SUPPLEMENTAL EIS
RESPONSES TO COMMENTS

WATER RESOURCES

WTR-300 Surface Water Flow and Quantity

1. The large excavation involved in the Asarco Rock Creek mine will divert subsurface flows and alter surface springs, lakes, and wetlands. Reduced or eliminated surface flows above the deposit will significantly degrade the biotic support function that scattered springs, lakes, and wetlands provide across the landscape. The fact that springs down gradient may increase in flow compensates in no way for loss of up slope flows. Particularly disturbing is the potential for altered flows within an area designated as wilderness by the congress of the US. Wilderness designation includes protection of the unaltered natural state. Development of the mine represents a significant threat to this designation. (S5124)

Response: Reduced or eliminated surface flows caused by subsurface mining and the development of the ore body are considered low under Alternative V. However, mitigations such as buffer zones, hydraulic monitoring and surface water monitoring reduce the risk of impacts. Full disclosure of the potential impacts are provided in Chapter 4-Hydrology. Under Alternative V, a long-term monitoring plan would be implemented, and mining would be prohibited with a 1,000-ft buffer surrounding Cliff Lake and the Cliff Lake fault, and the north and south ore outcrops.

2. Pages 4-28 to 4-30: The italicized hydrology summary indicates that surface water runoff in Miller Gulch would likely return to near normal after reclamation with the paste tailings deposit? Will the storm water diversions associated with the paste deposit, the contours of the reclaimed deposit, and the permeability of the deposit be such that surface water runoff in Miller Gulch will return to normal after reclamation?

The italicized hydrology summary discussion also does not describe potential changes in surface water flows (particularly lowered flows and extended duration of low/no flow periods during the low flow periods of the year) that could occur as a result of mining exploration or production. Springs and ground water feeding Rock Creek could be reduced during blasting and excavation of the adits and mine cavity. Altered flows could have significant effects on the ecology of the Rock Creek basin, and thus, are of potential concern.

The italicized hydrology summary discussion also neglects potential ground water contamination associated with seepage from the underground storage reservoir. We recommend including the underground storage reservoir among the mine features that potentially may affect surface and ground water resources under all action alternatives in the first sentence of the hydrology summary (page 4-28). We also recommend noting on page 4-29 that seepage from the underground reservoir has the potential to discharge to ground water.

The EPA strongly supports the decision to include an underdrain and seepage collection for the paste disposal facility as well as an approved ground-water mixing zone with appropriate downgradient compliance well(s). (S146)

Response: The surface of the tailings area would be graded to prevent ponding and minimize infiltration, runoff would be routed into Miller Gulch. Lastly, the surface of the tailings mass would be revegetated. Therefore, it is expected that after reclamation, the volume and timing of runoff from the tailings area to the lower reaches of Miller Gulch would approach baseline conditions.

Evaluation adit and mine development is not expected to reduce flows in Rock Creek, and was therefore not included in the Chapter 4, Hydrology summary. The detail is provided in the text that follows the summary.

The potential for seepage from the underground mine reservoir to reach the surface, while considered remote, is disclosed in Chapter 4, Hydrology, Alternative II of the final EIS. The preferred method of addressing localized seepage into or out of the mine is through grouting, and is stated in the same section. Other methods such as liming could also be considered based on available data. A 1,000-

foot horizontal and 450-foot vertical buffer has been incorporated into Alternative V at the north and south ore outcrop zones to minimize the potential for seepage from the underground reservoir to reach the surface.

3. Page 4-179: The potential reductions in surface water flow and/or altered Rock Creek headwater hydrology should be noted in the probable environmental effects that cannot be avoided section and/or the summary of the relationship between short term uses and long-term productivity section. (S146)

Response: No measurable reductions in headwater flow are predicted. Please see Chapter 4 - Hydrology.

4. Page 2-65 - water budget - Alt V: A total of 2,268 gpm is estimated for mine inflow during the final year of operation. First, given that the Troy mine discharges around 2000 gpm, and the workings there are smaller, and at a lower elevation, the 2,268 gpm may be underestimating the amount of water to be encountered at Rock Ck. Second, this water will be removed from the Rock Ck. watershed and discharged to the Clark Fork River. This will be contributing to the dewatering of Rock Ck. which is already a problem and should not be allowed.(S5093)

Page 4 -36 of the SDEIS notes the proposed evaluation adit is near an unnamed tributary within the headwaters of the West Fork of Rock Creek, and that tributary provides perennial flows between 20 and 100 gallons per minute. As mentioned earlier, ASARCO's proposal is to capture water from the evaluation adit, treat it, and discharge it at some undetermined location. This could remove a substantial portion of the tributaries' contribution of flow to the West Fork. Yet, page 4-36 states that "it is not anticipated that the evaluation adit would affect existing spring flow, or tributary flow to Rock Creek. This statement is unfounded.

The Agencies must present more detailed discussion on how capturing, treating, and discharging this water will impact effect flow regimes, dilution capacity, and sediment flushing and transport capacity in the West fork of Rock Creek. Additionally, the SDEIS needs to disclose those same impacts on the mainstem of Rock Creek. During the latter stages of mining and after closure, ASARCO will be required to capture, treat, and discharge over 2,300 million gallons a day of mine water to the Clark Fork River. The impacts of removing this water from the Rock Creek drainage must be addressed. (S6318)

Page 2-119 - Removing 2,000 to 4,000 gpm at the head of the watershed would indeed impact flows in Rock Ck., which, as stated above is already a problem with summer dry up reaches. From Table 3-2, DEIS, the average flow of Rock Ck is 21,845 gpm. The estimated removal of 2,248 gpm (p 2-65) from the head of the watershed would be a tenth of the annual average - a significant amount. But it would be even more significant during the dry months when flow in Rock Ck is down to less than 2,000 gpm. How the agencies could say there would be no impacts to stream flows in Rock Ck, I don't know. (S5093)

Response: Experience at the Troy mine suggests the majority of flow from the adit is localized near major fractures or faults and occurs during months when fractures have been recharged by springtime snowmelt and precipitation.

The volume of water captured by the underground mine on a daily basis would not normally discharge to surface water under premining conditions. Specifically, ground water flow rates associated with bedrock bulk permeabilities are extremely low. Prior to creating artificial underground pathways, it may have taken decades to centuries for this water to move through bedrock and reach surface water. Therefore, it is unrealistic to directly subtract the water removed from the mine from the average daily flow in Rock Creek. In addition, the amount of water intercepted by the mine is insignificant when compared to the volume of water falling as precipitation over the entire watershed on an annual basis. Table 4-29 displays the results of the R1-WATSED water sediment yield model which was completed for this project. The existing peak flow

water yield has been computed to be at 7 percent above natural conditions on the west fork and 3 percent above natural conditions for the entire Rock Creek watershed. After mine closure, the water yield values are still above those for a natural condition.

Only a small portion of the orebody is in the Rock Creek watershed; most is in the Bull River watershed.

5. Page 2-119 - Miller Gulch flows are expected to decrease, but there is no expected impact to downstream users. However, surface flow is indicative of ground water levels. If Miller Gulch flow is less, downstream users of the aquifer, i.e. households with springs and wells, can expect decreased water availability.(S5093)

Page 4-29 para.6 Surface water runoff in Miller Gulch would decrease....." How would this affect prior existing water rights?(S614)

Additionally, page 4-40 of the SDEIS discusses how 5 miles of ephemeral tributaries to Miller Gulch would be filled with tailings. It goes on to say that "surface water runoff to Miller Gulch would be expected to decrease temporarily during the proposed mine life" and that the "disruption of natural surface water runoff to Miller Gulch during operations could reduce flows for existing beneficial uses." The surface water in Miller Gulch is already appropriated for power generation, irrigation, and domestic uses, and ASARCO does not have water rights to appropriate surface water in Miller Gulch. These issues must be resolved.(S6318)

Response: Potential impacts to existing beneficial uses of surface water are discussed in Chapter 4-Hydrology.

6. Page 3-13 - Flow data: Table 3-2, should include flow data for Miller Gulch, E Fk Rock Ck, W Fk Rock Ck, E Fk Bull River. (S5093)

Response: The EIS contains the full data set for the main fork of Rock Creek and the Clark Fork River. Since no flow impacts are predicted for the east and west forks of Rock Creek and the East Fork of Bull River, no data is required. The flows for the West Fork of Rock Creek and Miller Gulch are described qualitatively in Chapter 3, as flows are intermittent for both streams and an average could not be calculated. There are no surface water impacts to the East Fork of Rock Creek, but it has an average flow of about 66 cfs and contributes an average of 82 percent of the total flow of Rock Creek below the confluence with the west fork.

7. ... in light of the fact that WWP operations of their Noxon Rapids Dam cannot insure sufficient continuous flow to meet the requirements and definition of instantaneous dilution for the instream diffuser it becomes difficult to imagine that a further reduction of this flow for mill makeup water is desirable.(S614)

Also reference pg. 3-13 last 2 sentences last para. Volume of water and flow of 144 cfs due to operation of Noxon Rapids Dam does not ensure that the minimum criteria for dilution would be met. (S614)

Response: Discharge from the proposed project must meet the effluent limitations identified in the MPDES permit. Low flow from the dam was used to develop the limitations. The revised MPDES permit also accounts for periods of time when water does not flow through Noxon Dam.

8. Design criteria of a 100-year 24-hour storm event seems rather arbitrary and insufficient, given that 100-year events have been happening with some regularity in the last few years.(S625)

Storm water design by-pass is predicated on a 10-year event. As you know, living in Libby, these so called "10 year events" occur on a rather frequent basis - about three or four occurred in the past five or six years due to human activities on the land and perhaps some change in weather patterns. We suggest that the storm water by-pass

design be predicated on at least 100 year event. In the past 10 years we have seen only two of those according to the USFS. (S3536) (S3468)

Collection of all storm water needs to be considered and guaranteed. (S5100)(S6638)

The storm water system is totally inadequate. Studies and solutions based on a 10 year event are unacceptable. All studies should have been based on a 100 year event; particularly since we have had two 100 year events in the past 10 years.(S5954) (S5788)

Let's have a good storm water management system which would divert clean water around the site and collect all the runoff for settling in settling basins. (S6740)

To protect Rock Creek, the Forest Service should prohibit disposal of storm water until it has been treated to remove all pollutants. (S3942)

Response: DEQ regulations currently only require that storm water control structures be sized for the 10-year/24-hour storm event. Under Alternative V, all detention and retention ponds would be sized to contain the 100-year/24-hour storm event. The agencies believe the Alternative V design criteria are conservative, particularly because the expected project life is only 30 years. Note that higher magnitude events would have local and regional erosion and sediment impacts associated with it, regardless of whether the proposed project is constructed or not.

9. Need to require proof of any pollutants and any increases in pollutants--including storm run off waters. How will Asarco handle run-off? (S4016)

Response: The potential impacts of the proposed project, including the potential impacts from increased sediment and constituents of concern are fully disclosed in Chapter 4-Hydrology. Also, see response to previous comment.

10. If we have a wet year like we had in 1997, any pond or location must be designed to minimize runoff damage. The Noxon area is known for the amount of rain and snow it receives. (S4429)

It would be important to remember that there can be a tremendous amount of snow, and therefore spring runoff in this area.(S4486)

Response: Under Alternative V, all detention and retention ponds would be sized to contain the 100-year/24-hour storm event. It is because of the significance of rain-on-snow events, and the potential for increased runoff during this type of event, that this pond size would be required.

11. Pages 4-36 and 4-40: The discussion of Surface Water Quantity for Alternative II does not describe the potential for mining to interrupt springs and ground water flows feeding Rock Creek and its tributaries. As noted earlier, it would appear that some of the water inflow into the mine, that will eventually be treated and discharged to the Clark Fork River, presently may drain/flow into Rock Creek, but during operation of the mine, bypass Rock Creek, and possibly after mine closure. How carefully have the hydrologic connections between potential mine water inflow and Rock Creek water sources been investigated?

Chapter 2, Part I identifies flow (i.e., water quantity) as a significant issue. Effects of mining activities on flows or water volumes, should be described. We remain concerned that the existing data on Rock Creek base flow and flow regimes are inadequate to determine whether future effects of mining would significantly decrease spring and ground water base flows to Rock Creek. Change in surface water flows (particularly lowered flows and extended duration of low/no flow periods during the low flow periods of the year), as the result of mining exploration or production, could have significant effects on the ecology of the Rock Creek basin. Rock Creek and tributary flow

changes due to mining may be difficult to predict in advance, but potential flow modifications (reductions) should be discussed and disclosed.

The hydrology section of the FEIS should better quantify potential changes in flow regime that may occur within the basin as a result of mining-related activities. The section should discuss potential impacts, including magnitude, duration and frequency within the Rock Creek basin, and its potential significance to altering the flow regime, and thus, aquatic life. Changes in flow are critical to evaluating potential impacts to water quality and aquatic life.

The monitoring program should allow detection of flow alterations and surface water quantity effects. We note that Klohn-Crippen recommended installing ground water monitoring wells, and carrying out ground water modeling to assess changes during operations and at closure to address effects on local springs and seeps. We believe Klohn Crippen's recommendations should be followed. (S146)

Response: Some impacts to springs and seeps due to mining may be difficult to predict in advance. However, additional discussion related to the potential impact of the underground mine is presented in Chapter 4 of the final EIS. Because the relative area of the mine is less than 4 percent of the area contributing baseflow in the Rock Creek drainage, no measurable reductions in flow or significant impacts are predicted. Actual reductions in streamflow would be substantially less than 4 percent for several reasons. These reasons include the naturally slow rate of water movement through deep bedrock and the relatively small contribution of flow from deep bedrock versus flow from near-surface fractures and colluvium. Lastly, because the natural variation in stream flows (seasonally and annually) are extreme, the potentially small changes in flow discussed above would not be measurable or statistically significant.

12. According to the SDEIS, approximately 5 to 10 percent of the flow in the process loop would be diverted to the wastewater treatment system and fresh water added to the circuit on an ongoing basis to prevent buildup of excess constituents in the process water [SDEIS p. 4-52]. This appears to be an unnecessary use of fresh water, leading to unexamined contamination of wastewater discharge. As provided in the MPDES permit, Federal regulations in 40 CFR 440.104(a)(s)(ii) require that the permittee demonstrate that the discharge is necessary and can not be eliminated through appropriate treatment. This demonstration has not yet been made. [Fact Sheet/Statement of Basis, P. 15]

If the wastewater treatment process reduces "excess constituents," namely chemicals used in the flotation process and dissolved metals or other contained matter, then it should be possible to recycle the treated water rather than use fresh water. The process does not reduce contaminants, precluding treated water recycle, then the impact of contained chemicals and other contaminants on discharge to the environment should be more closely examined. In the matter in which flotation chemicals are treated in the SDEIS, it appears the treatment process would be ineffective for their reduction, and they instead will be diluted into the Clark Fork River. The most common and accepted means of ensuring against any deleterious effects is to operate the mill on a zero discharge basis, which still allows for ample bleed of process water due to its entrainment in the tailing impoundment. If this proves inadequate, then recycled water following treatment should be used for make-up needs, ensuring no unnecessary or undue discharge to the environment. (S188)

Response: Make-up process water for the mill would come from various sources, including reclaimed tailings slurry water, mine discharge water, reclaimed concentrate slurry water, and mill site and tailing paste facility site storm water (Alternative V only). Fresh water from the potable well would only be used as make-up water for the mill when water from the other four sources is not available.

13. The project designs, impact projections, and mitigation protection measures are fundamentally flawed due to a lack of site-specific precipitation data. However, much of this projects' design appears to be based on this unsupportable assumption.

By document definition, "... the annual precipitation varies over the area, and is largely influenced by topography and elevation." On pages 3-5 of the SDEIS, the variation is stated to be between 30 and 80 inches. The Soil Survey for the Kootenai National Forest Area (Sept 1995) identifies annual precipitation in higher elevations is estimated to exceed 100 inches.

More importantly, "average annual" does not adequately address the individual extreme storm events, particularly rain on snow events, which are common to the area.

The design criteria for the most critical issues of: treatment capability; treatment system bypass; and catastrophic failure of impoundments, appear to be based on general area, rather than site-specific precipitation data. The National Oceanic and Atmospheric Administration (NOAA) 1973 database is the only reference cited in the Montana Pollutant Discharge Elimination System (MPDES) application.

Though there is reference to the identification of various ephemeral streams, springs and seeps, site specific information is lacking. The project interceptions of these waters requires a more thorough analysis of treatment capacities for contact contamination. Where these are identified to be "... routed around the developed areas...," the impact to the stability of receiving stream channels does not appear to be addressed. (S1417)

Response: Proposed structures would be designed to safely contain and convey runoff from the 100-yr, 24-hour precipitation event. This design exceeds state requirements and has been deemed to be prudent and adequate for the proposed facility. If the proposed application for the Rock Creek project is permitted, engineering plans and specifications for all structures would be submitted for further review. These designs would incorporate the estimated 100-year, 24-hour flow based on all available data including all site-specific precipitation data and the NOAA database where appropriate. In addition, the Alternative V storm water control options (ponds sized to 100-year events, lined ponds, reuse of storm water in mill, etc.) were specifically developed to mitigate potential impacts. Please refer to Chapter 4-Hydrology for details.

14. Page 4-53 Drainage and Surface Water: the bottom up option would reduce flows in the southern fork of Miller Gulch." If the flow is reduced it must be retained by the pile? Doesn't this reconstitute the paste? Isn't this an impact to surface water? See page 4-56. Tailings paste facility failure: Conditions which could change the character, and hence the behavior of the paste tailings include a change in moisture content of the past." (S614)

Response: The reduction in flows to the south fork of Miller Gulch would be due to the interception of upgradient stormwater runon. This stormwater would be diverted around the paste into the north fork of Miller Gulch or Rock Creek. This water would not reconstitute the paste. However, there is the potential as a result of severe precipitation events, there could be a sufficient increase in moisture content to cause slumping and isolated sections of paste embankment failure. It is unlikely that there would be a complete collapse of the embankment resulting in mass runout of paste, rather any paste failure due to a precipitation event would probably be more on the order of isolated and discrete paste slumps. This would require ongoing embankment monitoring, maintenance and repair.

15. Page 2-119 under "Surface and Ground water Quantity", "Surface water runoff in Miller Gulch would decrease ...". Should one assume that the present hydrology in Miller Gulch does not support slope water, or ground water discharge for local residents, tributaries, associated wetlands, ponds or vegetation and wildlife downstream? Again this is a CWA potential action. Corps needs to respond to this admission. (S4832)(S4833)

Response: Please see updates in Chapter 4 - Hydrology for more details on impacts to Miller Gulch and Chapter 3 for a discussion of existing conditions..

16. A general comment in reference to Miller Gulch. In my study of the SDEIS, I assumed that the North Fork of Miller Gulch was the one that drained Miller Gulch itself in the form of a major spring. The South Fork of Miller Gulch drains the south face of the east ridge of Miller Gulch, and the general area of the tailings paste facility. Both streams flow the year round. The tailing paste facility can not impact the water quality of the North Fork because it is above the water level of the South Fork. Any correction noted in my comments are based on the above assumptions. Page 2-64, paragraph 4, first sentence: Change North Fork of Miller Gulch to South Fork. (S4892)

Page 2-119 Surface and ground water quality: Change first sentence to: Surface water run off in South Fork of Miller Gulch would decrease during life of project and would impact down stream users. Reference paragraph at bottom of page 4-46 and top of page 4-41. (S4892)

Page 3-13 Miller Gulch: Change to and add: The proposed tailings impoundment would be located primarily within the South Fork of Miller Gulch drainage. The South Fork has a continuing flow of water the year round, dependent on the amount of precipitation received in form of snow and rainfall. Base flow in the North Fork of Miller is maintained by a major spring located. (S4892)

Response: The footprint of the proposed tailings storage facility for all action alternatives would occupy the headwaters of both the north and south forks of Miller Gulch. There would be a lesser impacts to the north fork because stormwater from above the tailings facility would be routed into the north fork.

17. Page C-15 sec 3.5. There would be no water flow leaving the area of paste facility for the following reasons. The soft clay deposits would be removed/a specific area of concern was across the south fork at the boundary of the paste facility. Removal of the soft clay would create a large depression and prevent water flow. It will be imperative to provide adequate foundation drains. The installation of foundations drains will preclude water flow into south fork. The north buttress across South Fork of Miller Gulch would preclude water flow. The above noted events would have occurred by project year 5.5. (S4892)

Response: Water flows would leave the paste facility area by both surface water runoff and by deep infiltration leaching. The tailings facility would be designed and constructed to capture as much seepage from the tailings as possible and would include such features as finger and blanket drains. If the technical review panel determined that additional foundation drains are needed to keep the seepage within the range predicted or for stability purposes, then they would be added to the design. Water intercepted by these drains would be sent to ponds and then pumped either to the mill for reuse or to the waste water treatment plant prior to discharge to the Clark Fork River. Removal of soft clays would be required for stability purposes but could be used elsewhere within the footprint to reduce infiltration. The depressions created where the clays were removed could trap water or if they intercepted a layer of higher hydraulic conductivity then seepage could potentially be increased at that location, either situation may require design modifications to eliminate or reduce the impact. The tailings facility would intercept surface water runoff that would normally enter the south fork of Miller Gulch. Storm water from undisturbed lands above the facility would be diverted either to the north fork of Miller Gulch or Rock Creek. Storm water falling on the paste facility would be diverted into storm water ponds and pumped either to the paste plant and the mill for reuse or to the

wastewater treatment plant for discharge to the Clark Fork River. The final contouring of the surface of the facility and the reduced surface infiltration rate of the paste materials relative to native soils may actually increase surface water runoff into the south fork after mining has ceased and the tailings facility has been reclaimed. It is extremely difficult to quantify the potential net water flow change for the tailings facility area.

18. Pages 2-75-77 Reclamation of tailings paste facility. No mention is made of the drainage gradient being toward the South Fork of Miller Gulch. I request that the same amount of drainage into the South Fork of Miller Gulch at post reclamation as was in the pre-mine time. (S4892)

Response: It would be difficult to ensure that characteristics and distribution of runoff during pre- and post-mining conditions would be identical, but the goal would be to get as close as possible.

WTR-301 Ground Water Flow and Quantity

1. Internal drainage and pump-back systems to reduce ground water contamination and the threat of impoundment failure are necessary. (S3392)

Response: Internal drainage systems and a perimeter seepage collection system are part of design for Alternatives III through V. A pumpback system would be required under Alternatives II-IV but are only included as a contingency measure under Alternative V.

2. Page 2-2 first bullet, 2nd paragraph "Effects will be …". On page S-21, it is stated there isn't sufficient ground water available for users." (S4832)(S4833)

Response: The text states that community water systems in Noxon and Heron are at near capacity. The water systems would likely need to be improved to utilize additional ground water resources.

3. Page 2-119, para.4. The statement "No impacts to streamflows in Rock Creek or the Clark Fork River would occur for any alternative" is impracticable. Ground water hydro-geology has not been adequately characterized and it is apparent from some of the soil column borings and newer wells (summit, Oct. 97) that there exist windows through the ground strata that will allow differing water regimes to mix. (S614)

Response: No measurable impacts to streamflow are predicted. The text in the final EIS was revised accordingly. An analysis is provided in Chapter 4 - Hydrology.

4. Page 3-24 para.3 This paragraph is applicable to more than just the area of the orebody; it should be recognized that within the area of the proposed tailings impoundment bedrock may also provide flow to deeper, regional ground water flow systems, including perhaps even Rock Creek. (S614)

Response: The text of the EIS is revised accordingly.

5. Page 4-36 Seepage Collection & Pump Back System. This also would potentially decrease static water levels in wells……" This would be a water rights violation! (S614)

Response: Sterling would be required to apply for and obtain the required water rights. Water rights issues as they relate to existing beneficial uses would be resolved through this process. The capture zones of the pumpback system wells would not be expected to influence existing ground water wells due to the significant distance these wells are located upgradient from current users of ground water.

6. What will be the end result to this area after years of losing or having it's water pumped out of it? (S6721)

Page 4-29 para.3 Make-up water from a well located in the Clark Fork River alluvium….." A make-up well just like a pumpback well creates a cone of depression. Such a well located adjacent to the CF river will create such a situation at the volumes that Asarco proposes to use. How does this diminish the low flows anticipated at night times and how does it affect the volume of water available for instantaneous mixing? (S614)

Response: Under all action alternatives, makeup water would be produced from a production well located in the alluvium associated with the Clark Fork River. The alluvium has a direct hydraulic connection with the Clark Fork River. As ground water is pumped from the production well, the stress of pumping induces recharge from the river. Therefore, because there is a recharge boundary, there is no permanent loss of ground water from the aquifer.

The impact of the proposed makeup water well is discussed in Chapter 4-Hydrology. The proposed mill facility would require up to 3,131 gpm of water which would first come from excess water in the mine or from the tailings impoundment. Withdrawal of flows would represent only 0.19 percent of the 7-day 10-year low flow of the Clark Fork River. If no water flows through Noxon Dan, water

would come from storage in Cabinet Gorge Reservoir. In either case, the use of water is insignificant compared to the water available, and the impact could not be measured.

7. Page 3-12: The discussion of hydrology in the SDEIS does not present new or updated information or data relative to water quantity or Rock Creek base flow or hydrological regimes. We remain concerned that existing data on Rock Creek flow regimes are insufficient to determine whether future effects of mining would significantly decrease spring & ground water flows to Rock Creek. As mentioned earlier, Klohn-Crippen concluded that the hydrogeology of the mine area did not appear to be well understood (page 55 of FMEA report). They recommended that ground water observation wells be installed to assess the hydrogeologic regime, and that ground water modeling be carried out to assess changes during operations and closure. It will be important for the water resources monitoring plan to address baseline hydrological data and information needs, and to detect hydrological impacts that are difficult to predict. (S146)

Response: The supplemental and final EISs present a summary of available hydrologic information collected to date. Collection of additional hydrogeologic information in the area of the ore body is precluded because it would require extensive field studies, supported by development of access roads, and installation of monitoring wells in the Cabinet Mountain Wilderness (CMW). To avoid the impacts associated with monitoring activities in the wilderness, the Agencies prefer to rely on operational monitoring during mining, and the monitoring of springs and seeps that have been identified to date under a comprehensive water resources monitoring plan. The Agencies believe that monitoring of springs and seeps, along with a contingency and corrective action plan, would be an effective way to address the issues raised. Additional hydrogeologic data would be collected during construction of the evaluation adit. This data would be used to evaluate the impact predictions in the final EIS and to modify the mine plan so that impacts remain at or below what was predicted in the final EIS. If that could not be achieved, additional MEPA/NEPA analysis would be conducted. Lastly, the final EIS has been revised to include a conceptual model of ground water flow in the area of the proposed mine. Lastly, the potential for impacts as described in this comment have been further mitigated under Alternative V which requires a 1,000-ft buffer in the vicinity of Cliff Lake and the Cliff Lake fault, and the north and south ore outcrops as well as a 450-foot vertical buffer between the surface and the mine workings.

8. Page 4-34 (Underground Mine): We remain concerned that a safety factor of 1.5 to 2.0 for estimating inflow may potentially underestimate mine inflow because the values for hydraulic properties of rocks (hydraulic conductivity, transmissivity) vary by orders of magnitude. EPA notes that geological fracturing and hydrological conditions at Rock Creek could result in different mine inflow experiences than those encountered at Troy.

We also note that grouting to control water inflow could be difficult if the mine intersects the water table, and as Klohn-Crippen stated the hydrogeology of the mine area does not appear to be well understood. The Agencies should develop contingencies if grouting does not effectively control mine inflow and inflow exceeds predicted quantities. (S146)

Response: The Agencies concur that hydraulic conductivity may vary locally by several orders of magnitude, particularly in fractured rock settings like Rock Creek. This local variation in hydraulic conductivity could possibly result in higher flow rates (short-term yields) when local fracture systems are encountered. Long-term yields however, are controlled by the bulk permeability of the rock. Available literature values suggest that bulk permeability of bedrock material would not be expected to vary by orders of magnitude. In addition, the estimates of mine inflow for the proposed Sterling Rock Creek mine are supported by field data collected at the Troy mine. The Troy mine makes 400 to 2,800 gallons per minute, with the highest flows during April, May, and June and an average flow of 1,600 gpm (Sterling 2000c: pp.7-3). The majority of water is made near the portal entrance.

Therefore, a factor of 1.5 to 2.0 in the sensitivity analysis is appropriate for disclosing the impacts of the reasonable worse case analysis. Monitoring of mine inflows would be conducted when mining commences, and the accuracy of the analyses can be determined at that point. If inflow to the mine is greater than anticipated, it is possible that the water could be used and make up water needs would be reduced during the life of mine. After mining ceases, and if the inflow rate to the mine is higher than predicted, additional treatment capacity would be required if the mine water does not meet MPDES discharge requirements without treatment.

9. Page 4-50, 4-53 (Mine Closure): We concur with plugging of the mine adits near the ore body to reduce the potential hydraulic head (water pressure) on the adit plug and decrease the risk of the adit plug blowing out (this has been a problem at other mine sites). We note that the bulkheads proposed at mine closure to seal the upper ends of the adits where they enter the mine workings (page 4-53) will need to hold the full pressure of water from the water table level. Has this water table level been estimated?

We also note that natural refilling of the mine is estimated by ASARCO to take 7 years (page 4-53). We suggest assessment and consideration of accelerated refilling of the underground mine at mine closure. Expedited filling of the mine with water should slow the rate of oxidation reactions that promote acid production and metal release into the pool (i.e., inundation of underground rock will reduce exposure of rock to oxygen, and thereby, slow oxidation).

Artificial refilling of the mine may also allow expedited evaluation of effects of the underground reservoir (i.e., allow more rapid evaluation of seepage from underground reservoir and other potential underground reservoir effects and allow earlier bond closure); and would allow potential injection of aqueous alkaline amendments (e.g., soda ash, caustic soda, hydrated lime) into the mine pool to raise the pH and alkalinity of the pool to precipitate metals and reduce potential toxic effects from water that may leak along fractures or faults.

Due to concerns about potential flow reduction or dewatering of Rock Creek headwater tributaries, we suggest consideration of the Clark Fork River as a water source for artificial refilling of the mine after closure. A well drilled into the Clark Fork River alluvium (to be used for mill makeup water during mine operations) would already be available. (S146)

Page 2-118, paragraph 4, last line – Hydrogeologic baseline data indicates that much of the surface area above the ore body is not directly hydrologically connected to the ore zone ground water. (S5)

Response: The Agencies acknowledge EPA concurrence with the specified method of adit plugging. Little or no water was encountered during exploratory drilling at the proposed mine depth. The wettest conditions were encountered in a horizontal exploration hole drilled in the vicinity of the evaluation adit which produced approximately 5 gallons per minute initially, and then gradually went dry. Analyses of ground water inflow presented in the EIS assumed the static water level in the area of the mine was 500 feet below ground surface. However, this assumption is considered to be very conservative. For example, the predicted flow rate for the proposed Rock Creek Mine is greater (by a factor of 2.0) than the current flow rate exhibited at the Troy mine.

Active dewatering during mine operation would maintain an inward gradient and limit the migration of mine water away from the workings. Once dewatering of the mine ceased, the mine would fill with ground water. The level of filling would depend on the closure option implemented. If the mine were completely plugged, the entire void space would likely fill and the potentiometric surface in the overlying rock mass would begin to rebound. Some groundwater would migrate from the mine workings to discrete surface discharge points. The exact locations of preferred fracture flowpaths cannot be identified. However, based on the structural geology of the area and the geometry of the deposits, higher probability discharge locations can be identified.

Under the plugging scenario, likely locations for discharge of mine water from the Rock Creek deposit would be where the deposit outcrops, including, South Basin below 5,800 feet elevation and North Basin below 5,200 feet elevation. Several small springs have been observed in South Basin. The large number of faults in the North Basin area make this the most likely area for mine water discharge. Another location where mine water may discharge is in Copper Gulch below 5,200 feet elevation. Copper Gulch is eroded along a splay of the Copper Lake Fault and, therefore, may contain fault-related permeability structures. However, a spring survey conducted in the upper portion of Copper Gulch overlying the deposit during September 2000 revealed no springs or stream flow.

If, on the other hand, the mines were allowed to passively drain out the service adits, the void space would not completely fill and the potentiometric surface would not rebound in the overlying aquifer. The water level in the Rock Creek mine would rise to an elevation of about 5,500 feet where it would drain out the service adit. Only those portions of the mine below 5,500 feet, mainly the north and west portions of the deposit, would flood. Seepage from these areas of the mine could discharge to the surface (i.e. East Fork Bull River [North Basin] and Copper Gulch). The total discharge quantity would probably be less than under the previous scenario because of lower hydraulic gradients.

The closure option selected at the time of mine closure under Alternative V would depend upon what hydrogeologic and rock mechanics monitoring data revealed as well as what impacts, if any, had occurred during mining. The plugging scenarios is preferred and would be necessary if mining affected the potentiometric levels of ground water in fractures that recharged Cliff Lake or other surface bodies of water. On the other hand, if the creation of new springs and seeps was the greater concern, then free draining adits or continued pumping of mine water would be preferred. The requirement of a 1,000-foot buffer around Cliff Lake and the north and south ore outcrops, plus a 450-foot vertical buffer between the ground surface and the mine workings should minimize the potential risk to Cliff Lake and the potential creation of post-mining springs and seeps (MT DEQ 2001a).

Accelerated filling of the mine with water after mining ceases could be retained for consideration in the future only if post-mining flow and water quality data (from both the Troy mine and the proposed project) support this approach. The reader is referred to comment responses to similar questions in WTR-300.

10. Underground mining in areas characterized by fractures and faults is known to have significant effects on ground water flows. Well-established flows may be obstructed and it follows that, even though there may be no evidence of surface subsidence, the proposed mining in the Cabinet Mountains Wilderness is virtually certain to have effects on the ground water and on related surface water (i.e. seeps and springs and the water levels of lakes). Some seeps and springs could be completely dried up. Lake water levels could be increased or decreased, and lakes could be completely dried up. The unpredictable nature of these effects dictates that, at the very least, a monitoring program be provided that is capable of detecting such changes almost instantaneously, and that corrective action be immediately instituted. Should such changes be allowed to continue for any significant period, irreversible damage to the wilderness is virtually certain to occur. In fact, it is not unreasonable to assume that, by the time such a change can be detected by monitoring, irreversible damage has already occurred and that the only possible corrective action would be action to limit the damage. (S6348)

In general the SDEIS lacks site-specific information on hydrological connections between the underground adits and workings and lakes, seeps, springs, creeks and wetlands. According to the conclusions and recommendations of

the FMEA, the hydrogeology of the mine area is not well understood. According to the SDEIS [p. 2-118], prediction of precise hydrogeologic effects of mine development within a fractured bedrock aquifer is extremely difficult even if numerous monitoring wells are available and the subsurface geology is well known. In this particular case, no monitoring wells are available, and the subsurface geology appears to be completely unknown. This renders a meaningful hydrological evaluation impossible. The SDEIS does say that it can be reasonably predicted that mining could reduce flows at some springs [SDEIS p. 2-118], but goes on to specify unidentified mitigation when this occurs. The wilderness lakes appear to retain water year-round; however, outflows are intermittent or nonexistent during drier years [SDEIS p. 3-15]. This indicates that the lakes water balance is sensitive, and even small decreases in surface or ground water flow to the lakes, as a result of underground mining, could result in significant alteration of natural lake characteristics. According to the SDEIS, small quantities of ground water may also flow long distances through interconnecting fractures. Therefore, ground water in fractured bedrock may flow to deeper, regional ground water flow systems [SDEIS p. 3-24]. On the same page the SDEIS says that lakes in the vicinity of the ore body do not appear to be connected to the underlying ground water system without actually citing any evidence of studies or other information gathered for this purpose. Data and analysis, instead of "appearances," should support conclusions in the SDEIS. In the SDEIS, the impact of dewatering cannot be quantified because the location and extent of subsidence cannot be predicted with any accuracy [SDEIS p. 4-17]. Additional data and analysis in this regard is critical to a defensible decision by the agencies. (S188)

Response: The impact of mining on water resources in the CMW are disclosed in Chapter 4, Hydrology, Surface Water Quality. A conceptual model of ground water flow near the proposed underground mine is provided in Chapter 4 of the final EIS. In addition, under Alternative V a 1,000-ft buffer would left in place in the vicinity of Cliff Lake and the Cliff Lake fault, and the north and south ore outcrops to mitigate any potential impact to water resources in this area. Mining into this buffer would proceed only after it could be determined no impacts could occur. See Appendix K for a discussion of the proposed water resources monitoring program.

11. Please conduct detailed geochemical, seismic, and subsidence studies to ensure that there will be no acid mine leaching, bedrock fracturing due to over burden pressure release, and no lake subsidence. (S5159)

Response: Please see the text of the final EIS (Chapter 4) and Appendix K for details of the geochemical testing and rock mechanics monitoring programs.

12. The impact to existing springs and seeps from underground dewatering and post-closure filling is uncertain, as is the proposed but unidentified mitigation after- the-fact for the dewatering of wilderness lakes and wetlands. (S188)

Response: Uncertainties in impact predictions presented in the final EIS do exist, and are acknowledged in the document. Uncertainty would be expected, for example, because the fracture pattern created by underground blasting cannot be predicted. Impacts to flows in springs are possible, but cannot be predicted with any certainty. While there is potential for impacts to wilderness lakes to occur under Alternative II, the potential for impacts in mitigated under Alternative V due to the proposed 1,000-ft mining buffer around Cliff Lake and the Cliff Lake fault, and similar prohibitions at the north and south ore outcrops. In addition, the agencies have committed to developing a comprehensive monitoring program and Contingency and Corrective Action Plan. Rock mechanics and hydrogeologic data (rate of inflow, degree of fracturing, static water levels) collected during development of the evaluation adit would be used to evaluate and, if necessary, modify the proposed mining plan to avoid potential impacts. Details of these plans are provided in the final EIS (Appendix K).

13. An additional problem with the analysis of the tailings facility is the use of the HELP model for predicting infiltration of the tailings. This model was not created for use on tailings and may not be reliable. Is there an example where the HELP model successfully predicted the water draining through a tailings facility. If not, why is it being used in this case?(S6301)

Response: The Hydrologic Evaluation for Landfill Performance (HELP) model was developed to compare seepage rates from landfills under a variety of design alternatives, and has not been validated for use at tailings impoundment or paste facilities. However, it is currently the best available analytical tool. Because of the uncertainties involved with seepage predictions, a blanket drain and extensive system of finger drains would be constructed to collect seepage. Seepage would be routed to a single collection pond and pumped back to the paste plant or returned to the mill during mine operation and directly to the water treatment plant after mine closure. The quantity and quality of seepage water from the paste facility would be monitored. Any differences between predicted and actual flow rates and quality could be documented, and the treatment plant size and capabilities adjusted accordingly.

14. Page S-16 2nd paragraph "Nevertheless, ... typical impacts ... are well-understood ..." If they are well-understood why are we considering potential effects, etc.? 3rd paragraph "However ... could reduce flows ... and likely increase flows ..." Increasing flows should be considered an indirect impact (not quantified or identified in SDEIS). Reduced flows to "some springs" should be identified as indirect impacts to wetlands, lakes, springs, wells, not identified or delineated for the project. (S4832)(S4833)

Response: The text has been modified to remove the term "well-understood." However, the purpose of an EIS is to disclose impacts, whether or not they are well-understood. It is unlikely that the springs and seeps identified to date are surface expressions of deep ground water movement in the vicinity of the orebody. While new spring discharge is possible, it can not be predicted with certainty.

WTR-302 Surface Water Quality

1. We note that environmental objections usually estimate water quality in as poor a light as possible. What information do you have on water quality prior to the advent of mining in the area? It is quite possible that the removal of deleterious natural minerals (some soluble) could help rather than hinder the environment. (S4901)

... why haven't they been required to take data on what kind of water comes out of the drainage that they're talking about putting the mine in? (S6743)

Response: A summary of the baseline characteristics of surface water and ground water resources for the project area is provided in Chapter 3. The proposed project would increase the load of chemical constituents to the environment.

2. According to the SDEIS, ASARCO has submitted an updated water quality database, reflecting several reporting procedural modifications, such as removing duplicate samples from the data set; these modifications have been validated by the agencies [SDEIS p. 3-12].

The original water quality database has been developed and maintained by ASARCO, without benefit of validation by the agencies. Data validation to determine the relative accuracy of the data, based on standardized laboratory quality control/quality assurance procedures, is not in evidence. Without that information the practice of removal of duplicates from a database is highly questionable. Which duplicate was removed (first or second analyses), were the data averaged, and were statistical analyses performed to analyze any resulting skewing of data as a result of removal?

In general, the geochemical and water quality data largely fall into a marginal or "gray area" when it comes to interpretation or prediction, resulting in what is commonly classified throughout the SDEIS as uncertainty. In these circumstances, what appears to be fairly mundane alteration of data, may significantly affect overall results. The agencies means of validating such changes to databases collected and maintained by the proponents (typically based on a brief discussion rather than an in-depth evaluation), warrants further circumspection of the water quality database. There is no evidence of a professionally acceptable data validation or database verification process that would be legally defensible. (S188)

Response: Field and laboratory duplicates were analyzed as part of the quality control program for the original data base used in the draft EIS. Statistics used in the supplemental and final EISs were generated after removing quality control samples from the data base. In all cases the original sample was retained for statistical analysis.

3. Two sets of water quality data, both about the same size and both collected during approximately the same time period, are presented for the Rock Creek station at Highway 200. One set (Table 3-2) was collected by the Montana DHES and the other set (Table 3-3) was collected by ASARCO. Mean and maximum values for nitrogen variables (ammonia, TKN, and nitrate+nitrite) are one to three orders of magnitude larger in the ASARCO data set than in the MDHES data set. Maximum values for nitrogen variables in the ASARCO data set are extraordinary for surface waters and probably represent sample contamination (Tom Reid, pers. comm.). Results from contaminated samples should be purged from the data set and mean values recalculated.

MDHES and ASARCO data from the Noxon Bridge station on the Clark Fork River are presented in Tables 3-4 and 3-5, respectively. These data are critical because they were used to calculate nondegradation criteria for outfall 001. As with the Rock Creek data, mean ammonia and nitrate+nitrite values (together comprising total inorganic nitrogen) are significantly larger in the ASARCO data set than they are in the MDHES data set.

WQB-7 (MDEQ 1995) establishes a "required reporting value" for each water quality variable "that should be achieved in routine sampling...based on levels actually achieved at both commercial and government laboratories".

Some of the MDHES inorganic nitrogen values and all of the ASARCO values were generated using methods that have detection limits two to ten times larger than the required reporting value. This is particularly significant in the case of the ASARCO data, where one-half of the detection limit value was used in statistical calculations.

Inclusion of a relative handful of questionable ASARCO data resulted in a mean receiving water concentration for total inorganic nitrogen (0.047 mg/L) that is nearly 50% larger than a mean RWC (0.033 mg/L) that would be generated using MDHES data alone. This is very significant, given that the nondegradation criterion for total inorganic nitrogen is based on the mean RWC plus the trigger value (Table I.1, Fact Sheet/Statement of Basis). In turn, the trigger value (0.010 mg/L) is based on the "estimated detection level" (MDEQ 1995), which ASARCO exceeded by an order of magnitude (Table 3-5).

Baseline data, as well as operational monitoring data, should meet reporting values specified in WQB-7. Obviously, baseline data derived from methods that do not meet required reporting values and data derived from contaminated samples should not be used in calculating nondegradation criteria. Moreover, the source of the consistently higher nitrogen values reported by ASARCO should be investigated. At a minimum, ASARCO quality assurance procedures and records should be reviewed and a program of split samples should be initiated with DEQ. ASARCO should be required to correct any deficiencies in QA/QC and to meet WQB-7 reporting values for all monitoring. (S5087)

Page 3-16 - Table 3-2: DEQ's baseline data for Rock Ck. concern: This bogus data due to the minimum values (detection limits) being much higher than ambient concentrations and due to using a value of zero when analysis yielded a value below these useless detection limits. (S5093)

Response: Data from DEQ and the applicant for the station on Rock Creek at Montana Highway 200 were presented independently in the supplemental draft EIS to segregate the two data sets. The data sets were segregated instead of combining all data as a way of removing the outliers from the analysis, as is suggested in this comment. It cannot be demonstrated whether the outliers were due to sample contamination, laboratory contamination or other unknown cause.

The differences in average concentration values presented in Tables 3-4 and 3-5 are primarily due to number of samples, detection limits, and the methods for reporting less than detection limit values. See Chapter 4-Hydrology for a discussion of the various methods that can be used to analyze less-than-detection limit values.

Baseline water quality data for the Rock Creek project have been collected for a 14-year period between 1984 and 1998. Through time, laboratory detection limits and requirements have changed. In most cases detection limits have decreased. Many of the baseline water quality data presented in the EIS were collected for the baseline reports that were published in 1985. These reports pre-date the 1995 WQB-7 standards and detection limits published at that time.

The final hydrologic monitoring plan would specify that the lowest possible laboratory detection limits would be used for water quality analyses, and must meet the specifications set forth in the most recent version of WQB-7.

4. Page 3-17 - Table 3-3: Asarco's baseline data for Rock Ck. (narrative p 3-15)concern: Asarco has submitted an updated version" of their baseline data, "improved" they would say. Indeed. No matter how you play with the data, it is still evident that metals in Rock Ck. already exceed the criteria. Any mining activity in the headwaters of the watershed will add metals to the waters and cannot, by law, be allowed. Mining could also impact Miller gulch and E Fk Bull River and baseline data and standards for these streams should be presented. Also, data for Cliff Lake, St. Paul Lake, Copper Lake are needed. (S5093)

Response: Additional data would be collected prior to commencement of mining activities. No measurable impacts are predicted for watersheds where there are currently limited data. No data was collected for the East Fork of Bull River because there would be no measurable impacts to that water body. Data was collected and is included in the final EIS for the wilderness lakes. Impacts to Rock Creek would be primarily sediment related as no tailings would be deposited in the headwaters. Numerous sediment mitigation would minimize those impacts. Other water quality impacts relate to nitrogen leaching off waste rock. See Chapter 4, Hydrology for more detailed description of impacts and Chapter 3 for description of the existing environment.

5. Page 4-37 & 38 Tables 4-11 and 4-12. Too bad that these tables were not sited side by side in the SEIS. It appears that there are some very consistent inconsistencies in these tables. Numbers for sulfate (SO2), nitrate and nitrite, zinc, lead, copper, are really out of order. It is hard to believe that both parties are sampling the same waters. This kind of data performance is what makes the public skeptical that either the agencies or Asarco will be willing or capable of delivering any kind of credible assurance that water quality in this project is being dealt with. (S614)

Response: The Agencies attempted to research and publish summaries of all available data related to the proposed project. Water quality data presented in the EIS came from many sources, and was collected through time for a variety of objectives and purposes (some not related to the EIS process). As such, parameter lists were not always consistent. See also previous two comments about data and detection variables.

6. We have noted that the discussion of estimated water quality in the Clark Fork River resulting from the proposed discharge—as presented in Tables 4-14, 4-15, and 4-16—contains a serious error. Page 4-42 discusses ASARCO's estimate of water quality in the untreated and treated mine water. Based on that information, the SDEIS states that "the maximum concentrations of the treated effluent are carried forward to estimate the reasonable worst case impacts to surface water quality."

However, careful review of that analysis shows that the maximum concentrations of several metals—including copper, lead, and zinc—presented in Tables 4-15 and 4-16 are less than maximum concentrations in the treated effluent presented in Table 4-14.

	Table 4-14 max	*Table 4-15/4-16 max*
copper	*.213 mg/L*	*.105 mg/L*
lead	*.06 mg/L*	*.01 mg/L*
zinc	*.043 mg/L*	*.033 mg/L*

Based upon this comparison, it the SDEIS and MPDES permit underestimate the concentration and load of metals discharged to the Clark Fork, as well as their potential impacts on water quality and aquatic life. We request the Agencies re-run this analysis using more appropriate data.

The effluent limits that the MPDES permit requires ASARCO to meet are the appropriate data to use in this analysis. We recognize that ASARCO expects the discharged mine water to be a better quality than what the permit allows. However, we also recognizes that "the mine water treatment system would remove suspended solids, heavy metals, and ammonia nitrogen and nitrate/nitrite nitrogen so that the requirements of the MPDES discharge permit can be met." (4-54 of the SDEIS)

The comparison of the relevant data presented below clearly shows that the MPDES permit allows ASARCO to discharge higher concentrations of metals than what they expect to discharge, and higher than the concentrations used in the SDEIS impact analysis.

	Table 4-14	*Table 4-15*	*MPDES daily/30-day*
cadmium	*<.001*	*<.001*	*.10 / .048*
copper	*.213 mg/L*	*.105 mg/L*	*.300 / .150*
lead	*.06 mg/L*	*.01 mg/L*	*.117 / .048*
zinc	*.043 mg/L*	*.033 mg/L*	*1.5 / .750*

We fully recognize that the proposed reverse osmosis treatment is a complex and expensive system to operate, and that ASARCO is only likely to run it when the mine discharge exceeds permit limits The SEIS notes this as well on p. 2-69, stating that "once the biotreatment system is operating, reverse osmosis would primarily be used during biotreatment upsets and maintenance, and as a polishing step when the effluent did not meet standards."

The situation could certainly arise where the biotreatment system produces effluent that meets the MPDES permit limits, but is "dirtier" than the water chemistry data used in the SDEIS impacts analysis. Regulators would have no legal authority to require ASARCO to operate the reverse osmosis system in order to produce an effluent that is "cleaner" than what the permit requires, even though that is what the Agencies depended on in the decision-making process.

Therefore, all water quality impacts analysis and nondegradation determinations presented in the NEPA documents should be based on the MPDES permit limits, not on water quality ASARCO thinks they can achieve. (S6318)

Response: Transcription errors in these tables of the EIS have been corrected. Additional tables have been added to Chapter 4 that assess impacts based on MPDES permit limits.

7. Treatment of the tailings, their impoundment, and the treatment of the contaminated water should be required to reduce contamination of these waters and wetlands. (S6580)

Greater precautions are necessary to protect the quality of water leaving the mine site. (S3509)

... further testing and investigation regarding probable contamination and poisoning of our waterways needs to be done. (S5800)

They also intend to dump their waste water, minimally treated, into the Clark Fork. (S5122)

Downstream water quality will be degraded. (S3488)

The EIS and SEIS Fail to Adequately Evaluate Impacts to Idaho Surface Water Quality and Beneficial Uses. The SEIS states "No measurable impacts are predicted for surface or ground water resources of Idaho" (Page S-14 SEIS). However, the SEIS clearly fails to make its case. Neither the Environmental Impact Statement (EIS) nor the Supplemental EIS (SEIS) address the potential for impacts to beneficial uses of the Clark Fork River in Idaho and Lake Pend Oreille from increased heavy metals concentrations and loadings. Ignoring these potential impacts is an unbelievably significant flaw in the analysis.. (S6337)

Response: Discharge of water to surface and ground water must be in accordance with the requirements of the MPDES permit. All mine waste including intercepted tailings seepage discharged to the Clark Fork River would undergo several different types of filtration, settling, and treatment to meet the proposed MPDES permit limits prior to discharge The proposed water treatment system includes several features designed to minimize potential problems with the level of treatment achieved in the system. These features include the use of reverse osmosis as an effluent polishing facility and the ability to eliminate or reduce flow to the treatment system during period of low treatment efficiency. Flow reduction can be accomplished by diverting water into mine storage for short periods of time. Please see the Alternative V description for more details of water treatment

systems and Chapter 4 for details of impacts. See also comments and responses on the water treatment systems in WTR-305.

8. Although alternative V is the more sensible choice because of it's pasted tailings, the collected seepage that may occur should still be re-treated prior to release back into the tailings impoundment to ensure that re-contamination does not occur. (S5159)

Response: Any seepage collected from the paste facility under Alternative V would not be placed back on top of the tailings as is done with traditional impoundment seepage. It would be returned to the paste plant and then either to the mill for use as process water or to the waste water treatment plant for discharge to the river.

9. The first place that treated water is dumped is into Rock Creek. That is not enough dilution. Where does Asarco propose to dump that first concentrated brine that comes off the tailings paste and the storm water from the mine. The proposal has them dumping into Rock Creek. (S5066)

Response: No discharges to Rock Creek other than storm water are proposed and then in accordance with proposed MPDES permit limits. The outfalls for the proposed project are ground water in Miller Gulch and the Clark Fork River. All waste water would be treated to meet MPDES permit requirements prior to discharge. Concentrated brine, as described in responses to comments in WTR-305 would be safely disposed of in a permitted landfill.

10. What is to happen to the toxic flow from the tailings pond and the flow of waste from the mine from Rock Creek when the river flow is slackened and the tons of waste builds up? (S6597)

Response: To the extent possible, all water from the mine, tailings impoundment (Alternatives II through IV), and paste facility (Alternative V) are recycled and used in the mill as makeup water. Water that is in excess of mill makeup water requirements would be treated to meet MPDES permit requirements prior to discharge in the Clark Fork River. During low flow water could be stored in the mine until the river flow increased. Water could also be routed through the reverse osmosis system to further reduce constituents in the water before discharge. An analysis of the potential impacts on water quality in the Clark Fork River is provided in Chapter 4-Hydrology.

11. The SDEIS does not include adequate data or analysis of surface water quality and therefore cannot conclude that surface and ground water resources will be adequately protected. This includes acid mine drainage production and treatment, ground water contamination (from any source, including nitrates), etc. (S2034)

Response: Chapter 3 of the final EIS contains the baseline water quality data and Chapter 4 contains the impact analysis of the proposed discharge for Alternatives I through V. These analyses are based on conventional chemical mass balance equations for both surface and ground water. Additional text has been added to Chapter 4 to discuss the impacts of these changes in surface water. Acid mine drainage and ground water impacts are also analyzed in the EIS.

12. There are entities spending huge amounts of money, coordinating vast physical support in order to clean up the upper Clark Fork. What is the point if Asarco waste is just going to degrade the river again 100 miles downstream? Isn't there some governmental guideline about counter productive authority? Please look into this. (S3579)

Response: Progress has been made in remediating pollution in the upper Clark Fork River Basin from both historic mining and other industrial activities. Unlike historic mining activities that have resulted in the necessity for remedial action under federal Superfund programs, the proposed Sterling Rock Creek project, if permitted, would be required to meet stringent standards as set forth in the MPDES discharge permit and other permits. These requirements would be protective of current beneficial uses and the environment.

13. What will the long term affects be for thirty years of treated water, the accumulation has to end up somewhere 232 pounds of nitrogen, 225 pounds of aluminum, .01 pounds of arsenic, 1 pound of cadmium, 4 pounds of copper, 1 pound of lead, 105 pounds of manganese, 21 pounds of zinc and 552 pounds of solids per day has to go somewhere? Who's to guarantee Asarco won't dump the maximum? (S5066)

Response: Nutrients and metals are naturally present in surface water resources, and are taken up by or utilized by living organisms, attached to sediments, or transported further downstream. The Alternative V water treatment system would ensure discharges from the proposed project meet MPDES permit requirements.

14. The SDEIS admits that stormwater runoff and seepage from the confluence mill site could impact the mainstem of Rock Creek. Page 4-42 states "that waste rock used in the construction of the proposed mill pad construction would potentially increase the load of nitrogen, TSS, and other non-toxic constituents in Rock Creek during the period of construction, and that resultant water quality impacts on Rock Creek cannot be estimated with certainty."

These discharges from the mill pad will effect the West Fork as well. Page 4 of the Statement of Basis admits this, stating that storm water, mine drainage, and potentially process water from the mill area will be discharged to the West Fork. These impacts must be discussed. (S6318)

Response: The statement of basis, incorrectly listed the West Fork of Rock Creek as the receiving water for Outfall 004; the discharge for Outfall 004 is to Rock Creek. This typographical error has been corrected in the final. The effluent limits for Outfall 004 are based on protecting the existing instream water quality, and are limited to significant precipitation events.

15. Any increase in pollutants in the Clark Fork River could impair the aquatic resources of the river and hence the Cabinet Mountains Wilderness. Moreover, and despite our organization's focus on designated Wilderness, we must express our concern with the proposal to place 100 million tons of mining waste along Rock Creek and near the Clark Fork, and to potentially discharge 3 million gallons of wastewater every day into the Clark Fork River. The Clark Fork system has suffered greatly from past abuse. It needs projects aimed at restoration, not further degradation. (S6348)

Response: Alternative V was developed to mitigate potential environmental impacts associated with the proposed project. All discharges would need to comply with limitations identified in the MPDES permit. There are no direct impacts to the wilderness predicted from the mine and certainly not relative to the discharge of treated water that meets MPDES permit limits. The mine would not discharge its potential maximum volume of water until the end of mine life (see the water balance table for Alternative V in Chapter 2).

16. Page 2-99 5th paragraph "Effects are predicted to impact …" Is it appropriate and acceptable to USFS and MDEQ to admit that "surface water quality from spills and pipelines ruptures, wilderness lake water levels and aquatic life" are significant - yet they will approve of this degree of habitat degradation. Again impacts to lake levels and regional seeps and ground water have not been addressed. Under the CWA, it is the Corps' responsibility to assess these potential indirect, yet substantial impacts (again see page C-6, Section 230.10 (b). It is ironic that the Corps requires so much mitigation and study on smaller independent projects' impacts to wetlands. What is the impact to downstream effects and Mtn Goat habitat when wilderness lakes are affected? None of this has been addressed, yet the project proposal indicates (admits) these are real potential impacts. (S4832)(S4833)

Response: This paragraph is a summary of significant or potentially significant impacts. Under Alternative V, there is a very remote risk of subsidence and surface expression of that subsidence that would affect surface waters, primarily the wilderness lakes above the ore body and their associated wetlands and riparian areas. The risk of accidents, spills, and pipeline failures, while slightly more likely than subsidence, is still very unlikely. Nevertheless, because there is a risk,

however small, the agencies, including the Corps of Engineers, need to disclose that the impacts from these events should they occur could be significant to surface waters and aquatic life. That is the purpose of an EIS, to disclose potential impacts. The impacts from these events are described in more detail in Chapter 4, Hydrology, Wetlands and Nonwetland Waters of the U.S., and Aquatics/Fisheries. Mitigations would be required should these events occur and result in impacts to the environment. Contingency plans would be developed for the more likely scenarios prior to mine operation, but there is no way to predict and plan for all possible variations. There are no predicted impacts to mountain goats from these events, but impacts to the goats from the mine are described in Chapter 4, Biodiversity.

17. Page 2-50 of the SDEIS admits impacts from the evaluation adit in Alternative V will be the same as alternative II, i.e., 59,000 tons of waste rock and 119,000 tons of ore will be stored at the mouth of the evaluation adit. Runoff from the waste rock and ore stockpiles will still impact the West Fork of Rock Creek under Alternative V, and those impacts must be disclosed. In addition, these discharges must be permitted as a point source under the Clean Water Act and Montana regulations. (S6318)

Response: Runoff from the waste rock dump and evaluation adit area would be diverted and collected in a lined pond. Water would be used for drilling or would be treated prior to discharge to the Clark Fork River. No discharge is planned to the West Fork of Rock Creek. Water from the face of the dump would be captured in toe ponds at the base of the dump and infiltrate into the ground.

18. Page S-16, paragraph 4. Please provide info on source of 7mg/L TSS; N and P estimates and estimates of potential harm of those estimated amounts to ecosystem must be part of final EIS. There are also other elements (metals, etc) that must be evaluated. (S3462)

Response: As a result of public comments on the supplemental draft EIS, sediment modeling was updated by the USFS using the R1-WATSED model. Results of sediment modeling using R1-WATSED are provided in Chapter 4-Hydrology and Appendix N. A complete analysis of potential water quality impacts, including impacts from nitrogen, phosphorus, and other elements, is presented in Chapter 4- Hydrology.

19. Page 2-118 increases of sediment and nitrate loads to Rock Ck. is considered. concern: but not metals? This is absurd. Take a look at Upper Stanley Ck. just below the mill site at Troy. And at the above cited NOV. (S5093)

Response: The mill patio for the proposed project would be built from non-mineralized waste rock. As such, some residual nitrogen from blasting agents is expected. Leaching of metals from non-mineralized waste rock is not predicted as described in Chapter 4. Increased sediment would primarily be caused by road side construction activities and not caused by tailings or waste rock.

20. The SDEIS speaks at length about how moving the mine's mill facilities to the "confluence" location will eliminate project-related impacts to aquatic life and fisheries in the West Fork of Rock Creek.

Pages S-20 and 2-122 of the SDEIS state that "moving the mill site to the Rock Creek confluence (alternatives IV and V) eliminates the project-related impacts to populations of bull and westslope cutthroat trout in the West Fork of Rock Creek as well as reducing sediment impacts to spawning habitat and fish populations in Rock Creek below the confluence with its East Fork."

Additionally, p. S-16 states that "for Alternatives IV and V, suspended sediment produced from construction of the mill facility, and residual nitrate from blasting would not effect the West Fork of Rock Creek because the mill would be located farther downstream, there would be less road construction/reconstruction, and there would be no waste rock dump."

However, these statements are not supported by information presented in the SDEIS. Review of the project clearly shows that discharges from the evaluation adit and mill area, and their access road, will still impact the West Fork with increased loads of sediments, nitrates, and metals. (S6318)

Response: Please see the results of R1-WATSED modeling presented in Chapter 4 - Hydrology as well as comments and responses in FISH-601 and T&E-501. The discussion of potential impacts to west fork of Rock Creek aquatics/fisheries resources was modified to indicate that minor impacts are predicted in the short term and negligible impacts are predicted over the long-term.

The supplemental EIS was incorrect in stating that moving the mill to the confluence area would eliminate impacts to the West Fork of Rock Creek. The implementation of Alternatives IV or V would still have a small effect on suspended sediment generation in the West Fork of Rock Creek from the upgrading of the access road to the evaluation adit site. This effect would be much smaller for Alternatives IV and V compared to the other action alternatives. Alternatives II and III would increase 25.7 and 19.3 mg/L of suspended sediment (respectively) while Alternatives IV and V would increase 7.2 and 4.4 mg/L (respectively) over existing conditions. The drainage that the confluence mill site is located in drains to the East Fork of Rock Creek so sediment increases from this area would be removed from the West Fork of Rock Creek. The evaluation adit area does not have a defined channel and is located in a mostly talus area so no sediment transport is expected with the activities in this area which would be located in the west fork watershed. Table 2-21 displays the amount of road mileage required for each alternative.

21. Please take the time to further study the impacts of sedimentation and nutrient loads to the Clark Fork River. (S5159)

Response: Please refer to Chapter 4-Hydrology for a complete discussion of the potential impacts of the proposed project as they relate to sediment and nutrients. If the project is approved, a comprehensive water resources monitoring plan would be implemented. As a part of this plan, water samples from a variety of stations would be collected and analyzed for nutrients and total suspended solids, as well as for a variety of other constituents.

22. Large flows from the mine site and tailings impoundment will carry sediments, potentially with heavy metals and nutrient contamination. Impacts associated with anticipated discharges, and potential failure of impoundment facilities represents an unacceptable risk to nationally important downstream resources including the Clark Fork River, Clark Fork Delta, and Pend Oreille Lake. Accumulation and concentration of mine pollutants in the delta are of particular concern to us due to the significant fishery, waterfowl and wetland wildlife values in this area. (S5124)

Response: A complete analysis of the potential impacts of the proposed project is provided in Chapter 4, Hydrology, Aquatics/Fisheries, and Threatened and Endangered Species (Bull Trout). Impacts of the magnitude referenced in this comment are not anticipated.

23. Page 2-73 4th paragraph "There will be 114 acres of sediment reduction work ..." Does this indicate that the BMP's may be ineffective? Is there any way to make sure these will be effective upfront? (S4832)(S4833)

Response: The sediment reduction plan would require Sterling to mitigate an amount of sediment that meets or exceeds the predicted sediment increase in Rock Creek from implementation of Alternative V. Please see "Rationale for Alternative V Sediment Mitigation Calculation" discussion presented in Appendix N. This is equal to the amount predicted by the R1-WATSED Model and then doubled to provide for a safety factor. The limited amount of validation of the sediment side of the R1-WATSED Model was also taken into consideration of the final amount of sediment mitigation required by Sterling. Appendix H discusses the expected effectiveness from past evaluations of

BMP's on the Kootenai National Forest. Appendix K discusses the monitoring process to determine effectiveness over mine life.

24. Reduce existing sediment sources in Rock Creek to offset the increased sediment loads from the mine. (S3701)

Is it possible that you could require Asarco to reduce existing sediment sources in Rock Creek to offset the increased sediment loads that mine construction will bring. (S4801)

Response: Please refer to Chapter 4 - Hydrology for a discussion of sediment yield and mitigations. See also comments and responses in T&E501 regarding the sediment mitigation plan.

25. Page 4-74 under "Nutrients" "Discharge of treated mine water .. in minor increases of nitrogen ..." See page 4-32, 4th paragraph - there it is stated "no increases." Which is it? (S4832)(S4833)

Response: The treated discharge from the mine will contain nitrogen and therefore increase the concentration of nitrogen in the receiving water. The text has been edited for consistency in this regard.

26. Describe the impacts that the mine's discharge will impose on the Clark Fork and its ability to assimilate nutrients. (S3701)

Conduct detailed studies on the impacts the mine's discharge will have on the Clark Fork and it's ability to assimilate nutrient loads.(S5159)

The nutrients presently in the Clark Fork River are already too high and need to be more quickly addressed before more are added. (S5621)

Response: A discussion of baseline water quality conditions as they relate to nutrients is presented in Chapter 3, and the potential impacts of the proposed project are discussed in Chapter 4.

27. Page 3-15 last paragraph In the report cited, how has nitrate been assessed? Check with tribes who state that nitrate levels are high. (S4832)(S4833)

Response: Nitrate was assessed using a mixing analysis. The concentration of nitrate in the Clark Fork River is disclosed in the EIS, and is compared to water quality criteria. See Chapter 4 - Hydrology.

28. Page 3-22 under (b.) Where is this 75% of soluble nitrogen coming from? The tributaries upstream are largely native. (S4832)(S4833)

Response: Non-point sources such as residential development, agricultural and silvicultural activities are likely responsible for this loading.

29. Estimate the total amounts of explosives used so that nitrogen levels can be accurately predicted. Nutrients such as this contribute to algal blooms, which increases the Biological Oxygen Demand in the Clark Fork and can be detrimental to aquatic life. (S5159)

Response: The nitrate concentration in the untreated mine wastewater is based on the Troy mine and other similar mining operations in the state. The nitrate concentration in the treated discharge is determined by the treatment system but levels must comply with limits in the proposed MPDES permit (see Appendix D). The impacts to the receiving waters of the nitrogen in the discharge are discussed in Chapter 4.

30. Page 3-47 3rd full paragraph: The Clark Fork River is presently considered unpolluted (Priscu 1989). (S4832)(S4833)

Response: The Clark Fork River is considered unpolluted with regard to biological oxygen demand.

31. Page 4-56, paragraph 5 – The discussion of the Priscu report does not make it clear that his analysis was based on untreated water with an estimated NO2 +NO3 load of 17 mg/l. (S5)

Response: A typographical error in the text has been corrected to clarify this concern.

32. Page 4-74, paragraph 1 – It would seem appropriate to mention that FDR 150 would be paved in this discussion of sedimentation. (S5)

Response: The fact that FDR 150 will be paved was added to the discussion.

33. Page 4-66 reagents: (also App F): In the DEIS was a rather cryptic discussion of impacts from the use of reagents. Where does the 23,500 ppm of potassium in the Troy tailings (DEIS - Table 4-17) come from? In the SDEIS more information is presented. A taste test was done on fish from Lake Ck below the tailings pond which revealed an adverse effect on fish. This should be included in the discussion. Testing should have been done on reagent residues in the tailings water. How will these be effected in the treatment systems? (S5093)

Response: Potassium, a common ion, has only a narrative standard. The discussion on mine reagents was based on the original data submitted by the applicant in ASARCO's 1986 application. This information, and the discussion based on it, was updated for the EIS. Flavor of fish often varies within and between sites due to habitat differences and/or seasonal condition.

34. Lastly, the NEPA document must provide a more detailed discussion of impacts caused by reagents used in the milling process, particularly xanthate which is known to be toxic to fish. (S6318)

Response: The discussion on the potential effects of mine reagents, particularly xanthates, was expanded in the EIS. As indicated in the effects evaluation, the outcome of a spill cannot be predicted in advance given the many variables associated with it.

35. Volume 2 page c-17 section 6.1. The project will impact a private water supply. Reference paragraph at bottom of page 4-40 and top of page 4-41. (S4892)

Response: The text has been revised to state that the proposed project could potentially reduce surface water flows to Miller Gulch, however the impacts from reduced flows cannot be quantified. The existing beneficial uses for surface water from Miller Gulch include power generation, irrigation, and domestic uses (Water rights PO29428, W131977, and W131978). Sterling would be required, under the Metal Mine Reclamation Act to repair or replace any existing use of surface or ground water that was affected by the proposed project.

36. The EIS must address potential danger to aquatic resources as well as the most important source of drinking water for this part of the Pacific Northwest. (S4368)

Response: An analysis of potential impacts related to fisheries and water quality are provided in Chapter 4 of the EIS.

37. The SDEIS and other available information set forth to date do not, in our opinion, guarantee that the quality of water for downstream will not be seriously impaired. (S5765)

We need further testing to prove that the discharge of mining waste will not seriously effect the health of humans and wildlife in that area. (S6638)

Response: A comprehensive water resources monitoring plan (see Appendix K) is proposed to address issues related to water conditions in the future.

38. In addition to failing to present adequate design information on the treatment system, the also SDEIS understates the impacts that the expected concentrations of metals in the mine discharge will have on water quality in the Clark Fork River.

Page 4-28 of the SDEIS states that "the impact of treated discharge on the quality of water in the Clark Fork River in Montana and Idaho would not be measurable."

Page 4-70 says "metals levels in the Clark Fork would remain below Montana's cold water aquatic life standards, and that impacts from metals loading to aquatic life in the Clark Fork River and Lake Pend Oreille would be negligible."

These statements are contradicted by information presented in MPDES permit. (S6318)

Response: The Agencies believe the analyses of water quality impacts presented in Chapter 4-Hydrology are technically adequate.

All components of the Alternative V water treatment system (that is, clarification, filtration, nitrification trickling-filter, reverse osmosis, anoxic biotreatment denitrification cells, and extended aeration effluent polishing) have been successfully used to treat mine wastewater similar in nature and under similar climatic conditions to those anticipated at the Rock Creek mine. While it is reasonable to assume that the final design and layout of the proposed water treatment system may require minor modifications to more accurately reflect site specific conditions (such as chemical constituents, flow rates, and water temperature), the water treatment system proposed as part of Alternative V should be capable of providing the level of water treatment required by the proposed MPDES discharge permit.

39. With the known harmful effects of the acids used in mining, set backs should be further back from the water due to the heavy amounts of precipitation in this area. (S6638)

I believe that we need further testing to prove that the discharge will not effect water quality. The mix of acids in the mining process could seriously effect the health of humans and wildlife downstream.(S5100)

Response: A complete disclosure of analyses is provided in Chapter 4-Hydrology and Aquatics/Fisheries. Environmental impairment due to use of acid is not predicted for the proposed Rock Creek Mine. Some of the reagents proposed for use at the mill are toxic to aquatic organisms. The greatest risk of impact from these materials would be from a spill of reagents en route to the mill, although reagent residues in tailings could potentially affect fish should they reach surface waters from pipeline rupture or tailings facility failure.

40. Asarco must control all overflows, by passes, holding ponds and the tailings impoundments, whether it be a 100 year storm or a natural disaster or a mining catastrophe. They must have a procedure to cover all possible catastrophes and have the equipment to handle them all. These procedures must be at hand and workable, not merely on paper. (S3490)

Response: Alternative V includes requirements for a Spill Prevention and Cleanup Plan (a draft is in the hardrock permit application and supporting information for the MPDES permit application for Alternative V), a Monitoring Alert Levels/Corrective Action Plan, and a Remedial Action Plan. These plans would be finalized prior to commencement of the proposed project for the most likely

situations. There is no way to predict all catastrophes due to the numerous variables. Equipment would be available to implement these plans prior to commencement of mining activities.

41. The real risk from the tailings containment is the extremely high likelihood that in a very few years there will be a catastrophic storm flooding event which would easily either breach the entire tailings containment structure or create a liquid slurry which massively overflows the containment structure. Asarco knows this, and its argument that the proposed structure is protected to stand up merely to a 10-year storm event without such catastrophic failures, is an unsatisfactory and deceptive response to the issue. (S4280)

Response: Sterling's proposed tailings impoundment is currently designed to handle the probable maximum flood (PMF) event. The Agencies understand a breach of the tailings impoundment dam would be a catastrophic event. Issues related to a breach of the tailings impoundment dam are disclosed in Chapter 4-Geotechnical Engineering. In addition, the Agencies have developed an alternative method for tailings deposition (Alternative V) that addresses these concerns.

42. We strongly urge the MDEQ to redo the assessment of the environmental impacts of Alternative 5 in order to fully project and account for the impacts of a plausible set of catastrophic events and system failures. The added analysis should encompass failures that change pollutant releases and loadings gradually over many years, but significantly over a 30 to 50 year time span, as well as single catastrophic events, such as a pipe rupture, that can overwhelm the assimilative capacity of the surrounding water resources and environment, with "irretrievable" impacts on species diversity and ecosystem health, including possibly the health of humans living in the area.

The assistance of experts in disaster preparedness and impacts should be sought by the MDEQ in order to define the nature of events and system failures to incorporate in new studies. This should include careful study of unexpected events that have led to the listing of so many mines as Superfund sites or major sources of pollution in large areas. Residents of North Idaho need look no father south than Kellogg for a case study of how a large number of small errors in the projection of the impacts of a mine project can add up to very significant and costly impacts on a whole region. (S4832)(S4833)

According to the SDEIS [p. S-14], Alternative V could result in significant or potentially significant impact to water quality from surface water quality from spills and pipeline ruptures, to wilderness lake water levels and aquatic life from the possibility of subsidence, and to surface water quality and aquatic life in lower Rock Creek and Clark Fork River if impoundment failure occurred.

The alternatives presented rely on a Monitoring Alert Levels and Contingency/Corrective Plan [SDEIS p. S-17]. Combined with the uncertainties in water quality characterization, the to-be-provided alert levels and plan result in an inability by the agencies to evaluate, and the public to adequately address, the potential impacts and any proposed mitigation.(S188)

Response: The EIS discloses the remote possibility of catastrophic events. Clearly, the occurrence, characteristics, and magnitude of such events can not be predicted with accuracy. However, design features such as deposition of tailings as a paste rather than in an impoundment, double walled pipelines with emergency shutoff and leak detection systems, and prohibiting pillar robbing have been developed under Altemative V to mitigate and limit the possible consequences of potentially catastrophic events.

43. 3rd paragraph "Assuming the adit portal could not or would not be permanently sealed …" I thought under "Adit Closure" (see page 2-74) it <u>was</u> to be plugged.

S-16 1st paragraph"Adit water would have to be <u>perpetually</u> piped"? Or piped for just 33 years? Clarify. Unsolved contradiction."Water draining … and then "possibly" into Rock Creek." Change to inevitably. (S4832)(S4833)

Response: These statements refer to what would happen under Alternative II as adit closure is not clearly defined in the permit application. However, under Alternative V, the reasonable worse case assumption used for this scenario is that water could be discharged in perpetuity. The quality of water exiting the mine portal would be treated and discharged, until the quality of the discharge met MPDES permit requirements and then the adits would be plugged and sealed if other factors did not require that the adits be free-draining. If there is a potential for the creation of new seeps and springs from water stored in the workings, it may be more desirable to continue to pump the water or allow it to drain and capture the drainage as it entered the adits; the water would then be treated, if necessary to meet MPDES permit limits, and discharged into the Clark Fork River in perpetuity. This decision cannot be made until more data is collected during mining.

44. Page 2-118: first incomplete paragraph "Water draining from adits … and then possibly into Rock Creek." Where else would the water go? Isn't this considered a discharge/impact? Corps response needed. (S4832)(S4833)

Response: Water in the alluvium below Rock Creek may or may not discharge to Rock Creek.

45. Page 4-50 - mine closure concern: mine water will never (foreseeable future) return to current ambient water quality levels. Nitrate levels will diminish over time, but metals levels will continue to be a problem indefinitely. The water will have to be removed from the watershed and treated perpetually and plugging the adits does not solve the problem. After treatment the water should be returned to the head of the watershed. (S5093)

Response: The water would not meet standards for direct release to the headwaters of Rock Creek. But mine water should approach background levels of the ground water from which it came, and so plugging the adits and sealing the water in the mine after mine water meets ground water standards without treatment would be the most realistic alternative. There are numerous operation problems of maintaining pipelines and treatment systems in perpetuity that could cause more environmental problems than the possible creation of seeps and springs from water stored in the mine. But if monitoring data indicated that the adits should not be plugged, then the agencies would have to consider that option at that point in time.

46. Use double walled pipes made of corrosion resistant materials with leak detection systems on all pipes to reduce metals and nutrient contamination. (S5159)

Response: Double-walled pipes with leak detection systems would be required under Alternative V. Please refer to the description of Alternative V in Chapter 2 for more detail.

47. The tailings pipeline should be located away from Rock Creek so as to protect Rock Creek water quality from potential and inevitable leaks and ruptures. (S5092)

Response: Please refer to Chapter 2 for details on a variety of pipeline design options.

48. Use double walled, corrosion resistant pipelines with leak detection systems. (S3701)(S4771)

Piping tailings 5 miles, across Rock Creek, to the impoundment area is asking for trouble. What happens when the pipe over Rock Creek ruptures? (S3293)

Another thing you could use is double-walled, corrosion resistant pipelines with leak detection systems to guard against metals contamination. (S4801)

Let's also reduce risk of pipeline spills by using double walled pipelines and a leak detection system. (S6740)

Response: Please refer to Chapters 2 and 4 for additional details related to pipeline design, potential impacts, and mitigations. To minimize potential pipeline leakage problems, under all alternatives the pipelines would be double-walled pipe with leak detection. In addition, pipelines would be installed

within a larger steel pipeline at the three stream crossings. All pipelines would be buried under Alternative V except at stream crossings. The pipelines would be located on the uphill side of the road corridor to keep the greatest distance between the pipelines and Rock Creek yet remain within the corridor.

49. In addition to these issues, we believe the potential impacts from pipeline leaks and spills of milling reagents must be better addressed. The SDEIS talks about using pipelines to move concentrate from the mill to the rail loadout facility as a mitigation for harlequin ducks and grizzly bears. However, it must also present a better discussion of the potential threats that the mitigation causes to aquatic life and fish in the Rock Creek drainage.

Page 4-66 talks about pipeline ruptures from the slurry, wastewater, and reclaim water and their potential to impact water quality. It says "impacts to aquatics and fisheries resources in other waterbodies from these improbable events would be minor."

These events are not improbable. The tailings line at the ASARCO Troy mine leaked, a pipeline at ASARCOs East Helena Smelter leaked, and the Yellowstone Pipeline leaks. Leaks from the pipeline are very likely over the 30-year life of the mine, and the EIS should recognize it.

Additionally, page S-17 states "impacts to aquatics and fisheries from spills and/or pipeline ruptures would be potentially significant for all action alternatives. The potential for spills would be further reduced by burial of the pipelines under Alternative V."

Burying the pipeline does not reduce the potential for ruptures and spills. Riparian area soils may help absorb some of the spilled material before it reaches the creek, but burying the pipe will also make it harder to detect, locate and repair pipeline leaks in a timely manner.

Page 4-29 states that "the potential for tailings pipeline ruptures and spills in the West Fork of Rock Creek are eliminated under Alternatives IV and V." This is not true. The pipelines still cross the West Fork, just down on the lower reach. (S6318)

Page 2-52 - Alt V concentrate pipeline: a 3 inch pipeline from the mill to the rail loadout facility, (5 miles?), buried in the same corridor as the tailings and water pipelines. concern: a break in the pipeline causing spillage of highly concentrated/toxic slurry...a very high risk plan. (S5093)

Page 2-78 - DEIS, Alt III: mitigation plans for chemical spills and pipeline rupture to be developed. concern: still not presented to public for public review. (S5093)

Response: Alternative V was developed to address issues related to chemical spills and potential pipeline leakage. The double walled pipelines would be equipped with a leak detection system capable of identifying the stretch of pipe requiring repair. Text related to the west fork will be edited. Pipeline ruptures from vandalism and breakage would be minimized through the use of double-walled piles with leak detection systems and burial of the pipelines. The applicant has developed a Spill Prevention and Containment Plan to be implemented should there be a spill or pipeline rupture.

50. The SDEIS speaks at length about ASARCO's commitment to use double-walled pipes with leak detection on the pipelines transporting tailings slurry, copper/silver concentrate, impoundment seepage, and degraded mine water generated during mining. We support the use of best available technologies for pipeline construction and leak detection at the Rock Creek mine.

However, any permit issued by the Agencies must require these designs as a condition for approval. ASARCO's commitment is appreciated, but it is not legally binding. If the Agencies are to assume the proposed pipeline technologies will help mitigate project-related impacts, they must require them as part of the operating permit. This issue is especially critical considering the numerous stream crossings within the pipeline utility corridor. (S6318)

Response: If the Agencies approve an operating permit based on Alternative V, the double-walled pipes with leak detection would be come a requirement of the hardrock permit. They are included in the Water Management Plan for Alternative V that provides supporting information for the MPDES permit application.

51. Page 4-13 If sulfide mineral oxidation is the probable cause of elevated copper in water from the underground workings at the Troy mine and this water reports to the tailings impoundment, what's to say that this same situation will not present itself at Rock Creek. Is Asarco prepared to perpetually treat water through an RO unit? Or is the state allowance that instantaneous dilution will occur in the Clark Fork River the solution to this problem? (S614)

Response: No mine water would be directly discharged to Rock Creek and Rock Creek is located approximately 40 feet above the ground water table in the vicinity of the tailings storage facility. Water handling for Alternatives II through IV is illustrated in Figure 2-16. For these alternatives, waste water from the mine would either go to the mill, directly to the tailings impoundment, or to the waste water treatment plant and discharge to the Clark Fork River. Some of the water stored in a pond on top of the tailings impoundment could be used as makeup water in the mill process and some would be sent to the waste water treatment plant for discharge to the river. Some of the tailings water is expected to seep to ground water, but due to the depth of the ground water beneath Rock Creek, no tailings seepage should reach the lower reaches of the creek. Contingencies that were not available at Troy would be in place to pumpback water that does no meet ground water criteria downgradient of the impoundment. Under Alternative V, after milling, the tailings will be slurried to the paste plant and dewatered before deposition. No water storage on top of the paste tailings is proposed (Figure 2-34). Paste tailings deposition will require approximately 20-25 percent moisture, some of which could be from the mine. These features would reduce seepage beneath the tailings facility under Alternative V.

Under all action alternatives, the majority of mine water would be treated until it met MPDES requirements without treatment prior to sealing the adits. A large enough bond would be held such that water could be treated in perpetuity, if necessary. However, treatment of mine water would cease once the adits were plugged and sealed. Under Alternative V, there is the possibility, however, that the adits may not be sealed in order to prevent the creation of new springs and seeps. In that case, water would continue to be discharged to the Clark Fork River in perpetuity.

The mine water at Troy is slightly elevated in copper with respect to surface water standards based on hardness. Mine water is considered to be ground water, and Troy mine water is below ground water quality standards. Under all action alternatives, any elevated copper in the Rock Creek mine water would be handled in such a way that surface and ground water standards would not be exceeded.

52. Page 4-14 para.3 Please resolve the inconsistency of the above paragraph and the first sentence in the third para. pg. 20 of Klohn-Crippen report, The available data indicate that there are no significant water chemistry issues at the Troy Mine". (S614)

Response: At the time the Klohn-Crippen report was written, limited chemistry data of the underground pool at Troy were available. The DEQ had mine pool water quality data from

inspection reports that indicated copper, lead, and antimony were elevated slightly above surface water standards based on hardness criteria. The mine pool water meets all ground water standards. It appears that Klohn-Crippen's study only focused on the applicant's monitoring reports, which did not include mine pool water chemistry data. Since that time, more sampling of the mine pool has occurred. Chapter 4 was re-written to reflect this more recent mine pool water chemistry data.

53. Page 4-31, table 4-9 (+) hardness value. We have to take exception to the note that 10mg/l as used for calculating Rock Creek standards is conservative. It might be were it not for the fact that Rock Creek has extremely soft water compared to other similar streams in the area. Therefore the reference conservative is relative. Conservative for Rock Creek might entail calculations at a hardness of 5mg/l.(S614)

Response: The lowest hardness value for which the formula for calculating the aquatic criteria is valid is 25 mg/L. Hardness values lower than 25 mg/L do not fall within the regression analyses used to derive these equations, and may not be meaningful. Because baseline data indicate the average hardness of Rock Creek (10 mg/L) is lower than the 25 mg/L minimum value, the posted criteria is conservative.

54. The effect of the ventilation adit on water quality in wilderness lakes is also a concern. The wilderness lakes have little buffering capability and may therefore, serve as a pot for acidification. (S6312)

Response: No impacts water quality or quantity impacts are predicted from development of the air-intake ventilation adit. This would not be used to exhaust air from the mine.

55. On page 4-11 the SEIS states "In upper Libby lake, acid anions are projected to increase by a maximum of 2.9% in 2030 for the Asarco + Montanore cumulative emissions while base cations would decrease by about 1%. In lower Libby lake, acid anions are projected to increase by an estimated 2.8% for the Asarco + Montanore cumulative emissions while base cations would increase by about 1.1%."

However, on page 4-12, the SEIS concludes "The estimated changes in acid anions and base cations are not sufficient for the MAGIC/WAND model to project any changes in pH or alkalinity in upper and lower Libby Lakes for either the Asarco emissions only or Asarco and Montanore cumulative emissions. The modeling results are due to the relatively low levels of project mine emissions and associated low dispersion model projections of percent increases in nitrogen and sulfur deposition to the Libby lakes."

The above statements are somewhat contradictory and the figures described are only estimates, based on the prediction of one model. In case these estimates prove incorrect, the SEIS should describe possible courses of mitigation. And the agencies should require frequent monitoring of water quality in the lakes. (S6312)

Response: The modeling that was completed using the MAGIC/WAND model demonstrated no effects on the Libby lakes. The department has explained why the modeling resulted in this manner and does not feel it is necessary to complete further modeling and analysis..

56. I want answers to questions concerning the relicensing of the dams by WWP and why we don't hear of the relationship between the WWP and their concern for the water quality with the proposed Rock Creek Mine so close to their operations. (S6597)

Response: Nighttime operation of the Washington Water Power (now Avista Corporation) Noxon Dam located upstream of the proposed Rock Creek Project reduces instream flows available in the Clark Fork River at the confluence with Rock Creek. An analysis of the potential impacts of the operation of the Noxon Dam on water quality in the Clark Fork River is provided in Chapter 4-Hydrology. Relicensing of the dams has been added to cumulative impacts analysis at the end of each appropriate resource section in Chapter 4.

57. Page 4-51 Seepage Monitoring, Collection, and Pump Back system; (4) collection ponds? Are these similar to the toe ponds at the Troy facility? (S614)

Response: No. The impoundment at the Troy Mine facility and proposed paste facility at Rock Creek for Alternative V are characterized by fundamentally different conceptual designs.

58. Require mining and milling to cease immediately if the discharge is not meeting environmental requirements or if the waste water treatment facilities shut down for any reason. (S347)(S805)(S1687)(S1851)(S1905)(S4347) (S4359)(S4363)(S4364)(S4393)(S4424)(S4427)(S4481)(S4482)(S4628) (S4633)(S4636)(S4651)(S4653)(S4655) (S4658-S4663)(S4710)(S4714) (S4716)(S4816) (S4830) (S4871)(S4878)(S4891)(S4910)(S4912)(S5051)(S5088) (S5159)(S5555)(S5763)(S5777)(S5790)(S5857)(S6340)(S6523)(S6526)(S6672)(S6677)(S6679)(S6806)

Response: Should problems develop with the mine wastewater treatment facility, flow to the treatment facility can be eliminated or reduced almost instantaneously by diverting mine inflow into mine water storage. Sufficient storage will be available within the mine at all stages of mine production to store over 100 days of mine inflow.

59. Page 2-65 (Figure 2-30): The final year water balance numbers in the Alternative V water handling schematic differ from the detailed water balance summary in Table 2-3 (pages 2-32, 2-33). This is to be expected since Table 2-3 was prepared for Alternative II, and Figure 2-30 for Alternative V. It would be helpful, however, if a detailed water balance summary was prepared for Alternative V so that the water handling and balance for the preferred alternative could be reviewed (i.e., prepare a Table 2-3 type water balance summary for the preferred alternative). (S146)

Response: The Alternative V water balance was presented in figure format for ease of interpretation and to help reduce the volume of material presented. However, a summary for Alternative V can be found in Table 2-15. Extensive computer output for Alternative V is on file with the Agencies, and is available for review.

60. Page 4-40, paragraph 4 – The discussion of makeup water requirements is misleading. Increased runoff, discharged after treatment, would act to offset makeup water demand. It should also be noted that if make-up water is required there will be no treated discharge water from the treatment plant to the Clark Fork River. (S5)

Response: This section has been expanded to clarify this discussion.

61. Page 2-106 3rd paragraph "Uncertainties in Agencies analysis ..." (Chapter 4) (S4832)(S4833)

Response: Uncertainties in the Agencies' analyses are discussed in detail in Chapter 4 - Hydrology.

62. Page S-14 Issue 3 "effects for impoundment failure." So impoundment <u>may</u> fail, if this is the case see bullet #4 under Issue 1; also <u>to what degree</u> will surface water and aquatic life in lower Rock Creek and Clark Fork River be affected? (S4832)(S4833)

Page 2-105 1st bullet Contradiction with Issue 3 (same page)- - on one hand it is stated that "no measurable impacts are predicted for surface or ground water resources in Idaho," yet "Effects from impoundment failure" will affect Clark Fork River. (S4832)(S4833)

Response: The probability of tailings impoundment failure is considered remote although the impacts would be catastrophic. Therefore, the impacts have been discussed quantitatively in Chapter 4-Hydrology, but not included in the summary of probable impacts.

63. Page 4-186 1st incomplete paragraph: Bring to attention the statement "Any permanent change in ground water quality ... be an irreversible commitment of resources." Change in ground water quality? See Page 1-10 under "Water Quality Permits", "... facilities ... must be ... constructed and operated ... to prevent ... that may degrade surface and ground waters ..." This should not be permitted. Also "Because the concentrations ... the loss

of higher quality water in the Clark Fork River would be ... irretrievable." This admission by ASARCO to a reduction in water quality in Clark Fork River. Is this in keeping with Section 401, and Montana Water Quality Act, and ultimately Idaho's water quality standards? Statement by ASARCO did not use the words "potential" or "could." (S4832)(S4833)

Response: Degradation is defined by rule ARM 17.30.715 and the MPDES limits would prevent degradation according to these criteria. However, there would be an increase in the load of nutrients and metals to the Clark Fork River, and that load would not be removed from the river once it was added to it — that is what would be irreversible.

64. Page 2-124, paragraph 2. Re: tailings impoundment failure. "This impact has been defined as having a short term irreversible impact and a long term excursion of water quality." What is a "short term irreversible impact"? How is it different from a "long term" or simply "irreversible" impact? (S3462)

Response: Short-term but irreversible implies the impact could not be prevented but that in the long-term the impact would not continue to occur.

65. Treat on line drainage and runoff from the exploration adit prior to the discharge. (S6740)

Response: Under all action alternatives, excess water from the exploration adit that is not used in the mining process would be treated prior to discharge. Drainage from the exploration adit would be treated using a portable reverse osmosis unit under Alternative V or ion exchange unit under Alternatives II, III, and IV located at the support facilities site for each alternative. Stormwater from undisturbed areas would be diverted away from the site. Stormwater within the evaluation adit portal site would be collected in a pond and sent to the treatment plant prior to discharge to the Clark Fork River.

.

66. In accordance with the Clean Water Act (CWA), the Corp. of Engineers (COE) should recognize the project will result in significant environmental impact and potentially violate provisions of the CWA. (S188)

Response: The U.S. Army Corps of Engineers (COE) does recognize that the project may result in significant environmental impacts to aquatic resources. The COE Omaha District Regulatory Office has commented on the various alternatives proposed in the draft EIS in an attempt to either avoid, minimize, or develop appropriate mitigative measures to limit any adverse impacts to either wetlands or water of the U.S. The EIS process is also looking in-depth at any potential downstream impacts, including surface and ground water discharges from the proposed mining project. In accordance with the Clean Water Act (CWA), the COE will not issue a 404 permit for any mining alternative that cannot obtain a State of Montana 401 - water quality certification.

67. Please cite/demonstrate this is in compliance with CWA. We know the EPA guidelines can be changed (Spokesman Review dated 2/13/98 - level leads acceptable at 288-fold increase of EPA standards, because the discharge could not be maintained at current EPA standards. These standards are political and not environmentally/ scientifically assessed. Any analysis of this potential in the Clark Fork Basin? (S4832)(S4833)

Response: Project discharges must comply with all applicable water quality standards. These standards apply in the receiving water and do not apply to the effluent. Water quality standards and effluent limits are analyzed in the MPDES discharge permit.

WTR-303 Ground Water Quality

1. In addition to shortcomings in predicting the quality of seepage from the impoundment, the SDEIS fails to present a conclusive discussion of where that contaminated ground water will migrate. The general assumption presented in the DEIS, and apparently carried forth to the SDEIS, is that contaminated seepage from the tailings impoundment will discharge to the Clark Fork River alluvium, and moreover, that since there is such a high dilution capacity in the Clark Fork, no adverse effects will occur.

This assumption is also presented in the Statement of Basis for the current Draft MPDES permit: page 19 states that "it is assumed that ground water in both of the hydrostratigraphic units eventually mixes with the alluvial aquifer associated with the Clark Fork River." Page 3 of the S.O.B. states "the underlying aquifers are hydrologically connected to the Clark Fork River."

This assumption, and the SDEIS impacts analysis based upon it, fail to consider the potential impacts that seepage from the impoundment could have on water quality and aquatic life in Rock Creek. Yet several statements in the EIS process suggest that there is in fact a ground water flow component towards Rock Creek.

In their 1990 Petition for Modification of Ambient Water, ASARCO states that "ground water flow direction in the tailings impoundment and land application areas generally is towards the Clark Fork River. There is also a smaller component of flow towards Rock Creek." (page 13)

Figure 2 in the MPDES permit Statement of Basis shows that compliance monitoring wells will be located between the tailings impoundment and Rock Creek. These wells are placed here for a reason, and the reader must assume it is to monitor ground water flowing from the impoundment toward Rock Creek.

The potentiometric surface maps (basal gravel/shallow bedrock aquifer and the shallow unconsolidated sediments) presented in ASARCO's Water Management Plans (WMP) clearly indicate that at least a portion of the aquifers impacted by tailings impoundment seepage will flow towards Rock Creek.

Page S-17 and 2-119 of the SDEIS states "discharge of tailings impoundment seepage to Rock Creek, Miller Gulch, and the Clark Fork River would be nearly eliminated."

The only data presented to refute the hydrological connection between ground water beneath the tailings impoundment and surface water in Rock Creek is presented in Section 8 of the Evaluation of the Tailing Impoundment Seepage Study found in ASARCO's WMP. In that discussion, data from one monitoring well (MW-21) is used to conclude that "Rock Creek is perched approximately 40 feet above adjacent ground water levels, and therefore is not recharged from ground water in the area of the proposed impoundment." (p. 40)

Other evidence discussed above contradicts this conclusion. At a minimum, ASARCO and Agencies must present more statistically meaningful and definitive data to demonstrate there is no hydrologic connection between ground water associated with the tailings impoundment and Rock Creek. That discussion must also delineate the "gaining" and "losing" reaches of Rock Creek in the impoundment area.

Until that data is presented, Rock Creek must be considered a "receiving water" for seepage from the tailings impoundment, and the potential impacts to water quality and aquatic life from that seepage must be presented during the NEPA process. In that assessment, the Agencies must consider the following facts.

The ground water mixing zone associated with the tailings impoundment extends to, and includes, the mainstem of Rock Creek east of the tailings impoundment. Montana mixing zone rules [ARM 17.30.506] (water quality assessment for mixing zones) require the Department to consider (a) biologically important areas and (e) passage of aquatic organisms (including access to tributaries), (g) aquifer characteristics, (h) ground water discharges to

surface water, and (I) discharges to intermittent and ephemeral streams. The mixing zone analysis for the tailings impoundment discharges to Rock Creek must address all these issues.

The MPDES permit allows ASARCO to increase metals concentrations—including copper and zinc—in the ground water at the end of the mixing zone to levels several times higher than those adopted to protect aquatic life. Additionally, it allows ASARCO to increase nitrogen concentrations in the ground water to 7.5 mg/L. The impacts from increased metals loads on aquatic life—including insects in the hyporheic zone, and the possibility of increased algae densities in the mainstem of Rock Creek, must be addressed.

Surface water in Rock Creek is extremely soft, and susceptible to metals contamination, as evidenced by the following statements in the SDEIS: p 3-15 states "the concentrations of cadmium, copper, lead, and zinc at times exceeded numeric water quality standards during the baseline period of measurement. This is due to the extremely low hardness in Rock Creek."

Page 4-48 "because of the lower hardness and less dilution capacity in Rock Creek, such a discharge may result in exceedence of standards in Rock Creek even though the same water would not violate standards in then Clark Fork River."

Page 4-67 "in the event of a spill, the impact to the lower 1.0 mile of Rock Creek would be the most severe because of the relatively low flow and soft water in Rock Creek."

The expanded tailings impoundment analysis must consider the impacts that metal discharges will have on aquatic life in Rock Creek, especially considering the softness of the water.

The pump back system proposed to capture contaminated seepage before it migrates beyond the agency-approved mixing zone may adversely effect flows in Rock Creek.

Page 4-51 says "a potential ground water recovery well system similar to that proposed for alternatives II through IV would be installed if monitoring showed a violation of the MPDES permit limits and other measures were ineffective at resolving the situation."

The analysis of potential impacts to Rock Creek must consider whether the cone of depression created by the pump back wells will intercept alluvial ground water flows, and consequently, reduce flows in Rock Creek.

The expanded discussion must also address the lack of detailed baseline water quality data in the area of the tailings impoundment.

The draft MPDES permit states that "to ensure that the compliance surface (perimeter of the mixing zone) is adequately delineated and a suitable baseline for the proposed compliance wells is developed in a timely manner, the permittee will submit a Work Plan to the Department for review and approval The Work Plan must contain recommendations for the location, design, and development of monitoring wells to delineate the spatial and temporal variability in water quality parameters downgradient of the proposed impoundment."

We believe this baseline information must be collected now and presented in the EIS process. We also request that the Ground water Work Plan include a requirement to sample ground water, and particularly the alluvial ground water adjacent to Rock Creek, for the presence of aquatic life in the hyporheic zone. Insects in the hyporheic zone may provide an important food source for native fish in Rock Creek, and the NEPA document must disclose the potential impacts that high metals concentrations may have on that food source, particularly considering these aquifers will be a part of the agency-approved mixing zone.

In addition, the draft permit does not require the contaminated seepage from the tailings impoundment to meet surface water standards, despite the acknowledged hydrological connection between seepage from the tailings to the Clark Fork River (and Rock Creek and Miller Gulch). As noted in previous Coalition comments, pollutants discharged to ground waters that are hydrologically connected to surface waters must be regulated under a traditional NPDES point source permit. This has not been done at Rock Creek. (S6318)

Concentrations of metals in Rock Creek near the paste storage facility should not be allowed to get higher than in the Clark Fork River. The basis for our concern is that the estimated ground water quality that would develop from the paste facility (Table 4-13; Statement of Basis, MPDES permit, page 20) is quite poor relative to aquatic water quality criteria. We understand that the document states (page 3-24) that ground water is expected to flow toward the Clark Fork River, and not toward Rock Creek, and that there would only be about 30 gpm of seepage water (page 4-50). However, if these estimates turn out to be wrong, and the ground water moves toward and surfaces in Rock Creek, there must be provisions for pumping back contaminated ground water to the paste facility. If the pumpback is necessary, measures must be taken to prevent stream dewatering. Metals concentrations in Rock Creek water immediately adjacent to and downstream of the paste storage facility should be monitored to assure that metals concentrations do not increase. (S1816)

Response: No impacts to ground water quality are predicted outside the agency-approved ground water mixing zone for Alternative V. Alternative V includes plans for extraction wells that would create a hydraulic barrier to prevent offsite migration of constituents in ground water.

Rock Creek appears to be perched on impermeable bedrock in the vicinity of the proposed tailings disposal facility. The static ground water level is approximately 40 feet below the Creek. Therefore, while there is a component of ground water flow towards Rock Creek, the creek is not hydraulically connected to the aquifer in this area. Likewise, the cone of depression from a hydraulic containment system should not interfere with the base flow in Rock Creek at reaches adjacent to and downstream of the tailings disposal area. Under Alternative II, there would be a large hydraulic head buildup in the proposed tailings impoundment. This increase in head could rise above the elevation of Rock Creek. In this case, there potentially could be flow into the creek. Under Alternative V, there would be no hydraulic head buildup in a tailings disposal facility because this alternative eliminates the need for ponding water on top of the tailings. Therefore, the hydraulic gradient would not be able to increase to levels that would cause ground water to flow into Rock Creek. In either case, compliance monitoring wells would be strategically located between the tailings facility and the river and Rock Creek to document water quality conditions in this area.

2. Pages 4-37, 4-38, Tables 4-11, 4-12: Has additional Troy tailings impoundment seepage water quality data been collected in 1996 and 1997? We believe it would be prudent to disclose additional data for those elements for which there is minimal data in Tables 4-11 and 4-12, such as arsenic, antimony, barium, chromium, mercury and selenium.

Without adequate data EPA will remain concerned that insufficient ground water quality data has been collected at Troy to provide the proper basis for concluding that there has been no ground water contamination at the Troy tailings impoundment. There must be a realization that the uncertainty around the baseline information directly affects the conclusions that will be reached. The base needs to be adequate in size and temporal distribution to account for variation within and between months and between years, and be related to the degree of precision needed in the impact evaluation. We note that Troy tailings water has been found to be acutely toxic (page 4-67). The lack of adequate Troy tailings ground water data and information upon which to base a conclusion is a concern.

The FMEA report (page 31) indicates that it is difficult to extend the operational and post-closure mine water chemistry at the Troy mine to the prospective Rock Creek Mine. The Klohn-Crippen draft FMEA report noted the need to monitor dissolved and total metal water chemistry from both the Troy and Rock Creek mines during operation of the Rock Creek mine. They indicated that arsenic, antimony, barium, chromium, copper, lead, manganese, selenium and zinc should be monitored for both the Troy and Rock Creek mines (page 19 and 29 of FMEA report).

Page 4-35: Many concerns regarding Alternative II tailings impoundment seepage were expressed in EPA's DEIS comments. The agencies are also referred to those comments. (S146)

Response: Seepage from the Troy impoundment and adit water (mine drainage) samples are collected and analyzed for the listed parameters. The tables in Chapter 4 have been updated to reflect this most recent monitoring. The purpose of the EIS is not to evaluate the impacts at the Troy mine but rather to use the data as a surrogate for predicting site specific impacts at the Rock Creek facility. We agree that having more data from the Troy mine during operations would be beneficial.

Both EPA guidance (Technical Support Document, EPA, 1991, EPA/505/2-90-001) and regulations (40 CFR 122.44) require that parameters which have a "reasonable potential" to exceed a state water quality standard be regulated in the discharge permit. This requirement has been satisfied (see Permit MT-0030287). The permit also requires the applicant to monitor for additional parameters that were not limited in the permit but may be a concern.

The U.S. Forest Service in a letter dated February 9, 2000 to Sterling Mining Company requested that a geologic report be prepared to demonstrate the similarity between the Troy deposit and the Rock Creek deposit, and to respond to a number of related questions. A report was prepared by John C. Balla, Ph.D. and submitted to the Agencies in May 2000. The results of this report indicate that the Rock Creek deposit is a geological analog to the Troy deposit. The Troy mine was shut down in 1993 due to low metals prices, the main orebody has been largely mined out, and the facility is functioning on a care and maintenance basis, only. Therefore, the current Troy mine in its present status is expected to be similar to what the Rock Creek mine would be like after closure.

3. Ground water below and directly downgradient of the paste facility are currently Class I waters and should be protected according to the Safe Water Drinking Act 1989. Efforts to protect ground waters have not been performed and must be considered for use, value, and vulnerability of drinking water resources., as well as social and economic values (US EPA, 1992). (S3469)

Response: The discharge of seepage from the tailings facility would need to meet all limitations set forth in the MPDES permit which were developed to be in compliance with all appropriate water quality laws, regulations, and standards.

4. I live downstream from Rock Creek and our water comes from an aquifer below the river. Will my well be eventually polluted by heavy metals from Rock Creek? (S5123)

Response: Ground water impacts outside of the Agency-approved mixing zone are not predicted. A comprehensive ground water monitoring plan will also be implemented to monitor ground water quality at a variety of locations. Please refer to Appendix K and the proposed MPDES permit in Appendix D.

5. Page S-16: This section should also include a brief discussion of the changes to ground-water quality that will result from migration of leachate from the paste disposal facility and from the mine pool. (S146)

Response: The summary provides an appropriate level of detail as it relates to the issues in question. Information on ground water was found on the following page. Please refer to Chapter 4-Hydrology for a detailed analyses of impacts.

6. Page 3-26, Table 3-8: An explanation should be provided for the very high total suspended solids concentrations in samples from the sand and gravel wells. This may indicate a problem with well construction and/or development. Does this affect the reliability of analyses of other water quality parameters? (S146)

Response: There is no current explanation for high total suspended solids values in samples from some monitoring wells completed in sand and gravel but it appears to be a construction problem and not a sampling one. However, all samples were filtered, and only the dissolved fraction is recorded. In the few cases where total suspended solids were high, only the nitrate data are considered unreliable.

7. Page 4-51 - ground water quality concern: Apparently a loading analysis was done for impoundment seepage water, and, as in the Montanore EIS, the analysis used only dissolved values to represent the polluted water. This eliminates 98% of the metals in the tailings water. This assumes that the ground will attenuate the colloidal metals the same as a .45 micron filter does, and that the ground will hold the metals in that state for all time. This is a wild and unproven assumption. (S5093)

Response: While metals bound to colloidal fractions greater than 0.45 microns may exist under some environmental conditions, mass balance calculations using the dissolved fraction rather than the total fraction provides a reasonable estimate of environmental impacts.

8. *Page 4-67, first paragraph. It is stated that Am Cy Superfloc S-5595 is moderately toxic to aquatic life, but no specifics (e.g. LC_{50} values) are provided here or in Appendix F. In the appendix (page F-4), it is stated that "The fraction fed to the final tailings thickener would go with solids to the tailings impoundment as a highly sheared (decomposed) hydrocarbon." Since this chemical will be used in large quantities (108,000 pounds annually) and is also the only mill process reagent that will go into the tailings in any quantity, it seems appropriate to further describe the risk associated with its use. To evaluate the risk, you will need to know the concentration of this chemical in the tailings (or paste) impoundment, its persistence, its toxicity and the toxicity (if any) of its degradation products, and how it might be mobilized from the paste impoundment, either through surface erosion or ground water seepage. (S1816)*

Page 2-27 - ore processing: SDEIS fails to give amounts of reagents left in tailings. concern: seepage of reagent-contaminated water into ground water leaving tailings site. (S5093)

Response: Am Cy Superfloc S-5595 loses its toxicity in the milling process where the compound is consumed. Reagents are consumed or transformed into organic radicals in the milling process. Only organic breakdown products consisting of carbon, hydrogen, and oxygen remain in the paste.

9. A major flaw in the DSEIS is the lack of a discussion on how the contaminants in the tailings fluid will be managed. The document does discuss how the new paste tailings method will decrease the volume of water associated with the tailings, but no discussion is presented on how the contaminants released during the milling process will be handled. As the water is recycled, the water-soluble substances will be concentrated and ultimately be released into the tailings facility as part of the tailings paste, only at (probably) higher concentrations in the paste. These substances will be leached through the soils underneath the impoundment and be recycled back to the tailings impoundment during operation of the mine. They will not disappear. When the mine is closed, and pumping discontinued they will drain into ground water and ultimately into the River, since the tailings facility is not lined. There is no information presented which suggests that they will be contained over the long term. The DSEIS should clearly indicate how these water soluble contaminants will be retained over the long term. At present, the water soluble contaminants will be moved around with the process fluids and tailings during operation, but ultimately they will be deposited in the unlined tailings impoundment and leached into the River as meteoric

water flushes through the tailings. By permitting this facility, it appears that a very large amount of contaminants will be eventually released into the Clark Fork River. (S6301)

Response: Under Alternative V, seepage water collected in the paste facility underdrain system or captured in the pumpback well system would not be returned on top of the paste facility but either sent to the paste plant and then the mill for reuse in the process circuit or to the waste water treatment plant to be treated so the discharge met effluent limits set forth in the MPDES permit. The agencies would require sufficient bonding to cover the possible need for long-term water treatment. The density and permeability of the tailings would be such that water would not be able to move quickly through the tailings. The milling reagents are broken down into organic radicals in the milling process. Between these factors, there would not be a concern about contaminants in the ground water.

10. Appendix H ; H-3, last paragraph –Alternative V would have downgradient monitoring wells and a pump back system only as a backup. H-4, last paragraph – The requirement to use "lowest possible detection limits" needs to be corrected. This should be WQB-7 levels. (S5)

Response: If lower detection limits are available in the future, they would likely be incorporated in a revision to WQB-7.

11. We understand that the proposed paste technology in Alternative V would not produce as much seepage into the ground water as a tailings pond and we believe it is an improvement over previous plans. However, we continue to be concerned about the need for a system of monitoring wells and the repumping of the seepage from the paste deposits. (S2794)

Page 4-32 para.2 For ground water, the applicable standards….." MT/DEQ proposes to give a ground water mixing zone for the RC tailings impoundment. Down-gradient of this site towards Miller Gulch and the Clark Fork River are at least eight residences that get their drinking water from wells and springs which will probably be impacted by this proposal. Aside from the yearly sampling that has ensured, there has been no requirement by the agencies or Asarco to determine if a hydrologic connection exists between the tailings impoundment area and the water systems of these families. This flies in the face of the rest of this paragraph the states, Ground waters are designated Class I waters and are protected for human consumption……..without treatment." (S614)

Response: For purposes of this EIS, it has been assumed that there is a hydrogeologic connection between the tailings disposal facility area and downgradient water users. Because of this possibility, Alternatives II-IV includes a perimeter pump-and-treat system to create a hydraulic barrier and prevent potential transport of constituents outside the approved mixing zone. The pumpback system is only carried into Alternative V as a contingency measure due to the reduced seepage rates compared to the other action alternatives. The proposed paste technology is an improvement from the Alternatives II-IV tailings impoundments. To address concerns, and to provide the highest possible level of environmental protection, a comprehensive ground water monitoring and contingency corrective action plan, has also been proposed under Alternative V.

12. The contingency pumpback system/technology is unavailable for review and is still in draft format. Feasibility studies must be conducted to determine if this is a technology which may be utilized and if any ecological risk factors may be forecasted on site. I have also tried to access the Mixing Zone Plan (Hydrometrics 1997) and it has been unavailable. (S3469)

Page 4-179: "The tailings impoundment loading of nutrients and dissolved metals in ground water below the proposed tailings impoundment would increase over baseline condition. The increase would be limited to an Agency approved ground water mixing zone and would likely exist over several decades This presumes that pollution at ground water seeps would be allowed and approved by the Montana Dept. of Environmental Quality

around tailings site outfall 002 (Tailing Paste Facility), See Appendix M Fact Sheet and Statement of Basis for Spec. map and location. (S3469)

The plan could incorporate internal drainage and pump-back systems to reduce ground water contamination and the threat of impoundment failure. (S4801)

... address reducing ground water contamination with a pump-back system. (S3971)

The pump back systems proposed for the tailings facility are unlikely to capture all of the water in the ground water system, and release of a large amount of contaminants in this water to the underground system is likely. As presented, a large percentage of contaminants released during mining and milling from this mine are almost certainly going to be ultimately discharged into the river. (S6301)

Response: Please refer to Chapter 4 for information related to the proposed pump-back system. The pumpback system would be an integral part of the water management system needed for a tailings impoundment as part of Alternatives II-IV, but is only retained as a contingency measure under Alternative V due to the greatly reduced seepage rates. The contingency pumpback system proposed by the agencies would consist of a sufficient number of extraction wells, properly located, and discharging at a flow rate designed to hydraulically contain ground water within an Agency approved mixing zone. The use of pump-and-treat technology has been successfully applied at numerous Superfund sites to create hydraulic barriers and has received approval by many agencies including U.S. EPA. Final design of a pumpback system for the proposed site would be developed prior to construction of the tailings facility.

13. The idea of a mixing zone is wonderful for industrial dischargers who presumably bargain for the largest "practicable" zone of mixing, but it is a confused and misguided means of protecting ground water resources. A mixing zone purposely allows a ground water resource to be impacted, with the understanding that the contamination can be easily controlled or diluted. Since concentrations exiting the mixing zone can be assumed to be dilute, the downgradient resources are protected from the original discharge. A serious flaw in this thinking is discounting the difficulty in mitigating an impacted aquifer, especially at its source of contamination. (S6690)

Response: Monitoring would be required to ensure ground water meets the requirements set forth in the MPDES discharge permit.

14. Water quality is not adequately addressed in the SDEIS. The new paste technology is never fully explained.... and why was "paste technology which introduces a higher risk of pipe failure and necessitates the construction of a 110 foot building as a paste plant offered instead of a lined impoundment? A clay lining is afforded the contingency site at the paste plant. (S6342)

Response: A comprehensive analysis of potential impacts from the proposed project are provided in Chapter 4 of the EIS. Additional detail on paste technology has been included. In addition, responses to geotechnical questions address the liner issue.

15. The contamination of our ground water is a distinct possibility with the Rock Creek Project. I am aware that Asarco has made changes in its proposed tailings impoundment and water treatment system but it is not enough. (S3392)(S3391)

The impoundment for this proposed project has no liner and will leak a minimum of 29,000 gallons of contaminants into Rock Creek, eventually finding their way into the Clark Fork and Lake Pend Oreille. (S3293)

Protect the ground water from the contaminated tailings water by lining the pond area and using return pumps to ensure no leakage. Collect and treat all contaminated water. (S6572)

There should be a required sealant under the 100 million ton pile of tailings. (S6588)

Page 2-89. Reason for dismissing the possibility of a lined impoundment facility.; These statements are not convincing. Please include a more definitive analysis in the Final EIS. (S3462)

I suggest re-consideration of the lined impoundment .... The liner should be designed and constructed by a qualified engineer/contractor with significant experience in this field who should be required to provide some guarantee of its performance. The liner should be provided with a bottom drain system that is capable of continuously monitoring potential failure of the liner and any significant release of leachate. In the event of a release, the drainage system should be capable of capturing the leachate prior to discharge to the subsurface. (S6690)

Creating an unlined tailing pond 400 yards from the Clark Fork River is unacceptable and it should be located far enough away from the river so further backup containment structures could be installed. We'd like the agencies require a synthetic liner or leachate collection system with pump back wells as part of the tailings impoundment design to help assure that contaminated leachate does not migrate offsite. In spite of the reduction in seepage attributed to the paste technology, the impoundment will still leak over 40,000 gallons per day of contaminated leachate into the local ground water supplies. A liner or collection system is needed to assure that local drinking water supplies, and water quality and aquatic life in Rock Creek and the Clark Fork are protected.. Even if lined Show long will a liner last? Even if a liner is placed beneath the tailings pile, what guarantee could they give to keep it from leaching into the river? The impoundment should also be capped. (F1)(F2)(P)(S3465)(S3735)(S3758) (S3771)(S3783)(S3788)(S3790)(S3971)(S3798)(S3821)(S3830)(S3916)(S3926)(S4005)(S4046)(S4059)(S4150) (S4187)(S4192)(S4222)(S4337)(S4377)(S4399)(S4486)(S4494)(S4573)(S4628)(S4796)(S4802)(S4910)(S5052) (S5054)(S5060)(S5069)(S5083)(S5086)(S5092)(S5140)(S5160)(S5621)(S5776)(S5777)(S5954)(S6573)(S6599) (S6604)(S6606)(S6613)(S6638)(S6640)(S6650)(S6656)(S6712)(S6719)(S6745)

Response: The water table is approximately 40 feet below the base of Rock Creek, and based on the hydrologic analysis, potential surface water impacts on Rock Creek from the tailings impoundment are not expected to occur. Potential water quality impacts to the Clark Fork River would be expected and have been calculated. The change in concentrations of important constituents are not expected to be measurable nor exceed water quality standards and permit limits.

A tailing seepage collection system is included in the design of the paste tailing embankment, Alternative V.

A liner was considered and dismissed from further study (see Chapter 2, Alternatives Considered but Dismissed). Alternative V, which incorporates deposition of tailings as a paste, alleviates the need for a liner because seepage would be greatly reduced over that of an impoundment and would not degrade water quality beyond the mixing zone. During review of the final design by the technical panel, the panel would also review field data to make sure that seepage calculations were accurate. If conditions, including the potential for ARD and metals leaching, differs greatly from what has been predicted then they would revisit the liner issue. A change of that magnitude would most likely trigger additional MEPA/NEPA analysis.

Comprehensive ground water monitoring and contingency corrective action plans have also been proposed under Alternative V to ensure compliance with limits in the MPDES permit. Sterling would be required under state law to repairing or replacing any water supply that is impacted by the proposed project.

16. Page 4-35 / 36. Ground Water Quality: Seepage impacts to ground water outside the mixing zone would be minor." With emphasis on the MINOR, what does that consist of. Would it preclude the use of the ground water for culinary or drinking water purposes? This sentence implies that the agency is wrong to allow some type of degradation outside the mixing zone jurisdiction? (S614)

Response: Minor means less than the nondegradation criteria established in rule (ARM 17.30.715). All beneficial use would be protected although some increase in concentration is expected for some parameters.

17. Page 4-51, paragraph 3 – This discussion needs to reference the proposed ground water mixing zone. (S5)

Response: The issue of a ground water mixing zone is addressed elsewhere in the text.

18. Also, what is the hydraulic conductivity of soils beneath the paste tailings deposit? Are these soils of sufficiently low permeability to allow effective capture of paste seepage in the underdrain system? Should a compacted clay layer be used beneath the paste landfill? (S146)

Clays removed for dam stability purposes in alternatives III and IV would be used to seal higher permeable areas [SDEIS p. S-17]. Similarly, seepage from the alternative V paste impoundment could be further minimized by utilizing clays removed from under the tailing impoundment area to decrease seepage permeability. The COE and EPA guidelines to evaluate impacts and to determine compliance with Section 404 of the Clean Water Act require analysis of "practicable" alternatives that would result in less environmental damage. Under the guidelines, the term "practicable" means available or capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. A clay liner under the tailings impoundment appears practicable from this standpoint, and would result in less environmental damage. Recent COE and EPA actions on similar projects support their using their authority in this regard to address the potential impacts from tailing seepage. The SDEIS refers to a conceptual system of basin drains, a blanket drain, and finger drains constructed beneath the paste facility [SDEIS p. 2-62]. Based upon the conceptual system the need for a liner is ruled out by the SDEIS. The existence of quasi-artesian springs in the area of the tailings impoundment further complicates both drain and liner considerations, as does the lack of a high level of knowledge about local hydrological conditions. This suggests that a greater level of site evaluation and engineering detail is necessary to adequately consider the effectiveness of the conceptual design and allow for meaningful assessment of potential impacts.

According to the SDEIS ([p.2-89], the agencies decided that the MPDES analysis demonstrated that a lined impoundment was not necessary to maintain water quality. Elsewhere in the SDEIS however it says that although the amount of seepage is greatly reduced under alternative V, the resultant impacts to ground water remain essentially the same [SDEIS p. 4-49]. Evaluation of field data supports our conclusion that geotechnical and hydrologic drilling conducted in the fall of 1997 indicated that the ground water hydrology has been inaccurately assessed, and requires a good deal of further characterization in order to accurately delineate hydrologic occurrence and flows. In the absence of this critical information the accuracy of the MPDES analysis on potential effects to ground water and surface water is highly questionable.

According to the SDEIS, cost estimates for a liner range from a low of $3.4 million for the impoundment as proposed by ASARCO, to a high of $29.6 million for a synthetically lined impoundment [SDEIS p. 2-89]. According to the report cited, the cost of a 6" clay liner constructed of existing material would be approximately $11.0 million, on the low scale of the range cited by the agencies to justify their decision. The added benefits of the liner, given the incremental cost of less than $0.10 per ton impounded, appears to justify a more objective consideration of its inclusion as a mitigation. Our examination of the report further indicates that the costs for lining the pond have been estimated liberally, and may be significantly less. 15% was allowed for unidentified items, 20% for engineering and construction management (versus 15% typically), and contractor profit at 15% (versus 10% typically). As the SDEIS indicates the soft clay deposits would be removed under Alternative V [SDEIS p. 4-21], the cost of placing and compacting the clay to form a liner might be substantially less than indicated in the report. (S188)

Response: The current level of modeling on potential seepage from the paste pile, performed by an independent third-party consultant (Klohn-Crippen 1998), suggests that approximately 30 gpm (US) of paste effluent would seep into the ground water system across the entire paste facility footprint (nearly 12 ounces of water per acre per minute). Seepage is greatly reduced under Alternative V compared to Alternatives II to IV. Under Alternatives II, III, and IV only nitrate and manganese could exceed Montana water quality standards. Under Alternative V, only manganese would exceed the standard. However, the standard for manganese is exceeded for the baseline period of measurement at some well locations.

Please refer to Chapter 4, Hydrology, Ground Water Quality Section for Alternative V for additional constituents. Sterling would need to comply with all applicable state and federal water quality laws, and its MPDES. Both the EPA and COE have reviewed the data and modeling pertaining to the seepage analysis.

Further data would be required from Sterling should a permit be issued and construction begin. Evaluation of the effects from and effects on springs within the tailings facility footprint, construction protocols relating to foundation preparation, and further review and approval by the agency technical panel on the overall design (including seepage) of the impoundment and its permit was issued, currently the agencies, including the EPA and COE, have not identified any environmental impacts due to seepage emanating from the paste facility. Plans and designs would be modified if necessary through the permit revision process that includes some level of MEPA/NEPA analysis so that the environmental impacts would be no greater than disclosed in Chapter 4 of this EIS for Alternative V. If that could not be achieved, then the permit and the change in impacts would be subject to the appropriate level of MEPA/NEPA analysis and public comment and review. The construction of the mine and mill facilities could not begin until the agencies had reviewed the data and the modified plans and designs. The agencies would then have to determine that either no additional MEPA/NEPA analysis was needed or that additional MEPA/NEPA analysis was required and completed and agency decisions were made to approve the revisions to the permit, if appropriate, before mine construction and operations could begin.

The statement that impacts are essentially the same refers to the potential exceedance of water quality standards. The additional drilling performed in 1997 and subsequent report do not provide sufficient information to refute the conceptual hydrogeologic model presented in Chapter 3 of the EIS. The Agencies believe that lining the tailings deposition area offers no additional benefit because MPDES limitation can be met for Alternative V. The cost of installing a liner was not a major component in the decision not to develop an alternative with a liner.

19. Page 2-118. "Additional hydrogeologic data will become available during development of the exploration adit." This kind of sentence that predicts the acceptance of an action alternative is inappropriate. "Even if it were possible, drilling monitoring wells at the site would require an unreasonable amount of disturbance and environmental destruction due to the topography (very steep slopes and rock faces) above the deposit." Why explain this in any detail? It isn't a possibility. How was it determined that this is an "unreasonable" amount of disturbance while proposing that hundreds (actually thousands) of acres be disturbed for Asarco's profit is "reasonable?" (S3462)

Response: There has been no decision about permitting this project and the “will” has been changed to “would.” The surface above the ore body is located in the Cabinet Mountain Wilderness where construction and sampling of monitoring wells would cause unreasonable disturbance. Sterling’s

mining activities and facility-related construction would be outside the wilderness boundary. There is sufficient data for MEPA/NEPA purposes from the Troy and Montanore mines to estimate the conditions at the proposed Rock Creek project. The collection of additional data from the evaluation adit construction as well as during mine operation would be required to validate the assumptions used in the analyses in this EIS, and to ensure that the final designs would meet the parameters used in the conceptual designs and that impacts from those final designs would be no greater than that disclosed in this EIS. A plan defining the evaluation of data collected from the evaluation adit has been included in Appendix K. If conditions are greatly different than disclosed in this EIS or if designs could not be modified such that impacts remain within the boundaries of those disclosed in this EIS for the selected alternative, then additional MEPA/NEPA analysis and public involvement would be required. The reports with this data and evaluation would be available for public review at agency offices. Lastly, under Alternative V, a 1,000-ft buffer would be left in the vicinity of Cliff Lake and the Cliff Lake fault to mitigate any potential impact to water resources in the area. A similar prohibition is proposed in Moran Basin.

20. Page S-14: We believe a bullet should be added under Issue 1 which indicates that impacts to ground water quality are likely from paste disposal leachate and from migration of underground mine pool water. Similarly a bullet should be added under Issue 3 indicating potential ground water quality impacts from paste disposal leachate. We note ground water impacts from tailings/paste seepage are included on page 2-2. (S146)

Page 2-99: We believe that Issue 1 should identify potential effects on ground water quality and quantity/quality of springs, seeps, base flows to Rock Creek, potentially longer durations of low flow and no flow intermittent stream segments, etc.,. Has it been determined that mining activities will not effect ground water, springs, seeps, base flows? If so that should be substantiated. (S146)

Page 2-2: Again, the EPA believes it would be appropriate to identify ground water quality impacts from migration of underground mine reservoir water under Issue 1. (S146)

Response: Seepage from water stored in the mine has been included in the issue statement in Chapter 2 as an issue that could drive alternative development. However, the statements referenced on pages S-14 and 2-99 of the supplemental EIS are conclusions of significant or potentially significant impacts. Impacts to water quality in the deep bedrock water aquifer are difficult to predict but are not anticipated to be significant and so are also not included in the referenced conclusions. Mine water would initially be high in nitrates and sediment. There are also no documented beneficial uses of water in the deep bedrock system. This issue is further addressed in Chapter 4-Hydrology of the EIS.

21. Page 2-107: Table 2-18 does not identify ground water impacts from the 207 million gallon underground storage reservoir. It is likely that water in this underground reservoir may contain elevated levels of nitrogen and metals, and seepage from this reservoir could discharge through fractures and seeps to ground water. This source of ground water quality impact should be identified. (S146)

According to the SDEIS [p. S-16, 4-50], the effects of underground mining on springs and seeps cannot be predicted precisely, although it is predicted that some reduced, and some increased flows will occur. Very little evaluation is provided of the potential effects from reduced or increased flows on stream flow, and relative to bull and cutthroat trout survival in Rock Creek and other watersheds. Increased flows are likely to also contain higher concentrations of contaminants, specifically metals and nutrients. The potential for impact in this regard has not apparently been assessed in the SDEIS. (S188)

Page 4-47 Asarco's mine permit application is not clear as to the fate of mine adit water." It is the agencies mandate to make clear about just such water. Once again we refer to the lack of discussion of water quality from water stored within the mine works. The lack of water quality data from stored mine water at the Troy works is also pertinent to this discussion. (S614)

Page 4-34 para. 3 by the year 30....." What is the condition of mine water stored in the Troy mine for a comparative review of what might be expected of the water that is proposed to be stored in the Rock Creek mine underground reservoir? Where are the tables depicting the quality of this water? (S614)

In our comments of the Draft EIS and original draft MPDES permit—which we incorporate into these comments by reference—we spoke at length about the unpermitted discharges that will occur as a result of storing mine water in the underground mine workings. Review of the SDEIS, and the new draft MPDES permit indicates these discharges will still occur under the Agencies' preferred Alternative V.

Page 4-34 of the SEIS states that "by year 30, up to a maximum of 207.7 million gallons of mine water could be stored in the underground mine as a method of managing excess water. Potential for seepage from the reservoir to ground water exists, but is expected to be relatively low due to the low hydraulic conductivity of the bedrock in the underground mine. Seepage water would likely contain elevated concentrations of nitrate, metals, and total dissolved solids."

Page 4-34 also states that "seepage could migrate and possibly exit to the surface seeps and springs at undetermined locations in the Rock Creek, Copper Gulch, or E. Fork Bull River watersheds, although the potential for development of continuous conduits that would allow significant quantities of water to reach the surface is considered "remote."

Page 2-118 says "the locations of underground fractures and their relationships to surface features such as springs is frequently impossible to determine prior to mine development. Therefore, the effects on springs and seeps cannot be predicted precisely."

The inherent difficulties in predicting where these seeps and springs may occur does not excuse the Agencies from permitting those discharges. It also does not excuse the Agencies from requiring ASARCO to collect reasonably obtainable information to help identify these areas, and to present that information during the EIS process.

Page 4-53 discusses the Agencies' commitment to developing a comprehensive monitoring program and Contingency and Corrective Action Plan. It says that the Agencies have selected recommended monitoring locations which would most likely be influenced by such seepage, that the precise location of the monitoring sites will be determined based upon stream surveys to determine gaining and losing reaches, and that ASARCO would be required to conduct statistically representative sampling at each location for two or three years prior to commencement of mining.

This information needs to be collected, analyzed, and presented as part of the EIS process. Long-term seepage from the mine workings is a critical issue for impacts assessment, and for bonding. In fact, in it's discussion of alternative water treatment processes on p. 2-92, the SDEIS notes that one of the reasons percolation ponds was dismissed was because they "would likely result in the formation of springs and seeps that would directly discharge into Rock Creek and the Clark Fork River. Seeps and springs could cause erosion and increased sediment loading to the receiving streams."

Underground mine storage and adit plugging will cause these same impacts in Rock Creek. Yet page 4-53 admits that it would be difficult to quantify the volume of flow or direction of flow using the available hydrogeologic analyses.

One way to acquire this information in a timely manner is to permit the evaluation adit first. As Page 2-118 of the SEIS recognizes "additional hydrogeological data will be collected during development of the evaluation adit." Additionally, ASARCO could collect the two to three years of statistically defensible data needed to determine impacts on seeps and springs.

Given the inadequate level of information to reasonably predict where long-term seepage from the mine will discharge, and the inadequate information on acid mine drainage and metals leaching potential from mine wastes, it would seem logical for the Agencies to review the alternative of permitting the evaluation adit alone so that ASARCO can collect this much-needed information. (S6318)

Response: Sterling's application is not clear as to the fate of mine water after closure, although it is implied that the adits would be sealed. Under Alternatives III and IV, the adits would be sealed and plugged, allowing the mine to fill up with water as described in Chapter 2, Alternative IV, Adit Closure. Under Alternative V the adits may or may not be plugged depending upon the need to alleviate impacts to wilderness lake or prevent creation of new springs and seeps from retained mine waters as well as the post-mining water quality. The mine water would be used in the mining and milling processes or treated and discharged to the Clark Fork River.

Tables 4-22A and B display the post operational mine water quality data from the Troy Mine where the mine water is currently being discharged to the tailings impoundment. This is the best data available for predicting the post-mining water quality at the Rock Creek project given the similarities between the Rock Creek and Troy Mine orebodies, tailings, and mining methods (see Chapters 3 and 4, Geology, for more information). As long as the mine water was being discharged to the Clark Fork River it would be treated until it could meet MPDES discharge limits without treatment. However, that would not be the primary criterion for determining closure of the mine adits as those limits are based on surface water quality standards. Adit closure plans would also be based in part on what impacts might need to be alleviated (impacts to wilderness lakes) by plugging the adits or avoided post-closure development of new springs and seeps from water seeping out of an underground body of water by not plugging the adits. The preferred closure plan would be to plug the adits, but that may not be the best method based on data collected during mine operation.

Background ground water quality data would be obtained from water entering the evaluation adit and the mine after mining commenced. Water would be collected from drill holes prior to blasting to avoid nitrate contamination as well as from drill holes drilled below the adit and mine workings for the express purpose of sampling ground water along fractures encountered during adit and mine construction. There is no way to accurately obtain this information before the mine is developed given the random nature of the fracturing system through which the majority of the ground water moves through the bedrock and ore body.

The water flowing through the bedrock and orebody naturally comes in contact with the metals in the rock. The mine would provide a more oxidizing environment that did not exist naturally and would allow releases of some metals that would otherwise not occur. (Please keep in mind that most of the metals in the mine water would be in the suspended sediments and not dissolved in the water.) Once the mine was sealed and allowed to fill up with water, if the adit closure plan called for plugging the adits, a more reducing environment should return allowing the metals content to approach pre-mine levels. The primary pollutants added to the mine water would be the nitrates from blasting. Once the nitrate levels reached pre-mine levels after mining ceased and the mine water met ground water standards, it would be reasonable to allow the adits to be sealed to allow the mine to fill with water

and eliminate the oxidizing environment. Monitoring the mine water would still be required to determine that this occurred. Monitoring water quality at the Troy Mine after its closure, should that occur during operation of the Rock Creek Mine, would provide additional information to be used when finalizing the Rock Creek mine closure plan.

Collecting data during completion of the evaluation adit would improve the predictability of long-term seepage from the mine and our understanding of mine water quality. Nevertheless, the adit would intersect a limited number of fractures relative to the mine workings. Potential impacts of the underground reservoir to be used during mining and the post-mining pool of water are discussed qualitatively in Chapter 4, Hydrology. The impacts cannot be quantified, but the agencies acknowledge that there is some potential for impacts from the underground reservoir to existing downgradient springs and seeps and in the creation of new springs and seeps. Any water in the mine workings might eventually reach the surface through cracks and fractures already existing; ground water of similar quality could have used some of those routes to reach the surface anyway over time had the mine not been built. Nevertheless, the mine would open new pathways of fractures not currently connected and so water could reach the surface at places it currently cannot get to. The most likely discharge locations would be below the ore outcrops at the northeast and southeast ends of the deposit and in Copper Gulch (MT DEQ 2001a). 1,000-foot buffer zones at those areas would reduce the potential for new springs and seeps under Alternative V. Additional information is provided in Chapter 4, Hydrology, of the final EIS. Some general concepts of ground water flow have been included in Chapter 4, but cannot be confirmed until additional hydrogeologic monitoring is done from within the evaluation adit and mine workings as described in Appendix K.

Due to low bulk permeabilities in bedrock, flow rates would likely be very low, although flow would be greater in the connected fractured pathways. Potential impacts to ground water and to surface waters from springs and seeps would likely be insignificant. No such impacts have been documented at the Troy Mine. All springs and seeps downgradient of the mine would be resurveyed during evaluation adit construction and would have to be regularly monitored during and after mining to determine if mine drainage was impairing any of these resources. If surface water quality impacts were identified, it may be necessary to unseal the adits and resume water treatment until the mine could be regrouted or treated with other new technologies that might have been developed to reduce drainage from the mine or to improve its water quality.

22. Page 4-179 under "Hydrology" "It is uncertain where outflow from the mine would discharge." How would this affect one whose land lies in that area? Will there be compensation for loss/alteration of private property if this water (untreated) suddenly appears in someone's backyard? "All nitrogen would be leached out within 1 to 5 years." Recall that nitrogen doesn't bind with anything in the soil or the water column. If it isn't denitrified into N2 gas, it goes into the soils water column and ultimately into surface or ground waters, unchanged. (S4832)(S4833)

Response: There is no private property close to the orebody. Water from the underground reservoir could show up as springs and seeps downgradient from the mine in the Rock Creek and possibly Copper Gulch drainages. See also previous comment and response.

23. Page 3-24 (Well and Spring Inventory): For public disclosure purposes, we recommend including in the FEIS a map and discussion of the seeps, springs, and wetlands found in the recent field inventories (i.e., summarize 1996/1997 field studies). The extent to which seeps, springs, and wetlands may be affected by mining exploration/production should be described in Chapter 4. (S146)

Response: The final EIS includes appropriate additions in Chapters 3 and 4. Details are available in the reports on file with the agencies.

24. In regard to the underground mine pool, we suggest assessment and consideration of expedited filling of the underground mine pool upon mine closure. ASARCO has estimated that it may take 7 years after mining ends for the mine to fill with water (Supplemental DEIS page 4-53). Expedited filling of the mine with water should slow the rate of oxidation reactions that promote acid production and metal release into the underground mine pool (i.e., inundation of underground rock will reduce exposure of rock to oxygen, and thereby, slow oxidation). Artificial refilling of the mine may also allow expedited evaluation of seepage and other effects of the underground pool and allow earlier mitigation of such effects, and may expedite bond closure. We also suggest assessment and consideration of injection of aqueous alkaline amendments (e.g., soda ash, caustic soda, hydrated lime) into the mine pool to raise the pH and alkalinity of the pool to precipitate metals and reduce potential toxic effects from water that may leak along fractures or faults. (S146)

Response: Accelerated filling of the mine with water after mining ceases could be retained for consideration in the future only if post-mining flow and water quality data (from both the Troy mine and the proposed project) support this approach.

There may be value to consideration of expedited filling of the underground mine pool upon mine closure. However, until the chemistry of the water and ore body are better defined for the long term, it would be difficult to determine the benefits of such action. In addition, the quantity of water required to fill this pool is estimated at over 13 billion gallons. Assuming the expedited filling was completed in one year, approximately 25,000 gpm (55 cfs) of supplemental water would be required.

25. It is proposed that mine water be stored in the mine "... to help regulate water flow through the waste water treatment plant." [EIS, page 2-29] Water stored in the mine during operation is more likely to pick up contaminants than water that infiltrates after mine closure. Levels of oil & grease, suspended sediment which may lead to higher levels of dissolved metals, and elevated levels of nitrogen, are all likely contaminants. The EIS should discuss the likelihood of additional contamination, and the effect this contamination could have on the treatment proposed for the mine discharge. (S6328)

Response: All mine inflow would be stored for a short period of time in the mine. This temporary in-mine storage would allow the heavier suspended solids, (rock dust, etc.) to settle out in the mine and not have to be treated along with mine wastewater. Also if determined to be appropriate, ground water inflow into non active portions of the mine might be segregated to minimize contamination associated with active mining and conveyed to the water treatment facility in a separate pipeline.

26. The single largest unknown is the quality of influent water to the treatment facility. The influent water quality from the mine is very difficult to predict, since it will reflect the amount of oxidation occurring in the fractured rock, the type of rock and the volume of water flowing through the rock. Use of the Troy adit water quality is questionable, at best, since the mine will be larger than the Troy Mine and use different processes for handling the materials mined. The original DEIS and the DSEIS do not provide any supportive information that the Troy mine water is a good model for the Rock Creek mine water, other than a vague statement that the geology is similar (see DEIS, page 3-12). If the water quality is significantly degraded, compared to the Troy water, the water purification systems may be adversely affected. This is admittedly speculation, but so is the unsubstantiated assertion that the water from the Rock Creek Mine will be similar to the Troy mine. The mine proponent has the burden to provide information that this particular mine will not have an unacceptable negative impact on the receiving streams.

Because of the lack of a site-specific analysis of the rock at the Rock Creek Mine, they have not met this standard. (S6301)

Response: It is true that the characteristics of the anticipated mine wastewater are not completely known at this time but are expected to be similar to the Troy Mine. Mine wastewater from similar ore bodies mined in a similar manner should be comparable in nature. In addition, the proposed water treatment technologies have been demonstrated to be capable of treating a variety of different mine wastewater. One of the purposes of monitoring is to provide for adjustments of plans as the quantity of site-specific information continues to increase throughout the life of the mine.

The U.S. Forest Service in a letter dated February 9, 2000, to Sterling Mining Company requested that a geologic report be prepared to demonstrate the similarity between the Troy deposit and the Rock Creek deposit, and to respond to a number of related questions. A report was prepared by John C. Balla, Ph.D. and submitted to the Agencies in May 2000. The results of this report indicate that the Rock Creek deposit is a geological analog to the Troy deposit. The Troy mine was shut down in 1993 due to low metals prices, the main orebody has been largely mined out, and the facility is functioning on a care and maintenance basis, only. Therefore, the current Troy mine in its present status is expected to be similar to what the Rock Creek mine would be like after closure.

27. What will be the effects to the ground and surface water, and this ecosystem, from the mine's pumping of water in order to extract the ore? (S6721)

Response: Details related to inflow to the underground mine workings are presented in Chapter 4-Hydrology.

28. Will nitrate leaching to ground water from rock used for buttress construction be a concern (since the rock would be blasted and excavated)? This should be addressed. We note that efforts to prevent contamination of ground water are easier and cheaper than recovery and treatment of contaminated ground water after-the- fact (i.e., pollution prevention pays). (S146)

Waste rock from the evaluation adit would be placed near the adit. Waste rock from the production adits would be used for millsite construction and hauled to the tailings paste facility and used immediately for buttress construction to avoid rehandling this material. Any seepage passing through the waste material, similar to seepage from the mine, will contain potentially significant quantities of nitrate. The SDEIS provides for treatment of the mine water, but does not address nitrate contamination of seepage from the various waste rock surface locations.(S188)

Response: The potential short-term impacts associated with leaching of the nitrogen residual or waste rock from blasting are disclosed in Chapter 4-Hydrology.

29. The FEIS should clearly and completely describe proposed contingencies for; handling "mineralized" rock and ore stockpiles in the event of a premature or temporary shutdown, for collection and treatment of any contaminated waste rock leachate/runoff, for addressing seepage from the underground mine reservoir, and addressing flow and quality impacts to seeps and springs and headwater tributaries of Rock Creek. (S146)

Response: Please see Chapter 4 - Hydrology for an analysis of impacts.

30. The revised Miller Gulch load out facility will involve the copious collection and return of water that has been laden with concentrate of heavy metals. There is no ground water data or monitoring wells spoken of in the DEIS, SDEIS or anywhere addressing this issue. What are we to know, if there is a pipeline rupture or escape of effluent from this facility into the ground water hydrogeologic regime at this site. (S614)

Response: Existing ground water quality data from numerous monitoring wells in the Miller Gulch area are provided in Chapter 3 of the EIS. The pipeline would have a leak detection system that

make monitoring wells unnecessary. If there was a leak or rupture, then monitoring wells could be installed downgradient of the incident. Impact from pipeline rupture would primarily impact surface waters. Potential impacts of a pipeline rupture are disclosed in Chapter 4 under Aquatics/Fisheries.

31. Page 2-20 (Evaluation Adit): The exploration adit would be driven at a decline of 10 percent. This suggests that the working face would act as a sump unless provisions are in place to remove this water to the outside environment. Since mining requires a dry work area, how will water be collected and removed from the exploration adit (estimated evaluation adit seepage of 168 gpm on page 4-28)? (S146)

Response: Water would be pumped to a lined 30,000 gallon pond constructed near the evaluation adit port, initially. After the adit advanced 350 feet, a 97,000-gallon underground mine sump would be excavated. Excess water would be pumped to a temporary water treatment unit at the support facilities site and then discharged to the Clark Fork River.

32. Page 2-119 1st incomplete paragraph "Relocating the mills ... would eliminate the potential for spills ... to reach the West Fork Rock Creek." Subsurface effects are not addressed here. (S4832)(S4833)

Response: No significant subsurface impacts were predicted.

33. Page 2-29 under "Water Use and Management" How about putting the potable water obtained from wells below the tailing impoundment site? It should meet the standards. (S4832)(S4833)

Response: The location of the water supply well is currently conceptual.

WTR-304 Water Monitoring

1. A citizen oversight committee should be formed to help the state monitor and ensure the requirements of the permit are fulfilled. Asarco should be required to fund any expenses this would involve. Asarco should also be required to contract qualified, neutral, "experts" to study areas of concern identified by the oversight committee. This committee mus have the power to shut the operation down immediately if it finds the company is violating any portion of the permit. (S1905)

Monitoring of water quality must be adequate to ensure standards are maintained. Asarco cannot be responsible for policing itself, and DEQ does not appear to be fully able to participate at the level desired by the public. A monitoring team funded by Asarco which includes members of the public and outside experts must be established. (S3489)

Monitoring should include opportunity for citizen oversight in monitoring activities. Accompany on the ground inspection and annual/quarterly report review. (S3466)

Response: Sterling must submit annual monitoring reports and inform the agencies whenever standards are exceeded. The agencies cannot require Sterling to use specific experts or fund a citizen oversight committee. Many mining companies use a third party for sampling and a certified laboratory for analyses. The agencies would conduct periodic monitoring and sampling separate from that conducted by Sterling. All monitoring reports would be available for public review after receipt or compilation.

2. To further protect the Clark Fork River, the Forest Service should require continuous in-river monitoring just downstream of the waste water discharge pipe. (S805)(S1687)(S1851)(S2866)(S3465)(S3942)(S4016)(S4046) (S4063)(S4364)(S4910)(S5086)(S5138)(S5501)(S5513)(S6640)(S6656)(S6806)

After the mine is closed in 30 years, how does Asarco plan on monitoring its leftovers and repairing pollution and damages? (S4429)

A complete monitoring program must be mandated and the measuring points should be sufficiently below the mine discharge system so as to assure the mine waste water is acceptably clean. (S4628)

It should be monitored by some one besides Asarco so we will know the truth. (S5138)

Provide real time, continuous monitoring of all water and air discharges and allow continual public access to these data. (P)

Response: The Agencies have the responsibility for enforcement of conditions stipulated in the operating permit and MPDES permit. A comprehensive water resources monitoring program would be implemented if the proposed project is permitted. Continuous monitoring of selected parameters at selected locations was considered but was not required because it was not necessary to monitor on a continuous basis for compliance and it is not an approved analytical method.

3. Who is going to inspect work and monitor in times of declining budget. (3251)

I would mandate strict monitoring for compliance paid for by Asarco and not DEQ. (S4334)

I suggest that a separate group perform the monitoring work. The group would be composed of one person each from Asarco, the USFS, and the DEQ plus a representative from the general public and one from a local environmental group. Their findings should be made public on a quarterly basis. (S5091)

Make Asarco pay for the monitoring and have the monitoring done by independent contractors who cannot be swayed by political or economic concerns. (S5122)

Response: The Agencies would be responsible for permit compliance inspections. Sterling would be responsible for monitoring and reporting under the MPDES and MMRA permits. The public could perform its own monitoring of surface waters, but the agencies cannot require Sterling to use specific contractors or laboratories. Most mining companies hire independent consultants to collect samples and independent laboratories to analyze the samples, but these are not requirements.

4. Volume II page H-3 surface water monitoring. There is no mention of monitoring the water quality of the surface water run off from the reclaimed paste facility. Due to the steep gradient there would be erosion to the paste. When it was determined there was no water quality problem the monitoring could cease. Also see V1 page 2-64 paragraph 3. (S4892)

Is there going to be a monitoring station at the state line so Lake Pend Oreille doesn't get polluted too? (S5040)

The EPA feels that it would alleviate many citizen's concerns if an in-stream monitoring requirement were included in the permit to verify that water quality standards in the Clark Fork River were not violated. We suggest that this in-stream monitoring location be located below Outfall 001. In-stream monitoring could be on a lesser frequency than effluent monitoring. (S146)

Require proof that there will be no measurable increases of pollutants where the Clark Fork River crosses into Idaho and that nutrient increases will not increase algae growth downstream. (S805)(S6806)(S1687)(S1851)

Page 3 of the S.O.B. notes that effluent limits apply at the end-of-pipe, prior to mixing with the receiving water, and that compliance monitoring will occur at the end of the pipe as well. We support the MPDES permit requirement for end-of-pipe monitoring.

However, considering the high concentrations of metals allowed in the discharge, and the questionable assumption that the discharge will mix "nearly instantaneously," we request the Agencies require ASARCO to conduct MPDES compliance monitoring in the Clark Fork River as well. Particular attention should be paid to surface water quality at the confluence of the Clark Fork River and Rock Creek. (S6318)

Response: A comprehensive water resources monitoring program would be implemented if the proposed project is permitted. Monitoring of selected parameters at selected locations, including the Clark Fork River, was considered. These ideas have been considered in development of the final water resources monitoring plan. Metals would be tested for in upstream samples from the Clark Fork River while nutrients and other parameters would be monitored in both samples collected upstream and downstream of the point of discharge (see Appendices D and K). No sampling would be required at the Montana-Idaho border.

5. I want to see a more aggressive monitoring system set up. (S3490)

Response: Please refer to Appendices K and D of the final EIS.

6. It seems to me that this can be treated as a point source discharge. There should be daily monitoring and, should the monitoring indicate an improper level of discharge, there should be sufficient facilities to shut down the discharge of waste water until such time as the discharge quality can be brought to acceptable levels. (S4018)

At the least, there must be strict standards, diligent monitoring, and prompt shutdown of operations and deployment of corrective measures if monitoring detects problems. (S4358)(S4016)(S4352)(S5086)(S6613)

Monitoring of the mine must be stringent at all locations of the mine. The agencies that will monitor the mine area must be given complete control to stop mine activity if any level is found to be above normal. (S4429)

Should mining discharge not meet requirements or if the waste treatment facilities shut down, mining and milling activities should cease immediately. (S4046)

Response: Should problems develop with the mine wastewater treatment facility, flow to the treatment facility could be eliminated or reduced almost instantaneously by diverting mine inflow into underground mine water storage. Sufficient storage would be available within the mine at all stages of mine production to store over 100 days of mine inflow.

7. How often are these wells monitored? What is Asarco required to do when it detects contamination? Will the mine have to shut down? (S6604)

Response: Monitoring wells are usually sampled on a quarterly basis. If exceedences in concentrations are noted, the well would likely be resampled to verify the original analysis. If the elevated concentration is confirmed, a contingency and corrective action plan would be implemented (see Appendix K).

8. We recommend the following additions to the metals monitoring plans described in Appendix H. Bioaccumulation of Metals in Fish Tissue. The proposed monitoring of copper, zinc and mercury is good. Presumably, gills will be analyzed for copper and zinc. We would also suggest analyzing for cadmium and lead, due to the fact that these metals already exceed water quality criteria at times in Rock Creek, plus the uncertainty associated with the water quality that will be discharged from outfall #4 (as indicated in the discharge permit) at the mill area. In addition, if tissue levels start to rise at any point, we suggest measuring liver concentrations as well (excluding zinc which does not show clear dose-related accumulation in livers).

Fine-grained bed sediment should be collected annually at 3 or 4 locations along Rock Creek downstream of the mill outfall and analyzed for copper, cadmium, zinc and lead. Again, this suggestion is prompted by the uncertainty associated with the water quality in outfall #4. It would be appropriate to co-locate these sites with those selected for measuring fines in bull trout redds. The concern with contaminated sediments lies not just with the potential effects on fish eggs and fry, but also with food-chain transfer of metals from sediment to benthic insects to fish. Consumption of metals-contaminated benthic insects have been shown to negatively affect growth of brown and rainbow trout (Woodward et al. 1995).

If sediment metals concentrations become elevated, then a risk assessment should be performed for the aquatic insects and fish, relevant investigations should be conducted, and if necessary, plans should be developed and implemented to remove contaminated sediments and reduce metals inputs to the stream. See Kemble et al. (1994) for potential bioassay techniques to determine toxicity of sediments and pore-water. Rock Creek water should be sampled for metals on a monthly basis at locations adjacent to and downstream of the paste storage facility. This is necessary to address the concern about metals entering the stream from ground water recharge or surface erosion. (S1816)

Response: The conceptual monitoring plan (Appendix K) has been modified to incorporate analysis of cadmium and lead in fish tissue and an ecological risk assessment, if appropriate. Since fish are the receptors of concern for Rock Creek and metal concentrations would be measured directly in their tissues, routine analysis of metals in sediment is not necessary unless a risk assessment were to be conducted.

9. Page 2-119. "ASARCO's water monitoring plan would be expanded for alternatives III through V and would include a Monitoring Alert Levels and Contingency/Corrective Action Plan. This plan would ensure early detection of potential environmental degradation or impairment and would focus primarily on the protection of surface and ground water resources. The intent of this additional plan would be to prevent pollution and other problems before

they occurred." The intent of the Monitoring Alert Levels and Contingency/Corrective Action Plan is good, but the name of the plan implies that it would be geared toward correcting problems once they occurred, not preventing problems. Why have neither the DEIS or SDEIS included a pollution-prevention monitoring plan so that the action alternatives could have been meaningfully evaluated? (S3462)

Response: This idea has been considered for the final monitoring plan. The entire design of the mine plan and the regulations such plans must meet, are geared towards pollution prevention. One of the purposes of monitoring is to ensure some unanticipated effect is not occurring.

10. Data should not be collected on a quarterly basis. This is not a legally defensible monitoring plan and is not protective of the ecosystem. For the first several years, samples should be collected weekly at a minimum.(S5093)

Page 2-77, Influent and effluent monitoring to be done frequently; more than required in draft MPDES. This is a very ambiguous statement and has to be carefully defined in any permit. (S614)

Response: Monitoring occurs on multiple schedules. Some parameters which are key indicators would be monitored daily. Others would be monitored weekly, monthly, or quarterly, as appropriate. The draft permit has been revised. See Appendix D for monitoring required under the proposed MPDES permit and Appendix K for monitoring to be conducted under the mine operating permit.

11. In the considered opinion of Wilderness Watch both the Draft EIS and the Supplemental DEIS are seriously deficient because they contain no complete and detailed plan for monitoring for potential damaging environmental impacts. The Supplemental EIS states that a Monitoring Plan will be developed for submission to, and approval by the Agencies, that trigger levels and corrective action plans have not yet been developed. We submit that this is not acceptable. Later development of such important elements of the plan of operation provides no opportunity for public participation and public input concerning the adequacy of these elements. In our opinion, granting a permit with such a deficiency in the EIS would be a violation of both NEPA and MEPA. (S6348)

Page 2-77 - and App H and App M: Water monitoring plan: details still not finalized but apparently sampling of Rock Ck. is to be only x4/year. concern: final details not presented to public for public review. x4/yr monitoring of Rock Ck. is not adequate, is not a legally defensible monitoring plan, and is not protective of the Rock Ck. ecosystem. (S5093)

Page H-1 Introduction; Corrective action plans, final monitoring plans concern: Should be made available to public for review and comment. (S5093)

Response: The final monitoring plan would need to be adjusted specifically for the approved plan as specified in the record of decision should the mine be permitted. A conceptual monitoring plan for surface and ground water resources is included in Appendix K. Neither NEPA nor MEPA require that final monitoring plans be included in the final EIS.

12. Page H-2 Water Monitoring Plan: begin during the first quarter of construction. concern: Asarco's baseline data is old, and full of errors. It is unacceptable to simply let the company "revise" the database. The approved water monitoring plan that will be used during construction and operation should be started two years BEFORE construction begins in order to generate a truly reliable, comparable and legally defensible baseline data set, and to demonstrate that whoever manages the monitoring program can indeed do it correctly. Asarco has never monitored in an acceptable manner. They have always found ways to confound the data, to make it weak. All monitoring at this project should be done by an independent, reliable, unbiased consulting firm that the public can have confidence in. (S5093)

Response: Water quality data collected to date are acceptable for the purpose of establishing baseline conditions. Collection of additional surface water quality baseline data would not change conclusions presented in the EIS. Collection of operational data would be accomplished by Sterling

or Sterling's consultant with periodic inspection and splitting of samples by the Agencies. Monitoring would begin at the time of evaluation adit construction, which would provide a year of more monitoring before major mine construction began.

13. Under Idaho's Water Quality Standards, the Lake is designated as a Special Resource Water and no new point source can discharge pollutants into the lake or a tributary of it (the Clark Fork River). This designation protects existing water quality from further degradation and limits discharges to below detectable increases of pollutants over background levels. The SDEIS on page 4-49 interprets this as the concentration of pollutants from the mine must be below detection limits at the state border. However, the actual standard or designation for Idaho is determined by a reduction of the ambient water quality of the receiving water as measured immediately below the applicable mixing zone. Since the Idaho border is only some 8 miles downstream of the discharge, in-stream monitoring of the River discharge should at least be done right at the border above Cabinet Gorge Dam, but actually should be conducted in Montana immediately downstream of the diffuser in order to not violate Idaho's water quality standards, as required by Section 401 of the Clean Water Act.(S6312)

Waste water discharges have the potential to decimate the watershed and destroy water quality and fisheries. ASARCO must use treatment technologies that have long term data proving they can clean mine waste water for the flows, temperatures, and actual conditions of the site. In-river monitoring should occur 24 hours a day to ensure that there is instantaneous mixing, even during nightly reservoir drawdown. Mining and milling should cease immediately if the discharge is not meeting requirements or if the waste water treatment facilities shut down. You must show proof that there will be no measurable increase of pollutants where the Clark Fork River crosses into Idaho and that nutrient increases will not increase algae growth downstream. Treatment of all stormwater discharges to Rock Creek are necessary as they will carry pollutant from the mill and tailings. (F1)(S177)(S4891)(S4912)(S5051)(S5088)(S5555)(S5763)

Response: Monitoring water quality in the Clark Fork River just upstream and downstream of the proposed discharge has been incorporated into the proposed MPDES permit.

14. Page 2-71 para. 4, Nitrates would be measured continuously with an on-line analyzer. This procedure needs to be applied to end of pipe effluent stream as well, with consistent but periodic QA/QC. (S614)

Response: The effluent would be monitored as would the river water quality below the mixing zone.

15. We also emphasize the need to monitor ground water near the mine, including flow and quality of springs, seeps, and Rock Creek and it's headwater tributaries, so that flow and quality alterations induced by mining exploration and production can be detected and evaluated. There must be a comprehensive monitoring program to detect ground and surface water quality/quantity effects.

We note that changes in surface water flows (particularly lowered flows or extended duration of low or no flows during the low flow periods of the year), as a result of mining exploration or production, could have significant effects on the ecology of the Rock Creek basin. Water quality of ground water and seeps and springs in the proximity of the underground storage reservoir is of particular concern and will need to be monitored.

We note that Klohn-Crippen concluded that the hydrogeology of the mine area did not appear to be well understood (page 55 of the FMEA report). They recommended that ground water observation wells be installed to assess the hydrogeologic regime, and that ground water modeling be carried out to assess changes during operations and closure.

The EPA would like to review the water resources monitoring plan developed for the alternative that is implemented. The SDEIS does not include much detail regarding specific operational and post-mining water resource monitoring, so it will be important to see the final monitoring and mitigation plans. (S146)

Response: Long term geochemical testing will be implemented to the extent possible. Long term kinetic testing would begin on waste rock removed from the evaluation adit and from additional samples obtained from drilling inside the adit to zones not penetrated by the evaluation adit but that would be intercepted by the mine adits. A separate plan to evaluate the data collected during evaluation adit construction has been included under Alternative V and is described in Appendix K.

16. Page 3-24 para.5 Ground water quality of a soft calcium bicarbonate-type below the proposed mill site is an issue of concern considering the quantity and quality of the waste rock that will be utilized in construction of the mill pad. A special water quality and waste rock monitoring program needs to be designed that will detect subtle changes in water chemistry. Conditions of the permit must also ensure that should pollution be detected removal of the offending rock and or facility will be dictated. (S614)

Response: See Appendix K for details on the water resources monitoring plan. Additionally, geochemical testing of waste rock would help identify potentially acid producing rocks so that it would either be stored in the mine or encapsulated in the tailings facility.

17. Further investigation of ground water at the proposed mine site is needed. What will be done to see that pollutants will not get into the ground water if the water table rises as a result of flooding like we had just last spring? (S4352)

Measurements of year round ground water flows should be required to ascertain the degree of release from the tailings impoundment. (S6588)

Response: The ground water analysis recognizes that fluctuations in the water table occur. To address concerns, and to provide the highest possible level of environmental protection, a comprehensive ground water monitoring and contingency corrective action plan is proposed under Alternative V. Please refer to Appendix K.

WTR-305 Water Treatment

1. Asarco's proposed treatments for waste water treatment and tailings storage are unproven and therefore, unacceptable.

There is also the question of an unproven and highly suspect wastewater treatment method. Our home is not the place for experimenting with potentially disastrous treatment methods such as "anoxic biotreatment cells" and reverse osmosis.

Asarco's waste water treatment methods are unproven and this is a dangerous situation given that Clark Fork River is less than one mile away. In addition, Asarco cannot be allowed to have unlined tailings piles. The toxic residuals from these piles will undoubtedly pollute the creek and the land. Unproven wastewater treatment methods and an unlined tailings pile a mere 1/4 mile from the Clark Fork River are unacceptable environmental risks.

Asarco should be required to use proven technologies to clean mine waste water for the flows, temperatures and conditions at the proposed site. ... concerned with the unproven and experimental technology they propose to use to handle the 100 million tons of mining waste tailings they plan to leave permanently along Rock Creek and just 1/4 mile from the Clark Fork River. How can this mine even be considered with the use of unproven and experimental technologies that would discharge 3 million gallons per day into the lower Clark Fork River. Unproven waste water treatment methods and an unlimited tailings pile a mere 1/4 mile from the Clark Fork River are unacceptable environmental risks.

Waste water discharges treatment technologies must be proven, monitored and abide by environmental regulations by proving no increase in pollutants.

... Asarco should be required to use treatment technologies that have been tested with long term data proving they can clean mine waste water for the flows, temperatures and conditions at the actual site.

Asarco should be required to use treatment technologies that have been tested and insuring that mine waste can be clean enough for the flows and conditions at the Rock Creek site.

The water treatment methods are unproven on mine waste. They don't even have a design completed for the reverse osmosis system. ... What if they can't design a filter to handle the different toxins?

Neither the anoxic biotreatment cell nor the reverse osmosis technologies have been proven to work on mine waste water. Any water treatment technology must treat the water to meet water quality standards at the point of discharge into state waters.

The EIS is inadequate in that it proposes to deal with a variety of environmental threats by using technology that is unproven in the proposed application.

Asarco should be required to use treatment technologies that have long term data proving they can clean mine waste water for the flows, temperatures and actual conditions at this site. The unproven technologies proposed for waste water treatment from the mine and tailings pile are unacceptable. Asarco should be required to use treatment technologies that have a long term proven record of working with the conditions at this site. (F1)(P)(S140)(S625) (S3293)(S3395)(S3750)(S3631)(S3896)(S3942)(S4016)(S4046)(S4050)(S4159)(S4419)(S4482)(S4494)(S4628) (S4725)(S4771)(S4891)(S4912)(S5051) (S5066)(S5088)(S5133)(S5098)(S5501)(S5555)(S5621)(S5763)(S5771) (S5954)(S5970)(S6342)(S6543)(S6606)(S6613)(S6631)(S6640)(S6656)

The primary biological treatment system, and the secondary reverse osmosis do not remove a sufficient amount of mine waste, also this is not a proven method.(S3490)

The plan does not provide the Montana DEQ or the public with full information regarding their plan to effectively treat the huge amount of waste water that will pour into the river. As I understand it the proposed method has never been used on such a column of water and it is unclear whether the filters can actually process that amount.(S4337)

Require Asarco to use treatment technologies that have long-term data proving they can clean mine waste water for the flows, temperatures and actual conditions anticipated at the Rock Creek site.(S4364)

... how will they treat and control their waste water discharge so it will not pollute Rock Creek, the Clark Fork River and subsequently Lake Pend Oreille? (S4019)

Submit more detailed design specifications for overall water treatment. (S3701)(S4801)(S6740)

The mine can not be opened without further testing of the waste water treatment methods. There needs to be more research about the 3 million gallons of waste water that will be dumped into the Clark Fork River. (S4482)

The procedures used should be well seasoned and appropriate to the task. Wastewater and storm water must be contained with safeguards to prevent any chance of overflow or spillage. The wastes must be treated to a high degree so the water put into the river is cleaner than the river water itself. These waters must be tested before allowing the release to the river. (S4914)

The proposed waste water treatment plans are also inadequate. The technology being proposed has no long-term baseline data on an installation of this magnitude, to prove its ability to be completely effective. (S5086)

...the paste treatment and the reverse osmosis water treatment. How assured is Asarco that this can work on the scale that they propose? What is the assurance based on i.e. what is the science behind a large scale use of such technology? Again how can the public be assured that truthful and adequate monitoring will be done? What is Asarco's backup plan, if this new technology does not work? How will we be informed whether it is or is not working? (S5091)

The ABC treatment where bacteria are supposed to digest nitrates and ammonia is not proven to work for large amounts of waste water from the mines. (S5094)

The RO is developed for drinking water systems. It may not work for waste water from the mines and must be constantly monitored day and night to prevent filter shutdowns. Does this sound proven to you? (S5094)

The anoxic biotreatment cell system as a way to remove nitrates and ammonia from mine waste has no established record in the kind of use proposed for Rock Creek. should that system prove to be ineffective, up tp 320 gallons of untreated water per minute could seep from the tailings impoundment area, with potentially catastrophic impact on the Clark Fork River and Lake Pend Oreille. The pristine wilderness surrounding Rock Creek and the watershed running through it should not be used as a testing ground for untried technology. (S5097)

Concerning waste water discharges, there must be long-term data proving they can clean mine waste water for the actual conditions at this site. (S5776)(S6712)

Show evidence that the ABC method of water treatment will actually work. (S6572)

Asarco should establish, through clear and concise documentation, that their waste water treatment technology is reliable in the wide array of temperatures and year round flow conditions. (S6588)

The water treatment methods and facilities appear to continue to lack documentation and studies that they would indeed work well enough to insure that the waters of the Clark Fork River and Lake Pend Oreille would receive adequate protection over the decades of mine operation. Considering the values of the resources at risk, there needs to be more documentation regarding the reliability of these methods and more evidence that the water resources will not be adversely impacted even if the systems work as advertised. Under the circumstances, poorly documented claims are simply not acceptable. It appears a lot more study and testing are necessary before the DEIS can be acceptable. (S6681)

The discussion continues about ABC being used "in large drinking water treatment facilities" and commonly used in "domestic waste water" treatment. Again, where is the long-term reliability and adequate delineation that these systems are effective with mine process waste water at the anticipated flows at Rock Creek? Where is the detailed design? (S6312)

Require ASARCO to use treatment technologies that have long-term data proving they can clean mine waste water for the flows, temperatures and actual conditions at this site. (S805)(S6806)(S1687)(S1851)

RO Process Design. According to the SDEIS, reverse osmosis, if adequately sized and operated, is a very effective water treatment process and should be sufficient to address any water quality issues during operations [SDEIS p. 4-18]. This statement ignores the critical importance of proper design, without which adequate size and operation are pointless. This underscores the fact that no conceptual, much less detailed, design has been provided for the RO system. The design, because it will be for a novel application, absolutely requires that it be based on extensive test work and preferably pilot plant testing. A detailed evaluation and report should have been provided by the proponent and used as the basis for the SDEIS discussion of this wastewater treatment alternative. (S188)

Page 2-107. Water Resources Row, under V. "Same as Alternative II but with increased treatment reliability and minor increases in phosphorus due to changes in waste water treatment systems." The new waste water treatment system is a "pilot" system and admittedly may or may not be successful. How can it be considered an increase in treatment reliability? (S3462)

Another critical component of the proposed ASARCO Rock Creek mine is the water treatment system that will be used to treat degraded mine water prior to discharge to the Clark Fork River. Much of the discussion in the SDEIS focuses on ASARCO's proposed modifications to the treatment system, and it's expected ability to meet MPDES permit requirements. For example,

Page 4-54 of the SDEIS states that "the proposed mine water treatment system would, if properly designed, constructed, and operated, produce an effluent that meets the requirements of the revised draft MPDES discharge permit."

Page 30 of the Klohn-Crippen Report states that "if adequately sized and operated, it(reverse osmosis) is a very effective water treatment process and should be sufficient to address any water quality issues during operations."

However, based on our review of the information presented in the SDEIS, Draft MPDES permit and it's accompanying Statement of Basis, there is insufficient information on the system design, and the quality and quantity of water it must treat, to determine the system's ability to meet MPDES effluent limits, and protect water quality and aquatic life in the Clark Fork River and Lake Pend Oreille.

Our concerns with the proposed treatment system include: the lack of detailed design specifications for the system; experimental nature of biological treatment and reverse osmosis; the lack of detailed baseline data on the chemistry and volume of water to be treated; the mixing zone for the proposed discharge and it's potential to impact migrating bull trout; the failure to monitor water quality in the Clark Fork River. (S6318)

The impacts that nutrients in the discharge will have on nutrient reduction strategies (nitrogen and phosphorous; and the disposal of waste brines from the reverse osmosis system. (S6318)

Page 4-54 1st incomplete paragraph "ASARCO expects that the biotreatment system ... primary treatment ...". Contradiction with page 2-66, 2nd paragraph under "General Waste Water Treatment", "Neither system would be designated as the primary or back-up system." continuing with page 4-54, "However, the reverse osmosis system ... after the biotreatment ...". Contradiction with page 2-69, 1st paragraph where it is stated "... if biotreatment proves to be successful". Consider this admission of insecurity from ASARCO about the treatment facilities capabilities. (See next comment). (S4832)(S4833)

Page 4-54 1st full paragraph: "Reverse osmosis technology ... has been proven ..." Citation please - where? who? how much could it handle? Similar conditions? Also "Reverse osmosis has been used ... 200 gpm ..." and "In addition, ... from 100 gpm ..." How does reverse osmosis perform with 2,300 gpm? In the event that biotreatment 'proves' to be 'unsuccessful', can a reverse osmosis system remove all nutrients, metals, pollutants from discharge water to meet Idaho's "Special Resource Waters" discharge water levels of "below detection limits?" (S4832)(S4833)

Also, "The proposed dual nitrate removal system ... appears to be capable ..." Page 4-54 states this "has been proven". Which is it? "The proposed anoxic treatment ... be effective ... under Montana ...conditions." Consider volume differences between systems - those handle 200 gpm, not 2,300 gpm (page 4-54). Which is it? (S4832)(S4833)

Another concern with the proposed treatment system is its' ability to effectively treat the volume of degraded mine water expected to be discharged from the proposed Rock Creek mine. ASARCO's original proposal to use a passive bioreactor and ion exchange system been dismissed during the NEPA process, apparently due to concerns over their ability to meet MPDES effluent limits.

The following statements from page 4-42 of the SDEIS demonstrate this point: "the proposed passive biotreatment system has not been proven to be capable of providing the degree of nitrogen removal required to meet the limits of the draft MPDES discharge permit" and "the long-term reliability of ion exchange as a nitrate removal system has not been demonstrated."

The SDEIS suggests that these concerns will be addressed by using the technologies ASARCO is proposing as part of Alternative V. Page 4-54 states "the reverse osmosis technology and the proposed anoxic biotreatment technology have been proven to be capable of removing nitrate from water in a reliable manner." Additionally, p. 2-69 states "the reverse osmosis technology has been proven to be capable of removing dissolved pollutants, such as nitrate, from water in many large capacity waste water treatment facilities throughout the world."

Contrary to these statements, reverse osmosis technology has not been proven at large scale mining operations like the proposed Rock Creek mine. The reverse osmosis treatment systems provided as examples in the SEIS—Lead, SD (200 gpm) and Lewistown, MT (100 gpm)—are only treating flows that are an order of magnitude lower than flows expected at Rock Creek during the later stages of the Rock Creek mine(2,300 gpm).

Additionally, the example of anoxic biotreatment systems presented in the SDEIS—the Stillwater Mine in Montana—is only treating 130 gpm. This example does not demonstrate the proposed anoxic biotreatment system will be capable of meeting the effluent limits spelled out in the Draft MPDES permit.

If uncertainties regarding the effectiveness of the passive bioreactor and ion exchange system were the reason they were dismissed during the NEPA review, one could argue that the currently proposed treatment system should be dismissed as well. Again, the Klohn-Crippen report (p. 30) noted "this (reverse osmosis) is a highly sophisticated treatment process; one not typically implemented at mining operations." (S6318)

As we stated in our comments on the Draft EIS, we believe decision-makers and the public need to have more detailed design specifications for the water treatment system in order to determine the system's ability to meet effluent limits and protect water quality and aquatic life in the Clark Fork and Lake Pend Oreille. As the following statements demonstrate, those design specifications have not been presented.

Page 1 of the Statement of Basis states "ASARCO has submitted a conceptual level wastewater treatment design which may include any or all of the following components: filtration, biological treatment, anaerobic denitrification, and reverse osmosis."

In addition, p. 2-66 states that "at the final design stage, modifications to the treatment system may be made depending on a number of factors, including the actual discharge water characteristics, the final MPDES limits, and the technology available at the time."

These design specifications are needed now to predict, and mitigate the potential negative effects the mine's discharge could have on water quality and aquatic life in the Clark Fork River and Lake Pend Oreille. (S6318)

I have received the impression that there is at least some uncertainty among the agencies as to how effective the proposed treatment processes will be at the volumes planned and also that the volumes to be treated might be understimated. I think an extra effort is justified at this sensitive area of Montana. (S3591)(S3654)

We need more detailed design specifications on the overall water treatment plan. Will the reverse osmosis system be able to handle the volume of contaminated water the mine will generate? (S3391)

We need more detailed design specifications on the overall water treatment plan. How will the RO and the bioreactor react?

We'd like Asarco to submit more detailed design specifications for their proposed water treatment system before any final permit decision is made. The proposed bioreactor/reverse osmosis system is an experimental approach that has never been proven to be effective at treating over 2,000 gallons per minute of contaminated water this mine will discharge, and the public and the regulatory agencies need the design specifications to make an informed decision on whether it will work. (S3465)

The company's proposal for water reclamation is theory not science the EIS is full of theory not science. (S3487)

A more detailed design needs to be spelled out. (S6740)

They could submit more detailed design specifications on the overall water treatment plan. They could present a long term operation and maintenance plan that covers water treatment scenarios and costs for when active mining stops. (S4801)(S6745)(S3392)

The proposed dual system of water treatment (ABC and RO) are not sufficiently proven for the agencies to rely on them. Many conclusions regarding the dual treatment systems at this site are based on assumptions about the Rock Creek site and limited applications elsewhere. (See e.g. 4-42, 4-74). Long term reliability, application to significantly unknown water quality, similar scale application, and anticipated flows have not been sufficiently considered for the Forest Service to make permitting decisions. Additionally, detailed facility design and waste disposal is not analyzed in the SDEIS. As a result, unproven technologies are proposed for unknown conditions. This does not meet the spirit or intent of NEPA or the Clean Water Act. (S2034)

The polluted wastewater generated from the ground water seepage into the mine must not be allowed to be discharged with any contaminates into Rock Creek or the Clark Fork River. The unproven method proposed is not satisfactory. (S5092)

Response: It is true that both the quantity and the quality of mine water requiring treatment have been estimated. It is also true that the capability of proposed water treatment system to treat the projected quantity and quality of mine water has also been estimated. However, the applicant has provided significant documentation on the capability of the proposed water treatment system to treat water of a similar nature under similar climatic conditions. This information has been reviewed by both government agency personnel and by independent consultants to verify applicability and accuracy.

All components of the Alternative V water treatment system (that is, clarification, filtration, nitrification trickling-filter, reverse osmosis, anoxic biotreatment denitrification cells, and extended aeration effluent polishing) have been successfully used to treat mine wastewater similar in nature and under similar climatic conditions to those anticipated at the Rock Creek mine. These technologies are not considered experimental or unproven.

Further nitrate removal using either reverse osmosis or anoxic biotreatment would be accomplished using multiple treatment units. The individual treatment units would be sized to treat mine wastewater flows very similar in magnitude (650 gpm) to that being successfully treated at other mine sites in Montana and South Dakota (100 to 200 gpm). Therefore, it is reasonable to assume that the level of nitrate removal achieved using multiple reverse osmosis units or anoxic biotreatment cells at Rock Creek would be very similar to that being achieved at these mine wastewater treatment facilities.

There are other advantages to the multiple treatment unit concept proposed for Rock Creek. This multiple treatment unit approach has been shown to facilitate system upgrades, to minimize potential treatment upset episodes, to allow easier facility maintenance, and to provide a higher level of system reliability.

The final design and layout of the proposed water treatment system may require minor modifications to more accurately reflect site specific conditions (such as chemical constituents, flow rates, and water temperature). Much of this information would be obtained during development of the evaluation adit and refined during mine construction and operation. The water treatment system proposed as part of Alternative V would be sized to handle the quantity of water requiring treatment and would be capable of providing the level of water treatment required by the MPDES discharge permit.

Final engineering design specifications are not required to predict the effects of the mine's discharge on water quality and aquatic life in the receiving waters.

2. How can this mine even be considered with the use of unproven and experimental technologies that would discharge 3 million gallons per day into the lower Clark Fork River. (S4355)

Response: The wastewater treatment system proposed for Alternatives II, III and IV does include unproven and experimental technologies. For this reason, Alternative V proposes an improved wastewater treatment system. All components of the Alternative V water treatment system (that is, clarification, filtration, nitrification trickling filter, reverse osmosis, anoxic biotreatment denitrification cells, and extended aeration effluent polishing) have been successfully used to treat mine wastewater similar in nature and under similar climatic conditions to that anticipated at the Rock Creek mine. While the final design and layout of the proposed water treatment system may

require minor modification to more accurately reflect site-specific conditions, the water treatment system is not considered to be either unproven or experimental.

The anticipated flow of mine discharge to the river under Alternative V ranges from approximately 500 gpm (720,000 gallons per day) during the first 3 years and would double to nearly 1,000 gpm about year 10 and would only reach just over 2,000 gpm (2.9 million gallons per day) at the end of mine life at about year 30. The waste water treatment system would be expanded by adding additional units to both systems; they would not need to be built to handle the maximum flows at the start of operations.

3. Water treatment is insufficient if it degrades the water quality going into the Clark Fork. The proposed plan still shows seepage, leaching, and incomplete removal of contaminates from several sources. (S3489)

Proposed dilution of heavy metal wastewater into the Clark Fork River is simply dumping waste in the river. Didn't we outlaw that a long time ago? (S4645)

I am greatly concerned that the plan for waste water treatment at the proposed Asarco will yield an effluent that is too close to the maximum contamination allowed. (S3591)(S3654)

Response: Water treatment would be insufficient if the discharge did not meet the terms of the MPDES permit and degraded water quality conditions in the Clark Fork River. The requirements of the discharge permit have been developed to be fully protective of the receiving waters. Under Alternative V, all discharges from the proposed project would require a sufficient level of treatment to prevent environmental degradation. The proposed water treatment system should be capable of providing the level of treatment necessary to comply with the requirements of the discharge permit.

4. Page 2-69 1st paragraph "A larger tank would be installed ... if biotreatment proves to be successful." Is ASARCO unsure if this process will work? If it fails what is the prescribed scenario? If biotreatment for excess nitrates fails, how does ASARCO plan to assume the responsibility for excess nitrate discharge into an already nitrate-exceeded water environment? What about waste from this technology? (S4832)(S4833)

The waste water treatment plan calls for two treatment methods: the anoxic biotreatment cells (ABC) which will remove 80 percent of the nitrogen, and the reverse osmosis (RO) process which will remove 90 percent of the nitrogen and metals. It is our understanding that the RO system would be primarily a backup system after an initial period. We would like to see the plans include the use of both systems in an in-line method. The water could first be passed through the ABC and then the RO unit. It is important that as many of the pollutants as possible be removed from the water before it enters the surface or ground waters. (S2794)

Why aren't the semi passive biotreatment and the reverse osmosis water treatment systems being designed or proposed to operate simultaneously rather than as a back up system for the event of the primary system failing? (S6721)

What role will the permitting agencies have in determining when the reverse osmosis treatment system will be used vs. the biotreatment system? (S146)

How will the two systems will interact? (S6745)

The SDEIS states that the anoxic biotreatment cells (ABC) will remove 80 percent of the nitrogen (and apparently little or none of the metals) and the reverse osmosis (RO) process will remove 90 percent of the nitrogen and metals. Instead of using the RO system initially and then only as a backup after about 5 years, I firmly believe that every effort should be made to alter the system to an in line process, with the water passing through the ABC first and then

through the RO system for final clean up of nitrogen and removal of metals. I'm aware that this would result in additional expense to the company, but it might eliminate the need for the diffuser or allow something less expensive at the discharge point. (S3591)(S3654)

Page 2-69. "A larger tank would be installed if biotreatment proves to be successful." Biotreatment is not proven at this scale. How can the treatment of such a large amount of wastewater destined to flow into the Clark Fork River be dependent in part on unproved technology? (S3462)

Response: While anoxic biotreatment as been successfully demonstrated at other mine sites, there are several reasons why its use at the proposed Rock Creek mine may be determined to be not appropriate. For example, mine wastewater inflow may be less than that anticipated and reverse osmosis may be found to be more cost effective than anoxic biotreatment. The biotreatment system could be expanded by adding additional cells or by increasing the size of existing cells should flows be greater than anticipated

The water treatment facility would be designed to treat the mine water to the level required by the discharge permit and to allow the use of the reverse osmosis facility for effluent polishing as required to provide the required level of water treatment. However, the RO system would be the primary system initially operating at the full capacity needed while a pilot biotreatment system was constructed and operated in tandem. Once the biotreatment system was fine-tuned for specific Rock Creek mine conditions and had proved it could handle the flow and constituents, then it would be expanded to fill the primary treatment system role. It is anticipated that the anoxic biotreatment cells would be capable of removing an acceptable level of nitrate from the mine wastewater without the use of reverse osmosis. Not using reverse osmosis would save a significant quantity of energy and would eliminate any requirement for brine handling and disposal. If problems arose with the biotreatment system at any time then the RO system would resume the primary treatment role or be used to supplement the biotreatment as necessary to meet the MPDES permit discharge limits. The agencies would be responsible for approving the final treatment facilities, but Sterling would determine which system to use to ensure compliance with the MPDES permit limits.

Achieving a higher level of nitrate removal by providing a two step nitrate removal process including anoxic biotreatment and reverse osmosis would not remove the requirement for a discharge diffuser.

5. There are serious inconsistencies throughout the description of various treatment facilities. The most glaring appears to be the fact the site is identified as being located in a "net evaporative climate zone" (page 28, of Fact Sheet and Statement of Basis for Proposed Permit Limits, MT-0030287) thus "...there will be no discharge of wastewater.'

In Chapter 3, page 5 of the SDEIS, under "Climate," the impoundment area is reported to have incident precipitation which "...exceeds estimated evaporation by about 3 inches." (Asarco, Inc., 1987-1994) This indicates there will be at minimum 3 inches of excess precipitation wherever these is contact contamination discharged to Rock Creek or the Clark Fork River. This translates into at least a 356 to 50 million gallon/per/year error infiltration or treatment capacity estimate for the project.

It calls into question all treatment facility design assumptions when the most basic of treatment facility site-specific evaluations, evaporative gain or deficit, is in error.

The interception of small drainages, springs, seeps, and shallow ground water associated with upgradient precipitation and potentially affected by contact contamination, does not appear to be included in treatment and

discharge calculations. Unless this is included in treatment or bypass calculations, the capabilities of the system will be greatly undersized. (S1417)

Response: The discussion of net precipitation in the statement of basis addresses the amount of process wastewater that may be diverted from the mill circuit to the water treatment system. It is not used in sizing the treatment or waste holding systems. The water balance developed by the Applicant and reviewed by the agencies includes precipitation from all major mine areas (paste storage, plant and mill sites, etc.). Uncontaminated stormwater would be diverted away from the active mine area and not require treatment.

6. I am concerned about building more ponds if needed to treat water. (S3251)

Response: The Agencies Alternative V water treatment system would not require additional ponds as it incorporates reverse osmosis technology but additional cells would be added as flow increased.

7. Page 4-56 3rd paragraph "Under Alternative V ... reverse osmosis ... may need to be used ...". Contrast this statement with comments on page 2-66 and 2-69; it has to be used. (S4832)(S4833)

Response: Reverse osmosis would be used during the adit evaluation phase and would be used until such time as the anoxic biotreatment is capable of providing the required level of nitrate removal. See also the previous comment.

8. In Table S-2, p. S-8 "Evaluation Adit Water Treatment" under Alternative V. "Pressure filtration, oil skimmer, and a reverse osmosis with a pilot anoxic biotreatment system." How can a "pilot" system be considered a "significant improvement" in Alternative V? (S3462)

Response: Pilot testing of wastewater treatment technology is a standard procedure to determine how to best apply a particular treatment technology at a particular site, in order to optimize final system design. At no time would the pilot biotreatment system be used as the primary system until the final designs for the full system had been approved.

9. Page 2-70, Reverse Osmosis: It is stated that reverse osmosis (RO) units sufficient to treat flows up to 650 gpm would be used. It is also stated that the RO system would be available to operate during bioreactor upsets (page 2-66). The maximum mine operation wastewater treatment flow is stated to be 2,300 gpm. Would this mean that RO treatment capacity would have to be provided to treat 2,300 gpm (i.e., four 650 gpm RO units needed)? Would additional backup RO units be needed if one of the units went down (i.e., a fifth RO unit)? (S146)

Response: It is anticipated that the mine wastewater treatment facility would be constructed in stages. By the time a reverse osmosis unit with a capacity in excess of 650 GPM is required, the mine should have several years experience with the biotreatment system. Any decision to expand the capacity of the reverse osmosis unit can then be based on the capability of the anoxic biotreatment cells to successfully treat mine wastewater under varying flow and climatic conditions. The final plan for the waste water treatment system would have to address contingency measures to be implemented during biotreatment upsets. These could include surface water storage capacity (which would be especially critical during early years of mine development when storage in the mine was limited) or use of temporary units.

10. What happens to the waste water treatment when a reverse osmosis unit is not functioning? Is there sufficient backup capacity to process at the given rates or does the process continue without processing a portion of the effluent? (S4634)

Response: The reverse osmosis facility would be designed with multiple individual reverse osmosis units. This would allow individual columns to be taken off-line for maintenance purposes while still providing an adequate number of units to treat the required flow. For example, a reverse osmosis

facility designed to treat 650 gpm of mine wastewater would include 8 to 10 individual reverse osmosis units. In addition, flow to the water treatment facility could be reduced or eliminated by diverting wastewater to in-mine storage during emergencies or periods of less than acceptable nitrate removal.

11. Page 2-69 3rd paragraph "If the effluent ..." If the biotreatment proves 'unsuccessful' how many times does ASARCO go around the circle of "returning to the treatment facility for further treatment"? (S4832)(S4833)

Response: As indicated, effluent from the aeration pond would be routed back to the reverse osmosis facility for further treatment prior to discharge if the effluent did not meet MPDES permit limits with biotreatment alone.

12. If they can remove 80%, there is no reason why they can not remove 100% of these contaminants. (S3490)

Response: The level of water treatment required would be necessary to meet the requirements of the Montana Pollution Discharge Elimination System (MPDES) discharge permit.

13. The impacts that bleed water will have on the treatment system; the impacts that nutrients in the discharge will have on nutrient reduction strategies (nitrogen and phosphorous; and the disposal of waste brines from the reverse osmosis system. (S6318)

What's to become of the mill's bleed water? Where does the bleed water figure into the treatment system? (S6745)(S3392)

What impacts will the bleed water have on the treatment system? (S4832)(S4833)

Another issue of critical importance to the proposed water treatment system is the fate of the "bleed water" from the mill circuit, and it's potential to undermine the effectiveness of the treatment system. Page 2-66 of the SDEIS states that "approximately 5 to 10% of the flow in the process loop (3,000 gpm for mill) will be diverted to the wastewater treatment system and fresh water added to the circuit on an ongoing basis to prevent buildup of excess constituents in the process water."

At a minimum, the lack of a complete discussion of the NSPS issue, including all of ASARCO's "plans and specifications" to meet the NSPS, must be available for public review and comment as part of the NEPA/MEPA process. The Forest Service cannot approve the Rock Creek before the information necessary for MPDES permits have been obtained. Dubois v. U.S. Dept. of Agriculture, 102 F.3d 1273 (1st Cir. 1996). Since the project has not yet supplied the necessary information to obtain them, the Forest Service's "approve first, review permitting information later" process is fundamentally flawed. Moreover, the Forest Service cannot meet its duty under 36 CFR 228.8 to ensure that the project will comply with the Clean Water Act without an understanding of the specific nature of the discharges. (S6318)

Response: Mill bleed water would be routed to mine wastewater treatment facility where it would be treated to remove suspended solids, heavy metals, nitrate and organics.

14. The system to treat nitrate is an improvement over the system proposed in the DEIS. However, addition of methanol to a sulfate containing mine drainage is very likely to generate hydrogen sulfide. Sulfate reducing bacteria can utilize methanol very well, and pockets of sulfate reducing bacteria are likely to be present in the system. Although nitrification will predominate in the system, sulfide production is almost certain. Aeration of the water during the summer months may be sufficient to remove sulfide from the system, but in winter, the oxidation process are slowed considerably as are the volatilization processes. Sulfate reduction will also increase the pH of the water, which in turn will increase the proportion of the non-volatile sulfide anion. What is the discharge standard for sulfide from the facility. Since this substance is effectively as toxic as cyanide, how often will it be monitored in the discharge water? Many municipal treatment systems that use a nitrification-denitrification process

have a chlorination step disinfect the water prior to discharge. This also can reduce the sulfide concentration by oxidation. How will the discharge from this treatment facility be treated in order to reduce the sulfide concentration, or will it simply be allowed to drain into Rock Creek with no monitoring for this toxic species? (S6301)

Page 3-9 2nd full paragraph "All information indicates … do not release detectable levels of sulfate when they weather naturally." So any values of sulfate found in the receiving waters would be from the mine. Is this part of the monitoring plan? If sulfates are found in the waters - is the anoxic biotreatment facility to remove these, or the reverse osmosis facility? Has it been established that treatment facilities are to remove these materials? (S4832)(S4833)

Response: The potential for sulfate reduction does exist in the anoxic biotreatment cells. The potential would be minimized by limiting methanol addition to that necessary to achieve nitrification. Initially, effluent monitoring would occur on a daily basis.

15. Production of hydrogen sulfide will precipitate some metals as metal sulfides, and is likely to be an important mechanism for removal of some of the more problematic heavy metals. These materials are reasonably stable as long as oxygen is excluded. However, when the media is allowed to dry or is exposed to oxygen, or methanol additions are discontinued, these metal sulfides will be oxidized and release the metals and sulfuric acid. How will the media be handled to preclude this from happening. Simple burial of the media is not acceptable, since water penetration will ultimately release those metals into ground water. (S6301)

Response: Heavy metals precipitation within the anoxic biotreatment cells would be minimized by removing over 99 percent of the expected heavy metals through clarification and filtration prior to biotreatment and by minimizing sulfate reduction in the anoxic biotreatment cells through process control.

16. Removal of ammonia is not discussed in any detail, and remains a substantial concern with this project. Ammonia will almost certainly be released during blasting which uses ANFO or other explosives. Nitrification (ammonia to nitrate) is very sensitive to temperature of influent water. Since the water temperature at the mine is expected to be very close to 0°C during the coldest winter months, ammonia removal is unlikely to be successful. No data are presented to the contrary, although Attachment 1 on "Water Treatment System for the Proposed Rock Creek Mine" admits on page 2-1 that "the trickling filter may need to be enclosed or insulated to allow for proper functioning during colder seasons." This document does not indicate how an enclosure will increase the temperature of influent water, that has been allowed to pass through an open sedimentation tank and a sand clarifier, which is likely to cool the water.

In fact, the ammonia removal system is not described in any detail, and no data were found which indicated that such a system will work effectively at the low temperatures expected for several months during the year. The potential for release of ammonia to the river is clear, and this represents a significant risk to aquatic organisms in the river both from unionized ammonia and the eutrophication potential. (S6301)

Page 2-66 (General Wastewater Treatment): There is some concern that the biotreatment system may be subject to upsets and to less effective treatment during cold weather. (S146)

The anoxic system, it says on page 2-66, would have cell dimensions based on preliminary design data for 80 percent nitrate-nitrogen removal at 6 degrees C. That's above freezing. It can drop to 20 or 30 below F around here. Maybe I missed it, but I could find no conjecture in the SDEIS as to how well, or if at all, this system would work in sub-zero temperatures. (S625)

The reverse osmosis process is temperature dependent. What are the projected capacities at reduced temperature? (S4634)

Response: Both nitrification and denitrification are temperature dependent. For that reason Sterling has proposed several measures to reduce unnecessary cooling of the mine wastewater. These measures include using a buried double-walled pipe to convey water from the mine to the water treatment facility and minimizing open water surfaces. Based on experience at other mine facilities, Sterling anticipates a minimum water temperature of 6 degrees C. It should be noted that during periods of less effective treatment (for example, cold or process upsets); flow to the treatment facility would be reduced significantly in a very short time by diverting mine inflow into in-mine water storage.

17. I see nothing in the proposed technologies that will insure that metals don't contaminate our watershed. The metals in solution in the water will poison the bacteria in the biologic filter and the metals in solution will pass right through this filter. Asarco then proposes that if the biologic filter doesn't purify the water adequately, then they may have to use a ionic exchange mechanism. Ion exchange moves selected materials through a semi-permeable membrane under controlled pressure and electrostatic gradients into another solution. It does not move the material into a solid storable form, and therefore it is more of a shell game than a filter mechanism. (S5136)

Response: Sterling estimates that over 99 percent of the heavy metals in the mine wastewater will be removed by clarification and filtration prior to inflow into the anoxic biotreatment cells due to the binding of metals to sediment. Heavy metals should not have an adverse impact on the ability of the anoxic biotreatment to remove nitrate. Reverse osmosis, not ion exchange, uses a semi-permeable membrane to remove dissolved solids. Ion exchange uses an engineered resin to capture charged ions. Both ion exchange and reverse osmosis produce a concentrated waste stream which must be disposed of in an acceptable manner.

18. What happens to the spent membranes that are loaded with heavy metals (Cr, Pb), nitrates, etc.? These materials may or may not be classified as dangerous waste depending on the actual constituents. Are there procedures, facilities and transportation in place to handle normal operations and off normal events such as a spill or storage tank breach? (S4634)

Response: Based on the use of reverse osmosis at other mine wastewater treatment facility, the spent membranes would not be classified as a hazardous waste. The mine permit application includes a Spill Prevention and Cleanup Plan that describes procedures for dealing with "off-normal" events such as a spill or storage tank breach.

19. Reverse osmosis membranes are stated to be replaced every 3 to 5 years. This seems optimistic considering the volume of waste water being treated and the decline in membrane efficiency as it is used. (S4634)

Response: After the anoxic biotreatment facility is brought on-line, it is anticipated that reverse osmosis would only be used for effluent polishing. However, even if reverse osmosis was used exclusively for nitrate removal, a three- to four-year membrane maintenance cycle would be reasonable.

20. As for reverse osmosis, if it were the only treatment system at a discharge rate of 2,300 gpm over a thirty year mine life, I calculate you would produce 5,721,375 gallons of brine waste (and I didn't figure in leap years). Before approving that, you had better know where it's going to go and how it's going to get there, rather than just saying it can be disposed of in an approved landfill such as.... (S625)

Please have detailed understandings of how much nutrients and waste brine water will be produced, and their ultimate fates. (S5159)

Page 2-70, Reverse Osmosis Brine: Contingencies for reverse osmosis (RO) brine waste disposal should be further described. It is stated that RO waste brine generation would amount to approximately 10 percent of the system

inflow, and that brine waste would be reduced (with a crystallizer/evaporator) to one 55 gallon drum of waste per day for every 250 gpm of water treated. (S146)

RO Brine Denver Mineral Engineers, Inc. (DME) designs and operates RO systems for mine wastewater. In 1992 DME initiated a program offering RO systems for treatment of mine wastewater in partnership with Arrowhead Industrial Waters, Inc., a worldwide leader in RO technology and applications. Based on the knowledge and experience of those companies, reverse osmosis, although a complex and expensive wastewater treatment process, if properly designed and operated, can be used effectively to remove contaminants from the mine wastewater at the Rock Creek project. However, it is also the experience from the program run by those companies, that based upon the examination of brines actually produced from similar wastewater streams, some characteristics of the brine, some metals may be in soluble form, and the resulting waste product may not meet TCLP criteria. Meaningful evaluation and design information is obtainable by operating a pilot-scale RO system on similar wastewater (possibly from the Troy mine), and analyzing the resulting brine's characteristics.

Reverse Osmosis (RO) creates a concentrated waste stream brine, consisting of rejected nitrate, nitrite, ammonia and metals containing approximately 90% of the original contaminants in the wastewater. Because the reject water or waste stream cannot be easily disposed of at the project site, the reverse osmosis system would operate at a high recovery rate to minimize the waste volume [SDEIS p. 2-69-70]. The high recovery rate will produce a more highly concentrated brine. According to the SDEIS, the brine or crystallized solid would not be ignitable, corrosive, or reactive and it would be non-toxic based on EPA's Toxicity Characteristic Leaching Procedure (TCLP) criteria [SDEIS p. 2-70], based on a theoretical evaluation. The SDEIS should clearly state that actual brine has not been produced and evaluated from pilot plant testing or other analysis methods producing a real brine product.(S188)

Page 2-70 - Waste brine would be non-toxic and could be used by fertilizer companies? This is a problem. Fertilizer companies have been caught using toxic wastes, but only after farmers' lands have been decimated and rendered useless, and the EPA has been a partner to the process with their flimsy, meaningless regulations. This will have to be followed closely. (S5093)

What will happen to the wastes that are generated and concentrated by these systems and how will they be disposed of? Where are the impacts of this disposal disclosed and analyzed? (S6312)

Consider further treatment of the proposed project's waste waters, and safe disposal of the waste brine. (S5159)

Another issue needing more detailed discussion in the SDEIS is the final disposal of the waste brine generate during reverse osmosis treatment. This waste product generated during RO treatment will contain elevated levels of nitrate, nitrite, ammonia, metals and other ions. Additionally, page 2-69 states "because the reject water or waste stream cannot be easily disposed of at the project site, the reverse osmosis system would operate at a high recovery rate to minimize the waste volume."

However, final disposal of these waste brines has not been determined, or presented in the SDEIS. Page 2-70 states that "the waste brine is generated, approximately 10 percent of the system inflow when reverse osmosis treatment is required, would either be stored and gradually blended back into the biotreatment treatment system, or crystallized/evaporated" and that "the waste brine could be used by fertilizer companies in western Montana, Idaho, eastern Washington, and Canada or disposed as a regulated waste in an approved landfill such as those in Missoula, Kalispell, and Spokane."

The issue of final disposal must be resolved, especially considering these wastes could be hazardous wastes under 40 CFR 261.21-261.25. Page 2-70 notes that "only minimal quantities of brine would be generated if biotreatment becomes the primary treatment system." However, if biotreatment is not the primary system, waste brine volumes could be extravagant. The Agencies must decide where and how these wastes will be disposed, and present that decision in the EIS process. (S6318)

What about the 10% waste material produces as a result of the reverse osmosis process? (S4832) (S4833)

Some clarity is needed on how the waste brine that would be produced would be disposed of. (S6740)

What will happen to Ros contaminated, concentrated brine? (S3392)

How will your Reverse Osmosis system dispose of the concentrate that is ten times the concentration then the incoming feed? The RO System will experience difficulties leading up to failure, or to expensive to operate. (S3655)

The reverse osmosis system is to be sized to treat 650 gpm. This will require a large system as the process is generally low volume. The process is not complete and generates a secondary waste stream with the reject water. Assuming a 90% efficiency, the process will generate 34 million gallons of waste water per year. What will become of this effluent? Will it be evaporated? How? A solar evaporation pond would consume an extensive area. A fueled evaporator would be an additional operating expense. (S4634)

Response: First it should be noted that the treated water discharge rate would vary over the life of the project. The predicted maximum discharge rate of 2,043 gpm would not be realized until project year 30. The predicted discharge rate at year 1 is approximately 550 gpm, at year 10 - 937 gpm, at year 15 - 1,165 gpm, and at year 20 - 1,342 gpm.

Secondly, it is difficult to predict the quantity of brine waste that would be generated during the mine water treatment process for several reasons as follows:

1. It is anticipated that reverse osmosis would only be used for nitrate removal during project start up and during periods of lower than required biological nitrate removal.

2. If reverse osmosis were used for effluent polishing purposes, it would be possible to store the brine for short periods and then recycle the brine back through the biotreatment treatment process. This could either completely eliminate the need to dispose of waste brine or reduce the quantity of brine requiring disposal. Mine wastewater would be treated to meet the requirements of the MPDES permit even when waste brine was routed through the biotreatment system.

Off-site disposal of waste brine generated during operation of the reverse osmosis facility could be accomplished through a variety of methods. Depending upon the composition of the brine, the brine could be a suitable source of fertilizer nitrate. If nonhazardous, the brine could be concentrated in a crystallizer/evaporator and transported off-site for disposal as a non-hazardous regulated waste.

The brine would not be classified as a hazardous waste as defined in 40 CFR 261.21-261.25. If no other method of reuse or disposal could be developed, the brine would be disposed of as a regulated waste in a solid waste landfill that is willing to accept it. Regardless of waste disposal options available to the applicant, all waste generated at the Rock Creek Mine would be disposed in compliance with the Resource Conservation and Recovery Act (RCRA). The closest permitted landfills at this time are in Missoula, Montana or Spokane, Washington.

21. Assuming the reverse osmosis units provide treatment during a bioreactor upset when the maximum mine wastewater flow of 2,300 gpm occurred, this would appear to generate 331,200 gallons of brine waste per day (2,300 gpm x 1440 min/day x 0.10 = 331,200 gallons). If this waste were then concentrated using the crystallizer-

evaporator to one 55 gallon drum for every 250 gallons of brine water it would result in over thirteen hundred 55 gallon drums of concentrated brine waste produced per day. If our understanding is correct, this is a large amount of brine waste production per day that could present a significant waste disposal problem. (S146)

Response: One 55 gallon drum of concentrated brine would be produced for every 250 gpm (360,000 gallons per day) of mine wastewater treated. If all mine wastewater required treatment by reverse osmosis, the total quantity of waste brine would be less than ten-55 gallon drums per day at peak discharge near the end of mine life.

22. Would it make sense to use the crystallizer-evaporator units to further concentrate the brine waste into a solid crystalline product to reduce waste brine volume? Also, will fertilizer companies accept nutrient rich brine waste that is contaminated with heavy metals? Have fertilizer company limitations for accepting nutrient rich brines with metal contamination been evaluated? (S146)

Response: The extent that the waste brine would be contaminated with heavy metals can not be predicted with certainty. However, it is anticipated that over 99 percent of the heavy metals present in the mine wastewater would be removed by clarification and filtration prior to treatment with reverse osmosis, if such treatment is even found to be necessary.

23. Page 2-69 (Water Treatment): It is stated that the semi-passive biotreatment cells would "not generate sludge or reject material requiring disposal." The SDEIS states that relatively small amounts of biomass would be generated in the treatment cells and this biomass would be discharged to an aeration pond. (S146)

What are "relatively small amounts of biomass?" (S3462)

Response: Small quantities of biomass may slough off in the biotreatment cells and be carried into the aeration polishing pond. The quantity of biomass wasted from the anoxic biotreatment cells is estimated at 10 mg/L. This material would be removed from the wastewater through a combination of aerobic-anaerobic digestion and sedimentation prior to discharge.

24. We believe it is possible over the 26-30 year operating life of the mine, and the years of continued operation of the wastewater treatment system after mine closure, that heavy metals, may build up in the sludge deposits at the bottom of the aeration pond. We recommend that monitoring of the metal content of the sludge in the aeration pond be carried out at mine closure, and possibly periodically before mine closure. Contingency plans for potential disposal of sludges containing elevated levels of heavy metals should be developed. (S146)

Response: Small quantities of heavy metals may be present in the aeration pond sludge. Sampling of this sludge would be required to determine the most appropriate method of site reclamation after the mine shut down and mine wastewater treatment is no longer required. If the sludge were such that a potential metals problem would happen, then the sludge would be removed from the pond, dried, and enclosed in a geomembrane lined cell within the paste facility and buried beneath 6 feet of compacted tailings mounded over the material to prevent excess water from potentially moving through the cell.

25. Page 2-29 (Water Use and Management): We want to reiterate as noted in our earlier DEIS comments (from December 1995) that the proposed Alternative II passive biotreatment-ion exchange combination of processes is questionably suitable, and potentially an environmental risk, for effective treatment of nitrogen and all of the metals that could conceivably be present in mine wastewaters (e.g., arsenic, antimony, barium, cadmium, chromium, copper, lead, manganese, mercury, selenium, silver, and zinc). (S146)

Alternative V appears to be a more reasonable choice considering the smaller amount of waste brine, the proven effectiveness, and simplicity of treatment compared to the Alternative II version, which produces more brine, is not proven technologically, is more difficult to administer and monitor, and is experimental. In both scenarios, however,

waste water should be required to undergo further treatment to fulfill stricter water quality requirements in order to reduce the 30 year cumulative effect of discharge in to the Clark Fork River. It is Montana's responsibility to ensure polluted waters don't reach Idaho and Washington State. (S5159)

Response: Questions as to the effectiveness and reliability of the originally proposed mine wastewater treatment system in the draft EIS were raised by many commenters. As a result, the water treatment system included in Alternative V is a more proven commonly utilized system than the water treatment system included in Alternatives II-IV and would allow the mine discharge to meet MPDES limits and result in unmeasurable changes in water quality at the Montana-Idaho border. The effluent limits in the discharge permit are developed to protect all designated and existing beneficial uses. The revised water treatment system in Alternative V is expected to meet or exceed these effluent limits and thereby provide an addition level of protection for water quality. The Alternative V wastewater treatment system was developed in response to concerns raised in the draft on the original treatment proposal.

26. The DSEIS does not adequately account for the management and disposal of either the anoxic biotreatment cell waste or the brine produced by the reverse osmosis process. Given that these highly concentrated waste byproducts will be produced in large volumes continuously, and handled, stored, loaded and transported within a few hundred yards of the Clark Fork River, great care will be needed to eliminate the chances of a large, accidental spill into the river or lake. In addition, these wastes will ultimately have to be trucked or shipped via rail out of the area. The route will take the material either along the river or the shore of Lake Pend Oreille for many miles, where the chances of a large, direct spill cannot be dismissed. (S4832)(S4833)

Response: See responses to previous comments regarding on-site brine handling. A spill from train derailment would be handled according to Montana Rail Link policy and state regulations. A vehicular accident would be handled according to state, federal, and/or local regulations or guidelines for the location of the accident. Analysis of these types of spills is beyond the scope of this EIS.

27. Mine evaluation adit water treatment is described as pressure filtration, oil skimmer, and reverse osmosis with a pilot anoxic biotreatment system [SDEIS p. S-8]. What is the design and layout for the proposed process at the evaluation adit site? On how many acres? What will be the provision for the equalization pond needed to make the treatment process effective (provide consistent feed characteristics)? The order of the text suggests that pressure filtration will be followed by an oil skimmer. However, typical water treatment plant designs for similar applications typically utilize oil skimming (in the form of Dissolved Air Flotation - DAF) prior to pressure filtration. This is done to ensure that filtration media is not adversely affected by oil or grease. (S188)

Response: Oil skimming would precede pressure filtration during treatment of mine evaluation adit water. Filtered water would be treated at a reverse osmosis facility capable of treating 650 gpm can be housed in a building approximately 66 feet long, 28 feet wide, and 12 feet wide. Total area required for the evaluation water treatment facility is estimated at less than ½ acre and would be located at the support facilities site.

28. Will bonding be adequate to ensure that both systems are available and operational for the life of the mine including the post-closure period? (S146)

Treatment in Perpetuity. Water treatment is not proper reclamation, the goal of which is to eliminate, not treat in perpetuity, long-term impacts. The prospect of treatment in perpetuity, as suggested by the SDEIS, should be rejected by the agencies, as no means of ensuring the feasibility of a perpetual treatment scenario is possible. Alternatives should be developed and selected that preclude perpetual treatment. In the simplest terms, perpetual water treatment is unacceptable, as it is a means of facilitating avoidance of present responsibility for environmental decisions. As a result, it delegates the responsibility to provide for the operation and maintenance of such so-called mitigation to future generations. (S188)

The reverse osmosis is a relatively expensive treatment based on processing capacity. Please describe the capital reserves planned to keep this process in operation. (S4634)

To ensure better safety you could present a long-term operation and maintenance plan that covers water treatment scenarios and costs for when active mining stops. What is the long-term perpetual water treatment system? (S4797)(S4801)(S6745)(S6740)

And what is the long term operation and maintenance plan for this water treatment system? The mine will continue to discharge over 2,000 gallons a minute once active mining stops, and I assume that's into perpetuity. So what's the long term perpetual treatment system? (S6740)

Require that the company present a long term operation and maintenance plan covering water treatment scenarios and costs after conclusion of active mining. (S6745)(S3392)

Response: As required by State law, Sterling must post a reclamation bond. The amount of this bond would include sufficient funds to operate and maintain the water treatment facility as long as necessary to comply with the MPDES permit after active mine operation ceases. See Chapter 1, Agency Roles and Responsibilities for more discussion on bonding.

Post closure water treatment would be continued until the quality of the mine drainage without treatment meets the limitation as outlined in MPDES discharge permit or the mine was sealed. Final adit closure plans would determine whether or not the mine was plugged and the ultimate fate of the mine water.

29. Page 2-66 under "General Waste Water treatment" anoxic means no oxygen, not low oxygen. (S4832)(S4833)

Response: "Anaerobic" means no oxygen, "aerobic" mean with oxygen, and "anoxic" means low oxygen."

30. Page 2-69: par 1: How will phosphorus be monitored? System requires its addition; what will prevent excess P from adding to Clark Fork load? (S3462)

Phosphorous. According to the SDEIS, minor increases in phosphorous due to changes in wastewater treatment systems (ABC biological treatment) will occur [SDEIS p. S-25]. Additional phosphorous may be needed for microbial growth in the anoxic biotreatment cell (ABC) system [SDEIS p. 2-69]. Receiving waters are phosphorous limited, and the potential for a minute increase in phosphorous and nitrates from the biotreatment process could increase algal mass in the Clark Fork River by an undetermined amount [SDEIS p. 4-56]. An additional stage of treatment should be performed to remove phosphorous. Phosphorous can be removed from wastewater both biologically and chemically. Phosphorous treatment commonly follows biological nitrogen treatment where residual phosphorous might be problematic, and is commonly performed in industrial wastewater treatment practice (references provided on request). (S188)

Response: Phosphorous addition will be limited to that necessary to optimize nitrate removal in the anoxic biotreatment cells. Phosphorous in the treated water discharge will be kept below an average monthly limit of 0.84 mg/L allowed by the MPDES discharge permit. Monitoring of effluent and instream sites for phosphorus has been added

WTR-306 MPDES Permit and Process

1. Page 13 "Table I.5." Concentration of pollutants shall not exceed the following limits established in 40 CFR 440.104. Many parameters in Table I.4 (reasonable potential to exceed standards) exceed these values. Conflict of standard? 401 response needed. (S4832)(S4833)

Response: The effluent limits in the permit are based on the more restrictive of water quality standards or the technology based limits in 40 CFR 440.104. Therefore, if the discharge complies with effluent limits it would be in compliance with these federal requirements. Section 401 of the federal Clean Water Act does not apply to state actions, such as an MPDES discharge permit.

2. Currently, the Montana section of the Clark Fork which will be impacted by mine waste is considered "unimpaired." It is my understanding the level of waste being allowed under the Asarco permit is precisely because the river is unimpaired making it capable of handling this volume of disposal. It would be my conclusion then, that if permitted, there is no more room for the impact for many other kind of waste on the river. I am personally aware that, at this time, well before Asarco makes its impact, our County Sanitarian is finding conditions which do not make her comfortable permitting new septic systems in localities down stream from the Asarco loading point. That says to me Sanders County is already very concerned about impacting even an unimpaired river. It would also stand to reason that, should the mine go in and hire 350 employees, all of these would not be current residents. And, it is unlikely unhired residents are going to move away to make room on currently developed properties for the new residents. I suggest, with so little property available even to the present population, the new miner families will have to be developing new residential sites and an enlarged population will surely have a septic impact on the river which will push it beyond what the Clean Water Act allows when added to Asarco's waste. My problem to you then is, what is your plan for community waste disposal along the 8 miles of river below the mine? If you are assuming the solution is that these small communities put in waste water systems, how do you propose these systems will be paid for? (S3476)

How will the effects of all activities, mining or otherwise, on Rock Creek be mitigated to ensure current water quality standards are at least maintained? (S6721)

We would like to see the permit limits for metals and nutrients reduced so that the mines discharge does not degrade water quality at the confluence of Rock Creek and the Clark Fork River, an important migratory corridor. The current permit allows Asarco to violate the standards adopted to protect aquatic life in this area, and we think that's wrong, and illegal. (S3465)

Response: Montana's surface water standards are a combination of drinking water, aquatic life, and fish ingestion numeric standards, as well as prohibitions discussed in ARM §17.30.633. The Agencies will base effluent limits and other conditions of the MPDES permit for the proposed Rock Creek Mine project on protection of beneficial uses and promulgated water quality standards including nondegradation standards to protect those uses. State of Montana DEQ residential development requirements for septic systems would apply to newly constructed residences for new miner families.

3. Page 4-185 under "Hydrology" "Proposed discharges from the ... biotreatment cell ... would alter water quality in the Clark Fork River." It's not supposed to. MDEQ comment needed. "Some seepage ... would continue in perpetuity." Not supposed to. See Page 4-32 ("Idaho Standards"). (S4832)(S4833)

Response: All discharges must meet the requirements outlined in the MPDES permit. The permit allows some loading of constituents to the Clark Fork River. The increase in concentration of constituents in receiving waters would not be measurable and would not affect existing uses.

4. How will the new discharge permit application criteria of 144 c.f.s. adequately dilute the pollutants. The old discharge permit application was based on 3100 c.f.s. This deserves more attention! The data shows that nitrogen, phosphorus and copper will all exceed Montana's trigger values. How can this be permitable if it exceeds the detection limits. (S4719)

Response: Receiving water flows are explained in Section I.A in the Fact Sheet/Statement of Basis (FS/SOB). The original draft permit used a value of 3,100 cfs based on the period 1962 to 1979. The USGS has since updated the statistics for this site and measured flow during the shutdown of the Noxon Rapids Facility resulting in a revised 7-day, 10-year low flow values of (1) 3,610 cfs, based on the period 1962 to 1994. The low flow estimate of 144 cfs has been revised to 365 cfs based on measured flow during shut down. Therefore, newer numbers are used in the revised draft permit. The trigger levels for nitrogen and phosphorus would not be exceeded, see Table I.3 in the FS/SOB. The nondegradation criteria are applied to changes in receiving water concentration outside of the mixing zone [ARM 17.30.715(1)(c)]. There is no requirement in Montana law or regulations which prohibits changes above or below detection limits since discharge limits are based on water quality standards rather than the technological limits of analytical equipment.

In addition to nondegradation based limits, the revised draft permit also analyzed impacts to aquatic life within the mixing zone. This analysis was done by assessing conditions the would occur during critical flow periods in the river. These critical conditions would occur when the flow through Noxon Rapids dam is reduced. The measured flow during this period is approximately 365 cfs. Table I.A.4.1 in the Statement of Basis for the MPDES permit shows the resulting concentration of pollutants in the river after mixing. Water quality based effluent limits were found to be necessary for nitrogen, arsenic, copper, lead, manganese, and mercury.

5. Cadmium SDEIS .994/lb/day, MPDES 1.326 lb/day. Copper ration is different in the SDEIS than the MPDES. Manganese SDEIS 69 lb/day MPDES 105 lb/day. Mercury SDEIS .0014 lb/day vs .0022 lb/day. Lead SDEIS .994, MPDES 1.326. Zinc has a value listed as N/A in the SDEIS, but has a listing value similar to the listed value for silver, 20.7 lb/day in the MPDES. Why? (S614)

Response: The analysis in the supplemental draft EIS is based on the expected concentration of the pollutant in the discharge and the MPDES permit specifies the maximum allowable amount of pollutant. The discharge must meet the lowest applicable standard outside of the mixing zone. A water quality based limit has been included in the final permit (see Appendix D). Additional tables are included in Chapter 4 of the final EIS that incorporate the impacts of MPDES average monthly limits.

6. Pages 6 to 10 - Effluent Limitations: concern: Effluent limitations for Outfalls 001, 002, 003, 004 are missing silver as a parameter. Outfall 004 is also missing aluminum. These discharge points should also have reagent or reagent breakdown products listed as a parameter. (S5093)

Silver is not included in the MPDES, but is quantified at 20.7 lb/day average monthly limit in the SDEIS. (S614)

Appendix M, pg. 6 The established parameter for aluminum is dissolved, this does not appear to be a typo. Does this mean that there is actually more aluminum going into the Clark Fork as total recoverable? (S614)

Response: Based on chemical analysis of the Troy Mine data, silver is not expected to be present in the discharge in significant concentrations and there is no reasonable potential for silver to exceed nondegradation criteria. Silver concentrations will be monitored at all outfall locations and if the baseline assumptions are incorrect a limit will be developed and included in the permit.

The effluent limit for aluminum has been deleted since aluminum would not be expected to cause a change in water quality.

7. Why are there no data for selenium from the Troy Mine, or the discharges from the Proposed Rock Creek Mine? This substance is one of the most toxic constituents to fish and birds and represents a serious problem in non-acid generating mine waste in Nevada (see NDEP data on the Independence Mining Company). Lack of data on selenium is a major problem with the water quality data presented. Selenium often follows sulfur, and although the rock may not be acid generating, selenium releases may still be a substantial problem. Selenium, antimony, nickel and thallium need to be included in the list of metals to be routinely monitored. (S6301)

Also, selenium, which is often found in mine tailings and process water should have an effluent limit or at least be monitored for in the treated water discharge at outfall 001. (S6686)(S6337)

Permit Part I. C. Specific-Effluent Limitations. & D. Self-Monitoring Requirements. Set an appropriate effluent limit and monitoring frequency for selenium for the treated discharge at outfall 001. (S6686)

Response: A limit for selenium has been added to the proposed limits for Outfalls 001 and 003 (see Tables I.C.2, I.C.3, and III.A.2.1 respectively in the Statement of Basis [S.O.B]), and a monitoring requirement for selenium has been added to Outfall 002 for ground water monitoring (see Table II.B.3.1 in the S.O.B.).

8. Page 4-39 – The Mn values in this table don't match the statement of basis. Title should indicate ground water beneath rather than below the impoundment. (S5)

Response: The title of Table 4-20 has been revised as suggested. Statistics for ambient ground water quality for wells in the sand and gravel unit are presented in Table 4-20, and are based on data from monitoring wells MW-84-7, MW-85-17, MW-85-18, and MW-85-19. Statistics presented in the Statement of Basis did not include data from monitoring well MW-84-7. Both data summaries, while not identical, are useful for identifying the general quality of ground water near the proposed tailings facility.

9. Ambient manganese concentrations already exceed Montana water quality standards. The standard for manganese is also exceeded under all action Alternatives. The SDEIS fails to come up with an alternative that complies with Montana water quality standards. (S22)

Response: Baseline manganese values in both the lascustrine and basal gravel units in the vicinity of the paste disposal area, and in Miller Gulch, naturally exceed the standard (0.05 mg/L). Manganese concentrations in the vicinity of the paste facility range from 0.005 to 3.2 mg/L depending on several site specific factors. The concentration of manganese in these units to the south and west of the paste storage area are significantly lower. This change is attributed to dilution, and to a lesser extent attenuation. Based on analysis of Troy tailing water, the average concentration of manganese is estimated to be 0.75 mg/L. Synthetic Precipitation Leaching Procedure (SPLP) tests of the paste material, manganese concentrations are predicted to be significantly lower (0.011 mg/L). Since manganese concentrations very widely in the vicinity of the paste facility, no increase (defined below) above naturally occurring levels will be allowed in compliance wells in which it has been determined through baseline sampling that manganese exceeds 0.05 mg/L. If manganese is below this level, then the concentration would be maintained at or below 0.05 mg/L.

10. Page 11 Table I.3. Note that in the Chronic section of table, total inorg N, Al, and Mn require a WQBEL, while in Acute section, Hg requires a WQBEL. Table is potential for discharge to exceed water quality standards. Section 401 response. (S4832)(S4833)

Response: Effluent limits are developed for parameters which have a reasonable potential to exceed water quality standards and included in the permit so that they do not exceed standards. Section 401 of the federal Clean Water Act does not apply to state actions, such as an MPDES discharge permit.

11. Page 6 Table I.1. If these values are correct then the Clark Fork River at Rock Creek is already in exceedance of water quality standards for Total N, Total P, Al, Cu, Pb, Fe, Hg, Zn. (S4832)(S4833)

Response: The mean values shown in Table I.1 are less than the applicable standard for all parameters shown.

12. Klohn-Crippen Consultants were contracted to carry out technical assessment of the paste tailings disposal alternative and acid rock drainage aspects of the Rock Creek Project. It is stated on page 19 of their report, dated February 17, 1998, that ABA test results indicate the following parameters should be included in site water chemistry monitoring and modeling: arsenic, antimony, barium, chromium, copper, lead, and selenium. The parameters antimony, barium, chromium, and selenium are not included in the list of parameters to be monitored at Outfall 002. We recommend that these parameters be included in the monitoring requirement for Outfall 002 in order to obtain data for metal leaching potential. (S146)

Response: Based on the Agency's analysis, arsenic, copper, lead, and selenium have been added to the list of analytes requiring monitoring during operation of the proposed mine.

13. In Table IV.1, the maximum baseline concentrations given for ammonia and nitrate+nitrate are extraordinary for surface waters and are not credible for the East Fork of Rock Creek. Moreover, the biological data for Rock Creek do not reflect such extreme nitrogen values. Sample contamination or computational error is probable and these data should be purged from the data base. They should not be used for setting maximum daily effluent limits for outfall 004. This is further evidence for the need to review ASARCO's QA/QC procedures and for split sampling with DEQ (see previous comments). (S5087)

Response: The department agrees that these values are a result of sample contamination and/or recording errors and they have been removed from the Fact Sheet//Statement of Basis. These values were not used to calculate effluent limits.

14. Page 4-46 Table 4-17 This is probably a best case scenario for resultant discharge to the Clark Fork River at a low flow of 140cfs. This does not include upsets and makes no mention of waters stored within the mine that will probably have higher concentrations of mineralization and nitrate residues from blasting. The TIN numbers do not jive with the MPDES permit in appendix M and neither do the silver and zinc. (S614)

Response: Mass loading analyses for surface water discharges and impacts to the Clark Fork River at a variety of flows were developed based on expected concentrations of constituents in the treated waste water stream. Regardless of where untreated water comes, it must meet the effluent limits set forth in the MPDES permit. Upsets, such as accidental spills and ruptures, as well as the potential impacts these upsets might have, are disclosed in the final EIS.

15. Page 7 Table I.2. Calculated Max Daily Limit cannot be Average Daily x 4.8. See Kjeldahl N (there 0.1 x 4.8 _39??) If we assume statistics are correct then effluent N @ 15.2 mg/L to 6.0 mg/L is >> nondegradation criteria listed in Table I.1. (S4832)(S4833)

Response: The calculated maximum for Kjeldahal nitrogen was incorrect. The correct value is 0.48 mg/L. The text has been corrected. Nondegradation criteria apply to receiving water after mixing.

16. Page 4-31: TIN concentration in revised draft is 193.4 lb/day, per average monthly limit vs MPDES permit in SDEIS app M pg 6 that lists outfall #001 (discharge to Clark Fork River) as 232.0 lb/day average monthly limit. That's like a twenty percent increase. Why? (S614)

Response: The original draft permit limited nitrate to 193.4 lb/day and ammonia to 193.4 lbs/day, or a total of 386.8 lbs/day of total inorganic nitrogen (TIN). The revised permit limits TIN to 232 lb/day, or a 40 percent decrease.

17. Also on page 6, the water quality based effluent limits for total inorganic nitrogen (outfall 001) will need to be recalculated. Effluent limits for other variables may also need to be recalculated if detection limits for baseline data do not meet reporting requirements or if methods did not otherwise comply with QA/QC procedures. (S5087)

Response: Effluent limits have been reevaluated. Most of the data for the Clark Fork was collected by the department as part of an on-going monitoring program unrelated to the project. Lower detection limits were initiated in 1988 when newer analytical equipment became available to the department. The earlier data was not used to develop permit limits and therefore the effluent limits are acceptable.

The data collected by ASARCO was collected according to a department-approved baseline study plan which contained a QA/QC plan.

18. Statement of Basis Part I.A. Water Quality Based Effluent Limitations. Delete the last sentence of the first paragraph. It references the need to meet Idaho's narrative standard for excess nutrients. That standard is secondary to the provisions of designated Special Resource Waters such as the Clark Fork River and Lake Pend Oreille. This designation protects existing water quality from further degradation and limits discharges to below detectable increases of pollutants over background levels. Increasing ASARCO's discharge limits could only be done if this standard could be met. (S6686)

Response: The text that is referred to in this section is discussing Montana's narrative water quality standards (ARM 17.30.633(1)(d) and nondegradation requirements and therefore, no change is necessary.

19. In its March 11, 1998 staff analysis, IDEQ raised concerns about the draft Montana Pollution Discharge Elimination System (MPDES) permit. These included: No maximum daily limit or average monthly load for phosphorus was calculated in the draft Montana Pollution Discharge Elimination System (MPDES) permit.

There are no parameters established in the MPDES permit limiting phosphorus in spite of the fact that the SDEIS identifies the necessity of adding this product to Asarco's primary water treatment system. (S614)

Summaries of information are contained in two independent investigations of nutrient levels in the Clark Fork River and Lake Pend Oreille. They are a 1989 report by Priscu and a 1993 report by the Environmental Protection Agency. These studies have shown that the Clark Fork River and Lake Pend Oreille have problems or the potential for problems with nutrient loadings of both phosphorus and nitrogen. Also in the draft SEIS on page 4-75 in chapter 4 on environmental consequences under the section on nutrients the statement is made that "Limited impacts from nutrients to aquatic life in the Clark Fork River and Lake Pend Oreille are anticipated." The tentative MDEQ MPDES permit for the ASARCO Rock Creek Project has a specific effluent limitations and monitoring requirements for nitrogen for the treated water discharge at outfall 001. There is no effluent limit for phosphorus for discharge 001. Since phosphorus is critical in the downstream river and lake and since it is possible that phosphorus may be added in the treatment process, provision must be made for a specific effluent limit for phosphorus in the treated water discharge at outfall 001. (S6686)

Page 2-69 para. 1, Phosphorus may also need to be added for microbial growth. It is estimated that app. 1 mg of phosphate (as phosphorus) would have to be added for every 30 mg of nitrate (as nitrogen) removed. Why is there no parameter for phosphorus in the MPDES permit? The MPDES permit for the Troy project had parameters for this constituent and they were not even adding this to any process such as the bio-treatment cell called for in this water treatment system.(S614)

Permit Part I. C. Specific Effluent Limitations. Set an appropriate effluent limit for phosphorus for the treated water discharge at outfall 001. Also, provide a table in the permit which shows the estimated concentrations (mg/l) and loads (lbs/day) of nutrients and metals anticipated at the state line during low and high flow events when mine discharge is at its peak. Contrast these values with detection limits. The detection limits used must be values defensible and statistically proven at a 95% confidence interval. If this is not possible with existing data, describe how and when this will be accomplished and incorporated in the permit. (S6686)

Response: An effluent limit for total phosphorus has been added to the permit and a table (Table I.C.2) has been added to the statement of basis of the MPDES permit. An analysis shows the predicted changes in concentration and loads at the state line. The table is not included in the permit since the purpose of the permit is to contain specific legal requirements that are enforceable through the permit. The purpose of the Statement of Basis/Fact Sheet is to contain information used in developing the permit. Detection limits are based on method detection limit (see Appendix B of 40 CFR 136) and Minimum Levels for specific approved analytical methods.

20. Page 4-66 some of the reagents proposed for use in the milling……" The MPDES permit has no monitoring requirements for the reagents. As some of these are toxic to aquatic life this is an oversight that cannot be excused. Potassium Xanthate has been measured outside of the Troy Project tailings impoundment. (S614)

Appendix M, pg. 6 There are no parameters set for silver, iron or process floculants. Why not? This is particularly egregious in view of the fact that pg. 25 of the Klohn-Crippen report states, "Asarco noted that 2/3 of the copper mineralization in the ore is boronite, which contains iron and therefore may produce acidity upon oxidation." (S614)

Appendix M, pg. 7. There are no parameters for floculants or lead. (S614)

Response: Iron and silver were analyzed in the Fact Sheet/Statement of Basis and are not expected to cause a significant change in water quality. Iron is a common constituent of most geological formations. All outfalls have effluent limits or compliance levels specified in the permit for lead. There are no specific water quality standards for the process chemicals. Whole effluent toxicity testing has been included to make sure these constituents do not violate narrative standards or adversely effect beneficial uses.

21. I would ask for stricter limits on discharges so as not to degrade the water quality of Rock Creek or the Clark Fork River. (S4334)

Response: Please refer to Appendix D for details on the proposed MPDES permit. The proposed effluent limits would not allow degradation of Rock Creek or the Clark Fork River.

22. The rate of nitrate emission into the drainage, whether dilution by mixing occurs or not, is still too high to be acceptable for this river and lake system. (S4280)

I do not see how pumping over 3,000,000 gallons of silt and waste water per day into this lake would not take a tremendous toll over time. (S4359)

Response: All discharges from the proposed projects must meet effluent limitations detailed in the MPDES permit. The MPDES permit sets limits on nutrient loading to the Clark Fork River at a level that is protective of surface water resources and beneficial uses. Sterling would be required to treat all effluent to remove nutrients prior to discharge. Details of the proposed water treatment systems are provided in Chapters 2 and 4.

23. DEQ must require mitigations for ASARCO to attain compliance if original standards are not met, not just require ASARCO to try" and mitigate. In other words, if water quality standards are not met, then ASARCO should not just say they tried to fix the problem, but be required to fix the problem. (S5159)

Response: By State and Federal law, Sterling must meet the requirements of the MPDES discharge permit. Failure to do so can result in significant fines and other penalties as well as a requirement to abate violation (fix the problem).

24. Permits may be terminated or modified or revoked if there is but not limited to (2) misrepresentations or a failure to fully disclose all relevant facts. see 402 b 12 k and 40 c.f.r.s. 122.64. All the facts are not in. A lack of data showing there won't be an impact amounts to a failure to fully disclose all relevant facts. The data shows it won't meet Montana's standards; there is no way it will meet Idaho's! (S4719)

Response: The agencies believe that the relevant information has been presented or if the data is unavailable, stipulations have been added to gather the appropriate information as necessary. The MPDES discharge permit is based on compliance with Montana water quality standards and would not result in a measurable change in concentration at the Idaho state line. Idaho Division of Environmental Quality has indicated that they will not accept any measurable change at the border.

25. On page 25, letter i, of the S.O.B., what is meant by "accedences of trigger levels"? Do you mean excursions from trigger levels? (S5087)

Response: Yes, "accendence" has been changed to excursion; and trigger levels have been changed to action levels which are specified in this section of the permit.

26. Page 4-47 The trigger values, however apply to a non-degradation……" Therefore, trigger value exceedances occurring during these night-time periods are not relevant to the non-degradation determination." Please explain these last two sentences? Says who, and why not? Why do the trigger values apply at higher flows but not at lower flows where there is less leeway for dilution? (S614)

Response: MPDES permit limits are based on trigger values or 15 percent of the water quality standards for toxic parameters, since the standards are based on short-term exposure. Permit limits for nutrients are based on a 30-day flow value. The authority for this is based on Montana WQS [ARM 17.30.635(4)].

27. Page 9 of the S.O.B. indicates that 30Q10 mean daily flow was used for nondegradation analysis for nutrients, while the 7Q10 flow (3,610 cfs) is used for compliance with chronic aquatic life, human health standards, and nondegradation review. These flow values are used to help assure human health and aquatic life standards are met during naturally occurring low flow conditions.

However, flow conditions in the Clark Fork at ASARCO's proposed discharge point are also influenced by operation of the Noxon Rapids Dam. Page 7 of the S.O.B. recognizes this, stating that "flow is regulated from zero to 51,000 cfs during a 24-hour period" and that "flow is reduced to zero daily for approximately 6 hours each day and longer on weekends to allow the reservoir to fill."

We believe the low flow conditions that routinely occur in the Clark Fork River as a result of dam operations(144 cfs, see Table 4-17 of the SEIS) should be used for the nondegradation determination. These low flow conditions, and their resultant reduction in the rivers dilution capacity for mine discharges, occur daily in the Clark Fork. In order to assure protection of aquatic life, all water quality determinations for the project—including standards compliance, toxicity determinations, and nondegradation review—need to be based on this low flow condition.

We disagree with the statement on page 4-47 of the SDEIS, which says "trigger values apply to nondegradation for flows equal to or greater than the 7Q10, rather than short duration flows from the dam that are less than the 7Q10. Therefore, trigger value exceedences occurring during these night time periods are not relevant to the nondegradation determination."

The fact is, these night time low flows occur far more frequently, and regularly than the 7Q10 flows. Moreover, when these daily low flows for the Clark Fork are considered, the proposed mine discharges could exceed the trigger values for ammonia, phosphorous, and copper (see p. 4-47 SDEIS). Consequently, ASARCO's proposed discharge to the Clark Fork River would have to be considered "significant," and must be required to go through the nondegradation process. (S6318)

Response: Water quality based effluent limits which are based on receiving water quality and flow are used to address two different conditions. The first condition is nondegradation which protects the existing high quality nature of the receiving water. Nondegradation criteria are set at a level below the lowest applicable standard. In this case, the lowest applicable standard is the chronic aquatic life standard which is based on 96-hour (4-day) average conditions. Since adequate flow is available on a daily basis, the 7-day, 10-year low flow (3,610 cfs) is considered appropriate for developing nondegradation based limits. The nondegradation regulation does not apply to discharges within the mixing zone.

The second condition or concem which must be addressed in the permit is toxicity to aquatic organisms within the mixing zone. Montana water quality standards allow limited toxicity within the mixing zone [ARM 17.30.507(1)(b)]. Toxicity-based limits are evaluated for shorter periods, typically one hour. These critical conditions will occur when no water is released from Noxon dam. Recent data collected at the gaging station below the dam indicate that 365 cfs of flow is available when the dam is shut down.

Whole Effluent Toxicity (WET) limits were developed in the permit that would limit any acute toxicity to the immediate area of the effluent diffuser.

28. Review of the Draft MPDES permit, and its accompanying Statement of Basis indicates the Department of Environmental Quality has not made on "significance determination" for discharges from the tailings impoundment. Page 19 of the S.O.B. does say that "Montana nondegradation rules allow changes in water quality that are nonsignificant," however, it does not say whether the Department has actually made that determination.

The only discussion presented on the significance determination found on p. 2-89 of the SDEIS, which states that "the analysis (in the DEIS) indicated that the mitigations of pumpback wells which were introduced as part of Alternative III were sufficient to decrease the concentrations of nitrates and metals (after mixing) emanating from the impoundment to justify finding the discharge "nonsignificant."

DEQ still has a legal obligation to make a significance determination on discharges from the tailings impoundment, and to present it during the EIS process. When doing so, DEQ must consider the fact that the pump back wells are not included as part of the tailings impoundment design in Alternative V. Additionally, DEQ must recognize that in spite of the expected reduction in the volume of seepage from the tailings impoundment, the impacts caused by the discharge are still expected to be the same. The mixing zone is still the same size, and the ground water quality compliance limits at the end of the mixing zone are still the same.

Page 4-49 of the SEIS recognizes this fact, stating "although the amount of seepage is greatly reduced under Alternative V, the resultant impacts to ground water remain essentially the same."

The impoundment is expected to discharge about 30 gallons per minute, or 43,200 gallons per day (p. 4-50 SEIS) of water—the equivalent of 216 septic tanks discharging 200 gpd. Additionally, the discharge will be allowed to increase ground water nitrate concentrations at the end of the mixing zone to 7.5mg/L .

In the past, the Department has determined that subdivisions with far fewer than 216 septic tanks does result in a "significant" change in water quality. Certainly the discharge from the tailings impoundment should be considered "significant" as well.

Besides nitrates, the other critical issue associated with the tailings impoundment mixing zone and significance determination concerns arsenic and mercury in seepage from the impoundment. Nondegradation rules (A.R.M. 17.30.715) provide that a discharge can only be considered "nonsignificant" if the discharge does not contain carcinogenic parameters (arsenic) or parameters with a bioconcentration factor greater than 300 (mercury) at concentrations less than or equal to the concentrations of those parameters in the receiving water.

The Draft MPDES permit applies the "no increase" criteria at the downgradient boundary of the mixing zone, not at the point of discharge. DEQ must demonstrate there will be no increase in arsenic or mercury in the ground water at the point of discharge. If they can't do so, the discharge must be considered significant.

We believe that the increases in ground water metals and nitrate concentrations within the mixing zone will cause a significant change in water quality, and that the Department should conduct a nondegradation review to assure the least degrading water quality protection practices are used on the Rock Creek project. (S6318)

Response: The compliance limits for ground water found in Part I of the permit are based on nonsignificance criteria found in the Nondegradation Rules [ARM 17.30.715] and incorporated in the Fact Sheet/Statement of Basis for Outfall 002. Therefore, the finding of nonsignificance was implicit. The Fact Sheet/Statement of Basis has been modified to included a section that specifically addresses nondegradation for each outfall in the MPDES permit. Arsenic and mercury must meet the limits at the point of discharge and not at the end of the mining zone.

29. Page 4-32 - Nondegradation Policy concern: Trigger values for metals for Rock Ck are not presented in this SDEIS (nor in the DEIS). Nor is a discussion of discharges of metals to Rock Ck. It is clear that the agencies are asserting that this project will cause no (significant) degradation to Rock Ck. By omission, they are also asserting that this project will cause not (significant) degradation to Miller Gulch or to the E Fk Bull River. Montana's Nondegradation Policy and the nation's Clean Water Act are being avoided by means of this refusal to look at the reality that metals levels will increase in Rock Ck. (and likely in Miller Gulch and E Fk Bull River also). The purpose for this deception and denial is clear. The Nondegradation Policy would not apply. The Clean Water Act standards would apply and increasing the concentrations of these metals in the streams would be illegal and permits could not be granted. (S5093)

Response: The proposed project would not discharge effluent directly to Rock Creek nor the East Fork Bull River. Temporary increases the concentration of total suspended sediment have been predicted by the R1-WATSED model. Trigger values are displayed in Chapter 4 - Hydrology and Appendix D.

30. For clarity, the first full sentence at the top of page 5 should be revised to read: "Since there are no numeric standards for nutrients, effluent limits are based on the nondegradation criterion, which is calculated as the mean receiving water concentration plus the trigger value. Estimated detection levels (EDLs) are used as trigger values (MDEQ 1995)." As it stands now, this sentence includes "trigger value" in the definition of "trigger value," which is not helpful. This brings up two questions: (1) what is the difference between "estimated detection levels" (="trigger values;" footnote 22 of WQB-7) and "required reporting value" (last column and footnote 19 of WQB-7)?, and (2) why do these two parameters have the same value for nitrate+nitrite but different values for ammonia in WQB-7? (S5087)

Response: Trigger values are published values in Department Circular WQB-7 and are used for determining nonsignificance under the nondegradation rules. Estimated detection value is not a defined term, trigger values are generally based on method detection levels (MDL) using standard

laboratory water, as modified by best profession judgement, whereas, required reporting values are defined on minimum levels which is approximately 10 times the MDL.

31. Under "I. Outfall 001" "Dischargers issued permits must conform to Montana Nondegradation Rules ... and may not cause receiving waters concentrations to exceed the applicable the standards ..." If the "dischargers" (in this case, ASARCO employees), don't comply, can the MDEQ and EPA simply ignore this rule and relax standards? (See Spokesman-Review 2/13/98, [relaxation of Pb levels in CDA basin due to non-attainment of standards]) (S4832)(S4833)

Response: State water quality standards can not be changed without approval of the Board of Environmental Review and then after only after a public hearing and approval from EPA. Montana water quality standards must meet federal criteria for approval. If a permittee exceeds effluent limits then the Montana DEQ initiates enforcement actions based on the significance of the violation. If DEQ fails to take enforcement action, then EPA has authority to enforce violations of the permit.

32. Outfall 002. Outfall 002 is identified as seepage from the tailings paste storage facility into the unconsolidated basal and lacustrine aquifers adjacent to the Clark Fork River. This does not identify that the outfall might also flow into the aquifer adjacent to Rock Creek, with the potential for hydrological connectivity of that aquifer with surface waters in Rock Creek. Based on our field observations, recent geohydrological evaluations conducted in the fall of 1997 strongly indicate the potential for seepage flow to go towards and into Rock Creek, where they might significantly affect flows and water quality. The mixing zone as shown is directly adjacent to Rock Creek. Given the compliance limits for the quality of ground water at the downgradient boundary of the mixing zone, significant contamination of Rock Creek surface water from nitrogen and copper, in excess of aquatic life standards, is likely to occur. (S188)

Response: The paste storage facility would be situated in 3 subbasins: Miller Gulch, Clark Fork and Rock Creek based on surface drainage. The possibility of lateral flow through a preferential flow path given the heterogenous nature of the unconsolidated material is a possibility. This condition has been analyzed and is considered remote. The lower segment of Rock Creek is a losing stream, making the chance of ground water recharge in this section unlikely. A series of ground water monitoring wells would be located in each subbasin and in each hydrostratigraphic unit. The exact number and location of these wells would depend on data collected in the Ground Water Work Plan.

33. Site-Specific Hydrological Information. The MPDES permit is based on calculations that assume certain hydrological conditions at the proposed tailing impoundment site. However, recent hydrological investigations by Summit Envirosolutions strongly indicate that the previous assessments of hydrology for the area are inaccurate, and a considerable amount of additional investigation and evaluation is necessary in order to provide a reasonably accurate assessment of the existing hydrology and any effects tailings seepage might have on that hydrology. In the absence of this critical information it does not appear the MPDES can be properly based. Further examination of the hydrology should be undertaken and the MPDES permit delayed. (S188)

Response: The agencies agree that additional hydrological investigation and baseline data collection is necessary. This work will be conducted as part of the Ground Water Work Plan which is a condition of the permit. The compliance limits established for Outfall 002 in the permit would be based on Montana's ground water standards and nondegradation criteria. These limits are in effect regardless of the underlying hydrogeological conditions. The function of the EIS is to evaluate whether the proposed project can comply with these limits. The agencies analysis indicates that seepage from the storage facility would not exceed these limits. The permit also contains Action Levels which would require additional action from the company if exceeded. Action Levels are not violation of standards or the permit but are intended to serve as an early warnings that one or more of the predictions are incorrect.

Lastly, the Summit Envirosolutions report was reviewed by the agencies. The agency review indicated the report contained technical inadequacies and issues that would need to be resolved prior to being able to draw valid conclusions regarding site hydrology.

34. Page 11 - Monitoring, recording and reporting requirements concern: All of this should be done by an independent, reliable, unbiased consulting firm. Also, detection limits for each parameter should be listed in all tables with monitoring requirements. (S5093)

Response: Monitoring, recording and reporting of results are legally the responsibility of the company. The permit requires that Required Reporting limits as found in Department Circular WQB-7 be achieved for analytical results. The agencies would conduct periodic sampling to verify results received in monitoring reports.

35. Page 15 - Monitoring of compliance wells concern: monitoring of metals should be monthly as it is for nutrients and should be both dissolved and total recoverable methods. Baseline data for total recoverable should be obtained. The assumption that collodial particles in sandy, gravelly soils all behave just like a .45 micron filter is invalid. (S5093)

Response: Montana ground water standards are based on dissolved method of analysis for metals.

36. Page 15 – Monthly monitoring of the ground water wells seems excessive. If the down hole data (SC) indicated a significant change (> 25%) from the previous month then sample collection for lab analysis of SO4 and potassium would be appropriate. (S3058)

Response: The monitoring requirement has been changed to incorporate this comment.

37. Page 14 2nd complete paragraph "If more than 10 percent … test repeated until satisfactory control survival is achieved." How is this to be done? Repeated tests will result in less toxicity? Under "e:" "The purpose of the TRE/TIE …" The cause of toxicity is known, it is derived from the mining activity. Under Ground Water Monitoring suggest quarterly reports not annual reporting. (S4832)(S4833)

Response: The test is repeated with a new sample of effluent and control water until satisfactory control results are achieved. These tests are performed according to standard test procedures; the reader is referred to the EPA test procedure manual cited in the text (EPA-600-/4-90/027).

Ground water monitoring will be conducted monthly for some parameters (indicators) and quarterly for others (metals, nutrients, etc). Ground water movement underneath the paste facility is in the order of 1×10^{-5} cm/sec or approximately 0.1 feet per day, therefore, monthly monitoring is considered adequate.

38. Page 14 – The effluent limits allow 2 TUs in effluent, but the test protocol requires an undiluted sample. It should be made clear that compliance is based on 1:1 dilution of sample. Would it be reasonable to have initial testing on undiluted sample and if there is toxicity then a diluted sample is tested. If the diluted sample also shows toxicity then re-sampling and re-testing would be required. e. – The discussion of TRE/TIE should reflect the clarification described above (that is toxicity means failure of initial and follow –up 1:1 dilution tests. (S3058)

Response: The test is run on a sample of undiluted effluent. The test procedure requires that the toxicity be performed at 100, 75, 50, 25, 125 and 0 percent effluent. The results of this analysis are then used to determine toxicity of the effluent.

39. Page 16, b(ii) – Doesn't using the 95 % prediction interval mean that one in 20 results would be expected to exceed the limit even without seepage from the impoundment? The use of the word "anomalous" seems inconsistent. Perhaps it would be better to indicate that any exceedence would need to be evaluated to determine the cause of the exceedence.

Page 16, b(iii) – Should be Part V. A? (S3058)

Response: Random variation would result in sample results which occasionally exceed the limits of the confidence interval; so would sample contamination. The use of the word "anomalous" was intended to address the latter case. The language in this section has been modified to reflect this comment.

40. Page 18, 3(c) – Should modify to indicate WET testing only in quarters where there is a discharge. (S3058)

Response: The text has been changed to clarify that WET testing is required only if a discharge occurs at any time during that calendar quarter.

41. Page 20, II. D. – Wouldn't it be appropriate to add a start date to the monthly reporting. Until such time as the company began construction activities or submitted plans for Department review in anticipation of beginning construction annual reporting of no discharge should be sufficient. (S3058)

Response: The proposed permit has been modified to address this concern.

42. Page 23 Klohn-Crippen Final Report, Feb 17, 1998 recommends water chemistry monitoring for parameters indicative of oxidation and metal leaching from the tailings facility. How is this recommendation adopted into the MPDES permit; the ultimate vehicle for wastewater permitting? (S614)

Response: The permit contains weekly monitoring requirements for 11 different metals associated with the ore body, as well as daily monitoring for pH.

43. Page 12 – It would be more reasonable to monitor nutrients and metals at the same 4 days per week schedule. What is the purpose of Kjeldahl and total nitrogen? The permit requirement of TIN should be adequate (also applies to 003 and 004). (S3058)

Response: Due to periodic blasting, the nitrogen concentration is expected to be highly variable and hence the more frequent sampling requirement. It is likely that the monitoring frequency would be reduced after additional data were collected on the performance of the biological treatment system. Kjeldahl nitrogen measures the chemically reduced forms of nitrogen. Studies have shown that organic nitrogen can decompose and contribute to algal growth. Since the biological treatment system will operate in an anaerobic condition it is necessary to monitor organic nitrogen.

44. Permit Part I.D. Self-Monitoring Requirements. Add an additional monitoring location to the permit, on the Clark Fork River at the USGS monitoring station below the Cabinet Gorge dam. Parameters monitored should include those described for Outfall 001, including selenium, and excluding influent flow rate, effluent flow rate, and acute whole effluent toxicity. Monitoring frequency should be determined by a water quality monitoring plan designed to detect changes in Clark Fork River water quality. The monitoring plan should be subject to approval by Idaho DEQ. Implementation of the monitoring plan should begin six months after the date this permit is issued, and continued for the life of the mine plus 10 years. When designing the monitoring plan, particular attention should be given to the hydroelectric dams' regulation of water levels and impoundments. Results of this monitoring should be used to demonstrate compliance with Idaho Water Quality Standards. (S6686)

Response: A monitoring site in Idaho below the Cabinet Gorge Dam is neither necessary nor scientifically defensible with respect to the project discharge. The permit contains statistically based and enforceable effluent limits based on Montana water quality standards. Sterling would be

required to monitor the effluent and in-stream just downgradient and upgradient of the outfall. See Appendix D for the parameters to be monitored and monitoring frequency.

45. Page 9 under "Other limitations" (i) Is this historical evidence that suggests that this "2.8 inches in 24-hr period" does not occur frequently or even annually? This storage is probably closer to a 10-yr event, not a 100-year event. (S4832)(S4833)

Response: The 2.8 inch precipitation event is the 10-year, 24-hour storm event. This number is from regional data reported by the National Oceanic and Atmospheric Administration, Atlas 2: Precipitation Frequency Atlas of the Western US, see FS/SOB reference citations.

46. Page 3-5 2nd paragraph Please discuss potential of >2.8 inches in a 24-hours period. This has significant impact on ASARCO's planned discharges whenever > 2.8 inches of precipitation occurs within a 24-hour period. Has this ever occurred? Where is the data to suggest this value is appropriate for the existing 3 million gallon/day discharge already planned? (S4832)(S4833)

Response: See previous comment and response. This storm event pertains more to potential stormwater discharges rather than the mine water discharged to the Clark Fork River after treatment and is the basis for technology-based limits in the MPDES permit for outfalls 003 and 004.

47. There seems to be some confusion between statements made in Volume 1 Chapter 2 and the MPDES permit in Volume 2 Appendix M. Apparently a storm event of 2.8 inches in 24 hours is a 10 year event. A storm event of 6.5 inches in 24 hours is a 100 year event. (S4892)

Response: That is correct but this is not a discrepancy. These values represent two different storm events. The 10-year/24-hour event in the basis for technology-based limits used in the MPDES permit. The 100-year/24-hour event is a design parameter used for structural control features such as ponds and diversions.

48. Page 15 1st paragraph: "Discharge from ... ponds ... may only occur ... 10-year ... event ... according to regulations ...". " This discharge is authorized ...". Note! A 10-yr event. The DEQ and Corps are responsible for allowing a discharge knowing Table I.4 parameters (reasonable potential to exceed) the standards in Table I.5. This is contradictory and may not be legal. (S4832)(S4833)

Response: Discharge of effluents in compliance with the MPDES permit are not illegal.

49. Page 3 1st incomplete paragraph: "The pond underdrain containment pond ... sized to contain 10-yr ... event ..." A 10-yr event would happen very frequently. Untreated discharges should be expected to occur 10% of the time. Section 401 Corps and DEQ response needed. (S4832)(S4833)

Response: A 10-year, 24-hour event can be expected once in 10 years; however, it may occur more frequently during any given 10-year period. A discharge from an event greater than the 10-year/24-hour event must still comply with water quality standards, but not the technology-based limits in the MPDES permit.

50. SOB 2, paragraph 3 – Do we want to be restricted to a 100-yr 24-hr storm for discharge from this pond? (S3058)

Response: The specific discharge limitation for Outfall 003 is contained in Part I.3.b.(ii) of the permit which limits the discharge in Outfall 003 to storm events which exceed the 10-year, 24-hour criteria. Discussion of the 100-year, 24-hour event is part of the facility description and is based on the design parameters presented in the applicant's Water Management Plan.

51. Page 27 4th paragraph: How can effluent limits for Outfall 003 comply with non-degradation and water quality standards in the Clark Fork River, given the fact that untreated discharges will occur at every 10-yr event? The limits have been modified to "Max Daily Limits" and "no limits on load?" Why? "These modifications … limited to storm events … which … occur on an infrequent basis …" A 10-yr event in NW MT is not an infrequent event. I challenge the agencies maintaining the "standards" to view this statement with skepticism. (S4832)(S4833)

Page 28 under "Other Limitations "This outfall can be expected to discharge untreated effluent very frequently. NW MT has frequent 10-yr events. Consider water quality compromise to receiving waters. Section 401, MDEQ, and Corps response needed. (S4832)(S4833)

Response: There is no requirement for treatment for Outfall 003, however, discharge is not permitted unless the effluent complies with the applicable effluent limits. Daily sampling of effluent is required of Outfall 003 because the discharge is expected to be short-term and intermittent, therefore, compliance is assessed on a daily basis. The load from Outfall 003 is part of the load from Outfall 001. A storm event resulting in 2.8 inches of precipitation in a 24-hour period occurs, on average, once in ten years.

52. Volume 1, page 2-64, paragraphs 2 and 3: Several lined storm water ponds would be constructed at lower elevations of tailings paste facility (see fig 2-22) and sized to handle a 100 year/24 hour event. Volume 2, app M, MPDES permit, page 9, other limitations: reference is made to 2.8 inches of precipitation in 24 hours. Volume 2, app M, page 2, middle paragraph: reference to a 100 year/24 hour/6.5 inch event. Discharge from this pond would be to the upper Miller Creek drainage change this sentence to lower Miller Gulch. Volume 2, app M, fact sheet, page 15 top paragraph: reference is made to a 10 year/24 hour storm event. Volume 2, app M, fact sheet, page 4, top of page: change upper Miller Creek to lower Miller Gulch. Volume 2, app M, fact sheet, page 27 outfall 003, paragraph 1: The majority of this paragraph is not correct. Delete and substitute: The paste facility storm water detention ponds are located in a ephemeral drainage that joins lower Miller Gulch next to Government Mountain Road. Miller Gulch in this area is ephemeral until its confluence with Clark Fork River. Volume 2, app M, fact sheet, page 28, top paragraph: reference is made to 10 year/24 hour/2.8 inch storm event. Bottom of page, other limitations: reference is made to 24 hour/2.8 inch event. (S4892)

Response: The suggested changes referring to Miller Gulch have been incorporated into the text.

53. Volume 1 page 2-63 bottom of page: The lined storm water pond at mill site would be enlarged along with diversions to handle a 100 year/24 hour storm event. Volume 2 app M, MPDES permit, part 1, page 10, other limitations: mention is made of 2.8 inches of precipitation in 24 hours. Volume 2, app M, fact sheet, page 2 bottom of page: no size is mentioned for the storm water retention pond at the mill site. Volume 2, app M, fact sheet, page 3, top of page: reference is made to a mill site under drain containment pond sized to handle a 10 year/24 hour event. Volume 2, app M, fact sheet, page 31 middle paragraph: reference is made to a 10 year/24 hour/2.8 inch event. Same in bottom paragraph. Volume 2, app M, fact sheet, page 33, other limitations: reference is made to 2.8 inches in 24 hours. (S4892)

Response: The mill site stormwater pond would be sized to hold the 10-year, 24-hour event and sized to pass the 100-year, 24-hour event. The limitations conform to the applicable regulations and standard engineering practice.

54. Page 32 1st paragraph: "Discharge … limited to spring runoff." Note exception is any 10-yr precipitation event in which all water quality standards may be exceeded. This should be considered illegal under ARM 17.30.715(1)(b), and applicable water quality standards. (S4832)(S4833)

Page 33 under "Other Limitations:" Assuming this paragraph is complete and accurate, there can be untreated discharges daily or continuously from Outfall 004 as long as it is between April 1 and July 1. The word "or"

indicates this. Is this what is meant? No limits to discharges, no standards must be met? Is this in keeping with the applicable laws? I challenge this. (S4832)(S4833)

Response: The effluent limits are based on water quality standards that may not be exceeded. The discharge is limited to spring runoff when a minimum of 10:1 dilution exists in the receiving water, therefore, the resulting change will be less than the criteria of ARM 17.30.715(1), except arsenic, a carcinogen, which is limited to less than receiving water.

55. Page 10 b (i) – The limitation of April 1 would potentially preclude discharge during winter rain on snow stormwater events which, although infrequent, may be among the highest flow events. Perhaps December 1 through July 1 would be more appropriate. (S3058)

Response: April 1 to July 1 was based on baseline flow measurements indicating that sufficient flow was available in Rock Creek to meet nondegradation criteria. The lowest flows typically occur between December 1 and March 1, therefore, this change will not be made. Sterling may choose to collect addition flow data on the relationship between winter precipitation events and stream flow and modify the permit in the future based on such data.

56. Throughout the MPDES document for this project, one finds the quote "There shall be no discharge from this facility (or outfall) unless the measured precipitation exceeds 2.8 inches, or equivalent amount of snow melt runoff, in a 24-hour period."

Basing a system bypass discharge for this scale, scope, and type of activity on NOAA data for western Montana, rather than site-specific precipitation data, is scientifically indefensible. Given the range of precipitation averages, coupled with difficult to impossible to measure rain-on-snow events, there is a high potential for yearly to several times per year of uncontrolled and untreated discharges from the various project outfalls.

The project is not a highway or subdivision or local gravel pit. To utilize the 10-year storm exemption for treatment system bypass, though legal, is irresponsible., It virtually guarantees regular discharges of physical and chemical contaminants from throughout the project, all within technically legal permit exemptions. (S1417)

Response: The proposed design for Alternative V would be based on the 100-year, 24-hour event.

57. Under "Outfall 003" "This outfall ... periodic overflow of commingled storm water and process water ..." What is the percentage of process water to storm water? Only treatment is "settling"? (S4832)(S4833)

Response: Storm water which contacts the paste facility is considered process water, therefore, it is 100% process water. The water would be sent back to the mill circuit for reuse as process water or routed to the wastewater treatment plant for discharge to the Clark Fork River. Outfall 003 would only be able to discharge during a 10-year, 24-hour event.

58. MPDES permit: out-fall 004 which is a combined storm water and mine drainage discharge to the East Fork of Rock Creek. Under no circumstances should there be any discharge to the East Fork so that it serves as a control. (S614)

Response: The MPDES permit authorized discharge to Rock Creek in the vicinity of the confluence of the east and west forks of Rock Creek provided the discharge meets the permit limits. Otherwise, the water must be recycled into the process water cycle or pumped to the waste water treatment plant for discharge to the Clark Fork River.

59. Page 12 Table I.4. (compare with "Table I.5" unlabelled Table under "B" on page 13). Essentially all parameters have "reasonable potential" to exceed non-degradation criteria; yet below it is stated that "MT Water Quality Standards require receiving waters to be free from substances that will cause toxic or harmful conditions ..." Will the discharge then be in exceedance of standards? This is considering "treated" waters. What should be expected from admitted exceedance in 10 yr events where untreated discharges may occur? Compare Table I.4. with "Table I.5." (S4832)(S4833)

Response: If the discharge complies with effluent limits it would not exceed water quality standards, including nondegradation criteria. The effluent limits would apply to the respective effluent discharges regardless of precipitation. For Outfalls 003 and 004 no discharge would be allowed, regardless of quality, except when the storm event exceeds 2.8 inches (10-year event).

60. Page 11 (iv) – This stipulation is unclear or unnecessary. Shouldn't this be more specific and indicate that infiltration of process water or storm water in contact with materials likely to contribute to pollution or into the mine waste material on the mill site should be minimized. It would seem beneficial to encourage un-impacted stormwater to infiltrate. The stormwater pond will be lined and any discharge during periods of high runoff either to ground water or to Rock Creek would have similar effects on water quality. In fact it seems that an infiltration gallery discharge would be beneficial not only in creating less disturbance, decreasing potential sediment load but also in minimizing impact to Rock Creek by attenuating the peak flow. In fact, shouldn't the 004 discharge include a ground water component? (S3058)

Response: Department experience has shown that "unmineralized" waste rock used for construction uses will contain blasting residuals (ammonium and nitrate), other constituents (dissolved solids), and, potentially other pollutants (metals, oil and grease, reagents) which will infiltrate into ground water. Potentially contaminated ground water may return to surface water during periods of critical low flow and have a chronic affect on aquatic organisms. Further, no ground water flow data (quantity or quality) was submitted in the application, nor was there any data on the estimated quality of the effluent. Neither the application or the Water Management Plan contained any discussion of an infiltration gallery; these documents implied that the discharged water would be allowed to infiltrate inside of the 300-foot streamside management zone (SMZ). The department would consider an infiltration gallery or percolation pond if a suitable design, with supporting baseline data and monitoring were included in an application.

61. SOB 3, paragraph 2 – Does diverted stormwater require a permit? (S3058)

Response: Diversion of storm water away from potential contaminate sources is considered a best management practice and does not need a permit. The owner/operator should construct the diversion in a manner which minimizes pollution of state waters, i.e. use reasonable land, soil and water conservation practices.

62. Page 2-20 (not changed in Alt V, p 2-50) - exploration adit: 59,000 tons waste rock and 119,000 tons ore rock piled up outside of adit. concern: erosion of nitrates and metals into waters of U.S. I see no plans for containment of erosion from these rock dumps. Also, 4x/yr monitoring of Rock Ck below this site is not protective of the ecosystem. This site would be a discharge point and needs an MPDES permit. (S5093)

Response: Best management plans would be used to control erosion at the adit site. The site would be bermed and runoff would not be allowed to leave the site. Sterling has not applied for authorization to discharge from this site under the Montana Pollutant Discharge Elimination System (MPDES); therefore, no discharge of pollutants to surface water is authorized. Discharge to ground water and monitoring requirements would be covered under the operating permit. Sampling frequency is a function of natural variability, concentration, and risk (probability of accepting Type I & II error). The frequency of four times per year is subjective interpretation of these factors.

63. Page 2-100 - mine plan - mill site (Alt V): 1,000,000 tons waste rock produced during adit construction, used in mill site patio, and paste facility starter berms. concern: erosion of nitrates and metals into waters of U.S. The ore body is surrounded by rock that has much lead in it. In 1987 Asarco was served with a Notice of Violation for elevated metals (Cu, Pb, Zn) in Upper Stanley Ck. at the Troy facility. Copper levels exceeded criteria for protection of aquatic life by up to 250 mill site. (Mine Site Visit, EPA, May 1992, App. A). This conclusion was only partially correct, but never-the-less demonstrates what is likely to also be found below the proposed mill patio at Rock Ck. Erosion is to be expected and cannot be contained by mill pad storm water underdrains (only briefly mentioned p 2-63) but will move into the ground water, and eventually reach Rock Ck. Also, 4x/yr monitoring of Rock Ck below this site is not protective of the ecosystem. Erosion from the mill site would be a discharge point and needs an MPDES permit, other than the stormwater permit that is proposed only for extreme storm conditions. (S5093)

Response: Storm water runoff originating above the mill site would be diverted away from the site. The mill site would be constructed with underdrains which collect seepage and excess storm water. This water would be utilized in the mill as process water, or, if the storm event exceeds the 10-year, 24 hour event, the pond would discharge to Rock Creek. Limits are set on the quality of this effluent (Outfall 004) so that it would not violate water quality standards. Some seepage could escape from the mill site underdrain system and may enter area ground water. The seepage is not expected to contain significant quantities of metals but may contain nitrates.

64. require treatment of all stormwater discharges to Rock Creek since they will carry pollutants from the mill and tailings. (F1)(S161)(S805)(S1687)(S1851)(S4891)(S4912)(S5051)(S5088)(S5555)(S5763)(S6806)

Storm water discharges from the mine and tailings pile will also need to be addressed as wastewater sources. (S6640)

Assurance should be provided that storm water runoff will not increase deposition of toxins or nutrients into the Clark Fork River. (S6588)

Require treatment of all storm water to reduce the risk of further contamination. (S5159)

Response: All storm water runoff from the 100-year/24-hour event would be contained in synthetically lined basins. Storm water collected at the adit portal and mill sites would be collected and recycled for mill use. Storm water collected from the outer slopes of the mill pad and the mill site underdrains and that collected from the tailings facility would only be allowed to discharge as specified by the MPDES permit during storms exceeding the 10-year/24-hour event. Otherwise, collected mill site and tailings facility storm water would be pumped back to the mill for reuse or to the waste water treatment plant prior to discharge to the Clark Fork River. Stormwater diverted above the mill or the tailings facility from undisturbed sites would be allowed to flow into Rock Creek, Miller Gulch, or the Clark Fork River.

65. On page 6, it is stated that outfall 004 would discharge to the East Fork of Rock Creek. The Fact Sheet and Statement of Basis says outfall 004 will discharge to the West Fork of Rock Creek. Which one is correct? (S5087)

Response: Outfall 004 consists of periodic overflow of commingled stormwater and mine drainage from the mill area. Outfall 004 would be expected to discharge from a lined stormwater retention pond to Rock Creek above the confluence of the West Fork of Rock Creek. The final location of this discharge site may be adjusted depending on the location of the mill and mill underdrain containment pond.

66. Cover page – Why is the mill site discharge designated to East Fork and not main stem? Our application is for discharge to main stem Rock Creek and which is where discharge, if any were to occur, would in fact be. SOB 4, paragraph 2 –Should West Fork be East Fork or deleted? (S3058)

Response: The discharge permit application submitted by the Applicant requested authorization to discharge to Rock Creek via overland flow from the mill site underdrain containment pond. It is the department's position that uncontrolled overland flow is not acceptable, therefore, as a condition of the permit, the department required that the discharge be restricted to 10-year, 24-hour storm events and that the discharge be routed to Rock Creek via an engineered structure. Further, this discharge may only occur during the period of the hydrograph when sufficient instream flow would be available to dilute the discharge. Reference to the West Fork of Rock Creek is incorrect and has been deleted from the permit. The actual discharge structure would be directed to the East Fork of Rock Creek, or, to the mainstem of Rock Creek below the confluence based on site specific factors and final design. The permit has been modified to refer to Rock Creek.

67. Page 31 - Special Conditions concern: need a Treatment System Work Plan. (S5093)

Response: Part I.C.1.b of the MPDES permit requires the applicant to submit complete plans and specifications, as well as other pertinent information on the wastewater treatment system.

68. Page 24 under "#3." Bypass. These statements are "loaded." They are a way of not maintaining required discharges to within water quality limits. Anything can be considered as "no feasible alternative." These statements allow the untreated discharge of effluents under almost any circumstance. (S4832)(S4833)

Response: These requirements are standard conditions included in all discharge permits issued under the jurisdiction of the federal Clean Water Act. Treatment systems may be by-passed provided effluent limits are achieved.

69. Fact Sheet Page 2 1st incomplete paragraph "Asarco proposes to install ... if necessary ..." See earlier comments about the role of Reverse Osmosis vs Anoxic Biotreatment Cell. This is direct contradiction with statements that "ABC will be primary source." "Neither ABC nor RO will be designated primary treatment." Clarify real role of each of these proposed experimental facilities. Section 401 responsibility. 1st full paragraph "The primary source of seepage ... incident precipitation ..." Seepage into ground water by >20 gpm and it is caused by precipitation? (S4832)(S4833)

Response: Reverse osmosis would be used for nitrate removal during the adit evaluation phase of the project and during the earlier stages of mine production. Anoxic biotreatment cells would be constructed early in the production stage and should be capable of removing an acceptable level of nitrate from the mine wastewater without the use of reverse osmosis. Not using reverse osmosis would save a significant quantity of energy and eliminate any requirement for brine handling and disposal. However, a reverse osmosis facility would be maintained onsite to provide effluent polishing as required and to serve as a back-up nitrate removal system if necessary. See also Water Treatment Systems, WTR304 comments and responses.

70. Page 5 under "B" Outfall 002. "Mixing zone of 700 feet". Is there geologic substantiation of this distance? (S4832)(S4833)

Page 4-52 - ground water mixing zone boundary concern: where is this boundary? App. M, p 31 says "approximately 500 to 750 feet downgradient of the facility." What is the rationale for this? (S5093)

Response: The ground water mixing zone is discussed in Part II.A of the Fact Sheet/ Statement of Basis (FS/SOB). The mixing zone boundary is shown in Figure 2 in the FS/SOB, Appendix D. Mixing zones must be the smallest practicable size [75-5-301(3)(a), MCA] that will allow for initial mixing of the effluent (seepage) and ground water.

71. Appendix M. Pg. 6. Out-fall 001 (mine drainage and process water) this water is discharged to Clark Fork River via diffuser, instantaneous mixture to occur within two (2) river widths. Two river widths in this case occurs at the outlet of Rock Creek to the Clark Fork, this is not allowable under MT regs. (S614)

Mixing zones are not legal or constitutional. (S5970)

Response: Montana Code Annotated (MCA 75-5-301(4) specifically requires the adoption of rules governing the granting of mixing zones in surface water and ground water. The Administrative Rules of Montana (ARM) 17.30.501 provides rules for implementation of mixing zones. Mixing zones are legal and constitutional provided all water quality standards are met.

72. We are confused over the contradictions presented by the MDEQ regarding whether or not there is an actual mixing zone connected with Outfall 001 to the Clark Fork River. At past public informational meetings presented by MDEQ, the USFS, and ASARCO on regarding the SDEIS, it was stated that the effluent diffuser eliminates the need for a mixing zone. The Statement of Basis, Appendix M of the SDEIS, page 14, has a heading called "mixing zone" and then states that mixing will be nearly instantaneous, that is complete mixing will occur in less than 2 river widths. There would also be a violation of Montana Water Quality Standards for a number of parameters if in fact there were no mixing zone in which standards are allowed to be exceeded.

What is the width of the river at the point of discharge? If it is approximately 300 to 350 ft. in width, do we assume that the "mixing zone" boundary is 600 to 700 ft. or less downstream of the diffuser? If so, doesn't this place the mixing zone near the confluence of Rock Creek and how is this allowed given the presence of bull trout and westslope cutthroat trout in Rock Creek? There must be a description of the boundaries of this mixing zone, as required by Montana law, (if in fact a mixing zone exists) in order to determine if that zone would be allowed under other provisions of the law. (S6312)

Response: The proposed MPDES permit has been revised for a low flow of 365 cfs because of operational shutdowns of Noxon Dam at night and on weekends. Analysis showed upper concentrations would be below toxic levels within 6.5 feet and below non-degradation standards within 20 feet at low flow or 243 feet at high flow. The mixing zone would be 300 feet below the diffuser. The applicant would be required to meet post-treatment water quality conditions presented in the MPDES permit. Hardness, temperature and pH are all considered in establishing permit limits.

73. If there is a mixing zone (in which non-degradation criteria also does not apply), why does p. 4-47 of the SDEIS go into a lengthy explanation of why exceedances of trigger values for non-degradation for ammonia, phosphorus and copper are not relevant due to "short-duration flows from the dam". Why wouldn't the explanation merely be that there is a mixing zone and non-degradation doesn't apply? (S6312)

Response: Nondegradation would not apply in the mixing zone at flows less than the $Q_{7,10}$.

74. Whether or not there is a definable mixing zone, we do not accept the assertion on p. 4-47 that the nightly 6-8 hour, and 12-hour weekend reservoir drawdowns constitute a "short-duration flow" in which trigger value exceedances are not relevant to the nondegradation determination. These drawdowns are neither short duration, nor do they involve any flow whatsoever (as acknowledged in the Statement of Basis, page 9 "flow is reduced to zero daily for approximately 6 hours each day and longer on weekends") to enable mixing of the pollutants being discharged. Therefore, the discharge should have to undergo a non-degradation review by the MDEQ. (S6312)

Response: The discharge meets the nonsignificance criteria of ARM 17.30.715 discussed in the MPDES permit. Flow from the reservoir would be reduced to near zero, when the generators are not operating. The flow during these near-zero flow periods is estimated at 140 cubic feet per second (cfs) based on conservative assumptions and used in the draft permit. Additional studies have placed the flow at 373 cfs during these conditions. See also updated Appendix D.

75. The SDEIS discusses a mixing zone but for some reason will not call it a mixing zone. Outfall into the Clark Fork River (CFR) includes an effluent diffuser and suggests mixing within two river widths (not instantaneous). What is this width, and how does it change at high and low river flows? Numerous important questions are left unanswered, including but not limited to the actual length and width of the discharge, point of discharge, impacts from location near the Rock Creek confluence with the CFR, impacts to fish and other wildlife, duration of exceedences in the mixing zone, etc. The mixing zone discussions also do not consider the impact of the dam's nightly drawdowns where for 6-8 hours on weekdays and 12 hours on weekends the water in the river is essentially not moving (zero flow). These are neither short duration, as stated in the SDEIS, nor demonstrably in compliance with applicable water quality laws. There is not sufficient data for a complete analysis in the SDEIS. This underscores the unsupportability of the conclusion that monitoring is not needed in the diffuser area. More data, disclosure, discussion about impacts, and monitoring are needed for the diffuser/mixing zone evaluation. (S2034)

Response: See response to previous three questions. In addition, the MPDES permit has been revised to reflect the flows expected during the shutdown of the Noxon Rapids facility.

76. In addition, given the above daily extended "zero" flow conditions, we question the statement on page 14 of the Statement of Basis, Appendix M, that the mixing will be "nearly instantaneous" for this 24-hour/day discharge. It is impossible for MDEQ to make this assumption given the flow conditions and then to state that "no in-stream monitoring is necessary." In-stream monitoring at the diffuser line itself, or at the end of the applicable mixing zone, should be required to validate the department's assertions of in-stream mixing and dilution and the assertion that both Montana's and Idaho's water quality standards are not going to be violated. (S6312)

Prove that there is instantaneous mixing 24 hours a day. (S5771)

Response: The assumption of instantaneous and complete mixing was used to simplify the mass balance analysis. The assumption and calculations are more accurate for reaches further from the source. Near-field mixing, or initial dilution, with an effluent diffuser is not dependent on flow in the river. Mixing is induced by the hydraulic forces generated by the diffuser. Monitoring would be done both upstream and just downstream of the mixing zone. The effluent would also be monitored. See Appendix D for more detail.

77. Effluent line - The defuser line that is proposed to dump mine waste water into the Clark Fork River just below Noxon Dam will utilize all the allowable degradation for that river. This one operation would, in essence, preclude any future choices for development along the river below that lien. We do not judge this to be a wise choice when measured against the potential future need of society for copper or silver. Of even greater concern is the proposal to issue permits first and then find out what will go into the surface, ground, and underground water later. We suggest that Asarco do the discharge content work first and the permits, if issued, be based upon that assessment if they meet all clean water criteria. (S3536)(S3468)

Efforts to address contamination and degradation are still insufficient and must not be judged by financial feasibility but rather by whether the process truly eliminates pollutants. Whether added metal and/or chemical contamination reaches the Clark Fork must be the final criteria. (S3489)

The use of a diffuser on the bottom of the river to dilute what would otherwise be substandard water is somewhat like placing a long horizontal perforated pipe on top of a polluting smokestack. (S3591)(S3654)

Response: The use of an in-stream diffuser would not, in and of itself, preclude future development in the Clark Fork River downstream of the proposed project. Future projects would be reviewed and judged on their own merit. Discharges from the proposed project would have to meet the requirements of the MPDES discharge permit. An instream diffuser was recommended by the Agencies to further enhance the assimilative capacity of the river and further protect near shore fishery habitat. The quality of mine discharge water must meet the requirements of the MPDES discharge permit prior to discharge through the diffuser.

78. Page 4-33 of the SDEIS states that the evaluation adit will discharge approximately 138 gpm of water. The SDEIS and MPDES permit are unclear how these discharges will be treated, and where they will be discharged. Page 2-66 of the SEIS says "a portable version of the reverse osmosis system would be built to handle mine discharge water from the evaluation adit," yet the MPDES does not identify the receiving water for this discharge, or the quality of the water discharged.

If the discharge is to the West Fork, the impacts must be disclosed. If the discharge is to Rock Creek or the Clark Fork River, the EIS must address the impacts on those receiving waters. It must also address the impacts that removing that water from the drainage will have on flows in the West Fork—including impacts on dilution capacity and ability to flush and transport sediment. Also, the Agencies must include this treatment in the required financial assurance/bond as noted elsewhere in these comments. (S6318)

Response: Ground water inflow into the evaluation adit would be treated to remove oil, suspended solids and dissolved solids and piped to a portable reverse osmosis system at the support facilities site then discharged to the Clark Fork River at the location proposed for mine discharge. The discharge from evaluation adit must meet the same MPDES permit limits as mine discharge from the water treatment facility during mine operation.

79. The MPDES effluent limits allow ASARCO to discharge mine water with concentrations of copper, cadmium, lead and zinc several times higher than Montana's cold water aquatic life standards. While Montana law does allow numeric standards to be exceeded in the mixing zone, it also specifies that "an effluent in its mixing zone may not block passage of aquatic organisms, nor may it cause acutely toxic conditions." {ARM 17.30.602(14)}.

The SDEIS and MPDES permit have failed to demonstrate that mine discharges to the Clark Fork will not block passage of aquatic life or result in acutely toxic conditions. Even it is assumed the effluent diffuser will provide nearly instantaneous mixing—i.e., within two river widths—the mixing zone will still encompass the confluence of the Clark Fork River and Rock Creek, a biologically important migratory corridor for adfluvial bull trout.

The Agencies should tighten the MPDES effluent limits, or require ASARCO to relocate the discharge pipe, so the mixing zone does not degrade water quality at the Clark Fork/Rock Creek confluence. (S6318)

Response: The discharge will not block fish migration or cause avoidance of Rock Creek. See the Statement of Basis, Section 1.E for discussion of mixing and fish avoidance.

The proposed MPDES permit has been revised for a low flow of 365 cfs because of operational shutdowns of Noxon Dam at night and on weekends. Analysis showed upper concentrations would be below toxic levels within 6.5 feet and below non-degradation standards within 20 feet at low flow or 243 feet at high flow. The mixing zone would be 300 feet below the diffuser. The applicant would be required to meet post-treatment water quality conditions presented in the MPDES permit. Hardness, temperature and pH are all considered in establishing permit limits.

Additional analysis was added to the MPDES permit addressing fish avoidance levels of metals. At maximum discharge levels that would occur near the end of mine life the discharge from each diffuser port would generate a relatively narrow plume of water that exceeded acute aquatic standards, which is allowed within a mixing zone. However, dilution and mixing with river water would allow the plumes to go below fish avoidance levels within a maximum of 15 feet. As a result of the USFWS Biological Opinion, Sterling would need to work with USFWS and FWP to study bull trout migratory behavior and passage patterns around the diffuser. In early years until all diffuser ports were required, water would be discharged on the south ports gradually adding the next ports to

the north. Sterling would continue to investigate design options that would create a discharge-free corridor on the north side of the river at full discharge rates. It might be necessary to modify the MPDES permit to allow a slightly longer but narrower mixing zone to achieve this.

80. The main concern we have with regard to the tentative MPDES discharge permit (Appendix M) pertains to the issue of behavioral avoidance of metals by fish. We are concerned that metal concentrations in the mixing zone of outfall #1 will be of a magnitude that will repel fish (especially bull trout) away from the mouth of Rock Creek, thereby preventing or delaying their movement into the stream. In addition, the mouth of Rock Creek provides a cold water refuge for bull trout, WCT, and other coldwater species during summer. We are also concerned that metal concentrations will increase in Rock Creek near its mouth as a result of ground water seepage or surface erosion of metals from the paste storage facility. If Rock Creek metal concentrations increase to the point that they exceed those in the Clark Fork River, then avoidance may be exhibited by fish wanting to reside in the cold water or move from the river into Rock Creek.

Assure that the mixing zone for metals from outfall #1 does not flow past the mouth of Rock Creek. Unless information can be gathered to prove otherwise, it should be assumed that a chemical gradient will be created within the mixing zone that will impede bull trout movement into Rock Creek. The easiest solution to this would be to move the discharge pipe to the opposite (south) side of the river. If ASARCO wishes to keep the point of discharge on the north bank and upstream of Rock Creek, they should conduct studies (dye tests) to show that higher-than-background levels will not develop in front of Rock Creek under any flow conditions. A monitoring plan must be devised and implemented to assure that metals gradients do not develop during the course of the mine operation.

These recommendations are intended to be protective of Rock Creek water quality and not diminish its suitability as a bull trout core area. They are also consistent with Montana's statute and rules dealing with mixing zones, which provide for the denial of a mixing zone if a parameter is determined to "inhibit migration of fish or other aquatic species."(ARM 17.30.506 (2)(e)). (S1816)

We also find ample evidence for the DEQ to deny the application based on violations of water quality laws. The proposed mine would break the Clean Water Act by further impairing the beneficial used of Rock Creek and the Clark Fork River, including fish habitat, drinking water, and recreational use. Statements from the SEIS (p. 4-179) admitting this include It is uncertain where outflow from the mine would discharge," Sediment loading below the proposed Rock Creek and the Clark Fork River would increase over baseline conditions," Nitrogen loading below the proposed mill site would temporarily increase during project construction. The increase in concentration cannot be estimated with certainty," and loading of nutrients and dissolved metals in ground water below the proposed tailings impoundment would increase over baseline conditions. The increase would be limited to an Agency-approved ground water mixing zone and would likely exist over several decades." Several of these statements are truly outrageous. If ASARCO does not know where the outflow from the mine would discharge, how can they keep the discharge out of the adjacent water bodies? Increased sediment, nitrogen, metals, and nutrients will add to the water quality listed lower Clark Fork and Lake Pend Orielle. What is the guarantee that the ground water mixing zone will be mixing" at all times? We found no discussion of constant monitoring to see if this is the case. These statements indicate that inadequate study has been done to determine the extent of pollution that would occur with the mine. (S6332)

Response: Impacts to surface and ground water resources were analyzed and presented in Chapter 4-Hydrology. All discharges from the proposed project would need to meet the requirements set forth in the MPDES permit. As such, all discharges must comply with existing water quality laws and regulations. Monitoring is also discussed and is described in Appendix K and in the proposed MPDES permit in Appendix D.

81. S-17 2nd paragraph: "Under all action ... only nitrates and dissolved Mn would exceed Montana standards ..." How and where is this addressed? Nitrates flow continuously through soil/water column - they do not bind, they are transported unchanged through system - thus they will continue downstream. Clark Fork River and Rock Creek are already in exceedance of certain water quality standards. This will only exacerbate existing high levels of NO3, NO2 in water system. Thus should be addressed up front. Studies on effects on aquatic invertebrate structure --> food chain support, algal blooms, etc.? 3rd paragraph "This plan ... early detection ..." what levels or which pollutants would be used for "early detection". Does this relate to "trigger values" as given in "Fact Sheet" (page 5)? 5th paragraph "A contingency plan ...". This should be addressed prior to project implementation. (S4832)(S4833)

Response: Table 4-13 of the supplemental draft EIS provides concentration data for nitrate and manganese under all action alternatives. The EIS and permit contain analyses that demonstrate that the discharges will comply with all applicable water quality standards. The reference to trigger levels in ground water has been changed to action levels to demonstrate that they are not the same as trigger values used in other parts of the permit.

82. Page 2-29 - mine plan: storage of mine water within underground mine workings, up to 208 million gallons. I see no change to this plan in Alt V. concern: diffusion of nitrates and metals into ground waters which eventually discharge into surface waters. Once again, 4x/yr monitoring of Rock Ck below this site is not protective of the ecosystem. This site would also be a discharge point and needs an MPDES permit. (S5093)

Response: Authorization to discharge to surface waters is provided in Part B of the MPDES permit at those Outfalls specifically designated. Discharge at any other surface water location, not authorized under an MPDES permit, is a violation of the Montana Water Quality Act and could subject the person to penalties under the Act. Discharge to ground water would be covered under the operating permit.

83. Do the signatory parties involved (FS and MDEQ) feel comfortable enough with this, that no violation of water quality standards would occur throughout the life of the project under any circumstances of excess runoff discharge from extraordinary rainfall events for the life of the project and beyond? (S4832)(S4833)

Response: Water quality violations are not expected due to discharges from stormwater control structures.

84. Page 25, I – What is 307(a)? (S3058)

Response: This text refers to section 307(a) of the Federal Water Pollution Control Act [33 USC 1317]. A definition of the "Act" has been added to the permit.

85. Page 26 – It would be useful to specifically describe the notification levels. (S3058)

Response: The notification levels are specified in Part III.J.1 and III.J.2 of the permit.

86. Page 2-65. Water balance chart does not adequately explain why there is precipitation equivalent to 231 gpm and evapotranspiration and sublimation is 145 / 21 gpm in one portion of tailings impoundment and 175.4 gpm precipitation, and evapo /sublim. 65/11 gam on other parts of same facility. (S614)

Response: The amount of evaporation is a function of the size (area) of the individual components.

87. SOB 15, paragraph 1, line 2 – This discussion of what is process water and what can be discharged is confusing. Although this may be a "net evaporation zone" based on USGS general maps, evaporation does not exceed precipitation every year (1997 for example). Therefore, it doesn't seem reasonable to make the generalization that no storm water discharge is allowed. Additionally it is our understanding that discharge of treated stormwater at 001 is allowed. This issue may warrant further clarification. (S3058)

Response: The text has been modified to state that the facility is subject to New Source Performance Requirements except for process water which is discharged from Outfalls 001-003 or recycled to the mill process water circuit.

88. Page 4-49 I request a public hearing on the MPDES permit process, outside and separate from the EIS process. Given that this is an interstate jurisdiction issue, meetings should be held in Sandpoint, Idaho as well as in Noxon. (S471)

Response: There had been a lot of public concern about the fact that the hearings for the draft EIS and draft MPDES permit were held separately several months apart. As a result the MPDES permit and the supplemental EIS as well as the 404 (b)(1) and the air quality permits were all covered by a single set of hearings. Three hearings were held: One in Missoula, Montana, on February 10, 1998, one in Sandpoint, Idaho, on February 11, 1998, and the third in Noxon, Montana, on February 12, 1998. Hearings on the draft EIS and MPDES permits were held in Noxon and Sandpoint. See Chapter 1 for more information on public involvement.

WTR-307 Total Maximum Daily Loads (TMDL)

1. Page 4-56, paragraph 4 – Reference to TMDL requirements; what are these? Page 4-57, 1ST paragraph – What "TMDL requirements" are refereed to here? (S5)

Response: TMDL refers to Total Maximum Daily Load. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. It is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The Clean Water Act, Section 303, establishes the water quality standards and TMDL programs. The Montana 303(d) list does not list the Clark Fork River below the confluence with the Flathead River as impaired due to nutrient loading. The lower Clark Fork River, however, is listed as impaired due to habitat, thermal, and flow alteration. The proposed discharge will not contribute to impairment for these factors.

2. The Clark Fork River in Idaho is listed as water quality limited due to metals pollution. Idaho water quality standards for cadmium and zinc were exceeded several times during the period 1985 through 1987 on Clark Fork River samples collected at the Cabinet Gorge USGS monitoring station. Since that time there have been no recorded excursions above the Idaho criteria for cadmium and zinc at the Cabinet Gorge monitoring station. Idaho water quality standards for copper were exceeded on several occasions at the Cabinet Gorge monitoring station since 1985 with the last five excursions occurring in 1992, 1993 and 1996. Lake Pend Oreille is listed as water quality "threatened" due to increasing nutrients from a variety of sources. Both waters are scheduled for development of a problem assessment and a total maximum daily load allocation (TMDL) designed to recover the impaired use, and to protect existing water quality. Work has begun on developing a TMDL for Lake Pend Oreille and the Clark Fork River, with an anticipated completion date of December 1999. When the TMDLs become effective, Montana must meet these limits at the border. This may or may not require a change to ASARCO's discharge permit depending on the outcome of the problem assessments. Therefore, a reopener clause should be included in the MPDES permit in case it is needed to address the future TMDLs. (S6686)

Page 3-22 para.2 The state of Idaho classification for Lake Pend Oreille as a special Resource Water does not allow any additional nutrient loading. 40CFR 122.4 (d), 131.10 (b).

Page 2-95. TMDL allocation for Lake Pend Oreille and Clark Fork River. Other than the one paragraph describing the necessity of meeting TMDL standards at the MT / ID border there is nothing describing Asarco's discharge meeting those standards. Violation of 40 CFR 122.4 (d) (When imposition of conditions cannot ensure compliance with applicable water quality requirements of all affected States). (S614)

Both point and non-point discharges from the mine will have to be consistent with the Total Maximum Daily Loads (TMDLs) for the Clark Fork River and Lake Pend Oreille.

Idaho's schedule for the development of TMDLs requires the Clark Fork TMDL to be developed by 2004 and done in conjunction with Montana. A Lake Pend Oreille TMDL is to be completed by the end of 1999. Because the Clark Fork's nutrient contribution to the lake is significant, IDEQ will estimate the Clark Fork's nutrient load and incorporate that into the Lake Pend Oreille TMDL.

Since the Clark Fork River is already water quality limited, reductions in metals loading will be required. In the interim, Idaho water quality standards prohibit increased metals loading to the Clark Fork River in Idaho. Any metals loading from the Rock Creek mine will have to be more than compensated for through effluent trading or some other workable scenario which will assure no further impairment of beneficial uses.

According to a November 18, 1996 memo from IDEQ to MDEQ, the EPA believes that the Rock Creek discharge, if allowed, would use up any allowable nutrient degradation in the Clark Fork River. IDEQ expressed concerns that this could prohibit growth and future development along the river. (S614)

Once the TMDLs are developed and approved for the river and lake, Montana will have to assure that those limits are met at the border. Therefore, any MPDES permits ultimately issued should contain reopener clauses to assure compliance with WQS and TMDLs.

Overall, it does not appear that, at the current rate of progress, Idaho can meet the court-ordered, 8-year TMDL schedule. If new sources continue to be permitted, the process will be undermined further as stakeholders lose faith in their ability to achieve load reductions. Additionally, the "reasonable assurance" standard will prove daunting if more pollution of unknown quantities is allowed. (S6337)

Response: Part IV, Section O. of the MPDES permit contains such a reopener provision that should be sufficient to address future TMDL requirements.

3. Permit Part IV.O. Reopener Provisions: TMDL or Wasteload Allocation. Add a sentence which recognizes that an EPA approved Idaho TMDL or a violation of Idaho water quality standards are valid reasons to reopen and modify this permit. (S6686)

Response: The language in Part IV.O recognizes any EPA-approved TMDL or Wasteload Allocation, therefore, no change to this language is necessary.

4. Idaho is developing a TMDL for nutrients for Lake Pend Oreille and for metals in the Idaho portion of the Clark Fork River, as per those water bodies impaired listing in Idaho under the CWA 303(d) process. The agencies need to justify how they are allowing additional loadings of metals and nutrients to these waters prior to development of TMDLs for these pollutants, which are under court order to be completed by the end of 1999. A re-opener clause in the discharge permit to meet TMDL requirements in Idaho is not sufficient to enable proper analysis, determination of impacts, and public comment on the proposed discharges of these pollutants with the current information presented in the SDEIS. (S6312)

Response: The states of Idaho and Montana, in cooperation with the Tri-State Water Quality Council, are working on a border nutrient agreement which, if approved by EPA, will function as a TMDL. The permit may be reopened, if necessary, to incorporate this agreement (see the proposed MPDES permit Part IV.O in Appendix D).

5. It is true that the section of the Clark Fork at the project site is not listed. However, the river is listed both upstream and downstream of the site! The failure to list the center portion is deceitful and dishonest! We urge DEQ to list the entire Clark Fork. We think is it an understatement to say, "nutrients in the mine's waste water discharge could negate some of the upstream nutrient control measures and also affect nutrient loading to Lake Pend Oreille" (SEIS, p.2-95). (S6332)

Response: The Tri-State Council is in the process of coordinating TMDLs for the lower Clark Fork River in Montana and Idaho. The MPDES permit has a reopener provision that allows subsequent incorporation of TMDLs as soon as they are developed. It is beyond the scope of this EIS to analyze the need for and development of a TMDL for this stretch of river.

6. In the MPDES permit #MT-0030287 you recognize natural dilution in many instances as a process for reaching the TMDL allocation for the Clark Fork River. This is clearly unacceptable as stated in the TMDL regulatory protocol for 303d listed water bodies. (S3469)

Page 30, 2 – It is our understanding that this permit constitutes both a WLA (see pages 10-13 of SOB) and TMDL for affected receiving waters for the parameters that are indicated to be present in the discharge whether a limit has been imposed or not. It would be useful to explicitly state this. (S3058)

Response: The final permit would be submitted to EPA for approval as a TMDL for this section of the river. The permit limits are based on compliance with Montana's water quality standards, including Montana's nondegradation policy and mixing zones rules. The TMDL would be limited to those parameters which have limits in the permit (nutrient and some metals). Due to the lack of specific information on the quality and volume of the discharge and receiving water, Outfall 004 does not constitute a waste load allocation. The permit constitutes a legal authority to discharge those constituents which were disclosed in the MPDES permit application whether or not those parameters received effluent limits in the permit.

7. Pages 4-56 and 4-57: We agree that the impacts of nitrogen and phosphorus in the treated discharge to the Clark Fork River upon the limnology of Cabinet Gorge Reservoir and Lake Pend Oreille (note addition of phosphorus during biotreatment) should be analyzed and disclosed. As noted any increase in the loading of phosphorus and nitrogen must comply with TMDL requirements of the MPDES permit and must not degrade water quality in Idaho. Also, increased Clark Fork River nutrient loading due to mine related population growth and overloaded wastewater treatment facilities at Thompson Falls (and elsewhere) should be considered in the TMDL analysis. Effluent limitations for phosphorus and nitrogen may also need to be considered.

We note that there is great public concern regarding protection and maintenance of water quality in the Clark Fork River and Lake Pend Oreille. Nutrient loading is of particular concern (i.e., nitrogen and phosphorus loading). The SDEIS indicates that over 90% of the water entering Lake Pend Oreille comes from the Clark Fork River as does 85% of the total loading of phosphorus (page 3-23). We note that while the draft MPDES permit includes an effluent limitation for total inorganic nitrogen, it does <u>not</u> include an effluent limitation for phosphorus. While calculations predict that wastewater discharges from the Rock Creek mine will not result in measurable increases in phosphorus concentrations in the Clark Fork River and Lake Pend Oreille, it does appear that phosphorus loads to the river and lake will increase, since phosphorus will be added to mine wastewaters during biotreatment.

We recommend that the anticipated increased loading of phosphorus to the Clark Fork River and Lake Pend Oreille as a result of the discharge of mine wastewaters be disclosed and discussed relative to nutrient loading concerns. We are pleased that weekly monitoring of nitrogen and phosphorus in outfall 001 is included in the proposed permit, but we request that nitrogen and phosphorus monitoring be included in the in-stream monitoring requested for the Clark Fork River below outfall 001 to verify that no measurable increase in phosphorus concentration in the Clark Fork River occurs.

It should be recognized that in response to either monitoring results or the aforementioned future December 1999 TMDL calculations, reevaluation may result in establishment of an effluent limitation for phosphorus in the future. In fact, it may be appropriate to consider establishing a limit on phosphorus loading from the Rock Creek mine at this time, given the public's concerns about protection of the Clark Fork River and Lake Pend Oreille. (S146)

Page 2-94 2nd paragraph: "protect Lake Pend Oreille ..." Are the discharges going to fulfill/maintain ID's standards? How will ASARCO/FS/DEQ control algae by reducing nutrient concentrations when nitrates (which do not bind in the water column) will inevitably find their way into the riverine system? 3rd paragraph have "numeric nutrient loading targets for the Clark Fork and Lake Pend Oreille" been met? How?

Page 2-95 2nd paragraph "However, nutrients in the mine's waste water discharge .. could negate ... nutrient control measures ..." How? IF ASARCO is fulfilling state water quality standards as they already claim to? Unsolved contradiction. 3rd paragraph So Lake Pend Oreille water quality already is listed as "threatened"; how can <u>any</u> water quality-comprised discharges be acceptable? (S4832)(S4833)

Response: TMDL limits have not yet been developed for this reach of the Clark Fork River. Reopener provisions in the MPDES permit will allow future consideration and incorporation of TMDLs. Comments were received on the draft Fact Sheet/Statement of Basis (FS/SOB) expressing concern regarding the loading of nutrients and the lack of an effluent limit for phosphorus in the draft permit. Numeric limits for both nitrogen and phosphorus are included in the proposed permit. The average monthly load for total inorganic nitrogen would be 232.0 lbs/day. The average monthly load for phosphorus would be 23.2 lbs/day. The FS/SOB for the proposed MPDES permit now requires that monitoring of nutrients, including total nitrogen and phosphorus, be conducted at a location above (upstream) and below (downstream) the proposed discharge. In addition to the chemical analyses, the project proponent must also monitor chlorophyll above and below the point of discharge.

Predicted changes in nutrient concentrations for the Clark Fork River in both Montana and Idaho have been presented in the Statement of Basis for the permit and in the EIS. These changes are predicted to comply with both Montana and Idaho water quality standards. Numeric nutrient targets for the Clark Fork River and Lake Pend Oreille have not been established. An additional analysis of the impacts, discussed in the final EIS, concludes that the predicted increase in nutrient concentrations are not likely to result in a measurable increase in periphyton biomass within the limitations of the existing data.

8. Rock Creek is a section 303(d) listed stream. The discussion of water quality impacts to Rock Creek is inadequate. Despite documented water quality problems, the Forest Service proposes to implement the proposed project, which will increase sediment directly into Rock Creek. Because the SDEIS failed to analyze and disclose these impacts, it is our estimation that implementation of Alternative V will only worsen existing violations of beneficial uses in Rock Creek.

The SDEIS failed to discuss the amounts of sediment that would be added directly, indirectly and cumulatively to Rock Creek. NEPA is clear that disclosure and differentiation of each alternative should be in the EA. Yet, this was simply not done. Additionally, the Forest has not completed or disclosed water quality related monitoring in the Rock Creek drainage.

Since this proposal occurs in an impaired stream, the State of Montana is required to develop Total Daily Maximum Loads (TMDLs) for the pollutant in the stream. It is important to note here that BMPs and mitigation measures cannot be substituted for TMDLs. Until water quality standards are attained (including the appropriate manganese standards) and beneficial uses restored to Rock Creek, the Forest Service may not permit any project that further degrades this stream.

The Kootenai NF LRMP gives explicit direction for the Forest Service to protect water quality. The implementation of the ASARCO mine will neither protect the aquatic ecosystem nor meet existing State water quality criteria, especially for Rock Creek. Instead it will have the opposite effect by increasing sediment directly into Rock Creek. Approval of Alternative V violates the Kootenai NF's LRMP.

The Rock Creek SDEIS does not supply the decision-maker with appropriate information. There is no information about the existing watershed condition, the total maximum daily load to Rock Creek, nor any quantifiable data proving that there will be no measurable increases of pollutants.(S22)

One way the Agencies could assure that the mine-related increases in sediment loads are offset by the abatement projects is to incorporate those projects into a sediment TMDL for Rock Creek. This would allow the Agencies to

formalize ASARCO's commitment to implement the projects, and allow ASARCO to begin discussions with the private landowners on Engle Creek whose cooperation is needed. The EIS should discuss this alternative.

The Agencies should keep Rock Creek on the 303(d) list, develop a sediment TMDL for the drainage, and incorporate the sediment abatement projects into it. Additionally, the TMDL analysis must also consider the impacts of ASARCO's recent logging activities, and the planned Forest Service timber sale mentioned on p. 4-65 in the analysis. (S6318)

Page 4-32 - TMDL: Rock Ck is listed as a water quality limited stream; sediment and metals. concern: TMDL's for nutrients, sediment and metals should have been presented, and must be calculated before permitting proceeds, and made available for public comment. (S5093)

Response: The baseline condition of the Rock Creek watershed is provided in the final EIS. In addition, a 303(d) analysis by the Agencies indicated there was no adverse trend in metals contamination or siltation in Rock Creek, and therefore did not fit the definition of a threatened body of water. Data submitted by the applicant did suggest the mainstem of Rock Creek is partially supporting aquatic life and cold-water fisheries beneficial uses. The cause of the impairment is salmonid-fishery habitat degradation, while the probable source of the impairment is silviculture. Rock Creek is now listed as "partially supporting" in the year 2000 Section 303(d) report. Watershed modeling completed by the Agencies using R1-WATSED was also used to predict and evaluate of existing harvest, roading, and proposed mining activities within the Rock Creek Watershed. Sufficient information is available related to existing conditions in the Rock Creek watershed, and future potential impacts. In regard to the TMDL status of Rock Creek, the proposed Rock Creek Mine is not within the boundaries on the TMDL area for the upper basin. After the Idaho TMDL is developed, the Tri-State Implementation Council would work with the two states to set a TMDL for the Montana/Idaho border, which would include any loading from the Rock Creek Mine. The reader is referred to comments and responses in WTR-308 dealing with the Clark Fork River TMDL development for more information.

The listing of a waterbody on the 303(d) list does not preclude the issuance of a discharge permit to a point source provided that: the discharge complies with the state nondegradation criteria; will not cause a decline in water quality for the parameters for which the waterbody is impaired; and, complies with all applicable treatment standards [75-5-703(10), MCA]. The only point source discharge to Rock Creek is located to mill site and complies with the foregoing criteria, therefore, the department believes that a permit may be issued.

9. (404 (b)(1), Section 230.10(b) see page C-6, under 2.1.2 number 1 ("contributes"). 4th paragraph "Rock Creek ... due to potential for water quality degradation associated with ASARCO ... project." Has the development of a TMDL been initiated? Why has ASARCO petitioned to have Rock Creek "delisted"? What is their intent? If they know that discharges will continue to degrade Rock Creek - does delisting make it any easier for ASARCO to do so? (S4832)(S4833)

Response: While short term increases in sediment load are predicted, the USFS WATSED model indicates an improvement in sediment yield over baseline at the completion of mining as a result of BMPs. ASARCO petitioned for the delisting because it felt the data did not support the listing of Rock Creek as impaired. DEQ's review of their petition resulted in the removal of the threatened impairment classification due to a change in definition but Rock Creek remained listed for aquatic habitat due to silvacultural practices.

10. There is no whole watershed catchment study methodology established to estimate total nutrient loads to the Clark Fork River. Total nutrient loads to the entire watershed must be determined and monitored due to the provisions established in the Total Maximum Daily Loading provisions according to the Clean Water Act 303d listed water bodies. (You already have a metals problem, why take the ecological risk?) An Ecological Risk Assessment for the entire watershed would need to be conducted. (S3469)

Response: A study of the entire Clark Fork watershed for the purpose of identifying non-point sources of nutrients to surface water resources is outside the scope of this analysis. Chapter 3 identifies pertinent watershed information as it relates to existing activities and Sterling's proposal. Chapter 2 identifies reasonably foreseeable activities in the watershed which may result in cumulative impacts to surface water resources. Lastly, Chapter 4 identifies the potential cumulative affects. This, in effect, constitutes all ecological risk assessment.

WTR-308 Idaho Water Quality Issues

1. We also have a very serious discrepancy between Montana and Idaho standards by an order of magnitude. How do the agencies propose to mitigate or resolve that without resorting dilution solution? (S614)

Is it valid to say "no measurable impacts to waters in Idaho" - does this include possible "accidental discharges"? (S4832)(S4833)

Response: The conclusion of no measurable impacts to waters in Idaho specifically refers to impacts related to discharges permitted under the MPDES permit, and does not include "accidental discharges." Impacts from accidental discharges cannot be quantified because the nature of the accident, the chemical and flow characteristics of the discharge and receiving waters, and the timing of the event are all unknown. Additional analyses of impacts to water quality at the Montana/Idaho State line and comparison to water quality standards were performed, and the Fact Sheet/Statement of Basis (FS/SOB) was revised in response to this analysis and to comments received from the State of Idaho on the supplemental EIS and draft FS/SOB. In addition, the wasteload allocation for manganese was revised. The current analyses support the conclusion that no measurable changes would occur at the Idaho border due to the proposed project.

2. Page 4-32 3rd and 4th full paragraphs Bring to your attention Idaho's stance. "beneficial uses" cannot be compromised by discharges that reduce water quality. Lowering of water quality is defined as "measurable adverse change." (S4832)(S4833)

Response: The Idaho DEQ stated that any measurable increase in the ambient water quality would not be consistent with the Special Resource Water designation for the Clark Fork River in Idaho. As a result of comments received from the State of Idaho additional analyses of impacts to water quality at the Montana/Idaho State line were performed, and results compared to water quality standards. The FS/SOB was revised in response to this analysis, as was the wasteload allocation for manganese. A wasteload allocation for phosphorus was also added. The current analyses support the conclusion that no measurable changes would occur at the Idaho border due to the proposed project.

3. The combination of waste and storm water runoff water should cause no appreciable deterioration of water quality in the Clark Fork River as it enters the state of Idaho, and subsequently, Lake Pend Orielle. (S6588)

We are at great risk from the silver/copper mine in Noxon, Montana, because we draw our drinking water from the lake. We spent $10,000 on a water purification system which is no match for the potential contaminants similar to those found in Lake Coeur d'Alene. (S3798)

Asarco should be forced to prove that there will be no increase in pollutants into the Clark Fork River where it crosses into Idaho and, just as importantly, nutrient increases will not increase algae growth downstream. (S4046)

My second concern is that Montana appears to have more relaxed waste water tolerances than Idaho has. Even if the level of pollution is satisfactory by Montana standards in our 8-mile stretch, what are you proposing to do to mitigate illegal levels once the water passes into Idaho? It doesn't seem prudent to let Asarco pass the legal battles off to the financial responsibility of the citizens of Montana. My impression is the fight will be between Montana because it allowed the impact and Idaho trying to get damage repairs, not between Idaho and Asarco. (S3476)

Require proof that there will be no measurable increases of pollutants where the Clark Fork River crosses into Idaho and that nutrient increases will not increase algae growth downstream. (F1)(S4364)(S4891)(S4912)(S5051) (S5088)(S5555)(S5763)

There needs to be substantial proof that the technologies that Asarco plans to use for wastewater treatment and tailings treatment will not increase pollutants into the Clark Fork River, especially where it crosses into Idaho. And proof that ground water won't be impacted, and that nutrient increases will not increase algae growth in the river delta and lake. (S5101)

Require proof of no increase of pollutants where the Clark Fork River enters Idaho. (S4910)(S5771)

The ground water at the mine site and the water in the Clark Fork River must be kept at safe levels, with no pollution. No added nutrients should produce algae growth anywhere. All mine water should be treated with proven methods and not contaminate nearby waters, whether underground or surface. (S4429)

Demonstrate there will be no net increased of pollutants into the waterways. (P)

Proof should be required that there will not be measurable increases of pollutants where the Clark Fork River crosses into Idaho and that nutrient increases will not increase algae growth downstream and particularly in Lake Pend Oreille. (S5501)

Please require proof that there will be no measurable increases in pollutants flowing into the creek, river or lake. (S5621)

Where is the data that shows the mine won't affect water quality at the Idaho Montana border? (S4719)

Lake Pend Oreille is the largest and deepest natural lake in Idaho. The Clark Fork River is the lake's principal inlet, contributing as much as 90 percent of the lake's annual inflow. The Idaho Division of Environmental Quality (Idaho DEQ) administers Idaho's Water Quality Standards. Under the Idaho Water Quality Standards and wastewater treatment requirements, the Clark Fork River in Idaho and Lake Pend Oreille are protected for the beneficial uses of domestic and agricultural water supply, cold-water biota, salmonid spawning, and primary and secondary contact recreation. Idaho standards also designate the Clark Fork River in Idaho and Lake Pend Oreille as Special Resource Waters. Under IDAPA 16.01.02.056 no new point source can discharge pollutants, and no existing point source can increase its discharge of pollutants above the design capacity of its existing wastewater treatment facility, to any water designated as a special resource water or to a tributary of, or to the upstream segment of a special resource water if pollutants significant to the designated beneficial uses can or will result in a reduction of the ambient water quality of the receiving special resource water as measured immediately below the applicable mixing zone. Interpretation of this rule and water quality certification of federal permits under Section 401 of the Clean Water Act is made by the applicable Idaho DEQ Regional Office. Section 401 of the Clean Water Act also prohibits another state to authorize a discharge which violates a downstream states's water quality standards. This must be addressed in the MPDES permit issued by the MDEQ. (S6686)

Failure to consider compliance with Idaho water quality standards in the self-monitoring plan. (S6337)

On page S-14 of the SEIS, under Issue 1: <u>Effects on quantity and quality of Montana and Idaho surface and ground water resources</u> it is stated by the MDEQ and U.S. Forest Service that: "No measurable impacts are predicted for surface or ground water resources in Idaho." It is difficult to either support or refute this statement given the information in the EIS and SEIS. To determine if Idaho Water Quality Standards are fully protected it is necessary to know if the pollutants will be detectable at the Idaho border. This information was requested by the Idaho DEQ in an October 14, 1997 letter to the MDEQ, but as yet, has not been provided to the Division. Information on concentrations and loadings comes from the draft MPDES discharge permit. (S6686)

Response: The Idaho Department of Health and Welfare administers Idaho's water quality standards and apply to the Clark Fork River at the state line. Idaho standards designate the Clark Fork River in Idaho and Lake Pend Oreille as Special Resources Waters. This designation requires that existing water quality cannot be lowered. Lowering of water quality is defined as a measurable adverse

change in chemical, physical, or biological parameter relevant to a beneficial use. The effluent limits in the proposed MPDES permit would not result in a measurable change according to the criteria discussed in the FS/SOB. in either Montana or Idaho, and therefore, will comply with Idaho's regulations. An additional table showing the change in concentration at the state line has been added to the FS/SOB for the MPDES permit (see Table A.1). Should Idaho DEQ determine that the permit potentially violates its state water quality standards, then Idaho would have authority under Sections 402(b) and (d) of the Federal Clean Water Act and 40 CFR Section 123.44 to administratively appeal the permit to EPA.

A summary of the analysis in the statement of basis for the proposed MPDES permit and an analysis of the potential impacts of nutrient and metals loading from the proposed project on water quality in the Clark Fork River and Lake Pend Oreille is provided in Chapter 4-Hydrology.

4. In contradiction, again, to the no predictable impacts on Idaho waters, page 3-21 states that algae growth potential in Lake Pend Oreille is moderate to moderately high particularly for conditions where nitrogen and phosphorous are added simultaneously. This is precisely what will be happening upstream in the Clark Fork River at the point of discharge where ASARCO may add phosphorus to the ABC treatment system, thereby increasing the concentration of phosphorus in the treated effluent (page 4-54). Again, on page 3-23 it states that maintaining open lake water quality is dependent upon maintaining nutrient loadings from the River at or below present levels; page 4-57 says this is dependent upon maintaining nutrient discharges at or below present levels. How is the allowable average daily discharge of 232 lbs./day of nitrogen in the River, added to phosphorous, keeping nutrient loading into the lake "at or below present levels"? Page 4-56 also states that the potential for increase in phosphorus and nitrates from the biotreatment process could increase algal mass in the Clark Fork River by an undetermined amount. Page 2-95 states that nutrients in the mine's waste water discharge could negate some of the upstream nutrient control measures and also affect nutrient loading to Lake Pend Oreille. It appears that the SDEIS concludes there will be no impacts to Idaho waters, and then shows precisely that there will be impacts from nutrients. An effluent limit for phosphorus needs to be added to the Outfall 001 discharge permit. (S6312)

Response: The analyses presented in Chapter 4-Hydrology indicate there would be no measurable change in concentration of constituents in the Clark Fork River at the Montana-Idaho border. Under Alternative V, the ABC treatment system would be replaced by a technology that does not depend on the addition of phosphorus. The calculated change in concentration of phosphorus in the Clark Fork River at the $Q_{7,10}$ flow is less than 1.0 micrograms per liter, which is below the Montana water quality trigger value. See revised MPDES permit for phosphorus limit. The MPDES permit also has a reopener clause that would allow for future incorporation of TMDLs.

5. In addition to the potential impacts metals will have on the Clark Fork River, the SDEIS fails to disclose the magnitude of adverse impacts that increased nitrogen and phosphorous loading will have on the Clark Fork River and Lake Pend Oreille.

Page 2-94 of the SDEIS describes the Tri-States Implementation Council and their ongoing efforts to reduce nutrient loading and nuisance algae growth in the Clark Fork River basin and Lake Pend Oreille. Among other things, the Council's proposed management actions include "an aggressive antidegradation policy with respect to nutrient sources."

Review of the SDEIS discussion and MPDES permit demonstrates that the nutrient discharges from the proposed Rock Creek mine are likely to undermine these ongoing efforts. For instance, its hard to determine how allowing ASARCO to discharge 232 pounds a day of total inorganic nitrogen advances the efforts to reduce nutrient loading, or complies with the Council's "aggressive antidegradation policy with respect to nutrient sources."

Additionally, the SDEIS admits on p. 2-95 that "nutrients in the mine's wastewater discharge could negate some of the upstream nutrient control measures, and also affect nutrient loading in Lake Pend Oreille."

We believe the SDEIS needs to more fully disclose nutrient and nuisance algae problems in the Clark Fork and Lake Pend Oreille, and the impacts that nutrients discharged from the mine will have on those beneficial use support in those surface waters.

This is especially critical considering the statement on page 4-56 of the SDEIS, which says that "existing biomass levels in the Clark Fork River at the time of the study exceeded conditions that were aesthetically acceptable" and that "the potential for minute increases in phosphorous and nitrates from the biotreatment process could increase algal mass in the Clark Fork River by an undetermined amount."

We believe these "minute" nutrient increases are unacceptable considering the Clark Fork already grows more algae than is aesthetically acceptable.

Additionally, we believe the NEPA review needs a more thorough discussion of the potential impacts caused by phosphorous discharges from the mine. Page 4-56 recognizes that Clark Fork River appears to be phosphorous limited, and p. 4-54 admits that "the concentration of phosphorous in the treated effluent could increase over untreated concentration." Yet the draft discharge permit does not even contain an effluent limit for phosphorous. The MPDES permit must contain effluent limits and compliance standards for phosphorous in the discharge.

Consideration must also be given to the fact that nitrogen, phosphorous, and methanol will be added as part of the treatment system. Page states that methanol at a concentration of 60 mg/L would be continually added, that nitrogen-rich sludge would be used to inoculate the treatment cells, and that phosphorous (1 mg P added for every 30 mg nitrate removed) may also be added to promote microbial growth. (S6318)

Clark Fork River and Cabinet Gorge. The SDEIS cites a report that concluded that the Clark Fork River below Noxon and Cabinet Gorge Reservoirs is relatively unpolluted, and that river water can either be phosphorous limited or co-limited by both nitrogen and phosphorous, with respect to algal growth. The algal growth potential in the lake (Cabinet Gorge) is considered to be moderate to moderately high, particularly for conditions where nitrogen and phosphorous are added simultaneously. [SDEIS p. 3-21] Phosphate bans have been enacted in several communities along the river to decrease municipal wastewater phosphorous content [SDEIS p. 3-21, 4-58]. Based on the information contained in the SDEIS, the Rock Creek project would add limited nitrogen and phosphorous to the river and lake. Yet, no significant impact is predicted. The study indicates that even slight increases might be expected to have significant impact, contradicting the conclusions made in the SDEIS.

Lake Pend Oreille. According to the SDEIS summary, no measurable impacts are predicted for surface or ground water resources in Idaho [SDEIS p. S-14]. Information contained elsewhere in the SDEIS is contrary, stating "nutrients in the mine's waste water discharge could negate some of the upstream nutrient control measures and also affect nutrient loading to Lake Pend Oreille." [SDEIS p. 2-95] Algal growth potential in Lake Pend Oreille is moderate to moderately high, particularly if nitrogen and phosphorous were added simultaneously [SDEIS p. 3-22]. Algae may currently be limited by a phosphorous and/or nitrogen deficiency [SDEIS p. 3-50]. Maintenance of open lake water quality is largely dependent on maintaining nutrient loading from the Clark Fork River at or below their present levels [SDEIS p. 3-23]. According to the SDEIS, the EPA may intervene to resolve interstate disputes. The potential impacts to Lake Pend Oreille are uncertain based on the information presented. The Montana DEQ and the Forest Service should demonstrate that an independent analysis for the purpose of evaluating the potential impacts to Lake Pend Oreille has been conducted, and the EPA render an official opinion as to the likely impacts and legality of the proposed action upon downstream states.

Information contained in the SDEIS identifying nitrogen as the greatest potential nutrient impact to Lake Pend Oreille, developed in 1989, did not include information on phosphorous addition in the wastewater treatment

process and discharged to surface waters [SDEIS p. 4-56], which was first identified until 1997. Because Lake Pend Oreille is phosphorous limited [SDEIS p. 4-58], the addition of even minute amounts of phosphorous could increase algal mass in Lake Pend Oreille by an undetermined amount. This supports the conclusion that an additional phosphorous treatment process step should be incorporated into the wastewater treatment plant design. (S188)

Response: Neither of the reports referred to above (Priscu 1989, USEPA 1993) make a statement that slight increases might be expected to have significant impact on algal growth in Cabinet Gorge Reservoir. The Priscu (1989) report concludes that additional nitrogen loading from the Rock Creek project should have no major influence on the magnitude of attached algal productivity and biomass in the Clark Fork River because phosphorus will limit the conversion of dissolved organic nitrogen into algal biomass. This report did not make any similar conclusions regarding phytoplankton in the river or reservoir, but given the relatively small predicted project-derived increase in nutrient levels in Cabinet Gorge Reservoir, a similar conclusion for phytoplankton seems reasonable.

The increase in phosphorus concentration in the Clark Fork River is calculated to be less than the 1.0 microgram per liter trigger value. When a TMDL for the lower Clark Fork River is developed, it could be incorporated in the MPDES permit through the reopener provision.

6.. The proposed mine is not consistent with Idaho Surface Water Quality Standards: New point and non-point discharges associated with the Rock Creek proposal are inconsistent with Idaho water quality standards (WQS). Idaho WQS prohibit new point source discharges of pollutants of concern into Special Resource Waters.

Given the legal status of the Clark Fork River and Lake Pend Oreille, and the current impaired and threatened status (respectively) of their beneficial uses, allowing additional upstream metals and nutrient loading would be a clear violation of Idaho water quality standards. This is irrespective to the ability to model quantifiable physical impacts to beneficial uses. (S6337)

Response: The proposed mine is located in Montana and is under the jurisdiction of Montana's, not Idaho's, water quality laws. The discharge from the proposed project must meet all requirements of the MPDES permit. EPA and the State of Idaho provided input and review for developing the permit. The permit has a reopener provision that would allow incorporation of TMDLs into the permit as soon as they are developed in coordination with the Tri-State Council. However, any increases in nutrients and metals would not be measurable at the Montana-Idaho border (see Statement of Basis in Appendix D).

7. Page 3-23 under (d.) "Maintenance of open lake water quality ... dependent on maintaining nutrient loadings ... at or below ... present levels." See page 4-185 under Hydrology; "Proposed discharges from ... biotreatment ... would alter the water quality ..." Compare this statement with page 4-32, 4th full paragraph, "This designation ... existing water quality cannot be lowered." Also "Finally, Section 401 of CWA ..." Corps and DEQ need to address this. Idaho standards indicate no water quality alteration is allowed. ASARCO admits to altering nutrient status either as surface water quality changes in Rock Creek and from paste facility seepage into Clark Fork River (page 4-30, 1st paragraph "Under Alternate V ... seepage from ... paste facility ... 20-30 gpm), compare with this admission (page 4-51, 2nd paragraph) that Table 4-13 indicates nitrate in tailings seepage water will be at higher concentrations than ambient ground water concentrations. (S4832)(S4833)

Response: The Idaho DEQ stated that any measurable increase in the ambient water quality would not be consistent with the Special Resource Designation in the Clark Fork River in Idaho. As a result of comments received from the State of Idaho additional analyses of impacts to water quality at the Montana/Idaho State line were performed, and results compared to water quality standards. The FS/SOB was revised in response to this analysis, as was the wasteload allocation for manganese. A wasteload allocation for phosphorus and selenium were also added. The current analyses support the

conclusion that no measurable changes in concentration would occur at the Idaho border due to the proposed project. The Idaho DEQ also considers changes in loading at the Idaho-Montana border to determine if the proposed Rock Creek project complies with the Special Resource Water designation. Based on the analysis presented in the FS/SOB, the annual load increase to Lake Pend Oreille for total inorganic nitrogen and total phosphorus was 2.0 and 1.5 percent, respectively. Should the Idaho DEQ determine the permit violates state water quality standards, the state would have the authority to administratively appeal the permit to EPA.

8. Page 4-49 2nd paragraph: "Because Lake Pend Oreille and the Clark Fork River are designated as Special Resource Waters ... pollutants ... must be below detection limits ..." "If this is not achievable ..." IDEQ must approve "lowering of water quality." Take caution in the consideration that IDEQ and EPA relaxed Pb levels in CDA basin by 288-fold because "achievement" was not possible (Spokesman-Review 2/13/98). This is a significant factor here. All these standards that must be complied with are "flexible" under certain circumstances. Ignoring water quality standards in Lake Pend Oreille because the proposed project "could not achieve" planned water quality limits in discharge waters is a clear violation of the law. Their plan may seem sound. But "what if" scenarios have not been taken into account. If the proposed project cannot meet standards, what will happen? Can the USFS and DEQ individuals who approved the permit be held responsible? It is stated that "Due to negligible economic or social benefits ... IDEQ would have difficulty justifying ... lowering ... limits ..." What happened with CDA Lake recently? How did Pb levels be allowed to increase phenomenally? Through an economic or social benefit to the city of CDA? (S4832)(S4833)

Response: Sterling must meet all requirements stipulated in the MPDES permit or fines would be levied and additional abatement actions required.

9. Page 4-57, paragraph 1, last two sentences – The EPA (1993) report actually says "A nutrient load-lake response model has been used to aid in predicting the effect these and other nutrient levels could have on the lake. Computer simulations indicate that the trophic state of the lake's pelagic waters would be little changed by <u>small to moderate alterations</u> in how much nitrogen and phosphorous entered the lake." (EPA 1993, page 29). It does not say that lake water quality is "dependent on maintaining nutrient discharges ... <u>at or below</u> their present levels". (S5)

Response: The EIS is consistent with the EPA report.

10. There are no data provided to support the conclusion stated on page 2-105 that no measurable impacts are predicted for surface or ground water resources in Idaho. There should be a table provided which displays the actual data demonstrating there will be no impacts. In fact, page 2-106 contradicts this assertion by stating that the agencies analyses (for surface & ground water quality) are based on <u>assumptions</u> that may vary from actual mining, climate & site conditions and <u>cannot be known completely in advance</u>. The key words here are climate and site conditions, and point to the fact that ASARCO and the agencies have not collected or provided much site-specific data or hard science on Rock Creek, but rather have relied almost solely on information from the Troy Mine, as well as generalizations and averages about mining and climatic conditions in Montana. The absence of information from an evaluation adit to determine actual water quality at the Rock Creek site further exacerbates this problem, coupled with the planned use of water treatment methods that are virtually unproven for mine process wastewater and for the flows anticipated at Rock Creek.

In addition, there is conflicting information on what exactly will be measured at the Idaho border to support this assertion: page 4-32 states that the lowering of water quality in Idaho is defined as a measurable adverse change in a parameter, while page 4-49 states that the concentration of pollutants from the mine must be below detection limits at the border. The specific constituents to be measured and the concentrations and loads anticipated at the border during high and low flow events should be provided in a table, and contrasted with detection limits whose values are defensible and statistically proven at a 95% confidence interval. (S6312)

Response: A detailed analysis of potential impacts to water quality in the Clark Fork River are provided in Chapter 4-Hydrology. Environmental baseline data have been collected and are summarized in Chapter 3-Hydrology. Where data from the Troy Mine were available, these data were used in selected analyses because of the similarity in the nature of the ore deposits. The reverse osmosis technology proposed for Alternative V is considered to be proven and reliable. While water quality in the Clark Fork River would be monitored, analysis of the treated effluent is considered to be the best indicator of whether MPDES discharge requirements are being met. Since permit limits would result in unmeasurable increases in constituents just below the mixing zone, they would also be unmeasurable at the border.

11. A VNRP is being established for the River from Butte, MT to the confluence with the Flathead, at a substantial implementation cost to the existing nutrient dischargers. It is unacceptable for the SDEIS and the agencies to negate the work being done under CWA Section 525 by upstream efforts to remove nutrient loadings to the system by allowing the mine to reintroduce the load downstream in the River and upstream of the Lake (this negating of nutrient control measures is acknowledged on page 2-95 and should be moved from the Description of Alternatives section to the Affected Environment or the Environmental Consequences section). (S6312)

Response: Discharges from the proposed project must meet the effluent standards in the MPDES permit that would prevent degradation to the Clark Fork River and would not negate upstream reductions.

12. Claiming dilution by the Flathead River and nutrient uptake and processing in 18.5 miles of the Clark Fork River before reaching the state line (page 4-49 – this must be an error as the state line is only about 8 miles whereas the Lake is about 18 miles from the point of discharge) flies in the face of science, as the nutrients do not disappear if there is biological uptake--they go back into the water when the plants die. This also ignores the most recent studies conducted and released by Washington Water Power to these very same agencies that are participating in the relicensing of Cabinet Gorge Dam & Noxon Dam on the lower Clark Fork River. Those studies reveal that the reservoirs are fast-flushing, not processing, and are not operating as nutrient sinks—that in fact nutrients, metals, etc. mainly pass through the reservoirs and dams and flush downstream. Permitting the mine discharge without disclosing and analyzing in the EIS the cumulative impact implications to the Tri-State management plan would strike at the heart of the work accomplished to date in the basin. (S6312)

Response: The Montana-Idaho state line is approximately 18.5 miles from the proposed project. The hydraulic residence time of Cabinet Gorge Reservoir is discussed in Chapter 3-Hydrology. The MPDES permit has a reopener clause that would allow incorporation of TMDLs as soon as they are developed in coordination with the Tri-State Council.

13. The total allowable loading & degradation to the lower Clark Fork River in both Idaho and Montana needs to be analyzed and the impacts disclosed to the public, along with an analysis of the impacts of water supply. This has not been done in the DEIS or the SDEIS. Page 3-83 of the SDEIS state that "as local areas grow, they increase the total nutrient loadings in the Clark Fork River. The extent of future developments are expected to become restricted as area water quality reaches the limits of Montana and Idaho water quality standards." An April 25, 1996 letter to MDEQ from the EPA indicated ASARCO's discharge would use up all the allowable degradation in the lower River. Page 3-82 discusses the "heavy clay soils in the western part of the county (Sanders County, MT) can constrain siting and proper operation of septic systems." It then goes on to discuss the Thompson Falls sewage treatment system and river discharge and the fact that the system "is operating near capacity." Page 3-82 also reveals that the Heron Acres water system is "currently at capacity." Page 2-125 states "community water facilities in Noxon and Heron are near capacity" and continues "Thompson Falls sewage treatment facility is near capacity and would not be able to accommodate additional demands." (S6312)

Response: An analysis of potential impacts to water quality from the proposed project is provided in Chapter 4-Hydrology. If community water and sewage systems are at or near capacity, these systems

would likely require expansion to accommodate potential growth. TMDLs for various reaches of the Clark Fork River have been, or are being developed. New TMDLs may be incorporated in the MPDES permit through the reopener clause.

14. The approach that was used to establish effluent limits conforms with guidance sent to MDEQ by EPA. Verification of these effluent limits has been independently conducted by EPA and calculations confirm, based upon the low flow conditions in the Clark Fork River as outlined in the draft permit, that the permit limits will not cause a violation of water quality standards, nor cause a measurable increase in the concentration of any parameter at the Montana-Idaho border. (S146)

Response: The Agencies acknowledge EPA concurrence that the permit limits will not cause a violation of water quality standards, nor cause a measurable increase in the concentration of any parameter at the Montana-Idaho border.

15. Page 1-7 Table 1-1. No permits or approvals are required by IDEQ? What is IDEQ's role and responsibility in maintaining water quality in Clark Fork River and Lake Pend Oreille? (S4832)(S4833)

Response: Because there is no interstate compact between Montana and Idaho, Idaho has no legal jurisdiction or decision making as it relates to implementation of Montana water quality laws. However, the project must comply with all federal water quality laws and the Agencies are committed to fulfilling the intentions of recommendations contained in the tri-state plan. As soon as TMDLs are developed for the lower Clark Fork River, the MPDES permit may be amended to incorporate these limits.

16. Page 1-10 3rd paragraph "This permit … not violate a downstream state's water quality …". How has the IDEQ been involved in the project? (S4832)(S4833)

Response: The IDEQ has participated in interdisciplinary team meetings, and has provided the Agencies with written comments and suggestions pertaining to the proposed project, project alternatives, and the EIS process and the MPDES permit.

17. S-14 4th bullet under Issue 1: how far is Idaho from discharge point? (S4832)(S4833)

Response: Idaho is approximately 18 miles downstream of Rock Creek.

18. Page 2-94. Tri-State Implementation Council: What are the numeric loading targets for the Clark Fork River and Lake Pend Oreille (as established by the state of Idaho)? Can they be met by Montana issuance of RC ?MPDES permit? (S614)

Response: Yes, see Part I of the Fact Sheet/Statement of Basis.

19. To determine if Idaho Water Quality Standards are fully protected it is necessary to know if pollutants will be detectable at the Idaho border. Recommend: Add an additional monitoring location to the MPDES permit, on the Clark Fork River at the USGS monitoring station below the Cabinet Gorge dam.

Request that an in-stream monitoring requirement be included in the wastewater discharge permit to assure that water quality in the Clark Fork River is monitored below the proposed mine discharge. This will allow maintenance of water quality standards to be verified, and thus, help alleviate the concerns of many citizens. (S146)

Response: Monitoring water quality in the Clark Fork River upstream and downstream of the proposed project would be required. The upstream location would be between the dam and the discharge point for the upstream and the downstream site would be just beyond the mixing zone. A site below Cabinet Gorge would not reflect only changes from the mine but other sources the mine would have no control over.

20. Address the possible impacts that the mine's discharge will impose on the Clark Fork's ability to assimilate additional nutrients and accommodate Montana and Idaho's future growth and development. (S6745)(S3392)

Response: The connection between project impacts, assimilation of nutrients, and the potential for future growth and development is directly tied to the TMDL. The TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. It is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The Clean Water Act, Section 303, establishes the water quality standards and TMDL programs. The Montana 303(d) list does not list the Clark Fork River below the confluence with the Flathead River as impaired due to nutrient loading. The lower Clark Fork River, however, is listed as impaired due to habitat, thermal, and flow alteration. The proposed discharge for Alternative V will not contribute to impairment for these factors, and can be permitted. Idaho DEQ is developing a TMDL for Lake Pend Oreille and the Idaho portion of the Clark Fork River. Once developed, a TMDL could be set at the Montana/Idaho border which could include any loading from the Rock Creek Mine. The MPDES permit has a reopener provision which states that the permit may be reopened and modified to include appropriate effluent limitations if TMDL requirements or a waste load allocation is developed and approved by DEQ or the EPA. The TMDL, once established, would limit the potential for future growth and development. Impacts from the proposed project would therefore be a factor, albeit unquantifiable at this point in time.

WTR-309 Wetlands and Non-wetland Waters of the U.S.

1. In appendix N on page 3-17 it talks about the wetland demonstration cells where it states: These cell will be revisited in Spring 1997 to record water levels, sample for water chemistry/quality, and establish wetland vegetation. The results of these 1997 observations on the wetland demonstration projects should be included in the final EIS, along with any information/observations made on the demonstration projects during the Spring of 1998. (S3312)

Response: The wetland demonstration cells were revisited in the Spring of 1997 and were seeded at that time. However, water levels and water chemistry/quality parameters were not measured or recorded during the Spring of 1997. With the change in applicant in 1999, no additional field work or sampling of these sites has been done. Monitoring would resume during evaluation adit construction.

2. Appendix N on page 3-2 states some mine-related components such as borrow areas for reclamation material, diversion ditches, or other storm water control structures may be found suitable for wetland mitigation. The final mitigation plan needs to incorporate all the elements and details of the mitigation outline the COE has previously provided to the applicant. The current supplement does not provide a detailed plan of how the storm water will be handled that is being diverted around the tailings impoundment site. Whether this storm water is utilized in the mitigation plan or not, the design/diversion of the storm water around the tailings impoundment needs to be addressed in more detail in the final EIS. (S3312)

Response: The areas mentioned on page 3-2 of Appendix N in the supplemental EIS or Appendix L in the final EIS, are discussed as additional alternative wetland mitigation sites. The wetland mitigation plan is presented in detail for three proposed sites and three optional mitigation sites have been located should the proposed sites prove infeasible or additional wetland creation acreage be required in the Corp of Engineers 404 permit. The applicant, as ASARCO, submitted to the COE a two page letter report and revised wetland mitigation figure in August 1998 showing the location of six optional wetland mitigation sites that could be used to achieve a minimum mitigation ratio of 1.5:1. The revised wetland mitigation figure also applies to Sterling. The letter states that the created wetlands at the optional sites would use procedures consistent with those proposed in the mitigation plan.

3. The March, 1993 Wetlands Inventory, Consideration of Alternatives and Mitigation Plan prepared by Asarco with technical assistance from Western Technology and Engineering, and Hydrometrics gave no conclusion regarding the importance of the aquatic diversity/abundance function of the delineated wetlands. The discussion on page 3-31 states that aquatic diversity/abundance was considered to be of moderate to high importance. Please explain the basis of the statement. (S3312)

Response: The moderate to high importance rating for aquatic diversity/abundance was based on the information provided in the March 1993 report, visual observations and evaluations by the Agencies and their consultants, and discussions with other interdisciplinary team members, especially aquatics/fisheries. The high importance rating is primarily based on the data showing that Rock Creek, east and west forks of Rock Creek all contain fish and bull trout appear to be permanent residents of all three streams.

4. Page 4-58 last paragraph disagreement with the statement that "None of the Alternatives would affect more than 1.5 acres of Waters of the US ...". See pages 3-29 and 3-30. "Waters of the US" is poorly defined and poorly discriminated between other jurisdictional "waters" or "wetlands". It is unknown how much additional "Waters of the US" will be affected. The Corps should look into this statement. (S4832)(S4833)

There is still no discussion about mitigating for the potential impacts to wetlands in the wilderness area should subsidence occur or should fracturing of underlying rock due to mining operations occur that would cause a change in the hydrology of the wetlands. (S6312)(S2117)

Wetlands located in the wilderness and similar areas located above the underground mine workings have not been adequately identified or discussed in the SDEIS. A map showing the wetlands identified in Table 3-11 [SDEIS p. 3-30] would further clarify this matter. Elsewhere, the SDEIS identifies only 4.0 acres of wetlands in the wilderness potentially impacted. Firsthand examination of the wilderness area above the proposed mine reveals extensive wetlands existent in areas related to the wilderness lakes, springs, seeps, creeks, etc. These areas are particularly abundant in the Cabinet Mountains due to the predominant horizontal planing structure that creates plateaus that hold surface and ground water, and create wetlands important to the area's particular hydrology and ecology. These unidentified wetlands may be affected by surface impacts (subsidence), or mine dewatering activities. Mitigation would be identified after-the-fact. The SDEIS is flawed because it approaches the impacts from the exclusive standpoint of subsidence potential, and does not adequately recognize the potential for existing connectivity of the wilderness wetlands and water resources to underground aquifers through fractured bedrock. (S188)

Identify and address wetland impacts in the wilderness. (F1)(S177)(S4364)(S4891)(S4912)(S5051)(S5088) (S5555) (S5763)

The EIS also needs to identify and address wetland issues in the wilderness and contain more replacement wetlands, to account for the delay and potential failure of restoring functions and values. To enable assessment of future monitoring and impacts, more baseline data needs to be included, especially on macroinvertebrates. (S6613)

Response: The potential for impacts to these wetland and non-wetland waters from the mine dewatering and area-wide subsidence was considered to be very unlikely because the lakes are located at least 900 feet above the ore body and are hydrologically separated from the regional water table by an unsaturated zone hundreds of feet thick. Also, Sterling does not plan to mine the pillars which would make the potential for area-wide subsidence unlikely. In addition, rock mechanics monitoring would be required and used to modify the mine plan in areas of potential subsidence (see Geology in Chapter 4). Lastly, under Alternative V a 1,000-ft buffer would be left in the vicinity of the Cliff Lake fault until it could be proven that mining this area would not impact water resources.

The existing wetland conditions, delineation results, and an evaluation of the functions and values of wetlands and non-wetlands water of the U.S. for Copper Lake, Cliff Lake, and Potential Subsidence Areas, Cabinet Mountain Wilderness are provided in the "Report of waters of the U.S. and wetland delineation for Copper Lake, Cliff Lake, and potential subsidence areas, Cabinet Mountains Wilderness" document (Hydrometrics, Inc. January 1997). A more general wetland function "Aquatic Diversity/ Abundance" was used to evaluate the overall importance of the delineated wetlands. Specific information on macroinvertebrates is provided in the Section 3 - Aquatics/Fisheries of the draft and supplemental EISs.

An additional table has been added to the final EIS (similar to Table 3-11 in the supplemental EIS) to provide detailed acreage (see Table 3-16). The potential for impacts to these wetland and non-wetland waters of the U.S. from the mine dewatering and area-wide subsidence is considered to be very unlikely under all action alternatives because the lakes are located at least 900 feet above the ore body and are hydrologically separated from the regional water table by an unsaturated zone hundreds of feet thick. The potential for impacts have been further mitigated under Alternative V which requires a 1,000-ft buffer in the vicinity of Cliff Lake and south end of the Cliff Lake fault, and the north and south ore outcrop zones. In addition, Sterling does not plan to mine the pillars which

would help reduce the potential for area-wide subsidence. A conceptual mitigation plan for the wilderness wetlands has been added to the applicant's revised wetland mitigation plan (Appendix L).

5. Page 2-80 Wetland Mitigation plan para 2, second sentence and Page C-9, last paragraph: The Miller Gulch tributary sites identified in Alt V will further decrease the amount of water I receive from the South Fork of Miller Gulch with the resultant impact to down stream wetlands (referenced paragraph 3 page C-8. I strongly recommend that Miller Gulch be used between the south boundary of Section 20 and Government Mtn Road instead. Miller Gulch in this area is broad (100 ft) flat and very little down gradient.

Page 2-126-127 changes in waters of U.S. and wetlands: Paragraph at bottom of page. Reference my comments for page 2-80.

Page 4-63 paragraph 3 refer to comments for page 2-80

Volume 2, page 3-1, wetland mitigation sites; South Fork of Miller Gulch tributary: Recommend this site be changed to Miller Gulch between section 20 boundary and Government Mtn Road. See comments for V1 page 2-80. I believe this site meets all of criteria listed V2 page 3-4. (S4892)

Response: The proposed wetland mitigation sites were selected based on five criteria including their suitability for establishing similar functions and values as the affected wetlands. The Miller Gulch mitigation sites was selected primarily to replace the small isolated perched-water wetland sites that would be filled with mill tailings. The section, or reach, of Miller Gulch between the south boundary of Section 20 and Government Mountain Road already contains wetland areas which may be negatively impacted by increasing water depths (rather than simply an expanded areal extent). In addition, the Miller Gulch mitigation site is located within the permit boundary, while the area in the NE 1/4, Section 29 is outside the permit boundary.

Water flow barriers in the side tributary to the South Fork to Miller Gulch drainage are designed to temporarily retain surface water runoff, attenuate peak flows, and prolong base flows. The total volume of water stored behind the barriers is not large compared to the total flows. The temporary retention wetlands sites behind the barriers are designed to establish similar functions and values as the wetlands to be filled from the paste tailings.

6. Page 3-30 top paragraph change to: Wetlands along the ephemeral and intermittent drainages of South Fork of Miller Gulch within the tailings impoundment area are associated with…. Add: the South Fork of Miller Gulch where it leaves the impoundment area is a year round flowing stream. (S4892)

Response: The stream designation for that particular reach of the tributary to the South Fork of Miller Gulch is an ephemeral.

7. There is a statement about discharge of fill material to approximately 5.2 acres of wetland. What type of fill material will be placed here? Can it not be deposited somewhere else? And save the wetland. (S5091)

Response: The fill materials that would potentially be discharged to the 5.2 acres of wetland are paste-tailings materials associated with the construction of a tailings storage facility. Many other sites and alternatives were evaluated for tailings disposal and discussed in the Cabinet Mountains mineral activity coordination report (U.S. Forest Service, 1986) and in the draft and supplemental EISs in Chapter 2, Alternatives Considered But Dismissed.

8. The effectiveness of the wetlands mitigations need to be monitored to determine effectiveness. If the mitigation is not effective, there should be money set aside and clear direction of corrective action to be taken to make the mitigation effective. (S5484)

Response: Monitoring of the wetland mitigation for success in reestablishing functions and values would be a part of the overall wetland mitigation plan (Section 3.4.3: Monitoring, in Appendix N).

9. The summary addresses created wetlands sites and identifies three optional wetland mitigation sites that could be developed if the proposed sites prove to be less successful than anticipated for replacing the lost wetland functions and values. I believe creation of new wetlands is extremely difficult, and it would be preferable to preserve and improve existing wetland. Have decreases in the wetlands functions been evaluated? What time frame is anticipated for the created wetlands to function and be of value when re-vegetated and fully established? (S6580)

Page S-15—Issue 6. "Effects are predicted to impact: Up to 9.6 acres of Waters of the U.S. and wetlands and decrease functions and values until mitigation sites, up to 13.8 acres (depending on the alternative), were established (all action alternatives)." This sentence also implies that Waters of the U.S. and wetlands would be destroyed before mitigation sites are constructed. Assuming that the mitigation sites are effective, how will organisms (any threatened species?) that depend on that habitat survive in the interim?

Page S-22. Alternative V calls for 7 acres of wetland mitigation sites. "... all wetland mitigation sites would be developed as replacement wetlands prior to disturbance of existing wetlands." This sentence disagrees with p. S-15. Do the alternatives plan for construction of replacement wetlands before or after Waters of the U.S. and wetlands are filled? (S3462)

Response: The potential wetland mitigation schedule is provided in Table 2-18 of the final EIS and in Table F-5, Appendix F, and in Section 3 of the Wetlands Mitigation Plan in Appendix L. Most of the wetland mitigation sites are scheduled to be developed and their projected comparable functions reestablished prior to the actual filling of the wetlands whose functions they are projected to replace within the first 5 years before production begins. However, some wetland mitigation work may be performed concurrent with impacts in order for the hydric soil and local seed source to be directly salvaged and replaced without detrimental stockpiling. In general, about 3 years are required after construction for the created wetland sites to resume comparable functions but could take as long as 25 years.

10. The summary states: All four action alternatives would fill waters of the U.S. and wetlands. I request that the cumulative impacts of mining activities on these areas be explored further. (S6580)

Response: A discussion of the cumulative impacts of mining activities on wetland and non-wetland waters of the U.S., along with anticipated timber sales, road building, recreational activities, and other mining projects impacts is presented in Chapter 4 at the end of the Wetlands and Non-wetland Waters of the U.S. section.

11. What about loss of wetlands, whose values we have come to progressively come to understand and appreciate? (S6588)

Response: The proposed wetland mitigation, if successful, is designed to compensate for the loss of wetland functions and values. Wetland mitigation plans for Alternatives II and V are discussed in more detail in Chapters 2 and 4.

12. Page 2-80: Could the storm water diverted from undisturbed lands above the tailings paste facility (page 2-64) be used to supplement the proposed wetland mitigation? Would it be appropriate to consider creation of wetlands between the mill site and the west and east forks of Rock Creek to help capture sediment runoff from the mill site? Would it be appropriate to create wetlands downgradient of the mill site to attenuate any potential adverse drainage from the waste rock used to construct the mill site? Would it be appropriate to consider wetland creation in association with the stormwater diversion around the paste tailings pile? (S146)

Perhaps opportunities for additional wetland mitigation in the Rock Creek watershed could also be developed in association with sediment mitigation needs, and mitigation wetlands could also be designed to provide additional recharge to Rock Creek to help address intermittent flow and dewatering impacts that are of concern with bull trout habitat. Such additional wetland creation may allow for increasing the wetland replacement ratio beyond 1:1. (S146)

Response: The applicant's latest Water Management Plan for Alternative V (January 1997) includes a figure showing that storm water would be diverted from above the tailings paste facility to both Miller Gulch and Rock Creek. The applicant, as ASARCO, has also submitted a two-page letter to COE (August 11, 1998) stating additional plans to create two of six optional wetland sites that would rely on surface water provided by the diversion of water around the northwest and northeast sides of the paste tailings disposal facility. These plans also apply to Sterling's water management plan. This storm water would also be used to supplement and maintain existing wetlands and flows in the South Fork of Miller Gulch and lower Rock Creek.

The applicant has stated their five criteria for selecting wetland mitigation sites, which includes: (1) suitability for establishing similar functions and values as directly and indirectly affected wetland; (2) proximity to the project area, yet sufficiently removed from activity to reduce project-related disturbance; (3) surface ownership; (4) cumulative acreage of sites to achieve a minimum acreage replacement ratio of one-for-one (now 1.5 to 1); and (5) relative cost of mitigation. The wetland creation sites near the mill and tailings paste disposal facility may not meet some of the selection criteria as well as other possible sites.

It would likely be appropriate (hydrologically) to create wetlands (storm water retention ponds) immediately below the mill site to attenuate flows and provide sedimentation and filtration prior to discharge to Rock Creek. However, the functional capacity of these wetlands would be limited throughout the mill life because of the lights, noise, and activities that would likely be associated with the mill.

13. Page 4-63: Mitigation for the proposed loss of 6.2 acres of wetlands and 0.4 acres of waters of the U.S. with Alternative V (page 4-75), should replace the ecological functions and values of the wetlands that are lost (i.e., ground water discharge, aquatic diversity and abundance, wildlife diversity and abundance). There is concern that replacement of the loss of 6.2 acres of wetlands and 0.4 acres of waters of the U.S. with 7.0 acres (basically a 1:1 replacement ratio) may not provide an adequate margin of safety to reflect the likely degree of success of created wetlands relative to the impacted wetlands (i.e., Will 1:1 acreage replacement of natural wetlands with created wetlands adequately replace functions and values?) There is also concern regarding temporal loss of wetland functions and values due to the time it takes for vegetation and mature ecological conditions to establish in created wetlands, and for indirect loss or impact of wetland areas and springs or seeps from drawing down of the water table as the mine is dewatered.

EPA Region 10 has indicated that for the Crown Jewel mining project in the State of Washington 34 acres of wetland mitigation was proposed as compensation for 3.5 acres of direct wetland disturbance. Ground water modeling for that project had predicted a drawdown area and a buffer was added to that to account for uncertainty in the model. We note that Klohn-Crippen concluded that the hydrogeology of the mine area did not appear to be well understood (page 55 of the FMEA report). They recommended that ground water observation wells be installed to assess the hydrogeologic regime, and that ground water modeling be carried out to assess changes during operations and closure. We believe that it would be appropriate to develop additional wetland mitigation to provide an additional margin of safety to reflect the likely degree of success of created wetlands relative to impacted wetlands and to address uncertainties in indirect impacts.

We are pleased, however, that the Wetland Mitigation Plan in Appendix N includes; performance criteria and monitoring to allow measurement of success of wetland creation; commitments to carry out remedial actions including additional wetland creation if performance criteria are not met. We are also pleased that conservation easements will be established to protect the mitigation wetlands (Appendix N, page 3-33). (S146)

The proposed action must require more replacement wetlands to account for the delay and potential failure of restoring function and value. (F1)(S177)(S4891)(S4912)(S5051)(S5088)(S5555)(S5763)

Response: The first concern is that a 1:1 wetland mitigation ratio is too low and that there would be a temporal loss of wetland functions and values. Even though the applicant has already provided detailed mitigation designs for 10 acres of wetlands, the actual wetland mitigation ratio has not yet been decided by the Corps of Engineers. It is likely that the Corps would require a minimum wetland mitigation ratio of 1.5:1 and the applicant has identified three optional areas in order to provide about 10 more acres for wetland mitigation. The proposed mitigation schedule does provide for wetland construction prior to substantial impacts to the existing wetlands from the mine project. A standard 5-year period after construction was used to estimate the resumption of comparable wetland functions for all mitigation sites even though some wetland sites and wetland functions would re-established faster or slower than the 5-year estimate.

The concern that the wetland mitigation ratio is too low is based on a previous ratio for the Crown Jewel mine in Washington and that there is uncertainty in the mine hydrogeology especially concerning potential impacts caused by drawing down the water table as the mine is dewatered. Potential impacts to the hydrogeologic regime from mine dewatering are also discussed in Chapter 4 of the supplemental EIS. In addition, it is not practical to install ground water monitoring wells in the Cabinet Mountain Wilderness, nor is modeling an effective way of assessing the hydrogeologic regime. As an alternative to well installation and modeling, the agencies developed an Evaluation Adit Data Evaluation Plan to gather and assess more reliable data. Hydrogeologic data collected during the construction of the evaluation adit would be used to assess the rate of seepage into the mine and mine water quality for the purpose of verifying analyses presented in the final EIS. A drawdown of the water table from the mine is not anticipated.

14. Compare maps 2-81 and 3-58. The "Lower Rock Creek Wetland Mitigation Site" just happens to be an OG stand. Losing an OG stand to gain a wetland site is not acceptable. Another mitigation site needs to be acquired. (S6312)

Response: The areas shown on maps on pages 2-81 and 3-58 of the supplemental EIS do have overlapping areas for the "Lower Rock Creek Wetland Mitigation Site" and "Old Growth" designations. The actual Lower Rock Creek Wetland Mitigation Site is only about 1.5 acres. The site development concept is to create natural-looking canal-like configurations between 2 to 3 feet deep and 10 to 25 feet wide. Even though some small trees may need to be removed to complete the excavations, larger and established trees (and stumps) would not be removed. The primary overstory tree species would be retained after wetland mitigation.

15. Riparian and wetland functions and values (not just the total amount of riparian and wetland habitat) should be evaluated, maintained, and enhanced. Monitoring should be required to ensure wetland functions and values are being maintained. An appropriate bond should be posted to cover damages to wetlands and riparian areas and the wilderness lakes. (S6312) (S2117)

Response: The wetland functions and values were assessed as part of the wetland and non-wetland waters of the U.S. delineation and inventory field work completed by the applicant (with assistance from Western Technology and Engineering, Inc, and Hydrometrics, Inc). The applicant has stated

their plans for annual monitoring for five years and every two years through the end of mining and production. After final success criteria have been met, Sterling plans to establish Wetland Conservation Easements for the new wetland sites. A reclamation bond will be required for all project-related disturbed areas as part of the Montana hard rock mine permit including wetland mitigation sites.

16. Appropriate buffers should be maintained around wetlands to protect their hydrological regimes. (S6312) (S2117)

Response: An evaluation of both direct and indirect impacts to wetlands associated with the various Mine Alternatives and major mine facilities was completed and the results are discussed in the applicant's Wetland Delineation Reports (ASARCO Incorporated 1993, 1995, 1997) and throughout the draft and supplemental EISs. The above-ground mine facilities were evaluated based on their distance (buffers) from existing wetlands. Wetland areas were considered to have indirect impacts, and their areas included in the total acreage, if their hydrological regime (water supply) would be impacted by the mine facilities. See Chapter 4, Wetlands and Non-wetland Waters of the U.S. for more details.

17. If there are any Black Cottonwood stands in the project area, they should be protected due to their importance to wildlife. Where in the SEIS is the occurrence and distribution of important wildlife habitat types, such as Black Cottonwood Bottomland shown? (S6312)

Response: Black cottonwood stands were identified in baseline and wetland studies in the proposed project area (ASARCO 1993 and 1995a). The wetland inventory maps identify the vegetation stands identified in the inventory which are dominated by black cottonwood. Vegetation stands dominated by black cottonwood were observed in the mainstem of Rock Creek in non-channel floodplains north of the upper bridge, in a snowmelt tributary and a narrow zone along the East Fork of Rock Creek, and along the mainstem and north fork of Miller Gulch. No major stands of black cottonwood are proposed for disturbance. The major disturbances to black cottonwood would be along the 50-foot wide pipeline and access road corridor. Black cottonwood trees would be avoided as much as possible and the pipeline corridor will be reclaimed immediately allowing the black cottonwood to begin reestablishment during mine life. No information was included in the supplemental EIS showing black cottonwood bottoms because of the minimal disturbance to the stands in the study area.

18. Approximately 6.2 acres of wetland will be impacted directly (5.2 acres) and indirectly (1 acre). The DSEIS grossly underestimates the unavoidable and major impact of the mine on wetlands for several square miles in the Cabinet Mountains, throughout the Rock Creek and Clark Fork River watersheds, and in the area surrounding the confluence of the Clark Fork River and Lake Pend Oreille.

Instead of just a few acres impacted, we project that several hundred acres will be impacted, perhaps not immediately, but eventually, and that at least a few thousand will be gradually degraded. After 30 to 50 years, thousands of acres of wetlands, small ponds, and lakes in the Cabinet Mountains, and downstream in the Clark Fork watershed will be severely impaired as a result of the gradual buildup of persistent pollutants that the DSEIS acknowledges will flow downhill from the mine.

We project that within 5 to 15 years of the start of the mine, sediment, nitrogen, phosphorous, arsenic, lead, other heavy metal, and possibly biological pollutants will build up to levels causing significant shifts in aquatic vegetation and food chains in several hundred acres of unidentified downstream wetlands. Based on the history of other large projects, it is prudent to also assume that there will be other serious pollution problems that were not anticipated. Hence, there will be little or no monitoring for them, nor any remedial systems in place.

Subtle shifts in species composition in wetlands are likely to eventually have major and cumulative adverse impacts on the productivity of the wetlands and the diversity of species that live within them. In time, predictable consequences include a reduction in the diversity and number of "top-of-the-foodchain" species, especially raptors and Kamloops trout and salmon.

After three decades of operation, the magnitude of xenobiotics settling into the region's wetlands, particularly the valuable wetlands and breeding grounds at the confluence of the Clark Fork River and Lake Pend Oreille, will reach levels where major and permanent species shifts are inevitable. We project that at least several hundred acres of wetlands could be dramatically and irreparably affected by the mine. The worst hit area, and the greatest loss in habitat quality will occur in a circle with a 10 mile radius around the confluence of the Clark Fork and Lake Pend Oreille. Denton Slough, nearby wildlife refuges, and other valuable migratory bird nesting places will be among the areas affected, perhaps significantly.

Wetland degradation will irretrievably harm many species that add immeasurably to the popularity of Lake Pend Oreille and the scope and quality of Lake-based recreational opportunities. Key species that are known to be sensitive to exposures to heavy metals and other xenobiotics include raptors (including threatened and endangered species, duck, geese, amphibian, trout, and small mammal populations). Long-term adverse population impacts can arise through a variety of mechanisms that the DSEIS hardly touches upon. These no doubt will include – Loss of suitable material for nesting and habitat for breeding; Periodic collapses in foodchains that undermine reproductive efficiency and the survivability of young; and, Multigeneration impacts on reproduction, immune system development, an neurological development and behavior caused by exposure to endocrine- disrupting xenobiotics.

Degradation in wetlands caused by the steady influx of pollutants from the mine will also erode the capacity of biotic communities to overcome other adverse shocks and circumstances. Such shocks will periodically include a dry summer or an unusually wet spring, the emergence of a new disease or parasite, like the whirling disease problem plaguing native brown trout populations in much of Montana, the impacts of fire, or some sustained shift in small aquatic invertebrate populations.

It is important to further note that such unusual circumstances and shocks to wetland ecosystems are actually a normal part of the evolutionary process. They are bound to arise, to varying degrees, in at least a few years in most decades. The key point is that the pollutants from the mine could irretrievably reduce the resiliency of wetlands in the area, and that as a result, major shifts will occur in times of stress in species diversity and richness, eroding what most people consider some of the most valuable attributes of wetland ecosystems.

While the mine is projected to operate for 30 years, we project the peak impact of the mine on unidentified downstream wetlands will not occur until perhaps five to 10 years after the mine closes. Thus, the period of maximum impact could be three decades after the expiration of the MDEQ permit to discharge pollutants, which will run only through the year 2003.

For at least another three to five decades after the closing of the mine, the level of pollutants seeping from the tailings pile, impoundments, and moving from the cavity within the mountain into the watershed through many springs and small creeks will be sufficient to maintain most pollutant levels. Levels of the more persistent xenobiotics will probably rise for many years after the mine closes because many of the metals released as a result of mining operations tend to bioaccumulate in the foodchain.

Based on experiences elsewhere it will take a half-century after the mine closes, at a minimum, for pollutant levels in most affected wetlands to approach pre-mine levels. As the quality of water improves, there is no guarantee that the original biological community will recover, indeed there is much evidence suggesting that it is extremely unlikely it ever will. Accordingly, a key conclusion is unavoidable – the Rock Creek mine will permanently impair

at least several hundred, and perhaps a thousand acres of wetlands that now serve as critical bird and fish habitat. Moreover, because of the unique importance of these wetlands as breeding and nesting habitats affecting the entire Lake Pend Oreille and Clark Fork River region, there is no way to mitigate the loss by expanding or restoring a few other wetlands in the immediately surrounding area. (S4832)(S4833)

Response: The EIS process and particularly the systematic evaluation of potential environmental effects requires the analysis be based on the best scientific information available. The systematic effects analysis must include identifying both qualitative and quantitative impacts and describing the reasonably foreseeable natural and man-caused changes from the existing conditions, should the mine be operated.

The analysis of direct and indirect impacts to wetlands and non-wetland waters of the U.S. in the supplemental EIS and the draft EIS was based on the best available information. Potential changes and impacts to wetland and riparian areas, in addition to the delineated 6.7 acres of wetlands and non-wetland waters of the U.S. that would be directly and indirectly affected, were included in the cumulative and short- and long-term impact analysis sections. In addition, other resource areas, such as aquatics/fisheries and biodiversity, include analysis of impacts to species and populations and to regional surface water quality (nutrient concentrations). Because impacts to the Clark Fork River are not anticipated to be measurable, no impacts to wetlands of Lake Pend Oreille are predicted to occur. There is a potential for impact from the remote risk of tailing facility failure, but the potential causes of such a failure, earthquake or extremely severe storm event and flooding would also contribute to the impact, such that the impact from the tailings facility failure would be difficult to quantify. The reader is directed to comments and responses in GEO-102 for more information regarding tailings facility stability.

19. Page 2-126, Changes in Waters of the U.S. and Wetlands. Does it make sense to say that because the footprint of a paste tailings impoundment would grow slowly over the life of the mine, the areas that were not yet under the impoundment would not be affected? (S3462)

Response: The phased-in construction of the Alternative V paste tailings disposal facility panels would delay the direct impacts (actually filling of the wetlands) and indirect impacts (e.g. decreased function as habitat for aquatic and terrestrial species) for some portion of the 34-year project.

20. Page S-22 states that "Alternative V would impact a total of about 6.2 acres of wetlands and 0.4 acres of waters of the U.S. These impacts would be significant. Alternative V would develop a total of 7.09 acres of wetland mitigation sites along Rock Creek and Miller Gulch."

It's interesting to note that the Agencies preferred alternative in the DEIS—Alternative IV would have destroyed fewer wetland acres (6.0 acres of wetlands and .4 acres of waters of the U.S.) and provided more wetland mitigation acres (10.5 acres). The Agencies should develop an alternative that includes a higher ratio of mitigation acres to acres destroyed. (S6318)

Response: The discrepancy between the 6.2 acres in the supplemental EIS versus the 6.0 acres in the draft EIS for acres of wetlands impacts by Alternative IV is the result of mathematical rounding of individual areas with less than 0.1 acres. The 6.2-acre area is more accurate. Alternatives IV and V would eventually directly impact the same quantity of wetland acres. Although the applicant has already provided detailed wetland mitigation designs for 7 acres of wetlands, the actual wetland mitigation ratio has not yet been formally decided by the Corps of Engineers. It is likely that the Corps would require a minimum wetland mitigation ratio of 1.5:1 (about 10 acres of wetland mitigation). Thus, the applicant identified the additional areas discussed in previous responses to comments, above.

21. Additionally, the Army Corps of Engineers needs to fully exercise their authority to avoid and minimize destruction of wetlands. One alternative discussed, but rejected in the SDEIS, that would achieve this is to require ASARCO to backfill the 40 million tons of tailings they admit will fit back in to the mine workings. The backfill option could potentially reduce the footprint of the impoundment, and as a result reduce the impacts to wetlands in the impoundment area. Additionally, the backfill alternative would help reduce the long-term potential for subsidence in the wilderness area.

Page 1-12 of the SDEIS states that "COE guidelines require analysis of practicable alternatives that would require no disposal of dredged or fill material in the Waters of the U.S., or that would result in less environmental damage." The backfill alternative meets these requirements, and should be included in the Agencies preferred alternative. (S6318)

Response: Part III of Chapter 2 of the draft EIS discussed the alternatives considered but dismissed from further study, including other tailings disposal methods such as the backfilling of tailings (page 2-96 in the draft EIS). The backfilling of tailings is dismissed in the final EIS for three main reasons including: 1) a surface tailings storage facility would not be eliminated; 2) additional land disturbances may be required; and 3) costs to mine could be uneconomical if backfilling were part of the project design. There were also operation constraints that made the use of paste backfill infeasible.

22. Depending on action alternative, various areas of wetlands will be filled by this project. The creation of mitigation areas appear to be highly dependent on structures, disturbance of undisturbed areas, and plant species introduction. Long linear features are being replaced by structure-created retention fans. Some appear to be potential sediment traps for up gradient land disturbances. It appears mitigation sites are going used as buffers. The structure design limits, upon which the mitigation sites are dependent, are not specified.

Fragmented wetland mitigation sites do not provide the same function and value as contiguous natural area.

The same concern for the lack of site specific baseline data for precipitation , springs, and seeps exists for the stability of the structures, particularly since they are being proposed in a "stacked" fashion, with the failure of one directly affecting the stability of down gradient structures. (S1417)

Response: The criteria used in developing wetland mitigation were listed in Section 2 of the wetland mitigation plan for Alternative V (Appendix L). The seven criteria were to: 1) avoid disturbing existing wetlands; 2) select areas to create similar functions and values; 3) select sites close to the impacted wetlands; 4) select sites with hydrologic, edaphic, and topographic capability to support and maintain wetlands; 5) select areas where surface ownership favors long-term management; 6) develop mitigation plans that do not rely on periodic maintenance; and (7) minimize potential impacts of constructed wetland on adjacent or downstream land or sensitive plant or animal species.

The primary functions and values associated with the existing wetlands located in the tailings footprint are sediment retention and aquatic and wildlife diversity/abundance. The created wetlands are anticipated to be functional for sediment retention and ultimately would provide aquatic and wildlife habitat functions and values comparable to the impacted wetlands.

23. Page 2 "Impacts to .."result in unavoidable discharge of fill .."they are not unavoidable under Alt 1 "approx. acres of wetland will be indirectly ..." what about indirect impacts to the Clark Fork River and unidentified downstream wetlands? "wetland and waters of the US" Wetlands are Waters of the US - what is the distinction here?

S-21 6th paragraph Again consider the distinction between "Wetlands and Water of the US" – the wetland report should have identified the difference. Wetlands are Waters of the US. Does the Corps mean 'streams' for Waters of the US? If so, please identify as such.

Page 3-29 under "Waters and Wetlands of the US" Wetlands are Waters of the US (Environmental Laboratory 1987). 4th paragraph: If ASARCO/Consultations are using Cowardin (1979) classification, they should use it correctly. Riverine, palustrine, lacustrine are types of wetland systems, upper perennial, forested, emergent, etc, are classes" "The non-wetland waters … are … riverine systems." Riverine systems include wetlands. The distinction given here is poor. "Wetland complex" is given in Table 3-11 but not defined in paragraph 4. "Riparian areas" contain unknown amount of jurisdictional wetlands. Where these identified? Are any of these within project area? Corps needs to address these undelineated areas. 6th paragraph "The non-wetlands … are … aquatic bed …" Aquatic beds should be considered wetland. They have vegetation, soils (due to long-term inundation), and obviously, positive wetland hydrology. They should be considered for potential impacts. (S4832)(S4833)

Response: As stated, the unavoidable loss of wetlands would result from implementing the various action alternatives. The analysis of direct and indirect impacts to wetlands and non-wetland waters of the U.S. is based on the best available information. Primary effects were equated to direct impacts (construction-related impacts) and secondary effects were equated to indirect impacts. The potential indirect impacts were considered to occur at some distance from the actual construction sites and also considered to occur after the project would be operational. Other resource areas, such as aquatics/fisheries and biodiversity, also include analysis of direct and indirect impacts to species and populations and to regional surface water quality (nutrient concentrations).

As was noted in the comment, wetlands are part of the overall waters of the U.S. However, by definition, wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The text has been revised, where necessary, to define the two entities as wetlands and non-wetland waters of the U.S. In general, the COE considers wetland delineations to be valid for 3 years; the COE will determine if additional wetland delineation field work is needed.

By definition, the Riverine System includes all wetlands and deepwater habitats contained within a channel. The entire wetland complex area was evaluated as jurisdictional wetlands for the EIS impact analysis. The riparian areas that were located away from proposed mining disturbances (primarily along the existing access road corridor) were not included in the inventory and field verification of jurisdictional wetlands or non-wetland waters of the U.S.

24. Page 4 4th paragraph where are cumulative impacts addressed? They must take into consideration impacts from relicensing dams and ICBEMP EIS results. What is considered the "public interest?" Do we consider environmental impacts less than economic benefits? Cover Sheet Cooperating Agencies Was the USFWS not included in this assessment? Why not? (S4832)(S4833)

Response: Cumulative impacts are addressed in Chapter 4 at the end of the analysis of environmental consequences section for wetlands and non-wetland waters of the U.S. The cumulative impact analysis for wetlands and non-wetland waters of the U.S. did not include prediction of effects related to licensing or practices associated with Clark Fork River dams because these projects would not affect the same wetlands. However, other resource areas, such as aquatics/fisheries and biodiversity did include impacts to species and populations and to regional surface water quality (nutrient concentrations) in their cumulative analysis. The role of a EIS under

NEPA/MEPA is to identify and disclose impacts to the affected resources; it is the responsibility of the decision makers and the public to make value judgments about what they read.

25. We find the proposed wildlife mitigation measures to be almost futile afterthoughts tacked onto the tail end of an environmentally degrading project of enormous proportions. For example, no monitoring plan for the effectiveness of the replacement wetlands were to be found. There is simply a reference to ASARCO 's Wetland Mitigation Plan. This is disturbing, since mitigated wetlands are notoriously ineffective and are almost never as productive an ecosystem for the native inhabitants of the one they are supposedly replacing. Without strict monitoring and enforcement of wetland construction techniques, construction will likely be shoddy and the wetland functions will suffer. (S6332)

Response: The re-establishment of aquatic and wildlife diversity and abundance are two main wetland design objectives for the created wetland sites. The applicant provided information on re-establishment of wetland functions and values in their Wetlands Mitigation Plan for Alternative V (Appendix L). Sterling would monitor the wetland mitigation sites annually for 5 years to ensure that wetland functions and values are established and maintained. Thereafter, monitoring would be conducted every 2 years through the end of mining. The agencies would assess the progress toward successful re-establishment of wetland functions and values documented in the monitoring reports and, if necessary, require remedial action to address performance criteria that are not met.

26. Page S-15 Issue 6 "may decrease functions … until mitigation sites were established (and functioning to degree needed)." If quantitative assessment has not been made, how will the "degree needed" be assessed? (S4832)(S4833)

Response: Most of the quantitative assessments of wetland functions and values (WET, HEP, HGM, etc.) are highly subjective because they rely on the evaluator's knowledge, education, and expertise. Qualitative assessments by qualified wetland scientists are generally considered to be as reliable as the numerical-type wetland assessments. Sterling would monitor the wetland mitigation sites annually for 5 years to ensure that wetland functions and values are established and maintained. Sterling would take remedial action to address any performance criteria that are not met, if deemed necessary by the appropriate agencies.

27. Page S-22 1st complete paragraph "Temporary … due to increased sediment …". Since wetlands are sinks and most retain sediments, this is not a temporary impact. The Corps should identify this as "fill." (S4832)(S4833)

Response: Sediment retention in wetlands is considered a valuable wetland function while increased sediment contribution to wetlands is considered a detrimental wetland impact. The temporary indirect impact described in this paragraph (sediment contribution from nearby construction-related earthmoving activities) is described as a temporary indirect impact because the increased sediment contribution to the nearby wetlands would be short-term in occurrence and would require transport to the wetlands via surface water runoff and runon.

28. Page 1-4 4th paragraph"The selected alternative … in compliance … Corps … EPA … regulations and guidelines …" The wetlands report is dated 1993 - wetland delineations are valid for three years - has an extension been made? See also page 2, last paragraph. (S4832)(S4833)

Response: The wetlands delineation for the original Rock Creek Mine site was formally determined as valid for a period of 3 years, from October 3, 1994 to October 3, 1997. No extension has been made and the COE will most likely require that the wetland areas with proposed direct and indirect impacts be reverified prior to approval of a 404 permit.

29. Page 1-12 1st full paragraph"The guidelines ..." There are no alternatives discussing this - Is the project really necessary? Recall that there is a "practicable" alternative. No wetland impact from no mine activity. (S4832) (S4833)

Response: The practicable alternative analysis to evaluate the need to dispose of fill material in Waters of the U.S., or to minimize environmental damage has been integrated and is part of the overall EIS alternatives analysis. The practicable mining alternatives, including the no-action alternative, and the tailings disposal locations were analyzed and the results discussed in Section 2.1.1 of the Preliminary Section 404(b)(1) Showing (page F-6) in Appendix F. The text has been revised to include a reference to the Section 404(b)(1) Showing in this paragraph.

30. Page 2-2 first bullet, 3rd paragraph"Seepage ..." This translates into unidentified wetland impacts - need response from Corps. (S4832)(S4833)

Response: Seepage into underground mine workings and its affect on wilderness lakes, wetland and springs was identified as a significant issue to be used as criteria in defining and evaluating the mine alternatives. The COE requested additional wetland and non-wetland waters of the U.S. delineation and classification inventory for areas defined as potential subsidence areas in the Cabinet Mountains Wilderness area in August 1994. The additional wetland and non-wetland waters of the U.S. were delineated in August 1996 and the results reported in January 1997 (Hydrometrics 1997a).

31. Page 2-80 3rd and 4th paragraphs"ASARCO has identified ... above the water table ...". and in 4th paragraph "Linear channels ... excavated down to ground water depths ..." and "Since the wetland hydrology ... no amendments ... to decrease the bottom permeability" Gobbledygook. If wetland mitigation needs ground water hydrology for hydrologic input, and the area is excavated to 'seasonal' level, why would anyone think of decreasing permeability? (S4832)(S4833)

Response: The sentence referring to no amendments to decrease permeability for the channel bottoms at the upper Rock Creek site was written to help differentiate wetland construction methods for the Miller Gulch site from those for the upper Rock Creek site. The text has been revised to remove this obvious fact.

32. Page 2-82 Table 2-14 First line - why does it take exactly 19 years for the functions to resume? What are the functions identified here? What type of functional assessment has been made that can address the precise period to resume functions?

2nd paragraph" .. salvaged soil." What is this? From where was it salvaged? Is it suitable for native wetland plants? Is it relatively noxious weed-free? What is the project's "standard upland herbaceous mix"? (S4832)(S4833)

Response: As stated in the Wetlands Mitigation Plan section of the EIS, soils taken from impacted wetlands would be used wherever possible to create the new wetlands. The salvaged soil may also include soil removed from the sites where wetland mitigation sites would be created. Soil would not be wasted because it contains noxious weeds. Sterling would be required to control noxious weeds in its disturbed sites. Any noxious weeds in wetland mitigations sites would be controlled. The standard upland herbaceous mix is listed in Appendix J.

33. Page 2-118 1st full paragraph, 2nd and 3rd paragraphs" ... subsurface geology is well known," and "Nevertheless ... impacts ... are well-understood ..." Compare this statement with 2nd paragraph, "Therefore, effects on springs and seeps cannot be predicted precisely." This is a contradiction, this states "we know but we don't know," and this indicates we don't know that seeps may form or dry up. Isn't this a charge of the Corps to evaluate even potential indirect impacts in the light of such admissions? The entire watershed may be affected. Compare with 3rd paragraph, "Even without such data, ... mining could reduce flows at some springs, ... likely

increase flows at other springs ..." The Corps needs to address these statements. The Corps is charged with implementing the CWA. Seeps are considered wetlands of the US. Loss of seeps is direct wetland impact. Increased flows in seeps results in differing water quantities to downstream wetlands, plants, animals, streams, and other wetland areas. These have not been addressed. Can an individual petition the FS to go on their property and admit to lose wetland seeps and springs, affect downstream conditions and get a permit to do so without an analysis of effects or implementing mitigation? Corps response needed. (S4832)(S4833)

Response: The EIS process and particularly the systematic evaluation of potential environmental effects requires the analysis be based on the best scientific information available. It is possible to have detailed knowledge of the subsurface geology (rock stratigraphy) without knowing the precise hydrogeology (piezometric surfaces, ground water gradients, etc.). Seep and spring areas that resulted in a predominance of hydrophytic vegetation were delineated as wetlands during the wetland and non-wetland Waters of the U.S. inventory. Impacts to these seeps and springs were included in the impacts assessment.

34. Page 2-126 last paragraph Miller Gulch site as a mitigation site. I thought earlier it was stated that Miller Gulch would lose surface water runoff. Surface water runoff and ground water are often related, especially in a drainage. How has this been addressed relative to excavated to ground water for mitigation? (S4832)(S4833)

Response: The Miller Gulch Tributary mitigation site would create wetland hydrology by concentrating and temporary storage of seasonal surface water on low permeable, poorly-drained lacustrine soils.

35. Appendix N Page 3-41st paragraph"Relative cost of mitigation" should not be used as a determining criterion for mitigation site selection. (S4832)(S4833)

Response: Appendix N in the supplemental EIS was prepared by the applicant and was not modified or changed by the Agencies. Costs are typically used, along with other aspects, as a criteria for wetland mitigation design and site selection.

36. Appendix N, Page 3-11 Table 3-3 One should not support the use of non-native plant species in wetland mitigation work. Remove Festuca arundinacea. Also strongly caution against the use of Lotus corniculatus in wetland mitigation projects. It has a deleterious effect on forb community. It dominates to the extent of mono-culture. It has been identified as a problem species in California, Oregon and Washington wetland mitigation projects. Recommend the Carex species listed in the footnote.

Page 3-21 Table 3-4.Again remove Lotus corniculatus from list for reasons above. Also remove the Cultivar of Poa. Use only local natives. (S4832)(S4833)

Response: Appendix N in the supplemental EIS was prepared by the applicant and was not modified or changed by the Agencies. This comment has been noted and modifications by the agencies have been included in the revised wetland mitigation plan provided in Appendix L and Chapter 2, Alternative description of the final EIS. Some additional minor wetland plant species substitutions and changes to the revegetation mixtures would be expected; however, any seed mixture changes should be approved by the COE or their representative, in consultation with other agencies.

37. Appendix N Page 3-13 under "Sediment Retention"what is "run-on"? (S4832)(S4833)

Response: Surface run-on refers to surface water that flows into and through the wetland areas from adjacent upgradient areas.

38. Appendix N Page 3-141st paragraph "Should the monitoring ... affected site life expectancy ...". Change "site life expectancy" to "plant growth". One can only assume the site will continue to exist regardless of sediment

retention circumstances. "These measures could include ...". Recommend identification why sediment is excessive - rather than abandon the mitigation site. under "Aquatic .."" ... including amphibians ..". Recommend placing amphibian habitat (substrate) in wetland mitigation sites (i.e. downed logs, large woody debris, or focus more on Carex and Scirpus survival. (S4832)(S4833)

Response: This comment has been noted and the text changed to "plant growth." Additionally, if a 404 permit is approved and issued by the COE, it would likely include permit conditions and best management practices related to maintenance and monitoring.

39. Appendix N Page 3-15 2nd full paragraph "Monitoring of this 'functionally' will occur ...". What is 'functionally'? Doesn't make sense. (S4832)(S4833)

Response: The word "functionally" has been changed to mean a measure of how well the wetlands are providing specific wetland functions and values.

40. The SDEIS underestimates the impacts the mine will have to wetlands. The SDEIS attempts, albeit inadequately, to assess quantities of and impacts to wetlands. The SDEIS does not consider impacts over time from such impacts as cumulative metals buildup, water fluctuations (drawdown, etc.), species composition changes in wetlands (plant and animal), and impacts of wetlands degradation to other resources. Therefore, the SDEIS analysis is incomplete. (S2034)

Response: Assessments of both direct and indirect impacts to wetland and non-wetland waters of the U.S. associated with the various mine alternatives and major mine facilities have been completed and the results discussed in the applicant's Wetland Delineation Reports (ASARCO 1993, 1995a, 1997b), responses to Agencies letters (ASARCO 1998), and throughout the draft and supplemental EISs. The wetland impact assessments did incorporate both quantitative criteria (acres disturbed) and qualitative criteria (decrease or change in functions and values). Wetland systems are temporally and spatially dynamic due to the natural process and man-caused effects in their sediment retention, fluctuation, water tables (droughts and flood cycles), and associated plant species compositions. The supplemental EIS, together with the draft EIS, 404(b)(1) showing, and associated analysis for vegetation, fisheries and aquatics, hydrology, and reclamation, does provide an in-depth analysis of proposed project impacts and mitigation measures for wetland and non-wetland waters of the U.S.

WTR-310 404(b)(1) Permit

1. The supplement includes only the preliminary 404(b)(1) showing prepared by the Agencies for Alternative V. Should the agency decide on a different alternative, or not agree with this showing, the final EIS should also incorporate a 404(b)(1) showing to cover the new alternative. (S3312)

Response: The showing has been modified to reflect the changes made to Alternative V since the release of the supplemental EIS.

2. C-14, paragraph 2, last line –the conclusion here is not consistent with other sections (see 4-72). (S5)

Response: This conclusion was based solely on impacts to fisheries from a project-related increase in the suspended particulates and turbidity. The Aquatics/Fisheries section in Chapter 4 discusses all water quality impacts but does summarize suspended particulates impacts by stating that "Sediment mitigations in Rock Creek under Alternative V could reduce project-related impacts to resident Rock Creek bull trout and westslope cutthroat trout and to Cabinet Gorge Reservoir bull trout."

3. Page C-2 2nd paragraph "Indirect impacts …". These should be considered. 3rd paragraph "Additionally, … is likely to have on the public …". See socio-economic section. Suggest the Corps review Fact Sheet and Failure Modes Effect Analysis. (S4832)(S4833)

Response: The brief discussion of indirect impacts (secondary effects) in the 404(b)(1) Showing Subpart A, is only for definition purposes. A detailed discussion of the types of indirect impacts considered is contained in Subpart B, Section 2.2.8, Determination of Secondary Effects on the Aquatic Ecosystem. This Showing is not intended to represent the Corps of Engineers conclusions. The Corps will include public interest factors, input from other state and federal agencies, and the proposed project and mitigation measures in the evaluation process prior to making a final permitting determination.

4. Page C-3 3rd paragraph " … wetlands and Waters of the US …". Never defined the difference between these. (S4832)(S4833)

Response: Wetlands are part of the overall waters of the U.S. However, by definition, wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The text has been revised throughout, where necessary, to define the two entities as wetlands and non-wetland waters of the U.S. Also, an additional paragraph, defining waters of the U.S. and wetlands as a subset of these waters, was added to Section 1.0 of the appendix.

5. Page C-4 3rd paragraph: Again use of Cowardin classification should be consistent with that classification (see comment under page 3-29). (S4832)(S4833)

Response: This comment has been noted and the text has been revised to more clearly define the Rock Creek wetland and non-wetland waters of the U.S. using Cowardin (1979) classifications.

6. Page C-5 1st full paragraph: "Some small wetland … impacted …". Require restoration. (S4832)(S4833)

Response: The small wetland areas are included in the total impacted acreage to be filled. The COE would require wetland mitigation to help replace lost wetland functions and values. The text will be expanded to explain that efforts will be made to minimize the impact to these wetlands through the use of silt fences. If necessary, restoration of these areas will be performed.

7. Page C-6 under "2.1.2" Number 1 states no discharge shall be authorized if it: Causes or contributes to any violation of applicable water quality standards. ASARCO needs to demonstrate this will not happen. Corps needs to determine if ASARCO's claim is adequate. Corps should read "Environmental Consequences" of SDEIS. ASARCO and MDEQ determine that impacts and discharges will affect water quality downstream. These discharges also are additive and may prevent anyone or any agency from discharging nutrients/metals into Clark Fork basin because ASARCO will have "used up" allowable discharge amounts. How does the word "potential" relate to "contributes"? (S4832)(S4833)

Response: The brief description of the State and Federal agencies responsible for regulating the discharge compliance is described in the paragraph directly below the numbered requirements (Appendix F; page 7). As explained under "State water quality standards," the Montana Department of Environmental Quality (DEQ), Water Quality division, provides Section 401 certification by reviewing the discharge of material and making an evaluation of compliance of violation of the applicable state water quality standards. If DEQ issues water quality certification, any conditions to the 401 certification will be incorporated by the U.S. Army Corps of Engineers as conditions of the Section 404 permit.

8. Page C-7 under #3: Consider effects on grizzly with relation to ESA and this statement. (S4832)(S4833)

Response: The three numbered requirements related to discharge compliance with guidelines (Section 230.10[b]) were evaluated and the steps and conditions for compliance described in the paragraphs directly below the numbered requirements in that Section (Appendix F; page 7). In addition, the assessment of wetland impacts on total aquatic and terrestrial wildlife habitat requirements are discussed in more detail in the wildlife and fisheries and aquatic sections of the EIS.

9. Page C-8 3rd paragraph: The entire paragraph discussed indirect wetland impacts. These have not been addressed. Corps response needed. (S4832)(S4833)

Response: This comment has been noted and the text expanded to provide additional discussion on the cumulative impacts on Rock Creek wetland and non-wetland waters of the U.S. resource for all activities affecting the resource. Although wetlands to be impacted by the project would be replaced, other habitat that is lost due to tailings paste fill activities would not be replaced.

10. Page C-12 1st full paragraph Since wildlife biologists assume existing habitats are at K (carrying capacity), this paragraph admits to causing unknown amounts of and species terrestrial organisms mortality. Under "2.2.7" "The cumulative impacts ..." The Corps is mandated with "no net loss" of wetland acreage. This is clear admission of decrease in wetlands not identified in report or dealt with in mitigation. Last sentence also admits indirect wetland impacts to downstream wetlands due to water quantity changes in Miller Gulch area. (S4832)(S4833)

Response: Habitat requirements and assumptions used for mortality, maintenance, and habitat improvement, in particular for terrestrial wildlife species, are discussed in more detail in the wildlife sections throughout the draft and supplemental EISs. Species with greater mobility are expected to relocate and compete to reestablish themselves in an area outside of the disturbance. Less mobile species are expected to be eliminated as a result of the placement of fill material in the wetlands and the resulting habitat elimination. The creation of new wetland areas planned under mitigation would ultimately provide new habitat for displaced species and reestablishment opportunities for the eliminated species. The placement of fill material in the wetlands located under the paste-tailings facility would cause both direct and indirect impacts to wetlands which are included in the cumulative impacts evaluation.

11. Page C-14 under "3.2" Last sentence changes "...turbidity in Rock Creek should not have a significant impact on the fishery." Change 'should' to "will not" and take personal responsibility for permit approval. Under "3.3"

"An increase in total nitrogen ..." Water quality standards were not to be exceeded. This is an admission that they will be." ... could lead to ..." This is direct impact. (S4832)(S4833)

Response: The project-related impacts from suspended particulates and turbidity in Rock Creek are dependent on the degree of implementation of BMPs and reduction of existing sediment sources outside the permit area. Therefore, the significance of the project-related impacts are based on a prediction, using the best scientific information available (should not), rather than as an absolute (will not).

12. Page C-15 under "3.5" "The seepage collection ..." Consider downstream effects on wetlands. (S4832)(S4833)

Response: Additional text provides information that increased surface flows (both rates and volumes) in tributaries of the South Fork of Miller Gulch could expand the boundaries of existing areas that support hydrophytic vegetation by contributing additional wetland hydrology.

13. Page C-16 under "4.3" "Due to the relatively small area ... impacts are not considered to be significant." Add all these "not considered significant," "minimal impacts," etc. together to gain a broader view of total environmental impact. Corps response needed. The environment/habitat should not be considered as individual units that one can assess of minimal impact. Each is interrelated to other habitat units/factors. (S4832)(S4833)

Response: The assessment of wetland impacts on total aquatic and terrestrial wildlife habitat requirements are discussed in more detail in the wildlife and fisheries and aquatic sections of Chapter 4. The total direct and indirect wetland and non-wetland waters of the U.S. areas to be impacted was used for assessing the impact significance.

14. Page C-18 under "7.2" "Treated water will retain some dissolved metals and most of the nitrogen compounds." Check with water quality requirements. This should not be permitted under MT Water Quality Standards and ID Special Resource Waters requirements. Check with 401 requirements. Treatment should remove pollutants. (S4832)(S4833)

Response: Text has been be added that describes the current water treatment system proposed under Alternative V. This water treatment would include removal of suspended and dissolved solids, ammonia nitrogen, and nitrate/nitrite nitrogen removal, prior to discharge to the Clark Fork River through a submerged outfall located downstream of Noxon Dam. The mine water treatment system would include sedimentation, filtration, and nitrogen removal. Two different nitrate removal systems would be installed including an anoxic biotreatment system and a reverse osmosis treatment system. Additional water treatment system analysis is provided in Chapter 4; Hydrology, Surface Water Quality in the Adit and Mine Water, Waste Rock, and Milling Process subsections.

15. Page C-19 under "8.1" "Of primary concern ... is potential impact of increased sedimentation on Bull Trout spawning." Check with USFWS on this. Allowed to potential trend a species toward listing? (S4832)(S4833)

Response: Text has been added that describes the current listing of bull trout by the Fish and Wildlife Service as threatened. A reference to the Biological Assessment (Appendix B) will also be added. The conclusion of the Biological Assessment was that implementation of Alternative V is not likely to adversely affect the Rock Creek population of bull trout.

16. Page C-21 1st paragraph Recommend not to use PVC. Dioxins are used in production and are a breakdown product of PVC deterioration. under "8.8" "The mitigation measures ..." Mitigation as suggested in these documents does not address secondary effects. (S4832)(S4833)

Response: The use of a PVC liner is not planned or proposed. The text has been revised to better explain this.

17. Page C-22 under "9.0" Please re-read 1st paragraph. Admission of impacts is clear. Is it permittable? 2nd paragraph "Public interest factors …". See Socio-Economic section. (S4832)(S4833)

Response: The proposed project would result in impacts to wetlands. The Corps of Engineers would not make a final "permit" decision until after the final EIS is published. Compliance with the Section 404(b)(1) Guidelines requires the Corp of Engineers to determine if there is a least damaging practicable alternative that could be permitted. As part of their final permit decision, the Corps of Engineers considers the relative extent of the public and private need for the project; if there are unresolved conflicts as to the resource use; and the extent and permanence of the beneficial and/or detrimental effect which the proposed project is likely to have on the public and private uses to which the area is suited.

18. Page 34 under "c." "A topo map with … discharge points, springs, wetlands, …" Will the information be available to the Corps for their use in determining additional wetland impacts? (S4832)(S4833)

Response: The Corps of Engineers will review all the information available for the final EIS, including wetland mitigation measures to determine if there is a least damaging practicable alternative that could be permitted. At the earliest, a final 404 Permit evaluation cannot be made by the Corps of Engineers until 30 days after the final EIS is published.

19. Volume 2 page 3-6 section 3.2.1 see comments on Volume 2 n3-1. Note that the recommended Miller Gulch site has a very minimal gradient and would only require several water barriers, and would cover a larger area. This area would be more secluded and away from human activity than Asarcos proposed site. (S4892)

Response: The main tributary of the South Fork of Miller Gulch wetland site that has been pointed out is now included as a proposed optional wetland mitigation site (identified as Miller Gulch Tributary Extension). This optional area was not originally included because the other wetland mitigation sites provided sufficient acreage.

20. Proposed activities would result in a 25 year recovery delay for wetlands and Waters of the U.S. Cumulative impacts under all action alternatives would be potentially significant in the short term until wetland mitigation sites were successfully established. Such short-term significant impacts preclude the granting of a 404 permit. The cumulative impact of all of the short-term impacts relating to the proposed activities for the ASARCO mine are significant and detrimental to water quality and fisheries habitat in the watershed. Therefore, the EPA will not be able to issue 401 certification nor 404 permits. (S22)

Response: The Rock Creek mining project has been reviewed relative to the Section 404(b)(1) Guidelines and the Agencies have concluded the mining project would result in impacts to wetlands and non-wetland waters of the U.S. Several of these impacts would be permanent and long-term while others would occur primarily during the construction period and would be short-term.

In the Corps of Engineers review of the project, all the alternatives considered in the final EIS will be reviewed and evaluated to determine if there is a least damaging practicable alternative that could be permitted. Public interest factors, input from other state and federal agencies, and the proposed mitigation measures will also be considered by the Corps of Engineers in the evaluation process prior to their making a final permitting determination. The Montana Department of Environmental, Water Quality Division provides Section 401 Certification pursuant to the state rules (ARM 16.20.1701 et seq.) And will make a determination for violations of applicable state water quality standards. Any conditions to the 401 certification will be conditions of the Section 404 permit.

21. Require more replacement wetlands to account for the delay and potential failure of restoring functions and values. (F1)(S4364)(S4891)(S4912)(S5051)(S5088)(S5555)(S5763)

Response: The actual amount of replacement wetlands that would be required has not been determined and would be part of the 404 permit evaluation process completed by the Corps of Engineers. The applicant, as ASARCO, recently submitted to the COE a two page letter report and revised wetland mitigation figure (ASARCO 1998) showing the location of three optional wetland mitigation sites that could be used to achieve a minimum mitigation ratio of 1.5:1. It is likely that the COE would require a minimum wetland mitigation ratio of 1.5 acres of replacement wetland for each acre of impacted wetland.