Appendix A

Correspondence

(includes unsigned EPA correspondence)

Summary of Correspondence
Air Quality Monitoring Program
Yerington Mine Site

Date	Type	Author	Title
10/11/04	Table	EPA	Air Sampling and Analytical Methods, Anaconda Mine, Yerington, NV
10/13/04	Outline	EPA	Air Sampling Protocol Outline
11/2/04	Report	ARC	Draft Air Quality Monitoring Work Plan for the Yerington Mine Site
12/21/04	Report	ARC	Draft Air Quality Monitoring Work Plan for the Yerington Mine Site
1/19/05	Letter	EPA	Conditional Approval for *Draft Air Quality Monitoring Work Plan*, submitted by Atlantic Richfield Company, dated December 21, 2004 Anaconda Copper Mine Site, Yerington, Nevada
2/14/05	Letter	EPA	Review Comments on *Draft Air Quality Monitoring Work Pla*n, submitted by Atlantic Richfield Company, dated December 21, 2004, Anaconda Copper Mine Site, Yerington, Nevada
2/24/05	Letter	EPA	Revised Review Comments on *Draft Air Quality Monitoring Work Pla*n, submitted by Atlantic Richfield Company, dated December 21, 2004, Anaconda Copper Mine Site, Yerington, Nevada
5/6/05	Letter	EPA	Atlantic Richfield Company's March 10, 2005 Response to USEPA's February 24, 2005 Letter: Revised Review Comments on *Draft Air Quality Monitoring Work Pla*n, submitted by Atlantic Richfield Company, dated December 21, 2004, Anaconda Copper Mine Site, Yerington, Nevada
5/10/05	Report	ARC	Air Quality Monitoring Data Summary Report for the Yerington Mine Site
5/24/05	Letter	ARC	*Response to Comments on the Draft Air Quality Monitoring Work Plan*
7/1/05	Letter	EPA	*Response to Comments on the Draft Air Quality Monitoring Work Plan*, dated May 24, 20005, Anaconda Copper Mine Site, Yerington, Nevada
7/22/05	Letter	EPA	Delays for Required Responses under Anaconda/Yerington Mine Site Unilateral Administrative Order for Initial Response Activities, EPA Docket No. 9-2005-0011, Anaconda Copper Mine Site, Yerington, Nevada
8/15/05	Letter	EPA	Confirmation of Additional Analysis of Archived Air Monitoring Samples Collected from January 28, 2005 through June 1, 2005, Anaconda Copper Mine Site, Yerington, Nevada
11/1/05	Report	ARC	Second Quarter 2005 Air Quality Monitoring Report, Yerington Mine Site
11/28/05	Report	ARC	Addenda to the First and Second Quarter 2005 Air Quality Monitoring Reports, Yerington Mine Site
12/19/05	Report	ARC	Final Air Quality Monitoring Work Plan for the Yerington Mine Site
12/11/06	Report	ARC	Third Quarter 2005 Air Quality Monitoring Report, Yerington Mine Site
4/3/06	Report	ARC	Fourth Quarter 2005 Air Quality Monitoring Report, Yerington Mine Site
4/4/06	Letter	ARC	Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site
6/16/06	Letter	EPA	Review Comments on: 1. *Fourth Quarter 2005 Air Quality Monitoring Report*, dated April 3, 2006 2. *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site*, date April 4, 2006
6/23/06	Report	ARC	First Quarter 2006 Air Quality Monitoring Report, Yerington Mine Site
8/3/06	Letter	ARC	Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site
9/18/06	Report	ARC	Second Quarter 2006 Air Quality Monitoring Report, Yerington Mine Site
10/19/06	Letter	EPA	*Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site*, dated August 3, 2006 submitted by Atlantic Richfield Company, Anaconda Copper Mine Site, Yerington, Nevada)

Date	Type	Author	Title
11/20/06	Letter	ARC	Transmittal of Draft Work Plan for Modified Air Monitoring Program at the Yerington Mine Site and Response to EPA letter dated October 19, 2006 (EPA Response to *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site*, dated August 3, 2006 submitted by Atlantic Richfield Company, Anaconda Copper Mine Site, Yerington, Nevada)
11/21/06	Report	ARC	Draft Revised Air Quality Monitoring Work Plan for the Yerington Mine Site
12/8/06	Letter	ARC	Schedule Clarification for the Implementation of the Modified Work Plan for the Air Quality Monitoring Program at the Yerington Mine Site and Request for an Extended Sampling Hiatus during Construction of New Facilities
12/12/06	Report	ARC	Third Quarter 2006 Air Quality Monitoring Report, Yerington Mine Site
1/12/07	Letter	EPA	Atlantic Richfield Company's November 20, 2006 Response to EPA Letter, dated October 19, 2006 (EPA Response to *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site*, dated August 3, 2006) and Draft Revised Air Quality Monitoring Work Plan for the Yerington Mine Site, dated November 21, 2006 submitted by Atlantic Richfield Company, Anaconda Copper Mine Site, Yerington, Nevada
3/16/07	Report	ARC	Fourth Quarter 2006 Air Quality Monitoring Report, Yerington Mine Site
3/23/07	Report	ARC	Revised Air Quality Monitoring Work Plan for the Yerington Mine Site
3/23/07	Letter	ARC	Transmittal of Revised Air Quality Monitoring Work Plan for the Yerington Mine Site and Response to EPA Letter dated January 12, 2007
5/25/07	Letter	EPA	Atlantic Richfield Company's March 23, 2007 *Transmittal of Revised Air Quality Monitoring Work Plan for the Yerington Mine Site and Response to EPA Letter dated January 12, 2007*, Anaconda Copper Mine Site, Yerington, Nevada
6/6/06	Report	ARC	First Quarter 2007 Air Quality Monitoring Report, Yerington Mine Site
6/11/07	Letter	ARC	Response to EPA comments dated May 25, 2007 regarding transmittal of *Revised Air Quality Monitoring Work Plan for the Yerington Mine Site* dated March 23, 2007
8/29/07	Letter	EPA	(1) *First Quarter 2007 Air Quality Monitoring Report*, dated June 6, 2007 (2) *Responses to EPA Comments dated May 25, 2007 regarding transmittal of Revised Air Quality Monitoring Work Plan*, dated June 11, 2007, Anaconda Copper Mine Site, Yerington, Nevada

AIR SAMPLING AND ANALYTICAL METHODS
ANACONDA MINE
YERINGTON,NV
OCTOBER 11, 2004

TABLE 1

AIR SAMPLING AND ANALYTICAL METHODS

Analyte	Field Sampling Method/Collection Media	Laboratory Method/ Reference	Method Detection Limit[a]	Risk-Based Concentration[d,e] for Air
Thorium				
Th-228	24-hour sample interval using Federal Reference Method Total Suspended Particulate Matter (TSP) high volume samplers/Quartz filter media	SW- 846, Alpha Spectroscopy	4.2 E-04 pCi/m^3[b]	4.01 E-05 pCi/m^3
Th-230	Same as above	SW-846, Alpha Spectroscopy	4.2 E-04 pCi/m^3[b]	1.86 E-04 pCi/m^3
Th-232	Same as above	SW-846, Alpha Spectroscopy	4.2 E-04 pCi/m^3[b]	1.22 E-04 pCi/m^3
Radium				
Ra-226	Same as above	SW-846, EPA 903.0 (or Gamma Spectroscopy)	4.2 E-04 pCi/m^3[b]	4.60 E-04 pCi/m^3
Ra-226+D	Same as above	SW-846, EPA 903.1 (or Gamma Spectroscopy)	4.2 E-04 pCi/m^3[b]	4.56 E-04 pCi/m^3
Ra-228	Same as above	SW-846, EPA 904.0 (or Gamma Spectroscopy)	1.3 E-03 pCi/m^3[b]	1.02 E-03 pCi/m^3

Analyte	Field Sampling Method/Collection Media	Laboratory Method/ Reference	Method Detection Limit[a]	Risk-Based Concentration[d,e] for Air
Gross Alpha & Beta				
Gross Alpha	Same as above	SW-846, EPA 9310	8.3 E-03 pCi/m^{3}[b]	To be established
Gross Beta	Same as above	SW-846, EPA 9310	2.5 E-03 pCi/m^{3}[b]	To be established
Uranium				
U-234	Same as above	SW-846, Alpha Spectroscopy	4.2 E-04 pCi/m^{3}[b]	4.64 E-04 pCi/m^{3}
U-235	Same as above	SW-846, Alpha Spectroscopy	4.2 E-04 pCi/m^{3}[b]	5.24 E-04 pCi/m^{3}
U-235+D	Same as above	SW-846, Alpha Spectroscopy	4.2 E-04 pCi/m^{3}[b]	5.24 E-04 pCi/m^{3}
U-238	Same as above	SW-846, Alpha Spectroscopy	4.2 E-04 pCi/m^{3}[b]	5.68 E-04 pCi/m^{3}
PM10	Same as above	EPA Method IO-2.1	**+/- 5 µg/m^{3}**	50 µg/m3
Metals (RCRA 8 Metals)				
Arsenic	Same as above	SW 846 (or equivalent); 6010 (or equivalent)	0.07 µg/m3 c	4.5 E-04 µg/m^{3}
Barium	Same as above	SW 846 (or equivalent); 6010 (or equivalent)	0.28 µg/m^{3} [c]	5.2 E-01 µg/m^{3}
Cadmium	Same as above	SW 846 (or equivalent); 6010 (or equivalent)	0.07 µg/m^{3} [c]	4.5 E-04 µg/m^{3}
Chromium	Same as above	SW 846 (or equivalent); 6010 (or equivalent)	0.07 µg/m^{3}[c]	1.6 E-04 µg/m^{3}
Lead	Same as above	SW 846 (or equivalent); 6010 (or equivalent)	0.07 µg/m^{3} [c]	1.5 µg/m^{3}
Mercury	Same as above	SW 846 (or equivalent); 6010 (or equivalent)	0.0014 µg/m^{3} [c]	1.1µg/m^{3}
Selenium	Same as above	SW 846 (or equivalent); 6010 (or equivalent)	0.35 µg/m^{3} [c]	20.0 µg/m^{3}

Analyte	Field Sampling Method/Collection Media	Laboratory Method/ Reference	Method Detection Limit[a]	Risk-Based Concentration[d,e] for Air
Silver	Same as above	SW 846 (or equivalent); 6010 (or equivalent)	0.07 $\mu g/m^3$ [c]	18.0 $\mu g/m^3$

References/Notes

a MDLs for radionuclides provided by laboratory. MDLs for metals taken from 40 CFR – Chapter 1, Part 50, Appendix G based on MDL for lead and corresponding MDLs for other RCRA metals

b MDLs are reported in "pCi/ m^3 for radionuclides. Sample weights are reported in mg and determination based on a sample volume of 2,400 m^3.

c A typical MDL is 0.07 ⌧g Pb/m^3. The above value was calculated by doubling the between-laboratory standard deviation obtained for the lowest measurable lead concentration in a collaborative test of the method.(15) An air volume of 2,400 m^3 was assumed.

d Values based on risk-based concentrations (RBC) and correspond to concentrations in air for a residential exposure scenario that correspond to a 1E-06 for carcinogens (arsenic, cadmium, radionuclides) and a noncancer hazard of 1.0 for chemicals without noncarcinogenic effects (barium, mercury, selenium, silver). The concentration shown for chromium assumes one part CrVI (a carcinogen) to six parts CrIII (a noncarcinogen). The concentration shown for lead is the NAAQS since lead cannot be assessed separately for a single exposure route such as inhalation.

Air Sampling Protocol Outline
October 13, 2004

Addendum to:
Yerington Mine
Air Quality Sampling Workplan
Objectives and outline for sampling at Process Area

<u>PM_{10} Sampling protocol:</u>

X Install and operate 5 downwind and 2 upwind particulate matter with a diameter of ten microns or less (PM_{10}) sampling sites at the Yerington/Anaconda mine site at designated locations (to be determined).

X Sampling will be conducted in accordance with *40 CFR, Chapter 1, Part 50 Appendix J to Part 50 --Reference Method for the Determination of Particulate Matter as PM_{10} in the Atmosphere.*

X Samples will be collected for a continuous 24-hour sample period (midnight to midnight).

X PM_{10} sampling results will be compared to *40 CFR, Chapter 1, Part 50 Appendix N to Part 50 -- Interpretation of the National Ambient Air Quality Standards for Particulate Matter* to evaluate compliance with the National Ambient Air Quality Standards (NAAQS).

X Sample to be performed in a 1 in 3 frequency (every 3 days) at each location for a period of 1 month per intensive sample period. Sampling efforts are to be focused on 4 months throughout the year (January, April, July, and October) to estimate air quality impacts during seasonal meteorological fluctuations.

X A total of 7 samples are to be collected per day. A total of approximately 70 samples (7 samples per day X 10 sample days per month) are to be collected per month per sample period. A total of approximately 280 samples to be collected over a one-year period.

X <u>Summary of PM_{10} sampling protocol:</u>

- X 7 sampling locations (5 downwind sites, 2 upwind sites)
- X 1 in 3 sampling frequency (every three days)
- X 1 month short term intensive sampling effort
- X 60 (approximately) samples collected per month
- X Monthly sampling to occurs during January, April, July, and October
- X 280 (approximately) number of samples collected per year

<u>Proposed TSP Sampling protocol:</u>

X Collocate, install and operate total suspended particulate (TSP) samplers at the 5 downwind PM_{10} monitoring sites at Yerington/Anaconda mine site at designated locations (to be determined).

X TSP sampling methodology chosen to address and collect "coarse" fraction of material that may potentially become airborne and is not captured by PM_{10} sampling methods.

X Sampling will be conducted in accordance *with 40 CFR, Chapter 1, Part 50 Appendix B to Part 50 -- Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method)*

2. Air Sampler Siting Considerations

Numerous factors have to be considered when siting the air sampling units. A summary of siting criteria for PM10 siting from 40 CFR58 App. E (Section 8) as follows:

Primary Considerations:

$ Probe height 2-15 meters
$ No obstructions within 2 meters
$ No trees within 20 meters
$ This would most likely be classified as a SPM (special purpose monitor) micro-scale so this would allow for some possible exeptions/deviations from above criteria.
$ Source of electricity

Text from 40 CFR58 App. E (Section 8) as follows:

8. Particulate Matter (PM10 and PM2.5)

8.1 Vertical Placement. Although there are limited studies on the PM10 concentration gradients around roadways or other ground level sources, References 1, 2, 4, 18 and 19 of this appendix show a distinct variation in the distribution of TSP and Pb levels near roadways, TSP, which is greatly affected by gravity, has large concentration gradients, both horizontal and vertical, immediately adjacent to roads. Lead, being predominately sub-micron in size, behaves more like a gas and exhibits smaller vertical and horizontal gradients than TSP. PM10, being intermediate in size between these two extremes exhibits dispersion properties of both gas and settleable particulates and does show vertical and horizontal gradients. Similar to monitoring for other pollutants, optimal placement of the sampler inlet for PM10 monitoring should be at breathing height level. However, practical factors such as prevention of vandalism, security, and safety precautions must also be considered when siting a PM10 monitor. Given these considerations, the sampler inlet for microscale PM10 monitors must be 2-7 meters above ground level. The lower limit was based on a compromise between ease of servicing the sampler and the desire to avoid re-entrainment from dusty surfaces. The upper limit represents a compromise between the desire to have measurements which are most representative of population exposures and a consideration of the practical factors noted above. Although microscale or middle scale stations are not the preferred spatial scale for PM2.5 sites, there are situations where such sites are representative of several locations within an area where large segments of the population may live or work (e.g., central business district of Metropolitan area). In these cases, the sampler inlet for such microscale PM2.5 stations must also be 2-7 meters above ground level.

For middle or larger spatial scales, increased diffusion results in vertical concentration gradients that are not as great as for the microscale. Thus, the required height of the air intake for middle or larger scales is 2-15 meters.

8.2 Spacing From Obstructions. If the sampler is located on a roof or other structure, then there must be a minimum of 2 meters separation from walls, parapets, penthouses, etc. No furnace or incineration flues should be nearby. This separation distance from flues is dependent on the height of the flues, type of waste or fuel burned, and quality of the fuel (ash content). In the case of emissions from a chimney resulting from natural gas combustion, as a precautionary measure, the sampler should be placed at least 5 meters from the chimney.

On the other hand, if fuel oil, coal, or solid waste is burned and the stack is sufficiently short so that the plume could reasonably be expected to impact on the sampler intake a significant part of the time, other buildings/locations in the area that are free from these types of sources should be considered for sampling. Trees provide surfaces for particulate desposition and also restrict airflow. Therefore, the sampler should be placed at least 20 meters from the dripline and must be 10 meters from the dripline when the tree(s) acts as an obstruction.

The sampler must also be located away from obstacles such as buildings, so that the distance between obstacles and the sampler is at least twice the height that the obstacle protrudes above the sampler except for street canyon sites. Sampling stations that are located closer to obstacles than this criterion allows should not be classified as neighborhood, urban, or regional scale, since the measurements from such a station would closely represent middle scale stations. Therefore, stations not meeting the criterion should be classified as middle scale.

There must be unrestricted airflow in an arc of at least 270° around the sampler except for street canyon sites. Since the intent of the category (a) site is to measure the maximum concentrations from a road or point source, there must be no significant obstruction between a road or point source and the monitor, even though other spacing from obstruction criteria are met. The predominant direction for the season with the greatest pollutant concentration potential must be included in the 270° arc.

8.3 Spacing From Roads. Since emissions associated with the operation of motor vehicles contribute to urban area particulate matter ambient levels, spacing from roadway criteria are necessary for ensuring national consistency in PM sampler siting.

The intent is to locate category (a) NAMS sites in areas of highest concentrations whether it be from mobile or multiple stationary sources. If the area is primarily affected by mobile sources and the maximum concentration area(s) is judged to be a traffic corridor or street canyon location, then the monitors should be located near roadways with the highest traffic volume and at separation distances most likely to produce the highest concentrations. For the microscale traffic corridor station, the location must be between 5 and 15 meters from the major roadway. For the microscale street canyon site the location must be between 2 and 10 meters from the roadway. For the middle scale station, a range of acceptable distances from the roadway is shown in Figure 2. This figure also includes separation distances between a roadway and neighborhood or larger scale stations by default. Any station, 2 to 15 meters high, and further back than the middle scale requirements will generally be neighborhood, urban or regional scale. For example, according to Figure 2, if a PM sampler is primarily influenced by roadway emissions and that sampler is set back 10 meters from a 30,000 ADT road, the station should be

classified as a micro scale, if the sampler height is between 2 and 7 meters. If the sampler height is between 7 and 15 meters, the station should be classified as middle scale. If the sample is 20 meters from the same road, it will be classified as middle scale; if 40 meters, neighborhood scale; and if 110 meters, an urban scale.

It is important to note that the separation distances shown in Figure 2 are measured from the edge of the nearest traffic lane of the roadway presumed to have the most influence on the site. In general, this presumption is an oversimplification of the usual urban settings which normally have several streets that impact a given site. The effects of surrounding streets, wind speed, wind direction and topography should be considered along with Figure 2 before a final decision is made on the most appropriate spatial scale assigned to the sampling station.

8.4 Other Considerations. For those areas that are primarily influenced by stationary source emissions as opposed to roadway emissions, guidance in locating these areas may be found in the guideline document Optimum Network Design and Site Exposure Criteria for Particulate Matter.

Stations should not be located in an unpaved area unless there is vegetative ground cover year round, so that the impact of wind blown dusts will be kept to a minimum.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

January 19, 2005

Dan J. Ferriter
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
Room LPR 6-164
La Palma, CA 90623

RE: Conditional Approval for *Draft Air Quality Monitoring Work Plan*, submitted by Atlantic Richfield Company, dated December 21, 2004
Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Ferriter:

The United States Environmental Protection Agency (EPA) has received and is reviewing the Draft Air Quality Monitoring Work Plan submitted by Atlantic Richfield Company (ARC), dated December 21, 2004, Anaconda Copper Mine Site, in Yerington, Nevada. Due to the large backlog of documents being reviewed by the EPA's internal technical reviewers we have not completed our review at this time. However EPA is conditionally approving the work proposed based on the need to begin air monitoring as soon as possible, in conjunction with the fact that the work plan was developed with significant input from EPA's oversight contractor, Tetra Tech EM Inc.

EPA's preliminary review does not indicate any major concerns regarding the proposed sampling locations or air monitoring sampling protocols. EPA does anticipate some concerns, primarily in regards to the proposed analytical suite, however based on sample holding times it appears that those issues along with any additional items can be addressed on a parallel track, allowing air monitoring to begin.

Based on our previous discussions with your contractor, Brown and Caldwell, we understand that the sample holding time from sample collection for mercury analysis is 28 days; with 180 days holding time for the remaining metals and radiological contaminants. Therefore EPA's goal will be to provide review comments as soon as possible.

As was the situation with EPA's January 5, 2005 letter regarding Process Areas sampling issues, EPA would usually try to coordinate and integrate our approval and review with input from the Nevada Division of Environmental Protection (NDEP) and the Bureau of Land Management (BLM). However based on the need to begin air monitoring as soon as possible we have expedited the process by this conditional approval. We will contact NDEP and BLM and the

Yerington Technical Work Group to determine a schedule for submittal of review comments keeping in mind the holding time constraints.

If you have any questions in regards to the conditional approval and parallel review and comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Craig Smith, BLM
Art Gravenstein, NDEP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

February 14, 2005

Dan J. Ferriter
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
Room LPR 6-164
La Palma, CA 90623

RE: Review Comments on *Draft Air Quality Monitoring Work Plan*, submitted by Atlantic Richfield Company, dated December 21, 2004
Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Ferriter:

The United States Environmental Protection Agency (EPA) has reviewed the Draft Air Quality Monitoring Work Plan submitted by Atlantic Richfield Company (ARC), dated December 21, 2004, Anaconda Copper Mine Site, in Yerington, Nevada. As we noted in our January 18, 2005 letter conditionally approving the commencement of air monitoring EPA's preliminary review did not indicate any major concerns regarding the proposed sampling locations or air monitoring sampling protocols. EPA anticipated some concerns, primarily in regards to the proposed analytical suite along with some minor items which are noted below. Also attached please find review comments from EPA's Quality Assurance Office regarding the work plan.

General comments:

- Plan lacks specific details on how monitoring will be performed and how DQO's will be achieved.
- No information is provided on meteorological monitoring and how this will be performed
- Meteorological data will be critical in establishing upwind/downwind samples as well as providing possible AQ modeling input data (if needed). Therefore meteorological data will be a key component of this sampling plan.
- Table No. 4 Proposed Analytical Methods, should be modified to add the following analytes; aluminum, beryllium, calcium, cobalt, copper, iron, manganese, magnesium, molybdenum, nickel, sodium, vanadium, zinc and sulfates

<u>Specific Comments</u>

Specific comments are identified in regards to the specific sections within the work plan as noted below:

Section 2:

- A discussion should be included to provide detail on specified monitors. Do they have EPA Federal Reference Method (FRM) or equivalent designation/approval?

- Please include section on meteorological tower:
  - Equipment specifications and accuracy/threshold values
  - Quality assurance (calibration) parameters (what level of tolerance is allowed)
  - Operational parameters (frequency of site visits, data downloading, data screening, etc.)

Section 3:

- Specify and provide text that is consistent with 40 CFR Appendix J

Section 4:

- Table No. 4 Proposed Analytical Methods, should be modified to add the following analytes; aluminum, beryllium, calcium, cobalt, copper, iron, manganese, magnesium, molybdenum, nickel, sodium, vanadium, zinc and sulfates. These analytes would be added to the current list of PM10, thorium radioisotopes (228,230,232), radium 226, radium 228, gross alpha, gross beta, uranium radioisotopes (234, 235, 238), arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

- Uranium analyses should provide information on soluble and insoluble fractions of uranium.

Section 5:

- Please provide details on QAPP and copies of equipment manufacturer SOPs.

- Please specify how quarterly report will be generated. Quarterly report will need to include the following information (taken from TOC of example calibration report):

-
  - 1.0 Calibration Summary
  - 2.0 Calibration Methods
    - 2.1.PM10 Hi-volume samplers
    - 2.2TSP Hi-volume samplers
    - 2.3 Climatronics Meteorological Tower
  - 3.0 Calibration Equipment
  - 4.0 Calibration Results and Comments

- Include detail that demonstrates calibrations for both have been performed in accordance with manufacturer specifications and/or EPA guidance.

- Specify how data will be validated. For example, meteorological data is usually validated using the following criteria:

Recommended Data Screening Procedures

Variable	Screening Criteria: Flag data if the value -
Wind Speed	- is less than zero or greater than 25 meters per second (m/s)
	- does not vary by more than 0.1 m/s for 3 consecutive hours
	- does not vary by more than 0.5 m/s for 12 consecutive hours
Wind Direction	- is less than zero or greater than 360 degrees
	- does not vary by more than 1 degree for more than 3 consecutive hours
	- does not vary by more than 10 degrees for 18 consecutive hours
Temperature	- is greater than the local record high
	- is less than the record low
	- is greater than a 10 °C change from the previous hour
	- does not vary by more than 0.5 °C for 12 consecutive hours
Solar Radiation	- is greater than zero at night
	- is greater than the maximum possible for the date and latitude
Barometric Pressure	- is greater than the local record high
	- is less than the local record low
Humidity	- is less than 30% during precipitation events
	- varies by 30% of the local average for 24 consecutive hours

Section 7:

- Electronic copies of data (in Excel spreadsheet or ASCII format) should be provided with the quarterly reports.

- Electronic copies of data (in Excel spreadsheet or ASCII format) should be provided with the annual report.

If you have any questions in regards to the comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

Attachment:

Comments on *Draft Air Quality Monitoring Work Plan, Yerington Mine Site, Lyon County, Nevada, dated December 22, 2004* (EPA QA Program Document Control Number [DCN] GUNV005W05VSF1) by Gail Jones, Environmental Scientist, dated February 2, 2005

cc: Chuck Zimmerman, B&C
Craig Smith, BLM
Art Gravenstein, NDEP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

February 24, 2005

Dan J. Ferriter
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
Room LPR 6-164
La Palma, CA 90623

RE: Revised Review Comments on *Draft Air Quality Monitoring Work Plan*, submitted by Atlantic Richfield Company, dated December 21, 2004
Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Ferriter:

As you know the United States Environmental Protection Agency (EPA) has reviewed the Draft Air Quality Monitoring Work Plan submitted by Atlantic Richfield Company (ARC), dated December 21, 2004, Anaconda Copper Mine Site, in Yerington, Nevada and submitted review comments on February 14th. Subsequently those comments plus additional review comments provided by the Yerington Paiute Tribe were discussed at the Yerington Technical session held on February 15, 2005. As a result of that discussion EPA's comments have been modified to reflect some of the issues and concerns brought up in that meeting.

As we noted in our January 18, 2005 letter conditionally approving the commencement of air monitoring EPA's preliminary review did not indicate any major concerns regarding the proposed sampling locations or air monitoring sampling protocols. EPA's anticipated concerns, primarily in regards to the proposed analytical suite, along with some minor items which are noted below as well as those issues reflecting the February 15, 2005 meeting are provided below.

General comments:

- Plan lacks specific details on how monitoring will be performed and how DQO's will be achieved. Potential DQOs for the work are as follows:

    1) First "cut" assessment of what is migrating off-site and what ambient concentrations.
        - This DQO can be achieved with TSP sampling and analysis.

    2) Impact on local populations and potential receptors
        - This DQO can be achieved primarily with PM_{10} sampling and analysis. TSP would not meet most human exposure criteria based on coarse particle size.

3) Human health and eco risk assessment
    - This DQO can potentially be achieved by both PM_{10} and TSP. TSP could be used to evaluate deposition of particles on surrounding vegetation, habitats, etc.

4) Degradation of air quality
    - This DQO can be achieved by both PM_{10} and TSP. Unfortunately, determination of "background" levels may not be realistic. The mine has been in place since the 70's and all air samples may have been impacted from the site.
    - A side-by-side comparison of PM_{10} and metals concentrations would be a good idea
    - TSP does not have any federal standard, but can be used to assess what percent of TSP is PM_{10} (difference between concentrations for collocated samples).

- No information is provided on meteorological monitoring and how this will be performed. EPA performed an audit on Jan 12-13, 2005 of the meteorological and air monitoring at the site as part of the start up. Copies have been provided electronically to the technical team. EPA will conduct quarterly audits on hi-vol and TSP samplers and 6-month audits on meteorological tower. All audits will follow EPA guidelines and accuracy criteria

- Meteorological data will be critical in establishing upwind/downwind samples as well as providing possible AQ modeling input data (if needed). Therefore meteorological data will be a key component of this sampling plan.

- To better assess the potential migration of contaminants off site and assess the impact on local populations and potential receptors a comparison of TSP and PM10 would be a prudent. To only use the TSP it could be overly conservative if used to assess risk. Therefore it seems prudent to do gravimetric, metals and radiological analysis on both the PM 10 and TSP, initially, to provide data for potential risk assessment purposes. A comparison of the two datasets over a representative time period could be conducted to evaluate the percentage of TSP that is the PM10 size range. Such an analysis could then be used to modify the subsequent sampling to improve cost effectiveness by using one or the other sample media.

- **Table No. 4** Proposed Analytical Methods, should be modified to add the following analytes; aluminum, beryllium, calcium, cobalt, copper, iron, manganese, magnesium, molybdenum, nickel, sodium, vanadium, zinc and sulfates. The original list of analytes proposed by EPA were based on the assessment following a RCRA assessment which comprised those metals with the addition of potential radiological contaminants resulting from the recent radiological screening level assessment by BLM on the site. This expanded list is based on evaluation of the past site inspections and sampling on the site indicated a more extensive list of potential contaminants of concern.

As was discussed at the February 15, 2005 meeting the detection limits were discussed in detail. Brown and Caldwell furthered discussed those issues with their analytical laboratory and found that the issue could be adequately addressed as summarized in the table below:

Parameter	PQL (µg)	Sample Volume (m^3)	Concentration (µg/m^3)	Concentration (ng/m^3)	Paiute Tribe (ng/m^3)
Aluminum	120	2,000	0.06	60	--
Arsenic	2.4	2,000	0.0012	1.2	7.5
Barium	1.2	2,000	0.0006	0.6	--
Beryllium	1.2	2,000	0.0006	0.6	3.5
Cadmium	1.2	2,000	0.0006	0.6	1.0
Calcium	600	2,000	0.3	300	--
Chromium	2.4	2,000	0.0012	**1.2**	**0.7**
Cobalt	2.4	2,000	0.0012	1.2	--
Copper	2.4	2,000	0.0012	1.2	4.0
Iron	120	2,000	0.06	60	--
Lead	1.2	2,000	0.0006	0.6	2.0
Manganese	1.2	2,000	0.0006	0.6	5.0
Magnesium	600	2,000	0.3	300	--
Mercury	0.12	2,000	0.00006	0.06	0.5
Molybdenum	1.2	2,000	0.0006	0.6	--
Nickel	2.4	2,000	0.0012	**1.2**	**0.5**
Selenium	2.4	2,000	0.0012	**1.2**	**0.5**
Silver	1.2	2,000	0.0006	0.6	--
Sodium	600	2,000	0.3	300	--
Vanadium	12	2,000	0.006	6	--
Zinc	5	2,000	0.0025	2.5	4.0

Specific Comments

Specific comments are identified in regards to the specific sections within the work plan as noted below:

Section 1:

- Introduction should include information and detail on additional air quality analysis i.e. PM10, TSP, metals, radiological, and sample frequency.

- Introduction, 2nd sentence would be more appropriately address by, "Fugitive dust emissions from the mine will be evaluated using EPA-approved PM10 and TSP sample collection methods at six strategically-placed air monitoring stations located near the site perimeter."

- Objectives of sampling should be identified and explain how these objectives will be met.

Section 2:

- A discussion should be included to provide detail on specified monitors. Do they have EPA Federal Reference Method (FRM) or equivalent designation/approval?

- Please include section on meteorological tower:
  - Equipment specifications and accuracy/threshold values
  - Quality assurance (calibration) parameters (what level of tolerance is allowed)
  - Operational parameters (frequency of site visits, data downloading, data screening, etc.)

- Meteorological data should be downloaded and evaluated a minimum of every 2 weeks (not every 3 weeks)

Section 3:

- Specify and provide text that is consistent with 40 CFR Appendix J

Section 4:

- Table No. 4 Proposed Analytical Methods, should be modified to add the following analytes; aluminum, beryllium, calcium, cobalt, copper, iron, manganese, magnesium, molybdenum, nickel, sodium, vanadium, zinc and sulfates. These analytes would be added to the current list of PM10, thorium radioisotopes (228,230,232), radium 226, radium 228, gross alpha, gross beta, uranium radioisotopes (234, 235, 238), arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

- Uranium analyses should provide information on soluble and insoluble fractions of uranium.

Section 5:

- Please provide details on QAPP and copies of equipment manufacturer SOPs.

- Please specify how quarterly report will be generated. Quarterly report will need to include the following information (taken from TOC of example calibration report):

-
    - 1.0 Calibration Summary
    - 2.0 Calibration Methods
        - 2.1.PM10 Hi-volume samplers
        - 2.2TSP Hi-volume samplers
        - 2.3 Climatronics Meteorological Tower
    - 3.0 Calibration Equipment
    - 4.0 Calibration Results and Comments

- Include detail that demonstrates calibrations for both have been performed in accordance with manufacturer specifications and/or EPA guidance.

- Specify how data will be validated. For example, meteorological data is usually validated using the following criteria:

Recommended Data Screening Procedures

Variable	Screening Criteria: Flag data if the value -
Wind Speed	- is less than zero or greater than 25 meters per second (m/s)
	- does not vary by more than 0.1 m/s for 3 consecutive hours
	- does not vary by more than 0.5 m/s for 12 consecutive hours
Wind Direction	- is less than zero or greater than 360 degrees
	- does not vary by more than 1 degree for more than 3 consecutive hours
	- does not vary by more than 10 degrees for 18 consecutive hours
Temperature	- is greater than the local record high
	- is less than the record low
	- is greater than a 10 °C change from the previous hour
	- does not vary by more than 0.5 °C for 12 consecutive hours
Solar Radiation	- is greater than zero at night
	- is greater than the maximum possible for the date and latitude
Barometric Pressure	- is greater than the local record high
	- is less than the local record low
Humidity	- is less than 30% during precipitation events
	- varies by 30% of the local average for 24 consecutive hours

Section 7:

- Electronic copies of data (in Excel spreadsheet or ASCII format) should be provided with the quarterly reports.
- Electronic copies of data (in Excel spreadsheet or ASCII format) should be provided with the annual report.

Figure

- Figure 1 should include the location of the meteorological tower

Appendix K

To reflect the modified list of analytes and detection limits discussed above the table included in this appendix should be revised to reflect the values listed below:

					LCS Control Limits	
Parameter	**Method**	**Instru-mentation**	**MDL (µg)**	**PQL[1] (µg)**	Recovery (%)	RPD[2] (%)
PM_{10}	EPA IO-2.1		N/A	100	N/A	N/A
Aluminum	SW846-6010B	ICP		120	75-125	20
Arsenic	SW846-6020	ICP/MS	0.50	2.4	75-125	20
Barium	SW846-6020	ICP/MS	0.50	1.2	75-125	20
Beryllium	SW846-6020	ICP/MS		1.2	75-125	20
Cadmium	SW846-6020	ICP/MS	0.20	1.2	75-125	20
Calcium	SW846-6010B	ICP		600	75-125	20
Chromium	SW846-6020	ICP/MS	0.50	2.4	75-125	20
Cobalt	SW846-6010B	ICP/MS		2.4	75-125	20
Copper	SW846-6020	ICP/MS		2.4	75-125	20
Iron	SW846-6010B	ICP		120	75-125	20
Lead	SW846-6020	ICP/MS	0.20	1.2	75-125	20
Manganese	SW846-6020	ICP/MS		1.2	75-125	20
Magnesium	SW846-6010B	ICP		600	75-125	20
Mercury	SW846-7471A	CVAA	0.0001	0.12	75-125	20
Molybdenum	SW846-6020	ICP/MS		1.2	75-125	20
Nickel	SW846-6020	ICP/MS		2.4	75-125	20
Selenium	SW846-6020	ICP/MS	0.15	2.4	75-125	20
Silver	SW846-6020	ICP/MS	0.20	1.2	75-125	20
Sodium	SW846-6010B	ICP		600	75-125	20
Vanadium	SW846-6020	ICP/MS		12	75-125	20
Zinc	SW846-6020	ICP/MS		5	75-125	20

Parameter	Method		MDA (pCi)
Thorium (228, 230, 232)	HASL-300		1.008
Radium 226	EPA 903.1M		1.008
Radium 228(b)	EPA 904.0M		3.12
Gross Alpha	HASL-300		19.92
Gross Beta	HASL-300		0.6
Uranium (234, 235, 238)	HASL-300		1.008

Notes:

(1) = maximum acceptable PQL
(2) = RPD limit includes laboratory duplicates
CVAA = cold vapor atomic absorption
ICP = inductively coupled plasma
LCS = laboratory control sample
MDA = minimum detectable activity are isotope dependent based on a 60 min counting time.
MDL = method detection limit
MS = mass spectrometry
µg = microgram
N/A = not applicable
pCi = picoCuries
PQL = practical quantitation limit
RPD = relative percent difference

Please note that the February 14, 2005 letter included review comments from EPA's Quality Assurance Office regarding the work plan which should be addressed in writing along with these herein. Review comments from the Fish and Wildlife Service and Yerington Paiute Tribe were provided in hard copy format at the February 15, 2005 meeting as well as by facsimile on February 14, 2005, those comments should also be addressed in writing and taken into consideration during the preparation of ARC's written responses to these comments since they reinforce in many aspects those comments provided above.

If you have any questions in regards to the comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Craig Smith, BLM
Art Gravenstein, NDEP

Todd L. Normane
Senior Attorney
BP Legal – Health, Safety & Environment

BP America Inc.
6 Centerpointe Drive
Mail Code LPR 6-552
La Palma, CA 90623
Direct: 714-228-6739
Facsimile: 714-228-6570
Todd.Normane@bp.com

March 10, 2005

Via Email and U.S. Mail

Mr. Jim Sickles
U.S. Environmental
Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

Mr. Andrew Helmlinger
U.S. Environmental
Protection Agency
75 Hawthorne Street, ORC-3
San Francisco, CA 94105

Re: USEPA's February 24, 2005 letter:
Revised Review Comments on the *Draft Air Quality Monitoring Work Plan*, submitted by Atlantic Richfield Company, dated December 21, 2004
Anaconda Copper Mine Site, Yerington, Nevada ("Comment Letter")

Dear Messrs. Sickles and Helmlinger:

I write to provide an initial response to EPA's above-referenced Comment Letter on behalf of the Atlantic Richfield Company ("Atlantic Richfield"). Atlantic Richfield is still reviewing EPA's Comment Letter and will provide a full response under separate cover. In the interim, Atlantic Richfield submits the following comments.

EPA General Comment 4 - Degradation of air quality: *"This DQO can be achieved by both PM_{10} and TSP. Unfortunately, determination of "background" levels may not be realistic. The mine has been in place since the 70's and all air samples may have been impacted from the site."*

Response: Atlantic Richfield disagrees with EPA's comment and does not believe that it is supported by both EPA's prior actions and statements or by the technical merits of the investigation.

EPA, EPA representatives and Atlantic Richfield collectively agreed that air monitors around the mine perimeter would serve as background locations and would be used to assess whether the mine was contributing additional particulates or contaminants to ambient air.

EPA in conjuction with BLM and NDEP assisted Atlantic Richfield in siting all the ambient air monitors adjacent to the Yerington Mine during an on-site visit in the

4Q2004. The goal of the field visit was twofold: 1) to strategically place air monitors to assess potential ambient air quality impacts from fugitive dust that may be generated at the the mine; and 2) to gauge background condtions to effectively judge the analytical results. A network of six air monitoring stations were strategically located and installed around the perimeter of the mine. The two air monitoring stations located on the western edge of the mine primarily serve as background air monitoring stations since the wind direction is predominantly from the west. The on-site wind speed and direction instrumentation is used to determine if the wind direction is in its usual pattern; if it is not (i.e. easterly wind) then a different set of air monitoring stations would measure background conditions during that particular sampling event.

EPA's current position regarding the feasibility of establishing background concentrations is a significant departure from the previous discussion and implementation of the air monitoring network at the Yerington Mine site and Atlantic Richfield respectfully requests that EPA reconsider its statement. Atlantic Richfield hopes that EPA will recognize that establishing background concentrations in air and other media is both achievable and essential to performing a scientifically valid Site assessment.

EPA General Comment – Final Paragraph: "*Review comments from the Fish and Wildlife Service and Yerington Paiute Tribe were provided in hard copy format at the February 15, 2005 meeting as well as by facsimile on February 14, 2005, those comments should also be addressed in writing and taken into consideration during the preparation of ARC's written responses to these comments since they reinforce in many aspects those comments provided above.*"

Response: EPA has assumed the lead agency role during this transition period. Atlantic Richfield would hope that EPA would exercise management over the review process and provide Atlantic Richfield with a defined scope of technical comments which require a response. Otherwise, Atlantic Richfield does not have clarity as to which comments and/or issues are deemed by EPA to require a response. Without such prior review and consolidation of agency and tribal comments by EPA, Atlantic Richfield may be asked to spend considerable time and effort to respond to comments or issues that have already been addressed in prior technical meetings or that are inconsistent with EPA guidance or legal requirements. Atlantic Richfield believes that such an open-ended comment and response process would be unproductive and inefficient.

This is an example of the technical process issues that comprise the agenda of the meeting that Atlantic Richfield previously requested with EPA. We look forward to discussing these issues with EPA and to developing a reasonable approach to addressing such process issues.

Regards,

Todd L. Normane
Counsel for Atlantic Richfield Company

cc: Dan Ferriter, Atlantic Richfield

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

May 6, 2005

Via Email and U.S. Mail

Todd L. Normane
Senior Attorney
BP Legal – Health, Safety & Environment
BP America Inc.
6 Centerpointe Drive
Mail Code LPR 6-552
La Palma, CA 90623

Daniel J. Ferriter
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
Room LPR 6-164
La Palma, CA 90623

RE: Atlantic Richfield Company's March 10, 2005 Response to USEPA's February 24, 2005 Letter: Revised Review Comments on *Draft Air Quality Monitoring Work Plan*, submitted by Atlantic Richfield Company, dated December 21, 2004, Anaconda Copper Mine Site, Yerington, Nevada

Dear Messrs. Normane and Ferriter:

This letter is in response to Atlantic Richfield Company's (ARC) March 10, 2005 response regarding the United States Environmental Protection Agency's (EPA) February 24, 2005 letter: Revised Review Comments on *Draft Air Quality Monitoring Work Plan*, submitted by Atlantic Richfield Company, dated December 21, 2004, Anaconda Copper Mine Site, Yerington, Nevada. As was requested in our April 21, 2005 compliance conference for the Anaconda/Yerington Mine Site (Site) Unilateral Administrative Order (UAO) for Initial Response Activities, CERCLA Docket No. 9-2005-0011 we are providing this clarification of EPA's position regarding the determination of ambient levels in air at the Site.

As was noted in the March 10, 2005 response ARC disagrees with **EPA's General Comment 4 – Degradation of air quality**; specifically in regards to the determination of ambient levels in air. The comment reads as follows:

"*Unfortunately, determination of "background" levels may not be realistic. The mine has been in place since the 70's and all air samples may have been impacted from the site.*"

ARC goes on to state that it was their understanding that EPA and ARC representatives collectively agreed that the air monitors around the mine perimeter would serve as background locations and would be used to assess whether the mine was contributing, either additional particulates, or contaminants to the air and impacting air quality.

EPA still feels that to determine "true background", i.e. that which predated any mining activity is not realistic taking into account past activities, both known and unknown. From previous technical discussions it appeared that some reviewers thought that perhaps such "true background" levels could be determined. This position is based on the definition of *background* contained in EPA's guidance document "Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites" EPA 540-R-01-003, OSWER 9285.7-41, September 2002. In that document *background* is defined as:

"... substances or locations that are not influenced by releases from a site, and are usually described as naturally occurring or anthropogenic.

1) **Naturally Occurring – substances present in the environment in forms that have not been influenced by human activity; and**
2) **Anthropogenic – natural and human-made substances present in the environment as a result of human activities (not specifically related to the CERCLA site in question)**

Some chemicals may be present in background as a result of both natural and man-made conditions (such as naturally occurring arsenic and arsenic from pesticide applications or smelting operations)

CERCLA site activity (such as waste disposal practices) may cause naturally occurring substances to be released into other environmental media or chemically transformed. The concentrations of the released naturally occurring substances may not be considered as representative of natural background according to CERCLA 104 (a)(3)(A)."

In a site as complex as this, the determination of an appropriate background reference location can be extremely complicated. However, EPA does agree with ARC that it is possible to determine naturally occurring background levels (or ambient levels) for the air at the site which would be representative, technically defensible and scientifically valid.

EPA feels that the current network of six air monitoring stations located on the site perimeter will most likely allow us to determine representative upwind and downwind locations. However to conduct the necessary analysis and determine which locations are representative of upwind and downwind usually requires the collection of air monitoring and meteorological data for a period of time, usually at least 3 years. The normal process for such a determination consists of a side by side comparison of the air monitoring data from each air monitoring location to the other air monitoring locations looking for discrepancies in the data, PM 10, metals and radiological constituents. That analysis would then be compared with the distribution of the particulates and contaminants to create a sort of "contaminant windrose" for the Site. That "contaminant windrose" could then be compared with the meteorological data to evaluate which locations best represent upwind and downwind.

Although, as noted above, in many cases at least 3 years of data is needed for such a determination of the ambient levels in the air, it would be possible to assess the data after one

year to determine what levels of correlation are exhibited between the air monitoring locations. At that time if some of the locations exhibit significant correlations the monitoring approach could be revisited.

Those issues still outstanding which were noted in our February 24, 2005 letter regarding the *Draft Air Quality Monitoring Work Plan*, submitted by ARC, dated December 21, 2004 will need to be addressed prior to final approval of that plan. Those issues will be discussed and provided under separate cover, at a later time.

If you have any questions in regards to the comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Craig Smith, BLM
Art Gravenstein, NDEP

Atlantic Richfield Company

Daniel J. Ferriter
Environmental Business Manager

6 Centerpointe Drive
Room LPR 6-164
La Palma, CA 90623
Phone: (714) 228-6783
Fax: (714) 228-6749
E-Mail: ferritd1@bp.com

May 24, 2005

Mr. James Sickles
Project Manager
U.S. Environmental Protection Agency Region 9
75 Hawthorne Street, SFD-8-2
San Francisco, California 94105

Subject: Response to Comments on the Draft Air Quality Monitoring Work Plan

Dear Mr. Sickles:

The Atlantic Richfield Company (ARC) appreciates this opportunity to respond to U.S. Environmental Protection Agency (EPA) and other comments on the Draft Air Quality Monitoring Work Plan dated December 21, 2004. These responses are based on: 1) the EPA comment letter dated February 24, 2005; 2) ARC's March 10, 2005 letter to EPA; and 3) subsequent discussions with EPA and EPA's contractor, Tetra Tech EM Inc. Each comment is reproduced, followed by ARC's response in italicized font.

Jim Sickles, EPA Letter Dated February 24, 2005

General Comments

Comment 1. Plan lacks specific details on how monitoring will be performed and how DQO's will be achieved. Potential DQOs for the work are as follows:

1) First "cut" assessment of what is migrating off-site and what ambient concentrations.
2) Impact on local populations and potential receptors.
3) Human health and eco risk assessment.
4) Degradation of air quality.

Response to Comment 1. The four DQOs listed below have been added to Section 1.0 Introduction of the Work Plan.

1) *Determine a "first cut" assessment of what is migrating off-site and what is in ambient air.*
2) *Determine the impact of fugitive dust on local populations and potential receptors.*
3) *Provide analytical data necessary to support human health and ecological risk assessment.*
4) *Determine the degradation from fugitive dust to ambient air quality.*

Comment 2. No information is provided on meteorological monitoring and how this will be performed. EPA performed an audit on Jan 12-13, 2005 of the meteorological and air monitoring at the site as part of the start up. Copies have been provided electronically to the technical team. EPA will conduct quarterly audits on hi-vol and TSP samplers and 6-month audits on meteorological tower. All audits will follow EPA guidelines and accuracy criteria.

Response to Comment 2. A new Section 3.2 Meteorological Monitoring has been added to Section 3.0 Sampling Specifications. Section 3.2 would contain the following text: "Meteorological monitoring will be conducted during each quarterly reporting period by the meteorological station adjacent to PW06. The following parameters will be measured: precipitation in inches; temperature degrees Fahrenheit (ºF); relative humidity in percent; barometric pressure in milliBars (mBar); solar radiation in kiloJoules per square meter (kJ/m2); wind speed in miles per hour (mph); and wind direction in degrees."

In addition, the text in Section 5.4 Independent Audit has been changed to: "The EPA will conduct quarterly audits on the high volume air samplers and semi-annual audits on the meteorological station. All audits will follow EPA guidelines and accuracy criteria."

A new subsection 5.10 Data Completeness has been added to Section 5.0 Quality Assurance Plan: "Program goals for data completeness consist of quarterly valid data retrieval of 90 percent for meteorological parameters and 80 percent for air quality parameters. The completeness goal for air quality parameters is to be tracked for each of the six monitoring locations (i.e., AM-1 through AM-6). If one or more of the high volume air samplers malfunctions during a sampling event such that valid data cannot be retrieved, then a makeup run can be conducted on the immediately following NAAQS 3-day schedule event."

Comment 3. Meteorological data will be critical in establishing upwind/downwind samples as well as providing possible AQ modeling input data (if needed). Therefore meteorological data will be a key component of this sampling plan.

Response to Comment 3. ARC agrees with this comment -- meteorological monitoring is a major component of the air monitoring program.

Comment 4. To better assess the potential migration of contaminants off site and assess the impact on local populations and potential receptors a comparison of TSP and PM10 would be a prudent. To only use the TSP it could be overly conservative if used to assess risk. Therefore it seems prudent to do gravimetric, metals and radiological analysis on both the PM10 and TSP, initially, to provide data for potential risk assessment purposes. A comparison of the two datasets over a representative time period could be conducted to evaluate the percentage of TSP that is the PM10 size range. Such an analysis could then be used to modify the subsequent sampling to improve cost effectiveness by using one or the other sample media.

Response to Comment 4. ARC proposes to conduct the gravimetric, metals and radiological analysis on both the PM_{10} and TSP for a period of six months (approximately 30 sampling events) beginning June 1, 2005 to provide a statistically significant data set for conducting a correlation analysis.

Comment 5. Table No. 4 Proposed Analytical Methods, should be modified to add the following analytes; aluminum, beryllium, calcium, cobalt, copper, iron, manganese, magnesium, molybdenum, nickel, sodium, vanadium, zinc and sulfates. The original list of analytes proposed by the EPA were based on the assessment following a RCRA assessment which comprised those metals with the addition of potential radiological contaminants resulting from the recent radiological screening level assessment by BLM on the site. This expanded list is based on evaluation of the past site inspections and sampling on the site indicated a more extensive list of potential contaminants of concern.

Response to Comment 5. The list of analytes has been expanded to include the additional metals. However, we request that the EPA provide a risk-based concentration for each of the additional metals for comparison with site results as soon as possible. After the risk-based criteria are provided by EPA, ARC will beginning analyzing filters for additional constituents. If there is no risk-based concentration available for a particular metal, ARC proposes to eliminate that metal from the analyte list.

Specific Comments

Comment 6. Introduction should include information and detail on additional air quality analysis i.e. PM10, TSP, metals, radiological, and sample frequency.

Response to Comment 6. The following text has been added to Section 1.0 Introduction: "PM_{10} gravimetric analysis will be conducted for one year. During six months of the monitoring program, selected metals and radiological species will be analyzed from both PM_{10} and TSP filters. The monitoring will occur every sixth day according to the NAAQS schedule."

Comment 7. Introduction, 2nd sentence would be more appropriately addressed by, "Fugitive dust emissions from the mine will be evaluated using EPA-approved PM10 and TSP sample collection methods at six strategically-placed air monitoring stations located near the site perimeter."

Response to Comment 7. The suggested revision to the second sentence of Section 1.0 Introduction has been incorporated into the revised Work Plan.

Comment 8. Objectives of sampling should be identified and explain how these objectives will be met.

Response to Comment 8. Data quality objectives have been added to Section 1.0 Introduction as described in the response to general comments above.

Comment 9. A discussion should be included to provide detail on specified monitors. Do they have EPA Federal Reference Method (FRM) or equivalent designation/approval?

Response to Comment 9. The high volume air samplers purchased for monitoring at the Yerington Mine have EPA Federal Reference Method approval. The first sentence of Section 2.1 High Volume Air Sampling Equipment reads: "Tisch Environmental, Inc. manufactured the

high volume air sampling equipment to be used in this program and has received approval from the EPA under Federal Reference Method Number RFPS-0202-141."

Comment 10. Please include section on meteorological tower:

- Equipment specifications and accuracy/threshold values
- Quality assurance (calibration) parameters (what level of tolerance is allowed)
- Operational parameters (frequency of site visits, data downloading, data screening, etc.)

Response to Comment 10. A new Section 3.2 Meteorological Monitoring has been added to Section 3.0 Sampling Specifications, as described in the response to general comments above. A new appendix has been added that contains manufacturer specifications for meteorological equipment. The fourth sentence of Section 6.0 Data Management has been changed to: "Meteorological data will be downloaded and evaluated a minimum of every two weeks."

Comment 11: Meteorological data should be downloaded and evaluated a minimum of every 2 weeks (not every 3 weeks).

Response to Comment 11. Field procedures have been modified so that meteorological data will be downloaded and evaluated a minimum of every two weeks.

Comment 12. Specify and provide text that is consistent with 40 CFR Appendix J

Response to Comment 12. The following sentence was added to Section 3.0 Sampling Specifications: Sampling will be conducted in accordance with 40 CFR, Chapter 1, Appendix J to Part 50, Reference Method for the Determination of Particulate Matter as PM-10 in the Atmosphere."

Comment 13. Table No. 4 Proposed Analytical Methods, should be modified to add the following analytes; aluminum, beryllium, calcium, cobalt, copper, iron, manganese, magnesium, molybdenum, nickel, sodium, vanadium, zinc and sulfates. These analytes would be added to the current list of PM10, thorium radioisotopes (228, 230, 232), radium 226, radium 228, gross alpha, gross beta, uranium radioisotopes (234, 235, 238), arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

Response to Comment 13. The list of analytes has been modified as indicated except for sulfates. A cursory check with laboratories that are proficient in analyzing air samples revealed that sulfates have not previously been analyzed on either a PM_{10} or TSP filter. A portion of the filter could be leached with deionized water and the leachate could be analyzed for soluble sulfates. There may be a significant portion of the total sulfates that are insoluble and that concentration would not be reported.

Most importantly, however, is that taking an additional portion of the filter for soluble sulfate analysis will result in less available filter for other analyses (e.g., radiological species) which results in elevating the reporting limits for those analyses. ARC recommends excluding the sulfate analysis at this time in the air monitoring program. For the additional metals, significant

concentration of certain cations (e.g., magnesium, calcium, and sodium) may be entrained in the fiber material itself. The presence of some metals in the sampling media will result in elevating the reporting limit for specific metals.

Comment 14. Uranium analyses should provide information on soluble and insoluble fractions of uranium.

Response to Comment 14. There are numerous approaches to soluble fractions of uranium with various leaching and digestion processes. This level of detail for a specific analyte is not warranted at this phase of the air monitoring program, which is focused on identification of general classes of airborne contaminants of concern. ARC recommends analyzing for the uranium radioisotopes (234, 235, 238) originally agreed to by the EPA.

Comment 15. Please provide details on QAPP and copies of equipment manufacturer SOPs.

Response to Comment 15. The full reference for the QAPP has been added to Section 5.0 Quality Assurance Plan. The following equipment manufacturer SOPs were incorporated as appendices:

- *Appendix D. SOP – Operation of PM_{10} High Volume Air Sampler*
- *Appendix E. SOP – Operation of TSP High Volume Air Sampler*
- *Appendix F. SOP – Calibration of PM_{10} and TSP High Volume Air Samplers*
- *Appendix G. SOP – Maintenance of PM_{10} and TSP High Volume Air Samplers*
- *Appendix H. SOP – Maintenance of Meteorological Station*

Comment 16. Please specify how quarterly reports will be generated. Quarterly reports will need to include the following information (taken from TOC of example calibration report).

Response to Comment 16. A description of how the quarterly report will be generated was incorporated in Section 7.0 Reporting. The suggested outline for the calibration report was incorporated in Section 5.2.3 Calibration Report of the revised Work Plan.

Comment 17. Include detail that demonstrates calibrations for both have been performed in accordance with manufacturer specifications and/or EPA guidance.

Response to Comment 17. The first sentence of Section 5.2 Equipment Calibration has been changed to: "Equipment calibration for the high volume air samplers and met station will be performed in accordance with manufacturer specifications and/or EPA guidance as described below."

Comment 18. Specify how data will be validated. For example, meteorological data is usually validated using the following criteria.

Response to Comment 18. The validation criteria for meteorological data were incorporated as Appendix L.

Comment 19. Electronic copies of data (in Excel spreadsheet of ASCII format) should be provided with the quarterly reports.

Response to Comment 19. Electronic copies of data (in Excel spreadsheet of ASCII format) will be provided with the quarterly reports.

Comment 20. Electronic copies of data (in Excel spreadsheet or ASCII format) should be provided with the annual report.

Response to Comment 20. Electronic copies of data (in Excel spreadsheet of ASCII format) will be provided with the annual report.

Comment 21. Figure 1 should include the location of the meteorological tower.

Response to Comment 21. Figure 1 has been changed to include the location of the meteorological tower.

Comment 22. To reflect the modified list of analytes and detection limits discussed above the table included in this appendix should be revised to reflect the values below:

Response to Comment 22. The table has been revised as requested.

Gail E. Jones, EPA, Letter Dated February 2, 2005

Comment 1. [Section 2.0, Monitoring Locations and Equipment; Figure 1, Air Quality Monitoring Locations] Section 2.0 describes where the meteorological station is located. It is recommended that this be included on Figure 1.

Response to Comment 1. Figure 1 has been changed to include the location of the meteorological tower.

Comment 2. [Section 2.0, Monitoring Locations and Equipment; Section 4.0, Proposed Analytical Methods] The rationale for the sampling locations and analyses should be provided in the plan. It is the reviewer's understanding that the monitoring locations and the analytical parameters and methods were recommended by EPA. If this is so, it should be stated in the plan. (Section 4.0 states that the actual parameters and analytical methods are being negotiated and will be finalized in a separate letter addendum.)

Response to Comment 2. The following text has been added to Section 2.0 Monitoring Locations and Equipment: "The monitoring locations were agreed upon by EPA and Atlantic

Richfield Company during a site visit on October 18, 2004." The analyte list has been finalized. Please see the response to comments to the EPA letter dated February 24, 2005 regarding the analyte list.

Comment 3. [Section 2.2. Meteorological Station] This section states that the data logger will write data "every 10 minutes and at 24 hours." It is unclear what this means. Is the data logger writing summary data at 24 hours? More details are needed concerning the data collection procedures.

Response to Comment 3. On January 13, 2005, the EPA's representative, Tetra Tech EM Inc., changed the frequency of meteorological data recording to every 15 minutes. The second sentence of Section 2.2 has been changed to: "The data logger attached to the instruments is currently programmed to sample every 2 seconds and record data every 15 minutes."

An additional sentence has been added to Section 2.2: "At 24-hour intervals, the data logger calculates and records summary data (e.g., sum of precipitation readings) for the previous 24 hours."

Comment 4. [Section 5.5, Field QC Samples] This section states that an equipment blank will be collected by placing the filter in the sample holder, but nor operating the sampler. The filter will then be replaced into the protective sleeve and returned to the laboratory. It is unclear how this constitutes an equipment blank. This description sounds more like a field blank. This should be clarified. (Note: The Office of Air Quality Planning and Standards (OAQPS) also defines this as a field blank.)

Response to Comment 4. All references to equipment blank have been changed to field blank.

Comment 5. [Appendix I, Sampling and Analysis Plan] The column headings under "Field QC Samples" appear to be Dup., FB, and TB. However, Section 5.5 describes duplicates, trip blanks and equipment blanks. This inconsistency should be corrected. (See Concern 4 above.)

Response to Comment 5. The table and corresponding text have been corrected.

Comment 6. It is unclear why two or three blanks will be collected in some sampling events. Given the small number of samples to be collected during each round of sampling, it would seem that one blank, either a field or trip blank, should be sufficient. A rationale for collecting more than one blank should be provided.

Response to Comment 6. The trip and field blanks were assigned randomly. The Sampling and Analysis Plan has been changed so that any one event has no more than one trip blank and no more than one field blank.

Comment 7. [Section 2.0, Monitoring Locations and Equipment] Several subsections appear to be mis-numbered. This should be corrected.

Response to Comment 7. The section numbering has been corrected.

Robert D. Williams, US Dept. of Interior, Letter Dated February 2, 2005

Comment 1. Degraded air quality, including the presence of various metals and trace elements, has the potential to adversely affect ecological receptors in the vicinity of the Yerington Mine. In Table 4, page 7, the list of constituents to be analyzed from the air samples collected near the mine does not include beryllium, copper, and zinc. Previous data from this site indicated that the mine may be a source for these metals. Therefore, we recommended that these metals be included in the list to be analyzed or that the Atlantic Richfield Company provides justification for their exclusion.

Response to Comment 1. Beryllium, copper, and zinc have been added to the list of metals to be analyzed.

Yerington Paiute Tribe, Letter Dated February 9, 2005

Comment 1. The plan should state timing and conditions under which the data will be available. That is, who will have access to the data and when. We suggest that all data (in Excel format) be regularly posted on the internet. Questionable data may be flagged and annotated, but no data should be invalidated or otherwise not reported.

Response to Comment 1. The last sentence of the quarterly report text in Section 7.0 Reporting has been changed to: "The quarterly report will be submitted final to the EPA within two months following the end of the subject quarter." The last sentence of the annual report text in Section 7.0 Reporting has been changed to: "The annual report will be submitted draft final to the EPA for comment within two months following the end of the subject year. Comments on the draft final report will be incorporated and the annual report will be submitted final to the EPA within one month of receiving comments." An electronic version of the analytical laboratory data and meteorological data will be provided as an appendix to the quarterly and annual reports. The data will be in Microsoft Excel format on a compact disc. Please work with the EPA on how it will be provided to the public. The draft Work Plan described how meteorological data will be validated and flagged; all data will be reported.

Comment 2. The Plan should include standard operating procedures (SOPs) for meteorological monitoring at stations located on the tailings.

Response to Comment 2. A new Section 3.2 Meteorological Monitoring has been added to Section 3.0 Sampling Specifications as described in the response to general comments above. A new appendix has been added that contains manufacturer specifications for meteorological equipment. The fourth sentence of Section 6.0 Data Management has been changed to: "Meteorological data will be downloaded and evaluated a minimum of every two weeks."

Comment 3. The usefulness of the data would be significantly enhanced if hourly wind speed and direction data were available at each monitoring site. Such monitors could be added for a nominal cost, particularly since AC power is already available at the sites to power the high volume speakers.

Response to Comment 3. The EPA and ARC agreed that meteorological monitoring would be accomplished at the one existing station at the site.

Comment 4. An independent audit of all monitoring work should be conducted early in the program by some qualified entity, possible by EPA. The audit should cover the on-site meteorological monitoring stations.

Response to Comment 4. An EPA audit of the high volume air samplers and meteorological station was conducted on January 12, 2005. The audit was documented in the Air Quality and Meteorological Oversight and Audit Summary prepared by Tetra Tech EM Inc. on January 25, 2005 and will be included as an appendix to the first quarterly report.

Comment 5. The plan should define audit control limits and should establish the corrective actions to be taken if any audit plans and the addressing of the findings of the audits should be discussed at the Stakeholders meetings.

Response to Comment 5. The EPA representative conducted an audit on January 12, 2005 that consisted of: 1) oversight and evaluation of the high volume air sampler calibrations; and 2) prevention of Significant Deterioration (PSD) audit and evaluation of the meteorological station. The audit was documented in the Air Quality and Meteorological Monitoring Oversight and Audit Summary prepared by Tetra Tech EM Inc. on January 25, 2005 and included in the first quarter report. Audit control limits and corrective actions are described in this report.

Comment 6. The Plan should include SOPs for the laboratory doing the sample analyses.

Response to Comment 6. Analytical laboratory SOPs have been included as a new Appendix.

Comment 7. Table 4 in the Draft Plan does not mention analysis methods for fine particulate matter. The EPA reference method should be cited. Analyses for $PM_{2.5}$ would be more useful than analyses for total suspended particulates.

Response to Comment 7. The EPA specified air monitoring only for PM_{10} and TSP. To clarify reference methods, the first paragraph of Section 3.0 Sampling Specifications has been changed to: "PM_{10} sampling will be conducted in accordance with 40 CFR, Chapter I, Appendix J to Part 50, Reference Method for the Determination of Particulate Matter as PM-10 in the Atmosphere. TSP monitoring will be conducted according to 40 CFR, Chapter I, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method)."

Comment 8. The work plan does not propose analyzing samples for some substances for which RELs or cancer risk potency factors have been established. In addition, the limits of detection (LOD) proposed for some elements are substantially higher than the RELs and higher than concentrations that pose high (100 more cancers per million) cancer risks for some elements. Finally, the proposed LODs are substantially higher than the ambient concentrations of some elements in the surrounding area.

Response to Comment 8. The analyte list has been expanded, as described above. Please see the response to comments to the EPA letter dated February 24, 2005 regarding the analyte list. The majority of practical quantitation limits (PQLs) and method detection limits (MDLs) for the analytes to be analyzed will be at or below risk-based levels. The PQLs/MDLs for the expanded analyte list have been included in Appendix K Validation Criteria for Air Monitoring Data.

Comment 9. One objective of this monitoring program is to ascertain whether the tailing cause or contribute to air quality degradation in surrounding areas. To do this, it must be determined whether the air over the tailings is more polluted than surrounding air. To determine this, the samples from this monitoring program need to establish concentrations of various substances over the tailings that are comparable to ambient concentrations measured in nearby areas. Accordingly, we recommend that the LOD of the analysis for each substance measured under this program be no greater than about one-half of the prevailing, ambient concentration of that substance in surrounding areas. Because surrounding concentrations of beryllium measured to date appear to near zero, we recommend that the LOD for beryllium be one-half of the REL for that element. The table on the following page summarizes our recommendations regarding LODs.

Response to Comment 9. Please see the response to the previous comment. As a side note, ARC is not aware of the beryllium concentrations measured to date. ARC requests that the air monitoring data collected by the tribe be shared with EPA and ARC

Comment 10. X-ray fluorescence analyses (XRF) would provide the recommended LODs for all elements except for beryllium as well as providing data on a number of additional elements. Inductively coupled plasma (ICP) analyses could be used for beryllium in conjunction with XRF for concentrations of other elements, or ICP could be used for all mineral analyses.

Response to Comment 10. The majority of analytes will be analyzed by either ICP or ICP/MS and the PQLs/MDLs will be at or below risk-based levels.

Comment 11. The Draft Plan states that results of the monitoring program will be evaluated in the context of the national ambient air quality standards (NAAQS). The only contaminates subject to this proposed program for which NAAQS exist are fine particulate matter ($PM_{2.5}$ and PM_{10}). Monitored concentrations of all substances should be used for health risk assessments such as those provided for by reference exposure levels (RELs) and cancer risk potency factors established by the California Office of Environmental Health Hazard Assessment (OEHHA).

Response to Comment 11. The results for analyses other than PM_{10} will be compared to risk-based levels provided by the EPA.

Comment 12. An integrated assessment of human health effects resulting from the exposure to ionizing radiation on the tailings should be conducted instead of (or, perhaps in addition to) assessments of radioactivity of individual elements. Such an assessment should address REM (roentgen equivalent man) exposures.

Response to Comment 12. The list of analytes and scope of the monitoring program is limited to what the EPA has proposed.

Please contact me at 714-228-6783 at your earliest convenience to schedule a meeting to discuss these issues and the implementation schedule.

Sincerely,

Chuck Zimmerman for

Dan Ferriter, P.E.
Environmental Business Manager

cc: Mark Brekhus/Atlantic Richfield
Todd Normane/Legal
Art Gravenstein/NDEP
Craig Smith/BLM
Tom Olsen/BLM
Chuck Zimmerman/Brown & Caldwell

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

July 1, 2005

Via Email and U.S. Mail

Daniel J. Ferriter
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
Room LPR 6-164
La Palma, CA 90623

Subject: ***Response to Comments on the Draft Air Quality Monitoring Work Plan***, dated May 24, 2005
Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Ferriter:

The United States Environmental Protection Agency (EPA) has reviewed the *Response to Comments on the Draft Air Quality Monitoring Work Plan*, dated May 24, 2005, submitted by Atlantic Richfield Company (ARC) for the Anaconda Copper Mine Site, in Yerington, Nevada. The responses were to comments from EPA, the Yerington Paiute Tribe (YPT), and the Department of the Interior on the specifically noted documents: (1) *Draft Air Quality Monitoring Work Plan for the Yerington Mine Site*, dated December 21, 2004; (2) EPA's Revised Review Comments on *Draft Air Quality Monitoring Work Plan for the Yerington Mine Site*, dated February 24, 2005; (3) ARC's March 10, 2005 letter to EPA regarding EPA's February 24, 2005 letter; and (3) subsequent discussions held between EPA and EPA's contractor Tetra Tech EM Inc. (TtEMI).

The subject of the air quality monitoring work plan has been the subject of lengthy discussion and correspondence, in addition to those items noted above, ever since ambient air monitoring was first requested in the September 1, 2004 Memorandum of Understanding (MOU) Agencies (EPA, the Bureau of Land Management (BLM), and the Nevada Division of Environmental Protection (NDEP)) Action Plan for the Yerington Mine Site. The purpose of that action plan was to address potential migration from the site of radiologically contaminated fugitive which was of particular concern after the July 2003 discovery of Anaconda archival documents that disclosed the presence of uranium at the mine site in 1976 and evaluated the recovery of uranium as a byproduct of the copper mining processing.

On September 16, 2004 ARC proposed a meeting to discuss the scope of such air quality monitoring at the site. On September 28, 2004, EPA provided (by electronic mail) maps with proposed air monitoring locations. Subsequently on October 13, 2004, EPA provided ARC a proposed air sampling protocol outline and supporting table with analytes and detection limits. On October 18, 2004, EPA, ARC, BLM, and NDEP met at the site to evaluate EPA's proposed air monitoring locations and to discuss the proposed analytes and sampling protocols. Brown and Caldwell submitted on behalf of ARC a draft air quality monitoring plan on November 2, 2004. On November 23, 2004, TtEMI provided comments on the November 2, 2004 draft air monitoring plan that were incorporated into ARC's December 21, 2004, *Draft Air Quality Monitoring Work Plan for the Yerington Mine Site.*

On January 18, 2005, EPA conditionally approved the December 21, 2004 *Draft Air Quality Monitoring Work Plan for the Yerington Mine Site* based on the need to begin air sampling as soon as possible and because EPA's preliminary review did not indicate any major concerns regarding the sampling locations or protocols. In regard to the proposed analytical suite, EPA assumed that the sample filters collected during the review process would be archived, and those sample filters that did not exceed a holding time could be sampled at a later time. On January 20, 2005, ARC responded to the January 18th conditional approval and stated that it would begin sampling and would save the sample filters to allow analysis at a later date. The Yerington Technical Working Group was given an opportunity to comment on the proposal, and on February 14, 2005, EPA provided review comments incorporating comments from the YPT and NFWS. Those comments were discussed at the February 15, 2005 Yerington Technical Working Group meeting. On February 24, 2005 EPA provided a revision to the February 14, 2005 review comments that reflect the discussions held at the February 15, 2005 Yerington Technical Working Group meeting. On March 10, 2005, ARC provided an initial response to EPA's February 24, 2005 revised review comments.

On March 31, 2005, EPA issued to ARC a Unilateral Administrative Order (UAO) for Initial Response Activities, CERCLA Docket No. 9-2005-0011. As was requested in the April 21, 2005 compliance conference in accordance with the UAO, on May 6, 2005, EPA provided a clarification of EPA's position regarding the determination of ambient levels in air at the site. On May 24, 2005, ARC provided its response to comments on the *Draft Air Quality Monitoring Work Plan*, which is the focus of this letter.

Throughout those discussions and correspondence the dominant issues were in regards to the analytical suite and the need to assess the presence of potential contaminants of concern from the site that may be present in fugitive dust in addition to the amount of particulates present. As can be seen in these comments on ARC's response to comments, those concerns remain and are exacerbated by the time that has passed since ARC was notified regarding the need for ambient air monitoring nine months ago, on September 1, 2004

EPA's comments are presented as general comments and specific comments as follows:

<u>General Comments</u>

1. Response to Comment 4 reads, "*ARC proposes to conduct gravimetric, metals and radiological analysis both PM 10 and TSP for a period of six months (approximately 30*

sampling events) beginning June 1, 2005, to provide a statistically significant data set for conducting a correlation analysis," which illustrates that the duration of the sampling period is still unresolved.

As was stated in EPA's May 6, 2005 letter regarding ambient air levels and air monitoring, to conduct the necessary analysis and determine which locations are representative of upwind and downwind usually requires the collection of air monitoring and meteorological data for a period of time, usually at least 3 years. That process involves the side by side comparison of the air monitoring data from each air monitoring location to the other air monitoring locations looking for discrepancies in the data, PM 10, metals and radiological constituents. That analysis would then be compared with the distribution of the particulates and contaminants to create a sort of "contaminant windrose" for the Site. That "contaminant windrose" could then be compared with the meteorological data to evaluate which locations best represent upwind and downwind. In many cases at least 3 years of data is needed for ambient air level determinations; however it would be possible to assess the data after one year to determine what levels of correlation are exhibited between the air monitoring locations. At that time if some of the locations exhibit significant correlations the monitoring approach could be revisited.

2. Response to Comment 5 reads, "*The list of analytes has been expanded to include the additional metals. However, we request that the EPA provide a risk-based concentration for each of the additional metals for comparison with site results as soon as possible. After the risk-based criteria are provided by EPA, ARC will begin analyzing filters from additional constituents, If there is no risk-based concentration available for a particular metal, ARC proposes to eliminate that metal from the analyte list,*" which indicates that the analytical suite is still unresolved.

To adequately assess the nature and extent of contamination at the site, it is necessary to sample all of the contaminants of potential concern (COPCs). This assessment will need to be completed and the risks subsequently assessed to determine what mitigation or risk management may be required. To eliminate an analyte now due the lack of site specific risk based criteria being currently available would not be prudent. The risk assessment involves the determination of cumulative risk for a site, it's media, and transport pathways, after which the ambient level risk is assessed to determine the incremental risks. Therefore, all the COPCs presently must be sampled resulting in a list of analytes is as follows:

PM 10, TSP, aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, magnesium, mercury, molybdenum, nickel, selenium, silver, sodium, vanadium, and zinc, along with radiological analytes comprised of gross alpha, gross beta, radium 226, radium 228, thorium radioisotopes (228,230,232) and uranium radioisotopes (234, 235, 238).

Specific Comments

1. Specific Response to Comment 6 – ARC proposes to sample PM10 gravimetric analysis for one year and sample for selected metals and radiological species for six months from both PM10 and TSP filters. Please note EPA's general comment No. 1 above.

2. Specific Response to Comment 13. – ARC proposes to exclude sulfate analysis at this time due laboratory concerns regarding the analysis for sulfates. Based on additional discussion

between EPA's and ARC's contractors there does appear to be legitimate concern regarding the large amount of filter material needed to conduct the analysis which in turn would raise the method detection limits for the other analytes. Therefore EPA concurs with ARC's proposed elimination of the sulfate analysis at this time.

3. Specific Response to Comment 14. – ARC recommends delaying consideration regarding the soluble and insoluble fractions of uranium due to the numerous approaches to soluble fractions with various leaching and digestion processes and recommends only analyzing for the uranium isotopes (234,235,238) as originally proposed. Even though EPA feels that determination of the soluble and insoluble fractions is worth evaluating during this phase of air sampling is worth consideration we concur with ARC's recommendation to delay such analysis until a later phase, if needed.

Beyond those general and specific response to comments discussed above EPA concurs with ARC's response to comments.

Based the continuing need to assess the potential risk of migration of contaminants of potential concern, in conjunction with the extensive previous discussion regarding the appropriate technical approach to be used, EPA is requiring ARC to modify the work plan and implement the described work as soon as possible, in accordance with the UAO. As per Section XIII , paragraph 37 of the UAO, ARC must notify EPA in writing within 7 days via facsimile to 415-947- 3528 whether it intends to modify the work plan and to provide a schedule for implementation of the sampling.

If you have any questions in regards to the comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Craig Smith, BLM
Art Gravenstein, NDEP
Duane Masters, Sr. Yerington Paiute Tribe
Stan Wiemeyer, USFWS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

July 22, 2005

Via Email and U.S. Mail

Daniel J. Ferriter
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
Room LPR 6-164
La Palma, CA 90623

Subject: **Delays for Required Responses under Anaconda/Yerington Mine Site Unilateral Administrative Order for Initial Response Activities, EPA Docket No. 9-2005-0011**
Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Ferriter:

The United States Environmental Protection Agency (EPA) has not received Atlantic Richfield Company's (ARC's) notification in writing whether it intends to modify the work plan and to provide a schedule for implementation of sampling as required in EPA's July 1, 2005 letter regarding: *Response to Comments on the Draft Air Quality Monitoring Work Plan, dated May 24, 2005, Anaconda Copper Mine Site, Yerington, Nevada*

As per Section VI, paragraph 15(c) of the Anaconda/Yerington Mine Site Unilateral Administrative Order (UAO) for Initial Response Activities, CERCLA Docket No. 9-2005-0011, ARC is required to "Prepare a plan for ambient air monitoring of radiological contaminants in the process area of the Site and at the Site perimeter." The UAO states that the requirement could be satisfied through the existing "Draft Air Quality Monitoring Work Plan for the Yerington Mine Site," dated December 21, 2004, as conditionally approved on January 18, 2005, with the qualification that the plan be revised to address newly discovered or changed Site conditions. As you know ARC submitted *Response to Comments on the Draft Air Quality Monitoring Work Plan, dated May 24, 2005, Anaconda Copper Mine Site, Yerington, Nevada* in partial fulfillment of the requirement.

In EPA's July 1, 2005 letter, ARC was directed to provide notification in writing within 7 days via facsimile as to whether it intended to modify the work plan and provide a schedule for the implementation of the sampling. Unfortunately due to continuing mechanical problems with the facsimile machine serving the telephone number provided in the July 1st letter, on July 8, 2005, EPA provided an alternate facsimile machine telephone number in the transmittal electronic mail (e-mail) accompanying EPA's Comments on the Draft Site Security Work Plan for the Yerington Mine Site, dated June 1, 2005.

Subsequently on July 13, 2005, EPA transmitted an e-mail to ARC inquiring into the status of the response regarding the July 1, 2005 letter. On July 13, 2005, a voice message was left on your office phone reiterating the request as to the status of ARC's response to the July 1, 2005 letter. On July 17, 2005, EPA received an e-mail response that you had been out of the office but had received the July 1, 2005 letter and would look at it as soon as you returned to the office on July 19, 2005, and that you would respond as soon as possible. By the date of this letter no response has been received.

As per Section XIV, paragraph 50 "Any delay in the performance of any requirement of this UAO that, in EPA's sole judgment and discretion, is not properly justified by Respondent under the terms of this Section shall be considered a violation of this Order." Also in paragraph 51 it states, "Respondent shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone to the EPA RPM within twenty-four (24) hours after Respondent first knew or should have known that a delay might occur. Respondent shall adopt all reasonable measures to avoid or minimize any such delay. Within three (3) days after notifying EPA by telephone, the Respondent shall provide written notification fully describing the nature of the delay, any justification for delay, any reason why the Respondent should not be held strictly accountable for failing to comply with any relevant requirements of this Order, the measures planned and taken to minimize the delay, and a schedule for implementing the measures that will be taken to mitigate the effect of the delay."

Finally in paragraph 52, the UAO reads "If Respondent is unable to perform any activity or submit any document within the time required under this Order, the Respondent may, prior to the expiration of the time, request an extension of time in writing. The extension request shall include a justification for the delay. The submission of an extension request shall not itself affect or extend the time to perform any of Respondent's obligations under this Order."

Based on the above cited paragraphs in the UAO, ARC may be in violation of the UAO, and therefore is potentially liable for the penalties pursuant to Section VIII, paragraph 37. To avoid an administrative determination regarding the violation and penalties associated with this violation, ARC must notify EPA within 3 days by close of business on July 25, 2005, via electronic mail, in writing by facsimile to 415-947-3526, or by voice mail to 415-972-3265 as to whether ARC will modify the work plan. Please also provide a schedule for implementation of sampling as required in EPA's July 1, 2005 letter. Additionally an alternate contact should be provided in case you are unavailable to ensure that such communications are addressed as per the UAO.

If you have any questions, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Craig Smith, BLM
Art Gravenstein, NDEP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

August 15, 2005

Via Email and U.S. Mail

Daniel J. Ferriter
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
Room LPR 6-164
La Palma, CA 90623

Subject: Confirmation of Additional Analysis of Archived Air Monitoring Samples Collected from January 28, 2005 through June 1, 2005 Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Ferriter:

The purpose of this letter is to confirm Atlantic Richfield Company's (ARC's) commitment to conduct additional analyses of archived air monitoring samples from the Anaconda Copper Mine Site, in Yerington, Nevada. This understanding is based on your verbal comments, in response to questions from the public, made at the August 3, 2005 Yerington Community meeting.

It is the United States Environmental Protection Agency's (EPA's) understanding that ARC has agreed to analyze the archived filters from the air monitoring conducted from January 28, 2005 through June 1, 2005 for the full suite of analytical parameters implemented beginning June 1, 2005. This additional analysis is for those analytes which have not exceeded the appropriate holding times, unless technical justification can be provided.

ARC must confirm it's commitment to conduct the additional analyses on the archived samples and provide a proposed schedule. The submittal of this data should be expedited and provided as soon as possible. Based on the agreed upon submittal schedule for quarterly air monitoring reports which requires that the data be submitted by the 21st day of the second month after the completion of the sampling, a tentative date for the submittal of the data should be September 26, 2005.

Should ARC be unable to submit the data within the time proposed, ARC may propose an alternate schedule, in writing. The alternate proposal should include the justification for any delay. ARC must provide their commitment and proposed schedule via electronic mail, or in

writing by facsimile to 415-947-3528, or by voice mail to 415-972-3265, by the close of business August 23, 2005.

If you have any questions in regards to the above, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Craig Smith, BLM
Art Gravenstein, NDEP

Atlantic Richfield Company

Roy I. Thun
Environmental Project Manager

6 Centerpointe Drive
LaPalma, CA. 90623-1066
Office: (661) 287-3855
Fax: (661) 222-7349
E-mail: thunri1@bp.com

April 4, 2006

Mr. James Sickles
Project Manager
U.S. Environmental Protection Agency Region 9
75 Hawthorne Street, SFD-8-2
San Francisco, California 94105

Subject: Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site

Dear Mr. Sickles:

The Atlantic Richfield Company (ARC) respectfully requests that the U.S. Environmental Protection Agency ("EPA") approve a modification to the air quality monitoring ("AQM") activities at the Yerington Mine Site, as described in this letter. Our request is based on the analytical results after one year of AQM monitoring at the site and our discussion at the Yerington Technical Work Group Meeting held on February 22, 2006. A more focused monitoring program for the remainder of 2006 is proposed.

Particulate matter, metals, and radiochemicals were measured at the six perimeter monitoring locations specified by EPA, and described in the *Air Quality Monitoring Work Plan for the Yerington Mine Site* ("Work Plan") dated December 19, 2005. The Work Plan specified monitoring every six days for one year according to the NAAQS[1] schedule. Monitoring began with Event 1 on January 28, 2005, and has continued to this date past the final Event 61 on January 23, 2006 specified in the Work Plan. Our evaluation of analytical and meteorological data collected during 2005 supports: 1) the elimination of TSP monitoring; 2) the elimination of any further analysis of specific metals and radiochemicals, as described below; 3) the addition of an analyte that was not evaluated during the 2005 monitoring program; and 4) a modification to the monitoring approach, which would focus on collecting samples during "peak wind speed" events.

<u>Eliminate TSP Monitoring</u>
PM_{10}[2] and TSP[3] are currently measured concurrently at six locations with co-located high volume air samplers as shown on Figure 1. TSP monitoring appears eligible for elimination because: 1) there is an excellent correlation with PM_{10} analytical results; 2) sufficient data have

[1] National Ambient Air Quality Standard
[2] PM_{10} refers to particulate matter with an aerodynamic mean of less than ten micrometers
[3] TSP refers to total suspended particulates

been collected to date for statistical analysis; and 3) PM_{10} is more appropriate for evaluating health risks.

The correlation of PM_{10} concentration with TSP concentration was calculated for each location from Event 22 on June 3, 2005 through Event 57 on December 30, 2005 (Event 22 was the first event where concurrent PM_{10} and TSP data were available). The correlation spreadsheet is provided as Attachment A. The correlation coefficients range from 0.89 to 0.95, indicating an excellent correlation regardless of monitoring location. Therefore, TSP concentrations at a given location could be estimated with good confidence from PM_{10} concentrations for future monitoring events.

With only one exception, 36 TSP analytical results (from Events 22 to 57) were generated during 2005 for each monitoring location for a total of 215 results. An additional 15 results (from Event 58 to 72) have been generated through March 2006 for a new total of 305 results. This total does not include field or laboratory quality control samples. The total quantity of TSP data generated to date is sufficient for statistical calculations.

Prior to 1987, the NAAQS primary standard for particulate matter was measured as TSP. In 1987, the EPA[4] specified that particulate matter would be measured as PM_{10} recognizing that these particles can accumulate in the respiratory system and aggravate health problems. At the Yerington Mine, measurement of PM_{10} is more relevant for evaluating health risks than measurement of TSP, and the analytical results can be compared to a current federal standard.

Eliminate Specific Metals

A total of 21 metals are currently analyzed from PM_{10} and TSP filters. Specific metals appear eligible for elimination from the analytical suite because of infrequent detections, because detections are significantly lower than risk levels, or because they are required nutrients:

- Barium, molybdenum, nickel, and selenium were detected five or fewer times out of 387 samples collected during 2005, as shown on the summary spreadsheet in Attachment B. These metals are infrequently detected in ambient air, and further monitoring of these metals is not warranted.

- Arsenic, chromium, and cobalt have less than five detections, but they have method detection limits (MDLs) that exceed EPA Preliminary Remediation Goals (PRGs). ARC proposes to retain these metals as part of the analytical suite for now, and the laboratory will attempt to achieve lower MDLs.

- The maximum detections of the following metals during 2005 were less than their respective PRGs by at least one order of magnitude: barium, beryllium, copper, iron, lead, mercury, molybdenum, nickel, selenium, silver, vanadium, and zinc (ambient air PRGs[5] are provided for each metal in Attachment B).

[4] United States Environmental Protection Agency
[5] Preliminary Remediation Goals provided by U.S. EPA Region IX

- Calcium, magnesium and sodium can be eliminated because they are U.S. EPA required nutrients, and are not required parameters for health screening.

Eliminate Specific Radiochemicals

A total of ten radiochemicals are currently analyzed from PM_{10} and TSP filters. Specific radiochemicals appear eligible for elimination from the analytical suite because of infrequent detections, or because they are duplicative with other analyses:

- Thorium-228, thorium-232, uranium-234, uranium-235, and uranium-238 were detected five or fewer times out of 317 samples collected during 2005 as shown on the summary spreadsheet in Attachment C. These radiochemicals are infrequently detected in ambient air and continued monitoring of these radiochemicals is not warranted.

- Analysis of gross alpha and gross beta is duplicative since individual radiochemicals (i.e., species of radium, thorium, and uranium) are measured with gross alpha/beta measurement techniques. The individual species data is more useful than a gross measurement that does not provide radiochemical-specific information.

Reduce Monitoring Frequency

Over one year of samples has been collected during 72 events through March 2006. These data are sufficient to determine seasonal variations and perform statistical calculations, risk assessment, and dispersion modeling. ATSDR[6] recommended collecting samples during peak wind events to assess health effects during extreme, short-term conditions. The proposed 2006 schedule would consist of four 24-hour monitoring events to be conducted during peak wind speed events. We recommend that a peak wind speed event be defined as wind speed greater than 15 miles per hour for at least 15 minutes. A combination of local weather forecasts and the meteorological station on the Yerington Mine would be used to determine when a peak wind event is occurring. The PM_{10} high volume air samplers would be turned on to capture the peak wind event. ARC strongly recommends that the current schedule of sampling every six days be terminated.

Revised Monitoring Program

Based on the above information, the revised monitoring program proposed in the following table is recommended for implementation. The following parameters will be analyzed: PM_{10}, aluminum, arsenic, cadmium, chromium, cobalt, manganese, sulfate, radium-226, radium-228, and thorium-230 (ATSDR[7] recommended adding sulfate). The schedule for 2006 consists of four 24-hour PM_{10} high volume air monitoring events to be conducted during peak wind events.

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[6] Agency for Toxic Substances and Disease Registry, 2006. *Health Consultation Public Comment Release Yerington Anaconda Mine Site*. January 23.

[7] Agency for Toxic Substances and Disease Registry, 2006. *Health Consultation Public Comment Release Yerington Anaconda Mine Site*. January 23.

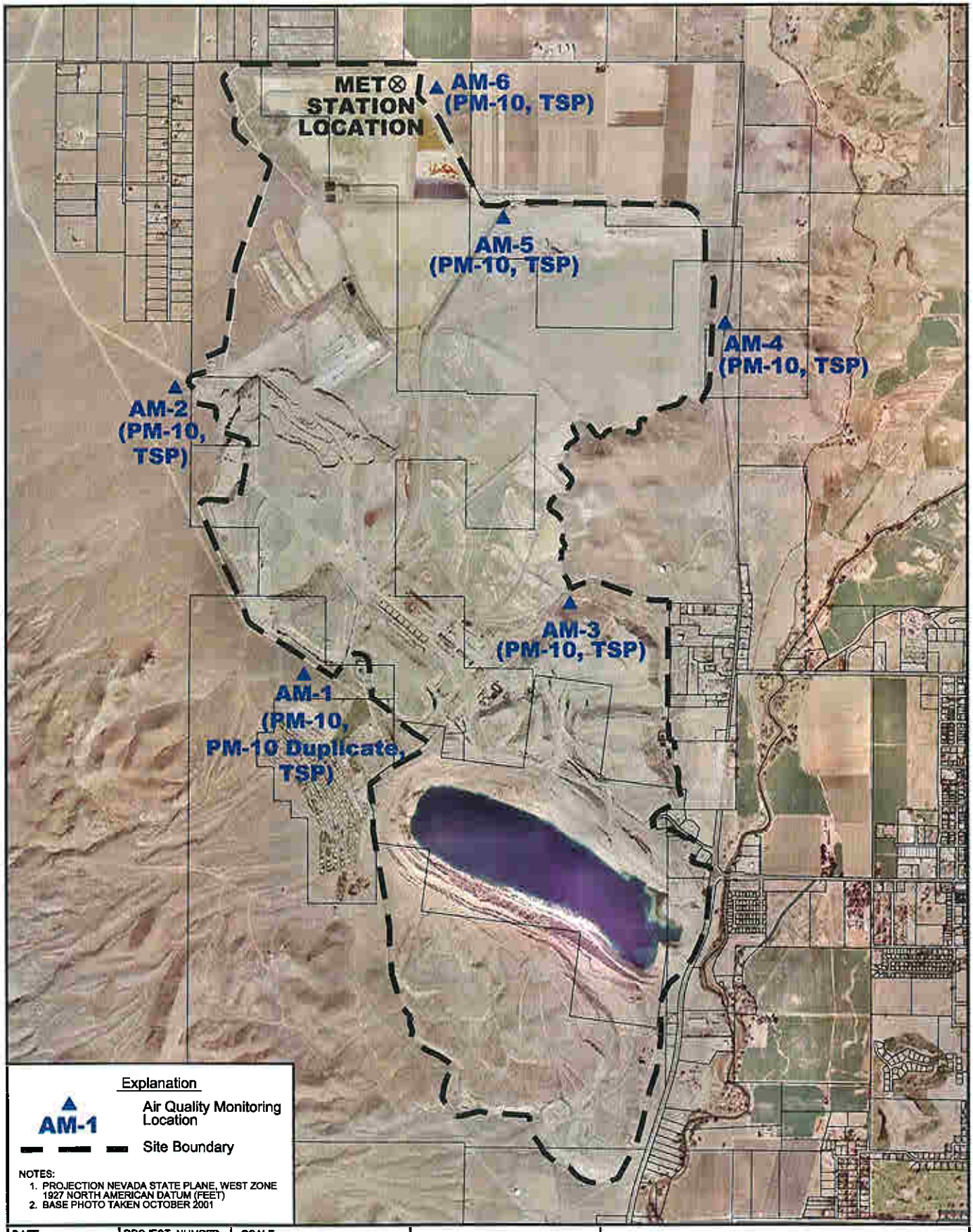
Parameter	Current Program	Proposed Program	Justification
PM_{10}	X	X	Retain
TSP	X		Eliminate: PM_{10} correlation, sufficient data, obsolete standard
Aluminum	X	X	Retain
Arsenic	X	X	Retain
Barium	X		Eliminate: infrequent detects, detects sig. less than risk levels
Beryllium	X		Eliminate: detects sig. less than risk levels
Cadmium	X	X	Retain
Calcium	X		Eliminate: required nutrient
Chromium, total	X	X	Retain
Cobalt	X	X	Retain
Copper	X		Eliminate: detects sig. less than risk levels
Iron	X		Eliminate: detects sig. less than risk levels
Lead	X		Eliminate: detects sig. less than risk levels
Magnesium	X		Eliminate: required nutrient
Manganese	X	X	Retain
Mercury	X		Eliminate: detects sig. less than risk levels
Molybdenum	X		Eliminate: infrequent detects, detects sig. less than risk levels
Nickel	X		Eliminate: infrequent detects, detects sig. less than risk levels
Selenium	X		Eliminate: infrequent detects, detects sig. less than risk levels
Silver	X		Eliminate: detects sig. less than risk levels
Sodium	X		Eliminate: required nutrient
Vanadium	X		Eliminate: detects sig. less than risk levels
Zinc	X		Eliminate: detects sig. less than risk levels
Gross Alpha	X		Eliminate: duplicative with individual analyses
Gross Beta	X		Eliminate: duplicative with individual analyses
Radium-226	X	X	Retain
Radium-228	X	X	Retain
Thorium-228	X		Eliminate: infrequent detects
Thorium-230	X	X	Retain
Thorium-232	X		Eliminate: no detects
Uranium-234	X		Eliminate: infrequent detects
Uranium-235	X		Eliminate: no detects
Uranium-238	X		Eliminate: infrequent detects
Sulfate		X	Add: at the request of ATSDR

ARC appreciates EPA's prompt attention to our request for a modification to the AQM scope. Please contact me at 661-287-3855 if you have any questions regarding the information contained in this letter and the attachments.

Sincerely,

Chuck Zimmerman for
Roy I. Thun
Environmental Business Manager

cc: Patrick Plumb, BLM – Via electronic submittal
Joe Sawyer, NDEP – Via electronic submittal
Todd Normane – Via electronic submittal
Chuck Zimmerman – Via electronic submittal



DATE:	PROJECT NUMBER:	SCALE:		
May 2005	21243	0 1250 2500 SCALE IN FEET	Atlantic Richfield Company	**Figure 1**
BROWN AND CALDWELL Carson City, Nevada				**Air Quality Monitoring Locations**

Carson City Cad: P:\ARCO\21243\Air Quality\Monitoring Reports\1st Quarter 2005\CAD\Figure_1.dwg (1=1) 05/06/2005 06:45:28

Attachment A. Correlation of PM_{10} and TSP Concentrations, 2005

Air Quality Monitoring Program
Yerington Mine, Yerington, Nevada

Event	Date	Units	PM_{10}						TSP					
			AM-1	AM-2	AM-3	AM-4	AM-5	AM-6	AM-1	AM-2	AM-3	AM-4	AM-5	AM-6
22	6/3/05	$\mu g/m^3$	14.72	9.18	10.08	13.97	7.61	12.90	40.39	26.21	33.28	36.32	22.13	49.87
23	6/9/05	$\mu g/m^3$	1.13	2.09	2.43	3.75	2.14	1.26	5.26	5.04	6.32	7.64	6.04	6.43
24	6/15/05	$\mu g/m^3$	13.75	13.46	13.82	18.72	12.79	13.45	29.83	26.58	34.83	41.22	20.04	29.70
25	6/21/05	$\mu g/m^3$	7.99	7.85	12.26	18.12	8.75	12.25	29.04	22.73	41.27	42.23	22.37	28.76
26	6/27/05	$\mu g/m^3$	9.46	8.03	7.95	10.00	8.93	9.24	21.25	20.04	22.85	23.98	20.57	20.26
27	7/3/05	$\mu g/m^3$	9.25	8.76	7.41	9.10	13.29	23.70	23.47	22.71	22.45	21.67	36.77	60.09
28	7/9/05	$\mu g/m^3$	7.66	7.29	7.00	8.74	7.02	10.46	26.39	19.36	20.04	22.18	18.29	22.60
29	7/15/05	$\mu g/m^3$	20.62	17.61	18.86	25.65	25.33	25.62	53.75	44.53	51.99	55.53	55.63	53.98
30	7/21/05	$\mu g/m^3$	13.62	12.87	14.22	23.27	16.70	18.20	36.38	31.76	38.68	54.90	38.85	41.19
31	7/27/05	$\mu g/m^3$	12.88	11.69	12.26	18.60	14.76	17.84	31.95	29.97	31.27	39.84	33.35	38.72
32	8/2/05	$\mu g/m^3$	9.45	9.19	8.63	11.64	8.63	12.65	21.59	19.69	23.13	27.49	22.16	27.68
33	8/8/05	$\mu g/m^3$	12.12	12.90	10.38	14.57	14.50	23.80	31.26	29.08	25.32	29.77	35.24	65.11
34	8/14/05	$\mu g/m^3$	17.73	15.71	14.13	17.30	15.17	18.03	42.08	38.15	30.95	36.05	36.53	44.34
35	8/20/05	$\mu g/m^3$	13.09	12.25	12.61	14.58	11.56	13.25	32.90	36.93	28.85	31.70	32.81	31.07
36	8/26/05	$\mu g/m^3$	14.20	13.54	12.72	16.45	17.98	18.77	36.69	33.64	28.77	42.27	43.10	42.06
37	9/1/05	$\mu g/m^3$	14.58	15.60	14.61	22.03	17.50	29.20	36.25	35.25	30.01	47.83	36.78	56.17
38	9/7/05	$\mu g/m^3$	13.96	13.40	13.33	21.83	17.58	21.84	35.33	25.38	28.96	48.99	40.93	48.80
39	9/13/05	$\mu g/m^3$	10.62	8.67	9.15	16.32	13.48	28.17	34.55	24.48	21.79	40.21	32.84	52.99
40	9/19/05	$\mu g/m^3$	12.96	11.67	14.17	22.56	21.24	48.09	37.41	31.07	33.82	54.13	54.37	192.57
41	9/25/05	$\mu g/m^3$	10.77	8.19	9.02	11.12	9.93	33.83	27.74	21.32	20.02	26.14	24.39	93.56
42	10/1/05	$\mu g/m^3$	9.33	7.77	9.58	13.80	11.58	14.11	34.65	30.05	32.02	38.63	35.40	31.88
43	10/7/05	$\mu g/m^3$	24.89	16.59	13.00	25.68	22.54	28.04	71.77	43.39	34.64	76.52	53.98	60.07
44	10/13/05	$\mu g/m^3$	9.90	8.29	12.19	23.17	12.90	18.52	28.56	22.29	27.20	47.29	27.91	34.02
45	10/19/05	$\mu g/m^3$	19.63	14.74	15.28	19.56	15.94	17.35	39.48	28.18	29.60	45.03	30.98	32.34
46	10/25/05	$\mu g/m^3$	7.99	7.52	6.49	7.36	6.59	7.63	15.72	16.17	12.04	15.20	13.28	12.72

Attachment A. Correlation of PM_{10} and TSP Concentrations, 2005

Air Quality Monitoring Program
Yerington Mine, Yerington, Nevada

Event	Date	Units	PM_{10}						TSP					
			AM-1	AM-2	AM-3	AM-4	AM-5	AM-6	AM-1	AM-2	AM-3	AM-4	AM-5	AM-6
47	10/31/05	$\mu g/m^3$	14.51	8.63	11.75	15.62	11.04	12.52	36.55	20.08	22.84	36.72	17.53	27.21
48	11/6/05	$\mu g/m^3$	1.55	2.84	1.99	0.18	1.71	2.99	8.57	12.79	8.43	7.66	4.99	6.70
49	11/12/05	$\mu g/m^3$	5.43	5.26	5.77	8.05	7.67	8.34	12.65	11.68	11.51	16.86	15.91	16.2
50	11/18/05	$\mu g/m^3$	8.90	8.68	11.44	17.11	11.78	13.99	22.01	19.47	20.42	31.1	21.74	23.62
51	11/24/05	$\mu g/m^3$	14.13	11.79	10.46	15.45	13.53	17.31	29.34	24.36	20.02	28.48	20.85	28.22
52	11/30/05	$\mu g/m^3$	4.18	4.00	4.91	11.02	7.31	5.93	20.87	15.89	19.42	23.67	11.64	21.26
53	12/6/05	$\mu g/m^3$	4.61	3.88	5.51	8.49	6.63	7.05	8.44	7.51	9.77		14.86	11.37
54	12/12/05	$\mu g/m^3$	5.58	4.62	4.57	4.96	4.33	5.49	9.12	8.48	8.33	7.07	7.72	7.75
55	12/18/05	$\mu g/m^3$	2.79	2.99	3.18	3.50	2.35	3.45	3.11	3.25	3.38	4.93	4.02	3.62
56	12/24/05	$\mu g/m^3$	4.17	4.00	5.35	7.08	4.65	5.16	5.36	4.89	6.99	10.02	6.79	6.63
57	12/30/05	$\mu g/m^3$	2.45	2.47	3.02	6.01	4.55	3.77	6.03	5.37	9.73	18.91	14.04	7.47

Correlation Coefficient (R)	AM-1	AM-2	AM-3	AM-4	AM-5	AM-6
	0.94	0.92	0.89	0.95	0.95	0.91

Ratio PM_{10} to TSP	Avg.	St. Dev.
	45%	12.9%

Attachment B. Comparison of 2005 Metal Results to Ambient Air PRGs

Air Quality Monitoring Program
Yerington Mine, Yerington, Nevada

Metal	Ambient Air PRG				2005 Analytical Results of PM_{10} Filters							
	PRG ($\mu g/m^3$)			Source[1]								
	Noncancer Endpoint	Cancer Endpoint										
		1×10^{-6}	1×10^{-4}		Total Count	Qty. of Detects	Minimum MDL[2] ($\mu g/m^3$)	Maximum Detect ($\mu g/m^3$)	95% UCL[3] ($\mu g/m^3$)	Does the 95% UCL Exceed 10^{-6} PRG?[4]	Health Risk	Is the Risk Within the Risk Management Range?
Aluminum	5.1			U.S. EPA	387	297	0.020	1.1	0.16	No		
Arsenic		0.00045	0.045	U.S. EPA	387	2	0.00093	0.0012	0.00056	**Yes**	**1E-06**	**Yes**
Barium	0.52			U.S. EPA	387	4	0.017	0.036	0.010	No		
Beryllium		0.0008	0.08	U.S. EPA	387	91	4.1E-06	0.000099	0.0000071	No		
Cadmium		0.0011	0.11	U.S. EPA	387	164	0.000027	0.0028	0.000074	No		
Chromium, total[5]		0.00016	0.016	U.S. EPA	387	1	0.0051	0.018	0.0031	**Yes**	**2E-05**	**Yes**
Cobalt		0.00069	0.069	U.S. EPA	387	5	0.0018	0.020	0.0013	**Yes**	**2E-06**	**Yes**
Copper	146			Calculated	387	382	0.0016	0.095	0.012	No		
Iron	1,100			Calculated	387	324	0.011	1.6	0.23	No		
Lead[6]	1.5			NAAQS	387	326	0.00020	0.012	0.0012	No		
Manganese	0.051			U.S. EPA	387	317	0.00093	0.037	0.0059	No		
Mercury[7]	0.31			U.S. EPA	263	92	1.8E-07	0.00067	0.000029	No		
Molybdenum	18			Calculated	387	4	0.00054	0.0026	0.00034	No		
Nickel[8]		0.004	0.4	U.S. EPA	387	4	0.0017	0.0039	0.0011	No		
Selenium	18			Calculated	387	4	0.00084	0.0018	0.00051	No		
Silver	18			Calculated	387	86	6.9E-06	0.00013	0.0000083	No		
Vanadium	3.7			Calculated	387	49	0.0014	0.024	0.0012	No		
Zinc	1,100			Calculated	387	163	0.0030	0.045	0.0051	No		
U.S. EPA Required Nutrients (not required parameters for health screening)												
Calcium	---	---	---	---	387	30	0.44	2.1	0.30	---	---	---
Magnesium	---	---	---	---	387	261	0.048	0.60	0.12	---	---	---
Sodium	---	---	---	---	387	1	0.99	1.6	0.59	---	---	---

Attachment B. Comparison of 2005 Metal Results to Ambient Air PRGs

Air Quality Monitoring Program

Yerington Mine, Yerington, Nevada

Notes

Cancer Endpoint - risk management range for the cancer endpoint is from 1×10^{-6} to 1×10^{-4}.

Noncancer Endpoint - based on a hazard index of 1

Calculated - PRGs were calculated using U.S. EPA Region IX methodology and oral reference doses. U.S. EPA does not calculate PRGs for chemicals without inhalation reference doses. Oral reference doses are considered appropriate for health screening purposes.

(1) U.S. EPA ambient air Preliminary Remediation Goals (PRGs) are provided for some metals in the U.S. EPA Region IX PRG Table dated October 2004 (http://www.epa.gov/region09/waste/sfund/prg/). PRGs are risk-based concentrations in environmental media (e.g., ambient air) that are considered by the U.S. EPA to be health protective of human exposures (including sensitive groups) over a lifetime. PRGs are chemical concentrations that correspond to fixed levels of risk [i.e., either a one in a million (1×10^{-6}) cancer risk or a noncarcinogenic hazard quotient of 1.0] for a residential exposure scenario over a 30-year duration.

(2) MDL = method detection limit. Value given corresponds to the lowest non-detect result.

(3) 95% UCL = 95% upper confidence limit on the mean. Non-detect results were included in the 95% UCL calculation by assuming the metal was present at one-half the detection limit. Calculations were conducted using U.S. EPA ProUCL software.

(4) 95% UCL was compared to the noncancer endpoint if there is no cancer endpoint.

(5) PRG provided assumes a ratio of 1 part Cr VI to 6 parts Cr VIII

(6) Value provided is based on the National Ambient Air Quality Standard (NAAQS) for lead

(7) PRG provided is for elemental mercury

(8) PRG provided is for nickel subsulfide

Attachment C. Comparison of 2005 Radiochemical Results to Ambient Air PRGs

Air Quality Monitoring Program
Yerington Mine, Yerington, Nevada

	Ambient Air PRG (pCi/m3)			2005 Analytical Results of PM_{10} Filters					
Radiochemical	1 x 10-6	1 x 10-4	Source(1)	Total Count	Qty. of Detects	Minimum MDL(2) (pCi/m^3)	Maximum Detect (pCi/m^3)	95% UCL (3)	Does the 95% UCL Exceed 10^{-6} PRG?
Radium-226	0.0013	0.13	calculated	387	62	0.000030	0.00090	0.00022	No
Radium-228	0.011	1.1	calculated	387	86	0.00068	0.0052	0.0012	No
Thorium-228	0.0013	0.13	calculated	387	1	5.5E-06	0.0001798	0.00010	No
Thorium-230	0.00054	0.054	calculated	387	48	5.2E-06	0.0026	0.00011	No
Thorium-232	0.00035	0.035	calculated	387	0	5.2E-06	na	0.000052	No
Uranium-234	0.0013	0.13	calculated	387	5	0.000028	0.0026	0.00020	No
Uranium-235	0.0015	0.15	calculated	387	0	0.000025	na	0.00014	No
Uranium-238	0.0016	0.16	calculated	387	3	0.000027	0.0021	0.00019	No

Notes

(1) U.S. EPA ambient air Preliminary Remediation Goals (PRGs) are not provided for radiochemicals in the U.S. EPA Region IX PRG Table dated October 2004 (http://www.epa.gov/region09/waste/sfund/prg/). PRGs are risk-based concentrations in environmental media (e.g., ambient air) that are considered by the U.S. EPA to be health protective of human exposures (including sensitive groups) over a lifetime. PRGs are chemical concentrations that correspond to fixed levels of risk of one in a million (1×10^{-6}) cancer

(2) MDL = method detection limit. Value given corresponds to the lowest non-detect result.

(3) 95% UCL = 95% upper confidence limit on the mean. Non-detect results were included in the 95% UCL calculation by assuming the radiochemical was present at one-half the detection limit. Calculations were conducted using U.S. EPA ProUCL software.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 16, 2006

Via Email and U.S. Mail

Roy I. Thun
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
La Palma, CA 90623

Subject: **Review Comments on:**
1. *Fourth Quarter 2005 Air Quality Monitoring Report,* dated April 3, 2006
2. *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated April 4, 2006
Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Thun:

This letter transmits review comments from the United States Environmental Protection Agency (EPA) on the *Fourth Quarter 2005 Air Quality Monitoring Report,* dated April 3, 2006 and *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated April 4, 2006 submitted by Atlantic Richfield Company (ARC) for the Anaconda Copper Mine Site (Site), in Yerington, Nevada. This data report was submitted as required by the Anaconda/Yerington Mine Site Unilateral Administrative Order (UAO) for Initial Response Activities EPA Docket No. 9-2005-0011, dated March 31, 2005. In addition to the Fourth Quarter 2005 Air Quality Monitoring Report ARC is submitting proposed changes to the current air monitoring approach, based on their review of the first full year of air monitoring and the discussion held at the February 22, 2006 Yerington Technical Work Group meeting.

The current air sampling approach is called out in the *Final Air Quality Monitoring Work Plan for the Yerington Mine Site*, dated December 19, 2005. That document is based on the *Draft Air Quality Monitoring Work Plan,* dated December 22, 2004, along with associated correspondence between EPA and ARC, including the following correspondence:

- EPA's January 19, 2005 *Conditional Approval of the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;

- EPAs' February 14, 2005 *Review Comments on the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;

- EPA's February 24, 2005 *Revised Review Comments on the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;

- ARC's March 10, 2005 *Response re; EPA's Revised Review Comments on the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;

- EPA's May 6, 2005 *Response to ARC's Response re; EPA's Revised Review Comments on the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;

- ARC's May 24, 2005 *Response to Comments on the Draft Air Quality Monitoring Work Plan*;

- EPA's June 29, 2005 *Response to ARC's May 24, 2005 Response to Comments on the Draft Air Quality Monitoring Work Plan;*

- EPA's August 15, 2005 *Confirmation of Additional Analysis of Archived Air Monitoring Samples Collected from January 28, 2005 through June 1, 2005*

The extensive correspondence listed above documents the extensive discussions undertaken prior to the current air monitoring approach. As such any proposed changes to that approach need to be based on sound technical justification.

EPA's review comments reflect input from the United States Bureau of Land Management (BLM), the Agency for Toxic Substances and Disease Registry (ATSDR) the Yerington Paiute Tribe (YPT) and the Yerington Community Action Group (YCAG). Since these additional review comments provide valuable input on multiple technical aspects those comments are provided as attachments.

EPA's comments are provided for both documents and are presented separately as follows:

***Fourth Quarter 2005 Air Quality Monitoring Report,* dated April 3, 2006**

1. AM-6 and AM-5 consistently have the highest metals concentrations of all six sites demonstrating that pollutant concentrations are likely migrating off-site on the north end of the mine site property. Data presented by ARC shows that arsenic, cadmium, and chromium concentrations exceeded the risk-based criteria establish for this air monitoring program at least one time. These metals warrant continued sampling.

2. Data presented by ARC shows that radiochemicals radium 226, radium 228, thorium 230, and thorium 232 concentrations exceeded the risk-based criteria establish for this air monitoring program at least one time. These radiochemicals warrant continued sampling.

3. Radiochemical data shows a trend towards deposition on AM-3 and AM-4 samples, whereas metals are predominantly found in highest concentrations on AM-5 and AM-6.

4. Some anomalies were observed on AM-1/AM-1 Duplicate (Dup) data. EPA requests that ARC reevaluate the results from AM-1 and AM-1 Dup to identify any discrepancies or anomalies.

5. Table 1 has been prepared by EPA which documents the 1st highest and 2nd highest concentrations of metals and radiochemicals for TSP and PM_{10} for all sample events at all monitoring sites (attachment

1). This table demonstrates that several metals and radiochemical concentrations exceeded the risk-based criteria establish for this air monitoring program at least one time and will be used to assist in evaluating whether a specific metal or radiochemical is removed from the analyte list.

6. Meteorological data shows that wind speed data appears to fluctuate and may play an important role in fugitive dust emanating from the site. The on-site topography may be contributing to the fluctuating wind and therefore additional wind monitors are needed to further characterize winds. EPA requests that two additional wind monitors be installed at AM-1 and AM-3 to characterize wind on the south and east boundaries of the site.

***Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated April 4, 2006**

It should be noted that caution is always advisable when considering the elimination of analytes when conducting additional sampling. Any decision to eliminate analytes should not necessarily limit the number of analytes required for sampling other media such as soil, water, etc. Keeping this mind EPA does agree with the proposal to limit some of the analytes previously analyzed, but this reduced list only applies to future air sampling efforts and is intended to save resoures, and is not intended to reduce the chemicals of concern for the site. The following EPA comments are presented in response to the ARC letter.

1. Elimination of TSP Monitoring

EPA approves the elimination of TSP sampling at sites AM-1, AM-2, AM-3, AM-4, and AM-5 based on the following conditions:

- A PM_{10} versus TSP concentration correlation coefficient of 0.9 or greater can be demonstrated. ARC documented all-site correlation coefficients of approximately 0.927.

- TSP concentrations will be estimated for AM-1, AM-2, AM-3, AM-4, and AM-5 using PM_{10} conversion equations.

- TSP concentrations recorded at AM-6 were consistently the highest recorded TSP concentrations and have the highest potential to be affected by high wind and fugitive dust storm events. Based on this information, AM-6 site warrants continued TSP sampling.

- Therefore, EPA feels that ARC should continue TSP sampling at AM-6 on a 1 in 6 frequency to document maximum TSP concentrations of metals and radiochemicals and to provide an actual TSP versus PM_{10} comparison.

2. Elimination of Specific Metals

ARC proposes to eliminate the following metals:

- Barium, berylium, calcium, copper, iron, lead, mercury, magnesium, molybdenum, nickel, selenium, silver, sodium, vanadium, and zinc based on information presented in the ARC letter.

EPA has reviewed the request for elimination of specific metals and has prepared a summary table that documents the 1st and 2nd highest reported PM_{10} and TSP concentrations for all sample events at all sample locations. This table demonstrates that several metals concentrations exceeded the risk-based criteria establish for this air monitoring program at least one time and will be used to assist in evaluating

whether a specific metal is removed from the analyte list. This information is presented in Table 1, *Evaluation of Yerington 2005 Air Quality Monitoring Program* (attachment 1).

Therefore, the following criteria were used to compile a revised metals analyte list:

- 1st and 2nd highest reported concentrations in respect to EPA risk-based criteria establish for this monitoring program
- Number of detects based on number of samples collected
- Historical activities that show metals or radiochemicals may be present in ambient air concentrations and may present a public health exposure risk
- Ability of laboratory to meet a representative minimum detection limit
- Health concerns expressed by outside organizations

Based on the criteria established above, the revised metals analyte list is presented below.

- Aluminum, arsenic, cadmium, chromium, cobalt, copper, manganese, nickel, PM_{10}, and TSP (at AM-6)
- Addition of sulfate (using an acute REL of 120 ug/m3)

The following metals are approved for removal from the list:

- Barium, beryllium, calcium, iron, lead, mercury, magnesium, molybdenum, selenium, silver, sodium, vanadium, and zinc

3. Elimination of Specific Radiochemicals

ARC proposes to eliminate the following radiochemicals:

- Thorium 228, thorium 232, uranium 234, uranium 235, uranium 238, gross alpha, and gross beta

EPA has reviewed the request for elimination of specific radiochemicals and has prepared a summary table that documents the 1st and 2nd highest reported PM_{10} and TSP concentrations for all sample events at all sample locations. This table demonstrates that several radiochemical concentrations exceeded the risk-based criteria establish for this air monitoring program at least one time and will be used to assist in evaluating whether a specific radiochemical is removed from the analyte list. Even though a risk-based criteria was not established for gross alpha, it is a health concern when inhaled and is therefore appropriate to retain on the radiochemical list.

In addition, the uranium 238 and thorium 232 decay sequences demonstrate how radiochemicals decay and may provide insight to the presence of radiochemicals in tailings and waste rock. These two decay sequences are presented below.

- <u>Uranium 238 decay sequence:</u> uranium 238→thorium 234 → uranium 234→ thorium 230→ radium 226→ radon 222

- <u>Thorium 232 decay sequence:</u> thorium 232→ radium 228→ thorium 228→ radium 224 → radon 220

Additional research is required to make any scientific conclusions regarding these decay sequences and how this may affect air quality on or near the Yerington site. This is information is presented solely for the purpose of identifying potential radiochemical formation.

Therefore, the following criteria were used to compile a revised radiochemical list:

- 1st and 2nd highest reported radiochemical concentrations in respect to EPA risk-based criteria establish for this monitoring program
- Number of detects based on number of samples collected
- Historical activities that show radiochemicals may be present in ambient air concentrations and may present a public health exposure risk
- Ability of laboratory to meet a representative minimum detection limit
- Health concerns expressed by outside organizations
- Uranium 238 and thorium 232 decay sequences

Based on the criteria established above, the revised radiochemical list is presented below.

- Gross alpha, radium 226, radium 228, thorium 228, and thorium 230

The following radiochemicals are approved for removal from the analyte list:

- Gross beta, thorium 232, uranium 234, uranium 235, and uranium 238

4. Reduction of Monitoring Frequency

As previously stated, EPA does not agree with the proposal requesting elimination of all routine sampling. Monitoring sites AM-4, AM-5, and AM-6 consistently had the highest PM_{10} concentrations. However, since AM-5 is very close to AM-6, EPA would agree to drop AM-5 and keep AM-3 to assess impacts blowing east towards the town of Yerington. Monitoring site AM-1 should remain operational to document upwind and southern boundary conditions. The PM_{10} inter-site correlation between sites AM-1 versus AM-2 and AM-3 versus AM-4 is 0.95 and 0.88, respectively. If one outlier point concentration at AM-5 is removed (PM_{10} concentration of 60.81 at AM-5 on 3/11/05), the inter-site correlation between sites AM-5 versus AM-6 is 0.86. If this point is not removed, the correlation is 0.56. This demonstrates that concentrations for sites AM-2, AM-4, and AM-5 can be calculated (if needed) with a good level of accuracy and these sites can be approved for termination of PM_{10} and TSP sampling.

This sampling modification will allow for a reduced sampling protocol, but will continue to provide useful data to determine potential health risks and public health exposure based on the following criteria: a) sampling location with respect to local populations, b) sampling location based on prevailing winds, and c) need to continue long-term air quality data assessments.

Therefore EPA feels that 1 in 6 day PM_{10} sampling should continue at AM-1, AM-3, and AM-6 for 2 additional years of sampling to better characterize mine tailings and/or processed waste material fugitive dust emissions. In addition, this will provide three complete years of air quality data for PM_{10} and specific metals and radiochemicals, which is normally used by EPA to establish baseline air quality conditions for a localized air basin.

5. Implementation of Real-Time Monitors

Local Yerington residents have provided documentation that the Yerington site is susceptible to large-scale dust storm events that form when certain ambient conditions are met. These events produce large dust clouds that envelope the entire north end of the mine site. These events cannot be predicted, nor are they based solely on wind speed and direction and evidence shows that other factors such as soil moisture, humidity, and temperature may affect the formation of the dust clouds.

ARC proposed a revised monitoring program that would initiate sampling based on wind speed however evidence shows that wind speed is not adequate for determination of PM_{10} formation. Therefore EPA is feels that continuous PM_{10} monitoring should be implemented with the following configuration:

- ARC install and operate two Thermo Environmental ADR1200S continuous particulate monitors at AM-1 and AM-3. The operation of these monitors will accomplish two goals: 1) evaluation of continuous PM_{10} concentrations during high wind/dust events, and 2) correlation with PM hi-vol samplers to develop a slope and correction factor for accurate determination of real-time PM_{10} concentrations using the ADR 1200S monitors.

- In addition, ARC install and operate a Rupprecht and Patashnick TEOM 1400A FEM continuous monitor with ACCU system at AM-6. This system will be used to continuously monitor PM_{10} and collect samples if a PM_{10} concentration-based criterion is exceeded. EPA will request that if two 60-minute average PM_{10} concentrations exceed 300 µg/m (two times the 24-hour National Ambient Air Quality Standards for PM_{10}) , the ACCU system be programmed to collect samples on the collection media for up to 12 additional hours of sampling. These samples will be analyzed for all parameters on the revised analyte list.

- ARC and its contractor work with EPA to evaluate the most effective configuration for the ACCU system and best laboratory analyses method for analysis of ACCU filters.

- ARC install and operate two wind monitors at the AM-1 and AM-3 sites based on EPA-approved wind monitoring protocols.

TIMEFRAME FOR IMPLEMENTATION OF PROGRAM CHANGES

EPA proposes the following timeframe for implementation for the Yerington Air Monitoring program.

- Termination of PM_{10} sampling at AM-2, AM-4, and AM-5 on July 1, 2006 (effective after the completion of sample collection at all monitoring sites on June 28, 2006)

- Termination of TSP sampling at AM-1, AM-2, AM-3, AM-4, and AM-5 on July 1, 2006 (effective after the completion of sample collection at all monitoring sites on June 28, 2006)

- Implement PM_{10} sampling with revised metals and radiochemical list at AM-1, AM-3, and AM-6 by July 1 (effective for the sample collection on July 4, 2006)

- Implement TSP sampling with revised metals and radiochemical list AM-6 by July 1 (effective for the sample collection on July 4, 2006)

- Implement continuous PM_{10} monitoring using the Thermo Environmental ADR 1200S monitor at AM-1, and AM-3, by August 1, 2006.

- Implement continuous PM_{10} monitoring using the Rupprecht and Patashnick TEOM 1400A monitor at AM-6 by August 1, 2006.

- Implement wind monitors at AM-1 and AM-3 by August 1, 2006.

If you have any questions or desire any clarifications in regards to the comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Patrick Plumb, BLM
Joe Sawyer, NDEP

Attachments:

1. Table 1 *Evaluation of Yerington 2005 Air Quality Monitoring Program*
2. Review Comments on the *Fourth Quarter 2005 Air Quality Monitoring Report,* dated April 3, 2006 and *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated April 4, 2006 by the Yerington Paiute Tribe, dated June 5, 2006
3. Electronic Mail submitted May 18, 2006 from Mark Evans, ATSDR, with Review Comments on the *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated April 4, 2006
4. Yerington Community Action Group's June 2, 2006 Comments on *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated April 4, 2006
5. Review Comments on Air Quality Monitoring Scope Reduction submitted by BLM June 12, 2006

Atlantic Richfield Company

Roy I. Thun
Environmental Project Manager

6 Centerpointe Drive
LaPalma, CA. 90623-1066
Office: (661) 287-3855
Fax: (661) 222-7349
E-mail: thunri1@bp.com

August 3, 2006

Mr. James Sickles
Remedial Project Manager
USEPA Region 9
75 Hawthorne Street
San Francisco, CA. 94105

Subject: Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site

Dear Mr. Sickles:

When Atlantic Richfield Company (ARC) originally developed the air quality monitoring scope of work with EPA's input and assistance it was recognized that the primary purpose of this monitoring was to provide sufficient data to determine human health risk. With over 1100 data points collected over the last one and a half years there is clearly sufficient data to recommend moving the air program from one of pure data collection to initiation of a human health risk assessment. As such, ARC is fully prepared to work with EPA and the stakeholders to design and implement a human health risk workplan for fugitive dust emissions from the site. ARC recognizes the need to continue to obtain certain relevant data while the risk assessment workplan is developed and is confident that the air quality monitoring scope reduction proposal that ARC submitted to EPA with acknowledgement of certain recommendations by EPA in your letter of June 16, 2006 sufficiently addresses this need.

As previously stated to EPA, ARC agrees that the air quality and meteorological monitoring program at the Yerington Mine Site should be reduced and has implemented the following EPA modifications effective July 1, 2006:

- Termination of PM_{10} sampling at AM-2, AM-4, and AM-5;
- Termination of TSP sampling at AM-1, AM-2, AM-3, AM-4, and AM-5;
- Implementation of PM_{10} sampling at AM-1, AM-3, and AM-6 with revised metals and radiochemicals list; and
- Implementation of TSP sampling at AM-6 with revised metals and radiochemicals list.

However, given that there is sufficient data to perform a risk assessment at this time, ARC disagrees with the EPA's decision to:

- Continue PM_{10} sampling at AM-1, AM-3, and AM-6;
- Continue TSP sampling at AM-6;
- Install and operate three continuous PM_{10} monitors; and
- Install and operate two additional wind monitoring stations.

Our objections to EPA's conclusions are discussed below.

PM_{10} Sampling at AM-1, AM-3, and AM-6

ARC does not agree with EPA's conclusion that additional sampling is required at AM-1, AM-3, and AM-6 for PM_{10} and associated metals and radiochemicals.

There are two main reasons for our disagreement:

- The data collected to date are more than adequate to derive reliable exposure point concentrations (EPCs) for use in risk assessment
- The data collected to date suggest that direct inhalation of site-related contaminants is a minor exposure pathway.

These two points are addressed as follows.

The air quality monitoring program was established to provide sufficient data to determine human health risk associated with wind blown dust being transported off site. EPA previously agreed that one year of monitoring was required to produce data sufficient for risk assessment (and perhaps modeling). We now have one and a half years of data. This dataset is sufficient to generate reliable EPCs (i.e., 95% upper confidence limit on the mean, UCLM). The quantity of data collected greatly exceeds the minimum required for robust statistical significance. ARC's data set clearly meets the letter and intent of federal guidance and additional data will not result in a better risk assessment.

A screening-level determination of chronic human health risk is most appropriately made by comparison of annual average concentrations with the EPA Region 9 preliminary remediation goals (PRGs). Comparison of the 24-hour concentrations is an extremely conservative means of assessing potential chronic health risk. During most monitoring events, 24-hour concentrations are far below the PRGs and the appropriate time-averaged concentrations are all below the PRGs. While a few pollutants have peak 24-hour concentrations in exceedance of PRGs, these exceedances do not indicate any potential for chronic health effects. Additionally, because the tailings pile was capped in April/May the potential for airborne dust releases has been further reduced. Thus data collected to date indicates that direct inhalation of site-related contaminants is an exposure pathway of limited concern for the site.

The Air/Superfund National Technical Guidance for Ambient Air Monitoring at Superfund Sites does not support EPA Region 9's recently-stated position with respect to the Yerington Site that baseline monitoring be conducted for a duration of three years. ARC was unable to identify any EPA guidance that suggests a three year period is typical of air quality monitoring programs at abandoned mine sites, hazardous waste sites, or Superfund sites. The above referenced guidance document states that, "... *the duration of the monitoring program is determined by the monitoring objectives*". Again, ARC has shown that ample data has already been collected to meet risk assessment needs. If EPA has other intentions with regard to the air data then such data quality objectives should be clearly stated.

Page 1-8 of the guidance document states that, "*The evaluation of off-site exposure generally requires that monitoring be performed whenever significant air emissions may be released from the site. At sites that have the potential for adversely affecting the air, this is often addressed by performing a short baseline study, followed by continuous monitoring whenever active remediation is being conducted at the site*". The guidance document also states on Page 2-10 that, "... *integrated sampling may be performed continuously or at intermittent, discrete intervals. Specific program goals and available funding will normally dictate whether continuous or intermittent sampling intervals are performed*". Since the tailings

pile has been capped as of May 2006, air quality monitoring no longer represents those conditions which justified the installation and operation of the air quality monitoring program. In fact, the decision to cap the tailings was deferred until a one year air quality monitoring program was completed (reference ARC's Dust Abatement Work Plan submitted in November 2004). Hence, it is only rational to conclude that the baseline air quality monitoring period is over, and is well represented by the 2005/2006 air quality monitoring data. Such data clearly satisfies the requirement for baseline air quality monitoring and further air quality monitoring should not be required until remediation begins at the Site.

TSP Sampling at AM-6

ARC does not agree with EPA's conclusion that additional sampling is required at AM-6 for TSP and associated metals and radiochemicals. Both the Yerington Paiute Tribe and the Yerington Community Action Group in June 2006 correspondence agreed with the recommendation to eliminate all TSP sampling. There are several other sources of potential particulate emissions in the area, which may explain the relatively high concentrations observed at AM-6. These sources include fugitive emissions from vehicles (e.g., ATVs and pickup trucks) traveling on unpaved roads adjacent to, or near, the monitoring stations, and agricultural tilling on the farm located immediately north of the monitoring site. ARC is preparing a technical memorandum that it will provide under separate cover that analyzes these sources in more detail. Given that concentrations of metals and radiochemicals measured at AM-6 are generally below PRGs, there are no human health or scientific bases to further delineate among these potential sources.

Continuous PM_{10} Monitoring

ARC sees no basis for continuous PM_{10} monitors given the results of approximately one and a half years of air quality monitoring discussed above. EPA states that the purpose of these monitors is to evaluate continuous PM_{10} concentrations during high wind/dust events and to correlate high-volume particulate data with real-time data. Since the capping of the tailings pile in May 2006, dust storms have not been observed (personal communication with Peggy Pauly of the Yerington Action Committee) though site wind speed has been documented in excess of 35 mph.

ARC has reviewed the use of continuous monitoring with its technical consultants and is advised that the collection of continuous PM10 data will: 1) provide absolutely no benefit to a human health risk assessment, 2) not resolve PM10 anomalies; which are not anticipated to impact ARC's ability to conduct a health risk assessment, and 3) not change the observed condition that the air quality data collected to date complies with the PM10 NAAQS.

Additional Wind Monitors

ARC disagrees with the installation of two more wind monitoring stations at the Yerington Site. While EPA does not provide a justification for its request for these stations, ARC assumes that EPA bases its request upon Terry McGuire's comparison of the winds from Yerington with the nearby DRI wind monitoring sites.

To date, ARC has not been provided access to the data from these other weather stations, or Mr. McGuire's data analysis. The conditions which define data agreement or disagreement have not been defined. Therefore, ARC can not concur with the conclusions of the report nor any action items based upon the data analysis. If EPA is relying upon such data and Mr. McGuire's analysis, ARC is clearly entitled to and hereby renews its request for such data and analysis.

In addition, one would not expect the winds at the Site to be the same as those observed at DRI's Yerington wind monitoring site. The winds measured on-site are in relatively open terrain at the north end of the Yerington Mine Site. However, the DRI wind monitor in Yerington is located adjacent to a

building and therefore is subject to building-induced turbulence. Hence, the two sites are not representative of the same area.

In addition, there is existing data that shows that the wind at the Site is consistent with observations in the Mason Valley. Wind in the Mason Valley is variable with wind at higher speeds blowing to the east/northeast (the same as found in the baseline data collected to date by ARC). Refer to the "Air Quality at the Yerington Paiute Tribe Reservation and Colony, Phase 1 - Analysis of Available Air Quality Data and Meteorological Monitoring and Recommendations for Future Modeling and On-Site Monitoring" dated May 2001 by McGinnis and Associates. Adding new wind monitors at the mine will only serve to confirm what ARC and EPA have already found. Therefore, adding new wind monitors at the site is unnecessary

The concentrations of particulates, metals and radiochemicals collected to date at the Site perimeter are very low and concentrations are generally below PRGs. The capping of the tailings pile in May 2006 will undoubtedly result in even lower concentrations than previously monitored. In this regard, ARC has yet to be provided with EPA's air monitoring data collected during the tailings capping in May. Hence, no matter which way the wind blows, there is little risk to downwind receptors due to airborne contaminants.

Summary

The air quality monitoring program was established to evaluate potential chronic human health risks associated wind blown dust being transported off site. EPA previously provided approval for one year of monitoring in order to produce data sufficient to meet this data quality objective. As expected, the air quality monitoring data collected to date are more than adequate to support risk assessment evaluations for the site and no additional data is needed. ARC appreciates your prompt consideration of its request to initiate a risk assessment at this juncture. Our efforts should be focused on worthwhile activities and projects that improve conditions at the Yerington Mine Site. As stated above, ARC will, with EPA's approval, continue with the modified and reduced air monitoring program described above. However, as detailed within this letter response ARC respectfully requests eliminating: PM_{10} sampling at AM-1, AM-3, and AM-6; TSP sampling at AM-6; the installation and operation of three new continuous PM_{10} monitors; and the installation and operation of two new additional wind monitoring stations. Please contact me at (661) 287-3855 if you have any questions regarding the information contained in this letter.

Sincerely,

Chuck Zimmerman for

Roy I. Thun
Environmental Business Manager

cc: Patrick Plumb, BLM – via electronic submittal
Joe Sawyer, NDEP – via electronic submittal
Todd Normane – via electronic submittal
Chuck Zimmerman– via electronic submittal
Guy Graening – via electronic submittal
Rick Graw – via electronic submittal
Rosalind Schoof – via electronic submittal

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

October 19, 2006

Via Email and U.S. Mail

Roy I. Thun
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
La Palma, CA 90623

Subject: ***Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated August 3, 2006 submitted by Atlantic Richfield Company Anaconda Copper Mine Site, Yerington, Nevada**

Dear Mr. Thun:

This letter transmits review comments from the United States Environmental Protection Agency (EPA) on the *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated August 3, 2006 submitted by Atlantic Richfield Company (ARC) for the Anaconda Copper Mine Site (Site), in Yerington, Nevada. Since the current air quality monitoring program is required under the Anaconda/Yerington Mine Site Unilateral Administrative Order (UAO) for Initial Response Activities EPA Docket No. 9-2005-0011, dated March 31, 2005, any proposed changes to the current air monitoring approach requires EPA's approval.

The current proposal for a reduction in air quality monitoring scope is the latest iteration in a several communications between ARC and EPA regarding the appropriate level and duration of air quality monitoring required for the Site.

ARC first proposed a reduction in the air quality monitoring scope at the Yerington Technical Working Group meeting held on February 22, 2006. Subsequently on April 4, 2006 ARC submitted the: *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* in conjunction with their submittal of the *Fourth Quarter 2005 Air Quality Monitoring Report Yerington Mine Site,* dated April3, 2006. On June 16, 2006 EPA provided review comments on the *Fourth Quarter 2005 Air Quality Monitoring Report Yerington Mine Site,* dated April 3, 2006 and *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated April 4, 2006. Finally on August 3, 2006 ARC submitted a response to the EPA's June 16, 2006 letter regarding ARC's request to reduce the scope of air quality monitoring. The review comments enclosed in this letter are in response to ARC's August 3, 2006 letter.

The current air sampling approach is called out in the *Final Air Quality Monitoring Work Plan for the Yerington Mine Site*, dated December 19,.2005. That document is based on the *Draft Air Quality Monitoring Work Plan,* dated December 22, 2004, along with associated correspondence between EPA and ARC, including the following correspondence:

- EPA's January 19, 2005 *Conditional Approval of the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;
- EPAs' February 14, 2005 *Review Comments on the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;
- EPA's February 24, 2005 *Revised Review Comments on the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;
- ARC's March 10, 2005 *Response re; EPA's Revised Review Comments on the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;
- EPA's May 6, 2005 *Response to ARC's Response re; EPA's Revised Review Comments on the Draft Air Quality Monitoring Work Plan,* dated December 22, 2004;
- ARC's May 24, 2005 *Response to Comments on the Draft Air Quality Monitoring Work Plan*;
- EPA's June 29, 2005 *Response to ARC's May 24, 2005 Response to Comments on the Draft Air Quality Monitoring Work Plan;*
- EPA's August 15, 2005 *Confirmation of Additional Analysis of Archived Air Monitoring Samples Collected from January 28, 2005 through June 1, 2005*

The extensive correspondence listed above documents the comprehensive discussions undertaken prior to the current air monitoring approach. As such any proposed changes to that approach need to be based on sound technical justification.

EPA's review comments reflect input from the United States Bureau of Land Management (BLM), the Agency for Toxic Substances and Disease Registry (ATSDR) the Yerington Paiute Tribe (YPT) and the Yerington Community Action Group (YCAG). Since these additional review comments provide valuable input on multiple technical aspects those comments are provided as attachments.

EPA's comments are provided for both documents and are presented separately as follows:

GENERAL COMMENTS:

1. EPA's goals in regard to the air monitoring have always been twofold: 1) to evaluate what metals and radionuclides contained in the surface dust and dirt are migrating off site and in what concentrations of PM10 and TSP, and 2) to provide sufficient data for a human health and ecological risk assessment.

2. In the introductory paragraphs ARC states that they feel that there is sufficient data collected over the last 1 ½ years to begin a human health risk assessment in regards to the air program and wishes to begin the preparation of human health risk work plan for fugitive dust emissions. They recognizes the need to obtain certain relevant data while the risk assessment work plan was developed but felt that the proposed reduction in scope with the acknowledgement of certain EPA recommendations in the June 16, 2006 letter would be justified. As a followup to that written proposal ARC has contacted EPA about initiating discussions regarding the potential scope and approach for such a human health risk assessment work plan for fugitive dust emissions. Initial discussions between ARC's and EPA's risk assessment staff were held on October 12, 2006. EPA can see potential value in beginning such discussions but based on the need to address certain issues raised in ARC's responses which most likely would not be addressed by a human health risk assessment work plan does not see the value in delaying the submittal of these review comments until those discussions have been completed as suggested by ARC.

3. ARC noted in the introductory paragraphs that they had agreed with a subset of EPA proposed modifications. ARC subsequently implemented changes as of July 1, 2006. Those proposed changes consist of (1) termination of Particulate Matter less than 10 microns in size (PM10) sampling at AM-2, AM-4 and AM-5; (2) termination of total suspended particulate (TSP) at AM-1, AM-2, AM-3, AM-4, and AM-5; (3) implementation of PM10 sampling at AM-1, and AM-3 and AM-6 with revised metals and radiochemicals (radionuclides) list; and (4) implementation of TSP sampling at AM-6 with revised metals and radionuclides list.

ARC disagreed with EPA's recommendations for the following items; (1) continuation of PM10 sampling at AM-1, AM-3, and AM-6; (2) continuation of TSP sampling at AM-6; (3) installation and operation of three continuous PM10 monitors; and (4) installation and operation of two additional wind monitoring stations. The following specific comments below will address ARC's responses regarding those items.

SPECIFIC COMMENTS

<u>Continuation of PM10 sampling at AM-1, AM-3, and AM-6</u>

1. ARC does not agree with EPA's conclusion that additional sampling is required at AM-1, AM-3 and AM-6 for PM10 and associated metals and radionuclides based on their evaluation that (1) the amount of data collected was adequate to derive exposure point concentrations for use in a risk assessment in regards to inhalation and (2) that the data collected so far suggests that direct inhalation of site contaminants is a minor exposure pathway.

ARC in this section of the letter incorrectly states that EPA had previously agreed that one year of monitoring was required to produce data sufficient to for risk assessment. ARC should note that as far back in letters from EPA regarding air monitoring on May 6, 2005 and June 29, 2005 that EPA's stated position regarding the length of possible sampling was as follows:

"In many cases at least 3 years of data is needed for ambient air level determinations; however it would be possible to assess the data after one year to determine what levels of correlation are

exhibited between the air monitoring locations. At that time if some of the locations exhibit significant correlations the monitoring approach could be revisited."

Also included in this section of the letter is the statement that the decision to cap the tailings as proposed in ARC's Dust Abatement Work Plan submitted in November 2004 was deferred until a one year air quality monitoring program was completed. This statement is offered in support of the statement that since EPA's capping of portions of the tailings in May 2006 that the current air quality monitoring no longer represents the original conditions which justified the installation and operation of the air monitoring program. EPA is not aware of any such decision, by either itself or fellow regulatory agencies, to defer the capping the potential fugitive dust source areas in the sulfide tailings to allow the completion of a one year air quality monitoring program.

As was elaborated on in the recent September 19, 2006 Yerington public meeting the November 15, 2004 dust abatement work plan was an outgrowth of NDEP's original proposal to cap both the sulfide tailings and the evaporation ponds with oxide tailings. In discussions concerning that approach both EPA and BLM stated that evaporation ponds should not be capped with gravel due to the potential radiological contamination, but should consider "soil sealing" them. Both EPA and BLM asked NDEP to ask ARC to look at soil sealing as well as capping with gravel, but NDEP declined to so, and subsequently directed ARC to provide a work plan for capping with gravel only requesting that ARC cap both the sulfide tailings and the evaporation ponds. When both EPA and BLM reviewed the work plan, submitted in November 15, 2004 both agencies provided verbal comments in December 2004 noting the previously expressed concerns regarding capping versus soil sealing. However once the unilateral administrative order (Order) was issued in March 2005 the work plan review comments were put on hold until the work could be better integrated with the initial response activities called out in the UAO. This is the sequence of events concerning the November 15, 2004 dust abatement work plan that EPA is aware rather than a decision to defer capping until one year of air monitoring was completed.

As previously stated in the June 16, 2006 letter EPA does not agree with the proposal requesting elimination of all routine sampling. Monitoring sites AM-4, AM-5, and AM-6 consistently had the highest PM_{10} concentrations. However, since AM-5 is very close to AM-6, EPA would agree to drop AM-5 and keep AM-3 to assess impacts blowing east towards the town of Yerington. Monitoring site AM-1 should remain operational to document upwind and southern boundary conditions. The PM_{10} inter-site correlation between sites AM-1 versus AM-2 and AM-3 versus AM-4 is 0.95 and 0.88, respectively. If one outlier point concentration at AM-5 is removed (PM_{10} concentration of 60.81 at AM-5 on 3/11/05), the inter-site correlation between sites AM-5 versus AM-6 is 0.86. If this point is not removed, the correlation is 0.56. This demonstrates that concentrations for sites AM-2, AM-4, and AM-5 can be calculated (if needed) with a good level of accuracy and these sites can be approved for termination of PM_{10} and TSP sampling.

This sampling modification will allow for a reduced sampling protocol, but will continue to provide useful data to determine potential health risks and public health exposure based on the following criteria: a) sampling location with respect to local populations, b) sampling location based on prevailing winds, and c) need to continue long-term air quality data assessments.

Therefore EPA feels that 1 in 6 day PM_{10} sampling should continue at AM-1, AM-3, and AM-6 to better characterize mine tailings and/or processed waste material fugitive dust emissions. The point raised in ARC's letter that the capping of the potential fugitive dust sources in the sulfide tailings and evaporation ponds would change the baseline characteristics of the dust emissions from the site does have some technical relevance Therefore to address those changes and to ensure that the dust capping was successful in regards to those potential sources the at least one year of air quality monitoring following the completion of the capping in April of 2006 should be completed. At that time a reevaluation of the approach would be merited.

Continuation of TSP sampling at AM-6

ARC maintains that the additional sampling for TSP at AM-6 is not justified based on several other potential sources in the area along with the concentrations of metals and radionuclides seen to date.

Although EPA still sees value in TSP/PM10 collocated sampling, since it would improve the determination of the size fraction characteristics of particles migrating off the north end of the site. However EPA thinks that a reasonable alternative approach could be the estimation of TSP concentrations using an established PM10 to TSP conversion equation (specific to AM-6) and eliminate TSP sampling at AM-6.

Continuous PM10 Monitoring

ARC's evaluation is that they see no basis for EPA's proposed continuous PM10 monitoring given the results of the past one and half years of sampling. They go on to state that subsequent to the capping of the sulfide tailings in May 2006 dust storms had not been observed even though site wind speed has been documented in excess of 36 mph. While that was true as of ARC's response on August 3, 2006, on August 14, 2006 a dust storm was observed appearing to originate in the area that had been previously capped. Neither the wind direction at that time nor the cause of the dust storm has been determined yet. It may be due to unusual dry soil moisture conditions as have been noted as a possible explanation for large amounts of particulates seen at lower wind speeds, or due to unusual wind directions resulting from the extreme variability of the site topography in conjunction with the meteorological conditions in the Mason Valley area or even as possibly due to winnowing of the finer size fractions from the capping material no clear explanation seems to be apparent. Therefore to better understand the site conditions at high wind speeds EPA still feels that the installation and operation of three continuous PM10 monitors is justified for the site.

Therefore EPA reiterates that continuous PM_{10} monitoring should be implemented with the following configuration:

- ARC install and operate two Thermo Environmental ADR1200S continuous particulate monitors at AM-1 and AM-3. The operation of these monitors will accomplish two goals: 1) evaluation of continuous PM_{10} concentrations during high wind/dust events, and 2) correlation with PM hi-vol samplers to develop a slope and correction factor for accurate determination of real-time PM_{10} concentrations using the ADR 1200S monitors.

- In addition, ARC install and operate a Rupprecht and Patashnick TEOM 1400A FEM continuous monitor with ACCU system at AM-6. This system will be used to continuously monitor PM_{10} and collect samples if a PM_{10} concentration-based criterion is exceeded. EPA will request that if two 60-minute average PM_{10} concentrations exceed 300 μg/m (two times the 24-hour National Ambient Air Quality Standards for PM_{10}) , the ACCU system be programmed to collect samples on the collection media for up to 12 additional hours of sampling. These samples will be analyzed for all parameters on the revised analyte list.

- ARC and its contractor work with EPA to evaluate the most effective configuration for the ACCU system and best laboratory analyses method for analysis of ACCU filters.

Additional Wind Monitors

ARC disagrees with the installation of two additional wind monitoring locations at the Site. They state that they assume that the justification for these additional locations is derived from EPA's evaluation of the Terry McGuire's evaluation of wind data from the Yerington DRI wind monitoring sites, which they have not been provided. The raw meteorological data was provided previously by the Yerington Paiute Tribe to NDEP and it was assumed that it was passed along to ARC. If that is not the case EPA is sure that it can be provided.

However the anomalous behavior of the dust storm on August 14, 2006, along with the dune sands of mine materials with wind ripples illustrating a general west to east transport direction which is easily observable east of the site in the drainage adjacent to the abandoned drive in movie theater, in conjunction with the variability in wind directions seen in the DRI data supports the installation and operation of two additional wind monitoring stations on the middle and at the southern end.

Summary

Therefore EPA directs ARC to implement the above noted changes consisting of (1) continuing PM10 sampling at AM-1, AM-3, and AM-6; (2) installation and operation of three continous PM10 monitors; and (3) installation and operation of two additional wind monitoring stations. In regards to the continuation of TSP sampling at AM-6 EPA will agree with its elimination based on the assumption that ARC could potentially estimate TSP concentrations using an established PM10 to TSP conversion equation (specific to AM-6).

Based the continuing need to assess the potential risk of migration of contaminants of potential concern, in conjunction with the extensive previous discussion regarding the appropriate technical approach to be used, EPA is requiring ARC to modify the work plan and implement the described work as soon as possible, in accordance with the UAO.

Please notify EPA of ARC's response, within 14 days, by electronic mail, in writing, along with verbal notification by November 2, 2006. The response should ARC agree to implement the modifications should include a detailed description of the action to be implemented along with a proposed schedule for implementation. Following EPA's review of ARC's response EPA will

provide approval, should it be deemed appropriate, of the approach to be incorporated in a revised Air Quality Monitoring Work Plan.

If you have any questions in regards to the comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Patrick Plumb, BLM
Joe Sawyer, NDEP

:

Atlantic Richfield Company

Roy I. Thun
6 Centerpointe Drive
LaPalma, CA. 90623-1066
Office: (661) 287-3855
Fax: (661) 222-7349
E-mail: thunri1@bp.com

November 20, 2006

Mr. James Sickles
Remedial Project Manager
USEPA Region 9
75 Hawthorne Street
San Francisco, California 94105

Subject: **Transmittal of Draft Work Plan for Modified Air Monitoring Program at the Yerington Mine Site and Response to EPA letter dated October 19, 2006 (EPA Response to *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated August 3, 2006 submitted by Atlantic Richfield Company, Anaconda Copper Mine Site, Yerington, Nevada)**

Dear Mr. Sickles:

The Atlantic Richfield Company ("ARC") has prepared the attached draft Work Plan for modifying the air monitoring program at the Yerington Mine Site in accordance with your letter of October 19, 2006 (*U.S. Environmental Protection Agency response to Atlantic Richfield Company's August 3, 2006 letter requesting a scope reduction in the air monitoring program at the Yerington Mine Site in Yerington, Nevada*), and ARC's October 30, 2006 letter to EPA stating ARC's intent to comply. Specifically, the attached draft Work Plan addresses continuing the PM10 monitoring at AM-1, AM-3 and AM-6, discontinuing the TSP monitoring at AM-6, implementing continuous PM10 monitoring at AM-1, AM-3, and AM-6, and installing two additional continuous wind monitors. The attached draft Work Plan also reflects the U.S. Environmental Protection Agency's ("EPA's") directive to work with EPA regarding the details of the latter two elements.

For the reasons set forth below, ARC believes that certain of the air monitoring activities and attendant costs that EPA insists ARC conduct are neither necessary nor consistent with the National Contingency Plan. Although ARC will comply with EPA's direction to conduct such air monitoring pursuant to the terms of the March 31, 2005 UAO, ARC also expressly reserves all of its rights under CERCLA, including its rights for recovery of such costs from the Superfund pursuant to Section 106(b) of CERCLA , 42 U.S.C. Section 9606(b).

ARC's compliance with EPA's requests should not be construed as a substantive agreement with the rationale provided by EPA in its October 19th letter. This correspondence and ARC's August 3, 2006 letter set forth the basis for ARC's technical position and our disagreement with

EPA's stated position requiring further air quality monitoring at the site. ARC's areas of disagreement are documented in the sections following the description of technical modifications in the air monitoring program.

In addition to outlining our technical dispute, ARC is proposing several modifications to the specific equipment described in EPA's letter with the intent of achieving best practices and improving ARC's ability to meet EPA's stated objectives. Some of these changes are based on previous discussions and interactions between ARC and EPA staff and consultants. These modifications are described below.

AIR AND METEOROLOGICAL MONITORING PROGRAM MODIFICATIONS

ARC proposes to install three continuous TEOM 1400 FEM monitors at AM-1, AM-3 and AM-6. The use of TEOM analyzers is greatly preferable over the Thermo Environmental ADR1200S monitors proposed by EPA, because the TEOMs are designed for year-round continuous operation, and because they are EPA approved "equivalent" PM10 monitors. The data from the TEOMs can be directly compared to the PM10 NAAQS, and there is no need to operate manual PM10 samplers to develop slope and correlation factors. There have been numerous studies that have compared TEOM monitors with manual samplers, and so there is no need to replicate those studies. Therefore, the one in six-day manual PM10 sampling at sites AM-1, AM-3 and AM-6 proposed by EPA would not be necessary because ARC is proposing to use the EPA approved TEOMs at all three sites.

ARC also agrees to install two new 10-meter wind monitors at AM-1 and AM-3. ARC recommends re-locating the existing meteorological station to AM-6 and installing a 10-meter meteorological tower. All wind measurements will therefore be made at the EPA recommended height of 10 meters above ground level and will be collocated with the three TEOM monitors. In addition, the meteorological station at AM-6 will be outfitted with a 2- and 10-meter temperature/delta temperature system, in conjunction with the existing solar radiation monitor. These additional parameters will allow the use of EPA's latest air quality dispersion model, AERMOD, for any future air dispersion modeling analyses.

ARC has investigated the usefulness of EPA's suggested ACCU sampling system at AM-6. It must be noted that the ACCU sampling system flow rate is 13.6 liters per minute (lpm), which is approximately two orders of magnitude lower than the PM10 high-volume sampler flow rate. The lower flow rate reduces the amount of material collected on the filter which can result in increased reporting limits for the laboratory analysis methods that can be used for the revised analyte list (aluminum, arsenic, cadmium, chromium, cobalt, copper, manganese, nickel, sulfate, gross alpha, radium 226, radium 228, thorium 228, and thorium 230).

As an alternative ARC is proposing to utilize X-ray Fluorescence (XRF) Spectroscopy to analyze the ACCU Teflon filter samples for the eight metals on the revised analyte list. XRF is a non-destructive and sensitive analytical technique for a wide variety of elements. The combined use of XRF and Teflon filter media will allow for minimum ambient concentration detection limits similar to the existing detection limits for the high-volume sampler with ICP analysis of quartz filter media for most of the metals on the revised analyte list. In addition, the Teflon filter will be analyzed by XRF for total mass of radium, thorium, and uranium. Note that XRF cannot

quantify specific radium, thorium, and uranium isotopes or gross alpha/gross beta. Subsequent to XRF analysis, the Teflon filter will be digested for sulfate analysis.

In summary, ARC has proposed the above improvements to EPA's recommended design for EPA's consideration. ARC will begin the procurement and installation of the additional equipment after receiving EPA's comments on the attached draft Work Plan. We currently estimate that we will require approximately three months to complete the installation of the new equipment and begin data collection.

ARC RESPONSES TO EPA'S COMMENTS ON THE AIR MONITORING PROGRAM

General Comments

General comment 1 lists two goals for the air monitoring program that EPA implies have not been met. As described in EPA's letter there is a lengthy history of correspondence regarding the details of the air monitoring program at Yerington. EPA states that air monitoring goals have always been twofold: 1) to evaluate what metals and radionuclides contained in the surface dust and dirt are migrating off site and in what concentrations of PM10 and TSP, and 2) to provide sufficient data for a human health and ecological risk assessment. ARC maintains that both goals have been accomplished. EPA's position with respect to ARC's August 3, 2006 letter is indicative of the fact that data quality objectives ("DQOs") that include specific decision rules were not established prior to initiating the air monitoring program. Without agreed upon DQO decision rules, the necessity and usefulness of the data will be uncertain. The only way to resolve this disagreement is by establishing DQOs with detailed decision rules for use of the monitoring data. Further explanation of ARC's views follow.

Goal 1. Characterizing concentrations of metals and radionuclides in PM10 and TSP at the Site boundaries: As of August 2006, over 85 samples have been collected on a 6-day sampling schedule from each monitor over the past year and one half. Concentrations of metals and radionuclides present in these samples have been analyzed, providing for detailed characterization of these chemicals in fugitive dust at six locations around the site. Factors influencing the type and concentrations of each analyte include meteorological conditions and chemical composition and physical state of source material. Since it is unlikely that these three factors influencing metals concentrations in dust have changed during the program, the only reason to continue this monitoring effort would be if this period of time was not considered to be adequate to fully characterize conditions over a longer time period, or if the one in six-day sampling schedule was not adequate to accurately determine average and maximum analyte concentrations. The likelihood of changes in these factors that could affect the current characterization is discussed below.

With respect to the influence of meteorological conditions, the existing air data include samples that are representative of every season and variation in weather (rain and storm events, various wind speeds and directions, etc) based on collection of samples every sixth day over the past year and one half. Meteorological data has also been collected for over one and one-half years. According to EPA guidance in *Guidelines on Air Quality Modeling* (EPA, 2006a) and in *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA 2000a), one year of site specific meteorological data is an adequate length of record for representative

meteorological data. Therefore, the collected meteorological data is representative of seasonal variations in weather conditions.

Comparison of wind rose diagrams for all days in the data collection period with wind rose diagrams derived from every monitored or sampled day show substantial concordance (see Appendix J in the *4th Quarter 2005 Air Quality Monitoring Report*). Not only are the general wind flow patterns, average wind speed, and percent calms very similar for the two data sets, but the wind directions associated with high wind speeds also agree well (high wind speeds typically occur with southwest to northeast wind directions). The collected wind data was analyzed using three daily wind parameters that characterize high wind event days; the daily average wind speed, the maximum 15-minute peak wind speed, and number of minutes during each day that the 15-minute average wind speed was above 20 mph. These data were summarized for the entire time period, as well as the air sampling days. There is good agreement between the "all days" and "sampling days" data sets for these three parameters. In summary, these analyses indicate that the meteorological conditions during the sampling days are representative of the entire time period, and that an adequate length of record of meteorological data has been collected. Therefore, ARC maintains that it is not necessary to continue the air monitoring effort because the length of record is adequate and the data adequately characterize high wind speed conditions.

EPA's one in six-day sampling schedule was developed to allow for accurate determination of average and maximum ambient air concentrations while balancing the required monitoring resources. EPA performed statistical data analyses to determine how sampling frequency affects the estimation of the annual average and maximum 24-hr particulate matter concentrations. In *Procedures for Handling Aerometric Data* (1973), EPA staff tabulated the error in calculated annual average concentrations for various sampling frequencies as compared to daily sampling. For the one in six-day sampling frequency, the percent error for the calculated annual average concentration is 3.2 percent.

EPA's *Guidelines for the Evaluation of Air Quality Data* (EPA, 1974) discusses the statistical distributions of air quality data and tabulates the difference between observed maximum 24-hour concentration (using a one in six-day sampling frequency) and the true maximum 24-hour concentration (measured using a daily sampling frequency). The ratios of observed maximum to true maximum concentrations range from 1.0 (when the one-in-six-day schedule includes the maximum day) to 0.60, with an average of 0.74. In other words, a one-in-six day sampling schedule can result in an underestimation of the true maximum 24-hour concentration by approximately 26 percent. EPA has also presented techniques to estimate the expected maximum 24-hour concentration from one in six-day sampling data in *A Mathematical Model for Relating Air Quality Measurements to Air Quality Standards* (EPA, 1971). With these EPA

resources that allow us to quantify the uncertainty associated with our monitored data, the existing sampling schedule is adequate to accurately determine the annual mean and maximum 24-hour ambient air concentrations.

Current conditions representing existing chemical composition and the physical state of onsite sources have been studied for the past one and one-half years. Changes in these factors should result in lower analyte concentrations in fugitive dust because current and proposed future work at the Site is focused on source reduction and immobilization, leading to reduced metals and radionuclide concentrations in fugitive dust. As such, the current data are more conservative (e.g., include higher analyte concentrations and activities) than would be collected in the future. Collection of additional samples as remediation projects are completed would not serve to provide additional protection to off-site residents. Given this conclusion, ARC respectfully requests EPA explain the rationale or technical basis for: 1) why the current one and one-half year period is not an adequate length of record for representative meteorological data and why this Site requires more than a 100 percent exceedance of EPA guidance requirements; and 2) why EPA does not recognize that the existing data adequately characterize high wind speed conditions consistent with the relevant EPA guidelines.

Goal 2. Provide sufficient data for a human health and ecological risk assessment: ARC disagrees with EPA's conclusion that air quality monitoring is needed for assessing ecological risks. The AQM program was clearly designed to assess risks to human receptors. Prior to October 19th, EPA did not assert that AQM was needed for ecological risk assessment (ERA) except as a potential DQO described as an "eco risk assessment" in EPA's February 24, 2005, Revised Review Comments on Draft Air Quality Monitoring Work Plan.

Regarding human health risk assessment ("HHRA"), EPA guidance, *A Preliminary Risk-based Screening Approach for Air Toxics Monitoring Data Sets* (2006b), provides a framework for addressing acute and chronic health risks using air monitoring datasets. Typically, an air monitoring dataset consists of air samples that are collected discontinuously over relatively short periods, such as a 24-hour period once every sixth day for a year (EPA, 2006). As noted in the guidance, the air data usually are collected from "one, two, or other small number of monitors" within a geographic area of interest (EPA 2006).

The existing air monitoring data for the Site are consistent with EPA (2006) recommendations in terms of: 1) sample duration (24-hour period); 2) collection frequency (every sixth day); 3) program duration (over one year); and 4) number of monitors (six monitors within a single air shed). One year of sampling data are sufficient for evaluation of chronic and acute exposures and sufficiently capture seasonal variability, storm events, and fluctuations in source material (EPA, 2006). ARC asserts that it is essential that the goals of this program must be clearly defined to ensure that data will be considered sufficient for use in future risk assessment efforts. It is imperative that DQOs with specific decision rules be agreed upon and approved by EPA to ensure collection of high quality, useful data. It is of utmost importance that the monitoring program design be based on answers to the following questions provided in the *Air Toxics Risk Assessment Reference Library Technical Resource Manual* (EPA, 2004) and *Guidance for the Data Quality Objectives Process* (EPA, 2000b):

1) What is the risk management decision to be made, and how will assessors use monitoring results in that decision?

2) How accurate must the results be to be useful in decision-making (e.g., how much uncertainty is acceptable to allow for a decision to be made)?

3) What methodologies are available to monitor at a particular level of quality?

4) What resources (time and money) are available for the monitoring program?

For example, if the primary goal is to collect data for use in risk assessment, then parameters characterizing an adequate database must be provided, including the number of samples required, sampling frequency and duration, maximum detection limits, rationale and justification for specified sample locations, protocol for estimating dust concentrations for areas where monitors may not be located, preferred treatment of nondetect results during data analysis, what are the minimum requirements for data completeness, representativeness, accuracy, comparability, and precision, and any other parameters that will guide collection of useable data. To address these goals, the attached draft Work Plan presents clearly defined DQOs for the remainder of the air monitoring program (note that specific DQOs for a screening-level risk evaluation of the air monitoring data would be developed in a future Work Plan).

In General Comment 2, EPA notes that there is potential value in beginning discussions of a risk-based screening evaluation work plan for fugitive dust emissions, but contends that such a work plan is not likely to address certain issues raised in ARC's responses of August 3rd. ARC disagrees, and contends that a future work plan for a risk-based screening evaluation or some other means to identify objectives is exactly what is needed to support the development of DQOs with specific decision rules and the determination of any remaining air monitoring needs. ARC's intent was to provide a scope of work for evaluation of the existing air monitoring data in the context of a screening-level risk evaluation. This work would include a summary of the air characterization to date, an evaluation of the data usability for risk assessment, and a comparison of exposure point concentrations to chronic and acute screening levels.

The proposed work would respond to immediate concerns regarding inhalation exposures to nearby residents while identifying any data gaps and uncertainties associated with the existing data. The work also would allow ARC to respond to ATSDR's recent health consultation conclusions. ATSDR (2006) found that long-term, or chronic, exposure to airborne contaminants does not present an "apparent public health hazard" to residents living near the Site. ATSDR (2006) also found that "None of the measured air contaminant concentrations represent a short term health hazard." Nevertheless, ATSDR stated that the existing site air monitoring data that have been collected routinely every six days for one and a half years are inadequate to characterize infrequent "peak wind events" that they feel may lead to worst-case acute air concentrations.

In order to avoid any further misunderstanding of both the value and intent with regard to the proposed screening-level risk evaluation, ARC requests to meet with EPA to present the benefits of this evaluation in guiding decisions regarding the air monitoring program. For example if, as ATSDR concluded, no long-term risks to residents are found, then there would be no need for further sample collection to characterize long-term exposures. If ARC demonstrates that the existing data may be used to adequately estimate "worst case" or "peak wind"

concentrations using various modeling or scaling techniques, then this could influence future air monitoring activities. Modeling "peak" or acute exposure concentrations is timely and cost-effective compared to conducting additional air sampling and would allow ARC to proceed immediately with evaluating potential health risks associated with the site. In addition, uncertainties or data gaps identified in the risk evaluation would be useful in future air monitoring or other media sample planning activities.

ARC maintains that completion of a screening-level risk evaluation of the air monitoring data is both a timely and necessary activity that would provide valuable information for evaluating the existing air monitoring program. As such, we look forward to continuing discussions with EPA to develop the DQOs for a future work plan that will address the screening-level risk evaluation.

Further discussion of specific comments from EPA are provided below.

Specific Comments

Continuation of PM10 sampling at AM-1, AM-3 and AM-6

In essence, EPA's position is that monitoring should be continued "to better characterize mine tailings and/or processed waste material fugitive dust emissions". While ARC recognizes that one can always collect additional data, we do not believe that such actions are technically warranted nor reasonable and necessary under the circumstances. It is unclear how continued monitoring will provide any new data which would allow for a better understanding or characterization of fugitive dust emissions beyond that which can be obtained today using the existing data. The existing air data has been collected over a wide range of weather conditions and seasons and is representative of the variety of conditions that occur at the site (see response to General Comment 1, Goal 1).

EPA also states that continued monitoring is needed to ensure that the capping of the sulfide tailings and the evaporation ponds was successful in reducing dust emissions. Capping of tailing piles and other similar sources is an accepted mitigation measure that has been employed at numerous sites. There is no need to expend resources to demonstrate that this emission control method is effective. It should also be noted that even after the capping, other onsite and offsite dust emission sources such as soil and roadway materials and agricultural emissions still remain that can emit wind blown dust. Therefore, capping the sulfide tailings and the evaporation ponds will only control those two sources and will not result in a reduction of dust emissions from the numerous other sources that could impact the project area.

Furthermore, ARC maintains that continuation of PM10 Sampling at AM-1, AM-3 and AM-6 is not necessary because the existing database is sufficient for calculation of exposure point concentrations and completion of HHRA activities. Additionally, a review of the data by ATSDR (2006) suggests that inhalation of fugitive dust is a minor exposure pathway. In contrast, EPA asserts that continued sampling will provide useful data to assess potential public health exposures based on the following criteria: 1) sampling location with respect to local populations; 2) sampling location based on prevailing winds; and 3) need to continue long-term air quality data assessments. This is another example of the need for a screening-level risk evaluation and DQO decision rules, as provided in the attached Work Plan. ARC contends that these criteria are satisfied by the existing data and that the use of one year of air monitoring data is

common practice in risk evaluations. Not only does EPA fail to provide scientific support for the required sampling, additional data collection further delays site investigation and remedial activities while adding little to actual site characterization.

Continuation of TSP sampling at AM-6

EPA contends that collocated TSP/PM10 sampling would improve the determination of the size fraction characteristics of particles migrating off the north end of the site. Nevertheless, EPA agreed to elimination of TSP sampling at AM-6 and estimation of TSP concentrations using a linear regression equation based on data collected at AM-6. ARC will comply with EPA's direction to use PM10 data from AM-6 to estimate TSP concentrations and will work with EPA to clearly define the accepted method for this extrapolation. However, the purpose and specific DQO decision rule for this information is still not clear. The DQO should state exactly how information on the size fraction characteristics of particles migrating off the north end of the site will be used either in site characterization or in risk assessment. Typically, PM10 data are used to represent the respirable fraction of dust in air and so TSP information is not necessary for exposure assessment.

If EPA requests TSP concentration estimates to provide information about particle size deposition, the direct measurement of size fractions found in soils, capping material, and other sources are more useful than TSP measurements. It is also likely that air modeling would be a much more effective method of providing this information, as discussed below.

EPA's AERMOD air dispersion model can provide estimates of the ambient concentrations of TSP and PM10 particulates, simulate plume depletion of coarse and fine particles, and estimate the amounts of particulate material deposited by wet and dry processes on outdoor surfaces. AERMOD requires particle size distribution and density data for the source material in order to perform these calculations. This type of modeling data would provide more useful data on particle size distribution and deposition than evaluating the TSP ambient concentration data.

Continuous PM10 Monitoring

EPA contends that it is still necessary to better understand the site conditions at high wind speeds, and that three continuous PM10 monitors are needed to accomplish this goal. ARC maintains that continuous PM10 monitoring is not justified nor reasonable and necessary because high wind events have been adequately captured by the existing air monitoring program.

EPA offers a single dust storm event on August 14, 2006 as support for the conclusion that continuous PM10 monitoring is justified to better understand "the site conditions at high wind speeds". Since receiving the response letter from EPA dated October 19, 2006, EPA has recently provided ARC with a list of 11 days of high-wind dust storm events and some photographs during these high wind speed events.

On 5 of the 11 days of supposed dust storm events, air sampling was being performed as part of the one in six-day sampling schedule. The maximum PM10 24-hour concentration measured during these five event days was 38.3 $\mu g/m^3$ on February 4, 2006, which is about sixth-tenths (0.6) of the maximum PM10 concentration measured during the entire program of 60.8 $\mu g/m^3$.

The meteorological conditions for the 5 of 11 event days when air sampling was being performed were compared to the meteorological data for the other six event days, including March 25, 2006 which EPA lists as the most intense event. The peak wind speed on March 25, 2006 was 36 mph, and there were sixty-one 15-minute periods when the wind speed was greater than 20 mph during the day. This can be compared to the meteorological conditions for February 4, 2006, the event day when air sampling was being performed that had the highest measured PM10 concentrations. The peak wind speed on February 4, 2006 was 34 mph, and there were forty-three 15-minute periods when the wind speed was greater than 20 mph during the day. The conclusion is that air sampling has been performed during a similar high wind event, and that the ambient impacts of high wind events have already been characterized.

While there may be disagreement between EPA and ARC regarding whether or not the existing sampling scheme adequately captures "peak" wind exposures, there are methods that may be used to estimate peak exposures using the existing data. Because acute exposure scenarios are not a standard practice in HHRAs conducted under Superfund, ARC believes that collection of continuous monitoring data for this purpose is not an efficient use of resources and prefers to use modeling or scaling techniques to estimate "peak" or acute exposures to off-site residents based on the current monitoring data. As discussed earlier, it can be demonstrated that EPA's one in six-day sampling schedule is adequate to accurately determine the maximum daily ambient air concentrations.

We are also concerned with how the continuous PM10 data may be interpreted, and we propose to work with EPA to develop reasonable assessment criteria for the 1-hour PM10 concentrations. Short-term peak concentrations can be relatively high, yet not result in ambient concentrations of health concern. For example, given a 2-hour period with PM10 concentrations of 1,000 $\mu g/m^3$ followed by 22 hours with typical PM10 concentrations of 30 $\mu g/m^3$, the resultant 24-hour average concentration is 111 $\mu g/m^3$. This daily concentration is still below the NAAQS of 150 $\mu g/m^3$ even though concentrations during two hours in the day were almost an order of magnitude greater. The hourly PM10 concentration data should not be compared to the 24-hour NAAQS as an indicator of impacts that warrant further analysis. It should also be noted that according to 40 CFR Part 50 Appendix K, EPA requires that the daily PM10 value be compared to the PM10 NAAQS, and the daily value is defined as the 24-hour average from midnight to midnight. Therefore, only midnight to midnight 24-hour "block" averages, not "running 24-hour averages", should be calculated from continuous PM10 monitor data.

ARC has more clearly defined the objectives of the continuous monitoring program, as well as develop DQO decision rules in the attached Work Plan including sampling locations, detection limits, precision and accuracy, data completeness, and length of data record required to meet the objectives. Our preliminary recommendation is that the duration be either 10 peak events (defined as when the 1-hr concentration is > 300 ug/m3 and the sampler turns on) or 6 months of monitoring from February through July 2007 (which includes 8 of the 10 events identified to date), whichever is shorter.

Additional Wind Monitors

EPA contends that two additional wind monitoring stations are needed on the middle and south end of the Site due to anomalous behavior of a dust storm on August 14, 2006 and dune sands

of mine materials with wind ripples illustrating a general west to east transport direction. ARC maintains that additional wind monitors for the site are not necessary based on the following rationale.

The most authoritative guidance for siting, operation, and quality assurance of meteorological monitoring is EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA-454/R-99-005; EPA, 2000). In the section on siting and representativeness, EPA states that a single well-located measurement site can be used to provide representative wind measurements for non-coastal, flat terrain, rural situations (note that while there is a variety of terrain surrounding the Site, the terrain between the tailing piles and evaporation ponds and offsite locations to the northeast is relatively flat). EPA notes that the ideal arrangement in complex terrain involves siting a tower between the source and the terrain feature of concern, and other terrain in the area should not significantly affect plume transport in a different manner than that measured by the tower. The current meteorological monitor is sited between the tailing piles and evaporation ponds and the residential areas of interest to the northeast. This EPA guidance document also states that meteorological data should be representative of conditions in the "area of interest" as determined by the locations of the sources and receptors. It is clear that the current meteorological monitoring site is located between the source area and the receptors of interest, and would thereby meet standard EPA requirements as being a representative meteorological monitoring site.

EPA's guidance document also comments on comparing wind data measured at two different locations. EPA (2000) recommends that meteorological data validation include a comparison against other monitoring sites. EPA (2000) explicitly acknowledges that there can be hour-to-hour variability caused by the spatial displacement of the meteorological sites, and therefore recommends that comparing a block of several hours of data is more desirable than making simple hourly comparisons. Variability in winds between monitoring sites on a short-term basis is to be expected, especially during periods of low wind speed and variable wind directions. This is not an indication that the wind data is not representative of the area of interest.

Based on this information, ARC does not agree with EPA's rationale for the need to install additional meteorological monitoring stations.

SUMMARY

The attached draft Work Plan demonstrates ARC's agreement to comply with EPA's letter of October 19, 2006 regarding continued air monitoring activities at the Site. Technical justification is provided for proposed modifications to details of EPA's requests. These modifications are included in the draft work plan. Nevertheless, ARC's planned compliance with EPA's requests should not be construed as a substantive agreement with the rationale provided in EPA's letter. This letter documents the technical basis of ARC's disagreements. One of ARC's principal concerns is that EPA has not included detailed DQOs with decision rules for establishing the uses and reliability of the data to be generated by the activities being required. ARC intends to submit the proposed screening-level risk evaluation of inhalation exposures in a future Work Plan in order to facilitate the implementation of decision rules. In this regard, we request that EPA work with ARC to establish DQO decision rules for this future work plan.

Please contact me at (661) 287-3855 if you have any questions regarding the information contained in this letter.

Sincerely,

Chuck Zimmerman for

Roy I. Thun
Environmental Business Manager

cc: Patrick Plumb (BLM)
Joe Sawyer (NDEP)
Todd Normane (BP Legal)
Stacey Waterman (BP)
Chuck Zimmerman (Brown and Caldwell)
Guy Graening (Brown and Caldwell)
Mark Podrez (RTP)
Rosalind Schoof (Integral)
Matt Arno (Foxfire Scientific)

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Atlantic Richfield Company

Roy I. Thun
Environmental Project Manager

6 Centerpointe Drive
LaPalma, CA. 90623-1066
Office: (661) 287-3855
Fax: (661) 222-7349
E-mail: thunri1@bp.com

December 8, 2006

Mr. James Sickles
Remedial Project Manager
USEPA Region 9
75 Hawthorne Street
San Francisco, California 94105

Subject: Schedule Clarification for the Implementation of the Modified Work Plan for the Air Quality Monitoring Program at the Yerington Mine Site and Request for an Extended Sampling Hiatus during Construction of New Facilities

Dear Mr. Sickles:

As a follow-up to our submittal of the draft Revised Work Plan to modify the air quality monitoring ("AQM") program at the Yerington Mine Site dated November 21, 2006, the Atlantic Richfield Company ("ARC") would like to note a discrepancy between the Work Plan text and appendix, and request that the U.S. Environmental Protection Agency ("EPA") approve an additional two weeks hiatus in December to implement the modified monitoring program. Note the following text from Section 9.0, Schedule, on page 40 (3rd paragraph):

> *"During January 2007, field activity will consist of re-locating/raising the existing meteorological station, installing the additional wind sensors and towers, installing the continuous particulate monitors and weatherproof enclosures, and calibrating all equipment. During this time, operation of the existing meteorological station and PM_{10} high volume air samplers at AM-1, AM-3, and AM-6 will be suspended. Operation of the PM_{10} high volume air samplers, meteorological station/additional wind sensors, and continuous particulate monitors at AM-1, AM-3, and AM-6 are anticipated to begin on February 5, 2007."*

Appendix E of the draft Revised Work Plan included a Sampling and Analysis Plan for 2007 that, according to this proposed hiatus, should have had sampling in January 2007 blanked out. Also, Appendix E shows sampling to be continued through the end of the calendar year. In keeping with the above text, ARC would revise the schedule presented in Appendix E in the final Revised Work Plan. Also, per EPA's intent, sampling using the modified AQM program should continue at least one year following the completion of the capping in April 2006, at which time a re-evaluation of the monitoring approach would be performed.

bp

The hiatus proposed in the above text would eliminate 5 sampling events during the month of January 2007. ARC proposes to make up these events during the period following the end of April 2007. In addition, due to the time required for the proposed installation of new monitoring equipment, ARC proposes to start the hiatus after the December 19th sampling event, which would add an additional two sampling events to the monitoring program in June 2007 prior to the re-evaluation of the AQM data. The attached revised sampling and analysis plan shows these changes and the last sampling date of July 11, 2007 prior to the re-evaluation. Given that there will be a two-month turn-around time for the analytical laboratory to produce the results for radiochemical concentrations, ARC requests that a second hiatus be implemented until ARC and EPA can interpret the meteorological and analytical data collected through July 11, 2007.

ARC believes that the seven make-up events in May and June of 2007 will potentially provide more meaningful AQM and meteorological data prior to the re-evaluation of the AQM program. This assertion is based on our evaluation of air monitoring data in 2005, which indicated that the highest particulate matter concentrations were generally recorded in the summer and fall months.

Please contact me at (661) 287-3855 if you have any questions regarding the information contained in this letter and our request for the longer hiatus to install the new equipment.

Sincerely,

Chuck Zimmerman for
Roy I. Thun
Environmental Business Manager

cc: Patrick Plumb (BLM)
Joe Sawyer (NDEP)
Todd Normane (BP Legal)
Stacey Waterman (BP)
Chuck Zimmerman (Brown and Caldwell)
Guy Graening (Brown and Caldwell)
Mark Podrez (RTP)

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Sampling and Analysis Plan
2007 Planned

Air Quality Monitoring Program
Yerington Mine, Yerington, Nevada

Sample Date	Event #	Analysis	Primary Samples AM-1	AM-3	AM-6	Field QC Samples Dup (10%)	FB (5%)	TB (5%)
12/25/06	117	PM-10	*Sampling Hiatus for Construction*					
12/31/06	118	PM-10						
1/6/07	119	PM-10						
1/12/07	120	PM-10						
1/18/07	121	PM-10						
1/24/07	122	PM-10						
1/30/07	123	PM-10						
2/5/07	124	PM-10	1	1	1	1		1
2/11/07	125	PM-10	1	1	1			
2/17/07	126	PM-10	1	1	1	1		
2/23/07	127	PM-10	1	1	1			1
3/1/07	128	PM-10	1	1	1		1	
3/7/07	129	PM-10	1	1	1	1		
3/13/07	130	PM-10	1	1	1			
3/19/07	131	PM-10	1	1	1			1
3/25/07	132	PM-10	1	1	1	1		
3/31/07	133	PM-10	1	1	1			
4/6/07	134	PM-10	1	1	1		1	
4/12/07	135	PM-10	1	1	1			
4/18/07	136	PM-10	1	1	1	1		
4/24/07	137	PM-10	1	1	1			
4/30/07	138	PM-10	1	1	1		1	
5/6/07	139	PM-10	1	1	1	1		1
5/12/07	140	PM-10	1	1	1			
5/18/07	141	PM-10	1	1	1			
5/24/07	142	PM-10	1	1	1	1		
5/30/07	143	PM-10	1	1	1			
6/5/07	144	PM-10	1	1	1		1	
6/11/07	145	PM-10	1	1	1	1		
6/17/07	146	PM-10	1	1	1			1
6/23/07	147	PM-10	1	1	1	1		
6/29/07	148	PM-10	1	1	1			
7/5/07	149	PM-10	1	1	1			
7/11/07	150	PM-10	1	1	1		1	
Suspension of Sampling Pending Re-evaluation of Air Quality Mon. Program								
		Subtotals =	**27**	**27**	**27**	**9**	**5**	**5**
						11.1%	6.2%	6.2%

Total Primary Samples = **81**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

January 12, 2007

Via Email and U.S. Mail

Roy I. Thun
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
La Palma, CA 90623

Subject: **Atlantic Richfield Company's November 20, 2006 Response to EPA Letter,** dated October 19, 2006 **(EPA Response to *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,*** dated August 3, 2006**) and Draft Revised Air Quality Monitoring Work Plan for the Yerington Mine Site,** dated November 21, 2006 **submitted by Atlantic Richfield Company Anaconda Copper Mine Site, Yerington, Nevada**

Dear Mr. Thun:

This letter transmits comments from the United States Environmental Protection Agency (EPA) on two related documents; (1) *Atlantic Richfield Company's November 20, 2006 Response to EPA's letter dated October 19, 2006* (entitled EPA Response to *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated August 3, 2006): and review comments on the *Draft Revised Air Quality Monitoring Work Plan for the Yerington Mine Site*, dated November 21, 2006. Since the current air quality monitoring program is required under the Anaconda/Yerington Mine Site Unilateral Administrative Order (UAO) for Initial Response Activities EPA Docket No. 9-2005-0011, dated March 31, 2005, any proposed changes to the current air monitoring approach requires EPA's approval.

The *Draft Revised Air Quality Monitoring Work Plan for the Yerington Mine Site*, was submitted by ARC in response to EPA's direction to modify the air monitoring approach as described in EPA 's letter dated October 19, 2006 responding to ARC's *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site,* dated August 3, 2006. Accompanying ARC's *Draft Revised Air Quality Monitoring Work Plan for the Yerington Mine Site* was a response to EPA's October19, 2006 letter. These two documents represent the latest iteration in several communications between ARC and EPA regarding the appropriate level and duration of air quality monitoring required for the Site.

EPA's review comments reflect input from the Yerington Technical Working Group comprised of regulatory agencies such as the Nevada Division of Environmental Protection (NDEP), the United States Bureau of Land Management (BLM), the Agency for Toxic Substances and Disease Registry (ATSDR) along with the Yerington Paiute Tribe (YPT) and the Yerington Community Action Group (YCAG). Since these additional review comments provide valuable input on multiple technical aspects those comments provided in a written format, specifically those from the YPT are provided as attachments.

EPA's comments are provided for both documents and are presented separately as follows:

Atlantic Richfield Company's November 20, 2006 Response to EPA Letter, dated October 19, 2006 **(EPA Response to *Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site*,** dated August 3, 2006)

General Comments

Numerous arguments are presented in ARC's) response letter focusing on a technical argument against the continuation of the current air sampling under the current air monitoring plan or under the proposed air monitoring plan submitted by ARC to EPA on November 21, 2006. However, as was mentioned previously, as a result of the current air monitoring program, along with input from local community groups, and technical reviewers, EPA has identified significant air quality concerns associated with short-term dust storms that emanate from the Yerington site (Site) that need to be characterized and addressed. The revised air monitoring program described in EPA's October 19, 2006 letter will allow EPA to make informed decisions on what meteorological and site-specific conditions lead to large-scale dust storm events that may cause a health concern for local populations, especially those with respiratory and other health-related issues.

Computer modeling programs proposed by ARC for estimating pollutant concentrations have been shown to be inaccurate for predicting concentrations from fugitive emission sources. Based on historical inaccuracies of computer modeling programs, along with the complex combination of enriched metals and radiochemical species that exist in the surface soils on the Site, EPA feels the revised air monitoring plan is warranted. Modeling may be performed by ARC, but should not act as a surrogate for actual PM_{10} air monitoring data.

Specific Comments

Page 2, 3rd paragraph: EPA agrees with ARC's proposal to use the Rupprect and Patachnick TEOM 1400a Federal Equivalency Method (FEM) PM_{10} Monitor in place of the Thermo Electron ADR1200S (ADR). EPA's initial recommendations for using the ADR units were based on correspondence and discussions with ARC's contractor, who had this equipment available and offered to collocate with the PM_{10} hi-volume (hi-vol) samplers to establish a site-specific ADR versus hi-vol PM_{10} correlation.

Page 3, 3rd paragraph: EPA agrees with ARC that data quality objectives (DQO's) and decision rules should be established to evaluate air quality data collected at the Site. However, prior to this current discussion DQO's were not offered by ARC. EPA has consistently argued that decisions with respect to the air monitoring program will be driven by the data and conditions documented at the site and DQOs will help EPA to make informed decisions for the air monitoring program.

Page 3, 5th paragraph: The EPA guidance on air quality modeling, referenced by ARC, is typically used for regulatory modeling applications for demonstrating compliance with national ambient air quality

standards (NAAQS) for industrial-based facilities. However, meteorological conditions on the Site are subject to additional factors not accounted for by traditional models. EPA agrees that the existing meteorological data is representative of seasonal variations in weather, however they do not fully characterize the event-specific meteorological conditions that exist during the large-scale fugitive dust storm events and resultant air quality impacts at each monitoring location. In order to "capture" and characterize these events and the corresponding PM_{10}, metals, and radiochemical concentrations, meteorological data must be collected simultaneously.

Page 5, 2nd paragraph: The air monitoring program implemented by ARC at the Site was implemented to evaluate fugitive emissions from mine waste material for a period of at least one year. At the completion of the one-year period, EPA agreed to evaluate the monitoring program and revise as appropriate. Subsequently, during the one-year monitoring period, EPA completed the remedial capping project in April 2006. By continuing PM_{10} sampling until May 2007 this will allow EPA to evaluate one year of data before and after the completion of capping.

In addition, the documented dust storm events have been shown to last for short periods of 12 hours or less and are followed by calm periods. In effect, a short, intense dust storm that may produce acute high concentrations of fugitive metals and radiochemicals, can be diminished averaged over a 24-hour period. The revised air monitoring program will allow EPA to evaluate these concerns. The goal of the air monitoring program may have shifted, but this is not contrary to EPA guidance.

Page 5, 3rd paragraph: Contrary to ARC's claim that preliminary DQOs were not established for an ecological risk assessment, multiple discussions between EPA and ARC were used to identify and determine goals of collecting air quality data from the Site for the purposes of completing a human health and ecological risk assessments.

During initial discussions regarding air monitoring at the Site, ARC provided response comment to the Nevada Division of Environmental Protection (NDEP) in a letter dated November 20, 2002 in response to a fugitive dust workplan submitted by ARC and subsequent pending air monitoring that was to be performed by ARC. The EPA and NDEP comments and ARC response comments provided the basis for initial DQOs that were established for evaluation of risks to human health and the environment. The EPA/DEP comments and ARC response comments are as follows:

EPA/NDEP comment

> "General Comment: While this document and outline for an approach to studying the airborne dust and particulate problem in Yerington, it has severe limitations in both its Data Quality Objectives (DQOs) and its ability to provide the necessary data to determine if airborne surface materials from the Site have an adverse effect and the health and environment of its off-site receptors."

ARC response comment:

> "Response to general comment: Atlantic Richfield believes that the DQOs are consistent with the first phase of a phased approach to collecting air quality data related to potential fugitive dust emissions from the mine site. The air quality and meteorological data to be collected for a period of one year will provide the basis to identify data gaps and conduct additional investigations as necessary."

ARC continues in the same response comment:

> "By conducting the air pathway evaluation in this manner, Atlantic Richfield would be able to identify and quantify any fugitive dust emissions from the site that may pose a threat to human health and the environment. These data can then be used to support the evaluation of closure alternatives and, if necessary, to evaluate the off-site fate and transport of original or re-suspended."

ARC provides additional supporting information in a subsequent comment in the same document:

> "Until the proposed meteorological and air quality data are collected and evaluated for the nominal one-year monitoring period, it is premature to define DQOs related to acute and chronic health effects. Atlantic Richfield agrees that an additional air pathway investigation may be conducted, but its scope and associated DQOs cannot be defined at the present time without the data proposed to be collected in the Draft Work Plan."

Furthermore, Preliminary DQO's as stated in the *Draft Air Monitoring Program, Yerington Mine* (December 2004) Section 1.0 were as follows:

> "Air quality monitoring will be conducted by Atlantic Richfield Company at the Yerington Mine to support an evaluation of the potential risk to human health and the environment that may result from fugitive dust generated by mine surface units and process areas."

Page 5, 4th paragraph: As stated above, the draft air monitoring plan was submitted to EPA in November 2004 and the EPA guidance document reference in by ARC was authored in 2006 and is in preliminary draft form. This guidance document will be thoroughly reviewed and will be utilized by EPA to help assist in the decision-making process going forward. However, EPA still needs to collect adequate data to evaluate potential mitigation benefits from capping and will evaluate one year of data prior to and after completion of the capping project.

Page 7, 1st paragraph: EPA studies have shown that air modeling programs can be inaccurate for estimating fugitive dust impacts as compared to actual ambient air samples. EPA is not opposed to ARC performing modeling, but considers the use of air modeling as a surrogate method for actual air monitoring as problematic.

Page 7, 3rd,4th, and 5th paragraph: In regards to evaluating the effective of capping of sulfide tailings, ARC asserts that, "There is no need to expend resources to demonstrate that this emission control method is effective." However, based on a review of air monitoring data prior to capping revealed that metals, including arsenic, cadmium, total chromium, and radiochemical isotopes, including Radium 226 and 226, Thorium 228 and 230, and Uranium 238 were measured at concentrations above Preliminary Remediation Goals (PRGs) established by EPA prior to beginning the air monitoring program. EPA feels that it is appropriate to evaluate whether the capping is successful in reducing emissions of the metals and radiochemicals.

Page 8, 3rd and 4th paragraph: ARC presented data in the annual report that demonstrated a very good correlation (0.927) between PM_{10} and TSP data. Direct measurements (sampling) of size fractions found in soils, capping material, and other sources may provide useful information to characterize source material. However, estimation of TSP is a simple and straightforward calculation and provides a statistically acceptable method to estimate TSP concentrations in ambient air near the north property boundary. As previously mentioned, TSP is a parameter that can be used for an ecological risk assessment and coarse particle deposition that may be of concern to local populations and receptors.

Page 8, 6th and 7th paragraph: Witnesses recorded the dust storm events at the Site and provided this information to EPA. However, no other documentation was provided to EPA by ARC to refute or confirm these events and additional events may have occurred that were not documented. In addition, these events have been shown to last anywhere from several hours to over 12 hours. These varying scenarios can produce very high concentrations of metals and radiochemicals that may be diminished in an average 24-hour sample, depending on when sample collection begins.

According to EPA Acute Exposure Guideline Levels (EPA 2006), acute exposure is defined as, "a single non-repetitive exposure for eight hours or less." However, it can be inferred that these dust storm events are not isolated to a single event and repetitive short-term exposure can lead to short-term or subchronic exposures that need to be characterized.

Page 9, 4th paragraph: EPA is concerned that six months is not an adequate timeframe to assess short-term impacts from dust storm events. EPA feels that a minimum of 1 year of monitoring and collection of (up to) 10 dust storm events is necessary. This will allow for collection of one continuous year of data and address review comments that the continuous PM_{10} monitors may have missed seasonal weather fluctuations. If 10 dust storm events are not recorded during the one year period or dust storm events are demonstrated to pose no significant public health concern, EPA will consider the termination of continuous PM_{10} monitoring. However, if peak dust events demonstrate a significant public health concern, EPA reserves the right to require additional air monitoring.

Page 10, 2nd paragraph: The EPA guidance document *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA-454/R-99-005; EPA 2000) referenced by ARC in this argument is typically used for the installation of meteorological towers that collect data for dispersion modeling required for facilities with point source (stack) emissions. The purpose of modeling is for these facilities to demonstrate that their pollutant emissions will not violate the NAAQS and is required to obtain or modify a federal or state air quality operating permit.

The air quality emissions associated with the Site do not fit these criteria, but meteorological tower siting guidance contained in this document can be useful to help describe the conditions that exist at the Site and provide insights to "usefulness" of locating and operating multiple towers collocated at the PM_{10} monitoring locations. Based on Section 3.3 of this document, the Site would be considered as "complex terrain". Section 3.3 states,

> "For the purposes of this guidance, the term "complex terrain" is intended to mean any site where terrain effects on meteorological measurements may be significant. Terrain effects include aerodynamic wakes, density-driven slope flows, channeling, flow accelerations over the crest of terrain features, etc.; these flows primarily affect wind speed and wind direction measurements, however temperature and humidity measurements may be affected. The definition of significant depends on the application; for regulatory dispersion modeling applications, significance is determined by comparing stack-top height and/or an estimated plume height to terrain height – terrain which is below stack top is considered as simple terrain (see Section 3.2), terrain between stack-top height and plume height is classified as intermediate terrain, and terrain which is above plume height is classified as complex terrain."

Fugitive emissions emanate from ground level, so conditions that exist at AM-1 and AM-3 can be classified as complex terrain. Additional guidance from Section 3.3 states,

> "The ideal arrangement in complex terrain involves siting a tall tower between the source and the terrain feature of concern" and "research has indicated that a single wind measurement location/site may not be adequate to define plume transport direction in some situations."

Based on the EPA guidance referenced above, along with the other uncertainties of wind characteristics at the site, EPA feels requiring additional wind monitors is justified. EPA does agree that there may be hour-to-hour variability in wind characteristics at different towers and such variation will be taken into consideration when evaluating the data. However, EPA is concerned with wind conditions at each site and will review data to determine variability and affect on air pollutant concentrations.

Draft Revised Air Quality Monitoring Work Plan for the Yerington Mine Site, dated November 21, 2006

General Comments

EPA is concerned that six months is not an adequate timeframe to assess short-term impacts from dust storm events. A minimum of 1 year of monitoring and collection of (up to) 10 dust storm events should be implemented. This will allow for a continuous one year of data and will address issues such as the possibility that the continuous PM_{10} monitors may have missed seasonal weather fluctuations. If 10 dust storm events are not recorded during the one year period or dust storm events are demonstrated to pose no significant public health concern, EPA will consider the termination of continuous PM_{10} monitoring. However, if peak dust events demonstrate a significant public health concern, EPA reserves the right to require additional monitoring.

EPA and its contractor are working with ARC and its contractor to ensure that all aspects of the revised air monitoring program are implemented to EPA's satisfaction. EPA will provide additional oversight and will inspect the air monitoring network prior to collection of PM_{10} and meteorological data.

If you have any questions in regards to the comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Patrick Plumb, BLM
Joe Sawyer, NDEP

:

Atlantic Richfield Company

Roy I. Thun
6 Centerpointe Drive
LaPalma, CA. 90623-1066
Office: (661) 287-3855
Fax: (661) 222-7349
E-mail: thunri1@bp.com

March 23, 2007

Mr. James Sickles
Remedial Project Manager
USEPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Subject: Transmittal of Revised Air Quality Monitoring Work Plan for the Yerington Mine Site and Response to EPA letter dated January 12, 2007

Dear Mr. Sickles:

This letter transmits Atlantic Richfield Company's ("ARC's") Revised Air Quality Monitoring Work Plan for the Yerington Mine Site ("Work Plan") in accordance with the U.S. Environmental Protection Agency ("EPA") letter of October 19, 2006 (*Response to Request for Air Quality Monitoring Scope Reduction at the Yerington Mine Site*, dated August 3, 2006), and EPA comments on the November 21, 2006 draft Work Plan contained in your letter of January 12, 2007 (*EPA Response to letter dated November 20, 2006 submitted by Atlantic Richfield Company, Anaconda Copper Mine Site, Yerington, Nevada*). Specifically, the final Work Plan addresses continuing high volume PM10 monitoring at stations AM-1, AM-3 and AM-6, discontinuing the high volume TSP monitoring at AM-6, implementing continuous PM10 monitoring at AM-1, AM-3, and AM-6, implementing wind monitoring at AM-1 and AM-3, and defining Data Quality Objectives (DQOs) for the monitoring program.

Note that the high volume PM10 monitoring resumed at AM-1, AM-3, and AM-6 on February 5, 2007, in accordance with the final Work Plan. In addition, the continuous PM10 monitors have been installed and are operating at AM-1, AM-3, and AM-6 as of February 7, 2007. The 10-meter towers have been installed and wind monitors are operating at AM-1, AM-3, and AM-6 as of February 16, 2007.

ARC RESPONSE TO COMMENTS ON DRAFT REVISED AIR QUALITY MONITORING WORK PLAN DATED NOVEMBER 21, 2006

EPA provided one comment on the draft Work Plan.

Comment: "EPA is concerned that six months is not an adequate timeframe to assess short-term impacts from dust storm events. A minimum of 1 year of monitoring and collection of (up to) 10 dust storm events should be implemented. This will allow for a continuous one year of data and will address issues such as the possibility that the continuous PM_{10} monitors may have missed seasonal weather fluctuations. If 10 dust storm events are not recorded during the one year period or dust storm events are demonstrated to pose no significant public health concern, EPA will consider the termination of continuous PM_{10} monitoring. However, if peak dust events demonstrate a significant public health concern, EPA reserves the right to require additional monitoring."

Response: Changes have been made to the final Work Plan in two sections.

1) The 7th sentence, 4th paragraph of Section 1.6 Air Sampling Frequencies and Duration has been modified to read," Peak dust storm events meeting this criterion will be sampled until a total of 10 events are obtained or for six months of monitoring (from February 2007 through February 2008), whichever duration is shorter." The 5th paragraph of Section 1.6 has been deleted.
2) The 1st sentence, 4th paragraph of Section 9.0 Schedule has been modified to read, "... ARC will operate the continuous particulate monitors until either 10 peak concentration events are sampled (defined as when the 1-hr concentration exceeds 300 ug/m^3 and the sampler turns on), or for a maximum of 12 months from February 2007 through February 2008, whichever duration is shorter." The 2nd and 3rd sentences, 4th paragraph of Section 9.0 have been deleted.

Section 6.6.2 of the final Work Plan Appendix B SOP-15 Continuous Particulate Air Sampling has been revised to incorporate data validation suggestions made by EPA's contractor.

In addition, ARC clarified the schedule for the implementation of the modified air monitoring program by letter dated December 8, 2006. The schedule of high volume PM10 sampling was suspended from December 19, 2006 to February 5, 2007 to accommodate construction activities associated with the installation of the continuous PM10 monitoring and 10-meter wind sensors. High volume PM10 monitoring resumed on February 5, 2007 and will continue through July 11, 2007, at which time a re-evaluation of the monitoring will be performed. Appendix E Sampling and Analysis Plan in the final Work Plan has been modified to reflect these schedule changes.

ARC RESPONSES TO EPA'S GENERAL COMMENTS ON THE AIR MONITORING PROGRAM

For the reasons set forth in ARC's letters dated August 3, 2006 and November 20, 2006, ARC believes that certain of the air monitoring activities and attendant costs that EPA insists ARC conduct are neither necessary nor consistent with the National Contingency Plan. Although ARC will comply with EPA's direction to conduct such air monitoring pursuant to the terms of the March 31, 2005 Unilateral Administrative Order, ARC also expressly reserves all of its rights under CERCLA, including its rights for recovery of such costs from the Superfund pursuant to Section 106(b) of CERCLA , 42 U.S.C. Section 9606(b). ARC's compliance with EPA's requests should not be construed as a substantive agreement with the rationale provided by EPA in its October 19th letter. ARC's areas of disagreement are re-iterated below.

- ARC maintains that the two goals of the air quality monitoring program have been accomplished by the monitoring conducted from January 2005 through December 2006:

  1) Evaluate what metals and radionuclides contained in the surface materials at the Site are migrating off-site via the air pathway and in what concentrations of PM10 and TSP, and
  2) Provide sufficient data for a human health risk assessment.

- The existing meteorological data from January 2005 through December 2006 is representative of seasonal variations in weather conditions and is adequate.

- ARC maintains that a screening level inhalation risk evaluation should be conducted on the data collected over the last two years in response to nearby resident concerns. ARC submitted the Draft Screening Level Inhalation Risk Evaluation Work Plan on February 1, 2007. The air quality data that have been collected are adequate for the evaluation of chronic and acute exposures, and sufficiently capture seasonal variability, dust storm events, and fluctuations in source material.

- Capping of the sulfide tailings in April 2006 is an accepted mitigation measure for fugitive dust emissions; therefore, there is no need to continue high volume PM10 monitoring to evaluate this emission control method.

- ARC maintains that continuous PM10 monitoring is not justified nor reasonable and necessary because "peak" dust events have been adequately captured by the existing air monitoring program. There are methods that may be used to estimate peak exposures using the existing data (e.g., multiplying a 24-hour concentration by 24 to estimate the concentration during a 1-hour event).

- ARC disagrees with EPA's conclusion that air quality monitoring is needed for assessing ecological risks.

Please contact me at (661) 287-3855 if you have any questions regarding the information contained in this letter.

Sincerely,

Chuck Zimmerman for

Roy I. Thun
Environmental Business Manager

cc: Pat Plumb (BLM)
Joe Sawyer (NDEP)
Mark Evans (ATSDR)
Tad Williams (Walker River Tribe)
Duane Masters (Yerington Paiute Tribe)
Lyon County Library System
Stacey Waterman (BP)
Jim Chatham (BP)
Todd Normane (BP)
Matt Arno (Foxfire)
Mark Podrez (RTP)
Damian K. Higgins (U.S. Fish & Wildlife)
Doug Herlocker (Tetra Tech EM Inc.)
Rosalind Schoof (Integral Consulting Inc.)
Rich Curley (Holland and Hart)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

May 25, 2007

Via Email and U.S. Mail

Roy I. Thun
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
La Palma, CA 90623

Subject: **Atlantic Richfield Company's March 23, 2007 *Transmittal of Revised Air Quality Monitoring Work Plan for the Yerington Mine Site and Response to EPA Letter dated January 12, 2007***
Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Thun:

This letter transmits comments from the United States Environmental Protection Agency (EPA) on two related documents; (1) *Atlantic Richfield Company's (ARC's) March 23, 2007 Transmittal of Revised Air Monitoring Work Plan for the Yerington Mine Site and Response to EPA Letter dated January 12, 2007,* and the *Revised Air Quality Monitoring Work Plan for the Yerington Mine Site*, dated March 23, 2007. These two documents represent the latest iteration in several communications between ARC and EPA regarding the appropriate level and duration of air quality monitoring required for the Site. Since the current air quality monitoring program is required under the Anaconda/Yerington Mine Site Unilateral Administrative Order (UAO) for Initial Response Activities EPA Docket No. 9-2005-0011, dated March 31, 2005, any proposed changes to the current air monitoring approach requires EPA's approval.

In the March 23, 2007 *Transmittal of Revised Air Monitoring Work Plan for the Yerington Mine Site and Response to EPA Letter dated January 12, 2007* ARC provided two sets of responses; 1) ARC RESPONSE TO COMMENTS ON DRAFT REVISED AIR QUALITY MONITORING WORK PLAN DATED NOVEMBER 21, 2006 and 2) ARC RESPONSES TO EPA'S GENERAL COMMENTS ON THE AIR MONITORING PROGRAM.

The ARC RESPONSE TO COMMENTS ON DRAFT REVISED AIR QUALITY MONITORING WORK PLAN DATED NOVEMBER 21, 2006 states the following:

EPA provided one comment on the draft Work Plan.

EPA Comment: "EPA is concerned that six months is not an adequate timeframe to assess short-term impacts from dust storm events. A minimum of 1 year of monitoring and collection of (up to) 10 dust storm events should be implemented. This will allow for a continuous one year of data and will address issues such as the possibility that the continuous PM_{10} monitors may have missed seasonal weather fluctuations. If 10 dust storm events are not recorded during the one year period or dust storm events are demonstrated to pose no significant public health concern, EPA will consider the termination of continuous PM_{10} monitoring. However, if peak dust events demonstrate a significant public health concern, EPA reserves the right to require additional monitoring."

ARC Response: Changes have been made to the final Work Plan in two sections.

1. *The 7th sentence, 4th paragraph of Section 1.6 Air Sampling Frequencies and Duration has been modified to read, "Peak dust storm events meeting this criterion will be sampled until a total of 10 events are obtained or for six months of monitoring (February 2007 through February 2008), whichever duration is shorter." The 5th paragraph of Section 1.6 has been deleted.*

2. *The 1st sentence, 4th paragraph of Section 9.0 Schedule has been modified to read. "...ARC will operate the continuous particulate monitors until either 10 peak concentration events are sampled (defined as when the 1-hr concentration exceeds 300 ug/m3 and the sampler turns on) or for a maximum of 12 months from February 2007 through February 2008, whichever duration is shorter." The 2nd and 3rd sentences, 4th paragraph of Section 9.0 have been deleted.*

ARC's response does not clearly concur with EPA's statement that the continuous PM10 monitoring should be implemented for a minimum of one year **and** the collection of up to ten dust storm events, but rather in the first section proposes sampling for a total of ten events **or** six months (not the 12 months stated in EPA's comment) but then goes on to list a 12 month period of February 2007 through February 2008. However, in the second section notes that ARC concurs with the statement that the continuous PM10 monitoring should be implemented for a minimum of one year **and** the collection of up to ten dust storm events.

EPA still sees the need to implement the continuous PM10 monitoring for a minimum of one year and the collection of up to ten dust storm events based on a need to assess seasonal aspects. When looking at past wind direction data, specifically for the period from October 2005 through 2006, it appears that a six month period from February through July 2007 (if this actually was ARC's proposal, which appears to be contradicted by the subsequent text in the response) would miss those winds trending to the east along with weaker winds that trend to the south. Based on observations of what appear to be wind blown mine sediments (based on the orientation of ripple structures on the sedimentary surfaces) east of the sulfide tailings ponds in the area of the old drive in theater, continuous PM10 monitoring for one year appears to be technically justified.

Finally in the last paragraph under ARC's response to EPA's comments, it is noted that the high volume PM10 monitoring will continue through July 11, 2007 at which time a re-evaluation of the monitoring will be performed. EPA agrees with the proposed re-evaluation however it

assumed that high volume PM10 sampling will continue until EPA provides formal approval of cessation of the high volume PM10 sampling. EPA will review the re-evaluation as expeditiously as possible and suggests that a proposed schedule for the submittal of the re-evaluation be provided in the interim to avoid undue delays.

EPA's has no specific comments on the *Revised Air Quality Monitoring Work Plan for the Yerington Mine Site*, dated March 23, 2007 beyond those discussed above in regards to *Atlantic Richfield Company's March 23, 2007 Transmittal of Revised Air Monitoring Work Plan for the Yerington Mine Site and Response to EPA Letter dated January 12, 2007.*

In the last section of the ARC's responses ARC reiterates areas of disagreement with EPA's requests regarding air monitoring at the site. While EPA continues to feel that our requests are necessary and consistent with the National Contingency Plan, at this time further discussion of the points noted should be deferred to subsequent discussions when appropriate.

Please confirm in writing by June 13, 2007 ARC's proposed duration of continuous PM10 monitoring and based on our evaluation of that response EPA will hopefully be able to formally approve the revised work plan. If you have any questions in regards to the comments, please contact me at 415-972-3265.

Sincerely,

Jim Sickles
Remedial Project Manager

cc: Chuck Zimmerman, B&C
Tom Olson, BLM
Joe Sawyer, NDEP

:

Atlantic Richfield Company

Roy I. Thun
6 Centerpointe Drive
LaPalma, CA. 90623-1066
Office: (661) 287-3855
Fax: (661) 222-7349
E-mail: thunri1@bp.com

June 11, 2007

Mr. James Sickles
Remedial Project Manager
USEPA Region 9
75 Hawthorne Street
San Francisco, CA. 94105

Subject: **Response to EPA comments dated May 25, 2007 regarding transmittal of *Revised Air Quality Monitoring Work Plan for the Yerington Mine Site* dated March 23, 2007**

Dear Mr. Sickles:

This letter provides Atlantic Richfield Company's ("ARC's") response to U.S. Environmental Protection Agency ("EPA") comments on the final *Revised Air Quality Monitoring Work Plan for the Yerington Mine Site* ("Revised Work Plan") dated May 25, 2007.

Continuous PM_{10} Monitoring Program

EPA provided the following comment regarding the duration of continuous PM_{10} monitoring in a letter dated January 12, 2007 (response to ARC's November 20, 2006 Response to EPA Letter, dated October 19, 2006, and the Revised Work Plan for the Yerington Mine Site dated November 21, 2006):

Comment: "EPA is concerned that six months is not an adequate timeframe to assess short-term impacts from dust storm events. **A minimum of 1 year of monitoring and collection of (up to) 10 dust storm events should be implemented**. This will allow for a continuous one year of data and will address issues such as the possibility that the continuous PM_{10} monitors may have missed seasonal weather fluctuations. **If 10 dust storm events are not recorded during the one year period or dust storm events are demonstrated to pose no significant public health concern, EPA will consider the termination of continuous PM_{10} monitoring.** However, if peak dust events demonstrate a significant public health concern, EPA reserves the right to require additional monitoring." *(Note: emphasis added).*

EPA's comment described the rationale for a minimum 1 year program (i.e., to address seasonal weather variations), and stated that if 10 events are not recorded within a 1 year period, it may not be necessary to continue the continuous PM_{10} monitoring program. Note that the 10-event criteria is not a requirement to collect data for a minimum of 10 events, but rather an acknowledgement that if less than 10 events are recorded, it is an indication that such events are not common and may not pose a significant public health concern.

ARC disagrees with EPA's mandate that continuous PM_{10} monitoring must be conducted for a minimum of 1 year and 10 storm events to ascertain acute health effects of any fugitive dust emissions from the site. ARC believes that peak dust events have been adequately captured by the existing hi-volume air monitoring program, and that ARC's original proposed continuous PM_{10} monitoring schedule of six months or up to 10 events, whichever occurs first, is adequate to determine the significance and frequency of such events, and to confirm the existing hi-volume air monitoring results. However, regardless of our disagreement with EPA's mandate on continuous PM_{10} monitoring duration, ARC will comply with EPA's directive to perform such monitoring for a minimum 1 year period.

ARC proposes to revise the final Work Plan as follows:

1) The 7th sentence, 4th paragraph of Section 1.6 Air Sampling Frequencies and Duration will be modified to read," Peak dust storm events meeting this criterion will be sampled for twelve months, from February 2007 through February 2008. After the one year of monitoring has been completed, an evaluation report will be submitted to EPA and EPA will then determine if the monitoring can be terminated."
2) The 1st sentence, 4th paragraph of Section 9.0 Schedule will be modified to read, "... ARC will operate the continuous particulate monitors for a twelve month period from February 2007 through February 2008. After the one year of monitoring has been completed, an evaluation report will be submitted to EPA and EPA will then determine if the monitoring can be terminated."

Note that it is not necessary to specify an alternative "number of events, whichever occurs first" criteria, since ARC agrees to perform a minimum of 1 year of monitoring.

Hi-volume PM_{10} Monitoring Program

In the May 25, 2007 letter, EPA states that they "assumed that high volume PM10 sampling will continue until EPA provides formal approval of cessation of the high volume PM10 sampling. EPA will review the re-evaluation as expeditiously as possible and suggests that a proposed schedule for the submittal of the re-evaluation be provided in the interim to avoid undue delays."

ARC will complete one year of "post-capping" hi-volume PM_{10} data collection on July 11, 2007. ARC proposes to provide the re-evaluation report with all PM_{10} and metals data to EPA by August 31, 2007. ARC requests that EPA schedule their review of this report immediately thereafter, and provide ARC with a formal determination by September 15, 2007. Given the great expense of continuing the high volume PM10 sampling, ARC appreciates EPA performing their review under this expeditious schedule.

Please contact me at (661) 287-3855 if you have any questions regarding the information contained in this letter.

Sincerely,

Chuck Zimmerman for
Roy I. Thun
Environmental Business Manager

cc: Nadia Hollan-Burke, EPA
Patrick Plumb, BLM
Joe Sawyer, NDEP
Todd Normane, BP – via electronic submittal
Rich Curley, Holland & Hart – via electronic submittal
Stacey Waterman, BP – via electronic submittal
Jim Chatham, BP – via electronic submittal
Chuck Zimmerman, BC – via electronic submittal
Guy Graening, BC – via electronic submittal
Mark Podrez, RTP – via electronic submittal
Rosalind Schoof, Integral Consulting – via electronic submittal
Matt Arno, Foxfire Scientific – via electronic submittal

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

August 29, 2007

Via Email and U.S. Mail

Roy I. Thun
Environmental Business Manager
Atlantic Richfield Company
6 Centerpointe Drive
La Palma, CA 90623

Subject: **(1) *First Quarter 2007 Air Quality Monitoring Report*, dated June 6, 2007**
(2) *Responses to EPA Comments dated May 25, 2007 regarding transmittal of Revised Air Quality Monitoring Work Plan*, dated June 11, 2007
Anaconda Copper Mine Site, Yerington, Nevada

Dear Mr. Thun:

EPA has completed a review of the above referenced documents required under EPA Administrative Order for Initial Response Activities, Docket #9-2005-0011 (UAO), dated March 31, 2005. These documents were prepared by Brown & Caldwell on behalf of Atlantic Richfield Company (ARC).

Attached are comments associated with the First Quarter 2007 Air Quality Monitoring Report. In general, EPA has observed instances of data variability and equipment malfunction which require additional explanation or clarification. In addition, there are instances where ARC provides a general evaluation regarding the data results without reference to the specific backup data, or conclusions that may not be valid given the data variability. Specific comments are provided regarding these issues in Attachment 1. Please submit responses to comments within 15 (fifteen) days, and consider these comments in future reports.

Also, it was difficult for the review team to quickly evaluate the data provided in the Appendices located on the CD as it is not automatically distributed to critical team members. In the future, please provide a complete copy of the reports including the CD to Douglas Herlocker, of Tetra Tech (in addition to myself and James Sickles). In addition, EPA requests that any unformatted (unprocessed) raw data that is available be included in the Appendices as well.

Regarding the June 11, 2007 *Response to EPA comments on the Revised Air Quality Monitoring Work Plan*, the responses are acceptable. The Work Plan is approved upon the condition that the changes proposed in the letter are included in the final submission, and copies of all letter

correspondence associated with the Work Plan (i.e. comments and responses to comments), including this letter, are included in an Appendix. Please submit the final version of the Work Plan within fifteen (15) days.

If you have any questions, please contact me at 415-972-3187 or James Sickles at 415-972-3265.

Sincerely,

Nadia Hollan Burke

Nadia Hollan Burke
Remedial Project Manager
Private Sites Section (SFD-8-2)

cc: John N. Batchelder, ARC
Chuck Zimmerman, B&C
Tom Olsen, BLM
Joe Sawyer, NDEP
Duane Masters Sr., YPT

Attachment: EPA Comments to *First Quarter 2007 Air Quality Monitoring Report, Yerington Mine Site (Dated June 6, 2007)*

ATTACHMENT 1

COMMENTS TO *FIRST QUARTER 2007 AIR QUALITY MONITORING REPORT YERINGTON MINE SITE (DATED JUNE 6, 2007)*

1. Page 13, 4th paragraph (Field Blanks and Trip Blanks): Field/trip sample blanks demonstrated contamination from alpha (3 results), Chromium (4 results), Copper (1 result), Radium-228 (3 results), and Thorium (1 result). EPA requests further clarification and documentation to explain contamination on sample blanks with respect to: 1) previous blank sample results, and 2) results with respect to minimum detection limits. This information will assist in determining whether this may be a systematic issue, or an anomaly.

2. Page 15, 2nd paragraph (Hourly concentration less than zero): 65 records were recorded as less than zero. EPA requests that ARC further explain these results due to the number of invalidated data, particularly whether the operating temperature was adjusted properly.

3. Page 16, 4th paragraph (Section 4.1 Data Completeness): EPA's consultant, Tetra Tech, completed a quality assurance audit procedure on air quality monitors and meteorological towers on March 27th and 28th. The following timeframes document when instrumentation was offline for audit procedure and the data should be flagged as appropriate:

AM-3	TEOM: offline 3-27-07 from 10:43 PST to 11:31 PST Meteorological tower: offline 3-27-07 from 11:46 PST to 12:20 PST
AM-1	TEOM: offline 3-27-07 from 14:08 PST to 14:26 PST Meteorological tower: offline 3-27-07 from 14:40 PST to 15:05 PST
AM-6	TEOM: offline 3-28-07 from 10:41 PST to 10:55 PST Meteorological tower: offline 3-27-07 from 14:40 PST to 15:05 PST

4. Page 19, 1st paragraph (Greater Than the Maximum Possible for the Date and Latitude): EPA requests that ARC more clearly define the "middle day of each month for Yerington, Nevada" and provide an explanation why 482 records were flagged for exceeding this criterion for solar radiation. It must be noted that when Tetra Tech personnel was on-site March 28, 2007 (accompanied by B & C personnel) performing the audit procedure he witnessed and documented that the solar radiation sensor was not positioned correctly and was upside down on the cross-arm mount. Tetra Tech called B & C personnel (via cell phone) to inform them about the situation. The solar radiation sensor was repositioned at that time by Tetra Tech and B & C Personnel. ARC should investigate if the incorrect position of the sensor resulted in the high number of flagged values, and should also document these equipment issues in the report.

5. Page 22, 1st paragraph: Average PM10 concentrations for 1st quarter 2007 range from 6.14 to 11.2 and therefore EPA does not believe the following statement is appropriate, "Average PM10 concentrations were relatively equal at all locations." It would be preferable to simply state the range of average values. Standard deviation information is also not provided in the table to provide a sense of whether the values are significantly different.

6. Page 23, 1st paragraph: ARC states, "Reviewing the wind direction and speed data indicated winds were generally blowing from the north at 11 mph." Rather than relying on this summarization, EPA requests that ARC reference actual wind speed/direction data for this time period to better understand this dust storm event.

7. Page 24, 2nd paragraph: ARC states, "These results indicate that the continuous particulate monitors could be used to monitor air quality at the Site instead of using the high volume air samplers which

are less automated and require more maintenance." Since this is based on collection of only 6, 8, and 9 collocated high volume and continuous PM_{10} samples at AM-1, AM-3, and AM-6, respectively, EPA believes that collection of additional collocated samples is required to obtain a significant amount of numbered pairs to calculate a reasonable correlation coefficient.

8. Page 24, last paragraph (Section 5.1.4): ARC provides a comparison of High volume PM_{10} results before and after capping. It should be noted that to accurately evaluate the results of the capping effort on air quality, other factors would need to be evaluated, including high wind speed data that wasn't available prior to capping, as well as comparison of other data such as surface soil and air monitoring results. This should also be considered during future efforts to develop a monitoring program that may be used to evaluate pre- and post- capping measures that may be needed in the future.

9. Page 25, 1st Paragraph: ARC states, "Based on these data, other sources than the sulfide tailing (e.g., agricultural activity) may play a larger role in air quality near the site." Similar to Comment #8 above, EPA believes that without a discussion of wind characteristics associated with PM_{10} sample collection, the suggestion that PM_{10} samples collected on the Yerington air sampling sites are a result of agricultural activities is unsupported. It would be prudent for ARC to evaluate how the components of surface soil samples which have been previously collected from the tailing materials compare with PM_{10} air samples.

10. Page 26, 1st Paragraph: ARC states, "DRI reported that all three of the filters (primary sample and associated field/trip blank) were very lightly loaded." EPA request further clarification what may have caused "very light loading" on the field/trip blanks.

11. Page 26, 1st Paragraph: ARC states, "For the primary sample, several crustal elements were measured at fairly high concentrations; however, due to the heterogeneous sample deposit, DRI indicated that converting the mass detected to actual concentrations in air may result in a high bias." EPA understands that only a portion of the filter may be analyzed. However, this same protocol has been used extensively for over two years in the process of analyzing high-volume PM10 samples which are cut into strips and digested. This process may actually result in either high or low bias depending on what particles were deposited on the portion of the filter analyzed.

EPA requests clarification to the following questions regarding XRF:

a. Is XRF analysis routinely taken at the center of the filter and if so, please explain why?
b. The ACCU system is designed to deposit a homogeneous sample across filter media. Can ARC provide any information to support the claim that the ACCU deposits samples heterogeneously across the filter media?

12. Page 29, 1st paragraph and table (Section 5.2): ARC should further explain what may have led to the large discrepancy in collocated sample results from 3/19/07. In addition, the correlation coefficients for cadmium (0.11) and aluminum (0.57) are particularly low for the overall quarterly results, this should also be explained.

13. Page 32, 2nd Paragraph: ARC states, "Individual wind rose plots for event during 1Q 2007 indicate that wind direction can be quite different from one event to the next; however, the wind direction is typically similar among the three monitoring locations." EPA believes this statement is somewhat contradictory and deserves clarification. More specifically, EPA would like a time-comparison of wind data from each station showing wind direction at each station during short-term average periods such as 15 minute to one hour averages.