

Proposed Rosemont Copper Project

Approved by:

___ Bev Everson

___ Mindee Roth

DRAFT- NOT FINAL UNTIL INITIALED BY BEV EVERSON OR MINDEE ROTH

Reclamation Team Meeting

May 17, 2010

File in:

___ Administrative Record

Attendees:

Forest Service

Debby Kriegel

Salek Shafiqullah

Bev Everson

Reta Laford

Heidi Schewel

Bob Lefevre

Art Elek

Charles Blair

Jeremy Sautter

SWCA

Jonathan Rigg

Dale Ortman

Melissa Reichard

Marcie Bidwell

RCC

Jamie Sturgess

Kathy Arnold

Fermin Samarano

David Krizek- TetraTech

Topics Discussed:

- Before and After pictures at other mining facilities
- Other sites procedures, slope details and reclamation successes
- Forest Service regulations and requirements for reclamation and bonding
- Needs in FEIS for later bonding calculations
- IDT Visual specialist shared thoughts for post-mine land use and measures of success
- IDT Visual specialist shared table depicting her understanding mine components post closure
- Documents already submitted by RCC: Reclamation Plan, Reclamation Concept Report and supporting docs
- Barrel Only and integration of landforming concepts and drainage possibilities

Decisions Made:

- Use the following phases and terminology: Construction, Operations & Reclamation, Closure

Action Items/Assignments:

- Facility & features meeting- integrating into IDT meeting on May 24
- Debby- Research and revegetation information that FS needs to Kathy by May 28
- Melissa- Forward Holly's revegetation presentation made to Cooperators to Marcie
- Melissa- Post mine land use determinations feedback from IDT to Debby by Thursday to Melissa by Friday May 21st- for Monday's meeting
- Bev- Regional commitment for land reclamation bonding
- Melissa- merge reclamation element grids from Debby and RCC

ROSEMONT PROJECT
RECLAMATION TECHNOLOGY TRANSFER MEETING
MAY 17, 2010

PURPOSE

Provide the CNF with All Information Needed to Meet NEPA and USFS Requirements for a Reclamation Plan

AGENDA

1. Introduction – PRESENTED BY SWCA
 - a. Attendee sign-in
 - b. Safety orientation
 - c. Purpose of meeting
 - d. Agenda

2. Define USFS Reclamation Plan Requirements in Regulation and Policy – PRESENTED BY CNF
 - a. Post-Mine Land Use
 - b. Facility specific reclamation design
 - c. Bonding
 - d. Reclamation Success Criteria and Bond Release

3. Present Current Rosemont Reclamation Plan – PRESENTED BY ROSEMONT
 - a. Summarize Reclamation Plan documents submitted to CNF
 - i. Itemize documents necessary to current Reclamation Plan
 - ii. Itemize obsolete documents, if any
 - b. Summarize the Reclamation Plan and what documentation defines each part of the plan
 - i. Post-Mine Land Use
 - ii. Concurrent and post-mine reclamation activities
 - iii. Facility-specific reclamation design and activities
 - iv. Reclamation success criteria

4. Revegetation Case Histories – PRESENTED BY ROSEMONT

5. Open Discussion of how existing Reclamation Plan documents meet or do not meet the CNF requirements – FACILITATED BY SWCA
 - a. Post-Mine Land Use
 - b. Resource areas affected by Reclamation Plan
 - c. Reclamation Plan relationship to Significant Issues
 - d. Facility-specific reclamation plans
 - i. Design to meet Post-Mine Land Use
 - ii. Specific activities & materials needed
 - iii. Quantities
 - iv. Success criteria
 - e. Other reclamation related information necessary to evaluate potential impact to Resource Areas for Significant Issues

6. Open Discussion of potential for a “landform” mitigation – FACILITATED BY SWCA

7. Determine Action Items - FACILITATED BY SWCA
 - a. Spreadsheet of specific action items needed to finalize the Reclamation Plan
 - i. Itemize all information needed from Rosemont
 - ii. Itemize all actions by CNF
 - iii. Itemize all actions by SWCA
 - b. Schedule all Action Items
 - c. Review all Action Items & Schedule

8. Adjourn Session

Draft Deliberative – Not for Public Distribution

Rosemont Copper Project



Reclamation Meeting
May 17, 2010

Legal Direction

Very little statutory direction; most laws do not address reclamation of locatable, or "hardrock" minerals

Forest Service regulatory direction is at 36 CFR 228 Part A (228.8, and 228.13), and in the 2800 Section of the Forest Service Manual.



228.8 (g) Reclamation. Upon exhaustion of the mineral deposit or at the earliest practicable time during operations, or within 1 year of the conclusion of operations, unless a longer time is allowed by the authorized officer, operator shall, where practicable, reclaim the surface disturbed in operations by taking such measures as will prevent or control onsite and off-site damage to the environment and forest surface resources including...



- (1) Control of erosion and landslides;
- (2) Control of water runoff;
- (3) Isolation, removal or control of toxic materials;
- (4) Reshaping and revegetation of disturbed areas, where reasonably practicable; and
- (5) Rehabilitation of fisheries and wildlife habitat.



228.13 Bonding

(a) Any operator required to file a plan of operations shall, when required by the authorized officer, furnish a bond conditioned upon compliance with 228.8(g), prior to approval of such plan of operations. In lieu of a bond, the operator may deposit into a Federal depository, as directed by the Forest Service, and maintain therein, cash in an amount equal to the required dollar amount of the bond or negotiable securities of the United States having market value at the time of deposit of not less than the required dollar amount of the bond. A blanket bond covering nationwide or statewide operations may be furnished if the terms and conditions thereof are sufficient to comply with the regulations in this part.

(b) In determining the amount of the bond, consideration will be given to the estimated cost of stabilizing, rehabilitating, and reclaiming the area of operations.



(c) In the event that an approved plan of operations is modified in accordance with 228.4 (d) and (e), the authorized officer will review the initial bond for adequacy and, if necessary, will adjust the bond to conform to the operations plan as modified.

(d) When reclamation has been completed in accordance with 228.8(g), the authorized officer will notify the operator that performance under the bond has been completed: *Provided, however,* that when the Forest Service has accepted as completed any portion of the reclamation, the authorized officer shall notify the operator of such acceptance and reduce proportionally the amount of bond thereafter to be required with respect to the remaining reclamation.



Forest Service Manual Direction (Sections 2800 and 6500)

Reclamation is an activity that is performed during or after mineral activities, to shape, stabilize, revegetate or otherwise treat lands disturbed by minerals activities. It should achieve safe and ecologically stable conditions and land use that's consistent with long-term forest land and resource management plans and local environmental conditions...



Reclamation shall be undertaken in a timely fashion and occur sequentially with ongoing mineral activities

To the extent practicable, reclaimed National Forest System land shall be free of long-term maintenance requirements...



Reclamation should reclaim disturbed areas to a condition that's consistent with applicable State air and water quality requirements

Reclamation requirements included in a Plan of Operations should include measurable performance standards. Requirements should be designed to attain those standards



Reclamation bonds, sureties, or other financial guarantees shall ordinarily be required for all mineral activities that require a Plan of Operations; dollar amounts of such guarantees shall be sufficient enough to cover the full cost of reclamation



Other Forest Service Guidance:

Training Guide for Reclamation Bonding Estimation and Administration for Mineral Plans of Operation under 36 CFR 228A (USDA - Forest Service, April 2004)



Training guide developed to address problems with mine closure that came to light in the mid to late 1990s, when precious metal prices plummeted and the Forest Service had to use reclamation bond monies to reclaim abandoned operations. The experience demonstrated that reclamation requirements and bonds for mining operations on federal lands in the Western U.S. were inadequate, particularly in....

- Interim management of process fluids
- Need for and cost of water treatment
- Detoxification and rinsing of spent ore from heap leach piles
- Closure of tailings impoundments

- Removal, isolation, and treatment of hazardous materials such as chemicals, spent ore, and waste rock
- Site drainage (both interim and long term)
- Monitoring and maintenance of the mine site during and after closure
- Indirect costs of closure and reclamation, and
- Lack of site specific information in plans of operation

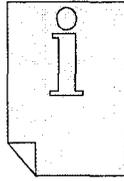
The training guide recognizes the reasons for historical inadequate bonding of locatable mining operations including:

- A perception that Forest Service regulations limit what can be bonded, including long term maintenance and monitoring, and interim management of a mining operation
- Incomplete plans of operation
- Bonding based on conceptual project design
- Erroneous assumptions about environmental effects
- Lack of Forest Service guidance on how to estimate bonds
- Lack of education, training or experience in personnel estimating bonds

The guide provides guidance in:

- What detailed information should be included in a Plan of Operations
- Determining the period of operation that should be covered by bonding
- Bond adjustments through time, in response to changing reclamation needs
- Determining what is to be reclaimed and what the reclamation tasks are
- What standards are to be met in reclamation
- What long term site maintenance and monitoring should be done
- Estimates of direct and indirect costs of reclamation, particularly, cost to agency to reclaim if operator is unable to do the reclamation

Further information from the training guide can be found at:



www.fs.fed.us/geology/bond_guide_042004.pdf

Coronado National Forest Plan
direction is to:
Support environmentally sound energy and mineral development



Arizona State Reclamation Plan Requirements

State of Arizona statute for reclamation and bonding of operations on private and state lands (Arizona Revised Statutes §§ 27-901-997 and Arizona Administrative Code R11-2-201 through R11-2-822)

Primarily concerned with safety (such as slope stability), shaping and revegetation

Jurisdiction on private lands

Other state regulation and bonding for reclamation through ADEQ and ADWR



Rosemont reclamation plan at:
www.asmi.az.gov/documents_forms/default.asp
(under Rosemont Reclamation Plan Review)



Bottom line...



Most conditions of reclamation will be developed
as mitigation through National Environmental
Policy Act analysis and incorporated in the final
Mine Plan of Operations

**Comments and
other
Discussion**



Post-Mine Land Use and Facility Specific Reclamation Design

Debby Kriegel, May 17, 2010

Design work for reclamation needs to respond to a site's physiography, ecology, function, artistic form, and public perception.

(USGS, The Human Factor in Mining Reclamation, 2000).

Restoration means to reproduce the ecosystem structure and functioning that existed prior to disturbance.

(Allen, Restoration Ecology: Limits and Possibilities in Arid and Semiarid Lands, 1995)

Primary Post-Mine Land Uses (See handout "Post-Mine Desired Condition and Land Uses for the Rosemont Area")

- Dispersed recreation (in a landscape setting that appears natural)
- Hiking (AZ Trail)
- Wildlife habitat
- Grazing (where conditions are stable and healthy)
- OHV use (on roads)
- Native American plant collection

Landforming

- Review of work to date: Golder, Schor, Tetra Tec
- ~~Jamie's new idea (drainage into the pit)~~
- Next steps:
 1. Golder review of Schor work
 2. Rosemont feasibility review of Schor work
 3. Work together as a team to apply concepts to alternatives (Schor, Tetra Tech, & FS)

Revegetation

Research needed - A study of establishing trees and shrubs on reclaimed areas, including:

- Species/quantities/sizes needed to re-establish natural vegetation patterns
- Expected growth rates on proposed slopes and expected growth mediums
- Irrigation requirements
- How to obtain plant materials for reclamation (commercial availability, contract growing, salvage/transplant)
- Review of whether transplant "plugs" and "topsoil islands" would be beneficial

Facility Reclamation

- How does "Reclamation Plan Update" apply to the MPO and alternatives?
- See spreadsheet "Rosemont Mine – Facilities and features within EMA boundary other than pit, waste/tailings piles, and plant". Each item with a "no" in the post-mine column needs reclamation.

D R A F T

Post-Mine Desired Condition and Land Uses for the Rosemont Area

DK 1/13/10

The diverse landscapes of the northern Santa Rita Mountains offer a variety of settings for a broad range of recreational opportunities and a place for visitors to escape from busy urban life into quiet, natural, wild places. Visitors enjoy vast open space, golden rolling grasslands dotted with oak and juniper, canyon bottoms with mature trees, and rugged, rocky mountain ridgetops. Visitors rarely see utilitarian structures (such as power lines and buildings), and the Rosemont mine site has been completely naturalized with topography and vegetation patterns that blend with the surrounding landscape.

The Rosemont mine waste rock and tailings piles are stable, erosion is minimal, and watersheds are healthy.

Native Americans enjoy traditional plant collection activities throughout the area. Vegetation growing on the Rosemont mine site (including the waste rock and tailings piles) includes important species such as Palmer Agave, yucca, beargrass, oak, mesquite, and juniper.

Rangelands are healthy, and ranchers graze cattle on areas that can support this use without resource degradation. Sensitive riparian areas, archaeological sites, and steep slopes are protected from cattle.

Wildlife habitat in the Rosemont mine area has been restored to uplands with native grasses and lowlands that support riparian areas and larger trees. Sensitive wildlife habitat (such as springs and important bat roosts) has been protected.

Lands along the Patagonia-Sonoita Scenic Road (AZ Hwy 83) and along Forest Service roads appear natural. Forest roads provide visitors with opportunities to explore away from Highway 83 and drive a loop through the Rosemont mine area. A road across the crest of the Santa Ritas is open to visitors with high-clearance vehicles. Along roads, visitors occasionally find developed recreation facilities (such as picnic tables, an OHV staging area, and trailhead signs), but these facilities are rustic and in character with the National Forest setting.

Dispersed recreation activities in the area include scenic driving, hiking, horseback riding, birdwatching, camping, hunting, and more. Visitors use off-highway vehicles responsibly and stay on designated roads. Dispersed campsites are small and clean, and resource damage is not a problem.

Landscapes away from roads, and lands along the Arizona Trail, provide opportunities for solitude and spending time in pristine wildlands with minimal evidence of human activity. The Arizona Trail is well-marked and well maintained. Access roads to trailheads are

EXECUTIVE SUMMARY

The Rosemont Copper Project (Project) involves developing an open pit mine over a 20-25 year period on the east side of the Santa Rita Mountains. During operations, the Project is committed to concurrent reclamation, which includes contouring and revegetation of the outer slopes of the facilities that make up the Rosemont Ridge Landform. At the end of the mine life, final reclamation of the site will include demolition and closure of the Plant Site facilities and final regrading and revegetation of the Rosemont Ridge Landform. At closure, the Rosemont Ridge Landform will remain along with the Open Pit, access roads, and the graded Plant Site area.

The Rosemont Ridge Landform (Landform) is the consolidated and contoured earthen structure consisting of waste rock from the Open Pit, a closed Heap Leach Facility encapsulated with waste rock, and a Dry Stack Tailings Facility, also encapsulated with waste rock. The base reclamation concept associated with the Rosemont Ridge Landform (shown on Illustration E1.0) can be described as a diverse habitat mosaic reclamation approach. In this approach, the final features of the Landform incorporate a variety of end uses and considerations such as controlling stormwater and erosion, allowing access to all areas, addressing the post-mining land use (ranching and wildlife habitat), and incorporating landscaping or aesthetic considerations. Depending on the location, shaping of the Rosemont Ridge Landform was varied to allow for landscape diversity and to adhere to design and/or physical constraints.



Illustration E1.0 Rendering of the Rosemont Ridge Landform Looking West

As indicated, the Rosemont Ridge Landform was developed by taking the following factors into account:

- Stormwater and erosion control (overriding);
- Access to all areas;
- Post-mining land use;
- Visual considerations; and
- Material placement costs.

A more contoured look was applied to the south end of the Rosemont Ridge Landform which is comprised of the Waste Rock Storage Area. Relief was provided by shaping the slopes with a modified Ridge and Valley Method using short slope runs. Slopes were pushed in and out by adding wide benches ranging in width from 100 to 300 feet. These benches provide access to all areas of the Landform. Water management features, such as shallow pools, are planned on these wide benches. These locations provide stormwater control, enhanced vegetative growth, and wildlife habitat. Several small hill features (hillocks) also comprise the top surface of the area. The slopes between the benches are generally about 300 to 325 feet long on a 3H:1V (horizontal:vertical) angle. This corresponds to a vertical rise of about 100 feet between benches.

Less contouring was achievable for the slopes in the central and northern portions of the Landform which are associated with the Dry Stack Tailings Facility. The dry stack tailings are encapsulated by thick waste rock buttresses on the outslopes. Drainage benches in the dry stack tailings area were placed on an approximate vertical spacing of 100 feet to provide stormwater runoff control and access to all areas of the outslopes. Drainage from these benches were directed to the Waste Rock Storage Area, to natural ground, or to stilling pools which transition storm flows from the channels to drop structures. These large stilling pool areas are also locations for enhanced vegetative growth and wildlife habitat.

The drainage benches are generally 50 feet wide and accommodate an access road, safety berm, and a stormwater channel. The stilling pool areas range from 100 to 200 feet wide. A contoured ridge is also planned for the top surface of the central portion of the Rosemont Ridge Landform, which is above the South Dry Stack Tailings Facility. This ridge is constructed of waste rock and provides a transition from the hillocks constructed in the Waste Rock Storage Area to the top of the North Dry Stack Tailings Facility, or the north end of the Rosemont Ridge Landform.

Contouring was also incorporated into the east facing slope of the Landform associated with the North Dry Stack Tailings Facility. The contouring applied generally follows a modified Ridge and Valley approach with short slope runs. Except for the lower section of the east face, the areas between the benches are generally about 300 to 325 feet long on 3H:1V (horizontal:vertical) slopes. The lower part of the slope, however, has a slope run of about 600 feet. Placing a rock cover over this lower section is envisioned, along with the contoured valleys of the upper slope area. Illustration E2.0 shows a view of the reclaimed slopes on the east side of the North Dry Stack Tailings Facility.



Illustration 2.0 Rendering of the Rosemont Ridge Landform Near Milepost 46.6 on State Route 83 looking at the east slope of the reclaimed North Dry Stack Tailings Facility

The top surface of the northern end of the Landform is flat with large, shallow depressions. Post-mining land use such as wildlife habitat and ranching are envisioned for this area. In

In addition to controlling stormwater, these large, shallow depressions will help to enhance vegetative growth and wildlife habitat.

Besides the application of a seed mix and tree plantings on the benches and on the slopes, additional mitigation strategies envisioned for the Rosemont Ridge Landform include the placement of scree piles (rock slopes). Scree piles may be placed for visual purposes, for erosion protection, or for wildlife habitat.

Rosemont is currently performing work on two (2) revegetation test plots located at the Project site. These test plots represent different site elevations as well as the opportunity to test different soils and soil treatments. These test plots mimic the slope lengths and slope angles generally applied to the Rosemont Ridge Landform.

A plan view of the post mining land use for the Rosemont Ridge Landform is shown on Illustration E3.0

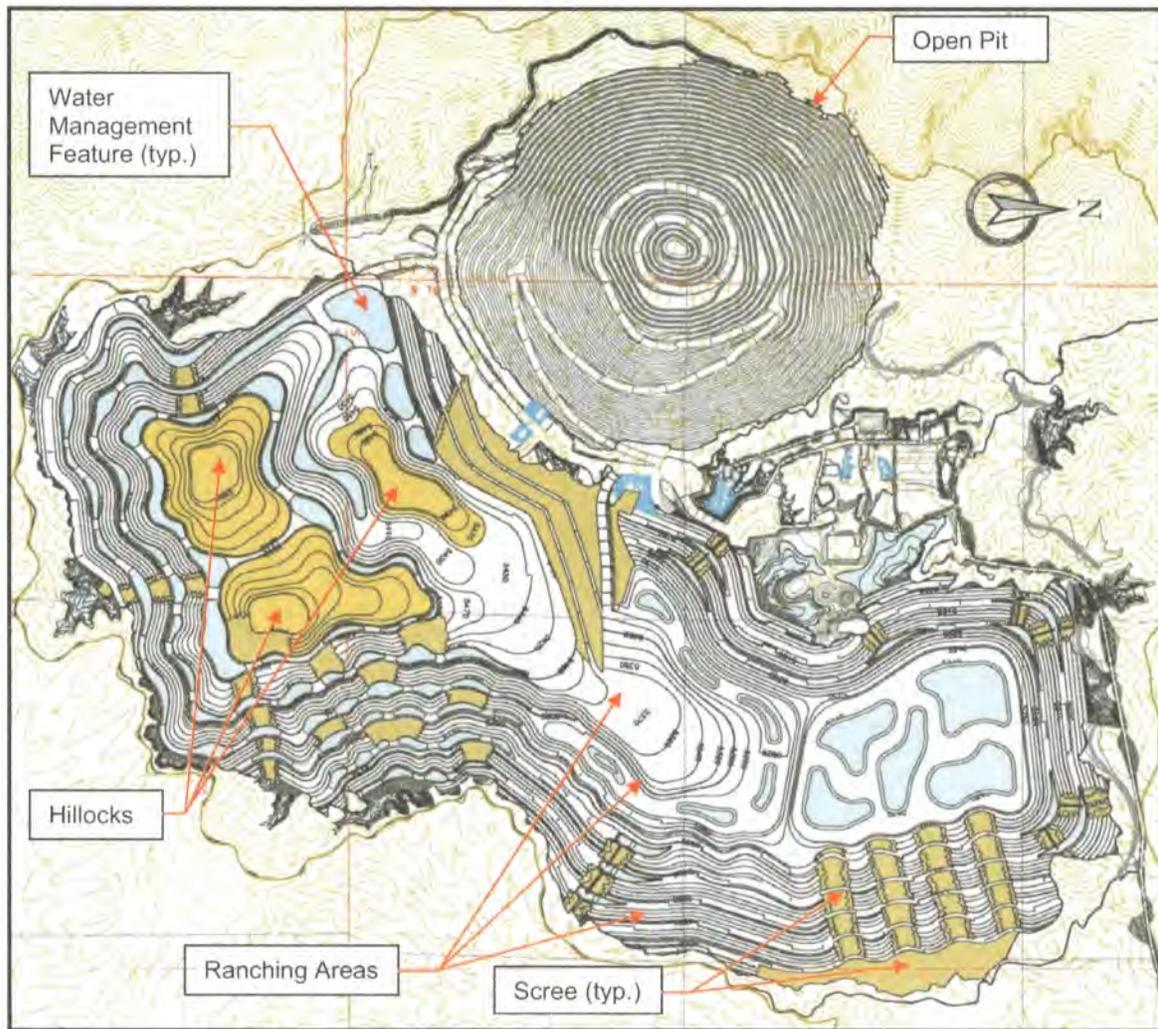


Illustration 3.0 Rosemont Ridge Landform Post-Mining Land Use

As shown on Illustration 3.0, the Rosemont Ridge Landform was designed with the following features:

- Water management features (areas of enhanced vegetation growth and wildlife habitat);
 - Water Management Features within the Landform footprint: 327 acres; and
 - Water Management Features outside the Landform footprint: 164 acres.
- Total Water Management Features associated with the Rosemont Ridge Landform design is 491 acres.
- Scree areas (areas of slope protection, wildlife habitat, and visual mitigation): 274 plan acres;
- Ranching areas within the Landform: 1,726 plan acres; and
- Hillocks (small hill features): 217 plan acres.



Table 13-3: Reclamation Activities Summary Table

ROSEMONT COPPER PROJECT – LIFE OF MINE			July 2007
Area	Approximate Size (ac)	Activity	Clarification
Rosemont Open Pit	135	Safety Berm	A safety berm of waste rock will be constructed around the lower end of the pit (5 feet high, 2.5:1 sideslopes)
		Soil Amendments & Seeding	Portions of the pit backfill area.
Perimeter Berm	400	Ripping, Regrading & Cover	The perimeter berm will be graded to a 3:1 slope, topsoil added as appropriate, and the area ripped.
		Soil Amendments & Seeding	The Wheeler Method will be applied to the top surface.
Waste Rock Storage	1,600	Ripping, Regrading & Cover	The top surface of the Waste Rock Storage Facility will be graded to promote drainage and ripped to a depth of 1 foot.
		Soil Amendments & Seeding	The Wheeler Method will be applied to the top surface.
Leach Pad	210	Solution Evaporation	Remaining solution will be evaporated.
		Demolition	Support equipment such as pumps, pipes, powerline, etc. will be removed to an on-site landfill.
		Cover	The leach pad will be covered with waste rock.
Tailings Starter Buttress	330	Ripping, Regrading & Cover	The buttress will be regraded to a 3.5:1 overall slope, covered with topsoil, and ripped as appropriate.
		Soil Amendments & Seeding	The Wheeler Method will be applied.
Tailings Surface	540	Ripping, Regrading & Cover	The top surface will be graded to drain and covered.
		Soil Amendments & Seeding	The Wheeler Method will be applied.
PWTS, Raffinate, PLS, and	20	Liner Removal	The pond will be emptied and sludge will be hauled to the

Table 13-3: Reclamation Activities Summary Table

ROSEMONT COPPER PROJECT – LIFE OF MINE		July 2007	
Area	Approximate Size (ac)	Activity	Clarification
Stormwater Ponds			Leach Pad or tailings. Edges of the embankment liner will be folded and welded together. The Raffinate and PLS Pond will be covered by waste rock and positive drainage will be restored. The ponds will be removed and the remaining surface will be regraded to promote drainage. The PWTS pond will be graded to drain.
		Demolition	The liners and embankments will be removed as needed to eliminate the potential for ponding.
		Burial	The Raffinate, PLS, and Stormwater pond at the leach pad will be buried in place by the waste rock dump.
		Ripping, Regrading & Cover	If the ponds are not buried they will be regraded to drain, and the slopes ripped, covered, and reseeded as appropriate.
Access Roads, Utility Corridors, and Buffer Areas	425	Soil Amendments & Seeding	The edges area will be scarified and seeded.
		Demolition	Culverts will be removed as appropriate.
		Ripping, Regrading & Backfilling	Road surfaces will be ripped. Natural drainage patterns will be reestablished and sediment control structures will be established as appropriate.
Haul Roads	Unknown	Demolition	Culverts will be removed.
		Ripping, Regrading & Backfilling	Road surfaces will be ripped. Natural drainage patterns will be reestablished and sediment control structures will be established.
		Soil Amendments & Seeding	The area will be scarified and seeded.

Table 13-3: Reclamation Activities Summary Table

ROSEMONT COPPER PROJECT – LIFE OF MINE			July 2007
Area	Approximate Size (ac)	Activity	Clarification
Plant Site	120	Demolition	Buildings and infrastructure will be dismantled and removed from site (Brandenburg quotation).
		Ripping, Regrading & Backfilling	Site will be graded to promote drainage (outside of foundation areas). Concrete foundations and parking lot areas will be broken and buried in-place with cover material, final surface graded to drain.
		Soil Amendments & Seeding	The area will be scarified and seeded.
Powerline and Fresh Water System - access roads and structures	Unknown	Demolition	Buildings and infrastructure will be dismantled and removed from site.
		Ripping, Regrading & Backfilling	Site will be graded to promote drainage (outside of foundation areas). Concrete foundations will be broken and buried in-place or hauled off-site depending upon location, final surface graded to drain.
		Soil Amendments & Seeding	The area will be scarified and seeded.
Topsoil Stockpiles	200	Ripping, Regrading & Backfilling	The areas will be regraded.
		Soil Amendments & Seeding	The area will be scarified and seeded.
Settling and Stormwater Basins	2	Ripping, Regrading & Backfilling	The areas will be graded to promote positive drainage.
		Soil Amendments & Seeding	The area will be scarified and seeded.

Table 13-3: Reclamation Activities Summary Table

ROSEMONT COPPER PROJECT – LIFE OF MINE		July 2007	
Area	Approximate Size (ac)	Activity	Clarification
Miscellaneous Items		Water Supply Line Removal	The pipes will be dismantled and removed from property.
		Tank Removal	The tanks owned by contractors will be dismantled and removed by the respective contractors.
		Powerline Removal	Lines and power poles will be removed as discussed with power providers.
		Equipment Mobilization / Demobilization	Includes mobilization and demobilization of all equipment used during reclamation.
		Production, Monitoring, and Dewatering Well Closure	All wells will be closed in accordance with standard well closure methods per state guidelines.
		Post Closure Monitoring	Includes a technician and analytical test work.
		Bulk Chemical Removal	All hazardous bulk chemicals will be used or removed from the property.
		Testing	Before burial of the foundation concrete (Tank Farm, Truck-Shop, and SX/EW) will be tested for hazardous constituents.
		Substations	The area will be regraded, scarified, and seeded.
		Misc. Exploration Roads	Any existing exploration roads that must be closed will be itemized and the cost estimate updated.
Reclamation Supervisor	A supervisor will be on-site for the year of reclamation.		

DRAFT - DELIBERATIVE - INTERNAL USE ONLY										
Rosemont Mine - Facilities and features within EMA boundary OTHER than pit, waste/tailings piles, and plant										
April 13, 2010										
Note: "Plant" is defined as all facilities shown on MPO Figure 2-8 "Ancillary Facilities".										
Category	Item	Description	During Mine	Post-Mine	Additional info/notes	EIS Topic Heading	MPO and/or alternatives	Permitted by other agency	Information Needed from Rosemont	Lights required? Could lighting be switched off sometimes?
Roads	Main access road	3.7 miles, 68+ ft easement and at least 52 ft wide corridor, cuts/fills, ditches, signs, culverts, gunnite embankments, bollard barricades	Yes	Yes	Public road.	Transportation	Description is for phased tailings alternative. MPO is different.		Need full description (length, width, all facilities) and location for MPO and other alternatives.	No
	Highway 83 widening	Approx. 500 ft. North and South of intersection with main access road.	Yes	Yes	Public road	Transportation	Depends on alternative, though might be similar for all.	ADOT ROW	Need full description (length, width, all facilities) and location for MPO and alternatives.	No
	Secondary access road	Proposed as 11 ft. wide road from Santa Rita Road to plant site	Yes	Yes	Public road. May need to be 2 lanes. Powerline may need wider than 11 ft.	Transportation	Depends on alternative, though might be similar for all.		Need list of proposed uses on this road and what width of road is needed for each. Also Need full description (length, width, all facilities) and location for MPO and other alternatives.	No
	Numerous mine roads between pit, crusher, and plant	120-130 ft wide haul roads	Yes	No	Mine use only	Mining	Same for all?		Need full description (length, width, all facilities) and location for MPO and alternatives.	No
	Haul roads around pit		Yes	No	Mine use only	Ore, Waste Rock and Tailings Transport	Same for all? MPO figures 2-1 through 2-6		Need full description (length, width, all facilities) and location for MPO and alternatives.	No
	Roads around perimeter of waste rock & tailings piles		Yes	Yes	Post mine: west side road would be public, east side road might be admin only (gated). Identify maintenance level for each.	?	Varies by alternative.		Need complete descriptions and locations for MPO and each alternative.	Only where active mine work occurring
	Roads to re-connect public access around mine		Yes	Yes	Public roads. Recommend FS and SWCA develop concepts for each alternative.	Transportation	Varies by alternative.			No
	Roads for power lines (to each pole) and gates to restrict public access		Yes	Yes	Admin use only. Need information from TEP/EPG (locations, widths, etc.).	Electrical Power	Same for all?			No
	Supply water line roads	May be the same as secondary access road	Yes	Yes	Public road	Water Supply and Control	Same for all?		Need complete descriptions and locations for MPO and each alternative.	No

	Slurry pipeline roads (if used)		Yes	No	Mine use only	Ore, Waste Rock and Tailings Transport	Varies by alternative.		Need complete descriptions and locations for MPO and each alternative.	No
	Well access roads		Yes	Yes	Administrative use only. Likely to change through time as more wells added, some closed, and/or different locations needed.	Water Supply and Control	Varies by alternative.		Need complete descriptions and locations for MPO and each alternative.	No
	Conveyor roads		Yes	No	Mine use only. Locations depend on filter plant location.	Ore, Waste Rock and Tailings Transport	Varies by alternative.		Need complete descriptions and locations for MPO and each alternative.	No
Bldgs	Filter plant, if not located within plant area		Yes	No		Other Utilities and Support Facilities	Only Sycamore Alternative?	Pima Co. building permit	Need complete descriptions and locations for alternatives with filter plant outside of plant area.	Yes. 24/7.
Power Lines	Construction power line (south of plant)	138 kv, pole height 90 ft., span 800 ft on level ground (less on steep topo)	Yes	Maybe		Electrical Power	Same for all?	?		No, unless necessary for aircraft safety.
	Permanent power line (from plant to Santa Rita Road)	138 kv, pole height 90 ft, span 800 ft on level ground (less on steep topo)	Yes	Unknown		Electrical Power	Same for all?	?		No, unless necessary for aircraft safety.
	Upgraded power line through Box Canyon (alternative)		Yes	Yes	Need infor from TEP whether this line will need to be repaired/replaced before mine operations begin	Electrical Power	Same for all	?		No, unless necessary for aircraft safety.
	Power line around perimeter of pit (for shovels, wells, etc.)		Yes	No		Electrical Power	Same for all?	?	Need complete description and locations for MPO and all alternatives.	No
	Power line for water pumps (may need a 2nd powerline over Gunsight Pass or some portion of this line if power can't be pulled from main line)		Yes	No		Electrical Power	Same for all?	?	Need complete description and locations for MPO and all alternatives.	No

Other mine waste	Heap leach, if not located within other waste rock pile (including road, acid system, PLS pond, PLS to SX plant channel/line, tanks/warehouse, pumps, stormwater ponds, etc.)		Yes	Yes (but reclaimed)		Ore, Waste Rock and Tailings Transport	Varies by alternative.	ADEQ (APP)	As alternatives are developed, will need clarification on size and location if not entirely encompassed by main waste rock/tailings pile.	Only if/when equipment is operated at night. Need information from Rosemont.
	Landfill		Yes	Yes	If on CNF land, need special use permit, and may need an LMP amendment.	Solid, non-hazardous, and sanitary waste (foundations, parking lots, pond liners, and other non-hazardous waste)	Varies by alternative?	ADEQ (APP)	Need complete description and locations for MPO and all alternatives. Also need information on proposed reclamation.	No
Conveyors	MPO and phased tailings Alternative	Behind waste rock buttress?	Yes	No		Ore, Waste Rock and Tailings Transport	MPO and Phased Tailings		Need complete description and locations for MPO and all alternatives, including changes throughout 20-year mine life.	Yes. 24/7.
	Barrel Only Alternative	Partially behind waste rock buttress	Yes	No		Ore, Waste Rock and Tailings Transport	Barrel Only Alternative		Need complete description and locations for MPO and all alternatives, including changes throughout 20-year mine life.	Yes. 24/7.
	Scholefield/McCleary Alternative	conveyor on east side of project between the plant and pile, including over the outer shell of waste pile, or if filter plant is located near tailings, pipes to the plant (with roads) and conveyor over the outer shell of waste pile	Yes	No		Ore, Waste Rock and Tailings Transport	Scholefield/McCleary Alternative		Need complete description and locations for MPO and all alternatives, including changes throughout 20-year mine life.	Yes. 24/7.
	Sycamore/Barrel Alternative	across ridge to Sycamore Canyon (potentially could be in a tunnel)	Yes	No		Ore, Waste Rock and Tailings Transport	Sycamore/Barrel Alternative		Need complete description and locations for MPO and all alternatives, including changes throughout 20-year mine life.	Yes. 24/7.
	Second conveyor on upper ridge area (MPO section 2, p. 27)		Yes	No	Probably connects the filter plant with active tailings deposition area.	Ore, Waste Rock and Tailings Transport	Varies by alternative?		Need complete description and locations for MPO and all alternatives, including changes throughout 20-year mine life.	Yes. 24/7.
Pipelines	Water supply lines (and associated roads)	20" black iron pipe	Yes	No	Above ground? May follow secondary access road.	Water Supply and Control	Same for all?	?	Need complete description and locations for MPO and all alternatives.	No

	Slurry line (if used), above-ground, and associated roads	Black pipe <24"	Yes	No	Confirm material	Ore, Waste Rock and Tailings Transport	Sycamore/Barrel only?		Need complete description and locations for MPO and all alternatives.	No
	Irrigation pipelines (if used)		Yes	Maybe		Reclamation	Varies by alternative			No
	Pumps/booster system facilities for pipelines (boosters in MPO figure 2-10).	Building, likely metal, about the size of a big garage, with a good sized pump and electrical control gear inside. Each would also include a power line, and perhaps electrical equipment in a small yard next to the building.	Yes	No		Water Supply and Control	Same for all?		Need complete description and locations for any proposed within EMA boundary.	Maybe. Can probably be turned off most of the time unless needed to reduce vantalism. Motion sensor? Need information from Rosemont.
Wells	Point of compliance groundwater monitoring wells around waste piles (MPO, section 2, p. 28, and Reclamation plan, p. 33).	Each includes a concrete slab, 6" capped pipe 24" high, and a small sign.	Yes	Yes	Water may be pulled with a truck mounted pump. If this is not available, each well may need a dedicated pump. Power supplied from a truck-mounted generator brought to the well each time a sample is taken.	?	Varies by alternative	ADWR	Need information on number and locations for each alternative. Typically, there are monitor wells located at the boundary of the PMA (Pollutant Management Area as per the APP) and Alert Well located between the facilities and the PMA. May need more wells to meet ADEQ requirements.	No
	Dewatering wells around pit: concrete slab, machinery, 5-6' high, power pole and line, and electric box		Yes	No	Unknown number and exact locations.	Other Utilities and Support Facilities	Same for all?	ADWR	Need complete description and locations for MPO and all alternatives.	No
	Hydrogeologic characterization wells		Maybe	Maybe	Wells installed by Rosemont during groundwater investigations. Will remain in existence only if used for monitoring, which we don't know at this time. Unknown quantity and locations.	?	Varies by alternative?	ADWR	Need complete description and locations for MPO and all alternatives.	No
Fences	Perimeter security fence:	4-stand barbed wire (range fence), frequent signs	Yes	No		?	Varies by alternative		Need clarification whether this will have smooth bottom wire for wildlife mitigation	No
	Pit fence on road side	Chain link, 6-8' high with signs, possibly barbed wire on top?	Yes	Yes		?	Same for all?		Need complete description and locations for MPO and all alternatives.	No

	Pit fence on remote side	Range fence with frequent signs	Yes	Yes		?	Same for all?		Need complete description and locations for MPO and all alternatives.	No
	Resource protection fences (cultural sites, biologically sensitive sites, etc.)		Yes	Maybe		Reclamation and Closure	Varies by alternative			No
Drainage Structures	Diversion channels around entire mine operation (plant, pit, and waste/tailings piles).	Rip-rap lined channels. 120 ft wide, with concrete weirs 15'w x 4'h typical max as needed for stability. Some options to concrete may be possible (e.g., rock).	Yes	Yes		?	Varies by alternative	Pima Co. flood control?	Need complete descriptions and locations for MPO and each alternative.	No
	Ends of MPO Central drain.	Inlet possibly a large concrete structure associated with retention pond. Outlet probably rock only. Inlet and outlets for alternatives would be smaller.	Yes	Yes		?	MPO		Need complete descriptions and locations for MPO and each alternative.	No
	Ends of underdrains		Yes	Yes		?	Varies by alternative		Need complete descriptions and locations for each alternative.	No
	Stormwater (settling) ponds.	Similar to large stock ponds (<10' earthen berms with armored embankments and spillways). Allow sediment to settle out before moving into creeks.	Yes	No		?	Varies by alternative	ADEQ (APP)	Need complete descriptions and locations for MPO and each alternative.	No
	Ponds along water and slurry pipelines in all locations where pipes could break	Stock pond sized.	Yes	No		?	Varies by alternative	ADEQ (APP)	Need complete descriptions and locations for MPO and each alternative.	No
	Lined ponds (such as heap leach, if not located under waste rock)		Yes	No		?	Varies by alternative	ADEQ (APP)	Need complete descriptions and locations for MPO and each alternative.	No
	Compliance dam (MPO figure 2-11), also known as final monitoring dam at outlet of Barrel Canyon.	Porous dam with 6 ft. high earth embankment and large waste rock (Reclamation plan, p. 33).	Yes	Probably	See section 2.9.5 of the MPO. Likely the Compliance Point Dam would be removed once ADEQ was satisfied that the APP could be terminated following final reclamation. Location may vary by alternative.	?	Varies by alternative	ADEQ (APP)	Need complete descriptions and locations for MPO and each alternative.	No

	90 ft. dam (MPO section 2, p. 47)		Yes	Maybe	This dam retains the PWTS pond. It would only remain post-mine if incorporated in the toe of the waste rock buttress.	?	Varies by alternative	ADEQ (APP)	Verify that this is within the plant site and post-mine reclamation (buried, graded, seeded, etc.).	No
Other	"Growth Media/Topsoil" stockpiles		Yes	No		Reclamation and Closure	Varies by alternative		Need complete descriptions and locations for MPO and each alternative.	No
	Vegetation test plots (two, approx. 4 acres each)		Yes	No		Reclamation and Closure	Same for all			No
	Other communication lines/towers? (phone lines, cell towers, repeaters, etc., such as MPO section 2, p. 15)		Yes	No	Location and number are unknown	Other Utilities and Support Facilities	?	FCC?	Need complete descriptions and locations for MPO and each alternative.	No, unless necessary for aircraft safety.
	Piezometers at base of dry stack tailings (Reclamation Plan p. 30)		Yes	Yes	Sensor is buried. Above ground there would be a pipe and/or electrical box to protect the plug-in connection port.	Other Utilities and Support Facilities	Varies by alternative		Need complete descriptions and locations for MPO and each alternative.	No
	Sand & gravel quarry (MPO section 2, p. 62)		Yes	No?		Other Utilities and Support Facilities	?		Need complete descriptions and locations for MPO and each alternative. Also need to know quantity of materials to be removed, longevity of quarry, mitigation, and proposed reclamation.	No
	Berm around pit (MPO p. 78 mentions fence and/or berm)		Yes	Yes	May be a berm, fence, or combination of the two.	?	Same for all?		Need to know details for MPO and each alternative (fence, berm, or both?). Also need to know how berm works with proposed ditch around pit.	No
	Other sub-surface items:	Liners (landfill, process water ponds, heap leach collection ditches, heap leach pipeline containment ditches, and heap leach pile), foundations, landfilled items, septic system, utility lines (water, sewer, electrical, etc.), geotextile drains under waste pile	Yes	Yes, but only below ground		?	Varies by alternative		Need complete descriptions and locations for MPO and each alternative. Also need to know which liners will remain post-mine (heap leach, landfill, etc.)	No

	Constructed wetland (Reclamation Plan p. 50)		Yes	Maybe	This appears to be mentioned as an option to be used on an "as needed" basis. Could help water quality.	Reclamation and Closure	Varies by alternative	State Mine Inspector and/or ADEQ (APP)?	Need complete descriptions and locations for MPO and each alternative. (Note: Contingency plan is coming; will this be described?)	No
	Weather stations and/or air quality monitoring facilities.	Likely they will be the standard monitoring station with precipitation, wind, temperature and humidity monitors; there may also be an evaporation pan. Power is often supplied with a solar panel if the station is not near another facility with power. They may also have particulate monitors or these may be located separately.	Yes	?	One is currently in the pit area.	?	Varies by alternative	Part of Pima Co. Air Quality Permit	Need complete descriptions and locations for MPO and each alternative.	No
	Mitigation measures	Example: AZ Trail stock water/trail to Sentenal Peak/interp signs, etc.	Yes	Yes	IDT should review mitigation list and add other items	Reclamation and Closure	Varies by alternative			
Note: For each item with a "no" post-mine, there needs to be a mitigation measure.										