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SECTION 1.0
INTRODUCTION

This Air Quality Monitoring Report presents a summary of air quality monitoring conducted by Atlantic Richfield Company (ARC) at the Yerington Mine Site during the second quarter of 2005 ("2Q 2005"). Monitoring activities were conducted according to the draft *Air Quality Monitoring Work Plan for the Yerington Mine Site* ("Work Plan") prepared by Brown and Caldwell on December 22, 2004 (Brown and Caldwell, 2004a) and conditionally approved by the U.S. Environmental Protection Agency ("EPA") on January 19, 2005. Air quality monitoring was conducted on the National Ambient Air Quality Standards (NAAQS) monitoring schedule, which consists of sampling on every sixth day.

Air quality monitoring was conducted at six locations located around the perimeter of the site (AM-1 through AM-6, shown on Figure 1). Each location was established to assess potential fugitive dust emissions from the site and monitor: 1) particulate matter of a diameter of 10 microns or less (PM_{10}) with a high volume sampler; 2) total suspended particulates (TSP) with a separate high volume air sampler; and 3) concentrations of selected metals and radiochemicals collected on the PM_{10} and TSP filters. Monitoring location AM-1 was established with a second PM_{10} high volume air sampler, co-located with the primary sampler, for duplicate analyses. Monitoring location AM-6 was sited near the site meteorological station. During 2Q 2005 monitoring, final agreement on the analyte list had not yet been reached. Pursuant to correspondence between ARC and EPA during the second quarter, ARC took the initiative and initiated chemical analyses of metals and radiochemicals on June 3, 2005.

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SECTION 2.0
FIELD ACTIVITIES

Field activities during 2Q 2005 consisted of calibration, auditing, monitoring, and maintenance. A summary of these activities is presented in Table 1. Field activities were conducted according to Standard Operating Procedures (SOPs) provided in the Work Plan, the *Quality Assurance Project Plan, Yerington Mine Site* (Brown and Caldwell, 2003) and the revised *Site Health and Safety Plan* (Brown and Caldwell, 2004b).

2.1 Calibration

Calibration activities consisted of quarterly calibration of the high volume air samplers and the semi-annual calibration for the meteorological station.

2.1.1 High Volume Air Sampler Calibration

The Work Plan specified that the high volume air samplers would be calibrated according to the following schedule:

- Upon installation;
- After any motor maintenance;
- Once every quarter (3 months); and
- After 360 hours.

All PM_{10} high volume air samplers were recalibrated during April 28 through 29, 2005 following routine motor maintenance. Air sampler AM-1-PM10-DUP was recalibrated on June 20, 2005 following mass flow controller replacement. All TSP high volume air samplers were shut down on March 2, 2005 and remained off through May 20, 2005 pending resolution of the analyte list. In preparation for Event 22 on June 3, 2005, all TSP high volume air samplers were powered up and recalibrated during May 20 through May 25, 2005.

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The Work Plan specified a minimum of five calibration points for all high volume samplers. In addition, three calibration points must be within 1.02 to 1.24 cubic meters per minute (m^3/min) for the PM_{10} high volume air samplers. The Work Plan also specified a calibration correlation coefficient greater than 0.99 for all high volume samplers. The calibration data sheets and charts for each high volume air sampler are provided in Appendix A. All calibration requirements were met. The EPA representative, Tetra Tech EM Inc., conducted an audit of the high volume air sampler calibration that is described in Section 2.2.

2.1.2 Meteorological Station Calibration

The Work Plan specified that the calibration of the meteorological station would be conducted at the start of the program and on a semi-annual basis thereafter. The semi-annual calibration is planned for July 2005 and the results of the calibration will be presented in the next quarterly monitoring report.

2.2 Auditing

The EPA representative conducted an audit on June 13, 2005 that consisted of evaluation of the high volume air sampler calibrations. The results of the audit were not ready at the time of this report, but will be presented in the following quarterly report.

2.3 Monitoring

Monitoring activity consisted of air monitoring and meteorological monitoring, as described below.

2.3.1 Air Monitoring

The Work Plan specified that air monitoring would be conducted according to the NAAQS monitoring schedule for PM_{10}. PM_{10} air monitoring during 2Q 2005 was conducted every sixth day beginning with Event 12 on April 4, 2005 through Event 26 on June 27, 2005 for a total of 14 events. Event 16 on April 28, 2005 was cancelled due to routine quarterly maintenance. All TSP high volume air samplers were shut down on March 2, 2005 and remained off through May

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20, 2005 pending resolution of the analyte list. TSP air monitoring was conducted every sixth day beginning with Event 22 on June 3, 2005 through Event 26 on June 27, 2005 for a total of five events. Field data sheets and total volume calculations are provided in Appendix B.

Sample volumes were calculated using the average daily temperature and barometric pressure from the meteorological station, and calibration chart slopes and intercepts as specified in the *Reference Method for the Determination of Particulate Matter as PM-10 in the Atmosphere* (USEPA, 1998 A) and the *Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method)* (USEPA, 1998 B). The sample volumes for PM_{10} and TSP samples are summarized in Tables 2 and 3, respectively. The following are notable occurrences for the air monitoring during this reporting period.

- The recorder pen for the Dickson chart recorder was inadvertently left in the "up" position on sampler AM-2-PM10 during Event 14 on April 16, 2005. The elapsed time indicator on the digital timer indicated that the sampler had run as scheduled for 24.0 hours. The Dickson chart response was determined by manually restarting the unit, allowing the motor to warm up, and reading the recorder pen marking in the "down" position. The flow rate and sample volume were then calculated in the normal manner.
- Power outages associated with a downed power pole, lightning storm, and vandalism disrupted electrical service to location AM-5 during several events. The disruption resulted in unusable samples at AM-5-PM10 during Event 19 on May 16, 2005 and Event 21 on May 28, 2005 and a delayed start for samples at AM-5-PM10 and AM-5-TSP during Event 22 on June 3, 2005. Data completeness goals were still met for AM-5-PM10 as discussed in Section 3.1.
- A digital timer malfunction resulted in an unusable sample at AM-1-PM10-DUP during Event 24 on June 15, 2005. Data completeness goals were still met for AM-1-PM10-DUP as discussed in Section 3.1.

2.3.2 Meteorological Monitoring

Meteorological monitoring was conducted with the meteorological station during 2Q 2005. The following parameters were measured:

- Precipitation in inches;
- Temperature in degrees Fahrenheit (ºF);
- Relative humidity in percent;

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- Barometric pressure in milliBars (mBar);
- Solar radiation in kiloJoules per square meter (kJ/m^2);
- Wind speed in miles per hour (mph); and
- Wind direction in degrees.

Meteorological data was collected from the station at 15-minute intervals from April 1, 2005 to June 30, 2005. Selected meteorological data is summarized on Table 4 for monitoring events this reporting period.

2.4 Maintenance

Maintenance activity consisted of troubleshooting, part replacement, and routine maintenance on the high volume air samplers and part replacement on the meteorological station.

2.4.1 High Volume Air Sampler

During Event 24 on June 15, 2005, the digital timer for AM-1-PM10-DUP malfunctioned and failed to turn off at the completion of the designated 24-hour sampling interval. The AM-1-PM10-DUP mass flow controller was replaced on June 20, 2005.

Minor routine maintenance included the replacement of recorder pens for the Dickson chart recorders and re-greasing of shim plates on the PM_{10} high volume air samplers. The system clocks for all high volume samplers were reset to standard time on June 20, 2005.

The Work Plan specified that motor brushes would be checked or replaced every 300 to 500 hours of operation. Cumulative operational hours for each blower motor are presented in Appendix C. After the completion of Event 15 on April 22, 2005, motors for all PM_{10} high volume air samplers had accumulated between 384.4 and 401.7 hours of operation. Motors in the PM_{10} high volume air samplers were replaced during April 25 through 27, 2005. By the end of this reporting period, motors in the TSP high volume air samplers had accumulated between 297.3 and 305.8 hours of operation. Motor brush replacement for all TSP high volume air samplers is scheduled for the beginning of next quarter.

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AM-5 is the only sampling location with electrical power supplied by the mine; all other locations are serviced and maintained by Sierra Pacific Power. Considering the difficulties experienced this quarter with electrical power at AM-5, preventative maintenance is planned during the following quarter to supply this sampling location with electrical service from Sierra Pacific Power.

2.4.2 Meteorological Station

Routine maintenance conducted on the meteorological station during this reporting period consisted of ensuring that the tipping bucket was aligned to vertical and resetting the system clock to operate on standard time. Replacement of bearings for the wind speed/direction sensor is scheduled for the beginning of next quarter.

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SECTION 3.0
AIR QUALITY DATA VERIFICATION

During 2Q 2005, the list of analyses was still being resolved and gravimetric analysis of PM_{10} filters was conducted by Severn Trent Laboratories for Event 12 on April 4, 2005 through Event 21 on May 28, 2005. All TSP high volume air samplers were shut down on March 2, 2005 and remained off through May 20, 2005 pending resolution of the analyte list. The TSP high volume air samplers were powered up beginning with Event 22 on June 3, 2005. Gravimetric analysis of both PM_{10} and TSP filters and chemical analysis of metals and radiochemicals present on both PM_{10} and TSP filters were conducted by Severn Trent Laboratories for Event 22 on June 3, 2005 through Event 26 on June 27, 2005.

Analytical results of air monitoring were provided by the laboratory electronically in a format specified by Brown and Caldwell. The laboratory electronic data deliverables (EDDs) were uploaded automatically into the project database which consists of a Microsoft SQL Server database with a Microsoft Access user interface. The analytical results are provided electronically on compact disc in Microsoft Excel format in Appendix D.

All air quality data was verified according to the quality control (QC) criteria provided in the Work Plan. The complete laboratory reports are provided electronically on compact disc in Adobe Acrobat portable document format (PDF) in Appendix E. The following items were verified for analytical data:

- Data completeness (primary and QC samples);
- Sample hold times;
- Field duplicate precision;
- Check field blanks and trip blanks for contamination;
- Laboratory control sample/duplicate (LCS/LCSD) accuracy and precision; and
- Miscellaneous items often noted in the case narrative.

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In summary, the verification indicates that the analytical data generated during this period are usable with no data flagged as rejected.

The Work Plan specified that 10 percent of the air quality data would be validated by a third party. The data verification requirement was mainly concerned with metals and radiological analyses since gravimetric analytical methods specify minimal QC. Third party data validation has been initiated for 10 percent of metals and radiological analyses and will be presented in the following quarterly report.

3.1 Data Completeness

The Work Plan specified a data completeness goal of quarterly valid data retrieval of 80 percent for air quality data. The completeness goal was to be tracked for each of the six monitoring locations (AM-1 through AM-6). If one or more of the high volume air samplers malfunctioned during a sampling event such that valid data could not be retrieved, then a makeup run could be conducted on the immediately following 3-day event specified in the NAAQS schedule. The data completeness goal was met for air quality data as described below.

Fourteen sampling events were conducted during 2Q 2005 as summarized in Table 5. Event 16 on April 28, 2005 was cancelled due to routine quarterly maintenance. Other exceptions to the sampling and analysis plan are explained in Section 2.3.1. A total of 112 primary samples were collected out of 120 planned. The actual completeness for air quality data was calculated to be 93 percent, which exceeds the 80 percent program goal.

3.2 Sample Hold Time

All samples were analyzed within sample hold time.

3.3 Field Duplicates

The Work Plan specified a collection frequency goal of 10 percent for field duplicates. Field duplicates were collected for every event at location AM-1 with a co-located high volume air

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sampler (AM-1-PM10-DUP). The total number of primary samples targeted during this reporting period was 120. A total of 13 field duplicate samples were collected as summarized in Table 6. The actual frequency of field duplicate collection was 10.8 percent, which exceeds the program goal of 10 percent.

Field duplicate precision for metals and radiochemicals are provided in Table 6. Field duplicate precision measured as relative percent difference (RPD) for ranged from 6 to 89 percent during 2Q 2005. Three primary/field duplicate sample pairs had a RPD higher than 60 percent for cobalt, lead, and mercury as explained in Appendix F. The wide range of precision highlights the difficulty in obtaining comparable duplicate results with air samples.

3.4 Field Blanks and Trip Blanks

The Work Plan specified a collection frequency goal of 5 percent for field blanks and 5 percent for trip blanks. Seven field blanks and ten trip blanks were collected during this reporting period as shown on Tables 7a and 7b. The total number of primary samples targeted during this reporting period was 120. The actual frequency of field and trip blank collection was 5.8 and 8.3 percent, respectively, which exceeds the program goals of 5 percent each.

Nearly all of the field QC samples were free of contamination which indicates that field procedures for handling and shipping the samples are effective. The analytes that were detected in the field blanks and trip blanks are summarized in Appendix F. TSP was detected at a relatively high concentration of 2,200 micrograms (µg) for the field blank associated with AM-2-TSP during Event 25 on June 21, 2005. Field procedures for sample handling were reviewed, and no sample collection issues were identified (TSP was not detected on field blanks collected at AM-2-TSP during events prior to, and after, Event 25 on June 21, 2005).

3.5 Method Blanks

Mercury, lead, and beryllium were detected in method blanks associated with six Sample Delivery Groups (SDGs) and the corrective actions are described in Appendix F. No analytes

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were detected in method blanks associated with the remaining SDGs. The method blank contamination did not significantly affect the usability of the mercury data because nearly all results were below the laboratory reporting limit.

3.6 LCS/LCSD

The LCSs and LCSDs were evaluated for accuracy and precision. LCS and LCSD recoveries were within specified limits.

3.7 Miscellaneous

Miscellaneous QC items consisted of discrepancies between final and tare weights for eight samples. The QC items are described in Appendix F followed by the corrective action or resolution. These QC items did not affect the usability of the data because the weight discrepancies were near the instrument detection limit.

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SECTION 4.0
METEOROLOGICAL DATA VALIDATION

Meteorological data was downloaded electronically from the meteorological station on approximately a weekly basis. The electronic files were uploaded automatically into the project database. The complete meteorological data are provided electronically on compact disc in Microsoft Excel format in Appendix G.

All meteorological data were validated according to the criteria provided in the Work Plan. The validation routines were programmed in Microsoft Visual Basic and incorporated into the Microsoft Access database as modules that can be run on a selected date range. The validation results are provided in the following sections for data completeness, wind speed, wind direction, temperature, solar radiation, barometric pressure, and relative humidity.

In summary, the verification indicates that the meteorological data generated during this period are usable with no data flagged as rejected.

4.1 Data Completeness

The Work Plan specified a data completeness goal of quarterly valid data retrieval of 90 percent for meteorological data. Three months of meteorological data were collected during 2Q 2005 as summarized in Table 8. A total of 8,732 data were collected out of 8,736 planned. The actual completeness for meteorological data was calculated to be 99.95 percent, which exceeded the program goal of 90 percent.

4.2 Wind Speed

The Work Plan specified three validation criteria for wind speed:

- Less than zero or greater than 56 mph [25 meters per second (m/s)];
- Does not vary by more than 0.2 mph (0.1 m/s) for 3 consecutive hours; and
- Does not vary by more than 1.1 mph (0.5 m/s) for 12 consecutive hours.

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No wind speed records were flagged for any of the three criteria during the reporting period.

4.3 Wind Direction

The Work Plan specified three validation criteria for wind direction:

- Less than zero or greater than 360°;
- Does not vary by more than 1 degree for more than 3 consecutive hours; and
- Does not vary by more than 10 degrees for 18 consecutive hours.

No wind direction records were flagged for any of the three criteria during the reporting period.

4.4 Temperature

The Work Plan specified four validation criteria for temperature:

- Greater than the local record high;
- Less than the local record low;
- Greater than a 18°F (10 degrees Celsius or °C) change from the previous hour; and
- Does not vary by more than 1°F (0.5°C) for 12 consecutive hours.

The following temperature records provide high and low temperatures recorded by the meteorological station by month:

Site Temperatures Compared to Local Records				
	Site Data (ºF)		Local Record[1] (ºF)	
2005	High	Low	High	Low
April	75.70	23.98	92	5
May	84.40	33.98	100	15
June	89.40	32.82	102	26

[1]Source: NWS/COOP Station 269229 located in Yerington, Nevada

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For comparison, the table also provides local record highs and lows from National Weather Service Cooperative Observer Program (NWS/COOP) Station 269229 located in Yerington, Nevada. No temperature records were flagged for being either greater than the local record high or less than the local record low.

4.5 Solar Radiation

The Work Plan specified the following two validation criteria for solar radiation:

- Greater Than Zero at Night: The times for sunset and sunrise were obtained for every day of the year for Yerington, Nevada from the Astronomical Applications Department of the U.S. Naval Observatory. For the purposes of evaluating this criterion, night was defined as the meteorological station measurement readings that occurred between the time for sunset and sunrise on a given day. A total of 1,198 records were flagged for this criterion. The majority of records (994) that were flagged were less than 1 kJ/m^2 which, given the sensitivity of the sensor, is generally considered to be zero. The remaining flagged records (from 1 to 133 kJ/m^2) occurred right at the calculated sunrise or sunset. The solar radiation data was determined to be usable and no corrective action was deemed necessary.
- Greater Than the Maximum Possible for the Date and Latitude: The maximum possible solar radiation for the middle day of each month for Yerington, Nevada was calculated using *Evaporation, Evapotranspiration, and Climatic Data – Developments in Atmospheric Science 22* (Burman, et. al., 1994) and summarized in the table below. The solar radiation measurements from the meteorological station were totaled for each day during the reporting period and compared to the maximum possible. No records were flagged for this criterion during the reporting period.

Maximum Solar Radiation[1] (kJ/m^2 day)	
April	27,157
May	31,061
June	32,701

[1]Source: Burman, et. al., 1994.

4.6 Barometric Pressure

The Work Plan specified two validation criteria for barometric pressure:

- Greater than the local record high; and
- Less than the local record low.

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Local record highs and lows were obtained from the Automated Weather Observing Station (AWOS) 93102 located in Fallon Naval Air Station, Nevada. For purposes of comparison, the mean sea level pressure was estimated using a modified National Oceanic and Atmospheric Administration (NOAA) method. No barometric pressure records were flagged for either criterion during the reporting period.

4.7 Relative Humidity

The Work Plan specified two validation criteria for relative humidity which are described below followed by a discussion of the validation results.

- Less than 30 Percent During Precipitation Events: For the purposes of evaluating this criterion, a precipitation event was defined as a precipitation reading greater than zero inches. A total of one record was flagged for this criterion during the reporting period.
- Varies by 30 Percent of the Local Average for 24 Consecutive Hours: Local average relative humidity by month was obtained from AWOS Station 93102 located in Fallon Naval Air Station, Nevada. A total of 99 records were flagged for this criterion during the reporting period.

Local Average Relative Humidity[1]	
April	40%
May	37%
June	32%

[1]Source: AWOS Station 93102 located in Fallon Naval Air Station, Nevada

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SECTION 5.0
SUMMARY AND DISCUSSION OF RESULTS

This section summarizes the results of air quality analyses and meteorological monitoring and discusses possible correlations between selected data.

5.1 Air Quality Data

Air quality data generated during this reporting period consisted of gravimetric analysis of both PM_{10} and TSP filters and chemical analysis of metals and radiochemicals present on both PM_{10} and TSP filters.

5.1.1 Gravimetric PM_{10} Results

Analytical results for PM_{10} are summarized in Appendix H and ranged from 400 to 32,100 µg. The masses detected on the PM_{10} filters were divided by the sample volumes in cubic meters in Table 2 to calculate PM_{10} concentrations in micrograms per cubic meter (µg/m^3) which are summarized in Table 9. PM_{10} concentrations ranged from 0.24 to 18.72 µg/m^3. The PM_{10} concentrations are charted on Figure 2, and observations from the chart are described below.

- Average PM_{10} concentrations (6.31 to 9.38 µg/m^3) by monitoring location in 2Q 2005 were higher compared to average concentrations (3.14 to 8.44 µg/m^3) in the previous quarter.
- PM_{10} concentrations were similar regardless of monitoring location. Monitoring location AM-5-PM10 had the lowest average (6.31 µg/m^3) during the reporting period.
- Average PM_{10} concentrations by monitoring event were highest during Event 21 on May 28, 2005, Event 22 on June 3, 2005, and Event 24 on June 15, 2005. The maximum concentration (18.72 µg/m^3) for the reporting period occurred at AM-4-PM10 during Event 24 on June 15, 2005.

The current NAAQS primary standard for particulate matter is measured as PM_{10} and is set at 50 µg/m^3 averaged over a year at each monitoring location. In addition, the NAAQS specifies that each monitoring location have no more than one measurement per year above 150 µg/m^3

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averaged over 24 hours. Average PM_{10} concentrations by monitoring location during 2Q 2005 ranged from 6.31 to 9.83 µg/m^3 which are well below the primary standard of 50 µg/m^3.

5.1.2 Gravimetric TSP Results

Analytical results for TSP are summarized in Appendix H and ranged from 9,600 to 93,100 µg. The masses detected on the PM_{10} filters were divided by the sample volumes in cubic meters in Table 3 to calculate TSP concentrations in µg/m^3 which are summarized in Table 10. TSP concentrations ranged from 5.0 to 49.9 µg/m^3. The TSP concentrations are charted on Figure 3. Prior to 1987, the NAAQS primary standard for particulate matter was measured as TSP and was set at 75 µg/m^3 averaged over a year at each monitoring location. Average TSP concentrations by monitoring location during 2Q 2005 ranged from 18.2 to 30.3 µg/m^3, which are well below the TSP primary standard of 75 µg/m^3 that was discontinued by EPA in 1987 (note that after 1987 the NAAQS primary standard for particulate matter was measured as PM_{10}).

5.1.3 Metals Results

A total of 21 metals were analyzed from PM_{10} and TSP filters by the methods indicated below.

- ICP: five metals (aluminum, calcium, iron, magnesium, and sodium) were analyzed by inductively coupled plasma (ICP).
- ICP/MS: fifteen metals (arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, vanadium, and zinc) were analyzed by inductively coupled plasma/mass spectrometry (ICP/MS).
- CVAA: mercury was analyzed by cold vapor atomic adsorption (CVAA).

Analytical results for metals detected on PM_{10} and TSP filters are summarized in Appendix H. The masses detected on the PM_{10} filters were divided by the sample volumes in Table 2 to calculate metals concentrations which are summarized in Table 9. The masses detected on the TSP filters were divided by the sample volumes in Table 3 to calculate metals concentrations which are summarized in Table 10. A brief discussion of each metal is provided below in alphabetical order.

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- Aluminum: Aluminum concentrations measured from PM_{10} filters ranged from below the detection limit of 0.024 to 0.30 µg/m^3. Aluminum concentrations measured from TSP filters ranged from 0.041 to 0.84 µg/m^3.
- Arsenic: Arsenic was not detected on any PM_{10} or TSP filters at detection limits down to 0.97 nanograms per cubic meter (ng/m^3).
- Barium: Barium was not detected on any PM_{10} or TSP filters at detection limits down to 18 ng/m^3.
- Beryllium: Beryllium was detected on one PM_{10} filter this reporting period at 0.011 ng/m^3. Beryllium concentrations measured from TSP filters ranged from below the detection limit of 0.004 to 0.087 ng/m^3.
- Cadmium: Cadmium concentrations measured from PM_{10} filters ranged from below the detection limit of 0.030 to 0.087 ng/m^3. Cadmium concentrations measured from TSP filters ranged from below the detection limit of 0.028 to 0.094 ng/m^3.
- Calcium: Calcium concentrations measured from PM_{10} filters ranged from below the detection limit of 0.51 to 0.61 µg/m^3. Calcium concentrations measured from TSP filters ranged from below the detection limit of 0.46 to 1.7 µg/m^3.
- Chromium, Total: Chromium was not detected on any PM_{10} or TSP filters at detection limits down to 5.3 ng/m^3.
- Cobalt: Cobalt concentrations measured from PM_{10} filters ranged from below the detection limit of 2.1 to 20 ng/m^3. Cobalt was not detected on any TSP filters at detection limits down to 1.9 ng/m^3. Some PM_{10} results were greater than TSP results at the same monitoring location.
- Copper: Copper concentrations measured from PM_{10} filters ranged from 4.7 to 30 ng/m^3. Copper concentrations measured from TSP filters ranged from 25 to 119 ng/m^3.
- Iron: Iron concentrations measured from PM_{10} filters ranged from below the detection limit of 0.017 to 0.77 µg/m^3. Iron concentrations measured from TSP filters ranged from 0.043 to 1.3 µg/m^3.
- Lead: Lead concentrations measured from PM_{10} filters ranged from below the detection limit of 0.23 to 2.8 ng/m^3. Lead concentrations measured from TSP filters ranged from below the detection limit of 0.36 to 3.8 ng/m^3.
- Magnesium: Magnesium concentrations measured from PM_{10} filters ranged from below the detection limit of 0.056 to 0.21 µg/m^3. Magnesium concentrations measured from TSP filters ranged from below the detection limit of 0.050 to 0.56 µg/m^3.
- Manganese: Manganese concentrations measured from PM_{10} filters ranged from below the detection limit of 1.1 to 7.5 ng/m^3. Manganese concentrations measured from TSP filters ranged from 2.1 to 22 ng/m^3.
- Mercury: Mercury concentrations measured from PM_{10} filters ranged from 0.005 to 0.026 ng/m^3. Mercury concentrations measured from TSP filters ranged from below the

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detection limit of 0.001 to 0.028 ng/m^3. Some PM_{10} results were greater than TSP results at the same monitoring location.

- Molybdenum: Molybdenum was not detected on any PM_{10} or TSP filters at detection limits down to 0.56 ng/m^3.
- Nickel: Nickel was detected only once on a PM_{10} filter during this reporting period at a concentration of 2.3 ng/m^3. Nickel was not detected on any TSP filters at detection limits down to 1.8 ng/m^3.
- Selenium: Selenium was not detected on any PM_{10} filters at detection limits down to 0.96 ng/m^3. Selenium concentrations measured from TSP filters ranged from below the detection limit of 0.88 to 1.2 ng/m^3

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- Silver: Silver concentrations measured from PM_{10} filters ranged from below the detection limit of 0.008 to 0.016 ng/m^3. Silver concentrations measured from TSP filters ranged from below the detection limit of 0.008 to 0.044 ng/m^3.
- Sodium: Sodium was not detected on any PM_{10} or TSP filters at detection limits down to 1.0 µg/m^3.
- Vanadium: Vanadium was not detected on any PM_{10} filters at detection limits down to 1.6 ng/m^3. Vanadium concentrations measured from TSP filters ranged from below the detection limit of 1.5 to 2.2 ng/m^3.
- Zinc: Zinc concentrations measured from PM_{10} filters ranged from below the detection limit of 3.5 to 5.9 ng/m^3. Zinc concentrations measured from TSP filters ranged from below the detection limit of 3.2 to 9.8 ng/m^3.

Five metals (arsenic, barium, chromium, molybdenum, and sodium) were not detected on either PM_{10} or TSP filters. An additional three metals (cobalt, selenium, and vanadium) had very few (six or less) detections. With the exception of cobalt and mercury with very low detection limits (single to double digit ng/m^3), the great majority of TSP results were greater than PM_{10} results for metals analyses from samples collected at the same monitoring location.

5.1.4 Radiochemical Results

A total of 10 radiochemicals were analyzed from PM_{10} and TSP filters using the following methods for 34 PM_{10} and 30 TSP samples:

- Gas Proportional Counters: gross alpha and gross beta were analyzed by method STL-RICHRC5016/5014 and radium-228 was analyzed by method STL-RICH-RC-5005.
- Alpha Scintillation Counter: radium-226 was analyzed by method STL-RICH-RC-5005.
- Alpha Spectrometry: three species of thorium (228, 230, and 232) were analyzed by method RICH-RC-5084 and three species of uranium (234, 235, and 238) were analyzed by method RICH-RC-5067.

Analytical results for the radiochemicals detected on PM_{10} and TSP filters are summarized in Appendix H. The radioactivity values detected on the PM_{10} filters were divided by the sample volumes in Table 2 to calculate radiochemical concentrations, which are summarized in Table 11. The radioactivity values detected on the TSP filters were divided by the sample volumes in Table 3 to calculate radiochemical concentrations, which are summarized in Table 12. A brief

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discussion of each radiochemical is provided below. Analytical results are presented in femtoCuries (1 femtoCurie = 1,000 picoCuries) for ease of presentation.

- Gross Alpha: Gross alpha was detected from one PM_{10} filter (AM-6-PM10 -- Event 24 on June 15, 2005) at a concentration of 2.0 ± 1.4 femtoCuries per cubic meter (fCi/m^3). Results from the other PM_{10} filters were below the detection limit of 0.041 ± 0.028 fCi/m^3. Gross alpha was detected on six TSP filters, at concentrations up to 3.5 ± 1.8 fCi/m^3. The other TSP filter results were below the detection limit of 0.041 ± 0.034 fCi/m^3.
- Gross Beta: Gross beta was detected on all PM_{10} filters, with concentrations from 0.83 ± 0.62 to 16 ± 3.3 fCi/m^3. Gross beta was detected on all TSP filters, with concentrations from 1.1 ± 0.78 to 24 ± 4.8 fCi/m^3.
- Radium-226: Radium-226 was detected on six PM_{10} filters, with concentrations up to 0.46 ± 0.26 fCi/m^3. The other PM_{10} filter samples were below the detection limit of 0.21 ± 0.16 fCi/m^3. Radium-226 was detected on five TSP filters, with concentrations up to 0.50 ± 0.30 fCi/m^3. The other TSP filter results were below the detection limit of 0.24 ± 0.17.
- Radium-228: Radium-228 was detected on 24 of 34 PM_{10} filter samples, with concentrations up to 3.4 ± 1.0 fCi/m^3. Results from the remaining PM_{10} filters were less than the detection limit of 1.1 ± 0.57 fCi/m^3. Radium-228 was detected on 23 of 30 TSP filters, with concentrations up to 3.9 ± 1.2 fCi/m^3. Results from the remaining TSP filters were less than the detection limit of 0.95 ± 0.52 fCi/m^3.

- Thorium-228: Thorium-228 was detected from one PM_{10} filter (AM-5-PM10 -- Event 26 on June 27, 2005) at a concentration of 0.18 ± 0.17 fCi/m^3. All other PM_{10} filter samples were less than the detection limit of 0.021 ± 0.019 fCi/m^3. Thorium-228 was detected from one TSP filter (AM-3-TSP -- Event 25 on June 21, 2005) at a concentration of 0.21 ± 0.18 fCi/m^3. Results from the other TSP filters were less than the detection limit of 0.014 ± 0.0060 fCi/m^3.
- Thorium-230: Thorium-230 was detected from four of 34 PM_{10} filter samples, with concentrations up to 0.19 ± 0.13 fCi/m^3. The other PM_{10} filters were below the detection limit of 0.023 ± 0.020 fCi/m^3. Thorium-230 was detected from eight of 30 TSP filters, with concentrations up to 0.36 ± 0.21 fCi/m^3. Results from the other TSP filters were less than the detection limit of 0.0080 ± 0.0080 fCi/m^3.
- Thorium-232: Thorium-232 was not detected on any PM_{10} filters at detection limits down to 0.020 ± 0.018 fCi/m^3. Thorium-232 was detected from two TSP filters, with concentrations up to 0.13 ± 0.11 fCi/m^3.

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- Uranium-234: Uranium-234 was detected from one PM_{10} filter (AM-4-PM10 -- Event 23 on June 9, 2005) at a concentration of 0.063 ± 0.052 fCi/m^3. Results from the other PM_{10} filters were less than the detection limit of 0.028 ± 0.030 fCi/m^3. Uranium-234 was detected from one TSP filter (AM-5-TSP -- Event 23 on June 9, 2005) at a concentration of 0.046 ± 0.025 fCi/m^3. Results from the other TSP filters were less than the detection limit of 0.022 ± 0.022 fCi/m^3.
- Uranium-235: Uranium-235 was not detected on any PM_{10} or TSP filters at detection limits down to 0.022 ± 0.22 fCi/m^3.
- Uranium-238: Uranium-238 was not detected on any PM_{10} or TSP filters at detection limits down to 0.024 ± 0.018 fCi/m^3.

5.2 Meteorological Data

Meteorological data generated during this reporting period consisted of precipitation, temperature, relative humidity, barometric pressure, solar radiation, wind speed, and wind direction. These meteorological parameters are summarized in Table 13 and discussed below.

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5.2.1 Precipitation

Total monthly precipitation measured by the meteorological station increased from approximately 0.4 inches in April to 1.5 inches in May then decreased to 0.3 inches in June.

5.2.2 Temperature

The average, minimum, and maximum temperatures for each month in this reporting period are presented in Table 13. The average monthly temperature measured by the meteorological station increased from approximately 49ºF in April to 64ºF in June.

5.2.3 Relative Humidity

The average, minimum, and maximum relative humidity for each month in this reporting period are presented in Table 13. The average monthly relative humidity measured by the meteorological station increased from approximately 41 percent in April to 46 percent in May then decreased to 34 percent in June.

5.2.4 Barometric Pressure

The average, minimum, and maximum barometric pressures for each month in this reporting period are presented in Table 13. The average monthly barometric pressure measured by the meteorological station decreased from approximately 866 mBar in April to 864 mBar in June.

5.2.5 Solar Radiation

Total monthly solar radiation measured by the meteorological station increased from approximately 675,000 kJ/m^2 in April to 881,000 KJ/m^2 in June.

5.2.6 Wind Speed

Wind speed measured by the meteorological station ranged from approximately zero to 45 mph (20 m/s). The highest wind speeds occurred in early April, mid-May and mid-June.

Wind speed for each monitoring event is provided in Figure 4. The daily average, minimum, maximum, and standard deviation of all wind speed observations for each monitoring day are

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indicated on the chart. Monitoring Event 19 on May 16, 2005, Event 21 on May 28, 2005, and Event 25 on June 21, 2005 had the highest average wind speeds.

Wind speed frequency is presented in Figure 5. The wind speed measurements have been grouped according to general wind speed classes [e.g., 5 – 10 mph (2.2 – 4.5 m/s)]. The frequency of wind speed measurements is indicated for each wind speed class. The majority (47 percent) of wind speed measurements were between 1 – 5 mph (0.45 – 2.2 m/s) for the reporting period. Winds during 2Q 2005 increased from the previous quarter and 24 percent of the total measurements were between 5 – 10 mph (2.2 – 4.2 m/s).

5.2.7 Wind Direction

Wind direction measurements collected over a period of time are best summarized by wind rose plots. These plots group wind direction measurements into ranges of degrees (0 to 22.5, 22.5 to 45, etc.) and represents the ranges by a vector on a radial chart. The length of the vector is determined by the number of measurements in that range compared to the total number of measurements. In addition, a wind rose plot may provide information on wind speed by coloring the vectors that correspond to wind speed ranges. Wind rose plots were created using WRPLOT View software by Lakes Environmental to display both wind direction and wind speed. The data was formatted in Lakes format which has the requirements outlined below.

- Hourly Readings: Multiple readings per hour were averaged to provide a single hourly reading. An algorithm was used to average readings whose difference exceeded 180 degrees.
- Rounding: Wind direction in degrees was rounded to the nearest 10 degrees. Wind speed in mph was converted to knots, and then rounded to the nearest integer.

Wind rose plots are provided in Appendix I for the entire reporting period, for each month, and for each monitoring event. As shown on the wind rose plot for 2Q 2005, the predominant wind directions were from the southwest to the northeast.

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5.3 Correlation of Meteorological Data

Three correlations are discussed below: PM_{10} concentration vs. wind speed; particulate matter concentration vs. wind direction/monitoring location; and PM_{10} vs. TSP concentration.

5.3.1 PM_{10} Concentration versus Wind Speed

A dual axis chart of PM_{10} concentration and wind speed for each monitoring location is provided in Appendix J (a statistical correlation was not performed), which presents daily average and standard deviation of all wind speed observations for each monitoring day. These data indicate that sample events and locations with elevated PM_{10} concentration (Events 21, 22, and 24) do not generally correspond to the events with the greatest average wind speed (Events 19, 21, and 25).

5.3.2 Particulate Matter Concentration versus Wind Direction

The average PM_{10} and TSP concentrations measured during the reporting period at each monitoring location are presented on Figure 6 and Figure 7, respectively. Note that monitoring locations that are predominantly downwind (AM-1 and AM-2) have average particulate matter concentrations that are similar to those measured at the locations which are predominantly upwind (AM-4 through AM-6). The monitoring results this period do not indicate a general correlation between either PM_{10} or TSP concentration and wind direction/monitoring location.

5.3.2 PM_{10} Concentration versus TSP Concentration

A bar chart of gravimetric PM_{10} concentration and gravimetric TSP for each monitoring location is provided in Appendix K. The PM_{10} particles in the atmosphere are assumed to be a subset of all suspended particles of various sizes (i.e., TSP). Gravimetric PM_{10} measured at all locations is generally lower than gravimetric TSP, with PM_{10} concentrations between 20 and 64 percent of TSP concentrations:

PM_{10} Concentration as a Percentage of TSP Concentration				
Count[1]	**Minimum**	**Maximum**	**Average**	**Std. Dev.**
30	20%	64%	39%	9%

[1]Includes data from 5 events (Events 22 through 26) at 6 locations (AM-1 through -6).

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SECTION 6.0

REFERENCES

Brown and Caldwell, 2003, *Quality Assurance Project Plan, Yerington Mine Site*. Prepared for Atlantic Richfield Company. September 19.

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PM-10/Metals Analytical Results Summary, 2Q 2005

Event	Date	Units	AM-1-PM10	AM-1-PM10-Dup	AM-2-PM10	AM-3-PM10	AM-4-PM10	AM-5-PM10	AM-6-PM10
Parameter:	**ALUMINUM**								
22	06/03/05	UG	410	418	315	312	382	318	371
23	06/09/05	UG	< 40.8	< 40.8	< 40.8	< 40.8	48 J	< 40.8	< 40.8
24	06/15/05	UG	194 J	< 40.8	203 J	197 J	312	172 J	219 J
25	06/21/05	UG	277	251	240	336	518	223 J	313
26	06/27/05	UG	145 J	152 J	147 J	154 J	196 J	159 J	155 J
Parameter:	**ARSENIC**								
22	06/03/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
23	06/09/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
24	06/15/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
25	06/21/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
26	06/27/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
Parameter:	**BARIUM**								
22	06/03/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
23	06/09/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
24	06/15/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
25	06/21/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
26	06/27/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
Parameter:	**BERYLLIUM**								
22	06/03/05	UG	< 0.0084	0.019 J	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084
23	06/09/05	UG	< 0.079 UJ	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084
24	06/15/05	UG	< 0.016 UJ	< 0.0084	< 0.017 UJ	< 0.015 UJ	< 0.023 UJ	< 0.016 UJ	< 0.0096 UJ
25	06/21/05	UG	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084
26	06/27/05	UG	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084
Parameter:	**CADMIUM**								
22	06/03/05	UG	0.059 J	< 0.054	< 0.054	< 0.054	< 0.054	0.06 J	< 0.054
23	06/09/05	UG	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054
24	06/15/05	UG	0.077 J	0.058 J	0.15 J	0.062 J	0.1 J	0.069 J	0.082 J
25	06/21/05	UG	< 0.054	< 0.054	0.068 J	0.069 J	0.059 J	< 0.054	< 0.054
26	06/27/05	UG	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054
Parameter:	**CALCIUM**								
22	06/03/05	UG	948 J	1010 J	< 898	1030 J	1020 J	< 898	964 J
23	06/09/05	UG	< 898	< 898	< 898	< 898	< 898	< 898	< 898
24	06/15/05	UG	< 898	< 898	< 898	< 898	< 898	< 898	< 898
25	06/21/05	UG	< 898	< 898	< 898	< 898	< 898	< 898	< 898
26	06/27/05	UG	< 898	< 898	< 898	< 898	< 898	< 898	< 898

Event	Date	Units	AM-1-PM10	AM-1-PM10-Dup	AM-2-PM10	AM-3-PM10	AM-4-PM10	AM-5-PM10	AM-6-PM10
Parameter:	**CHROMIUM, TOTAL**								
22	06/03/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
23	06/09/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
24	06/15/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
25	06/21/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
26	06/27/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
Parameter:	**COBALT**								
22	06/03/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
23	06/09/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
24	06/15/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
25	06/21/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
26	06/27/05	UG	13.6 J	35.2 J	6.4 J	< 3.7	< 3.7	< 3.7	< 3.7
Parameter:	**COPPER**								
22	06/03/05	UG	33.8	32.4	15.2	20.9	17.7	26.4	26.8
23	06/09/05	UG	16.9	14.6	18.3	38.2	24.5	13.5	9.5
24	06/15/05	UG	35.9 J	< 2.9 UJ	27.5	16.1	27.3	8.2	13.2
25	06/21/05	UG	13.9	15.6	14.7	47.2	52.2	14.4	24.4
26	06/27/05	UG	17.1	18.7	13.8	24.4	23.5	16.3	13.4
Parameter:	**IRON**								
22	06/03/05	UG	419	440	277	306	420	328	375
23	06/09/05	UG	56.8 J	< 31.5 UJ	< 31.2 UJ	< 50.8 UJ	53.4 J	< 28.6 UJ	< 33 UJ
24	06/15/05	UG	219 J	< 14.4 UJ	230	255	472	226	304
25	06/21/05	UG	275	265	225	429	1320	313	408
26	06/27/05	UG	161	169	161	179	246	182	174
Parameter:	**LEAD**								
22	06/03/05	UG	< 1.6 UJ	< 1.5 UJ	< 0.96 UJ	< 1 UJ	< 1.5 UJ	< 1.7 UJ	< 1.3 UJ
23	06/09/05	UG	< 0.47 UJ	< 0.39 UJ	< 0.48 UJ	< 0.48 UJ	< 0.57 UJ	< 0.75 UJ	< 0.49 UJ
24	06/15/05	UG	4.7 J	0.69 J	2.4	4.7	2.4	4.7	3.5
25	06/21/05	UG	1.5	1.3	1.5	2	4.8	1.3	2.8
26	06/27/05	UG	1.7	1.2	1.2	2.5	1.4	1.3	2.1
Parameter:	**MAGNESIUM**								
22	06/03/05	UG	281 J	286 J	216 J	230 J	292 J	206 J	282 J
23	06/09/05	UG	< 97.2	< 97.2	< 97.2	< 97.2	< 97.2	< 97.2	< 97.2
24	06/15/05	UG	158 J	< 97.2	162 J	180 J	236 J	153 J	179 J
25	06/21/05	UG	164 J	163 J	155 J	342 J	367 J	152 J	210 J
26	06/27/05	UG	124 J	120 J	107 J	122 J	153 J	118 J	124 J

Event	Date	Units	AM-1-PM10	AM-1-PM10-Dup	AM-2-PM10	AM-3-PM10	AM-4-PM10	AM-5-PM10	AM-6-PM10
Parameter:	**MANGANESE**								
22	06/03/05	UG	11.6	12.2	8.8	8.6	11.9	9.8	12
23	06/09/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
24	06/15/05	UG	7.9 J	< 1.9 UJ	8.1	7.2	10.7	6.5	8.1
25	06/21/05	UG	8.6	8.6	8.5	9	12.9	6.7	9.5
26	06/27/05	UG	5.2 J	5.5 J	6.2	5.1 J	8.2	5.5 J	5.7 J
Parameter:	**MERCURY**								
22	06/03/05	UG	0.017 J	0.011 J	0.014 J	0.017 J	0.022 J	0.011 J	0.018 J
23	06/09/05	UG	< 0.04 UJ	< 0.045 UJ	< 0.053 UJ	< 0.041 UJ	< 0.043 UJ	< 0.05 UJ	< 0.04 UJ
24	06/15/05	UG	0.026 J	0.0024 J	0.036 J	0.029 J	0.045 J	0.03 J	0.031 J
25	06/21/05	UG	0.0096 J	0.014 J	0.0084 J	0.014 J	0.016 J	0.021 J	0.011 J
26	06/27/05	UG	0.018 J	0.019 J	0.014 J	0.02 J	0.02 J	0.017 J	0.018 J
Parameter:	**MOLYBDENUM**								
22	06/03/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
23	06/09/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
24	06/15/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
25	06/21/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
26	06/27/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Parameter:	**NICKEL**								
22	06/03/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
23	06/09/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
24	06/15/05	UG	3.8 J	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
25	06/21/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
26	06/27/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
Parameter:	**Particulate Matter < 10 microns**								
12	04/04/05	UG	5700	6100	1100	1700	2200	1500	2100
13	04/10/05	UG	14400	12100	13600	11800	12900	400	11200
14	04/16/05	UG	17700	17600	17800	17000	21000	12900	22900
15	04/22/05	UG	13100	15700	13700	14400	13600	13600	18900
17	05/04/05	UG	18500	18600	15700	18100	19300	15700	19800
18	05/10/05	UG	3400	3300	4000	6800	5100	2500	3300
19	05/16/05	UG	3900	4800	5600	5200	8400		4100
20	05/22/05	UG	13500	13300	12700	12000	14200	13400	15800
21	05/28/05	UG	21700	21500	25100	21100	21300		20900
22	06/03/05	UG	24700	23000	15400	17300	23800	13200	21800
23	06/09/05	UG	1900	2900	3500	4100	6300	3700	2100
24	06/15/05	UG	23200 J	< 100 UJ	23200	23900	32100	22400	23000
25	06/21/05	UG	14200	17100	13600	21300	31200	15300	20800
26	06/27/05	UG	16300	16200	13700	13800	17200	15600	15600

Event	Date	Units	AM-1-PM10	AM-1-PM10-Dup	AM-2-PM10	AM-3-PM10	AM-4-PM10	AM-5-PM10	AM-6-PM10
Parameter:	**SELENIUM**								
22	06/03/05	UG	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
23	06/09/05	UG	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
24	06/15/05	UG	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
25	06/21/05	UG	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
26	06/27/05	UG	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Parameter:	**SILVER**								
22	06/03/05	UG	0.018 J	0.016 J	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
23	06/09/05	UG	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
24	06/15/05	UG	0.021 J	< 0.014	0.027 J	0.02 J	0.021 J	0.018 J	< 0.014
25	06/21/05	UG	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
26	06/27/05	UG	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Parameter:	**SODIUM**								
22	06/03/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
23	06/09/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
24	06/15/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
25	06/21/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
26	06/27/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
Parameter:	**VANADIUM**								
22	06/03/05	UG	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9
23	06/09/05	UG	< 2.9 UJ	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9
24	06/15/05	UG	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9
25	06/21/05	UG	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9
26	06/27/05	UG	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9
Parameter:	**ZINC**								
22	06/03/05	UG	< 6.2	< 6.2	< 6.2	< 6.2	9.5 J	6.6 J	< 6.2
23	06/09/05	UG	< 6.2	< 6.2	< 6.2	< 6.2	< 6.2	< 6.2	< 6.2
24	06/15/05	UG	9.9 J	< 6.2	8.6 J	< 6.2	10 J	< 6.2	< 6.2
25	06/21/05	UG	< 6.2	< 6.2	< 6.2	< 6.2	9.2 J	< 6.2	< 6.2
26	06/27/05	UG	< 6.2	< 6.2	< 6.2	< 6.2	6.7 J	< 6.2	< 6.2

Notes

UG = microgram
PM-10 = particulate matter with a diameter of 10 microns or less
PM-10 analysis performed per 40 CFR 50 Appendix J
J = estimated value
< = not detected above the method detection limit

TSP/Metals Analytical Results Summary, 2Q 2005

Event	Date	Units	AM-1-TSP	AM-2-TSP	AM-3-TSP	AM-4-TSP	AM-5-TSP	AM-6-TSP
Parameter:	**ALUMINUM**							
22	06/03/05	UG	1050	776	704	992	762	1560
23	06/09/05	UG	106 J	77.2 J	105 J	136 J	98.8 J	119 J
24	06/15/05	UG	633	536	759	626	292	586
25	06/21/05	UG	914	595	1120	1220	576	698
26	06/27/05	UG	417	420	401	526	403	408
Parameter:	**ARSENIC**							
22	06/03/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
23	06/09/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
24	06/15/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
25	06/21/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
26	06/27/05	UG	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
Parameter:	**BARIUM**							
22	06/03/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
23	06/09/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
24	06/15/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
25	06/21/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
26	06/27/05	UG	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8	< 34.8
Parameter:	**BERYLLIUM**							
22	06/03/05	UG	0.017 J	< 0.0084	0.0091 J	0.031 J	0.013 J	0.042 J
23	06/09/05	UG	0.17 J	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084
24	06/15/05	UG	< 0.039 UJ	< 0.019 UJ	< 0.031 UJ	< 0.024 UJ	< 0.019 UJ	< 0.03 UJ
25	06/21/05	UG	< 0.0084	< 0.0084	< 0.0084	0.013 J	< 0.0084	< 0.0084
26	06/27/05	UG	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084
Parameter:	**CADMIUM**							
22	06/03/05	UG	0.074 J	0.079 J	0.065 J	0.083 J	0.068 J	0.098 J
23	06/09/05	UG	0.077 J	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054
24	06/15/05	UG	0.1 J	0.091 J	0.1 J	0.11 J	0.12 J	0.082 J
25	06/21/05	UG	0.065 J	< 0.054	0.078 J	0.077 J	0.17 J	< 0.054
26	06/27/05	UG	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054	< 0.054
Parameter:	**CALCIUM**							
22	06/03/05	UG	2590 J	1980 J	3060	2830 J	1150 J	2360 J
23	06/09/05	UG	< 898	< 898	< 898	< 898	< 898	< 898
24	06/15/05	UG	< 898	< 898	1160 J	993 J	< 898	< 898
25	06/21/05	UG	< 898	< 898	1230 J	1280 J	< 898	< 898
26	06/27/05	UG	< 898	< 898	< 898	< 898	< 898	< 898

Event	Date	Units	AM-1-TSP	AM-2-TSP	AM-3-TSP	AM-4-TSP	AM-5-TSP	AM-6-TSP
Parameter:	**CHROMIUM, TOTAL**							
22	06/03/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
23	06/09/05	UG	< 10.3 UJ	< 10.3 UJ	< 10.3 UJ	< 10.3 UJ	< 10.3 UJ	< 10.3 UJ
24	06/15/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
25	06/21/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
26	06/27/05	UG	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3	< 10.3
Parameter:	**COBALT**							
22	06/03/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
23	06/09/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
24	06/15/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
25	06/21/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
26	06/27/05	UG	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
Parameter:	**COPPER**							
22	06/03/05	UG	118	73.2	129	103	75.4	95.9
23	06/09/05	UG	82.5	80.9	136	121	55.6	66.8
24	06/15/05	UG	83	81.4	152	131	45.3	74.2
25	06/21/05	UG	87.7	64.5	205	180	65.6	96.2
26	06/27/05	UG	102	95.4	169	167	99.6	83.9
Parameter:	**IRON**							
22	06/03/05	UG	1140	747	763	1100	853	1660
23	06/09/05	UG	124	82.4 J	148	146	117 J	124
24	06/15/05	UG	719	566	1630	1180	440	773
25	06/21/05	UG	990	591	1500	2460	793	895
26	06/27/05	UG	511	436	527	655	517	468
Parameter:	**LEAD**							
22	06/03/05	UG	< 2.1 UJ	< 1.9 UJ	< 2.1 UJ	2.8	< 2 UJ	2.5
23	06/09/05	UG	0.98 J	< 0.68 UJ	0.87 J	0.81 J	0.77 J	0.98 J
24	06/15/05	UG	3.7	2.5	4.8	7.3	2.6	3.2
25	06/21/05	UG	2	< 1.4 UJ	5.3	5.5	2.1	< 1.8 UJ
26	06/27/05	UG	1.6	2	2	2	1.8	1.5
Parameter:	**MAGNESIUM**							
22	06/03/05	UG	636	465 J	510 J	663	446 J	856
23	06/09/05	UG	< 97.2	< 97.2	< 99.1 UJ	< 115 UJ	< 97.2	< 97.2
24	06/15/05	UG	423 J	337 J	500 J	424 J	220 J	381 J
25	06/21/05	UG	504 J	318 J	969	715	347 J	415 J
26	06/27/05	UG	300 J	268 J	303 J	386 J	274 J	273 J

Event	Date	Units	AM-1-TSP	AM-2-TSP	AM-3-TSP	AM-4-TSP	AM-5-TSP	AM-6-TSP
Parameter:	**MANGANESE**							
22	06/03/05	UG	28.1	24.8	20.1	30.1	23.9	40.7
23	06/09/05	UG	4.9 J	5.1 J	4.3 J	4.4 J	3.8 J	4.1 J
24	06/15/05	UG	22.8	21.6	21.1	18.5	10	19.6
25	06/21/05	UG	28.3	24.8	27.2	27.5	16.7	20.4
26	06/27/05	UG	15.2	16.6	13.1	17.7	13.2	15.8
Parameter:	**MERCURY**							
22	06/03/05	UG	0.038 J	0.026 J	0.04 J	0.038 J	0.026 J	0.044 J
23	06/09/05	UG	< 0.071 UJ	< 0.045 UJ	< 0.059 UJ	< 0.047 UJ	< 0.045 UJ	< 0.049 UJ
24	06/15/05	UG	0.038 J	0.051 J	0.046 J	0.048 J	0.035 J	0.045 J
25	06/21/05	UG	< 0.02 UJ	< 0.019 UJ	< 0.026 UJ	< 0.0018 UJ	< 0.029 UJ	< 0.024 UJ
26	06/27/05	UG	0.043 J	0.034 J	0.038 J	0.032 J	0.023 J	0.044 J
Parameter:	**MOLYBDENUM**							
22	06/03/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
23	06/09/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
24	06/15/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
25	06/21/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
26	06/27/05	UG	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Parameter:	**NICKEL**							
22	06/03/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
23	06/09/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
24	06/15/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
25	06/21/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
26	06/27/05	UG	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
Parameter:	**SELENIUM**							
22	06/03/05	UG	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
23	06/09/05	UG	< 2.2 UJ	< 1.7	< 1.7	< 1.7	< 1.9 UJ	1.9 J
24	06/15/05	UG	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
25	06/21/05	UG	< 1.7	< 1.7	< 1.7	1.7 J	< 1.7	2.2 J
26	06/27/05	UG	< 1.7	< 1.7	< 1.7	< 1.7	1.8 J	< 1.7
Parameter:	**SILVER**							
22	06/03/05	UG	0.052 J	0.042 J	0.05 J	0.048 J	0.029 J	0.049 J
23	06/09/05	UG	< 0.037 UJ	< 0.034 UJ	< 0.049 UJ	< 0.044 UJ	< 0.019 UJ	< 0.024 UJ
24	06/15/05	UG	0.049 J	0.048 J	0.075 J	0.054 J	0.03 J	0.047 J
25	06/21/05	UG	0.032 J	0.02 J	0.053 J	0.052 J	< 0.014	0.026 J
26	06/27/05	UG	0.035 J	0.031 J	0.058 J	0.056 J	0.036 J	0.031 J

Event	Date	Units	AM-1-TSP	AM-2-TSP	AM-3-TSP	AM-4-TSP	AM-5-TSP	AM-6-TSP
Parameter:	**SODIUM**							
22	06/03/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
23	06/09/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
24	06/15/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
25	06/21/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
26	06/27/05	UG	< 2020	< 2020	< 2020	< 2020	< 2020	< 2020
Parameter:	**Total Suspended Particulates**							
22	06/03/05	UG	78200	49200	58600	69400	40900	93100
23	06/09/05	UG	10300	9600	11200	14700	11100	11900
24	06/15/05	UG	57100	48000	59100	78200	36300	53900
25	06/21/05	UG	55400	41400	70900	80700	40400	52600
26	06/27/05	UG	40800	37000	39100	45900	37400	37300
Parameter:	**VANADIUM**							
22	06/03/05	UG	3.1 J	< 2.9	< 2.9	3.1 J	< 2.9	3.8 J
23	06/09/05	UG	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9
24	06/15/05	UG	3.2 J	2.9 J	3.8 J	3.3 J	< 2.9	3.1 J
25	06/21/05	UG	< 2.9	< 2.9	3.5 J	4.2 J	< 2.9	< 2.9
26	06/27/05	UG	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9
Parameter:	**ZINC**							
22	06/03/05	UG	7.2 J	< 6.2	8.4 J	18.8 J	8.9 J	12.7 J
23	06/09/05	UG	< 6.2	< 6.2	< 6.2	8 J	< 6.2	< 6.2
24	06/15/05	UG	9.2 J	8.1 J	16.6 J	13.3 J	6.6 J	10.8 J
25	06/21/05	UG	6.4 J	< 6.2	12.7 J	16.9 J	7.3 J	7.8 J
26	06/27/05	UG	< 6.2	7.4 J	10.5 J	18.6 J	6.2 J	8 J

Notes

UG = microgram
TSP = total suspended particulates
UJ = estimated with an elevated method detection limit
< = not detected above the method detection limit

PM-10/Radiochemical Analytical Results Summary, 2Q 2005

Event	Date	Units	AM-1-PM10	AM-1-PM10-Dup	AM-2-PM10	AM-3-PM10	AM-4-PM10	AM-5-PM10	AM-6-PM10
Parameter:		**ALPHA, GROSS**							
22	06/03/05	PCI	< 0.0928±0.21	< 0.113±0.158	< 0.0838±0.0825	< 0.0698±0.0479	< 0.0817±0.135	< 0.102±0.291	< 0.107±0.112
23	06/09/05	PCI	< 3.59±1.71	< 2.8±1.64	< 3.97±1.77	< 3.68±2	< 2.89±1.37	< 2.68±1.32	< 2.34±1.49
24	06/15/05	PCI	< 4.59±2.41		< 4.02±2.46	< 3.27±2.05	< 3.6±1.98	< 3.94±2.3	3.34±2.39 J
25	06/21/05	PCI	< 4.04±2.16	< 3.86±1.61	< 3.35±1.21	< 3.56±1.73	< 3.99±2.4	< 3.11±1.23	< 3.6±1.91
26	06/27/05	PCI	< 4.05±1.8	< 2.25±1.4	< 2.94±1.7	< 4.48±2.4	< 4.14±2.2	< 3.32±1.1	< 3.58±2
Parameter:		**BETA, GROSS**							
22	06/03/05	PCI	1.56±1.15 J	1.98±1.43 J	1.62±1.18 J	1.75±1.27 J	1.7±1.24 J	1.69±1.23 J	1.41±1.04 J
23	06/09/05	PCI	7.98±2.47	6.51±2.42	6.92±2.36	6.73±2.28	4.53±2.1 J	6.38±2.28	4.6±2.12 J
24	06/15/05	PCI	26.8±5.34		27.8±5.64	25.7±5.52	24.6±5.86	25.2±5.16	24.7±5.15
25	06/21/05	PCI	17±3.83	11.9±3.28	19.1±4.29	21.9±4.93	21.9±4.58	21.4±4.67	18.4±4.16
26	06/27/05	PCI	22.3±4.7	17.7±4.2	25±5.2	24.8±5.4	26.5±6.2	27±5.4	23.2±4.9
Parameter:		**RADIUM-226**							
22	06/03/05	PCI	< 0.493±0.307	0.606±0.418 J	0.414±0.273 J	0.362±0.247 J	< 0.451±0.32	< 0.778±0.396	< 0.36±0.262
23	06/09/05	PCI	< 0.732±0.496	< 0.94±0.628	< 1.19±0.561	< 1.04±0.615	< 1.19±0.535	< 0.679±0.418	< 0.637±0.294
24	06/15/05	PCI	< 1.24±0.632		< 0.975±0.584	< 0.94±0.424	< 1.25±0.669	< 0.522±0.362	< 0.619±0.37
25	06/21/05	PCI	< 0.652±0.436	< 1.24±0.732	< 0.742±0.44	0.552±0.372 J	< 0.65±0.457	0.731±0.396 J	< 0.941±0.558
26	06/27/05	PCI	< 1.54±0.72	< 0.996±0.53	< 0.824±0.54	< 0.808±0.49	< 1.26±0.67	0.796±0.45 J	< 0.93±0.54
Parameter:		**RADIUM-228**							
22	06/03/05	PCI	< 2.37±1.29	2.91±1.49 J	< 2.08±1.2	4.94±1.75	2.77±1.45 J	3.49±1.61	< 2.55±1.47
23	06/09/05	PCI	< 2.16±1.55 UJ	4.46±1.94 J	3.34±1.73	4.54±1.87	3±1.69 J	2.94±1.57 J	2.77±1.51 J
24	06/15/05	PCI	2.15±1.08 J		1.68±0.937 J	3.2±1.31	5.8±1.77	1.87±0.994 J	2.15±1.09 J
25	06/21/05	PCI	2.72±1.34 J	4.23±1.88	< 2.33±1.3	4.22±1.64	2.53±1.26 J	< 1.97±1.17	3.98±1.56
26	06/27/05	PCI	4.61±2.5 J	< 1.92±1 UJ	3.37±1.4	2.34±1.2 J	< 2.67±1.6	< 2.39±1.2	< 2.61±1.4
Parameter:		**THORIUM-228**							
22	06/03/05	PCI	< 0.37±0.0456	< 0.305±0.155	< 0.248±0.0684	< 0.422±0.0555	< 0.492±0.202	< 0.327±0.103	< 0.269±0.0897
23	06/09/05	PCI	< 0.114±0.0326	< 0.0348±0.0315	< 0.099±0.00988	< 0.0868±0.037	< 0.108±0.00902	< 0.0872±0.0447	< 0.065±0.00719
24	06/15/05	PCI	< 0.521±0.154		< 0.389±0.129	< 0.371±0.138	< 0.397±0.148	< 0.368±0.123	< 0.298±0.0939
25	06/21/05	PCI	< 0.126±0.132	< 0.297±0.0618	< 0.458±0.156	< 0.25±0.0833	< 0.362±0.135	< 0.397±0.148	< 0.353±0.18
26	06/27/05	PCI	< 0.485±0.21	< 0.135±0.1	< 0.225±0.12	< 0.671±0.29	< 0.78±0.4	0.314±0.3 J	< 0.23±0.027
Parameter:		**THORIUM-230**							
22	06/03/05	PCI	< 0.232±0.139	< 0.172±0.126	< 0.0875±0.102	< 0.28±0.144	0.265±0.241 J	0.337±0.231 J	0.212±0.176 J
23	06/09/05	PCI	< 0.0381±0.0344	< 0.0592±0.00496	< 0.0457±0.048	< 0.0834±0.00677	< 0.0586±0.0529	< 0.0711±0.0303	< 0.0474±0.00397
24	06/15/05	PCI	< 0.126±0.0932		< 0.137±0.102	< 0.356±0.179	< 0.172±0.127	< 0.288±0.174	< 0.204±0.102
25	06/21/05	PCI	< 0.134±0.156	< 0.204±0.123	< 0.105±0.11	0.164±0.149 J	< 0.348±0.175	< 0.173±0.156	< 0.276±0.234
26	06/27/05	PCI	< 0.265±0.24	< 0.131±0.12	< 0.152±0.065	< 0.362±0.03	< 0.365±0.22	< 0.171±0.15	< 0.155±0.11

Event	Date	Units	AM-1-PM10	AM-1-PM10-Dup	AM-2-PM10	AM-3-PM10	AM-4-PM10	AM-5-PM10	AM-6-PM10
Parameter:		**THORIUM-232**							
22	06/03/05	PCI	< 0.131±0.0973	< 0.172±0.103	< 0.14±0.0117	< 0.134±0.12	< 0.254±0.0213	< 0.102±0.0919	< 0.0957±0.0708
23	06/09/05	PCI	< 0.0381±0.0344	< 0.0335±0.0303	< 0.0457±0.0413	< 0.0472±0.0427	< 0.0586±0.0529	< 0.0402±0.0363	< 0.0474±0.00397
24	06/15/05	PCI	< 0.126±0.114		< 0.137±0.124	< 0.161±0.169	< 0.172±0.156	< 0.13±0.118	< 0.204±0.0341
25	06/21/05	PCI	< 0.121±0.109	< 0.204±0.0341	< 0.105±0.0775	< 0.0887±0.0931	< 0.157±0.116	< 0.173±0.156	< 0.125±0.0925
26	06/27/05	PCI	< 0.265±0.24	< 0.131±0.12	< 0.179±0.018	< 0.427±0.043	< 0.365±0.16	< 0.171±0.15	< 0.183±0.067
Parameter:		**URANIUM-234**							
22	06/03/05	PCI	< 0.416±0.26	< 0.559±0.0437	< 0.408±0.165	< 0.297±0.269	< 0.435±0.0217	< 0.754±0.0488	< 0.244±0.221
23	06/09/05	PCI	< 0.114±0.0606	< 0.174±0.0837	< 0.115±0.0509	< 0.0518±0.0604	0.105±0.0875 J	< 0.227±0.0952	< 0.047±0.0494
24	06/15/05	PCI	< 0.255±0.189		< 0.249±0.225	< 0.244±0.221	< 0.405±0.203	< 0.446±0.0223	< 0.781±0.249
25	06/21/05	PCI	< 0.247±0.26	< 0.225±0.166	< 0.604±0.0776	< 0.429±0.183	< 0.251±0.186	< 0.296±0.346	< 0.268±0.282
26	06/27/05	PCI	< 0.216±0.2	< 0.224±0.17	< 0.225±0.2	< 0.42±0.3	< 0.371±0.015	< 0.752±0.053	< 0.271±0.29
Parameter:		**URANIUM-235**							
22	06/03/05	PCI	< 0.416±0.26	< 0.479±0.0331	< 0.221±0.2	< 0.442±0.221	< 0.383±0.0153	< 0.713±0.0435	< 0.244±0.221
23	06/09/05	PCI	< 0.114±0.038	< 0.0507±0.0375	< 0.0452±0.0335	< 0.0976±0.0139	< 0.0475±0.0352	< 0.19±0.0769	< 0.047±0.0348
24	06/15/05	PCI	< 0.255±0.231		< 0.249±0.225	< 0.432±0.0362	< 0.273±0.246	< 0.446±0.0223	< 0.489±0.245
25	06/21/05	PCI	< 0.437±0.0367	< 0.225±0.203	< 0.371±0.223	< 0.243±0.219	< 0.251±0.227	< 0.267±0.242	< 0.268±0.242
26	06/27/05	PCI	< 0.216±0.2	< 0.224±0.2	< 0.397±0.033	< 0.283±0.26	< 0.371±0.015	< 0.489±0.24	< 0.271±0.25
Parameter:		**URANIUM-238**							
22	06/03/05	PCI	< 0.486±0.185	< 0.479±0.227	< 0.329±0.0131	< 0.586±0.223	< 0.383±0.271	< 0.61±0.0305	< 0.432±0.0362
23	06/09/05	PCI	< 0.142±0.424	< 0.0748±0.0758	< 0.0452±0.0475	< 0.148±0.0561	< 0.099±0.0517	< 0.168±0.0561	< 0.128±0.0696
24	06/15/05	PCI	< 0.451±0.192		< 0.44±0.188	< 0.432±0.0362	< 0.502±0.0282	< 0.446±0.197	< 0.329±0.244
25	06/21/05	PCI	< 0.437±0.0367	< 0.397±0.169	< 0.636±0.322	< 0.429±0.183	< 0.251±0.186	< 0.267±0.198	< 0.268±0.242
26	06/27/05	PCI	< 0.382±0.032	< 0.224±0.2	< 0.397±0.17	< 0.52±0.029	< 0.422±0.021	< 0.329±0.3	< 0.271±0.2

Notes

PCI = picoCuries
PM-10 = particulate matter with a diameter of 10 microns or less
PM-10 analysis performed per 40 CFR 50 Appendix J
J = estimated value
< = not detected above the method detection limit

TSP/Radiochemical Analytical Results Summary, 2Q 2005

Event	Date	Units	AM-1-TSP	AM-2-TSP	AM-3-TSP	AM-4-TSP	AM-5-TSP	AM-6-TSP
Parameter:	**ALPHA, GROSS**							
22	06/03/05	PCI	< 0.137±0.385	< 0.0802±0.183	< 0.0897±0.106	< 0.111±0.25	< 0.0754±0.0621	< 0.0891±0.253
23	06/09/05	PCI	< 2.76±1.61	< 2.73±1.35	< 2.25±1	< 2.86±1	< 2.69±1.78	< 2.25±1
24	06/15/05	PCI	< 4.8±2.85	< 3.48±2.19	5.95±2.98 J	6.1±3.49 J	< 3.29±2.2	3.94±2.63 J
25	06/21/05	PCI	< 2.98±2.2	3.79±2.5 J	4.22±2.7 J	< 5.31±3.1	< 3.96±2.4	< 3.28±1.9
26	06/27/05	PCI	< 2.83±1.84	< 3.91±2.35	< 3.17±1.38	< 3.22±2.15	3.03±2.01 J	< 4.09±1.74
Parameter:	**BETA, GROSS**							
22	06/03/05	PCI	2.11±1.53 J	2.24±1.62 J	1.89±1.38 J	2.09±1.53 J	2.21±1.6 J	2.29±1.65 J
23	06/09/05	PCI	6.11±2.36	6.36±2.32	7.32±2.4	5.89±2.23	8.29±2.43	6.92±2.29
24	06/15/05	PCI	31.8±6.07	33±6.42	28.7±6.04	31.4±7.21	33.7±6.48	30.8±6.11
25	06/21/05	PCI	25.6±5.2	20.7±4.7	23.9±4.9	24.8±5.2	23.1±4.7	22.9±4.9
26	06/27/05	PCI	22.9±4.68	24.8±4.83	36.4±6.91	46.6±9.17	40.9±7.42	37.8±7.27
Parameter:	**RADIUM-226**							
22	06/03/05	PCI	< 0.754±0.424	< 0.982±0.514	< 0.771±0.458	< 0.513±0.313	< 0.767±0.445	< 0.567±0.401
23	06/09/05	PCI	< 0.907±0.499	< 0.606±0.331	0.878±0.532 J	< 0.571±0.394	< 0.93±0.39	< 0.634±0.412
24	06/15/05	PCI	0.932±0.584 J	< 0.7±0.452	0.759±0.465 J	0.642±0.447 J	< 0.526±0.312	< 0.626±0.36
25	06/21/05	PCI	< 0.992±0.53	< 0.519±0.37	< 0.953±0.47	< 0.923±0.64	< 0.59±0.4	< 0.615±0.38
26	06/27/05	PCI	< 0.773±0.479	< 0.582±0.373	< 0.576±0.299	< 0.45±0.317	0.565±0.314 J	< 0.557±0.357
Parameter:	**RADIUM-228**							
22	06/03/05	PCI	3.25±1.45	4.68±1.67	3.62±1.4	3.78±1.5	< 2.13±1.21	3.07±1.47 J
23	06/09/05	PCI	3.45±1.51	3.23±1.33	4.09±1.55	2.79±1.44 J	2.66±1.32 J	2.62±1.32 J
24	06/15/05	PCI	< 1.89±1.06	< 1.89±1.16	2.24±1.13 J	4.82±1.7	2.6±1.28 J	< 1.9±0.989
25	06/21/05	PCI	< 1.82±1	3.25±1.4	2.06±1.1 J	< 1.83±1.1	2.39±1.2 J	< 2.02±1.1
26	06/27/05	PCI	4.08±1.94	4.23±1.71	3.12±1.4	7.04±2.33	7.11±2.14	4.45±1.62
Parameter:	**THORIUM-228**							
22	06/03/05	PCI	< 0.332±0.131	< 0.258±0.0857	< 0.395±0.156	< 0.354±0.0685	< 0.232±0.161	< 0.314±0.135
23	06/09/05	PCI	< 0.0569±0.00397	< 0.0705±0.00453	< 0.0712±0.0235	< 0.0798±0.0264	< 0.0983±0.00728	< 0.0773±0.0278
24	06/15/05	PCI	< 0.0269±0.0115	< 0.0519±0.0139	< 0.0574±0.032	< 0.0261±0.0111	< 0.0311±0.0208	< 0.0579±0.0205
25	06/21/05	PCI	< 0.482±0.19	< 0.316±0.12	0.362±0.3 J	< 0.33±0.23	< 0.284±0.055	< 0.297±0.19
26	06/27/05	PCI	< 0.0442±0.0226	< 0.0444±0.0326	< 0.0568±0.0132	< 0.0514±0.0171	< 0.0399±0.02	< 0.0376±0.00628
Parameter:	**THORIUM-230**							
22	06/03/05	PCI	0.191±0.173 J	< 0.0916±0.0678	< 0.123±0.129	< 0.126±0.0932	< 0.224±0.135	0.206±0.187 J
23	06/09/05	PCI	< 0.0356±0.00142	< 0.0482±0.00192	< 0.03±0.0271	< 0.0567±0.025	< 0.0571±0.0496	< 0.0529±0.00211
24	06/15/05	PCI	< 0.018±0.00768	< 0.0277±0.00232	0.166±0.0662 J	< 0.0156±0.0182	0.0209±0.0198 J	< 0.0309±0.0185
25	06/21/05	PCI	0.216±0.2 J	< 0.0887±0.093	0.455±0.33 J	0.688±0.4 J	< 0.223±0.13	< 0.204±0.16
26	06/27/05	PCI	< 0.0348±0.0211	< 0.0243±0.0219	< 0.0138±0.0145	< 0.0202±0.0236	< 0.0386±0.00645	0.0303±0.0275 J

Event	Date	Units	AM-1-TSP	AM-2-TSP	AM-3-TSP	AM-4-TSP	AM-5-TSP	AM-6-TSP
Parameter:	**THORIUM-232**							
22	06/03/05	PCI	0.191±0.173 J	< 0.0916±0.0828	< 0.123±0.0909	< 0.126±0.0932	< 0.224±0.0374	0.247±0.205 J
23	06/09/05	PCI	< 0.0356±0.00142	< 0.0482±0.0241	< 0.0445±0.00177	< 0.0336±0.0304	< 0.0571±0.00228	< 0.0356±0.0322
24	06/15/05	PCI	< 0.0212±0.0109	< 0.0327±0.00329	< 0.0266±0.0114	< 0.0141±0.0105	< 0.0246±0.00904	< 0.0365±0.0134
25	06/21/05	PCI	< 0.117±0.11	< 0.0887±0.066	< 0.145±0.15	< 0.159±0.19	< 0.101±0.075	< 0.204±0.076
26	06/27/05	PCI	< 0.0157±0.0116	< 0.0243±0.0219	< 0.0138±0.0102	< 0.0183±0.0165	< 0.0174±0.0157	< 0.0164±0.0121
Parameter:	**URANIUM-234**							
22	06/03/05	PCI	< 0.518±0.165	< 0.378±0.0189	< 0.384±0.0192	< 0.261±0.305	< 0.474±0.271	< 0.66±0.0427
23	06/09/05	PCI	< 0.207±0.114	< 0.13±0.0613	< 0.0431±0.0452	< 0.0502±0.0585	0.0855±0.0464 J	< 0.0412±0.0412
24	06/15/05	PCI	< 0.167±0.113	< 0.403±0.172	< 0.354±0.36	< 0.244±0.221	< 0.249±0.184	< 0.217±0.161
25	06/21/05	PCI	< 0.716±0.24	< 0.273±0.25	< 0.37±0.38	< 0.579±0.42	< 0.424±0.18	< 0.236±0.21
26	06/27/05	PCI	< 0.645±0.184	< 0.367±0.184	< 0.387±0.275	< 0.82±0.0596	< 0.28±0.234	< 0.296±0.22
Parameter:	**URANIUM-235**							
22	06/03/05	PCI	< 0.455±0.164	< 0.378±0.0189	< 0.227±0.169	< 0.35±0.014	< 0.382±0.0153	< 0.583±0.334
23	06/09/05	PCI	< 0.116±0.0446	< 0.13±0.0613	< 0.0431±0.0319	< 0.0453±0.0476	< 0.0464±0.0464	< 0.0412±0.0412
24	06/15/05	PCI	< 0.114±0.0438	< 0.403±0.0338	< 0.24±0.217	< 0.244±0.221	< 0.249±0.225	< 0.217±0.196
25	06/21/05	PCI	< 0.466±0.019	< 0.273±0.25	< 0.443±0.19	< 0.439±0.037	< 0.24±0.22	< 0.236±0.21
26	06/27/05	PCI	< 0.396±0.0332	< 0.247±0.223	< 0.261±0.236	< 0.513±0.0205	< 0.28±0.253	< 0.296±0.268
Parameter:	**URANIUM-238**							
22	06/03/05	PCI	< 0.478±0.231	< 0.442±0.0269	< 0.227±0.169	< 0.464±0.176	< 0.382±0.0153	< 0.534±0.0267
23	06/09/05	PCI	< 0.222±0.106	< 0.164±0.0791	< 0.0431±0.0319	< 0.0669±0.0678	< 0.0464±0.0464	< 0.112±0.112
24	06/15/05	PCI	< 0.218±0.116	< 0.475±0.0479	< 0.354±0.36	< 0.271±0.316	< 0.249±0.225	< 0.383±0.164
25	06/21/05	PCI	< 0.313±0.23	< 0.273±0.25	< 0.443±0.33	< 0.716±0.54	< 0.5±0.26	< 0.348±0.35
26	06/27/05	PCI	< 0.794±0.349	< 0.455±0.261	< 0.44±0.338	< 0.345±0.312	< 0.28±0.253	< 0.618±0.0623

Notes

PCI = picoCuries
TSP = total suspended particulates
UJ = estimated with an elevated method detection limit
< = not detected above the method detection limit