

APPENDIX G

RECLAMATION PLAN

Sierrita Pipeline Project

Docket No. CP13-73-000

Reclamation Plan

Sierrita Gas Pipeline LLC
Two North Nevada Avenue
Colorado Springs, CO 80903

February 2014

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Abbreviations and Acronyms

ADA	Arizona Department of Agriculture
BANWR	Buenos Aires National Wildlife Refuge
CAP	Central Arizona Project
FERC	Federal Energy Regulatory Commission
HDD	Horizontal Directional Drilling
MMcf/d	million cubic feet per day
NRCS	National Resource Conservation Service
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
OHV	off-highway vehicle
POD	Plan of Development
PLS	pure live seed
Project	Sierrita Project
ROW	right-of-way
Sierrita	Sierrita Gas Pipeline LLC
SPCC	Spill Prevention, Control, and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan

Draft Reclamation Plan

1.0 Introduction

1.1 Project Overview

Sierrita Gas Pipeline LLC (Sierrita) proposes to construct approximately 60 miles of 36-inch-diameter, high-pressure pipeline and associated measurement facilities to deliver natural gas from El Paso Natural Gas Company, L.L.C.'s existing pipeline system to an interconnect point at the U.S.-Mexico border near the Town of Sasabe, Arizona herein referred to as the Sierrita Pipeline (Project). A corresponding pipeline Mexico segment, known as the Sasabe-Guaymas Pipeline, would also be constructed in Mexico by a separate entity not associated with Sierrita. The U.S. and Mexican pipelines would serve to meet increased gas-fired electrical generation needs. Sierrita proposes to use a nominal 100-foot-wide construction right-of-way (ROW) for installation of the pipeline, and a 50-foot-wide permanent ROW to facilitate operation and maintenance of the pipeline, meter stations, and appurtenant installations. Sierrita has no plans for periodic vegetation maintenance of the ROW with the exception of large shrubs or trees located within 10 feet of the pipeline centerline with roots that could compromise the integrity of the pipeline or may interfere with periodic corrosion/leak surveys. The vegetation clearing would be performed by pedestrian means; no vehicles would be used for vegetation maintenance.

1.2 Plan Overview

This Reclamation Plan has been prepared to outline the goals and objectives of reclamation, the reclamation schedule, reclamation processes, and monitoring and maintenance efforts. The Reclamation Plan describes the reclamation process that would be implemented to mitigate temporary impacts within the Project area resulting from construction.

The Reclamation Plan utilizes reclamation methods developed for similar projects that have been approved by the Federal Energy Regulatory Commission (FERC) and includes recent technical standards and published post-construction restoration monitoring information. Sierrita proposes to implement the May 2013 version of FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and the *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) with modifications (Sierrita's Plan and Procedures). This Reclamation Plan will be implemented in conjunction with Sierrita's Plan and Procedures.

2.0 Goals and Objectives

The short-term goal of reclamation is to minimize erosion and sedimentation potential on land affected by the Project. Properly executed construction practices, optimum scheduling, and timely construction can mitigate short-term impacts. Long-term reclamation goals include protecting water resources, stabilizing soils through successful establishment of stable

vegetation cover, minimizing impacts to the viewshed, and returning land uses to pre-existing conditions to the extent practicable.

Project reclamation efforts would meet short-term and long-term reclamation goals by:

- Re-establishing topography compatible with the surrounding landscape;
- Establishing stable soil surface and drainage conditions that would minimize surface erosion and sedimentation;
- Using proper soil management techniques, including stripping, stockpiling, and reapplying topsoil and hydro-axed vegetation material and establishing surface conditions that would enhance development of diverse, stable, self-generating plant communities;
- Revegetating disturbed areas with plant species adapted to site conditions to establish long-term, productive, native plant communities compatible with existing land uses and concurrently minimize the potential for noxious and invasive weeds to become established; and
- Monitoring during the construction and operational phases to assess both short-term and long-term reclamation goals.

3.0 Reclamation Schedule

The current Project schedule is for Contractor move-in to occur in May 2014, with construction beginning in May or June 2014 and an in-service date of September 30, 2014. This schedule includes clearing, grading, and topsoil / hydro-axed vegetation segregation prior to pipeline installation; restoration of the ROW after pipeline installation through cleanup, final grading, and installation of permanent erosion control structures; and revegetation of the ROW through topsoiling, reclamation seeding, Pima pineapple cactus (PPC; *Coryphantha scheeri var robustispina*), saguaro cactus (*Carnegiea gigantea*), Palmer's agave (*Agave palmeri*), and parviflora agave (*Agave parviflora*) transplanting, and noxious and invasive weed management.

The reclamation schedule may be affected by weather and Project clean-up activities. Reclamation efforts would occur before the end of the monsoon season in the northern portion of the Project and before the end of the winter rain season when precipitation and temperature conditions conducive to seed germination and seedling establishment are the most likely to occur.

4.0 Reclamation Process

The short-term and long-term goals described above would be fulfilled through implementation of the reclamation processes outlined below in conjunction with measures outlined in Sierrita's Plan and Procedures.

4.1 Initial Construction Activities

Sierrita will complete Preconstruction Planning as outlined in Section III of Sierrita's Plan and Section IV of Sierrita's Procedures. Initial construction activities would include surveying,

clearing vegetation, stripping and stockpiling topsoil and hydro-axed vegetation, and grading the ROW for safe construction passage. The initial construction activities are described in the following sections.

Construction Survey

The temporary construction ROW would be surveyed and demarcated using staking and flagging to identify the width of clearing along the ROW. Vehicle travel and ATV equipment operation would be limited to the surveyed work areas or on approved access roads. ATV's would only be allowed for construction survey where landowner permission is obtained.

Pima Pineapple Cactus, Saguaro Cactus, and Agave Avoidance and Transplanting

Impacts to existing PPC located along the edge of the ROW will be avoided where practicable. Prior to clearing activities, PPC along the edge of the ROW will be identified and demarcated using highly visible flagging. Clearing staff will be notified of the demarcated areas to be avoided prior to the initiation of clearing activities. PPC will be marked prior to construction activities and transplanted after the Biological Opinion (BO) is completed and Notice to Proceed (NTP) is received. PPC transplanting will be performed by hand; No clearing will be needed to access PPC.

Impacts to existing large saguaro cacti, Palmer's agaves, and parviflora agaves located along the edge of the ROW will be avoided where practicable. Prior to clearing activities, large saguaro cacti, Palmer's agaves, and parviflora agaves along the edge of the ROW will be identified and demarcated using highly visible flagging. Clearing staff will be notified of the demarcated areas to be avoided prior to the initiation of clearing activities.

PPC, saguaro cacti less than nine feet in height without arms, and Palmer's agave that cannot be avoided during construction will be removed by a qualified nursery or equivalent prior to land clearing activities. A qualified nursery or equivalent will assess and maintain saguaro cacti, Palmer's agaves and 20 percent of the PPC that cannot be avoided during construction activities and will ensure that the PPC, saguaro cacti, and Palmer's agaves are tagged, marked, and temporarily and permanently transplanted appropriately. The remaining 80 percent of PPC will be relocated outside of the construction ROW, but within the 300-foot area that was surveyed prior to construction. Sierrita will ensure that transplanting will not occur within known cultural resource sites. PPC transplanting will be performed by hand; No clearing will be needed to access PPC. Limited vegetation clearing may be needed to access saguaro cacti and Palmer's agaves. Before removal from the existing ROW, the north orientation of each PPC and saguaro cacti will be photographed, tagged, and recorded. All PPC and saguaro will be replanted with a similar north orientation.

A qualified nursery or equivalent will assess approximately 50 percent of the parviflora agaves that cannot be avoided and would relocate approximately 30 percent of the healthy / viable parviflora agaves to an adjacent location outside of the construction ROW but within the previously surveyed 300-foot corridor. Limited vegetation clearing may be needed to access

parviflora agaves. Monitoring or assessments of the transplanted parviflora agaves will not be performed.

Dry Wash Test Pits, Woody Vegetation Stockpile, and Vegetation Clearing

The Project route will be staked during Construction Surveys as described above. The soil characteristics will be assessed by digging a test trench prior to clearing and will be evaluated by an on-site hydrogeologist. In areas where the soil conditions allow (e.g., where the on-site hydrogeologist determines that soils are more cohesive and do not require an approximate 1:1 trench for safe construction operations) or where the scour depth and/or migration setback can be modified, the Project route will be narrowed and re-staked, and clearing would only occur within the narrowed construction work area.

Approximately 25 percent of the woody vegetation (e.g., mesquite) would be cut or cleared from the staked ROW during initial clearing activities. An excavator fitted with a thumb or a grapple, working from the construction ROW, would stockpile cut/cleared large shrubs in a 20-foot non-cleared area adjacent to the ROW for later use as soil mulch, and/or unauthorized access controls. The remaining shrubs and vegetation will be hydro-axed (e.g., large pieces). The hydro-axed vegetation will be incorporated into the topsoil such that the cleared vegetation will serve as a mulch functional equivalent to reduce wind and water erosion potential and to protect topsoil piles from heavy rain, flash flooding, and wind erosion during construction and will further reduce erosion potential of the topsoil during restoration activities.

Topsoil Segregation

Following clearing activities, Sierrita would, at a minimum, segregate topsoil (and hydro-axed vegetation) along the ditch and working sides of the ROW to minimize compaction and promote restoration by reserving the seed source. When significant grading is required, Sierrita would topsoil the entire width of the ROW. Sierrita would store topsoil and hydro-axed vegetation along the outside of the working side, the spoil side, or both sides of the ROW, to minimize the movement of topsoil during grading and restoration activities.

Surface Rock Removal

Rocks removed from the land surface or subsoil will be stockpiled and placed back on the ROW near the same location after construction. The rocks, where present and where useful for reclamation, would be windrowed adjacent to the topsoil stockpiles. Rock would be separated from the topsoil and placed on the construction ROW or in temporary workspaces for use in erosion control or unauthorized access controls or if requested by the landowner or land management agency.

5.0 Right-of-Way Restoration

The Project will be constructed in accordance with Sierrita's Plan and Procedures. Restoration of the ROW following pipeline installation involves backfilling the excavated trench, replacing stockpiled subsoil and topsoil, restoring pre-existing contours, installing permanent erosion

control structures (e.g., waterbars/slope breakers), and establishing native vegetation as described in the following sections.

Backfilling and Returning Topsoil

Following pipeline installation, the excavated trench material (subsoil) would be used to backfill the trench, followed by the return of topsoil and hydro-axed vegetation. Topsoil and subsurface soils would be replaced as quickly as possible after pipeline installation is complete. Any excess ditch spoil would be blended across the construction corridor, creating a rough surface to help retain precipitation and capture windblown seed from adjacent vegetation.

Compacted areas, as determined by the Environmental Inspector, would be decompacted to a minimum depth of 16 inches using a chisel plow prior to surface soil replacement (Monson 2005). Soil ripping would be conducted where necessary along contours to minimize soil erosion and to facilitate water retention to aid revegetation.

Woody Vegetation and Surface Rock Placement

Woody vegetation stockpiled during initial construction activities would be picked up and moved back across the ROW during backfilling activities as a measure to further impede unauthorized vehicle access to the ROW following construction. The woody vegetation will be replaced in natural locations (e.g., not in a row or pattern) along the ROW.

Rocks removed from the land surface or subsoil during excavation may be used to backfill the trench only to the top of the existing bedrock profile. The size, density, and distribution of rock on the construction work area would be similar to adjacent areas not disturbed by construction unless approved for use by the landowner or land managing agency. Rock not returned to the trench would be used to further impede vehicular access along the ROW, where appropriate and approved by the landowner or land managing agency. If approved by the landowner or managing agency, the rock may be buried at specific locations on the ROW.

Recontouring

Temporarily disturbed areas within the ROW, additional temporary workspaces (ATWS), and contractor yards would be recontoured to blend with the surrounding landscape during backfilling activities. To the extent practicable, recontouring would emphasize the restoration of drainage patterns and landforms to preconstruction conditions.

Erosion Control Measures (Waterbars)

Following backfilling, woody vegetation placement, and recontouring activities, waterbars will be installed in accordance with Sierrita's Plan and Procedures. Waterbars are earthen berms that reduce rill erosion along the ROW and direct the flow of surface water. Waterbars typically consist of a one-foot high berm with an upslope swale. Sierrita will use waterbars to direct water into well-vegetated areas immediately adjacent to the ROW to prevent headcutting or other erosion. Where well-vegetated areas are not present, J-hooks and rocks would be installed at the ends of all waterbars.

The purposes of waterbars are:

- To decrease overland water velocities across disturbed lands by reducing slope lengths;
- To remove excessive water resulting from a large storm event from a disturbed area in a controlled manner and at sufficiently frequent intervals to reduce its erosive power;
- To direct significant flows water into a stabilized location to minimize surface scour;
- To maximize water infiltration along the pipeline ROW; and
- To slow excessive water flow across the ROW to help maintain soil moisture for restoration efforts.

Dry Wash Crossing Restoration

Dry wash bank stabilization measures will be implemented concurrently with the implementation of the erosion control measures. Sierrita completed a detailed *Scour and Lateral Bank Migration Analysis* for the Project based on an approach developed with the Pima County Regional Flood Control District (RFCD). The detailed analysis identified the minimum pipeline burial depth for safe pipeline operation at each dry wash crossing based on site-specific scour resistance characteristics and calculated scour depth and lateral erosion distance. The detailed analysis was performed in an effort to identify dry washes for which the construction ROW could be reduced and ATWS setbacks could be increased to minimize impacts to riparian areas while maintaining a safe pipeline burial depth. Modification to the general ROW restoration measures may be required in some dry washes to prevent pipeline exposure and to promote dry wash bed and bank stabilization. The additional restoration measures will continue to be developed with the Pima County RFCD.

The following additional restoration procedures will be used to reclaim disturbed areas at dry wash crossings.

- Omit topsoil salvage and imprinting in active wash areas
- Re-establish original water flow path;
- Omit crowing of excess backfill over the pipeline to prevent channeling of water along the pipeline and pipeline disturbance;
- In riparian areas, place cut vegetation along the top of bank to impede access and provide cover, where available; and
- Maintain the root crown/structure in riparian habitats during clearing.

Drill Seeding and Saguaro Cactus and Palmer's Agave Transplanting

Drill seeding is proposed between MP 0.0 and MP 26.0 where the pipeline ROW is generally parallel to and visible from existing highways (e.g., Highway 86 and Highway 286). This portion of the Project ROW and areas from MP 26.0 to the end of the Project route that abut and parallel existing roads will be recontoured to blend with the surrounding landscape following construction and would therefore be accessible for drill seeding. Detailed information regarding seeding methods and timing is provided in Section 6.0.

Saguaro cacti and Palmer's agaves within the Project ROW that cannot be avoided during construction will be salvaged from the ROW and will be replanted in similar locations during seeding activities. Sierrita would replace saguaro cacti and Palmer's agaves that cannot be avoided or transplanted during construction. Survivability would be confirmed after the second growing season. Sierrita would continue to monitor transplanted plants over a 5-year period. Sierrita would supplement with nursery stock at a 3:1 ratio to obtain an overall 1:1 survivability ratio or no net loss.

Surface Roughening

The Project ROW between MP 0.0 and approximately MP 26.0 is parallel to and visible from a roadway (i.e., Highways 86 and 286). ROW inaccessibility measures are generally not necessary between MP 0.0 and approximately MP 26.0 and areas from MP 26.0 to the end of the Project ROW that are parallel to and visible from a roadway, therefore Sierrita will implement typical recontouring measures for the portion of the Project. Measures to impede access by unauthorized vehicles to the ROW will be implemented for the majority of the Project ROW from MP 26.0 to the end of the pipeline route where the ROW does not abut and parallel an existing road. The areas where roughening will occur will be imprinted by excavating approximately 18-inch to approximately three foot low areas followed by approximately 18-inch to approximately 3-foot mounds along the ROW to impede vehicular access. Topsoil and hydro-axed vegetation will be spread over the roughened ROW by an excavator.

Aerial and Broadcast Seeding

Measures to impede access by unauthorized vehicles to the ROW will be implemented for the majority of the Project ROW from MP 26.0 to the end of the pipeline route where the ROW does not abut and parallel an existing road. Because the Project ROW would be made inaccessible for vehicles, seeding will be performed either by broadcast or aerial methods. Detailed information regarding seeding methods and timing is provided in Section 6.0.

6.0 Revegetation

6.1 Existing Vegetation

The Project is located within both the Arizona Upland subdivision of the Sonoran Desertscrub biotic community and the Semidesert Grassland biotic community. Dominant plant species in the Arizona Upland subdivision areas include creosote bush (*Larrea tridentata* var. *tridentata*), velvet mesquite (*Prosopis velutina*), whitethorn acacia (*Acacia constricta*), catclaw acacia (*Acacia*

greggii), cholla (*Cylindropuntia* spp.), barrel cactus (*Ferocactus* spp.), triangle bur ragweed (*Ambrosia deltoidea*), broom snakeweed (*Gutierrezia sarothrae*), hedgehog cactus (*Echinocereus* sp.), prickly pear cactus (*Opuntia* spp.), spiny hackberry (*Celtis ehrenbergiana*), nipple cactus (*Mammalaria* spp.), and desert zinnia (*Zinnia acerosa*).

Dominant plant species in the Semidesert Grassland areas include velvet mesquite, Lehmann's lovegrass (*Eragrostis lehmanniana*), grama (*Bouteloua* spp.), three-awn (*Aristida* spp.), cholla, prickly pear cactus, hedgehog cactus, velvetpod mimosa (*Mimosa dysocarpa*), broom snakeweed, catclaw acacia, fairyduster (*Calliandra eriophylla*), ratany (*Krameria* sp.), ocotillo (*Fouquieria splendens*), rainbow cactus (*Echinocereus pectinatus*), agave (*Agave* spp.), foothill paloverde (*Parkinsonia microphylla*), blue paloverde (*Parkinsonia florida*), and banana yucca (*Yucca baccata*).

Within both of these vegetation communities (i.e., Arizona Upland of Sonoran Desertscrub and Semidesert Grassland), two types of vegetation classifications exist: upland and xeroriparian. The upland vegetation includes those areas between dry washes and xeroriparian vegetation is associated with an ephemeral water supply along the dry washes in the Project area. Although both areas contain similar compositions of plant species, the xeroriparian vegetation usually contains plant species at higher densities than in the upland areas. Xeroriparian vegetation associated with the ephemeral drainages in the Project area includes velvet mesquite (*Prosopis velutina*), paloverde (*Parkinsonia* spp.), netleaf hackberry (*Celtis laevigata* var. *reticulata*), spiny hackberry (*Celtis ehrenbergiana*), catclaw acacia (*Acacia greggii*), Ambrosia leaf bur ragweed (*Ambrosia ambrosioides*), and triangle bur ragweed (*Ambrosia deltoidea*).

No broadleaf deciduous riparian vegetation communities (i.e., communities containing willow [*Salix* spp.], cottonwood [*Populus* spp.], or ash [*Fraxinus* spp.], etc.) occur in the Project area. Saguaro cacti occur in low densities throughout the Project area, and Palmer's agaves occur in the extreme southern end of the Project area.

6.2 Reclamation Seed Mixture

Disturbed areas within the ROW, additional temporary workspaces (ATWS), and contractor yards would be revegetated using the following recommended seed mixture, which was developed based on recommendations from the NRCS Tucson Field Office and Tucson Plant Materials Center. The seed mixture was designed to be compatible with the dominant vegetation currently found along the Project ROW. The criteria used for selecting the seed mixture include the following:

- Restoration performance of species within a similar habitat type based on past pipeline reclamation projects in similar habitats;
- Erosion-control capability;
- Existing plant dominance;
- Availability of seed;
- Wildlife habitat value; and
- Livestock management.

In addition to the seed mixture developed by the NRCS Tucson Field Office, the USFWS recommended that important masked bobwhite forage species be added to the final seed mixture within Semidesert Grassland vegetation community areas crossed by the Project. The USFWS also requested that more typical desert scrub species be added to the final seed mixture where the Project crosses Sonoran Desertscrub vegetation community areas in the northern portion of the Project. Sierrita has adopted the recommendation of the USFWS. The NRCS recommended reclamation seed mixture (to be used throughout the Project route) and USFWS shrub species seed amendments with Semidesert Grassland and Sonoran Desertscrub vegetation communities is provided in Table 6-1. The general location along the current Project route of Semidesert Grassland and Sonoran Desertscrub vegetation communities is provided in Table 6-2. A summary by milepost of the proposed seed mixture, seeding method, and anticipated seeding schedule for the Project is provided in Table 6-3.

Sierrita will continue to consult with NRCS and other applicable agencies regarding additional input on seed mix.

TABLE 6-1
Recommended Seed Mixture for the Sierrita Project

Species	Scientific Name	Variety (suggested)	Percent of Mixture	PLS Seeding Rate/acre (pounds)
NRCS-Recommended Grass and Forb Seed Mix ^a				
Arizona Cottontop	<i>Digitaria californica</i>	Common or "Loetta"	5	0.18
Plains bristlegrass	<i>Setaria macrostachya</i>	Common	20	0.74
Sand dropseed	<i>Sporobolus cryptandrus</i>	Common	5	0.01
Spike dropseed	<i>Sporobolus contractus</i>	"Cochise" or Common	5	0.025
Green sprangletop	<i>Leptochloa dubia</i>	Common	20	0.4
Sideoats grama	<i>Bouteloua curtipendula</i>	"Vaughn"	25	1.9
Desert Marigold	<i>Baileya multiradiata</i>	Common	10	0.1
Globemallow	<i>Sphaeralcea ambigua</i>	Common	5	0.11
Penstemon	<i>Penstemon species</i>	Common	5	0.11
TOTAL			100	3.58 lbs
USFWS Recommended Supplemental Shrub Seed Mix for Semidesert Grassland Areas ^b				
White ball acacia	<i>Acacia angustissima</i>	Common	--	5.0
Bundleflower	<i>Desmanthus cooleyi</i>	Common	--	5.0
USFWS Recommended Supplemental Shrub Seed Mix for Sonoran Desertscrub Areas ^b				
White-thorn acacia	<i>Acacia constricta</i>	Common	--	3.5
Greythorn	<i>Ziziphus obtusifolia</i>	Common	--	5.0
Fairy duster	<i>Calliandra eriophylla</i>	Common	--	5.0
Barrel cactus	<i>Ferocactus wislizenii</i>	Common	NA ³	NA ^c
Hedgehog cactus	<i>Echinocereus triglochidiatus</i>	Common	NA ³	NA ^c

a - Seed mixture recommended by the NRCS, Tucson, Arizona.

b - Supplemental seed mixture recommended by the USFWS in a letter dated January 22, 2013.

When available, cultivars listed above are recommended because of known quality and adaptability to the area. Substitutions to species listed above may occur if the seed for a given species is not available. Use of species other than those listed above would be approved by the USFWS and NRCS prior to use.

This seeding rate is based on drill seeding that will be implemented for the Project ROW between MP 0.0 and MP 26.0 and for areas between MP 26.0 and MP 59.2 where the Project abuts and parallels an existing road. Broadcast or aerial seeding will be implemented from MP 26.0 to MP 59.2 (except where the ROW abuts and parallels an existing road) where the land surface will be roughened to inhibit unauthorized vehicle use. The seeding rate should be doubled where broadcast or aerial seeding will be implemented.

c - Species recommended to be added to the seed mixture by USFWS; Based on correspondence from the NRCS, salvaged saguaro cacti and Palmer's agave would be replanted where feasible rather than seeded.

Vegetation Community	Begin MP	End MP
Sonoran Desertscrub	0.0	5.0
Semidesert Grassland	5.0	7.1
Sonoran Desertscrub	7.1	8.1
Semidesert Grassland	8.1	18.3
Sonoran Desertscrub	18.3	59.2

Seed would be tested for purity and percent live seed (pure live seed [PLS]) and would be certified as weed free prior to use. Disturbed areas would be seeded using the specified species and seeding rates.

Soil Amendments / Fertilizer / Weed Control

Soil amendments consist of fertilizers, wood or straw mulches, tackifying agents, or soil stabilizing emulsions. The Project is not currently proposing the application of fertilizers as part of its post-construction restoration activities.

The Project reserves the option use pre-emergent herbicide, such as Oust® or Plateau®, to minimize the germination of annual weeds, which would reduce competition with perennial herbaceous species in the reclamation mixture.

Seeding Schedule

Based on the current construction plan, construction on the northern portion of the Project should be completed before the end of monsoon season. Seeding would occur following final clean-up between MP 0.0 and MP 26.0 and should also be completed before the end of the monsoon season. However, if construction is not completed before the end of the monsoon season (e.g., due to construction delays), then seeding for this portion of the Project ROW will occur before the end of the winter rain season.

Based on the current construction plan, the remainder of the Project should be constructed before the end of the winter rain season. Seeding would be performed either by broadcast or aerial methods from MP 26.0 to MP 59.2 following recountoring and ROW-roughening activities and should be completed before the end of the winter rain season.

Table 6-3

Sierrita Post-Construction Seed Application Factors and Approach

Begin MP	Seed Mix ^a		Seeding Method ^b		Seeding Timing ^c	
	NRCS-Recommended Grass and Forb Seed Mix		Drill Seed	Broadcast / Aerial	Before End of Monsoon Season	Before End of Winter Rain Season
	USFWS Recommended Supplemental Shrub Seed Mix for Semidesert Grassland Areas	USFWS Recommended Supplemental Shrub Seed Mix for Sonoran Desertscrub Areas				
0.0		●	●		●	
1.0		●	●		●	
2.0		●	●		●	
3.0		●	●		●	
4.0		●	●		●	
5.0	●		●		●	
6.0	●		●		●	
7.0		●	●		●	
8.0	●		●		●	
9.0	●		●		●	
10.0	●		●		●	
11.0	●		●		●	
12.0	●		●		●	
13.0	●		●		●	

Table 6-3

Sierrita Post-Construction Seed Application Factors and Approach

Begin MP	Seed Mix ^a		Seeding Method ^b		Seeding Timing ^c	
	NRCS-Recommended Grass and Forb Seed Mix		Drill Seed	Broadcast / Aerial	Before End of Monsoon Season	Before End of Winter Rain Season
	USFWS Recommended Supplemental Shrub Seed Mix for Semidesert Grassland Areas	USFWS Recommended Supplemental Shrub Seed Mix for Sonoran Desertscrub Areas				
14.0	●		●		●	
15.0	●		●		●	
16.0	●		●		●	
17.0	●		●		●	
18.0	●		●		●	
19.0		●	●		●	
20.0		●	●		●	
21.0		●	●		●	
22.0		●	●		●	
23.0		●	●		●	
24.0		●	●		●	
25.0		●	●		●	
26.0		●	●		●	
27.0		●	●			●

Table 6-3

Sierrita Post-Construction Seed Application Factors and Approach

Begin MP	Seed Mix ^a		Seeding Method ^b		Seeding Timing ^c	
	NRCS-Recommended Grass and Forb Seed Mix		Drill Seed	Broadcast / Aerial	Before End of Monsoon Season	Before End of Winter Rain Season
	USFWS Recommended Supplemental Shrub Seed Mix for Semidesert Grassland Areas	USFWS Recommended Supplemental Shrub Seed Mix for Sonoran Desertscrub Areas				
R28.0		●		●		●
R29.0		●		●		●
R30.0		●		●		●
R31.0		●		●		●
R32.0		●	●			●
R33.0		●	●			●
R34.0		●	●			●
R35.0		●		●		●
R36.0		●		●		●
R37.0		●		●		●
38.0		●		●		●
39.0		●		●		●
40.0		●		●		●
41.0		●		●		●

Table 6-3

Sierrita Post-Construction Seed Application Factors and Approach

Begin MP	Seed Mix ^a		Seeding Method ^b		Seeding Timing ^c	
	NRCS-Recommended Grass and Forb Seed Mix		Drill Seed	Broadcast / Aerial	Before End of Monsoon Season	Before End of Winter Rain Season
	USFWS Recommended Supplemental Shrub Seed Mix for Semidesert Grassland Areas	USFWS Recommended Supplemental Shrub Seed Mix for Sonoran Desertscrub Areas				
42.0		●		●		●
43.0		●		●		●
44.0		●		●		●
45.0		●		●		●
46.0		●		●		●
47.0		●		●		●
48.0		●		●		●
49.0		●		●		●
50.0		●		●		●
51.0		●		●		●
52.0		●		●		●
53.0		●		●		●
54.0		●		●		●
55.0		●		●		●

Table 6-3

Sierrita Post-Construction Seed Application Factors and Approach

Begin MP	Seed Mix ^a		Seeding Method ^b		Seeding Timing ^c	
	NRCS-Recommended Grass and Forb Seed Mix		Drill Seed	Broadcast / Aerial	Before End of Monsoon Season	Before End of Winter Rain Season
	USFWS Recommended Supplemental Shrub Seed Mix for Semidesert Grassland Areas	USFWS Recommended Supplemental Shrub Seed Mix for Sonoran Desertscrub Areas				
56.0		●		●		●
57.0		●		●		●
58.0		●		●		●
59.0		●		●		●
59.2		●		●		●

a - Seed mixture recommended by the NRCS, Tucson, Arizona; Supplemental seed mixture recommended by the USFWS in a letter dated January 22, 2013.
 b - Drill seeding will occur between MP 0.0 and MP 26.0 and for areas between MP 26.0 and MP 59.2 where the Project abuts and parallels an existing road. Broadcast or aerial seeding will be implemented from MP 26.0 to MP 59.2 where the land surface will be roughened to inhibit unauthorized vehicle use.
 c - Based on the current Project schedule, the northern portion of the Project would be completed before the end of the monsoon season. The remainder of the Project is currently scheduled to be completed before the beginning of the winter rain season

7.0 Post-Construction Monitoring and Reporting

The purpose of post-construction monitoring is to evaluate the long-term soil stability, vegetative cover and density, habitat quality, and levels of noxious and invasive weeds in the ROW. Vegetation monitoring will occur annually during the growing season for five years after the seeding and succulent transplanting is completed in accordance with Sierrita's Post-Construction Vegetation Monitoring Document. Annual monitoring will continue until the Federal Energy Regulatory Commission (FERC), and the Arizona State Land Department determine that restoration and revegetation goals have been achieved for a given ROW segment (i.e., that a plant cover similar to that of the areas adjacent to the Project ROW that were not disturbed by Project construction has been established).

Note that with the exception of noxious weed control, vegetation maintenance, including mowing of non-agricultural lands, is not anticipated. However, the Project may selectively remove large brush from the permanent ROW to facilitate aerial surveillance and inspection.

Additionally, Sierrita will monitor the Project for erosion and stabilization issues on a monthly schedule. The ROW will be flown by fixed wing aircraft and a report will be filed with Sierrita's Western Pipeline Operations Division. On-going inspection both in the air and general pipeline maintenance on the ground (Operations Division personnel) of the ROW, as necessary, will occur over the lifetime of the Project. If there are erosion and stabilization issues that are noted and require attention, Operations and Sierrita's Land Department will coordinate with the landowner or land managing agency to address site-specific issues. Further, if an issue or concern is identified by a landowner or land management agency, Sierrita's Land Department can be contacted directly at 1-877-598-5263.

Access Roads

Sierrita will inspect access roads prior to start of construction and following construction to return access roads to pre-construction conditions and in accordance with the terms of all road use permits. To facilitate post-construction monitoring, the Project access roads will be divided into two groups based on the degree of reclamation required after Project construction is completed. Group 1 roads include those that would have required widening during construction to facilitate equipment access to the ROW. Post-construction monitoring of Group 1 access roads will include visual assessments, photo documentation, And GPS data collection in Years 1, 3 and 5 following construction. Group 2 roads are those that would have been utilized for the Project, but did not require modification for construction. Group 2 roads will not be monitored following construction activities.

Sierrita will utilize Project access roads to travel to and from the permanent Project ROW as in-kind use following construction. All Project access roads are existing roads; no new roads will be constructed as part of the Project. Noxious weed control, vegetation monitoring, and general maintenance activities will be performed within the ROW by pedestrian means. Vehicle use along the permanent ROW is not anticipated for monitoring or general maintenance activities

following final restoration and clean-up. Should Sierrita need to access the ROW for an inspection or repair of a specific location along the pipeline, that action would be permitted separately with appropriate agencies and the ROW would be accessed utilizing the nearest access road. Following inspection and repair, the ROW would be restored using the restoration methods Provided in Sierrita's Reclamation Plan.

8.0 Unauthorized Vehicle Access and Control

Sierrita is working with the appropriate law enforcement agencies (e.g. USBP, Pima County Sherriff's Department, and USFWS) regarding security measures to ensure that unauthorized persons do not enter and/or use the ROW during construction and operation.

Sierrita will implement measures to inhibit unauthorized vehicle access to the ROW including surface roughening, and woody vegetation and rock placement, as discussed above.

9.0 References

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