

**Resolution Copper Project and Land Exchange  
Environmental Impact Statement**

USDA Forest Service  
Tonto National Forest  
Arizona

October 4, 2018

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## **Process Memorandum to File**

### **Evolution of Range of Alternatives Considered in Detail in DEIS, after Publication of the Alternatives Evaluation Report (Nov 2017)**

This document is deliberative and is prepared by the third-party contractor in compliance with the National Environmental Policy Act and other laws, regulations, and policies to document ongoing process and analysis steps. This document does not take the place of any Line Officer's decision space related to this project.

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## Purpose of Process Memorandum

The alternatives development process was last documented for the public in a Draft Final Alternatives Evaluation Report in November 2017. The purpose of this process memorandum is to document key process steps occurring since November 2017 that have resulted in a revised range of alternatives to be considered for detailed analysis in the DEIS.


A key focus of this process memo is on the ability to compare terminology in different documents, as alternative names have evolved over time.


## Key Process Steps

1. January – August 2017, Alternatives development process and screening, including April 2017 public workshops
2. September 2017, Briefing with Forest Supervisor; briefing paper on proposed range of alternatives rolled out to cooperating agencies
3. November 2017, Draft Final Alternative Evaluation Report posted on public website
4. December 2017, DRAFT Alternative Portfolios prepared, and Forest Service requests input from Resolution on alternatives
5. December 2017, Forest Service meets with BLM to discuss Peg Leg alternative ramifications
6. December 2017, Forest Service meets with ASLD to discuss Peg Leg alternative ramifications
7. February 2018, Resolution provides revised alternative portfolios back to Forest Service; includes shift of Peg Leg from Bureau of Reclamation withdrawal lands
8. March 2018, Forest Service requests revision to GPO proposal to replace upstream dam with modified centerline dam and receives Resolution concurrence (April 2018)
9. March 2018, Briefing with Forest Supervisor; Forest Service requests optimized Peg Leg alternative from Resolution
10. March 2018, Forest Service meets with BLM and ASLD to discuss Peg Leg resource data; receipt of two new potential locations from BLM (Upper Mineral Creek and Skunk Camp)
11. April 2018, Forest Service receives alternative portfolios from Resolution for optimized Peg Leg alternative and Skunk Camp alternative
12. May 2018, Briefing with Forest Supervisor
13. May 2018, Upper Mineral Creek potential location screened and dismissed
14. May 2018, Forest Service meets with BLM, ASLD, and RCM to discuss technical details of alternatives; joint decision by Forest Service and BLM to consolidate Peg Leg alternatives, including dropping downstream dam and full liner alternatives

15. June 2018, Forest Service meets with U.S. Army Corps of Engineers to discuss permitting ramifications and data needs for Peg Leg and Skunk Camp alternatives
16. June-August 2018, Forest Service receives updated design information on alternatives and pipeline corridors, including:
  - June 8, June 11 (Alternatives 2 and 3) [Project Record #0002639; Project Record #0002640]
  - June 6 (Alternative 4) [Project Record #0002626]
  - June 18 (Alternative 6) [Project Record #0002656]
  - June 21 (Alternative 5) [Project Record #0002763]
  - July 2 (Pipelines for Peg Leg location) [Project Record #0002791]
  - July 3 (Pipelines for Skunk Camp location) [Project Record #0002792]
  - July 10 (Pipeline rework for Near West location) [Project Record #0002784]
  - August 1 (Updated Alternative 6) [Project Record #0002835]
  - August 13 (Magma Mine road reroute) [Project Record #0110645]
17. June-July 2018, Forest Service works with RCM to obtain and rectify GIS data for all alternative components, for use in DEIS analysis
18. July 2018, Complete revised alternatives package is provided for NEPA team and cooperating agencies
19. July 2018, BLM provides Forest Service with technical input on Peg Leg pipeline routes and resource conflicts
20. August 2018, Forest Service provides BLM pipeline information to RCM for consideration
21. August 2018, Forest Service posts “SnapShots” for revised alternatives to public website
22. August, September 2018, Forest Service meets at a management level with BLM to discuss regulatory framework and logistics for Peg Leg alternative
23. October 2018 (expected), Forest Service meets with BLM and RCM to discuss technical details of pipelines and potential pipeline reroutes for Peg Leg alternative

## Evolution of Range of Alternatives

		Evolution of alternatives over time 			
		Nov - Dec 2017	Feb - Apr 2018	May 2018	June 2018
Location	TSF Facility Description	Alternatives Evaluation Report and Alternative Portfolios	Resolution Alternative Portfolios	Presented at Tribal Meeting and ASLD/BLM Alternatives Meeting	Final Range of Alternatives for Detailed Analysis in DEIS
-	None	Alternative 1 – No Action	Alternative 1 – No Action	Alternative 1 – No Action	Alternative 1 – No Action
Near West	(Original GPO) Slurry tailings Unlined/No PAG cell Upstream dam	Alternative 2 – Proposed Action	Alternative 2 – Near West GPO Proposed Action		
	Slurry tailings Unlined/No PAG cell Mod. centerline dam		Alternative 3A – Near West Modified Proposed Action	Alternative 2 – Modified Proposed Action	Alternative 2 – Near West - Modified Proposed Action - Wet
	Slurry/Thin lift Lined PAG cell Mod. centerline dam	Alternative 3 – Modified Proposed Action	Alternative 3B – Near West Modified Proposed Action	Alternative 3 – Modified Proposed Action – Thin Lift/Pag Cell	Alternative 3 – Near West - Modified Proposed Action – Dry
Silver King	Filtered tailings Lined PAG cell	Alternative 4 – Silver King Filtered	Alternative 4 – Silver King Filtered	Alternative 4 – Silver King Filtered	Alternative 4 – Silver King - Filtered
Peg Leg	Slurry tailings Fully lined Downstream dam	Alternative 5 – Peg Leg Lined	Alternative 5 – Peg Leg Lined	Alternative 5 – Peg Leg - Lined	
	Slurry tailings Lined PAG cell True centerline dam	Alternative 6 – Peg Leg Unlined	Alternative 6 – Peg Leg Unlined	Alternative 6 – Peg Leg - Unlined	
	Slurry tailings Lined PAG cell/other selective lining True centerline dam		Alternative 7 – Peg Leg Combined	Alternative 7 – Peg Leg - Optimized	Alternative 5 – Peg Leg
Skunk Camp	Slurry tailings Lined PAG cell True centerline dam		Alternative 8 – Skunk Camp	Alternative 8 – Skunk Camp	Alternative 6 – Skunk Camp

 Key process step (see page 1)

## Technical Details of Alternatives

The differences in technical details between alternatives are included as Attachment 1, including locations, dam types, tailings type and handling, pyrite tailings handling<sup>1</sup>, and seepage control. Attachment 1 has been updated several times for various meetings; the version included here represents the latest shared with the NEPA team (August 14, 2018), updated with the final decisions on alternative range.

## Pipeline Routes

The original intent of the project team was to select a single pipeline route to bring tailings slurry from the West Plant Site to the Peg Leg location, and a single pipeline route to bring tailings slurry from the West Plant Site to the Skunk Camp location.

Ultimately, two alternative pipeline routes were developed both for Peg Leg and Skunk Camp locations. Preliminary screening was not useful for narrowing this selection, so it was determined that the pipeline alternatives ought to be analyzed in the DEIS, and therefore have been carried forward.

## Decision Rationale

### **Dismissal of Upper Mineral Creek Potential Alternative**

In March 2018, the BLM identified two general locations in watersheds approximately 7 and 11 miles, respectively, to the southeast of the town of Superior and approximately 3 miles northeast and directly east of the ASARCO Ray Mine as potential tailings sites that the agency believed warranted at least preliminary investigation.

The first of these, which BLM referred to for planning purposes as the Mineral Creek Headwaters or Upper Mineral Creek site, is a 6,077-acre area comprising 2.3 acres of BLM-administered public lands, 662 acres of Arizona State Trust surface with Federal mineral estate, 4,304 acres of Arizona State Trust lands with no Federal mineral estate, 80 acres of private surface with Federal mineral estate, and 1,029 acres of private lands with no Federal mineral estate. BLM stated that mining company ASARCO presently holds 21 mining claims within the area. The topography is a steep canyon with smaller side canyons.

Resource specialists and planners at the Tonto National Forest conducted a first-stage screening of the suitability of the Mineral Creek Headwaters area as a site for a future tailings storage facility. Although presumably of sufficient size to store the requisite volume of tailings, the site lies directly atop a perennial reach of Mineral Creek and abundant riparian vegetation, as well as over a dozen springs. It would also occupy designated critical habitat for Gila chub. For these reasons the Mineral Creek Headwaters site was eliminated from further consideration as a viable alternative for detailed analysis in the EIS.

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<sup>1</sup> Also known as Potentially Acid Generating (PAG) tailings

The screening analysis completed on the two BLM locations (Upper Mineral Creek, Dripping Springs Wash/Skunk Camp) is included with this memo as Attachment 2.

### **Dismissal of Downstream Dam Alternative**

In the November 2017 Draft Final Alternatives Evaluation Report two separate alternatives were carried forward at the Peg Leg location. These two alternatives were later consolidated into the single Peg Leg alternative currently being carried forward for detailed analysis.

In November 2017, what was then known as “Alternative 5 – Peg Leg -Lined” consisted of a slurry tailings facility constructed with a downstream dam and envisioned to be fully lined. The use of a downstream dam was originally incorporated into the range of alternatives because of the improvement it provided for dam resilience and public health and safety. However, it soon became evident to the NEPA team that a downstream dam requires massive amounts of earth moving that generated substantially greater resource impacts.

Resolution Copper’s engineering consultants estimated that generating the huge volumes of earthfill from within the Peg Leg tailings site’s footprint in order to construct a downstream dam would require excavating 0.9 billion tons of soil to a depth up to 60-70 feet from throughout the roughly 7,000-acre facility—essentially creating a major open-pit aggregate mining operation in addition to the underground mining proposed at the Oak Flat/East Plant Site<sup>2</sup>. Further calculations estimated the effort would require full-time use of more than 140 earthmoving vehicles (dozers, backhoes, haul trucks, etc.), an increase over the amount of equipment needed for other slurry tailings alternatives. The direct carbon dioxide equivalent (CO<sub>2e</sub>) emissions are 80 to 132 percent higher than the emissions expected at any other alternative dam types under consideration. The project would also have higher emissions of carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitric oxide (NO), volatile organic compounds (VOCs), and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)<sup>3</sup>. The Tonto National Forest therefore decided to eliminate this alternative because the adverse environmental effects of implementing it were determined to be substantially greater than either the GPO Proposed Action or the other tailings site alternatives already under consideration.

However, the concept of a downstream dam has been incorporated into both the optimized Peg Leg design and the Skunk Camp design, both being carried forward for detailed analysis. Both designs utilize a downstream dam for the pyrite tailings facility.

### **Dismissal of Full Lining Alternative**

The original inclusion of a tailings alternative that was “fully lined” was developed based on scoping comments. In Arizona, while large heap leach facilities are often lined to aid recovery of valuable leachate, large slurry tailings facilities generally are not lined. The NEPA team felt that analysis of a fully lined alternative—even if not typically done—could highlight key differences in seepage control.

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<sup>2</sup> See Project Record #0002698. This draft alternative portfolio was originally drafted by SWCA, with later review by RCM contractors. The version in the project record reflects the red-line edits made by RCM contractors.

<sup>3</sup> See Project Record #0002643. This spreadsheet was provided by RCM contractor Air Sciences to compare emissions between tailings alternatives. Specifically see emissions for “Alt 5”.

Further review showed that use of a full geomembrane liner over such a large area as originally envisioned would be technically impractical and ineffective<sup>4</sup>. However, a suite of seepage control techniques are available in addition to geomembranes, that still meet permeability requirements under Arizona permitting requirements<sup>5</sup>. These include use of underlying low-permeability tailing fines (cyclone overflow), as well as grouting or sealing of fractures in base rock using asphalt or bentonite or other materials.

Because the Peg Leg location is located on alluvium the potential water losses are expected to be substantial. The optimized design at Peg Leg incorporates the concept of lining but using a variety of techniques instead of strictly a geomembrane. The separate pyrite tailings cell has been located over an area of bedrock and would also be fully lined with a geomembrane. For the scavenger tailing (NPAG) facility, the full extent of the liner would be assessed and adjusted during operations; at the start, a geomembrane would be positioned under the reclaim pond and along the face of the starter dam. Other techniques would be used to reduce seepage losses, particularly placement of fine-grained cyclone overflow in advance of tailings deposition in the remaining areas.

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<sup>4</sup> See Project Record #0110644, 5/2/18 BGC memo "Resolution Copper Project EIS – Longevity of Geosynthetic Liner Systems – DRAFT"

<sup>5</sup> See Project Record #0110650, 10/8/18 Golder memo "Peg Leg Earthen, Downstream, Fully Lined Summary Alternative". See specifically Section 3.3 and Table 1.

# **ATTACHMENT 1**

## **Alternatives Matrix with Technical Details**



**FINAL RANGE OF ALTERNATIVES FOR DETAILED ANALYSIS IN DRAFT EIS**

**AS OF AUGUST 14, 2018**

		<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>	<b>Alternative 6</b>
		<b>Near West - Modified Proposed Action - Wet</b>	<b>Near West - Modified Proposed Action - Dry</b>	<b>Silver King - Filtered</b>	<b>Peg Leg</b>	<b>Skunk Camp</b>
Location/ Ownership	Location	GPO/Near West	GPO/Near West	North of Superior	South of Gila River	Between Dripping Springs and Pinal Mountains
	Ownership-TSF	Tonto National Forest	Tonto National Forest	Tonto National Forest	BLM/ASLD/Private	ASLD/Private
	Ownership-Pipeline Alternative 1	Tonto National Forest	Tonto National Forest	Tonto National Forest	(Western) Tonto/BLM/ASLD/USBR/Private	(Northern) Tonto/ASLD/Private
	Ownership-Pipeline Alternative 2	N/A	N/A	N/A	(Eastern) Tonto/BLM/ASLD/USBR/Private <sup>1</sup>	(Southern) Tonto/ASLD/Private
	Ownership - Powerline	Same as slurry pipelines	Same as slurry pipelines	Same as slurry pipelines	Tie-in to existing lines at location	Tonto/ASLD/Private

<sup>1</sup> Assumes that ASARCO Ray Land Exchange takes place, and some BLM lands become private lands.

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Tailings Characteristics	Type of Tailings	Thickened slurry - NPAG (65% solids) - PAG (50% solids)	Thickened slurry - NPAG (70% solids) - PAG (50% solids)	Filtered at stack location to approximately 86-89% solids	Thickened slurry - NPAG (60% solids) - PAG (50% solids)	Thickened slurry - NPAG (60% solids) - PAG (50% solids)
	Conveyance of tailings from WSP to TSF	Split slurry lines, approximately 5 miles	Split slurry lines, approximately 5 miles	Delivered in split slurry lines for filtering at stack location, approximately 1-2 miles for NPAG and 2-4 miles for PAG	Split slurry lines, approximately 22 miles (to east) or 28 miles (to west)	Split slurry lines, approximately 25 miles (to south) or 20 miles (to north)

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Tailings Embankment	Starter Dams	Earthfill  Earthfill also used for portions of embankment to north	Earthfill  Earthfill also used for portions of embankment to north	None. Structural zone of filtered tailings built around perimeter	Earthfill	Earthfill
	Downstream slope	3:1 or 4:1	3:1	3:1	3:1	3:1
	Embankment raises	Modified centerline, using NPAG cyclone sand	Modified centerline using NPAG cyclone sand; low-permeability splitter berms between NPAG/PAG cells	None. Structural zone of filtered tailings built around perimeter	True centerline using NPAG cyclone sand  Downstream dam used for PAG cells	True centerline using NPAG cyclone sand; cross-valley construction  PAG cells would be built with cyclone sand; downstream dam construction

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Tailings Deposition	NPAG deposition at TSF	From embankment crests	From embankment crests in thin lifts (enhances evaporation, decreases water entrainment, increases density, develops better beaches, avoids reclaim pond)	Filtered at NPAG cell and physical placement with conveyors and mobile equipment in separate NPAG stack	From embankment crests. Initial placement uses traditional methods, transitioning later to thin-lift	From embankment crests in thin lifts (enhances evaporation, decreases water entrainment, increases density, develops better beaches, avoids reclaim pond)
	PAG deposition at TSF	Subaqueous deposition into reclaim pond; small separate PAG starter cell lasts through Year 9. Minimum 5-10 foot water cap.	Subaqueous deposition into reclaim pond; separate PAG cell with possible low-permeability liner. Minimum 5-10-foot water cap.	Filtered at PAG cell and physical placement with conveyors and mobile equipment in separate PAG stack	Subaqueous deposition into reclaim pond; use of consecutive small PAG cells to reduce amount of water needed for cover. Minimum 10-foot water cap.	Subaqueous deposition into reclaim pond; use of two consecutive PAG cells with low-permeability liner. Minimum 10-foot water cap.

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Seepage control <sup>2</sup>	Foundations	Foundation treatments or low-permeability barrier where needed <sup>3</sup> ; underdrains to help collect seepage [Level 1]	Foundation treatments or low-permeability barrier where needed; underdrains to help collect seepage [Level 1]	Potential for treatment or possible excavation of certain foundation layers; underdrains to help collect seepage	Clearing and compaction of existing materials; underdrains to help collect seepage.  Starter NPAG cell to have geomembrane below reclaim pond; extended during operations.  Full facility to have at least 18-inches of low-permeability cyclone overflow (slime seal)	Foundation treatment details not yet developed, could include excavation of weak foundation layers; underdrains to help collect seepage
	NPAG-Initial	11 seepage collection ponds downstream of full facility [Level 1]	11 seepage collection ponds downstream of full facility [Level 1]	4 seepage collection ponds downstream of NPAG stack (also for contact stormwater)	Toe collection ponds  Pumpback well system	1 seepage collection pond downstream of full facility and cut off wall

<sup>2</sup> Level 1 implemented immediately. Levels 2 through 4 to be assessed and applied if needed.

<sup>3</sup> Foundation treatments may include dental concrete, cut-offs, or grouting. Engineered low-permeability layers may include compacted fine tailings, geomembranes, asphalt, slurry bentonite, or cemented paste tailings.

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	NPAG- Contingent	Additional grouting around seepage collection dams [Level 2]  Additional seepage collection dams [Level 3]  Downstream pumpback wells [Level 4]	Additional grouting around seepage collection dams [Level 2]  Additional seepage collection dams [Level 3]  Downstream pumpback wells [Level 4]	None specified	None specified	None specified
	PAG	Engineered low- permeability barrier on starter PAG cell	Engineered low- permeability PAG cell	Potential for engineered low- permeability foundation treatment; otherwise 1 seepage collection pond downstream of PAG stack (also for contact stormwater)	PAG cell located on area of granodiorite, would form basis for engineered low- permeability barrier; could include partial lining systems.  Toe collection ponds	Engineered low- permeability PAG cells

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Size of Facility	Total disturbed footprint at tailings storage impoundments	3,309 acres	3,308 acres	2,279 acres	5,889 acres	4,406 acres
	Total disturbed footprint at TSF fence line	4,909 acres	4,909 acres	5,661 acres	10,782 acres	10,079 acres
	Height of TSF (toe to crest)	520 feet	510 feet	1,040 feet NPAG; 750 feet PAG. No lift greater than 900 feet.	310 feet NPAG; 200 feet PAG	490 feet

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**AS OF AUGUST 14, 2018**

	Total disturbed footprint of Pipeline Corridor 500' (acres and linear feet/mi)	n/a	n/a	Total: 30 acres FS: 18.04 acres Private: 12.50 acres  1,067.17 ft FS: 818.61 ft Private: 248.56 ft  Includes access roads	WEST Total: 1,722 acres FS: 501.26 acres BLM: 521.71 acres BOR: 557.32 acres ASLD 115.14 acres Private: 26.18 acres  144,372.62 ft FS: 40,432.60 ft BLM: 44,356.55 ft BOR: 48,498.86 ft ASLD: 9,115.78 ft Private: 1,968.84 ft  EAST Total: 1,353 acres FS: 518.23 acres BLM: 460.66 acres BOR: 165.26 acres ASLD 157.52 acres Private: 51.31 acres  116,209.8 ft FS: 46,293.62 ft BLM: 40,513.50 ft BOR: 14,092.88 ft ASLD: 12,832.96 ft Private: 2,476.87 ft ** doesn't include access roads **	NORTH Total: 1,465 acres FS: 539.91 acres ASLD: 645.26 acres Private: 279.85 acres  104,445.4 ft FS: 40,676.51 ft ASLD: 50,573.54 ft Private: 13,195.3 ft  SOUTH Total: 1,944 acres FS: 756.52 acres ASLD: 880.72 acres Private: 306.50 acres  132,932.3 ft FS: 56,879.15 ft ASLD: 61,688.71 ft Private: 14,364.44 ft  ** doesn't include access roads **
	Total disturbed footprint of Pipeline corridor	Total: 78 acres FS: 77.54 acres Private: 0.36 acres	Total: 78 acres	n/a	n/a	n/a



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	– engineered acres and linear feet/mi)	28,153.03 ft FS: 28,058.08 ft Private: 94.95 ft  Includes access roads	FS: 77.54 acres Private: 0.36 acres  28,153.03 ft FS: 28,058.08 ft Private: 94.95 ft  Includes access roads			
	Total disturbed footprint of additional Powerline corridor (acres and linear feet/mi)	n/a	n/a	n/a	n/a	421.68 ac FS: 137.40 ASLD: 210.67 Private: 73.61  ** does not include access roads**

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Total disturbed footprint of access roads outside of above facilities (acres and linear feet/mi)	No additional needed at this time but could change as engineering is designed further.	No additional needed at this time but could change as engineering is designed further.	An alternative Silver King Road Reroute for WPS delivery access is proposed for Alt 4 – Silver King. The use of FR229 for delivery access would be reduced to 0.4 miles, but infrequent use along FR229, north of the MARRCO corridor would continue for accessing the SRP substation.	Most access roads would follow existing routes. Additional Access roads for western alignment would include 5.1 miles or 12.4 acres of new disturbance. Additional access roads for eastern alignment would include 2.2 miles or 5.3 acres of new disturbance.	20 miles of access roads for powerline 4 miles of access roads North alignment 6 miles of access roads South alignment

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Concentrate	Filter/Loadout Facility	Located in San Tan Valley	Located in San Tan Valley	West Plant Site	Located in San Tan Valley	Located in San Tan Valley
	Concentrate delivery	Slurry pipeline, down MARRCO corridor; train from Filter/ Loadout Facility to main rail line	Slurry pipeline, down MARRCO corridor; train from Filter/ Loadout Facility to main rail line	Train from West Plant Site down MARRCO corridor to main rail line	Slurry pipeline, down MARRCO corridor; train from Filter/ Loadout Facility to main rail line	Slurry pipeline, down MARRCO corridor; train from Filter/ Loadout Facility to main rail line

## **ATTACHMENT 2**

### **Screening Analysis for Upper Mineral Creek**

4/16/18 and 5/11/18

**Preliminary Alternative Tailings Site Evaluation Summary**

+	Improves upon the GPO Tailings location (is better)
-	Decline upon the GPO Tailings location (is worse)
=	Generally the same as the GPO
?	Unknown

Source	Preliminary Site	Site Type Ownership (if known)	Issue Category				Total +
			Water Resources Potential receptors, Groundwater, Surface Water, Springs, Floodplains	Biological Resources Fragmented Land, NDVI, Critical Habitat, Waters, AZGFD Riparian, Important Bird Areas	Recreation Resources Arizona Trail, LOST Trail, other trails, NFS Roads, general recreation knowledge	Public Health and Safety Proximity to people/communities, residents downstream	
<b>BLM Suggested Alternatives</b>	Mineral Creek Headwaters	Forest Service/ State Land/ Private	-	-	+	+	<b>2</b>
	Dripping Springs "Skunk Camp"	State Land/ Private	=	-	+	+	<b>2</b>

Resource Consideration	Mineral Creek Headwaters	Dripping Springs "Skunk Camp"
Air quality and Non-Attainment Areas	Within PM10, and SO2 Maintenance area	Within PM10
Distance to perennial waters	0.0 – on a perennial reach of Mineral Creek	11.5 miles to Gila River downstream
Distance to communities	Bellvue – 2 miles Globe – 11.4 miles Kearny – 11.8 miles Miami – 8.5 miles Superior – 6.6 miles Top of the World – 3.5 miles Winkelman – 18.8 miles	Bellvue – 8.5 miles Globe – 14.3 miles Kearny – 7.5 miles Miami – 13.3 miles Superior – 11.5 miles Top of the World – 10.6 miles Winkelman – 14.3 miles
Distance to critical habitat	0.0 – covers Gila Chub habitat. Within 1 mile of Mexican Spotted Owl Habitat	3.7 miles over mountain to Gila Chub at Big Box Dam or 11.5 miles to Gila River. Approx 8 miles of Mexican Spotted Owl
Wild and Scenic Rivers	None	None
Watershed	2 different watersheds: Lyons Fork and Upper Mineral Creek watersheds	1 single watershed: Upper Dripping Springs Wash
Springs	14 springs under footprint and perennial reach	1 spring