ANACONDA COPPER MINE
Operable Unit 8 (OU-8)
Proposed Plan Meeting
December 12, 2016

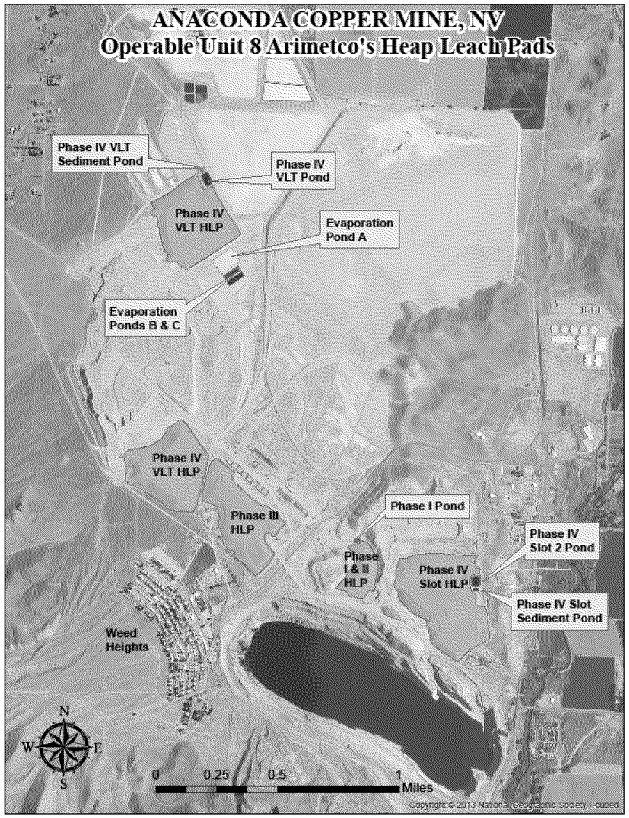
Anaconda Mine OU-8 Proposed Plan Public Meeting and Comment Period

Agenda

- Welcome
- Presentation
- Questions and Answers
- Public Comments
- Adjourn

What are the Issues?

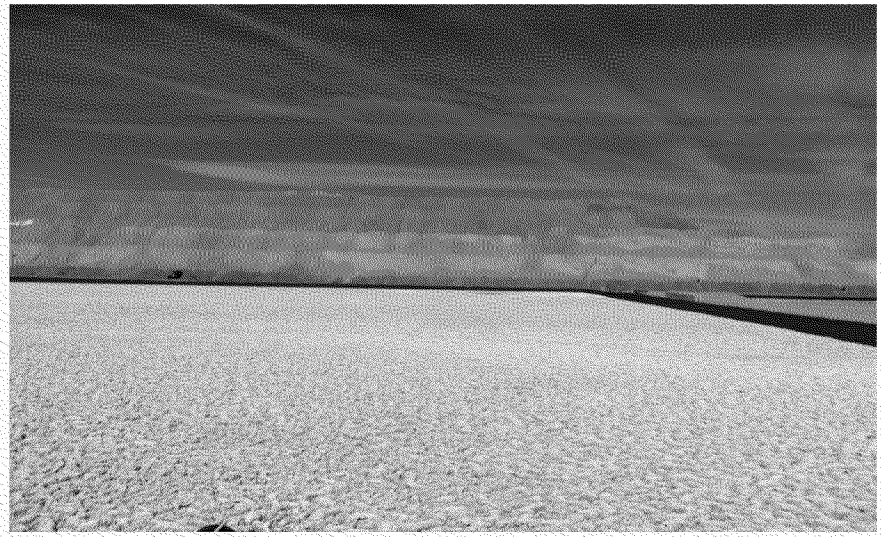
- Acidic drain-down fluids containing elevated Total Dissolved Solids from OU-8.
- Heap Leach Pad (HLP) fluids continue to accumulate in the Fluid Management System (FMS) evaporation ponds.
- The ponds are expected to reach capacity in 2-4 years.
- Repeatedly constructing new evaporation ponds is not a sustainable, fiscally responsible long-term remedy to manage the drain-down fluids.



OU-8 Components

OU-8 VLT HLP 4-Acre Evaporation Pond

June 2009



October 2013

Pond Constructed in 2008, out of capacity by 2012

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Contaminants of Concern (COCs)

Contaminants of Concern

Comparison of Analytical Results from Drain-Down Fluids with Maximum Contaminant Levels **(MCLs)**

Analyte	Range of Detected Concentrations[a]	Primary MCL (µg/L)	State of Nevada Secondary	Federal Secondary
Aluminum	9,000,000 – 27,000,000	NA	200	50 – 200
Antimony	160 – 200	6	NA	NA
Arsenic	110 – 280	10	NA	NA
Beryllium	550 – 1,500	4	NA	NA
Boron	1,100 – 2,500	NA	NA	NA
Cadmium	170 – 420	5	NA	NA
Chromium (total)	460 – 2,100	100	NA	NA
Cobalt	28,000 – 70,000	NA	NA	NA
Copper	1,700,000 – 5,700,000	1,300	1,000	1,000
Iron	210,000 – 1,100,000	NA	600	300
Lead	Non-detect	15	NA	NA
Manganese	270,000 – 740,000	NA	100	50
Mercury	4.7 – 29	2	NA	NA
Nickel	17,000 – 41,000	NA	NA	NA
Selenium	Non-detect	50	NA	NA
Silver	50	NA	100	100
Thallium	380 – 890	2	NA	NA
Vanadium	65 – 1,100	NA	NA	NA
Zinc	26,000 – 67,000	NA	5,000	5,000

Notes:

MCL = Maximum Contaminant Level
NA = Not Available
µg/L = microgram(s) per liter

- The cancer risk to an outdoor worker is 8 in 100,000, primarily through ingestion of soil materials.
- Contaminants driving this risk are arsenic, chromium, radium-228, and uranium-238.

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What are the Remedial Action Objectives (RAOs)?

- Prevent ingestion/direct contact with heap leach materials and fluids containing contaminants of concern (COCs) above human health risk-based levels.
- Minimize exposure to heap leach materials and fluids containing contaminants of ecological concern at levels that are harmful to ecological receptors.
- Maximize groundwater protection by preventing migration of COCs to groundwater at levels above maximum contaminant levels (MCLs).

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The 4 Alternatives Considered and Evaluated

Alternative 1	FS Alternative 2	No Further Action Alternative
Alternative 2	FS Alternative 6a	Passive Evaporation and Top Capping of HLPs
Alternative 3	FS Alternative 8a	Passive Evaporation and Complete Capping of HLPs
Alternative 4 (Preferred Alternative)	Combination of key elements of FS Alternatives 6a and 8a, plus stormwater management.	

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Alternative 1, No Further Action
-Continue Existing Activities

- Collect drain-down fluids
- Maintain collection ditches
- Passive evaporation in ponds
- Wildlife deterrence
- Access control

Capital Cost: approximately $1,740
Annual O&M Costs: approx. $168,500
Total Costs: minimum $2.1 million
(30-year Net Present Value)

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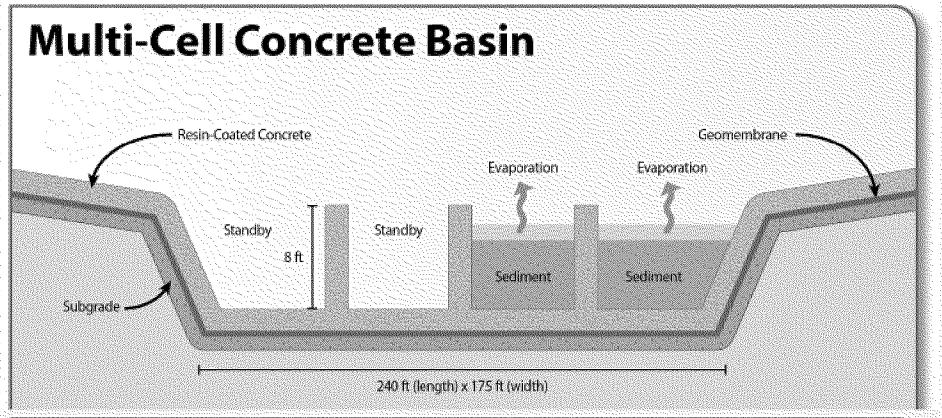
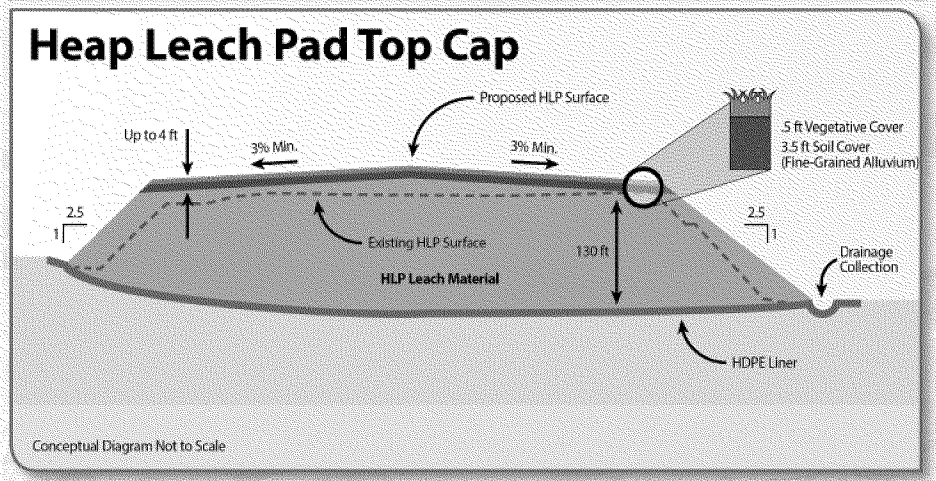
Alternative 2 –Passive Evaporation & Top Capping of HLPs

- Existing activities, plus:
- Close existing ponds except 4-Acre Pond
- New concrete basin
- New solids repository
- Cap (4 ft. thick) tops only of each HLP





Capital Cost: minimum of $21.1 million
Annual O&M Costs: approx. $686,300
Total Costs: minimum $29.7 million
(30-year Net Present Value)

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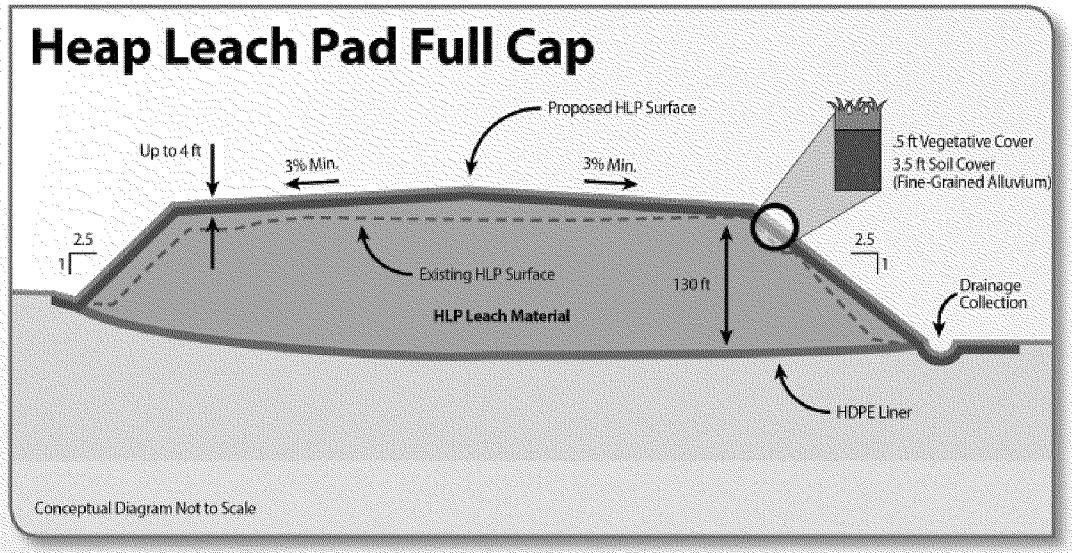
Alternative 3 –Passive Evaporation and Complete Capping of HLPs

- Existing activities
- Close existing ponds except 4-Acre Pond
- New concrete basin
- New solids repository
- Cap (4 ft. thick) on top and sides of each HLP
- Top cap spillways to collect/convey stormwater



Capital Cost: minimum of $51.7 million
Annual O&M Costs: approx. $519,200
Total Costs: minimum $58.2 million
(30-year Net Present Value)

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Alternative 4, *Preferred Alternative*
-Modified Evaporation, Complete Cap, E-cells, Stormwater

- All components of Alts 1, 2 & 3,
- Except: no concrete basin required with 4-Acre Pond closure, and 2' thick cap instead of 4' thick

Capital Cost: minimum of $30.4 million
Annual O&M Costs: approx. $381,700
Total Costs: minimum $36.1 million
(30-year Net Present Value)

- Plus: convert most HLP ponds to E-Cells
- Close 4-Acre Pond in place or reprocess contents
- Stormwater Plan: 4 new detention basins, piping, open channels, designed to connect to future adjacent areas stormwater features

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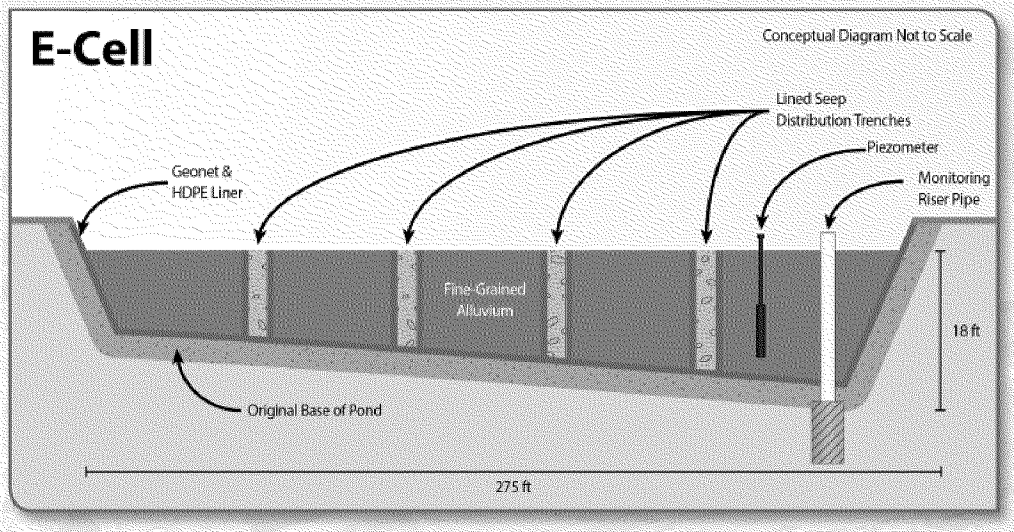
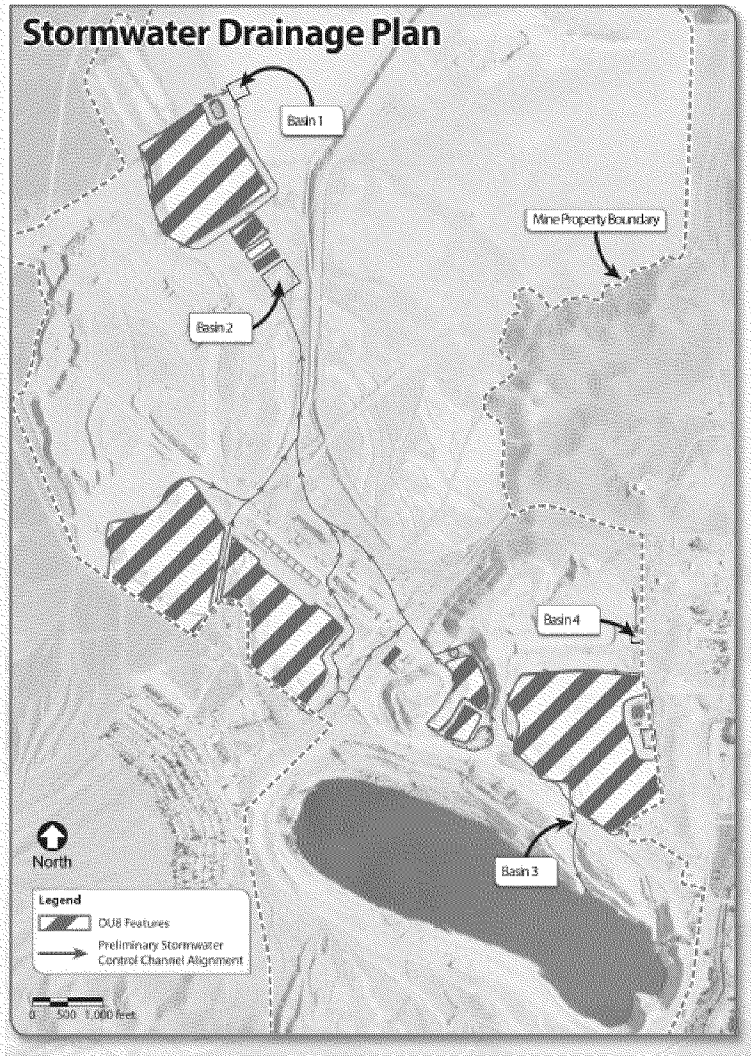
Alternative 4, Preferred Alternative –Select Features





Alternative Selection Criteria

1. Protection of human health and the environment
2. Compliance with Applicable or Relevant and Appropriate Requirements
3. Long-term effectiveness and permanence
4. Reduction in toxicity, mobility and volume
5. Short-term effectiveness
6. Implementability
7. Cost
8. State acceptance
9. Community acceptance

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Alternative 1 Evaluation

- Not protective of human health and the environment, as exposure to fluids/solids is not eliminated
- The risk of leaks and potential groundwater contamination would be reduced, but not eliminated
- Precipitation infiltration would not be reduced and generation of drain-down fluids would continue
- Additional ponds would need to be constructed within the next 2-4 years, and in perpetuity, to accommodate build up of solid precipitates and fluids accumulation
- Does not meet Nevada mine closure standards and requirements
- Long-term effectiveness would not be achieved.
- Costs of new pond construction is not included in this alternative.

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Alternative 2 Evaluation

- More protective of human health and the environment, as top cap reduces exposure potential
- Reduction in drain-down fluids reduces the risk of leaks and potential groundwater contamination, but complete groundwater protection from potential releases would not be achieved
- Precipitation infiltration and generation of drain-down fluids would be greatly decreased
- Contaminant mass and volume would not be greatly reduced
- More closely meets Nevada mine closure standards and requirements, but dependent on liner conditions and FMS portions
- More difficult to implement than Alternative 1
- Capital costs much greater than Alternative 1, but < Alts 3, 4
- Estimated O&M costs > any of other alternatives

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Alternative 3 Evaluation

- More protective of human health and the environment, as full HLP cover reduces potential contact with solids and fluids
- The risk of leaks and potential groundwater contamination are greatly decreased, but contaminant mass & volume may remain
- Long-term generation of drain-down fluids greatly decreased
- 4'-thick complete cover would require substantially more borrow material than Alternatives 2 or 4
- More closely follows Nevada mine closure standards and requirements, but only minimal stormwater routing included
- Long-term effectiveness would be increased
- More difficult to implement than any of the other alternatives
- Capital costs greater than any of the other alternatives
- Estimated O&M costs substantially greater than Alternative 4

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Preferred Alternative Alternative 4, Evaluation

- RAOs would be achieved
- Most protective of human health and the environment, as complete cover limits exposure to drain-down fluids and solids
- The risk of leaks and potential groundwater contamination further reduced
- Infiltration virtually eliminated & generation of drain-down fluids further reduced
- Stormwater controls isolate non-contact fluids & decrease risks
- 2'-thick complete cover would require substantially less borrow material than Alternative 3
- 2'-cap meets Nevada mine closure standards and requirements
- More implementable than Alternatives 2 or 3
- Capital costs substantially less than Alternative 3
- Estimated O&M costs significantly less than Alternatives 2 or 3

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We Want Your Input!

- ✓ 30-day Public comment period runs from November 21-December 21, 2016.
- ✓ You can make a verbal comment today which will be transcribed verbatim. There is a 3-minute time limit for verbal comments.
- ✓ You can write a comment and return it in person today, or by mail, email or fax to the contact below:

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Questions and Answers

and

Public Comments

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