ASARCO

Mission Complex

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DEPARTMENT OF
ENVIRONMENTAL QUALITY

April 1, 2010

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Re: Response to PDEQ comments on preliminary draft
Berm Building Dust Control Plan
ASARCO LLC—Mission Complex, Permit No. 2026

Dear Messrs. Fitzpatrick and Chama:

This letter responds to the Pima County Department of Environmental Quality (PDEQ) letter dated March 5, 2010, in which you posed a number of questions concerning the proposed Berm Building Dust Control Plan (the "Plan") for the ASARCO LLC—Mission Complex ("Asarco").

General Comments

Control of blowing dust from tailings dams is a continual challenge and Asarco is committed to taking all reasonable precautions to prevent its occurrence. Asarco has investigated, and will continue to investigate, ways to improve dust control from its tailings dams and other activities with potential to generate fugitive dust. Even the best reasonable precautions will not, in all circumstances, prevent blowing dust. Asarco's investigation of additional measures including different methods of berm construction does not mean that Asarco concedes it was not taking reasonable precautions during the two dust events in November and December 2009. Asarco's control measures that were in place at that time have resulted in years of no significant dust emissions or dust complaints. It was only the unusual combination of berm construction, which requires reducing the moisture content in the tailings impoundment, and unusually sustained and gusty high winds during that period, which led to blowing dust. Because the blowing dust events occurred during the berm building mode and not during other modes, it is reasonable to confine the discussion to the berm building activities and associated dust control measures.

With this general understanding, Asarco is addressing each of your questions in the order presented in your March 5, 2010 letter.

1) **Add reference to the permit requirement to prevent effluent from a fugitive emissions source to have an average optical density greater than 20 percent (opacity standard) and the visibility limiting standard in the Introduction.**

Asarco has added the opacity standard to the discussion of applicable requirements.

2) **The Introduction states, 'This Berm Building Dust Control Plan is adopted by Asarco to comply with these requirements.' PDEQ believes the Plan is adopted to facilitate compliance with permit requirements and is not a demonstration of compliance. Please adapt the language of this sentence accordingly.**

Please see closing comments concerning PDEQ's distinction between "comply" and "to facilitate compliance" and Asarco's concerns with that distinction.

3) **The Introduction states, 'This Plan may be revised from time to time…' PDEQ requests the addition of language that ASARCO LLC will submit a copy of the revised Plan to PDEQ within 5 working days after the Plan is revised.**

Asarco has made the requested change. See Plan § 5.0.

4) **PDEQ requests the addition of a section to the Plan between the Introduction and Plan Details that will provide a tailings dam description. Provide PDEQ the following information and include in this section:**
   - **The area in acres and the current elevation of each active tailings dam**
   - **The berm perimeter length in feet of each active tailings dam**
   - **The source of tailings (i.e. North Mill, South Mill) for each active tailings dam**
   - **The estimated monthly tailing slurry production of each mill**
   - **The length of the dikes that will be used to segment the tailings dams**
   - **A detailed description of how the segmentation and berm building process will be conducted for each active tailings dam including the sequential progression from timing of filling the segments to capacity with tailings to preparation for berm building to construction of dikes and berms**
   - **A description of the tailing supply pipelines and the process for disassembling and reassembling tailings supply lines for each active tailings dam**

- **A diagram showing the general configuration of each active tailings dam including the position of segments and dikes**

Asarco does not believe that it is appropriate to include such a detailed discussion of operational issues in the Plan. Many of these parameters are undergoing constant change due to the ongoing operations of the mine and would require constant revision and update of the Plan with little to no air pollution benefit. For example, berm elevation and length change with each lift. The elevation of tailings within the dam changes daily during deposition and varies within various portions of a dam. Any description would, at best, be a snapshot of the moment that the description was provided.

Asarco will provide the general information that PDEQ requested, but will not include this information in the Plan.

- **The area in acres and the current elevation of each active tailings dam**

There are three currently active tailings dams, #4, #7 and #8. Tailings Dam (TD) #4 is 1,273 acres at an average elevation of 2,936 feet. TD#7 is 354 acres at an average elevation of 3,105 feet. TD#8 is 392 acres at an average elevation of 3,070 feet. This information is correct as of the date of response and will change as berm construction proceeds.

- **The berm perimeter length in feet of each active tailings dam**

The berm perimeter length, in feet, for each active tailings dam: TD #4 29,523 ft.; TD #7 15,769 ft.; and TD #8 14,731 ft. This information is correct as of the date of response and will change as berm construction proceeds.

- **The source of tailings (i.e. North Mill, South Mill) for each active tailings dam**

Currently the North Mill supplies TD#4 and the South Mill supplies TD#7 and #8. In the future, the South Mill may also supply tailings to TD#4.

- **The estimated monthly tailing slurry production of each mill**

Presently the South Mill produces 20,000 tons per day of tailings (dry basis) and the North Mill 31,500 tons per day (dry basis). These values will change depending on annual actual throughputs, market conditions, and mine and mill operational needs.

- **The length of the dikes that will be used to segment the tailings dams**

The dikes or wing walls are presently planned to be approximately 200 feet in length. This length will be adjusted based on additional experience gained and the needs of the individual impoundment. Asarco has not previously put dikes or wing walls in to segment its tailings impoundments and therefore does not have definitive experience on what length is optimal.

- **A detailed description of how the segmentation and berm building process will be conducted for each active tailings dam including the sequential progression from timing of filling the segments to capacity with tailings to preparation for berm building to construction of dikes and berms**

A brief process description is added to the Plan. See Plan §§ 3.1 and 3.2. It includes a clarification from the previously submitted description and discussion in that the typical order in the more complex pipeline lift and associated service road construction is as follows: preparation (drying); testing; construction of the service road; berm building and dike or wing wall installation; pipeline disassembly, repair and lifting; placement of spigots; resumption of tailings deposition when both berm building and pipeline lift are complete. Pipeline disassembly and repair may commence during service road construction or berm building and continue thereafter if the pipeline is not needed to discharge tails elsewhere on the tailings impoundment.

- **A description of the tailing supply pipelines and the process for disassembling and reassembling tailings supply lines for each active tailings dam**

The pipeline is primarily 30" HDPE pipe, although some 22" transite pipe may also be present in places. As a segment is drying, some spigot work could begin if the pipeline is not needed to discharge tails elsewhere on the impoundment. When the segment is dry enough to support equipment, road and berm building could begin. Once berm road construction or berm building starts, all spigots, valves and saddles will be removed. The HDPE pipe will be cut into manageable pieces and the transite pipe collars will be disassembled to be cleaned and moved, respectively. The pipe can be positioned as the berm and road building advances. The pipe should be positioned for correct spigot orientation and then fused or reconnected, depending upon the material. This process would repeat until the segment berm building is complete. Tailings discharge cannot resume until all pieces are fused or reconnected , quality control checked and appropriate valves installed.

- **A diagram showing the general configuration of each active tailings dam including the position of segments and dikes**

Asarco has included a conceptual diagram of the general configuration in the proposed plan. This conceptual diagram is subject to change as Asarco gains experience with segmentation and determines what works best from an air pollution control and operational perspective.

5) What is the rationale for the chosen number of segments for each tailings dam?

TD#7 and #8 are judged to be too small to allow for more than two segments without causing the segments to fill too quickly, which may require berm building work more frequently, including during the windy season, which Asarco seeks to avoid. At present, three segments are presently planned for TD#4, although this may increase in the future as the dam expands. The number of segments is based upon best engineering judgment, the area of the respective dams, operational needs, and the need to maintain flexibility in scheduling work.

6) The Introduction states that inactive mode includes the period when a tailings dam is in preparation for berm building. Please describe how ASARCO LLC addresses dust control during the berm preparation period and include in the Plan.

Inactive segments of the tailings dams are maintained initially by moisture and then by encrustation. Asarco visually monitors the crusting to watch for cracking. Initially, the cracks are quite moist and do not present a significant risk of dust generation. As the cracks dry, Asarco applies acrylic co-polymer. In the future, Asarco may use other, equally effective, dust suppressants in accordance with PDEQ procedures. The Visual Observation Plan is used to ensure that dust generation does not occur. Dust generation from inactive tailings dams has not been noted in the recent high wind days and is beyond the scope of this Plan.

7) In the Plan Details, section 1.0 Preparation for Berm Building, please include the average length of time of the evaporating period for each tailings dam and the quantitative measures used to determine when the "proper moisture content" is reached so that berm construction can begin.

The average length of time varies depending upon the dam, the season, the amount of precipitation, wind, and humidity. Asarco's experience suggests that it is rarely less than six weeks and sometimes can be much longer. Determining when berm construction can begin is more of an art than an exact science. Asarco typically uses the berm construction equipment to determine when berm construction can begin. When the

equipment can operate without becoming mired or sinking into the tailings within 50 to 100 feet of the edge, berm building starts. Quantitative measures could probably be developed, but would likely be so conservative as to be of little practical value. Regardless of tailings nominal moisture level, construction cannot begin until the equipment can operate safely.

8) Include a subsection for Notice of Commencement of Preparation for Berm Building in section 1.0, in which ASARCO LLC will give notice to PDEQ within 5 days after commencement of preparation for berm building. Commencement of preparation for berm building will begin when a segment stops receiving tailings in preparation for berm building.

9) Include subsections for Operational Control and Controls Employed During Preparation for Berm Building in section 1.0

Asarco sees little value in the proposed additions requested in #8 and #9. Blowing dust has not been noted from tailings dams in either the inactive or preparation for berm building mode. The dust control measures employed in the phase is discussed in response to Question 6. Further, Asarco must maintain the flexibility to manage the tailings because tailings lines break, mills go down, or possible dry areas requiring resmearing with tails are detected and addressed. PDEQ has provided no justification—nor can it—to show any problems with blowing dust resulting from Asarco's management of its tailings impoundments at times other than berm building.

10) In section 2.1.1 Notice of Commencement of Perimeter Berm Building, include a provision that ASARCO LLC will notify PDEQ within 5 working days with the starting date for berm building for each segment and include specific details of the location where construction will begin, the equipment that will be utilized, the anticipated rate of berm building in feet per day, and the anticipated monthly schedule for progression.

Asarco has provided for giving notice to PDEQ within five working days of its commencement of berm building. Asarco will also provide the initial inspection results. Asarco will amend the pending Visual Observation Plan (VOP) to conform to these changes. The rest of the information requested is operational details not related to air pollution control.

11) Section 2.1.2 states, 'A combination of a low ground pressure bulldozer and a large hydraulic excavator will be used to place and shape the berm in a single lift.' Please describe a low ground pressure bulldozer and how it will be involved in this process.

A Low Ground Pressure (LGP) bulldozer is one that uses wider treads than standard to reduce the pressure per square inch on the ground surface, allowing it to work on soils that are moister and less firm than a typical unit. The bulldozer is used to compact the tailings in the vicinity of the construction to facilitate drying and speed up berm construction. It is also used to shape the final berm. In the case of the pipeline lift and associated service road, the bull dozer is also used to grade and prepare the roadbed.

12) Give reference for the basis of determining the height of the berm lift.

The height of the berm lift is based upon experience working with the tails generated at the Mission Complex. Higher berms have been tried, but are beyond the effective working limits of Asarco's equipment and have caused operational issues. Lower berms would require more frequent berm building.

13) Discuss the method for berm building used at ASARCO LLC—Ray Complex in Hayden, Arizona, and explain the reason why the trenching method for berm building is used at ASARCO LLC—Mission Complex as opposed to alternate methods.

ASARCO LLC currently operates tailing dams using the upstream construction method with spigotted tailings at both at the Ray Complex-Hayden Operations and the Mission Complex. The impoundment configurations are identical at both locations, but the method of construction varies. At the Ray Complex-Ray Operations, the tailings dam is constructed with waste rock from the open pit mine using the centerline construction method.

At Hayden, the upstream lifts are constructed with a Cat D7R LGP tracked dozer. The dozer is used to push spigotted beach tailings from the beach to the perimeter of the impoundment to build the 10-foot lifts. The following photograph shows a recently constructed lift at the Hayden "D" tailings dam.

10-foot lift constructed with Cat D7R LGP at Hayden "D" tailings dam.

At Mission, the upstream lifts are constructed with a Cat 375 tracked excavator and a Cat D6 LGP tracked dozer. The excavator is used to excavate spigotted beach tailings from the dam interior and place them at the dam perimeter in a mound. The Cat D6 LGP dozer is used to flatten the mound at a height of 10 feet. The following photographs show a recently constructed lift at the Mission TD#4

10-foot lift constructed with Cat 375 excavator and Cat D6 LGP tracked dozer at Mission TD#4– note D6 flattening the mound created by the excavator.

The following photograph shows the trench method used at Mission:

Close up of trench and mound (prior to flattening) created by the Cat 375 tracked excavator at Mission TD#4.

Advantages of the trenching method utilized at Mission are as follows:

- Less time is required to dry and consolidate the tailings before berm construction commences as only the coarsest tailings nearest to the berm are utilized.

- Berm construction only disturbs a narrow strip of the tailing impoundment surface immediately to the inside of the new berm. Approximately 50 feet, consisting of the excavator bench and excavated trench, are disturbed. The push method used at Hayden requires that beach tailings be pushed several hundred feet to construct the new berm.

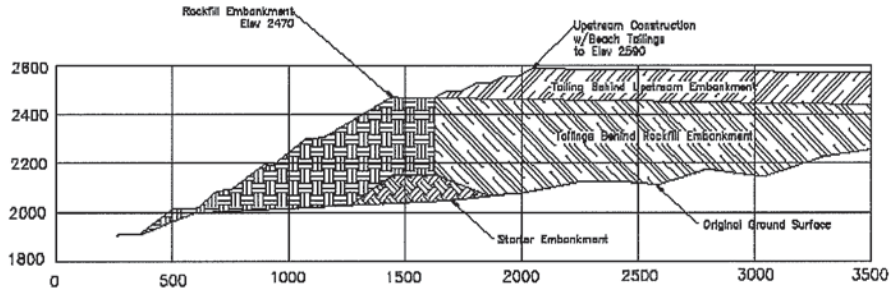
- Less dust is generated during the berm construction process as no heavy equipment other than the excavator, is operating on the tailing impoundment surface. The push method used at Hayden requires that a LGP bulldozer be constantly moving on the dam surface.

Advantages of the push method utilized at Hayden are as follows:

- Lower capital and operating cost associated with berm construction as only a LGP bulldozer is required.

- From a dam stability standpoint, this method potentially has a higher initial berm safety factor due to the additional compaction/consolidation caused by the operation of the LGP bulldozer on the tailing surface.

At the Ray Mine, the steep topography upon which the Elder Gulch Tailing Facility is constructed and the impoundments ultimate height dictated that the starter dike and subsequent lifts be built with rock. Waste rock from the open pit mine is delivered to the dam with haul trucks and is placed and compacted with a D10 tracked dozer. The dam is currently over 500 feet high and the top is too narrow to continue construction with the 400 ton haul trucks utilized by the mine. Beginning in 2010, lifts will be constructed using the upstream method with spigotted tailings. The trenching method utilized at Mission will be used to construct the upstream lifts. The following diagram is a typical cross section through the dam showing the ultimate dam.



Typical Cross Section
Modified Dam w/Upstream Construction

The advantage of the centerline rock design is that it is very stable and can be built very tall on irregular steep underlying topography. Its disadvantages are it is expensive to

build and must be located such that there is haul road access to the mine. The increased haul truck traffic also generates emissions that are not present in the Mission approach.

14) Identify the manufacturer and commercial product name of the co-polymer. What mix ratio is used and what is the basis of the chosen ratio? What is the application rate? Will a colorant indicator always be added with the co-polymer?

The manufacturer of the polymer is Environmental Products and Applications, Inc. The product is Envirotac II Soil Stabilizer. The product is mixed at a 10 gallons water:1 gallon Envirotac II ratio consistent with manufacturer's directions. It is applied at a rate of 2000 gallons to an acre. Asarco will use a colorant indicator, although that color may change with time and cost. Similarly, Asarco reserves the right to use alternative chemical dust suppressants should they prove more effective or more cost effective.

15) What are the specific types and capacities of spray application vehicles that ASARCO LLC will be using and what is the basis for choosing such types and quantities of vehicles?

Asarco operates a large fleet of water and polymer application vehicles.

- Asarco has one 2,500 gallon "Terra-Gator" that it uses as a backup and supplemental unit and which is dispatched toward the interior of a tailings dam if needed for supplementary control purposes. This unit can be used for water or polymer and is typically outfitted for polymer.
- Asarco has one 5,500 gallon polymer application truck, which is the primary unit used. This unit is preferred for use on the tailings due to weight and design carrying capacity.
- Asarco has one 8,000 gallon water truck usually used for haul roads.
- Asarco has one 12,000 gallon water truck for haul roads.
- Asarco has one 13,000 gallon water truck for haul roads.
- Asarco has two 35,000 gallon water trucks for haul roads.

The 8000 gallon water application truck can also apply polymer in the event of need. These larger trucks are less preferred for use on the tailings because of their weight and tendency to sink.

The existing fleet is adequate to meet the requirements for daily, weekly and supplemental controls as set forth in the Plan.

16) What is the distance to the source of water and co-polymer from each active tailngs dam and what is the estimated time for a round-trip to refill each spray application vehicle and return to each active tailings dam?

Under the control strategy outlined in the Plan when fully implemented, the following distances will need to be traveled:

Tailings Dam #4 (2 stand pipes) – 0.3 miles (located on the SW side of TD #4) and 0.4 miles (located on the NE side of TD #4)
Tailings Dam #7 (1 stand pipe) – 0.65 miles (located on the SW side of TD #4)
Tailings Dam #8 (1 stand pipe) – 0.6 miles (located on N side of TD#8)

Using a typical speed of 20 mph and a 1,200 to 1,500 gpm fill rate, round trips for water and polymer on TD#4 take between 10 and 15 minutes; round trips on TD#7 and TD#8 take approximately 15 to 20 minutes.

17) Will ASARCO LLC be using low ground pressure spray application vehicles adapted specifically for mine tailings surface conditions such as the Terra-Gator "floater" vehicles utilized in 2006 in order to access the tailings dam surface.

Yes. Asarco is also converting the 5,500 gallon polymer truck to further decrease its ground pressure.

18) Describe how the tailings surface of the segments will be inspected as part of the Weekly Controls and describe how loss of encrustation will be determined.

The tailings segments in berm building mode are visually inspected by mill operations and/or environmental department personnel. Inspection is by spot check around the tailings dam, with emphasis placed on areas that have dried the longest and are most susceptible to blowing dust. The inspection looks for (1) adequate moisture; (2) visible encrustation; (3) cracking; (4) if cracking, whether the cracks remain moist; (5) if cracking and dry or visible dust build up, supplementary controls are ordered. Supplementary controls are also ordered if visible, loose dust is present on the surface. This condition is typically due to dust blown onto the tailings surface from off-site areas. The observations will be recorded in logbook(s).

19) Quantify how the interior areas of the tailings surface within the segments will be "judged safe and practicable for spray vehicles to access."

This test is based upon the experience and judgment of the operators. It starts with visual observation of how dry the tails appear. Once the tails appear dry, the visual observation

is confirmed by testing the tailings surface with a vehicle or bulldozer by an experienced operator to evaluate surface stability. Asarco does not judge other approaches to provide the requisite level of safety.

20) Describe the alternative measures [sic] will be utilized for dust control if it is judged that a spray application vehicle is unable to access interior areas of the tailings surface exhibiting a loss of encrustation.

This situation rarely, if ever, results in dust emissions because a spray application vehicle being unable to reach an area means that the tailings in that area are still moist and controlled. Asarco's spray application vehicles have the ability to spray some distance from the truck and that reach is utilized. The use of segmentation further reduces the likelihood of a problem by reducing the areal extent of drying.

21) Add a form to the Plan to record the results of the inspection conducted and the controls employed during the Construction Period. The form shall record the conditions observed and identify on a map areas that require additional dust control and quantify the amount of water or co-polymer applied to those areas.

Asarco already maintains daily forms that record the gallons of polymer, the gallons of water, and the conditions observed in the berm building area. Asarco sees no reason to create additional forms. Mapping is not practicable as the relevant scales would provide little useful information.

22) Construction Period—Supplementary Controls refers to implementing supplementary controls if the morning weather forecast predicts sustained winds in excess of 20 mph. Please change this section to refer to the National Weather Service website (http://www.nws.noaa.gov/) forecast for Sahuarita, AZ, and implement supplementary controls 2-3 days in advance of forecasted sustained wind speeds in excess of 20 mph.

Asarco will use the recommended National Weather Service website and the forecast for Sahuarita, AZ. See Plan §§ 3.1.4.3 & 3.2.4.3. Asarco appreciates the suggestion that if sustained winds are anticipated, that berm building be suspended and additional controls implemented. Asarco certainly considers the forecast weather in its handling of berm building. The possibility of sustained winds has to be weighed against the increased time that the tailings dam will remain in berm building mode if work is suspended. Therefore, while Asarco will certainly continue to consider the medium-term weather forecast in deciding whether to suspend berm construction, Asarco has chosen not to revise the plan because the plan already provides for daily inspection and application of co-polymer in disturbed areas and weekly inspection and application of co-polymer in non-disturbed, interior regions as conditions warrant. This comprehensive control program should

already provide the added control that PDEQ is seeking and is a better approach than trying to rush through additional controls in the few days before an event may or may not occur. Asarco thus believes that the continuing program of inspection and control in the plan provides control that is equal to or better than a reactive program focused on the days before an event.

23) Section 2.4.1 states, "Once a sufficient portion of berm construction is complete and the tailings spigots can be reinstalled and extended, tailings deposition will commence…' Please discuss how a sufficient portion is quantified.

Based upon further engineering review, deposition will commence once the segment berm building is complete. Resuming tailings discharge any earlier risks destabilizing the working area and could lead to potentially extended periods before berm building could be completed and tailings discharge in the regular course resume.

24) Include in section 2.2 a Notice of Commencement of Perimeter Berm Building.

The Plan provides for adequate notice. Asarco will push berm construction as close behind road construction as possible, so no purpose is served by additional notice.

25) Will the pipeline lift and associated service road construction be completed prior to the commencement of berm building?

No. The sequence, as stated in the response to question #4, is as follows: road construction; berm construction; pipeline disassembly, repair and lifting; testing and quality assurance; resume discharge. Road construction must occur first, followed by berm construction. Pipeline disassembly and repair may be concurrent with berm construction in some cases. Asarco seeks to minimize the period of time its tailings supply lines are out of service.

26) Change section 2.2.5 to indicate that any active berm building segment will be smeared with fresh tails within sixty (60) days of commencement of berm building.

The Plan accurately reflects Asarco's commitment from the Settlement Agreement. Asarco agreed to the following:

Tailings piles, when active during the berm building mode, will be smeared (light coat of fresh, moist tailings on surface of dam) once every 60 days unless meteorological conditions make it unnecessary.

Letter from Newman Porter to Christopher Straub, July 17, 1998. A tailings pile or segment without a tailings supply line is not active because there is no way to smear tailings. Asarco remains committed to smearing within 60 days of the segment becoming active. If Asarco must discontinue work, then those days that it cannot work should not count against its 60 day commitment.

27) What effect on the tailings dam surface crust does ASARCO LLC acknowledge for heavy rainfall sufficient to cause surface runoff and are control measures adjusted following such rainfall events.

It is not clear how this question relates to berm building. As a practical matter, yes, Asarco does adjust control measures based on weather conditions. In the event described, Asarco typically would apply tailings (on active segments) or co-polymer (on inactive segments).

28) Add a contingency plan to the Plan to address a situation where tailings are not available for application to a tailings dam due to a force majeure.

Daily, weekly and supplementary controls continue to apply to the extent that they can be applied. The Plan will be revised to make this clear. See Plan § 4.0.

29) Add a section to the Plan in which an evaluation of the Plan is conducted periodically.

Asarco agrees. The Plan will be reevaluated prior to commencement of each subsequent service road and associated pipeline lift. This provides the best opportunity to adjust segments. See Plan § 5.0.

No #) Please provide PDEQ with a written response to the above comments and questions within twenty (20) working days. PDEQ looks forward to resolving plan details prior to submission of the final plan as a permit revision.

Asarco has submitted its written response to PDEQ's comments and questions within twenty working days. Asarco is committed to implementing its Plan. However, Asarco has not yet committed to submitting the Plan as a permit revision. Further discussions with PDEQ staff are necessary before Asarco can determine whether submission as a permit revision is necessary or appropriate.

<u>Closing Comment</u>

Asarco cannot commit at this time to submitting the Berm Building Dust Control Plan as a permit revision because it is not clear what PDEQ intends by such a permit revision in

light of PDEQ's comments in #1 and #2. If the Plan merely "facilitate[s] compliance with permit requirements and is not a demonstration of compliance" then no permit revision is needed because the Plan does not establish any binding requirements. If PDEQ wishes to make the Plan enforceable, then Asarco will submit the Plan pursuant to Part "B", Conditions I.C.3.a, I.C.10.a and P.C.C. § 17.16.050 and Asarco's compliance with the Plan shall be a demonstration of compliance with Condition I.C.3, I.C.10 and I.C.11. Asarco will not agree to add the Plan as an enforceable condition of its permit if the effect of such revision is solely to create additional enforcement obligations for Asarco. The Plan is not required by any applicable requirement and, as demonstrated by PDEQ's questions concerning construction rates and equipment, goes far beyond air pollution control.

Asarco hopes that an amicable resolution to this issue can be reached. As stated initially, Asarco is committed to complying with applicable laws and implementing reasonable precautions to minimize blowing dust. Asarco hopes that PDEQ shares that goal. We look forward to meeting with PDEQ staff to discuss the next steps in this process of reaching such a mutually satisfactory resolution.

Sincerely,

Richard Rhoades
General Manager

Enclosure: ASARCO LLC-Mission Complex Berm Building Dust Control Plan

ASARCO LLC—MISSION COMPLEX
BERM BUILDING DUST CONTROL PLAN
(Version 2.0, April 1, 2010)

ASARCO LLC—MISSION COMPLEX
BERM BUILDING DUST CONTROL PLAN
(Version 2.0, April 1, 2010)

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ASARCO LLC—MISSION COMPLEX
BERM BUILDING DUST CONTROL PLAN

INTRODUCTION

ASARCO LLC—Mission Complex ("Asarco") is committed to complying with existing environmental, safety and health laws and regulations. The Clean Air Act, regulations and its Title V permits require Asarco to employ reasonable precautions in the construction and operation of its tailings dams to minimize dust emissions, prevent excessive amounts of particulate matter from becoming airborne off of its tailings dams, minimize diffusion of fugitive visible emissions, including fugitive dust across the property line, and meeting the 20% opacity standard. This Berm Building Dust Control Plan is adopted by Asarco to comply with these requirements. This Plan may be revised from time to time to enhance controls, based upon lessons learned from the implementation of this Plan and changes in technologies and control strategies available to Asarco.

The Mission Complex operates three active tailings dams: Tailings Dams #4, #7 and #8. Each tailings dam has three operational phases or modes: active (receiving tails); inactive (not receiving tails and/or preparation for berm building); and berm building. The berm building mode entails two different types of activities: (1) perimeter berm construction and (2) periodic pipeline lift and associated service road construction.

This Plan describes how the Mission Complex tailings dam berm construction procedures will be modified and outlines the dust control measures that will be utilized for these two activities in order to minimize fugitive dust generation. The main modification in the construction procedure is (1) a dam undergoing berm building will be partially divided into segments by construction of dikes (also referred to as wing walls) that extend from the perimeter berm to the general vicinity of the ponded water near the decant tower(s) and (2) the use of wet construction techniques.

Operation of tailings dams or segments of tailings dams in the active and inactive modes will continue consistent with historical Mission Complex practice and are unaffected by this Plan.

PLAN DETAILS

1.0 Transition to Berm Building Dust Control Plan

The next time a tailings dam (Tailings Dam #4, #7 or #8) enters the berm building mode, that dam will be partially divided into segments by construction of dikes or wing walls that extend from the perimeter berm to the general vicinity of the ponded water near the decant tower(s). This change will allow one or more segments of each tailings dam to remain active receiving wet tailings, while berm construction or drying in preparation for berm building is going on in other segments, thereby reducing the potential for fugitive dust generation from berm construction activities. This process will be repeated until Tailings Dams #4, #7 and #8 have been subdivided into two or more segments. Once the initial subdivision into segments is completed for a tailings

dam, the *Operational Controls* specified in paragraph 3.1.2 and 3.2.2 of this Plan will apply commencing at the beginning of the next berm building period.

2.0 Preparation for Berm Building

The segment(s) of the tailings dam planned for berm building are filled to capacity by depositing tailings slurry in preparation for raising the perimeter berm. The reclaim water flows to the decant tower where it is decanted off and reused in the milling processes. After the segment(s) are filled, evaporating time is required to dry the deposited tailings and enable heavy equipment to work in the area. This evaporating period is also required to allow moisture content reduction needed for adequate compaction of the erected perimeter berm. The length of time that is required to achieve the proper moisture content is a variable controlled by weather conditions. During the preparation period, smearing of tailings is not possible.

3.0 Berm Building Mode Controls

As noted above, there are two types of activities in the berm building mode: perimeter berm construction, governed by section 3.1 of this plan, and periodic pipeline lift and associated service road construction, governed by section 3.2 of this plan. Which section applies is determined by Asarco's submission of a "Notice of Start of Perimeter Berm Building" under paragraph 3.1.1, in which case section 3.1 of this plan applies, or submission of a "Notice of Start of Pipeline Lift and Associated Service Road Construction" under paragraph 3.2.1, in which case section 3.2 of this plan applies.

3.1 *Perimeter Berm Construction*

In perimeter berm construction, a Low Ground Pressure (LGP) bulldozer compacts the tailings in the area of the perimeter berm to facilitate drying. An excavator then stacks tailings material to the lift height or slightly higher. The bull dozer then shapes and compacts the lift. The spigot pipes are cleaned and then extended to compensate for the new height of the berm. After berm construction is complete and quality assured, tailings deposition or smearing resumes.

3.1.1 *Notice of Start of Perimeter Berm Building*. Asarco will give notice to PDEQ, of the start of perimeter berm building, along with the initial inspection results, as required by the current Visual Observation Plan, prior to commencing construction activities.

3.1.2 *Operational Control*. Except during the periodic pipeline lift addressed in section 3.2, Asarco will keep approximately 50% or less by area (depending upon the number and size of segments and absent any extraordinary circumstances) of each tailing dam in berm building mode to reduce potential fugitive dust generation.

3.1.3 *Wet Construction*. Attempts to start as early as possible shall be made by using a LGP bulldozer to compact the surface and accelerate moisture reduction of the material that will be used as borrow material for the berm and to stabilize the area for the excavator to begin berm

construction. The active berm building segment(s) shall be worked as wet as possible while maintaining a moisture content that will not jeopardize berm compaction and the overall stability of the dam. A combination of a low ground pressure bulldozer and a large hydraulic excavator will be used to place and shape the berm in a single lift. Lifts are typically, but not always, 10-12 feet. At normal, full production rates, the perimeter berms at the Mission Complex tailings dams are raised approximately ten to twelve feet each year.

3.1.4 *Controls Employed During Perimeter Berm Construction.* During the berm building mode, Asarco will implement additional dust control measures including those in the current Visual Observation Plan and the proposed revision to the VOP dated December 23, 2009. These measures include:

3.1.4.1 *Construction Period—Daily Controls.* Water will be applied during the operating day to areas of the berm, disturbed areas, or access roads as necessary to minimize dust, unless there is sufficient rain to wet the tailings adequately to prevent dust. Co-polymer binder will be applied at the end of construction each day to all new areas disturbed by construction activity including any new berm constructed during the day. If observation of the segment identifies interior areas within the segment that require additional dust control or if monitoring conducted under the Non-Point Source Monitoring Plan or the Visual Observation Plan identifies interior areas within the segment that require additional dust control, co-polymer binder will be applied to those areas if safe and practicable. *Daily Controls* are required each day that berm building operations occur beginning with the start of berm building identified in the "Notice of Start of Perimeter Berm Building" required under paragraph 3.1.1 until the date identified in the "Notice of Smearing" required under paragraph 3.1.6.

3.1.4.2 *Construction Period—Weekly Controls.* Co-polymer binder will be applied systematically to the surface of the segment as it becomes sufficiently dry to permit safe spray application as set forth in this paragraph. Each week, the segment will be inspected to identify areas exhibiting loss of encrustation and to determine if co-polymer application can be safely extended towards the decant tower. If the inspection reveals that the encrustation is compromised and that the segment can support the spray application vehicle, Asarco will systematically apply co-polymer as needed in areas judged safe for application. *Weekly Controls* are required once per calendar week, with the inspections at least four days apart, beginning the calendar week after the date identified in the "Notice of Start of Perimeter Berm Building" required under paragraph 3.1.1 until the date identified in the "Notice of Smearing" required under paragraph 3.1.6. This provision does not prevent more frequent inspection.

3.1.4.3 *Construction Period—Supplementary Controls.* If Asarco's monitoring detects that tailings dams in the berm building mode are becoming dry and the morning weather forecast at http://www.nws.noaa.gov/ for Sahuarita, Arizona predicts sustained wind speeds for the day in excess of 20 mph, then Asarco will implement the following

supplementary controls, as appropriate, to ensure reasonable precautions are taken to prevent fugitive dust:

- Asarco will not schedule berm construction work for days with sustained winds predicted in excess of 20 mph, unless it is raining sufficiently to prevent dust from becoming airborne. A day where Asarco cannot continue berm building due to sustained high winds is defined as a "High Wind Day."
- Asarco will inspect the surface of the new berm, any service road or dam surface area disturbed by berm building and will apply co-polymer or water as appropriate.
- Asarco will inspect the dam surface for signs of potential fugitive dust emissions and will apply co-polymer where safe and practicable.
- Asarco will deploy overtime labor, if needed, to ensure fugitive dust emissions remain within permit limits.

Supplementary Controls are potentially applicable from the start of berm building identified in the "Notice of Start of Perimeter Berm Building" required under paragraph 3.1.1 until the date identified in the "Notice of Smearing" required under paragraph 3.1.6.

3.1.5 *Construction Completion and Smearing.* Once the berm construction is complete and the tailings spigots reinstalled and extended, tailings deposition will commence on the segment of the dam where the berm was raised in order to rewet the tailings surface. Tailings deposition will be stepped through the available spigots on a systematic basis. Asarco typically operates four to six spigots at a time, but this may vary based upon tailings production. Asarco will commence smearing with fresh tails within any active berm building segment within sixty days, not including any High Wind Days, after the date Asarco started perimeter berm building, as stated in Asarco's Notice of Start of Perimeter Berm Building.

3.1.6 *Notice of Smearing*. Asarco will give notice that it has started smearing within seven days of starting to smear the segment in which berm building occurred.

3.2 *Periodic Pipeline Lift and Associated Service Road Construction.*

Approximately every three to four years, the tailing supply pipeline around the perimeter of each tailing dam is raised to a higher working elevation to maintain a safe and practical operating pressure for the spigots. Since tailings deposition occurs at a rate of approximately ten feet per year, the pipeline is typically raised approximately 30 feet to the new working elevation.

In periodic pipeline lift and associated service road construction, the process starts with surveying and constructing the service road, followed by perimeter berm construction as described in Section 3.1. Once the berm is in place, the tailing supply line will be dismantled, cleaned, repaired, and then refused or reconnected (depending on the material) in the proper orientation. Spigots will be installed and the lines properly sized. This process may commence

earlier, during road construction or berm construction, if the pipeline is not needed to deliver tailings to another segment of the dam. After road and berm construction is complete, the pipeline lifted, and all work quality assured, tailings deposition or smearing resumes. This pipe lift construction period takes several additional weeks due to the added labor of constructing the road and dismantling, repairing, and lifting the pipeline.

3.2.1 *Notice of Start of Periodic Pipeline Lift and Associated Service Road Construction.* Asarco will give notice to PDEQ of the commencement of periodic pipeline lift and associated service road construction prior to starting. The notice will also state the anticipated time that the tailings supply line will be inactive due to pipeline lift and road construction activities.

3.2.2 *Operational Control.* Because of the need to disassemble the tailings supply line as part of the lifting activity, it is not always possible to smear either the segment being built or the other segments of the tailings dam undergoing the periodic pipeline lift and associated service road construction. Asarco will minimize the time the tailing supply line is out of service.

3.2.3 *Wet Construction.* Attempts to start as early as possible shall be made by using a LGP bulldozer to compact the surface and accelerate moisture reduction of the material that will be used as borrow material for the berm and to stabilize the area for the excavator to begin berm construction. The active berm building segment(s) shall be worked as wet as possible while maintaining a moisture content that will not jeopardize berm compaction and the overall stability of the dam. A combination of a LGP bulldozer and a large hydraulic excavator will be used to place and shape the berm in a single lift. Lifts are typically, but not always, 10 to 12 feet.

3.2.4 *Controls Employed During Pipeline Lift, Berm, and Service Road Construction.* During the periodic pipeline lift and associated service road construction period, Asarco will implement additional dust control measures including those in the current Visual Observation Plan and the proposed revision to the VOP dated December 23, 2009. These measures include:

> 3.2.4.1 *Construction Period—Daily Controls.* Water will be applied during the operating day to areas of the berm, disturbed areas, or access roads as necessary to minimize dust, unless adequate rain renders this unnecessary. Co-polymer binder will be applied at the end of construction each day to all new areas disturbed by construction activity including any new berm or service road constructed during the day. If observation of the dam identifies interior areas that require additional dust control or if monitoring conducted under the Non-Point Source Monitoring Plan or Visual Observation Plan identifies interior areas within the segment that require additional dust control, co-polymer binder will be applied to those areas if safe and practicable. *Daily controls* are required each day that berm building operations occur beginning with the start of berm building identified in the "Notice of Start of Periodic Pipeline Lift and Associated Service Road Construction" required under paragraph 3.2.1 until the date identified in the "Notice of Smearing" required under paragraph 3.2.7.

3.2.4.2 *Construction Period—Weekly Controls.* Co-polymer binder will be applied systematically to the surface of the dam as it becomes sufficiently dry to permit safe spray application as set forth in this paragraph. Each week, the dam will be inspected to identify areas exhibiting loss of encrustation and to determine if co-polymer application can be safely extended towards the decant tower. If the inspection reveals that the encrustation is compromised and that the dam can support the spray application vehicle, Asarco will systematically apply co-polymer as needed in areas judged safe for application. *Weekly Controls* are required once per calendar week, with the inspections at least four days apart, beginning the calendar week after the date identified in the "Notice of Start of Periodic Pipeline Lift and Associated Service Road Construction" required under paragraph 3.2.1 until the date identified in the "Notice of Smearing" required under paragraph 3.2.7. This provision does not prevent more frequent inspection.

3.2.4.3 *Construction Period—Supplementary Controls.* If Asarco's monitoring detects that the tailings dam in the pipeline lift and associated service road construction period are becoming dry and the morning weather forecast at http://www.nws.noaa.gov/ for Sahuarita, Arizona predicts sustained wind speeds for the day in excess of 20 mph, then Asarco will implement the following supplementary controls, as appropriate, to ensure reasonable precautions are taken to prevent fugitive dust:

- Asarco will not schedule berm construction work for days with sustained winds predicted in excess of 20 mph, unless it is raining sufficiently to prevent dust from becoming airborne. A day where Asarco cannot continue berm building due to sustained high winds is defined as a "High Wind Day."
- Asarco will inspect the surface of the new berm, any service road or dam surface area disturbed by berm building and will apply co-polymer or water as appropriate.
- Asarco will inspect the dam surface for signs of potential fugitive dust emissions and will apply co-polymer where safe and practicable.
- Asarco will deploy overtime labor, if needed, to ensure fugitive dust emissions remain within permit limits.

Supplementary Controls are potentially applicable from the start of berm building identified in the "Notice of Start of Perimeter Berm Building" required under paragraph 3.1.1 until the date identified in the "Notice of Smearing" required under paragraph 3.2.7.

3.2.4.4 *Construction Period—Service Road Controls.* Service road construction areas will be inspected and areas that may be susceptible to wind erosion shall be identified and addressed in accordance with the *Daily, Weekly* and *Supplementary Controls.* In addition, Asarco will also implement the following additional measures:

- The service road will be capped with native soil as soon as practicable after completion.

- Water trucks will be used as required to control fugitive dust during road construction and capping and on service roads utilized during service level construction.

Service Road Controls are applicable from the start of berm building identified in the "Notice of Start of Periodic Pipeline Lift and Associated Service Road Construction" required under paragraph 3.1.1 until the date identified in the "Notice of Smearing" required under paragraph 3.2.7.

3.2.5 *Notice of Reactivation of Tailing Supply Line.* Within seven business days of completing the lifting of the tailing supply line to its new elevation and completion of any required testing and repair to ensure its integrity, Asarco shall give notice to PDEQ of the date that the Tailing Supply Line was reactivated.

3.2.6 *Completion of Pipeline Lift and Commencement of Smearing.* Once berm construction is complete, the pipeline lift is completed and the tailings spigots reinstalled and extended, tailings deposition will commence on the segment of the dam where the berm was raised in order to rewet the tailings surface. Tailings deposition will be stepped through the available spigots on a systematic basis. Asarco typically operates four to six spigots at a time, but this may vary based upon tailings production. Asarco will commence smearing with fresh tails within any active berm building segment within sixty days, not including any High Wind Days, after the date Asarco reactivates the tailings supply line following Periodic Pipeline Lift and Associated Service Road Construction, as stated in Asarco's Notice of Reactivation of Tailings Supply Line.

3.2.7 *Notice of Smearing*. Asarco will give notice that it has started smearing within seven days of starting to smear the segment in which berm building occurred.

4.0 Notification of Delay and Resumption of Construction

Completion of berm building may be delayed by force majeure conditions, including but not limited to strikes, severe weather, or weather conditions that render the segment too wet or unsafe to work. In the event this occurs, Asarco will notify PDEQ within two business days of becoming aware of the delay and will implement *daily* and *supplementary controls* to the extent feasible. *Weekly controls* are not feasible if the surface of the dam or berm is too wet or unsafe to work. *Daily* and *supplementary controls* will be implemented to the extent possible from the service road and extended back to the new berm construction area and/or dam surface as soon as safe and practicable. Asarco will notify PDEQ as soon as it is possible to resume regular construction.

During any force majeure situation, Asarco will continue to implement *daily, weekly, supplementary* and *service road controls*, as applicable, to the extent reasonably possible given the force majeure situation. Asarco may also implement other controls appropriate to the situation.

5.0 Plan Revision

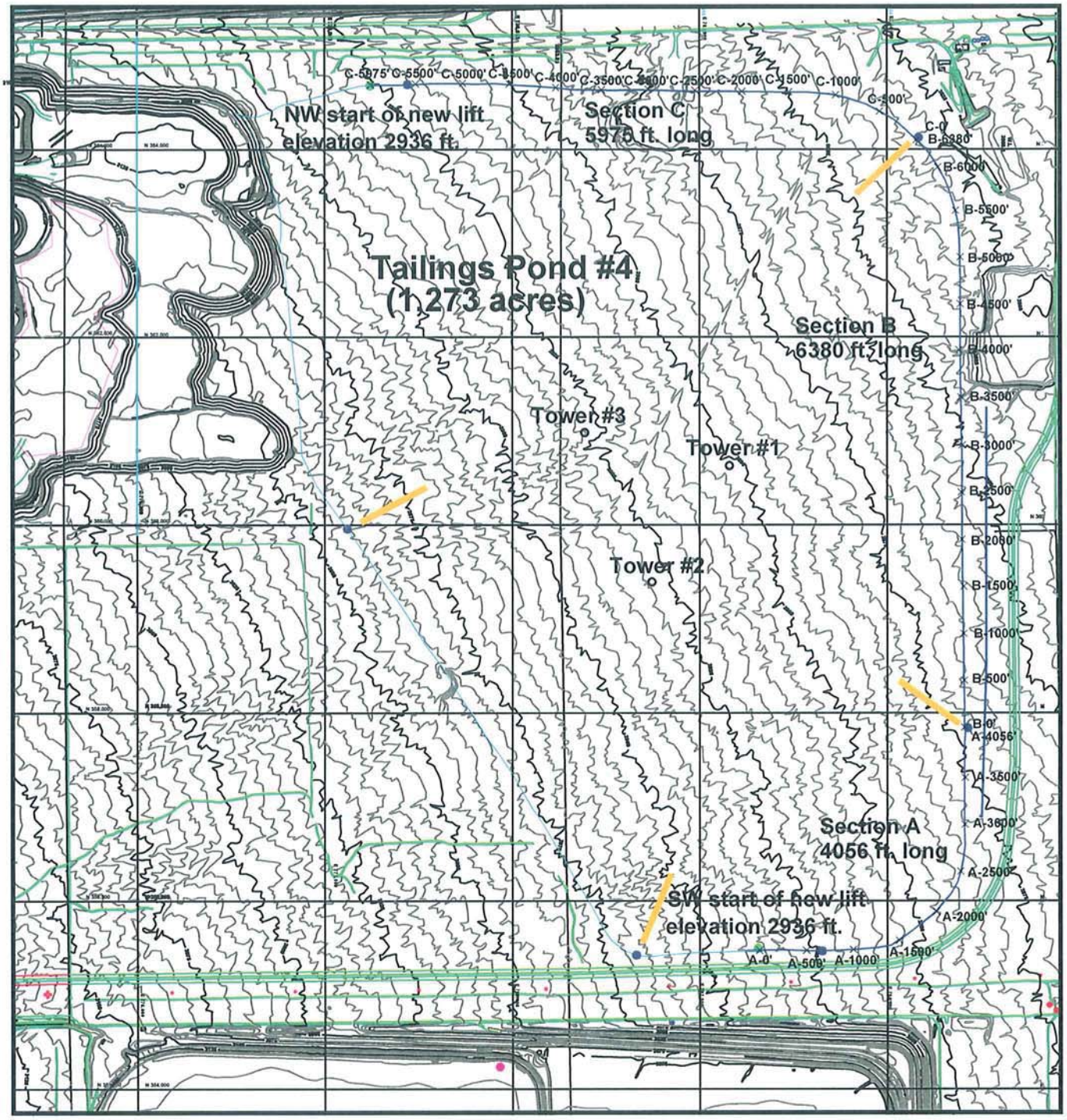
Asarco will review this Plan and its application to a particular tailings dam prior to the start of another round of service road and associated pipeline lift activities. This time presents the best opportunity to improve or enhance segmentation or other controls.

Asarco may also review and revise this Plan at any time additional or enhanced controls are identified or if operational needs require a revision.

Asarco will provide a revised copy of this Plan to PDEQ within ten working days of adoption of a revision.

ATTACHEMETS

Conceptual Diagrams Showing the general Configuration of Active Tailings Dams #4, #7, and #8.



Proposed wing wall

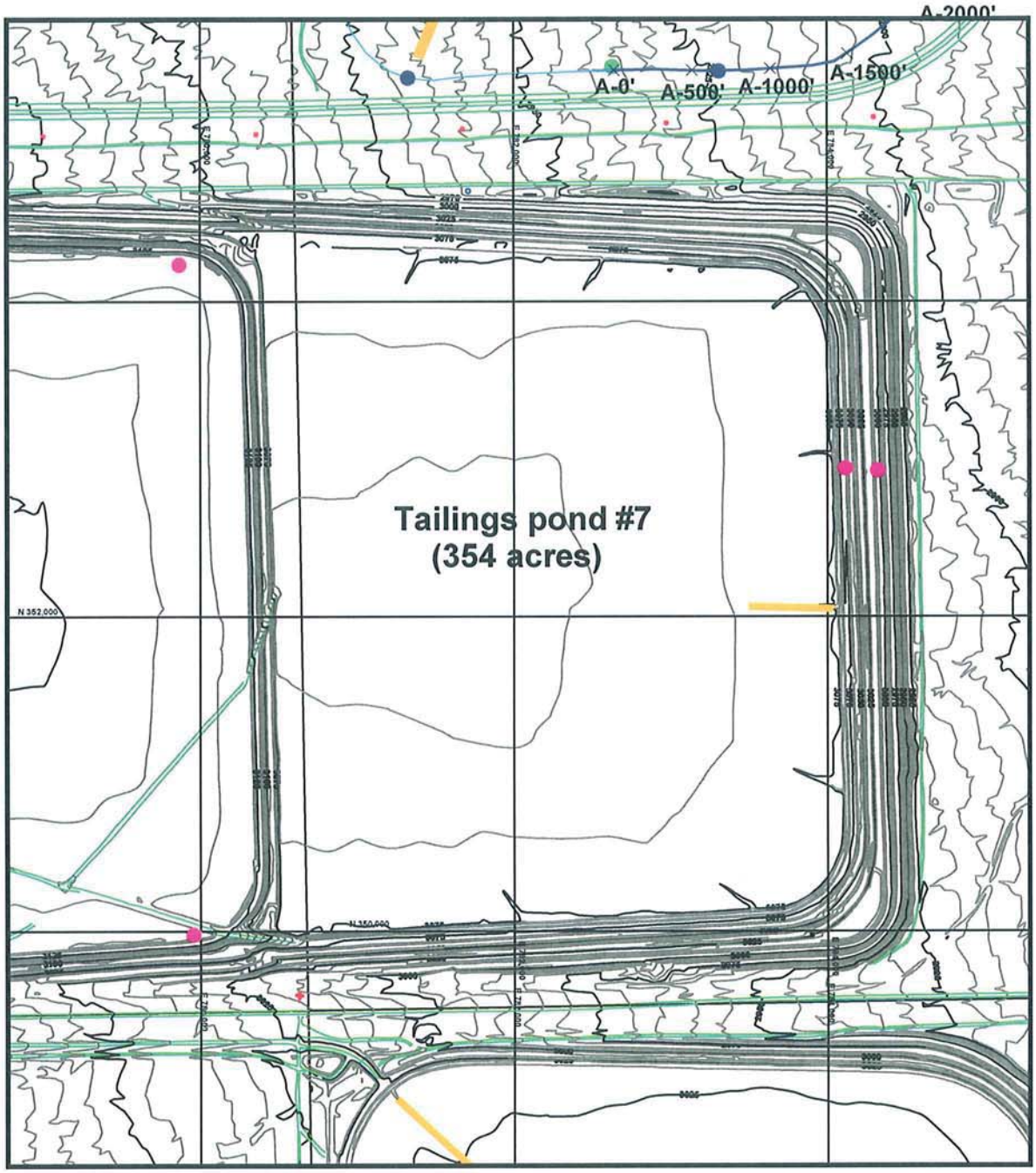
Proposed gate valve

NORTH

ASARCO PROPERTY
MISSION COMPLEX

Tailings Pond #4

Scale 1"-1500'



Proposed wing wall

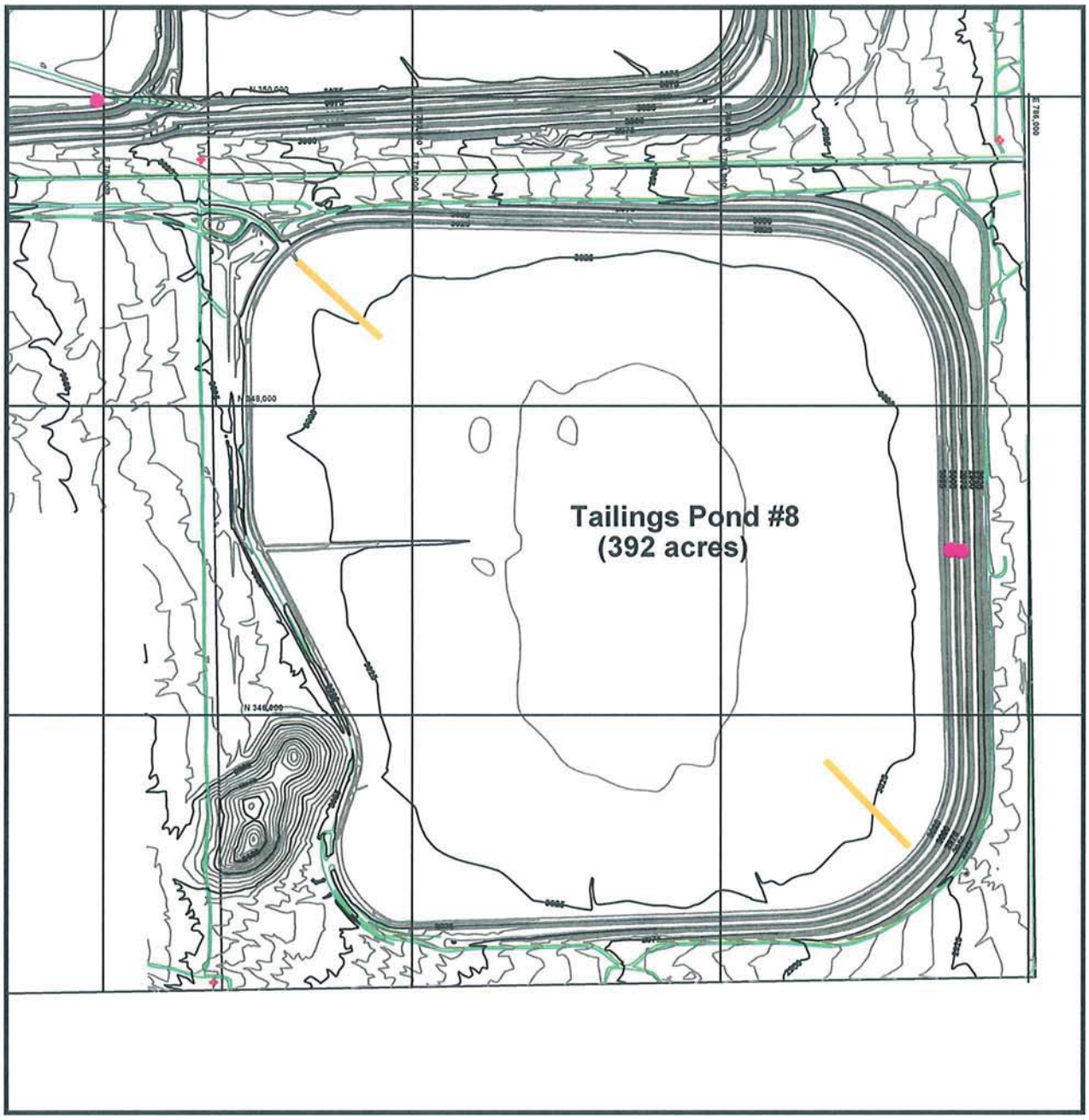
Piezometer well

NORTH

ASARCO PROPERTY
MISSION COMPLEX

Tailings Pond #7

Scale 1"-1000'



Proposed wing wall

Piezometer well

NORTH

ASARCO PROPERTY
MISSION COMPLEX

Tailings Pond #8

Scale 1"-1000'