UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105

November 21, 2016

Mr. Anthony R. Brown
Environmental Manager
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Subject: EPA Comments on Atlantic Richfield Company (ARC) Final Revised RI/FS Quality Assurance Project Plan (QAPP), Revision 1 for the Leviathan Mine Site in Alpine County, California; dated June 17, 2016,;Updated Project Database dated June 30, 2016; and the DQOs response from ARC dated August 14, 2015.

Dear Mr. Brown:

The U.S. Environmental Protection Agency (EPA) has completed its review of the 2016 Atlantic Richfield (ARC) Final Revised RI/FS Quality Assurance Project Plan, Revision 1 (Revised QAPP) for the Leviathan Mine Site in Alpine County, California, dated June 17, 2016. EPA has also reviewed the Updated Project Database dated June 30, 2016; as well as the DQOs response from ARC dated August 14, 2015. This work was submitted to EPA pursuant to Administrative Order for Remedial Investigation and Feasibility Study, Leviathan Mine, Alpine County, California (CERCLA Docket No. 2008-18, June 23, 2008).

Background: ARC's Remedial Investigation/Feasibility Study (RI/FS) QAPP, was originally submitted to EPA on July 10, 2009, as Appendix B to the RI/FS Sampling and Analysis Plan (SAP) included in the RI/FS Program Work Plan (PWP). EPA subsequently approved the PWP with comments and direction in a letter dated May 13, 2010. After ongoing discussions to ensure Remedial Investigation/ Feasibility (RIFS) data are fully presented, supported, validated and of sound quality and usability. ARC provided the 2013 Data Summary in October 2014.

In an email dated February 26, 2015, EPA requested specific presentation of data to be provided at a technical meeting to be held on April 1, 2015. No data was provided in advance of the meeting. The PowerPoint presentation from ARC simply provided overall quality assurance and quality control (QA/QC) program. EPA requested that ARC update, revise and submit the RI/FS QAPP. To ensure clarity on expectations, EPA formalized that request in written comments dated April 2, 2015 on the 2013 RI Data Summary Report (DSR).

EPA has provided comments under separate comments on the Data Summary reports and items found to be deficient, particularly the QCSR.

Concurrent to the QAPP and Data summary reports, EPA has been reviewing the Data Quality Objectives (DQOs) DQOs to guide the Leviathan Mine remedial investigation and feasibility study (RI/FS) have been developed by EPA and Atlantic Richfield, with input from stakeholders, through a series of planning steps. EPA developed Programmatic DQOs for the Leviathan Mine RI in 2009. Atlantic Richfield has developed DQOs to guide the On Property (2010, 2015), Off Property (2013), and Reference FRIs (2015). Because of the drawn out duration of the DQO development period, it is important to consolidate the most recent version of each of the FRI DQOs.

On August 14, 2015, in response to EPA requests, ARC provided a table summarizing all DQOs. At the time there was no unifying QAPP in place.

In 2016, the focus shifted to a full update of the QAPP; and it was determined that the most appropriate document for the consolidated set of DQOs is in the QAPP. Going forward EPA directs ARC to ensure, at a minimum, that each annual QAPP update includes any necessary revisions to the RI and FRI DQOs, and that any changes to the programmatic and/or FRI DQOs be explicitly identified in the QAPP update.

EPA held a face to face meeting with ARC on December 10, 2015 requesting that the agenda focus on a discussion of data quality, data validation and data usability. The QAPP and the information requested in the April 2, 2015 letter were not made available in time for the meeting. The topic was generally discussed and the meeting was rescheduled to January 19, 2016.

On, September 5, 2014 Atlantic Richfield provided a comprehensive Technical Memorandum: Current Data Quality Objectives and Leviathan Mine Focused Remedial Investigation Work Plan. In a letter dated November 14, 2014, EPA provided comments and requested an updated master DQO table within 30 days or by December 14, 2014. Atlantic Richfield asked for an extension.

On December 14, 2015, eight months after the April 2, 2015 request, the revised QAPP was submitted to EPA. Revisions to the original QAPP were discussed in a technical meeting with U.S. EPA and ARC on January 19, 2016

On February 28, 2015 ARC submitted a summarized list of DQOs developed for On-Property and Reference focused remedial investigations (FRI) being implemented at Leviathan Mine. DQOs for the Off Property FRI were not included in the submittal.

On July 10, 2015 EPA provided comments on the February DQO submittal. Included in EPA's July 10, 2015 comments was a request that ARC provide point-by-point responses to EPA comments from December 26, 2012, and July 10, 2015; and March 26, 2015 comments from the Regional Board.

On February 5, 2016, ARC provided an annotated Table of contents and a QAPP Crosswalk to help facilitate further discussions and had a conference call with ARC managers on February 10, 2016. EPA is preparing comments to this Table of Contents and will provide comments in a separate comment letter.

On March 9, 2016, ARC provided an RI/FS QAPP that was updated to address comments from the U.S. EPA letter dated February 9, 2016. Revisions to the revised RI/FS QAPP were discussed during a technical meeting on March 28, 2016.

EPA provided additional comments on the revised RI/FS QAPP on April 28, 2016 and conditionally approved the QAPP with instructions for ARC to submit a revised Final Updated QAPP and Data Management Plan within 30 days.

On June 17, 2016 ARC provided the revised Final RI/FS QAPP and response to comments (RTC) table and the Updated Project Database was provided on June 30, 2016.

EPA has completed its review of three deliverables:

I. Final Revised QAPP, dated June 17, 2016
II. Updated Project Database dated June 30, 2016
III. DQOs response from ARC dated August 14, 2015

EPA provides the following General and Specific comments on these three submittals.

I. Final Revised QAPP, dated June 17, 2016

General Comments.

- **G1. Previous Comments:** EPA finds that the majority of ARC responses adequately address EPA's comment. Comments not specifically mentioned or referenced below have been adequately addressed. EPA provides the following remaining comments.

  - **EPA April 28, 2016 Previous Comment 1: Section 3.71. Acquisition of Non-Direct Measurement Data and Figure 5, Process for Review of Non-Direct Measurements.** EPA finds the comments have been mostly addressed with the following corrections:

    - The Data Quality Summary Worksheet is now Attachment 7 in the revised Final QAPP and was incorrectly referenced as Attachment 6 in the RTC.

    - Table 8 Project Database Usability Codes' definition for DOC-3 is "no documentation," and the QAPP Section 5.5.1 definition is "rejected data." These are very different definitions and should not have the same use code. Please clarify this discrepancy. Further, please clearly define how these two different types of data will be used. Rejected data cannot be used, and other data may have limited use. Further, in the instance where there is "no documentation", ARC shall take some action and document clearly how they will fill those data gaps.

  - **EPA April 28, 2016 Previous Comment 2: Section 2.3.1 Conceptual Site Model. EPA Response:** Overall, EPA finds that the ARC response adequately addresses EPA's comment.

Section 2.3.1 references Section 6.3, Updates to the Conceptual Site Model. Please see new comment below on Section 6.3.

- **EPA April 28, 2016 Previous Comment 3: Section 3.7.2.3 Data Storage and Retrieval. EPA Response:** EPA finds that the ARC response mostly addresses EPA's comment, with the following corrections:

    - The RTC stated that Section 8.0 was modified accordingly. To clarify, Section 8.0 is in the RI/FS PWP, and not in the revised Final RI/FS QAPP. Please ensurer the reference is added to the RIFS QAPP as well.
    - The Data Management Plan (DMP) (Appendix C of this revised Final RI/FS QAPP) provides an overview of data management and explanations of the database tables and fields. Table C-1 lists the historical and ongoing data sources in the project database with the usability code. Please include the usability code definitions at the bottom of the table and in the text of DMP.

- **EPA April 28, 2016 Previous Comment 4: Section 4.0 Assessment /Oversight, Performance Evaluation (PE) Samples.** EPA finds the comments have not been adequately addressed. Please ensure that PE samples are stated as a requirement in the Laboratory Analysis Management Program (LAMP) program. In Section 4.1 in the QAPP ARC states:

    Additional QC shall be conducted in the form of the analysis of vendor-supplied Performance Evaluation (PE) samples submitted to the laboratory by the U.S. EPA. If instructed, Atlantic Richfield may introduce PE samples as a double blind sample as part of the submission of field samples to the lab under appropriate COC. Unacceptable results of all such PE samples may be used as the basis for corrective action. "Compliant performance" is defined as that which yields correct analyte identification and concentration values as determined by standard vendor, as well as meeting the contract requirements for analysis.

    EPA requests that this text be updated to include the use of double blind PE samples on a regular basis. EPA anticipates sending 2 to 4 double PE samples per year to Leviathan. If a PE sample failure occurs, follow-up PE samples will be provided. PE sample results will only be used by EPA as one factor in determining whether increased internal data review efforts or oversight such as field audits would be required. EPA believes the PE sample results will help AR substantiate their data quality and internal data quality. EPA acknowledges that PE sample errors can occur, although rare. EPA will not take action to reject data based solely on a single or isolated PE sample failure.

EPA provides the following additional Specific Comments on the QAPP:

- **Section 6.2 Technical Data Summary Reports.** Please revise Section 6.2 to accurately discuss the purpose and content for Technical Evaluation Reports and ensure it clearly outlines the RI/FS process shown on Figure 3. Please also ensure consistent names are used for this report. Currently, the description of Technical Data Summary Reports does not correlate with Figure 3, RI/FS Quality Process, Technical Evaluation Reports. Figure 3 shows Technical Evaluation Reports following the Data Quality Assessment (DQA), and include nature and extent, fate and

transport, and risk screening.
Section 6.2 text states that Technical Data Summary Reports present evaluation of data following the New Jersey EPA DQA process and PARCC evaluation. However, Section 6.1 already describes the DQA and PARCC evaluation and Section 5.4 describes the QCSR. Please review and clarify this redundancy.

- **Figure 3 RI/FS Quality Process.** Please ensure that the QAPP text is consistent with Figure 3. Please explain and define the "Other Data Reports" that point to the DQA box. Under Data Quality review, please add: Prepare QCSR and Assign Data Usability Codes. As noted in the bullet above, the titles and terms are not always consistent. Please ensure the figure matches the text.

- **Section 6.3 Updates to the Conceptual Site Model (CSM).** Please correct spelling of acronym COPCs in first sentence. Please remove the entire second to last paragraph, on page 79 beginning with "The FRI DQOs provide….". This paragraph describes a process for comparing data to DQOs rather than describing when updates to the CSM will be made. Sections 6.0 and 6.1 already address this topic. Please remove redundant text. Going forward EPA directs ARC to ensure, at a minimum, that each annual QAPP update includes any necessary revisions to the CSM and a clear written statement that CSM has been reviewed and updated or remains unchanged. That shall be explicitly identified in the annual QAPP update.

II. Updated Project Database dated June 30, 2016

- **G1: Completeness.** ARC should confirm that the database is complete and includes all historical data. Results should not be removed, rather they should be clearly qualified.

- **G2: Data Availability:** The ARC database is in ACCESS is not user friendly to someone not sophisticated in the use of the database and established queries. There have been instances, when EPA and contractors need the data in Excel in an easier to use formats. EPA requests the opportunity to work with ARC when those queries are needed.

- **G3: Database Standards:** EPA finds that the ARC response adequately addresses the majority of EPA's previous comments regarding the database. EPA directs ARC to ensure that data submittals universally provide the following items:
    1. Clearly document the level of validation on every data point (level 2 or level 4),
    2. Provide one final qualifier for the end user (do not use multiple qualifiers such as laboratory, validation, and final)
    3. Provide clear agreed upon definitions for all fields in the database.
    4. Provide agreed upon reason codes for all validation qualifiers.
    5. Ensure clearly defined usability codes to reflect clear level of QC for every data point.

- **Data Validation Qualifiers:** EPA's request to use consistent standard EPA validation qualifiers has not been completed for all data sets. For example, 2011 sediment data (in the stormwater data table) and 2011 radiological data (in soil data table) do not include level of validation.

Please ensure all data have clearly defined and consistent validation qualifiers for every data point.

- **Updates:** Going forward EPA directs ARC to ensure that, at a minimum, each annual QAPP update includes any necessary revisions to the database, and that any changes to the database be explicitly identified in the QAPP update.

III. DQOs response from ARC dated August 14, 2015

EPA has completed its review of the ARC response to EPA's July 10 2015; dated August 14, 2015. The ARC response to the majority of the comments was adequate. EPA provides the following comments.

- **Previous EPA comment dated July 10, 2015 Comment G1: Off Property:** DQOs for the Off Property FRI were not included in the submittal. **ARC Response:** ARC did not provide the Off Property DQOs in the response to comments, citing their delivery in a separate February 28, 2013 submittal. **EPA Comment:** Appendix B to the June 17, 2016 QAPP appears to contain a complete set of DQOs for the On Property, Off Property, Reference and Supplemental Study Area RIs. Please confirm that this list is complete, current and updated. In addition, an annual review should be completed and documented to confirm any additions or modifications.

- **Previous EPA comment dated July 10, 2015 Comment G3: Accepted DQOs:** The table provides no way of tracking proposed from approved DQO content. Please note that use of the table for tracking concepts across the FRIs should not be misinterpreted by Atlantic Richfield as EPA acceptance or approval of the details under each concept. Please provide a clear summary of approved (or to be approved) DQO content. Note that the DQOs should be prepared based on EPA guidance documents such as Data Quality Objectives Process for hazardous Waste Site Investigations, EPA QA/G-4HW Final, January 2000. **ARC Response:** There is no way to track changes without making the tables too difficult to read. **EPA Comment:** ARC apparently mis-understood the comment. Please provide a DQO tracking table that will facilitate feedback of changes to one set of DQOs (for example the Off Property FRI DQOs) to pre-existing DQOs (for example the On Property FRI and/or Programmatic DQOs). The ARC response focusses on the mechanical revision process within a specific or group of DQO summary tables. Please provide a process that will ensure that the same types and quantities of data are gathered for the same matrix (for example sediment) across all of the Leviathan investigations. The comment has not been addressed. Appendix B to the June 17 QAPP provides progress. All of the Leviathan Mine RI DQOs shall be compiled in one location in the QAPP. Please provide a full evaluation that ensures there is consistency of the DQOs across the different FRIs.

- **Previous EPA comment dated July 10, 2015 Comment G4: Comparison of On-Property FRI DQOs (2010) with the more recently developed Off Property (2013) and Reference FRI DQOs (2015):** EPA has requested assurance that information gathered under each set of DQOs will be comparable for use in the risk assessments, and RI & FS decision making. EPA requested addition of columns to the cross-walk table to identify actions and status of efforts to ensure that data collection efforts across the FRIs would result in

comparable data. Instead, the Status and Action columns added appear to provide partial timelines for RI planning and events. The document does not address EPA's request. Please provided the requested information. In summary, EPA finds the submittal to be incomplete. EPA's request was that a master list of DQOs would be documented to reference and refer to in work plans and field sampling plans; and that the crosswalk table would assist in monitoring the consistency of sampling strategies across the FRIs and identify potential inconsistencies that could prevent comparisons of information necessary to support decision making. **ARC Response:** The response is incomplete. The requested changes to the cross reference table were not made. ARC notes that the differences between DQOs identified in EPA's comment are disregarded as 'minor' or 'slight'. **EPA Comment:** The requested changes appear to have been made to the surface water DQOs of Appendix B to the June 17, 2016 QAPP. However, no changes appear to have been made to the stream sediment DQOs. This continues the potential for lack of comparability between On Property and Downstream stream sediment data if different sample depths are chosen in the field. Differences between stream sediment DQOs in the On Property and Downstream stream sediment continue to indicate the need for ARC to implement a mechanism for ensuring DQOs are consistent across the various FRIs. ARC Shall review all FRI DQOs, compare, and resolve any differences. Please complete this review within 30 days. Going forward, this review should be completed and documented in the annual QAPP updates.

- **Previous EPA LRWQCB comment dated July 10, 2015 RA-2 Reference Area Stream Sediment** - Assessment of ecological risk due to sediment exposure typically requires obtaining Acid Volatile Sulfide (with Simultaneously Extractable Metals). This DQO and other sediment related DQOs provided do not identify the AVS/SEM analysis. Would this lead to an unacceptable limitation on the ability to assess risk at the site? **EPA Comment:** The response did not address the question posed in the comment. The response stated that AVS/SEM would be added to the analyte list for stream sediment. However, the response did not address the question regarding limitations on risk assessment. It remains unclear whether AVS/SEM analysis is necessary to complete the risk assessment at Leviathan Mine. The response seems to indicate that ARC has determined that performing the AVS/SEM analysis is necessary to support the risk assessment. **EPA Comment:** Please provide text and clarity to confirm that AVS/SEM analysis has been completed and will be utilized to support the risk assessment.

- **Previous EPA comment dated November 14, 2014 Comment: Please compare the On-Property FRI DQOs developed during 2010 with the more recently developed Off Property and Reference FRI DQOs** to ensure that information gathered under each set of DQOs will be comparable for use in the risk assessments, and RI and FS decision making. Please provide a response to verify consistency, or provide the modifications necessary to ensure a consistent set of DQOs across the FRIs. **ARC Response:** No response provided. **EPA Comment:** The ARC response is incomplete. The comment has not been addressed.

- **Previous EPA comment dated November 14, 2014 EPA Comment:** Please footnote the table to clarify that the technical details expressed within the cross-walk table do not necessarily reflect EPA approved approaches. For example, the limitation of Reference FRI

sampling to areas of iron-stained breccia expressed for soil sampling in the cross walk table has not been approved by EPA. Inclusion of such information and use of the table for tracking concepts across the FRIs should not be misinterpreted by Atlantic Richfield as acceptance or approval of such details. It would be helpful if shading or coloring was used to differentiate proposed from approved content. **ARC Response:** No response provided. **EPA Comment:** The comment has not been addressed. The subject table is not included within the Appendix B DQOs contained in the June 17, 2016.

- **1. Please update the sampling strategies for each FRI to be consistent with the most recent FRI DQO.** For example, incremental sampling is identified for Mine Waste/Soil in the Reference FRI and incremental sampling is no longer envisioned for the On or Off Property sampling. **ARC Response:** Refers to other documents. **EPA Comment:** The response is incomplete. A table providing the requested information is not provided in the Appendix B DQOs contained in the June 17, 2016 QAPP.

- **2. Provide a column for applicable or relevant and appropriate requirements (ARAR) in the cross walk table.** As-is the table does not provide for consideration of the impact of ARARs on information needed to support future decisions. In addition to risk assessment, ARARs for mine waste and water quality will likely drive decision making at Leviathan Mine and should be acknowledged in this tracking table. **ARC Response:** The response included a discussion of the timing for ARAR identification and statements regarding use of appropriately conservative screening criteria. **EPA Comment:** EPA did not request an ARAR identification or determination. Please provide DQOs to acknowledge ARARs as part of the objective setting information. The response is incomplete. The comment is not fully addressed in the Appendix B DQOs contained in the June 17, 2016 QAPP.

- **3. Please add an Action column.** This column would identify any actions necessary to maintain consistency, utility, and comparability of information collected across the FRIs. For example, the need to revise On Property FRI DQOs and sampling activities to be consistent with later developed Off Property DQOs could be identified. **ARC Response:** Refers to ARC's response to comment G4 of EPA's July 10, 2015 comments. **EPA Comment:** The response is incomplete. The G4 response did not address EPA's comment. The requested information is not provided in the Appendix B DQOs contained in the June 17, 2016 QAPP.

- **4. Please add a Status Column.** This column would identify the status of any items included in the Action column. **ARC Response:** Refers to ARC's response to comment G4 of EPA's July 10, 2015 comments. **EPA Comment:** The response is incomplete. The G4 response did not address EPA's comment. The requested information is not provided in the Appendix B DQOs contained in the June 17, 2016 QAPP.

- **5. Please verify that the Attached DQO comments from Dec 27 2012, both EPA and Waterboard, have been incorporated**. **EPA Comment:** The response is adequate (except as noted above).

- **6. It would be helpful if each FRI DQO table could be preceded by a brief timeline section and date of the latest version that is presented.** ARC Response: ARC is working on a way to provide access to current DQOs without compiling a hard copy each time there is a modification. **EPA Comment:** As agreed, annual updates to the Appendix B DQOs contained in the June 17, 2016 QAPP are expected to address this comment. Within 30 days, please confirm that current DQOs are up to date. Going forward, this review should be completed and documented in the annual QAPP updates.

EPA conditionally approved the QAPP dated June 17, 2016; provided EPA comments are addressed. A few of the comments remain unaddressed as outlined above. EPA's conditional approval remains in place. Within 60 days, or by January 21, 2017. EPA directs ARC to provide a line-by-line response to these comments and submit a revised Final Updated Quality Assurance Project Plan (QAPP) and Data Management Plan that incorporates the Database, the DQOs and the Conceptual Site Model incorporating these changes.

If you have any questions, please feel free to contact me at (415) 947-4183 or Deschambault.lynda@epa.gov.

Sincerely,

Lynda Deschambault
Remedial Project Manager

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