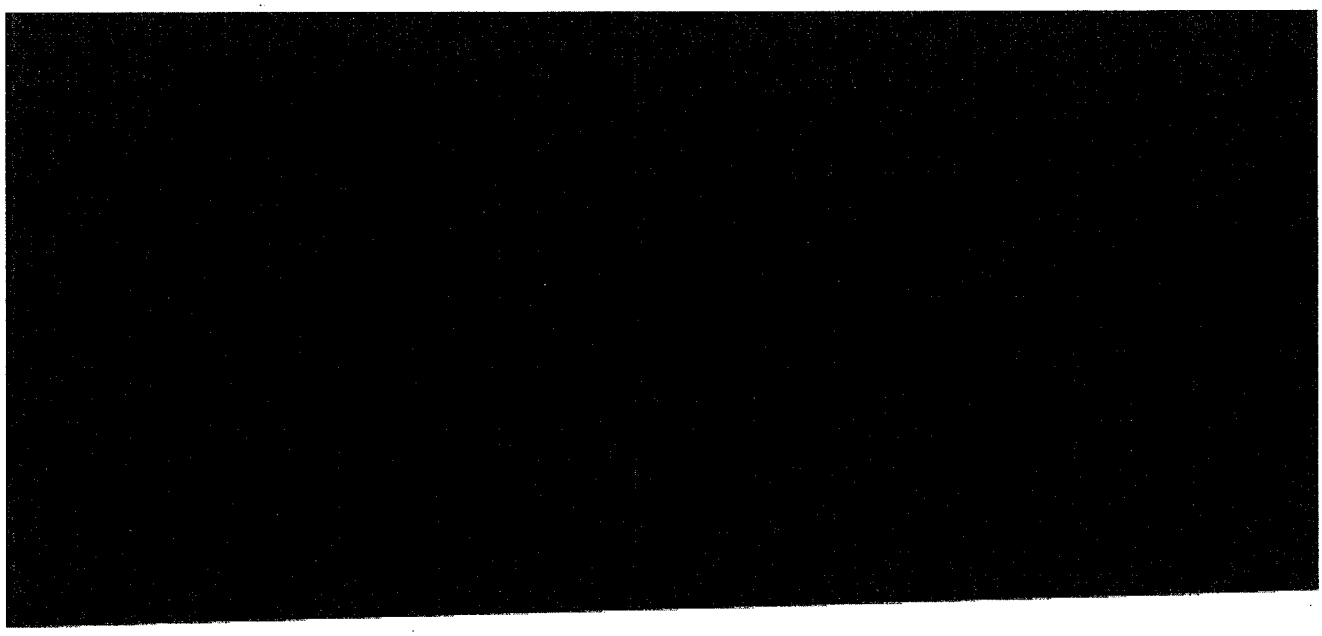
Appendix E

Analytical Data Review Memorandum



Data Validation Summary Report

ENSR Corporation
August 2008
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ENSR | AECOM

Prepared for:
Tronox LLC
Henderson, Nevada

Data Validation Summary Report

Prepared By Robert Kennedy
Senior Project Chemist
ENSR International

Reviewed By Marie Wojtas

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Contents

1.0 INTRODUCTION

The purpose of limited data validation performed on laboratory results for the first and second quarter of 2008 was to determine the suitability of the data for future on-site environmental assessments, including the Annual Remedial Performance Report for Chromium and Perchlorate covering July 2007 through June 2008. The majority of the reviewed data discussed below was collected between January and June 2008. Some previously unvalidated data collected between July and December 2007 was also included in the reviewed dataset. In addition, data reviewed in previous quarterly and semiannual reports, although within the annual report date range, are not discussed in this Data Validation Summary Report (DVSR).

MWH Laboratories in Monrovia, CA was the lab contracted by Tronox for the chemical analyses discussed below as a part of the routine monitoring program at the Tronox facility in Henderson, Nevada. All samples were collected unfiltered by Veolia or ENSR personnel. The specific analyses performed by the laboratory and reviewed in this report include only the subset of analytes discussed in the Annual Remedial Performance Report for Chromium and Perchlorate. Samples in the reviewed report set were analyzed for one on more of the following parameters: perchlorate, chlorate, hexavalent chromium, total chromium, total dissolved solids (TDS), and nitrate. **Table E-4** lists the sample IDs (well ID and collection date), sample delivery group (SDG) (MWH report numbers), and analyte/method list for each sample reviewed and included in this DVSR.

2.0 DATA VALIDATION PROCESS

All the results contained in the lab reports listed in the data validation memoranda were subjected to thorough data review called limited validation. Full data packages, including raw data, were subjected to full validation for 10% of data packages as recommended in the guidance on data validation provided by NDEP for the BMI Plant Sites (NDEP, 2006). These SDGs subjected to full validation are indicated in bold in **Table E-4**. Influent/Effluent analyses were only subjected to limited validation. The laboratory submitted sample and batch QC results with narratives in pdf format and EQuIS format EDDs for all samples, and raw data for only the data packages that were subjected to full validation. The EDDs were imported into an EQuIS database at Tronox specifically created for the ongoing monitoring at the Henderson site. ENSR performed a limited validation on the data using the hard copy data package and subsequently entered the qualifiers and associated reason codes into the database.

Limited validation consisted of reviewing the following data elements to the level of summary data forms.

- Agreement of analyses conducted with chain-of-custody (COC) requests
- Holding times and sample preservation
- Laboratory blanks/equipment blanks/ field blanks
- Laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Laboratory duplicate results
- Field duplicate results
- Sample results and detection limits

Full validation consisted in reviewing the above data elements plus the following extra elements, all to the level of raw data review.

- Initial and continuing calibrations
- Interference check sample results
- Inductively coupled plasma (ICP) serial dilution results

Analytical data were evaluated with reference to the EPA National Functional Guidelines (EPA 2004) and other method appropriate validation guidance documents, as well as the Region 9 Superfund Data Evaluation/Validation Guidance (EPA, 2001), the above mentioned NDEP Guidance on Data Validation (NDEP, 2006), and by the quality control (QC) criteria provided by the laboratory. The regional and national functional guidelines were modified to accommodate the non-Contract Laboratory Program (CLP) methodologies. The specific guidelines used for the various methods were as follows:

- Inorganic analytical data were evaluated with reference to "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (EPA, 2004)

In general, the validation qualifiers and definitions employed were based on those used by EPA in the document mentioned above. Validation qualifiers and definitions are listed in **Table E-1**. A reason code was assigned to all validation qualifiers applied during this review. The reason codes and their explanations are listed in **Table E-2**. Reason codes were simplified in 2008 by removing the redundant prefix associated validation qualifier but are consistent with the suffix of past codes. These codes were entered in the project database to indicate the primary reason(s) for data validation qualification (resulting in a change to a lab qualifier or result value). Conversions of the laboratory reported "ND" for not detected to the U qualifier in the database and the laboratory-applied "J" qualifier to indicate results less than the reporting limit (RL) but greater than the method detection limit (MDL) are not further discussed in this report.

Data validation was organized by MWH Laboratory Report number which is also identified as the sample delivery group (SDG) in the tables. Three combined data validation memoranda for all the reviewed reports were written by data validators and reviewed by a peer at ENSR's Westford office. These memoranda are included on CD-ROM as pdf documents and each includes a list of the data reviewed by the laboratory SDGs listed in Attachment A.

3.0 DATA VALIDATION RESULTS

The data validation qualifiers and reason codes were used to select all the data in the database where results were qualified as a result of validation. This information was sorted by the quality control (QC) review elements listed below:

- Agreement of analyses conducted with chain-of-custody (COC) requests
- Initial and continuing calibrations (full validation only)
- Interference check sample results (full validation only)
- Holding times and sample preservation
- Laboratory blanks/equipment blanks/ field blanks
- Laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) results

- Matrix spike/matrix spike duplicate (MS/MSD) results
- Laboratory duplicate results
- Field duplicate results
- ICP serial dilution results (full validation only)
- Quantitation limits and sample results
- Calculation and transcription verifications

Tables E-3 lists all the results which were qualified based on quality control issues identified with regard to holding times, equipment blank results, matrix spike results, laboratory control sample results, quantitation problems, lab duplicate precision, and field duplicate precision. No QC issues were identified that resulted in qualification of results based on initial and continuing calibrations, interference check sample results, or ICP serial dilution results. As requested by NDEP, Reason codes, Data Quality Indicators (DQI), and the nonconforming DQI results are listed in **Table E-3**.

3.1 Holding times and sample preservation

Holding times were derived from the EPA methods utilized and were calculated beginning from the time of sample collection. The majority of analyses were performed within the method-specified holding times. Exceptions are listed in **Table E-3** and summarized in the validation memoranda. The DQI result value for holding time in Table E-3 is the time elapsed between sample collection and analysis in days.

The holding time for hexavalent chromium samples analyzed by EPA Method 7196 is 24 hours from collection to analysis. A revision to this holding time was made for samples analyzed using EPA Method 281.6 collected on or after April 11, 2007. On this date (April 11, 2007) the new Federal Register rules published on March 12, 2007 became effective. Using the new rule, samples collected, preserved, filtered, and analyzed in accordance with EPA method 218.6 requirements, have a holding time of 28 days.

The holding time for perchlorate and chlorate in water is 28 days from collection to analysis. The holding time for Total Dissolved Solids (TDS) in water is 7 days from collection to analysis. The holding time for nitrate analysis by EPA Method 300 is 48 hours. Most results with holding exceedances were qualified as estimated, but nondetect result values in two samples were rejected as discussed below in Section 3.8.

The reason for holding time exceedance was usually a client requested reanalysis due to nonconformity with historical results. Results for hexavalent chromium, nitrate, chlorate, perchlorate, and TDS required qualification on the basis of holding time issues as discussed in the data review memoranda. Where the TDS holding time was exceeded TDS results were qualified as J- because the method specifically mentions potential biodegradation of solids as the reason samples should be filtered as soon as possible. In addition the estimated and potential low bias qualification (J-) was applied to detected sample results with holding time exceedances analyzed for perchlorate, chlorate, and nitrate.

The hexavalent chromium) qualifiers for hold time exceedance were not assigned a low bias because it is unclear which direction (positive or negative bias) the result would deviate. Hexavalent chromium concentrations can change unpredictably over time in response to absorption of gases, pH changes, and redox condition changes.

Sample preservation requirements were met for all samples.

3.2 Blank Contamination

In general, laboratory and field blanks were free of contamination. The equipment blanks collected on 2/5/08 and 5/7/08 and analyzed for perchlorate appeared to be contaminated. The 5/7/08 equipment blank also appeared to be contaminated with TDS. The associated perchlorate result in one sample (M-92_05/07/08) was qualified as estimated and possibly biased high (J+). Other associated sample data did not require qualification due to blank contamination because the sample results were greater than 10 times the associated blank concentrations.

3.3 Laboratory Control Samples

LCS and LCSD recoveries met QC acceptance criteria for all of the analyses reviewed with the exception of the low level TDS LCS associated with samples in SDGs 240326 and 240243R. The associated high level LCS spike exhibited acceptable recoveries, therefore only sample results less than 700mg/L were qualified as estimated. Nondetect results for TDS in two equipment blanks ('EB050808_05/08/08 and EB050908_05/09/08) and one field blank (FB050808_05/08/08) were qualified as estimated (UJ).

3.4 Matrix Spike Samples

MS and MSD recoveries met the QC acceptance criteria for all the analyses reviewed in this report with one exception. The MSD recovery of nitrate in the batch analyzed for SDG 241086R was slightly above the laboratory acceptance limits of 80-112%. Detected nitrate results for all six samples in this batch were therefore qualified as estimated and possibly biased high (J+).

3.5 Laboratory Duplicates

The evaluation of laboratory duplicate precision included an assessment of the agreement between LCS and LCSDs, MS and MSDs, and matrix duplicates, as measured through relative percent difference (RPD). Laboratory duplicate RPD results were all within control limits except for the TDS results on samples PC-86 (14.6%) and PC-66D (23.5%) in SDGs 233998 and 240701, respectively. The positive results and nondetect results for TDS in the 31 samples associated with these SDGs, listed in Table E-3 were therefore qualified as estimated (J/UJ).

3.6 Field Duplicates

The results of the 16 groundwater sample duplicate pairs collected during February to May of 2008 were evaluated during validation. RPDs were compared to the objectives of 30% maximum RPD for aqueous samples. The RPD for a single sample/duplicate pair (M-23/MD-5) collected on 5/5/2008 (in SDG 239631) and analyzed for nitrate exceeded this criterion. The seven detect and nondetect results for nitrate samples associated with this SDG were therefore qualified as estimated (J and UJ, respectively).

3.7 Sample Results, Detection Limits, and Quantitation

Results for nitrate in four samples were qualified as estimated (J) due to interference by bromide in the ion chromatography reported in SDG 240115.

3.8 Rejected Results

Nondetect results for TDS in sample EB051208_05/12/08 and nitrate in sample EFFLUENT_02/25/08 were rejected due to gross holding time exceedances.

4.0 EVALUATION OF DATA QUALITY INDICATORS

Data validation information was used to evaluate the data quality indicators (DQI) of precision, accuracy, representativeness, comparability, completeness, and sensitivity for results in the dataset for the Henderson Quarterly Performance Perchlorate Report. Each of these DQI parameters is discussed in sections below.

4.1 Precision

Precision is the measure of agreement among repeated measurements of the same property under identical or substantially similar conditions. Field precision was assessed through the collection and measurement of field duplicates and expressed as the RPD of the sample and field duplicate pair results. In general the field duplicate precision was acceptable for all analytes reported. A single exception for nitrate in one sample/field duplicate pair is noted above in Section 3.6.

Laboratory precision was assessed through the RPD results for matrix duplicates, LCS/LCSD pairs, and MS/MSD pairs. In general, the laboratory duplicate precision was acceptable. Two exceptions for TDS analysis in lab duplicate pairs are noted above in Section 3.5.

4.2 Accuracy

Accuracy is the degree of agreement between an observed value and an accepted reference or true value. Laboratory accuracy was assessed during the validation using the recoveries of positive control samples (i.e., MS and MSD, and LCS and LCSD). The results of all positive control samples were acceptable with the exception of those discussed in Sections 3.3 and 3.4 above. Accuracy is also indirectly addressed via the negative control samples for field activities (i.e. trip, equipment, and field blanks), as well as laboratory negative control samples (i.e., method blanks and calibration blanks). All negative control sample results were acceptable with the exceptions discussed above in Section 3.2. Accuracy was also assessed in the review of initial and continuing calibrations for the data packages subjected to full validation.

Bias as a component of accuracy is also evaluated with the validation of holding time results discussed in Section 3.1 of this report. These evaluations resulted in the minor qualification of some results and rejection of two results as described in the data validation memo and Section 3.1 and 3.8 above.

4.3 Representativeness

Representativeness is the measure of the degree to which data suitably represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Aspects of representativeness addressed during validation include the review of sample collection information in the chain-of-custody (COC) documentation, conformity of laboratory analyses to workplan intentions, adherence of the documented laboratory procedures to method requirements, and completeness of the laboratory data packages. Most of the issues identified during this evaluation did not result in the qualification of laboratory data but did involve re-submittals of data from the laboratories to correct problems that were discovered during the data review or validation process. All of these issues were resolved or were judged to have no impact on data validation. Other aspects of data representativeness such as adherence to recommended holding times are discussed in Section 3.1 of this report.

4.4 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system, expressed as a percentage of the number of valid measurements that were or should have been collected. Valid

data is defined as all the data points judged to be valid (i.e. not rejected), as a result of the validation process.

Field completeness is defined as the percentage of samples actually collected versus those intended to be collected in accordance with the plan for routine monitoring. All intended samples were collected in accordance with the monitoring schedule. All COC requests were faithfully executed by the laboratories with the minor exceptions discussed in the validation memoranda.

Laboratory completeness is defined as percentage of valid data points versus the total expected from the laboratory analyses. Actual laboratory completeness was 100% on the basis of sample analysis (i.e., all requested analyses were performed and reported by the laboratories), and 99.91% completeness based on valid data as a percentage of the total data points attempted.

4.5 Comparability

Comparability is a qualitative expression of the measure of confidence that two or more data sets may contribute to a common analysis. Comparability of data within the investigation was maximized by using standard methods for sampling and analysis, reporting data, and data validation. The following standard water/wastewater program methods from EPA were employed by the MWH laboratory for all analyses.

- Perchlorate by EPA Method 314
- Hexavalent chromium by SW-846 Method 7196 or EPA Method 218.6
- Total chromium by SW846 6010B or EPA 200.7
- Total dissolved solids (TDS) by SM2540C or EPA160.1
- Chlorate by EPA Method 300.0 or EPA 9056
- Nitrate by EPA Method 300.0 or EPA 9056

The methods used for hexavalent chromium, EPA 7196 and EPA 218.6, both employ the same colorimetric analytical detection system. Method 218.6 utilizes a prior ion chromatographic separation to reduce interferences but both methods have been judged to be comparable by EPA in 40CFR Part136, where Standard Methods SM 3500-Cr (essentially equivalent to EPA 7196) and EPA 218.6 are both approved methods. The EPA 7196 and EPA 218.6 methods are expected to produce comparable data for hexavalent chromium in the groundwater matrix at the Henderson site. Note MWH now consistently uses EPA 218.6 for only the influent/effluent samples under National Pollution Discharge Elimination System (NPDES) permit and EPA 7196 for all other wells at the site.

The methods used for total chromium analysis, EPA 6010 and EPA 200.7, are both ICP/Atomic Emission Spectrometry (AES) methods with very similar preparation and analysis procedures. These two methods are expected to produce comparable data for total chromium. Minor differences in the QC control limits exist between the methods but MWH appears to consistently use the slightly tighter 200.7 QC limits.

The methods cited for TDS, EPA 160.1 and SM2540C, are essentially identical and can be expected to produce comparable data.

The methods cited for chlorate and nitrate analysis, EPA 300.0 and EPA 9056, are essentially identical and can be expected to produce comparable data.

4.6 Sensitivity

Sensitivity is the capability of a method or instrument to discriminate between measurement responses representing different levels of the variable of interest and particularly the capability of measuring a constituent at low levels. For the EPA methods employed in this project sensitivity is measured by the

method detection limit (MDL) and reporting limit (RL). Reporting limits in general were sample quantitation limits based on the low point of calibration and adjusted for sample-specific factors such as exact aliquot size, dilutions, etc. Sensitivity of the methods employed was adequate for the routine monitoring needs and consistent with the historical data for the site.

5.0 CONCLUSIONS

One hundred percent of the laboratory data used for the Annual Remedial Performance Report for Chromium and Perchlorate covering the sample collection time period from July 2007 to June 2008 were subjected to a limited validation using standardized guidelines and procedures recommended by EPA and NDEP. Ten percent of the laboratory data packages were subjected to full data validation including a review of the raw data. A limited set of analytical data, defined by the laboratory reports listed in Table E-4 are covered by this DVSR. Previous Quarterly and Semiannual Reports covered the other samples within the Annual Report date range. Ninety four percent of the results for this project were accepted as reported by the laboratory without additional qualification based on validation actions and should be considered valid for all decision making purposes. A subset of the laboratory results were qualified based on issues discovered during the validation and those results are summarized in Tables E-3. The qualified data are grouped in this table based on the reason for qualification (see Table E-2), the Data Quality Indicator (DQI) involved, and the qualifier flags applied (see Table E-1). Six percent of the results for this project were qualified as estimated due to minor QC problems with sample holding time, blank contamination, laboratory control sample recoveries, matrix spike recoveries, laboratory duplicate precision, field duplicate precision, and sample quantitation issues. These estimated results should be considered usable for decision making purposes provided the potential bias is considered when the data are used. Only two results out of 2237 validated were rejected as unusable due to serious QC problems. Based on the results of data validation the overall goals for data quality were achieved for the dataset used in the Annual Remedial Performance Report for Chromium and Perchlorate covering the sample collection time period from July 2007 to June 2008.

6.0 REFERENCES

EPA, 1999 USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review"

EPA, 2001 USEPA "Draft Region 9 Superfund Data Evaluation/Validation Guidance"

EPA, 2004 USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review"

ENSR, August 2006 DRAFT Quality Assurance Project Plan, Tronox LLC Facility Henderson, Nevada

NDEP, 2006 NDEP "Guidance on Data Validation, BMI Pant Sites and Common Areas Projects, Henderson, Nevada"

Table E-1
Data Validation Qualifiers
Annual Remedial Performance Report for Chromium and Perchlorate
Henderson, Nevada
July 2007 - June 2008

Validation Qualifier	Definition
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity and the result may be biased high. This qualifier is applied only to inorganic analyte results.
J-	The result is an estimated quantity and the result may be biased low. This qualifier is applied only to inorganic analyte results.
UJ	The analyte was not detected above the sample reporting limit and the reporting limit is approximate.
U	The analyte was analyzed for, but was not detected above the sample reporting limit
R	The result is rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
B	The result may be a false positive totally attributable to blank contamination. This qualifier is applied only to radiochemical results.
JB	The result may be biased high and partially attributable to blank contamination. This qualifier is applied only to radiochemical results.

Table E-2
Data Validation Qualifier Reason Codes
Annual Remedial Performance Report for Chromium and Perchlorate
Henderson, Nevada
July 2007 - June 2008

Code	Explanation
a	qualified due to low abundance (radiochemical activity)
b	qualified due to blank contamination
be	qualified due to equipment blank contamination
bf	qualified due to field blank contamination
bl	qualified due to lab blank contamination
c	qualified due to calibration problems
cp	qualified due to insufficient ingrowth (radiochemical only)
fd	qualified due to field duplicate imprecision
h	qualified due to holding time exceedance
i	qualified due to internal standard areas
k	qualified as Estimated Maximum Possible Concentrations (dioxins only)
l	qualified due to LCS recoveries
ld	qualified due to lab duplicate imprecision (matrix duplicate, MSD, LCSD)
m	qualified due to matrix spike recoveries
nb	qualified due to negative lab blank contamination (nondetect results only)
p	qualified as a false positive due to contamination during shipping
q	qualified due to quantitation problem
s	qualified due to surrogate recoveries
x	qualified due to low % solids
y	qualified due to serial dilution results
z	qualified due to ICS results

Table E-3
Qualifications Based on DQI Exceedances
Annual Remedial Performance Report for Chromium and Perchlorate
Henderson, Nevada
July 2007 - June 2008

Sample ID	SDG	Method	Analyte	Result	Units	Validation Qualifier	Reason Code	DQI	DQI Result	
ARP-1_03/12/08	233998	EPA 160.1	Total Dissolved Solids	5180	mg/l	J	ld	Lab Dup RPD	14.60	%
ARP-1_06/17/08	244956	EPA 160.1	Total Dissolved Solids	7080	mg/l	J-	h	Holding Time	8.41	days
ARP-2_03/12/08	233998	EPA 160.1	Total Dissolved Solids	5400	mg/l	J	ld	Lab Dup RPD	14.60	%
ARP-3_02/13/08	230772	EPA 160.1	Total Dissolved Solids	10800	mg/l	J-	h	Holding Time	15.13	days
ARP-3_03/12/08	233998	EPA 160.1	Total Dissolved Solids	7990	mg/l	J	ld	Lab Dup RPD	14.60	%
ARP-4A_03/12/08	233998	EPA 160.1	Total Dissolved Solids	4720	mg/l	J	ld	Lab Dup RPD	14.60	%
ARP-4A_06/17/08	244956	EPA 160.1	Total Dissolved Solids	3510	mg/l	J-	h	Holding Time	8.38	days
ARP-5A_03/12/08	233998	EPA 160.1	Total Dissolved Solids	6420	mg/l	J	ld	Lab Dup RPD	14.60	%
ARP-5A_06/17/08	244956	EPA 160.1	Total Dissolved Solids	6410	mg/l	J-	h	Holding Time	8.39	days
ARP-6B_03/13/08	233998	EPA 160.1	Total Dissolved Solids	8650	mg/l	J	ld	Lab Dup RPD	14.60	%
ARP-6B_06/17/08	244956	EPA 160.1	Total Dissolved Solids	10200	mg/l	J-	h	Holding Time	8.39	days
ARP-7_01/10/08	227339	EPA 160.1	Total Dissolved Solids	6490	mg/l	J-	h	Holding Time	13.53	days
ARP-7_03/13/08	233998	EPA 160.1	Total Dissolved Solids	5650	mg/l	J	ld	Lab Dup RPD	14.60	%
ART-1_02/11/08	230253	EPA 160.1	Total Dissolved Solids	8870	mg/l	J-	h	Holding Time	39.40	days
ART-3_02/11/08	230253	EPA 160.1	Total Dissolved Solids	6920	mg/l	J-	h	Holding Time	39.40	days
EB050808_05/08/08	240243	EPA 160.1	Total Dissolved Solids	10	mg/l	UJ	l	LCS Recovery	66.30	%
EB050908_05/09/08	240326	EPA 160.1	Total Dissolved Solids	10	mg/l	UJ	l	LCS Recovery	66.30	%
EB051108_05/11/08	240701	EPA 160.1	Total Dissolved Solids	10	mg/l	UJ	ld	Lab Dup RPD	23.50	%
EB051208_05/12/08	240701	EPA 160.1	Total Dissolved Solids		mg/l	R	h	Holding Time	23.73	days
EB051408_05/14/08	241086	SW 846 9056	Chlorate	10	ug/l	UJ	h	Holding Time	28.34	days
EB-1_02/05/08	229690	SW 846 7196	Chromium-hexavalent	0.005	mg/l	UJ	h	Holding Time	1.20	days
EFFLUENT_02/25/08	231734	EPA 300.0	Nitrate (as N)		mg/l	R	h	Holding Time	25.29	days
EFFLUENT_04/14/08	237426	EPA 300.0	Nitrate (as N)	5.000	mg/l	UJ	h	Holding Time	2.24	days
EFFLUENT_05/05/08	239615	EPA 300.0	Nitrate (as N)	2.500	mg/l	UJ	h	Holding Time	3.45	days
EFFLUENT_07/10/07	209942	EPA 300.0	Nitrate (as N)	5.000	mg/l	UJ	h	Holding Time	2.43	days
EFFLUENT-COMP_01/05/08	229879	EPA 314	Perchlorate	10	ug/l	UJ	h	Holding Time	53.60	days
EFFLUENT-COMP_01/12/08	229879	EPA 314	Perchlorate	10	ug/l	UJ	h	Holding Time	46.60	days
FB050808_05/08/08	240243	EPA 160.1	Total Dissolved Solids	10	mg/l	UJ	l	LCS Recovery	66.30	%
FB-1_02/04/08	229550	SW 846 7196	Chromium-hexavalent	0.005	mg/l	UJ	h	Holding Time	1.05	days
H-48_05/10/08	240701	EPA 314	Perchlorate	231	ug/l	J-	h	Holding Time	30.70	days
I-D_05/06/08	239784	EPA 160.1	Total Dissolved Solids	8350	mg/l	J-	h	Holding Time	30.11	days
I-H_05/06/08	239784	EPA 160.1	Total Dissolved Solids	11200	mg/l	J-	h	Holding Time	30.13	days
INFLUENT_02/25/08	231734	EPA 218.6	Chromium-hexavalent	75	ug/l	J-	h	Holding Time	1.17	days
INFLUENT_02/25/08	231734	EPA 300.0	Nitrate (as N)	13	mg/l	J-	h	Holding Time	25.28	days
INFLUENT_04/14/08	237426	EPA 300.0	Nitrate (as N)	69	mg/l	J-	h	Holding Time	2.23	days
INFLUENT-COMP_05/17/08	241525	EPA 314	Perchlorate	255000	ug/l	J-	h	Holding Time	40.03	days
I-O_05/06/08	239784	EPA 160.1	Total Dissolved Solids	11900	mg/l	J-	h	Holding Time	30.14	days

Table E-3
Qualifications Based on DQI Exceedances
Annual Remedial Performance Report for Chromium and Perchlorate
Henderson, Nevada
July 2007 - June 2008

Sample ID	SDG	Method	Analyte	Result	Units	Validation Qualifier	Reason Code	DQI	DQI Result	
I-P_05/06/08	239784	EPA 160.1	Total Dissolved Solids	12300	mg/l	J-	h	Holding Time	30.13	days
I-T_05/06/08	239784	EPA 160.1	Total Dissolved Solids	16000	mg/l	J-	h	Holding Time	30.13	days
I-U_05/06/08	239784	EPA 160.1	Total Dissolved Solids	12200	mg/l	J-	h	Holding Time	30.13	days
L-635_06/18/08	244956	EPA 314	Perchlorate	10	ug/l	UJ	h	Holding Time	29.38	days
L-637_05/13/08	241119	EPA 160.1	Total Dissolved Solids	6400	mg/l	J-	h	Holding Time	20.56	days
L-637_06/18/08	244956	EPA 314	Perchlorate	10.000	ug/l	UJ	h	Holding Time	29.40	days
M-11_02/07/08	230021	SW 846 7196	Chromium-hexavalent	2.5	mg/l	J	h	Holding Time	1.23	days
M-11_05/07/08	240115	SW 846 7196	Chromium-hexavalent	2.8	mg/l	J	h	Holding Time	1.22	days
M-11_05/07/08	240115	SW 846 9056	Nitrate (as N)	4.0	mg/l	J	q	IC Interference	NA	
M-126_05/11/08	240701	EPA 160.1	Total Dissolved Solids	13700	mg/l	J	ld	Lab Dup RPD	23.50	%
M-126_05/11/08	240701	EPA 314	Perchlorate	80	ug/l	UJ	h	Holding Time	29.65	days
M-12A_05/07/08	240115	SW 846 7196	Chromium-hexavalent	15	mg/l	J	h	Holding Time	1.25	days
M-12A_05/07/08	240115	SW 846 9056	Nitrate (as N)	17	mg/l	J-	h,q	Holding Time	10.55	days
M-13_05/07/08	240115	SW 846 9056	Nitrate (as N)	5.3	mg/l	J	q	IC Interference	NA	
M-134_05/11/08	240701	EPA 160.1	Total Dissolved Solids	2810	mg/l	J	ld	Lab Dup RPD	23.50	%
M-135_05/11/08	240701	EPA 160.1	Total Dissolved Solids	6620	mg/l	J	ld	Lab Dup RPD	23.50	%
M-136_05/11/08	240701	EPA 160.1	Total Dissolved Solids	1400	mg/l	J	ld	Lab Dup RPD	23.50	%
M-17A_05/08/08	240233	EPA 160.1	Total Dissolved Solids	9500	mg/l	J-	h	Holding Time	26.59	days
M-23_05/05/08	239631	SW 846 9056	Nitrate (as N)	53	mg/l	J	fd	Field Dup RPD	49.00	%
M-36_02/07/08	230021	SW 846 7196	Chromium-hexavalent	38.0	mg/l	J	h	Holding Time	1.21	days
M-36_05/08/08	240233	EPA 160.1	Total Dissolved Solids	12000	mg/l	J-	h	Holding Time	27.91	days
M-37_02/05/08	229690	SW 846 7196	Chromium-hexavalent	0.028	mg/l	J	h	Holding Time	1.18	days
M-37_05/06/08	240016	SW 846 7196	Chromium-hexavalent	0.034	mg/l	J	h	Holding Time	1.35	days
M-38_05/08/08	240233	EPA 160.1	Total Dissolved Solids	11800	mg/l	J-	h	Holding Time	26.61	days
M-39_05/07/08	240115	SW 846 7196	Chromium-hexavalent	5.3	mg/l	J	h	Holding Time	6.18	days
M-39_05/07/08	240115	SW 846 9056	Nitrate (as N)	16	mg/l	J	q	IC Interference	NA	
M-44_05/05/08	239631	SW 846 7196	Chromium-hexavalent	0.87	mg/l	J	h	Holding Time	1.23	days
M-48_05/05/08	239631	SW 846 9056	Nitrate (as N)	17.8	mg/l	J	fd	Field Dup RPD	49.00	%
M-65_05/12/08	240701	EPA 160.1	Total Dissolved Solids	13800	mg/l	J-	h	Holding Time	22.55	days
M-66_05/12/08	240701	EPA 160.1	Total Dissolved Solids	13000	mg/l	J-	h	Holding Time	22.56	days
M-67D_05/12/08	240701	EPA 160.1	Total Dissolved Solids	7510	mg/l	J-	h	Holding Time	23.00	days
M-71_05/08/08	240233	EPA 160.1	Total Dissolved Solids	7590	mg/l	J-	h	Holding Time	28.01	days
M-73_05/08/08	240233	EPA 160.1	Total Dissolved Solids	4370	mg/l	J-	h	Holding Time	28.11	days
M-83_03/13/08	233998	EPA 160.1	Total Dissolved Solids	1640	mg/l	J	ld	Lab Dup RPD	14.60	%
M-83_05/12/08	241119	EPA 314	Perchlorate	20.000	ug/l	UJ	h	Holding Time	28.76	days
M-84_02/07/08	230021	SW 846 7196	Chromium-hexavalent	0.14	mg/l	J	h	Holding Time	1.20	days
M-84_05/12/08	240608	SW 846 7196	Chromium-hexavalent	0.11	mg/l	J	h	Holding Time	1.09	days

Table E-3
Qualifications Based on DQI Exceedances
Annual Remedial Performance Report for Chromium and Perchlorate
Henderson, Nevada
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Sample ID	SDG	Method	Analyte	Result	Units	Validation Qualifier	Reason Code	DQI	DQI Result	
M-87_03/13/08	233998	EPA 160.1	Total Dissolved Solids	3920	mg/l	J	ld	Lab Dup RPD	14.60	%
M-92_05/07/08	240115	EPA 314	Perchlorate	768	ug/l	J+	be	Equip Blank	112.00	ug/L
M-94_02/04/08	229550	SW 846 7196	Chromium-hexavalent	0.57	mg/l	J	h	Holding Time	1.05	days
MC-29_05/11/08	240701	EPA 160.1	Total Dissolved Solids	16500	mg/l	J	ld,h	Lab Dup RPD	23.50	%
MC-3_05/10/08	240701	EPA 314	Perchlorate	160	ug/l	UJ	h	Holding Time	30.55	days
MC-50_05/11/08	240701	EPA 160.1	Total Dissolved Solids	11400	mg/l	J	ld	Lab Dup RPD	23.50	%
MC-53_05/11/08	240701	EPA 160.1	Total Dissolved Solids	10300	mg/l	J	ld	Lab Dup RPD	23.50	%
MC-93_05/11/08	240701	EPA 160.1	Total Dissolved Solids	8450	mg/l	J	ld	Lab Dup RPD	23.50	%
MC-97_05/11/08	240701	EPA 160.1	Total Dissolved Solids	9300	mg/l	J	ld	Lab Dup RPD	23.50	%
MD-1_02/04/08	229550	SW 846 7196	Chromium-hexavalent	0.67	mg/l	J	h	Holding Time	1.51	days
MD-1_05/05/08	239631	SW 846 7196	Chromium-hexavalent	0.86	mg/l	J	h	Holding Time	1.70	days
MD-2_02/07/08	230021	SW 846 7196	Chromium-hexavalent	2.6	mg/l	J	h	Holding Time	1.65	days
MD-2_05/12/08	240608	SW 846 7196	Chromium-hexavalent	0.12	mg/l	J	h	Holding Time	1.57	days
MD-5_05/05/08	239631	SW 846 9056	Nitrate (as N)	32	mg/l	J	fd	Field Dup RPD	49.00	%
MW-16_05/12/08	240701	EPA 160.1	Total Dissolved Solids	11100	mg/l	J-	h	Holding Time	22.37	days
MW-16_05/12/08	240701	EPA 314	Perchlorate	40	ug/l	UJ	h	Holding Time	28.58	days
MWK-4_03/12/08	233998	EPA 160.1	Total Dissolved Solids	6700	mg/l	J-	h	Holding Time	16.99	days
MWK-4_06/17/08	244956	EPA 160.1	Total Dissolved Solids	7060	mg/l	J-	h	Holding Time	8.37	days
MWK-5_03/13/08	233998	EPA 160.1	Total Dissolved Solids	5550	mg/l	J	ld	Lab Dup RPD	14.60	%
MWK-5_06/17/08	244956	EPA 160.1	Total Dissolved Solids	7200	mg/l	J-	h	Holding Time	8.32	days
PC-103_03/13/08	233998	EPA 160.1	Total Dissolved Solids	4010	mg/l	J	ld	Lab Dup RPD	14.60	%
PC-103_05/15/08	241233	EPA 300.1B	Chlorate	2250	ug/l	J-	h	Holding Time	33.88	days
PC-103_06/17/08	244956	EPA 160.1	Total Dissolved Solids	4440	mg/l	J-	h	Holding Time	8.36	days
PC-122_02/14/08	230772	EPA 160.1	Total Dissolved Solids	7200	mg/l	J-	h	Holding Time	14.25	days
PC-122_03/13/08	233998	EPA 160.1	Total Dissolved Solids	6950	mg/l	J	ld	Lab Dup RPD	14.60	%
PC-122_06/17/08	244956	EPA 160.1	Total Dissolved Solids	10300	mg/l	J-	h	Holding Time	8.45	days
PC-124_05/05/08	239631	SW 846 9056	Nitrate (as N)	17	mg/l	J	fd	Field Dup RPD	49.00	%
PC-126_05/05/08	239631	SW 846 9056	Nitrate (as N)	37	mg/l	J	fd	Field Dup RPD	49.00	%
PC-128_05/05/08	239631	SW 846 9056	Nitrate (as N)	8.6	mg/l	J	fd	Field Dup RPD	49.00	%
PC-132_05/05/08	239631	SW 846 9056	Nitrate (as N)	5.000	mg/l	UJ	fd	Field Dup RPD	49.00	%
PC-134_05/11/08	240701	EPA 160.1	Total Dissolved Solids	1640	mg/l	J	ld	Lab Dup RPD	23.50	%
PC-137_05/11/08	240701	EPA 160.1	Total Dissolved Solids	2590	mg/l	J	ld	Lab Dup RPD	23.50	%
PC-17_03/12/08	233998	EPA 160.1	Total Dissolved Solids	9960	mg/l	J-	h	Holding Time	34.54	days
PC-17_06/17/08	244956	EPA 160.1	Total Dissolved Solids	9780	mg/l	J-	h	Holding Time	8.42	days
PC-18_06/17/08	244956	EPA 160.1	Total Dissolved Solids	9800	mg/l	J-	h	Holding Time	8.43	days
PC-53_03/13/08	233998	EPA 160.1	Total Dissolved Solids	4150	mg/l	J	ld	Lab Dup RPD	14.60	%
PC-53_06/17/08	244956	EPA 160.1	Total Dissolved Solids	4080	mg/l	J-	h	Holding Time	8.30	days

Table E-3
Qualifications Based on DQI Exceedances
Annual Remedial Performance Report for Chromium and Perchlorate
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Sample ID	SDG	Method	Analyte	Result	Units	Validation Qualifier	Reason Code	DQI	DQI Result	
PC-54_02/04/08	229550	EPA 160.1	Total Dissolved Solids	6400	mg/l	J-	h	Holding Time	37.05	days
PC-56_03/10/08	233998	EPA 160.1	Total Dissolved Solids	2680	mg/l	J-	h	Holding Time	8.10	days
PC-58_03/10/08	233998	EPA 160.1	Total Dissolved Solids	8200	mg/l	J-	h	Holding Time	8.09	days
PC-59_03/10/08	233998	EPA 160.1	Total Dissolved Solids	4900	mg/l	J-	h	Holding Time	9.00	days
PC-60_03/10/08	233998	EPA 160.1	Total Dissolved Solids	4580	mg/l	J-	h	Holding Time	9.00	days
PC-62_03/10/08	233998	EPA 160.1	Total Dissolved Solids	3040	mg/l	J-	h	Holding Time	9.01	days
PC-66D_05/11/08	240701	EPA 160.1	Total Dissolved Solids	7590	mg/l	J	ld	Lab Dup RPD	23.50	%
PC-68_03/10/08	233998	EPA 160.1	Total Dissolved Solids	2070	mg/l	J	h,ld	Holding Time	8.15	days
PC-86_03/12/08	233998	EPA 160.1	Total Dissolved Solids	2590	mg/l	J	ld	Lab Dup RPD	14.60	%
PC-86_06/17/08	244956	EPA 160.1	Total Dissolved Solids	2670	mg/l	J-	h	Holding Time	8.49	days
PC-90_03/12/08	233998	EPA 160.1	Total Dissolved Solids	4220	mg/l	J	ld	Lab Dup RPD	14.60	%
PC-90_06/17/08	244956	EPA 160.1	Total Dissolved Solids	3910	mg/l	J-	h	Holding Time	8.48	days
PC-91_03/12/08	233998	EPA 160.1	Total Dissolved Solids	8020	mg/l	J-	h	Holding Time	9.27	days
PC-91_06/17/08	244956	EPA 160.1	Total Dissolved Solids	5800	mg/l	J-	h	Holding Time	8.47	days
PC-97_03/12/08	233998	EPA 160.1	Total Dissolved Solids	2640	mg/l	J	ld	Lab Dup RPD	14.60	%
PC-97_06/17/08	244956	EPA 160.1	Total Dissolved Solids	2610	mg/l	J-	h	Holding Time	8.50	days
PC-98R_03/13/08	233998	EPA 160.1	Total Dissolved Solids	5050	mg/l	J	ld	Lab Dup RPD	14.60	%
PC-98R_05/15/08	241233	EPA 314	Perchlorate	21200	ug/l	J-	h	Holding Time	32.00	days
PC-98R_06/17/08	244956	EPA 160.1	Total Dissolved Solids	7440	mg/l	J-	h	Holding Time	8.33	days
TR-1_05/14/08	241086	SW 846 9056	Nitrate (as N)	1.22	mg/l	J+	m	MSD %R	112.80	%
TR-2_05/14/08	241086	SW 846 9056	Nitrate (as N)	1.47	mg/l	J+	m	MSD %R	112.80	%
TR-2D_05/14/08	241086	SW 846 9056	Chlorate	10	ug/l	UJ	h	Holding Time	29.00	days
TR-2D_05/14/08	241086	SW 846 9056	Nitrate (as N)	1.47	mg/l	J+	m	MSD %R	112.80	%
TR-5_05/14/08	241086	SW 846 9056	Nitrate (as N)	1.27	mg/l	J+	m	MSD %R	112.80	%
TR-7_05/14/08	241086	SW 846 9056	Nitrate (as N)	1.18	mg/l	J+	m	MSD %R	112.80	%
TR-8_05/14/08	241086	SW 846 9056	Nitrate (as N)	2.33	mg/l	J+	m	MSD %R	112.80	%

Table E-4
SDGs, Sample IDs, and Analytes
Annual Remedial Performance Report for Chromium and Perchlorate
Tronox, LLC
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
228116	AA-MW-16_01/17/08	X					X				
229690	AA-MW-16_02/05/08	X					X	X			
227339	ARP-1_01/09/08	X					X				
230772	ARP-1_02/13/08	X	X				X				
233998	ARP-1_03/12/08	X					X				
237937	ARP-1_04/17/08	X					X				
241119	ARP-1_05/14/08	X					X	X			
244956	ARP-1_06/17/08	X					X				
227339	ARP-2_01/09/08	X					X				
230772	ARP-2_02/13/08	X	X				X				
233998	ARP-2_03/12/08	X					X				
237937	ARP-2_04/17/08	X					X				
241119	ARP-2_05/14/08	X					X	X			
227339	ARP-3_01/09/08	X					X				
230772	ARP-3_02/13/08	X	X				X				
233998	ARP-3_03/12/08	X					X				
237937	ARP-3_04/17/08	X					X				
228116	ARP-4A_01/18/08	X					X				
230772	ARP-4A_02/13/08	X	X				X				
233998	ARP-4A_03/12/08	X					X				
237937	ARP-4A_04/17/08	X					X				
241233	ARP-4A_05/15/08	X					X	X			
244956	ARP-4A_06/17/08	X					X				
228116	ARP-5A_01/18/08	X					X				
230772	ARP-5A_02/13/08	X	X				X				
233998	ARP-5A_03/12/08	X					X				
237937	ARP-5A_04/17/08	X					X				
241233	ARP-5A_05/15/08	X					X	X			
244956	ARP-5A_06/17/08	X					X				
228116	ARP-6B_01/18/08	X					X				
230772	ARP-6B_02/14/08	X	X				X				
233998	ARP-6B_03/13/08	X					X				
237937	ARP-6B_04/17/08	X					X				
241233	ARP-6B_05/15/08	X					X	X			
244956	ARP-6B_06/17/08	X					X				
227339	ARP-7_01/10/08	X					X				
230772	ARP-7_02/14/08	X	X				X				
233998	ARP-7_03/13/08	X					X				
238547	ARP-7_04/23/08	X					X				
241119	ARP-7_05/14/08	X					X	X			
226763	ART-1_01/07/08	X					X				
230253	ART-1_02/11/08	X	X				X				
233399	ART-1_03/10/08	X					X				
236536	ART-1_04/07/08	X					X				
240600	ART-1_05/12/08	X					X	X			

Table E-4
SDGs, Sample IDs, and Analytes
Annual Remedial Performance Report for Chromium and Perchlorate
Tronox, LLC
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
243607	ART-1_06/09/08	X					X				
226763	ART-2_01/07/08	X					X				
230253	ART-2_02/11/08	X	X				X				
233399	ART-2_03/10/08	X					X				
236536	ART-2_04/07/08	X					X				
240600	ART-2_05/12/08	X					X	X			
243607	ART-2_06/09/08	X					X				
226763	ART-3_01/07/08	X					X				
230253	ART-3_02/11/08	X	X				X				
233399	ART-3_03/10/08	X					X				
236536	ART-3_04/07/08	X					X				
240600	ART-3_05/12/08	X					X	X			
243607	ART-3_06/09/08	X					X				
226763	ART-4_01/07/08	X					X				
230253	ART-4_02/11/08	X	X				X				
233399	ART-4_03/10/08	X					X				
236536	ART-4_04/07/08	X					X				
240600	ART-4_05/12/08	X					X	X			
243607	ART-4_06/09/08	X					X				
230253	ART-5_02/11/08	X	X				X				
233399	ART-5_03/10/08	X					X				
236536	ART-5_04/07/08	X					X				
226763	ART-6_01/07/08	X					X				
230253	ART-6_02/11/08	X	X				X				
233399	ART-6_03/10/08	X					X				
236536	ART-6_04/07/08	X					X				
243607	ART-6_06/09/08	X					X				
226763	ART-7_01/07/08	X					X				
230253	ART-7_02/11/08	X	X				X				
233399	ART-7_03/10/08	X					X				
236536	ART-7_04/07/08	X					X				
240600	ART-7_05/12/08	X					X	X			
243607	ART-7_06/09/08	X					X				
226763	ART-8_01/07/08	X					X				
230253	ART-8_02/11/08	X	X				X				
233399	ART-8_03/10/08	X					X				
236536	ART-8_04/07/08	X					X				
240600	ART-8_05/12/08	X					X	X			
243607	ART-8_06/09/08	X					X				
226763	ART-9_01/07/08	X					X				
230253	ART-9_02/11/08	X	X				X				
233399	ART-9_03/10/08	X					X				
236536	ART-9_04/07/08	X					X				
240600	ART-9_05/12/08	X					X	X			
243607	ART-9_06/09/08	X					X				

Table E-4
SDGs, Sample IDs, and Analytes
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
240326	CLD1-R_05/09/08	X					X	X			
240326	CLD2-R_05/09/08	X					X	X			
240326	CLD2-RD_05/09/08	X					X	X			
240191	EB050708_05/07/08	X					X	X		X	X
240243	EB050808_05/08/08	X					X	X		X	X
240326	EB050908_05/09/08	X					X	X			
240701	EB051008_05/10/08	X					X	X			
240701	EB051108_05/11/08	X					X	X			
240701	EB051208_05/12/08	X					X	X		X	X
240912	EB051308_05/13/08	X					X	X			
241086	EB051408_05/14/08	X					X	X		X	X
241249	EB051508_05/15/08	X			X			X			
229690	EB-1_02/05/08	X					X	X	X		
240115	EB-2_05/07/08	X					X	X	X		
240568	EFFLUENT COMP_05/10/08						X				
244394	EFFLUENT COMP_06/14/08						X				
226444	EFFLUENT_01/02/08		X	X	X	X	X				
226881	EFFLUENT_01/07/08		X	X	X	X	X				
227614	EFFLUENT_01/14/08		X	X	X	X	X				
228226	EFFLUENT_01/21/08		X	X	X	X	X				
228904	EFFLUENT_01/28/08		X	X	X	X	X				
229554	EFFLUENT_02/04/08		X	X	X	X	X				
230307	EFFLUENT_02/11/08		X	X	X	X	X				
230975	EFFLUENT_02/18/08		X	X	X	X	X				
231734	EFFLUENT_02/25/08		X	X	X	X	X				
232539	EFFLUENT_03/03/08		X	X	X	X	X				
233325	EFFLUENT_03/10/08		X	X	X	X	X				
234187	EFFLUENT_03/17/08		X	X	X	X	X				
234938	EFFLUENT_03/24/08		X	X	X	X	X				
235626	EFFLUENT_03/31/08		X	X	X	X	X				
236473	EFFLUENT_04/07/08		X	X	X	X	X				
237426	EFFLUENT_04/14/08		X	X	X	X	X				
238185	EFFLUENT_04/21/08		X	X	X	X	X				
238983	EFFLUENT_04/28/08		X	X	X	X	X				
239615	EFFLUENT_05/05/08			X	X	X	X				
240609	EFFLUENT_05/12/08		X	X	X	X	X				
241471	EFFLUENT_05/19/08		X	X	X	X	X				
242355	EFFLUENT_05/27/08		X	X	X	X	X				
242868	EFFLUENT_06/02/08		X	X	X	X	X				
245247	EFFLUENT_06/23/08		X	X	X	X	X				
209942	EFFLUENT_07/10/07		X	X	X	X	X				
210513	EFFLUENT_07/16/07		X	X	X	X	X				
211352	EFFLUENT_07/23/07		X	X	X	X	X				
211862	EFFLUENT_07/30/07		X	X	X	X	X				
212455	EFFLUENT_08/06/07		X	X	X	X	X				

Table E-4
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
213190	EFFLUENT_08/13/07		X	X	X	X	X				
213923	EFFLUENT_08/20/07		X	X	X	X	X				
214521	EFFLUENT_08/27/07		X	X	X	X	X				
215298	EFFLUENT_09/04/07		X	X	X	X	X				
215917	EFFLUENT_09/10/07		X	X	X	X	X				
216651	EFFLUENT_09/17/07		X	X	X	X	X				
217312	EFFLUENT_09/24/07		X	X	X	X	X				
218081	EFFLUENT_10/01/07		X	X	X	X	X				
218826	EFFLUENT_10/08/07		X	X	X	X	X				
219640	EFFLUENT_10/15/07		X	X	X	X	X				
220317	EFFLUENT_10/22/07		X	X	X	X	X				
220913	EFFLUENT_10/29/07		X	X	X	X	X				
221435	EFFLUENT_11/05/07		X	X	X	X	X				
222215	EFFLUENT_11/12/07		X	X	X	X	X				
223000	EFFLUENT_11/19/07		X	X	X	X	X				
223421	EFFLUENT_11/26/07		X	X	X	X	X				
224147	EFFLUENT_12/04/07		X	X	X	X	X				
224657	EFFLUENT_12/10/07		X	X	X	X	X				
225322	EFFLUENT_12/17/07		X	X	X	X	X				
226070	EFFLUENT_12/26/07		X	X	X	X	X				
229879	EFFLUENT-COMP_01/05/08						X				
229879	EFFLUENT-COMP_01/12/08						X				
228212	EFFLUENT-COMP_01/19/08						X				
228827	EFFLUENT-COMP_01/26/08						X				
229480	EFFLUENT-COMP_02/02/08						X				
230241	EFFLUENT-COMP_02/09/08						X				
230943	EFFLUENT-COMP_02/16/08						X				
231827	EFFLUENT-COMP_02/23/08						X				
232561	EFFLUENT-COMP_03/01/08						X				
233336	EFFLUENT-COMP_03/08/08						X				
234259	EFFLUENT-COMP_03/15/08						X				
234930	EFFLUENT-COMP_03/22/08						X				
235624	EFFLUENT-COMP_03/29/08						X				
236457	EFFLUENT-COMP_04/05/08						X				
237653	EFFLUENT-COMP_04/12/08						X				
238142	EFFLUENT-COMP_04/19/08						X				
239009	EFFLUENT-COMP_04/26/08						X				
239738	EFFLUENT-COMP_05/03/08						X				
241525	EFFLUENT-COMP_05/17/08						X				
242317	EFFLUENT-COMP_05/24/08						X				
242769	EFFLUENT-COMP_05/31/08						X				
243689	EFFLUENT-COMP_06/07/08						X				
245253	EFFLUENT-COMP_06/21/08						X				
209671	EFFLUENT-COMP_07/07/07						X				
211351	EFFLUENT-COMP_07/21/07						X				

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SDGs, Sample IDs, and Analytes
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
211900	EFFLUENT-COMP_07/28/07						X				
212440	EFFLUENT-COMP_08/04/07						X				
213163	EFFLUENT-COMP_08/11/07						X				
213912	EFFLUENT-COMP_08/18/07						X				
214740	EFFLUENT-COMP_08/25/07						X				
215322	EFFLUENT-COMP_09/01/07						X				
215831	EFFLUENT-COMP_09/10/07						X				
216593	EFFLUENT-COMP_09/15/07						X				
217277	EFFLUENT-COMP_09/22/07						X				
218165	EFFLUENT-COMP_09/29/07						X				
218819	EFFLUENT-COMP_10/06/07						X				
219583	EFFLUENT-COMP_10/13/07						X				
220240	EFFLUENT-COMP_10/20/07						X				
220871	EFFLUENT-COMP_10/27/07						X				
221449	EFFLUENT-COMP_11/03/07						X				
222229	EFFLUENT-COMP_11/10/07						X				
222963	EFFLUENT-COMP_11/17/07						X				
223401	EFFLUENT-COMP_11/24/07						X				
223885	EFFLUENT-COMP_12/01/07						X				
224617	EFFLUENT-COMP_12/08/07						X				
225519	EFFLUENT-COMP_12/15/07						X				
226005	EFFLUENT-COMP_12/22/07						X				
226447	EFFLUENT-COMP_12/29/07						X				
240191	FB050708_05/07/08	X					X	X			
240243	FB050808_05/08/08	X					X	X		X	X
229550	FB-1_02/04/08	X					X	X	X		
239631	**FB-1_05/05/08**	**X**					**X**	**X**			
240243	H-11_05/08/08	X					X				
239919	H-28A_05/06/08	X					X	X			
240701	H-48_05/10/08	X					X				
240701	H-55_05/10/08	X					X				
240243	HM-2_05/08/08	X					X				
240243	HMW-13_05/08/08	X					X				
240243	HMW-14_05/08/08	X					X				
240243	HMW-15_05/08/08	X					X				
240243	HMW-16_05/08/08	X					X				
240191	HMW-9_05/07/08	X					X				
240243	HSW-1_05/08/08	X					X				
228116	I-AA_01/17/08	X	X				X				
229690	I-AA_02/05/08	X					X	X			
239784	I-AA_05/06/08	X					X	X			
239784	I-AR_05/06/08	X					X	X			
229639	I-B_02/05/08	X					X	X			
239784	I-B_05/06/08	X					X	X			
229639	I-C_02/05/08	X					X	X			

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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
239784	I-C_05/06/08	X					X	X			
229639	I-D_02/05/08	X					X	X			
239784	I-D_05/06/08	X					X	X			
229639	I-E_02/05/08	X					X	X			
239784	I-E_05/06/08	X					X	X			
239784	I-F_05/06/08	X					X	X			
229639	I-H_02/05/08	X					X	X			
239784	I-H_05/06/08	X					X	X			
240115	I-I_05/07/08	X					X	X			
240115	I-J_05/07/08	X					X	X			
240115	I-K_05/07/08	X					X	X			
229639	I-L_02/05/08	X					X	X			
239784	I-L_05/06/08	X					X	X			
229639	I-M_02/05/08	X					X	X			
239784	I-M_05/06/08	X					X	X			
230066	**I-N_02/08/08**	**X**					**X**	**X**			
239784	I-N_05/06/08	X					X	X			
240568	INFLUENT COMP_05/10/08						X				
244394	INFLUENT COMP_06/14/08						X				
226444	INFLUENT_01/02/08		X	X	X	X	X				
226881	INFLUENT_01/07/08		X	X	X	X	X				
227614	INFLUENT_01/14/08				X	X	X				
228226	INFLUENT_01/21/08		X	X	X	X	X				
228904	INFLUENT_01/28/08		X	X	X	X	X				
229554	INFLUENT_02/04/08		X	X	X	X	X				
230307	INFLUENT_02/11/08		X	X	X	X	X				
230975	INFLUENT_02/18/08		X	X	X	X	X				
231734	INFLUENT_02/25/08		X	X	X	X	X				
232539	INFLUENT_03/03/08		X	X	X	X	X				
233325	INFLUENT_03/10/08		X	X	X	X	X				
234187	INFLUENT_03/17/08		X	X	X	X	X				
234938	INFLUENT_03/24/08		X	X	X	X	X				
235626	INFLUENT_03/31/08		X	X	X	X	X				
236473	INFLUENT_04/07/08		X	X	X	X	X				
237426	INFLUENT_04/14/08		X	X	X	X	X				
238185	INFLUENT_04/21/08		X	X	X	X	X				
238983	INFLUENT_04/28/08		X	X	X	X	X				
239615	INFLUENT_05/05/08			X	X	X	X				
240609	INFLUENT_05/12/08		X	X	X	X	X				
241471	INFLUENT_05/19/08		X	X	X	X	X				
242355	INFLUENT_05/27/08		X	X	X	X	X				
242868	INFLUENT_06/02/08		X	X	X	X	X				
245247	INFLUENT_06/23/08		X	X	X	X	X				
209942	INFLUENT_07/10/07		X	X	X	X	X				
210513	INFLUENT_07/16/07		X	X	X	X	X				

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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
211352	INFLUENT_07/23/07		X	X	X	X	X				
211862	INFLUENT_07/30/07		X	X	X	X	X				
212455	INFLUENT_08/06/07		X	X	X	X	X				
213190	INFLUENT_08/13/07		X	X	X	X	X				
213923	INFLUENT_08/20/07		X	X	X	X	X				
214521	INFLUENT_08/27/07		X	X	X	X	X				
215298	INFLUENT_09/04/07		X	X	X	X	X				
215917	INFLUENT_09/10/07		X	X	X	X	X				
216651	INFLUENT_09/17/07		X	X	X	X	X				
217312	INFLUENT_09/24/07		X	X	X	X	X				
218081	INFLUENT_10/01/07		X	X	X	X	X				
218826	INFLUENT_10/08/07		X	X	X	X	X				
219640	INFLUENT_10/15/07		X	X	X	X	X				
220317	INFLUENT_10/22/07		X	X	X	X	X				
220913	INFLUENT_10/29/07		X	X	X	X	X				
221435	INFLUENT_11/05/07		X	X	X	X	X				
222215	INFLUENT_11/12/07		X	X	X	X	X				
223000	INFLUENT_11/19/07		X	X	X	X	X				
223421	INFLUENT_11/26/07		X	X	X	X	X				
224147	INFLUENT_12/04/07		X	X	X	X	X				
224657	INFLUENT_12/10/07		X	X	X	X	X				
225322	INFLUENT_12/17/07		X	X	X	X	X				
226070	INFLUENT_12/26/07		X	X	X	X	X				
226782	INFLUENT-COMP_01/05/08						X				
227540	INFLUENT-COMP_01/12/08						X				
228212	INFLUENT-COMP_01/19/08						X				
228827	INFLUENT-COMP_01/26/08						X				
229480	INFLUENT-COMP_02/02/08						X				
230241	INFLUENT-COMP_02/09/08						X				
230943	INFLUENT-COMP_02/16/08						X				
231827	INFLUENT-COMP_02/23/08						X				
232561	INFLUENT-COMP_03/01/08						X				
233336	INFLUENT-COMP_03/08/08						X				
234259	INFLUENT-COMP_03/15/08						X				
234930	INFLUENT-COMP_03/22/08						X				
235624	INFLUENT-COMP_03/29/08						X				
236457	INFLUENT-COMP_04/05/08						X				
237653	INFLUENT-COMP_04/12/08						X				
238142	INFLUENT-COMP_04/19/08						X				
239738	INFLUENT-COMP_05/03/08						X				
241525	INFLUENT-COMP_05/17/08						X				
242317	INFLUENT-COMP_05/24/08						X				
242769	INFLUENT-COMP_05/31/08						X				
243689	INFLUENT-COMP_06/07/08						X				
245253	INFLUENT-COMP_06/21/08						X				

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Annual Remedial Performance Report for Chromium and Perchlorate
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
209671	INFLUENT-COMP_07/07/07						X				
210523	INFLUENT-COMP_07/14/07						X				
211351	INFLUENT-COMP_07/21/07						X				
211900	INFLUENT-COMP_07/28/07						X				
212440	INFLUENT-COMP_08/04/07						X				
213163	INFLUENT-COMP_08/11/07						X				
213912	INFLUENT-COMP_08/18/07						X				
214740	INFLUENT-COMP_08/25/07						X				
215322	INFLUENT-COMP_09/01/07						X				
215831	INFLUENT-COMP_09/10/07						X				
216593	INFLUENT-COMP_09/15/07						X				
217277	INFLUENT-COMP_09/22/07						X				
218165	INFLUENT-COMP_09/29/07						X				
219583	INFLUENT-COMP_10/13/07						X				
220240	INFLUENT-COMP_10/20/07						X				
220871	INFLUENT-COMP_10/27/07						X				
221449	INFLUENT-COMP_11/03/07						X				
222229	INFLUENT-COMP_11/10/07						X				
222963	INFLUENT-COMP_11/17/07						X				
223401	INFLUENT-COMP_11/24/07						X				
223885	INFLUENT-COMP_12/01/07						X				
224617	INFLUENT-COMP_12/08/07						X				
225519	INFLUENT-COMP_12/15/07						X				
226005	INFLUENT-COMP_12/22/07						X				
226447	INFLUENT-COMP_12/29/07						X				
229639	I-O_02/05/08	X					X	X			
239784	I-O_05/06/08	X					X	X			
229639	I-P_02/05/08	X					X	X			
239784	I-P_05/06/08	X					X	X			
229639	I-Q_02/05/08	X					X	X			
239784	I-Q_05/06/08	X					X	X			
229639	I-R_02/05/08	X					X	X			
239784	I-R_05/06/08	X					X	X			
229639	I-S_02/05/08	X					X	X			
239784	I-S_05/06/08	X					X	X			
229639	I-T_02/05/08	X					X	X			
239784	I-T_05/06/08	X					X	X			
239784	I-U_05/06/08	X					X	X			
240115	I-V_05/07/08	X					X	X			
240115	I-Z_05/07/08	X					X	X			
227339	L-635_01/08/08	X					X				
230772	L-635_02/12/08	X	X				X				
233998	L-635_03/11/08	X					X				
237937	L-635_04/16/08	X					X				
241119	L-635_05/13/08	X					X	X			

Table E-4
SDGs, Sample IDs, and Analytes
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
244956	L-635_06/18/08	X					X				
227339	L-637_01/08/08	X					X				
230772	L-637_02/12/08	X	X				X				
233998	L-637_03/11/08	X					X				
237937	L-637_04/16/08	X					X				
241119	L-637_05/13/08	X					X	X			
244956	L-637_06/18/08	X					X				
240243	LK-3_05/08/08	X					X				
230036	M-10_02/07/08	X	X		X						
240233	M-10_05/08/08	X					X	X	X	X	X
245535	M-100_06/25/08						X	X			
245535	M-102_06/25/08						X	X			
240912	M-103_05/13/08	X					X	X			
230021	M-11_02/07/08	X					X	X	X		
240115	M-11_05/07/08	X					X	X	X	X	X
228116	M-111A_01/18/08	X	X				X				
230066	**M-111A_02/08/08**	**X**					**X**	**X**			
240701	M-111A_05/12/08	X					X	X			
230066	**M-115_02/08/08**	**X**					**X**	**X**			
240327	M-115_05/09/08	X					X	X			
240912	M-117_05/13/08	X					X	X			
240912	M-118_05/13/08	X					X	X			
240701	M-120_05/10/08	X					X	X			
240701	M-121_05/10/08	X					X	X			
228116	M-126_01/17/08	X	X				X				
229690	M-126_02/05/08	X					X	X			
240701	M-126_05/11/08	X					X	X			
240326	M-129_05/09/08	X					X	X			
242835	M-129_06/02/08	X					X	X			
240115	M-12A_05/07/08	X					X	X	X	X	X
240115	M-13_05/07/08	X					X	X		X	X
240326	M-130_05/09/08	X					X	X			
242835	M-130_06/02/08	X					X	X			
228116	M-131_01/17/08	X					X				
229690	M-131_02/05/08	X					X	X			
240016	M-131_05/06/08	X					X	X			
228116	M-132_01/17/08	X	X				X				
240701	M-132_05/12/08	X					X	X			
228116	M-133_01/17/08	X	X				X				
240701	M-133_05/12/08	X					X	X			
228116	M-134_01/17/08	X	X				X				
229690	M-134_02/05/08	X					X	X			
240701	M-134_05/11/08	X					X	X			
228116	M-135_01/17/08	X	X				X				
229690	M-135_02/05/08	X					X	X			

Table E-4
SDGs, Sample IDs, and Analytes
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
240016	M-135_05/06/08	X					X	X			
240701	M-135_05/11/08	X					X	X			
228116	M-136_01/17/08	X	X				X				
229690	M-136_02/05/08	X					X	X			
240701	M-136_05/11/08	X					X	X			
230066	**M-14A_02/08/08**	**X**					**X**	**X**			
240327	M-14A_05/09/08	X					X	X			
230066	**M-17A_02/08/08**	**X**					**X**	**X**			
240233	M-17A_05/08/08	X					X	X			
240115	M-19_05/07/08	X					X	X			
240115	M-21_05/07/08	X					X	X			
230021	M-22A_02/07/08	X					X	X			
240327	M-22A_05/09/08	X					X	X			
229550	M-23_02/04/08	X					X	X			
239631	**M-23_05/05/08**	**X**					**X**	**X**		**X**	**X**
229690	M-25_02/05/08	X					X	X			
240016	M-25_05/06/08	X					X	X		X	X
240233	M-2A_05/08/08	X					X	X			
240115	M-31A_05/07/08	X					X	X			
240115	M-33_05/07/08	X					X	X			
240701	M-34_05/12/08	X					X	X			
240701	M-35_05/12/08	X					X				
230021	M-36_02/07/08	X					X	X	X		
240233	M-36_05/08/08	X					X	X	X	X	X
229690	M-37_02/05/08	X					X	X	X		
240016	M-37_05/06/08	X					X	X	X	X	X
230021	M-38_02/07/08	X					X	X			
240233	M-38_05/08/08	X					X	X			
240115	M-39_05/07/08	X					X	X	X	X	X
229550	M-44_02/04/08	X					X	X			
239631	**M-44_05/05/08**	**X**					**X**	**X**	**X**		
229550	M-48_02/04/08	X					X	X			
239631	**M-48_05/05/08**	**X**					**X**	**X**		**X**	**X**
240115	M-50_05/07/08	X					X	X			
240115	M-52_05/07/08	X					X	X			
229690	M-57A_02/05/08	X					X	X			
240016	M-57A_05/06/08	X					X	X			
239919	M-5A_05/06/08	X					X	X			
240701	M-61_05/12/08	X					X	X			
229690	M-64_02/05/08	X					X	X			
240701	M-64_05/12/08	X					X	X			
229690	M-65_02/05/08	X					X	X			
240701	M-65_05/12/08	X					X	X			
229690	M-66_02/05/08	X					X	X			
240701	M-66_05/12/08	X					X	X			

Table E-4
SDGs, Sample IDs, and Analytes
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Tronox, LLC
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
240701	M-67_05/12/08	X					X	X			
240701	M-67D_05/12/08	X					X	X			
240115	M-68_05/07/08	X					X	X			
229690	M-69_02/05/08	X					X	X			
240016	M-69_05/06/08	X					X	X			
239919	M-6A_05/06/08	X					X	X			
230021	M-70_02/07/08	X					X	X			
240233	M-70_05/08/08	X					X	X			
230021	M-71_02/07/08	X					X	X			
240233	M-71_05/08/08	X					X	X			
230021	M-72_02/07/08	X					X	X			
240233	M-72_05/08/08	X					X	X			
240233	M-73_05/08/08	X					X	X			
240233	M-74_05/08/08	X					X	X			
230066	**M-75_02/08/08**	**X**					**X**	**X**			
240233	M-75_05/08/08	X					X	X			
230066	**M-76_02/08/08**	**X**					**X**	**X**			
240233	M-76_05/08/08	X					X	X			
240115	M-77_05/07/08	X					X	X			
229690	M-79_02/05/08	X					X	X			
240016	M-79_05/06/08	X					X	X			
239919	M-7B_05/06/08	X					X	X			
228116	M-83_01/17/08	X					X				
230021	M-83_02/07/08	X					X	X			
230772	M-83_02/12/08	X	X				X				
233998	M-83_03/13/08	X					X				
237937	M-83_04/17/08	X					X				
240233	M-83_05/08/08	X					X	X			
241119	M-83_05/12/08	X					X	X			
230021	M-84_02/07/08	X					X	X	X		
240608	M-84_05/12/08	X					X	X	X		
230021	M-85_02/07/08	X					X	X			
240233	M-85_05/08/08	X					X	X			
230021	M-86_02/07/08	X					X	X			
240233	M-86_05/08/08	X					X	X			
228116	M-87_01/17/08	X					X				
230021	M-87_02/07/08	X					X	X			
230772	M-87_02/12/08	X	X				X				
233998	M-87_03/13/08	X					X				
237937	M-87_04/17/08	X					X				
240233	M-87_05/08/08	X					X	X			
241119	M-87_05/12/08	X					X	X			
244956	M-87_06/18/08	X					X				
240233	M-88_05/08/08	X					X	X			
230021	M-89_02/07/08	X					X	X			

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Tronox, LLC
Henderson, Nevada
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
240233	M-89_05/08/08	X					X	X			
240115	M-92_05/07/08	X					X	X			
229550	M-94_02/04/08	X					X	X	X		
229550	M-95_02/04/08	X					X	X			
239631	**M-95_05/05/08**	**X**					**X**	**X**			
229550	M-96_02/04/08	X					X	X			
239631	**M-96_05/05/08**	**X**					**X**	**X**			
240115	M-97_05/07/08	X					X	X			
229690	M-99_02/05/08	X					X	X			
240016	M-99_05/06/08	X					X	X			
240701	MC-29_05/11/08	X					X				
240701	MC-3_05/10/08	X					X				
240701	MC-50_05/11/08	X					X				
240701	MC-51_05/10/08	X					X				
240701	MC-53_05/11/08	X					X	X			
240701	MC-6_05/10/08	X					X				
240701	MC-65_05/10/08	X					X				
240701	MC-69_05/10/08	X					X				
240701	MC-7_05/10/08	X					X				
240701	MC-93_05/11/08	X					X				
240701	MC-97_05/11/08	X					X				
229550	MD-1_02/04/08	X					X	X	X		
239631	**MD-1_05/05/08**	**X**					**X**	**X**	**X**		
230021	MD-2_02/07/08	X					X	X	X		
240608	MD-2_05/12/08	X					X	X	X		
229550	MD-3_02/04/08	X					X	X			
240016	MD-3_05/06/08	X					X	X			
229690	MD-4_02/05/08	X					X	X			
240115	MD-4_05/07/08	X					X	X			
239631	**MD-5_05/05/08**	**X**					**X**	**X**		**X**	**X**
240701	MW-16_05/12/08	X					X	X			
227339	MWK-4_01/09/08	X					X				
230772	MWK-4_02/13/08	X	X				X				
233998	MWK-4_03/12/08	X					X				
237937	MWK-4_04/17/08	X					X				
241233	MW-K4_05/15/08	X					X	X			
244956	MWK-4_06/17/08	X					X				
227339	MWK-5_01/10/08	X					X				
230772	MWK-5_02/14/08	X	X				X				
233998	MWK-5_03/13/08	X					X				
237937	MWK-5_04/17/08	X					X				
241233	MW-K5_05/15/08	X			X	X	X	X			
244956	MWK-5_06/17/08	X					X				
240243	PC-1_05/08/08	X					X	X			
227339	PC-101R_01/09/08	X					X				

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SDGs, Sample IDs, and Analytes
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Tronox, LLC
Henderson, Nevada
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
230772	PC-101R_02/13/08	X	X				X				
233998	PC-101R_03/12/08	X					X				
237937	PC-101R_04/16/08	X					X				
241119	PC-101R_05/13/08	X					X	X			
227339	PC-103_01/10/08	X					X				
230772	PC-103_02/14/08	X	X				X				
233998	PC-103_03/13/08	X					X				
237937	PC-103_04/17/08	X					X				
241233	PC-103_05/15/08	X			X	X	X	X			
244956	PC-103_06/17/08	X					X				
240243	PC-104_05/08/08	X					X	X			
240243	PC-107_05/08/08	X					X				
240326	PC-108_05/09/08	X					X				
240326	PC-110_05/09/08	X					X				
240326	PC-112_05/09/08	X					X				
226763	PC-115R_01/07/08	X					X				
230253	PC-115R_02/11/08	X	X				X				
233399	PC-115R_03/10/08	X					X				
236536	PC-115R_04/07/08	X					X				
240600	PC-115R_05/12/08	X					X	X			
243607	PC-115R_06/09/08	X					X				
226763	PC-116R_01/07/08	X					X				
230253	PC-116R_02/11/08	X	X				X				
233399	PC-116R_03/10/08	X					X				
236536	PC-116R_04/07/08	X					X				
240600	PC-116R_05/12/08	X					X	X			
243607	PC-116R_06/09/08	X					X				
226763	PC-117_01/07/08	X					X				
230253	PC-117_02/11/08	X	X				X				
233399	PC-117_03/10/08	X					X				
236536	PC-117_04/07/08	X					X				
240600	PC-117_05/12/08	X					X	X			
243607	PC-117_06/09/08	X					X				
226763	PC-118_01/07/08	X					X				
230253	PC-118_02/11/08	X	X				X				
233399	PC-118_03/10/08	X					X				
236536	PC-118_04/07/08	X					X				
240600	PC-118_05/12/08	X					X	X			
243607	PC-118_06/09/08	X					X				
226763	PC-119_01/07/08	X					X				
230253	PC-119_02/11/08	X	X				X				
233399	PC-119_03/10/08	X					X				
236536	PC-119_04/07/08	X					X				
240600	PC-119_05/12/08	X					X	X			
243607	PC-119_06/09/08	X					X				

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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
226763	PC-120_01/07/08	X					X				
230253	PC-120_02/11/08	X	X				X				
233399	PC-120_03/10/08	X					X				
236536	PC-120_04/07/08	X					X				
240600	PC-120_05/12/08	X					X	X			
243607	PC-120_06/09/08	X					X				
226763	PC-121_01/07/08	X					X				
230253	PC-121_02/11/08	X	X				X				
233399	PC-121_03/10/08	X					X				
236536	PC-121_04/07/08	X					X				
240600	PC-121_05/12/08	X					X	X			
243607	PC-121_06/09/08	X					X				
227339	PC-122_01/10/08	X					X				
230772	PC-122_02/14/08	X	X				X				
233998	PC-122_03/13/08	X					X				
237937	PC-122_04/17/08	X					X				
241119	PC-122_05/14/08	X					X	X			
244956	PC-122_06/17/08	X					X				
229550	PC-123_02/04/08	X					X	X			
239631	**PC-123_05/05/08**	**X**					**X**	**X**			
229550	PC-124_02/04/08	X					X	X			
239631	**PC-124_05/05/08**	**X**					**X**	**X**		**X**	**X**
229550	PC-125_02/04/08	X					X	X			
239631	**PC-125_05/05/08**	**X**					**X**	**X**			
229550	PC-126_02/04/08	X					X	X			
239631	**PC-126_05/05/08**	**X**					**X**	**X**		**X**	**X**
229550	PC-127_02/04/08	X					X	X			
239631	**PC-127_05/05/08**	**X**					**X**	**X**			
229550	PC-128_02/04/08	X					X	X			
239631	**PC-128_05/05/08**	**X**					**X**	**X**		**X**	**X**
229550	PC-129_02/04/08	X					X	X			
239631	**PC-129_05/05/08**	**X**					**X**	**X**			
229550	PC-130_02/04/08	X					X	X			
240016	PC-130_05/06/08	X					X	X		X	X
229550	PC-131_02/04/08	X					X	X			
239631	**PC-131_05/05/08**	**X**					**X**	**X**			
229550	PC-132_02/04/08	X					X	X			
239631	**PC-132_05/05/08**	**X**					**X**	**X**		**X**	**X**
226763	PC-133_01/07/08	X					X				
230253	PC-133_02/11/08	X	X				X				
233399	PC-133_03/10/08	X					X				
236536	PC-133_04/07/08	X					X				
240600	PC-133_05/12/08	X					X	X			
243607	PC-133_06/09/08	X					X				
228116	PC-134_01/18/08	X	X				X				

Table E-4
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
230772	PC-134_02/13/08	X	X				X				
240701	PC-134_05/11/08	X					X	X			
228116	PC-135_01/18/08	X					X				
230772	PC-135_02/13/08	X	X				X				
228116	PC-136_01/18/08	X					X				
230772	PC-136_02/13/08	X	X				X				
241119	PC-136_05/14/08	X					X	X			
228116	PC-137_01/18/08	X	X				X				
230772	PC-137_02/14/08	X	X				X				
240701	PC-137_05/11/08	X					X	X			
227339	PC-17_01/09/08	X					X				
230772	PC-17_02/13/08	X	X				X				
233998	PC-17_03/12/08	X					X				
237937	PC-17_04/16/08	X					X				
241119	PC-17_05/13/08	X					X	X			
244956	PC-17_06/17/08	X					X				
227339	PC-18_01/09/08	X					X				
230772	PC-18_02/13/08	X	X				X				
233998	PC-18_03/12/08	X					X				
237937	PC-18_04/16/08	X					X				
241119	PC-18_05/13/08	X					X	X			
244956	PC-18_06/17/08	X					X				
240243	PC-2_05/08/08	X					X	X		X	X
240701	PC-21A_05/12/08	X					X	X		X	X
240243	PC-24_05/08/08	X					X	X			
240701	PC-28_05/10/08	X					X	X			
240243	PC-2D_05/08/08	X					X	X		X	X
240701	PC-31_05/10/08	X					X	X			
240701	PC-31D_05/10/08	X					X	X			
229550	PC-37_02/04/08	X					X	X			
239631	**PC-37_05/05/08**	**X**					**X**	**X**			
240243	PC-4_05/08/08	X					X	X		X	X
240701	PC-40_05/10/08	X					X	X			
240701	PC-40D_05/10/08	X					X	X			
240243	PC-50_05/08/08	X					X	X			
227339	PC-53_01/10/08	X					X				
230772	PC-53_02/14/08	X	X				X				
233998	PC-53_03/13/08	X					X				
237937	PC-53_04/17/08	X					X				
241233	PC-53_05/15/08	X					X	X			
244956	PC-53_06/17/08	X					X				
229550	PC-54_02/04/08	X					X	X			
239631	**PC-54_05/05/08**	**X**					**X**	**X**			
227339	PC-55_01/08/08	X					X				
230772	PC-55_02/12/08	X	X				X				

Table E-4
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
233998	PC-55_03/11/08	X					X				
237937	PC-55_04/16/08	X					X				
241119	PC-55_05/13/08	X					X	X			
244956	PC-55_06/18/08	X					X				
227339	PC-56_01/07/08	X					X				
230772	PC-56_02/11/08	X	X				X				
233998	PC-56_03/10/08	X					X				
237937	PC-56_04/17/08	X					X				
241119	PC-56_05/14/08	X					X	X			
244956	PC-56_06/18/08	X					X				
227339	PC-58_01/07/08	X					X				
230772	PC-58_02/11/08	X	X				X				
233998	PC-58_03/10/08	X					X				
237937	PC-58_04/17/08	X					X				
241119	PC-58_05/14/08	X					X	X			
244956	PC-58_06/18/08	X					X				
227339	PC-59_01/07/08	X					X				
230772	PC-59_02/11/08	X	X				X				
233998	PC-59_03/10/08	X					X				
237937	PC-59_04/17/08	X					X				
241119	PC-59_05/14/08	X					X	X			
244956	PC-59_06/18/08	X					X				
227339	PC-60_01/07/08	X					X				
230772	PC-60_02/11/08	X	X				X				
233998	PC-60_03/10/08	X					X				
237937	PC-60_04/17/08	X					X				
241119	PC-60_05/14/08	X					X	X			
244956	PC-60_06/18/08	X					X				
227339	PC-62_01/07/08	X					X				
230772	PC-62_02/11/08	X	X				X				
233998	PC-62_03/10/08	X					X				
237937	PC-62_04/17/08	X					X				
240326	PC-62_05/09/08	X					X	X			
241119	PC-62_05/14/08	X					X	X			
244956	PC-62_06/18/08	X					X				
240701	PC-64_05/11/08	X					X	X			
240701	PC-65_05/11/08	X					X	X			
240701	PC-66_05/11/08	X					X	X			
240701	PC-66D_05/11/08	X					X	X			
240701	PC-67_05/11/08	X					X	X			
230772	PC-68_02/11/08	X	X				X				
233998	PC-68_03/10/08	X					X				
237937	PC-68_04/17/08	X					X				
241119	PC-68_05/14/08	X					X	X			
244956	PC-68_06/18/08	X					X				

Table E-4
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SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
229550	PC-71_02/04/08	X					X	X			
239631	**PC-71_05/05/08**	**X**					**X**	**X**			
229550	PC-72_02/04/08	X					X	X			
239631	**PC-72_05/05/08**	**X**					**X**	**X**			
229550	PC-73_02/04/08	X					X	X			
239631	**PC-73_05/05/08**	**X**					**X**	**X**			
240191	PC-74_05/07/08	X					X				
240191	PC-77_05/07/08	X					X				
240191	PC-79_05/07/08	X					X	X			
240191	PC-82_05/07/08	X					X			X	X
227339	PC-86_01/09/08	X					X				
230772	PC-86_02/12/08	X	X				X				
233998	PC-86_03/12/08	X					X				
237937	PC-86_04/17/08	X					X				
241119	PC-86_05/14/08	X			X	X	X	X			
244956	PC-86_06/17/08	X					X				
227339	PC-90_01/09/08	X					X				
230772	PC-90_02/12/08	X	X				X				
233998	PC-90_03/12/08	X					X				
237937	PC-90_04/17/08	X					X				
241119	PC-90_05/14/08	X			X	X	X	X			
244956	PC-90_06/17/08	X					X				
227339	PC-91_01/09/08	X					X				
230772	PC-91_02/12/08	X	X				X				
233998	PC-91_03/12/08	X					X				
237937	PC-91_04/16/08	X					X				
241119	PC-91_05/14/08	X			X	X	X	X			
244956	PC-91_06/17/08	X					X				
240191	PC-96_05/07/08	X					X				
227339	PC-97_01/09/08	X					X				
230772	PC-97_02/12/08	X	X				X				
233998	PC-97_03/12/08	X					X				
237937	PC-97_04/16/08	X					X				
241119	PC-97_05/14/08	X					X	X			
244956	PC-97_06/17/08	X					X				
227339	PC-98R_01/10/08	X					X				
230772	PC-98R_02/14/08	X	X				X				
233998	PC-98R_03/13/08	X					X				
237937	PC-98R_04/17/08	X					X				
241233	PC-98R_05/15/08	X					X	X			
244956	PC-98R_06/17/08	X					X				
226763	PC-99R2/R3_01/07/08	X					X				
230253	PC-99R2/R3_02/11/08	X	X				X				
233399	PC-99R2/R3_03/10/08	X					X				
236536	PC-99R2/R3_04/07/08	X					X				

Table E-4
SDGs, Sample IDs, and Analytes
Annual Remedial Performance Report for Chromium and Perchlorate
Tronox, LLC
Henderson, Nevada
July 2007-June 2008

SDG	SampleID	EPA 160.1 Total Dissolved Solids	EPA 200.7 Total Chromium	EPA 218.6 Chromium-hexavalent	EPA 300.0 Nitrate (as N)	EPA 300.1B Chlorate	EPA 314 Perchlorate	EPA 6010B Total Chromium	EPA 7196 Chromium-hexavalent	EPA 9056 Chlorate	EPA 9056 Nitrate (as N)
240600	PC-99R2/R3_05/12/08	X					X	X			
243607	PC-99R2/R3_06/09/08	X					X				
230253	SEEP SURFACE FLOW_02/11/08	X	X				X				
233399	SEEP SURFACE FLOW_03/10/08	X					X				
236536	SEEP SURFACE FLOW_04/07/08	X					X				
226763	SF-1_01/07/08	X					X				
230253	SF-1_02/11/08	X	X				X				
233399	SF-1_03/10/08	X					X				
236536	SF-1_04/07/08	X					X				
240600	SF-1_05/12/08	X					X	X			
243607	SF-1_06/09/08	X					X				
241086	TR-1_05/14/08	X					X	X		X	X
240912	TR-10_05/13/08	X			X		X	X			
240912	TR-11_05/13/08	X			X		X	X			
241249	TR-12_05/15/08	X			X		X	X			
241086	TR-2_05/14/08	X					X	X		X	X
241086	TR-2D_05/14/08	X					X	X		X	X
241249	TR-3_05/15/08	X			X		X	X			
241249	TR-4_05/15/08	X			X		X	X			
241249	TR-4D_05/15/08	X			X		X	X			
241086	TR-5_05/14/08	X					X	X		X	X
241086	TR-6_05/14/08	X					X	X		X	X
241086	TR-7_05/14/08	X					X	X		X	X
241086	TR-8_05/14/08	X					X	X		X	X
240912	TR-9_05/13/08	X			X		X	X			

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Memorandum

Date: August 5, 2008

To: Sally Bilodeau/Camarillo

From: Sharon McKechnie/Westford

Subject: Data Review
Routine Monitoring Program
Annual Remedial Performance Report for Chromium and Perchlorate,
July 2007- June 2008
Tronox LLC, Henderson, Nevada

Distribution: Robert Kennedy/Westford

04020-023-110
TH416-TH555_sm

SUMMARY

A limited review was performed on the data for raw groundwater samples, raw surface water samples, equipment blanks, and field blanks analyzed for all or a subset of the following parameters:

- Perchlorate by EPA Method 314
- Hexavalent chromium by SW-846 Method 7196 or EPA Method 218.6
- Total chromium by SW846 6010B or EPA Method 200.7
- Total dissolved solids (TDS) by EPA Method 160.1/Standard Methods (SM) 2540C
- Nitrate as Nitrogen by EPA Method 300.0 or SW-846 Method 9056
- Chlorate by EPA Method 300.0 or SW-846 Method 9056

The samples were collected at the Tronox LLC site in Henderson, Nevada from January 7, 2008 through June 25, 2008 and submitted to MWH Laboratories in Monrovia, California for analysis. The MWH project numbers, sample collection dates and analyses included in this review are summarized in Attachment A at the end of this memo. In addition, some samples were subcontracted for TDS analyses to Sierra Environmental Monitoring, Inc in Reno Nevada. These samples are included in the summary in Attachment A at the end of this memo.

The sample results were assessed according to the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (October 2004), the Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006), and by the laboratory quality control (QC) criteria. The validation guidelines were modified to accommodate the non-CLP methodologies.

The data reviewed required minor qualification for selected samples and appear generally acceptable for decision making. One nondetect result for TDS was rejected on the basis of holding time (HT) nonconformance and is considered unusable for decision making purposes. Selected other detected and nondetect results for hexavalent chromium, TDS, Chlorate, and Nitrate as nitrogen were estimated on the basis of (HT). All issues noted are discussed in the sections which follow.

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All issues noted are discussed in the sections which follow.

REVIEW ELEMENTS

The elements selected for review are based on the documentation provided in the laboratory data reports. Sample data were reviewed for the following elements:

- Agreement of analyses conducted with chain-of-custody (COC) requests
- Holding times and sample preservation
- Method blanks/equipment blanks/field blanks
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Laboratory duplicate results
- Field duplicate results
- Sample results/detection limits

DISCUSSION

Agreement of Analyses Conducted with COC Requests

Sample reports were checked to verify that the results reported corresponded to analytical requests as detailed on the COC documentation. The following discrepancies were noted:

Report number 227339:

- The preprinted COC commented "No Sample" for Sample PC-58; however, a sample for this location was received at the laboratory. No validation action was taken other than this notation.

Report number 240267/240233*:**

- The COC listed samples M-84 and MD-2; however these samples were cancelled upon authorization of the client. No validation action was taken other than this notation.

- Two separate samples were collected from location M-10 on 5/8/2008 and analyzed by different analytical methods for the same parameters. The affected parameters are total chromium by SW846 method 6010B and EPA method 200.7, and nitrate as nitrogen by EPA method 300.0 and SW-846 method 9056. The results from SW-846 method 6010B and EPA method 9056 were reported since this sample location is regulated under RCRA methods. No validation actions on this basis were taken other than this notation.

Report number 241086R:

- Several samples were indicated on the COC to be analyzed for nitrate as nitrogen by EPA method 300.0; however, in addition these samples were analyzed for nitrate as nitrogen by SW-846 method 9056. The results from SW-846 method 9056 were reported since the sample locations in this data report regulated under RCRA methods. No validation actions on this basis were taken other than this notation. These data were qualified for other reasons.

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Report number 244956:

- Sample PC-55 was listed on the COC with a collection date of 6/18/2008; however, the sample results page listed the sample collection date as 6/17/2008. The collection date on the sample results page was manually corrected to reflect the collection date on the COC. No validation action was taken other than this notation.

Report number 241249:

- The laboratory incorrectly logged in the analytical parameters for sample EB051508 and, as a result, perchlorate was not analyzed for this sample as specified on the COC. Insufficient sample remained for perchlorate analysis once the error was identified. No validation action was taken other than this notation.

Report number 243607:

- The sample time was not noted for sample ART-1 on the COC. Both the TDS and perchlorate analyses for this sample were performed well within the method specified holding times of 7-days and 28 days respectively; therefore, no validation action was taken other than this notation.

Report number 240016:

- During this data review, it was noted that the concentration of TDS in EB-1 was significantly higher than the reporting limit at 2730 mg/L and comparable to the TDS concentrations detected in the ambient samples. The laboratory was contacted and confirmed that the sample reported as EB-1 may have been mislabeled. The reported results for EB-1 were discarded and were not applied to the associated samples.

Additional issues noted during review:

- Selected reports were revised to correct incorrectly reported prep dates for TDS samples which were reanalyzed. The reports were revised to reflect the reanalysis prep date rather than the prep date from the original run. No validation action was taken other than this notation.

Holding Times and Sample Preservation

Method-specified HTs were met for all samples analyzed except for the following:

Report number 227339:

- The initial TDS analysis for sample ARP-7 was performed within the method specified HT of 7-days; however, the sample was reanalyzed at the client's request due to the result being inconsistent with historical data. The re-analysis was performed 9 days beyond the method-specified HT criterion. The result of the re-analysis was reported and the detected TDS result qualified as estimated, biased low (J-).

Report number 229550R2:

- The initial TDS analysis for sample PC-54 was performed within the method-specified holding time of 7-days; however, the sample was reanalyzed at the client's request due the result being

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inconsistent with historical data. The re-analysis was performed 30 days beyond the method-specified 7 day HT criterion. The result of the re-analysis was reported on this sample and the detected TDS result qualified as estimated, biased low (J-).

- The hexavalent chromium analyses for samples M-94, FB-1, and MD-1 were performed approximately 5 hours beyond the method-specified 24-hour HT criterion. The detected hexavalent chromium results for samples M-94, FB-1, and MD-1 were qualified as estimated (J).

Report number 229690R:

- The hexavalent chromium analyses for samples M-37 and EB-1 were performed approximately 5 hours beyond the method-specified 24-hour HT criterion. Detect and nondetect hexavalent chromium results for samples M-37 and EB-1 were qualified as estimated (J and UJ, respectively).

Report number 230021R:

- The hexavalent chromium analyses for samples MD-2, M-11, M-36, and M-84 were performed approximately 1.5 hours beyond the method-specified 24-hour HT criterion. Detect and nondetect hexavalent chromium results for samples MD-2, M-11, M-36, and M-84 were qualified as estimated (J and UJ), respectively.

Report number 230253:

- The initial TDS analysis for samples ART-1 and ART-3 were performed within the method specified HT of 7-days; however, the samples were reanalyzed at the client's request due to the result being inconsistent with historical data. The re-analyses were performed 33 days beyond the method-specified HT criterion. The result of the re-analyses were reported and the detected TDS results for samples ART-1 and ART-3 were qualified as estimated, biased low (J-).

Report number 230772:

- The initial TDS analysis for samples PC-122 and ARP-3 were performed within the method specified HT of 7-days; however, the samples were reanalyzed at the client's request due to the results being inconsistent with historical data. The re-analyses were performed 7 and 8 days, respectively beyond the method-specified HT criterion. The result of the re-analyses were reported and the detected TDS results for samples PC-122 and ARP-3 were qualified as estimated, biased low (J-).

Report number 233998:

- The TDS analyses for samples PC-56, PC-58, PC-59, PC-60, and PC-62 were performed from 1 to 2 days beyond the method-specified 7-day HT criterion. The detected results for these samples were qualified as estimated, biased low (J-).

- The initial TDS analysis for samples PC-91, MWK-4, and PC-17 were performed within the method specified HT of 7-days; however, the samples were reanalyzed at the client's request due to the results being inconsistent with historical data. The re-analyses were performed 2, 10, and 28 days, respectively beyond the method-specified HT criterion. The results of the re-

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analyses were reported and the detected TDS results for samples PC-91, MWK-4, and PC-17 were qualified as estimated, biased low (J-).

- The TDS analysis for sample PC-68 was performed 1 day beyond the method-specified 7-day HT criterion. The detected result for this sample was qualified as estimated, biased low (J-).

Report number 239784:

- The initial TDS analysis for samples I-D, I-H, I-O, I-P, I-T, and I-U were performed within the method specified HT of 7-days; however, the samples were reanalyzed at the client's request due to the results being inconsistent with historical data. The re-analyses were performed 23 days, beyond the method-specified HT criterion. The results of the re-analyses were reported and the detected TDS results for samples I-D, I-H, I-O, I-P, I-T, and I-U were qualified as estimated, biased low (J-).

Report number 240016:

- The hexavalent chromium analysis for sample M-37 was performed 12.5 hours beyond the method-specified 24-hour HT criterion. The detected hexavalent chromium result for sample hexavalent chromium was qualified as estimated (J).

Report number 240115:

- The hexavalent chromium analysis for samples M-39, M-11, M-12A, and EB-2 were performed from 4 to 8.5 hours beyond the method-specified 24-hour HT criterion. Detect and nondetect results for these samples were qualified as estimated (J and UJ, respectively).

- The nitrate as nitrogen analysis for sample M-12A was performed approximately 9 days beyond the method specified 48-hour HT criterion. The initial analysis for this sample was performed within the method-specified HT; however, this sample was reanalyzed at the client's request to confirm the result. The detected result for the re-analysis of this sample was qualified as estimated, biased low (J-).

Report number 240233:

- The initial TDS analysis for samples M-17A, M-36, M-38, M-71, and M-73 were performed within the method specified HT of 7-days; however, the samples were reanalyzed at the client's request due to the results being inconsistent with historical data. The re-analyses were performed 23 days, beyond the method-specified HT criterion. The results of the re-analyses were reported and the detected TDS results for samples M-17A, M-36, M-38, M-71, and M-73 were qualified as estimated, biased low (J-).

Report number 240608:

- The hexavalent chromium analyses for samples M-84 and MD-2 were performed approximately 2 hours beyond the method-specified 24-hour HT criterion. The detected results for these samples were qualified as estimated (J).

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Report number 240701:

- The initial TDS analysis for samples MW-16, M-65, M-66, M-67D, and EB051208 were performed within the method specified HT of 7-days; however, the samples were reanalyzed at the client's request due to the results being inconsistent with historical data. The re-analyses were performed from 16 to 17 days, beyond the method-specified HT criterion. The results of the re-analyses were reported and the detected TDS results for samples M-16, M-65, M-66, and M-67D were qualified as estimated, biased low (J-). The nondetect result for EB051208 was rejected (R) and considered unusable for decision making purposes.

- The perchlorate analyses for samples MW-16, M-126, MC-29, MC-3, and H-48 were performed were performed 3 days beyond the method-specified 28-day HT criterion. The detected and nondetect results for these samples were qualified as estimated, biased low (J- and UJ, respectively).

Report number 241086R:

- The chlorate analyses for samples TR-2D and EB051408 were performed 1 day beyond the method specified 28-day HT criterion. The nondetect results for these samples were qualified as estimated (UJ).

Report number 241119R:

- The initial perchlorate analysis for sample M-83 was performed within the method specified HT of 28-days; however, the sample was reanalyzed at the client's request due to the results being inconsistent with historical data. The re-analysis was performed 1 day, beyond the method-specified HT criterion. The result of the re-analysis was reported and the nondetect perchlorate result for sample M-83 was qualified as estimated, (UJ).

- The initial TDS analysis for sample L-637 was performed within the method specified HT of 7-days; however, the sample was reanalyzed at the client's request due to the result being inconsistent with historical data. The reanalysis was performed 14 days beyond the method-specified HT criterion. The result of the re-analysis was reported and the detected TDS result qualified as estimated, biased low (J-).

Report number 241233:

- The initial perchlorate and chlorate analyses for samples PC-98R and PC-103, respectively were performed within the method specified HT of 28-days; however, the samples were reanalyzed at the client's request due to the results being inconsistent with historical data. The results of the re-analyses were reported and the detected perchlorate results for samples PC-98R and PC-103 were qualified as estimated, biased low (J-)

Report number 244956:

- The TDS analyses for samples PC-98R, PC-86, PC-90, PC-122, MWK-4, ARP-1, ARP-4A, ARP-5A, ARP-6B, PC-53, PC-103, MWK-5, PC-91, PC-97, PC-17, and PC-18 were performed approximately 1 day beyond the method-specified 7-day HT criterion. The detected results for these samples were qualified as estimated (J-).

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- The Perchlorate analysis for samples L-635 and L-637 were performed 1 day beyond the method-specified 28-day HT criterion. The initial analyses for these samples were performed within the method-specified HT; however, the samples were re-analyzed at the client's request due the result being inconsistent with historical data. The nondetect results for the re-analyses were reported and qualified as estimated (UJ).

The cooler temperatures upon receipt at the laboratory met the acceptable range of 4± 2°C.

Documentation regarding sample pH verification upon receipt at the laboratory for total chromium analyses was not included in the data package. No action was taken except for this notation.

Method Blanks/Equipment Blanks/Field Blanks

Target analytes were not detected in the method blanks associated with the samples in this data set.

The field blanks, associated with this quarterly monitoring, are listed below:

Report Number	Field blank ID
229550R2	FB-1
240191	FB050708
240243R	FB050808

No target analytes were detected in the field blank; therefore, no validation actions were necessary on this basis.

Equipment blanks reviewed in association with the samples in this data set are listed below:

Report Number	Equipment blank ID
229690R	EB-1 (Collected 2/5/08)
240016	EB-1 (Collected 5/6/08)*
240115	EB-2
240191	EB050708
240243R	EB050808
240326	EB050908
240701	EB051008
	EB051108
	EB051208
240912R	EB051308
241086R	EB051408
*This equipment blank was not reported due to a laboratory error and was not used to evaluate the associated sample data.	

No analytes were detected above the reporting limit in any of the equipment blanks listed above with the exception of EB-1 (report 229690R) and EB-2 (report number 240115). TDS (EB-2) and perchlorate (EB-1 and EB-2) were detected above the reporting limits, however, the results for the associated samples, with the exception of sample M-92 (report number 240115), were significantly greater than the reporting limits and the concentrations detected in the equipment blank. It was considered that the low level of blank contamination present would have no impact on the TDS or perchlorate results for these samples. No validation action was taken on this basis. Sample M-92

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was qualified as estimated, biased high (J+) based on equipment blank contamination. The following table summarizes the concentrations detected and the associated samples.

Equipment Blank	Analyte	Conc. Detected
EB-1 (Collected 2/5/08)	Perchlorate	107 (µg/L)
Associated samples: All samples in report number 229690R		
EB-2	Perchlorate	112 (µg/L)
	TDS	50 mg/L
Associated samples: All samples in report number 240115		

LCS/LCSD Results

The percent recoveries (%Rs) and relative percent differences (RPDs) of the LCS/LCSD analyses for perchlorate, chlorate, nitrate as nitrogen, TDS, total chromium, and hexavalent chromium met the laboratory acceptance criteria with the following exceptions:

- **Report numbers 240326 and 240243R:** The %R (66.3%) for low-level TDS LCS associated with samples CLD1-R, CLD2-RD, PC-110, PC-108, PC-62, PC-112, EB050908 (report number 240326) and PC-4, PC-2, PC-2D, FB050808 (report number 240243R), fell below the laboratory acceptance criteria of 80-114%. The laboratory also analyzed a mid level LCS at 700mg/L, with acceptable results. Professional judgement was used and detect and nondetect sample results less than 700mg/L were qualified as estimated, biased low (J- and UJ, respectively). Detected TDS sample results greater than 700 mg/L were accepted unqualified due to the acceptable mid level LCS.

- **Report number 240233:** The %R (77.6%) for low-level TDS LCS associated with samples M-17A and M-38 fell below the laboratory acceptance criteria of 80-114%. The laboratory also analyzed a mid level LCS at 700mg/L, with acceptable results. The TDS results for M-17A and M-38 were greater than 700 mg/L; thus, professional judgement was used and the data was accepted unqualified due to the acceptable mid level LCS.

MS/MSD Results

The %Rs and RPDs of the MS/MSDs performed on client specific samples met the laboratory acceptance criteria, with the following exception:

- **Report number 241086R:** The MSD %R (112.8%) associated with the nitrate as nitrogen analysis of all samples except EB051408 was exceeded the laboratory acceptance limit of 80-112%. Detect nitrate as nitrogen results for all field samples except EB051408 were qualified as estimated, biased high (J+).

In most cases the batch MS/MSD analyses were performed on samples from other clients, and although this practice is acceptable, the results could not be directly applied to the samples reviewed in these data packages due to possible differences in the sample matrix and type. No validation action was taken on this basis.

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Laboratory Duplicate Results

The RPDs of the laboratory duplicates for the TDS analyses performed on client specific samples met the laboratory acceptance criteria with the following exception:

- **Report number 233998:** The RPD for TDS (14.6%) in the laboratory duplicate analysis performed on sample PC-68 did not meet laboratory QC acceptance criterion of ≤10%. The positive results for TDS in samples ARP-1, ARP-2, ARP-3, ARP4-A, ARP-5A, ARP-6B, ARP-7, PC-53, PC-68, PC-86, PC-90, PC-97, PC-98R, PC-103, PC-122, MWK-5, M-83, and M-87 were ,therefore, qualified as estimated (J). It should be noted that sample PC-68 was previously qualified (J-) for HT nonconformance. Due to conflicting biases from HT and laboratory QC nonconformances this sample result for TDS was qualified as (J).

- **Report number 240701:** The RPD for TDS (23.5%) in the laboratory duplicate analysis performed on sample PC-66D did not meet laboratory QC acceptance criteria ≤10%. The positive results for TDS in samples PC-66D, MC-29, MC-50, MC-53, MC-93, MC-97, PC-134, PC-137, M-134, M-135, M-136, M-126, and EB051108, ,therefore, qualified as estimated (J).

In most cases batch laboratory duplicate analyses were performed on samples from other clients, and although this practice is acceptable, the results could not be directly applied to the samples reviewed in these data packages due to possible differences in the sample matrix and type. No validation action was taken on this basis.

No laboratory duplicates were analyzed for perchlorate, nitrogen, total chromium, and hexavalent chromium. Precision in the laboratory was demonstrated by the MS/MSD and/or the LCS/LCSD analyses (see discussions above).

Field Duplicate Results

The following field duplicate pairs were submitted with the selected samples in this data set. The following table summarizes the sample IDs, the detected results and the associated RPDs. All units are in mg/L unless specified.

Analyte	Sample IDs/Collection Date	Sample (mg/L)	Duplicate (mg/L)	RPD
Perchlorate	M-94/MD-1 2/4/08	579000 (µg/L)	556000 (µg/L)	4
Total Chromium		0.59	0.60	2
Hexavalent Chromium		0.57	0.67	2
TDS		7120	7350	3
Perchlorate	PC-54/MD-3 2/4/08	291000 (µg/L)	285000 (µg/L)	2
Total Chromium		2.2	2.2	0
TDS		6400	6430	<1
Associated Samples: All samples in report number 229550				
Perchlorate	M-11/MD-2 2/7/08	30100 (µg/L)	31500 (µg/L)	5
Total Chromium		2.8	2.8	0
Hexavalent Chromium		2.5	2.6	4
TDS		3100	3000	3
Associated Samples: All samples in report number 230021				

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Analyte	Sample IDs/ Collection Date	Sample (mg/L)	Duplicate (mg/L)	RPD
Perchlorate	I-AA/MD-4 2/5/08	134000 (µg/L)	151000 (µg/L)	12
Total Chromium		0.060	0.060	0
TDS		3220	3210	<1
Associated Samples: All samples in report number 229690R				
Perchlorate	M-84/MD-2 5/12/08	16000 (µg/L)	16500 (µg/L)	3
Total Chromium		0.12	0.11	9
Hexavalent Chromium		0.11	0.12	9
TDS		1040	1030	1
Associated Samples: All samples in report number 240608				
Perchlorate	M-69/MD-3 5/6/08	420000 (µg/L)	415000 (µg/L)	1
Total Chromium		0.081	0.081	0
TDS		4040	4020	<1
Associated Samples: All samples in report number 240016				
Perchlorate	M-68/MD-4 5/7/08	69300 (µg/L)	66200 (µg/L)	<1
Total Chromium		1.1	1.1	0
TDS		5710	6440	12
Associated Samples: All samples in report number 240115				
Perchlorate	PC-2/PC2D 5/8/08	4120 (µg/L)	4420 (µg/L)	7
TDS		5870	5530	6
Chlorate		22200 (µg/L)	28700 (µg/L)	26
Nitrate as Nitrogen		10.2	12	16
Associated Samples: All samples in report number 240243				
Perchlorate	CLD2-R/CLD2-RD 5/9/08	6560 (µg/L)	6730 (µg/L)	3
Total Chromium		0.92	0.73	23
TDS		4620	4680	1
Associated Samples: All samples in report number 240326				
Total Chromium	TR-2/TR-2D 5/14/08	0.021	0.021	0
TDS		566	560	1
Nitrate as Nitrogen		1.47	1.47	0
Associated Samples: All samples in report number 241086R				
Total Chromium	TR-4/TR-4D 5/15/08	0.032	0.032	0
TDS		868	888	2
Nitrate as Nitrogen		1.5	1.6	6
Associated Samples: All samples in report number 241249				
Perchlorate	PC-40/PC-40D 5/10/08	24500 (µg/L)	24200 (µg/L)	1
TDS		12000	11700	2
Associated Samples: M-120, M-121, MC-3, MC-6, MC-7, MC-51, MC-65, MC-69, H-48, H-55, PC-28, PC-31, PC-31D				
Perchlorate	PC-66/PC-66D 5/11/08	438000 (µg/L)	432000 (µg/L)	1
Total Chromium		3.6	3.3	9
TDS		7570	7590	<1
Associated Samples: PC-64, PC-65, PC-67, PC-134, PC-137, MC-29, MC-50, MC-53, MC-93, MC-97, M-126, M-134, M-136				
Perchlorate	M-67/M-67D 5/12/08	521000 (µg/L)	520000 (µg/L)	<1
Total Chromium		6.8	6.7	2
TDS		7600	7510	1
Associated Samples: M-34, M-35, M-61, M-64, M-65, M-66, M-111A, M-132, M-133, M-135, PC-21A, MW-16				

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Analyte	Sample IDs/ Collection Date	Sample (mg/L)	Duplicate (mg/L)	RPD
Perchlorate	PC-31/PC-31D 5/10/08	4630 (µg/L)	4500 (µg/L)	3
TDS		6300	5220	19
Associated Samples: M-120, M-121, MC-3, MC-6, MC-7, MC-51, MC-65, MC-69, H-48, H-55, PC-28, PC-31, PC-31D, PC-40, PC-40D				

The RPDs met the QC acceptance criteria of 30% maximum RPD for an aqueous matrix.

Sample Results/Detection Limits

Analytical dilutions were necessary for most samples due to matrix interferences or to bring the perchlorate and/or total chromium concentrations within the instrument calibration range.

Some hexavalent chromium analysis results exceeded the total chromium results for the same sample. RPDs were spot checked and did not exceed 11%. No validation action was taken other than this notation.

All samples for nitrate as nitrogen analyses in SDG 240115 required qualification for quantitation interference due to bromide chromatographic interference. Samples M-39, M-13, M-12A, and M-11 were qualified as estimated (J) on this basis.

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Attachment A- Routine Monitoring
1st & 2nd Quarters, 2008

MWH Report #	Sample Collection Date	Analyses
226763	1/7/2008	Perchlorate, Total Dissolved Solids
227339	1/7/08-1/10/08	Perchlorate, Total Dissolved Solids
228116	1/17/08-1/18/08	Perchlorate, Total Chromium, Total Dissolved Solids
229550R2	2/4/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Hexavalent Chromium
229690R	2/5/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Hexavalent Chromium
229639	2/5/2008	Perchlorate, Total Chromium, Total Dissolved Solids
230021R	2/7/2008	Perchlorate, Total Chromium, Total Dissolved Solids*, Hexavalent Chromium
230036R	2/7/2008	Total Chromium, Total Dissolved Solids*, Nitrate as nitrogen
230253	2/11/2008	Perchlorate, Total Chromium, Total Dissolved Solids**,
230772	2/11/08-2/14/08	Perchlorate, Total Chromium, Total Dissolved Solids,
233399	3/10/2008	Perchlorate, Total Dissolved Solids
233998	3/10/08-3/13/08	Perchlorate, Total Dissolved Solids
236536	4/7/2008	Perchlorate, Total Dissolved Solids
237937	4/16/2008-4/17/2008	Perchlorate, Total Dissolved Solids
238547	4/23/2008	Perchlorate, Total Dissolved Solids
239784	5/6/2008	Perchlorate, Total Chromium, Total Dissolved Solids
239919R	5/6/2008	Perchlorate, Total Chromium, Total Dissolved Solids
240016	5/6/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Hexavalent Chromium, Nitrate as nitrogen, Chlorate
240115	5/7/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Hexavalent Chromium, Nitrate as nitrogen, Chlorate
240191	5/7/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Nitrate as nitrogen, Chlorate
240233	5/8/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Hexavalent Chromium, Nitrate as nitrogen, Chlorate
240243R	5/8/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Nitrate as nitrogen, Chlorate
240326	5/9/2008	Perchlorate, Total Chromium, Total Dissolved Solids
240327	5/9/2008	Perchlorate, Total Chromium, Total Dissolved Solids
240243	5/8/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Chlorate, Nitrate as nitrogen
240267/240233***	5/8/2008	Total Chromium, Total Dissolved Solids, Nitrate as nitrogen
240701	5/10/2008-5/12/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Nitrate as nitrogen, Chlorate
240600	5/12/2008	Perchlorate, Total Chromium, Total Dissolved Solids
240608	5/12/2008	Perchlorate, Total Chromium, Total Dissolved Solids,

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Attachment A- Routine Monitoring
1st & 2nd Quarters, 2008

MWH Report #	Sample Collection Date	Analyses
		Hexavalent Chromium
241119R	5/12/2008-5/14/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Nitrate as nitrogen, Chlorate
240912R	5/13/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Nitrate as nitrogen
241086R	5/14/2008	Perchlorate, Total Chromium, Total Dissolved Solids
241233	5/15/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Nitrate as nitrogen, Chlorate
241249	5/15/2008	Perchlorate, Total Chromium, Total Dissolved Solids, Nitrate as nitrogen, Chlorate
242835	6/2/2008	Perchlorate, Total Chromium, Total Dissolved Solids
243607	6/9/2008	Perchlorate, Total Dissolved Solids
244956	6/17/2008-6/18/2008	Perchlorate, Total Dissolved Solids
245535	6/25/2008	Perchlorate, Total Chromium

Notes: Analyses flagged with a (*) were subcontracted to Sierra Environmental monitoring, Inc.

Analyses flagged with a (**) were initially analyzed by Sierra Environmental Monitoring, Inc. then subsequently reanalyzed by MWH.

MWH report numbers followed by (***) were issued by MWH under the first report number and data contained in this report can be found in the database under the second report number.

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Memorandum

Date: July 14, 2008

To: Sally Bilodeau/Camarillo

From: Sheena Blair/Westford

Subject: Data Review
Routine Monitoring Program
Annual Remedial Performance Report for Chromium and Perchlorate,
July 2007- June 2008
Tronox LLC, Henderson, Nevada

Distribution: Robert Kennedy/Westford

04020-023-110
TH422+TH522_sb.doc

SUMMARY

A full Tier 2 validation was performed on the data for raw groundwater samples and a field blank analyzed for all or a subset of the following parameters:

- Perchlorate by EPA Method 314
- Chlorate by SW-846 Method 9056
- Hexavalent chromium by SW-846 Method 7196
- Total chromium by SW846 method 6010B
- Total dissolved solids (TDS) by EPA Method 160.1
- Nitrate as Nitrogen by EPA 300.0

The samples were collected at the Tronox LLC site in Henderson, Nevada February 8 and May 5, 2008 and were submitted to MWH Laboratories in Monrovia, California for analysis. It should be noted that the samples for TDS analysis in SDG 230066 were subcontracted by MWH Laboratories to Sierra Environmental Monitoring Inc. in Reno Nevada who processed the samples under report number 89212. The MWH project numbers (including the subcontract report), sample collection dates, and analyses included in this review are summarized in Attachment A at the end of this memo. The original data for all reports provided by MWH did not support a validation at the Tier 2 level as requested by NDEP. MWH was contacted and the information required to perform a Tier 2 validation was requested. All provided quality control (QC) elements submitted by MWH were reviewed and results of that are summarized below.

The sample results were assessed according to the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (October 2004), the Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006), and by the laboratory QC criteria. The validation guidelines were modified to accommodate the non-CLP methodologies.

The data reviewed required minor qualification for selected samples and appear generally acceptable for decision making. No data were rejected. Selected detected results were qualified as estimated for QC nonconformances (see discussion below).

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REVIEW ELEMENTS

Sample data were reviewed for the following elements:

- Agreement of analyses conducted with chain-of-custody (COC) requests
- Holding times and sample preservation
- Initial and continuing calibrations
- Interference check sample (ICS) results (total chromium only)
- Laboratory blanks/equipment blanks/field blanks
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Laboratory duplicate results
- Field duplicate results
- Serial dilution results (total chromium only)
- Sample results/detection limits

DISCUSSION

Agreement of Analyses Conducted with COC Requests

Sample reports were checked to verify that the results reported corresponded to analytical requests as detailed on the COC documentation. No discrepancies were noted.

Holding Times and Sample Preservation

Method-specified holding times (HTs) were met for all samples analyzed except for the following:

Report number 239631:

- The hexavalent chromium analyses for samples M-44 and MD-1 were received at the laboratory beyond the method-specified 24 hour HT criterion. Detected hexavalent chromium results for these samples were qualified as estimated (J).

The cooler temperatures upon sample receipt at the laboratories met the acceptable range of $4 \pm 2^{\circ}C$.

Documentation regarding sample pH verification upon receipt at the laboratory for total chromium was not included in the data package. No action was taken except for this notation.

Initial and Continuing Calibrations

All criteria were met for the calibration curves and the initial and continuing calibration verification (ICV/CCV) standards (where applicable).

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ICS Results

All criteria were met for the analyses of the ICS A and ICS AB solutions.

Laboratory Blanks/Equipment Blanks/Field Blanks

No equipment blanks were submitted in association with the samples submitted in report numbers 230066 and 239631.

No target analytes were detected in Field blank FB-1 (collected May 5, 2008) or in the laboratory blanks, i.e., preparation blanks (PB) and the initial and continuing calibration blanks (ICBs and CCBs) associated with the samples in this data set.

LCS/LCSD Results

The percent recoveries (%Rs) and relative percent differences (RPDs) of the LCSs/LCSDs met the laboratory acceptance criteria for all analyses.

MS/MSD Results

A MS/MSD analysis was performed on sample M-48 (in report number 239631) for total chromium. The %Rs and RPD of the MS/MSD met the laboratory acceptance criteria.

In most other cases the batch MS/MSD analyses were performed on samples from other clients, and although this practice is acceptable, the results could not be directly applied to the samples reviewed in this data set due to possible differences in the sample matrix and type. No validation action was taken on this basis.

Laboratory Duplicate Results

The RPD of the laboratory duplicate for the total dissolved solids analysis performed on sample PC-131 (in report number 239631) met the laboratory acceptance criteria.

In most other cases batch laboratory duplicate analyses were performed on samples from other clients, and although this practice is acceptable, the results could not be directly applied to the samples reviewed in these data packages due to possible differences in the sample matrix and type. No validation action was taken on this basis.

No laboratory duplicates were analyzed for perchlorate, total chromium, and hexavalent chromium. Precision in the laboratory was demonstrated by the MS/MSD and/or the LCS/LCSD analyses (see discussions above).

Field Duplicate Results

No field duplicates were submitted with the samples in SDG 230066. No validation actions were required on this basis.

Samples M-44/MD-1 and M-23/MD-5 were submitted as the field duplicate pair with the sample in SDG 239631. The following table summarizes the sample IDs, the detected results and the associated RPDs. The RPDs met the QC acceptance criteria of 30% maximum RPD for an aqueous

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matrix except for nitrate as N in fields duplicate pair M-23/MD-5. All detect and nondetect nitrate as N results in SDG 239631 were qualified as estimated (J and UJ, respectively).

Analyte	Sample IDs/Collection Date	Sample	Duplicate	RPD
Perchlorate (µg/L)	M-44/MD-1 (05/05/08)	644000	674000	5
Total Chromium (mg/L)		0.86	0.84	2
Total Dissolved Solids (mg/L)		8070	7290	10
Hexavalent Chromium (mg/L)		0.87	0.86	1
Associated samples: All samples in report number 239631				

Analyte	Sample IDs/Collection Date	Sample	Duplicate	RPD
Perchlorate (µg/L)	M-23/MD-5 (05/05/08)	487000	480000	1
Chlorate (µg/L)		433000	387000	11
Total Chromium (mg/L)		0.73	0.72	1
Total Dissolved Solids (mg/L)		4430	4520	2
Nitrate as N (mg/L)		53	32	49
Associated samples: All samples in report number 239631				

ICP Serial Dilution Results

In most cases batch serial dilution analyses were performed on samples from other clients, and although this practice is acceptable, the results could not be directly applied to the samples reviewed in these data packages due to possible differences in the sample matrix and type. No validation action was taken on this basis.

Sample Results/Detection Limits

Calculations were spot-checked. There were no discrepancies noted.

Analytical dilutions were necessary for most samples due to matrix interferences or to bring analyte concentrations within the instrument calibration range.

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Attachment A

MWH Report #	Sample Collection Date	Analyses
230066	02/08/2008	Perchlorate, Total Chromium, TDS*
239631	05/05/08	Perchlorate, Total Chromium, TDS, Nitrate as N, Chlorate, Hexavalent Chromium
*Subcontracted to Sierra Environmental Monitoring Inc. and analyzed under report number 89212		

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Memorandum

Date: July 21, 2008

To: Sally Bilodeau/Camarillo

From: Sheena Blair and Sharon Mc Kechnie/Westford

Subject: Data Review
Routine Monitoring Program
Annual Remedial Performance Report for Chromium and Perchlorate,
July 2007- June 2008
Tronox LLC, Henderson, Nevada

Distribution: Robert Kennedy/Westford

04020-023-110
TH428-TH571_sbsm

SUMMARY

A limited review was performed on the data for raw groundwater samples analyzed for all or a subset of the following parameters:

- Perchlorate by EPA Method 314
- Chlorate by EPA 300.0
- Dissolved hexavalent chromium by EPA 218.6
- Total chromium by EPA 200.7
- Nitrate as Nitrogen by EPA 300.0

The samples were collected at the Tronox LLC site in Henderson, Nevada from July 01, 2007 through June 23, 2008 and submitted to MWH Laboratories in Monrovia, CA for analysis. The MWH report numbers and the sample collection dates that were included in this review are summarized in Appendix A at the end of this memo. The data reports provided by MWH did not support a validation at the Tier 2 level as requested by NDEP. All provided QC elements submitted by MWH were reviewed and results of that review are summarized below.

The sample results were assessed according to the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (October 2004), the Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006), and by the laboratory quality control (QC) criteria. The validation guidelines were modified to accommodate the non-CLP methodologies.

The data reviewed required were considered generally acceptable for decision making except as noted. The nondetect nitrate as nitrogen result for the Effluent sample (report number 231734R) was rejected due to holding time exceedence. Selected other data required minor qualification for certain QC nonconformances (see discussion below).

REVIEW ELEMENTS

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The elements selected for review are based on the documentation provided in the laboratory data reports. Sample data were reviewed for the following elements:

- Agreement of analyses conducted with chain-of-custody (COC) requests
- Holding times and sample preservation
- Method blanks/equipment blanks/field blanks
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Laboratory duplicate results
- Field duplicate results
- Sample results/detection limits

DISCUSSION

Agreement of Analyses Conducted with COC Requests

Sample reports were checked to verify that the results reported corresponded to analytical requests as detailed on the chain of custody (COC) documentation. The following discrepancies were noted.

- **Report number 228226:** The sample collection dates for samples Influent and Effluent were incorrectly listed on the COC as 01/23/2008. The date was corrected manually on the COC to 01/21/2008. No validation action was taken other than this notation.

The following issues were also noted:

- **Report number 213923:** The laboratory flagged the hexavalent chromium results for samples Influent and Effluent as (H) for out of hold time (HT). However, these samples were analyzed within the recommended HT of 28 days for EPA method 218.6. The laboratory (H) flags were removed from the Form1s during validation. No validation actions were required on the basis of HT.

- **Report number 216651:** The laboratory flagged the hexavalent chromium results for samples Influent and Effluent as (H) for out of HT. However, these samples were analyzed within the recommended HT of 28 days for EPA method 218.6. The laboratory (H) flags were removed from the Form1s during validation. No validation actions were required on the basis of HT.

Holding Times and Sample Preservation

Method-specified HTs were met for all samples analyzed except as noted below:

- **Report number 231734R:** The nitrate as nitrogen analysis for samples Influent and Effluent were performed 23.5 days beyond the method-specified 48 day HT criterion. The initial analyses were performed within the method-specified HT; however, the samples were reanalyzed at the client's request due the results being inconsistent with historical data. The detected nitrate as nitrogen result for sample Influent was qualified as estimated, biased low (J-). The nondetect result for sample Effluent was rejected (R).

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- **Report number 209942:** The Effluent sample for nitrate as nitrogen analysis was submitted to the laboratory in a sample bottle that contained the preservative nitric acid. The laboratory performed the analysis on an addition aliquot of sample that was unpreserved. However, by the time the error was noted, the laboratory performed the analysis beyond the 48 hour method recommended HT. Therefore, the nondetect nitrate as nitrogen result for the Effluent sample was qualified as estimated (UJ).

- **Report number 229879:** Samples EFF-COMP (12/30/07-01/5/2008) and EFF-COMP (01/06/08-01/12/2008), which were re-collects of the original sample composites, were submitted to the laboratory past the recommended method HT of 28 days for perchlorate analysis. These samples were nondetect for perchlorate, thus, these nondetect results were qualified as estimate (UJ).

- **Report number 237456:** Due to an instrument injection error samples Influent and Effluent were analyzed one day past the method recommended HT of 48 hours for nitrate as nitrogen. Detected and nondetect results for these samples were qualified as estimated (J- and UJ, respectively).

- **Report number 239615:** Due to a laboratory oversight the nitrate as nitrogen for the Effluent sample was analyzed 35 hours past the method recommended HT of 48 hours for nitrate as nitrogen. The nondetect result for this sample was qualified as estimated (UJ).

- **Report number 241525:** The initial perchlorate analysis of sample Influent was performed within HT. However, due to an instrument problem during the analytical run, the sample was re-analyzed. The re-analysis was performed 12 days past the method recommended HT of 28 days for perchlorate, therefore, the detected perchlorate result for this sample was qualified as estimated, biased low (J-).

In general the cooler temperatures upon receipt at the laboratory met the acceptable range of 4$\pm$ 2°C.

Documentation regarding sample pH verification upon receipt at the laboratory for total chromium was not included in the data package. No action was taken except for this notation.

Method Blanks/Equipment Blanks/Field Blanks

No equipment or field blanks were submitted with the samples included in this review. No validation actions were required on this basis.

Target analytes were not detected in any of the method blanks associated with all sample analyses.

LCS/LCSD Results

The percent recoveries (%Rs) and relative percent differences (RPDs) of the LCSs/LCSDs for all analyses met the laboratory acceptance criteria.

MS/MSD Results

The %Rs and RPDs of the MS/MSDs performed on any of the client specific samples met the laboratory acceptance criteria.

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In most cases the batch MS/MSD analyses were performed on samples from other clients, and although this practice is acceptable, the results could not be directly applied to the samples reviewed in these data packages due to possible differences in the sample matrix and type. No validation action was taken on this basis.

Laboratory Duplicate Results

No laboratory duplicates were analyzed for all analyses performed. Precision in the laboratory was demonstrated by the MS/MSD and/or the LCS/LCSD analyses (see discussions above).

Field Duplicate Results

Field duplicate samples were not submitted in association with the samples in the project numbers under review.

Sample Results/Detection Limits

Analytical dilutions were necessary for most samples due to matrix interferences or to bring the perchlorate and total chromium concentrations within the instrument calibration range.

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Attachment A: Influent and Effluent July1, 2007 to June 23, 2008

Report Number	Collection date	Analyses
209671R	7/1-7/7/2007	Perchlorate
209942	7/10/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
210513	7/16/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
210523	7/8-7/14/2007	Perchlorate
211351	7/15-7/21/2007	Perchlorate
211352	7/23/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
211862	7/30/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
211900	7/8-7/14/2007, 7/22-7/28/2007	Perchlorate
212440	7/29-8/4/2007	Perchlorate
212495	8/6/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
213163	8/5-8/11/2007	Perchlorate
213190	8/13/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
213912	8/12-8/18/2007	Perchlorate
213923	8/20/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
214521	8/27/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
214740	8/19-8/25/07	Perchlorate
215322	8/26-9/01/2007	Perchlorate
215335	9/4/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
215831	9/2-9/10/2007	Perchlorate
215917	9/10/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
216593	9/9-9/15/2007	Perchlorate
216651	9/17/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
217277	9/16-9/22/2007	Perchlorate
217312	9/24/2007	Perchlorate
218081	10/1/2007	Perchlorate
218165	9/29/2007	Perchlorate
218819	10/6/2007	Perchlorate

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Report Number	Collection date	Analyses
218830	10/8/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
219583	10/7-10/13/2007	Perchlorate
219640	10/15/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
220240	10/14-10/20/2007	Perchlorate
220317	10/22/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
220871	10/21-10/27/2007	Perchlorate
220913	10/29/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
221449	10/28-11/3/2007	Perchlorate
222215R	11/12/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
222229	11/4-11/10/2007	Perchlorate
222963	11/11-11/17/2007	Perchlorate
223000	11/19/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
223401	11/18-11/24/2007	Perchlorate
223421	11/26/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
223885	11/25-12/1/2007	Perchlorate
224147	12/4/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
224617	12/2-12/8/2007	Perchlorate
225519	12/9-12/15/2007	Perchlorate
226005	12/16-12/22/2007	Perchlorate
226843	12/30/2007-01/05/2008	Perchlorate
224657	12/10/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
225322	12/17/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
226070	12/26/2007	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
226444	1/2/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
226447	12/23-12/29/2007	Perchlorate
226782	12/30/07-1/5/2008	Perchlorate
227540	1/6-1/12/2008	Perchlorate

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Report Number	Collection date	Analyses
227614	1/14/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
228212	1/13-1/19/2008	Perchlorate
228226	1/23/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
228827	1/20-1/26/2008	Perchlorate
228904	1/28/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
229480	1/27-2/2/2008	Perchlorate
229554	2/4/202008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
229879	12/30/2007-1/5/2008, 1/6-1/12/2008	Perchlorate
230241	2/3-2/9/2007	Perchlorate
230307	2/11/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
230943	2/10-2/16/2008	Perchlorate
230975	2/18/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
231734R	2/25/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
231827	2/17-2/23/2008	Perchlorate
232539	3/3/202008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
232561	2/24-3/1/2008	Perchlorate
233325	3/10/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
233336	3/2-3/8/2008	Perchlorate
234187	3/17/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
234259	3/9-3/15/2008	Perchlorate
234930	3/16-3/22/2008	Perchlorate
234938	3/24/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
235624	3/23-3/29/2008	Perchlorate
235626R	3/31/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
236418	4/7/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
236457	3/30-4/5/2008	Perchlorate

ENSR
2 Technology Park Drive, Westford, Massachusetts, 01886-3140
T 978.589.3000 F 978.589.3100 www.ensr.aecom.com

Report Number	Collection date	Analyses
237456	4/14/202008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
237653	4/6-4/12/2008	Perchlorate
238142R	4/13-4/19/2008	Perchlorate
238185	4/21/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
238983R	4/28/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
239009	4/20-4/26/2008	Perchlorate
239615	5/5/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
239738	4/27-5/3/2008	Perchlorate
240568	5/4-5/10/2008	Perchlorate
241525	5/11-5/17/2008	Perchlorate
245253	06/15-6/21/2008	Perchlorate
242317	5/18-5/24/2008	Perchlorate
242769	5/25-5/31/2008	Perchlorate
243689	06/01-06/07/2008	Perchlorate
244394	06/08-06/14/2008	Perchlorate
245253	06/15-06/21/2008	Perchlorate
240609	5/12/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
241471	5/19/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
242355	5/27/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
242868	06/02/2008	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium
245247	6/23/08	Perchlorate, Chlorate, Nitrate as Nitrogen, Total Chromium, Hexavalent Chromium

The results of selected data submitted in the following MWH Report Number are entered in the database under alternative MWH Report Numbers. The following table lists the report numbers affected.

MWH Report Number	Database Report Number
218830	218826
226843	226881
221525	221435
237456	237426
236418	236473
212495	212455
215335	215298