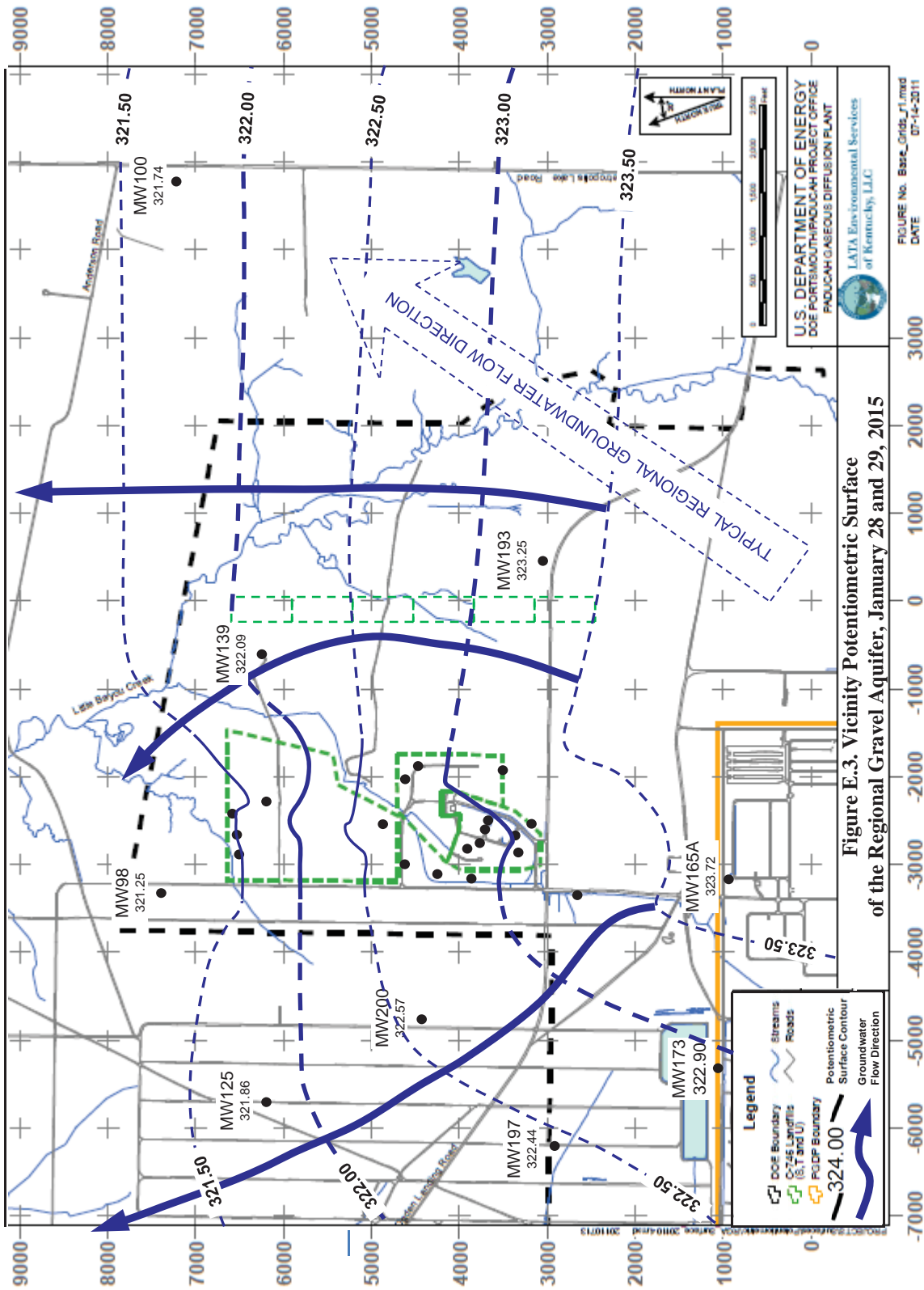


Table E.2. C-746-S&T Landfills Hydraulic Gradients

	ft/ft
Beneath Landfill Mound	2.95×10^{-4}
Vicinity	3.78×10^{-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
<u>Beneath Landfill Mound</u>					
725	0.256	0.21	7.55×10^{-5}	0.86	3.02×10^{-4}
425	0.150	0.13	4.42×10^{-5}	0.50	1.77×10^{-4}
<u>Vicinity</u>					
725	0.256	0.27	9.67×10^{-5}	1.10	3.87×10^{-4}
425	0.150	0.16	5.66×10^{-5}	0.64	2.27×10^{-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 first 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.

<u>Parameter</u>	<u>Monitoring Well</u>
Upper Continental Recharge System	
Technetium-99	MW390
Upper Regional Gravel Aquifer	
Sodium	MW387
Technetium-99	MW369, MW372, MW384, MW387
Lower Regional Gravel Aquifer	
Technetium-99	MW385, MW388

NOTE: Although technetium-99 is not cited in 40 CFR § 302.4, Appendix A, it is being reported along with the parameters of this regulation.

2/23/2015

**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	Beta activity	900.0	115	pCi/L	50
		Trichloroethene	8260B	8.08	ug/L	5
8004-4792	MW373	Trichloroethene	8260B	7.67	ug/L	5
8004-4809	MW384	Beta activity	900.0	138	pCi/L	50
8004-4810	MW385	Beta activity	900.0	100	pCi/L	50
8004-4815	MW387	Beta activity	900.0	158	pCi/L	50
8004-4816	MW388	Beta activity	900.0	63.3	pCi/L	50
8004-4805	MW391	Trichloroethene	8260B	18.3	ug/L	5
		Trichloroethene	8260B	17.4	ug/L	5
8004-4806	MW392	Trichloroethene	8260B	18.2	ug/L	5
8004-4802	MW394	Trichloroethene	8260B	6.03	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							
	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							*							*									
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 4, 2008							*																
Quarter 1, 2009			*				*				*												
Quarter 1, 2010			*				*				*												
Quarter 2, 2010			*								*												
Quarter 3, 2010			*								*		*					*		*			
Quarter 1, 2011							*				*												
Quarter 2, 2011			*								*												
Quarter 2, 2012			*																				
Quarter 3, 2012							*																
Quarter 1, 2013							*				*												
Quarter 3, 2013			*									*											
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								
	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
BETA ACTIVITY																							
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										■		■	■				■		■	■			

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA							
	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																							
Quarter 1, 2003			*																				
Quarter 4, 2003			*																				
Quarter 1, 2004			*																				
Quarter 2, 2004			*																				
Quarter 3, 2004			*																				
Quarter 4, 2004			*																				
Quarter 1, 2005			*																				
Quarter 3, 2006			*																				
CALCIUM																							
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												*								*			

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA							
	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											*	*							*				
CARBON DISULFIDE																							
Quarter 4, 2010											*												
Quarter 1, 2011											*											*	
CHEMICAL OXYGEN DEMAND																							
Quarter 1, 2003				*																			
Quarter 2, 2003				*																			
Quarter 3, 2003				*		*				*													
Quarter 4, 2003				*																			
Quarter 1, 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 3, 2011	*																						
Quarter 4, 2011	*																						
Quarter 1, 2012	*																						
Quarter 1, 2013	*																						
Quarter 3, 2013	*																						
Quarter 3, 2014	*								*			*					*						
Quarter 4, 2014						*																	

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA							
	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																							
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 2, 2011			*																				
Quarter 3, 2011			*																				
Quarter 4, 2011			*																				
Quarter 3, 2012			*																				
Quarter 3, 2013			*																				
Quarter 4, 2013			*																				
Quarter 4, 2014			*																				
CHROMIUM																							
Quarter 4, 2002									■														
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							
	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										*									*				
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											*	*						*	*				

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA							
	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											*	*						*					

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA								
	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	
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								
	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												*	*							*				

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA							
	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	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA							
	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							
	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			*								*							*					
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							
	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												*											

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA								LRGA									
	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										*		*	*				*	*	*	*	*	*	

Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA								LRGA									
	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
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			*							*	*	*	*				*		*	*			
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							
	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							
	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																							
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Quarter 4, 2013																							
Quarter 1, 2014																							
Quarter 2, 2014																							
Quarter 3, 2014																							
Quarter 4, 2014																							
Quarter 1, 2015																							


Chart of MCL and Historical UTL Exceedances for the C-746-S and T Landfills

Groundwater Flow System	UCRS					URGA										LRGA							
	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:	3/12/2015	Time:	09:00	Monitor:	Tammy Smith														
Weather Conditions: Cloudy with calm winds at 47 degrees																			
Monitoring Equipment: MSA Sirius A3-12982																			
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 4.2	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 1.2	17 0	3-4.2, 16-1.2	
Cell 2 Gas Vent (3)	1 0	2 0	3 0															0	
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																		
Suspect or Problem Areas	No areas noted				JB 3-12-15														
Remarks: ALL VENTS CHECKED 1" FROM THE MOUTH OF THE VENT																			
Performed by:																			
 Signature				3/12/2015 Date															

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APPENDIX I

SURFACE WATER ANALYSES AND WRITTEN COMMENTS

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Division of Waste Management RESIDENTIAL/INERT-QUARTERLY

Solid Waste Branch

Facility: US DOE - Paducah Gaseous Diffusion Plant

14 Reilly Road

Permit Number: 073-00014 & 073-00015

FINDS/UNIT: KY8-890-008-982 / 1

Frankfort, KY 40601 (502)564-6716

LAB ID: None

For Official Use Only

SURFACE WATER SAMPLE ANALYSIS (s)

Monitoring Point (KPD&S Discharge Number, or "UPSTREAM", or "DOWNSTREAM")	L135 UPSTREAM	L154 DOWNSTREAM	L136 AT SITE	F. 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	F							
Sample Date and Time (Month/Day/Year hour:minutes)	1/12/2015 10:49	1/12/2015 10:38	3/4/2015 07:20	1/12/2015 10:50							
Duplicate ("Y" or "N") ¹	N	N	N	N							
Split ('Y' or 'N') ²	N	N	N	N							
Facility Sample ID Number (if applicable)	L135SS2-15	L154US2-15	L136SS2-15	FB1SS2-15							
Laboratory Sample ID Number (if applicable)	364796001	364810003	368336001	364796003							
Date of Analysis (Month/Day/Year)	2/6/2015	2/6/2015	3/26/2015	2/6/2015							
CAS RN ³	CONSTITUENT	T D ⁴	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	F L A G S ⁷	DETECTED VALUE OR PQL ⁵	F L A G S ⁷	DETECTED VALUE OR PQL ⁵	F L A G S ⁷	
A200-00-0	Flow	T	MGD	Field	0.05		0.07		0.52		*
16887-00-6	Chloride(s)	T	mg/L	300.0	11.7		22.8		0.567		<0.2
14808-79-8	Sulfate	T	mg/L	300.0	19.9		27.2		7.29		0.136
7439-89-6	Iron	T	mg/L	200.8	0.598		0.331		1.03		<0.1
7440-23-5	Sodium	T	mg/L	200.8	6.92		13.1		1.02		<0.25
S0268- -	Organic Carbon ⁶	T	mg/L	9060	12.2		19.7		6.27		*
S0097- -	BOD ⁶	T	mg/L	not applicable		*				*	*
S0130- -	Chemical Oxygen Demand	T	mg/L	410.4	37.9		85.4		10	J	*

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

¹Respond "Y" if the sample was a duplicate of another sample in this report
²Respond "Y" if the sample was split and analyzed by separate laboratories.
³Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
⁴T = Total; "D" = Dissolved
⁵"<" indicates a non-detect; do not use "ND" or "BDL". Value then shown is Practical Quantification Limit
⁶Facility has either/or option on Organic Carbon and (BOD) Biochemical Oxygen Demand - both are not required
⁷Flags are as designated, do not use any other type. Use "*", " then describe on "Written Comments" page.

Division of Waste Management **RESIDENTIAL/INERT-QUARTERLY**
Solid Waste Branch **Facility: US DOE - Paducah Gaseous Diffusion Plant**
14 Reilly Road **Permit Number: 073-00014 & 073-00015** FINDS/UNIT: KY8-890-008-982 / 1
Frankfort, KY 40601 (502)564-6716 LAB ID: None
For Official Use Only

SURFACE WATER SAMPLE ANALYSIS (s)

Monitoring Point (KPD&S Discharge Number, or "UPSTREAM", or "DOWNSTREAM")	L135 UPSTREAM	L154 DOWNSTREAM							
Sample Sequence #	2	2							
If sample is a Blank, specify Type: (F)ield, (T)rip, (M)ethod, or (E)quipment	NA	NA							
Sample Date and Time (Month/Day/Year hour:minutes)	1/12/2015 10:49	1/12/2015 10:38							
Duplicate ("Y" or "N") ¹	Y	Y							
Split ("Y" or "N") ²	N	N							
Facility Sample ID Number (if applicable)	L135DSS2-15	L154DUS2-15							
Laboratory Sample ID Number (if applicable)	364796002	364810002							
Date of Analysis (Month/Day/Year)	2/6/2015	2/6/2015							
CAS RN ³	CONSTITUENT	Unit OF MEASURE	METHOD	DETECTED VALUE OR PQL ⁵	DETECTED VALUE OR PQL ⁵	DETECTED VALUE OR PQL ⁵	FLA S ⁷	FLA S ⁷	FLA S ⁷
A200-00-0	Flow	MGD	Field	0.05	0.07				
16887-00-6	Chloride(s)	mg/L	300.0	11.8	22.8				
14808-79-8	Sulfate	mg/L	300.0	19.9	27.1				
7439-89-6	Iron	mg/L	200.8	0.586	1.07				
7440-23-5	Sodium	mg/L	200.8	6.79	12.9				
S0268- -	Organic Carbon ⁶	mg/L	9060	11.2	18.7				
S0097- -	BOD ⁶	mg/L	not applicable	*	*				
S0130- -	Chemical Oxygen Demand	mg/L	410.4	57.9	55.4				

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
- ¹Respond "Y" if the sample was a duplicate of another sample in this report
²Respond "Y" if the sample was split and analyzed by separate laboratories.
³Chemical Abstracts Service Registry Number or unique identifier number assigned by agency.
⁴RT = Total; "D" = Dissolved
⁵"<" indicates a non-detect; do not use "ND" or "BDL". Value then shown is Practical Quantification Limit
⁶Facility has either/or option on Organic Carbon and (BOD) Biochemical Oxygen Demand - both are not required
⁷Flags are as designated, do not use any other type. Use "*", " then describe on "Written Comments" page.

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.)

CAS RN ³	CONSTITUENT	TD ₄	Unit OF MEASURE	METHOD	L135 UPSTREAM		L154 DOWNSTREAM		FLA G S'	DETECTED VALUE OR PQL ⁵	FLA G S'	DETECTED VALUE OR PQL ⁵	FLA G S'
					DETECTED VALUE OR PQL ⁵	FLA G S'	DETECTED VALUE OR PQL ⁵	FLA G S'					
S0145- -	1 Specific Conductance	T	µmho/cm	Field	321		421						
S0270- -	0 Total Suspended Solids	T	mg/L	160.2	6.1		18						
S0266- -	0 Total Dissolved Solids	T	mg/L	160.1	180		234						
S0269- -	0 Total Solids	T	mg/L	SM-2540B	210		296						
S0296- -	0 pH	T	Units	Field	7.74		7.69						
7440-61-1	Uranium	T	mg/L	200.8	0.0448		0.0207						
12587-46-1	Gross Alpha (α)	T	pCi/L	900.0	18.8	*	6.73	*					
12587-47-2	Gross Beta (β)	T	pCi/L	900.0	35.9	*	15.6	*					

RESIDENTIAL/INERT – QUARTERLY**Facility: US DOE - Paducah Gaseous Diffusion Plant****Permit Numbers: 073-00014 & 073-00015****Finds/Unit: KY8-890-008-982 / 1****LAB ID: None****For Official Use Only**

SURFACE WATER WRITTEN COMMENTS

Monitoring Point	Facility Sample ID	Constituent	Flag	Description
L135	L135SS2-15	Biochemical Oxygen Demand (BOD)		Analysis of constituent not required and not performed.
		Alpha activity		TPU is 11.2. Rad error is 10.5.
		Beta activity		TPU is 10.4. Rad error is 9.54.
L154	L154US2-15	Biochemical Oxygen Demand (BOD)		Analysis of constituent not required and not performed.
		Alpha activity		TPU is 3.18. Rad error is 2.67.
		Beta activity		TPU is 4.02. Rad error is 2.79.
L136	L136SS2-15	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 4. Rad error is 4.
		Beta activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.66. Rad error is 6.54.
QC	FB1SS2-15	Flow Rate		Analysis of constituent not required and not performed.
		Total Organic Carbon (TOC)		Analysis of constituent not required and not performed.
		Biochemical Oxygen Demand (BOD)		Analysis of constituent not required and not performed.
		Chemical Oxygen Demand (COD)		Analysis of constituent not required and not performed.
		Conductivity		Analysis of constituent not required and not performed.
		Suspended Solids		Analysis of constituent not required and not performed.
		Dissolved Solids		Analysis of constituent not required and not performed.
		Total Solids		Analysis of constituent not required and not performed.
		pH		Analysis of constituent not required and not performed.
		Alpha activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 4.18. Rad error is 4.18.
		Beta activity	U	Indicates analyte/nuclide was analyzed for, but not detected. TPU is 6.38. Rad error is 6.38.
L135	L135DSS2-15	Biochemical Oxygen Demand (BOD)		Analysis of constituent not required and not performed.
		Alpha activity		TPU is 11.6. Rad error is 11.2.
		Beta activity		TPU is 12.5. Rad error is 11.1.
L154	L154DUS2-15	Biochemical Oxygen Demand (BOD)		Analysis of constituent not required and not performed.
		Alpha activity		TPU is 2.66. Rad error is 2.41.
		Beta activity		TPU is 3.94. Rad error is 2.96.

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