Atlantic Richfield Company

Anthony R. Brown
Project Manager, Mining

4 Centerpointe Drive, 2nd Floor Suite 200
La Palma, CA 90623-1066
Office: (714) 228-6770
Fax: (714) 228-6749
E-mail: Anthony.Brown@bp.com

December 12, 2016

Lynda Deschambault
Remedial Project Manager, Superfund Division
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street, 10th Floor (SFD 7-1)
San Francisco, California 94105

VIA EMAIL AND FEDERAL EXPRESS

Subject: Leviathan Mine Site, Alpine County, California
Administrative Order for RI/FS, CERCLA Docket No. 2008-18
Focused Feasibility Study for Lower Leviathan Creek Beaver Pond/Dam Complex

Dear Ms. Deschambault:

Atlantic Richfield Company ("Atlantic Richfield") is responding to U.S. EPA's November 22, 2016 comment letter regarding conditions in the beaver dam and pond complex downstream of the Leviathan Mine site in lower Leviathan Creek. We understand that U.S. EPA is concerned about a sudden release of acidic water from the beaver ponds. We share that concern, but we continue to believe that careful study of stream conditions and potential remedial alternatives for addressing impounded water and accumulated sediments in this part of the site needs to occur before implementing a remedial (or removal) action. As part of the proposed treatability testing, measures to lower water levels in some of the larger ponds can be evaluated for their feasibility and effectiveness. This will include partial or complete breaching of certain dams. But full-scale dam removal and channel restoration should not occur without a proper understanding of the hydraulic forces in place, the geologic and hydrologic conditions in the area, potential failure modes, and the downstream consequences if the dams were to fail. Doing so could increase the risk of harm and delay completion of the site-wide RI/FS.

Atlantic Richfield is prepared to proceed in 2017 with a focused feasibility study ("FFS") and treatability testing as set forth in the outline and proposed schedule submitted to U.S. EPA on November 7, 2016. For reasons previously stated [1] and discussed further below, however, we cannot agree to—and we do not believe that U.S. EPA is in a position to require—removal of the entire dam complex, restoration of unimpeded flow in Leviathan Creek, or sediment stabilization prior to completion of the RI/FS and issuance of appropriate decision documents in accordance with CERCLA and the National Contingency Plan (the "NCP").

[1] Atlantic Richfield refers U.S. EPA to Adam Cohen's May 13, 2015 letter to Josh Wirtschafter detailing why issuance of removal action memorandum for physical removal of the beaver dams should not be issued (copy included as Attachment 1).

Site characterization is not yet complete in lower Leviathan Creek. In Comments G2 and G3, U.S. EPA states that investigation beyond what is described in existing remedial investigation ("RI") work plans is not needed in the beaver ponds. Atlantic Richfield agrees that surface water, stream sediments, and floodplain soils have been thoroughly characterized. We are not looking to unnecessarily extend or expand the scope of the RI or to delay its completion (Comment G4). But the exact cause of surface water quality changes occurring upstream of Station 15 within the beaver ponds remains uncertain. Although investigations described in Amendment No. 11 to the On-Property FRI Work Plan [2] will assist in showing whether or not inflowing groundwater is affecting surface water pH in this area, additional characterization of surface water / sediment interactions in the beaver ponds is needed to determine if sediments are releasing metals and acidity, and if so, under what conditions. As previously discussed with U.S. EPA, Atlantic Richfield is developing a Task Sampling and Analysis Plan for these investigations, which will be submitted in early 2017. That work will be completed as part of the On-Property RI, however, not the proposed FFS.

Careful analysis and engineering needs to occur before dams are breached or removed. Remedial investigation work and data analysis completed in 2015 and 2016 show that sediments and floodplain soils containing elevated metals concentrations are present within and along lower Leviathan Creek. Some of these materials are currently entrained within the beaver pond complex. Completion of the RI/FS is needed to determine the full nature and extent of these materials, the associated ecological and human health risks, whether remedial action will be required in this area, and if so, what type. In addition, as U.S. EPA is well aware, some of the beaver ponds are retaining surface water that has a lower pH than water immediately above and below the ponds complex. Removing, breaching, altering, or otherwise disturbing some or all of the beaver dams without a full understanding of the dynamics of the system and a plan to manage the impact could result in a sudden release of impounded water, increased flow velocities, sediment disturbance and mobilization, and other unintended consequences.[3]

Where water that may be affected by the release of hazardous substances from a CERCLA site is impounded and needs to be safely managed, appropriate investigations and engineering should be completed prior to disturbing any impounding structures. This was the conclusion of the Bureau of Reclamation's recent report following the Gold King Mine incident, [4] which found that it is "essential" to have an understanding of hydraulic forces and groundwater

---

[2] Task Sampling and Analysis Plan for Surface Water/Groundwater Interaction Investigation near Acidic Pond and Leviathan Creek (Final), May 6, 2016.

[3] This is one of the reasons why Atlantic Richfield agreed to assist U.S. EPA with debris removal in the pond complex but said it would limit its work to what a two-person crew could accomplish using manual labor and hand tools (rather than mechanized equipment) to remove small woody debris from above the water line along the creek banks. The U.S. Forest Service similarly concluded that logs and other debris should not be removed in 2016 from any dams and that attempts at debris removal should generally be confined to areas above the Leviathan Creek water line.

[4] "Technical Evaluation of the Gold King Mine Incident," U.S. Dept. of Interior, Bureau of Reclamation Technical Service Center, Oct. 2015.

systems, analyze potential failure modes and downstream consequences of a structural failure, consider the geologic and hydrologic conditions of the area, and monitor the performance of any constructed structures before taking action. (Although the Gold King context is important, conditions at the Leviathan Creek beaver ponds bear little resemblance to those at the Gold King site; and the failure modes and potential impacts are very different.) These types of analyses and evaluations are precisely what Atlantic Richfield is planning to do as part of the proposed FFS prior to treatability testing. By following the FFS path, Atlantic Richfield would proceed immediately with pre-field-activity evaluations, including hydraulic and sediment transport modeling. We believe these analyses can be completed in time to allow for commencement of treatability testing in late summer/fall 2017, once water levels in Leviathan Creek decrease to the point that in-stream work can be performed without undue safety risk.

Treatability testing will lower water levels in certain ponds, but reducing the threat of a release is not the "objective" of the FFS. U.S. EPA states that its "primary goal" for the beaver ponds complex is to reduce the threat of a sudden release of impounded low pH water and metals-enriched sediments (Comment G1). Comment S4 directs Atlantic Richfield to add text to the FFS work plan indicating that the long term goal or data quality objective for the study is "to return flow to Leviathan Creek." Comment S3 directs Atlantic Richfield to "ensure that the pilot methods being tested will provide sufficient risk reduction … through implementation of a final remedy." We disagree, at least in part, with these comments. While preventing a release of hazardous substances may be a valid remedial action objective, it is not within the scope of the RI/FS. Restoring stream flow (*i.e.*, habitat restoration) is not related to hazardous substances at all, and therefore is not authorized under CERCLA or the NCP.

Again, as part of the FFS, Atlantic Richfield is proposing to perform treatability testing of various dam removal, water management, and sediment stabilization measures in 2017 (Comment S1). Testing will aid in evaluating the implementability, effectiveness, and costs of these alternatives. The testing thus constitutes a core component of the site-wide FS, as described in the NCP [5] and U.S. EPA RI/FS guidance. [6] Since dams will not be re-built after testing is completed, the practical result will be partial reduction of the number of intact dams and ponds and the volume of impounded water remaining in lower Leviathan Creek prior to remedy implementation. Although the exact number and location of dam/pond modifications will depend on the results of the engineering analysis and hydraulic modeling (to be described in the pending FFS work plan), Atlantic Richfield currently expects to alter or remove at least dams 3,

[5] *See* 40 C.F.R. § 300.430(d)(1).
[6] *See* "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," OSWER Dir. 9355.3-01 (Oct. 1988), Ch. 5. As stated in this Guidance (p. 5-5), "treatability testing performed during an RI/FS is used to adequately evaluate a specific technology, including evaluating performance, determining process sizing, and estimating costs in sufficient detail to support the remedy-selection process." As further stated in the Guidance (p. 5-3): "In some situations a specific technology … may not be identified until the later phases of the RI/FS. Under such circumstances, it may be advantageous to postpone completion of the RI/FS until treatability studies can be completed." Treatability testing involves bench-scale or pilot testing of specific technologies, not full-scale implementation of a remedial alternative (*see* Section 5.3).

4, and 5 and to drain or substantially reduce water le vels in the associated ponds. These are some of the largest ponds in the complex.

In addition, appropriate precautions will be taken du ring treatability testing to reduce the risk of sediment mobilization within the af fected ponds (U.S. EPA Comment S4). Even so, Atlantic Richfield's underlying goal or objective in performing the FFS will not be (and should not be) to implement a response action that rem oves or prevents a release of all hazardous substances in, or that restores the pre-dammed condition of, lower Leviathan Creek. Nor will Atlantic Richfield be stabilizing, removing, or otherwise performing response actions in or on other ponds and dams that are not specifically targ eted for treatability testing (Comment S5). Before doing so, Atlantic Richfield a nd EPA need to complete the RI/FS (at least for this portion of the site), identify a preferr ed remedial alternative, solicit public comment on the preferred alternative in a proposed plan, and document a remedial decision.

It is premature—and it would be considered pre-decisiona l—for Atlantic Richfield or U.S. EPA to be specifying remedial action objectives or performing remedial action even in this limited portion of the site in 2017. Moreover, t he administrative orders under which Atlantic Richfield is performing response actions expressly limit i ts obligations to the RI/FS and the collection and treatment of acid mine drainage from th e Channel Underdrain ("CUD"), Delta Seep, and Aspen Seep. Atlantic Richfield cannot proceed with post-RI/FS work (including pre-ROD remedial design) or a separate removal action under the current administrative orders.

Atlantic Richfield cannot submit a FFS work plan by December 22, 2016. U.S. EPA's November 22 letter requests (at p. 5) that Atlantic Richfield submit the FFS work plan and revised schedule by December 22, 2016. This is not possibl e. The schedule and Gantt chart we submitted on November 7, 2016 provide for submission of the work plan on March 21, 2017. This is the earliest date by which the necessary pre-planni ng analyses can be completed and written up. The steps needing to be completed prior to submission of the work plan and their respective durations are shown in the submitted Gantt ch art. Preliminary work to prepare a more detailed vertical profile of Leviathan Creek, pre pare more accurate estimates of impounded water volumes, develop and execute hydraulic an d sediment transport modeling of dam removal, and prepare a subsequent dam breach an alysis and preliminary energy dissipation models will result in a more focused altern ative development for testing in the 2017 field season with less risk of release or mobilization of hazardous substances. Once the field demonstration options are selected and developed, targ eted testing and monitoring parameters and a detailed field program for monitoring the eff ects of the tested options will be developed and incorporated into the work plan. Therefore, the FFS work plan cannot reasonably be prepared ahead of the modeling work with any level of detail.

The beaver ponds are not "interfering" with the effec tiveness of early response actions. U.S. EPA incorrectly asserts that the beaver pond compl ex is "interfering with the effectiveness of ongoing early response actions at the site " (Comment S2). The beaver pond complex has developed over time as water quality condition s in lower Leviathan Creek improved as a result of more aggressive capture and treat ment of the known acid drainage discharges at the mine site. If anything, the existence o f the ponds is evidence of improving

water quality conditions in Leviathan Creek and the continued effectiveness of the early response actions. The beaver ponds do not affect access to the mine site, the duration of the treatment season, or the volume or chemistry of the effluent from any of the on-site treatment systems.

The ponds are doing nothing to affect any activity performed by Atlantic Richfield or the Lahontan Regional Water Quality Control Board ("LRWQCB") as part of the early response actions required by the current administrative orders (the 2008 Administrative Settlement Agreement and Order on Consent for Removal Action, CERCLA Docket No. 2008-29 (the "AOC"); and the 2005 Administrative Abatement Action, CERCLA Docket No. 2005-15 (the "AAA")). Under the AOC, Atlantic Richfield is required to capture and treat flows from the CUD (seasonally), Delta Seep (seasonally), and Aspen Seep (year-round) to meet discharge criteria. The AAA similarly requires that the LRWQCB treat acid drainage discharging from the Adit and Pit Underdrain ("PUD") and captured in Ponds 1, 2S/2N, and 3 to meet discharge criteria. The AOC and AAA do not require any response actions in, or impose any performance standards for, lower Leviathan Creek or for acid drainage discharges other than the five known releases.

Nor are the ponds frustrating the stated objectives of the early response actions. Those objectives—as U.S. EPA articulated in the applicable action memoranda—emphasized effective and practicable capture and treatment of the known releases of acid drainage at the mine site, so that other releases of hazardous substances that might be affecting downstream water quality could be identified and evaluated in the RI/FS. U.S. EPA's September 25, 2008 removal action memorandum ("Request for Approval of Modification to the Removal Action at the Leviathan Mine," the "MRAM") states that:

> "The objectives of the [non-time critical removal action, the NTCRA] remain: to expeditiously improve temporary protection of human health and the environmental from *known AMD discharges* while obtaining critical information for selecting a long-term remedy."

The MRAM is very clear in stating that the early response actions "will address *only* the immediate hazards of untreated AMD discharges from the identified sources, namely the Adit, PUD, CUD, Delta Seep, and Aspen Seep." It says nothing about addressing or mitigating releases that may be occurring elsewhere at the site, including in the area of the lower Leviathan Creek acidic pond, which has since been inundated by the beaver pond complex. Although downstream conditions were to be further investigated in the RI/FS, U.S. EPA did not identify a need for early response action in this portion of the site or link downstream conditions to the performance or effectiveness of the early response actions required at the mine property.

The MRAM states that "an additional objective of the NTCRA was to eliminate untreated AMD discharge to the watershed to provide an opportunity to determine the scope of the subsequent phases of the RI/FS." U.S. EPA explained that:

> "The elimination of the major known discharges was expe cted to allow quantification of the effect of sediments and any other remaining sources without the confounding effect of replenishment of con taminated sediments for most of the year, particularly during the start of the lower flow conditions in late spring."

This is precisely what has happened. The beaver ponds are not "interfering" with the effectiveness of any early response actions. Rather, the effectiveness of the early response actions is what has allowed Atlantic Richfield and U.S. EPA to identify the beaver ponds as an area requiring further characterization in the RI/FS, exactly as was intended.

The effect of the beaver ponds on surface water qua lity has not been fully determined. Comment S2 also contests Atlantic Richfield's assertion t hat water quality in Leviathan Creek immediately downstream of the beaver p onds complex is improved compared to upstream conditions. But the data trends are clear, as presented to U.S. EPA during our August 29, 2016 technical meeting. Arsenic, thallium, p H, and other water quality parameters generally show improvement at Station SW-15 below the ponds as compared to levels above or within the ponds. Monitoring results also suggest th at arsenic and thallium in Leviathan Creek are derived mainly from sources upstream of the beaver po nds complex, not mobilization from pond sediments. During high flow conditions (when th e risk of a dam failure and release is greatest), pH is relatively moderate and shows little var iation through the pond complex. Surface water pH levels decrease within the ponds during low flow conditions, but this effect would presumably occur regardless of whether the beaver ponds were impounding water, as evidenced by the fact that the acidic pond was present bef ore the ponds complex developed. The bottom line is that multiple mechanisms could be af fecting the pH of the water retained by the beaver dams, including water/sediment interactions, groundwater discharge, reactions in surface water, and mineral precipitation. Atlantic Ri chfield will continue to investigate these mechanisms as part of the On-Property Focused RI.

As explained during the August 29 meeting, other pot ential hydrologic and water quality benefits of the beaver ponds include: increased storage capacity, which reduces peak flow rates, flow velocity, and thus erosion and sediment t ransport during high flow events; greater channel depth, and hydraulic roughness, which a lso reduce flow velocity; sediment precipitation and metals attenuation; greater hydrauli c retention, which may increase oxidation of dissolved iron and precipitation of iron-sorbed meta ls; and greater potential for organic complexing and co-precipitation of dissolved metals. The precise nature and extent of these effects will be further quantified as part of the rema ining RI site characterization work. Until that work is completed, it is premature for U.S. EPA to reje ct Atlantic Richfield's preliminary conclusions about water quality trends in this portion of the Leviathan Creek.

The susceptibility of the beaver dams to failure ha s not been determined. U.S. EPA's letter states that "failure of the [beaver] dams is to be expected," citing an article by Butler

and Malanson (2005).[7] Atlantic Richfield does not agree. First, the number of dams in lower Leviathan Creek has steadily expanded since approximately 2010, with no observable dam failures occurring, despite extremely high stream flow events in 2010, 2011, and 2016. If the dams really were unsound, one would have expected one or more failures during this time, but that did not occur. Second, as discussed in the Butler and Malanson article, beaver dams tend to be highly stable once established, often permanently altering the physical structure of stream systems.[8] Butler and Malanson did not find that extensive dam systems such as the Leviathan Creek complex (containing more than 30 dams) are necessarily prone to failure, and other studies have commented on the stability of these systems.[9] Third, the hydrologic conditions in the area of the dam complex have not yet been fully assessed, and the hydraulic forces needed to cause a dam failure have not yet been determined. As stated above, Atlantic Richfield proposes to perform these analyses as part of the FFS. Until those analyses are completed, it is premature to conclude that "failure of the dams is expected" or that dam removal is the preferred strategy for protecting against a release of hazardous substances.

Admittedly, the dams may begin to degrade now that U.S. EPA has required the beavers to be removed (that is, unless the beavers are allowed to return). It is reasonable to expect this to occur gradually over time, and there is currently nothing to suggest that any one of the dams will suddenly fail causing a chain reaction of multiple dams or a catastrophic release of impounded water and sediments. If anything, the multiple dams will likely act as energy dissipaters during a high-flow event, causing stream water to spread out across the floodplain rather than flowing under high velocity within the narrow stream channel, thus reducing the potential impact. Further, one would expect that the type of large flood event needed to wash-out most or all of the dams in the complex would have to be of such a large magnitude that it would overwhelm the relatively small volume of water impounded within the ponds and dilute any potential downstream effects. This is something that needs to be (and will be) assessed in the FFS.

<u>An Engineering Evaluation/Cost Analysis ("EE/CA") or Interim Remedial Action will delay response actions and the RI/FS.</u> U.S. EPA's November 22, 2016 letter concludes by stating that, if Atlantic Richfield's FFS work plan can achieve the goals outlined in the letter—that is, reducing the threat of a sudden release of impounded water and sediments until remedy implementation and returning flow to Leviathan Creek—it will approve the proposed FFS approach. Otherwise, U.S. EPA "will consider initiating an EE/CA and new removal action focused on addressing the dam situation." For the reasons stated above, Atlantic Richfield believes the proposed FFS approach will partially reduce the amount of water impounded by the

[7] David R. Butler and George P. Malanson, The geomorphic influence of beaver dams and failures of beaver dams, 71 Geomorphology 48 (2005).

[8] The authors state that "[b]eaver ponds trap and accumulate sediment, reduce stream velocities, and reconfigure the landscape from a strictly fluvial to a wetland environment." Id. at 49. They also note that "a great deal of sediment remains in place, upstream of failed dams" Id. at 58.

[9] See e.g. id. at 49: "Individual beaver dams can function successfully for decades, acting as successful, long-term sediment sinks" (citing David R. Butler, ZOOGEOMORPHOLOGY—ANIMALS AS GEOMORPHIC AGENTS (Cambridge Univ. Press 1995).

dam complex as a consequence of treatability testing in 2017. But again, the primary goals and objectives of this work will not be pre-remedy removal of the entire dam complex, habitat restoration, or full-scale sediment stabilization in lower Leviathan Creek.

Atlantic Richfield does not believe a separate removal action and EE/CA are warranted or well advised. For the reasons stated above and in Adam Cohen's May 13, 2015 letter to Josh Wirtschafter, we do not believe the conditions in the beaver pond complex constitute an imminent and substantial endangerment to public health or the environment or otherwise satisfy the requirements for a CERCLA removal action as enumerated in 40 C.F.R. § 300.415(b)(2): there is not a nearby human population; Leviathan Creek and Bryant Creek are not used for drinking water; past performance shows that the dams are not susceptible to failure during spring runoff or high-flow storm events; the low pH water and sediments would be present regardless of the existence of the dams; the dam complex appears to be stable and is to some degree preventing contaminant migration; and dam removal could exacerbate, rather than mitigate, migration of stream sediments and floodplain soils.

Performing an EE/CA will involve much of the same analyses that Atlantic Richfield is proposing in the FFS, but it is likely to be more involved, take more time, and thus cause greater delay, since none of the planning has yet occurred. Before proceeding with the EE/CA, U.S. EPA will need to prepare an action memorandum to document its decision to select an appropriate removal action (40 C.F.R. § 300.810). U.S. EPA will also need to prepare an approval memorandum once the EE/CA is completed. Public notice and comment will be required under 40 C.F.R. §§ 300.415(n) and 820. All of this will require substantial time and resources. Indeed, proceeding down the removal action path may prevent any dam removal work from occurring in 2017. Atlantic Richfield continues to believe that the FFS approach is highly preferred and will better ensure the timely completion of the RI/FS and the selection and implementation of an appropriate remedial action for this portion of the site.

Conclusion. For the reasons set forth in this letter, Atlantic Richfield requests that U.S. EPA reconsider its November 22, 2016 comments. We believe that additional investigations in the beaver ponds complex are not only important for completing the site characterization under the remedial investigation, but also critical to ensuring that partial dam removal does not exacerbate the risk of a release of hazardous substances. While treatability testing will lower water levels and help to reduce impoundment behind some of the existing dam structures, we do not believe total dam removal and habitat restoration are appropriate pre-remedy goals for the RI/FS. We ask that U.S. EPA approve Atlantic Richfield's draft FFS outline and proposed schedule and allow us to proceed with development and submission of the FFS work plan by March 21, 2017.

If you have any related questions or comments, please feel free to contact me at (951)265-4277 or anthony.brown@bp.com.

Sincerely,

Anthony R. Brown
Project Manager, Mining

cc (via email):
Gary Riley, U.S. EPA
Caleb Shaffer, U.S. EPA
Joshua Wirtschafter, U.S. EPA
Darrel Cruz, Washoe Tribe
Diane Vitols, Washoe Tribe
Doug Carey, LRWQCB
Ken Maas, USFS
Steve Hampton, CDFW
Toby McBride, USFWS
David Friedman, NDEP
Ron Halsey, Atlantic Richfield
Patricia Gallery, Atlantic Richfield
Brian Johnson, Atlantic Richfield
Nathan Block, Atlantic Richfield
Marc Lombardi, Amec Foster Wheeler
Craig Weber, Amec Foster Wheeler

ATTACHMENT 1

May 13, 2015 Letter from Adam Cohen to Josh Wirtschafter,
Re: Conditions at Beaver Ponds and Dam Complex in Lower Leviathan Creek

Davis Graham & Stubbs LLP

Adam S. Cohen
303 892 7321
adam.cohen@dgslaw.com

May 13, 2015

VIA E-MAIL AND FIRST CLASS MAIL

Joshua Wirtschafter, Esq.
U.S. EPA, Region IX
Office of Regional Counsel ORC-3
75 Hawthorne Street
San Francisco, CA 94105

Re: Leviathan Mine, Alpine County, California
Conditions at Beaver Ponds and Dam Complex in Lower Leviathan Creek

Dear Josh:

Atlantic Richfield Company ("Atlantic Richfield") recently learned that EPA is considering preparation of a memorandum to request approval for a new CERCLA removal action in the area of the beaver ponds and dam complex in lower Leviathan Creek. The memo would require physical removal of the large number of beaver dams that have proliferated since approximately 2010. It is our understanding that EPA believes removal of the dams may be needed because of the presence of low pH water in the ponds.

This letter is intended to inform EPA why a removal action memo should not be issued. As explained below, authorizing a removal action for the beaver ponds would be inconsistent with CERCLA, the National Contingency Plan ("NCP"), and the ongoing EPA-ordered remedial investigation for the following reasons:

- Conditions in the beaver ponds and dam complex do not present an imminent and substantial danger to public health or welfare or the environment.

- Due to the current drought, dam removal need not occur to facilitate sampling of sediments and floodplain soils in lower Leviathan Creek under the ongoing remedial investigation ("RI"). If RI sampling (proposed for the 2015 field season) shows that any CERCLA response is warranted in the beaver ponds, action can and should occur as part of the long-term remedial action for the site. Speculative concerns expressed by the trustees are not a sufficient basis to require a CERCLA removal action in the meantime.

- Dam removal will implicate a host of regulatory requirements and other implementation conditions, which will delay RI sampling and greatly increase response costs. Dam removal will not contribute to the efficient performance of the remedial action, as required by the NCP. And because there is not a time-critical need for removal activity, at a minimum, an EE/CA will be required before dam removal could occur.

If, despite the information provided in this letter and EPA's careful examination of the underlying conditions, EPA chooses to proceed with preparation of a removal action memo for the beaver ponds, Atlantic Richfield requests that EPA include this letter in the administrative record for the Leviathan Mine Site. We would also request an opportunity to meet with the EPA Region 9 Superfund Division, California Site Cleanup Branch Chief, Mr. John Lyons, before any memo is finalized and signed.

I. BACKGROUND

A. Beavers Have Been Active in Lower Leviathan Creek For Several Years.

Atlantic Richfield has been performing RI work in lower Leviathan Creek pursuant to the unilateral Administrative Order, CERCLA Docket No. 2008-18 (the "UAO") for several years. Prior to the spring of 2010, a small pond of acidic water had formed adjacent to Leviathan Creek just above the Leviathan Creek Basin Landslide. Beginning in approximately the spring of 2010, a colony of beavers constructed an extensive complex of dams, lodges, and ponds in lower Leviathan Creek. At first, the dams were located just downstream of the acidic pond. With time, and as the number of dams increased in an upstream direction, the stream channel enveloped the former acidic pond. By the fall of 2014, the ponds and dam complex extended approximately 2,000 linear feet and contained twenty-eight dams and associated ponds. Dams are up to ten feet tall and 130 feet wide. The ponds continue to expand, largely on State-owned and Forest Service lands. We are not aware of any efforts taken to date by California or the Forest Service to manage the beaver colony and dams.

B. The Beaver Ponds Are Not Affecting Downstream Water Quality.

Atlantic Richfield began measuring pH and other water quality field parameters at multiple locations throughout the beaver ponds in 2012.[1] pH values measured in the upstream ponds generally ranged from 5.5 to 6.9. pH values measured in the farthest downstream pond below the former acidic pond (at Station SW-14) generally ranged from 3.5 to 6.5, with lower values reported during dryer conditions and higher values during spring runoff. pH values measured in Leviathan Creek below the beaver ponds and dam complex and immediately downstream of the Aspen Creek confluence (at Station SD-29) were consistently measured above 6.5.

Atlantic Richfield recently submitted a report to EPA summarizing its evaluation of surface water quality data collected from Leviathan Creek, Bryant Creek, and Aspen Creek, including RI/FS sampling performed in 2012 and 2013 (since the development of the beaver

[1] *See* On-Property Focused Remedial Investigation Work Plan Amendment No. 9, Beaver Pond Surface Water Monitoring Program, last submitted to EPA on January 30, 2015.

ponds and dam complex).[2] No discernible increases in metals concentrations were identified in lower Leviathan Creek or upper Bryant Creek since the expansion of the beaver ponds complex. The report concludes:

> "From 2008 to the present, variability in chemical concentrations in surface water downstream of AD discharges at the site is considerably lower than before 2008 and concentrations of several metals are lower due to more reliable AD discharge capture and extended seasonal treatment."
>
> and
>
> "Concentrations of metals are highest in historical data at Station-15 and are attenuated to levels consistent with those observed upstream of the site (Station-1) within about 1 mile downstream of AD discharges from the site."

Thus, the beaver ponds and dam complex are not causing any measurable mobilization of site-related metals in Leviathan Creek or any adverse effects on downstream water quality.

C. *Atlantic Richfield and EPA Have Consistently Focused on Managing the Beaver Ponds as Needed to Facilitate RI Sampling.*

Over the last five years, RI sampling in lower Leviathan Creek has been adjusted to accommodate conditions created by the beaver ponds and dam complex. RI sampling is required by the UAO, and Atlantic Richfield is committed to completing it as expeditiously as possible. On December 9, 2010, EPA commented on the need to investigate the toe of the Leviathan Creek Basin Landslide as part of the On-Property Focused Remedial Investigation. Atlantic Richfield responded on February 15, 2011, noting that "beaver activity in the pond area near the toe of the landslide is changing the current condition in this area." EPA then requested surface water monitoring in the beaver ponds beginning in July 2012. In early October 2014, Atlantic Richfield submitted Amendment No. 8 to the On-Property Focused Remedial Investigation Work Plan, which provided for stream sediment and floodplain soil investigations in Leviathan Creek and Aspen Creek. Amendment No. 8 excluded sampling within the beaver ponds and dam complex because of the unique conditions present in that reach. Instead, sediment and floodplain soil sampling in this area was addressed separately in Amendment No. 10, which Atlantic Richfield submitted to EPA for review on September 30, 2014.[3]

---

[2] *See* Evaluation of Historical and Remedial Investigation/Feasibility Study Surface Water Data, submitted to EPA on October 31, 2014. Atlantic Richfield will be submitting a revised version of this report in May 2015.

[3] *See* On-Property Focused Remedial Investigation Work Plan Amendment No. 10, Stream Sediment and Floodplain Soil Characterization in Beaver Dam and Pond Complex in the On-Property Reach of Leviathan Creek, submitted to EPA September 30, 2014; Revision No. 1 submitted November 7, 2014; Revision No. 2 submitted April 10, 2015.

Atlantic Richfield stated in Amendment No. 10 (page 1) that conditions prevailing in the fall of 2014 presented an ideal opportunity to sample the stream sediments in the beaver ponds while flows in Leviathan Creek were at historically low levels because of the drought:

> "Currently, the seasonal low streamflow combined with the severe drought conditions have resulted in the beaver ponds significantly drying out. Hence, the remainder of the 2014 field season provides an opportunity to characterize much of the stream and floodplain where the beaver dams and ponds are present without the need for removal of the beaver and\or the associated dam complex."

Amendment No. 10 also stated the beaver ponds could be accessed for sampling when stream flows are low (page 7):

> "When streamflow is high, water accumulates in the ponds and a relatively large area is inundated and is not accessible, and hence characterization activities cannot be conducted. When streamflow is low, many of the ponds drain, a relatively small area is inundated, much of the area upstream of beaver dams is accessible, and characterization activities can be conducted throughout most of the On-Property segment of Leviathan Creek."

Attachment D to Amendment No. 10 described the plan for managing the water in the ponds during sediment sampling. Only the minimum amount of dam breaching or removal needed to ensure safe conditions for sampling was recommended. As stated on page D2:

> "The minimum amount of dam breaching or removal will be performed to drain ponds such that stream sediment and floodplain soils can drain sufficiently to provide solid footing and safe access to perform sampling activities."

On October 17, 2014, EPA provided its written comments on Amendment No. 10. EPA acknowledged that "the focus of Amendment No. 10 is sampling within the current year to take advantage of low water conditions when the beaver ponds are dry." EPA's October 17, 2014 letter did not object to Atlantic Richfield's proposed approach to managing the water and dams in the area—that is, to conduct the minimum amount of dam breaching or removal needed to ensure safe conditions for sediment sampling. EPA's and Atlantic Richfield's focus was properly on the steps necessary to allow RI sampling to proceed.

D. As the Complexity and Cost of Dam Removal Increased, Atlantic Richfield Focused More on Water Management and Less on Dam Removal As the Best Way to Facilitate RI Sampling in the Beaver Ponds.

During early spring 2015, Atlantic Richfield, EPA, and other government agencies continued to discuss how best to proceed with RI sampling of the beaver pond sediments and

floodplain soils. As had been communicated throughout the process, the intent was to minimize interference with the beavers and their dams as much as possible.

Discussions among the stakeholders raised numerous logistical and legal concerns regarding incursions into the ponds and the removal of even portions of the dams. One issue was how to manage the beavers. Notwithstanding CERCLA's permit exemption in Section 122(e), beaver trapping and removal would need to comply with state wildlife permit requirements. The Forest Service and the State of California, as the landowners in this area, would need to obtain any necessary depredation permits, comply with applicable permit requirements, and continue to trap and remove beavers if they returned to the area in the future.

Another issue involved how woody debris and mud removed from the dams would be managed. According to the Forest Service, this material could not be left on the forest floor, as Atlantic Richfield had initially planned. Debris removed from Leviathan Creek would therefore need to be hauled out for disposal, but the Lahontan Regional Water Quality Control Board does not want the material brought back to the mine property for stockpiling or disposal unless sampling confirms it is not a characteristic hazardous waste. Access into Leviathan Creek for the heavy equipment needed for dam removal was another concern. The Forest Service's February 4, 2013 authorization letter (permitting Atlantic Richfield to perform RI sampling on Forest Service lands) does not cover dam removal or road and trail construction. And the Forest Service stated its preference for the least amount of disturbance necessary to accomplish the sampling objectives of the RI.

Other regulatory stakeholders raised concerns regarding the potential ecological and habitat impacts to Leviathan Creek from dam removal activities. They suggested that state and federal requirements under the California Fish and Game Code and the Clean Water Act (pertaining to water diversions, streambed alterations, and dredge and fill activities) would be implicated. Among other actions, fish and wildlife surveys, in-stream mitigation and monitoring, debris removal, and habitat restoration might be necessary.

What Atlantic Richfield had envisioned in September 2014 (when Amendment No. 10 was first submitted to EPA) as a simple approach to draining the beaver ponds sufficiently to allow safe access for RI sediment and floodplain soil sampling was thus evolving into a massively complex and extremely expensive pre-sampling construction effort and post-sampling reclamation project, about which stakeholders had significant concerns. Timing was also a significant issue. There was little chance that all of the permitting, pre-construction mitigation, and other planning efforts could be completed in time to allow RI sampling to occur in 2015.

In part because of EPA's strong interest in completing all RI field work as soon as possible, Atlantic Richfield assessed whether other approaches might be more appropriate for facilitating RI sampling in and adjacent to the ponds. Because drought conditions are predicted

to continue in 2015, it became readily apparent to Atlantic Richfield that the sampling objectives of the RI could—and should—be met without removing or breaching any of the beaver dams.

On April 2, 2015, Atlantic Richfield informed EPA it planned to complete the sampling required for the RI in the beaver ponds and dam complex this summer without breaching or removing any dams. Instead, Leviathan Creek flows would be re-routed around the ponds, and any remaining standing water in the ponds would be pumped down. The goal has been and will be to secure safe access to sampling locations for in-stream sediments and floodplain soil. This goal can be met without the extensive level of effort, safety risk, and expense required to access the stream with heavy equipment, extract the dams, dispose of the extracted material, conduct in-stream mitigation, and reclaim the work area after sampling is completed.

Atlantic Richfield submitted a revised version of Attachment D to EPA on April 10, 2015.[4] As set forth therein, Atlantic Richfield expects Leviathan Creek to run dry in this area by mid-summer 2015. To facilitate RI sampling, Atlantic Richfield will construct a temporary access road or trail to allow personnel, equipment, and materials to reach the beaver ponds and dam complex, conduct a geophysical survey to identify sub-surface hazards resulting from beaver activity, and if necessary temporarily re-route stream flows around the ponds and drain the beaver ponds prior to sampling. If trapping beavers is needed, Atlantic Richfield will notify EPA, which can in turn work with the Forest Service and the State of California on obtaining any required depredation permits. This plan is fully consistent with the sampling objectives of the RI and the approach Atlantic Richfield has been proposing for sediment and floodplain RI sampling in the beaver ponds and dam complex since 2010.

E. The Washoe Tribe and USFWS Have Been Pressing EPA for Dam Removal Without a Valid Basis.

The Washoe Tribe's consultant, AESE Inc., and the U.S. Fish and Wildlife Service ("USFWS") have been urging EPA to remove the beaver ponds and dams for some time. In a memo dated October 13, 2014, AESE asserted that "[i]t is clear that [Time Critical Removal Actions] or [Non-Time Critical Removal Actions] are not being considered to remove the continued threat to human health and the environment associated with these unlicensed impoundments." AESE criticized Atlantic Richfield and EPA because "more effort is being expended in studying the problem rather than reacting via TCRA." In a letter dated October 15, 2014, USFWS expressed concern—without supporting data—that the ponds and dams are "containing contaminated sediment and that catastrophic failure of the beaver dams could release sediments downstream." USFWS added that, "[f]or this reason, the Trustees have encouraged

[4] *See* On-Property Focused Remedial Investigation Work Plan Amendment No. 10, Revision No. 2 – Stream Sediment and Floodplain Soil Characterization in Beaver Pond Complex in On-Property Reach of Leviathan Creek – Attachment D – Access Approach to Support Remedial Investigation Activities Within Leviathan Creek, submitted April 10, 2015.

USEPA to consider removal of the beaver dams and associated potentially contaminated sediments."[5]

Neither AESE nor USFWS identified low pH water in the beaver ponds as a basis for removal of the beaver ponds and dams. AESE was concerned that further characterization of the sediments and floodplain soils in lower Leviathan Creek would be allowed to proceed under the RI, rather than requiring immediate action to mitigate an uncharacterized condition and respond to the natural presence of beavers and their dams in Leviathan Creek. USFWS acknowledged that the sediments in the beaver ponds had not yet been characterized—that they were "potentially" contaminated—but encouraged removal anyway.

As discussed elsewhere in this letter, there is no basis in the data or information developed to date to support the trustees' desire for a beaver dam removal action. If the trustees want the dams and beavers removed for reasons other than protection against releases of hazardous substances, they can seek the appropriate approvals and remove the dams themselves in accordance with applicable requirements. But CERCLA is not the proper statutory mechanism for such an action.

II. ANALYSIS

A. EPA Cannot Establish An Imminent And Substantial Endangerment.

Before EPA can perform or require a removal action under CERCLA, it must establish an imminent and substantial endangerment to public health or welfare or the environment. EPA cannot meet this burden based on available sampling data or conjecture about conditions in the beaver ponds and dam complex in lower Leviathan Creek.

CERCLA Section 104 authorizes EPA to act, consistent with the NCP, to remove or arrange for the removal of hazardous substances or contamination when (A) any hazardous substance is released or there is a substantial threat of release into the environment, or (B) there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to public health or welfare. 42 U.S.C. § 9604(a)(1). Under Section 106, EPA may not order a CERCLA response action without first

[5] This was not the first time that the Washoe Tribe or USFWS had speculatively weighed in on the topic of the beaver ponds. In a September 2, 2014 email to Lynda Deschambault, Janet Whitlock stated "it appears that the ponds may be improving water quality, and we would like to make sure that monitoring [and other studies] are included in the plans [to remove the ponds] so the Trustees can determine whether pond removal causes degradation of habitat downstream." In a September 30, 2014 email, Ms. Whitlock commented that "the dams do appear to be providing some level of "treatment" and to be causing accumulation of sediments behind them that may be contaminated." She added that "the Trustees would like to see a plan put together for removal of the beaver dams." On April 2, 2015, Lynda Deschambault stated that the Washoe Tribe has been lobbying for dam removal since she became the RPM for the Leviathan site in mid-2014.

identifying an imminent and substantial endangerment to public health or welfare or the environment because of an actual or threatened release of a hazardous substance. 42 U.S.C. 9606(a). The NCP similarly requires EPA to determine that there is a threat to public health or welfare or the environment before taking a removal action. 40 C.F.R. § 300.415(b)(2). *See e.g., State of Minn. v. Kalman W. Abrams Metals, Inc.*, 155 F. 3d 1019, 1024 (8th Cir. 1998).

There is no imminent and substantial endangerment here. Without more, depressed pH measurements in some of the beaver ponds during some portions of the year is not sufficient. First, similar pH readings were observed in this part of the site long before the proliferation of the beaver ponds. As noted above, EPA was aware of the existence of an acidic pond in this area before the issuance of the UAO in 2008. An imminent and substantial threat did not arise simply because the beaver ponds inundated the pre-existing pond. Second, low pH measurements are confined to just the lower beaver ponds. Neutral conditions are present immediately downstream of the ponds in Leviathan Creek. Third, conditions in the ponds are not causing other hazardous substances to become more concentrated. Metals concentrations in the ponds are comparable to those measured at upstream locations and return to near background levels downstream in Bryant Creek. Fourth, the very fact that beavers are proliferating in this area refutes the notion that wildlife is being adversely affected. One would not expect this level of activity if the water in the ponds posed an imminent and substantial threat. Similarly, fish sampling performed by USFWS in the fall of 2013 revealed a significantly improved fish population in Leviathan Creek as compared to 2006. If anything, the recent expansion of the beaver ponds and dam complex and the improved fishery are evidence of improving water quality in Leviathan Creek.

Moreover, any discussion of a potential release of low pH water from the beaver ponds is speculative and unsupported by conditions as the site. There are now close to thirty dams in this reach of Leviathan Creek, some reaching up to ten feet high and 130 feet across. As the number of dams grows, and the creek channel widens, the stability of the overall dam complex and its ability to withstand a major flooding event increases. Even if a breach occurred, the volume of water needed to destroy such a large complex of dams would substantially overwhelm and dilute the volume of low pH water contained in the ponds during a flood.

Nor does EPA have any objective measurements to substantiate a claim that contaminated sediments in the beaver ponds and dam complex present an imminent and substantial endangerment to the environment. The main mass of sediments to be investigated in the RI is that which existed prior to the establishment of the beaver dam and pond complex, with a minor contribution of material that has precipitated since the dams were built. The sediments have yet to be characterized as part of the ongoing RI/FS. Other RI sampling work in the general area does not suggest that high levels of hazardous substances are present at or near the surface of Leviathan Creek sediments and likely to migrate. 40 C.F.R. § 300.415(b)(2)(iv). And again, the presence of a large number of stable dam structures would reduce the potential for a major release of stream sediments from this area during a flood event. Removing the dams would only

make the sediments and stream channel less stable and increase the likelihood of mobilization and migration. If the sediments in lower Leviathan Creek are contaminated, which has not been determined, removing the dams would exacerbate, not mitigate, the threat of a release.

B. *Requiring Dam Removal is not Authorized by CERCLA or the NCP.*

Even if EPA could establish an imminent and substantial threat from pH measurements, it still lacks authority to require removal of the dam materials under CERCLA. The dams were naturally constructed and consist primarily of branches, woody debris, and mud from the adjacent banks. No testing has been done of the dam materials to show they contain hazardous substances or other pollutants or contaminants. It certainly cannot be shown that releases of hazardous substances from the Leviathan site caused or contributed to the beavers' colonization of this area and construction of the ponds and dam complex.

The NCP requires consistency between removal actions and the long-term remedial action for a site. Section 300.415(d) of the NCP states:

> "Removal actions shall, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned."

But requiring removal of the beaver dams now will only interfere with the efficient performance of the RI and the long-term remedial action for the Leviathan site. Until the sediments and floodplain soils in the area are fully characterized and the required human health and ecological risk assessment is performed, any determination about the need to remove, mitigate, or otherwise manage stream sediments and floodplain soils in this area is premature. Sediments will be disturbed and re-distributed during the demolition work, thus increasing the potential scope of a future remedial action. Habitat-related impacts resulting from bringing in construction equipment to remove the dams now will need to be reclaimed before the long-term remedial action is selected. Similar impacts will likely occur and will need to be reclaimed again if the long-term remedial action requires sediment removal in this area. Further, unless California and the Forest Service commit to a rigorous program of wildlife control, beavers will return and new dams will be built before remediation (if necessary) takes place.

Whatever conditions are contributing to the pH measurements in the lower beaver ponds, they will be properly investigated and characterized (along with the stream sediments and floodplain soils) as part of the ongoing RI. While the current drought conditions exist, those investigations can proceed without breaching or removing the beaver dams. If, as a result of the current investigations, a determination is made that long-term remedial action is needed in this area, it will be much more efficient to design and perform it without the complications likely to result from an intervening dam removal action.

C. Even if a removal action is warranted, it would not be time-critical, and so an EE/CA would be needed before dam removal could occur.

EPA can hardly argue that, based on existing site evaluation information, less than six months exists before removal activity must begin in the beaver ponds and dam complex to address the presence of low pH water, or even potentially contaminated sediments. Conditions in and adjacent to lower Leviathan Creek have been known for years. Atlantic Richfield has been monitoring water quality in the beaver ponds since July 2012. Whatever contaminated sediments may be present in this area as a result of releases from the Leviathan Mine property, they have been there since at least the early 1980s, when the Lahontan Regional Water Quality Control Board implemented stabilization and pollution abatement measures at the mine site. Atlantic Richfield and EPA have been discussing the need to sample sediments in the beaver ponds and dam complex and address the proliferating beaver activity for at least three years.

Therefore, under 40 C.F.R. § 300.415(b)(4), EPA cannot require dam removal without first conducting a thorough engineering evaluation/cost analysis ("EE/CA") or its equivalent to properly analyze the removal alternatives for the beaver ponds and dam complex. At a minimum, this will require the very same type of sediment and soil sampling currently proposed in Amendment No. 10 for the RI; and any analysis of removal alternatives under the EE/CA will be substantially similar to what is required for the feasibility study. Because of the magnitude of the ponds complex, the myriad of applicable regulatory and permitting requirements that will need to be addressed, and the complexity of the construction activities and engineering involved, it is doubtful that the EE/CA could be completed and the dams removed before the RI is completed and a long-term remedial action is selected for the Leviathan site.

D. EPA's Decision to Prepare a Removal Action Memorandum Appears to be in Response to the Speculative Concerns of the Natural Resource Trustees, Rather than a Legitimate Finding of Imminent and Substantial Endangerment.

Given the amount of time that EPA has been aware of the presence of low pH water in lower Leviathan Creek, it is hard to understand why EPA would be considering preparation of new removal action memorandum for the beaver ponds and dam complex now. It is especially unusual, since Atlantic Richfield has proposed a technically sound approach for characterizing the sediments and floodplain soils in this area under the RI, with work to begin later this summer. If hazardous conditions are detected, management of the beaver dams and stream sediments will be appropriately addressed as part of the comprehensive long-term remedial action for the site. That process should go forward as planned, rather than interposing yet another set of activities that will only delay finalization of the RI/FS and long term remediation at the site, especially given the absence of any imminent hazard.

We question whether EPA may be responding to pressure from the trustees. While the Trustees understandably want the beaver ponds and dams eliminated for habitat improvement,

flood protection, natural resource damages assessment, or aesthetic reasons, those are not proper grounds under CERCLA for EPA to order a removal action. As noted above, if the Trustees or other stakeholders wish to remove the dams for non-CERCLA reasons, they may do so without Atlantic Richfield's involvement.

We recognize the importance of "coordinating with the Trustees in the conduct of its [RI/FS] and other response actions in order to promote efficiency and economy to achieve earlier cleanup of the site."[6] We also acknowledge that trustees are authorized by 40 C.F.R. § 300.615(e) to request that EPA remove or arrange for the removal hazardous substances from a contaminated medium pursuant to CERCLA Section 104. But again, there is no evidence that the beaver dams themselves constitute a "contaminated medium" or contain hazardous substances that warrant a removal action under CERCLA. Simply put, the Trustees cannot dictate what response actions are to be performed under CERCLA. As stated in the NCP Preamble, "although a trustee may be responsible for certain natural resources affected or potentially affected by a release, the lead agency retains the responsibility for managing activities at the site." 55 Fed. Reg. 8666, 8707 (Mar. 8, 1990). And only response actions consistent with and satisfying the criteria set forth in the NCP can be required.

III. CONCLUSION

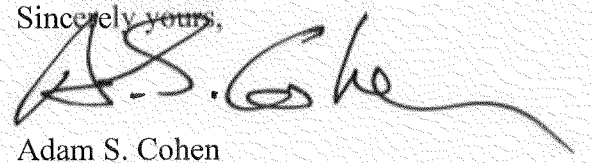
For the reasons set forth in this letter, no proper basis exists under CERCLA and the NCP to require a removal action in lower Leviathan Creek. EPA should allow Atlantic Richfield to proceed with its plans to complete the characterization of in-stream sediments and floodplain soils in the beaver ponds and dam complex as part of the RI. If RI sampling demonstrates a legitimate need for response actions in this area, such actions should be evaluated and selected in the context of the RI/FS and in accordance with the NCP. Accordingly, Atlantic Richfield urges EPA not to proceed with preparation of a removal action memorandum providing for the removal of the beaver ponds and dam complex.

We appreciate EPA's careful consideration of this information. We would be glad to discuss our concerns with EPA at a mutually convenient time.

---

[6] *See* Leviathan Mine Site Memorandum of Agreement Among the Washoe Tribe of Nevada and California, the United States Environmental Protection Agency, the United States Department of the Interior, and the United States Department of Agriculture, signed by EPA on May 9, 1998.

Sincerely yours,



Adam S. Cohen
for
DAVIS GRAHAM & STUBBS LLP

cc: Anthony Brown
Brian Johnson
Patricia Gallery
Rebecca Raftery, Esq.