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CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter describes the proposed action and alternatives. It also describes the alternatives considered but eliminated from detailed analysis. As discussed in Chapter 1, the proposed action is based on POA 10 and the Final Permanent Closure Plan. It proposes to expand the mine plan boundary and operations for an additional five to seven years and to perform reclamation and closure at the CRI Mine. The proposed action is described in detail in the following sections. Other alternatives are the no action alternative and a PAG material management alternative.

Under the no action alternative, the mining and reclamation outlined in existing approved plans of operation and in the current reclamation and closure plans would continue. Under this alternative, the proposed mine operations would not be expanded at this time, and reclamation and closure would proceed as previously approved.

The PAG material management alternative would involve hauling PAG material from the Rochester pit to an outside location on the existing West and North RDSs, where PAG material would then be permanently stored. At the conclusion of mining, the PAG material would be recontoured, covered with a layer of non-PAG waste rock, seeded, and left in place.

2.2 POA 10—PROPOSED ACTION

CRI is proposing to amend the existing POA 10 to expand the plan of operation boundary by 499.0 acres (**Figure 1-2**, Proposed Plan Boundary). The total plan boundary acreage, including public and private lands, would be revised from 4,339.0 acres to 4,838.0 acres (345 private acres and 4,493 public acres; see **Table 2-1**, Summary of Project Surface Disturbance and Plan Boundary Acreage). CRI also proposes to expand operations, and update closure and reclamation activities on public and private lands owned or controlled by CRI at

Table 2-1
Summary of Project Surface Disturbance and Plan Boundary Acreage

	Disturbance (Acres)			Plan Boundary (Acres)		
	Public	**Private**	**Total**	**Public**	**Private**	**Total**
Authorized	1,752.3	186.6	1,938.9	4,122.0	217.0	4,339.0
Proposed	2,006.4	163.7	2,170.1	4,493.0	345.0	4,838.0

the CRI Mine (see **Figure 2-1**, Proposed Facilities). The proposed expansion and operations would disturb an additional 231.2 acres and would increase the total authorized disturbance at the site from 1,939 to 2,170 acres (see **Table 2-1** and **Table 2-2**, Proposed Disturbance Acres by Facility Type). As shown in **Figure 2-1**, the proposed expansion and operations under the POA 10 would include the following:

- Expanding the Stage IV HLP by approximately 67 acres
- Increasing the allowable maximum Stage IV HLP stacking height from 330 feet to 400 feet
- Constructing the approximately 123-acre Stage V HLP
- Relocating portions of the American Canyon public access road and establishing an associated ROW on public land
- Relocating a portion of the paved Rochester main access road and abandoning the associated ROW
- Realigning the Stage IV haul road and constructing secondary access roads
- Relocating a portion of the power line and poles along the main access road to a new alignment corridor, with changes to existing ROWs, and relocating power lines from the proposed Stage V HLP footprint
- Relocating the electrical building and core shed
- Increasing the groundwater pumping rate
- Abandoning production well PW-2A and installing production well PW-2B
- Replacing production well PW-3A with PW-3B and subsequently abandoning production well PW-3A
- Excavating new borrow areas and constructing one new-growth medium stockpile
- Changing PAG material management to include hauling it outside the pit and providing temporary PAG storage on the north and west rock disposal sites

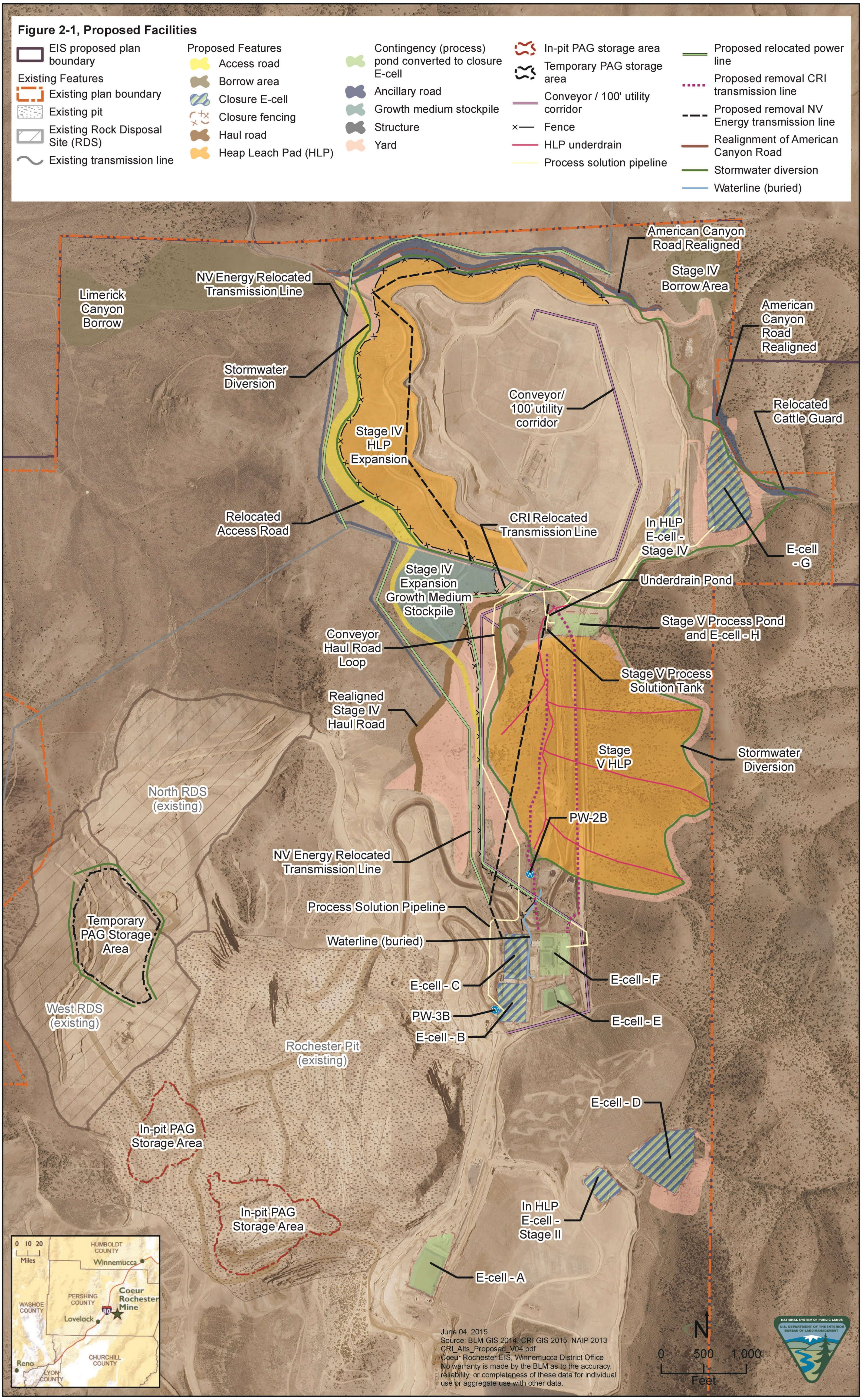

Figure 2-1, Proposed Facilities

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Table 2-2
Proposed Disturbance Acres by Facility Type

Mine Facilities[1]	Existing/ Authorized Acres		Proposed Acres (change)		Proposed Site Disturbance Acres (total)		Total Disturbance Acres
	Private	Public	Private	Public	Private	Public	Private and Public
Exploration Evaluations							
Rochester and Packard Areas	0.7	78.5	0	0	0.7	78.5	79.2
Total Acres	**0.7**	**78.5**	**0**	**0**	**0.7**	**78.5**	**79.2**
Roads							
Ancillary Service[1]	0	18.2	2.4	12.5	2.4	30.7	33.1
North w/Stage IV Haul Road	2.6	11.5	-2.6	6.3	0	17.8	17.8
Packard Haul Road	0	31.8	0	-0.1	0	31.7	31.7
Southwest Stage II Haul Corridor	0	36.7	0	0.1	0	36.8	36.8
Total Acres	**2.6**	**98.2**	**-0.2**	**18.8**	**2.4**	**117**	**119.4**
Open Pits - Berms							
Rochester	45.3	272.5	-2.9	2.5	42.4	275	317.4
Packard	68.6	33.0	0.1	-0.2	68.7	32.8	101.5
Total Acres	**113.9**	**305.5**	**-2.8**	**2.3**	**111.1**	**307.8**	**418.9**
Process Ponds/E-cells							
Stage I Plant Area Pond E	0	3.1	0	-3.1	0	0	0
Stage II Concept Closure Pond D	0	8.3	0	-8.3	0	0	0
Stage III Existing-Concept Pond A	0	6.5	0	-6.5	0	0	0
Stage IV Conceptual Closure Pond[2]	3.8	6.0	-3.8	-6.0	0	0	0
Conceptual Closure Pond B	0	3.3	0	-3.3	0	0	0
Conceptual Closure Pond C	0	2.0	0	-2.0	0	0	0
Conceptual Closure Pond F	0	4.0	0	-4.0	0	0	0
Evaporation Test Pond	0	0.5	0	-0.5	0	0	0
E-cell A	0	0	0	4.9	0	4.9	4.9
E-cell B	0	0	0	3.4	0	3.4	3.4
E-cell C	0	0	0	3.2	0	3.2	3.2
E-cell D	0	0	0	8.6	0	8.6	8.6
E-cell E	0	0	0	1.7	0	1.7	1.7
E-cell F	0	0	0	4.0	0	4.0	4.0
E-cell G	0	0	6.7	3.1	6.7	3.1	9.8
E-cell H	0	0	0	3.1	0	3.1	3.1
In-Heap Stage II E-cell	0	0	0	2.3	0	2.3	2.3
In-Heap Stage IV E-cell	0	0	0	2.2	0	2.2	2.2
Stage V Underdrain Pond	0	0	0	0.1	0	0.1	0.1
Total Acres	**3.8**	**33.7**	**2.9**	**2.9**	**6.7**	**36.6**	**43.3**
Heap Leach							
Stage I	0	85.0	0	-0.1	0	84.9	84.9
Stage II	0	107.3	0	-2.4	0	104.9	104.9
Stage III	0	161.8	0	-2.9	0	158.9	158.9
Stage IV	0	215.4	0	66.8	0	282.2	282.2
Stage V	0	0	0	123.4	0	123.4	123.4
Total Acres	**0**	**569.5**	**0**	**184.8**	**0**	**754.3**	**754.3**
Waste Rock Disposal Sites							
North RDS	2.7	94.0	0	-0.2	2.7	93.8	96.5
South RDS	0	207.1	0	-0.3	0	206.8	206.8
Charlie RDS	0	50.7	0	-0.1	0	50.6	50.6
East RDS	0	46.1	0	-1.1	0	45.0	45.0

Table 2-2
Proposed Disturbance Acres by Facility Type

Mine Facilities[1]	Existing/ Authorized Acres		Proposed Acres (change)		Proposed Site Disturbance Acres (total)		Total Disturbance Acres
	Private	Public	Private	Public	Private	Public	Private and Public
West RDS	19.2	89.2	-1.1	1	18.1	90.2	108.3
Packard RDS	7.2	3.0	-0.1	0.1	7.1	3.1	10.2
Low-Grade Stockpile	0	37.2	0	0	0	37.2	37.2
Total Acres	**29.1**	**527.3**	**-1.2**	**-0.6**	**27.9**	**526.7**	**554.6**
Foundations and Buildings							
Foundation and Buildings[3]	0	2.4	0	-2.4	0	0	0
Total Acres	**0**	**2.4**	**0**	**-2.4**	**0**	**0**	**0**
Yards-Storage							
Plant In-Fill Area[3]	0	91.9	0	-91.9	0	0	0
Growth Medium Stockpiles	0	19.4	0	18.2	0	37.6	37.6
Borrow Areas	0	0	0	56.7	0	56.7	56.7
Ancillary Misc. Disturbance[2]	36.5	10.3	-22.0	78.4	14.5	88.7	103.2
Total Acres	**36.5**	**121.6**	**-22.0**	**61.4**	**14.5**	**183.0**	**197.5**
Sediment and Drainage Control							
American Canyon Closure Diversion[3]	0	8.7	0	-8.7	0	0	0
S. American Canyon Closure Diversion[3]	0	4.1	0	-4.1	0	0	0
Packard Conceptual Channels	0	2.8	0	0	0	2.8	2.8
Stage V Underdrain Pond	0	0	0	0.1	0	0.1	0.1
Total Acres	**0**	**15.6**	**0**	**-12.7**	**0**	**2.9**	**2.9**
Grand Total Acres	**186.6**	**1,752.3**	**-23.3**	**254.5**	**163.7**	**2,006.4**	**2,170.1**

[1]This includes the access road and American Canyon road realignment.
[2]This includes the proposed power line disturbance area, with an assumed 25-foot width.
[3]These features are proposed to be incorporated into other disturbance categories.

- Installing the Stage IV HLP conveyor system, associated load out points, ore stockpiles, maintenance road, and utility corridor, including process solutions and freshwater supply pipelines
- Changing closure activities for existing facilities, including altering the open pit safety berm sizes, the HLP interim fluid management plans, and the HLP cover designs and installing evaporation cells (E-cells) and long-term drain-down management

Existing authorized disturbance at the CRI Mine totals 1,939 acres on both public and private lands. The proposed new mining expansion disturbance would be a net total of 231.2 acres, which would increase the total disturbance footprint to 2,170 acres (see **Table 2-1**). Included in the proposed action and reflected in the total disturbance acreages are the previously authorized disturbance on private lands and public lands. These disturbance acres have been adjusted to reflect existing disturbance acreage and other variables (see **Table 2-2**). In addition to the expansion and reclamation activities described in the following sections, the proposed action includes continuing to use best management practices (BMPs), adhering to operating plans (see **Section 2.2.9**, Operating Plans), and implementing environmental protection measures.

2.2.1 Open Pit

The currently authorized Rochester pit boundary would not change under the proposed action; rather, the proposed action would allow CRI to access and process additional ore from within the existing authorized Rochester pit. This would happen by hauling away in-pit RDSs and in situ PAG material above 6,175 feet above mean sea level (amsl). PAG material would be hauled and temporarily (10 years or less) stored outside the pit on the currently authorized West and North RDSs (see **Section 2.2.2**, Waste Rock Facilities).

The additional ore is in the western portion of the pit in ore-grade zones covered by the in-pit RDSs and along the pit walls and floor. After mining ends, PAG material temporarily stored outside the pit would be hauled back into the pit and stored within designated pit locations (**Figure 2-1**). The additional ore would be mined above the 6,175 foot amsl level and above groundwater. The backfill zone in the eastern portion of the pit would remain in place at the current level of 6,175 feet amsl.

2.2.2 Waste Rock Facilities

Non-PAG waste rock would continue to be placed on existing RDSs, as authorized under existing operations and the WRMP. See **Section 2.2.9**, Operating Plans, for discussion of the WRMP.

Under the proposed action approximately 1.3 million tons of PAG material stored in the Rochester pit would be removed, along with approximately 3.0 million tons of in situ PAG material encountered during mining. These PAG materials would be removed and placed in a designated temporary surface PAG storage facility on the West and North RDSs (see **Figure 2-1**).

Before any PAG waste rock is removed from the pit, the temporary PAG material storage area would be prepared by placing at least 50 feet of waste rock above the native ground surface. Following material placement or confirmation of non-PAG material thickness over native ground, the PAG material storage area would be graded flat and gently sloped toward the pit. Run-on from precipitation and snowmelt would be controlled by stormwater diversion structures constructed upgradient of the facility. Runoff would be managed in a stormwater control structure at the western toe of the temporary PAG material storage area. The outer toe of the PAG stockpile would be kept at least 60 feet from the edge of the prepared surface to ensure sufficient room for stormwater management and maintenance access. Specific locations for the stormwater management features would be determined when the temporary PAG material storage area is prepared.

CRI would develop and maintain a temporary PAG material storage monitoring plan. This plan would outline the process by which CRI would verify the absence of acid rock drainage and metals leaching (ARDML) and provide early detection for the existence or potential formation of ARDML. Monitoring would include regularly inspecting the temporary PAG material storage area. The inspection would be for conditions that indicate substantive geo-chemical reactivity of PAG material, ponding of potentially impacted stormwater, and seepage.

Should CRI identify the development of acid rock drainage (ARD), the following contingency measures would be implemented:

- Grading material surfaces to promote runoff
- Redirecting stormwater from upgradient areas around the temporary storage area
- Removing snow from temporary PAG material storage surfaces as soon as practicable

In addition, CRI would manage meteoric waters that come in contact with the temporary PAG material storage area through use of BMPs and applicable measures defined in CRI's stormwater pollution prevention plan (SWPPP). PAG waste rock would be stored in the temporary PAG material storage area for less than 10 years. At the end of the proposed mining activities, the stored PAG material would be relocated to designated areas in the pit, above the 6,250-foot elevation, in accordance with the current WRMP (see **Section 2.2.9** and **Figure 2-2**, PAG Rock Management [Part 1 of 2], and **Figure 2-3**, PAG Rock Management [Part 2 of 2]).

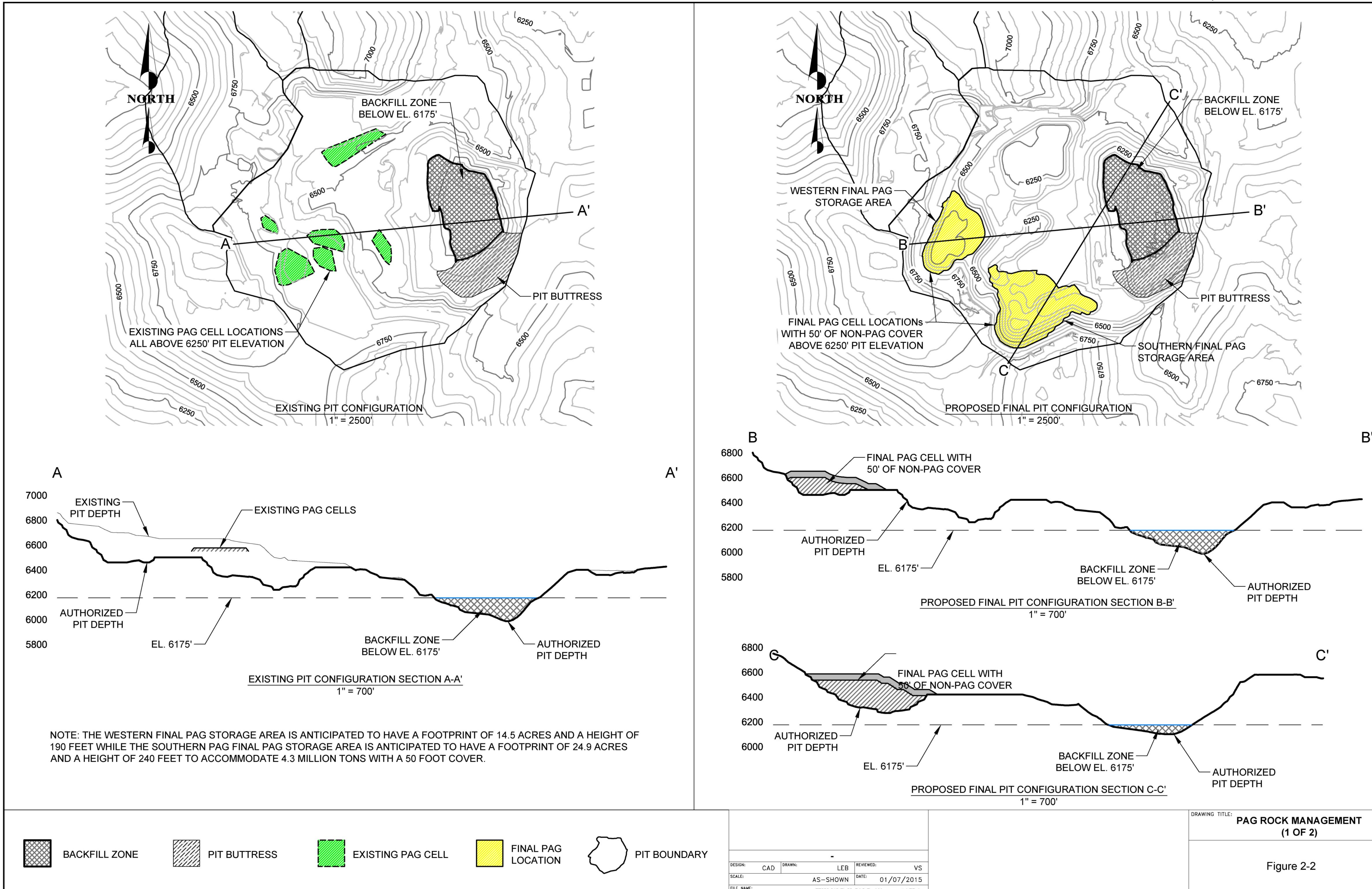
2.2.3 Heap Leach Pads

Stage IV

The proposed action would achieve the following:

- Expand the Stage IV HLP area by approximately 67 acres
- Increase the stacking height from 330 feet to 400 feet
- Revise and expand the stormwater diversion system
- Relocate the Stage IV access road
- Expand and install fencing
- Construct the Stage IV conveyor system within a conveyor corridor

Expanding the Stage IV HLP would necessitate expanding the HLP liner; this would expand the HLP surface area by approximately 67 acres. The expansion would add about 70 million tons of ore storage to the Stage IV HLP (see **Figure 2-1**). Construction would generally consist of the following:


NORTH
BACKFILL ZONE BELOW EL. 6175'
A
A'
PIT BUTTRESS
EXISTING PAG CELL LOCATIONS ALL ABOVE 6250' PIT ELEVATION
EXISTING PIT CONFIGURATION
1" = 2500'
NORTH
C'
BACKFILL ZONE BELOW EL. 6175'
WESTERN FINAL PAG STORAGE AREA
B
B'
PIT BUTTRESS
FINAL PAG CELL LOCATIONs WITH 50' OF NON-PAG COVER ABOVE 6250' PIT ELEVATION
SOUTHERN FINAL PAG STORAGE AREA
C
PROPOSED FINAL PIT CONFIGURATION
1" = 2500'
EXISTING PIT DEPTH
EXISTING PAG CELLS
AUTHORIZED PIT DEPTH
EL. 6175'
BACKFILL ZONE BELOW EL. 6175'
AUTHORIZED PIT DEPTH
EXISTING PIT CONFIGURATION SECTION A-A'
1" = 700'
FINAL PAG CELL WITH 50' OF NON-PAG COVER
AUTHORIZED PIT DEPTH
EL. 6175'
BACKFILL ZONE BELOW EL. 6175'
AUTHORIZED PIT DEPTH
PROPOSED FINAL PIT CONFIGURATION SECTION B-B'
1" = 700'
FINAL PAG CELL WITH 50' OF NON-PAG COVER
AUTHORIZED PIT DEPTH
EL. 6175'
BACKFILL ZONE BELOW EL. 6175'
AUTHORIZED PIT DEPTH
PROPOSED FINAL PIT CONFIGURATION SECTION C-C'
1" = 700'
NOTE: THE WESTERN FINAL PAG STORAGE AREA IS ANTICIPATED TO HAVE A FOOTPRINT OF 14.5 ACRES AND A HEIGHT OF 190 FEET WHILE THE SOUTHERN PAG FINAL PAG STORAGE AREA IS ANTICIPATED TO HAVE A FOOTPRINT OF 24.9 ACRES AND A HEIGHT OF 240 FEET TO ACCOMMODATE 4.3 MILLION TONS WITH A 50 FOOT COVER.
BACKFILL ZONE
PIT BUTTRESS
EXISTING PAG CELL
FINAL PAG LOCATION
PIT BOUNDARY
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DRAWN: LEB
REVIEWED: VS
SCALE: AS-SHOWN
DATE: 01/07/2015
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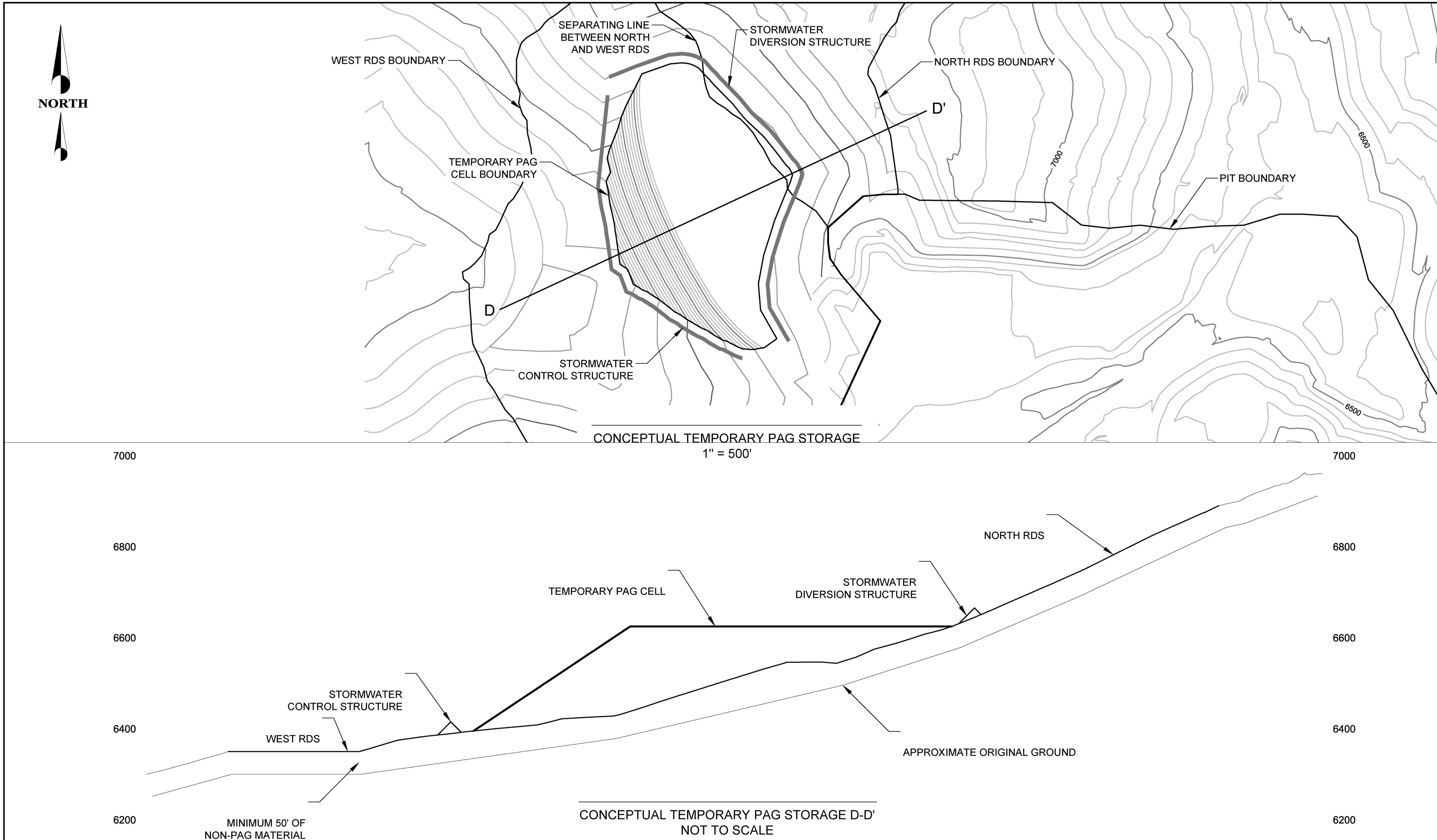
DRAWING TITLE: PAG ROCK MANAGEMENT (1 OF 2)
Figure 2-2
PLOT DATE: 2015-01-13 – 2:12PM



NOTE: THE TEMPORARY PAG STOCKPILE IS ANTICIPATED TO HAVE A FOOTPRINT OF 24.9 ACRES AND MEASURE APPROXIMATELY 240 FEET IN HEIGHT TO ACCOMMODATE 4.3 MILLION TONS OF PAG MATERIAL.

-

DESIGN: CAD	DRAWN: LEB	REVIEWED: VS
SCALE: AS-SHOWN		DATE: 01/20/2015
FILE NAME: 77200.010-Fig09_PAG-RockManagment_LEB.dwg		

DRAWING TITLE: **PAG ROCK MANAGEMENT (2 OF 2)**

Figure 2-3

PLOT DATE: 2015-01-20 – 9:57AM

- Clearing and grubbing vegetation
- Stripping and stockpiling growth medium
- Preparing the subsurface
- Placing the HLP liner and solution collection system
- Completing other ancillary work in the proposed disturbance area for access, control, and stormwater management

Subsurface preparation would consist of scarifying, watering, and compacting stripped areas. Grading would consist of cut and fill as necessary to meet facility design parameters. After grading, an under-liner, consisting of a geosynthetic clay liner (GCL) with a permeability of 1×10^{-6} centimeters per second (cm/sec) or lower, would be constructed and joined to the existing Stage IV liner. The new expansion liner would be joined to the old liner by welding a seam connecting the two liner systems. Destructive seam testing would be completed during construction to verify seam strength (Knight Piésold 2013). The under-liner would be overlain by an 80-millimeter (mil), textured, high-density polyethylene (HDPE) primary liner, followed by well-graded over-liner to a thickness of between three and five feet. A separate geonet leak detection system would be placed between the primary and secondary HDPE liners. The solution drain pipe system would be installed on top of the primary liner system and would consist of perforated lateral pipes and perforated collector pipes. A series of four-inch-diameter, perforated lateral pipes on 20-foot centers would feed into collector pipes placed at strategic locations to route solution to the pregnant solution tanks.

Standard construction equipment would consist of excavators, compactors, articulating dump trucks, and dozers and would be used where practical; smaller equipment would be used as necessary, depending on field conditions. Long-term operating and maintenance access to the facility would be provided by an access road inside the facility perimeter fence next to the expanded leach pad area. Stormwater management structures would also be constructed outside the toe of the expanded HLP.

Leach solution from the expanded area would tie into the existing Stage IV solution management system through an expanded solution collection pipe network. Knight Piésold (2014) evaluated the water balance of the existing Stage IV HLP solution management system. This was to determine if the solution management system would be capable of handling the additional liner area and increased ore volume. Results of the evaluation indicate the fluid management system is capable of containing both leach area drain-down and stormwater flow from a 25-year 24-hour storm and to withstand the 100-year 24-hour storm.

The expansion area is expected to contribute approximately 23.5 million gallons of additional stormwater and drain-down volume. The additional liner acreage would not change the facility water balance, the permitted Stage IV HLP solution application rate (0.005 gpm per square foot), or the overall solution flow to the HLP (9,000 gpm).

The proposed action would increase the Stage IV HLP ultimate leach pad height from 330 feet to 400 feet. Knight Piésold (2014) evaluated liner integrity, solution flow, and overall HLP stability based on an increase of HLP height. Results of this evaluation show that at 400 feet, the stability of the Stage IV HLP meets all NDEP requirements.

A stormwater diversion designed to withstand a 100-year 24-hour storm is placed around the perimeter of the Stage IV HLP. Expanding the Stage IV HLP and constructing the Stage V HLP would require removing and reconstructing a portion of this diversion to an area outside of the new expansion perimeter (see **Figure 2-4**, Proposed HLP Stage V Facilities).

The Stage IV HLP eight-foot fence would be relocated to outside of the rerouted stormwater diversion area. An access road to be used for maintaining and operating the expanded HLP would be constructed between the 100-year stormwater diversion and the Stage IV HLP.

A proposed conveyor system in the proposed utility corridor (see **Figure 2-1** and **Figure 2-5**, Conceptual Utility Corridor) would transport crushed ore to the Stage V HLP stockpile and then to the Stage IV HLP. The proposed conveyor corridor would include a road and other utility infrastructure. The conveyor system would consist of multiple sections, measuring approximately 6,300 feet from the tertiary crusher to the Stage V stockpile and then an additional 5,300 feet from the Stage V stockpile to the top of the Stage IV HLP. Design features would be similar to the system previously installed south of the Stage IV HLP, which was removed and is now in use at the Stage III HLP.

The proposed conveyor would transport up to 48,000 tons of crushed ore per day and would operate 24 hours a day, seven days a week, 365 days a year. The conveyor system would be placed in an overhead culvert for a 50-foot section near the tertiary crusher where it crosses over a road. Conveyed ore from the drop-off point would then be transported by trucks for final deposition into lifts on the leach pad.

Air emission controls would be installed along the conveyor similar to those authorized for the existing conveyor system under Air Quality Operating Permit No. AP 1044-0063.

Stage V

The Stage V HLP proposed action, as depicted on **Figure 2-4**, would achieve the following:

- Construct and operate a new 124-acre Stage V HLP
- Construct the Stage V contingency pond

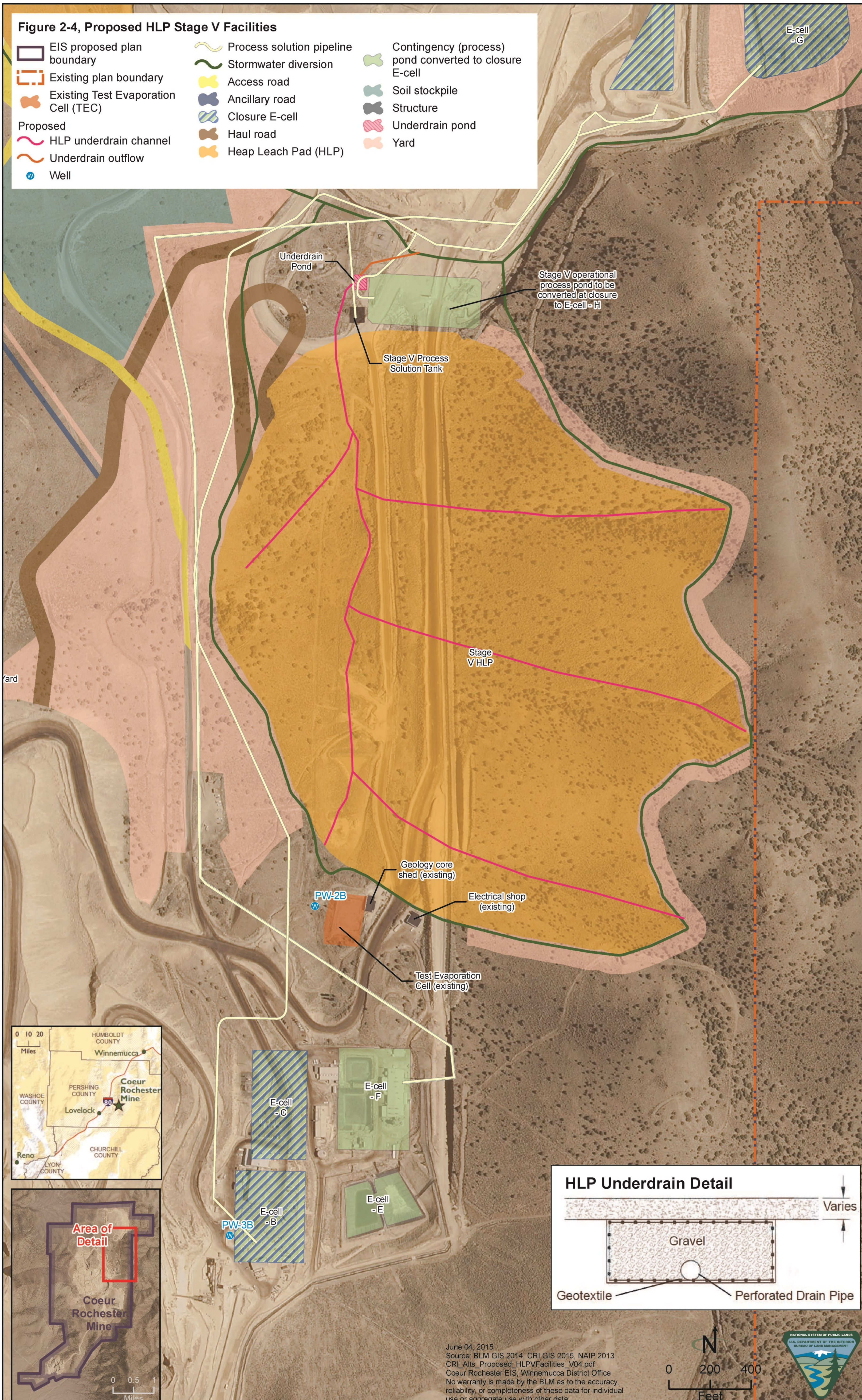


Figure 2-4, Proposed HLP Stage V Facilities
EIS proposed plan boundary
Existing plan boundary
Existing Test Evaporation Cell (TEC)
Proposed
HLP underdrain channel
Underdrain outflow
Well
Process solution pipeline
Stormwater diversion
Access road
Ancillary road
Closure E-cell
Haul road
Heap Leach Pad (HLP)
Contingency (process) pond converted to closure E-cell
Soil stockpile
Structure
Underdrain pond
Yard
E-cell - G
Underdrain Pond
Stage V operational process pond to be converted at closure to E-cell - H
Stage V Process Solution Tank
Stage V HLP
Yard
Geology core shed (existing)
PW-2B
Electrical shop (existing)
Test Evaporation Cell (existing)
E-cell - C
E-cell - F
E-cell - B
E-cell - E
PW-3B
HUMBOLDT COUNTY
Winnemucca
PERSHING COUNTY
Coeur Rochester Mine
WASHOE COUNTY
Lovelock
Reno
CHURCHILL COUNTY
LYON COUNTY
0 10 20 Miles
Area of Detail
Coeur Rochester Mine
0 0.5 1 Miles
HLP Underdrain Detail
Varies
Gravel
Geotextile
Perforated Drain Pipe
June 04, 2015
Source: BLM GIS 2014, CRI GIS 2015, NAIP 2013
CRI_Alts_Proposed_HLPVFacilities_V04.pdf
Coeur Rochester EIS, Winnemucca District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
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0 200 400 Feet

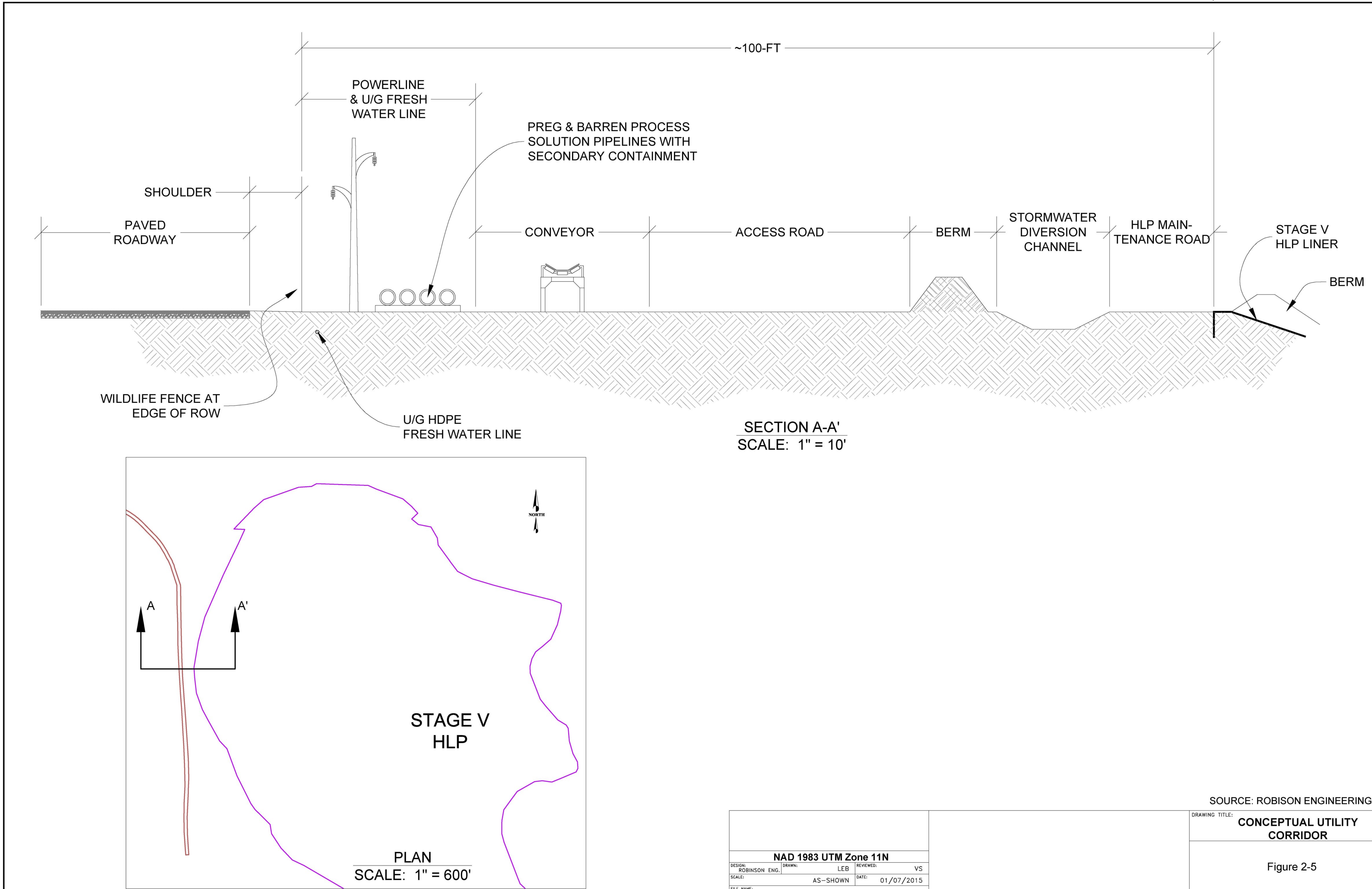
~100-FT
POWERLINE & U/G FRESH WATER LINE
PREG & BARREN PROCESS SOLUTION PIPELINES WITH SECONDARY CONTAINMENT
SHOULDER
PAVED ROADWAY
CONVEYOR
ACCESS ROAD
BERM
STORMWATER DIVERSION CHANNEL
HLP MAIN-TENANCE ROAD
STAGE V HLP LINER
BERM
WILDLIFE FENCE AT EDGE OF ROW
U/G HDPE FRESH WATER LINE
SECTION A-A'
SCALE: 1" = 10'
NORTH
A
A'
STAGE V HLP
PLAN
SCALE: 1" = 600'
SOURCE: ROBISON ENGINEERING
NAD 1983 UTM Zone 11N
DESIGN: ROBINSON ENG.
DRAWN: LEB
REVIEWED: VS
SCALE: AS-SHOWN
DATE: 01/07/2015
FILE NAME:
DRAWING TITLE: CONCEPTUAL UTILITY CORRIDOR
PLOT DATE: 2015-01-13 – 2:13PM

Figure 2-5

- Construct an underdrain system and channel to capture and convey spring flow
- Relocate the 100-year 24-hour stormwater diversion system
- Expand the fencing

The proposed expansion would construct a new 124-acre Stage V HLP designed to contain approximately 50 million tons of ore (Knight Piésold 2013). Facility construction and operation would begin prior to the Stage IV expansion to ensure a seamless transition of ore placement.

Standard construction equipment would be used where practical and would consist of excavators, compactors, articulating dump trucks, and dozers; smaller equipment would be used as necessary, depending on field conditions. Long-term operating and maintenance access to the facility would be provided by an access road inside the facility perimeter fence and next to the new leach pad area.

Stage V HLP construction would generally consist of the following:

- Clearing and grubbing vegetation
- Stripping and stockpiling growth medium
- Preparing the subsurface
- Installing heap leach pad liners and placing a solution collection system
- Constructing the Stage V contingency pond
- Managing stormwater

The proposed action would also construct an underdrain system and channel to capture and convey spring and seep flow and complete other ancillary work within the proposed disturbance area for access.

Grading would consist of cut and fill as necessary to meet facility design parameters. The Stage V HLP would also be constructed over stormwater sediment ponds east and downgradient of the Stage IV HLP in American Canyon. The pond berms would be graded before the HLP is constructed, and existing materials or equipment would be removed or buried in place.

Following pad area grading, an under-liner consisting of a GCL with a permeability of 1×10^{-6} cm/sec or lower would be installed. The under-liner would be overlain by an 80-mil, textured HDPE primary liner, followed by well-graded over-liner material to a thickness of between three and five feet. The solution collection pipe network system would be installed between the two liner systems. It would consist of lateral slotted pipes that drain to dedicated solid solution pipes. These pipes would route pregnant solution beneath the buttress fill into the pregnant solution tank. The buttress would be free draining to avoid potential accumulation of process solution during operation or closure.

As required by NAC 445A.433 (1)(d), the Stage V HLP and its associated tanks and pond would be sized and operated to withstand and fully contain process fluids and projected stormwater volumes. The facility would be engineered as a free-draining valley-fill heap with external tanks and a contingency pond system for solution management. Pregnant leach solution collected from the heap would be integrated into the plant areas, ponds, and process circuit for precious metal recovery. Ore would be leached with a weak cyanide solution applied to the surface of the heap leach pad benches using a drip irrigation system.

The Stage V HLP application rate would be approximately 0.005 gpm per square foot; flow to the process plant would be up to 7,000 gpm, although the heap leach facility and associated facilities are designed to accommodate process solution flow rates up to 9,000 gpm. To accommodate upset or emergency conditions, the Stage V pregnant and barren solution tank area is designed to overflow directly into the double-lined Stage V contingency pond. (Solution tank and pond volumes are summarized in **Table 2-3**, Solution Tank and Contingency Pond Volumes.)

Table 2-3
Solution Tank and Contingency Pond Volumes

Pond	Volume in Gallons
Stage V contingency pond	18,000,000 plus freeboard
Stage V pregnant tank	68,000
Stage V barren tank	68,000

The HLP would be engineered to an approximate height of 400 feet, and overall slopes with benches would range from 2.7 feet horizontal and 1.0 foot vertical to 2.5 feet horizontal and 1.0 foot vertical. Ore would be transported to the Stage V HLP stockpile by the proposed conveyor system. Ore would be placed on the HLP above the well-graded granular over-line material in lifts measuring approximately 50 feet. Once ore is placed on the HLP lifts, their surfaces would be ripped to facilitate process solution percolation.

The Stage V contingency pond (also referred to as the Stage V closure E-cell) would be constructed to the north of the Stage V HLP. Following excavation, the pond would be lined with 80-mil, HDPE primary and a secondary liners; a separate geonet leak detection system would be placed between the primary and secondary HDPE liners. The leak detection system would report to a monitoring sump that allows for observation and evacuation of fugitive solutions, if needed.

The Stage V HLP would be designed to accommodate and reduce potential impacts on springs and seeps, including American Canyon Spring and historic seep areas, as identified in Gibson & Skordal's wetland delineation report (1993), that would be covered during facility construction. The proposed Stage V HLP includes design features to collect and convey spring and seep flow of approximately 100 gpm. Flows have not been observed from the seep areas identified in the 1993 report; flows from the American Canyon Spring, when present, have generally been well below five gpm. The underdrain system would be installed beneath the secondary liner in the prepared subgrade and would consist of perforated pipe contained in a gravel envelope covered by geotextile and prepared subgrade. As shown in **Figure 2-4** the main underdrain system would be installed with finger drains extending up peripheral drainages and through historic wetland areas. The underdrain system would be sloped to drain to the north toward American Canyon. Flows from the underdrain system would be collected in a lined pond, the Stage V underdrain pond, which would be next to the Stage V process/closure pond. This pond would be configured to allow flows from the pond to be directed either to the stormwater diversion or to the Stage V HLP process solution system. Inflow water to the Stage V underdrain pond would be monitored monthly for NDEP Profile I constituents for a period agreed on by NDEP. If during this time no impacts are observed, the water would be routed to the stormwater diversion. Quarterly monitoring would occur throughout the life of the mine.

The construction of the Stage V HLP would necessitate the relocation of the 100-year 24-hour diversion (1,000-year diversion). The diversion would be constructed around the Stage V HLP, with flows from the western and eastern sides being directed north to tie into the diversion around the Stage IV HLP, as shown on **Figure 2-4**.

An eight-foot-tall wildlife fence would be constructed around the Stage V HLP. An access road for maintaining and operating the HLP facility would be constructed between the diversion and Stage V HLP.

2.2.4 Power Line Relocation

Under the proposed action, CRI would relocate power poles and lines, as shown on **Figure 2-1** and **Figure 2-5**. Some of the power lines and poles proposed for removal and relocation are in the proposed Stage V HLP and Stage IV HLP expansion footprints. The power lines and poles would be moved by their respective owners, either CRI or NVEnergy.

NV Energy holds ROW NVN-058236 for the 4-kilovolt (kV) power line along the main access road (American Canyon Road and main mine access). The power line would be moved to the west of the proposed expanded Stage IV HLP. The 4kV distribution line would be tied into the 60kV line (ROW NVN-043389), which traverses west to east across the project area, south of the Stage IV HLP. The NV Energy 60kV power line (ROW NVN-065285) in the proposed Stage V HLP footprint would be relocated to the west, along a northwestern trajectory, to tie into the 60kV NV Energy power line covered under ROW NVN-043389. From there the 60kV transmission power line (ROW NVN-065285) would supply energy to the American Canyon Substation to the east, between the Stage IV and V HLPs (see **Figure 2-1**). NV Energy would submit ROW amendment applications, which would be reviewed by the BLM along with this EIS for both power transmission line relocations.

The CRI power line in the proposed Stage V HLP footprint would be relocated to the west and into the utility corridor (see **Figure 2-1** and **Figure 2-5**).

2.2.5 Proposed Haul and Access Roads

The proposed action would relocate a portion of the American Canyon public access road and a portion of the paved main mine access road. It also would realign the Stage IV HLP haul road and would construct secondary facility access roads. These changes would total approximately 19 acres of new disturbance.

The proposed expansion of the Stage IV HLP would require the American Canyon public access road to be relocated to the north, outside of the Stage IV HLP proposed expansion area (see **Figure 2-1**). An additional portion of the American Canyon access road would be rerouted around the proposed E-cell G area (see **Figure 2-1**). Approximately 3,400 feet of road would be abandoned, and a new 5,020-foot-long by 24-foot-wide road would be constructed. CRI would build the new road section, in cooperation with Pershing County. The proposed new road design would meet Pershing County design standards for width and grade (Knight Piésold 2013). Pershing County has submitted a ROW application for the road realignment. The proposed ROW (NVN-092476) would be 5.7 miles long and 60 feet wide, totaling approximately 42 acres. A cattle guard would be relocated to the proposed rerouted section of road and would be reinstalled along the fence line on private property. An additional portion of the American Canyon access road would be rerouted around the proposed E-cell G (see **Figure 2-1**; the rerouted road is included in the proposed disturbance footprint for E-cell G.)

The paved main access road is proposed to be moved to outside the toe of the proposed Stage IV HLP expansion and new Stage V HLP (see **Figure 2-1**). The existing portion of the main access road within the footprint of the new and expanded HLPs would be abandoned and buried during the Stage IV HLP and Stage V HLP construction. Portions of the road pavement may be broken up and removed or buried in place. Approximately 6,200 feet of road would be abandoned, and 6,100 feet of new road would be constructed. It would follow the same specifications as the existing road, which includes a running width of 32 feet (Knight Piésold 2013).

2.2.6 Support Facilities—Buildings

The core shed and the electrical building would be relocated south of their current locations (see **Figure 2-1**) before construction of the Stage V HLP. Lighting would be installed and managed according to the site lighting management plan (CRI 2013). The concrete foundations of the core shed and electrical buildings at the old locations would be broken up and buried as necessary.

2.2.7 Borrow Pits and Growth Medium Stockpile

The proposed action includes developing two new borrow areas, the Limerick Canyon borrow and the Stage IV borrow, to provide material for proposed closure activities. Approximately 56.7 acres of new disturbance is proposed for excavation. Construction would include implementing environmental protection measures that would avoid direct impacts on cultural sites, as described in **Section 2.2.10**. One borrow area would be northwest of the Stage IV HLP and the other would be northeast of the Stage IV HLP (see **Figure 2-1**).

Growth medium would also be salvaged from the Stage IV and Stage V HLP footprint areas and borrow areas, as described in **Section 2.2.3**. Growth medium would be stripped to a depth of approximately 1.5 feet from the Stage IV HLP expansion area and to a depth of approximately 3 feet from the Stage V HLP area. The new growth medium stockpile would be south of the existing Stage IV HLP (see **Figure 2-1**); its estimated volume is shown in **Table 2-4**.

Table 2-4
Proposed Borrow Areas and New Growth Media Stockpile

Name	Surface Area (Acres)	Average Depth (Feet)	Estimated Volume (Cubic Yards)
Stage IV borrow	13.6	6.0	132,000
Limerick Canyon borrow	43.9	6.0	425,000
Stage IV and V HLP expansion growth medium stockpile			756,000

Source: POA 10 and 2014 FPCP
Note: Stockpile acres are for engineering purposes and may not match other acres listed.

2.2.8 Groundwater Pumping Rates and Production Well Changes

CRI proposes to increase groundwater pumping from a historical average rate of approximately 344 gpm to a higher rate of 500 to 900 gpm. This would be to account for varying seasonal water demand requirements associated with operations. A maximum rate of 900 gpm equates to 1,451.7 acre-feet annually (afa), which is within CRI's water rights limits. Production well PW-2A in the proposed Stage V HLP would be replaced by production well PW-2B on the south of the Stage V HLP footprint (see **Figure 2-1**). Production well PW-3A would also be replaced by production well PW-3B in the vicinity of the original well (see **Figure 2-1**).

2.2.9 Operating Plans

Waste Rock Management Plan

The WRMP identifies procedures and guidance for day-to-day waste rock management in order to preclude acid generation potential from the RDSs. Components of the plan are as follows:

- Waste Rock Classification, including standard acid-base accounting procedures (LECO furnace method) and kinetic testing (humidity cells) to assess the ANP/AGP of the waste rock and to classify it as PAG or non-PAG
- Segregation of waste rock
- Design and construction of Rochester in-pit rock disposal sites
- Waste rock selective placement
- Amendment placement if necessary
- Monitoring

The approved WRMP and the Updated Backfill Management Plan (UBMP) guide the placement of PAG and non-PAG waste in the pit. The plans were developed based on the results of the 1995, 1998, and 2000 waste rock characterization studies.

In response to the characterization study results, CRI developed and implemented the initial WRMP for the mine in August 2000. CRI supplemented the UBMP in October 2010 based on additional characterization results from 2009 and 2010 studies (SWS 2010a). CRI revised the WRMP in September 2011. According to these plans, PAG waste rock encountered during mine operations is to be stored above the backfill zone (6,250 feet amsl). Waste rock would be placed such that, at final closure, a minimum of 50 feet of non-PAG waste rock would cover the PAG cells. For PAG material used as backfill below 6,175 feet amsl, the waste rock would be amended with lime to achieve an ANP/AGP ratio equal to or greater than 3 to 1. Within PAG cells, run-on from precipitation and snowmelt will be controlled by constructing stormwater diversion structures upgradient of the facility, and runoff will be managed in a stormwater control structure at the western toe of the temporary PAG material storage area.

SRK (2014) completed a review of available geochemical data to determine its adequacy to meet the requirements for POA 10. The company also evaluated potential impacts from temporarily stockpiling PAG waste rock outside of the pit. SRK concluded that the initial characterization programs that provided the basis for the WRMP were validated and confirmed by subsequent characterization and monitoring. The waste rock characterization programs confirm that total sulfur is a reliable indicator of the ARD potential of the waste rock material. Therefore, the classification system as defined in the approved WRMP is sufficiently sensitive to the indicators of metal leaching and acid generation (SRK 2014).

SRK (2014) also concluded that temporarily stockpiling PAG waste rock outside of the pits, as proposed in POA 10, is unlikely to degrade groundwater due to the following:

- The temporary PAG material stockpile's short duration of operation and residence time
- The temporary PAG material stockpile's location over a minimum of 50 feet of non-PAG waste rock in an existing RDS footprint
- The relocation of the material to PAG stockpiles in the pit at an elevation above 6,250 feet amsl, covered with 50 feet of non-PAG waste rock, as previously approved

Spill Contingency Plan

A spill contingency plan has been included with the POA 10 submittal as Appendix I. Its purpose is to identify the following:

- Potential pollutant sources
- Policies and procedures to prevent, reduce, or mitigate impacts from an accidental release
- Policies and procedures for reporting and cleaning up potential accidental releases of pollutants

Emergency Response Plan

The emergency response plan in Appendix H of POA 10 outlines emergency response procedures for a variety of incidences, including spills, releases, fires, medical emergencies, security issues, and natural disasters. It provides emergency contacts, incident procedures, reporting/authority notification, and guidelines for accidental solution releases.

Solids and Hazardous Wastes

Authority for federal control of hazardous waste is granted by the federal Resource Conservation and Recovery Act (RCRA). The federal hazardous waste regulations applicable to waste generators are found in 40 CFR, Parts 260-262, 265, 266, 268, 273, 279, and 280. The comparable State of Nevada regulations for managing hazardous wastes are found at NAC 444.850 through 8788. Under these regulations, the Rochester mine qualifies as a large quantity generator.

CRI has prepared a solid and hazardous waste management plan (POA 10, Appendix L). It describes waste analysis and designations, container management, preparedness and prevention, storage areas, waste minimization, spill control and prevention, and personnel training.

Quality Assurance Plan

This plan (Appendix M of POA 10) describes general quality assurance and quality control activities. Quality assurance measures specific to facilities and construction practices are also included under each engineering design report.

SWPPP

The SWPPP includes an inventory of potential pollutant sources, identifies controls and BMPs for reducing the discharge of pollutants in stormwater runoff, and outlines measures for the SWPPP implementation and review. The most recent SWPPP is in POA 10, Appendix F. The project area does not contain any jurisdictional wetlands or waters of the United States; however, the SWPPP has been maintained as an operation plan.

Temporary Closure Plan

Temporarily closing ore processing facilities could result from a variety of circumstances. The temporary closure plan has been developed in accordance with NAC 445A.398(5) and NAC 445A.444; it addresses temporary closures due to extreme weather conditions, as required by NAC 445A.444(2)(a). In the event of an unplanned temporary closure of ore processing operations, the process fluid management system would be operated in accordance with the procedures outlined in the temporary closure plan (POA 10, Appendix E).

2.2.10 Environmental Protection Measures

The proposed action includes the environmental protection measures outlined below. These measures are outlined by resource, or program; however, all would apply across the project area and across resources, as applicable.

Cultural Resources

- Employees and contractors associated with the site would be informed that it is illegal to knowingly disturb cultural resources (historic or archaeological) or collect artifacts.
- CRI would not knowingly disturb, alter, injure, or destroy a historical or archaeological site, structure, building, or object. If CRI discovers any cultural resource that might be altered or destroyed by operations, the discovery would be left intact and immediately reported to the BLM authorized officer by telephone and in writing.

Native American Religious Concerns

- In accordance with 43 CFR, Part 10.4(g), CRI would notify the BLM authorized officer by telephone and in writing immediately on the discovery of human remains or funerary, sacred, or cultural patrimony objects (as defined in 43 CFR, Part 10.2). Further, in accordance with 43 CFR, Parts 10.4(c) and (d), the operator would immediately stop all activities in the vicinity of the discovery and would not restart them for 30 days or when notified to proceed by the BLM authorized officer.

Paleontological Resources

- In the event that undiscovered paleontological resources are encountered (including all significant vertebrate fossils and deposits of petrified wood), they would be left intact, and their presence would immediately (as soon as possible) be brought to the attention of the BLM authorized officer.

Air Quality

- Air quality permits from the NDEP Bureau of Air Pollution Control (BAPC) would be adhered to for the facilities and operations. Committed air quality practices would include dust control for mine unit operations, as required by the BAPC's Fugitive Dust Control and Process Equipment Emission Control Plan Permit, Number AP 1044-0063. In general, air quality control measures would include dust abatement techniques on unpaved and unvegetated surfaces, equipment maintenance to ensure proper function, adherence to posted speed limits, and compliance with NDEP air quality operating permits and the Nevada Mercury Control Program operating permit AP1044-2242.
- Disturbed areas would be seeded with an interim seed mix to minimize fugitive dust emissions from unvegetated surfaces. Fugitive dust in the project area would be controlled at the crusher and conveyor drop points through the use of water sprays and other controls. Appropriate emission control equipment would be installed and operated in accordance with the construction and operating air permits.

Water

- CRI would monitor groundwater sources according to NDEP standards and would maintain water quality and quantity for wildlife, livestock, and human consumption to the State of Nevada standards. CRI would operate in such a manner as to not disturb the Packard Flat artesian well, the water pipeline, and its associated water sources and developments.

Drill Hole Abandonment

- Mineral exploration and development drill holes, monitoring, and production wells subject to NDWR regulations would be abandoned in accordance with applicable rules and regulations (NAC 534). Boreholes would be sealed to prevent cross contamination between aquifers, and the required shallow seal would be placed to prevent contamination by surface access.
- Monitoring wells would be abandoned and reclaimed, as required by NAC 534. Well abandonment methods would differ based on well hydrologic conditions (e.g., dry, standing water, or artesian) and completion methods (e.g., type of casing, such as PVC or steel, perforated interval, and unperforated).

Noxious Weeds

- CRI would minimize nonnative and invasive species weed infestations or population spread in the project area, in accordance with the weed management plan (CEA 2014). CRI periodically evaluates the effectiveness of the weed management plan and will incorporate additional measures if directed by BLM. Areas of concern would be identified and surveyed in the field by a certified pesticide applicator. Surveys would be conducted concurrently with weed treatments. Weed control measures may include mechanical removal or herbicide application. Pesticide application reports (PARs) would be submitted to the BLM following each weed treatment event.
- Additional weed management activities would include educating employees, power washing the undercarriage of vehicles and equipment before they are driven onto the site, and using weed-free straw and materials for stormwater management and reclamation.
- Seeding would be conducted using certified weed-free seed.
- Concurrent reclamation would aid in minimizing the spread of weeds onto disturbed areas.
- Removing and disturbing vegetation would be kept to a minimum through construction site management (e.g., using previously disturbed areas and existing easements and by limiting equipment/materials storage and staging areas).
- Herbicides would be mixed and herbicide containers and spray equipment would be rinsed only in areas that are a safe distance from environmentally sensitive areas and points of entry to bodies of water, such as storm drains, irrigation ditches, streams, lakes, and wells. All herbicide containers and contaminated personal protective equipment (PPE) will be disposed of according to herbicide label specifications.

Growth Medium Management

- During stripping or grading/surface clearing, growth medium would be stockpiled in designated areas. Growth medium stockpiles would be located such that mining operations would not disturb them. The surfaces of the stockpiles would be shaped during construction to reduce erosion. To further minimize wind and water erosion, after shaping, the growth medium stockpiles would be seeded with a mix approved by the BLM. Diversions and berms would be constructed around the stockpiles to prevent erosion from overland run-on or runoff. BMPs, such as silt fences or certified weed-free straw bales, would be used to contain sediment resulting from precipitation.

Fire Protection

The following precautionary measures would be taken to prevent wildland fires:

- Wildland fires would be reported immediately to the BLM Central Nevada Interagency Dispatch Center ([775] 623-3444). To the extent known, CRI would include the location of what is burning (latitude and longitude if possible), the time the fire started, who or what is near the fire, and the direction of fire spread. CRI would place the call even if the available mine personnel could handle the situation or if the fire were to pose no threat to the surrounding area.
- CRI roster of emergency phone numbers would be available to mine personnel so that the appropriate firefighting agency could be contacted in case of a fire.
- All vehicle operators would carry at a minimum a shovel and a conventional fire extinguisher.
- Vehicle catalytic converters (on vehicles that regularly enter and leave the project area) would be inspected often and cleaned of all flammable debris.
- All cutting/welding torch use, electric arc welding, and grinding would be conducted in an area free, or mostly free, of vegetation. An ample water supply and shovel would be on hand to extinguish any fires created from sparks. At least one person in addition to the cutter/welder/grinder would be at the worksite to promptly detect fires created by sparks.
- Personnel would comply with the requirements of any fire restrictions or closures issued by the BLM Winnemucca District Office, as publicized in the local media or posted at various sites throughout the field office district.
- All applicable state and federal fire laws and regulations would be complied with, and all reasonable measures would be taken to prevent and suppress fires in the project area.
- Personnel would be allowed to smoke only in designated areas, such as the visitor parking area.

Wildlife, Including Special Status Species and Migratory Birds

- Speed limits would be adhered to in the project area for safety and to protect wildlife and livestock.
- Wherever possible, hand spraying of herbicides is preferred over other methods to prevent impacts on wildlife, including special status species. Noxious and invasive weeds would not be controlled within 0.5 mile of nesting and brood-rearing areas for special status species during the nesting and brood-rearing season.

- If potential Preble's shrew habitat is disturbed, an equal amount of potential shrew habitat would be surveyed for three seasons (spring, summer, and fall), using a BLM-approved Preble's shrew survey protocol. In addition, disturbed potential shrew habitat would be reclaimed with a recommended seed mix that would support Preble's shrew.
- When the mine is closed and before closure E-cell G is constructed, bats and their habitat would be inventoried within 200 yards of adits or caves. The inventory would take place before the surface is disturbed and those areas are occupied. If special status bat species are present in the survey area, additional measures will be developed, in consultation with the agencies, to ensure that any impacts on special status bat species are avoided.

CRI holds an NDOW industrial artificial pond permit for leaching operation ponds. As part of the permit, CRI must implement the following measures to prevent wildlife mortality:

- In order to avoid exposing wildlife to chemicals from heap leaching facilities, fencing would be installed and would comply with requirements of NDOW's industrial artificial pond permit. The minimum standard fence would be eight feet high, the bottom four feet of which would be composed of woven or mesh wire. Nothing greater than two-inch mesh would be used on the bottom two feet, and a maximum of eight-inch mesh would be on the top. The remainder of the fence above the woven or mesh wire would be four-strand smooth or barbed wire. The wire spacing would be 10 inches, 12 inches, and 14 inches beginning from the top of the woven or mesh wire. If a cyclone or chain-link fence were used, it would be eight feet high and the bottom would be tight to the ground.
- Open waters that contain any chemical solutions at levels lethal to wildlife (e.g., barren and pregnant solution ponds) would be covered or contained to preclude access by birds and bats. All covers or containers would be maintained to preclude access by wildlife for as long as the pond or container contains chemicals at levels lethal to wildlife.
- Before the release of drill rigs at sites that contain mud pits with standing fluid, the operator would construct a fence completely around the mud pits to exclude wildlife and livestock.

Migratory Birds

- The MBTA prohibits the destruction of the nests with eggs or young of migratory birds. Most of the songbirds in the project area are migratory and are protected by this provision. Nesting season runs from approximately March 1 through August 31. A careful examination of each area to be disturbed, including cross-country travel routes during the breeding season, would be done to ensure no nests with eggs or young are present. If such nests are found, they would be avoided by an appropriate distance to prevent destroying them and disturbing the nesting birds.

- During burrowing owl nesting season (March to late August) and following the Winnemucca BLM's survey protocol, a burrowing owl clearance survey would be conducted before the surface is disturbed in the areas identified as potential burrowing owl habitat in the project area; survey results and a report would be submitted to the BLM.
- Standard raptor protection designs, as outlined in Suggested Practice for Avian Protection on Power Lines (APLIC 2006), would be incorporated into the design and construction of power lines.

Sage Grouse

- According to the most recent biological baseline report (JBR 2013) no greater sage-grouse sign or individuals were observed in the project area. In accordance with the Strategic Plan for Conservation of Greater Sage-Grouse in Nevada (Greater Sage-Grouse Advisory Committee 2012), CRI would minimize impacts on greater sage-grouse by limiting disturbance areas, performing breeding bird surveys before ground disturbance, reclaiming disturbed areas after use, and working with agencies to make long-term habitat improvements through reclamation.

Visual Resources and Lighting

- To the extent possible and to minimize impacts on visual resources, buildings would be painted in colors that are compatible with the natural environment.
- To minimize visual intrusions, existing utility corridors, roads, and areas previously disturbed would be used wherever possible. New road construction would be limited or avoided to the extent possible.
- To reduce light pollution and maintain dark sky attributes, screens that do not allow light bulbs to shine up or out would be used. Proposed lighting would be located and directed to avoid light pollution onto adjacent lands as viewed from a distance, in accordance with the site lighting management plan (CRI 2013).
- Lighting fixtures would be hooded and shielded, would face downward, would be in soffits, as appropriate, and would be directed onto the pertinent site only, away from adjacent parcels or

view areas. Where possible, existing topography would be used to shield portable light equipment from adjacent parcels or view areas.

- In order to minimize visual impacts on the Rochester National Register Historic District, the NV Energy power line and access road would be located farther downhill to the east.

Acid Rock Drainage

- CRI would develop and maintain a temporary PAG material storage monitoring plan to verify the absence of or provide early detection for the existence of or potential formation of acid rock drainage and metal leaching. Monitoring may include regular inspection of the temporary PAG material storage area for conditions indicating substantive geochemical reactivity of PAG material, ponding of potentially impacted stormwater, or seepage.
- Should CRI identify the development of ARD, contingency measures would be implemented. These may include grading material surfaces to promote runoff, redirecting stormwater from upgradient areas around the temporary storage areas, and regularly removing snow from temporary PAG material storage surfaces as soon as practicable. In addition, CRI would manage meteoric waters that come in contact with the temporary PAG material storage area through use of BMPs and applicable measures defined in CRI's SWPPP. Impacted waters would not be discharged.

Safety and Security

- CRI maintains strict security procedures to prevent unauthorized access to the project area. It is surrounded by standard three-strand barbed wire fence, and the main access road is controlled by the 24-hour staffed security gate. Access into the Packard Mine is controlled by locked gates. Routine vehicle travel and inspections by mine personnel also serve to identify the presence of unauthorized individuals. In addition, all process areas are enclosed by an eight-foot-high chain-link fence to inhibit large wildlife species and livestock from entering. Other standard security and safety procedures are
    - Speed limits posted on access routes and on roads throughout the project area
    - Warning signs posted where flammable materials and hazardous materials are stored and where conditions warrant it
    - Safety training for all employees, as required by MSHA

Waste

- Nonhazardous project-related refuse would be collected in approved, lidded trash bins or containers and removed from the project area for disposal in accordance with county, state, and federal regulations or disposed of in the on-site permitted landfill. Debris that may have hazardous characteristics, residues, or fluids would not be disposed of in these trash bins and containers.
- A class III-waivered and permitted landfill in the project area has been designed, permitted, and constructed in accordance with applicable local, state, and federal regulations. No hazardous or toxic waste, waste oil, or lubricants would be disposed of on public lands. Unauthorized burial or burning of trash and other debris would not occur.

Erosion, Sedimentation, and Surface Water Quality

- The surface would not be disturbed when muddy conditions exist. These are defined as those temporary periods when ruts develop that are six or more inches deep. BMPs would be used strategically to reduce erosion and sedimentation in accordance with the SWPPP.

2.2.11 Monitoring

CRI would monitor the proposed activity to identify or prevent impacts on existing resources. The permits and plans associated with each monitoring component are summarized in **Table 2-5**.

Table 2-5
Monitoring Plans and Permits by Component

Monitoring Component	Permit or Plan and Agency
Air quality	Throughput, emissions, ore characteristics, fuel use, and stack testing NDEP Bureau of Air Pollution Control
Solid waste	90-Day storage area inspections NDEP Bureau of Waste Management
Hazardous waste	90-Day storage area inspections Satellite storage area weekly inspections RCRA container storage area weekly inspections NDEP Bureau of Waste Management
Explosives	Weekly magazine inspection Bureau of Alcohol, Tobacco, Firearms, and Explosives
Water	Process water, surface water and groundwater quality and quantity NDEP Bureau of Mining Regulation and Reclamation Inspection of stormwater BMPs NDEP Bureau of Water Pollution Control

Table 2-5
Monitoring Plans and Permits by Component

Monitoring Component	Permit or Plan and Agency
	Water use Nevada Division of Water Resources
Noxious weeds	Periodic noxious weed surveys and annually updated weed management plan BLM (under the plan of operations)
Reclamation	Reclamation revegetation success BLM and NDEP Bureau of Mining Regulation and Reclamation
Slope stability	Inspections BLM and NDEP Bureau of Mining Regulation and Reclamation
Waste and ore rock chemistry	Waste rock and ore analysis NDEP Bureau of Mining Regulation and Reclamation
Wildlife	Wildlife mortality NDOW

2.2.12 Reclamation

The proposed action would reclaim proposed disturbed areas, in accordance with BLM and NDEP regulations (see **Figure 2-6**, Post-Reclamation Topography). The purpose of 43 CFR, Part 3809, Surface Management, is to prevent unnecessary or undue degradation of public lands by operations authorized under the mining laws. Part 3809 establishes procedures and standards to ensure that operators and mining claimants meet this responsibility and provide for the maximum possible coordination with appropriate state agencies. The State of Nevada requires that a reclamation plan be developed for new exploration or mining projects and for expansions of existing operations per NRS and NAC 519A.

CRI would submit a map to the BLM Winnemucca District on or before April 15 of each year, showing topography, township, range and sections, locations of existing facilities, new areas of disturbance, and areas that have been reclaimed. The map would show the month and year that the area was regraded or reseeded. CRI would also submit an annual reclamation report to NDEP BMRR.

Goals of Reclamation

The goals of reclamation are as follows:

- Minimize surface disturbance and environmental impact to the extent practicable
- Create diverse reclaimed landscapes to promote vegetation and habitat diversity and hydrologic stability over time

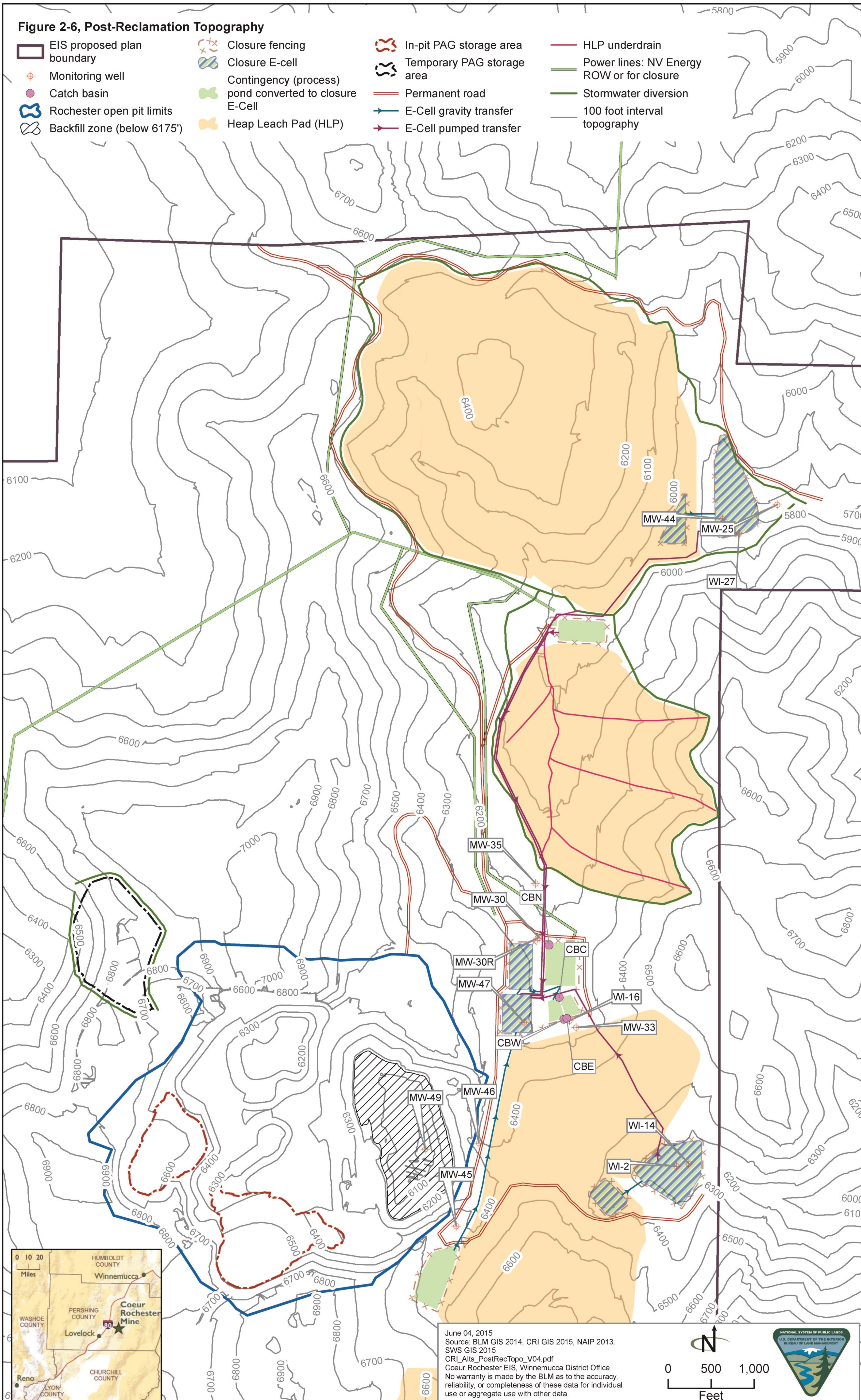
Figure 2-6, Post-Reclamation Topography
EIS proposed plan boundary
Monitoring well
Catch basin
Rochester open pit limits
Backfill zone (below 6175')
Closure fencing
Closure E-cell
Contingency (process) pond converted to closure E-Cell
Heap Leach Pad (HLP)
In-pit PAG storage area
Temporary PAG storage area
Permanent road
E-Cell gravity transfer
E-Cell pumped transfer
HLP underdrain
Power lines: NV Energy ROW or for closure
Stormwater diversion
100 foot interval topography
MW-44
MW-25
WI-27
MW-35
CBN
MW-30
CBC
MW-30R
MW-47
WI-16
MW-33
CBW
CBE
MW-49
MW-46
WI-14
WI-2
MW-45
HUMBOLDT COUNTY
Winnemucca
PERSHING COUNTY
Coeur Rochester Mine
WASHOE COUNTY
Lovelock
Reno
CHURCHILL COUNTY
LYON COUNTY
June 04, 2015
Source: BLM GIS 2014, CRI GIS 2015, NAIP 2013, SWS GIS 2015
CRI_Alts_PostRecTopo_V04.pdf
Coeur Rochester EIS, Winnemucca District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
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- Return project-related disturbances to productive post-mining land uses that emphasize wildlife habitat, livestock grazing, dispersed recreation, open space, and mineral exploration
- Comply with applicable state and federal environmental laws and regulations
- Limit visual impacts
- Limit or eliminate long-term maintenance following reclamation, to the extent practical

These goals would be achieved by meeting the following primary objectives:

- Establish stable surface topographic and hydrologic conditions during mining and after reclamation that are compatible with the surrounding landscape; this would be accomplished by designing stable fill and cut slopes, controlling erosion, and managing surface water and earthen materials to minimize water quality impacts
- Establish a stable, diverse, and self-sustaining plant community by removing and redistributing suitable plant growth medium on disturbed areas and by the seeding and planting native and adapted plant species
- Concurrently reclaim facilities that are no longer needed for operations as soon as practicable
- Separate process water and contact water from unimpacted water
- Incorporate operational stormwater management facilities into the design of closure stormwater management systems

Components of Reclamation

Regrading and Shaping

CRI would complete reclamation by recontouring and regrading disturbed areas and by ripping compacted surfaces. This is to ensure both long-term slope stability and visual compatibility with surrounding landforms. Details for final slope contouring and stability are described under reclamation of individual facilities (e.g., reclamation of waste rock disposal and heap leach pad facilities). In general, the topography of the reclaimed areas would be compatible with the natural topography of the area before mining begins, as well as being compatible with the topography of lands adjoining the project area.

Growth Medium and Soil Balance

Following grading and shaping, CRI would apply growth medium to the HLPs. This would be to increase the potential for revegetation success by improving aeration, drainage, and water-holding capacity for plants. Growth medium usually is composed of A and B soil horizon layers, which are not found in the project area in significant quantities.

There are four growth medium stockpiles on-site; a proposed additional stockpile, the Stage IV expansion stockpile, would be for material from the Stage V HLP footprint and Stage IV HLP expansion area footprint. Two on-site potential cover material borrow areas have been identified (see **Figure 2-1**). The estimated available growth medium and borrow material volumes are 1,659,000 and 557,000 cubic yards, respectively. Based on these estimated volumes and as a result of topsoil stockpiling from planned disturbance, there should be sufficient growth medium and cover material to meet the needs of the HLP covers.

If additional growth medium is needed, alternative sources would be found and identified in the final permanent closure plan. Based on current authorizations, growth medium does not need to be placed on the RDSs and on the yard areas.

Disturbance areas for which no growth medium or cover borrow material is available may be covered with alluvial waste rock or may be regraded, ripped, and seeded. CRI may also use soil amendments, such as organic mulches, to enhance soil viability. Soil amendments are frequently used during reclamation to provide a better medium for plant growth by causing changes in the rooting media.

In order to ensure proper amendment application, CRI would sample and analyze growth medium, cover borrow material, and alluvial waste rock materials for specific parameters and nutrient levels. CRI also would monitor growth medium nutrient levels before final reclamation and would evaluate different soil amendments concurrently with reclamation.

Revegetation

Following growth medium placement, CRI would seed disturbed areas. Seeding would enhance revegetation potential and stabilize areas to establish a productive vegetative community. This would be in accordance with the Sonoma-Gerlach Resource Area Management Framework Plan (MFP; BLM 1982) and designated post-mining land uses. The seed mixture approved for use on the project area is shown in **Table 2-6**, Revegetation Seed Mix. It represents a reclaimed desired plant community and is intended to represent ecological site status in the project area. The seed list, application rates, cultivation methods, and techniques may change based on the success of reclamation. Alternative site-specific mixtures, amendments, and application rates may be developed through consultation with and approval by the BLM and NDEP.

Table 2-6
Revegetation Seed Mix

Species Common Name	Species Scientific Name	Pounds per Acre (Pure Live Seed)
Thickspike wheatgrass	*Elymas lanceolatus* ssp. *lanceolatus*	3.0
Bluebunch wheatgrass	*Pseudoroegneria spicata*	3.0
Indian ricegrass	*Oryzopsis hymenoides*	2.0
Palmer penstemon	*Penstemon palmeri*	1.0
Blue flax	*Linum lewisii*	1.0
Wyoming big sagebrush	*Artemisia tridentate* var. *wyomingensis*	0.2
Four-wing saltbush	*Atriplex canescens*	2.5
Ladac alfalfa[1]	*Medicago sativa* L.	0.5
Douglas rabbitbrush	*Chrysothamnus viscidiflorus*	0.5
	Total	**13.7**

[1]This species has been used to replace rubber rabbitbrush (*Chrysothamnus nauseosus*), which naturally reseeds.

Revegetation generally includes preparing the seedbed, adding soil amendments as necessary, applying seed mix and mulch, and securing the mulch by crimping or tackifying (adhering) the mulch. Seedbeds are prepared by loosening the soil with discs or harrows to facilitate precipitation infiltration and root penetration. The seed mix should be applied as soon as practicable during the fall after seedbed preparation. Seed application procedures would be selected based on specific site conditions. For example, flat to moderate sloped areas may be seeded using a drill or broadcast seeder. Steeper slopes could be seeded from the air or broadcast seeded with specially adapted equipment.

Mulching stabilizes soils, reduces wind and water erosion, increases water-holding capacity, and protects the seed from predation and exposure to extreme heat and cold. CRI may use crimped rice straw mulch, with drill seeding on moderately sloped areas. Mulch would be used only on areas where a growth medium is not applied. A livestock fence, generally following the project area boundary, would remain in place until vegetation is established on reclaimed areas and the areas have been released from bonding for vegetation.

Noxious Weeds

CRI would control noxious weeds and other nonnative invasive plant species until the BLM and NDEP have determined that revegetation is successful. Noxious weeds would be controlled and monitored periodically and updated when needed, according to the weed management plan (CEA 2014). Before applying herbicides, CRI would obtain approval from the BLM. All seed used for reclamation would be tested for purity and the presence of noxious, poisonous, and prohibited plant species. Before application, test results would be submitted to the BLM. Weed infestations and weed control would continue to be monitored until reclamation is complete and the potential for weed invasion is minimized. Certified weed-free straw bales would be used for sediment control.

Stormwater Diversion

Stormwater runoff is primarily controlled by a series of diversions and containment ponds and sediment basins throughout the area. Operationally, the run-on diversions are designed to convey peak flows generated during a 100-year, 24-hour storm (100-year diversion). At closure, these diversions would be resurveyed, realigned to avoid proposed closure E-cells, and constructed to hold a 500-year, 24-hour storm.

Portions of the conveyance feature along the west side of the existing Stages I, II, and III HLPs are buried culvert pipe. These culvert segments would be removed and reconstructed as open channels for closure.

Figure 2-7, Stormwater Management Plan, presents the stormwater catchment map and closure drainage route arrangements for the 500-year, 24-hour storm closure diversion. Stormwater drainage management at closure is further discussed in the 2014 final permanent closure plan (FPCP). The existing operational 100-year diversion has an ultimate discharge point in American Canyon. Stormwater from the east sides of the Stage I and II HLPs drain into South American Canyon. Discharge points would be configured to ensure released flows are managed by using appropriate BMPs, such as installing straw bales, rice wattles, silt fences, or rock drains. Stormwater diversions are monitored and maintained during operations.

Reclamation—Open Pit

Open pit reclamation includes strategically placing backfill material, reclaiming the open pit access ramp (haul road), and placing safety berms around major access points of the Rochester and Packard pits. The Rochester pit is authorized to be backfilled to the 6,250 foot amsl elevation. Half of the Packard pit has been backfilled, and no further backfilling is planned. Exposed open pit benches and high walls at both the Rochester and Packard pits would be left in place on completion of mining.

Approximately four million tons of non-PAG waste rock has been placed in the Rochester pit as buttress material for the southeast high wall (SWS 2010); no further stabilization would be required for the pit walls during reclamation. **Figure 2-6** depicts open pit post-reclamation contours and topography. Proposed pit reclamation includes changes in placing safety berms to measure 5 feet high and 14 feet wide, with a side slope ratio of 1.4 feet horizontal to 1.0 foot vertical. The open pit access ramp would be reclaimed by recontouring, scarifying, and seeding. CRI has requested an exemption to the requirements for reclamation of the final open pit areas under the provision of NAC 519A.250, which allows the operator to request an exemption to the requirements for reclamation of open pits that may not be feasible to reclaim.

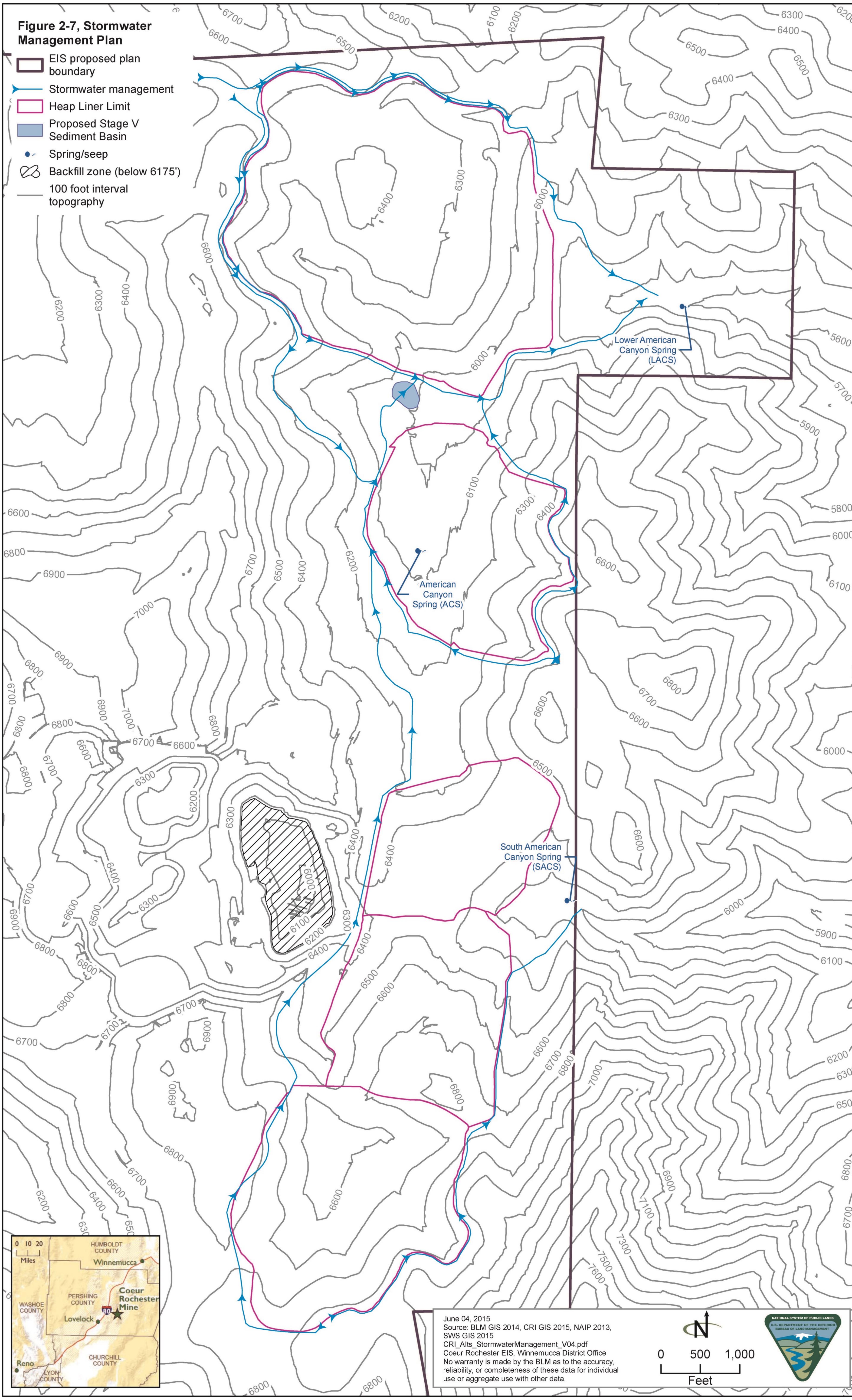

Figure 2-7, Stormwater Management Plan

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Reclamation—Waste Rock Disposal Facilities

Based on previous authorizations, no new changes to the approved reclamation plan are proposed under POA 10 that apply to reclamation of the rock disposal sites. All but two of the RDSs would be graded to a 2.0-foot horizontal to 1.0-foot vertical slope configuration. They would be seeded with the approved seed mix to establish vegetation. The East RDS is authorized to a final reclamation slope ratio of 1.3 feet horizontal to 1.0 foot vertical; the Packard RDS has already been contoured to a slope ratio of 3.0 feet horizontal to 1.0 foot vertical.

The static factors of safety and dynamic movement of the RDSs were previously calculated by Golder (1988a, 1990b, and 1993c). Pseudostatic factors (factors that affect seismic stability) of safety were calculated by WESTEC (1995). All analyses used the RDS ratios of 1.33 feet horizontal to 1.0 foot vertical proposed in CRI's 1992 and 1993 reclamation plan. Using the same data, both Golder and WESTEC concluded that catastrophic foundation failures of the rock disposal sites were unlikely. They determined that the ratio of 2.0-foot horizontal to 1.0-foot vertical slope configurations were stable.

Grading and shaping the RDSs would provide stable slopes and mass stability, reduce slope erosion potential, control sediment, and round edges to blend with the existing topography. Following mining, dozers would be used to contour the RDSs to the final slope configurations identified above. The dozers would push material downslope to achieve the appropriate slope configurations. In addition, the dozers would be used to construct a series of gouges (checkerboard pattern) along the RDS slope faces. This is to reduce surface erosion potential, collect sediment, capture moisture, and serve as seed catch basins.

Reclamation of in-pit RDSs would be in accordance with the approved WRMP and would include placement of a minimum of 50 feet of non-PAG waste rock to cover the PAG cells. The in-pit PAG material storage areas would be located above 6,175-foot amsl elevation.

Reclamation—Heap Leach Facilities

Reclamation of heap leach facilities includes the proposed Stage IV expansion and Stage V HLPs.

Grading and Shaping

Following mining and heap leaching operations, dozers and graders would recontour the HLPs to a ratio of 2.5-foot horizontal to 1.0-foot vertical slope. Recontouring would blend the slopes with the existing landscape and would inhibit erosion.

Reclamation of Impoundments

Following receipt of testing results, as determined by NDEP, the TEC would be reclaimed. The TEC area would be covered with an evapotranspiration (ET) cover, followed by application of growth medium and seed. Exterior piping would be decommissioned and properly disposed of. Other impoundments not used as part of the final permanent stormwater diversion system would be graded and blended into the existing topography.

Reclamation—Ponds

Pond reclamation would meet requirements of the BLM's Nevada Cyanide Management Plan and NDEP's NAC 445A.350 through 447 regulations. Existing ponds would be converted to E-cells, covered by construction of the Stage V HLP, or reclaimed (see discussion in subsection Closure Heap Leach Pads). Any sludge remaining in the existing pregnant ponds or contingency ponds would be characterized and may be left in place, incorporated into an E-cell, or covered with geotextile and buried in place. Sludge may also be removed and placed in a lined compartmentalized area on a heap leach pad or shipped off-site for disposal.

Reclamation—Power and Communication Facilities

The power and communication facilities would not be demolished until mining has ceased and power and communications are no longer needed on-site. Power distribution lines would remain for pump-back wells and E-cells. A certified approved contactor would remove the transformers, substations, and communication towers and would properly disconnect, label, and ship them to an authorized disposal facility.

Reclamation—Buildings and Support Facilities

Buildings would be sold and moved off-site or demolished and buried in the on-site class III-waivered landfill. Building foundations would be broken up and hauled as fill to this landfill, or they would be broken up, buried in place, and covered by three feet of soil or non-PAG waste rock. Any remaining chemicals, reagents, and other toxic substances would be used as intended in the process, would be sent back to the supplier or manufacturer for proper disposal, or would be properly labeled and shipped as solid or hazardous waste to a proper disposal facility. Following removal or burying, the remaining disturbed areas would be regraded, ripped, and seeded with the approved seed mix.

Reclamation—Conveyor System and Crushers

The conveyor system and crushers would be salvaged and removed from the site.

Reclamation—Haul and Access Roads

The haul and access roads would be reclaimed in accordance with BLM and NDEP requirements, including those in the BLM Solid Minerals Reclamation Handbook H-3042-1. Most of the exploration roads and haul roads would be reclaimed during concurrent reclamation activities; the remaining roads would be reclaimed at the end of the mine life.

Reclamation includes recontouring and ripping compacted surfaces. Where roads cut into a slope, fill material would be pulled up onto the road surface and recontoured to a stable slope configuration that would blend with the surrounding land forms and would minimize erosion. Road surfaces at grade would be ripped to reduce compaction and would be recontoured and scarified for seeding. Any culverts would be removed and the drainage channels would be restored to their predisturbance configuration.

To reduce water erosion and overland flow potential, water bars (small berms) would be built along regraded road surfaces. The water bars would be designed to emphasize flow from the water bar into or toward a natural draw or channel. The American Canyon road would not be reclaimed but would be maintained for post-mining public access.

Reclamation—Borrow Pits and Growth Medium Stockpiles

Growth medium stockpiles and borrow areas would be ripped and scarified to loosen compacted soil and would be graded and contoured to blend with existing topography. These measures would allow the areas to blend with the topography, would limit erosion, and would promote natural drainage. Following grading and contouring, vegetation would be established using the approved seed mix.

Surface Facilities or Roads Not Subject to Reclamation

Surface facilities not subject to reclamation are the following:

- The open pits for which a reclamation exemption under NAC 519A.250 would be sought
- Ponds that would be converted into closure E-cells
- Power line and pipeline corridors and access
- Access roads to perform post-mining monitoring
- Access to American Canyon
- Closure stormwater diversion structures

Closure of Heap Leach Pads

Closure of HLPs would be in accordance with the proposed FPCP.

Chemical Stabilization and Drain-Down

The goal for chemical stabilization and drain-down of the HLPs is to reduce and evaporate process fluid from the HLPs. This is done to arrive at manageable drain-down conditions, based on proposed HLP covers and E-cell designs.

The anticipated process fluid management sequences as currently modeled are as follows:

- Surface reclamation of the Stage I HLP by recontouring and reseeding has been completed. Residual drain-down and pump-back solution would continue to drain into E-cell E (the converted east and west pregnant ponds). E-cell E would gravity overflow into E-cell F as needed.
- The Stage II HLP would continue operating until leaching is no longer economically feasible. Residual drain-down would be routed to the barren tank for use as make-up process solution for leaching Stage III and IV HLPs. The Stage II HLP would subsequently trend to the modeled long-term steady state drain-down conditions during the operating life of the Stage III HLP.
- After the Stage III HLP is no longer in use, drain-down solution would be routed into the barren tank when leaching stops. The drain-down solution would be used as make-up process solution for continued leaching of the Stage IV and Stage V HLPs. The Stage III HLP drain-down volume would be reduced over time and would trend to the modeled, steady-state, drainage conditions during the operating life of the Stage IV and V HLPs.
- When the Stage IV HLP is no longer in use, drain-down would be routed through the Stage IV/Stage V pregnant tank, process plant, and then to the barren tank for use as make-up solution for leaching the Stage V HLP, or the drain-down would be allowed to evaporate until the long-term drain-down rate is achieved.
- Evaporation would take place at the Stage V HLP as needed to reduce process solution quantities to an amount that could be handled within the E-cell system.
- The Stage III and V HLPs' long-term drain-down would be free draining and routed to solution conveyance pipes through the buttresses. These buttresses would be permanent features, and the pipes would remain open at closure to facilitate long-term drain-down.

Piping Removal

The piping for process solution distribution that is no longer needed for closure would either be detoxified and disposed of in the on-site class III landfill or would be shipped off-site for recycling. The two in-heap E-cells in the Stage II and Stage IV HLPs would remain as functioning components of the drain-down system described above; they would not be reclaimed as part of the surrounding HLP.

Heap Cover Designs and Revegetation

Following proposed reclamation earthwork, a combination of ET and runoff (RO) covers would be installed on the HLPs to reduce infiltration from HLP facilities. The ET cover would be composed of 18 inches of growth media, designed to shed surface runoff and to allow for vegetative ET of precipitation. The top 6 inches would be amended, if necessary, to aid in revegetation if existing growth medium resources are insufficient. The RO cover is an impermeable geo-membrane placed over 12 inches of prepared subgrade consisting of existing crushed spent ore.

A low-permeability barrier would follow to prevent contact with infiltrating meteoric water. On top of the low-permeability barrier, 24 inches of free-draining material would be placed to allow excess stormwater to drain off the heap. The free-draining layer would daylight from beneath the growth medium layer at strategic points along the perimeter of the heap leach facilities (see **Figure 2-8**, Typical Heap Leach Closure Cover Design).

On top of the free-draining material 18 inches of growth medium would be applied. The RO covers would be placed predominantly on the north-facing slopes of the HLPs, with ET covers installed on the remaining HLP surfaces. The final percentage of each heap leach facility covered by the RO or ET cover is based on updated modeling under the FPCP as required by NDEP. **Figure 2-8** depicts typical ET and RO cover cross-sections; **Figure 2-9**, Proposed Closure, shows a general plan view of the RO and ET cover areas. Proposed acres and percentages for the two cover types are shown in **Table 2-7**.

Table 2-7
Proposed Heap Leach Pad ET and RO Cover Areas

Heap Leach Pad	ET Cover[1]		RO Cover[1]		Total Cover (Acres)[1]
	Acres	Percent	Acres	Percent	
Stage I	20.9	25	62.3	75	83.2
Stage II	31.9	25	95.3	75	127.2
Stage III	25.9	18	117.1	82	143.0
Stage IV with expansion	48.0	17	238.0	83	286.0
Stage V	11.7	10	107.5	90	119.2

Source: 2015 FPCP (Appendix C)
[1]Acres shown in this table are lined surface acres used for engineering purposes and do not match the reclamation footprint acres or acres otherwise stated in this EIS.

Covers would be installed using conventional earth-moving equipment and techniques.

Placing ET cover material is anticipated to involve a simple scraper fleet spreading process. Placing the RO covers would more closely mimic leach pad liner installation, with the required membrane installation step and over-liner drainage layer. For steeper slope segments, ramp construction, conventional haul truck dumping, and dozer spreading may be necessary for the drainage layer. Once installed, the overlying growth medium would be placed, and workers would take care not to compromise the liner integrity. Placing a drain layer on the RO element would require care and observation of minimum thickness tolerances. After the growth medium is placed, the ET and RO covers would be seeded.

The percentage of each heap leach pad covered by the RO or the ET material has been based on heap leach drain-down estimator (HLDE) modeling to arrive at a drain-down for proposed closure E-cells. **Table 2-8** presents cover model calculations for long-term drain-down from heap leach facilities, totaling 14.41 gpm. Modelled drain-down for each heap leach pad is summarized in **Table 2-9**.

Table 2-8
E-cell Areas and Storage Capacities

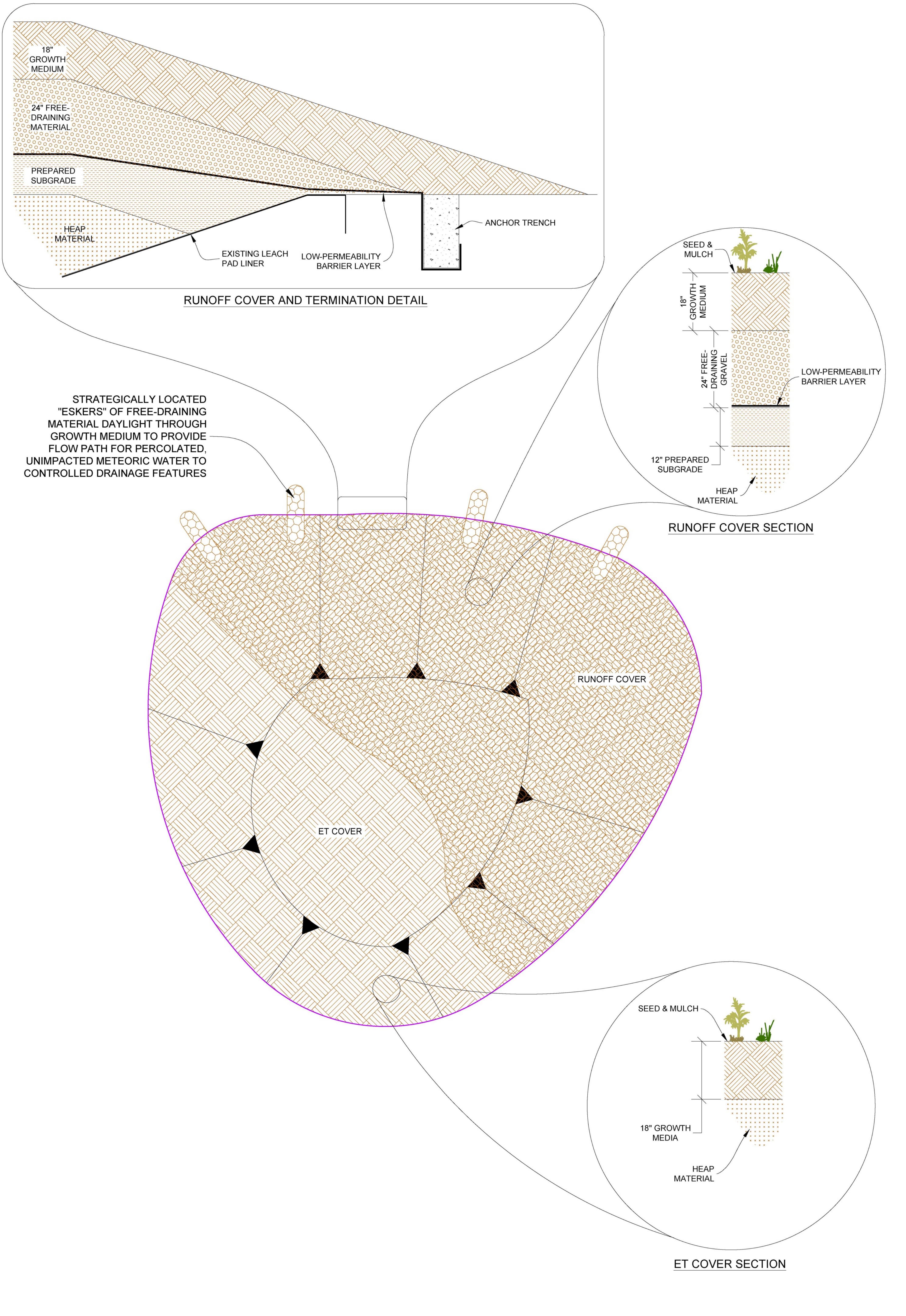
E-cell	E-cell Surface Area[1] (Acres)	Evaporation Compartment Volume (1,000 Gallons)	Storage Compartment Volume (1,000 Gallons)
A	4.84	925	4,970
B	3.26	631	708
C	2.99	578	622
Stage II in-heap	2.00	0	0
D	8.32	2,155	1,955
E	1.54	281	454
F	3.97	769	892
Stage IV in-heap	2.10	0	0
G	9.75	2,423	12,208
H	3.01	628	692
TOTAL	**41.78**	**8,390**	**22,501**

Source: FPCP (Appendix C) 2015
[1]The surface area of the E-cells is measured one foot below the crest. E-cell acreages listed in this table are for engineering purposes and may not match acres listed elsewhere in this EIS.

Table 2-9
Tabulated Heap Leach Pad vs. E-cell Used

Source	Heap Drain-down from Heap Leach Drain-down Estimator or Pumped Volume (gpm)	Area of E-cell Needed (Acres)	E-cell Used
Stage I	2.02	4.04	E and a portion of F
Stage II	3.08	6.16	D and in-heap E-cell
Stage III	2.75	5.50	A and a portion of B
Stage IV with expansion	5.10	10.20	In-heap E-cell and a portion of G
Stage V	1.46	2.92	H
Pump-back wells	5.44	10.88	Portions of B, C, D, and F
Total	**19.85**	**39.70**	

Source: FPCP (Appendix C) 2015
[1]Surface area of the E-cells is measured one foot below the crest.



DESIGN: ROBINSON ENG.	DRAWN: LEB	REVIEWED: VS	DRAWING TITLE: TYPICAL HEAP LEACH CLOSURE COVER DESIGN
SCALE: NTS		DATE: 12/31/2014	
FILE NAME: 77200.010-Fig10_Typ_HLP-Cover-Designs_LEB.dwg			

Figure 2-8

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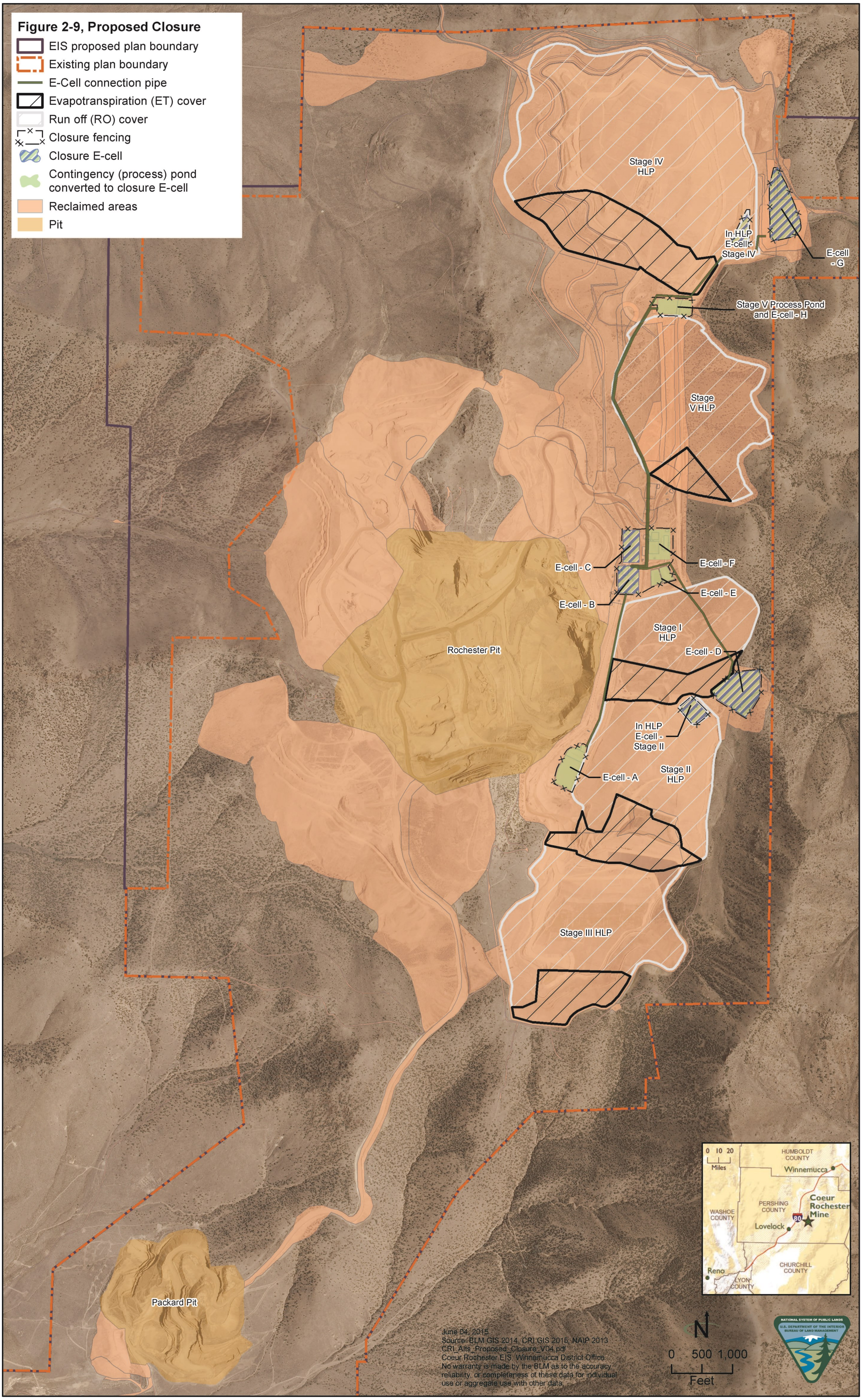

Figure 2-9, Proposed Closure
EIS proposed plan boundary
Existing plan boundary
E-Cell connection pipe
Evapotranspiration (ET) cover
Run off (RO) cover
Closure fencing
Closure E-cell
Contingency (process) pond converted to closure E-cell
Reclaimed areas
Pit
Stage IV HLP
In HLP E-cell - Stage IV
E-cell - G
Stage V Process Pond and E-cell - H
Stage V HLP
E-cell - C
E-cell - F
E-cell - B
E-cell - E
Stage I HLP
E-cell - D
Rochester Pit
In HLP E-cell - Stage II
Stage II HLP
E-cell - A
Stage III HLP
Packard Pit
HUMBOLDT COUNTY
Winnemucca
PERSHING COUNTY
Coeur Rochester Mine
WASHOE COUNTY
Lovelock
80
Reno
LYON COUNTY
CHURCHILL COUNTY
0 10 20
Miles
N
0 500 1,000
Feet
June 04, 2015
Source: BLM GIS 2014, CRI GIS 2015, NAIP 2013
CRI_Alts_Proposed_Closure_V04.pdf
Coeur Rochester EIS, Winnemucca District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

E-cells

The proposed action includes constructing 10 new or converted drain-down E-cells. This would occur when the steady-state drainage at all facilities is reached and when there is no longer a need for process make-up water. E-cells would provide long-term drain-down HLP solution management during closure. The E-cells would be constructed on approximately 41.78 acres (see **Table 2-8**).

Two in-heap E-cells would be constructed on existing Stage II and Stage IV HLPs, four E-cells would be constructed at locations without ponds (B, C, D, and G on **Table 2-8**), and four E-cells would be constructed at converted pond locations (A, E, F, and H on **Table 2-8**). E-cells B, C, and F would be designed for overflow.

Once process fluids have been sufficiently reduced, the HLPs would be covered to further reduce drain-down solution volume from precipitation and to help maintain E-cell volume capacities. E-cells are shown on **Figure 2-9**, and a closure and drain-down flow schematic is shown on **Figure 2-10**, Closure Drain-down Flow Schematic.

According to the fluid management drain-down model, the E-cells storage capacity has been designed to conservatively handle heap leach drain-down and upset conditions (e.g., weather). The system is designed to allow for gravity drainage from the heap leach facilities to the proposed E-cells via HDPE pipes. The overflow E-cells can receive excess drain-down flow from upsets from the Stage I or Stage III HLP E-cells (E and A) via gravity drainage or from the Stage II, IV, or V HLP E-cells (D, G, and H, respectively) via pumped routing in pipelines. Buried pipes would have double containment. Pumps would be powered from existing power lines. The E-cells have sufficient storage for any pump-back solutions. Design also considers reducing solution volume based on evaporation. Storage capacities of E-cells are shown in **Table 2-8**.

The closure drain-down flow sequence is shown on **Figure 2-10**. The E-cells would consist of a solution delivery system, an evaporation zone, and a storage compartment (see **Figure 2-11**, E-cell Section Details). Construction materials for the E-cells would be composed of excavated E-cell footprint material placed and compacted as outer berm fill. E-cell interior backfill materials would be selected, classified, and sized on-site materials or imported commercial material or both. Each E-cell construction would involve the following:

- A solution distribution pipe network system
- Pipe network shallow cover fill
- General E-cell interior backfill, divided into two zones
    - An evaporation zone, used primarily to evaporate drain-down fluid but that also has some limited storage, underlain by a GCL

  - A compartment to store water when the evaporation depletion rate is exceeded by inflow
- A basal double-lined geosynthetic liner and leak detection system

E-cells C, E, and F would be configured slightly different in their interior and would lack the geo-composite drain networks that the other E-cells would possess. This is because inflow would be from more dispersed flow sources (i.e., channels) and not practically constrained to a pipe network.

The proposed E-cell system provides for a total E-cell acreage capable of handling the anticipated heap leach facility drain-down as well as solution from the pump-back wells, based on a conservative evaporative rate of 0.5 gpm per acre of E-cell surface area. **Table 2-9** outlines the modeled drain-down and E-cell area needs.

Solution Delivery and Distribution System

The solution distribution system would be designed to conservatively handle drain-down solution from the heap leach facilities to the E-cells. The system would be used to distribute drain-down over the surface of the E-cell evaporation zones. It would be at a shallow depth to facilitate solution evaporation and to eliminate the potential for standing surface water (**Table 2-9**). The network pipes would include off-takes leading to buried geo-composite drains, as shown on **Figure 2-10**. Wicking through these drains would help optimize water distribution and maximize evaporation. This system would be above the GCL layer and the storage compartment portion of the E-cell.

Evaporation Zone

The evaporation zone portion of the E-cells would consist of a two-foot-thick layer of well-graded sand covering most of the E-cell surface. The side opposite the inflow in each E-cell would not be covered in sand; it would provide a capillary break and infiltration zone for water overtopping the evaporation zone into the storage compartment (discussed below and shown on **Figure 2-10**). The sand in the evaporation zone would be placed over a GCL layer. Evaporation would take place across the entire surface area of the zone, and the GCL would be properly pre-hydrated to establish good permeability.

Storage Compartment

The storage compartment of each E-cell would be filled with clean minus-two-inch gravel (gravel that is a maximum of 2 inches in size). The existing pond liner and overlying GCL would prevent evaporation or seepage losses once the solution enters the storage compartments. Several slotted infiltration pipes would allow the passive transport of water overtopping the evaporation zone into the underlying storage compartment. (These pipes could also be used as monitor standpipes to observe water levels in the storage compartment, as shown on **Figure 2-11**).

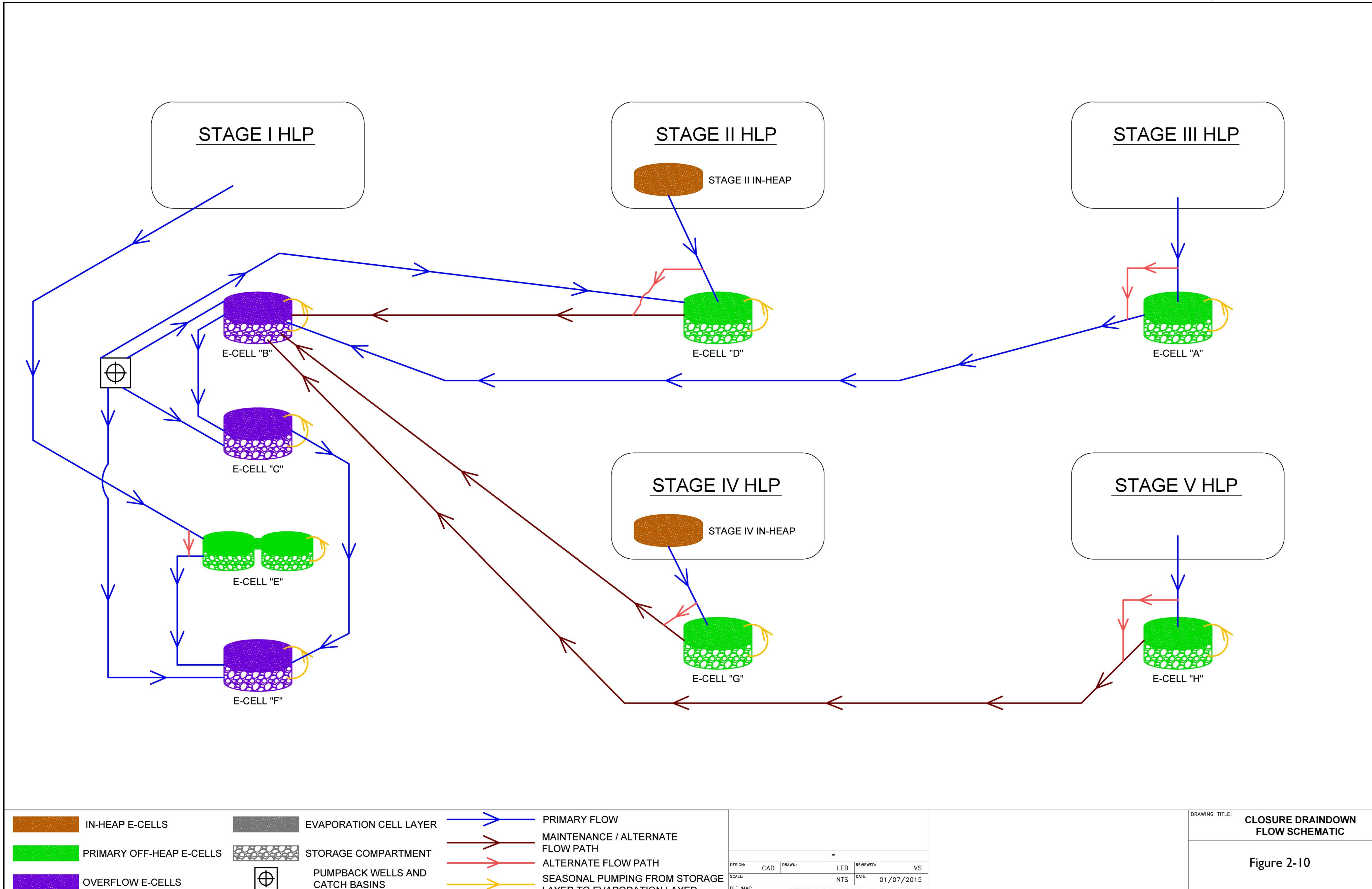

Figure 2-10

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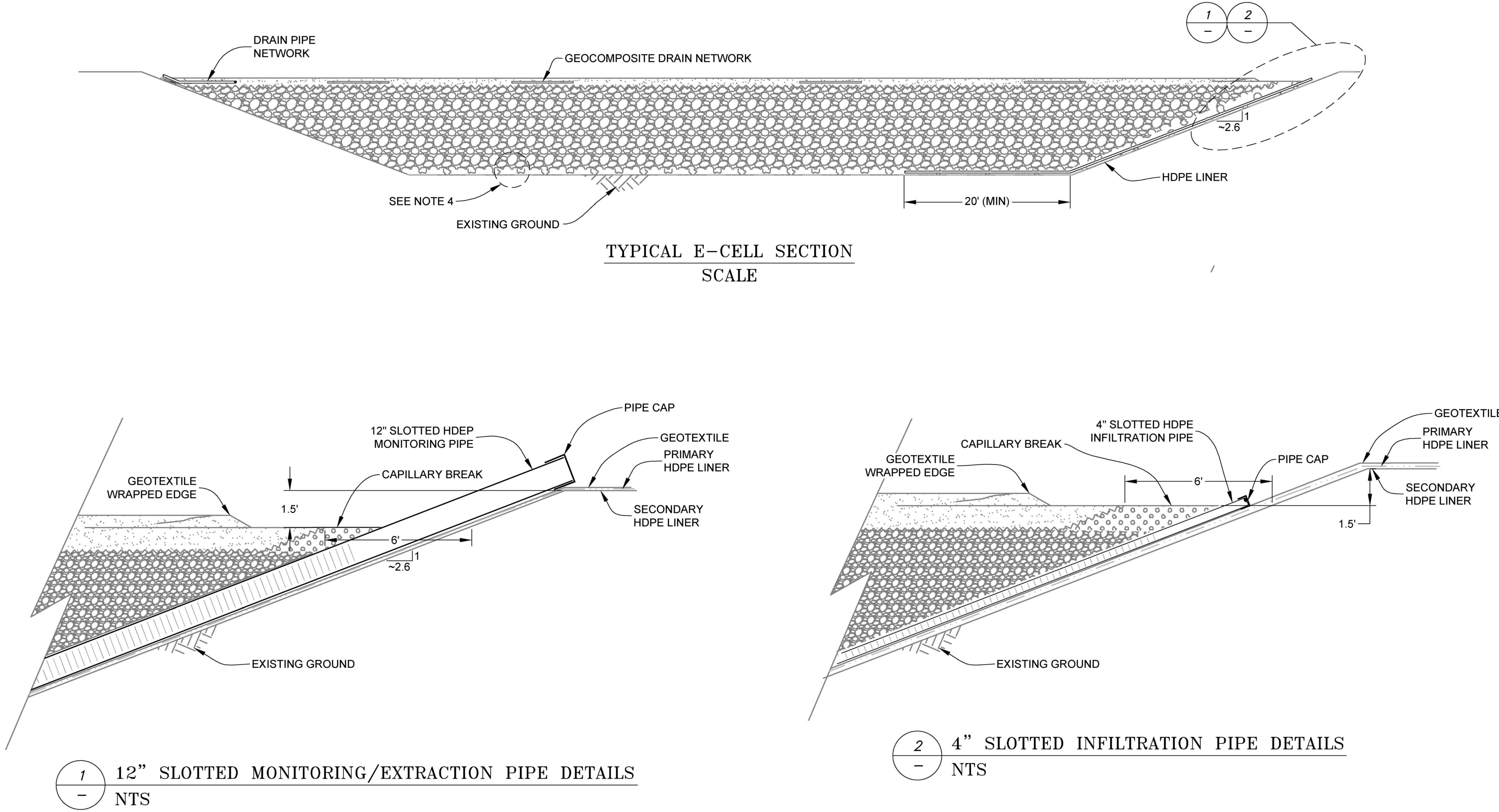

REFERENCES:
"E-CELL SECTIONS AND DETAILS" PREPARED BY KNIGHT PIESOLD, 01/2015 (PROJECT # DV 101.00322.31 - DWG #210)

DESIGN: ROBINSON ENG.	DRAWN: LEB	REVIEWED: VS	
SCALE: NTS		DATE: 01/12/2015	
FILE NAME: 77200.010-Fig13_E-Cell_Section-Details_LEB.dwg			

DRAWING TITLE:
E-CELL SECTION DETAILS

Figure 2-11

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One large-diameter infiltration pipe would also serve as an extraction well for returning water from the storage compartment to the E-cell. The solution in the storage compartments would be seasonally circulated from the storage compartment to the evaporation zone by dedicated well pumps. Solution may also enter the storage compartment through a manual bypass provided on the distribution line. This feature would allow flow to be routed directly into the storage compartment rather than into the evaporation cell.

Capillary Break

A zone of gravel would be placed along the interior perimeter of each E-cell to separate the sand in the evaporation zone from the GCL-covered pond crest. This zone would create a capillary break to prevent unsaturated lateral suction flow generated in the evaporation zone from leaving the lined containment.

Fluid Management and Flow Sequence

Fluid management for E-cell closure and flow sequence is shown in **Figure 2-10**. When active heap leach operation ends, the solutions would be managed according to the following sequence:

- The Stage I HLP would gravity drain into E-cell E, which would be the converted east and west pregnant ponds. Any Stage I pump-back solution would also be routed into E-cell E. E-cell E would gravity flow into E-cell F as needed
- The Stage II HLP would gravity drain to an internal two-acre E-cell and then into E-cell G, which would pump overflow into E-cell B if needed
- The Stage III HLP would gravity drain into E-cell A, which would be the converted operational contingency pond. E-cell A would gravity flow into E-cell B if needed
- The Stage IV HLP would gravity drain to an internal E-cell and then into E-cell D, which would pump overflow into E-cell B if needed
- The Stage V HLP would gravity drain into E-cell H, which would pump overflow into E-cell B if needed

The Stage III and V HLPs long-term drain-down would be routed into the E-cell system through permanent solution conveyance pipes and through the permanent buttresses.

The E-cell's passive evaporation capacity and sequencing have been designed to manage anticipated drain-down volumes, as shown in **Table 2-8**. In the unlikely event a storage compartment reaches capacity, the drain-down would back up into the evaporation compartment. If an E-cell were to require maintenance or if solution transfer becomes otherwise necessary, the solution may be conveyed to adjacent E-cells through the alternative flow paths shown on **Figure 2-10**. In addition, a substantial degree of additional flow management can be achieved by the dedicated well pumps. They are able to seasonally circulate from the storage compartment to the evaporation compartment within each E-cell, thereby maximizing use of the system-wide evaporative capacity.

The overflow E-cells can receive excess drain-down flow from such events as weather from either of the following via pumped routing in pipelines:

- Stage I HLP E-cell E or Stage III HLP E-cell A via gravity drainage
- Stage II HLP E-cell D, Stage IV E-cell G, or Stage V E-cell H

Buried pipes would have double containment (i.e., pipe-in-pipe), and pumps would be powered from existing power lines (see **Figure 2-10**).

Closure of Underdrains

Two underdrain collection systems or catch basins were designed to capture seasonal spring flows from beneath the Stage I HLP and to convey them to the process ponds. In addition, flow in the southeast portion of the heap underdrain system was to the southeast, to the South American Canyon sump east of the Stage I HLP. The sumps would continue to pump solution during mining and the post-closure monitoring through 2051 until fluids are diminished by the pump-back wells (see Appendix C, 2014 FPCP). While being pumped, the fluid would be conveyed to the Stage I HLP E-cell.

The American Canyon spring and other seeps identified in the 1993 wetland delineation (Gibson & Skordal 1993) would be covered by the proposed Stage V HLP. Underdrain collection systems or the proposed underdrain system would capture existing seasonal flow from these areas and convey them to process underdrain ponds during operations, and if not impacted, routed to the stormwater diversion system. At closure, the underdrain water would be monitored and, if no impacts are observed, the water would be routed to the stormwater diversion system.

Closure of Well Fields and Water Storage Tanks

On-site monitoring wells that are not planned to be used after closure would be abandoned within 30 days after they are no longer required, in accordance with NAC 534.4365. Wells that would be used for closure monitoring would be plugged after a minimum of five years upon approval by NDEP. An estimated 0.25 acre of ground disturbance around each monitoring well would be reclaimed, regraded, ripped, and seeded with the approved seed mix. Once water no longer needs to be stored for operations or closure, the water tanks would be salvaged, if possible, or they would be demolished and buried on-site in the class III-waivered landfill.

Potable Water Treatment Facility

The potable water treatment facility would be decommissioned and salvaged, if possible, when it is no longer necessary. Treatment reagents and other substances would be used in the process, according to their intended use. Afterward, they would be sent back to the supplier or manufacturer for proper disposal or would be properly labeled and managed as solid or hazardous waste.

Fuel Storage Facilities

The fuel storage facilities would be decommissioned and salvaged if possible once they are no longer necessary. Stored fuel would be used during operations and closure, would be sent back to the supplier for salvage or proper disposal, or would be properly labeled and managed. During facility closure, the soil in and around the fuel storage facilities would be sampled and tested as needed to verify that these areas are free of hydrocarbons or other potentially hazardous substances. Where hazardous substances are identified, the contaminated areas would be remediated. Hydrocarbon-contaminated soils would be excavated and placed in containers for shipment to an off-site disposal facility.

Explosives Storage Facilities

Explosives storage facilities would be demolished once mining has ceased. Explosives and other substances would be consumed in the mining process according to their intended use, would be sent back to the supplier or manufacturer for proper disposal, or would be securely and properly labeled and managed in accordance with the BATFE permit.

Septic Tank and Leach Field

The sewage treatment facility would be decommissioned and the supplier or authorized contractor would remove or bury the equipment in place once sewage treatment is no longer necessary. The leach field associated with the sewage treatment facility would be reclaimed by sealing the pipes in place with cement. Septic tanks would be removed, broken up, and buried in the landfill.

Landfill

The class III-waivered landfill would be reclaimed when closure is completed and debris and waste disposal has ceased. A layer of suitable cover material compacted to a minimum uniform depth of 24 inches would be placed on the final grade surface. This cover would be graded to allow for proper drainage of surface flows and to promote drainage away from the landfill, in accordance with Nevada regulations and guidance. A final layer of 12 inches of stockpiled growth medium, borrow cover material, or suitable alluvial waste rock would be placed on top of the cover. The area would then be tilled and seeded with the approved seed mix.

Fences

Fences surrounding the process and project areas would be removed and salvaged, if possible. Unsalvageable fencing materials would be disposed of in the on-site class III-waivered landfill. Fences constructed around the E-cells would remain as part of reclamation. The perimeter livestock fence would remain until reclamation is complete and the area has been released from bonding requirements.

Post Reclamation and Closure—Monitoring and Maintenance

Reclamation and closure monitoring is outlined in **Table 2-10**, Closure Monitoring. These activities would be conducted in accordance with standard operating procedures (SOPs) and would comply with BLM and NDEP requirements. Monitoring frequency for each location would be contingent on the stabilization of conditions or the design elements being retrofitted or modified to eliminate the monitoring requirements over time. Stabilization of conditions would be based on either observed physical conditions or on actual chemical sampling results from the various locations. These processes are discussed in more detail in Section 5 of the FPCP.

Heap Leach Pads and Evaporation Cells

Monitoring the reclaimed HLPs and E-cell structural integrity would entail inspecting the general surface conditions and perimeter. Unusual conditions indicating movement or undue settlement that might compromise the system or cover would require additional investigation. The inspections would remain qualitative unless conditions develop that are perceived to be detrimental to the performance of the facility. In such a case, the areas would be repaired or stabilized.

Monitoring the water drain-down from the HLPs to the corresponding E-cells would include observing system component integrity and sampling for water quality. The E-cell leak detection sumps would be monitored monthly for a minimum of one year. The prescribed monitoring frequencies could be modified based on physical observations or chemical data results reflecting source stabilization.

The E-cell storage compartment fluid (accessed via the inclined monitoring pipes) would be monitored to determine water level and quality. The water level would be recorded quarterly for five years and then annually for an additional 25 years, for a total of 30 years or until source stabilization is reached, as defined in NAC445A.430. Monitoring would begin after mining and associated heap leach processing and residual leaching cease, between 2021 and 2023.

Similarly, the water would be sampled quarterly for five years, after which the water quality would be assessed and the monitoring interval would be changed to annually for up to 30 years. The prescribed monitoring frequencies would be modified based on chemical data results reflecting source stabilization, in accordance with BLM and NDEP requirements.

In the absence of detected water, water quality data would not be available. Salt buildup would be monitored over the lifetime of the E-cell; the plan assumes system components to be replaced after 30 years. The E-cell backfill matrix would be replaced regardless of the timeframe if found to be ineffective due to salt buildup. Monitoring for this condition would be visual during normal maintenance visits throughout closure.

Table 2-10
Closure Monitoring

Monitoring Location[1]	Monitoring Type[1]					
	Visual				Water Quality	
	Revegetation		Stability			
	Required[2]	Frequency[3]	Required[2]	Frequency[3]	Required[2]	Frequency[3]
Rock Disposal Sites						
Rock disposal sites	X	A	X	SA	-	-
Pits						
Rochester pit	-	-	X	SA	-	-
Packard pit	-	-	X	SA	-	-
Heap Leach Pads						
Heap leach pad cover	X	A	X	SA	-	
Stage I, Stage II, Stage IV, and Stage V underdrain	-	-	-	-	NDEP profile I and average daily flow	Q
Leak detection	-	-	-	-	NDEP profile I and average daily flow	Q
Stage II barren solution pipe leak detection ports	-	-	-	-	NDEP profile I and average daily flow	Q
Stage IV leak detection sump overflow pond	-	-	-	-	NDEP profile II and fluid depth	Q
Stage II and Stage IV dike sumps	-	-	-	-	Solution depth	W
Stage I pregnant solution at north dike sump	-	-	-	-	NDEP profile II and average daily flow, piezometric head	Q5/A25
Stage I drain-down pipe leakage flow (boot sleeve)	-	-	-	-	NDEP profile I and average daily flow	Q5
Catch basins (2)	-	-	-	-	NDEP profile I and average daily accumulation	Q
Inflow to E-cell from HLP	-	-	-	-	NDEP profile I	Q5/A25
E-cells						
Backfill and infrastructure integrity	X	A	X	SA	-	-
Backfill salt accumulation	-	-	X	Q5/A25	-	-
Incline monitoring pipe	-	-	-	-	NDEP profile I and water level	Q5/A25
Leak detection and sump	-	-	-	-	NDEP profile I	M1

Table 2-10
Closure Monitoring

Monitoring Location[1]	Monitoring Type[1]					
	Visual				Water Quality	
	Revegetation		Stability			
	Required[2]	Frequency[3]	Required[2]	Frequency[3]	Required[2]	Frequency[3]
Surface water						
South American Canyon Spring	-	-	-	-	NDEP profile I	SA5/A25
Lower American Canyon Spring	-	-	-	-	NDEP profile I	SA5/A25
Groundwater						
Production wells PW-1A (if required), PW-4A, PW-2B, PW-3B	-	-	-	-	NDEP profile I	Q
Pump-back wells (WI-16, WI-17R, WI-29R, MW-50, MW-51, MW-52B, MW-53A, MW-53B, MW54)	-	-	-	-	Average daily volume	W
Monitoring wells (MW-25, MW-26, MW-30, MW-30R, MW-33, MW-35, MW-37, MW-40B, MW-41A, MW-41B, MW-44, MW-45, MW-46, MW-47, MW-48, MW-49, MW-50, MW-51, MW-52A, MW-53A, MW-53B, MW-54, TB-1, TB-3, WI-1, WI-2, WI-14, WI-15, WI-16, WI-17R, WI-19, WI-24, WI-27, WI-29R)	-	-	-	-	NDEP profile I	Q5/A
Climatology						
Weather stations	-	-	-	-	Maximum and minimum ambient temperature, relative humidity, wind speed and direction, total precipitation, solar radiation, and snow water equivalent	D5
Process solutions						
Process solutions	-	-	-	-	NDEP profile II	SA

[1]Monitoring locations and type may be updated during WPCP permit renewals and reclamation permit modifications.
[2]Required by WPCP NEV0050037
[3]Frequency legend: A—Annually inspected; A5-Annually for 5 years; SA—Semiannually; SA5—Semiannually for 5 years; Q—Quarterly; Q5—Quarterly for 5 years; M1—Monthly for 1 year; W—Weekly; D5—Daily for 5 years

Proposed Reclamation Schedule
Reclamation would be timed to take advantage of optimal climatic conditions, as outlined in **Table 2-11**, Proposed Seedbed Preparation and Seeding Schedule. Final grades, drainages, and sediment controls would be established over the late spring and summer. Seedbeds would be prepared in late summer or early fall just before seeding. The beds would be seeded between the BLM-recommended dates of October 1 and March 15 of each year in order to increase the potential for seeding success. If possible, seeds would be applied when one to three inches of snow is on the ground. If seeding is not completed before the onset of winter, surface erosion protection measures would be used. Any spring seeding would occur at the earliest possible time.

Table 2-11
Proposed Seedbed Preparation and Seeding Schedule

Techniques	Month											
	J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Seedbed preparation		X	X						X	X	X	
Seeding				X	X					X	X	X

Proposed Project Schedule
The general project schedule for the proposed action is based on the acquisition of requisite authorizations and permits. Roads, power lines, and other facilities are anticipated to be relocated within one year. Cover would be placed on the heap leach facilities once a steady state drain-down rate has been achieved.

2.3 ALTERNATIVES TO THE PROPOSED ACTION

2.3.1 No Action Alternative

Under the No Action Alternative the life of the CRI Mine would not be extended by five to seven years. Reclamation and mining to access precious metal reserves would continue, based on current authorizations in previously approved plans of operation and reclamation and closure plans; existing groundwater pumping rates would continue. Mining would continue to allow up to 1,930 acres of authorized disturbance within the existing mine plan boundary of 4,340 acres (see **Figure 1-3**, Existing Facilities).

Waste rock would continue to be placed in existing RDSs or in designated areas in the Rochester pit, in accordance with the approved WRMP and the UBMP. According to these plans, waste rock classified as PAG would continue to be placed in areas outside of the backfill zone and above an elevation of 6,250 feet amsl. The in-pit PAG disposal sites would continue to be covered with at least 50 feet of non-PAG waste rock. Non-PAG waste rock with less than or equal to 0.05 percent pyritic sulfur would be placed without amendment. If the pyritic sulfur content of the cover material was greater than 0.05 percent, the waste rock would be amended with lime to achieve an acid neutralization potential/acid generation potential ratio of greater than or equal to three to one.

Groundwater pumping rates would remain at the historical average of approximately 344 gpm. Existing production wells would remain at current locations and would not be replaced. The American Canyon Spring and associated riparian areas would remain. Mining would continue using existing SOPs, operating plans, and previously committed environmental protection measures.

Reclamation and closure would continue based on existing approved authorizations. At least two years before site closure and reclamation, CRI would submit a final permanent closure plan, in accordance with requirements of NDEP (NAC 445A) and BLM (43 CFR, Part 3809). Residual heap leaching from existing approved HLPs (Stages I to IV) would continue until they are no longer economically feasible, and then the pads would be stabilized and reclaimed. Conceptual closure ponds and an evaporation test pond would be constructed. The Stage I HLP corrective action plan would continue groundwater remediation pumping and recovery during closure.

Existing ROWs would continue. The CRI haul road ROW would be abandoned, following a determination of successful reclamation.

2.3.2 Alternative 1—Permanent Management of PAG Material Outside of the Rochester Pit

Under Alternative 1, proposed mining expansion operations and long-term reclamation and closure actions would be the same as those under the proposed action. Alternative 1 differs only with respect to management and permanent storage of the in-pit PAG material (**Figure 2-12**, Alternative 1 Permanent PAG Management). Under Alternative 1, CRI would remove in-pit PAG material and any newly encountered PAG material, as a part of the proposed action. CRI would then permanently store the material in the North and West RDS areas, which are also the temporary PAG material storage areas, described in the proposed action.

At closure, PAG material would be reclaimed in place on the North and West RDS areas outside of the pit, in accordance with the WRMP. PAG waste rock would not be returned to the Rochester pit. Reclamation of waste rock disposal areas would be designed to secure and limit exposure of PAG materials in accordance with the approved WRMP and would include placement of a minimum of 20 feet of non-PAG waste rock to cover the PAG cells. In addition, reclamation would be subject to the proposed PAG storage monitoring and mitigation contingency plan (see **Sections 2.2.9** and **2.2.10**).

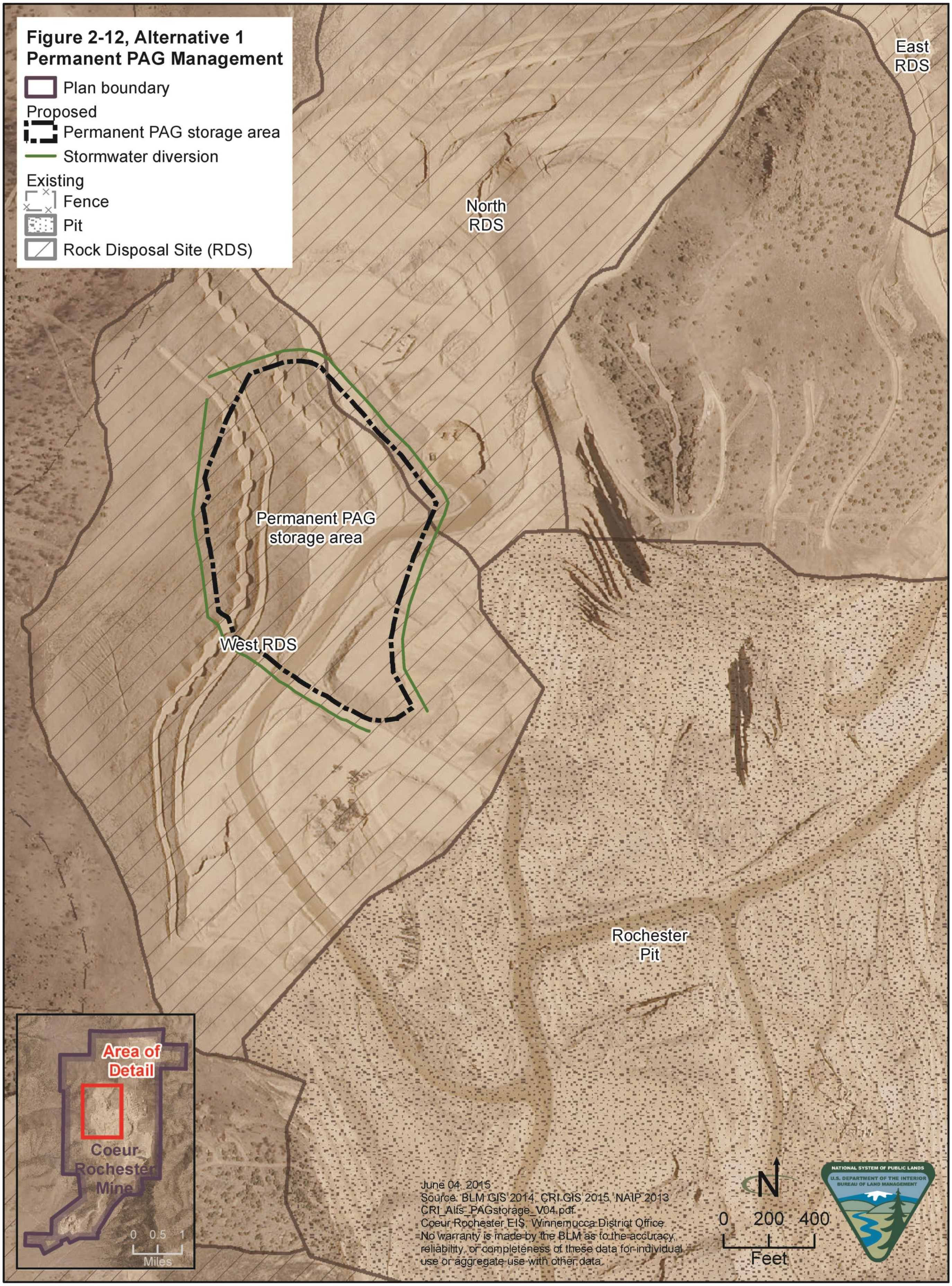
Figure 2-12, Alternative 1
Permanent PAG Management
Plan boundary
Proposed
Permanent PAG storage area
Stormwater diversion
Existing
Fence
Pit
Rock Disposal Site (RDS)
East RDS
North RDS
Permanent PAG storage area
West RDS
Rochester Pit
Area of Detail
Coeur Rochester Mine
0 0.5 1
Miles
June 04, 2015
Source: BLM GIS 2014, CRI GIS 2015, NAIP 2013
CRI_Alts_PAGstorage_V04.pdf
Coeur Rochester EIS, Winnemucca District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
N
0 200 400
Feet

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

2.4.1 Pit Backfill Elevation

The environmental assessment (DOI-BLM-WO10-0010, October 2010) for Plan of Operations Amendment #8 considered backfilling the pit to the 6,150-foot elevation as well as the backfill elevation of 6,175 feet. According to analysis under this environmental assessment, backfilling the pit to the 6,175-foot level (current backfill elevation) would eliminate the existing and future pit lake and would create a groundwater flow-through condition in the backfill. Further analysis based on hydrologic modeling of water flow through the pit supports the 6,175-foot pit backfill elevation, with no new impacts identified. Therefore, alternative backfill elevations need not be analyzed, and they have been eliminated from further detailed analysis.

2.4.2 Alternate Location for Stage V HLP

CRI and the BLM considered alternate locations for Stage V HLP to avoid covering the American Canyon Spring. However, based on feasibility studies and restrictions within the mine plan boundary, they determined that no other locations would be feasible for construction of the Stage V HLP.

2.4.3 Close a Portion of American Canyon Road to Public Access

Closing off public access on a portion of American Canyon Road was discussed. However, such a closure would restrict public access to adjacent public lands that are popular for recreation and other commercial uses. Moreover, it could have adverse socioeconomic impacts on Pershing County. This alternative was therefore considered not reasonable and was eliminated from detailed analysis.